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

Model	Range	CTs
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*	

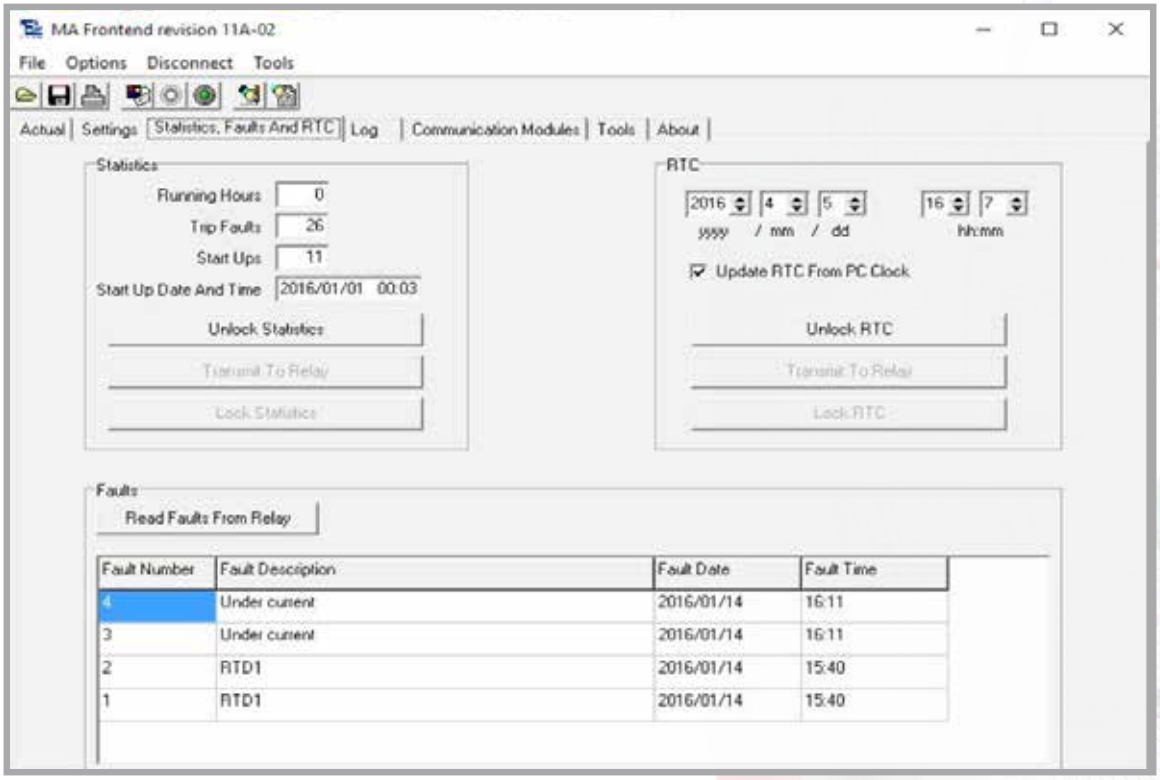
MA RDU 216 Battery Operated in Toolbox

MA RDU 1 LED Fault Indicator

MA RDU 216 Programing 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% Ie (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*
Range Selection	*: Manual*
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*
Overload T/C Reset Time	*: T reset = Curve [2.33 (35,49 x 4) 15 log (100/70)] - Motor Standstill*

Environmental Specifications

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

Physical Specifications

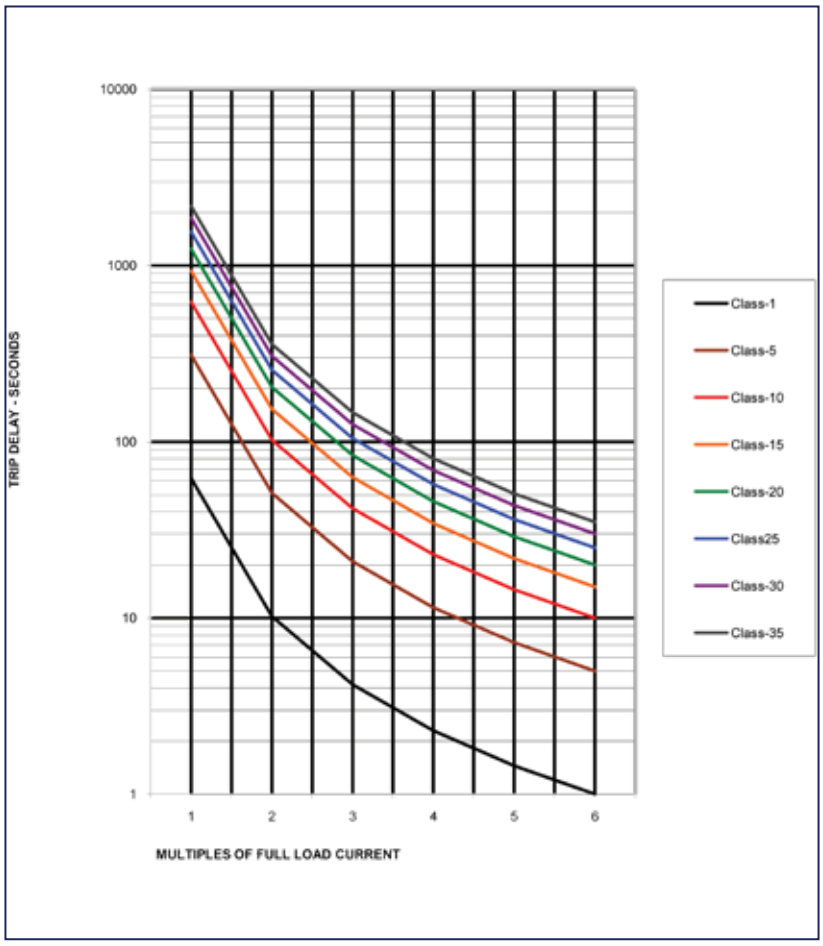
Relays	
Relay 1	*: Main Trip Relay*
Relay 2	*: Restart Relay or I/O Map*
Relay 3	*: Auxiliary Relay or I/O Map*
Relay 4	*: Frozen Contactor Relay*
Real Time Clock (24 Hour)	
Start Time	*: Hour and Minute Configurable*
Stop Time	*: Hour and Minute Configurable*

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

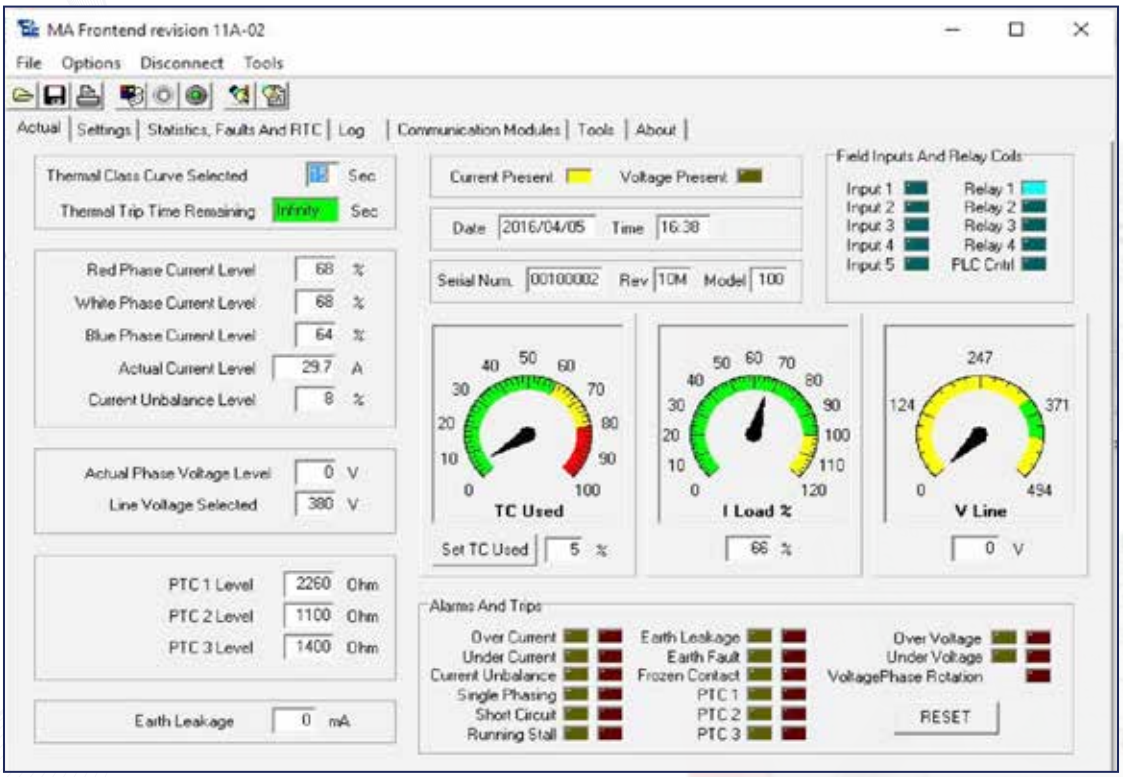
Approvals

- *Manufactured to ISO 9001: 2000 Standards*
- *Profibus Certification*

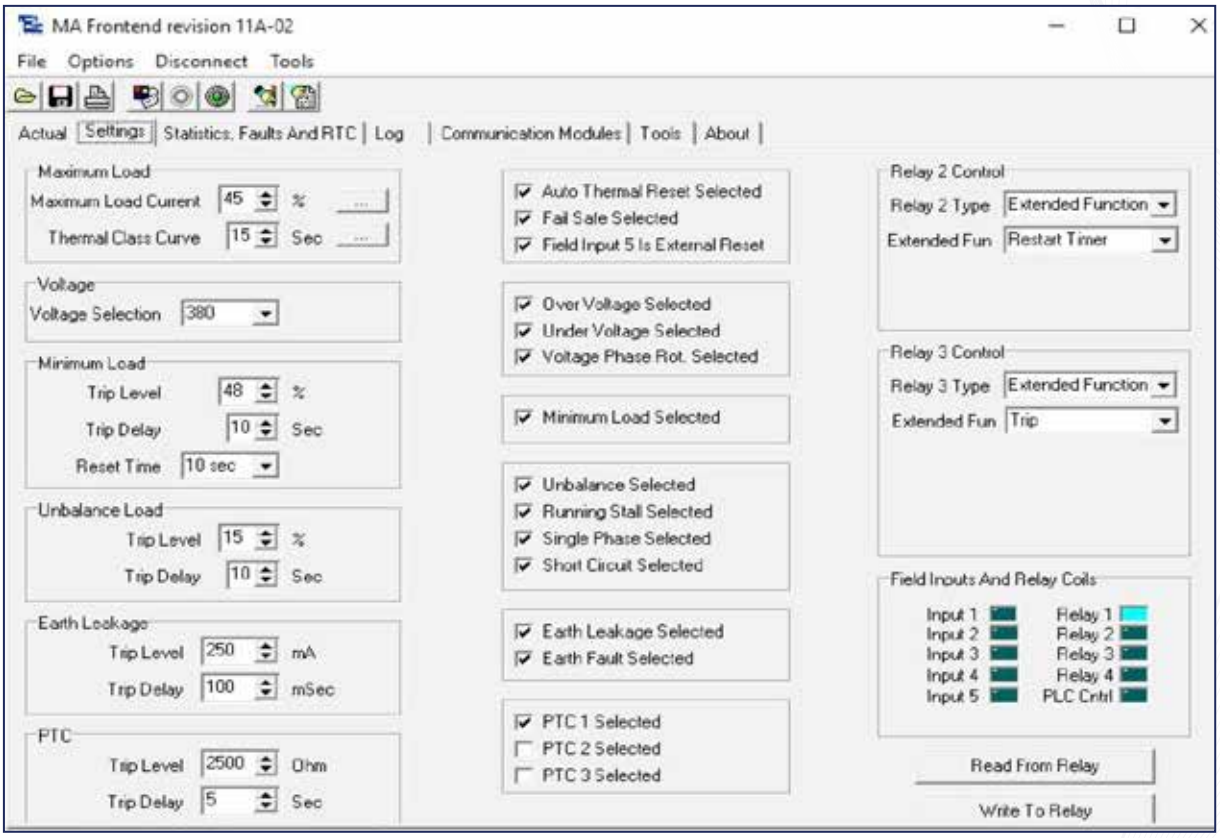
Thermal Curves



Frontend Actual Readings

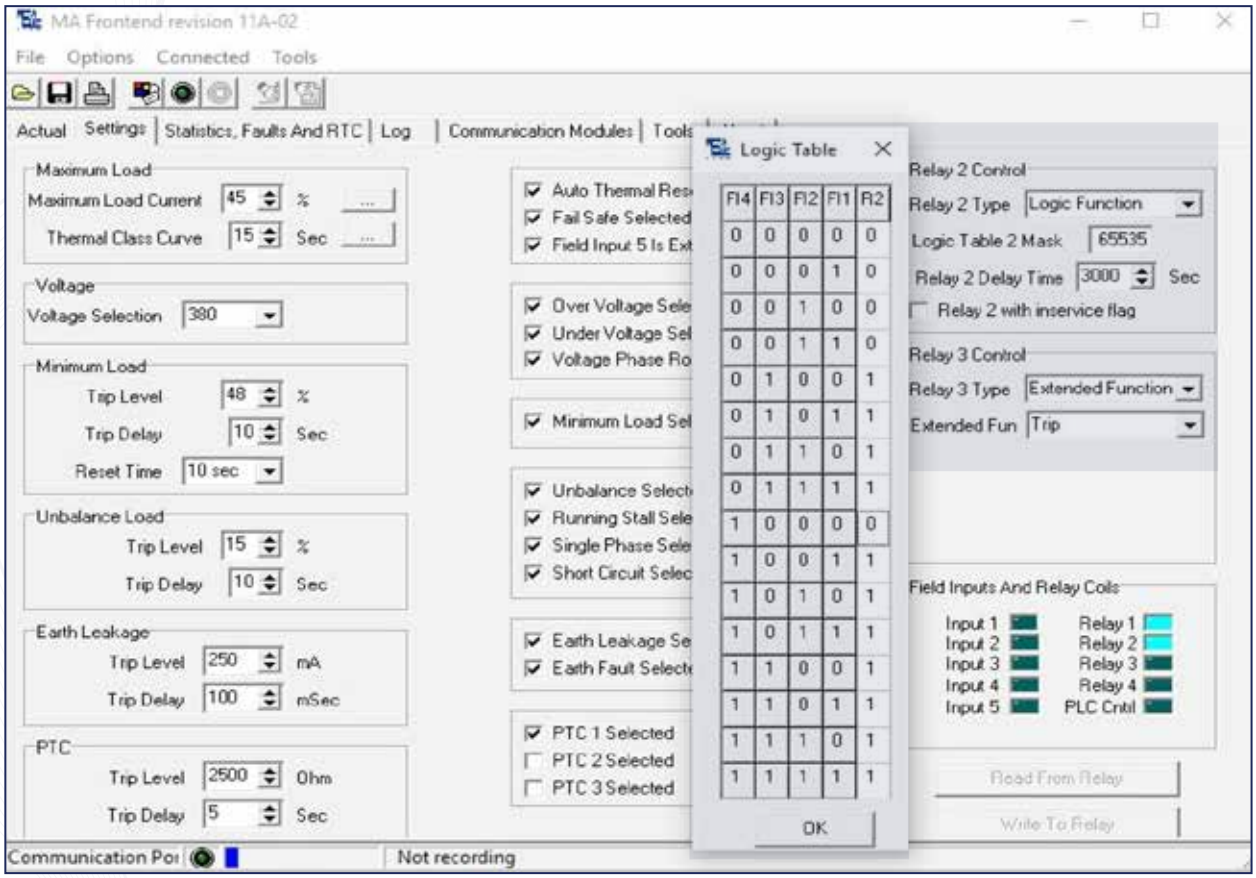


Frontend Settings

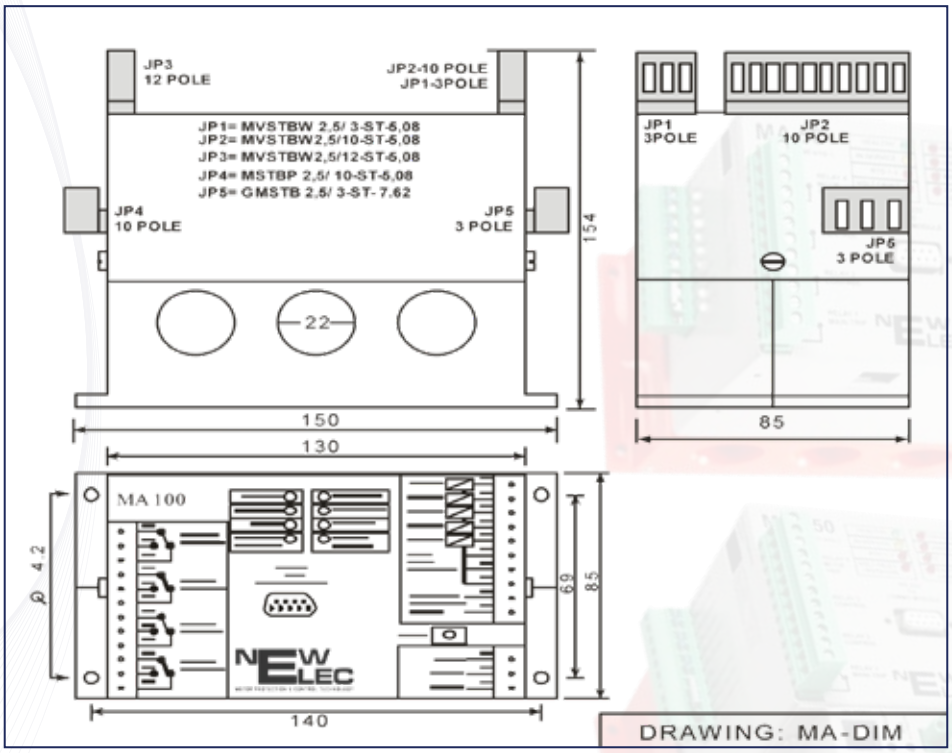


Three-Phase (Measurements / Data) Recorder via Frontend

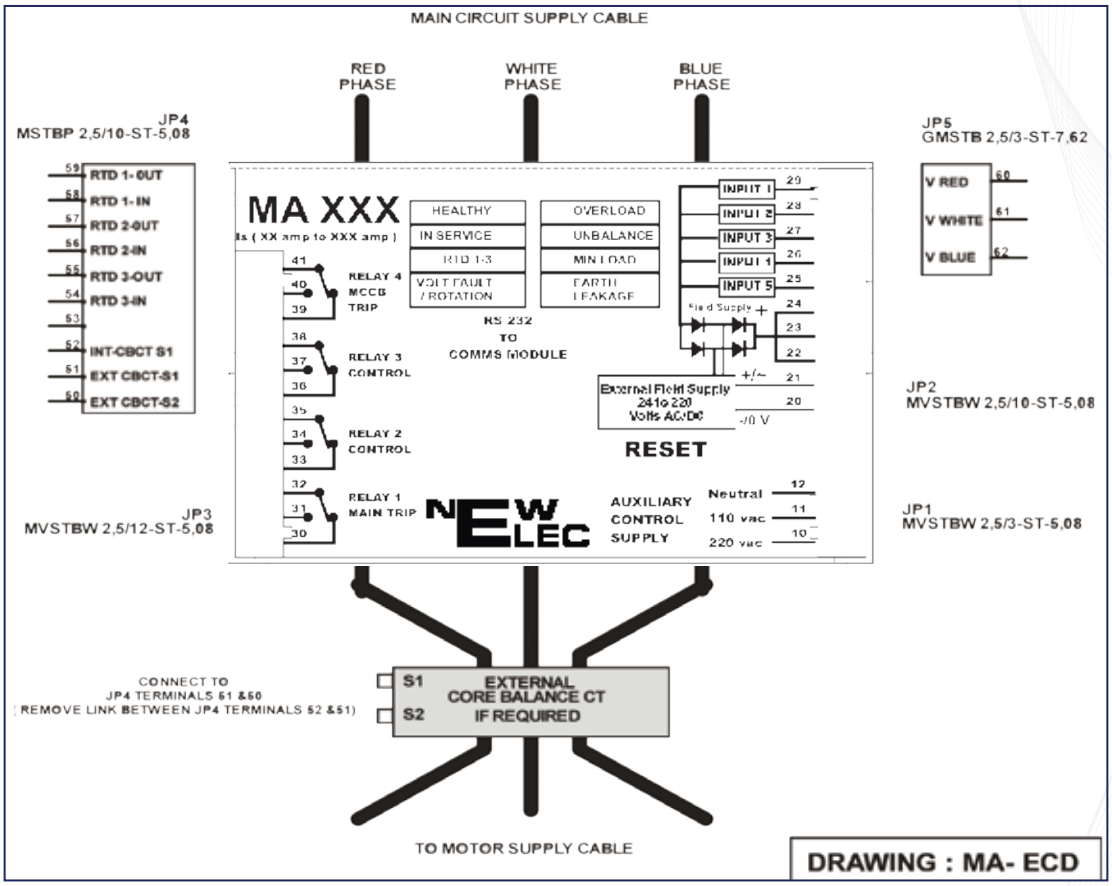
I/O Setup



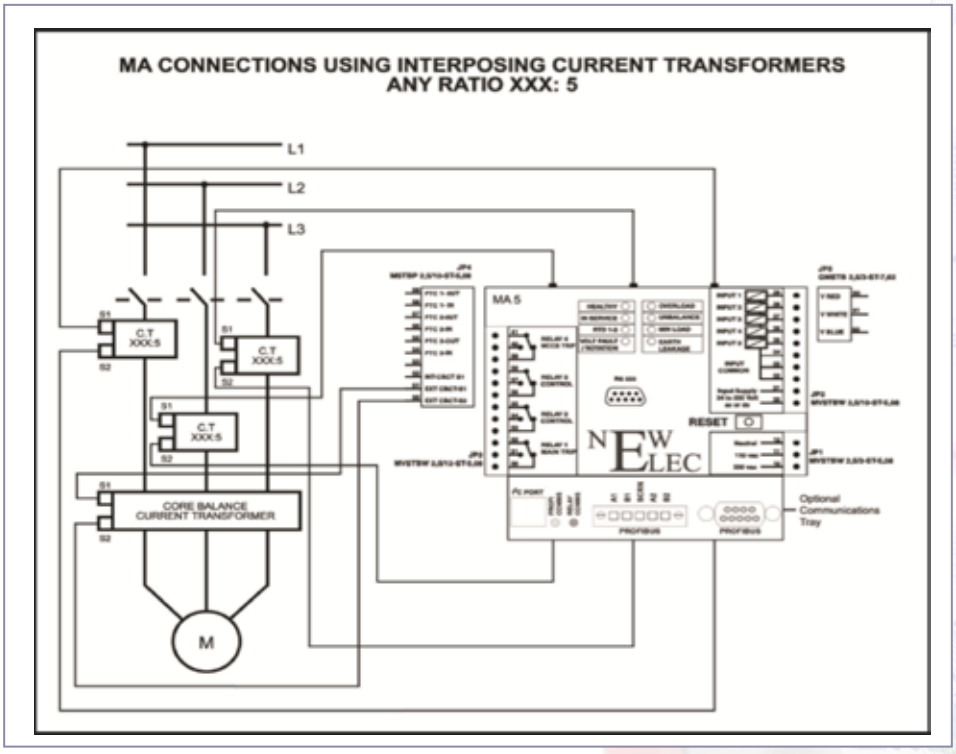
Dimensional Diagram



Wiring Diagram



Interposing CTs



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