



## Features:

- Compact PLC with built-in HMI.
- 4 line x 16 characters LCD display.
- User friendly Windows based software for ladder programming and HMI configuration
- IO expansion port
- RTC available (MM3030-1, MM3030-2, MM3030-4)

**Size:** 96mm x 96mm

## IO Configuration Table

	MM3030-1	MM3030-2	MM3030-3	MM3030-4
<b>Power Supply</b>	18-30V DC		180-270V AC, 50Hz	18-30V DC
<b>Digital Inputs</b>	10		8	10
<b>Digital Outputs</b>	8 (Transistorized)		6(Relay)	8 (Transistorized)
<b>Analog Inputs</b>	2 Input ; Voltage(0-10V) / Current(0-20mA)			
<b>RTC</b>	Yes		No	Yes
<b>Communication Port</b>	2 Ports : 1. RS232-DCE 2. IO630 Expansion port	2 Ports : 1. RS485-slave 2. RS485-master + IO630 Expansion Port	2 Ports : 1. RS232-DCE 2. IO630 Expansion Port	2 Ports : 1. RS485-slave 2. RS485-master
<b>Protocol</b>	1. Modbus RTU 2. Proprietary for IO630 Expansion	1. Modbus RTU 2. Modbus RTU for IO610 Expansion + Proprietary for IO630 Expansion	1. Modbus RTU 2. Proprietary for IO630 Expansion	1. Modbus RTU 2. Modbus RTU for IO610 Expansion
<b>Supported IO Expansion Module</b>	IO630	IO630 & IO610	IO630	IO610
<b>Order Code</b>	MM3030-1	MM3030-2	MM3030-3-P1	MM3030-4

## Technical Specifications

### Display

Display	LCD (backlight) 4 line x 16 characters. Font Size 5 x 7mm
No. of Keys	15 keys (10 numeric, 12 User Configurable)

### Input Specifications

<b>Digital Input</b>	
Input Type	PNP
Input Voltage Range	11 - 28V DC (abs. max.: 30VDC) (for MM3030-1, MM3030-2, MM3030-4) 5 - 16V DC (abs. max.: 30VDC) (for MM3030-3)
Response Time	Programmable upto 1 to 255ms from Front End (Default 10ms; Also depends on ladder execution time)
Isolation	2.5kV

### Input Specifications

<b>Fast Input</b>														
No. of fast Input Channels	3 channels A) FC0 - I0 & I1 - Rate / Totalizer B) FC1 - I2 & I3 - Rate / Totalizer C) FC2 - I4 & I5 - Totalizer													
Operating Modes / Frequency	Unidirectional / Bidirectional / Quadrature / Dual Uni Modes													
Max Speed	<table border="1"> <thead> <tr> <th>Input no</th> <th>Operating Mode</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td rowspan="2">I0, I1</td> <td>Uni / Bi / Dual Uni</td> <td>12kHz (for MM3030-1, MM3030-2, MM3030-4) 7.5kHz (for MM3030-3)</td> </tr> <tr> <td>Quad</td> <td>7.5kHz</td> </tr> <tr> <td>I2, I3</td> <td rowspan="2">Uni / Bi / Quad / Dual Uni</td> <td>7.5kHz</td> </tr> <tr> <td>I4, I5</td> <td>7.5kHz</td> </tr> </tbody> </table>	Input no	Operating Mode	Frequency	I0, I1	Uni / Bi / Dual Uni	12kHz (for MM3030-1, MM3030-2, MM3030-4) 7.5kHz (for MM3030-3)	Quad	7.5kHz	I2, I3	Uni / Bi / Quad / Dual Uni	7.5kHz	I4, I5	7.5kHz
Input no	Operating Mode	Frequency												
I0, I1	Uni / Bi / Dual Uni	12kHz (for MM3030-1, MM3030-2, MM3030-4) 7.5kHz (for MM3030-3)												
	Quad	7.5kHz												
I2, I3	Uni / Bi / Quad / Dual Uni	7.5kHz												
I4, I5		7.5kHz												
Minimum Rate Measured	0.06Hz													
Maximum Count	32 bits													
<b>Analog Section</b>														
Input Type	2 input [AI0, AI1]													
Sensor	Voltage [0-10V], Current [0-20mA] [Selectable via jumper]													
Resolution	10 bit													
Accuracy	± 0.5% of full scale / ± 5 counts whichever greater													
Conversion time	100 msec													
Linearity	0.1 %													

### Output Specifications

<b>OUTPUT SECTION (for MM3030-1, MM3030-2, MM3030-4)</b>	
Transistor Rating	O0 & O1 - NPN @24V DC 50mA (Fast output) O2 - O7 PNP @24V DC 100mA
Isolation	2.5kV
Short Circuit Protection	Yes
Min. Switching Time	1ms [Also depends on Ladder scan time]
PWM Output	2 Channels @O0 & O1, Pulse width: multiples of 1 ms, Duty Cycle: 0.1% Least Count

### Output Specifications

Pulse Output	2 Channels @ 00 & 01 50kHz -programming On & Off timers in 1µsec resolution, Programmable no of pulses.
Timer Accuracy	0.1% or 2ms (Whichever greater)
<b>OUTPUT SECTION (For MM3030-3)</b>	
Relay Contact Rating	NO Type : 3A (Resistive @ 230VAC)
Isolation	2.5kV

### Functional Features

Timer Operational Modes	On Delay Timer, Off Delay Timer, Up Timer / Down Timer [Special Timer]. 1ms Timer & Pulse Timer
Counter	Up Counter, Down Counter & Up/Down Counter [With & without over run]
Other Blocks	PID Control with auto tune, Totalizer, Rate totalizer, Hysteresis & Scaling.
Memory Retention	10 years (4k memory)
RTC	Yes

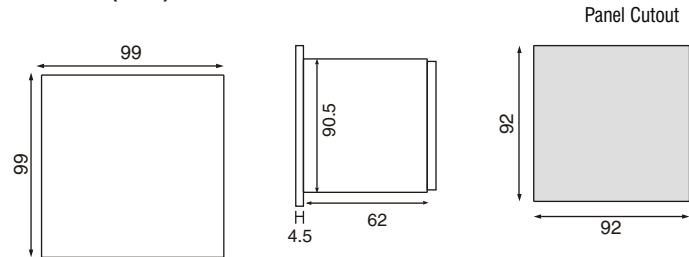
### Functional Specifications:

Programming Method	Windows based software for ladder programming and HMI configuration.
Memory	Data Memory : 16 kbytes Code Memory : 351 kbytes Upload Memory : 96 kbytes
Max. no. of Objects	5000 (As per memory)
Minimum Scan Time	200 µsec
Typical Scan Time	1 ms (Also depends on ladder programming)
Memory Retention	10 years (4k memory)

### Environmental Specifications

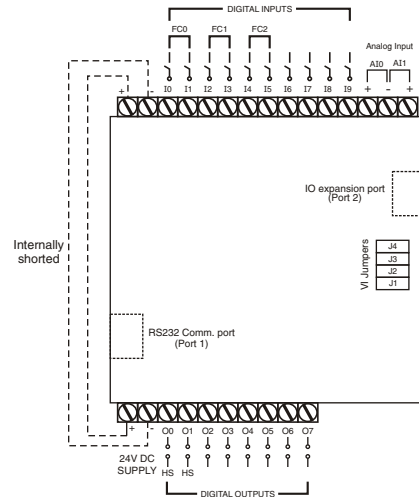
Temperature	Operating : 0 to 50 °C Storage : -20 to 60 °C
Humidity (non-condensing)	95% RH
Weight	350gms

### Dimensions (in mm)

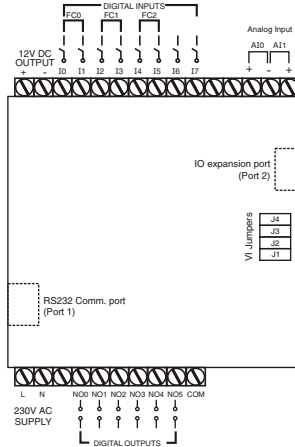


### Terminal Connections

- For MM3030-1** Port1- 6 Pin Jack (RS232)  
Port2- 8 Pin Jack (IO Expansion)
- For MM3030-2 & MM3030-4** Port1- 6 Pin Jack (RS485)  
Port2- 8 Pin Jack (IO Expansion)



- For MM3030-3** Port1- 6 Pin Jack (RS232),  
Port2- 8 Pin Jack (IO Expansion)



### Jumper settings for Voltage & Current selection for Analog channels

Jumper No	Description
J1	For Voltage Channel 0
J2	For Current Channel 0
J3	For Voltage Channel 1
J4	For Current Channel 1

## Port Description

<b>Port1 RS232</b> (for MM3030-1 and MM3030-3)		<b>Port 2 IO Expansion</b> (for MM3030-1 and MM3030-3)	
PIN	DESCRIPTION	PIN	DESCRIPTION
1	NC	1	NC
2	GND	2	NC
3	TXD (RS 232)	3	GND
4	RXD (RS 232)	4	IO +ve
5	GND	5	IO -ve
6	NC	6	GND
		7	NC
		8	NC

<b>Port1 RS485</b> (for MM3030-2 and MM3030-4)		<b>Port 2 IO Expansion</b> (for MM3030-2)	
PIN	DESCRIPTION	PIN	DESCRIPTION
1	RS485 +ve	1	RS485 +ve
2	NC	2	RS485 -ve
3	NC	3	GND
4	NC	4	IO +ve
5	NC	5	IO -ve
6	RS485 -ve	6	GND
		7	NC
		8	NC

<b>Port 2 IO Expansion</b> (for MM3030-4)	
PIN	DESCRIPTION
1	RS485 +ve
2	RS485 -ve
3	GND
4	NC
5	NC
6	GND
7	NC
8	NC

## Ordering Information

Product	Order Code
MM3030-1	MM3030-1
MM3030-2	MM3030-2
MM3030-3	MM3030-3-P1
MM3030-4	MM3030-4

## Accessories (To be ordered separately)

Communication cable	ACH-002
Windows-based software for ladder programming	ACD-003
4 Relay module	AR-04-5A-NONC (SPDT)
	AR-04-5A-NO (SPST)
IO Expansion Cable	ACH-003
IO Expansion Adapter	AC-IOEXP-01
<b>Converters</b>	
RS485 to RS232	AC-RS485-RS232-01 ( Non Isolated )
	AC-RS485-RS232-ISO ( Isolated )
USB to RS232	AC-USB-RS232-01
USB to RS485 (with jack)	AC-USB-RS485-03
<b>Ordering information for IO630 Expansion Modules</b>	
<b>(For MM3030-1, MM3030-2, MM3030-3).</b>	
IO630-8DI [8 Digital Inputs]	
IO630-4RO [4 Relay Outputs]	
IO630-4TO [4 Transistor Outputs]	
IO630-2AI-VI [2 Analog inputs (Voltage / Current)]	
IO630-2AI-TCR [2 Analog inputs (TC/RTD)]	
IO630-2AO [2 Analog Outputs]	
<b>IO610 Expansion Modules (For MM3030-2, MM3030-4)</b>	
IO610-8DI [8 Digital inputs]	
IO610-4RO [4 Relay Outputs]	
IO610-4TO [4 Transistor Outputs]	
IO610-2AI-VI [2 Analog inputs (Voltage / Current)]	
IO610-2AI-TCR [2 Analog inputs (TC / RTD)]	
IO610-2AO [2 Analog Outputs]	