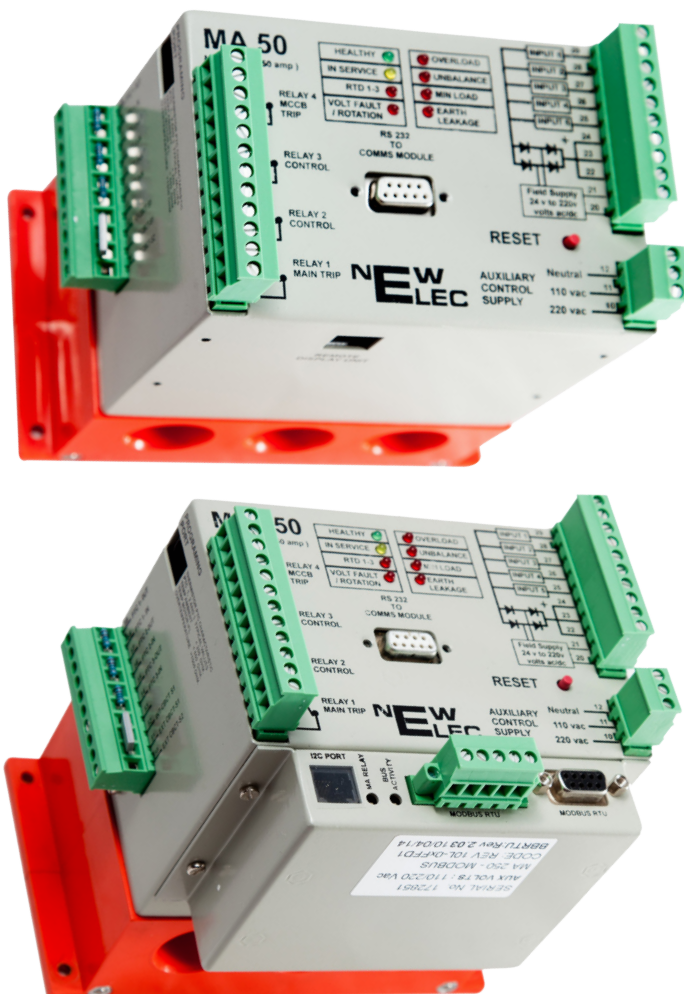


NEW ELEC

MOTOR PROTECTION & CONTROL TECHNOLOGY

MA Series Electronic Motor Protection Relay



A South African Company to be Proud of

About

Used as either a standalone Electronic Motor Protection Relay or as part of an automation network process communicating to a PLC, this motor control relay is equipped with 5 digital inputs accepting field supply voltages from 24V to 220V AC or DC and 4 potential free C/O contacts, 2 of which are programmable.

Thermal curves (Class 3 to 35), to IEC 60255-8, 3 x PTC 100 inputs, earth leakage, earth fault and short-circuit protection, load loss protection, over and undervoltage protection and voltage symmetry are all features available through the range 5 to 250A.

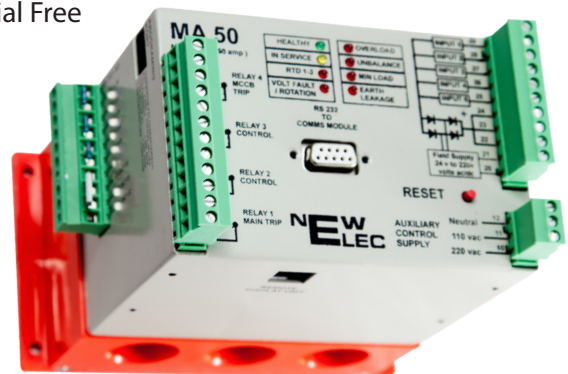
The integrated C.T. block also includes the earth leakage core balance C.T. Indication LEDs address the need of maintenance personnel involved in fault-finding, while the free NewElec frontend software enables recording of the motor performance.

WHY WAIT TO AUTOMATE?

Ideally suited for economically converting an old plant to an automated one at substantially reduced costs by using existing control voltages that are simply adapted for the MA Relay which then communicates to a PLC/DCS via Profibus DP, Modbus RTU or Canbus.

Features Include:

- Thermal Overload Protection
- Locked Rotor Protection
- Running Stall / Jam Protection
- Unbalanced Current Protection
- Single Phasing Protection
- Minimum Load / Underload Protection
- Earth Leakage Protection
- Earth Fault Protection
- Short-Circuit Protection
- 3 phasereal time recorder
- Over / Undervoltage / Phase Rotation
- Moulded Case Circuit Breaker / Contactor Co-ordination
- Latched LED Trip Indication
- Fault Recording
- 3-Phase Recorder
- 4 C.O Conatcts Potential Free (2 Programmable)
- 5 Digital Inputs
- Profibus DP
- Modbus RTU
- Canbus



Accessories

<u>Model</u>	<u>Range</u>	<u>CTs</u>
MA 5	0,5 to 5 Amp	Not required
MA 10	1 to 10 Amp	Not required
MA 50	5 to 50 Amp	Not required
MA 100	10 to 100 Amp	Not required
MA 250	25 to 250 Amp	Not required
Profibus Module		
Modbus Module		
Canbus Module		
MMI 216	Image 1	
MA FLED	Image 2	
MA RDU	Image 3	



MA RDU 216 Battery Operated in Toolbox



MA RDU 1 LED Fault Indicator

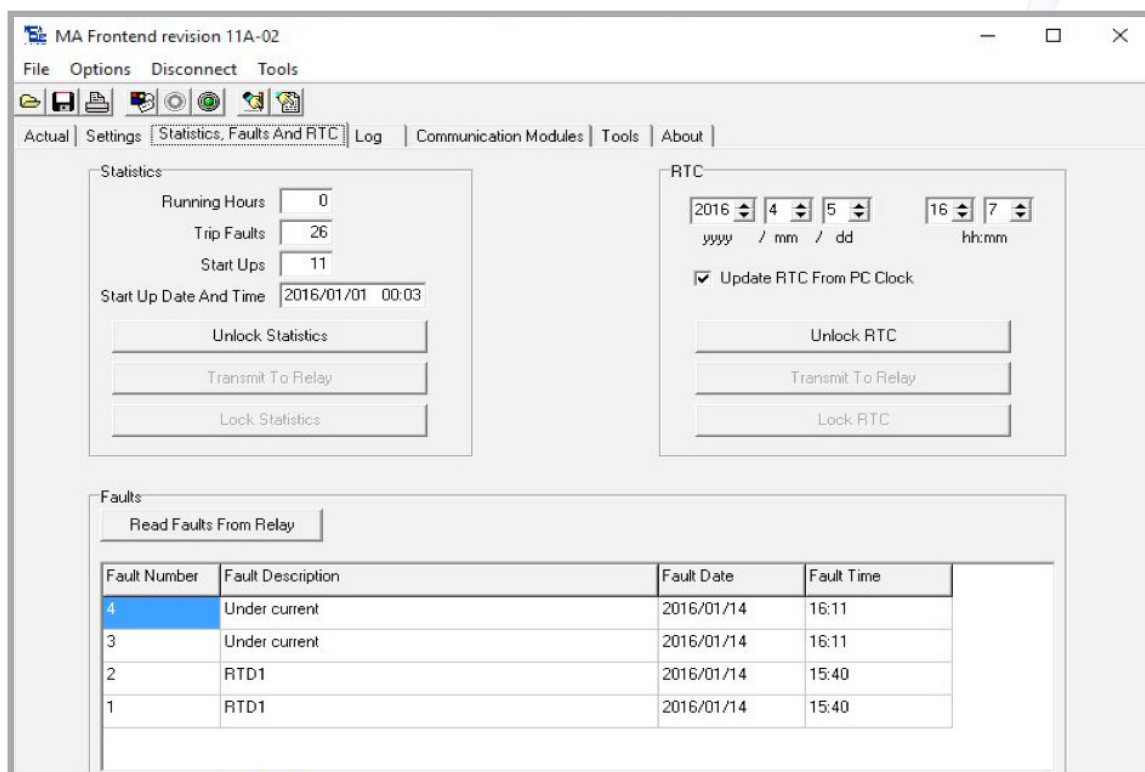


MA RDU 216 Programming Unit

Management Tools

Fault Records - Last 4 Faults

A typical display of the Fault Records which can be exported to an Excel spreadsheet.



Technical Specifications

Overcurrent (Overload) Detection

Class 3-35 to IEC 60255-8 Specification

Motor Full Load Setting	: 10% to 100%
Reset	: Manual or 3 Auto resets per hour
Reset Threshold Setting	: Fixed at 70% Thermal Capacity

Maximum Load Current

Three-Phase Current	
Current Range	: 0,5 to 250 Amp
Dynamic Range	: 0% to 1000%
Resolution	: 250 steps (4% ea)

Underload Detection

Range	: 10 to 100% of M.F.L
Selection	: Current Level
Trip Delay	: 1 to 10 seconds
Reset Time	: Manual or 10 sec to 6 hours (9 steps)

Unbalance / Single-Phasing Setting

Level Setting	: 0 to 50% I _e (M.F.L.)
Trip Delay	: 1 to 10 seconds
Reset	: Manual

Short-Circuit Detection

Trip Level	: 900% of ILOAD
"Trip Delay" Time	: 1 second fixed
Reset	: Manual

Voltage

Range	: 110V, 400V and 525V
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Range Selection	: Manual
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Over / Undervoltage Detection

Trip Delay Time	: 10 seconds fixed
Trip Level	: Factory Setting
Reset	: Manual

Earth Leakage Detection (EL ≤ 1A)

Instantaneous Definite Time	: 100ms ≥ t ≥ 1 000ms
Trip Level	: Adjustable
Range	: 50mA to 1A
Reset	: Manual

Earth Fault Detection

Trip Level	: 2A fixed
Trip Delay Time	: 1 second fixed
Reset	: Manual
Harmonic Filtering	: Suitable for VSDs

Running Stall Protection

Detection Level	: 300% of ILOAD
Trip Delay Time	: 1 second fixed
Reset	: Manual

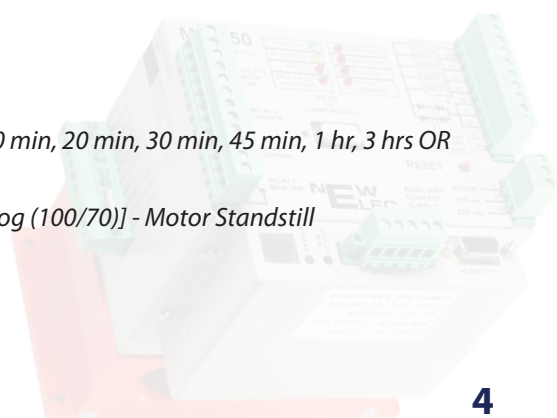
Digital Field Inputs

Inputs	: 5
Input Voltage	: 24V to 230V AC or DC

Restart Timer

Minimum Load Reset	: Manual only, 5 sec, 10 sec, 2 min, 10 min, 20 min, 30 min, 45 min, 1 hr, 3 hrs OR 6 hrs delay
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Overload T/C Reset Time	: T reset = Curve [2.33 (35,49 x 4) 15 log (100/70)] - Motor Standstill
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Environmental Specifications

<i>Emissions</i>		<i>Conducted Emissions</i>	: CISPR 11 Class A
<i>Radiated Emissions</i>	: CISPR 22 Class A		: IEC 61326-1
	: IEC 61326-1		
<i>Harmonic Current Emissions</i>	: IEC 61000-3-3		
<i>Immunity</i>		<i>Electrostatic Discharge</i>	: IEC 61326-1
<i>Electrical Fast Transients</i>	: IEC 61326-1: 2000 Criteria A		Criteria B
	: 2kV, 5kHz, 5/50nS		: 4kV
<i>Surges</i>	: IEC 61326-1 Criteria A	<i>Radiated Susceptability</i>	: IEC 61326-1
	: 1kV 1,2 / 50µs		: 1kHz at 10V/m
<i>Conducted Immunity</i>	: IEC 61326-1		
	: 1kHz at 3V		

Physical Specifications

Relays

<i>Relay 1</i>	: Main Trip Relay
<i>Relay 2</i>	: Restart Relay or I/O Map
<i>Relay 3</i>	: Auxiliary Relay or I/O Map
<i>Relay 4</i>	: Frozen Contactor Relay
<i>Real Time Clock (24 Hour)</i>	
<i>Start Time</i>	: Hour and Minute Configurable
<i>Stop Time</i>	: Hour and Minute Configurable

Physical Dimensions

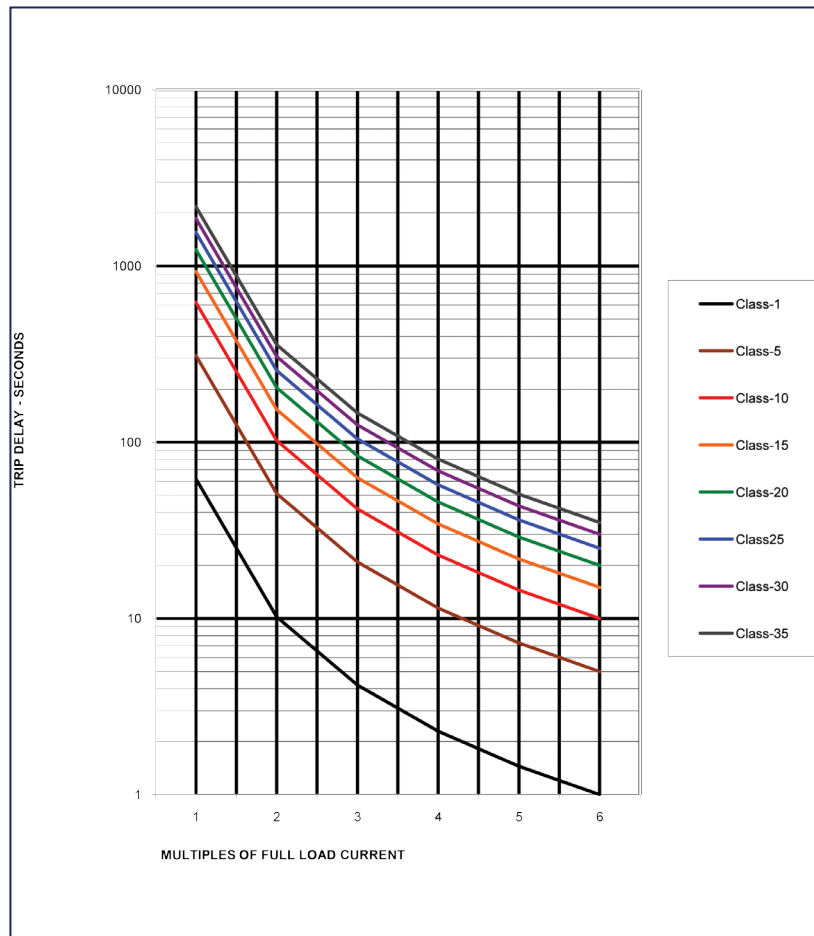
<i>Footprint</i>	: 85mm x 150mm
<i>Length</i>	: 140mm
<i>Mass</i>	: 1kg
<i>Auxiliary Power Supply</i>	
<i>Voltage Requirements</i>	: 110V A.C. ± 10%
	: 220V A.C. ± 10%
<i>Power Requirements</i>	: 2,2 Watts
<i>Operating Environment</i>	
<i>Temperature</i>	: 0 - 60° C
<i>Relative Humidity</i>	: < 85%

Approvals

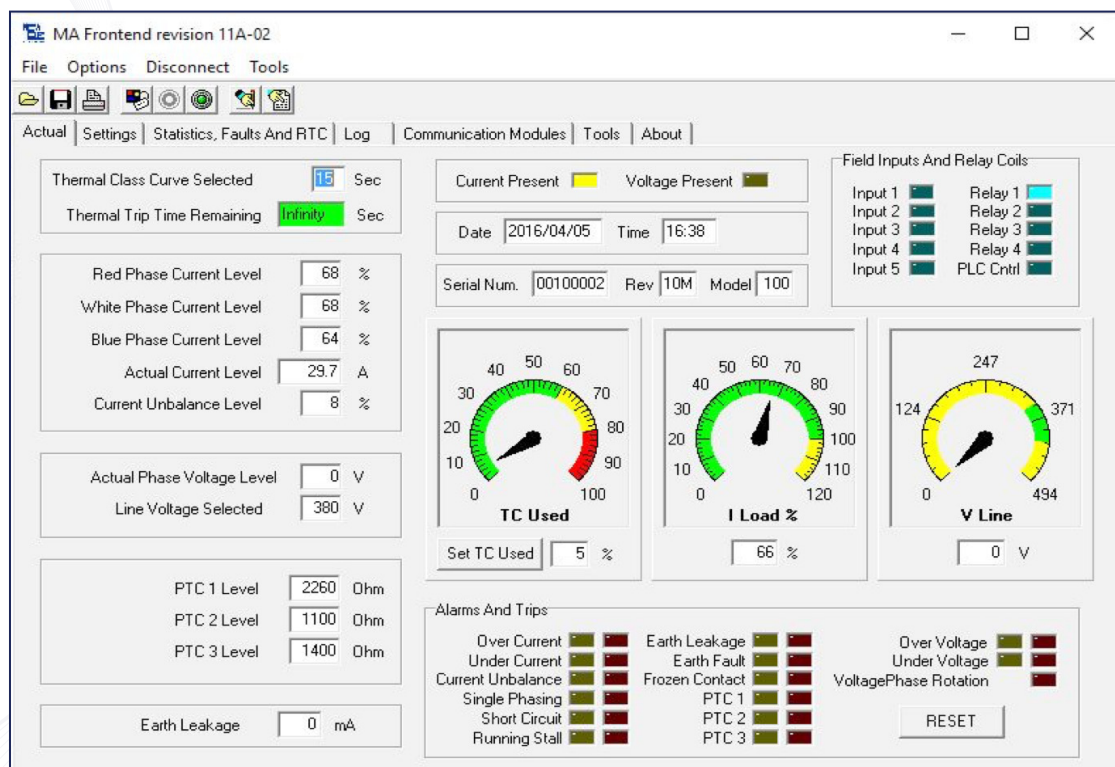
- Manufactured to ISO 9001: 2000 Standards
- Profibus Certification



Thermal Curves



Frontend Actual Readings

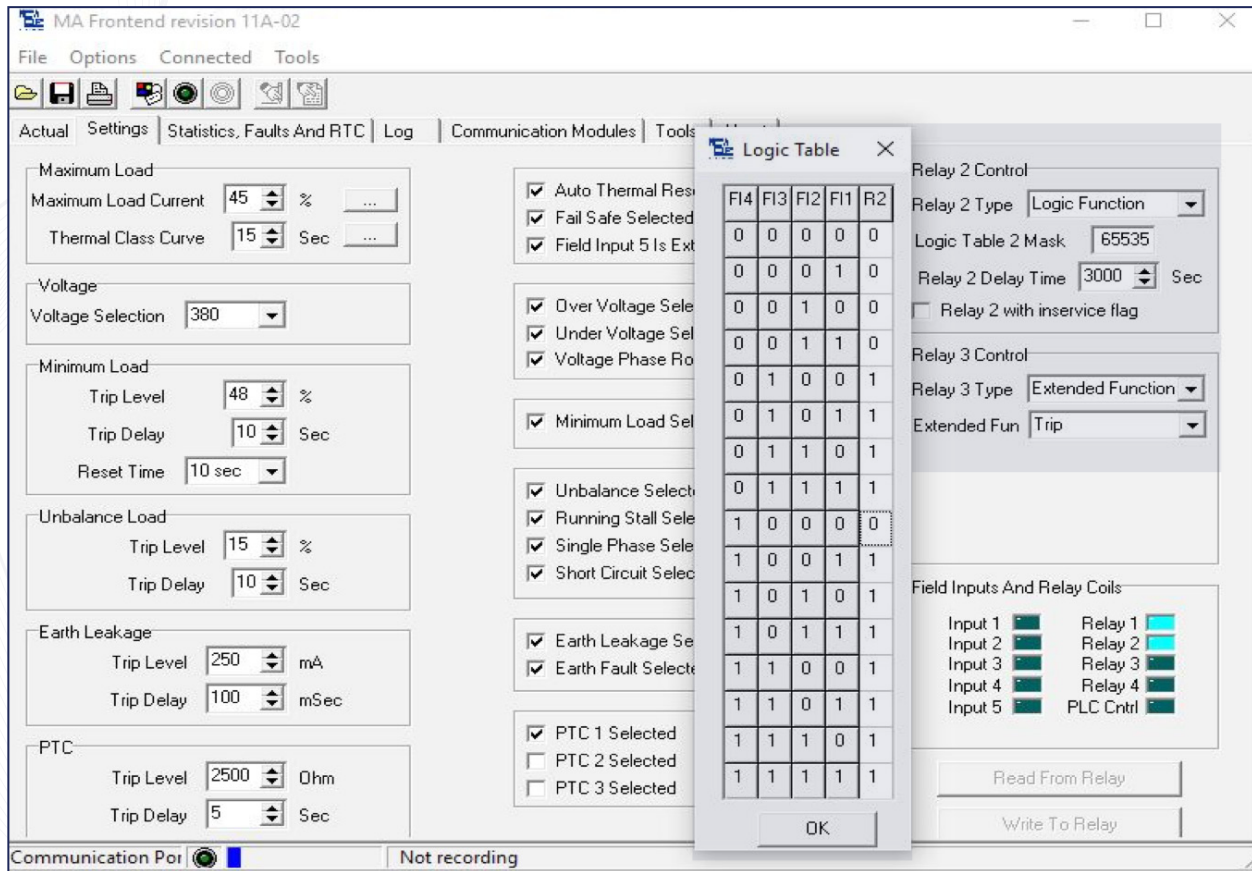


Frontend Settings

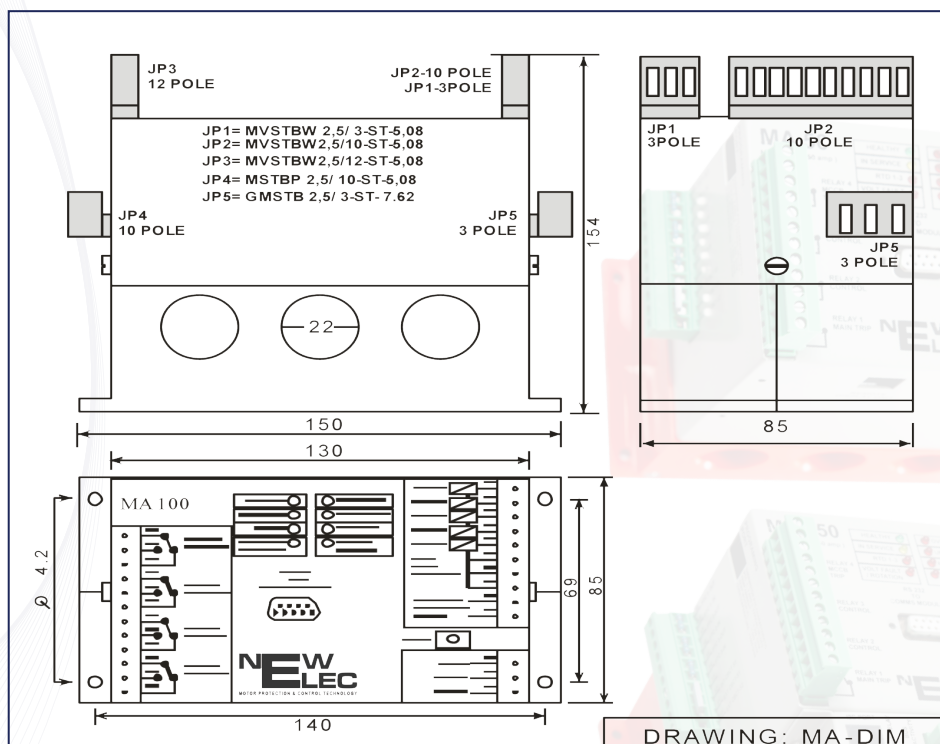
Three-Phase (Measurements / Data) Recorder via Frontend



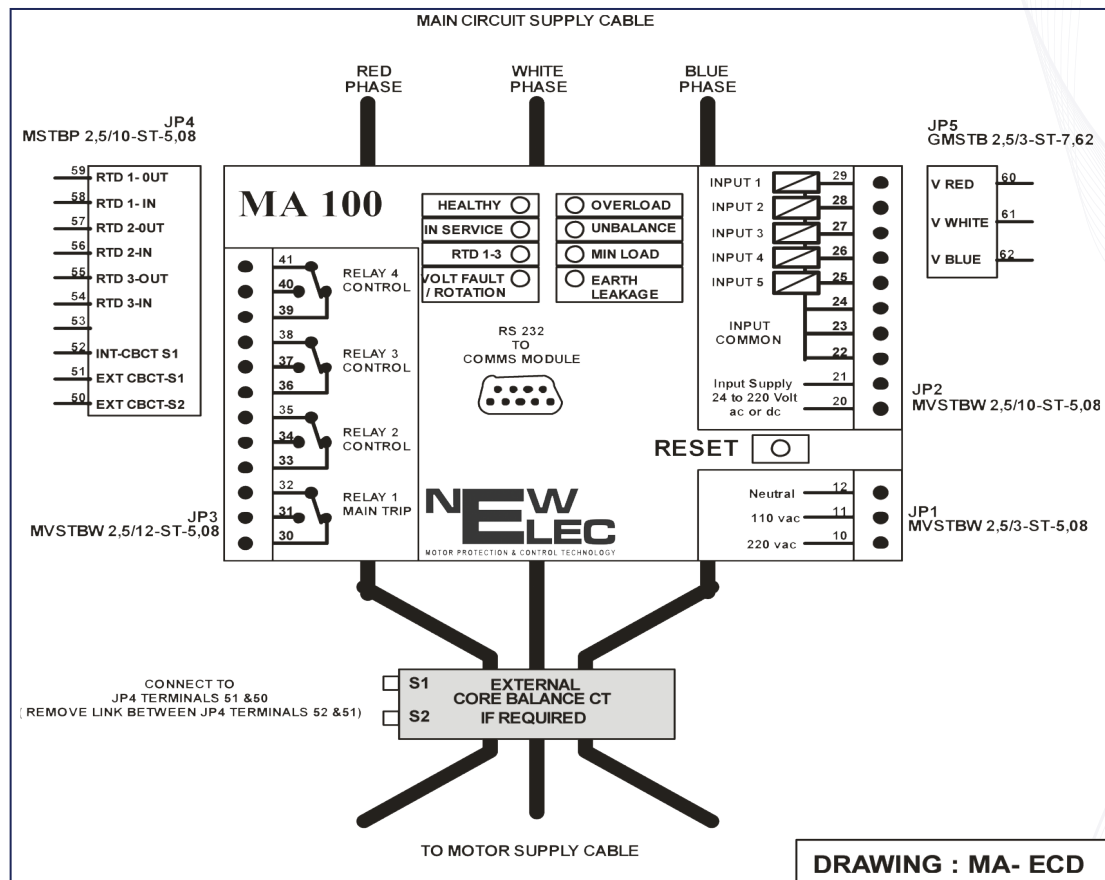
I/O Setup



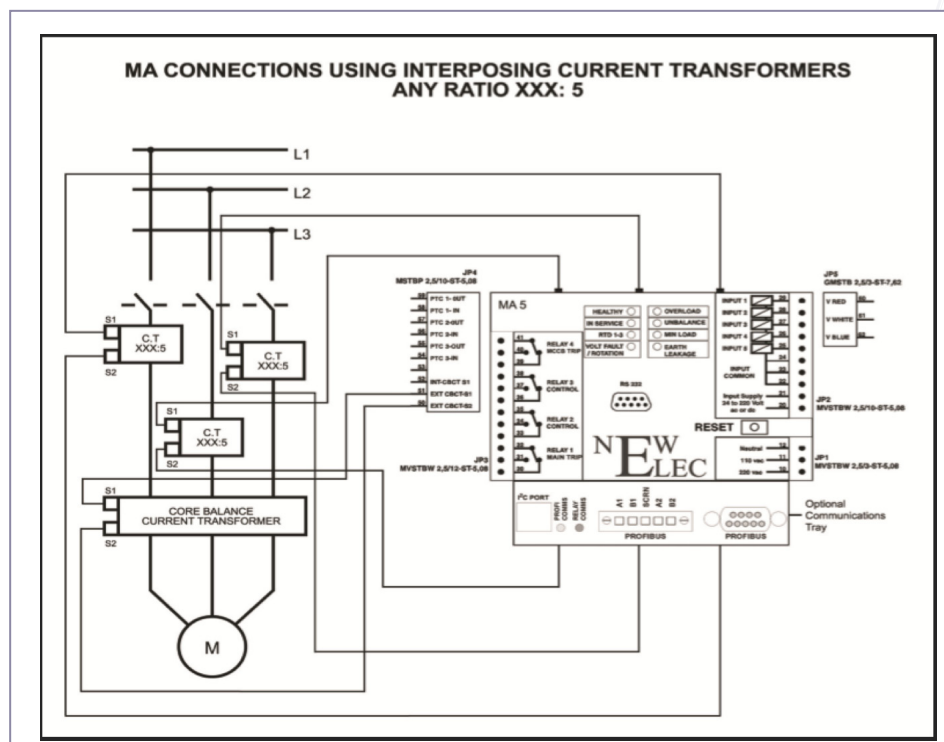
Dimensional Diagram



Wiring Diagram



Interposing CTs



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MA Series

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