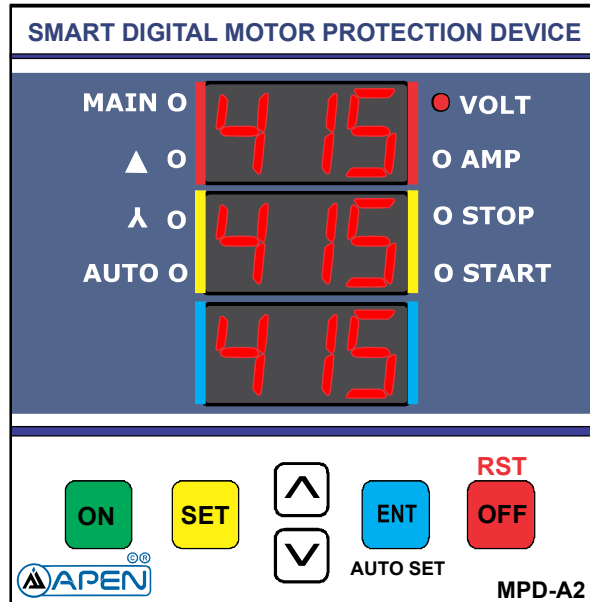




Apenn Panels: Where Quality "Meets" Efficiency.

## SMART DIGITAL MOTOR PROTECTION DEVICE MPD A2 SW 2.2 Operating Manual

### USER INTERFACE



### Technical Specifications:

1	Model	: MPDA2
2	Dimension (HxWxD) mm	: 96 X96.X 85 mm
3	Panel Cutout (HxW) mm	: 92 X.92 mm
4	Display	: 0.56" 3 Digit, 3 line, 7 Segment LED Display
5	3 Phase AC.Voltage Input	: Upto 600 V AC Phase to Phase
6	3 Phase AC Current Input	: 1) .0.5.to 5A AC Direct.or C.T. Selectable Upto 1000/5 Ratio : 2) 1 to 99.9A AC Direct (Factory Set)
7	Supply	: 1) 230V AC, 50HZ : 2) 440V AC, 50Hz (Without Neutral)
8	Digital Output	: 3 Relay Individual For Main,Delta,Star Contactor
9	Digital Input	: 1) Auto/Manual : 2) Start : 3) Stop
10	Water Level Control	: Available For Over Head Tank
11	Earth Fault Protection	: CBCT (Available On Request by Factory Set)
12	Operating Temperature	: 0 to 55°C
13	Relative Humidity	: Upto 95% RH

# Functional Features (In-Depth Description)

## 1. Digital Monitoring – R, Y, B Ampere & Volt Meter

The MPD-A2 provides individual digital displays for R, Y, and B phase current and voltage readings. This enables precise monitoring of load balance, current draw, and voltage levels across all phases.

## 2. High & Low Voltage Protection

The device automatically detects both high and low voltage conditions and trips the motor to prevent winding damage. When voltage returns to the safe range, the system can automatically restart.

## 3. Short Circuit & Overload Protection

An intelligent internal circuit continuously measures the motor current. If an overload or short circuit occurs, the relay instantly cuts off the supply. The overload limit can be set by the user.

## 4. Phase Failure / Reverse Phase / Unbalance Protection

If any phase is missing, the phase sequence is reversed, or current/voltage imbalance is detected, the device immediately stops the motor. This prevents motor burning and mechanical stress.

## 5. Star–Delta Automatic Control

To reduce the starting current, the MPD-A2 automatically controls the Star–Delta operation. The transition delay time from Star to Delta can be adjusted by the user as required.

## 6. Dry-Run Protection

In pumping applications, if the motor runs without water, the current level drops. The MPD-A2 detects this condition and stops the motor automatically, protecting the pump and mechanical parts from damage.

## 7. Auto / Manual Mode Operation

The system can be operated in both automatic and manual modes. In automatic mode, the motor restarts automatically when the voltage becomes normal. In manual mode, operation is fully controlled by the user.

## 8. Soft Start / Stop Feature

During motor start-up, the device gradually increases current supply, avoiding sudden inrush currents. This reduces mechanical stress and extends the life of the motor.

## 9. Adjustable Timers and Settings

**Overload Delay** – Set the time delay before tripping in case of overload.

**Start Delay** – Set the time delay before the motor starts after power restoration.

**Auto Restart / Bypass Timer** – Adjust the time after which the system restarts automatically following a fault condition.

## 10. Calibration Options

Voltage and current readings can be calibrated to ensure maximum accuracy. This feature helps maintain high precision in measurement and protection performance.

## 11. One-Time Relay Bypass Feature

In testing or emergency conditions, the relay can be bypassed, allowing the motor to run directly. This feature is particularly useful during maintenance or troubleshooting.

## 12. Water Level Control (WLC) Function

An inbuilt Water Level Control function is available for overhead tank applications. The system automatically starts or stops the motor depending on water levels, preventing overflow or dry running.

## 13. Energy-Efficient Design

The MPD-A2 operates with low power consumption and high load capacity. It ensures noise-free and heat-free performance, suitable for continuous operation.

## 14. Safety and Reliability

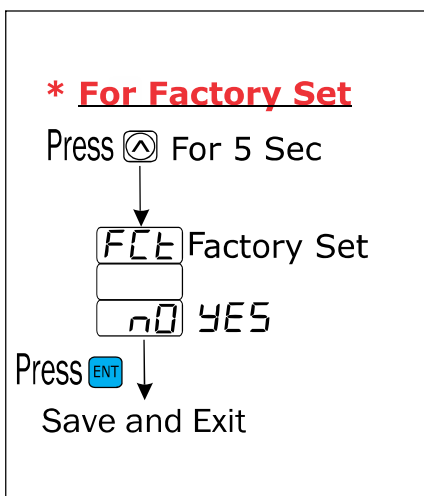
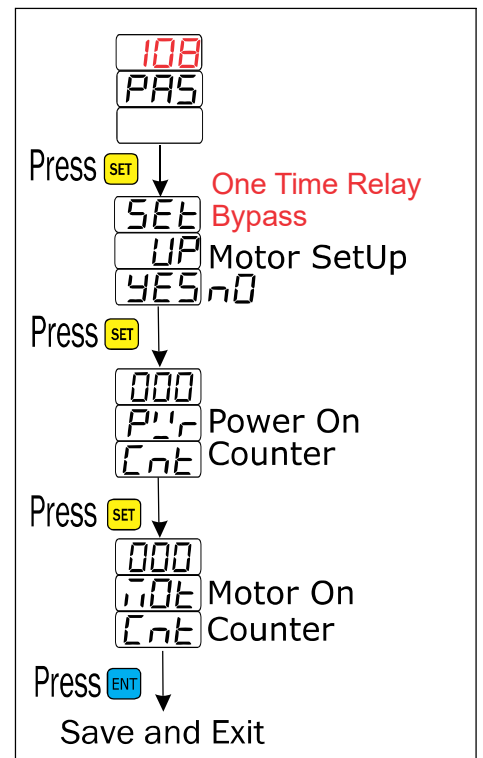
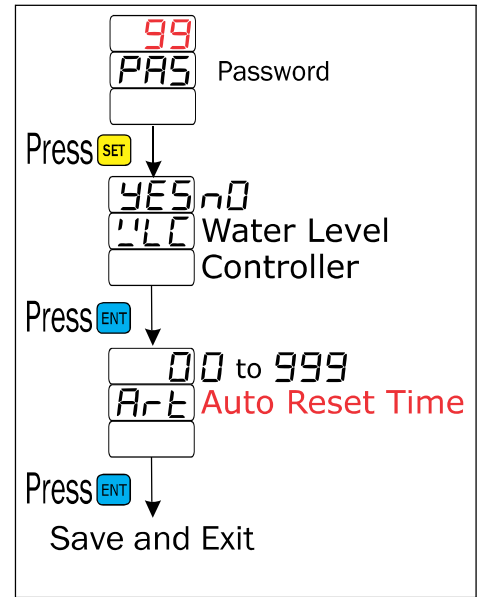
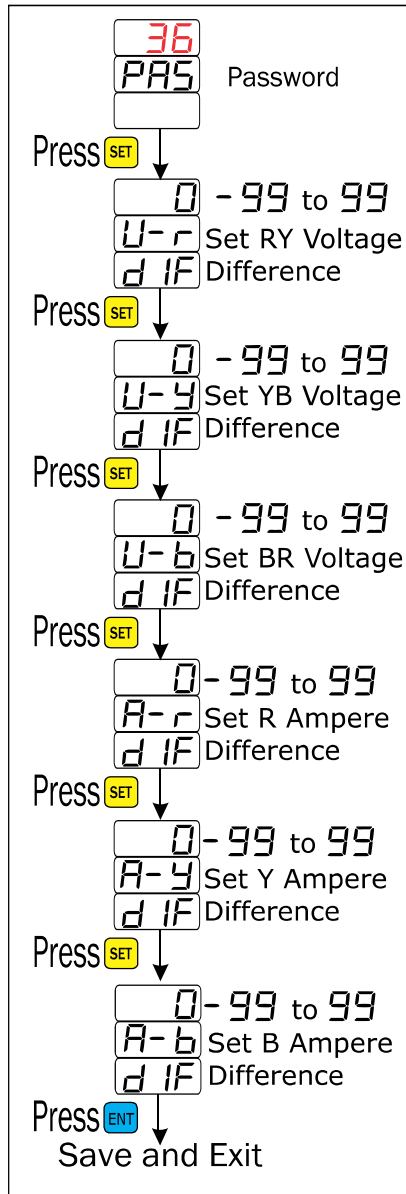
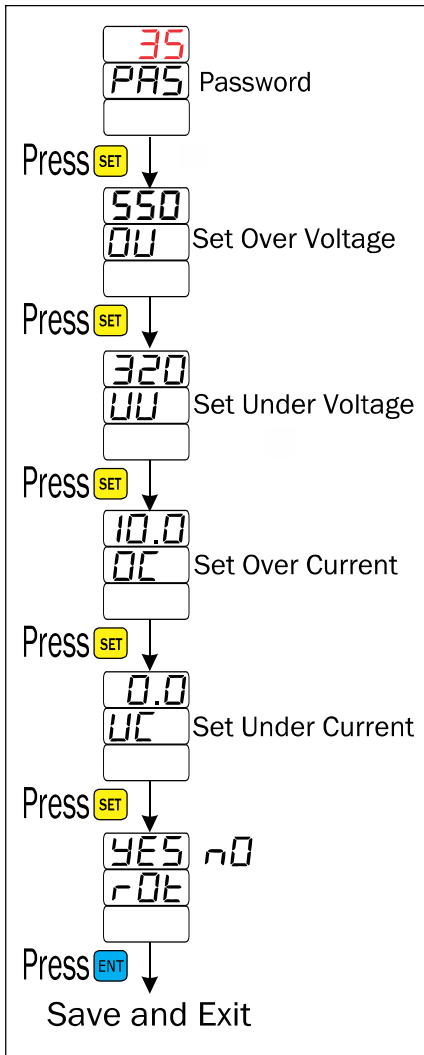
With an IP54-rated enclosure and high-quality DMC terminal block, the device is protected from dust, moisture, and vibration. This robust construction enhances equipment lifespan and reduces maintenance cost.

## 15. Long Life & Easy Installation

Designed for over one million mechanical operations, the MPD-A2 ensures long-term reliability. Simple wiring and front-panel configuration make installation and setup quick and user-friendly.

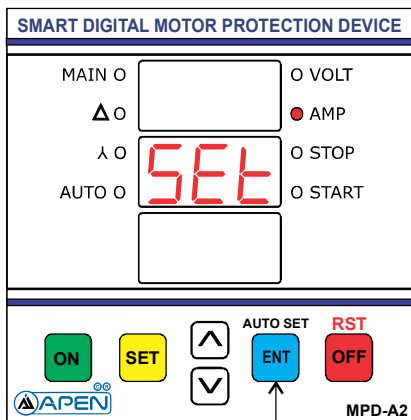
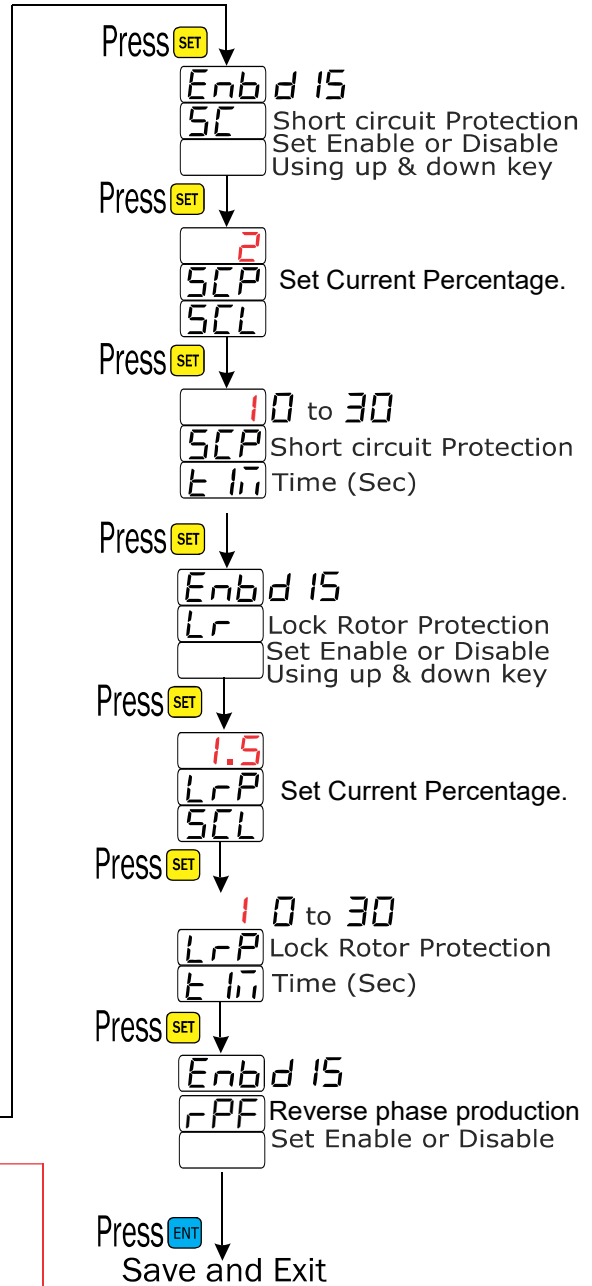
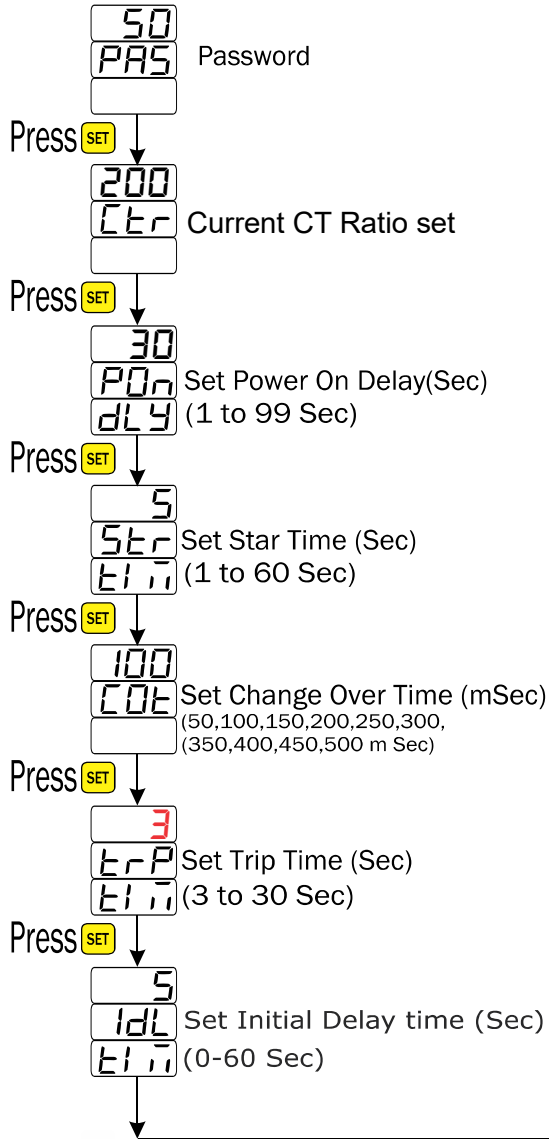
# PARAMETER SETTING

Press **SET** key to go to parameter Setting.



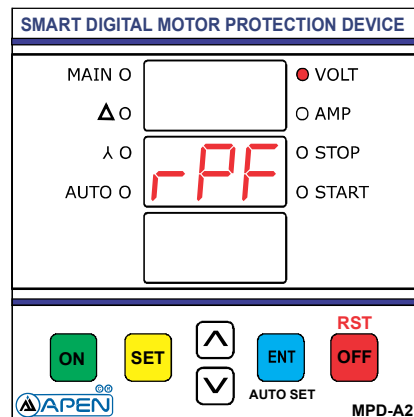
# PARAMETER SETTING

Press **SET** key to go to parameter Setting.



\* For AutoSet

Press **ENT** ENT Key For 3 Sec, Display Will Show **5 E T**  
Over Current Set 30% Over than Running Current.  
Under Current Set 35% Under than Running Current.



rPF :(1) Reverse Phase Fault

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O  O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O **SPF** O STOP  
 AUTO O  O START

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**SPF:Single Phase Fault**

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O  O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O **OUF** O STOP  
 AUTO O  O START

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**OUF:Over Voltage Fault**

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O  O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O **UUF** O STOP  
 AUTO O  O START

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**UUF:Under Voltage Fault**

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O **OCF** O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O  O STOP  
 AUTO O  O START

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**OCF:Over Current Fault in R Phase**

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O  O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O **OCF** O STOP  
 AUTO O  O START

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**OCF:Over Current Fault in Y Phase**

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O  O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O  O STOP  
 AUTO O  O START

**OCF**

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**OCF:Over Current Fault in B Phase**

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O **UCF** O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O  O STOP  
 AUTO O  O START

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**UCF:Under Current Fault in R Phase**

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O  O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O **UCF** O STOP  
 AUTO O  O START

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**UCF:Under Current Fault in Y Phase**

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O  O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O  O STOP  
 AUTO O  O START

**UCF**

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**UCF:Under Current Fault in B Phase**

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O **SCF** O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O  O STOP  
 AUTO O  O START

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**SCF:Short Circuit Fault**

SMART DIGITAL MOTOR PROTECTION DEVICE

MAIN O **Unb** O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O  O STOP  
 AUTO O  O START

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

APEN MPD-A2

**Unb:Unbalance Fault**

SMART DIGITAL MOTOR PROTECTION DEVICE

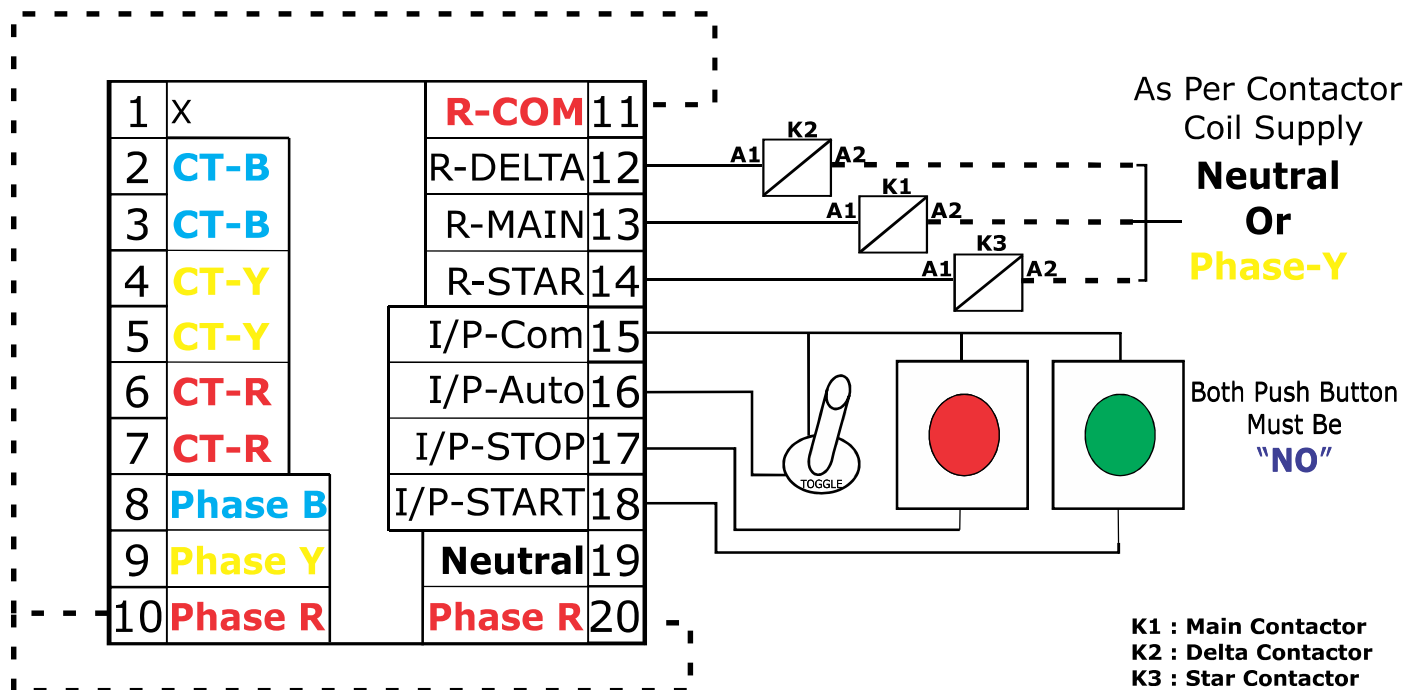
MAIN O **LrF** O VOLT  
 $\Delta$  O  O AMP  
 $\lambda$  O  O STOP  
 AUTO O  O START

ON SET  $\wedge$  ENT RST  
 $\nabla$  AUTO SET OFF

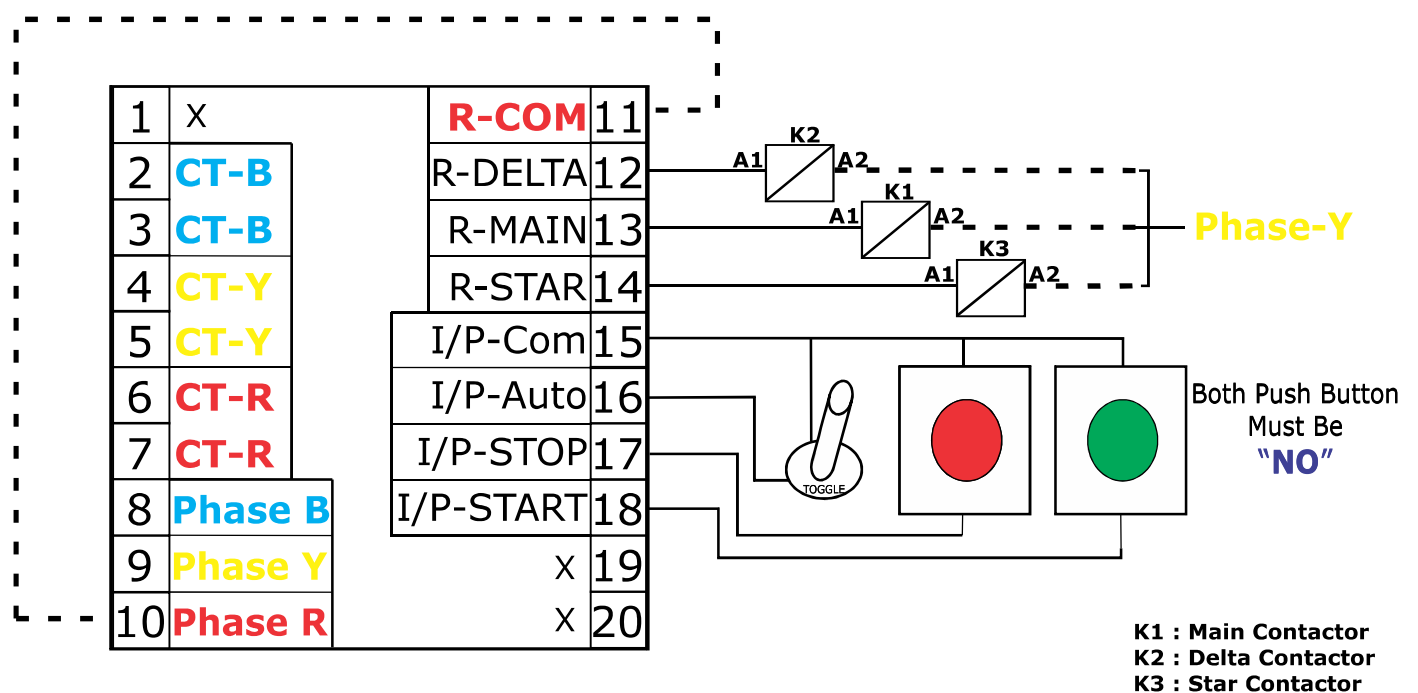
APEN MPD-A2

**LrF:Lock Rotor Fault**

# 1) Connection For **Auxiliary Supply 230V AC**



# 2) Connection For **Auxiliary Supply 440V AC**



**\* No Neutral Require**