DRA18 SERIES

AC - DC DIN RAIL MOUNTABLE POWER SUPPLY
INDUSTRIAL CONTROL EQUIPMENT

FEATURES

- UL / cUL / TUV / CE
- UNIVERSAL INPUT 90~264VAC
- SHORT CIRCUIT PROTECTION
- INTERNAL INPUT FILTER
- 2 YEARS WARRANTY

c UL us LISTED IND. CONT. EQ. UL 508 | c UL us Class I, Div 2 | c UL us UL 1310 | c UL us UL 60950-1 | EN 60950-1 | CE

MODEL LIST

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
DRA18-05	90~264 VAC	15 WATTS	+ 5 VDC	3000 mA	73%	75%
DRA18-12	90~264 VAC	18 WATTS	+ 12 VDC	1500 mA	75%	77%
DRA18-15	90~264 VAC	18 WATTS	+ 15 VDC	1200 mA	75%	77%
DRA18-24	90~264 VAC	18 WATTS	+ 24 VDC	750 mA	75%	77%

SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

GENERAL

Characteristics	Conditions		min.	typ.	max.	unit
Switching frequency	Vi nom, Io nom			132		KHz
Isolation voltage	Input-Output		3000 / 4242			VAC / VDC
	Input-FG		1500 / 2121			VAC / VDC
Isolation resistance	Input-Output, @ 500VDC		100			MΩ
Ambient temperature	Operating at Vi nom		-20		+ 71	°C
Derating (see derating curve)	Vi nom, from +61°C to +71°C				2.5	% / °C
Storage temperature	Non operational		-25		+ 85	°C
Relative humidity	Vi nom, Io nom		20		95	% RH
Temperature coefficient	Vi nom, Io min				± 0.03	% / °C
MTBF	Bellcore Issue 6 @40°C, GB	5V model		795000		Hours
		12V model		797000		Hours
		15V model		796000		Hours
		24V model		800000		Hours
Altitude during operation	IEC 60068-2-13				4850	m
Dimension	Spring terminal type		L90 x W22.5 x D114			mm
Cooling	Free air convection					
Pollution degree			2			

SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

INPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Rated input voltage	Io nom		100		240	VAC
Absolute input max. range	Ta min ... Ta max, Io nom	AC in	90		264	VAC
		DC in	120		375	VDC
Input current	Vi : 115 / 230 VAC, Io nom			335 / 210		mA
Rated input current	Vi : 90 VAC, Io nom				500	mA
Line frequency	Vi nom, Io nom		47		63	Hz
Inrush current	Vi : 115 / 230 VAC , Io nom				10 / 18	A
Power dissipation	Vi : 230 VAC, Io nom	5V model		5.0		W
		12V model		4.65		W
		15V model		4.25		W
		24V model		4.45		W
Leakage current	Input-Output				0.25	mA
	Input-FG				3.5	mA

OUTPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Output voltage accuracy (Adjusted before shipment)	Vi nom, Io max		0		+ 1	%
Minimum load	Vi nom		0			%
Line regulation	Io nom, Vi min ...Vi max				± 1	%
Load regulation	Vi nom, Io min ...Io nom				± 2	%
Voltage trim range	Vi nom, 0.8 Io nom	5V...15V models	- 10		+ 15	VDC
		24V model	- 10		+ 20	VDC
Rated continuous loading	Vi nom	5V model	3 A @ 5Vdc / 2.6 A @ 5.75 Vdc			
		12V model	1.5 A @ 12Vdc / 1.3 A @ 13.8 Vdc			
		15V model	1.2 A @ 15Vdc / 1.0 A @ 17.25 Vdc			
		24V model	0.75 A @ 24Vdc / 0.6 A @ 28.8 Vdc			
Hold up time	Vi : 115 / 230 VAC , Io nom		20 / 75			ms
Turn on time	Vi nom, Io nom				1000	ms
	Vi nom, Io nom → with 7000 μF CAP				1500	ms
Rise time	Vi nom, Io nom				150	ms
	Vi nom, Io nom → with 7000 μF CAP				500	ms
Fall time	Vi nom, Io nom				150	ms
Transient recovery time	Vi nom, 1~0.5 Io nom				2	ms
Ripple & noise	Vi nom, Io nom, BW = 20MHz				50	mV
Power back immunity	Vi nom, Io nom 1 second	5V model	7.5			VDC
		12V model	18			VDC
		15V model	22			VDC
		24V model	35			VDC
Capacitor load	Vi nom, Io nom				7000	μF
DC ON indicator threshold at start up (Green LED)	Vi nom, Io nom	5V model	3.5		4.5	VDC
		12V model	9.0		10.8	VDC
		15V model	11.0		13.5	VDC
		24V model	18		21.6	VDC
DC LOW indicator threshold after start up (Red LED)	Vi nom, Io nom	5V model	3.5		4.5	VDC
		12V model	9.0		10.8	VDC
		15V model	11.0		13.5	VDC
		24V model	18		21.6	VDC
Efficiency	Vi nom, Io nom, Po / Pi		Up to 77%, See model list and typ efficiency curve			

CONTROL AND PROTECTION

Characteristics	Conditions	min.	typ.	max.	unit
Input fuse		T2A / 250VAC internal			
Internal surge voltage protection	IEC 61000-4-5	Varistor			
Rated over load protection	Vi nom (see typ current limited curve)	110		140	%

SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

CONTROL AND PROTECTION

Characteristics	Conditions	min.	typ.	max.	unit
Over voltage protection	Vi nom, Io nom (Auto Recovery)	125		145	%
Output short circuit		Hiccup mode			
Degree of protection		IP20			

APPROVALS AND STANDARDS

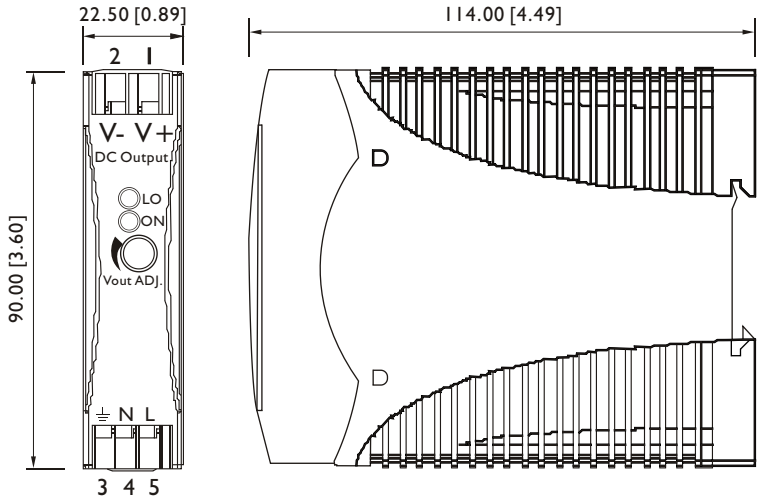
UL / cUL	UL 508 Listed UL 60950-1, UL 1310 Class 2 Power Recognized ISA 12.12.01(Class I, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme
CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3 EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L / N-FG Level 4 EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11 ENV 50204 Level 2, EN 61204-3
CCC	GB4943, GB9254, GB17625.1
Vibration resistance	meet IEC 60068-2-6 (Mounting by rail : 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face)

PHYSICAL CHARACTERISTICS

Case size	90 x 22.5 x 114 mm (3.6 x 0.89 x 4.49 inches)
Case material	Plastic
Weight	150 g
Packing	0.23 kg ; 56 pcs / 14 kg / 2.16 CUFT

MECHANISM & PIN CONFIGURATION

mm [inch]



CONSTRUCTION

Easy snap-on mounting onto the DIN-Rail (TS35/7.5 or TS35/15), unit sits safely and firmly on the rail.

INSTALLATION

Ventilation / Cooling
Normal convection
All sides 25mm free space
For cooling recommended
Connector size range
Spring terminal:
AWG24-14 (0.2~2mm^2) flexible / solid cable,
10 m/m stripping at cable end recommends
Use copper conductors only, 60 / 75°C

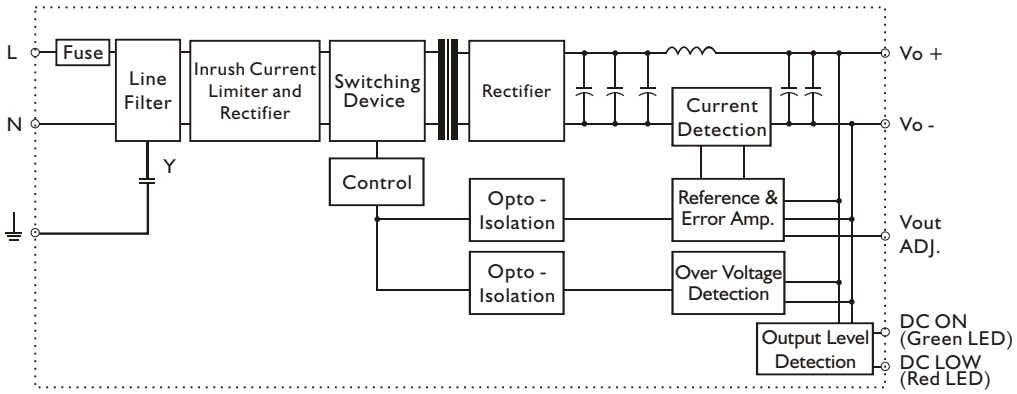
GENERAL TOLERANCE	
0.00[0.00] - 30.00[1.18]	±0.30[0.01]
30.00[1.18] - 120.00[4.72]	±0.50[0.02]

PIN ASSIGNMENT

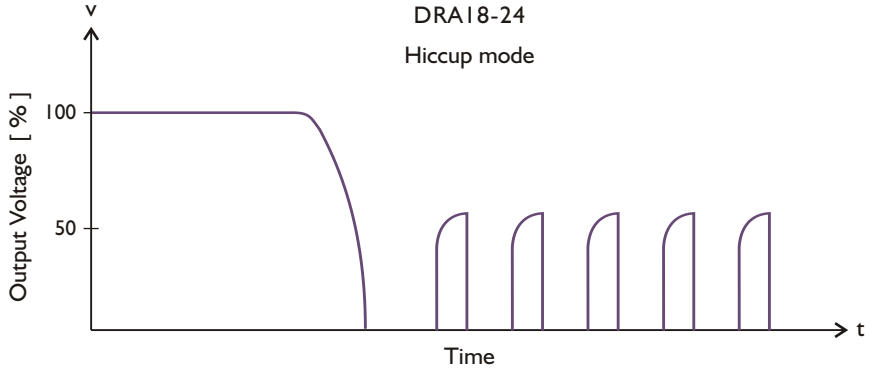
PIN NO.	Designation		Description
1	OUT	V +	Positive output terminal
2		V -	Negative output terminal
3	IN	⏚	Ground this terminal to minimize high-frequency emissions
4		N	Input terminals (neutral conductor, no polarity at DC input)
5		L	Input terminals (phase conductor, no polarity at DC input)
	OTHER	ON	Operation indicator LED
		LO	DC LOW indicator LED
		Vout ADJ.	Trimmer-potentiometer for Vout adjustment

CIRCUIT SCHEMATIC

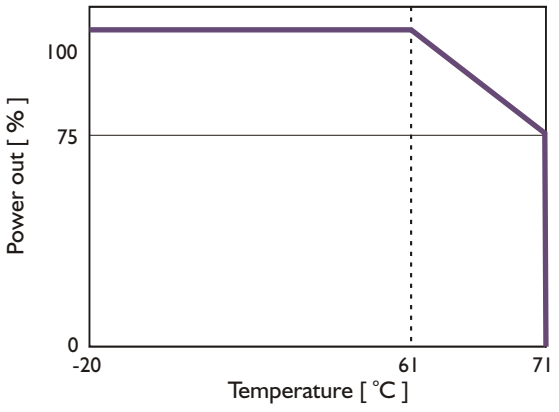
• Block diagram for DRA18 series



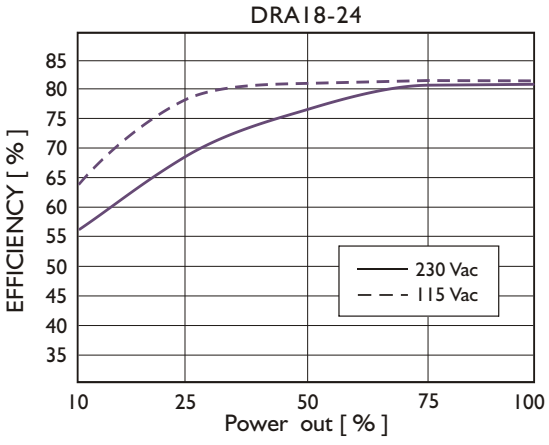
TYP. CURRENT LIMITED CURVE



DERATING CURVE



TYP. EFFICIENCY CURVE



DRA18 SERIES

AC - DC DIN RAIL MOUNTABLE POWER SUPPLY
INDUSTRIAL CONTROL EQUIPMENT

FEATURES

- UL / cUL / TUV / CE
- UNIVERSAL INPUT 90~264VAC
- SHORT CIRCUIT PROTECTION
- INTERNAL INPUT FILTER
- 2 YEARS WARRANTY

c UL us LISTED IND. CONT. EQ. UL 508 | c UL us Class I, Div 2 | c UL us UL 1310 | c UL us UL 60950-1 | EN 60950-1 | CE

MODEL LIST

MODEL NO.	INPUT VOLTAGE	OUTPUT WATTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	EFF. (min.)	EFF. (typ.)
Single Output Models						
DRA18-05A	90~264 VAC	15 WATTS	+ 5 VDC	3000 mA	73%	75%
DRA18-12A	90~264 VAC	18 WATTS	+ 12 VDC	1500 mA	75%	77%
DRA18-15A	90~264 VAC	18 WATTS	+ 15 VDC	1200 mA	75%	77%
DRA18-24A	90~264 VAC	18 WATTS	+ 24 VDC	750 mA	75%	77%

SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

GENERAL

Characteristics	Conditions		min.	typ.	max.	unit
Switching frequency	Vi nom, Io nom			132		KHz
Isolation voltage	Input-Output		3000 / 4242			VAC / VDC
	Input-FG		1500 / 2121			VAC / VDC
Isolation resistance	Input-Output, @ 500VDC		100			MΩ
Ambient temperature	Operating at Vi nom		-20		+ 71	°C
Derating (see derating curve)	Vi nom, from +61°C to +71°C				2.5	% / °C
Storage temperature	Non operational		-25		+ 85	°C
Relative humidity	Vi nom, Io nom		20		95	% RH
Temperature coefficient	Vi nom, Io min				± 0.03	% / °C
MTBF	Bellcore Issue 6 @40°C, GB	5V model		795000		Hours
		12V model		797000		Hours
		15V model		796000		Hours
		24V model		800000		Hours
Altitude during operation	IEC 60068-2-13				4850	m
Dimension	Screw terminal type		L90 x W22.5 x D114			mm
Cooling	Free air convection					
Pollution degree			2			

SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

INPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Rated input voltage	Io nom		100		240	VAC
Absolute input max. range	Ta min ... Ta max, Io nom	AC in	90		264	VAC
		DC in	120		375	VDC
Input current	Vi : 115 / 230 VAC, Io nom			335 / 210		mA
Rated input current	Vi : 90 VAC, Io nom				500	mA
Line frequency	Vi nom, Io nom		47		63	Hz
Inrush current	Vi : 115 / 230 VAC , Io nom				10 / 18	A
Power dissipation	Vi : 230 VAC, Io nom	5V model		5.0		W
		12V model		4.65		W
		15V model		4.25		W
		24V model		4.45		W
Leakage current	Input-Output				0.25	mA
	Input-FG				3.5	mA

OUTPUT SPECIFICATIONS

Characteristics	Conditions		min.	typ.	max.	unit
Output voltage accuracy (Adjusted before shipment)	Vi nom, Io max		0		+ 1	%
Minimum load	Vi nom		0			%
Line regulation	Io nom, Vi min ...Vi max				± 1	%
Load regulation	Vi nom, Io min ...Io nom				± 2	%
Voltage trim range	Vi nom, 0.8 Io nom	5V...15V models	- 10		+ 15	VDC
		24V model	- 10		+ 20	VDC
Rated continuous loading	Vi nom	5V model	3 A @ 5Vdc / 2.6 A @ 5.75 Vdc			
		12V model	1.5 A @ 12Vdc / 1.3 A @ 13.8 Vdc			
		15V model	1.2 A @ 15Vdc / 1.0 A @ 17.25 Vdc			
		24V model	0.75 A @ 24Vdc / 0.6 A @ 28.8 Vdc			
Hold up time	Vi : 115 / 230 VAC , Io nom		20 / 75			ms
Turn on time	Vi nom, Io nom				1000	ms
	Vi nom, Io nom → with 7000 μF CAP				1500	ms
Rise time	Vi nom, Io nom				150	ms
	Vi nom, Io nom → with 7000 μF CAP				500	ms
Fall time	Vi nom, Io nom				150	ms
Transient recovery time	Vi nom, 1~0.5 Io nom				2	ms
Ripple & noise	Vi nom, Io nom, BW = 20MHz				50	mV
Power back immunity	Vi nom, Io nom 1 second	5V model	7.5			VDC
		12V model	18			VDC
		15V model	22			VDC
		24V model	35			VDC
Capacitor load	Vi nom, Io nom				7000	μF
DC ON indicator threshold at start up (Green LED)	Vi nom, Io nom	5V model	3.5		4.5	VDC
		12V model	9.0		10.8	VDC
		15V model	11.0		13.5	VDC
		24V model	18		21.6	VDC
DC LOW indicator threshold after start up (Red LED)	Vi nom, Io nom	5V model	3.5		4.5	VDC
		12V model	9.0		10.8	VDC
		15V model	11.0		13.5	VDC
		24V model	18		21.6	VDC
Efficiency	Vi nom, Io nom, Po / Pi		Up to 77%, See model list and typ efficiency curve			

CONTROL AND PROTECTION

Characteristics	Conditions	min.	typ.	max.	unit
Input fuse		T2A / 250VAC internal			
Internal surge voltage protection	IEC 61000-4-5	Varistor			
Rated over load protection	Vi nom (see typ current limited curve)	110		140	%

SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

CONTROL AND PROTECTION

Characteristics	Conditions	min.	typ.	max.	unit
Over voltage protection	Vi nom, Io nom (Auto Recovery)	125		145	%
Output short circuit		Hiccup mode			
Degree of protection		IP20			

APPROVALS AND STANDARDS

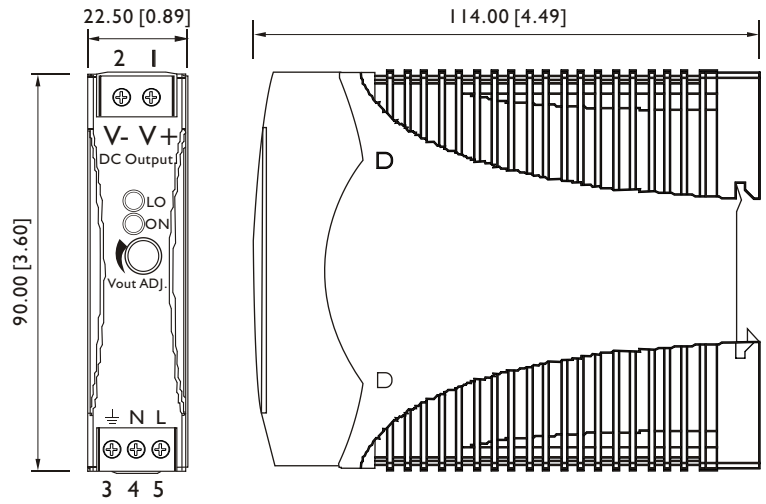
UL / cUL	UL 508 Listed UL 60950-1, UL 1310 Class 2 Power Recognized ISA 12.12.01(Class I, Division 2, Groups A, B, C and D)
TUV	EN 60950-1, CB scheme
CE	EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3 EN 61000-6-2, EN 55024, EN 61000-4-2 Level 4, EN 61000-4-3 Level 3 EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L / N-FG Level 4 EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11 ENV 50204 Level 2, EN 61204-3
CCC	GB4943, GB9254, GB17625.1
Vibration resistance	meet IEC 60068-2-6 (Mounting by rail : 10-500 Hz, 2G, along X, Y, Z each Axis, 60 min for each Axis)
Shock resistance	meet IEC 60068-2-27 (15G, 11ms, 3 Axis, 6 Faces, 3 times for each Face)

PHYSICAL CHARACTERISTICS

Case size	90 x 22.5 x 114 mm (3.6 x 0.89 x 4.49 inches)
Case material	Plastic
Weight	150 g
Packing	0.23 kg ; 56 pcs / 14 kg / 2.16 CUFT

MECHANISM & PIN CONFIGURATION

mm [inch]



CONSTRUCTION

Easy snap-on mounting onto the DIN-Rail (TS35/7.5 or TS35/15), unit sits safely and firmly on the rail.

INSTALLATION

Ventilation / Cooling
- Normal convection
- All sides 25mm free space
- For cooling recommended

Connector size range
- Screw terminal:
- AWG26-12 (0.2~2.5mm^2) flexible / solid cable, connector can withstand torque at maximum 5 pound-inches.
- 4~5 m/m stripping at cable end recommends

Use copper conductors only, 60 / 75°C

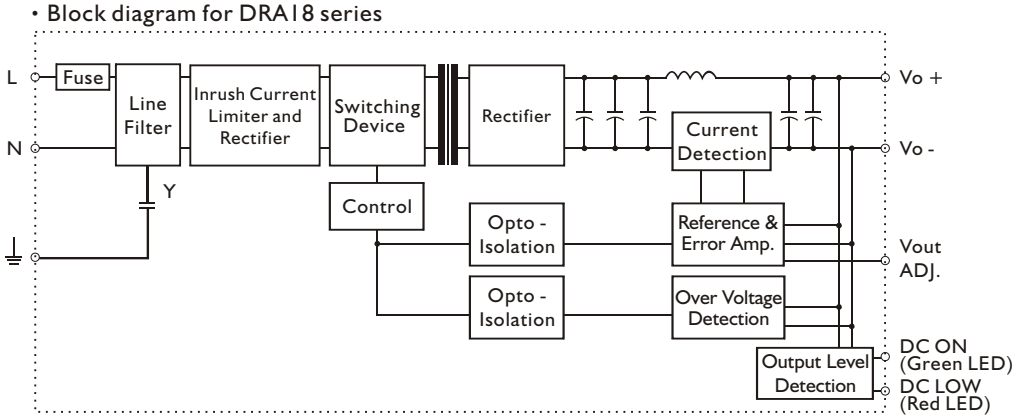
GENERAL TOLERANCE	
0.00[0.00] - 30.00[1.18]	±0.30[0.01]
30.00[1.18] - 120.00[4.72]	±0.50[0.02]

PIN ASSIGNMENT

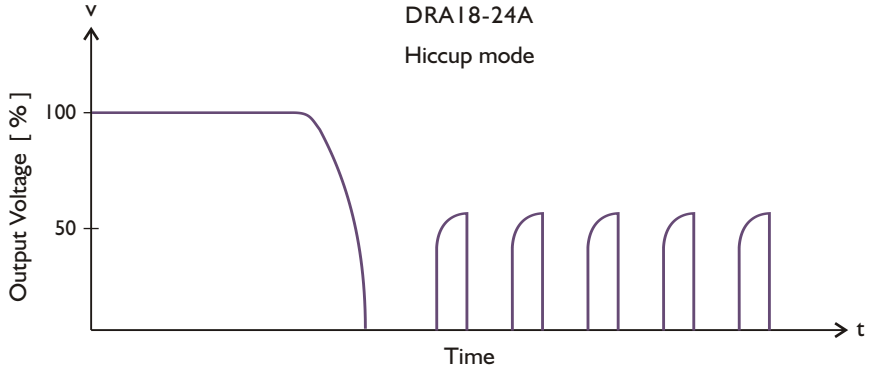
PIN NO.	Designation		Description
1	OUT	V +	Positive output terminal
2		V -	Negative output terminal
3	IN	⏚	Ground this terminal to minimize high-frequency emissions
4		N	Input terminals (neutral conductor, no polarity at DC input)
5		L	Input terminals (phase conductor, no polarity at DC input)
	OTHER	ON	Operation indicator LED
		LO	DC LOW indicator LED
		Vout ADJ.	Trimmer-potentiometer for Vout adjustment

CIRCUIT SCHEMATIC

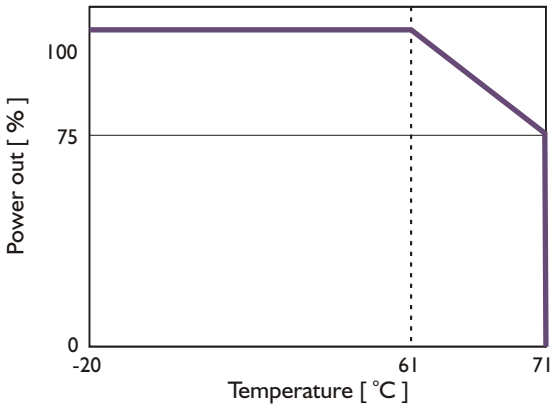
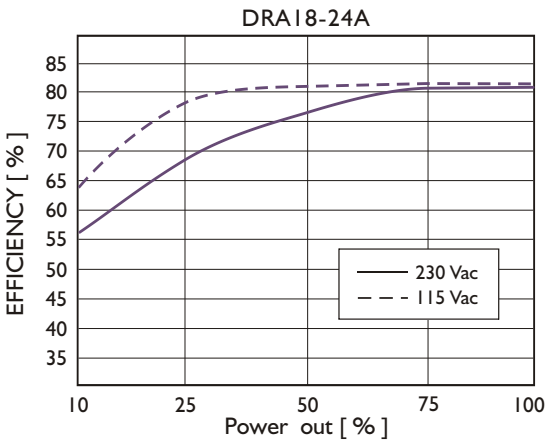
• Block diagram for DRA18 series



TYP. CURRENT LIMITED CURVE



DERATING CURVE



TYP. EFFICIENCY CURVE