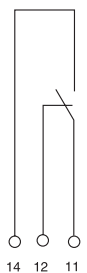
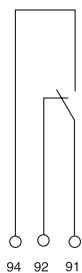
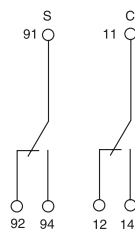
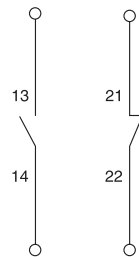


## ACCESSORIES AND AUXILIARIES FOR MODULAR CIRCUIT BREAKER

## Auxiliary contacts

| TECHNICAL DATA                      |             |     | AUX CONTACTS FOR<br>MTC - MT - MTHP -<br>MDC - IDP              | AUX CONTACTS FOR<br>IDP 4P - 3 modules | AUX CONTACTS FOR<br>IDP 125A | AUX CONTACTS FOR<br>IDP type B |
|-------------------------------------|-------------|-----|-----------------------------------------------------------------|----------------------------------------|------------------------------|--------------------------------|
| Code:                               |             |     | GW96001 - GW96006 -<br>GW96009 - GWD6002 -<br>GWD6007 - GWD6010 | GW96003 - GW96004                      | GW96005                      | GW96007                        |
| DIN modules:                        |             |     | 0,5                                                             | 0,5                                    | 0,5                          | 0,5                            |
| Rated operating voltage (Ue):       | AC - 50 Hz  | (V) | 24 ÷ 400                                                        | 24 ÷ 400                               | 24 ÷ 400                     | 24 ÷ 230                       |
|                                     | DC          | (V) | 24 ÷ 250                                                        | 24 ÷ 110                               | -                            | 24 ÷ 220                       |
| Aux contact type:                   |             |     | 1 CO                                                            | 1 NO + 1 NC                            | 1 NO + 1 NC                  | 1 NO + 1 NC                    |
| Rated operating current (Ie):       | AC12 - 230V | (A) | 6                                                               | 6                                      | 5                            | 5                              |
|                                     | AC12 - 400V | (A) | 3                                                               | 2                                      | 0,5                          | -                              |
|                                     | DC12 - 24V  | (A) | 6                                                               | 4                                      | -                            | -                              |
|                                     | DC12 - 60V  | (A) | 2                                                               | -                                      | -                            | -                              |
|                                     | DC12 - 110V | (A) | 1,5                                                             | 1                                      | -                            | -                              |
|                                     | DC12 - 250V | (A) | 1                                                               | -                                      | -                            | 0,5                            |
| Minimum operating current:          |             |     | (mA)                                                            | 50                                     | -                            | -                              |
| Rated tightening torque:            |             |     | (Nm)                                                            | 0,6                                    | 0,6                          | 0,6                            |
| Beam stripping cable recommended:   |             |     | (mm)                                                            | 6                                      | 6                            | 6                              |
| Screwdriver suggested:              |             |     | Philips 1                                                       | Philips 1                              | Philips 1                    | Philips 1                      |
| Operating temperature:              |             |     | (°C)                                                            | -25 ÷ 60                               | -25 ÷ 60                     | -25 ÷ 60                       |
| Max cable section (flexible/rigid): |             |     | (mm²)                                                           | 2,5                                    | 2,5                          | 2,5                            |

## Circuit diagrams - Auxiliary contacts

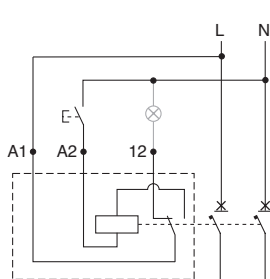
GW 96 001  
GW D6 002GW 96 006  
GW D6 007GW 96 009  
GW D6 010GW 96 003  
GW 96 004  
GW 96 005  
GW 96 007

S = auxiliary contact set as fault indicator switch  
C = auxiliary contact set as open/closed position

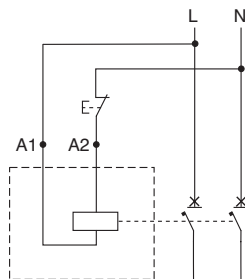
## Shunt trip and Undervoltage releases

| TECHNICAL DATA                      |             |     | SHUNT TRIP RELEASES  |           |      |                    |           |      |         |           | UNDERVOLTAGE RELEASES |                    |                    |           |
|-------------------------------------|-------------|-----|----------------------|-----------|------|--------------------|-----------|------|---------|-----------|-----------------------|--------------------|--------------------|-----------|
| Code:                               |             |     | GW96011<br>GWD6013   |           |      | GW96012<br>GWD6015 |           |      | GW96014 | GW96015   | GW96016<br>GWD6019    | GW96017<br>GWD6020 | GW96018<br>GWD6021 |           |
| DIN modules:                        |             |     | 1                    |           |      | 1                  |           |      | 1       | 1         | 1                     | 1                  | 1                  |           |
| Rated operating voltage (Ue):       | AC - 50 Hz  | (V) | 12                   | 24        | 48   | 110                | -         | 415  | 230     | 230       | 230                   | 24                 | 48                 |           |
|                                     | DC          | (V) | 12                   | 24        | 48   | 110                | 125       | -    | -       | -         | -                     | 24                 | 48                 |           |
| Pick-up current:                    |             |     | (A)                  | 1,6       | 3,2  | 6,4                | 0,22      | 0,25 | 0,84    | 0,46      | -                     | -                  | -                  |           |
| Pick-up power:                      |             |     | (VA in AC - W in DC) | 19,2      | 76,8 | 307                | 24,4      | 31,6 | 348     | 106       | -                     | -                  | -                  |           |
| Rated operating current (Ie):       | AC12 - 230V | (A) | 6                    |           |      | 6                  |           |      | 6       | -         | -                     | -                  | -                  |           |
|                                     | AC12 - 400V | (A) | 3                    |           |      | 3                  |           |      | 3       | -         | -                     | -                  | -                  |           |
|                                     | DC12 - 24V  | (A) | 6                    |           |      | 6                  |           |      | 6       | -         | -                     | -                  | -                  |           |
|                                     | DC12 - 60V  | (A) | 2                    |           |      | 2                  |           |      | 2       | -         | -                     | -                  | -                  |           |
|                                     | DC12 - 110V | (A) | 1,5                  |           |      | 1,5                |           |      | 1,5     | -         | -                     | -                  | -                  |           |
|                                     | DC12 - 250V | (A) | 1                    |           |      | 1                  |           |      | 1       | -         | -                     | -                  | -                  |           |
| Release trip:                       | AC - 50 Hz  | (V) | -                    |           |      | -                  |           |      | -       | -         | 0,35 ÷ 0,7 Ue         | 0,35 ÷ 0,7 Ue      | 0,35 ÷ 0,7 Ue      |           |
|                                     | DC          | (V) | -                    |           |      | -                  |           |      | -       | -         | -                     | 0,35 ÷ 0,7 Ue      | 0,35 ÷ 0,7 Ue      |           |
| Minimum operating voltage:          | AC - 50 Hz  | (V) | 8,4                  |           |      | 77                 |           |      | 161     | 170       | -                     | -                  | -                  |           |
|                                     | DC          | (V) | 8,4                  |           |      | 77                 |           |      | 77      | -         | -                     | -                  | -                  |           |
| Minimum reset voltage:              | AC - 50 Hz  | (V) | -                    |           |      | -                  |           |      | -       | -         | 0,85 Ue               | 0,85 Ue            | 0,85 Ue            |           |
|                                     | DC          | (V) | -                    |           |      | -                  |           |      | -       | -         | -                     | 0,85 Ue            | 0,85 Ue            |           |
| Maximum operating voltage:          | AC - 50 Hz  | (V) | 52,8                 |           |      | 456,5              |           |      | 253     | 440       | -                     | -                  | -                  |           |
|                                     | DC          | (V) | 52,8                 |           |      | 137,5              |           |      | 137,5   | -         | -                     | -                  | -                  |           |
| Duration of impulse command:        |             |     | (ms)                 | < 10      |      |                    | < 10      |      |         | < 10      | < 10                  | -                  | -                  | -         |
| Tripping time:                      |             |     | (ms)                 | < 10      |      |                    | < 10      |      |         | < 10      | < 10                  | -                  | -                  | -         |
| Tripping delay:                     |             |     | (ms)                 | -         |      |                    | -         |      |         | -         | -                     | 300                | 300                | 300       |
| Holding current:                    |             |     | (mA)                 | -         |      |                    | -         |      |         | -         | -                     | 12                 | 10                 | 12        |
| Holding power:                      |             |     | (VA)                 | -         |      |                    | -         |      |         | -         | -                     | 2,8                | 0,28               | 0,57      |
| Coil resistance:                    |             |     | (Ω)                  | 7,5       |      |                    | 495       |      |         | 495       | 360                   | -                  | -                  | -         |
| Aux contact type:                   |             |     |                      | 1 NO      |      |                    | 1 NO      |      |         | 1 NO      | -                     | -                  | -                  | -         |
| Rated tightening torque:            |             |     | (Nm)                 | 0,6       |      |                    | 0,6       |      |         | 0,6       | 0,06                  | 0,6                | 0,6                | 0,6       |
| Beam stripping cable recommended:   |             |     | (mm)                 | 6         |      |                    | 6         |      |         | 6         | 6                     | 6                  | 6                  | 6         |
| Screwdriver suggested:              |             |     |                      | Philips 1 |      |                    | Philips 1 |      |         | Philips 1 | Philips 1             | Philips 1          | Philips 1          | Philips 1 |
| Operating temperature:              |             |     | (°C)                 | -5 ÷ 55   |      |                    | -5 ÷ 55   |      |         | -5 ÷ 55   | -5 ÷ 55               | -5 ÷ 55            | -5 ÷ 55            | -5 ÷ 55   |
| Max cable section (flexible/rigid): |             |     | (mm²)                | 2,5       |      |                    | 2,5       |      |         | 2,5       | 2,5                   | 2,5                | 2,5                | 2,5       |

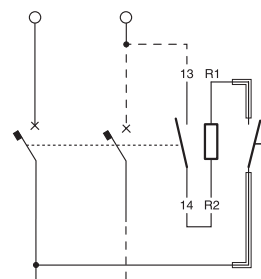
## Circuit diagrams - Releases



GW 96 011  
GW 96 012  
GW D6 013  
GW 96 014  
GW D6 015



GW 96 016  
GW 96 017  
GW 96 018  
GW D6 019  
GW D6 020  
GW D6 021



GW 96 015

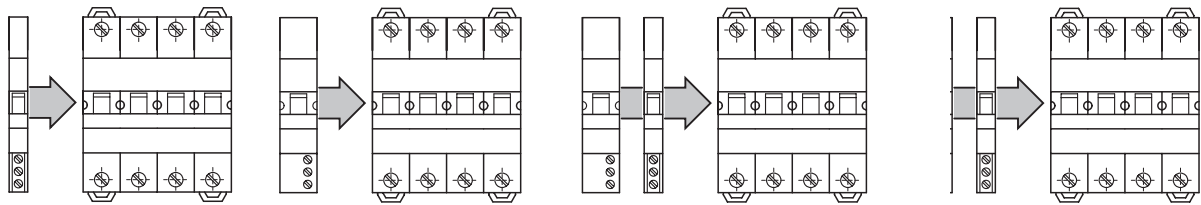


**Note:** It is not necessary to connect the terminal 12 to carry out the tripping. The terminal 12 is used only in order to know the tripping of circuit breaker caused by release (for example by an indicator light)

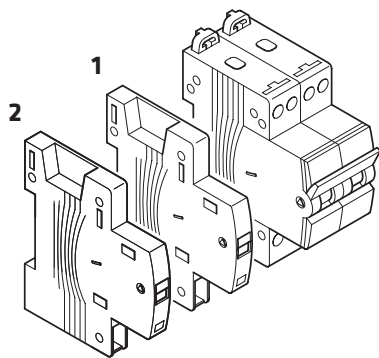
MODULAR ACCESSORIES

MTC - MT - MTHP - MDC

For each circuit breaker it's possible to fit up to max 2 accessories. The shunt trip releases or under voltage releases must be positioned to the left of the accessories, as shown in the figure.



If 2 auxiliary contacts are used, it is necessary to observe the connection rules shown in the table below.



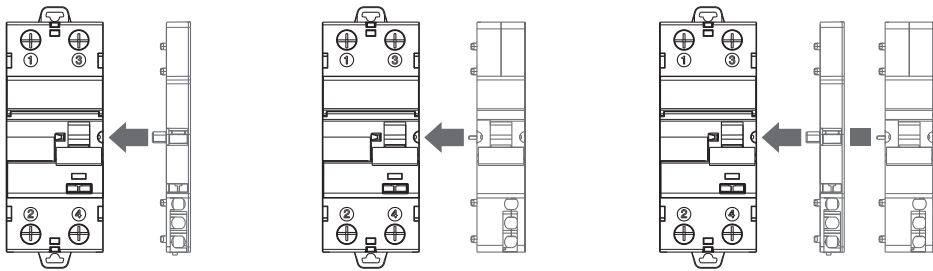
| POS. 2                  | POS. 1                  |
|-------------------------|-------------------------|
| GW 96 001<br>GW 96 009c | GW 96 001<br>GW 96 009c |
| GW 96 001               | GW 96 006<br>GW 96 009s |
| GW 96 009c              |                         |
| GW 96 006<br>GW 96 009s |                         |

GW 96 009c: open/closed auxiliary contact set  
GW 96 009s: tripped relay auxiliary contact set

IDP

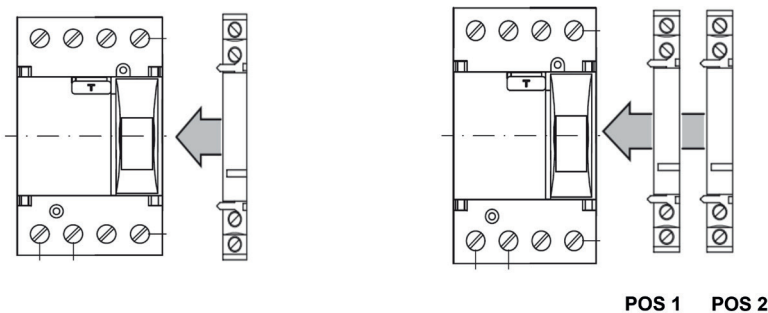
RCCB's for IDP 2P-4P up to 100 A (except for the B type)

It is possible to couple until 2 accessories for each RCCB. The shunt trip releases or the under voltage releases must be set at the right end of accessories as shown in the figure below.



RCCB's 4P 3 modules

It is possible to couple until 2 accessories for each RCCB. The shunt trip release must be set at the right end of accessories as shown in the figure below.



| POS. 1    | POS. 2    |
|-----------|-----------|
| GW 96 003 | GW 96 015 |
| GW 96 004 | GW 96 015 |

RCCBS's 125A and B type

It is possible to couple until 1 accessory for each 2P and 4P RCCB.



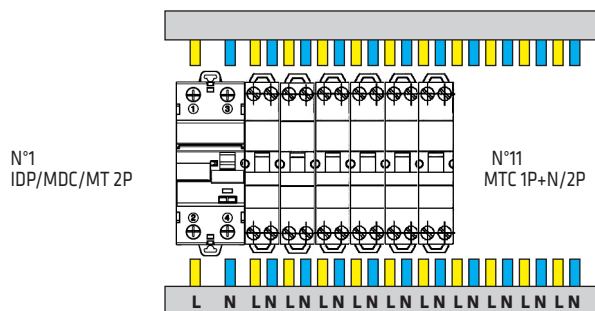
## MODULAR ACCESSORIES

## Wiring busbars

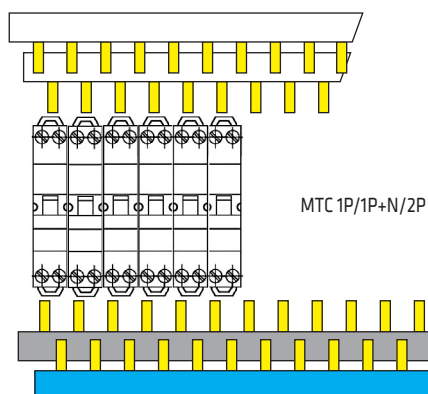
| TECHNICAL DATA                                               |      |             |
|--------------------------------------------------------------|------|-------------|
| Rated operating voltage (Ue):                                | (V)  | 400 a.c.    |
| Conditional short-circuit current conditioned by fuse (Icc): | (kA) | 25 (gL 100) |
| Rated impulse withstand voltage (Uimp):                      | (kV) | 4           |

## Wiring busbars for MTC circuit breakers

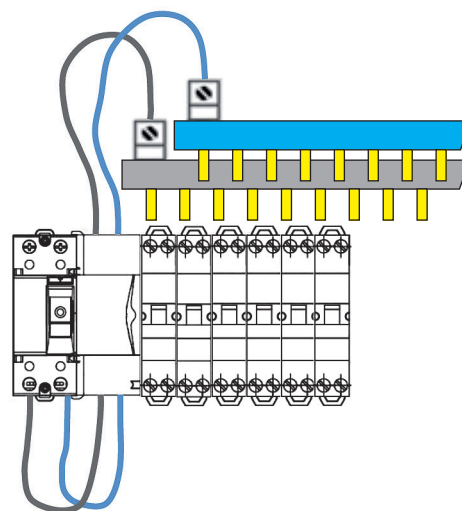
## GW 96 507 F- 13 MOD. - 63A



GW 96 500 - GREY - 13 MOD. - 80A  
 GW 96 501 - BLUE - 13 MOD. - 80A  
 GW 96 988 - WHITE - L=1 MT. - 80A

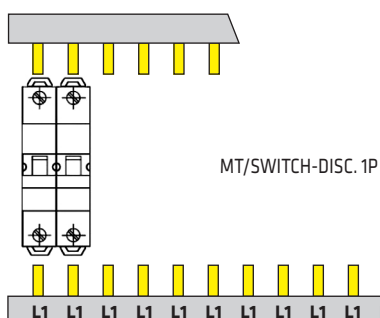


## GW 96 503

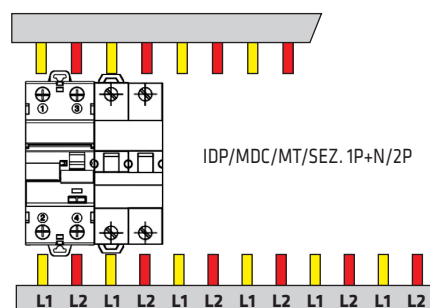


## Wiring busbars for MT/MDC/IDP circuit breakers and switch-disconnectors with red lever

GW 96 984 - 12 MOD. - 63A  
 GW 96 988 - 1 MT. - 80A

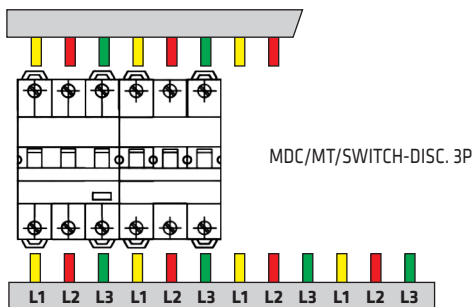


GW 96 985 - 12 MOD. - 63A  
 GW 96 989 - 1 MT. - 63A

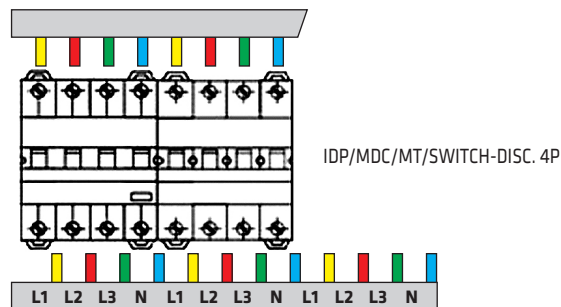


## MODULAR ACCESSORIES

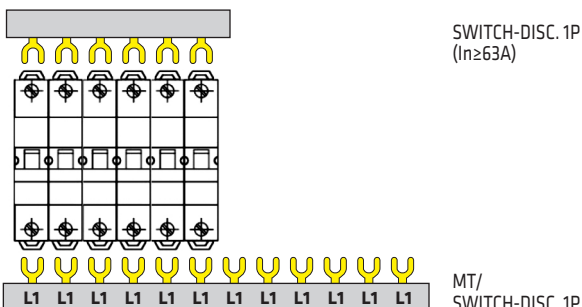
GW 96 986 - 12 MOD. - 63A  
GW 96 990 - 1 MT. - 63A



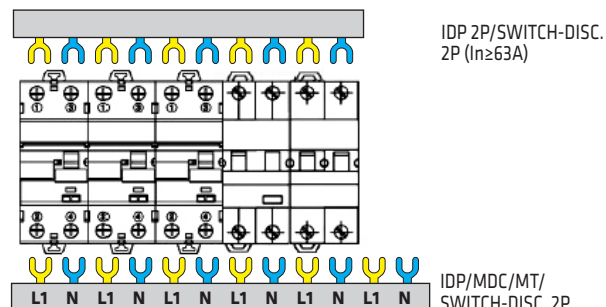
GW 96 987 - 12 MOD. - 80A  
GW 96 991 - 1 MT. - 80A



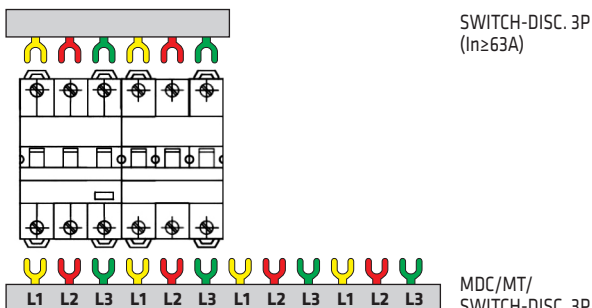
GW 96 992 - 12 MOD. - 63A  
GW 96 996 - 1 MT. - 63A



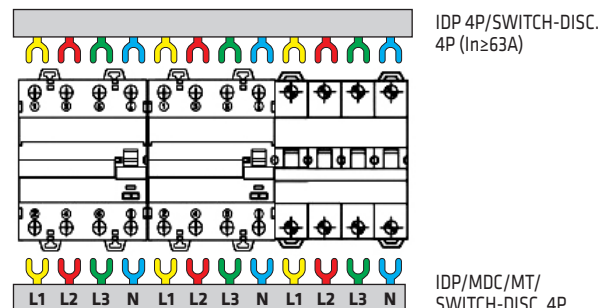
GW 96 993 - 12 MOD. - 63A  
GW 96 997 - 1 MT. - 63A



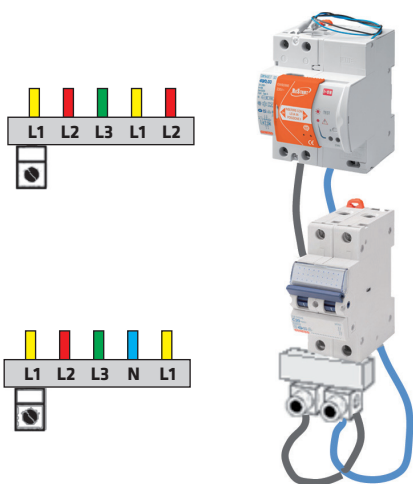
GW 96 994 - 12 MOD. - 63A  
GW 96 998 - 1 MT. - 63A



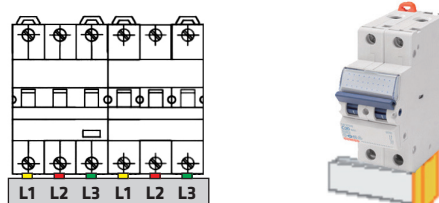
GW 96 995 - 12 MOD. - 80A  
GW 96 999 - 1 MT. - 80A



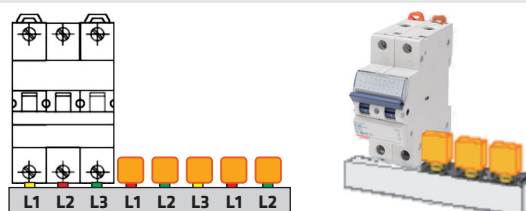
GW 96 961 PER PETTINI 1P/2P/3P  
GW 96 962 PER PETTINI 4P



GW 96 963 PER PETTINI 1P - GW 96 964 PER PETTINI 2P -  
GW 96 965 PER PETTINI 3P - GW 96 966 PER PETTINI 4P



GW 96 967



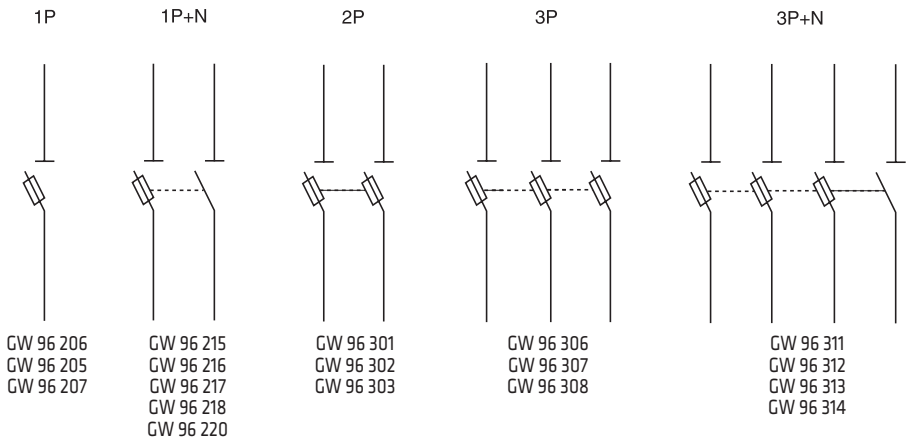
## MODULAR ACCESSORIES

### PROTECTION

#### AC disconnectable fuse holders

| TECHNICAL DATA                                 |       |            |                               |            |
|------------------------------------------------|-------|------------|-------------------------------|------------|
| Fuse dimension:                                |       | 8,5x31,5   | 10,3x38                       | 14x51      |
| Standard:                                      |       | EN 60947-3 | EN 60947-3                    | EN 60947-3 |
| Rated current (In):                            | (A)   | 20         | 32                            | 50         |
| Rated operating voltage (Ue):                  | (V)   | 400 a.c.   | 690 a.c.                      | 690 a.c.   |
| Rated insulation voltage (Ui):                 | (V)   | 400 a.c.   | 690 a.c.                      | 690 a.c.   |
| Rated impulse withstand voltage (Uimp):        | (kV)  | 8          | 8<br>4 (only for GW 96 220)   | 8          |
| Category of use:                               |       | AC-22B     | AC-22B                        | AC-22B     |
| Rated conditional short-circuit current (Icc): | (kA)  | 50         | 200                           | 100        |
| Max power loss:                                | (W)   | 2,5        | 3                             | 5          |
| Degree of protection:                          |       | IP20       | IP20                          | IP20       |
| Operating temperature:                         | (°C)  | -10...+40  | -10...+40                     | -10...+40  |
| Max cable section:                             | (mm²) | 25         | 25<br>10 (only for GW 96 220) | 35         |
|                                                |       |            |                               | 50         |

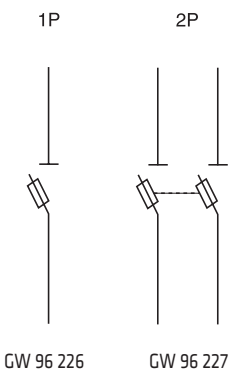
#### Circuit diagram



#### DC disconnectable fuse holders

| TECHNICAL DATA                |               |
|-------------------------------|---------------|
| Fuse dimension:               | 10,3x38       |
| Standard:                     | EN 60947-3    |
| Rated current (In):           | (A) 20        |
| Rated operating voltage (Ue): | (V) 1000 d.c. |
| Category of use:              | DC-20B        |
| Max power loss:               | (W) 3         |
| Max cable section:            | (mm²) 10      |

#### Circuit diagram

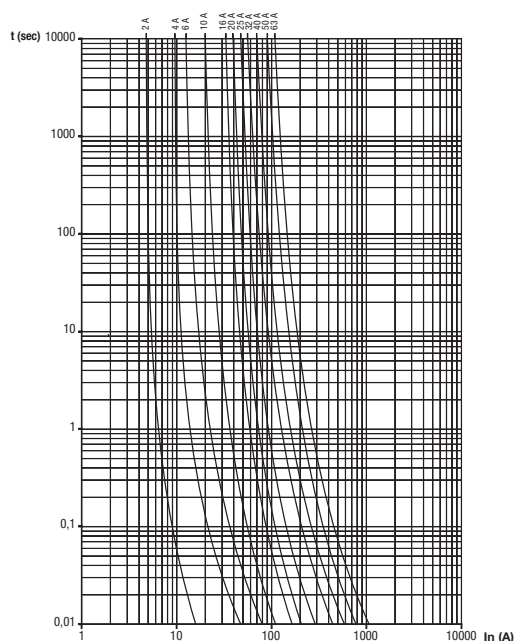


## AC cylindrical fuses

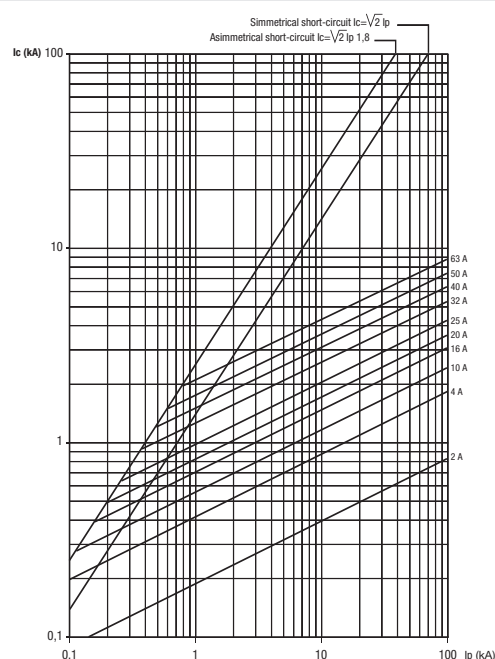
| TECHNICAL DATA                |        |                        |         |             |       |
|-------------------------------|--------|------------------------|---------|-------------|-------|
| Standard:                     |        | EN 60269-1, HD 60269-3 |         |             |       |
| Type:                         |        | gG                     |         |             |       |
| Characteristic:               |        | fast                   |         |             |       |
| Dimensions:                   | (mm)   | 8,5x31,5               | 10,3x38 | 14x51       | 22x58 |
| Rated current (In):           | (A)    | 2÷25                   | 2÷32    | 25÷50       | 63    |
| Rated operating voltage (Ue): | (V AC) | 400                    | 400-500 | 400-500-690 | 690   |
| Breaking capacity:            | (kA)   | 50                     | 120     | 80          | 80    |

## Characteristic curves

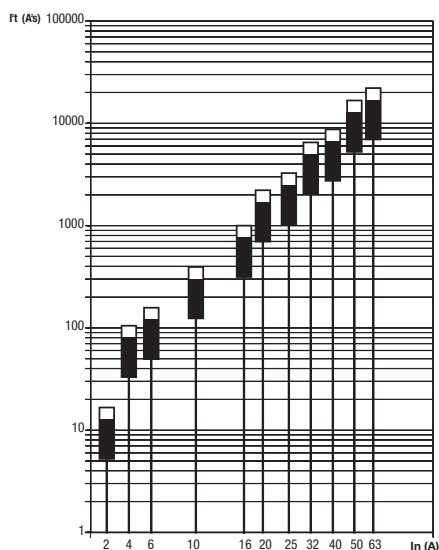
TIME CURRENT CHARACTERISTIC



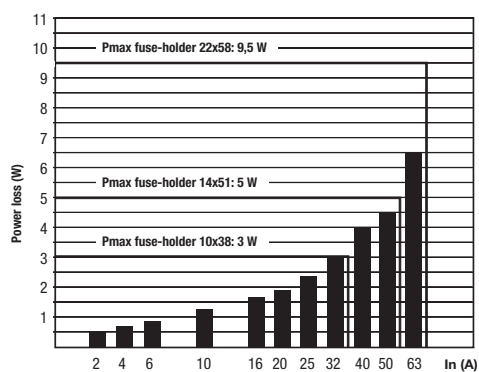
CUT-OFF CURRENT CHARACTERISTICS



I²t CHARACTERISTIC



POWER LOSS



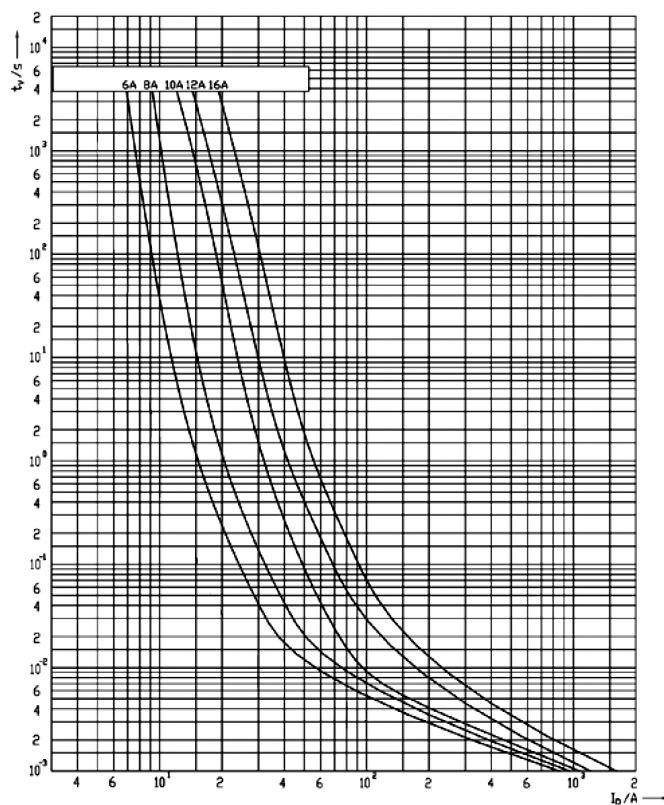
## MODULAR ACCESSORIES

## DC cylindrical fuses

| TECHNICAL DATA                     |                    |         |     |     |     |     |      |
|------------------------------------|--------------------|---------|-----|-----|-----|-----|------|
| Standard:                          | IEC 60269-4        |         |     |     |     |     |      |
| Type:                              | gPV                |         |     |     |     |     |      |
| Dimensions:                        | (mm)               | 10,3x38 |     |     |     |     |      |
| Rated operating voltage (Ue):      | (V DC)             | 1000    |     |     |     |     |      |
| Breaking capacity:                 | (kA)               | 30      |     |     |     |     |      |
| Weight:                            | (g)                | 10      |     |     |     |     |      |
| Rated current (In):                | (A)                | 6       | 8   | 10  | 12  | 16  | 20   |
| Power loss at In:                  | (W)                | 1,65    | 1,9 | 2,3 | 2,4 | 2,5 | 3,25 |
| Specific let-through energy at In: | (A <sup>2</sup> s) | 45      | 62  | 88  | 180 | 270 | 430  |

## Characteristic curves

## TIME CURRENT CHARACTERISTIC



## MODULAR ACCESSORIES

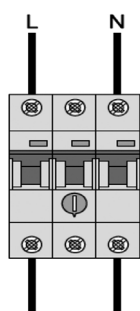
## Motor protection switches

| TECHNICAL DATA                               |       |                                                                                      |  |
|----------------------------------------------|-------|--------------------------------------------------------------------------------------|--|
| Standard:                                    |       | EN 60947-2                                                                           |  |
| N° of modules:                               |       | 3                                                                                    |  |
| Rated operating voltage (Ue):                | (V)   | 230-400 a.c.                                                                         |  |
| Rated insulation voltage (Ui):               | (V)   | 440 a.c.                                                                             |  |
| Rated impulse withstand voltage (Uimp):      | (kV)  | 4                                                                                    |  |
| Rated current (In):                          | (A)   | 0,1÷40                                                                               |  |
| Breaking capacity (Iq):                      | (kA)  | 10                                                                                   |  |
| Back-up fuse:                                | (A)   | up to 2,5 -4A fuse not necessary<br>above 4 - 6,3A fuse gL or gG type 100A if Icc>Iq |  |
| Electrical endurance (number of O-C cycles): |       | 6000                                                                                 |  |
| Mechanical endurance (number of O-C cycles): |       | 20000                                                                                |  |
| Rated tightening torque:                     | (Nm)  | 2,5                                                                                  |  |
| Power loss per pole:                         | (W)   | 2,3 (1,6-10A)<br>3,3 (16A)<br>4,5 (25-40A)                                           |  |
| Degree of protection:                        |       | IP20                                                                                 |  |
| Operating temperature:                       | (°C)  | -25...+50                                                                            |  |
| Max cable section:                           | (mm²) | 25                                                                                   |  |
| Total weight:                                | (g)   | 244/366                                                                              |  |

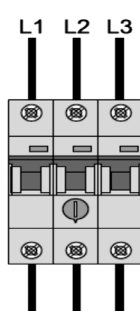
## Selection table

| Type      | Adjustment range | Single-phase system 230V |             | Three-phase system 230V |              | Three-phase system 400V |              |
|-----------|------------------|--------------------------|-------------|-------------------------|--------------|-------------------------|--------------|
|           |                  | Power (KW)               | Current (A) | Power (KW)              | Current (A)  | Power (KW)              | Current (A)  |
| GW 96 752 | 0,16 - 0,25      | -                        | -           | -                       | -            | 0,06                    | 0,2          |
| GW 96 753 | 0,25 - 0,40      | -                        | -           | 0,06                    | 0,4          | 0,09                    | 0,3          |
| GW 96 754 | 0,40 - 0,63      | -                        | -           | 0,9                     | 0,5          | 0,12                    | 0,4<br>0,6   |
| GW 96 755 | 0,63 - 1         | 0,4                      | 0,7         | 0,12                    | 0,7          | 0,25                    | 0,8          |
| GW 96 756 | 1 - 1,6          | 0,12                     | 1,3         | 0,18<br>0,25            | 1<br>1,4     | 0,37<br>0,55            | 1,1<br>1,5   |
| GW 96 757 | 1,6 - 2,5        | 0,06                     | 1,9<br>2,4  | 0,37                    | 2            | 0,75                    | 1,9          |
| GW 96 758 | 2,5 - 4          | 0,7                      | 0,12        | 0,7                     | 0,25         | 0,8                     | 2,6<br>3,6   |
| GW 96 759 | 4 - 6,3          | 0,12                     | 1,3         | 0,18                    | 4,6          | 2,2                     | 5            |
| GW 96 760 | 6,3 - 10         | 1                        | 7,4<br>8,9  | 1,5<br>2,5              | 6,3<br>8,7   | 2,5 - 3<br>4            | 6,6<br>8,5   |
| GW 96 761 | 10 - 16          | 0,37                     | 14,5        | 3                       | 11,5         | 5,5<br>7,5              | 11,3<br>13,2 |
| GW 96 762 | 16 - 25          | 1,1                      | 17,8        | 4<br>5,5                | 14,8<br>19,6 | 11                      | 21,7         |
| GW 96 763 | 25 - 40          | -                        | -           | 7,5<br>11               | 26,4<br>38   | 15<br>18,5              | 29,3<br>36   |

## Wiring

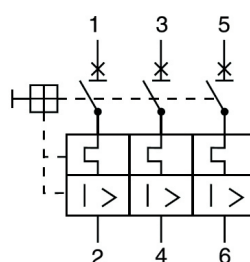


Single-phase system



Three-phase system

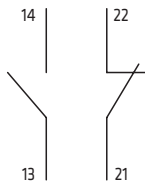
## Circuit diagram



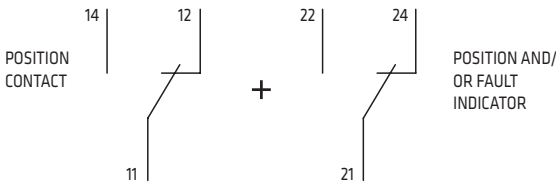
MODULAR ACCESSORIES

| TECHNICAL DATA FOR AUXILIARY CONTACTS: |                    |     |                 |
|----------------------------------------|--------------------|-----|-----------------|
| Operating current:                     | AC15               | (A) | 2 (250V a.c.)   |
|                                        | AC13               | (A) | 3 (250V a.c.)   |
|                                        | DC12               | (A) | 0.5 (110V d.c.) |
| Max cable section:                     | (mm <sup>2</sup> ) |     | 2.5             |

GW 96 764 POSITION CONTACT



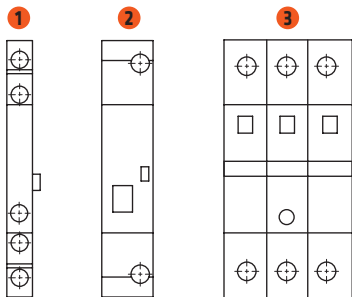
GW 96 765 POSITION AND/OR FAULT INDICATOR CONTACT



| TECHNICAL DATA FOR SHUNT TRIP RELEASES:    |                    |  |                     |
|--------------------------------------------|--------------------|--|---------------------|
| Pick-up current:                           | (A)                |  | 1.4 (230V)          |
| Max cable section:                         | (mm <sup>2</sup> ) |  | 2.5                 |
| TECHNICAL DATA FOR UNDER VOLTAGE RELEASES: |                    |  |                     |
| Min. reset voltage:                        | (V)                |  | 0.8 Ue              |
| Release trip:                              | (V)                |  | 0.5 Ue              |
| Holding power:                             | (VA)               |  | 3 (230V) - 5 (400V) |
| Max cable section:                         | (mm <sup>2</sup> ) |  | 2.5                 |

**NOTE:** For the auxiliary contact GW 96 765, the changeover contact 14-11-12 signals only position status (open-closed) while the changeover contact 22-21-24 is configurable which signals the tripped status for fault or the position status (open-close). The configuration of the latter changeover contact is set by means the rotation of the selector placed on the side of the product in vertical position (fault indicator) or in horizontal position (position indicator).

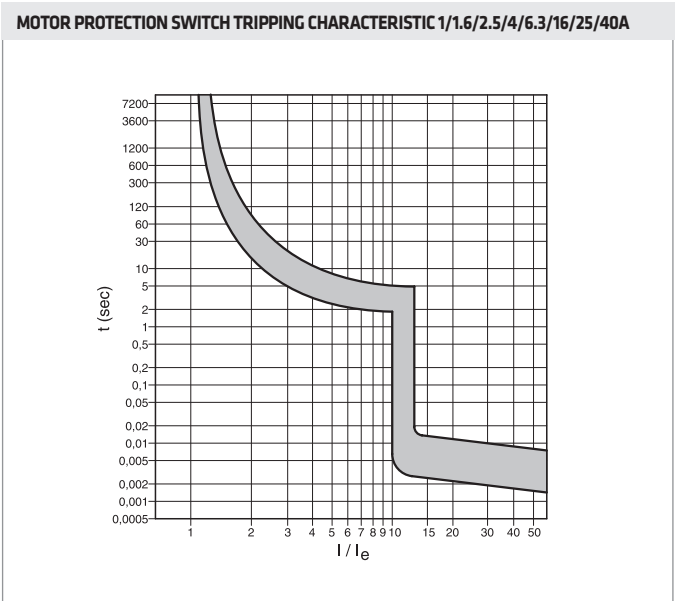
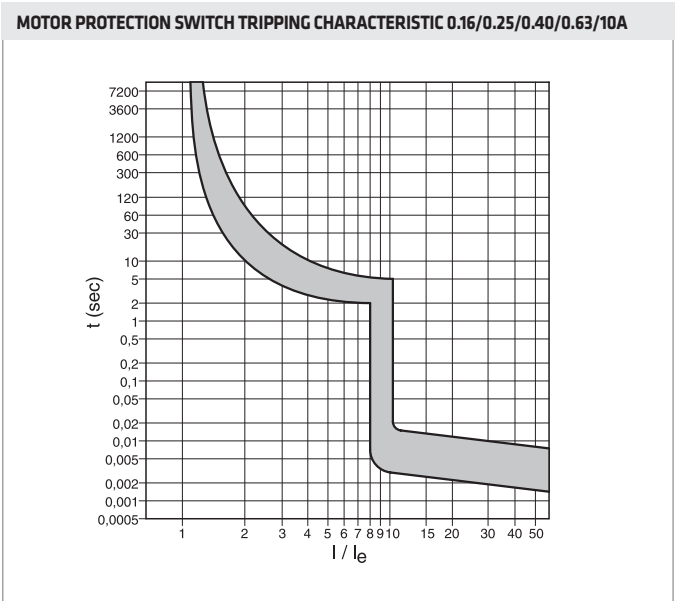
Accessories - possible combinations



Motor protection switch 3 with:

| Position contact 1 | Fault indicator contact 1 | Shunt trip release 2 | Under voltage release 2 |
|--------------------|---------------------------|----------------------|-------------------------|
| •                  |                           |                      |                         |
|                    | •                         |                      |                         |
|                    |                           | •                    |                         |
|                    |                           |                      | •                       |
|                    | •                         | •                    |                         |

Characteristics



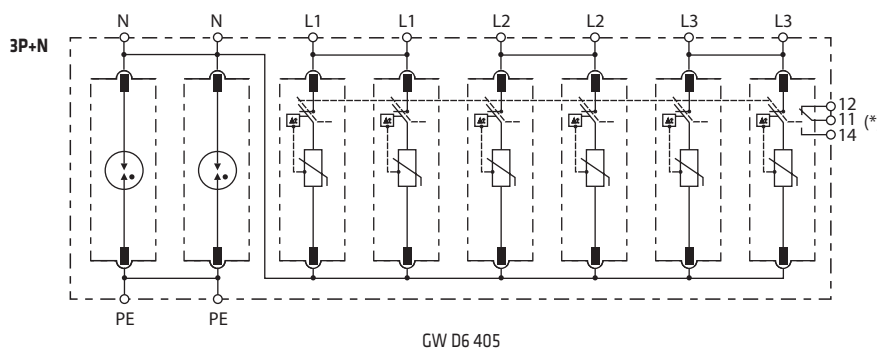
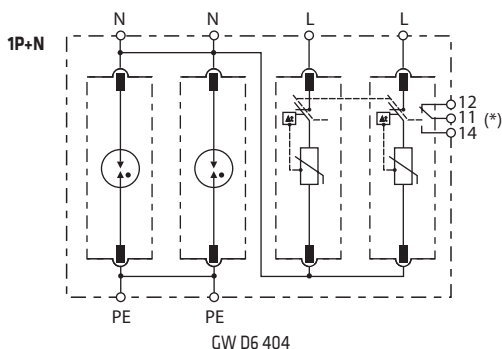
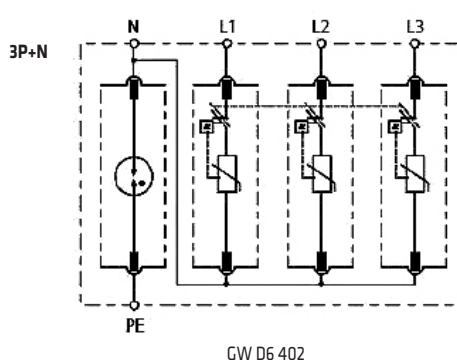
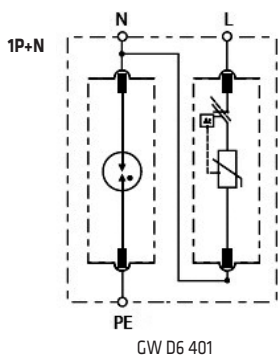
For technical information contact the Technical Assistance Service or visit [gewiss.com](http://gewiss.com)

## Surge protective devices LST type 1+2 and type 2

| TECHNICAL DATA                                                |          |                                 |                                 |                                 |                                                               |
|---------------------------------------------------------------|----------|---------------------------------|---------------------------------|---------------------------------|---------------------------------------------------------------|
| Standard:                                                     |          | IEC 61643-1, EN 61643-11        |                                 |                                 |                                                               |
| Type:                                                         |          | 1+2<br>(10/350µs and 8/20µs)    |                                 | 2<br>(8/20µs)                   |                                                               |
| Maximum discharge current 8/20µs (I <sub>max</sub> ):         | (kA)     | 65                              | 100                             | 20                              | 40                                                            |
| Impulse current 10/350µs (I <sub>imp</sub> ):                 | (kA)     | 12,5                            | 25                              | -                               | -                                                             |
| Rated discharge current 8/20µs (I <sub>n</sub> ):             | (kA)     | 20                              | 25                              | 10                              | 20                                                            |
| Network:                                                      |          | TT - TNS                        | TT - TNS                        | TT - TNS                        | TT - TNS - TNC - IT                                           |
| Rated operational voltage (U <sub>n</sub> ):                  | (V)      | 230 / 400                       | 230 / 400                       | 230 / 400                       | 230 / 400                                                     |
| Max continuous operating voltage (U <sub>c</sub> ):           | (V)      | 275 (L - N)<br>255 (N - PE)     | 275 (L - N)<br>255 (N - PE)     | 320 (L - N)<br>255 (N - PE)     | 275 (L - N); 265 (N - PE)<br>440 (L - N) (GW D6 413)          |
| Voltage protection level at I <sub>n</sub> (U <sub>p</sub> ): | (kV)     | < 1,3 (L - N)<br>< 1,5 (N - PE) | < 1,5 (L - N)<br>< 1,5 (N - PE) | < 1,4 (L - N)<br>< 1,5 (N - PE) | < 1,3 (L - N)<br>< 1,5 (N - PE)<br>< 2 (L - N/PE) (GW D6 413) |
| Residual voltage U <sub>res</sub> per I < I <sub>n</sub>      | 5 kA     | -                               | -                               | -                               | < 0,9                                                         |
|                                                               | 10 kA    | -                               | -                               | < 1,4 (L-N) - < 1,5 (N-PE)      | < 1,1                                                         |
|                                                               | 12,5 kA  | -                               | -                               | -                               | < 1,15                                                        |
|                                                               | 15 kA    | -                               | -                               | -                               | < 1,2                                                         |
| Rated frequency:                                              | (Hz)     | 50/60                           | 50/60                           | 50/60                           | 50/60                                                         |
| Response time (t <sub>a</sub> ):                              | (ns)     | 25 (L - N)<br>100 (N - PE)      | 25 (L - N)<br>100 (N - PE)      | 25 (L - N)<br>100 (N - PE)      | 25 (L - N)<br>100 (N - PE)                                    |
| Follow current interrupting rating (I <sub>fi</sub> ):        | (A)      | 100                             | 100                             | 100                             | 100                                                           |
| Short circuit withstand (I <sub>cc</sub> ):                   | (kA)     | 25                              | 25                              | 25                              | 25                                                            |
| State indicator:                                              |          | yes                             | yes                             | yes                             | yes                                                           |
| Auxiliary contact type:                                       |          | no                              | Changeover                      | no                              | Changeover                                                    |
| Maximum operating voltage for auxiliary contact:              | (V)      | -                               | 250 ac - 125 dc                 | -                               | 250 ac - 125 dc                                               |
| Maximum operating current for auxiliary contact:              | (A)      | -                               | 1 ac - 0,2 dc                   | -                               | 1 ac - 0,2 dc                                                 |
| Rated tightening torque:                                      | (Nm)     | 4                               | 4                               | 4                               | 4                                                             |
| Cable cross sections:                                         | rigid    | (mm <sup>2</sup> )              | min 6 max 35                    | min 6 max 35                    | min 6 max 35                                                  |
|                                                               | flexible | (mm <sup>2</sup> )              | min 6 max 25                    | min 6 max 25                    | min 6 max 25                                                  |
| Degree of protection:                                         |          | IP20                            | IP20                            | IP20                            | IP20                                                          |
| Operating temperature:                                        | (°C)     | -40...+80                       | -40...+80                       | -40...+80                       | -40...+80                                                     |

## Type 1+2 LST circuit diagrams

SPDs 1+2 type protect electrical equipment from overvoltages due to the direct and indirect effects of lightning strikes or due to manoeuvres on electrical network supply. They provide protection for installations in areas with a high frequency of lightning strikes and are typically installed in primary distribution panels.

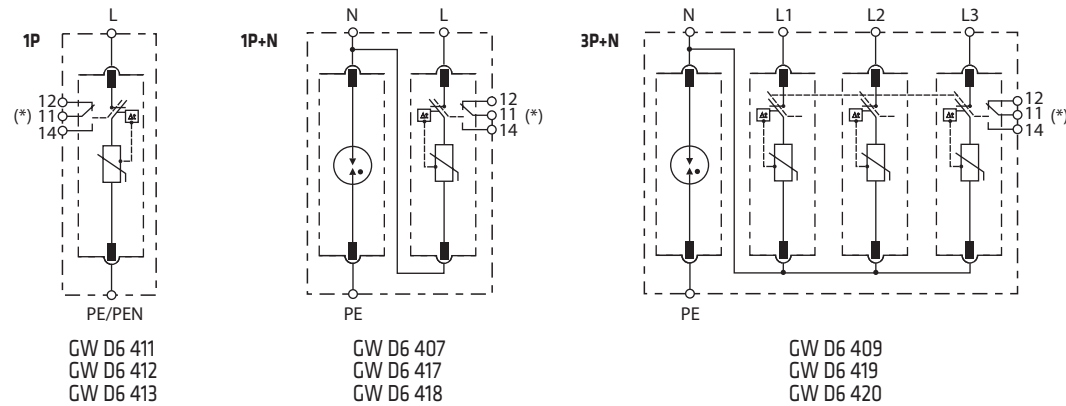


(\*) Only for version with auxiliary contact

## MODULAR ACCESSORIES

### Type 2 LST circuit diagrams

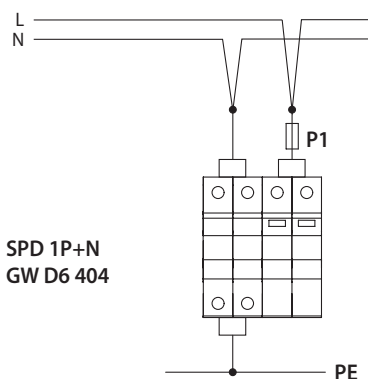
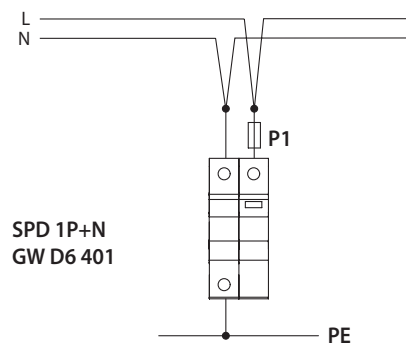
SPDs 2 type protect electrical equipment from overvoltages due to the indirect effects of lightning strikes or due to manoeuvres on electrical network supply. They are suitable for installation at the beginning of electrical system, in the middle boards and next to electrical loads.



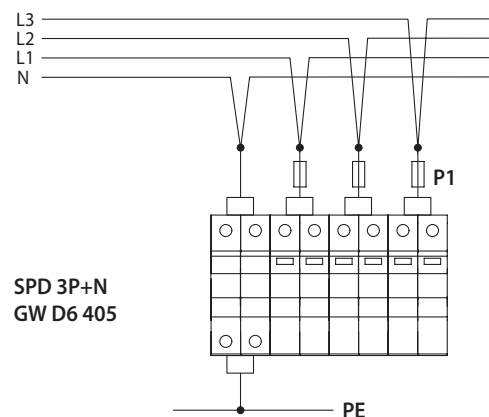
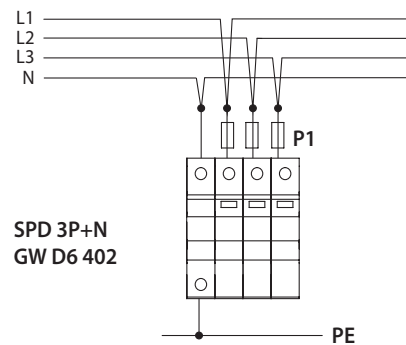
### Type 1+2 LST connection

#### TT NETWORK - TNS NETWORK

##### Single-phase system



##### Three-phase system



P1 = fuse or miniature circuit breaker

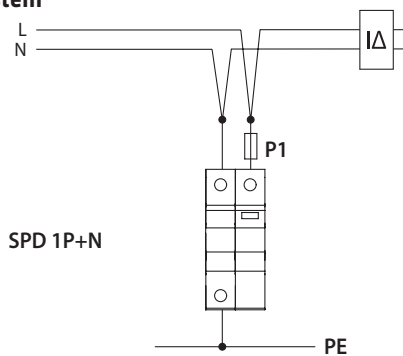
For technical information contact the Technical Assistance Service or visit [gewiss.com](http://gewiss.com)

## MODULAR ACCESSORIES

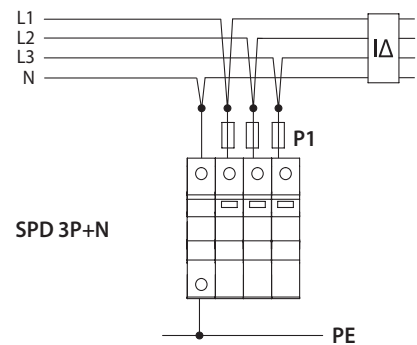
## Type 2 LST connection

## TT NETWORK

## Single-phase system

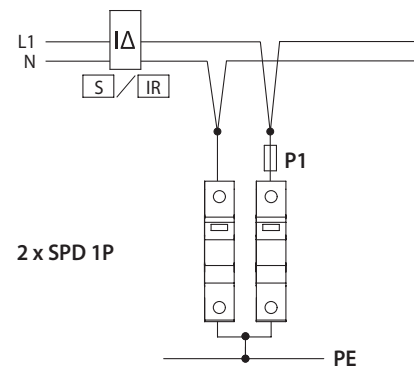
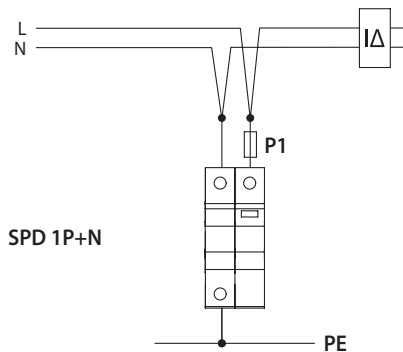


## Three-phase system

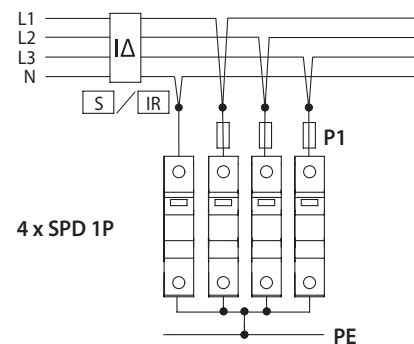
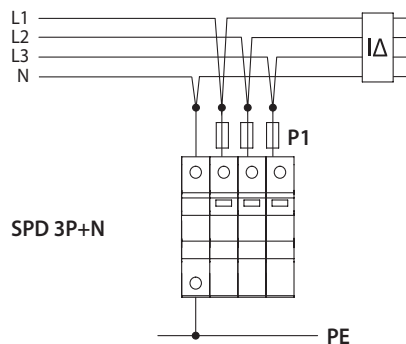


## TNS NETWORK

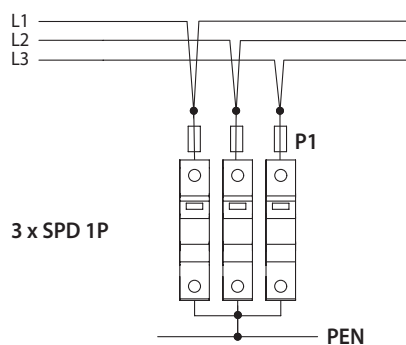
## Single-phase system



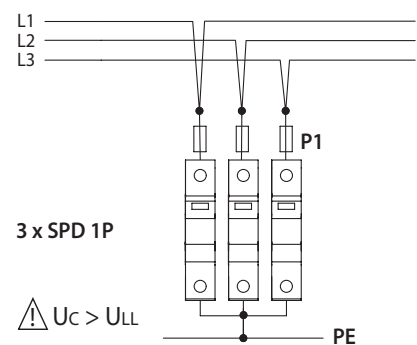
## Three-phase system



## TNC NETWORK



## IT NETWORK



P1 = fuse or miniature circuit breaker

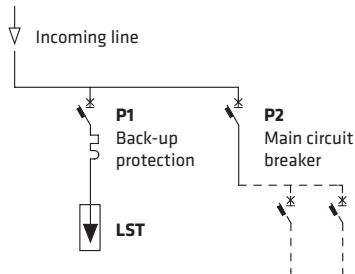
For technical information contact the Technical Assistance Service or visit [gewiss.com](http://gewiss.com)

## MODULAR ACCESSORIES

## Back-up protection

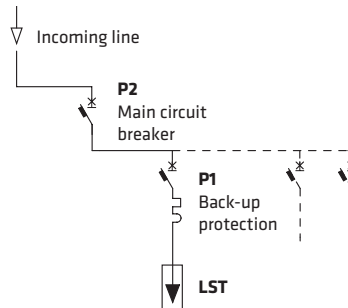
## LST type 1+2

## Service continuity priority



|  |                           |
|--|---------------------------|
|  | $P1 \leq 125A \text{ gG}$ |
|--|---------------------------|

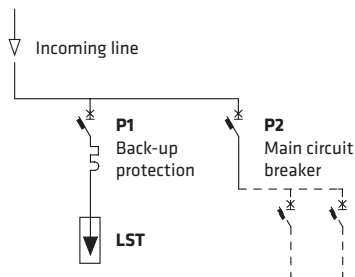
## Protection priority



|  |                                                                                                                             |
|--|-----------------------------------------------------------------------------------------------------------------------------|
|  | $\text{if } P2 > 125A \Rightarrow P1 \leq 125A \text{ gG}$<br>$\text{if } P2 \leq 125A \Rightarrow \text{NO protection P1}$ |
|--|-----------------------------------------------------------------------------------------------------------------------------|

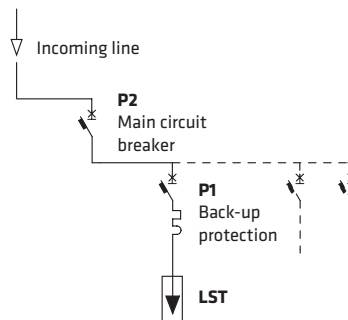
## LST type 2

## Service continuity priority



|  |                               |                               |
|--|-------------------------------|-------------------------------|
|  | <b>LST</b><br>Imax=20kA       | <b>LST</b><br>Imax=40kA       |
|  | $P1 \leq 63A \text{ gG}$      | $P1 \leq 80A \text{ gG}$      |
|  | $P1 \leq 40A \text{ curve C}$ | $P1 \leq 50A \text{ curve C}$ |

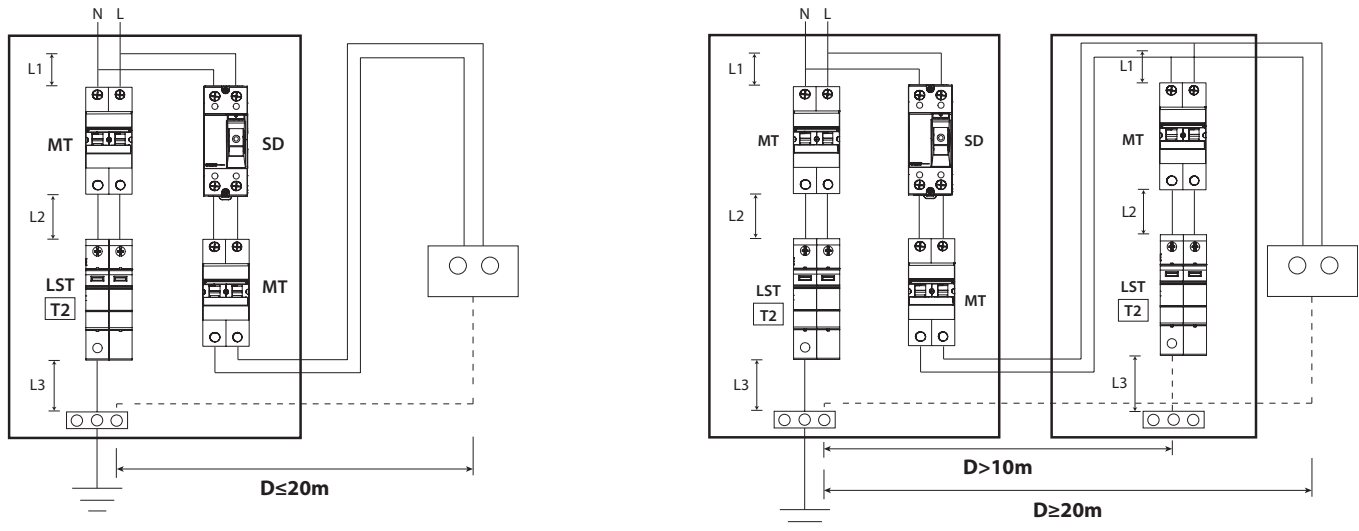
## Protection priority



|  |                                                                                                                               |                                                                                                                               |
|--|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
|  | <b>LST</b><br>Imax=20kA                                                                                                       | <b>LST</b><br>Imax=40kA                                                                                                       |
|  | $\text{if } P2 > 63A \Rightarrow P1 \leq 63A \text{ gG}$<br>$\text{if } P2 \leq 63A \Rightarrow \text{NO protection P1}$      | $\text{if } P2 > 80A \Rightarrow P1 \leq 80A \text{ gG}$<br>$\text{if } P2 \leq 80A \Rightarrow \text{NO protection P1}$      |
|  | $\text{if } P2 > 40A \Rightarrow P1 \leq 40A \text{ curve C}$<br>$\text{if } P2 \leq 40A \Rightarrow \text{NO protection P1}$ | $\text{if } P2 > 50A \Rightarrow P1 \leq 50A \text{ curve C}$<br>$\text{if } P2 \leq 50A \Rightarrow \text{NO protection P1}$ |

### Installation rules

The length of the wiring of SPD ( $L1 + L2 + L3$ ) must be as short as possible ( $L1 + L2 + L3 \leq 0,5 \text{ m}$ ). The surge protective devices LST can protect an electrical load placed at a maximum distance of 20m, if the load is further away, it's necessary to install an additional SPD. The minimum installation distance between two LST must be 10m.

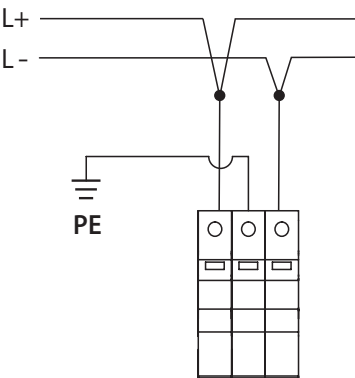


## MODULAR ACCESSORIES

### Surge protective devices LST for PV applications

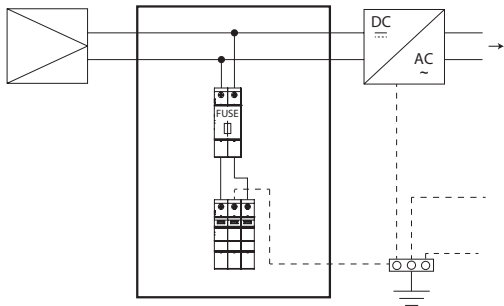
| TECHNICAL DATA                              |                               |              |              |
|---------------------------------------------|-------------------------------|--------------|--------------|
| Standard                                    | EN 50539-11, EN 61643-11      |              |              |
| Type                                        | 2<br>(8/20µs)<br>Photovoltaic |              |              |
| Rated operating voltage (Un):               | (V)                           | 600 d.c.     | 1000 d.c.    |
| Maximum discharge current 8/20µs (Imax):    | (kA)                          | 40           |              |
| Maximum continuous operating voltage (Ucpv) | (V)                           | 660 d.c.     | 1060 d.c.    |
| Voltage protection level at In (Up):        | (kV)                          | < 2,6 (600V) | < 4 (1000V)  |
| Short circuit DC current withstand (Iscpv): | (kA)                          | 10           |              |
| State indicator:                            |                               | yes          |              |
| Auxiliary contact type:                     |                               | no           |              |
| Rated tightening torque:                    | (Nm)                          | 4            |              |
| Cable cross sections:                       | rigid                         | (mm²)        | min 6 max 35 |
|                                             | flexible                      | (mm²)        | min 6 max 25 |
| Degree of protection:                       |                               | IP20         |              |
| Operating temperature:                      | (°C)                          | -40...+85    |              |

### LST connection for photovoltaics

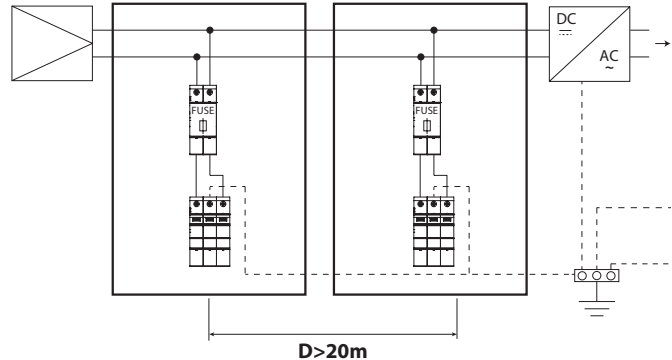


### Installation rules

The SPDs LST for PV applications are installed near the inverter on the DC side to protect the inverter and the photovoltaic modules.



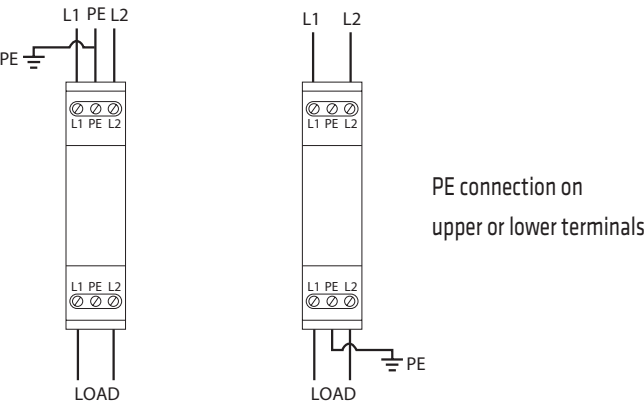
The SPDs LST for PV applications can protect the PV modules placed at a maximum distance of 20m, if they are further away, it's necessary to install an additional SPD.



Surge protective devices LST for telecom and dataline

| TECHNICAL DATA                           |          |                                     |     |
|------------------------------------------|----------|-------------------------------------|-----|
| Standard                                 |          | IEC 61643-1, EN 61643-11            |     |
| Type                                     |          | 2<br>(8/20µs)<br>Telecom / Dataline |     |
| Maximum discharge current 8/20µs (Imax): | (kA)     | 10                                  |     |
| Rated discharge current 8/20µs (In):     | (kA)     | 5                                   |     |
| Rated operational voltage (Un):          | (V)      | 50                                  |     |
| Max continuous operating voltage (Uc):   | (V)      | 180                                 |     |
| Voltage protection level at In (Up):     | (kV)     | < 0,2                               |     |
| Band width (fg):                         | (MHz)    | 3                                   |     |
| State indicator:                         |          | no                                  |     |
| Auxiliary contact type:                  |          | no                                  |     |
| Rated tightening torque:                 | (Nm)     | 2                                   |     |
| Cable cross sections:                    | rigid    | (mm²)                               | 2,5 |
|                                          | flexible | (mm²)                               | 2,5 |
| Degree of protection:                    |          | IP20                                |     |
| Operating temperature:                   | (°C)     | -40...+60                           |     |

Circuit diagrams



## MODULAR ACCESSORIES

## Permanent and transient surge protective devices POP

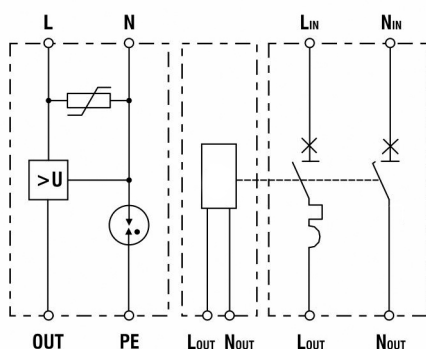
| TECHNICAL DATA                             |          |                                                       |              |
|--------------------------------------------|----------|-------------------------------------------------------|--------------|
| Standard:                                  |          | IEC 61643-1 (SPD), EN 61643-11 (SPD) - EN 50550 (POP) |              |
| SPD technical data                         |          |                                                       |              |
| SPD type:                                  |          | 2 (8/20μs)                                            |              |
| Maximum discharge current 8/20 μs (Imax):  | (kA)     | 15                                                    |              |
| Rated discharge current 8/20μs (In):       | (kA)     | 3                                                     |              |
| System:                                    |          | TT - TN                                               |              |
| Rated operational voltage (Un):            | (V)      | 230                                                   |              |
| Maximum continuous operating voltage (Uc): | (V)      | 400 (L-N)<br>254 (N-PE)                               |              |
| Voltage protection level at In (Up):       | (kV)     | ≤ 1,5 (L-N)<br>≤ 1,5 (N-PE)                           |              |
| Rated frequency:                           | (Hz)     | 50                                                    |              |
| Response time (ta):                        | (ns)     | 25 (L-N)<br>100 (N-PE)                                |              |
| Follow current interrupting rating (Ifi):  | (A)      | 100                                                   |              |
| State indicator:                           |          | yes                                                   |              |
| Auxiliary contact type:                    |          | no                                                    |              |
| Extractable cartridges:                    |          | no                                                    |              |
| POP technical data                         |          |                                                       |              |
| Maximum operating time (ta):               | (s)      |                                                       |              |
|                                            | at 255 V | No operating                                          |              |
|                                            | at 275 V | 15                                                    |              |
|                                            | at 300 V | 5                                                     |              |
|                                            | at 350 V | 0,75                                                  |              |
|                                            | at 400 V | 0,2                                                   |              |
| Maximum no operating time (ta):            | (s)      |                                                       |              |
|                                            | at 255 V | No operating                                          |              |
|                                            | at 275 V | 3                                                     |              |
|                                            | at 300 V | 1                                                     |              |
|                                            | at 350 V | 0,25                                                  |              |
|                                            | at 400 V | 0,07                                                  |              |
| Circuit breakers technical data            |          |                                                       |              |
| Coupled circuit breaker:                   |          | MT60 (25-32-40-50-63 A)<br>MTC60 (25-32 A)            |              |
| Poles number:                              |          | 1P+N                                                  |              |
| Curve:                                     |          | C                                                     |              |
| Breaking capacity EN60898 (Icn):           | (A)      | 6000                                                  |              |
| Coupled shunt trip releases:               |          | GW96012                                               |              |
| Other features                             |          |                                                       |              |
| DIN N. modules:                            |          | 5 (with MT60), 4 (with MTC60)                         |              |
| Rated tightening torque:                   | (Nm)     | 4                                                     |              |
| Cable cross sections:                      | Rigid    | (mm²)                                                 | min 6 max 35 |
|                                            | Flexible | (mm²)                                                 | min 6 max 25 |
| Degree of protection:                      |          | IP20                                                  |              |
| Operating temperature:                     |          | (°C)<br>-40...+60                                     |              |

## MODULAR ACCESSORIES

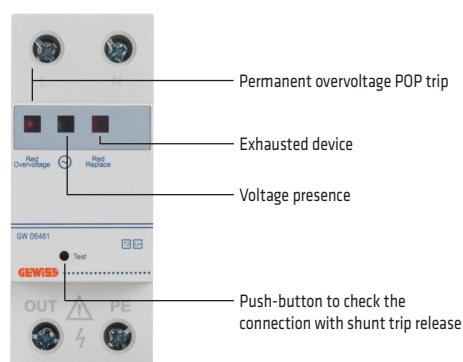
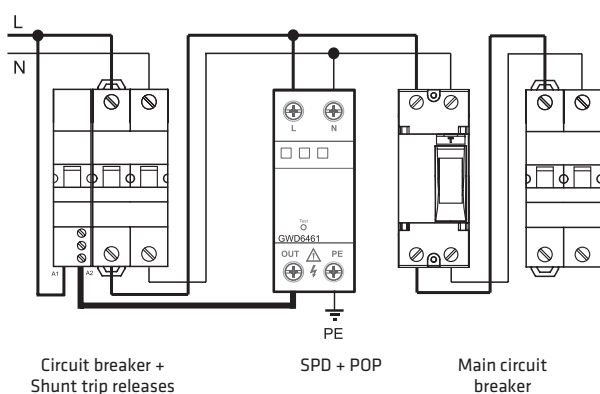
### Circuit diagrams

SPD+POP devices protect electrical system both from voltage transients indirect (produced by discharges from lightning or switching operations on the network) to permanent overvoltages (produced by instable networks or neutral loss). When permanent overvoltages occurs, SPD+POP devices use release coil to open circuit breaker.

Instead, when transient overvoltages occurs, SPD+POP devices work as a common surge protective device without opening the circuit breaker.



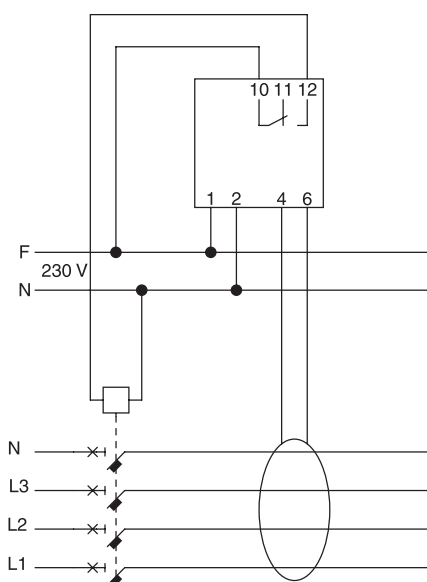
### Connection



## Residual current relay with separate toroid

| TECHNICAL DATA                             |                    |                                                             |
|--------------------------------------------|--------------------|-------------------------------------------------------------|
| Standards:                                 |                    | EN 60947-2 Appendix M                                       |
| Rated operating voltage (U <sub>e</sub> ): | (V)                | 230 a.c. Phase-Neutral / 230 a.c. Phase-Phase               |
| Test voltage:                              | (kV)               | 2 at 50Hz (1kV per measurement circuit)                     |
| Rated frequency:                           | (Hz)               | 40-60                                                       |
| Type:                                      |                    | A                                                           |
| Sensitivity setting I <sub>Δn</sub> :      |                    | 30 - 50 - 150 - 230 - 300 - 350mA<br>0.5 - 1 - 1.5 - 2 - 3A |
| Delay time setting Δt:                     | (s)                | 0 - 0.25 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 10               |
| Output contact type:                       |                    | 1 changeover, 10A - 250V                                    |
| Insulation class:                          |                    | II                                                          |
| Power loss:                                | (VA)               | 4                                                           |
| Degree of protection:                      |                    | IP20                                                        |
| Operating temperature:                     | (°C)               | 0 +55                                                       |
| Storage temperature:                       | (°C)               | -20 +80                                                     |
| Maximum cable section:                     | (mm <sup>2</sup> ) | 6                                                           |
| Sealing:                                   |                    | yes                                                         |

## Circuit diagram



ON (green LED): relay ON

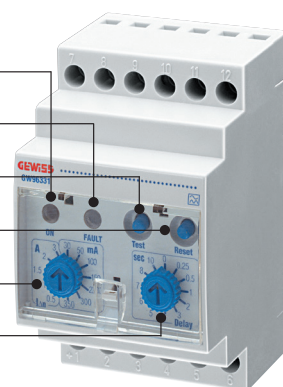
FAULT (red LED): relay tripping

TEST: relay test-button

RESET: anomaly resetting

I<sub>Δn</sub>: sensitivity setting

DELAY: delay time setting



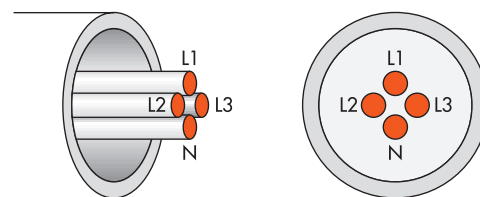
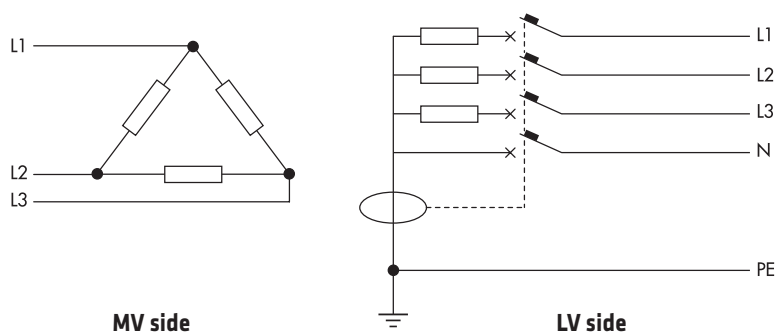
In order to obtain the residual current protection, it is necessary the use of all these following components:

- earth leakage relay GW 96 331 (installation on EN 50022 rail)
- solid or split core current transformer (GW 96 332 ÷ GW 96 337)
- one release (shunt trip or under voltage release) to be used an accessory to the MCB or MCCB.

The distance between earth leakage relay and the core current transformer must be less than 20m.

## Guide for using the earth leakage relay with separate toroid

In the case of power centers with large cable-section, it is possible to place the core current transformer directly on the cable which connect the star point of the MV/LV transformer to earth. Special attention must be paid for core current transformer wiring. In fact, the cables must be as centred as possible inside the core current transformer, to prevent untimely tripping of the relay when there are high rated currents circulating in the cables (because these currents could cause localised magnetic saturations).



## COMMAND

## AC switch disconnectors

| TECHNICAL DATA                                 |                                 |                                         |     |                                         |     |      |      |
|------------------------------------------------|---------------------------------|-----------------------------------------|-----|-----------------------------------------|-----|------|------|
|                                                |                                 | In<63A                                  |     | In≥63A                                  |     |      |      |
| Standard:                                      |                                 | EN 60947-3                              |     | EN 60947-3                              |     |      |      |
| Rated operating voltage (Ue):                  | (V)                             | 240 - 415 a.c.                          |     | 240 - 415 a.c.                          |     |      |      |
| Rated insulation voltage (Ui):                 | (V)                             | 500 a.c.                                |     | 500 a.c.                                |     |      |      |
| Rated impulse withstand voltage (Uimp):        | (kV)                            | 4                                       |     | 4                                       |     |      |      |
| Rated frequency:                               | (Hz)                            | 50 / 60                                 |     | 50 / 60                                 |     |      |      |
| Rated current (In):                            | (A)                             | 32                                      | 40  | 63                                      | 80  | 100  | 125  |
| Utilization category:                          |                                 | AC-23B                                  |     | AC-22A                                  |     |      |      |
| Rated closing capacity:                        | (A)                             | 320                                     | 400 | 189                                     | 240 | 300  | 375  |
| Rated breaking capacity:                       | (A)                             | 256                                     | 320 | 189                                     | 240 | 300  | 375  |
| Rated short-time current (Icw):                | (A)                             | 384                                     | 480 | 756                                     | 960 | 1200 | 1500 |
| Rated conditional short-circuit current (Icc): | (kA)                            |                                         |     |                                         |     |      |      |
| MTC45                                          |                                 | 4.5                                     | 3   | 3                                       | 3   | 3    | 3    |
| MTC 60 - MT 60                                 |                                 | 4.5                                     | 3   | 3                                       | 3   | 3    | 3    |
| MTC 100 - MT 100                               |                                 | 4.5                                     | 3   | 3                                       | 3   | 3    | 3    |
| MT 250                                         |                                 | 4.5                                     | 3   | 3                                       | 3   | 3    | 3    |
| MTHP 160 - MTHP 250                            |                                 | 3                                       | 3   | 3                                       | 3   | 3    | 3    |
| Power loss per pole:                           | (W)                             | 0.8                                     | 1.5 | 2                                       | 3.2 | 5    | 6    |
| Screwdriver suggested:                         |                                 | PZ2                                     |     | Philips                                 |     |      |      |
| Connection:                                    | cable                           | ≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10           |     | ≤ 1x50 - ≤ 2x25 - ≤ 3x16                |     |      |      |
|                                                | rigid<br>section (mm²) flexible | ≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10           |     | ≤ 1x70 - ≤ 2x35 - ≤ 2x25+1x16           |     |      |      |
| Suitable accessory:                            |                                 | GW 96 001 (position contact)            |     | GW 96 001 (position contact)            |     |      |      |
| Double connection (cable + fork busbar):       |                                 | YES (only downstream)                   |     | YES (upstream and downstream)           |     |      |      |
| Lockable:                                      |                                 | with GW 96 041 (padlocking lever block) |     | with GW 96 041 (padlocking lever block) |     |      |      |

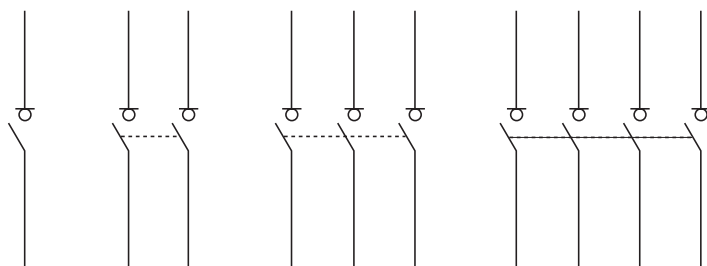
## Circuit diagrams

1P

2P

3P

4P

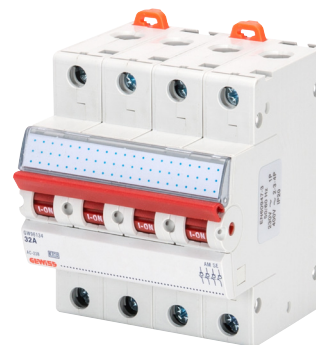


GW 96 104  
GW 96 105  
GW 96 146  
GW 96 147  
GW 96 148  
GW 96 149

GW 96 114  
GW 96 115  
GW 96 156  
GW 96 157  
GW 96 158  
GW 96 159

GW 96 124  
GW 96 125  
GW 96 166  
GW 96 167  
GW 96 168  
GW 96 169

GW 96 134  
GW 96 135  
GW 96 176  
GW 96 177  
GW 96 178  
GW 96 179



## MODULAR ACCESSORIES

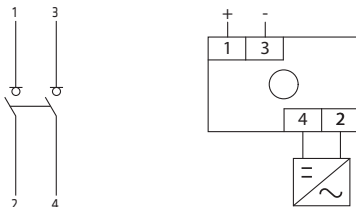
## DC rotary switch disconnectors

| TECHNICAL DATA                                           |                                |                                    |                                            |                   |        |        |
|----------------------------------------------------------|--------------------------------|------------------------------------|--------------------------------------------|-------------------|--------|--------|
| Standard                                                 | EN 60947-3                     |                                    |                                            |                   |        |        |
| Poles:                                                   | 2                              |                                    | 4                                          |                   |        |        |
| Utilization category:                                    | DC-21B                         | DC-22B                             | DC-21B                                     |                   | DC-22B |        |
| Rated operating voltage (Ue):                            | Rated operational current (In) |                                    |                                            |                   |        |        |
|                                                          | 2 poles in series              |                                    | 2 poles in series +<br>2 poles in parallel | 4 poles in series |        |        |
|                                                          | 500 V d.c.                     | 25 A                               | 8 A                                        | 58 A              | 32 A   | 32 A   |
|                                                          | 600 V d.c.                     | 25 A                               | 6 A                                        | 50 A              | 32 A   | 27,5 A |
|                                                          | 700 V d.c.                     | 23 A                               | -                                          | 27 A              | 32 A   | -      |
|                                                          | 800 V d.c.                     | 20 A                               | 2,5 A                                      | 23 A              | 32 A   | 12,5 A |
|                                                          | 900 V d.c.                     | 16 A                               | -                                          | 20 A              | 32 A   | -      |
|                                                          | 1000 V d.c.                    | 11 A                               | 1,5 A                                      | 13 A              | 32 A   | 10 A   |
| Rated short-time withstand current (Icw):                | (A)                            | 900                                |                                            | 1000              |        |        |
| Short circuit making capacity (Icm):                     | (A)                            | 900                                |                                            | 1000              |        |        |
| Rated conditional short-circuit current with fuse (Icc): | (kA)                           | 5 (gL Gg max 63A)                  |                                            | 5 (gL Gg max 80A) |        |        |
| Rated insulation voltage (Ui):                           | (V)                            | 1500 d.c.                          |                                            |                   |        |        |
| Rated impulse withstand voltage (Uimp):                  | (kV)                           | 8                                  |                                            |                   |        |        |
| Mechanical life:                                         | (N° operations)                | 10.000                             |                                            |                   |        |        |
| Rated tightening torque:                                 | (Nm)                           | 1,8                                |                                            |                   |        |        |
| Size of terminal screw:                                  |                                | M4                                 |                                            |                   |        |        |
| Screwdriver:                                             |                                | Pz2                                |                                            |                   |        |        |
| Power loss per switch at In DC-21B:                      | (W)                            | 5                                  |                                            | 16                |        |        |
| Operating temperature:                                   | (°C)                           | -40...+65                          |                                            |                   |        |        |
| Upline/downline power supply:                            |                                | si                                 |                                            |                   |        |        |
| Max cable cross section:                                 | (mm²)                          | 10 (exible) 16 (solid or stranded) |                                            |                   |        |        |

NOTE: DC switch disconnectors aren't lockable and accessorized

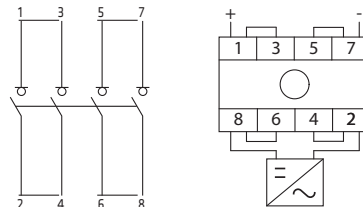
## Circuit diagrams

## 2 POLES IN SERIES



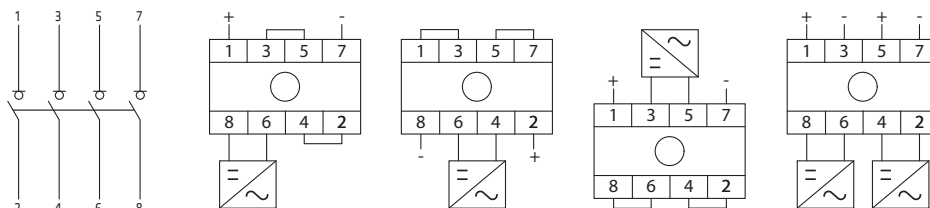
| DC-21B |      |      |      |      |       |
|--------|------|------|------|------|-------|
| 500V   | 600V | 700V | 800V | 900V | 1000V |
| 25A    | 25A  | 23A  | 25A  | 16A  | 11A   |
| DC-22B |      |      |      |      |       |
| 500V   | 600V | -    | 800V | -    | 1000V |
| 8A     | 6A   | -    | 2,5A | -    | 1,5A  |

## 2 POLES IN SERIES + 2 POLES IN PARALLEL



| DC-21B |      |      |      |      |       |
|--------|------|------|------|------|-------|
| 500V   | 600V | 700V | 800V | 900V | 1000V |
| 58A    | 50A  | 27A  | 23A  | 20A  | 13A   |

## 4 POLES IN SERIES



| DC-21B |       |      |       |      |       |
|--------|-------|------|-------|------|-------|
| 500V   | 600V  | 700V | 800V  | 900V | 1000V |
| 32A    | 32A   | 32A  | 32A   | 32A  | 32A   |
| DC-22B |       |      |       |      |       |
| 500V   | 600V  | -    | 800V  | -    | 1000V |
| 32A    | 27,5A | -    | 12,5A | -    | 10A   |

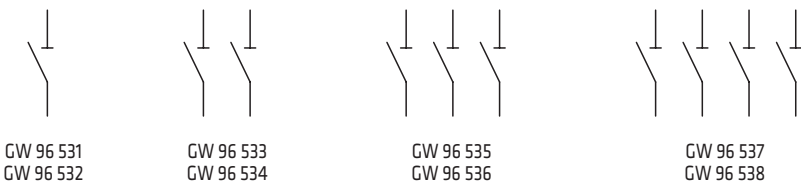
For technical information contact the Technical Assistance Service or visit [gewiss.com](http://gewiss.com)

Isolating switches - On-off switches with indicator lamp

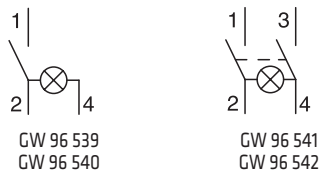
| TECHNICAL DATA                                 |       |                                         |     |                                     |          |
|------------------------------------------------|-------|-----------------------------------------|-----|-------------------------------------|----------|
|                                                |       | Isolating switches                      |     | On-off switches with indicator lamp |          |
| Standards:                                     |       | EN 60669-2-4                            |     | EN 60669-1                          |          |
| Rated operating voltage (Ue):                  | (V)   | 250 - 415 a.c.                          |     | 230 a.c.                            |          |
| Rated insulation voltage (Ui):                 | (V)   | 500 a.c.                                |     |                                     |          |
| Rated frequency:                               | (Hz)  | 50/60                                   |     |                                     |          |
| Rated operating current (Ie):                  | (A)   | 16                                      | 32  | 16                                  | 32       |
| Power loss per pole:                           | (W)   | 0.35                                    | 1.4 | 0.35*                               | 1.4*     |
| Indicator lamp supply voltage:                 | (V)   | -                                       |     | 230 a.c.                            | 230 a.c. |
| Lamp consumption:                              | (W)   | -                                       |     | 0.8                                 | 0.8      |
| Lamp duration:                                 | (h)   | -                                       |     | 100.000                             | 100.000  |
| Closing capacity:                              |       | 1.25 Ie - 1.1 Ue - cosφ = 0.6           |     |                                     |          |
| Rated conditional short-circuit current (Inc): | (A)   | 1500                                    |     |                                     |          |
| Coordination with fuses gG:                    | (A)   | 16                                      | 32  | 16                                  | 32       |
| Operating temperature:                         | (°C)  | 5...40                                  |     |                                     |          |
| Maximum cable section:                         | (mm²) | 6 (flexible) 10 (rigid)                 |     |                                     |          |
| Lockable:                                      |       | with GW 96 041 (padlocking lever block) |     |                                     |          |

\* The value does not include the power of the indicator lamp

Circuit diagrams - Isolating switches



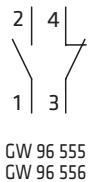
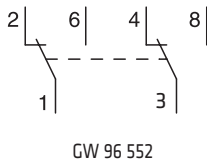
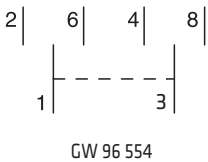
Circuit diagrams - On-off switch with indicator lamp



Lever switches

| TECHNICAL DATA                |       |                                         |     |
|-------------------------------|-------|-----------------------------------------|-----|
| Standards:                    |       | EN 60669-1                              |     |
| Rated operating voltage (Ue): | (V)   | 250 a.c.                                |     |
| Rated frequency:              | (Hz)  | 50/60                                   |     |
| Rated operating current (Ie): | (A)   | 16                                      | 32  |
| Device power loss:            | (W)   |                                         |     |
| GW 96 551                     |       | 0.4                                     | -   |
| GW 96 552                     |       | 0.8                                     | -   |
| GW 96 553                     |       | 0.4                                     | -   |
| GW 96 554                     |       | 0.8                                     | -   |
| GW 96 555 - GW 96 556         |       | 0.4                                     | 2.8 |
| Operating temperature:        | (°C)  | 5...40                                  |     |
| Maximum cable section:        | (mm²) | 6 (flexible) 10 (rigid)                 |     |
| Lockable:                     |       | with GW 96 041 (padlocking lever block) |     |

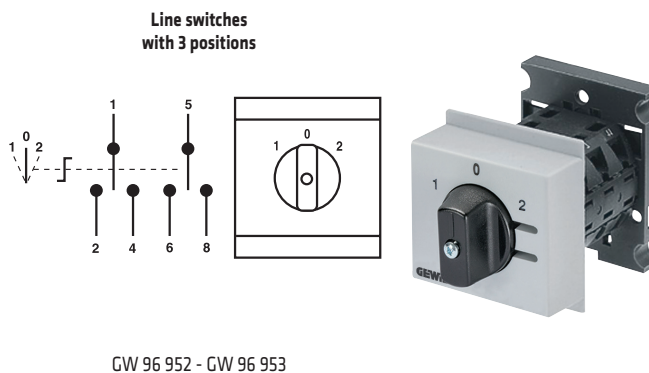
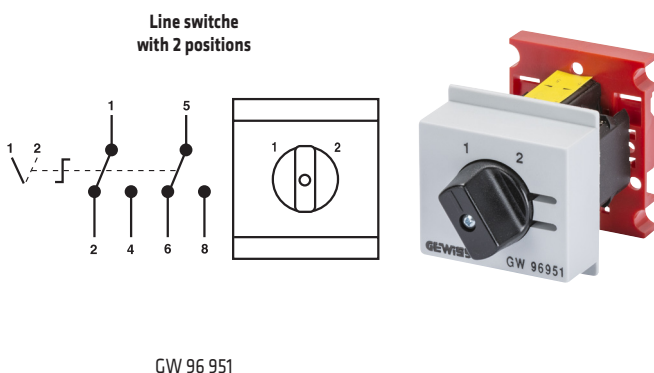
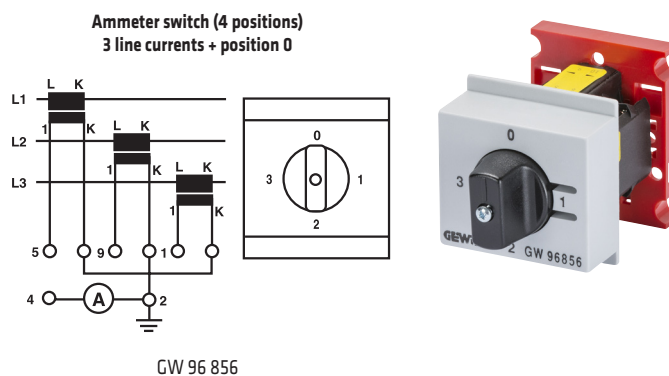
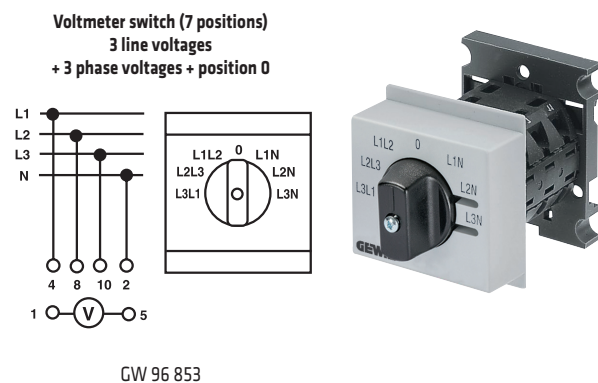
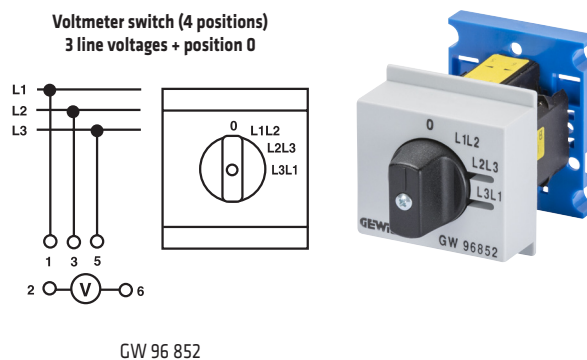
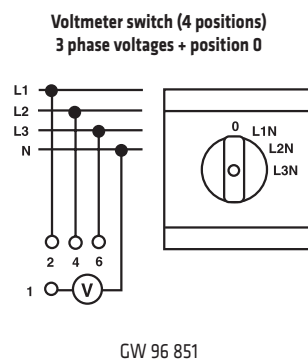
Circuit diagrams



### Rotary switches

| TECHNICAL DATA                             |            |                              |     |
|--------------------------------------------|------------|------------------------------|-----|
| Standards:                                 | EN 60947-3 |                              |     |
| Rated operating current (I <sub>e</sub> ): | (A)        | 16                           |     |
| Rated operating voltage (U <sub>e</sub> ): | (V)        | 230 - 690 a.c.               |     |
| Category of use:                           |            | AC3 (for line switches only) |     |
| Rated power in AC3:                        | (kW)       | 230V                         | 3   |
|                                            |            | 400V                         | 5.5 |

### Circuit diagrams



## MODULAR ACCESSORIES

## Contactors

| ELECTRICAL CHARACTERISTICS                         |                                      |                                                               |                                                      |           |
|----------------------------------------------------|--------------------------------------|---------------------------------------------------------------|------------------------------------------------------|-----------|
| Contactor type:                                    | CTR 20 - CTRM 20                     | CTR 25 - CTRM 25                                              | CTR 40                                               | CTR 63    |
| Standard:                                          | EN 61095, EN 60947-4-1, EN 60947-5-1 |                                                               |                                                      |           |
| Rated current AC-1/AC-7a (In):                     | (A) 20                               | 25                                                            | 40                                                   | 63        |
| Rated operational voltage (Ue):                    | (V)                                  | 230 AC (1NO)<br>400 AC (1NO+NC - 1CO - 2CO - 4NO)             |                                                      |           |
| Rated insulation voltage (Ui):                     | (V)                                  | 440 AC                                                        |                                                      |           |
| Rated impulse withstand voltage (Uimp):            | (kV)                                 | 4                                                             |                                                      |           |
| Rated conditional short-circuit current with fuse: | (kA)                                 | 3 (gL 20)                                                     | 3 (gL 25)                                            | 3 (gL 63) |
| Rated frequency:                                   | (Hz)                                 | 50/60                                                         |                                                      |           |
| No. of modules:                                    |                                      | 1 (1NO - 2NO - 1NO+1NC)<br>2 (3NO - 4NO)                      | 2                                                    | 3         |
| Power loss per pole (AC-1 / AC-7a):                | (W)                                  | 1.7                                                           | 2.2                                                  | 4         |
| Mechanical endurance (no. of operations):          |                                      | 3 x 10 <sup>6</sup>                                           |                                                      |           |
| Operating temperature:                             | (°C)                                 | -15...+55 (1NO - 1CO - 2CO - 1NO+NC)<br>-25...+55 (2NO - 4NO) |                                                      |           |
| Storage temperature:                               | (°C)                                 | -30...+80                                                     |                                                      |           |
| Max number of contactors (side-by-side):           |                                      | 3 (≤ 40 °C) <sup>(2)</sup><br>2 (40 - 55 °C) <sup>(2)</sup>   |                                                      |           |
| Rated tightening torque:                           | (Nm)                                 | 1.2                                                           |                                                      | 3.5       |
| Terminal screw type:                               |                                      | M3.5                                                          |                                                      | M5        |
| Screwdriver suggested:                             |                                      | PZ1                                                           |                                                      | PZ2       |
| Cable section:                                     | rigid (mm <sup>2</sup> )             | 1...10                                                        |                                                      | 1.5...25  |
|                                                    | flexible (mm <sup>2</sup> )          | 1...6                                                         |                                                      | 1.5...16  |
| Weight                                             | (g)                                  | 130                                                           | 240                                                  | 420       |
| CONTROL COIL CHARACTERISTICS                       |                                      |                                                               |                                                      |           |
| Control coil voltage (Uc):                         | (V)                                  | 24 - 230 AC                                                   | 24 - 230 AC / 24 - 220 DC                            |           |
| Min operating coil voltage:                        | (V)                                  |                                                               | 85% Uc                                               |           |
| Max operating coil voltage:                        | (V)                                  |                                                               | 110% Uc                                              |           |
| Frequency:                                         | (Hz)                                 |                                                               | 50/60 <sup>(3)</sup>                                 |           |
| Switch-on coil consumption:                        | (VA / W)                             | 12 / 10                                                       | 2.6 / 2.6 <sup>(4)</sup><br>3.8 / 3.8 <sup>(5)</sup> | 5 / 5     |
| Operation coil consumption:                        | (VA / W)                             | 2.8 / 1.2                                                     | 2.6 / 2.6 <sup>(4)</sup><br>3.8 / 3.8 <sup>(5)</sup> | 5 / 5     |
| Rated tightening torque:                           | (Nm)                                 |                                                               | 0.6                                                  |           |
| Terminal screw type:                               |                                      | M3                                                            |                                                      | M3.5      |
| Screwdriver suggested:                             |                                      |                                                               | PZ1                                                  |           |
| Cable section:                                     | rigid (mm <sup>2</sup> )             |                                                               | 1...2.5                                              |           |
|                                                    | flexible (mm <sup>2</sup> )          |                                                               | 1...2.5                                              |           |
| AUXILIARY CONTACT CHARACTERISTICS                  |                                      |                                                               |                                                      |           |
| Rated operational voltage (Ue):                    | (V)                                  | 230 - 400 a.c.                                                |                                                      |           |
| Rated insulation voltage (Ui):                     | (V)                                  | 500                                                           |                                                      |           |
| Rated impulse withstand voltage (Uimp):            | (kV)                                 | 4                                                             |                                                      |           |
| Rated current AC-15 (In):                          | (A)                                  | 6 (230V) - 4 (400V)                                           |                                                      |           |
| No. of modules:                                    |                                      | 0.5                                                           |                                                      |           |
| Power loss per pole (AC-15):                       | (W)                                  | 0.3                                                           |                                                      |           |
| Mechanical endurance (no. of operations):          |                                      | 3 x 10 <sup>6</sup>                                           |                                                      |           |
| Electrical endurance (no. of operations):          |                                      | 50,000                                                        |                                                      |           |
| Rated tightening torque:                           | (Nm)                                 | 0.6                                                           |                                                      |           |
| Terminal screw type:                               |                                      | M3                                                            |                                                      |           |
| Screwdriver suggested:                             |                                      | PZ1                                                           |                                                      |           |
| Cable section:                                     | rigid (mm <sup>2</sup> )             | 1...2.5                                                       |                                                      |           |
|                                                    | flexible (mm <sup>2</sup> )          | 1...2.5                                                       |                                                      |           |
| Weight                                             | (g)                                  | 35                                                            |                                                      |           |

<sup>(1)</sup> It's suggested the use of a spacer insert (GW D6 766) between adjacent contactors to ensure heat dissipation.

<sup>(2)</sup> The contactors' coils for 25, 40 and 63A versions can be controlled by AC voltage with frequency from 40 to 500Hz

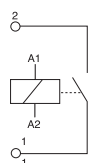
<sup>(3)</sup> For 2NO - 3NO - 4NO - 3NA+1NC versions

<sup>(4)</sup> For 4NC versions

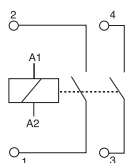
<sup>(5)</sup> Not available for contactors with AC/DC coil

### Circuit diagrams - Contactors

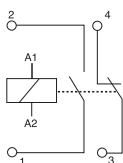
### Circuit diagrams - Auxiliary contacts



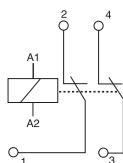
GW D6 701



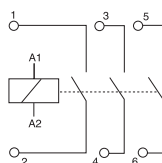
GW D6 702  
GW D6 703  
GW D6 711  
GW D6 712



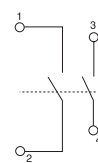
GW D6 721  
GW D6 731  
GW D6 741  
GW D6 742  
GW D6 751



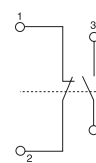
GW D6 705  
GW D6 743



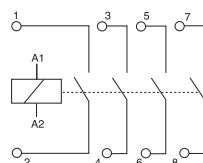
GW D6 708  
GW D6 713  
GW D6 722  
GW D6 732  
GW D6 752



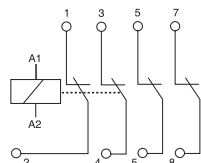
GW D6 761



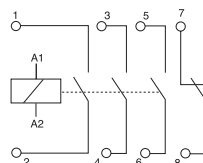
GW D6 762



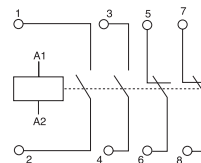
GW D6 709  
GW D6 714  
GW D6 715  
GW D6 723



GW D6 716  
GW D6 717



GW D6 718  
GW D6 735



GW D6 725



## MODULAR ACCESSORIES

## Installation relays

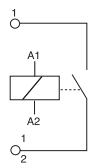
| ELECTRICAL CHARACTERISTICS                         |                             |                                                                                                                                                |
|----------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Contactor type:                                    |                             | <b>RLM</b>                                                                                                                                     |
| Standard:                                          |                             | EN 61095, EN 60947-4-1, EN60947-5-1                                                                                                            |
| Rated current AC-1/AC-7a (In):                     | (A)                         | 16                                                                                                                                             |
| Rated operational voltage (Ue):                    | (V)                         | 230 AC (1NO)<br>400 AC (1NO+NC - 1CO - 2CO - 4NO)                                                                                              |
| Rated insulation voltage (Ui):                     | (V)                         | 440 AC                                                                                                                                         |
| Rated impulse withstand voltage (Uimp):            | (kV)                        | 4                                                                                                                                              |
| Rated conditional short-circuit current with fuse: | (kA)                        | 3 (gL 20)                                                                                                                                      |
| Rated frequency:                                   | (Hz)                        | 50/60                                                                                                                                          |
| No. of modules:                                    |                             | 1 (1NO - 2NO - 1NO+1NC - 1CO)<br>2 (4NO - 2CO)                                                                                                 |
| Power loss per pole (AC-1 / AC-7a):                | (W)                         | 1.2                                                                                                                                            |
| Mechanical endurance (no. of operations):          |                             | 3 x 10 <sup>6</sup>                                                                                                                            |
| Operating temperature:                             | (°C)                        | -15...+55 (1NO - 1CO - 2CO - 1NO+NC)<br>-25...+55 (2NO - 4NO)                                                                                  |
| Storage temperature:                               | (°C)                        | -30...+80                                                                                                                                      |
| Max number of contactors (side-by-side):           |                             | 3 (≤ 40 °C)<br>2 (40 - 55 °C)                                                                                                                  |
| Rated tightening torque:                           | (Nm)                        | 1.2                                                                                                                                            |
| Terminal screw type:                               |                             | M3.5                                                                                                                                           |
| Screwdriver suggested:                             |                             | PZ1                                                                                                                                            |
| Cable section:                                     | rigid (mm <sup>2</sup> )    | 1...10                                                                                                                                         |
|                                                    | flexible (mm <sup>2</sup> ) | 1...6                                                                                                                                          |
| Weight                                             | (g)                         | 130 (1NO - 2NO - 1NO+1NC - 1CO)<br>240 (4NO - 2CO)                                                                                             |
| CONTROL COIL CHARACTERISTICS                       |                             |                                                                                                                                                |
| Control coil voltage (Uc):                         | (V)                         | 8 - 230 AC<br>12 - 24 DC                                                                                                                       |
| Min operating coil voltage:                        | (V)                         | 85% Uc                                                                                                                                         |
| Max operating coil voltage:                        | (V)                         | 110% Uc                                                                                                                                        |
| Frequency:                                         | (Hz)                        | 50/60                                                                                                                                          |
| Switch-on coil consumption:                        | (VA / W)                    | 12 / 10 (AC Coil: 1NO - 2 NO - 1NO+1NC - 1CO)<br>33 / 25 (AC Coil: 4NO, 2CO)<br>2.1 / 2.1 (AC/DC Coil: 1CO)<br>2.6 / 2.6 (AC/DC Coil: 2CO)     |
| Operation coil consumption:                        | (VA / W)                    | 2.8 / 1.2 (AC Coil: 1NO - 2 NO - 1NO+1NC - 1CO)<br>5.5 / 1.6 (AC Coil: 4NO, 2CO)<br>2.1 / 2.1 (AC/DC Coil: 1CO)<br>2.6 / 2.6 (AC/DC Coil: 2CO) |
| Rated tightening torque:                           | (Nm)                        | 0.6                                                                                                                                            |
| Terminal screw type:                               |                             | M3                                                                                                                                             |
| Screwdriver suggested:                             |                             | PZ1                                                                                                                                            |
| Cable section:                                     | rigid (mm <sup>2</sup> )    | 1...2.5                                                                                                                                        |
|                                                    | flexible (mm <sup>2</sup> ) | 1...2.5                                                                                                                                        |
| AUXILIARY CONTACT CHARACTERISTICS                  |                             |                                                                                                                                                |
| Rated operational voltage (Ue):                    | (V)                         | 230 - 400 AC                                                                                                                                   |
| Rated insulation voltage (Ui):                     | (V)                         | 500                                                                                                                                            |
| Rated impulse withstand voltage (Uimp):            | (kV)                        | 4                                                                                                                                              |
| Rated current AC-15 (In):                          | (A)                         | 6 (230V) - 4 (400V)                                                                                                                            |
| No. of modules:                                    |                             | 0.5                                                                                                                                            |
| Power loss per pole (AC-15):                       | (W)                         | 0.3                                                                                                                                            |
| Mechanical endurance (no. of operations):          |                             | 3 x 10 <sup>6</sup>                                                                                                                            |
| Electrical endurance (no. of operations):          |                             | 50.000                                                                                                                                         |
| Rated tightening torque:                           | (Nm)                        | 0.8                                                                                                                                            |
| Terminal screw type:                               |                             | M3                                                                                                                                             |
| Screwdriver suggested:                             |                             | PZ1                                                                                                                                            |
| Cable section:                                     | rigid (mm <sup>2</sup> )    | 1...2.5                                                                                                                                        |
|                                                    | flexible (mm <sup>2</sup> ) | 1...2.5                                                                                                                                        |
| Weight                                             | (g)                         | 35                                                                                                                                             |

<sup>(1)</sup> It's suggested the use of a spacer insert (GW D6 766) between adjacent groups of relays to ensure heat dissipation.

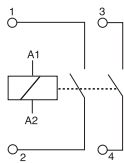
<sup>(2)</sup> Not available for relays with AC/DC coil

## MODULAR ACCESSORIES

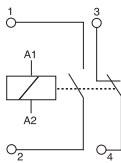
### Circuit diagrams - Contactors



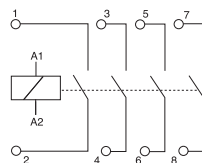
GW D6 601  
GW D6 602  
GW D6 603  
GW D6 604



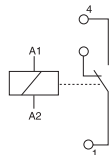
GW D6 624



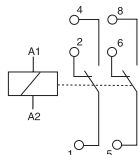
GW D6 706  
GW D6 707  
GW D6 744



GW D6 632  
GW D6 633  
GW D6 634

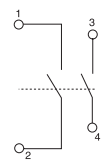


GW D6 606  
GW D6 608  
GW D6 610  
GW D6 611

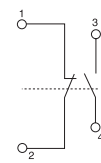


GW D6 626  
GW D6 627  
GW D6 629  
GW D6 630

### Circuit diagrams - Auxiliary contacts



GW D6 761



GW D6 762



## MODULAR ACCESSORIES

## Latching relays

| ELECTRICAL CHARACTERISTICS                              |                |                                                  |                                                  |
|---------------------------------------------------------|----------------|--------------------------------------------------|--------------------------------------------------|
| Relay type:                                             |                | RLB                                              |                                                  |
| Contactor type:                                         |                | 1NO - 2NO - 1NO+1NC - 1CO                        | 4NO - 2CO                                        |
| Standard:                                               |                | EN 60669-2-2                                     |                                                  |
| Rated current AC-1/AC-7a (In):                          |                | (A)                                              | 16                                               |
| Rated operational voltage (Ue):                         |                | (V)                                              | 440 AC                                           |
| Rated insulation voltage (Ui):                          |                | (V)                                              | 440 AC                                           |
| Rated impulse withstand voltage (Uimp):                 |                | (kV)                                             | 4                                                |
| Rated conditional short-circuit current with fuse:      |                | (kA)                                             | 3 (gL 20)                                        |
| Rated frequency:                                        |                | (Hz)                                             | 50/60                                            |
| No. of modules:                                         |                | 1                                                | 2                                                |
| Power loss per pole ( AC-1 / AC-7a):                    |                | (W)                                              | 1                                                |
| Mechanical endurance (no. of operations):               |                | 1 x 10 <sup>6</sup>                              |                                                  |
| Operating temperature: <sup>(2)</sup>                   |                | (°C)                                             | AC Coil (-25...+70)<br>DC Coil (-25...+55)       |
| Storage temperature:                                    |                | (°C)                                             | -30...+80                                        |
| Max number of contactors (side-by-side): <sup>(1)</sup> | T (≤ 40 °C)    | AC Coil: No limitation<br>DC Coil: No limitation | AC Coil: No limitation<br>DC Coil: No limitation |
|                                                         | T (40 - 55 °C) | AC Coil: No limitation<br>DC Coil: 3             | AC Coil: 3<br>DC Coil: 3                         |
|                                                         | T (55 - 70 °C) | AC Coil: 3<br>DC Coil: 0                         | AC Coil: 1<br>DC Coil: 0                         |
| Rated tightening torque:                                |                | (Nm)                                             | 1.2                                              |
| Terminal screw type:                                    |                | M4                                               |                                                  |
| Screwdriver suggested:                                  |                | PZ2                                              |                                                  |
| Cable section:                                          | rigid (mm²)    | 1...10                                           |                                                  |
|                                                         | flexible (mm²) | 1...10                                           |                                                  |
| Weight                                                  |                | 135                                              | 195                                              |
| CONTROL COIL CHARACTERISTICS                            |                |                                                  |                                                  |
| Control coil voltage (Uc):                              |                | (V)                                              | 8 - 230 AC<br>24 DC                              |
| Min operating coil voltage:                             |                | (V)                                              | 90% Uc                                           |
| Max operating coil voltage:                             |                | (V)                                              | 110% Uc                                          |
| Frequency:                                              |                | (Hz)                                             | 50/60                                            |
| Switch-on coil consumption:                             |                | (VA / W)                                         | AC 18 / 13<br>DC 9 / 9                           |
| Operation coil consumption:                             |                | (VA / W)                                         | AC 9 / 4<br>DC 9 / 9                             |
| Rated tightening torque:                                |                | (Nm)                                             | 0.6                                              |
| Terminal screw type:                                    |                | M3                                               |                                                  |
| Screwdriver suggested:                                  |                | PZ1                                              |                                                  |
| Cable section:                                          | rigid (mm²)    | 1...4                                            |                                                  |
|                                                         | flexible (mm²) | 1...4                                            |                                                  |
| AUXILIARY CONTACT CHARACTERISTICS <sup>(3)</sup>        |                |                                                  |                                                  |
| Rated operational voltage (Ue):                         |                | (V)                                              | 250 AC                                           |
| Rated insulation voltage (Ui):                          |                | (V)                                              | 440 AC                                           |
| Rated impulse withstand voltage (Uimp):                 |                | (kV)                                             | 4                                                |
| Rated current AC-15 (In):                               |                | (A)                                              | 4 (250V)                                         |
| No. of modules:                                         |                | 0.5                                              |                                                  |
| Power loss per pole (AC-15):                            |                | (W)                                              | 0.3                                              |
| Mechanical endurance (no. of operations):               |                | 1 x 10 <sup>6</sup>                              |                                                  |
| Electrical endurance (no. of operations):               |                | 100.000                                          |                                                  |
| Rated tightening torque:                                |                | (Nm)                                             | 0.8                                              |
| Terminal screw type:                                    |                | M3                                               |                                                  |
| Screwdriver suggested:                                  |                | PZ1                                              |                                                  |
| Cable section:                                          | rigid (mm²)    | 1...4                                            |                                                  |
|                                                         | flexible (mm²) | 1...4                                            |                                                  |
| Weight                                                  |                | (g)                                              | 30                                               |

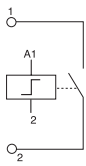
<sup>(1)</sup> It's suggested the use of a spacer insert (GW D6 766) between adjacent groups of relays to ensure heat dissipation.

<sup>(2)</sup> The maximum endurance of impulse for relays with AC coil at temperature > 55°C and relays with DC coil, is 1 minute

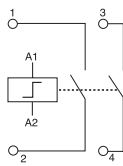
<sup>(3)</sup> Not available for relays with AC/DC coil

## MODULAR ACCESSORIES

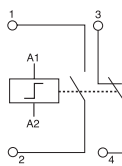
### Circuit diagrams - Contactors



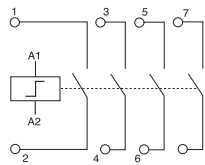
GW D6 641  
GW D6 642  
GW D6 643  
GW D6 644



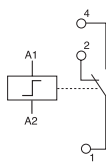
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GW D6 659



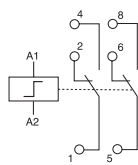
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GW D6 654



GW D6 667  
GW D6 668  
GW D6 669

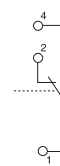


GW D6 646  
GW D6 647  
GW D6 648  
GW D6 649  
GW D6 650

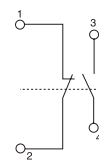


GW D6 663  
GW D6 664

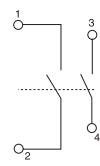
### Circuit diagrams - Auxiliary contacts



GW D6 761



GW D6 762



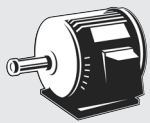
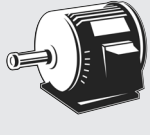
GW D6 762



## MODULAR ACCESSORIES

## UTILIZATION CATEGORIES

The table below shows a brief description of each utilization category according to EN 61095. For the performance of the Gewiss contactors and relays according to the utilization category, please see the application note.

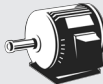
| CURRENT TYPE                                                                              | CATEGORY | TYPICAL APPLICATIONS                                                                                    |                                                                                       |
|-------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| AC<br> | AC-1     | Resistive, non-inductive or slightly inductive loads: resistance furnaces                               |    |
|                                                                                           | AC-2     | Slip-ring motors: starting, switching off                                                               |    |
|                                                                                           | AC-3     | Squirrel-cage motors: starting, switching off motors during running <sup>(1)</sup>                      |                                                                                       |
|                                                                                           | AC-4     | Squirrel-cage motors: starting, plugging, inching                                                       |                                                                                       |
|                                                                                           | AC-5a    | Switching of discharge lamps                                                                            |    |
|                                                                                           | AC-5b    | Switching of incandescent lamps                                                                         |                                                                                       |
|                                                                                           | AC-6a    | Switching of transformers                                                                               |  |
|                                                                                           | AC-6b    | Switching of capacitor banks                                                                            |                                                                                       |
|                                                                                           | AC-7a    | Slightly inductive loads in household appliances and similar applications                               |  |
|                                                                                           | AC-7b    | Motor-loads for household applications <sup>(1)</sup>                                                   |                                                                                       |
|                                                                                           | AC-8a    | Hermetic refrigerant compressor motor <sup>(2)</sup> control with manual resetting of overload releases |  |
|                                                                                           | AC-8b    | Hermetic refrigerant compressor motor (2) control with automatic resetting of overload releases         |                                                                                       |
| DC<br> | DC-1     | Resistive, non-inductive or slightly inductive loads: resistance furnaces                               |  |
|                                                                                           | DC-3     | Shunt-motors: starting, plugging, inching<br>Dynamic breaking of d.c. motors                            |  |
|                                                                                           | DC-5     | Series-motors: starting, plugging, inching<br>Dynamic breaking of d.c. motors                           |                                                                                       |
|                                                                                           | DC-6     | Switching of incandescent lamps                                                                         |  |

<sup>(1)</sup> AC-3 and AC-7b categories may be used for occasional inching (jogging) or plugging for limited time periods such as machine set-up; during such limited time periods, the number of such operations should not exceed five per minute or more than ten in a 10-min period.

<sup>(2)</sup> A hermetic refrigerant compressor motor is a combination consisting of a compressor and a motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, the motor operating in the refrigerant.

## APPLICATION NOTE

In general, the technical data of Gewiss contactors and relays refer to the AC-1 or AC-7a utilization category. If the type of electrical load doesn't belong to these categories, the current and as a consequence the power of the load, must be derated according the following table.

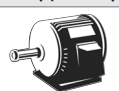
| AC APPLICATION  |                   |                                                                                                                                                          |                 |        |       |                                       |        |
|--------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|-------|---------------------------------------|--------|
| Contactor type                                                                                   |                   | CTR20 - CTRM 20                                                                                                                                          | CTR25 - CTRM 25 | CTR40  | CTR63 | RLM                                   | RLB    |
| Utilization category:                                                                            |                   | AC-1 / AC-7a<br>Resistive, non-inductive or slightly inductive loads  |                 |        |       |                                       |        |
| Rated operational current (A):                                                                   |                   | 20                                                                                                                                                       | 25              | 40     | 63    | 16                                    | 16     |
| Max operational power (kW):                                                                      | 230V single-phase | 4                                                                                                                                                        | 5,4             | 8,7    | 13,3  | 3,5                                   | 3,5    |
|                                                                                                  | 230V three-phase  | 6                                                                                                                                                        | 9               | 16     | 24    | 6                                     | 6      |
|                                                                                                  | 400V three-phase  | 13                                                                                                                                                       | 16              | 26     | 40    | 10,5                                  | 10,5   |
| Electrical endurance (opening-closing)                                                           |                   | 200000                                                                                                                                                   |                 | 100000 |       | 200000                                | 100000 |
| Max operating frequency (opening-closing per hour)                                               |                   | 600                                                                                                                                                      |                 |        |       |                                       |        |
| Utilization category:                                                                            |                   | AC-3 / AC-7b<br>Starting and switching off                            |                 |        |       |                                       |        |
| Rated operational current (A):                                                                   |                   | NO contacts: 9<br>NC contacts: 6                                                                                                                         | 8.5             | 22     | 30    | NO contacts: 7<br>NO contacts: 4      | 5      |
| Max operational power (kW):                                                                      | 230V single-phase | NO contacts: 1.3<br>NC contacts: 0.75                                                                                                                    | 1.3             | 3.7    | 5     | NO contacts: 1,1<br>NO contacts: 0,55 | 0,37   |
|                                                                                                  | 230V three-phase  | -                                                                                                                                                        | 2,2             | 5,5    | 8,5   | 1,5                                   | 1,1    |
|                                                                                                  | 400V three-phase  | -                                                                                                                                                        | 4               | 11     | 15    | 3                                     | 2,2    |
| Electrical endurance (opening-closing)                                                           |                   | 300000                                                                                                                                                   | 500000          | 150000 |       | 300000                                | 100000 |
| Max operating frequency (opening-closing per hour)                                               |                   | 600                                                                                                                                                      |                 |        |       |                                       |        |
| Utilization category:                                                                            |                   | AC-5<br>Switching of lamps                                          |                 |        |       |                                       |        |
| Max operational power (kW):                                                                      |                   | See specific table regarding switching of lamps                                                                                                          |                 |        |       |                                       |        |
| Utilization category:                                                                            |                   | AC-6b<br>Switching of capacitor banks                               |                 |        |       |                                       |        |
| Max operational capacity (µF):                                                                   | 230 V             | 30                                                                                                                                                       | 36              | 220    | 330   | 30                                    | 80     |
| Electrical endurance (opening-closing)                                                           |                   | 100000                                                                                                                                                   |                 |        |       |                                       |        |
| Max operating frequency (opening-closing per hour)                                               |                   | 600                                                                                                                                                      |                 |        |       |                                       |        |

## MODULAR ACCESSORIES

GEWISS contactors and relays can be also used for DC applications. The following table shows the values of the rated operational current depending on the rated operational voltage and the utilization category.

| DC APPLICATION  |                    |                         |                  |        |        |     |     |    |
|---------------------------------------------------------------------------------------------------|--------------------|-------------------------|------------------|--------|--------|-----|-----|----|
| Utilization category                                                                              | Nr. poles          | Contactor type          |                  |        |        |     |     |    |
|                                                                                                   |                    | CTR 20 - CTRM 20        | CTR 25 - CTRM 25 | CTR 40 | CTR 63 | RLM | RLB |    |
| Max operating frequency (DC-1):                                                                   |                    | 300 switching p er hour |                  |        |        |     |     |    |
| Electrical endurance (DC-1/DC-3/DC-5):                                                            |                    | 100.000                 |                  |        |        |     |     |    |
| Rated operational current (A)                                                                     |                    |                         |                  |        |        |     |     |    |
| RATED OPERATIONAL VOLTAGE: 24V DC                                                                 |                    |                         |                  |        |        |     |     |    |
|                  | DC-1 (L/R ≤ 1ms)   | 1                       | 20               | 25     | 40     | 63  | 16  | 16 |
|                                                                                                   | 2 in series        | 20                      | 25               | 40     | 63     | 16  | 16  |    |
|                                                                                                   | 3 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
|                                                                                                   | 4 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
|                  | DC-3 (L/R ≤ 2ms)   | 1                       | 10               | 15     | 22     | 25  | 10  | 9  |
|                                                                                                   | 2 in series        | 20                      | 25               | 40     | 45     | 16  | 16  |    |
|                                                                                                   | 3 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
|                                                                                                   | 4 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
|                  | DC-5 (L/R ≤ 7,5ms) | 1                       | 10               | 15     | 20     | 25  | 10  | 9  |
|                                                                                                   | 2 in series        | 20                      | 25               | 40     | 45     | 16  | 16  |    |
|                                                                                                   | 3 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
|                                                                                                   | 4 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
| RATED OPERATIONAL VOLTAGE: 48V DC                                                                 |                    |                         |                  |        |        |     |     |    |
|                | DC-1 (L/R ≤ 1ms)   | 1                       | 15               | 20     | 24     | 26  | 12  | 12 |
|                                                                                                   | 2 in series        | 18                      | 25               | 38     | 42     | 15  | 15  |    |
|                                                                                                   | 3 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
|                                                                                                   | 4 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
|                | DC-3 (L/R ≤ 2ms)   | 1                       | 5                | 8      | 10     | 11  | 5   | 4  |
|                                                                                                   | 2 in series        | 10                      | 16               | 20     | 22     | 10  | 9   |    |
|                                                                                                   | 3 in series        | -                       | 25               | 40     | 45     | 16  | 16  |    |
|                                                                                                   | 4 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
|                | DC-5 (L/R ≤ 7,5ms) | 1                       | 4                | 5      | 8      | 10  | 4   | 3  |
|                                                                                                   | 2 in series        | 8                       | 15               | 18     | 20     | 8   | 7   |    |
|                                                                                                   | 3 in series        | -                       | 25               | 40     | 44     | 16  | 16  |    |
|                                                                                                   | 4 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
| RATED OPERATIONAL VOLTAGE: 60V DC                                                                 |                    |                         |                  |        |        |     |     |    |
|                | DC-1 (L/R ≤ 1ms)   | 1                       | 10               | 15     | 18     | 20  | 8   | 8  |
|                                                                                                   | 2 in series        | 15                      | 20               | 32     | 34     | 12  | 14  |    |
|                                                                                                   | 3 in series        | -                       | 25               | 40     | 60     | 16  | 16  |    |
|                                                                                                   | 4 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
|                | DC-3 (L/R ≤ 2ms)   | 1                       | 2                | 4      | 5      | 5   | 2   | 2  |
|                                                                                                   | 2 in series        | 8                       | 12               | 16     | 18     | 8   | 7   |    |
|                                                                                                   | 3 in series        | -                       | 25               | 32     | 35     | 16  | 16  |    |
|                                                                                                   | 4 in series        | -                       | 25               | 40     | 63     | 16  | 16  |    |
|                | DC-5 (L/R ≤ 7,5ms) | 1                       | 1                | 3      | 4      | 5   | 1   | 1  |
|                                                                                                   | 2 in series        | 6                       | 10               | 14     | 15     | 6   | 5   |    |
|                                                                                                   | 3 in series        | -                       | 20               | 28     | 30     | 12  | 15  |    |
|                                                                                                   | 4 in series        | -                       | 25               | 40     | 60     | 16  | 16  |    |

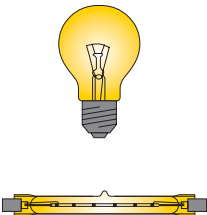
## MODULAR ACCESSORIES

| DC APPLICATION  |                    |                        |                  |        |        |     |      |
|--------------------------------------------------------------------------------------------------|--------------------|------------------------|------------------|--------|--------|-----|------|
| Utilization category                                                                             | Nr. poles          | Contactor type         |                  |        |        |     |      |
|                                                                                                  |                    | CTR 20 - CTRM 20       | CTR 25 - CTRM 25 | CTR 40 | CTR 63 | RLM | RLB  |
| Max operating frequency (DC-1):                                                                  |                    | 300 switching per hour |                  |        |        |     |      |
| Electrical endurance (DC-1/DC-3/DC-5):                                                           |                    | 100.000                |                  |        |        |     |      |
| Rated operational current (A)                                                                    |                    |                        |                  |        |        |     |      |
| RATED OPERATIONAL VOLTAGE: 110V DC                                                               |                    |                        |                  |        |        |     |      |
|                 | DC-1 (L/R ≤ 1ms)   | 1                      | 6                | 6      | 4      | 4   | 4    |
|                                                                                                  | 2 in series        | 10                     | 10               | 10     | 10     | 8   | 7    |
|                                                                                                  | 3 in series        | -                      | 20               | 30     | 35     | 12  | 16   |
|                                                                                                  | 4 in series        | -                      | 20               | 40     | 63     | 12  | 16   |
|                 | DC-3 (L/R ≤ 2ms)   | 1                      | 1                | 1,3    | 1,5    | 1   | 1    |
|                                                                                                  | 2 in series        | 4                      | 5,5              | 5      | 5      | 4   | 3    |
|                                                                                                  | 3 in series        | -                      | 15               | 15     | 18     | 10  | 8    |
|                                                                                                  | 4 in series        | -                      | 20               | 40     | 63     | 12  | 13   |
|                 | DC-5 (L/R ≤ 7,5ms) | 1                      | 0,3              | 0,5    | 1      | 0,3 | 0,3  |
|                                                                                                  | 2 in series        | 2                      | 4                | 5      | 5      | 2   | 1,5  |
|                                                                                                  | 3 in series        | -                      | 12               | 12     | 15     | 8   | 6    |
|                                                                                                  | 4 in series        | -                      | 15               | 35     | 45     | 12  | 10   |
| RATED OPERATIONAL VOLTAGE: 220V DC                                                               |                    |                        |                  |        |        |     |      |
|                 | DC-1 (L/R ≤ 1ms)   | 1                      | 0,6              | 0,6    | 1,2    | 1,2 | 0,5  |
|                                                                                                  | 2 in series        | 6                      | 6                | 8      | 8      | 4   | 3    |
|                                                                                                  | 3 in series        | -                      | 15               | 20     | 30     | 12  | 10   |
|                                                                                                  | 4 in series        | -                      | 15               | 40     | 63     | 14  | 13   |
|               | DC-3 (L/R ≤ 2ms)   | 1                      | 0,1              | 0,2    | 0,3    | 0,3 | 0,1  |
|                                                                                                  | 2 in series        | 0,4                    | 0,6              | 1      | 1      | 0,4 | 0,3  |
|                                                                                                  | 3 in series        | -                      | 3                | 4      | 5      | 2   | 1    |
|                                                                                                  | 4 in series        | -                      | 8                | 10     | 10     | 6   | 4    |
|               | DC-5 (L/R ≤ 7,5ms) | 1                      | 0,06             | 0,1    | 0,2    | 0,2 | 0,05 |
|                                                                                                  | 2 in series        | 0,2                    | 0,4              | 0,8    | 0,8    | 0,2 | 0,1  |
|                                                                                                  | 3 in series        | -                      | 2                | 3      | 4      | 1   | 0,5  |
|                                                                                                  | 4 in series        | -                      | 5                | 8      | 10     | 3   | 1,5  |

## MODULAR ACCESSORIES

## SWITCHING OF LAMPS

The following table shows the number of lamps per phase that can be commanded by each contactor and relay, according to the type of lamp and the rated power. The values refer to a rated voltage of 230 V 50 Hz.

| MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ                                        |           |                   |                   |        |        |                     |                 |
|-------------------------------------------------------------------------------------|-----------|-------------------|-------------------|--------|--------|---------------------|-----------------|
|                                                                                     |           | CONTACTORS        |                   |        |        | INSTALLATION RELAYS | LATCHING RELAYS |
| Lamp type                                                                           | Power (W) | CTR 20<br>CTRM 20 | CTR 25<br>CTRM 25 | CTR 40 | CTR 63 | RLM                 | RLB             |
| INCANDESCENT AND HALOGEN                                                            |           |                   |                   |        |        |                     |                 |
|   | 11        | 182               | 200               | 364    | 455    | 182                 | 182             |
|                                                                                     | 15        | 133               | 147               | 267    | 333    | 133                 | 133             |
|                                                                                     | 18        | 111               | 122               | 222    | 278    | 111                 | 111             |
|                                                                                     | 20        | 100               | 110               | 200    | 250    | 100                 | 100             |
|                                                                                     | 25        | 80                | 88                | 160    | 200    | 80                  | 80              |
|                                                                                     | 28        | 71                | 79                | 143    | 179    | 71                  | 71              |
|                                                                                     | 30        | 67                | 73                | 133    | 167    | 67                  | 67              |
|                                                                                     | 33        | 61                | 67                | 121    | 152    | 61                  | 61              |
|                                                                                     | 35        | 57                | 63                | 114    | 143    | 57                  | 57              |
|                                                                                     | 40        | 50                | 55                | 100    | 125    | 50                  | 50              |
|                                                                                     | 42        | 48                | 52                | 95     | 119    | 48                  | 48              |
|                                                                                     | 46        | 43                | 48                | 87     | 109    | 43                  | 43              |
|                                                                                     | 48        | 42                | 46                | 83     | 104    | 42                  | 42              |
|                                                                                     | 50        | 40                | 44                | 80     | 100    | 40                  | 40              |
|                                                                                     | 53        | 38                | 42                | 75     | 94     | 38                  | 38              |
|                                                                                     | 57        | 35                | 39                | 70     | 88     | 35                  | 35              |
|                                                                                     | 60        | 33                | 37                | 67     | 83     | 33                  | 33              |
|                                                                                     | 70        | 29                | 31                | 57     | 71     | 29                  | 29              |
|                                                                                     | 75        | 27                | 29                | 53     | 67     | 27                  | 27              |
|                                                                                     | 77        | 26                | 29                | 52     | 65     | 26                  | 26              |
|                                                                                     | 80        | 25                | 28                | 50     | 63     | 25                  | 25              |
|                                                                                     | 100       | 20                | 22                | 40     | 50     | 20                  | 20              |
|                                                                                     | 116       | 17                | 19                | 34     | 43     | 17                  | 17              |
|                                                                                     | 120       | 17                | 18                | 33     | 42     | 17                  | 17              |
|                                                                                     | 150       | 13                | 15                | 27     | 33     | 13                  | 13              |
|                                                                                     | 160       | 13                | 14                | 25     | 31     | 13                  | 13              |
|                                                                                     | 200       | 10                | 11                | 20     | 25     | 10                  | 10              |
|                                                                                     | 205       | 10                | 11                | 20     | 24     | 10                  | 10              |
|                                                                                     | 230       | 9                 | 10                | 17     | 22     | 9                   | 9               |
|                                                                                     | 300       | 7                 | 7                 | 13     | 17     | 7                   | 7               |
|                                                                                     | 400       | 5                 | 6                 | 10     | 13     | 5                   | 5               |
|                                                                                     | 500       | 4                 | 4                 | 8      | 10     | 4                   | 4               |
|                                                                                     | 750       | 3                 | 3                 | 5      | 7      | 3                   | 3               |
|                                                                                     | 1000      | 2                 | 2                 | 4      | 5      | 2                   | 2               |
|                                                                                     | 1500      | 1                 | 1                 | 3      | 3      | 1                   | 1               |
|                                                                                     | 2000      | 1                 | 1                 | 2      | 3      | 1                   | 1               |
| LOW-PRESSURE HALOGEN (WITH ELECTROMAGNETIC OR ELECTRONIC BALLAST)                   |           |                   |                   |        |        |                     |                 |
|  | 10        | 100               | 120               | 270    | 430    | 100                 | 100             |
|                                                                                     | 20        | 50                | 60                | 135    | 215    | 50                  | 50              |
|                                                                                     | 30        | 33                | 40                | 90     | 143    | 33                  | 33              |
|                                                                                     | 40        | 25                | 30                | 68     | 108    | 25                  | 25              |
|                                                                                     | 50        | 20                | 24                | 54     | 86     | 20                  | 20              |
|                                                                                     | 60        | 17                | 20                | 45     | 72     | 17                  | 17              |
|                                                                                     | 70        | 14                | 17                | 39     | 61     | 14                  | 14              |
|                                                                                     | 80        | 13                | 15                | 34     | 54     | 13                  | 13              |
|                                                                                     | 90        | 11                | 13                | 30     | 48     | 11                  | 11              |
|                                                                                     | 100       | 10                | 12                | 27     | 43     | 10                  | 10              |
|                                                                                     | 150       | 7                 | 8                 | 18     | 29     | 7                   | 7               |
|                                                                                     | 200       | 5                 | 6                 | 14     | 22     | 5                   | 5               |
|                                                                                     | 300       | 3                 | 4                 | 9      | 14     | 3                   | 3               |
|                                                                                     | 400       | 3                 | 3                 | 7      | 11     | 3                   | 3               |

## MODULAR ACCESSORIES

| MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ                                        |           |                   |                   |             |             |                     |                 |             |             |             |             |             |             |
|-------------------------------------------------------------------------------------|-----------|-------------------|-------------------|-------------|-------------|---------------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                                                                     |           | CONTACTORS        |                   |             |             | INSTALLATION RELAYS | LATCHING RELAYS |             |             |             |             |             |             |
| Lamp type                                                                           | Power (W) | CTR 20<br>CTRM 20 | CTR 25<br>CTRM 25 | CTR 40      | CTR 63      | RLM                 | RLB             |             |             |             |             |             |             |
| COMPACT FLUORESCENT WITH BALLAST INSIDE (ENERGY SAVING )                            |           |                   |                   |             |             |                     |                 |             |             |             |             |             |             |
|    | 3         | 150               | 200               | 550         | 700         | 133                 | 133             |             |             |             |             |             |             |
|                                                                                     | 5         | 90                | 120               | 330         | 420         | 80                  | 80              |             |             |             |             |             |             |
|                                                                                     | 6         | 75                | 100               | 275         | 350         | 67                  | 67              |             |             |             |             |             |             |
|                                                                                     | 7         | 64                | 86                | 236         | 300         | 57                  | 57              |             |             |             |             |             |             |
|                                                                                     | 8         | 56                | 75                | 206         | 263         | 50                  | 50              |             |             |             |             |             |             |
|                                                                                     | 9         | 50                | 67                | 183         | 233         | 44                  | 44              |             |             |             |             |             |             |
|                                                                                     | 10        | 45                | 60                | 165         | 210         | 40                  | 40              |             |             |             |             |             |             |
|                                                                                     | 11        | 41                | 55                | 150         | 191         | 36                  | 36              |             |             |             |             |             |             |
|                                                                                     | 12        | 38                | 50                | 138         | 175         | 33                  | 33              |             |             |             |             |             |             |
|                                                                                     | 13        | 35                | 46                | 127         | 162         | 31                  | 31              |             |             |             |             |             |             |
|                                                                                     | 14        | 32                | 43                | 118         | 150         | 29                  | 29              |             |             |             |             |             |             |
|                                                                                     | 15        | 30                | 40                | 110         | 140         | 27                  | 27              |             |             |             |             |             |             |
|                                                                                     | 16        | 28                | 38                | 103         | 131         | 25                  | 25              |             |             |             |             |             |             |
|                                                                                     | 17        | 26                | 35                | 97          | 124         | 24                  | 24              |             |             |             |             |             |             |
|                                                                                     | 18        | 25                | 33                | 92          | 117         | 22                  | 22              |             |             |             |             |             |             |
|                                                                                     | 20        | 23                | 30                | 83          | 105         | 20                  | 20              |             |             |             |             |             |             |
|                                                                                     | 21        | 21                | 29                | 79          | 100         | 19                  | 19              |             |             |             |             |             |             |
|                                                                                     | 22        | 20                | 27                | 75          | 95          | 18                  | 18              |             |             |             |             |             |             |
|                                                                                     | 23        | 20                | 26                | 72          | 91          | 17                  | 17              |             |             |             |             |             |             |
|                                                                                     | 24        | 19                | 25                | 69          | 88          | 17                  | 17              |             |             |             |             |             |             |
|                                                                                     | 25        | 18                | 24                | 66          | 84          | 16                  | 16              |             |             |             |             |             |             |
|                                                                                     | 26        | 17                | 23                | 63          | 81          | 15                  | 15              |             |             |             |             |             |             |
|                                                                                     | 27        | 17                | 22                | 61          | 78          | 15                  | 15              |             |             |             |             |             |             |
|                                                                                     | 30        | 15                | 20                | 55          | 70          | 13                  | 13              |             |             |             |             |             |             |
|                                                                                     | 33        | 14                | 18                | 50          | 64          | 12                  | 12              |             |             |             |             |             |             |
|                                                                                     | 35        | 13                | 17                | 47          | 60          | 11                  | 11              |             |             |             |             |             |             |
|                                                                                     | 40        | 11                | 15                | 41          | 53          | 10                  | 10              |             |             |             |             |             |             |
|                                                                                     | 50        | 9                 | 12                | 33          | 42          | 8                   | 8               |             |             |             |             |             |             |
|                                                                                     | 70        | 6                 | 9                 | 24          | 30          | 6                   | 6               |             |             |             |             |             |             |
| COMPACT FLUORESCENT WITH EXTERNAL ELECTROMAGNETIC BALLAST                           |           |                   |                   |             |             |                     |                 |             |             |             |             |             |             |
|  |           | UNCORRECTED       | IN PARALLEL       | UNCORRECTED | IN PARALLEL | UNCORRECTED         | IN PARALLEL     | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL |
|                                                                                     | 5         | 84                | 15 (2 µF)         | 106         | 18 (2 µF)   | 190                 | 110 (2 µF)      | 294         | 165 (2 µF)  | 70          | 15 (2 µF)   | 70          | 40 (2 µF)   |
|                                                                                     | 2x5       | 60                | 15 (2 µF)         | 76          | 18 (2 µF)   | 136                 | 110 (2 µF)      | 210         | 165 (2 µF)  | 50          | 15 (2 µF)   | 50          | 40 (2 µF)   |
|                                                                                     | 7         | 84                | 15 (2 µF)         | 106         | 18 (2 µF)   | 190                 | 110 (2 µF)      | 294         | 165 (2 µF)  | 70          | 15 (2 µF)   | 70          | 40 (2 µF)   |
|                                                                                     | 2x7       | 60                | 15 (2 µF)         | 76          | 18 (2 µF)   | 136                 | 110 (2 µF)      | 210         | 165 (2 µF)  | 50          | 15 (2 µF)   | 50          | 40 (2 µF)   |
|                                                                                     | 9         | 70                | 15 (2 µF)         | 88          | 18 (2 µF)   | 158                 | 110 (2 µF)      | 245         | 165 (2 µF)  | 58          | 15 (2 µF)   | 58          | 40 (2 µF)   |
|                                                                                     | 2x9       | 53                | 15 (2 µF)         | 66          | 18 (2 µF)   | 119                 | 110 (2 µF)      | 184         | 165 (2 µF)  | 44          | 15 (2 µF)   | 44          | 40 (2 µF)   |
|                                                                                     | 10        | 60                | 15 (2 µF)         | 76          | 18 (2 µF)   | 136                 | 110 (2 µF)      | 210         | 165 (2 µF)  | 50          | 15 (2 µF)   | 50          | 40 (2 µF)   |
|                                                                                     | 11        | 53                | 15 (2 µF)         | 66          | 18 (2 µF)   | 119                 | 110 (2 µF)      | 184         | 165 (2 µF)  | 44          | 15 (2 µF)   | 44          | 40 (2 µF)   |
|                                                                                     | 13        | 53                | 15 (2 µF)         | 66          | 18 (2 µF)   | 119                 | 110 (2 µF)      | 184         | 165 (2 µF)  | 44          | 15 (2 µF)   | 44          | 40 (2 µF)   |
|                                                                                     | 16        | 42                | 15 (2 µF)         | 53          | 18 (2 µF)   | 95                  | 110 (2 µF)      | 147         | 165 (2 µF)  | 35          | 15 (2 µF)   | 35          | 40 (2 µF)   |
|                                                                                     | 18        | 35                | 7 (4,5 µF)        | 44          | 8 (4,5 µF)  | 79                  | 49 (4,5 µF)     | 123         | 73 (4,5 µF) | 29          | 7 (4,5 µF)  | 29          | 18 (4,5 µF) |
|                                                                                     | 2x18      | 20                | 7,5 (4 µF)        | 25          | 9 (4 µF)    | 45                  | 55 (4 µF)       | 70          | 82,5 (4 µF) | 17          | 7,5 (4 µF)  | 17          | 20 (4 µF)   |
|                                                                                     | 21        | 35                | 10 (3 µF)         | 44          | 12 (3 µF)   | 79                  | 73 (3 µF)       | 123         | 110 (3 µF)  | 29          | 10 (3 µF)   | 29          | 27 (3 µF)   |
|                                                                                     | 22        | 21                | 7 (4,5 µF)        | 27          | 8 (4,5 µF)  | 48                  | 49 (4,5 µF)     | 74          | 73 (4,5 µF) | 18          | 7 (4,5 µF)  | 18          | 18 (4,5 µF) |
|                                                                                     | 24        | 28                | 7 (4,5 µF)        | 35          | 8 (4,5 µF)  | 63                  | 49 (4,5 µF)     | 98          | 73 (4,5 µF) | 23          | 7 (4,5 µF)  | 23          | 18 (4,5 µF) |
|                                                                                     | 26        | 28                | 7 (4,5 µF)        | 35          | 8 (4,5 µF)  | 63                  | 49 (4,5 µF)     | 98          | 73 (4,5 µF) | 23          | 7 (4,5 µF)  | 23          | 18 (4,5 µF) |
|                                                                                     | 28        | 28                | 9 (4,5 µF)        | 35          | 10 (3,5 µF) | 63                  | 63 (3,5 µF)     | 98          | 94 (3,5 µF) | 23          | 9 (3,5 µF)  | 23          | 23 (3,5 µF) |
|                                                                                     | 32        | 19                | 7,5 (4 µF)        | 24          | 9 (4 µF)    | 43                  | 55 (4 µF)       | 67          | 83 (4 µF)   | 16          | 7,5 (4 µF)  | 16          | 20 (4 µF)   |
|                                                                                     | 36        | 20                | 7 (4,5 µF)        | 25          | 8 (4,5 µF)  | 45                  | 49 (4,5 µF)     | 70          | 73 (4,5 µF) | 17          | 7 (4,5 µF)  | 17          | 18 (4,5 µF) |
|                                                                                     | 38        | 20                | 7 (4,5 µF)        | 25          | 8 (4,5 µF)  | 45                  | 49 (4,5 µF)     | 70          | 73 (4,5 µF) | 17          | 7 (4,5 µF)  | 17          | 18 (4,5 µF) |
|                                                                                     | 40        | 20                | 7 (4,5 µF)        | 25          | 8 (4,5 µF)  | 45                  | 49 (4,5 µF)     | 70          | 73 (4,5 µF) | 17          | 7 (4,5 µF)  | 17          | 18 (4,5 µF) |
|                                                                                     | 58        | 13                | 4 (7 µF)          | 17          | 5 (7 µF)    | 30                  | 31 (7 µF)       | 46          | 47 (7 µF)   | 11          | 4 (7 µF)    | 11          | 11 (7 µF)   |

## MODULAR ACCESSORIES

| MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ                                        |           |                   |                   |        |        |                     |                 |
|-------------------------------------------------------------------------------------|-----------|-------------------|-------------------|--------|--------|---------------------|-----------------|
|                                                                                     |           | CONTACTORS        |                   |        |        | INSTALLATION RELAYS | LATCHING RELAYS |
| Lamp type                                                                           | Power (W) | CTR 20<br>CTRM 20 | CTR 25<br>CTRM 25 | CTR 40 | CTR 63 | RLM                 | RLB             |
| COMPACT FLUORESCENT WITH EXTERNAL ELECTRONIC BALLAST                                |           |                   |                   |        |        |                     |                 |
|  | 5         | 75                | 105               | 300    | 417    | 67                  | 100             |
|                                                                                     | 7         | 56                | 79                | 225    | 313    | 50                  | 75              |
|                                                                                     | 9         | 45                | 63                | 180    | 250    | 40                  | 60              |
|                                                                                     | 2x9       | 25                | 35                | 100    | 139    | 22                  | 33              |
|                                                                                     | 10        | 45                | 63                | 180    | 250    | 40                  | 60              |
|                                                                                     | 2x10      | 25                | 35                | 100    | 139    | 22                  | 33              |
|                                                                                     | 11        | 32                | 45                | 129    | 179    | 29                  | 43              |
|                                                                                     | 2x11      | 19                | 26                | 75     | 104    | 17                  | 25              |
|                                                                                     | 13        | 32                | 45                | 129    | 179    | 29                  | 43              |
|                                                                                     | 2x13      | 19                | 26                | 75     | 104    | 17                  | 25              |
|                                                                                     | 14        | 28                | 39                | 113    | 156    | 25                  | 38              |
|                                                                                     | 2x14      | 15                | 21                | 60     | 83     | 13                  | 20              |
|                                                                                     | 16        | 32                | 45                | 129    | 179    | 29                  | 43              |
|                                                                                     | 17        | 23                | 32                | 90     | 125    | 20                  | 30              |
|                                                                                     | 2x17      | 13                | 18                | 50     | 69     | 11                  | 17              |
|                                                                                     | 18        | 25                | 35                | 100    | 139    | 22                  | 33              |
|                                                                                     | 2x18      | 13                | 19                | 53     | 74     | 12                  | 18              |
|                                                                                     | 22        | 17                | 24                | 69     | 96     | 15                  | 23              |
|                                                                                     | 2x22      | 11                | 15                | 43     | 60     | 10                  | 14              |
|                                                                                     | 24        | 19                | 26                | 75     | 104    | 17                  | 25              |
|                                                                                     | 2x24      | 10                | 14                | 39     | 54     | 9                   | 13              |
|                                                                                     | 3x24      | 7                 | 10                | 28     | 39     | 6                   | 9               |
|                                                                                     | 4x24      | 5                 | 7                 | 21     | 29     | 5                   | 7               |
|                                                                                     | 26        | 19                | 26                | 75     | 104    | 17                  | 25              |
|                                                                                     | 2x26      | 9                 | 13                | 38     | 52     | 8                   | 13              |
|                                                                                     | 28        | 16                | 23                | 64     | 89     | 14                  | 21              |
|                                                                                     | 32        | 14                | 20                | 56     | 78     | 13                  | 19              |
|                                                                                     | 2x32      | 7                 | 10                | 29     | 40     | 6                   | 10              |
|                                                                                     | 36        | 14                | 20                | 56     | 78     | 13                  | 19              |
|                                                                                     | 2x36      | 7                 | 10                | 29     | 40     | 6                   | 10              |
|                                                                                     | 38        | 13                | 19                | 53     | 74     | 12                  | 18              |
|                                                                                     | 2x38      | 6                 | 9                 | 26     | 36     | 6                   | 9               |
|                                                                                     | 40        | 11                | 16                | 45     | 63     | 10                  | 15              |
|                                                                                     | 2x40      | 6                 | 8                 | 23     | 32     | 5                   | 8               |
|                                                                                     | 42        | 11                | 16                | 45     | 63     | 10                  | 15              |
|                                                                                     | 2x42      | 5                 | 8                 | 22     | 30     | 5                   | 7               |
|                                                                                     | 55        | 8                 | 12                | 33     | 46     | 7                   | 11              |
|                                                                                     | 2x55      | 4                 | 6                 | 17     | 24     | 4                   | 6               |
|                                                                                     | 57        | 8                 | 11                | 32     | 45     | 7                   | 11              |
|                                                                                     | 2x57      | 4                 | 6                 | 16     | 22     | 4                   | 5               |
|                                                                                     | 60        | 7                 | 10                | 29     | 40     | 6                   | 10              |
|                                                                                     | 2x60      | 4                 | 5                 | 15     | 20     | 3                   | 5               |
|                                                                                     | 70        | 7                 | 9                 | 26     | 37     | 6                   | 9               |
|                                                                                     | 80        | 6                 | 8                 | 24     | 33     | 5                   | 8               |
|                                                                                     | 2x80      | 3                 | 4                 | 12     | 16     | 3                   | 4               |
|                                                                                     | 85        | 5                 | 8                 | 21     | 30     | 5                   | 7               |
|                                                                                     | 100       | 5                 | 7                 | 20     | 27     | 4                   | 7               |
|                                                                                     | 120       | 4                 | 5                 | 16     | 22     | 3                   | 5               |
|                                                                                     | 150       | 3                 | 5                 | 13     | 18     | 3                   | 4               |

## MODULAR ACCESSORIES

| MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ                                        |           |                   |             |                   |             |             |             |             |              |                     |             |                 |             |
|-------------------------------------------------------------------------------------|-----------|-------------------|-------------|-------------------|-------------|-------------|-------------|-------------|--------------|---------------------|-------------|-----------------|-------------|
|                                                                                     |           | CONTACTORS        |             |                   |             |             |             |             |              | INSTALLATION RELAYS |             | LATCHING RELAYS |             |
| Lamp type                                                                           | Power (W) | CTR 20<br>CTRM 20 |             | CTR 25<br>CTRM 25 |             | CTR 40      |             | CTR 63      |              | RLM                 |             | RLB             |             |
| COMPACT FLUORESCENT WITH EXTERNAL ELECTROMAGNETIC BALLAST                           |           |                   |             |                   |             |             |             |             |              |                     |             |                 |             |
|    |           | UNCORRECTED       | IN PARALLEL | UNCORRECTED       | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL  | UNCORRECTED         | IN PARALLEL | UNCORRECTED     | IN PARALLEL |
|                                                                                     | 4         | 52                | 15 (2 µF)   | 66                | 18 (2 µF)   | 118         | 110 (2 µF)  | 188         | 165 (2 µF)   | 52                  | 15 (2 µF)   | 94              | 40 (2 µF)   |
|                                                                                     | 6         | 55                | 15 (2 µF)   | 70                | 18 (2 µF)   | 125         | 110 (2 µF)  | 200         | 165 (2 µF)   | 55                  | 15 (2 µF)   | 100             | 40 (2 µF)   |
|                                                                                     | 8         | 59                | 15 (2 µF)   | 75                | 18 (2 µF)   | 133         | 110 (2 µF)  | 213         | 165 (2 µF)   | 59                  | 15 (2 µF)   | 107             | 40 (2 µF)   |
|                                                                                     | 10        | 52                | 15 (2 µF)   | 66                | 18 (2 µF)   | 118         | 110 (2 µF)  | 188         | 165 (2 µF)   | 52                  | 15 (2 µF)   | 94              | 40 (2 µF)   |
|                                                                                     | 11        | 55                | 15 (2 µF)   | 70                | 18 (2 µF)   | 125         | 110 (2 µF)  | 200         | 165 (2 µF)   | 55                  | 15 (2 µF)   | 100             | 40 (2 µF)   |
|                                                                                     | 13        | 52                | 15 (2 µF)   | 66                | 18 (2 µF)   | 118         | 110 (2 µF)  | 188         | 165 (2 µF)   | 52                  | 15 (2 µF)   | 94              | 40 (2 µF)   |
|                                                                                     | 14        | 22                | 7 (4,5 µF)  | 28                | 8 (4,5 µF)  | 50          | 49 (4,5 µF) | 80          | 73 (4,5 µF)  | 22                  | 7 (4,5 µF)  | 40              | 18 (4,5 µF) |
|                                                                                     | 15        | 27                | 7 (4,5 µF)  | 34                | 8 (4,5 µF)  | 61          | 49 (4,5 µF) | 97          | 73 (4,5 µF)  | 27                  | 7 (4,5 µF)  | 48              | 18 (4,5 µF) |
|                                                                                     | 16        | 44                | 12 (2,5 µF) | 56                | 14 (2,5 µF) | 100         | 88 (2,5 µF) | 160         | 132 (2,5 µF) | 44                  | 12 (2,5 µF) | 80              | 32 (2,5 µF) |
|                                                                                     | 18        | 24                | 7 (4,5 µF)  | 30                | 8 (4,5 µF)  | 54          | 49 (4,5 µF) | 86          | 73 (4,5 µF)  | 24                  | 7 (4,5 µF)  | 43              | 18 (4,5 µF) |
|                                                                                     | 20        | 23                | 7 (4,5 µF)  | 29                | 8 (4,5 µF)  | 53          | 49 (4,5 µF) | 84          | 73 (4,5 µF)  | 23                  | 7 (4,5 µF)  | 42              | 18 (4,5 µF) |
|                                                                                     | 22        | 24                | 6 (5 µF)    | 30                | 7 (5 µF)    | 54          | 44 (5 µF)   | 86          | 66 (5 µF)    | 24                  | 6 (5 µF)    | 43              | 16 (5 µF)   |
|                                                                                     | 25        | 30                | 9 (3,5 µF)  | 39                | 10 (3,5 µF) | 69          | 63 (3,5 µF) | 110         | 94 (3,5 µF)  | 30                  | 9 (3,5 µF)  | 55              | 23 (3,5 µF) |
|                                                                                     | 30        | 24                | 7 (4,5 µF)  | 30                | 8 (4,5 µF)  | 54          | 49 (4,5 µF) | 86          | 73 (4,5 µF)  | 24                  | 7 (4,5 µF)  | 43              | 18 (4,5 µF) |
|                                                                                     | 32        | 20                | 6 (5 µF)    | 26                | 7 (5 µF)    | 47          | 44 (5 µF)   | 74          | 66 (5 µF)    | 20                  | 6 (5 µF)    | 37              | 16 (5 µF)   |
|                                                                                     | 36        | 20                | 7 (4,5 µF)  | 26                | 8 (4,5 µF)  | 47          | 49 (4,5 µF) | 74          | 73 (4,5 µF)  | 20                  | 7 (4,5 µF)  | 37              | 18 (4,5 µF) |
|                                                                                     | 38        | 20                | 7 (4,5 µF)  | 26                | 8 (4,5 µF)  | 47          | 49 (4,5 µF) | 74          | 73 (4,5 µF)  | 20                  | 7 (4,5 µF)  | 37              | 18 (4,5 µF) |
|                                                                                     | 40        | 20                | 7 (4,5 µF)  | 26                | 8 (4,5 µF)  | 47          | 49 (4,5 µF) | 74          | 73 (4,5 µF)  | 20                  | 7 (4,5 µF)  | 37              | 18 (4,5 µF) |
|                                                                                     | 58        | 13                | 4 (7 µF)    | 17                | 5 (7 µF)    | 30          | 31 (7 µF)   | 48          | 47 (7 µF)    | 13                  | 4 (7 µF)    | 24              | 11 (7 µF)   |
|                                                                                     | 65        | 13                | 4 (7 µF)    | 17                | 5 (7 µF)    | 30          | 31 (7 µF)   | 48          | 47 (7 µF)    | 13                  | 4 (7 µF)    | 24              | 11 (7 µF)   |
|                                                                                     | 75        | 13                | 5 (6 µF)    | 17                | 6 (6 µF)    | 30          | 37 (6 µF)   | 48          | 55 (6 µF)    | 13                  | 5 (6 µF)    | 24              | 13 (6 µF)   |
|                                                                                     | 80        | 11                | 4 (7 µF)    | 14                | 5 (7 µF)    | 25          | 31 (7 µF)   | 40          | 47 (7 µF)    | 11                  | 4 (7 µF)    | 20              | 11 (7 µF)   |
|                                                                                     | 85        | 11                | 4 (8 µF)    | 14                | 5 (8 µF)    | 25          | 28 (8 µF)   | 40          | 41 (8 µF)    | 11                  | 4 (8 µF)    | 20              | 10 (8 µF)   |
|                                                                                     | 100       | 9                 | 3 (10 µF)   | 12                | 4 (10 µF)   | 21          | 22 (10 µF)  | 33          | 33 (10 µF)   | 9                   | 3 (10 µF)   | 17              | 8 (10 µF)   |
|                                                                                     | 125       | 9                 | 2 (18 µF)   | 12                | 2 (18 µF)   | 21          | 12 (18 µF)  | 34          | 18 (18 µF)   | 9                   | 2 (18 µF)   | 17              | 4 (18 µF)   |
| SERIES CIRCUIT FOR TWO FLUORESCENT LAMPS WITH EXTERNAL ELECTROMAGNETIC BALLAST      |           |                   |             |                   |             |             |             |             |              |                     |             |                 |             |
|  |           | UNCORRECTED       | IN PARALLEL | UNCORRECTED       | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL  | UNCORRECTED         | IN PARALLEL | UNCORRECTED     | IN PARALLEL |
|                                                                                     | 2x4       | 26                | 15 (2 µF)   | 33                | 18 (2 µF)   | 59          | 110 (2 µF)  | 94          | 165 (2 µF)   | 26                  | 15 (2 µF)   | 47              | 40 (2 µF)   |
|                                                                                     | 2x6       | 28                | 15 (2 µF)   | 35                | 18 (2 µF)   | 63          | 110 (2 µF)  | 100         | 165 (2 µF)   | 28                  | 15 (2 µF)   | 50              | 40 (2 µF)   |
|                                                                                     | 2x8       | 29                | 15 (2 µF)   | 37                | 18 (2 µF)   | 67          | 110 (2 µF)  | 107         | 165 (2 µF)   | 29                  | 15 (2 µF)   | 53              | 40 (2 µF)   |
|                                                                                     | 2x10      | 26                | 15 (2 µF)   | 33                | 18 (2 µF)   | 59          | 110 (2 µF)  | 94          | 165 (2 µF)   | 26                  | 15 (2 µF)   | 47              | 40 (2 µF)   |
|                                                                                     | 2x11      | 28                | 15 (2 µF)   | 35                | 18 (2 µF)   | 63          | 110 (2 µF)  | 100         | 165 (2 µF)   | 28                  | 15 (2 µF)   | 50              | 40 (2 µF)   |
|                                                                                     | 2x13      | 26                | 15 (2 µF)   | 33                | 18 (2 µF)   | 59          | 110 (2 µF)  | 94          | 165 (2 µF)   | 26                  | 15 (2 µF)   | 47              | 40 (2 µF)   |
|                                                                                     | 2x14      | 11                | 7 (4,5 µF)  | 14                | 8 (4,5 µF)  | 25          | 49 (4,5 µF) | 40          | 73 (4,5 µF)  | 11                  | 7 (4,5 µF)  | 20              | 18 (4,5 µF) |
|                                                                                     | 2x15      | 13                | 7 (4,5 µF)  | 17                | 8 (4,5 µF)  | 30          | 49 (4,5 µF) | 48          | 73 (4,5 µF)  | 13                  | 7 (4,5 µF)  | 24              | 18 (4,5 µF) |
|                                                                                     | 2x16      | 22                | 12 (2,5 µF) | 28                | 14 (2,5 µF) | 50          | 88 (2,5 µF) | 80          | 132 (2,5 µF) | 22                  | 12 (2,5 µF) | 40              | 32 (2,5 µF) |
|                                                                                     | 2x18      | 12                | 7 (4,5 µF)  | 15                | 8 (4,5 µF)  | 27          | 49 (4,5 µF) | 43          | 73 (4,5 µF)  | 12                  | 7 (4,5 µF)  | 22              | 18 (4,5 µF) |
|                                                                                     | 2x20      | 12                | 7 (4,5 µF)  | 15                | 8 (4,5 µF)  | 26          | 49 (4,5 µF) | 42          | 73 (4,5 µF)  | 12                  | 7 (4,5 µF)  | 21              | 18 (4,5 µF) |
|                                                                                     | 2x22      | 12                | 6 (5 µF)    | 15                | 7,2 (5 µF)  | 27          | 44 (5 µF)   | 43          | 66 (5 µF)    | 12                  | 6 (5 µF)    | 22              | 16 (5 µF)   |
|                                                                                     | 2x25      | 15                | 9 (3,5 µF)  | 19                | 10 (3,5 µF) | 34          | 63 (3,5 µF) | 55          | 94 (3,5 µF)  | 15                  | 9 (3,5 µF)  | 28              | 23 (3,5 µF) |
|                                                                                     | 2x30      | 12                | 7 (4,5 µF)  | 15                | 8 (4,5 µF)  | 27          | 49 (4,5 µF) | 43          | 73 (4,5 µF)  | 12                  | 7 (4,5 µF)  | 22              | 18 (4,5 µF) |
|                                                                                     | 2x32      | 10                | 6 (5 µF)    | 13                | 7 (5 µF)    | 23          | 44 (5 µF)   | 37          | 66 (5 µF)    | 10                  | 6 (5 µF)    | 19              | 16 (5 µF)   |
|                                                                                     | 2x36      | 10                | 7 (4,5 µF)  | 13                | 8 (4,5 µF)  | 23          | 49 (4,5 µF) | 37          | 73 (4,5 µF)  | 10                  | 7 (4,5 µF)  | 19              | 18 (4,5 µF) |
|                                                                                     | 2x38      | 10                | 7 (4,5 µF)  | 13                | 8 (4,5 µF)  | 23          | 49 (4,5 µF) | 37          | 73 (4,5 µF)  | 10                  | 7 (4,5 µF)  | 19              | 18 (4,5 µF) |
|                                                                                     | 2x40      | 10                | 7 (4,5 µF)  | 13                | 8 (4,5 µF)  | 23          | 49 (4,5 µF) | 37          | 73 (4,5 µF)  | 10                  | 7 (4,5 µF)  | 19              | 18 (4,5 µF) |
|                                                                                     | 2x58      | 7                 | 4 (7 µF)    | 8                 | 5 (7 µF)    | 15          | 31 (7 µF)   | 24          | 47 (7 µF)    | 7                   | 4 (7 µF)    | 12              | 11 (7 µF)   |
|                                                                                     | 2x65      | 7                 | 4 (7µF)     | 8                 | 5 (7µF)     | 15          | 31 (7µF)    | 24          | 47 (7µF)     | 7                   | 4 (7µF)     | 12              | 11 (7µF)    |
|                                                                                     | 2x75      | 7                 | 5 (6 µF)    | 8                 | 6 (6 µF)    | 15          | 37 (6 µF)   | 24          | 55 (6 µF)    | 7                   | 5 (6 µF)    | 12              | 13 (6 µF)   |
|                                                                                     | 2x80      | 6                 | 4 (7 µF)    | 7                 | 5 (7 µF)    | 13          | 31 (7 µF)   | 20          | 47 (7 µF)    | 6                   | 4 (7 µF)    | 10              | 11 (7 µF)   |
|                                                                                     | 2x85      | 6                 | 4 (8 µF)    | 7                 | 5 (8 µF)    | 13          | 28 (8 µF)   | 20          | 41 (8 µF)    | 6                   | 4 (8 µF)    | 10              | 10 (8 µF)   |
|                                                                                     | 2x100     | 5                 | 3 (10 µF)   | 6                 | 4 (10 µF)   | 10          | 22 (10 µF)  | 17          | 33 (10 µF)   | 5                   | 3 (10 µF)   | 8               | 8 (10 µF)   |
|                                                                                     | 2x125     | 5                 | 2 (18 µF)   | 6                 | 2 (18 µF)   | 11          | 12 (18 µF)  | 17          | 18 (18 µF)   | 5                   | 2 (18 µF)   | 9               | 4 (18 µF)   |

## MODULAR ACCESSORIES

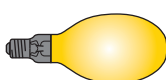
| MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ                                                     |           |                   |                   |              |              |                     |                 |
|--------------------------------------------------------------------------------------------------|-----------|-------------------|-------------------|--------------|--------------|---------------------|-----------------|
|                                                                                                  |           | CONTACTORS        |                   |              |              | INSTALLATION RELAYS | LATCHING RELAYS |
| Lamp type                                                                                        | Power (W) | CTR 20<br>CTRM 20 | CTR 25<br>CTRM 25 | CTR 40       | CTR 63       | RLM                 | RLB             |
| LEAD-LAG CIRCUIT FOR FLUORESCENT LAMPS WITH EXTERNAL ELECTROMAGNETIC BALLASTS - SERIES CORRECTED |           |                   |                   |              |              |                     |                 |
|                 | 2x18      | 31 (2,7 µF)       | 40 (2,7 µF)       | 100 (2,7 µF) | 150 (2,7 µF) | 31 (2,7 µF)         | 62 (2,7 µF)     |
|                                                                                                  | 2x36      | 17 (4,5 µF)       | 22 (4,5 µF)       | 54 (4,5 µF)  | 81 (4,5 µF)  | 17 (4,5 µF)         | 33 (4,5 µF)     |
|                                                                                                  | 2x40      | 17 (4,5 µF)       | 22 (4,5 µF)       | 54 (4,5 µF)  | 81 (4,5 µF)  | 17 (4,5 µF)         | 33 (4,5 µF)     |
|                                                                                                  | 2x58      | 10 (7 µF)         | 13 (7 µF)         | 54 (7 µF)    | 50 (7 µF)    | 10 (7 µF)           | 21 (7 µF)       |
|                                                                                                  | 2x65      | 10 (7 µF)         | 13 (7 µF)         | 33 (7 µF)    | 50 (7 µF)    | 10 (7 µF)           | 21 (7 µF)       |
|                                                                                                  | 2x80      | 8 (9 µF)          | 11 (9 µF)         | 27 (9 µF)    | 41 (9 µF)    | 8 (9 µF)            | 17 (9 µF)       |
|                                                                                                  | 2x85      | 8 (9 µF)          | 11 (9 µF)         | 27 (9 µF)    | 41 (9 µF)    | 8 (9 µF)            | 17 (9 µF)       |
|                                                                                                  | 2x125     | 7 (18 µF)         | 9 (18 µF)         | 22 (18 µF)   | 33 (18 µF)   | 6 (18 µF)           | 13 (18 µF)      |
| FLUORESCENT WITH ELECTRONIC EXTERNAL BALLAST                                                     |           |                   |                   |              |              |                     |                 |
|               | 4         | 117               | 158               | 417          | 600          | 67                  | 100             |
|                                                                                                  | 6         | 106               | 144               | 379          | 545          | 61                  | 91              |
|                                                                                                  | 2x6       | 58                | 79                | 208          | 300          | 33                  | 50              |
|                                                                                                  | 8         | 88                | 119               | 313          | 450          | 50                  | 75              |
|                                                                                                  | 2x8       | 44                | 59                | 156          | 225          | 25                  | 38              |
|                                                                                                  | 10        | 70                | 95                | 250          | 360          | 40                  | 60              |
|                                                                                                  | 2x10      | 39                | 53                | 139          | 200          | 22                  | 33              |
|                                                                                                  | 11        | 58                | 79                | 208          | 300          | 33                  | 50              |
|                                                                                                  | 13        | 50                | 68                | 179          | 257          | 29                  | 43              |
|                                                                                                  | 14        | 44                | 59                | 156          | 225          | 25                  | 38              |
|                                                                                                  | 2x14      | 23                | 32                | 83           | 120          | 13                  | 20              |
|                                                                                                  | 3x14      | 17                | 23                | 60           | 86           | 10                  | 14              |
|                                                                                                  | 4x14      | 13                | 17                | 45           | 64           | 7                   | 11              |
|                                                                                                  | 15        | 44                | 59                | 156          | 225          | 25                  | 38              |
|                                                                                                  | 2x15      | 27                | 37                | 96           | 138          | 15                  | 23              |
|                                                                                                  | 16        | 50                | 68                | 179          | 257          | 29                  | 43              |
|                                                                                                  | 2x16      | 25                | 34                | 89           | 129          | 14                  | 21              |
|                                                                                                  | 3x16      | 18                | 24                | 63           | 90           | 10                  | 15              |
|                                                                                                  | 4x16      | 13                | 17                | 45           | 64           | 7                   | 11              |
|                                                                                                  | 18        | 39                | 53                | 139          | 200          | 22                  | 33              |
|                                                                                                  | 2x18      | 21                | 28                | 74           | 106          | 12                  | 18              |
|                                                                                                  | 3x18      | 15                | 20                | 52           | 75           | 8                   | 13              |
|                                                                                                  | 4x18      | 11                | 15                | 40           | 58           | 6                   | 10              |
|                                                                                                  | 19        | 32                | 43                | 114          | 164          | 18                  | 27              |
|                                                                                                  | 2x19      | 16                | 22                | 57           | 82           | 9                   | 14              |
|                                                                                                  | 20        | 32                | 43                | 114          | 164          | 18                  | 27              |
|                                                                                                  | 2x20      | 16                | 22                | 57           | 82           | 9                   | 14              |
|                                                                                                  | 21        | 32                | 43                | 114          | 164          | 18                  | 27              |
|                                                                                                  | 2x21      | 16                | 22                | 57           | 82           | 9                   | 14              |
|                                                                                                  | 22        | 32                | 43                | 114          | 164          | 18                  | 27              |
|                                                                                                  | 2x22      | 15                | 21                | 54           | 78           | 9                   | 13              |
|                                                                                                  | 24        | 29                | 40                | 104          | 150          | 17                  | 25              |
|                                                                                                  | 2x24      | 16                | 22                | 57           | 82           | 9                   | 14              |
|                                                                                                  | 3x24      | 11                | 14                | 38           | 55           | 6                   | 9               |
|                                                                                                  | 4x24      | 8                 | 11                | 29           | 42           | 5                   | 7               |
|                                                                                                  | 25        | 23                | 32                | 83           | 120          | 13                  | 20              |
|                                                                                                  | 2x25      | 13                | 17                | 45           | 64           | 7                   | 11              |
|                                                                                                  | 28        | 25                | 34                | 89           | 129          | 14                  | 21              |
|                                                                                                  | 2x28      | 13                | 18                | 46           | 67           | 7                   | 11              |
|                                                                                                  | 30        | 25                | 34                | 89           | 129          | 14                  | 21              |
|                                                                                                  | 2x30      | 13                | 18                | 46           | 67           | 7                   | 11              |
|                                                                                                  | 32        | 21                | 28                | 74           | 106          | 12                  | 18              |
|                                                                                                  | 2x32      | 10                | 14                | 36           | 51           | 6                   | 9               |
|                                                                                                  | 34        | 21                | 28                | 74           | 106          | 12                  | 18              |
|                                                                                                  | 2x34      | 10                | 14                | 36           | 51           | 6                   | 9               |
|                                                                                                  | 35        | 21                | 28                | 74           | 106          | 12                  | 18              |

## MODULAR ACCESSORIES

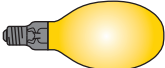
## MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ

| Lamp type                                                                         | Power (W) | CONTACTORS        |                   |        |        | INSTALLATION RELAYS | LATCHING RELAYS |
|-----------------------------------------------------------------------------------|-----------|-------------------|-------------------|--------|--------|---------------------|-----------------|
|                                                                                   |           | CTR 20<br>CTRM 20 | CTR 25<br>CTRM 25 | CTR 40 | CTR 63 | RLM                 | RLB             |
|  | 2x35      | 10                | 14                | 37     | 53     | 6                   | 9               |
|                                                                                   | 36        | 22                | 30                | 78     | 113    | 13                  | 19              |
|                                                                                   | 2x36      | 11                | 15                | 40     | 58     | 6                   | 10              |
|                                                                                   | 3x36      | 8                 | 10                | 27     | 39     | 4                   | 7               |
|                                                                                   | 38        | 23                | 32                | 83     | 120    | 13                  | 20              |
|                                                                                   | 2x38      | 11                | 15                | 40     | 58     | 6                   | 10              |
|                                                                                   | 39        | 18                | 25                | 66     | 95     | 11                  | 16              |
|                                                                                   | 2x39      | 10                | 13                | 35     | 50     | 6                   | 8               |
|                                                                                   | 40        | 17                | 23                | 60     | 86     | 10                  | 14              |
|                                                                                   | 2x40      | 8                 | 11                | 30     | 43     | 5                   | 7               |
|                                                                                   | 45        | 15                | 20                | 52     | 75     | 8                   | 13              |
|                                                                                   | 2x45      | 8                 | 10                | 27     | 39     | 4                   | 7               |
|                                                                                   | 49        | 15                | 20                | 52     | 75     | 8                   | 13              |
|                                                                                   | 2x49      | 8                 | 10                | 27     | 39     | 4                   | 7               |
|                                                                                   | 50        | 14                | 19                | 50     | 72     | 8                   | 12              |
|                                                                                   | 2x50      | 7                 | 10                | 26     | 38     | 4                   | 6               |
|                                                                                   | 51        | 16                | 22                | 57     | 82     | 9                   | 14              |
|                                                                                   | 2x51      | 8                 | 11                | 30     | 43     | 5                   | 7               |
|                                                                                   | 54        | 13                | 18                | 48     | 69     | 8                   | 12              |
|                                                                                   | 2x54      | 7                 | 9                 | 24     | 35     | 4                   | 6               |
|                                                                                   | 55        | 13                | 17                | 45     | 64     | 7                   | 11              |
|                                                                                   | 2x55      | 6                 | 9                 | 23     | 33     | 4                   | 5               |
|                                                                                   | 58        | 14                | 19                | 50     | 72     | 8                   | 12              |
|                                                                                   | 2x58      | 7                 | 10                | 26     | 38     | 4                   | 6               |
|                                                                                   | 65        | 14                | 19                | 50     | 72     | 8                   | 12              |
|                                                                                   | 2x65      | 7                 | 10                | 26     | 38     | 4                   | 6               |
|                                                                                   | 70        | 12                | 16                | 42     | 60     | 7                   | 10              |
|                                                                                   | 2x70      | 6                 | 8                 | 22     | 32     | 4                   | 5               |
|                                                                                   | 73        | 9                 | 13                | 33     | 47     | 5                   | 8               |
|                                                                                   | 2x73      | 5                 | 7                 | 18     | 26     | 3                   | 4               |
|                                                                                   | 80        | 9                 | 12                | 31     | 45     | 5                   | 8               |
|                                                                                   | 2x80      | 5                 | 6                 | 16     | 24     | 3                   | 4               |

## HIGH-PRESSURE MERCURY-VAPOR WITH EXTERNAL ELECTROMAGNETIC BALLAST

| HIGH-PRESSURE MERCURY-VAPOR WITH EXTERNAL ELECTROMAGNETIC BALLAST                   |      |             |             |             |             |             |             |             |             |             |             |             |             |
|-------------------------------------------------------------------------------------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                                                                     |      | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL |
|  | 50   | 14          | 4 (7 µF)    | 18          | 5 (7 µF)    | 38          | 31 (7 µF)   | 55          | 47 (7 µF)   | 14          | 4 (7 µF)    | 17          | 11 (7 µF)   |
|                                                                                     | 80   | 10          | 4 (8 µF)    | 13          | 5 (8 µF)    | 29          | 27 (8 µF)   | 42          | 41 (8 µF)   | 10          | 4 (8 µF)    | 13          | 10 (8 µF)   |
|                                                                                     | 125  | 7           | 3 (10 µF)   | 9           | 4 (10 µF)   | 20          | 22 (10 µF)  | 29          | 33 (10 µF)  | 7           | 3 (10 µF)   | 8           | 8 (10 µF)   |
|                                                                                     | 250  | 4           | 1 (18 µF)   | 5           | 2 (18 µF)   | 10          | 12 (18 µF)  | 15          | 18 (18 µF)  | 4           | 1 (18 µF)   | 5           | 4 (18 µF)   |
|                                                                                     | 400  | 2           | 1 (25 µF)   | 3           | 1 (25 µF)   | 7           | 9 (25 µF)   | 10          | 13 (25 µF)  | 2           | 1 (25 µF)   | 3           | 3 (25 µF)   |
|                                                                                     | 700  | 1           | 0 (40 µF)   | 2           | 0 (40 µF)   | 4           | 5 (40 µF)   | 6           | 7 (40 µF)   | 1           | 0 (40 µF)   | 2           | 2 (40 µF)   |
|                                                                                     | 1000 | 1           | 0 (60 µF)   | 1           | 0 (60 µF)   | 3           | 4 (60 µF)   | 4           | 5 (60 µF)   | 1           | 0 (60 µF)   | 1           | 1 (60 µF)   |

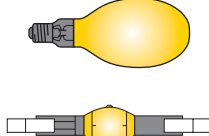
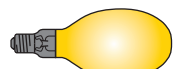
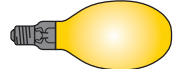
## HIGH-PRESSURE MERCURY-VAPOR WITHOUT BALLAST

|                                                                                     | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL |
|-------------------------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|  | 160         | 11          |             | 12          |             | 22          |             | 28          |             | 10          |             | 10          |
|                                                                                     | 250         | 7           |             | 8           |             | 15          |             | 18          |             | 6           |             | 6           |
|                                                                                     | 500         | 4           |             | 4           |             | 7           |             | 9           |             | 3           |             | 3           |

## METAL HALIDE WITH EXTERNAL ELECTROMAGNETIC BALLAST

|                                                                                                                                                                            |      | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <br> | 35   | 18          | 5 (6 µF)    | 22          | 6 (6 µF)    | 43          | 36 (6 µF)   | 60          | 50 (6 µF)   | 16          | 5 (6 µF)    | 16          | 13 (6 µF)   |
|                                                                                                                                                                            | 70   | 10          | 2 (12 µF)   | 12          | 3 (12 µF)   | 23          | 18 (12 µF)  | 32          | 25 (12 µF)  | 8           | 2 (12 µF)   | 8           | 7 (12 µF)   |
|                                                                                                                                                                            | 100  | 8           | 2 (12 µF)   | 10          | 3 (12 µF)   | 19          | 18 (12 µF)  | 26          | 25 (12 µF)  | 7           | 2 (12 µF)   | 7           | 7 (12 µF)   |
|                                                                                                                                                                            | 150  | 5           | 1 (20 µF)   | 7           | 1 (20 µF)   | 12          | 11 (20 µF)  | 18          | 15 (20 µF)  | 4           | 1 (20 µF)   | 4           | 4 (20 µF)   |
|                                                                                                                                                                            | 250  | 3           | 0 (32 µF)   | 4           | 1 (32 µF)   | 7           | 6 (32 µF)   | 10          | 9 (32 µF)   | 3           | 0 (32 µF)   | 3           | 3 (32 µF)   |
|                                                                                                                                                                            | 400  | 3           | 0 (45 µF)   | 3           | 0 (45 µF)   | 6           | 5 (45 µF)   | 9           | 7 (45 µF)   | 2           | 0 (45 µF)   | 2           | 2 (45 µF)   |
|                                                                                                                                                                            | 600  | 1           | 0 (65 µF)   | 2           | 0 (65 µF)   | 3           | 3 (65 µF)   | 4           | 5 (65 µF)   | 1           | 0 (65 µF)   | 1           | 1 (65 µF)   |
|                                                                                                                                                                            | 1000 | 1           | 0 (85 µF)   | 1           | 0 (85 µF)   | 2           | 2 (85 µF)   | 3           | 3 (85 µF)   | 1           | 0 (85 µF)   | 1           | 0 (85 µF)   |
|                                                                                                                                                                            | 2000 | 0           | 0 (125 µF)  | 0           | 0 (125 µF)  | 1           | 1 (125 µF)  | 2           | 2 (125 µF)  | 0           | 0 (125 µF)  | 0           | 0 (125 µF)  |

## MODULAR ACCESSORIES

| MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ                                        |           |                   |                   |             |             |                     |                 |             |             |             |             |             |             |
|-------------------------------------------------------------------------------------|-----------|-------------------|-------------------|-------------|-------------|---------------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                                                                     |           | CONTACTORS        |                   |             |             | INSTALLATION RELAYS | LATCHING RELAYS |             |             |             |             |             |             |
| Lamp type                                                                           | Power (W) | CTR 20<br>CTRM 20 | CTR 25<br>CTRM 25 | CTR 40      | CTR 63      | RLM                 | RLB             |             |             |             |             |             |             |
| METAL HALIDE WITH EXTERNAL ELECTRONIC BALLAST                                       |           |                   |                   |             |             |                     |                 |             |             |             |             |             |             |
|    | 20        | 18                | 25                | 51          | 64          | 18                  | 27              |             |             |             |             |             |             |
|                                                                                     | 35        | 10                | 13                | 27          | 33          | 10                  | 14              |             |             |             |             |             |             |
|                                                                                     | 2x35      | 5                 | 7                 | 15          | 18          | 5                   | 8               |             |             |             |             |             |             |
|                                                                                     | 50        | 7                 | 10                | 19          | 24          | 7                   | 10              |             |             |             |             |             |             |
|                                                                                     | 70        | 5                 | 7                 | 15          | 18          | 5                   | 8               |             |             |             |             |             |             |
|                                                                                     | 2x70      | 3                 | 4                 | 8           | 10          | 3                   | 4               |             |             |             |             |             |             |
|                                                                                     | 100       | 4                 | 5                 | 10          | 13          | 4                   | 5               |             |             |             |             |             |             |
|                                                                                     | 150       | 3                 | 4                 | 8           | 10          | 3                   | 4               |             |             |             |             |             |             |
|                                                                                     | 250       | 2                 | 2                 | 4           | 5           | 2                   | 2               |             |             |             |             |             |             |
|                                                                                     | 400       | 1                 | 1                 | 2           | 3           | 1                   | 1               |             |             |             |             |             |             |
|                                                                                     | 1000      | 0                 | 0                 | 1           | 1           | 0                   | 0               |             |             |             |             |             |             |
| 2000                                                                                | 0         | 0                 | 0                 | 1           | 0           | 0                   |                 |             |             |             |             |             |             |
| HIGH-PRESSURE SODIUM-VAPOR WITH EXTERNAL ELECTROMAGNETIC BALLAST                    |           |                   |                   |             |             |                     |                 |             |             |             |             |             |             |
|    |           | UNCORRECTED       | IN PARALLEL       | UNCORRECTED | IN PARALLEL | UNCORRECTED         | IN PARALLEL     | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL |
|                                                                                     | 35        | 15                | 5 (6 µF)          | 18          | 6 (6 µF)    | 55                  | 36 (6 µF)       | 70          | 55 (6 µF)   | 15          | 5 (6 µF)    | 25          | 13 (6 µF)   |
|                                                                                     | 50        | 11                | 3 (8 µF)          | 12          | 4 (8 µF)    | 35                  | 27 (8 µF)       | 45          | 41 (8 µF)   | 11          | 3 (8 µF)    | 16          | 10 (8 µF)   |
|                                                                                     | 70        | 9                 | 2 (12 µF)         | 10          | 3 (12 µF)   | 30                  | 18 (12 µF)      | 35          | 27 (12 µF)  | 9           | 2 (12 µF)   | 13          | 7 (12 µF)   |
|                                                                                     | 100       | 7                 | 2 (12 µF)         | 8           | 3 (12 µF)   | 25                  | 18 (12 µF)      | 30          | 27 (12 µF)  | 7           | 2 (12 µF)   | 11          | 7 (12 µF)   |
|                                                                                     | 150       | 5                 | 1 (20 µF)         | 6           | 1 (20 µF)   | 17                  | 11 (20 µF)      | 22          | 16 (20 µF)  | 5           | 1 (20 µF)   | 7           | 4 (20 µF)   |
|                                                                                     | 250       | 3                 | 0 (32 µF)         | 4           | 1 (32 µF)   | 10                  | 6 (32 µF)       | 13          | 10 (32 µF)  | 3           | 0 (32 µF)   | 4           | 3 (32 µF)   |
|                                                                                     | 400       | 2                 | 0 (45 µF)         | 2           | 0 (45 µF)   | 6                   | 4 (45 µF)       | 8           | 6 (45 µF)   | 2           | 0 (45 µF)   | 3           | 2 (45 µF)   |
|                                                                                     | 600       | 1                 | 0 (65 µF)         | 1           | 0 (65 µF)   | 4                   | 3 (65 µF)       | 5           | 5 (65 µF)   | 1           | 0 (65 µF)   | 2           | 1 (65 µF)   |
|                                                                                     | 1000      | 0                 | 0 (100 µF)        | 1           | 0 (100 µF)  | 3                   | 2 (100 µF)      | 3           | 3 (100 µF)  | 0           | 0 (100 µF)  | 1           | 0 (100 µF)  |
| HIGH-PRESSURE SODIUM-VAPOR WITH EXTERNAL ELECTRONIC BALLAST                         |           |                   |                   |             |             |                     |                 |             |             |             |             |             |             |
|  | 35        | 10                | 13                | 27          | 33          | 10                  | 14              |             |             |             |             |             |             |
|                                                                                     | 50        | 8                 | 11                | 22          | 28          | 8                   | 12              |             |             |             |             |             |             |
|                                                                                     | 70        | 5                 | 7                 | 15          | 18          | 5                   | 8               |             |             |             |             |             |             |
|                                                                                     | 100       | 4                 | 5                 | 10          | 13          | 4                   | 5               |             |             |             |             |             |             |
|                                                                                     | 150       | 3                 | 4                 | 8           | 10          | 3                   | 4               |             |             |             |             |             |             |
|                                                                                     | 250       | 2                 | 2                 | 4           | 5           | 2                   | 2               |             |             |             |             |             |             |
|                                                                                     | 400       | 1                 | 1                 | 3           | 4           | 1                   | 2               |             |             |             |             |             |             |
|                                                                                     | 600       | 0                 | 0                 | 1           | 2           | 0                   | 1               |             |             |             |             |             |             |
|                                                                                     | 1000      | 0                 | 0                 | 1           | 1           | 0                   | 0               |             |             |             |             |             |             |
| LOW-PRESSURE SODIUM-VAPOR WITH EXTERNAL ELECTROMAGNETIC BALLAST                     |           |                   |                   |             |             |                     |                 |             |             |             |             |             |             |
|  |           | UNCORRECTED       | IN PARALLEL       | UNCORRECTED | IN PARALLEL | UNCORRECTED         | IN PARALLEL     | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL | UNCORRECTED | IN PARALLEL |
|                                                                                     | 18        | 22                | 6 (5 µF)          | 27          | 7 (5 µF)    | 71                  | 44 (5 µF)       | 90          | 66 (5 µF)   | 22          | 6 (5 µF)    | 25          | 16 (5 µF)   |
|                                                                                     | 35        | 7                 | 1 (20 µF)         | 9           | 1 (20 µF)   | 23                  | 11 (20 µF)      | 30          | 16 (20 µF)  | 7           | 1 (20 µF)   | 15          | 4 (20 µF)   |
|                                                                                     | 55        | 7                 | 1 (20 µF)         | 9           | 1 (20 µF)   | 23                  | 11 (20 µF)      | 30          | 16 (20 µF)  | 7           | 1 (20 µF)   | 15          | 4 (20 µF)   |
|                                                                                     | 90        | 4                 | 1 (26 µF)         | 5           | 1 (26 µF)   | 14                  | 8 (26 µF)       | 19          | 12 (26 µF)  | 4           | 1 (26 µF)   | 10          | 3 (26 µF)   |
|                                                                                     | 135       | 3                 | 0 (40 µF)         | 4           | 0 (40 µF)   | 10                  | 4 (40 µF)       | 13          | 7 (40 µF)   | 3           | 0 (40 µF)   | 10          | 2 (40 µF)   |
|                                                                                     | 180       | 3                 | 0 (40 µF)         | 4           | 0 (40 µF)   | 10                  | 5 (40 µF)       | 13          | 8 (40 µF)   | 3           | 0 (40 µF)   | 10          | 2 (40 µF)   |
| LOW-PRESSURE SODIUM-VAPOR WITH EXTERNAL ELECTRONIC BALLAST                          |           |                   |                   |             |             |                     |                 |             |             |             |             |             |             |
|  | 35        | 13                | 18                | 35          | 44          | 13                  | 19              |             |             |             |             |             |             |
|                                                                                     | 55        | 8                 | 11                | 22          | 28          | 8                   | 12              |             |             |             |             |             |             |
| LED LAMPS*                                                                          |           |                   |                   |             |             |                     |                 |             |             |             |             |             |             |
|  | -         | N = 2,4 / ln      | N = 3,8 / ln      | N = 11 / ln | N = 18 / ln | N = 1,5 / ln        | N = 2 / ln      |             |             |             |             |             |             |

\* N = number of lamps  
In = rated current of LED lamp

GUIDE - HOW TO MAKE SIMULTANEOUS COMMAND OF MORE GROUPS OF LATCHING RELAYS

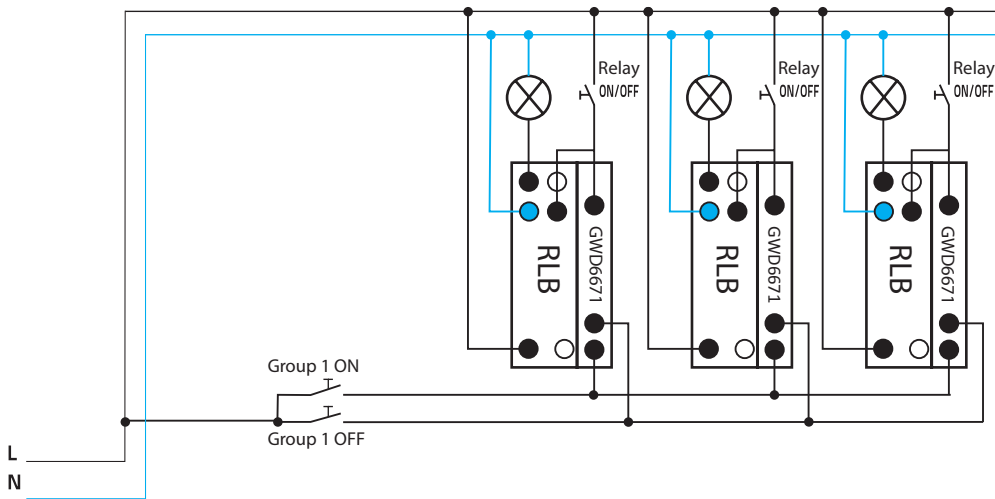
| ACCESSORIES FOR CENTRAL COMMAND AND GROUP COMMAND |                |                             |         |
|---------------------------------------------------|----------------|-----------------------------|---------|
| Code:                                             |                | GWD6671 <sup>(1)</sup>      | GWD6672 |
| Type of accessory:                                |                | It must be mounted on relay |         |
| Rated operating voltage (Ue):                     |                | (V)                         | 250 AC  |
| Rated insulation voltage (Ui):                    |                | (V)                         | 440 AC  |
| No. of modules:                                   |                |                             | 0.5     |
| Mechanical endurance (no. of operations):         |                | 1 x 10 <sup>6</sup>         | -       |
| Rated tightening torque:                          |                | (Nm)                        | 0.8     |
| Terminal screw type                               |                |                             | M3      |
| Screwdriver suggested:                            |                |                             | PZ1     |
| Cable section:                                    | rigid (mm²)    |                             | 1...4   |
|                                                   | flexible (mm²) |                             | 1...4   |
| Weight                                            |                | (g)                         | 30      |

<sup>(1)</sup> Not available for relay with DC coil

The following codes are used to make a centralized command of one or more groups of relays

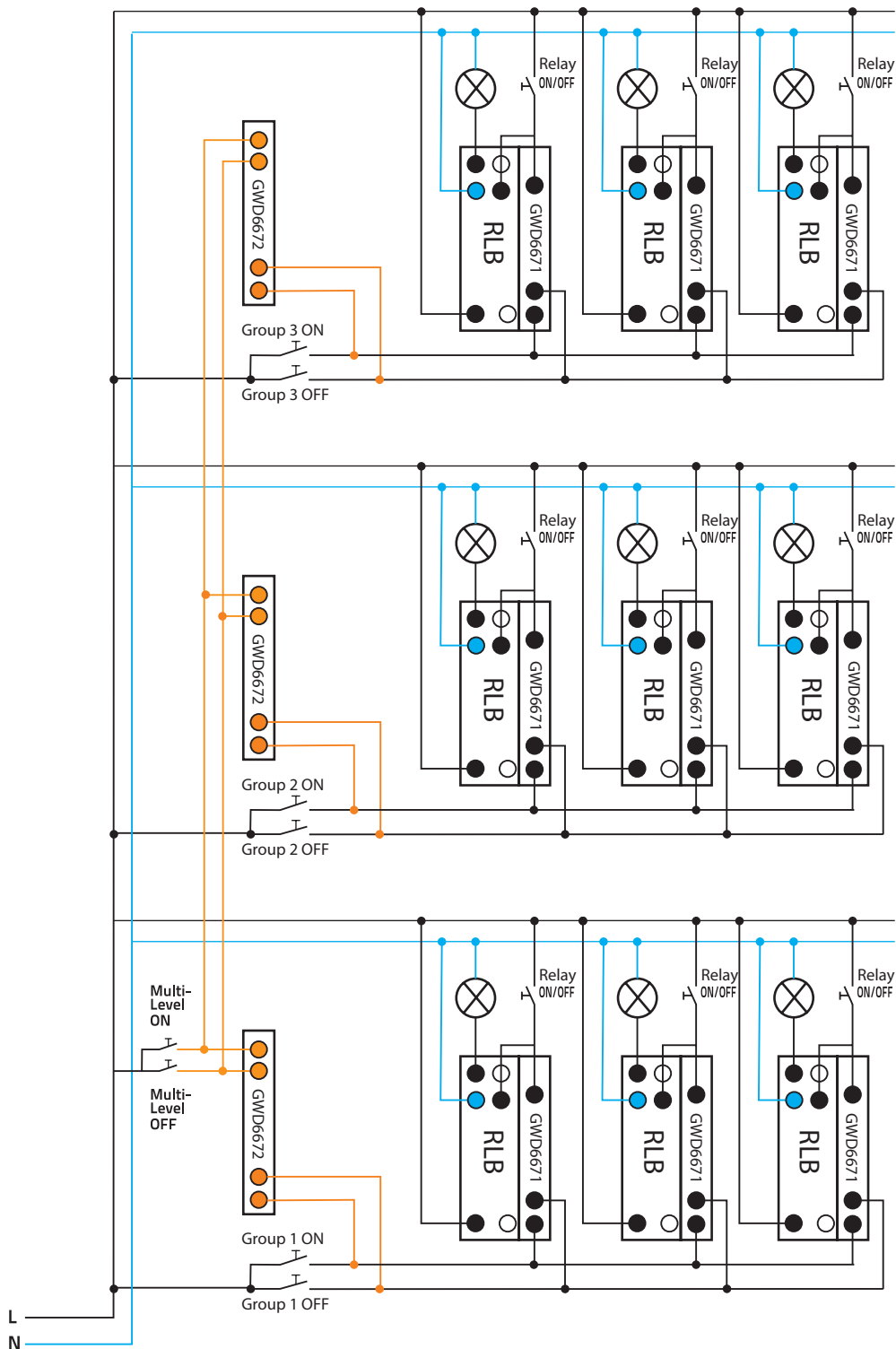
| Code      | Type                                             | Number                                 | Description                                                                                                                   |
|-----------|--------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| GW D6 671 | Accessory that must be mounted on latching relay | 1 for each latching relay of the group | Carry out the ON/OFF command of two or more relays from one point, independently from the status of each relay.               |
| GW D6 672 | Stand-alone accessory                            | 1 for each group of relay              | Carry out the simultaneously command of two or more groups of centralized relays independently from the status of each relay. |

GW D6 671 - CENTRALIZED COMMAND OF 1 GROUP OF RELAY



- Legend:
- **Push-button relay:** local command of relay
  - **Push-button of group:** centralized command of all group's relays, independently from the status of each relay

## GW D6 672 - CENTRALIZED COMMAND OF MORE GROUPS OF RELAYS



## Legend:

- **Push-button relay:** local command of relay
- **Push-button of group:** centralized command of all group's relays, independently from the status of each relay
- **Multilevel Push-button:** centralized command for all relays of all the groups, independently from the status of each relay

## Load management relay

| TECHNICAL DATA                             |                    |                                                     |
|--------------------------------------------|--------------------|-----------------------------------------------------|
| Standards:                                 |                    | EN 61010-1, EN 61000-6-2,<br>EN 61000-6-4, EN 60688 |
| Rated operating voltage (U <sub>e</sub> ): | (V)                | 230 a.c. Phase-Neutral / 220 a.c. Phase-Phase       |
| Rated current (I <sub>n</sub> ):           | (A)                | 32                                                  |
| Capacity and type of contact:              |                    | 16A AC1 / 250V a.c. - 1NC                           |
| Absorbed power:                            | (VA)               | 2                                                   |
| Precision class:                           |                    | 1                                                   |
| Operating temperature:                     | (°C)               | -5...+55                                            |
| Degree of protection:                      |                    | IP 20                                               |
| Maximum cable section:                     | (mm <sup>2</sup> ) | 6                                                   |

The load management relay measures the consumption of active power in the system and, when the set threshold is exceeded, it disconnects non-preferential loads reconnecting them after a pre-set time lapse.

The operating logic involves a block condition after 3 consecutive exceedances of the power threshold (P) set in kW. This block condition, signaled by a flashing ESC P on the screen of the device, switches off the non-preferential load until manually reset by pressing the button on the front of device.

The load management relay with rated current **32A** is suitable for installation in systems up to **6 kW**.

The device is already programmed with **optimum default values for 3 kW users**, but can also be personalised using the single push-button on the front:

**ton:** contact opening delay when power threshold is exceeded

adjustment range: 0 - 255 seconds

default value: **45 seconds**

**tof:** contact opening time for non-priority loads

adjustment range: 0 - 255 seconds

default value: **240 seconds**

**Bel:** duration of the acoustic "threshold exceeded" warning

adjustment range: 0 - 255 seconds

default value: **45 seconds**

**P:** contact opening threshold for non-priority loads

adjustment range: 0 - 9.99 kW

default value: **3.8 kW**



Programming/Reset  
push-button

Below, the sequence of events to achieve the block condition is described.

#### 1st overcoming power threshold

- In case of overload, i.e. the power value is exceeding the threshold (**P**) set in kW, P-Comfort counts **ton** period of time before to open the contact (non-preferential load is off), if the power value does not come back under the limit of threshold.
- The contact remains open during **tof** period of time and then closes the contact (non-preferential load is on).

#### 2nd overcoming power threshold

- If the power value is exceeding again the threshold (**P**), P-Comfort counts **ton** period of time and then the contact is opened.
- The contact remains open during **tof x 4** period of time (the index of multiplication is fixed, e.g. if toff = 60s the opening time of the contact will be equal to 240s) and then closes the contact supplying the non-preferential load.

#### 3rd overcoming power threshold

- If the power consumption continues to remain above the threshold (**P**), P-Comfort counts **ton** and then opens the contact running to block condition and switching off the non-preferential load.

A power exceedance is consecutive when the overload happens within a time equal to **ton + tof**, compared to the previous one.

If the overload happens after this period of time, the counter of the number of consecutive exceedances is automatically reset.

## MODULAR ACCESSORIES

## BIOCOMFORT (Main disconnection switch)

## DESCRIPTION

## Principle of operation

The main disconnection switch (also known as a "biocomfort switch") disconnects the alternating voltage from the electrical system downstream when all the loads in the sleeping area that are connected to it are switched off. It is not necessary to manually adjust the relay tripping threshold because the main disconnection switch, thanks to the innovative self-learning function, automatically learns the value of the current absorbed by the loads and applies it as the tripping threshold.

While the main disconnection switch is functioning, the line downstream of the biocomfort switch (used for the sleeping area) is powered with a continuous monitoring voltage of (5 - 230V DC). This voltage is necessary in order to restore the mains voltage (230V a.c.) at any moment, if a load is switched on. It is then possible to deactivate the main disconnection switch using a manual command if any maintenance work needs to be carried out on the electrical system.

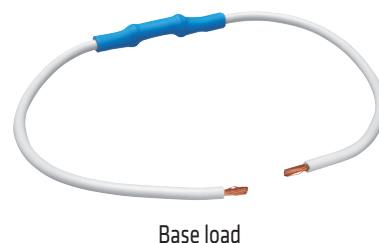
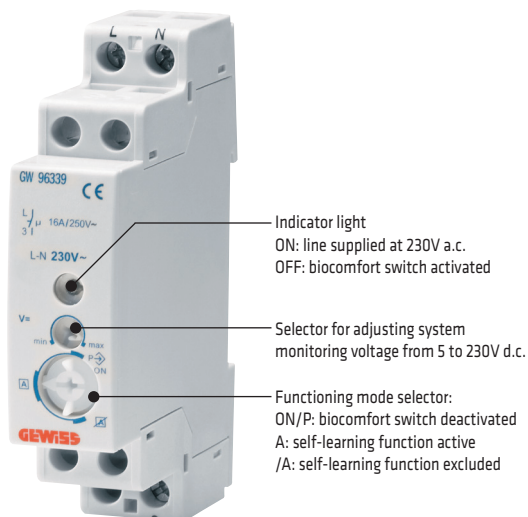
| TECHNICAL DATA                 |                                          |                     |
|--------------------------------|------------------------------------------|---------------------|
| Standard:                      |                                          | EN 60669-2-1        |
| Rated operating voltage (Ue):  | (V)                                      | 230 a.c. $\pm 10\%$ |
| Rated operating current (Ie):  | (A)                                      | 16                  |
| Rated insulation voltage (Ui): | (V)                                      | 250 a.c.            |
| Rated frequency:               | (Hz)                                     | 50                  |
| Monitoring voltage:            | (V)                                      | 5 - 230 d.c.        |
| Maximum lamp load:             | Incandescent lamps and halogen lamps (W) | 2300                |
|                                | Fluorescent lamps (VA)                   | 1000                |
|                                | Lamps with electronic ballast (VA)       | 1000                |
| Power loss:                    | (W)                                      | 0.8                 |
| Max. operating cycles:         |                                          | 1000/h              |
| Closing time:                  | (ms)                                     | 10 - 20             |
| Opening time:                  | (ms)                                     | 5 - 15              |
| Operating temperature:         | (°C)                                     | -20...+50           |
| Maximum cable section:         | (mm <sup>2</sup> )                       | 6                   |

## Base load

To be applied to fluorescent lamps, or loads with an absorption level less than 30 mA, according to the diagrams shown. Install directly on the load or in junction boxes. Other applications: fluorescent lamps, low consumption lamps, LED lamps, halogen lamps with transformer, dimmers and electronic transformers.

## Notes

To facilitate the correct operation of the main disconnection switch, you are advised to install the minimum essential loads in the sleeping area. In fact, special attention must be paid before installing the biocomfort switch when there are dimmers or devices in standby in the sleeping area (e.g. TVs, alarm clocks, etc.): it is difficult for the main disconnection switch to pick up and disable these devices. For further information, refer to the circuit diagrams on the next page.

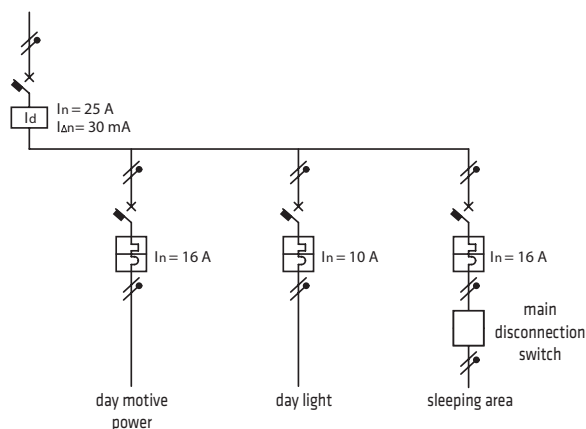


## MODULAR ACCESSORIES

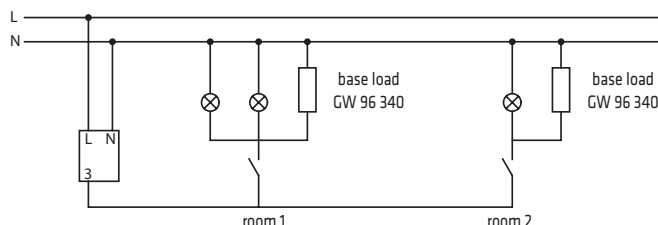
## Circuit diagrams

## Installation in the enclosure

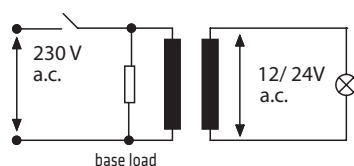
(requiring a dedicated line for the sleeping area)



## Fluorescent lamps / Low consumption lamps



## Halogen lamps with 12/24V transformer



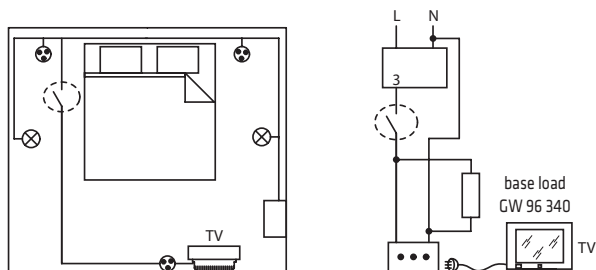
The biocomfort switch works correctly by adding the base load in parallel with the transformer, downstream from the command switch. The lamp command switch must be located upstream from the transformer (230V AC side).

## Dimmers

The functioning of the biocomfort switch alongside circuits commanded by electronic dimmers is not guaranteed, but it will function with rotary dimmers (positioning the monitoring voltage selector on the maximum value). In addition, correct functioning is subject to the correct acquisition of the self-learning function by the biocomfort switch, with the minimum adjustment of the load managed by the dimmer. During normal use, load switch-on and switch-off operations must be performed in a decisive manner.

The functioning of the main disconnection switch with mechanical rotary dimmers not belonging to the Gewiss range is not guaranteed. For this reason, you are advised to install dimmers belonging to the Chorus range (GW 10 561, GW 12 561 and GW 14 561).

## Loads in standby



In this case, the socket-outlet to which the load is connected must be commanded by a switch. In addition, the base load must be installed in parallel with the socket-outlet.

## AC single-phase current control relay

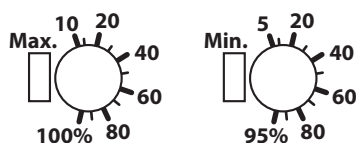
| TECHNICAL DATA                                |            |                      |
|-----------------------------------------------|------------|----------------------|
| Code:                                         |            | GW 96 906            |
| Input circuit                                 |            |                      |
| Rated operating voltage (Un):                 | (V)        | 230 a.c.             |
| Tolerance:                                    | (% Un)     | ± 15                 |
| Controlled current:                           | (A)        | 10                   |
| Power loss:                                   | (VA)       | 5                    |
| Rated frequency:                              | (Hz)       | 48 ÷ 63              |
| Overload category (IEC 60664-1):              |            | III                  |
| Rated impulse withstand voltage (Uimp):       | (kV)       | 4                    |
| Output circuit                                |            |                      |
| Changeover contact free potential type:       | (N°)       | 1                    |
| Rated operating voltage (Un):                 | (V)        | 250                  |
| Switchover capacity (5A/250V AC):             | (VA)       | 1250                 |
| Fuse (quick type):                            | (A)        | 5                    |
| Mechanical endurance:                         | (N° Oper.) | 20 x 10 <sup>5</sup> |
| Electrical endurance (resistive load 1000VA): | (N° Oper.) | 20 x 10 <sup>5</sup> |
| Max switching frequency:                      | (N°/min)   | 60 <sup>(1)</sup>    |
|                                               |            | 6 <sup>(2)</sup>     |
| Environmental conditions                      |            |                      |
| Operating temperature:                        | (°C)       | -25 ÷ 55             |
| Storage temperature:                          | (°C)       | -25 ÷ 70             |
| Transfer temperature:                         | (°C)       | -25 ÷ 70             |
| Relative humidity (IEC60721-3-3 class 3K3):   | (%)        | 15 ÷ 85              |
| Pollution degree (IEC 60664-1):               |            | 2                    |

<sup>(1)</sup> 100VA resistive load<sup>(2)</sup> 1000VA resistive load

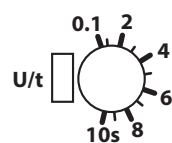
Undercurrent protection is needed, for example, in a electrical system when a load is switched-on automatically (motor, pump, etc.) but a fault doesn't allow the operation: since the value of the current is not correct, the starting of system can be quickly stopped to avoid any damage (e.g. on a line of conveyor belts). Instead overcurrent protection is needed when there is an irregular increase of power consumption that could be the consequence of the blockage of a conveyor belt motor or the jamming of a mixer.



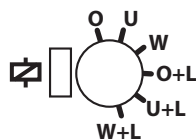
## % values adjustment



## Delay time adjustment



## Operation conditions

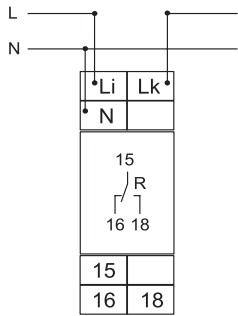
**O:** OVER – overcurrent monitoring**U:** UNDER – undercurrent monitoring**W:** WIN – monitoring the range between Min and Max**O+L:** OVER+Latch – overcurrent monitoring with fault latch**U+L:** UNDER+Latch – undercurrent monitoring with fault latch**W+L:** WIN+Latch – monitoring the range between Min and Max with fault latch

## Signalling

**U/t** green LED on: presence of power supply voltage**U/t** red LED on: indication of failure of threshold**U/t** green LED flashing: indication of delay timeYellow LED  on/off: indication of output contact status

## MODULAR ACCESSORIES

## Circuit diagrams



## Functions

**Overcurrent monitoring (OVER, OVER+Latch)**

When the supply voltage U is applied the output relay R switches into on-position, if the measured current is below the Max-value. When the measured current exceeds the Max-value, the output relay R switches into off-position after the interval of the tripping delay (Delay) has expired.

**OVER**

The output relay R switches into on-position again, if the current falls below the Min-value.

**OVER+Latch**

The output relay R switches only into on-position again by interrupting and reapplying of the supply voltage, provided that the measured current is below the Max-value.

**Window function (WIN, WIN+Latch)**

When the supply voltage U is applied, the output relay R switches into on-position, if the measured current is within the adjusted window. When the measured current leaves the window between Min and Max, the output relay R switches into off-position after the interval of the tripping delay (Delay) has expired.

**WIN**

The output relay R switches into on-position again, if the current re-enters the adjusted window.

**WIN+Latch**

The output relay R switches only into on-position again by interrupting and reapplying of the supply voltage, provided that the measured current is within the threshold values.

**Undercurrent monitoring (UNDER, UNDER+Latch)**

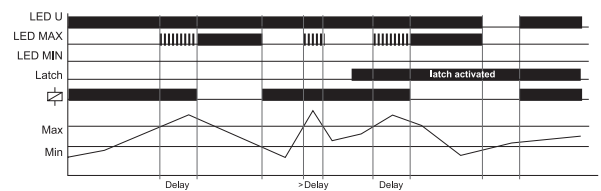
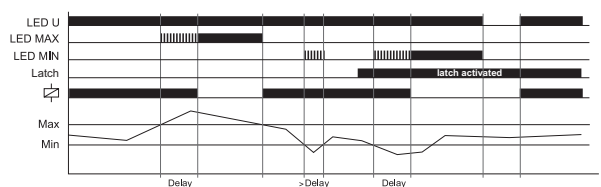
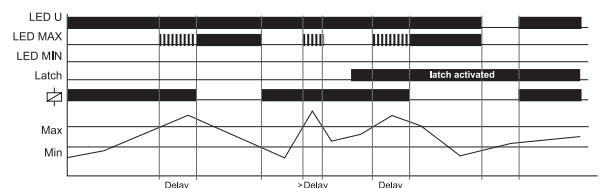
When the supply voltage U is applied, the output relay R switches into on-position, if the measured current is beyond the Min-value. When the measured current falls below the Min-value, the output relay R switches into off-position after the interval of the tripping delay (Delay) has expired.

**UNDER**

The output relay R switches into on-position again, if the current exceeds the Max-value.

**UNDER + Latch**

The output relay R switches only into on-position again by interrupting and reapplying of the supply voltage, provided that the measured current is beyond the Min-value.

**(OVER, OVER+Latch)****(WIN)****(UNDER, UNDER + latch)**

## Phase control relay in a three-phase system

| TECHNICAL DATA                                |            |                      |
|-----------------------------------------------|------------|----------------------|
| Code:                                         |            | GW 96 907            |
| <b>Input circuit</b>                          |            |                      |
| Rated operating voltage (Un):                 | (V)        | 230/400 a.c.         |
| Tolerance:                                    | (% Un)     | ± 30                 |
| Controlled voltage:                           | (V)        | 230/400 a.c.         |
| Power loss:                                   | (VA)       | 8                    |
| Rated frequency:                              | (Hz)       | 48 ÷ 63              |
| Overload category (IEC 60664-1):              |            | III                  |
| Rated impulse withstand voltage (Uimp):       | (kV)       | 4                    |
| <b>Output circuit</b>                         |            |                      |
| Changeover contact free potential type:       | (N°)       | 1                    |
| Rated operating voltage (Un):                 | (V)        | 250                  |
| Switchover capacity (5A/250V AC):             | (VA)       | 1250                 |
| Fuse (quick type):                            | (A)        | 5                    |
| Mechanical endurance:                         | (N° Oper.) | 20 x 10 <sup>6</sup> |
| Electrical endurance (resistive load 1000VA): | (N° Oper.) | 20 x 10 <sup>5</sup> |
| Max switching frequency:                      | (N° /min)  | 6 <sup>(1)</sup>     |
| <b>Environmental conditions</b>               |            |                      |
| Operating temperature:                        | (°C)       | -25 ÷ 55             |
| Storage temperature:                          | (°C)       | -25 ÷ 70             |
| Transfer temperature:                         | (°C)       | -25 ÷ 70             |
| Relative humidity (IEC60721-3-3 class 3K3):   | (%)        | 15 ÷ 85              |
| Pollution degree (IEC 60664-1):               |            | 2                    |

<sup>(1)</sup> 1000VA resistive load

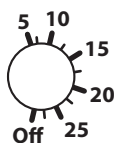
If the energy supplied by a three-phase system has phase imbalances due to uneven load distribution, the motor converts a part of the energy into reactive power that is lost and hence wasted, exposing the motor to big thermal stress.

Another critical condition happens with any alteration of the phase sequence during operation or from the incorrect sequence of the phases before start-up which change the direction of rotation for the devices connected as for example generators, pumps and fans.

Also the absence of a phase has a negative effect on the condition of the system, disturbing motor start-up for instance.



## % values phase asymmetry adjustment



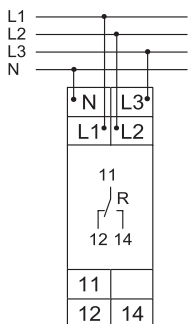
## Signalling

U green LED on: presence of power supply voltage

Yellow LED  on/off: indication of output contact status

## MODULAR ACCESSORIES

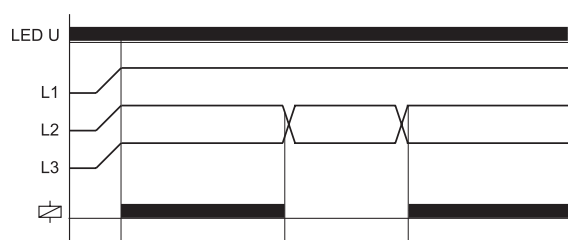
### Circuit diagrams



### Functions

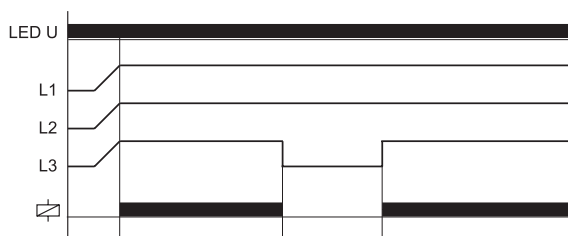
#### Phase sequence monitoring

When all the phases are connected in the correct sequence and the measured asymmetry is less than the fixed value, the output relay switches into on-position (yellow LED illuminated). When the phase sequence changes, the output relay switches into off-position (yellow LED not illuminated).



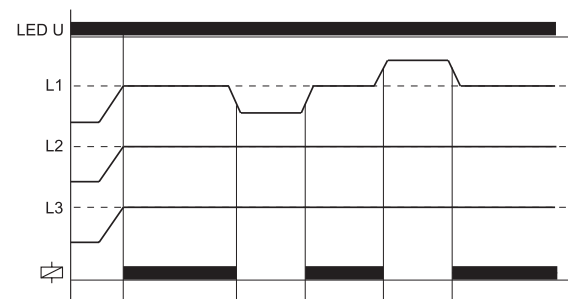
#### Phase absence monitoring

The output relay R switches into off-position (yellow LED not illuminated) if one of the three power supply phases is absent.



#### Asymmetry monitoring

The output relay R switches into off-position (yellow LED not illuminated) when the asymmetry exceeds the value set at the ASYM-regulator. Reverse voltages of a consumer (e.g. a motor which continues to run on two phases only) do not effect the disconnection.



## AC/DC single-phase undervoltage control relay

| TECHNICAL DATA                                |            |                                       |
|-----------------------------------------------|------------|---------------------------------------|
| Code:                                         |            | GW 96 908                             |
| Input circuit                                 |            |                                       |
| Rated operating voltage (Un):                 | (V)        | 24 a.c./d.c.<br>230 a.c.              |
| Tolerance:                                    | (% Un)     | -25 / +20                             |
| Controlled voltage:                           | (V)        | 24 a.c./d.c. - 230 a.c.               |
| Power loss:                                   | (VA)       | 10 (230V)                             |
| Rated frequency:                              | (Hz)       | 48 ÷ 63                               |
| Overload category (IEC 60664-1):              |            | III                                   |
| Rated impulse withstand voltage (Uimp):       | (kV)       | 4                                     |
| Output circuit                                |            |                                       |
| Changeover contact free potential type:       | (N°)       | 1                                     |
| Rated operating voltage (Un):                 | (V)        | 250                                   |
| Switchover capacity (5A/250V AC):             | (VA)       | 1250                                  |
| Fuse (quick type):                            | (A)        | 5                                     |
| Mechanical endurance:                         | (N° Oper.) | 20 x 10 <sup>6</sup>                  |
| Electrical endurance (resistive load 1000VA): | (N° Oper.) | 20 x 10 <sup>5</sup>                  |
| Max switching frequency:                      | (N°/min)   | 60 <sup>(1)</sup><br>6 <sup>(2)</sup> |
| Environmental conditions                      |            |                                       |
| Operating temperature:                        | (°C)       | -25 ÷ 55                              |
| Storage temperature:                          | (°C)       | -25 ÷ 70                              |
| Transfer temperature:                         | (°C)       | -25 ÷ 70                              |
| Relative humidity (IEC60721-3-3 class 3K3):   | (%)        | 15 ÷ 85                               |
| Pollution degree (IEC 60664-1):               |            | 2                                     |

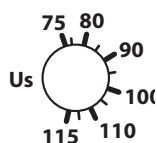
<sup>(1)</sup> 100VA resistive load<sup>(2)</sup> 1000VA resistive load

Electrical devices can suffer damage if they work continuously in networks with voltage levels higher or lower than the usual operating values.

In case of undervoltage condition, safe start-up cannot be guaranteed or the position of the contacts of a contactor may be unsure, with the consequence that the all system becomes unstable.



## % rated voltage adjustment



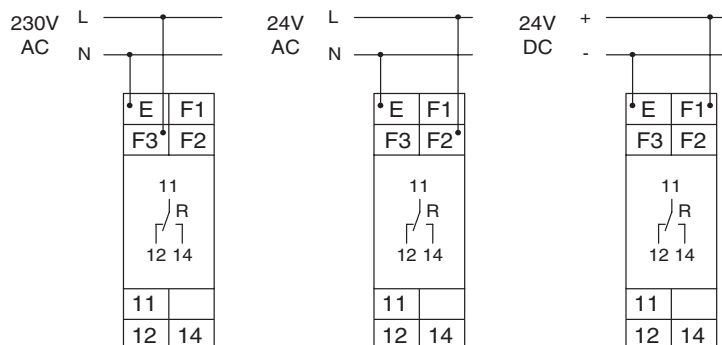
## Signalling

U green LED on: presence of power supply voltage

Yellow LED  on/off: indication of output contact status

## MODULAR ACCESSORIES

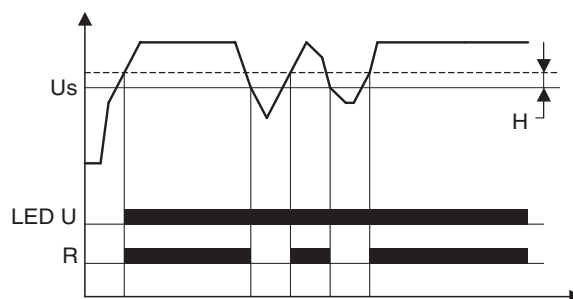
## Circuit diagrams



## Functions

**Undervoltage monitoring (UNDER)**

When the supply voltage  $U$  is applied, the output relay  $R$  switches into on-position, if the measured voltage is beyond the adjusted value. When the measured voltage falls below the adjusted value, the output relay  $R$  switches into off-position. The output relay  $R$  switches into on-position again, if the voltage exceeds the adjusted value plus the hysteresis.



## AC three-phase undervoltage control relay

| TECHNICAL DATA                                |            |                      |
|-----------------------------------------------|------------|----------------------|
| Code:                                         |            | GW 96 909            |
| Input circuit                                 |            |                      |
| Rated operating voltage (Un):                 | (V)        | 230/400 a.c.         |
| Tolerance:                                    | (% Un)     | -30 / +10            |
| Controlled voltage:                           | (V)        | 230/400 a.c.         |
| Power loss:                                   | (VA)       | 8                    |
| Rated frequency:                              | (Hz)       | 48 ÷ 63              |
| Overload category (IEC 60664-1):              |            | III                  |
| Rated impulse withstand voltage (Uimp):       | (kV)       | 4                    |
| Output circuit                                |            |                      |
| Changeover contact free potential type:       | (N°)       | 1                    |
| Rated operating voltage (Un):                 | (V)        | 250                  |
| Switchover capacity (5A/250V AC):             | (VA)       | 1250                 |
| Fuse (quick type):                            | (A)        | 5                    |
| Mechanical endurance:                         | (N° Oper.) | 20 x 10 <sup>6</sup> |
| Electrical endurance (resistive load 1000VA): | (N° Oper.) | 20 x 10 <sup>5</sup> |
| Max switching frequency:                      | (N° /min)  | 6 <sup>(1)</sup>     |
| Environmental conditions                      |            |                      |
| Operating temperature:                        | (°C)       | -25 ÷ 55             |
| Storage temperature:                          | (°C)       | -25 ÷ 70             |
| Transfer temperature:                         | (°C)       | -25 ÷ 70             |
| Relative humidity (IEC60721-3-3 class 3K3):   | (%)        | 15 ÷ 85              |
| Pollution degree (IEC 60664-1):               |            | 2                    |

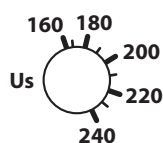
<sup>(1)</sup> 1000VA resistive load

Electrical devices can suffer damage if they work continuously in networks with voltage levels higher or lower than the usual operating values.

In case of undervoltage condition, safe start-up cannot be guaranteed or the position of the contacts of a contactor may be unsure, with the consequence that the all system becomes unstable.



## Rated voltage adjustment (160÷240V L-N)



## Signalling

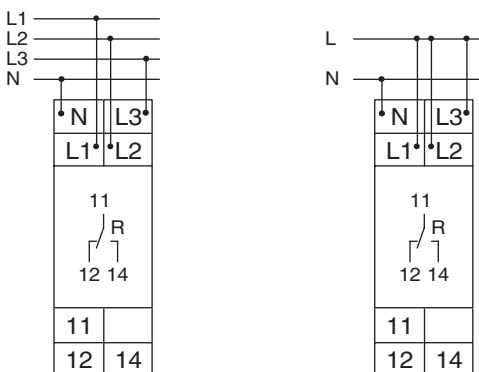
**L1** green LED on: presence of power supply voltage L1-N

**L2** green LED on: presence of power supply voltage L2-N

**L3** green LED on: presence of power supply voltage L3-N

Yellow LED  on/off: indication of output contact status

### Circuit diagrams

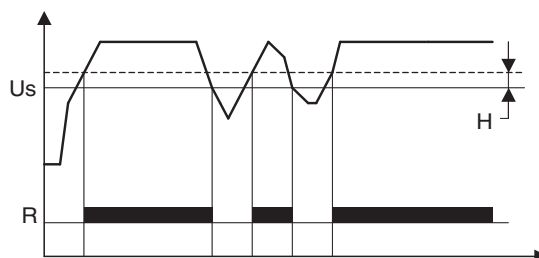


### Functions

Undervoltage monitoring for 3-phase AC mains with fixed threshold voltage and fixed hysteresis. All measuring inputs (L1, L2 and L3) must be connected to phase voltage. If single or 2-phase monitoring is required, unused input terminals (L) must be connected to mains voltage to have proper L-N voltage on the terminals L1, L2 and L3. A phase failure can not be detected, if the reverse voltage coming from the load exceeds the threshold  $U_s$ .

#### Undervoltage monitoring

The output relay R switches into on-position (yellow LED illuminated), when the measuring voltage of all connected phases exceeds the fixed threshold  $U_s$  by more than the fixed hysteresis H. When the voltage of one of the connected phases (L1, L2 or L3) falls below the fixed threshold, the output relay R switches into off-position again (yellow LED not illuminated).



## PROGRAMMING

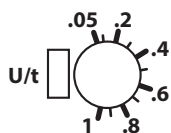
## Multifunction timer

| TECHNICAL DATA             |                          |                                                                                                                                                                                             |
|----------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code:                      |                          | <b>GW 96 814</b>                                                                                                                                                                            |
| Control voltage:           | (V)                      | 24...240 a.c./d.c.                                                                                                                                                                          |
| Type of contact:           |                          | 1 changeover                                                                                                                                                                                |
| Switchover capacity:       |                          | 8A - 250V a.c.                                                                                                                                                                              |
| Rated frequency:           | (Hz)                     | 50-60                                                                                                                                                                                       |
| Timing:                    |                          | 0,05s...100h                                                                                                                                                                                |
| Power loss:                |                          | 4VA (1,5W)                                                                                                                                                                                  |
| Mechanical endurance:      | (total N° of operations) | 20.000.000                                                                                                                                                                                  |
| Electrical endurance:      | (total N° of operations) | 20.000                                                                                                                                                                                      |
| Switchover frequency:      |                          | max 6 per minute                                                                                                                                                                            |
| Repetition precision:      |                          | < 0,5% o ± 5ms                                                                                                                                                                              |
| Reset time:                | (ms)                     | 100                                                                                                                                                                                         |
| Degree of protection:      |                          | IP20                                                                                                                                                                                        |
| Operating temperature:     | (°C)                     | -25...+55                                                                                                                                                                                   |
| Storage temperature:       | (°C)                     | -25...+70                                                                                                                                                                                   |
| Maximum tightening torque: | (Nm)                     | 1                                                                                                                                                                                           |
| Maximum cable section:     | (mm²)                    | 1 x 0.5 up to 2.5 (cable with or without terminals)<br>1 x 4 (cable without terminals)<br>2 x 0.5 up to 1.5 (cable with or without terminals)<br>2 x 2.5 (flexible cable without terminals) |

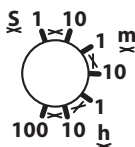
The multifunction timer allows to connect and disconnect a load for a set period of time (adjustable from 0.05s to 100h).



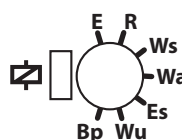
## Precise delay time adjustment



## Delay time adjustment



## Operation conditions



- E:** delay on activation with mains command
- R:** delay on deactivation with contact command
- Ws:** pulse on activation with contact command
- Wa:** pulse on deactivation with contact command
- Es:** delay on activation with contact command
- Wu:** single pulse on activation with mains command
- Bp:** symmetrical cycle, initial pause

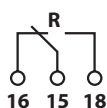
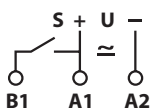
## Signalling

**U/t** green LED on: presence of power supply voltage

**U/t** green LED flashing: indication of delay time

Yellow LED  on/off: indication of output contact status

## Circuit diagrams



- S:** control contact
- U:** relay supply
- R:** Output contact

## Functions

### Delay on activation with mains command (E)

When the supply voltage is applied, the time count  $t$  begins (U/t green LED flashing). After the delay time  $t$  has elapsed (green LED on), the output relay R switches over to the ON position (yellow LED on). This status remains until the supply voltage is interrupted. If the supply voltage is disconnected before the time  $t$  has elapsed, the count is cancelled and restarts when the supply voltage is reconnected.

E



### Delay on deactivation with contact command (R)

The supply voltage must always be applied to the device (green LED on). When the contact S is closed, the output relay R switches over to the ON position (yellow LED on). If the contact S is opened, the time  $t$  count begins (green LED flashing). After the delay time  $t$  has elapsed (green LED on), the output relay switches over to the OFF position (yellow LED off). If the contact S is closed before the delay time  $t$  has elapsed, the count is cancelled and restarts with the next cycle.

R



### Pulse on activation with contact command (Ws)

The supply voltage must always be applied to the device (green LED on). When the contact S is closed, the output relay R switches over to the ON position (yellow LED on) and the time  $t$  count begins (green LED flashing). After the delay time  $t$  has elapsed (green LED on), the output relay switches over to the OFF position (yellow LED off). During the delay time  $t$ , the command contact can be enabled without the output relay switching over. The next cycle can only be activated when the first cycle is fully ended.

Ws



### Pulse on deactivation with contact command (Wa)

The supply voltage must always be applied to the device (green LED on). The closure of the contact S has no effect on the output relay R. When the contact S is open, the output relay switches over to the ON position (yellow LED on) and the time  $t$  count begins (green LED flashing). After the delay time  $t$  has elapsed (green LED on), the output relay switches over to the OFF position (yellow LED off). During the delay time  $t$ , the command contact can be enabled without the output relay switching over. The next cycle can only be activated when the first cycle is fully ended.

Wa



### Delay on activation with contact command (Es)

The supply voltage must always be applied to the device (green LED on). When the contact S is closed, the time  $t$  count begins (green LED flashing). After the delay time  $t$  has elapsed (green LED on), the output relay switches over to the ON position (yellow LED on). This status remains until the contact S is opened. If the contact S is opened before the delay time  $t$  has elapsed, the count is cancelled and restarts with the next cycle.

Es



### Single pulse on activation with mains command (Wu)

When the supply voltage is applied, the output relay R switches over to the ON position (yellow LED on) and the time  $t$  count begins (green LED flashing). After the delay time  $t$  has elapsed (green LED on), the output relay switches over to the OFF position (yellow LED off). This status remains until the supply voltage is interrupted. If the supply voltage is disconnected before the delay time  $t$  has elapsed, the output relay switches over to the OFF position. The count is cancelled and restarts when the supply voltage is reconnected.

Wu



### Symmetrical cycle, initial pause (Bp)

When the supply voltage is applied to the device, the time count  $t$  begins (green LED flashing). After the delay time  $t$  has elapsed, the output relay switches over to the ON position (yellow LED on) and the time  $t$  count restarts. After the time  $t$  has elapsed again, the output relay switches back to the OFF position (yellow LED off). The output relay continues to be tripped with the open/closed cycle equal to time  $t$ , as long as the supply voltage is present.

Bp



MODULAR ACCESSORIES

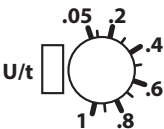
Asymmetrical timer

| TECHNICAL DATA             |                           |                                                                                                                                                                                             |
|----------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code:                      |                           | GW 96 815                                                                                                                                                                                   |
| Control voltage:           | (V)                       | 12...240 a.c./d.c.                                                                                                                                                                          |
| Type of contact:           |                           | 1 changeover                                                                                                                                                                                |
| Switchover contact:        |                           | 8A - 250V a.c.                                                                                                                                                                              |
| Rated frequency:           | (Hz)                      | 50-60                                                                                                                                                                                       |
| Timing:                    |                           | 0,05s...100h                                                                                                                                                                                |
| Power loss:                |                           | 4VA (1.5W)                                                                                                                                                                                  |
| Mechanical endurance:      | (total no. of operations) | 20,000,000                                                                                                                                                                                  |
| Electrical endurance:      | (total no. of operations) | 20,000                                                                                                                                                                                      |
| Switchover frequency:      |                           | max 6 per minute                                                                                                                                                                            |
| Repetition precision:      |                           | < 0,5% or $\pm$ 5ms                                                                                                                                                                         |
| Reset time:                | (ms)                      | 100                                                                                                                                                                                         |
| Degree of protection:      |                           | IP20                                                                                                                                                                                        |
| Operating temperature:     | (°C)                      | -25...+55                                                                                                                                                                                   |
| Storage temperature:       | (°C)                      | -25...+70                                                                                                                                                                                   |
| Maximum tightening torque: | (Nm)                      | 1                                                                                                                                                                                           |
| Maximum cable section:     | (mm²)                     | 1 x 0.5 up to 2,5 (cable with or without terminals)<br>1 x 4 (cable without terminals)<br>2 x 0.5 up to 1.5 (cable with or without terminals)<br>2 x 2.5 (flexible cable without terminals) |

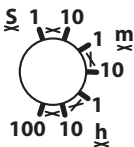
Asymmetrical timer allows to connect and disconnect a load according to a continuing cycle of ON-OFF periods of time with different settings (both adjustable from 0.05s to 100h).



Precise delay time adjustment



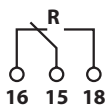
Delay time adjustment



Signalling

- U/t green LED on: presence of power supply voltage
- U/t green LED flashing slowly: indication of delay time 1
- U/t green LED flashing quickly: indication of delay time 2
- Yellow LED  on/off: indication of output contact status

Circuit diagrams



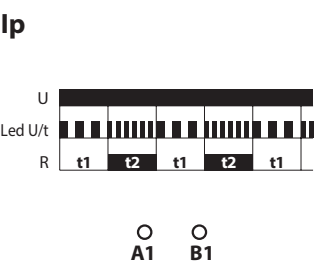
U: relay supply  
R: output contact

Functions

Asymmetric cycle, initial pause (Ip)

When the supply voltage is applied, the time count t1 begins (U/t green LED - slow flashing). After the delay time t1, the output relay R switches to ON (yellow LED ON) and the time count t2 begins (green LED - fast flashing). After the delay time t2, the output relay switches to OFF (yellow LED OFF). The output relay continues to trigger in the times set by t1 and t2, as long as there is a supply voltage.

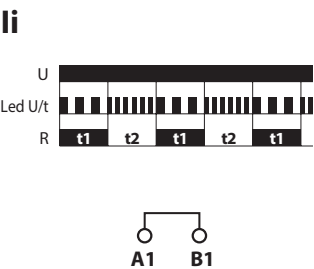
The output relay continues to switch between ON and OFF with times t1 and t2 until the supply voltage is disconnected.



Asymmetric cycle, initial pulse (Ii)

When the supply voltage U is applied, the output relay R switches to ON (yellow LED ON) and the time count t1 begins (U/t green LED - slow flashing). After the delay time t1, the output relay switches to OFF (yellow LED OFF) and the time count t2 begins (U/t green LED - fast flashing). After the delay time t2, the output relay switches to ON (yellow LED ON). The output relay continues to trigger in the times set by t1 and t2, as long as there is a supply voltage.

The output relay continues to switch between ON and OFF with times t1 and t2 until the supply voltage is disconnected.



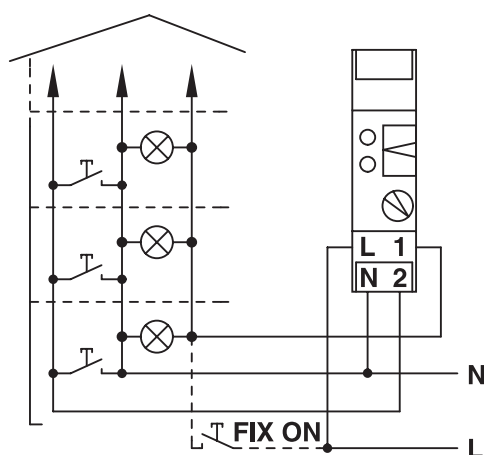
## MODULAR ACCESSORIES

## Staircase lighting time delay switches

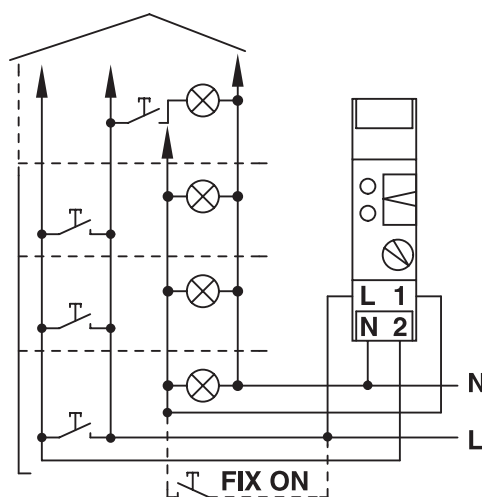
| TECHNICAL DATA                                  |                            |                                             |                                             |
|-------------------------------------------------|----------------------------|---------------------------------------------|---------------------------------------------|
| Code:                                           |                            | GW 96 810                                   | GW 96 813                                   |
| Type:                                           |                            | Normal                                      | With switch-off warning                     |
| Standards:                                      |                            | EN 60669-1/2-1                              | EN 60669-1/2-1                              |
| Rated operating voltage (Ue):                   | (V)                        | 230 a.c.                                    | 230 a.c.                                    |
| Rated insulation voltage (Ui):                  | (V)                        | 250 a.c.                                    | 250 a.c.                                    |
| Rated frequency:                                | (Hz)                       | 50                                          | 50/60                                       |
| Timer setting:                                  |                            | 30s...20min                                 | 30s...20min                                 |
| Output contact:                                 |                            | 1 NO                                        | 1 NO                                        |
| Switchover capacity:                            |                            |                                             |                                             |
|                                                 | resistive loads (cosφ=1)   | (A)                                         | 16                                          |
|                                                 | inductive loads (cosφ=0.6) | (A)                                         | 10                                          |
|                                                 | incandescent lamps         | (W)                                         | 2300                                        |
|                                                 | fluorescent lamps          | (W)                                         | 1000                                        |
|                                                 | halogen lamps              | (W)                                         | 3600                                        |
| Connection type:                                |                            | 3 or 4 cables                               | 3 or 4 cables                               |
| Operating state:                                |                            | automatic/fixed ON                          | automatic/fixed ON                          |
| Power loss:                                     | (VA)                       | 1.3                                         | <1                                          |
| Illuminated push-buttons that can be connected: | (mA)                       | 50                                          | 150 (4 wires) - 50 (3 wires)                |
| Degree of protection:                           |                            | IP20                                        | IP20                                        |
| Memory effect:                                  |                            | yes                                         | -                                           |
| Operating temperature:                          | (°C)                       | -10...+55                                   | -10...+55                                   |
| Maximum cable section:                          | (mm²)                      | 1x4/2x2.5 (rigid)<br>1x2.5/2x1.5 (flexible) | 1x4/2x2.5 (rigid)<br>1x2.5/2x1.5 (flexible) |
| Rated tightening torque:                        | (Nm)                       | 1,5                                         | 1,5                                         |
| Beam stripping cable recommended:               | (mm)                       | 6                                           | 6                                           |
| Screwdriver recommended:                        |                            | PZ1                                         | PZ1                                         |

## Circuit diagrams

## 3-cable connection



## 4-cable connection

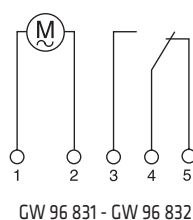
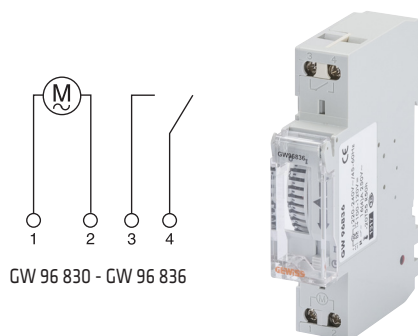


## MODULAR ACCESSORIES

## Analogue time switches

| TECHNICAL DATA                    |                    |                     |                                  |                                  |                     |
|-----------------------------------|--------------------|---------------------|----------------------------------|----------------------------------|---------------------|
| Code:                             |                    | GW 96 830           | GW 96 831                        | GW 96 832                        | GW 96 836           |
| Standard:                         |                    | EN 60335-1/2-26     | EN 60335-1/2-26                  | EN 60335-1/2-26                  | EN 60335-1/2-26     |
| Type:                             |                    | Daily               | Daily                            | Weekly                           | Daily               |
| Rated operating voltage (Ue):     | (V)                | 230 a.c.            | 230 a.c.                         | 230 a.c.                         | 230 a.c.            |
|                                   |                    | -                   | 130 d.c.                         | 110 d.c.                         | 110 d.c.            |
| Rated frequency:                  | (Hz)               | 50                  | 50                               | 50                               | 50                  |
| Output contact:                   |                    | 1 NO                | 1 changeover                     | 1 changeover                     | 1 NO                |
| Switchover capacity:              |                    |                     |                                  |                                  |                     |
|                                   | resistive loads    | 16A-250V-cos φ = 1  | 16A-250V-cos φ = 1               | 16A-250V-cos φ = 1               | 16A-250V-cos φ = 1  |
|                                   | inductive loads    | 4A-250V-cos φ = 0.6 | 4A-250V-cos φ = 0.6              | 4A-250V-cos φ = 0.6              | 4A-250V-cos φ = 0.6 |
|                                   | incandescent lamps | 1000 W              | 1350 W                           | 1350 W                           | 1000 W              |
| Minimum setting:                  |                    | 30min               | 30min                            | 3h                               | 30min               |
| Charge reserve:                   | (h)                | NO                  | 150                              | 150                              | 50                  |
| Operating state:                  |                    | automatic/fixed ON  | automatic/fixed ON/<br>fixed OFF | automatic/fixed ON/<br>fixed OFF | automatic/fixed ON  |
| Absorbed power:                   | (VA)               | 1                   | 1                                | 1                                | 1                   |
| Degree of protection:             |                    | IP20                | IP20                             | IP20                             | IP20                |
| Operating temperature:            | (°C)               | -25...+55           | -20...+55                        | -20...+55                        | -20...+55           |
| Maximum cable section:            | (mm²)              | 4                   | 2,5                              | 2,5                              | 4                   |
| Rated tightening torque:          | (Nm)               | 1,5                 | 1,5                              | 1,5                              | 1,5                 |
| Beam stripping cable recommended: | (mm)               | 6                   | 6                                | 6                                | 6                   |
| Screwdriver recommended:          |                    | PZ1                 | PZ1                              | PZ1                              | PZ1                 |
| Sealing:                          |                    | yes                 | yes                              | yes                              | yes                 |

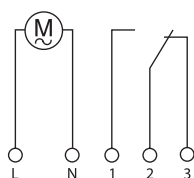
## Circuit diagrams



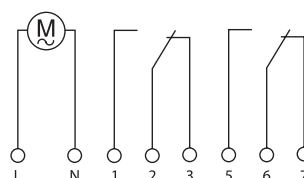
## Digital time switches

| TECHNICAL DATA                    |                              |                              |                              |
|-----------------------------------|------------------------------|------------------------------|------------------------------|
| Code:                             | <b>GW 96 844</b>             | <b>GW 96 845</b>             | <b>GW 96 846</b>             |
| Standard:                         | EN 60669-1, EN 60669-2-1     | EN 60669-1, EN 60669-2-1     | EN 60669-1, EN 60669-2-1     |
| Type:                             | Daily/Weekly                 | Daily/Weekly                 | Daily/Weekly                 |
| Rated operating voltage (Ue):     | (V) 230 a.c.                 | 230 a.c.                     | 230 a.c.                     |
| Rated frequency:                  | (Hz) 50-60                   | 50-60                        | 50-60                        |
| No. of channels:                  | 1                            | 2                            | 1                            |
| Output contact:                   | 1 changeover                 | 2 changeover                 | 1 changeover                 |
| Switchover capacity:              | resistive loads              | 16A-250V-cos $\varphi$ = 1   | 16A-250V-cos $\varphi$ = 1   |
|                                   | inductive loads              | 8A-250V-cos $\varphi$ = 0.6  | 8A-250V-cos $\varphi$ = 0.6  |
|                                   | incandescent lamps           | 2000 W                       | 1000 W                       |
| Memory positions:                 | 70                           | 70                           | 50                           |
| Minimum setting:                  | (min.) 1                     | 1                            | 1                            |
| Charge reserve:                   | (h) 3 years                  | 3 years                      | 3 years                      |
| Battery:                          | Lithium (CR2450 type)        | Lithium (CR2450 type)        | Lithium (CR2450 type)        |
| Operating state:                  | automatic/fixed ON/fixed OFF | automatic/fixed ON/fixed OFF | automatic/fixed ON/fixed OFF |
| Precision (at +20°C):             | (s/day) 2.5 $\pm$ 0.5        | 2.5 $\pm$ 0.5                | 2.5 $\pm$ 0.5                |
| Absorbed power:                   | (VA) 1                       | 1                            | 3                            |
| Degree of protection:             | IP20                         | IP20                         | IP20                         |
| Operating temperature:            | (°C) -10...+55               | -10...+55                    | -10...+55                    |
| Minimum cable section:            | (mm <sup>2</sup> ) 1         | 1                            | 1                            |
| Maximum cable section:            | (mm <sup>2</sup> ) 4         | 4                            | 2.5                          |
| Rated tightening torque:          | (Nm) 1,5                     | 1,5                          | 1,5                          |
| Beam stripping cable recommended: | (mm) 6                       | 6                            | 6                            |
| Screwdriver recommended:          | PZ1                          | PZ1                          | PZ1                          |
| Sealing:                          | yes                          | yes                          | yes                          |

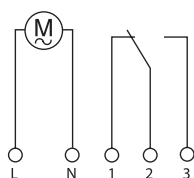
## Circuit diagrams - Digital switches



GW 96 844



GW 96 845



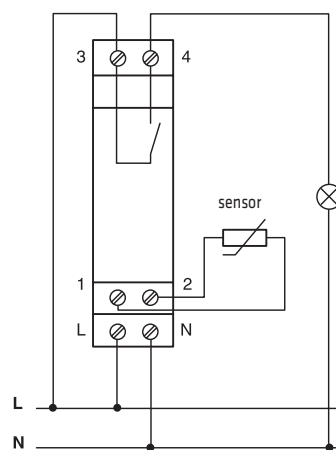
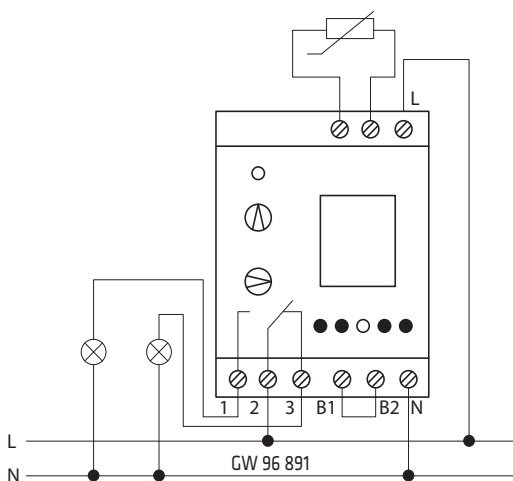
GW 96 846



## Twilight switches

| TECHNICAL DATA                             |                      |                              |                               |
|--------------------------------------------|----------------------|------------------------------|-------------------------------|
| Type:                                      |                      | With digital time switch     | Normal                        |
| Code:                                      |                      | GW 96 891                    | GW 96 892                     |
| Standard:                                  |                      | EN 60669-1, EN 60669-2-1     | EN 60669-1, EN 60669-2-1      |
| Rated operating voltage (Ue):              | (V)                  | 230 a.c.                     | 230 a.c.                      |
| Rated frequency:                           | (Hz)                 | 50-60                        | 50-60                         |
| No. of channels:                           |                      | 1                            | 1                             |
| Output contact:                            |                      | 1 changeover                 | 1 NO                          |
| Switchover capacity in AC:                 |                      |                              |                               |
|                                            | resistive loads      | 16A-250V                     | 16A-250V                      |
|                                            | inductive loads      | 10A-250V-cos $\varphi$ = 0.6 | 2,5A-250V-cos $\varphi$ = 0.6 |
|                                            | incandescent lamps   | 2600W                        | 1000W                         |
|                                            | fluorescent lamps    | 1000W                        | -                             |
| Switchover capacity in DC:                 | (A)                  |                              |                               |
|                                            | resistive loads 24V  | 0.8                          | 0.8                           |
|                                            | resistive loads 60V  | 0.3                          | 0.3                           |
|                                            | resistive loads 220V | 0.15                         | 0.15                          |
| Brightness adjustment:                     |                      | 2...500 lux                  | 2...500 lux                   |
| Switchover delay:                          | (s)                  | 0...100 adjustable           | 50 (fixed)                    |
| Clock type:                                |                      | Daily/Weekly                 | -                             |
| Timer switch no. of memories:              |                      | 50                           | -                             |
| Minimum timer switch adjustment:           | (min.)               | 1                            | -                             |
| Timer switch standby charge:               |                      | 3 years                      | -                             |
| Battery:                                   |                      | Lithium (CR2032 type)        | -                             |
| Timer switch operation:                    |                      | automatic/fixed ON/fixed OFF | -                             |
| Timer switch precision (at +20°C):         | (s/day)              | 2.5 $\pm$ 1                  | -                             |
| Absorbed power:                            | (VA)                 | 2.5                          | 5                             |
| Length of the cable connecting the sensor: | (m)                  | 100                          | 100                           |
| Max number of sensors:                     |                      | 10                           | 1                             |
| Switch degree of protection:               |                      | IP20                         | IP20                          |
| Sensor degree of protection:               |                      | IP65                         | IP65                          |
| Switch operating temperature:              | (°C)                 | -10...+55                    | -20...+55                     |
| Sensor operating temperature:              | (°C)                 | -30...+70                    | -30...+70                     |
| Maximum cable section:                     | (mm <sup>2</sup> )   | 4                            | 4                             |
| Rated tightening torque:                   | (Nm)                 | 1,5                          | 1,5                           |
| Beam stripping cable recommended:          | (mm)                 | 6                            | 6                             |
| Screwdriver recommended:                   |                      | PZ1                          | PZ1                           |

## Circuit diagrams



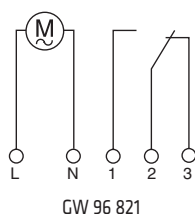
GW 96 892



## Astronomical switch

| TECHNICAL DATA                             |                    |                              |
|--------------------------------------------|--------------------|------------------------------|
| Code:                                      |                    | <b>GW 96 821</b>             |
| Standard:                                  |                    | EN 60065                     |
| Rated operating voltage (U <sub>e</sub> ): | (V)                | 230 a.c.                     |
| Rated frequency:                           | (Hz)               | 50-60                        |
| No. of channels:                           |                    | 1                            |
| Output contact:                            |                    | 1 changeover                 |
| Switch-over capacity:                      | resistive loads    | 16A-250V-cos $\varphi$ = 1   |
|                                            | inductive loads    | 8A-250V-cos $\varphi$ = 0.6  |
|                                            | incandescent lamps | 2000 W                       |
| Charge reserve:                            | (h)                | 3 years                      |
| Battery:                                   |                    | Lithium (CR2450 type)        |
| Operating state:                           |                    | automatic/fixed ON/fixed OFF |
| Precision (at +20°C):                      | (s/day)            | 2.5 $\pm$ 0.5                |
| Absorbed power:                            | (VA)               | 1                            |
| Degree of protection:                      |                    | IP20                         |
| Operating temperature:                     | (°C)               | -10...+55                    |
| Minimum cable section:                     | (mm <sup>2</sup> ) | 1                            |
| Maximum cable section:                     | (mm <sup>2</sup> ) | 4                            |
| Maximum cable section:                     | (mm <sup>2</sup> ) | 4                            |
| Rated tightening torque:                   | (Nm)               | 1,5                          |
| Beam stripping cable recommended:          | (mm)               | 6                            |
| Sealing:                                   |                    | yes                          |
| Screwdriver recommended:                   |                    | PZ1                          |

## Circuit diagrams



MEASUREMENT

Voltmeters and Ammeters

| TECHNICAL DATA                               |                                                         |                   |
|----------------------------------------------|---------------------------------------------------------|-------------------|
| Type:                                        | Analogue                                                | Digital           |
| Standards:                                   | EN 60051-1, EN 60051-2                                  | EN 61010-1        |
| Rated operating voltage (Ue):                | (V) -                                                   | 230 a.c.          |
| Rated frequency:                             | 40-60                                                   | 15-100            |
| Ammeter interchangeable scales and capacity: | 10-20-30-40-50-60-100-150-250<br>400-600-1000-1200-1500 | 5 ÷ 999           |
| Voltmeter scales:                            | (V) 300-500 a.c.                                        | 500 a.c.          |
| Precision class:                             | 1.5                                                     | 0.5               |
| Ammeter overloadability:                     | 10 In for 1s / 2 In continuous                          | 1.1 In continuous |
| Voltmeter overloadability:                   | 2 Ue for 5s / 1.2 Ue continuous                         | 1.2 Ue continuous |
| Absorbed power:                              | 0.3 (ammeter)                                           | 2 (ammeter)       |
|                                              | 1.5 (voltmeter)                                         | 1.5 (voltmeter)   |
| Degree of protection:                        | IP20                                                    | IP20              |
| Operating temperature:                       | (°C) -10...+55                                          | -5...+55          |
| Maximum cable section:                       | (mm²) 6                                                 | 6                 |

Analogue voltmeters and ammeters

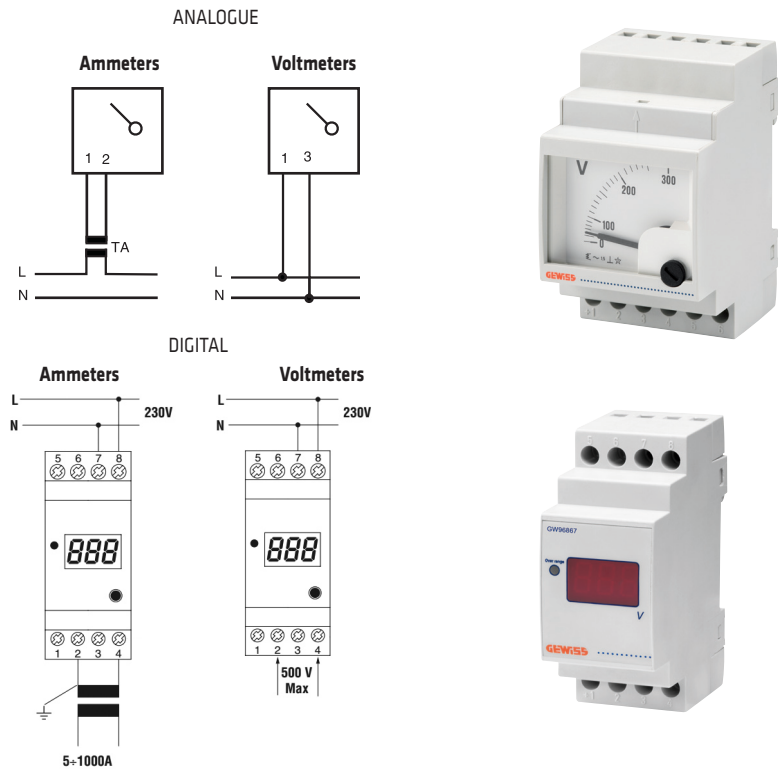
Indicator instruments of the electromagnetic type made up of a movable coil element. The voltmeter is the direct activation type, with a scale of 0-300/0-500V. The ammeters of 10 - 20 - 30A capacity use direct activation, whereas the GW 96 878 ammeter allows the measurement of currents up to 1500A thanks to the use of the appropriate TA and relative scale.

Digital voltmeters and ammeters

The digital tools with completely electronic operation ensure high precision and a long lifespan, thanks to the absence of moving mechanical parts subject to wear and tear. The measurement is displayed by means of a digital multiscale display. The ammeters are fitted for capacity selection using the front push-button.

The current transformers (.../5) must have a primary current equal to the capacity pre-set on the tool.

Circuit diagrams



## Single-phase digital energy meter

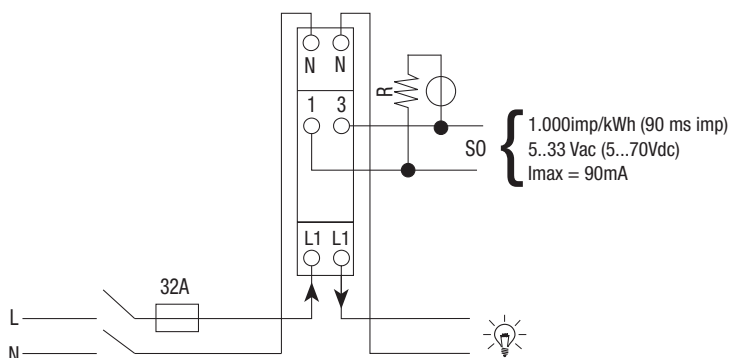
| TECHNICAL DATA                               |           |                                       |
|----------------------------------------------|-----------|---------------------------------------|
| Code:                                        |           | <b>GW D6 801</b>                      |
| Standards:                                   |           | EN 50470-1-3, EN 62053-31             |
| DIN modules:                                 |           | 1                                     |
| Reference voltage $U_n$ :                    | (V)       | 230 a.c.                              |
| Minimum operating voltage ( $U_n$ min):      | (V)       | 184 a.c.                              |
| Maximum operating voltage ( $U_n$ max):      | (V)       | 276 a.c. (continuous)                 |
|                                              |           | 300 a.c. (momentary 1s)               |
| Activation:                                  |           | direct                                |
| Measured values:                             |           | active energy (exported and imported) |
|                                              |           | active power (exported and imported)  |
| Reference frequency:                         | (Hz)      | 50                                    |
| Minimum current measured NOT in Class (Ist): | (A)       | 0.02                                  |
| Minimum current measured in Class (Imin):    | (A)       | 0.25                                  |
| Base current (Ib):                           | (A)       | 5                                     |
| Maximum current (Imax):                      | (A)       | 32 (continuous)                       |
|                                              |           | 960 (momentary 1s)                    |
| Precision class:                             |           | 1                                     |
| Reading resolution:                          | (kWh)     | 0.1                                   |
| Absorbed power:                              | (VA)      | 8                                     |
| Remote signalling contact:                   |           | 1 NO                                  |
| Max. output current with pulse:              | (A)       | 0,09 (max 230V a.c./d.c.)             |
| Pulse output contact operating voltage:      | (V)       | 5÷230 a.c.                            |
|                                              |           | 5÷300 d.c.                            |
| Output pulse frequency:                      | (imp/kWh) | 1000                                  |
| Output pulse duration:                       | (ms)      | 90                                    |
| Display:                                     |           | LCD (N° 7 digits)                     |
| Digits displayed:                            |           | 999 999,9                             |
| Degree of protection:                        |           | IP20                                  |
| Operating temperature:                       | (°C)      | -25...+55                             |
| Storage temperature:                         | (°C)      | -25...+70                             |
| Maximum cable section:                       | (mm²)     | 16 (also with terminal connector)     |
| Screwdriver suggested for main terminals:    |           | PZ1                                   |
| Maximum cable section for output contact:    | (mm²)     | 2,5 (4 with terminal connector)       |
| Screwdriver suggested for output contact:    |           | PZ0                                   |
| Resetting of energy count:                   |           | yes                                   |
| Sealing:                                     |           | yes                                   |
| Suitable accessory:                          |           | with KNX GW 90 876* interface         |

\* KNX interface (1 module) communicates on the KNX bus system the values of energy and power measured by the energy meter.

The KNX interface is optically coupled with energy meter (the two devices have to be installed side-by-side).

KNX interface has to be configured with ETS software.

## Circuit diagrams



KNX interface

Energy meter

## Three-phase digital energy meters

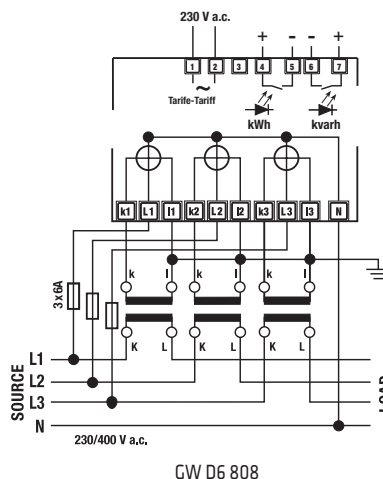
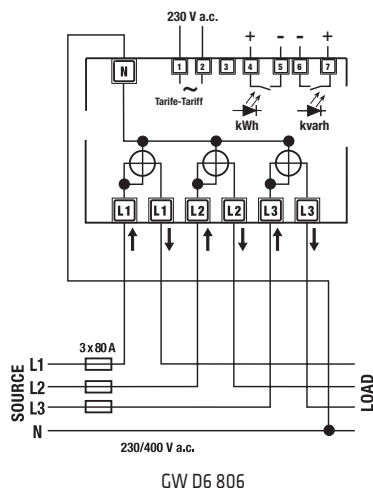
| TECHNICAL DATA                                           |                                 |                                                                                                      |                                                                                                      |
|----------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>Code:</b>                                             |                                 | <b>GW D6 806</b>                                                                                     | <b>GW D6 808</b>                                                                                     |
| <b>Standard:</b>                                         |                                 | EN 50470-1-3, EN 62053-23-31                                                                         | EN 50470-1-3, EN 62053-23-31                                                                         |
| <b>DIN modules:</b>                                      |                                 | 4                                                                                                    | 4                                                                                                    |
| <b>Reference voltage (Un):</b>                           | <b>(V)</b>                      | 230 a.c. Phase-Neutral                                                                               | 230 a.c. Phase-Neutral                                                                               |
| <b>Connection:</b>                                       |                                 | single phase line (2 cables)<br>single phase line (4 cables)                                         | three-phase line (4 cables)                                                                          |
| <b>Minimum operating voltage (Un min):</b>               | <b>(V)</b>                      | 110 a.c. (Phase-Neutral)<br>190 a.c. (Phase-Phase)                                                   | 110 a.c. (Phase-Neutral)<br>190 a.c. (Phase-Phase)                                                   |
| <b>Maximum operating voltage (Un max):</b>               | <b>(V)</b>                      | F-N: 276 AC (continuous) - 300 AC (momentary 1s)<br>F-F: 480 AC (continuous) - 800 AC (momentary 1s) | F-N: 276 AC (continuous) - 300 AC (momentary 1s)<br>F-F: 480 AC (continuous) - 800 AC (momentary 1s) |
| <b>Activation:</b>                                       |                                 | direct                                                                                               | indirect with C.T.                                                                                   |
| <b>Measured values:</b>                                  |                                 | active power (exported and imported)<br>active energy (exported and imported)                        | active power (exported and imported)<br>active energy (exported and imported)                        |
| <b>Reference frequency:</b>                              | <b>(Hz)</b>                     | 50                                                                                                   | 50                                                                                                   |
| <b>Minimum current measured NOT in Class (Ist):</b>      | <b>(A)</b>                      | 0,015                                                                                                | 0,003                                                                                                |
| <b>Minimum current measured in Class (Imin):</b>         | <b>(A)</b>                      | 0,25                                                                                                 | 0,05                                                                                                 |
| <b>Base current (Ib):</b>                                | <b>(A)</b>                      | 5                                                                                                    | 5                                                                                                    |
| <b>Maximum current (Imax):</b>                           | <b>(A)</b>                      | 80 (continuous)<br>2400 (momentary 10 ms)                                                            | 6 (continuous)<br>120 (momentary 10 ms)                                                              |
| <b>Precision class:</b>                                  |                                 | 1 (active energy)<br>2 (reactive energy)                                                             | 1 (active energy)<br>2 (reactive energy)                                                             |
| <b>Absorbed power:</b>                                   | <b>(VA)</b>                     | 2                                                                                                    | 2                                                                                                    |
| <b>Remote signalling contact:</b>                        |                                 | 1 contact for carry active energy<br>1 contact for carry reactive energy                             | 1 contact for carry active energy (1NO)<br>1 contact for carry reactive energy (1NO)                 |
| <b>Tariffs:</b>                                          |                                 | n° 2 tariffs for active and reactive energy                                                          | n° 2 tariffs for active and reactive energy                                                          |
| <b>Max. output current with pulse:</b>                   | <b>(A)</b>                      | 0,09                                                                                                 | 0,09                                                                                                 |
| <b>Pulse output contact operating voltage:</b>           | <b>(V)</b>                      | 5÷33 a.c.<br>5÷70 d.c.                                                                               | 5÷33 a.c.<br>5÷70 d.c.                                                                               |
| <b>Output pulse frequency:</b>                           | <b>(imp/kWh)<br/>(imp/kvar)</b> | 500                                                                                                  | 100-10-1                                                                                             |
| <b>Output pulse duration:</b>                            | <b>(ms)</b>                     | 50                                                                                                   | 50                                                                                                   |
| <b>Display:</b>                                          |                                 | LCD (N° 8 digits)                                                                                    | LCD (N° 8 digits)                                                                                    |
| <b>Digits displayed:</b>                                 |                                 | 999 999.99 (active and reactive energy)<br>999 (active and reactive power)                           | 999 999.99 (active and reactive energy)<br>999 (active and reactive power)                           |
| <b>Degree of protection:</b>                             |                                 | IP20                                                                                                 | IP20                                                                                                 |
| <b>Operating temperature:</b>                            | <b>(°C)</b>                     | -25...+55                                                                                            | -25...+55                                                                                            |
| <b>Storage temperature:</b>                              | <b>(°C)</b>                     | -25...+70                                                                                            | -25...+70                                                                                            |
| <b>Maximum cables section:</b>                           | <b>(mm²)</b>                    | 35 (also with terminal cable)                                                                        | 4 (also with terminal cable)                                                                         |
| <b>Screwdriver suggested for main terminals:</b>         |                                 | PZ2                                                                                                  | PZ1                                                                                                  |
| <b>Maximum cable pulse output contact:</b>               | <b>(mm²)</b>                    | 4 (2,5 with terminal cable)                                                                          | 4 (also with terminal cable)                                                                         |
| <b>Screwdriver suggested for output impulse contact:</b> |                                 | shear (0,8x3,5)                                                                                      | PZ1                                                                                                  |
| <b>Resetting of energy count:</b>                        |                                 | yes                                                                                                  | yes                                                                                                  |
| <b>Sealing:</b>                                          |                                 | yes                                                                                                  | yes                                                                                                  |
| <b>Suitable accessory:</b>                               |                                 | with KNX GW 90 876* interface                                                                        | with KNX GW 90 876* interface                                                                        |

\* KNX interface (1 module) communicates on the KNX bus system the values of energy and power measured by the energy meter.

The KNX interface is optically coupled with energy meter (the two devices have to be installed side-by-side).

KNX interface has to be configured with ETS software.

## Circuit diagrams



## MODULAR ACCESSORIES

### Hour counter

| TECHNICAL DATA                |                    |                           |
|-------------------------------|--------------------|---------------------------|
| Standard:                     |                    | EN 60335-1, EN 60335-2-26 |
| Rated operating voltage (Ue): | (V)                | 230 a.c.                  |
| Rated frequency:              | (Hz)               | 50                        |
| Displayed digits:             |                    | 99,999.99                 |
| Resetting:                    |                    | no                        |
| Absorbed power:               | (VA)               | 1                         |
| Degree of protection:         |                    | IP20                      |
| Operating temperature:        | (°C)               | -25...+55                 |
| Maximum wire section:         | (mm <sup>2</sup> ) | 10                        |

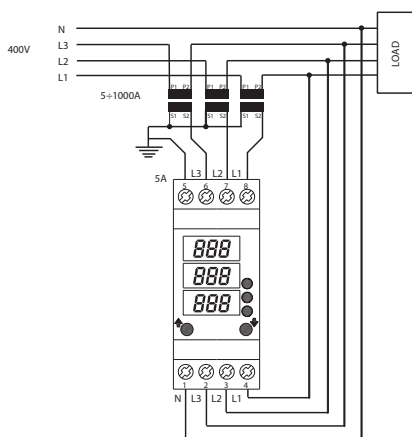


## MODULAR ACCESSORIES

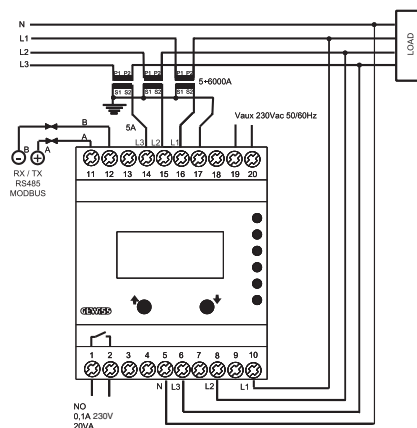
## Multimeter and network analyser

| TECHNICAL DATA                     |                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type:                              | Multimeter                                                         | Network analyser                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Standard:                          | EN 61010                                                           | EN 61010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Rated operating voltage (Ue):      | (V) 230 a.c. Phase-Neutral                                         | 230 a.c. Phase-Neutral                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Rated frequency:                   | (Hz) 50-60                                                         | 50-60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Activation:                        | CT of 5A                                                           | CT of 5A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Suitable for network system:       | single and three-phase                                             | single and three-phase                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Measured values:                   | Instantaneous measures:<br>- voltage (phase and line)<br>- current | Instantaneous measures:<br>- voltage (phase and line)<br>- power (phases and neutral)<br>- frequency<br>- active, reactive, apparent power (total and by phase)<br>- cos $\phi$ (total and per phase)<br>Average values (based on 15min):<br>- active, reactive, apparent power (total and by phase)<br>Energy measurement:<br>- active energy (partial, resettable and total)<br>- reactive energy (partial, resettable and total)<br>Measurement of energy quality:<br>- THD (% harmonic dispersion rate for voltage and current) |
| Resetting of partial energy count: | -                                                                  | active and reactive                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Display:                           | LED                                                                | LCD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Number of digits displayed:        | 3                                                                  | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Remote signalling contact:         | -                                                                  | all measured values                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| RS485 output:                      | -                                                                  | MODBUS RTU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Precision class:                   | 0.5                                                                | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Overloadability:                   | 1.1 In                                                             | 1.2 In                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Absorbed power:                    | (VA) 2                                                             | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Degree of protection:              | IP20                                                               | IP20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Operating temperature:             | (°C) -5...+55                                                      | 0...+55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Storage temperature:               | (°C) -10...+70                                                     | -10...+70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## Circuit diagrams - Multimeter



## Circuit diagrams - Network analyser

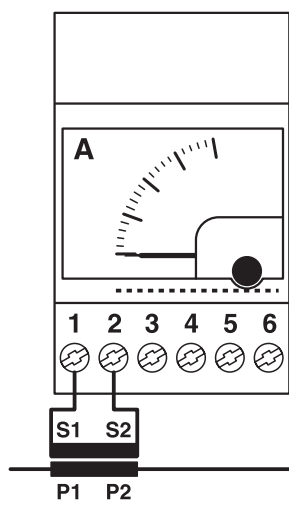


## MODULAR ACCESSORIES

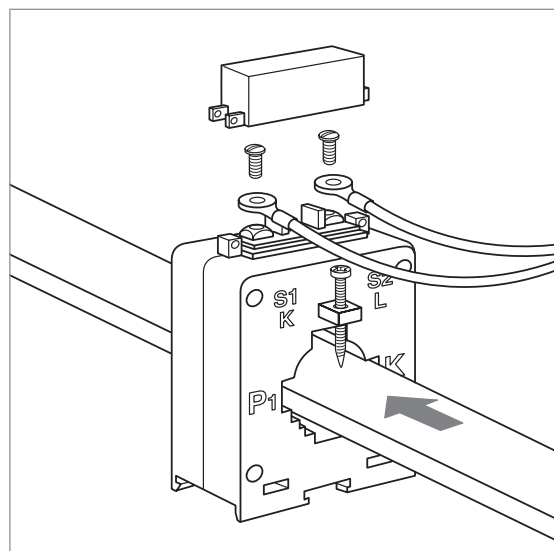
## Current transformers

| TECHNICAL DATA            |                    |                        |
|---------------------------|--------------------|------------------------|
| Standards:                |                    | EN 61869-1, EN 61869-2 |
| Secondary current:        | (A)                | 5                      |
| Rated frequency:          | (Hz)               | 50-60                  |
| Test voltage:             |                    | 6kV at 50Hz for 1 min. |
| Overload:                 |                    | 1.2 I <sub>n</sub>     |
| Dynamic shorting current: |                    | 2.5 I <sub>th</sub>    |
| Safety factor:            |                    | < 5                    |
| Degree of protection:     |                    | IP30                   |
| Operating temperature:    | (°C)               | -20...+50              |
| Storage temperature:      | (°C)               | -40...+80              |
| Relative humidity:        |                    | 80%                    |
| Maximum cable section:    | (mm <sup>2</sup> ) | 10                     |

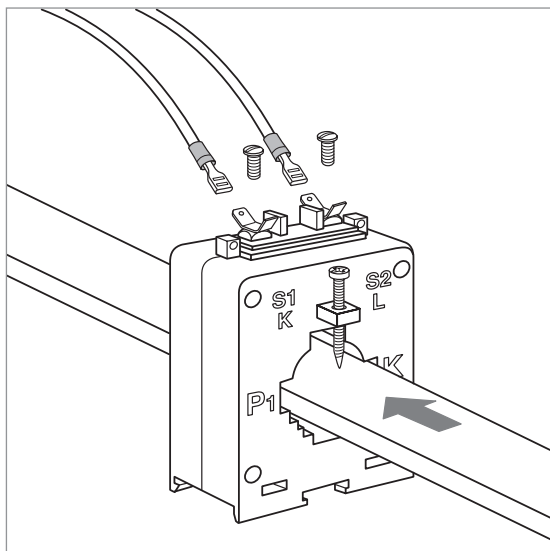
## Circuit diagrams



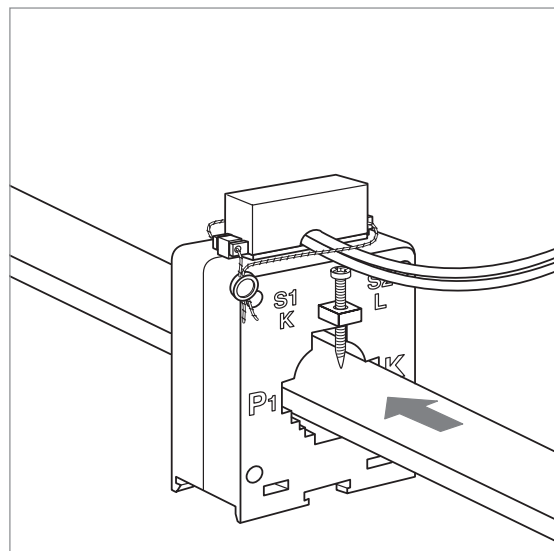
CONNECTION WITH CABLE TERMINAL



CONNECTION WITH FAST-ON (6.3MM)



TERMINAL COVER FIXING AND SEALING



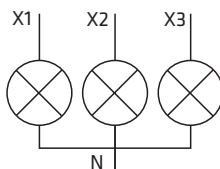
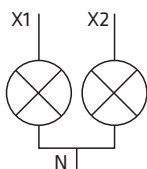
## SIGNALLING

## Indicator lights

| TECHNICAL DATA                |                    |                                            |                         |
|-------------------------------|--------------------|--------------------------------------------|-------------------------|
| Standard:                     |                    | EN 62094-1                                 | EN 62094-1              |
| Rated operating voltage (Ue): | (V)                | 230 a.c.                                   | 12-48 a.c./d.c.         |
| Rated frequency:              | (Hz)               | 50/60                                      | 50/60                   |
| Type of lamp:                 |                    | LED                                        | LED                     |
| Lamp consumption:             | (W)                | 0.8 (single) / 1.4 (double) / 1.8 (triple) | 0.08                    |
| Lamp duration:                | (h)                | 100,000                                    | 100,000                 |
| Operating temperature:        | (°C)               | -5...+40                                   | -5...+40                |
| Maximum cable section:        | (mm <sup>2</sup> ) | 6 (flexible) 10 (rigid)                    | 6 (flexible) 10 (rigid) |

Note: rated operating voltage for triple signalling lamp : 230Vac Phase-Neutral and 400Vac Phase-Phase. Triple signalling lamp cannot be used in a three phase system without neutral.

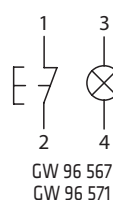
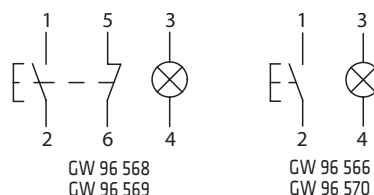
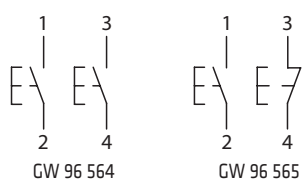
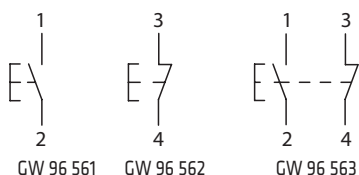
## Circuit diagrams



## Push-buttons and illuminated push-buttons

| TECHNICAL DATA                          |                    |                               |                               |
|-----------------------------------------|--------------------|-------------------------------|-------------------------------|
|                                         |                    | Push-buttons                  | Illuminated push-buttons      |
| Standard:                               |                    | EN 60669-1                    | EN 60669-1                    |
| Rated operating voltage (Ue):           | (V)                | 250 a.c.                      | 250 a.c.                      |
| Lamp voltage:                           | (V)                | -                             | 12-48 a.c.      230 a.c.      |
| Rated current:                          | (A)                | 16                            | 16                            |
| Rated impulse withstand voltage (Uimp): | (kV)               | 4                             | 4                             |
| Rated frequency:                        | (Hz)               | 50/60                         | 50/60                         |
| Closing capacity:                       |                    | 1.25Ie - 1.1 Ue - Cos φ = 0.6 | 1.25Ie - 1.1 Ue - Cos φ = 0.6 |
| Type of lamp:                           |                    | -                             | LED                           |
| Lamp consumption:                       | (W)                | -                             | 0.08      0.8                 |
| Lamp duration:                          | (h)                | -                             | 100,000                       |
| Mechanical operations:                  |                    | 20,000                        | 20,000                        |
| Operating temperature:                  | (°C)               | -5...+40                      | -5...+40                      |
| Maximum cable section:                  | (mm <sup>2</sup> ) | 6 (flexible) 10 (rigid)       | 6 (flexible) 10 (rigid)       |

## Circuit diagrams

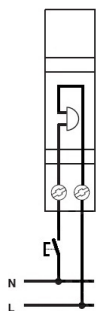


## MODULAR ACCESSORIES

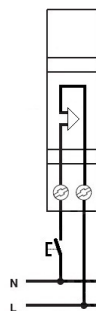
## Bells and buzzers

| TECHNICAL DATA                |       |                                  |                    |                                  |                      |                             |
|-------------------------------|-------|----------------------------------|--------------------|----------------------------------|----------------------|-----------------------------|
| Type:                         |       | Bells                            | Bell + transformer | Buzzers                          | Buzzer + transformer | Bell + Buzzer + transformer |
| Rated operating voltage (Ue): | (V)   | 12-230 a.c.                      | 230 a.c.           | 12-230 a.c.                      | 230 a.c.             | 230 a.c.                    |
| Rated frequency:              | (Hz)  | 50-60                            | 50                 | 50-60                            | 50                   | 50                          |
| Secondary rated voltage:      | (V)   | -                                | 24 a.c.            | -                                | 24 a.c.              | 24 a.c.                     |
| Sound level at 1m:            | (dB)  | 84                               | 80                 | 80                               | 70                   | 80 bell - 70 buzzer         |
| Absorbed power:               | (VA)  | 5 version 12V<br>10 version 230V | 6.1                | 5 version 12V<br>10 version 230V | 6.1                  | 3.8+3.8                     |
| Degree of protection:         |       | IP20                             | IP20               | IP20                             | IP20                 | IP20                        |
| Operating temperature:        | (°C)  | -10...+55                        | -10...+55          | -10...+55                        | -10...+55            | -10...+55                   |
| Maximum cable section:        | (mm²) | 6                                | 6                  | 6                                | 6                    | 6                           |

## Circuit diagrams - Bells and Buzzers



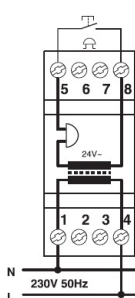
GW 96 401 (12V)  
GW 96 402 (230V)



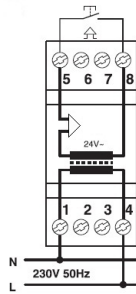
GW 96 406 (12V)  
GW 96 407 (230V)



## Circuit diagrams - Bell + transformer and Buzzer + transformer



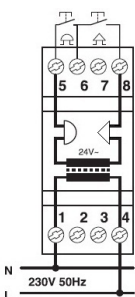
GW 96 403



GW 96 408



## Circuit diagram - Bell + Buzzer + transformer



GW 96 411



## Bell transformers (for discontinuous use)

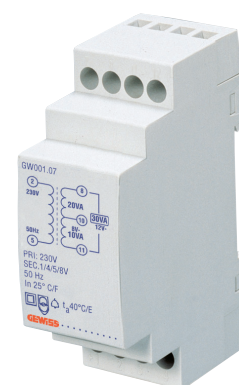
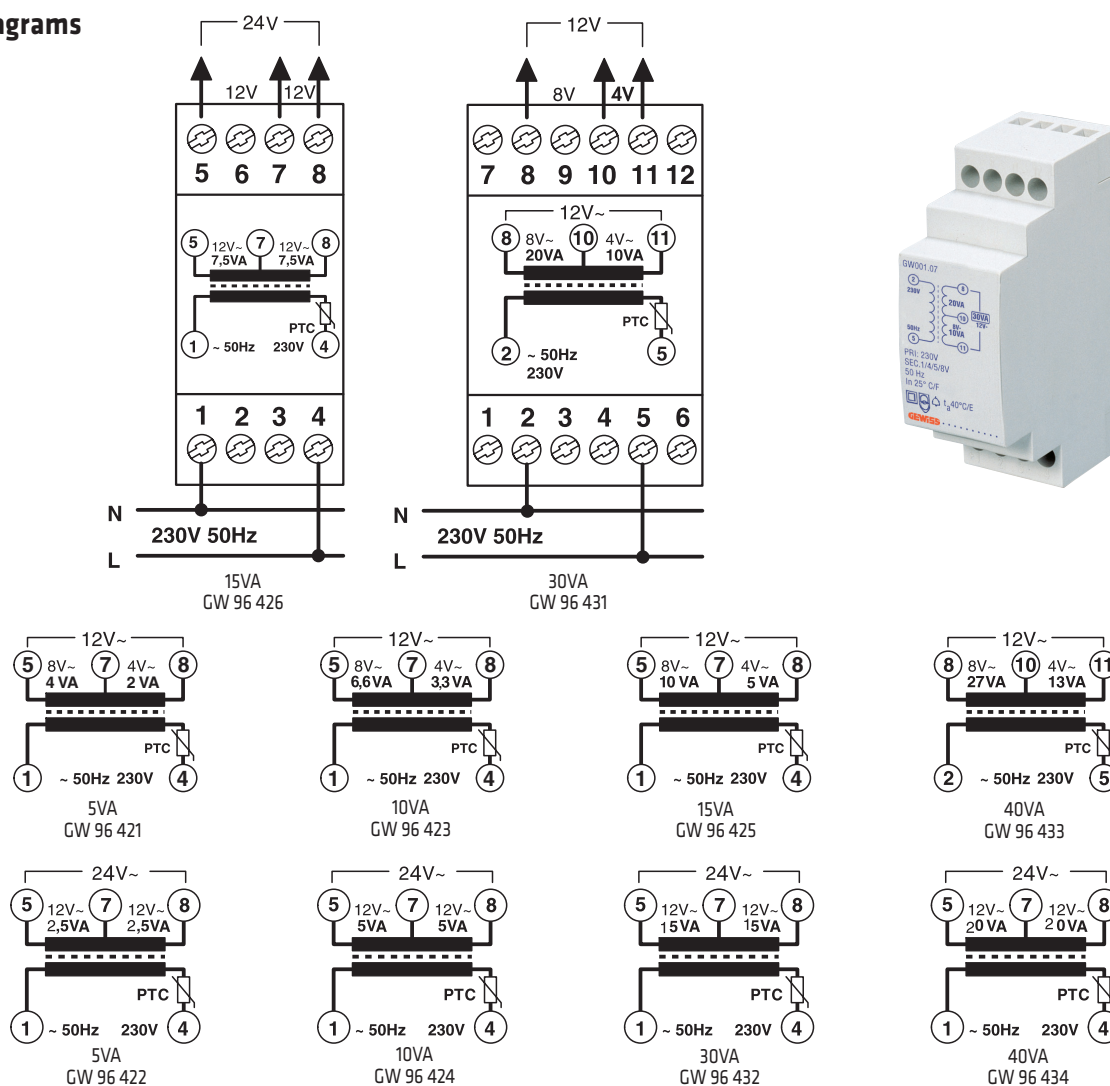
| TECHNICAL DATA                         |                    |                          |
|----------------------------------------|--------------------|--------------------------|
| Standards:                             |                    | EN 61558-1, EN 61558-2-8 |
| Primary rated voltage:                 | (V)                | 230 a.c.                 |
| Secondary rated voltage:               | (V)                | 4+8=12 / 12+12=24        |
| Secondary voltage change at full load: |                    | 15%                      |
| Insulation class:                      |                    | II                       |
| Rated power:                           | (VA)               | 6 - 10 - 15 - 30 - 40    |
| Degree of protection:                  |                    | IP20                     |
| Operating temperature:                 | (°C)               | -10...+40                |
| Maximum cable section:                 | (mm <sup>2</sup> ) | 6                        |

## Applications

Thanks to intermittent operation, the bell transformers can be used to actuated the shunt trip release 96 GW 011 with rated voltage  $V_n=12/24V$ . The following table shows the maximum number of releases GW 96 011 actuated by bell transformer.

| Transformer code | Secondary voltage (V) | Rated power (VA) | Max n. of releases GW 96 001 actuated |
|------------------|-----------------------|------------------|---------------------------------------|
| GW 96 425        | 12                    | 15               | 5                                     |
| GW 96 426        | 12                    | 7,5              | 3                                     |
|                  | 24                    | 15               | 2                                     |
| GW 96 431        | 12                    | 30               | 11                                    |
| GW 96 432        | 12                    | 15               | 7                                     |
|                  | 24                    | 30               | 6                                     |
| GW 96 433        | 12                    | 40               | 12                                    |
|                  | 12                    | 20               | 8                                     |
| GW 96 434        | 24                    | 40               | 7                                     |

## Circuit diagrams

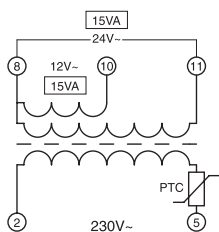


## MODULAR ACCESSORIES

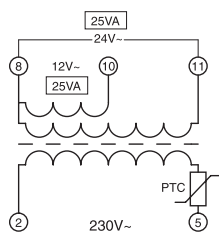
## Safety transformers (for continuous operation)

| TECHNICAL DATA                                       |                    |                          |  |
|------------------------------------------------------|--------------------|--------------------------|--|
| Standards:                                           |                    | EN 61558-1, EN 61558-2-6 |  |
| Primary rated voltage:                               | (V)                | 230 a.c.                 |  |
| Secondary rated voltage:                             | (V)                | 12-24 a.c.               |  |
| Secondary voltage change at full load:               | (V)                | 5%                       |  |
| Rated frequency:                                     | (Hz)               | 50                       |  |
| Rated power:                                         | (VA)               |                          |  |
|                                                      | GW 96 321          | 15                       |  |
|                                                      | GW 96 322          | 25                       |  |
|                                                      | GW 96 323          | 40                       |  |
|                                                      | GW 96 324          | 63                       |  |
| Off-load power loss:                                 | (W)                |                          |  |
|                                                      | GW 96 321          | 0.9                      |  |
|                                                      | GW 96 322          | 0.9                      |  |
|                                                      | GW 96 323          | 1.4                      |  |
|                                                      | GW 96 324          | 1.8                      |  |
| Insulation class:                                    |                    | II                       |  |
| Degree of protection:                                |                    | IP20                     |  |
| Operating temperature:                               | (°C)               | -10...+25                |  |
| Maximum cable section:                               | (mm <sup>2</sup> ) | 6                        |  |
| Resistant to the short-circuit not for construction: |                    | yes                      |  |
| Max limit of temperature PTC:                        | (°C)               | 120                      |  |

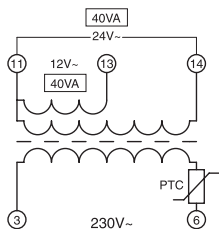
## Circuit diagrams



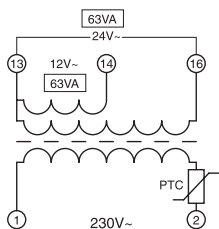
GW 96 321



GW 96 322



GW 96 323



GW 96 324



Socket for assembly on DIN rail EN 50022

| TECHNICAL DATA                |                |                            |            |                |             |
|-------------------------------|----------------|----------------------------|------------|----------------|-------------|
| Standards:                    | German         |                            | French     | Italian/German | Danish      |
| No. poles:                    | 2P+E           | 2P+E                       | 2P+E       | 2P+E           | 2P+E        |
| Standard:                     | IEC 60884-1    |                            |            |                |             |
| Specific regulation:          | DIN VDE 0620-1 |                            | NFC 61-314 | CEI 23-50      | DK 107-2-D1 |
| Rated current (In):           | (A)            | 16                         |            | 10 / 16*       | 16          |
| Rated operating voltage (Ue): | (V)            | 250 a.c.                   |            |                |             |
| Rated frequency:              | (Hz)           | 50                         |            |                |             |
| Protection shields:           | yes            |                            |            |                | no          |
| Degree of protection:         | IP20           | IP40<br>(closed cover)     | IP20       | IP20           | IP20        |
| Rated tightening torque       | (Nm)           | 0.8                        |            |                |             |
| Maximum cable section:        | (mm²)          | 10 (flexible) / 16 (rigid) |            |                |             |

\* 10A Italian standard / 16A German standard



GW 96 522



GW 96 523



GW 96 524



GW 96 525

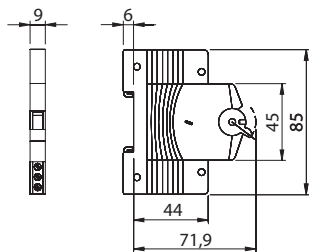


GW 96 526

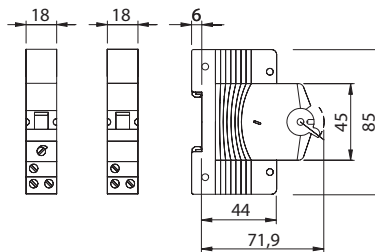
## MODULAR ACCESSORIES

### Dimension tables

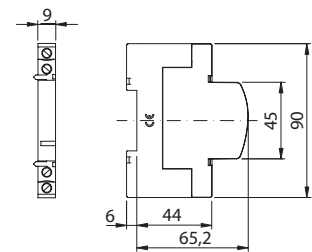
#### AUXILIARY CONTACTS FOR MTC-MT-MTHP-MDC



#### RELEASES FOR MTC-MT-MTHP-MDC

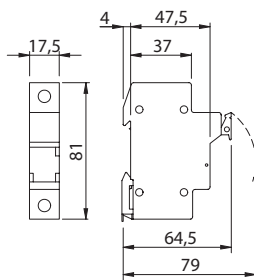


#### AUXILIARY CONTACTS AND RELEASES FOR SD

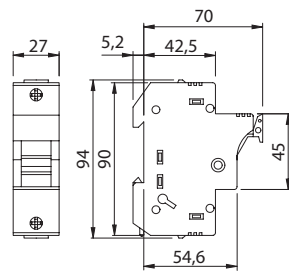


#### DISCONNECTABLE FUSE HOLDERS

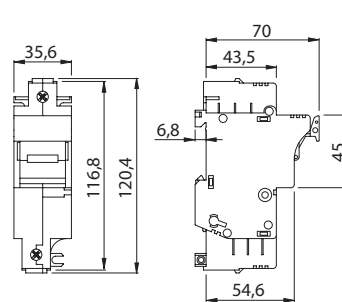
##### AC Fuse holders



For fuses 8,5 x 31,5 - 10,3 x 38



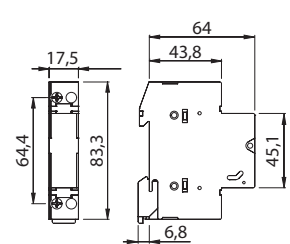
For fuses 14 x 51



For fuses 22 x 58

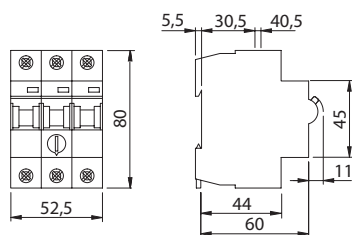
##### DC Fuse holders

##### Compact fuse holder

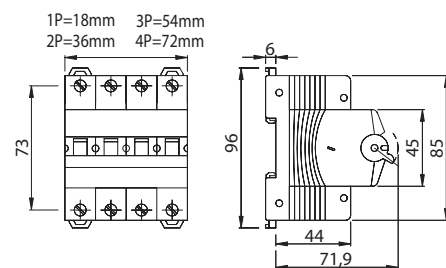


For fuses 10,3 x 38

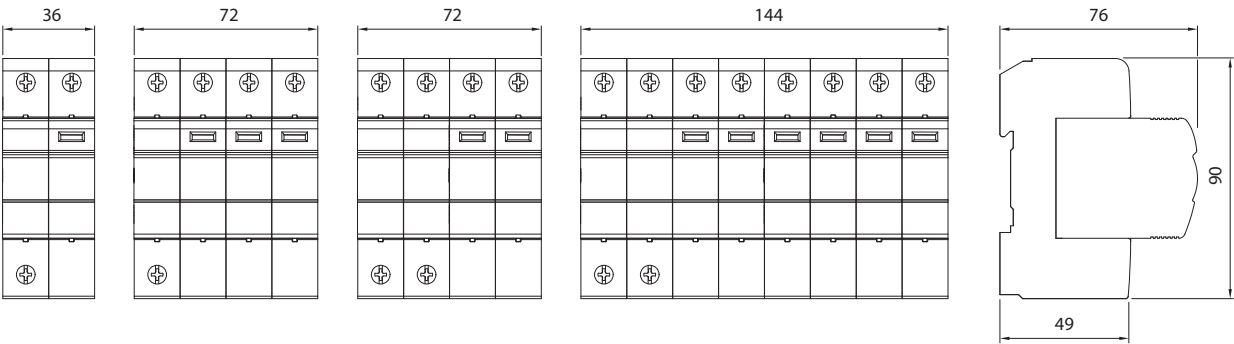
#### MOTOR PROTECTION SWITCHES



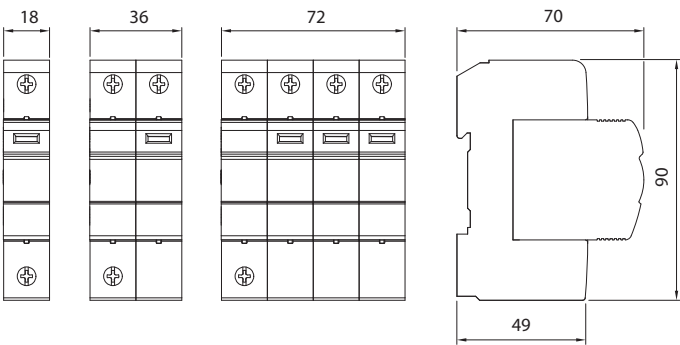
#### AC SWITCH DISCONNECTORS



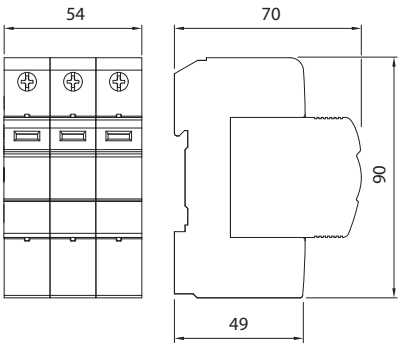
SURGE PROTECTIVE DEVICES TYPE 1+2



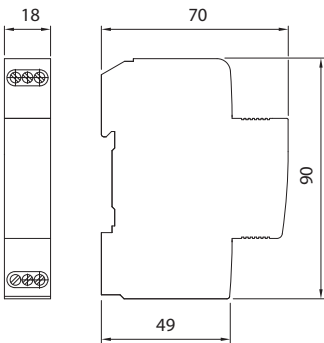
SURGE PROTECTIVE DEVICES TYPE 2



DC SURGE PROTECTIVE DEVICES

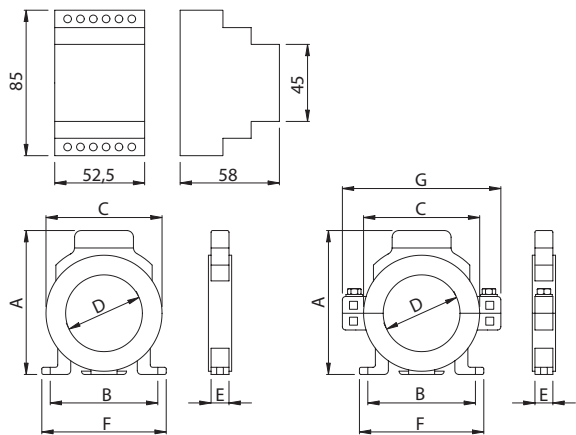


SURGE PROTECTIVE DEVICES FOR TELECOM AND DATALINE



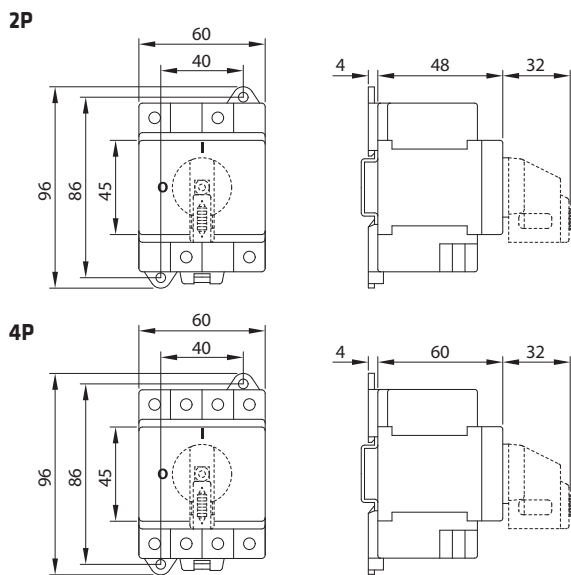
## MODULAR ACCESSORIES

### RESIDUAL CURRENT RELAY AND TOROIDS

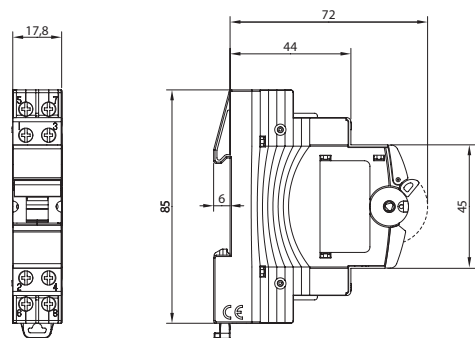


| Code      | D   | A   | B   | C     | E  | F   | G   |
|-----------|-----|-----|-----|-------|----|-----|-----|
| GW 96 332 | 35  | 118 | 90  | 78,5  | 27 | 104 |     |
| GW 96 333 | 80  | 163 | 110 | 114,5 | 27 | 117 |     |
| GW 96 334 | 110 | 198 | 140 | 150,5 | 32 | 155 |     |
| GW 96 335 | 210 | 298 | 210 | 250,5 | 32 | 227 |     |
| GW 96 336 | 110 | 198 | 140 | 150,5 | 32 | 155 | 198 |
| GW 96 337 | 210 | 298 | 210 | 250,5 | 32 | 227 | 296 |

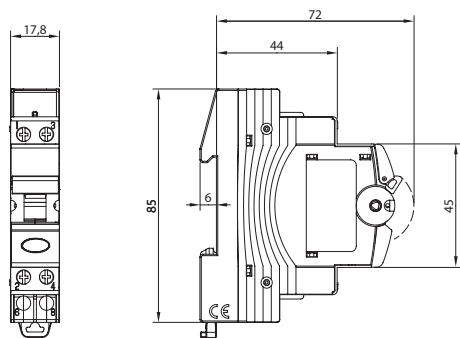
### DC ROTARY SWITCH DISCONNECTORS



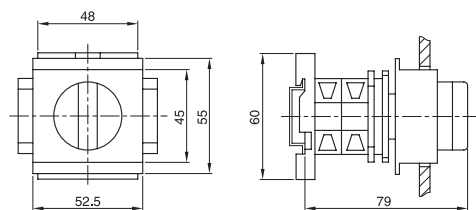
### ISOLATING SWITCHES AND LEVER SWITCHES



### ON-OFF SWITCHES WITH INDICATOR LAMP

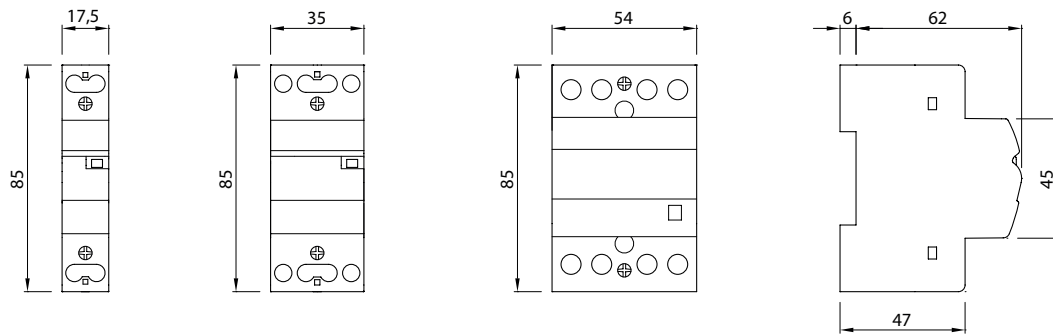


### ROTARY SWITCHES

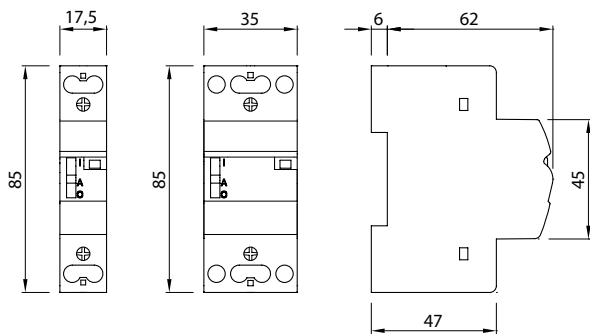


## MODULAR ACCESSORIES

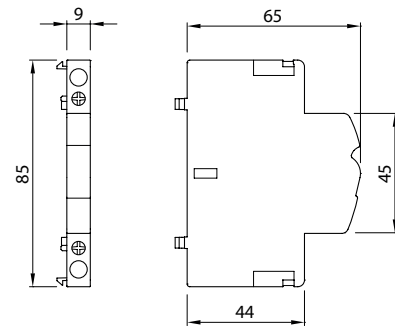
## CONTACTORS



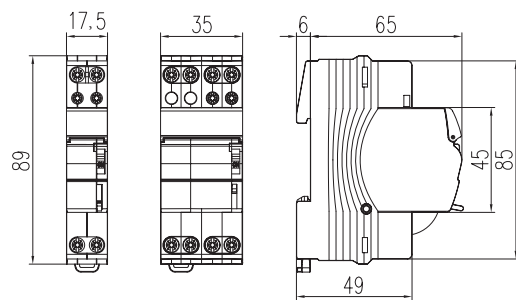
## MANUAL CONTROL CONTACTORS AND INSTALLATION RELAYS



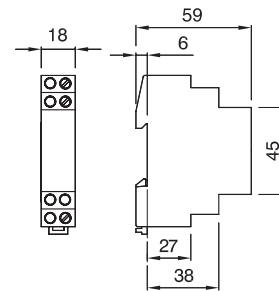
## AUXILIARY CONTACTS FOR CONTACTORS, INSTALLATION RELAYS AND LATCHING RELAYS



## LATCHING RELAYS

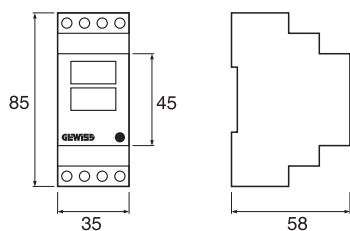


## BIOCOMFORT

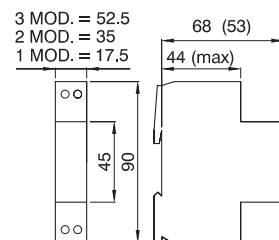


## MODULAR ACCESSORIES

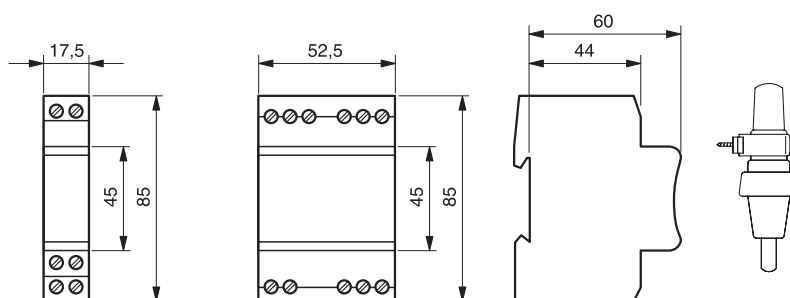
## LOAD MANAGEMENT RELAY



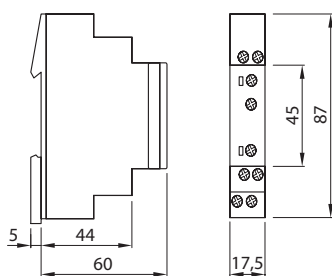
## TIME SWITCHES



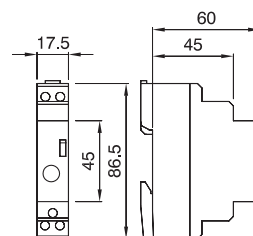
## TWILIGHT SWITCHES



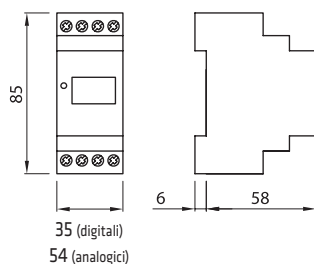
## CONTROL RELAYS AND TIMERS



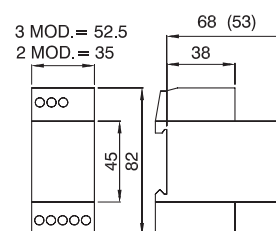
## STAIRCASE LIGHTING TIME DELAY SWITCHES



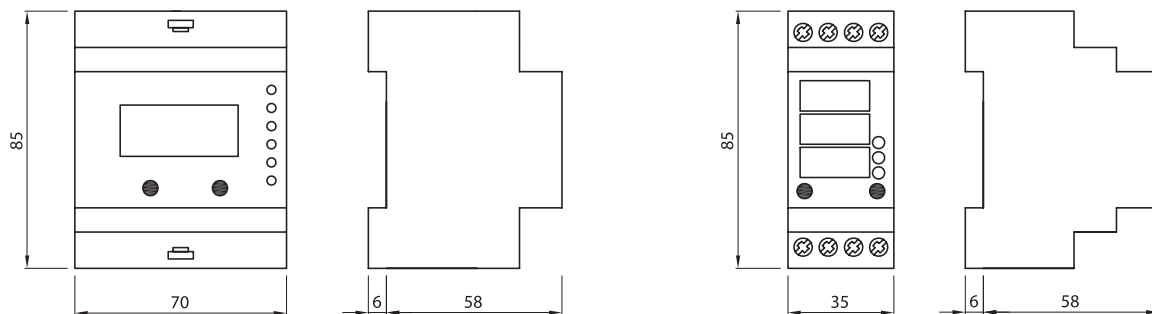
## DIGITAL VOLTMETER AND DIGITAL AMMETER



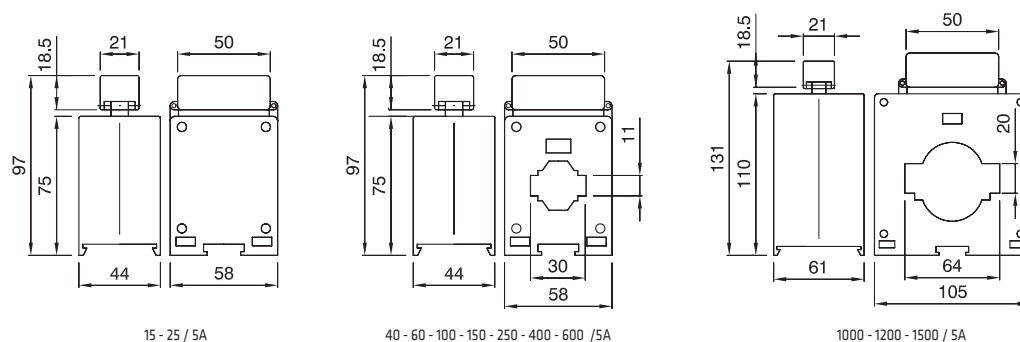
## HOUR COUNTER



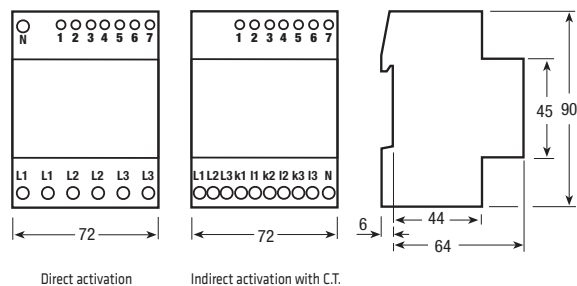
## NETWORK ANALYSER, MULTIMETER



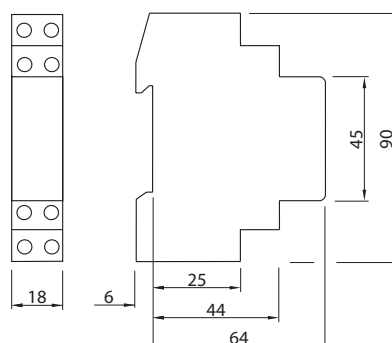
## CURRENT TRANSFORMERS



## THREE-PHASE DIGITAL ENERGY METERS

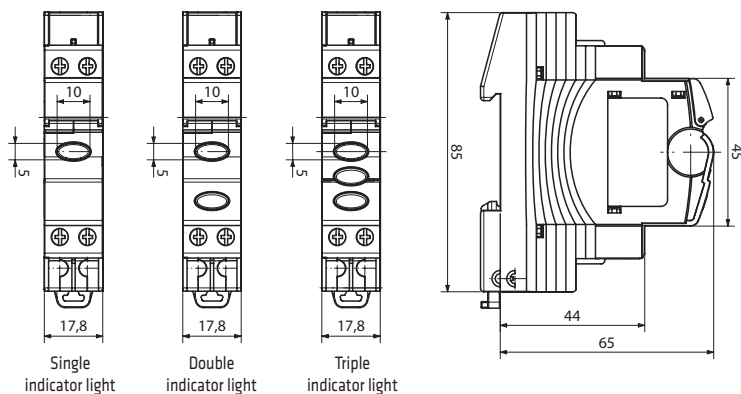


## SINGLE-PHASE DIGITAL ENERGY METERS

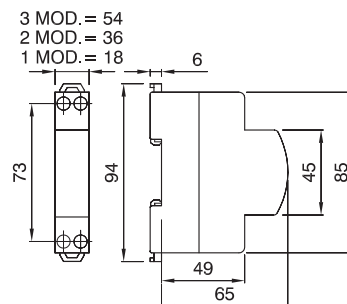


## MODULAR ACCESSORIES

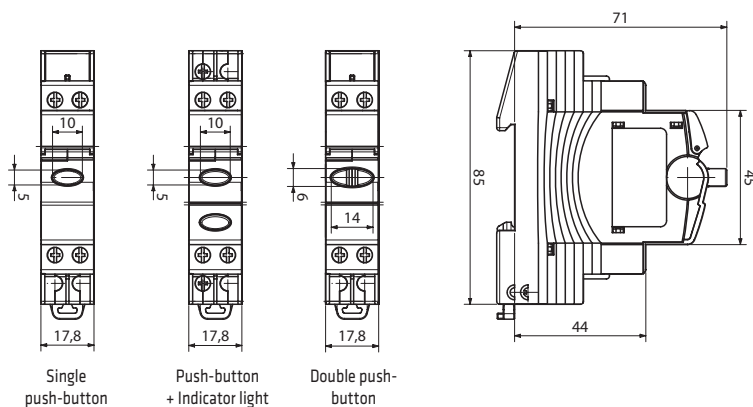
### INDICATOR LIGHTS



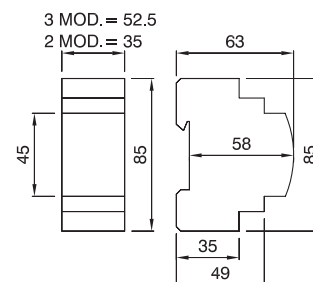
### BELLS AND BUZZERS



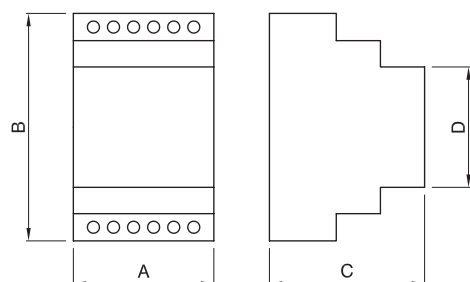
### PUSH-BUTTONS



### BELL TRANSFORMERS

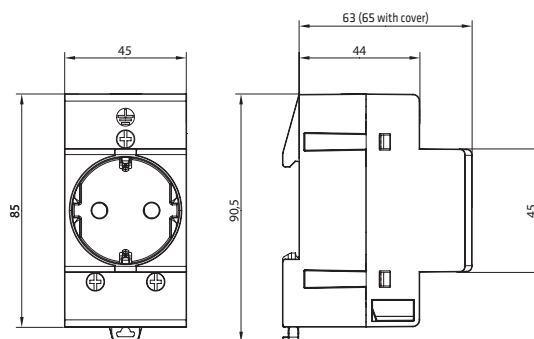


### SAFETY TRANSFORMERS



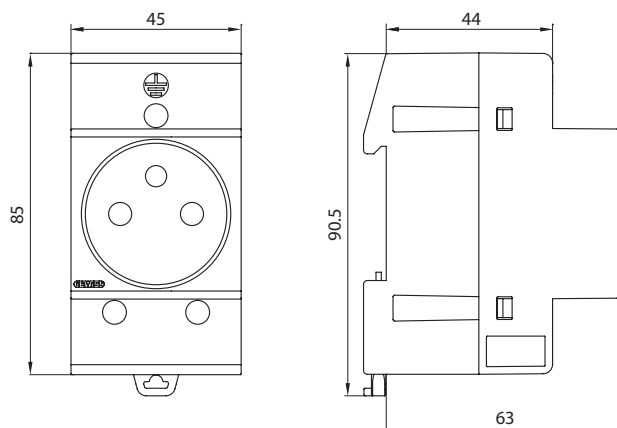
| Code      | A (mm) | B (mm) | C (mm) | D (mm) |
|-----------|--------|--------|--------|--------|
| GW 96 321 | 52.5   | 85     | 58     | 45     |
| GW 96 322 | 52.5   | 85     | 58     | 45     |
| GW 96 323 | 70     | 85     | 58     | 45     |
| GW 96 324 | 105    | 85     | 65     | 45     |

### SOCKET GERMAN STANDARD FOR ASSEMBLY ON DIN RAIL

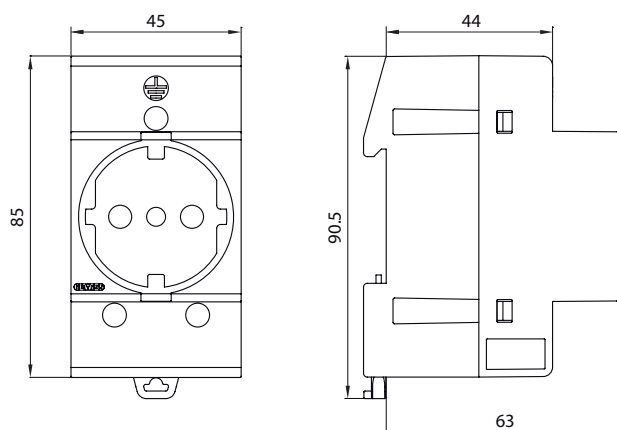


## MODULAR ACCESSORIES

### SOCKET FRENCH STANDARD FOR ASSEMBLY ON DIN RAIL



### SOCKET ITALIAN/GERMAN STANDARD FOR ASSEMBLY ON DIN RAIL



### SOCKET DANISH STANDARD FOR ASSEMBLY ON DIN RAIL

