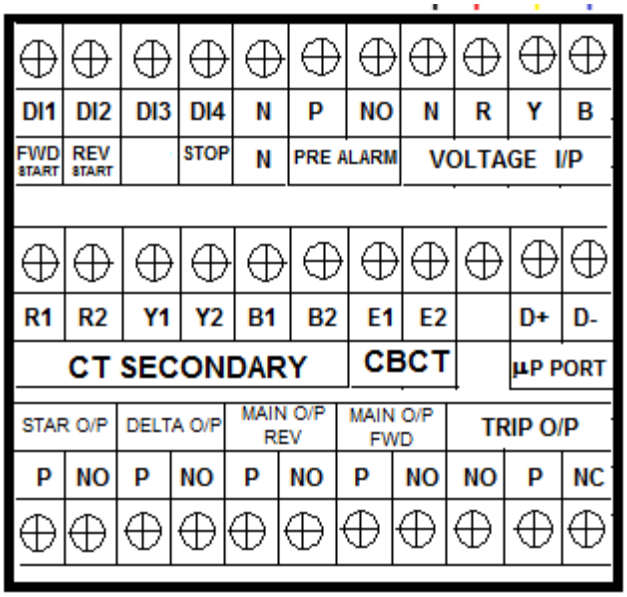
Operating Manual:i.MWM-IO

Current Range : 4 to 61 Amp

- **FRONT VIEW (DISPLAY & KEY BOARD)**

- **BACK VIEW (CONTROL TERMINAL)**



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- **KEY FUNCTIONS :**

KEY	ACTION
	**To select the parameter**
	**To increase the value of the selected parameter**
	**To decrease the value of the selected parameter**
	**To reset the fault / Start-Stop in MMI/Test Mode**

1) **For checking Parameter: Press 'SETTINGS' Key.**
2) **Give the Password '106' OR 'XXX' * & then press 'SETTINGS' key for the PARA Mode.**
3) **For increasing the value of selected Parameter: Press 'VALUE ' ▲ 'key.**
4) **For decreasing the value of the selected Parameter: Press 'VALUE ▼ key.**
5) **RESET key the used to reset the faults occurred in i.MWM.**
6) **In run mode : If scroll time is 0 sec, then, ▲key is use to view current, voltage, P.F., Watt,…etc**

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PARAMETER LIST OF i.MWM-IO: 4 TO 61 AMP

Sr. No.	PARAMETER	RANGE	PASSWORD
1	SET CURRENT	4 TO 61 AMP	FACTORY/ENGG.
2	SET UNDER LOAD	0 TO 55.0 AMP	FACTORY/ENGG.
3	SET EARTH LEAKAGE CURRENT	0.1 TO 25 AMP	FACTORY/ENGG.
4	OVERLOAD CURVE	0 TO 5 Correspond to (0/5/10/15/20/2 Sec.Curve)	ENGG.
5	SPP TRIP TIME	3 to 20 Second	FACTORY/ENGG.
6	UNDERLOAD TRIP TIME	6 to 30 Second	FACTORY/ENGG.
7	SLAVE ID	1 TO 150	FACTORY/ENGG.
8	SCROLL TIME	0 TO 10	FACTORY/ENGG.
9	PHASE REVERSE	ENABLE / DISABLE	FACTORY/ENGG.
10	AUTO RESET	ENABLE / DISABLE	FACTORY/ENGG.
11	SET LOCK ROTOR	3 TO 20 Second	ENGG.
12	OVERLOAD DEFINITE TIME	2 TO 900 Second	ENGG.
13	STAR-DELTA TIMER	3 TO 15 Second	ENGG.
14	SET LOW KWatt	1.0 TO 40.0 KWatt	FACTORY/ENGG.
15	DELTA STAR TIMER	10 TO 50 Second	FACTORY/ENGG.
16	SET UNDERVOLTAGE	160 TO 220 VAC	FACTORY/ENGG.
17	SET OVERVOLTAGE	230 TO 300 VAC	FACTORY/ENGG.
18	OPERATING MODE	DIGITAL INPUT/ MMI (KBD/TS/PC)/ PROTECTION/TEST	FACTORY/ENGG.
19	ART TIMER	0 TO 600 Second	FACTORY/ENGG.

PASSWORD

1. ENGG. PASSWORD : 147 *
2. FACTORY PASSWORD : 106

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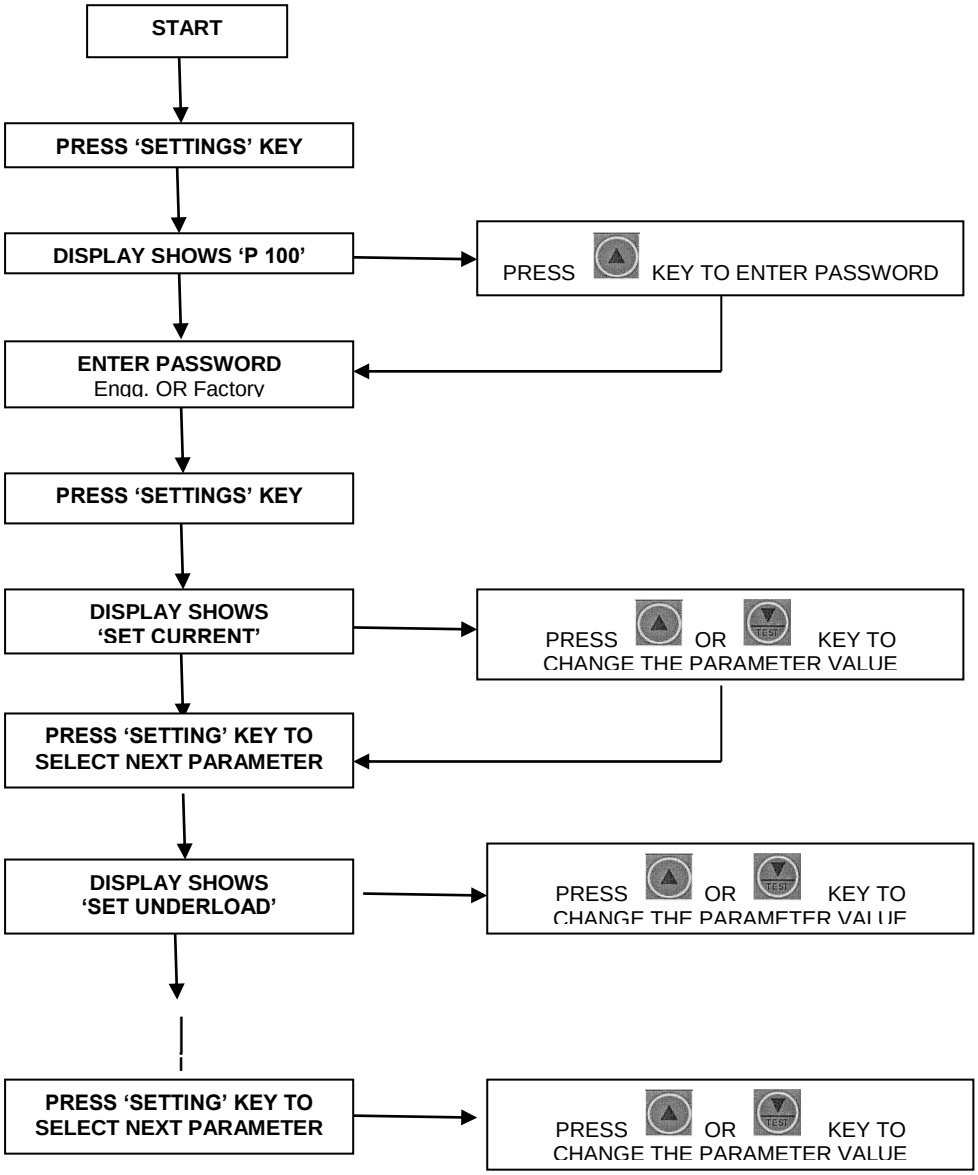
- **PROGRAMABLE PARAMETER KEY OPERATION**



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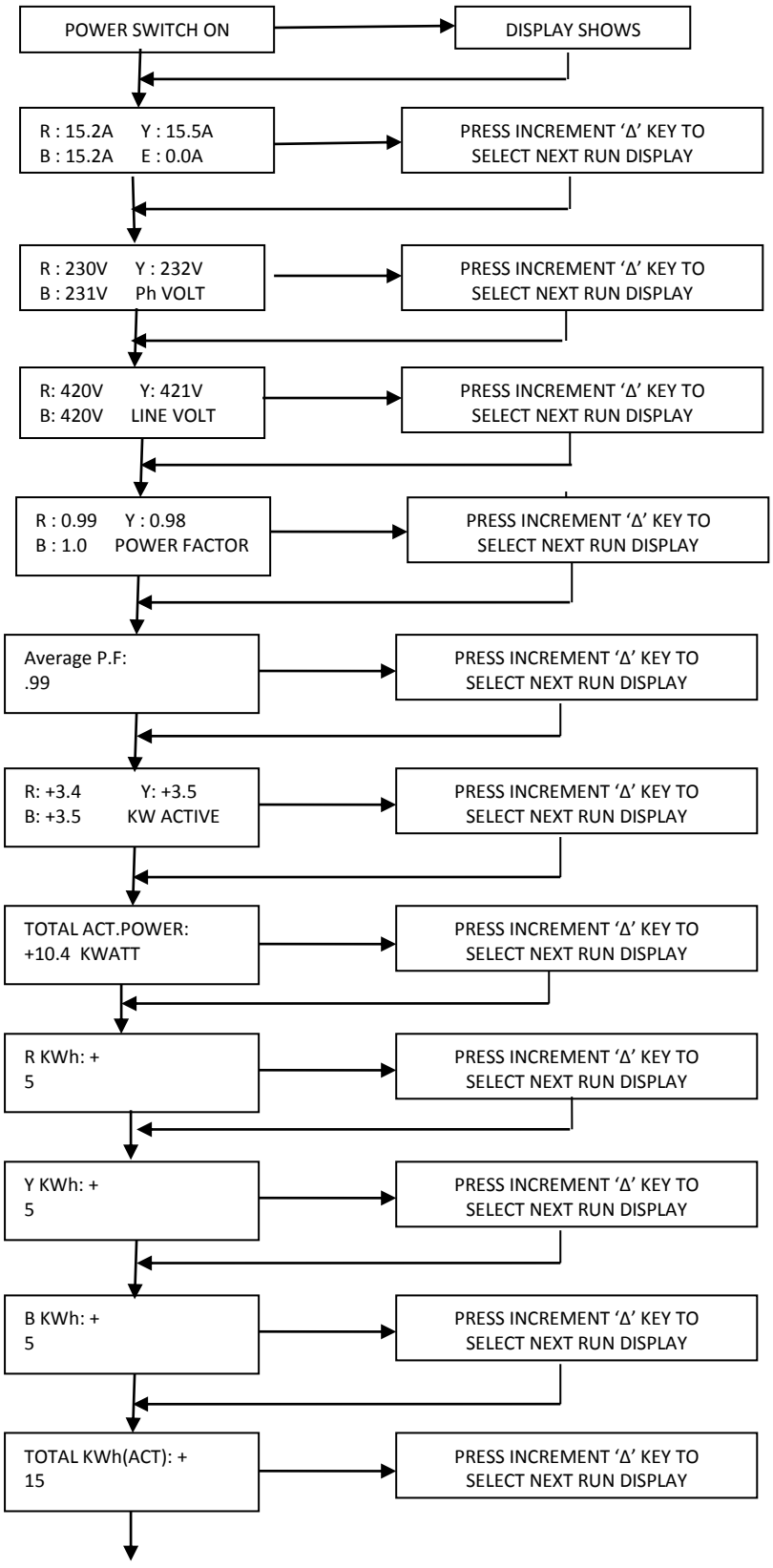
- **RUN DISPLAY**



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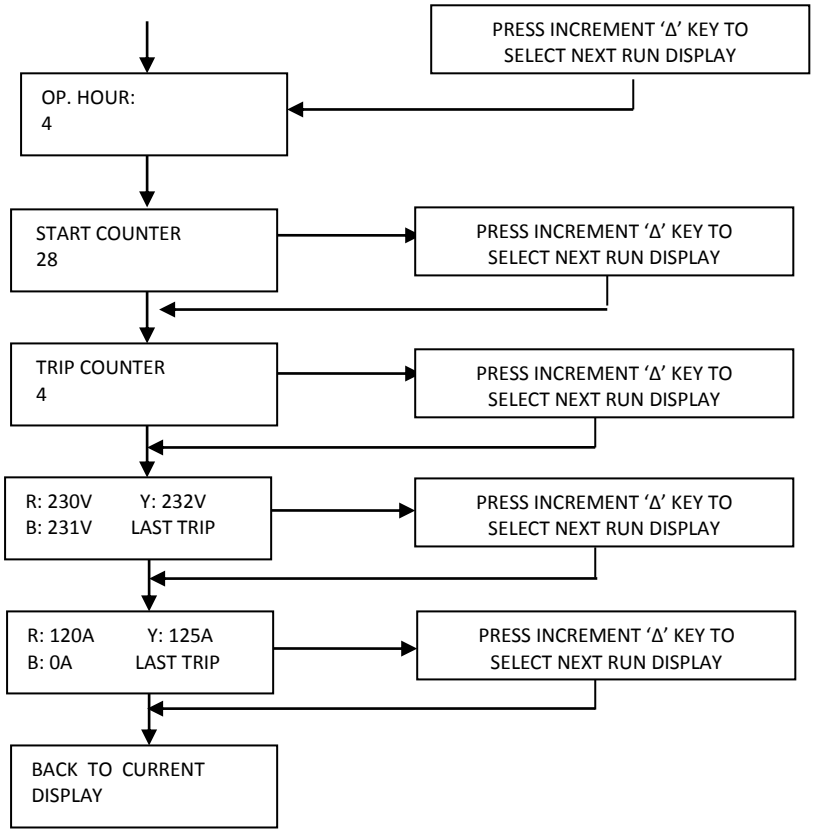

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SETTINGS:

1) OVERLOAD TRIP TIME: -

The O/L trip time depends on settable DEFINITE time & the Set O/L CURVE. The O/L trip time is according to the definite time if & only if the O/L curve is '0'.Otherwise O/L trip time is according to settable O/L CURVE.

2) LOCK ROTOR: -

The settable range of Lock rotor is 3 to 20 times (i.e. 300% to 2000%) that of the set current. There is no Settable parameter for Short circuit independently, but it is depends on the lock rotor setting, i.e., the short
Circuit is equal to the Set lock rotor plus 1 times the set current [i.e. (Set lock rotor + 1) X Set current].

3) OPERATING MODE:

i) DIGITAL INPUT : In 'Digital Input' mode, Start command is given from the DI(i.e.
from push button).

ii) MMI (KBD/TS/PC) : In MMI (KBD/TS/PC) mode, Start command is given from Reset Key OR from MMI (through communication)

iii) PROTECTION (Without STAR-DELTA TIMER):

a) In 'Protection' mode, when power supply switched ON, the control output
turns ON immediately.
b) ART time should be 'ZERO'.

iv) TEST: In 'TEST' mode, Start command is given from Reset key.

<u>NOTE: Operation of Relay for STAR-DELTA start will take place only when Current will pass through CT in STAR configuration after giving Start Pulse through DI OR Start command is given through MMI (KBD/TS/PC). For testing of STAR-DELTA Timer, Set Test mode & press 'RESET' key.</u>

4) ART :

Once the control output is OFF then it will turn ON after the ART time is over. Initially when power is switched ON it bypass ART time

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5) SCROLL TIME:-

The scroll time is settable from 0 to 10 seconds.

i) When scroll time is given '0' we have to select current, voltage, P.F., kWatt, …… etc. by the increment '  ' key only.

ii) When we set the scroll time between 1 to 10 seconds then the run display scrolls automatically after the Selected scroll time.

- **DO & DI – DETAILS**

DI - Details		
Sr.No.	**DI No.**	**DI Description**
1	DI – 1	FORWARD START
2	DI – 2	REVERSE START
3	DI – 3	-
4	DI – 4	STOP
5	-------	NEUTRAL

DO – Details		
Sr.No.	**DO No.**	**DO Description**
1	DO – 1	O/P FOR MAIN CONTACTOR (FORWARD)
2	DO – 2	O/P FOR MAIN CONTACTOR (REVERSE)
3	DO – 3	STAR O/P
4	DO – 4	DELTA O/P
5	DO – 5	TRIP CHANGEOVER O/P (P-NO-NC)
6	DO – 6	PRE-ALARM O/P

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TRIPPINGS & FAULT MESSAGE :

OVERLOAD:

If any phase current (R, Y, B) > SET O/L CUR then i.MWM will trip on Over Load according to settable O/L Curve (see page-IT CHARECTERISTICS) or Settable definite time. It will show '**OVER LOAD**' on the LCD Display.

UNBALANCE:

If difference between any two phase current > (SET OL CUR/ 3) then I.MWM will trip with delay of 12 seconds, showing '**UNBALANCE**' on LCD Display.

CURRENT SINGLE PHASE PROTECTION:

Out of R, Y, or B phase if any one phase is absent or OFF then, i.MWM trips

OR

If any one of the thee phase current is ,/= 1.0A then also i.MWM trips with Settable 'SPP TRIP TIME' & LCD Display shows 'CURRENT SPP' on the display.

PHASE REVERSE:

If any two phases (R, Y & B) are interchanged then I.MWM will trips immediately showing "PHASE REVERSAL' on LCD Display.

UNDERLOAD:

If all 3 phases (R, Y, B) < SET UNDELOAD then I.MWM will trip with settable 'UNDERLOAD TIME' delay showing 'UNDER LOAD' on LCD Display.

LOCK ROTOR:

If any one phase current (R, Y, B) > SET O/L CUR X Set Lock Rotor (r), then I.MWM will trip immediately showing 'LOCK ROTOR" on LCD Display.

SHORT CKT:

If any one phase current (R, Y, B) > SET OL CUR X (Set Lock Rotor + 1) then I.MWM will trip Immediately showing 'SHOT CKT' on LCD Display.

EARTH FAULT:

If Earth current > SET EARTH then I.MWM will trip immediately showing 'EARTH FAULT' on LCD Display.

OVER VOLTAGE:

The set over voltage parameter is for the over voltage protection. If any one phase Voltage (R,Y,B) > 'Set Over Voltage' then i.MWM trips immediately showing 'OVER VOLTAGE' on LCD Display.

UNDER VOLTAGE:

The set under voltage parameter is for the under voltage protection. If all three phase Voltage (R,Y,B) < 'Set Under Voltage' then i.MWM trips immediately showing 'UNDER VOLTAGE' on LCD Display.

VOLTAGE SPP:

If any one of Phase is OFF or less than 60VAC then, i.MWM immediately trips & showing "VOLTAGE SPP' on LCD Display.

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LOGIC:

1) START Counter :
Each time when current start flowing, the value of the start counter increases by 1.

2) TRIP Counter :
The value of trip counter increased by 1 at every time of controlled output trips.

3) Control O/P, Star-Delta Timer & Delta- Star Timer :

i) After START command is given through DI1, DO1 (CONTROL O/P) + DO2 (STAR O/P) gets ON immediately. After settable Star-Delta timer delayed, the DO2 (STAR O/P) will turn OFF & DO3 (DELTA O/P) will turn ON.

ii) If Total Kwatt < SET LOW Kwatt, then after settable Delta-Star timer delayed, the 'Delta' relay will turns OFF & 'Star' relay will turns ON.

iii) If Total Kwatt > SET LOW Kwatt, then after settable Star-Delta timer delayed, the 'Star' relay will turnsOFF & 'Delta' relay will turn ON.

iv) After every time the device trips, the 'CONTROL O/P' & 'STAR /DELTA O/P' relay will turn OFF.

ABBREVIATIONS USED :

1. **SPP : Single Phasing Protection**
2. **O/L : Over Load**
3. **ART : Anti Recycle Timer**
4. **P.F. : Power Factor**
5. **Ph : Phase**
6. **CKT : Circuit**
7. **KW : Kilo Watt**
8. **KWH : Kilo Watt Hour**
9. **OP HOUR : Operating Hour**

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SET VALUES OF PARAMETER :

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3	SET EARTH LEAKAGE CURRENT	0.1 TO 25 AMP	
4	OVERLOAD CURVE	0 TO 5 Correspond to (0/5/10/15/20/2 Sec.Curve)	
5	SPP TRIP TIME	3 to 20 Second	
6	UNDERLOAD TRIP TIME	6 to 30 Second	
7	SLAVE ID	1 TO 150	
8	SCROLL TIME	0 TO 10	
9	PHASE REVERSE	ENABLE / DISABLE	
10	AUTO RESET	ENABLE / DISABLE	
11	SET LOCK ROTOR	3 TO 20 Second	
12	OVERLOAD DEFINITE TIME	2 TO 900 Second	
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16	SET UNDERVOLTAGE	160 TO 220 VAC	
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18	OPERATING MODE	DIGITAL INPUT/ MMI (KBD/TS/PC)/ PROTECTION/TEST	
19	ART TIMER	0 TO 600 Second	

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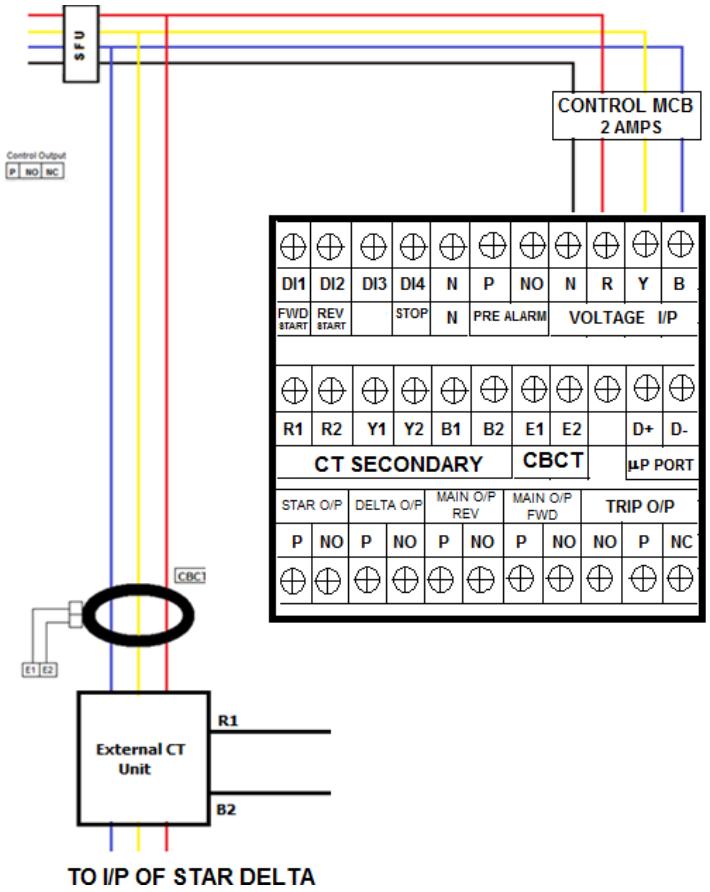
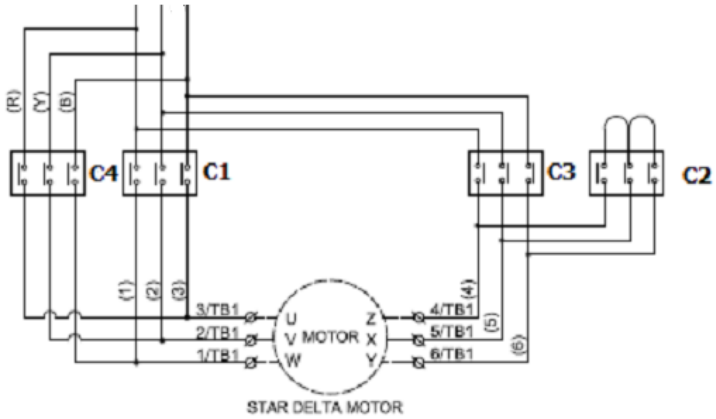
POWER WIRING FOR i.MWM-IO/4 to 61 Amp





CONTACTOR DETAIL

1) **C1 MAIN FORWRD**
2) **C2 STAR**
3) **C3 DELTA**
4) **C4 MAIN REVERSE**

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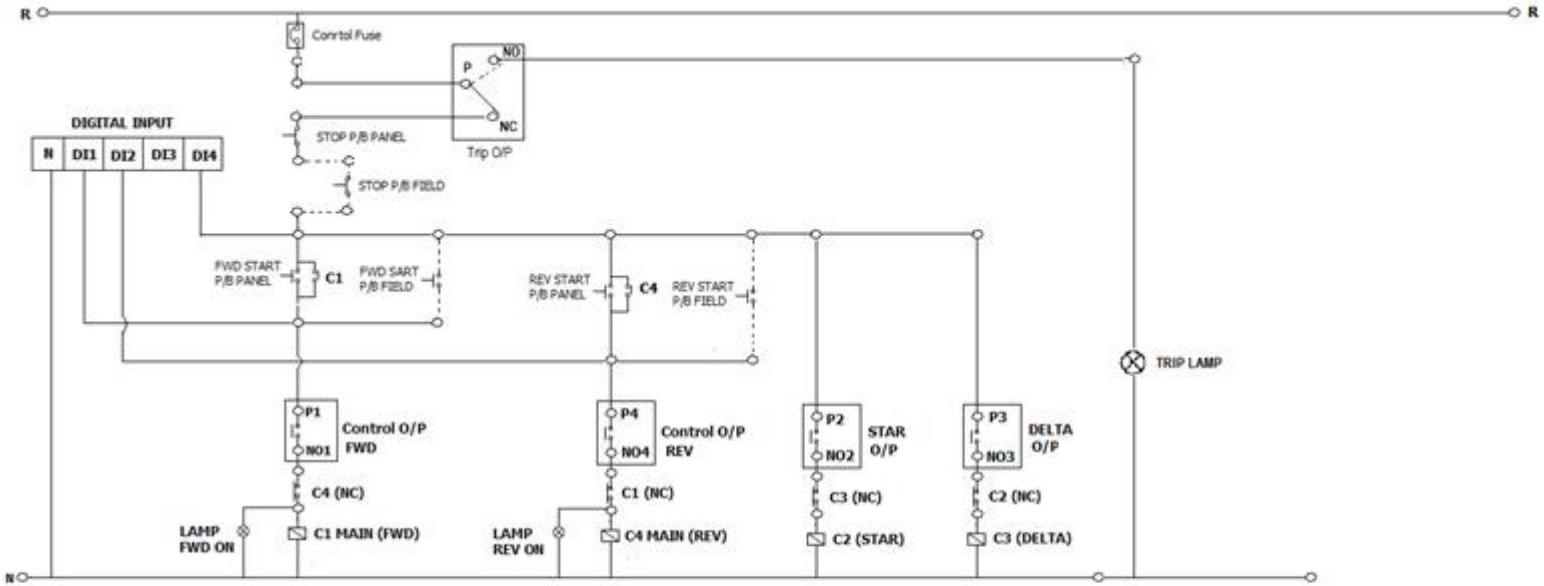
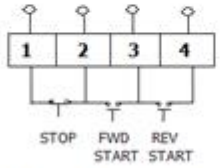
CONTROL WIRING FOR i.MWM-IO/4 to 61 Amp



CONTACTOR DETAIL

1) C1 MAIN FORWRD
2) C2 STAR
3) C3 DELTA
4) C4 MAIN REVERSE



FIELD WIRE TERMINATION FOR START/STOP

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