selec

MM303X Series
Operating Instructions

96 x 96mm

FEATURES

- Compact PLC with built-in HMI.
- Windows based user friendly software for ladder programming and HMI configuration
- IO Expansion (Not for MM3032)
- RTC Available (MM3030-1, MM3030-2, MM3030-4).

PRODUCT CONFIGURING TABLE

	MM3030-1	MM3030-2	MM3030-3	MM3030-4	MM3032
Power Supply	18-30VDC		180-270VAC, 50Hz	18-30VDC	180-270VAC, 50Hz
Display	4 Line x 16 Characters Font Size 5 x 7mm, LCD (Backlight)				2 Line x 16 Characters Font Size 5 x 7mm, LCD (Back light)
No. Of Keys	15 (12 user configurable)				10 (8 user configurable)
Digital Inputs	10		8	10	8
Digital Output	8 (Transistorized)		6 (Relay)	8 (Transistorized)	6 (Relay)
Analog Inputs	2 Input ; Voltage (0-10 V) / Current (0-20 mA)				
IO Expansion Port	IO630	IO630 & IO610	IO630	IO610	—
Communication Port	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	1 Port : RS232-DCE
Protocol	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	1. Modbus RTU
Order Code	**MM3030-1**	**MM3030-2**	**MM3030-3-P1**	**MM3030-4**	**MM3032-P1**

SPECIFICATIONS

DIGITAL INPUT

Input Type	PNP
Input Voltage Range	11-28VDC (abs. max.: 30VDC) (MM3030-1, MM3030-2, MM3030-4)
	5-16VDC (abs. max.: 30VDC) (MM3030-3, MM3032)
Response Time	Programmable from 1 to 255ms from Front End (Default 10ms; Also depends on ladder execution time)
Isolation	2.5kV
No. of fast Input Channels	3 inputs A) FC0 - I0 & I1 - Rate / Totalizer B) FC1 - I2 & I3 - Rate / Totalizer C) FC2 - I4 & I5 - Totalizer
Operating Modes	Unidirectional / Bidirectional / Quadrature / Dual Uni Modes

	Input no	Operating Mode	Frequency
Max Speed.	I0, I1	Uni / Bi / Dual Uni	12kHz (MM3030-1, MM3030-2, MM3030-4)
			7.5kHz (MM3030-3, MM3032)
		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		

ANALOG SECTION

No. of Channels	2 input (AI 0, AI 1)
Analog Sensor	Voltage (0-10V), Current (0-20mA)(Selectable via jumper)
Resolution	10 bit
Accuracy	± 0.5% of full scale / ± 5 counts (whichever greater)
Linearity	0.1 %

OUTPUT SECTION

For MM3030-3 and MM3032	
Relay Contact Rating	3A (Resistive@230VAC) 3A (Resistive@30VDC)
Isolation	2.5kV
For MM3030-1, MM3030-2 and MM3030-4	
Transistor Rating	O0 and O1 - NPN@24VDC 50 mA (Fast Output), O2 - O7 PNP@24VDC 100 mA.
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
Pulse Output	2 Channels @ O0 & O1 50 kHz -programming On & Off time in 1µsec resolution, Programmable no of pulses.
Timer Accuracy	0.1% or 2ms (Whichever Greater)

ENVIRONMENTAL CONDITIONS

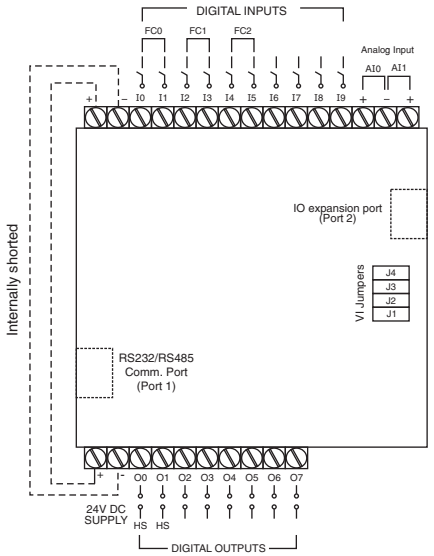
Temperature	**Operating** : 0 to 50°C ; **Storage :** -20 to 60°C
Humidity (non-condensing)	95% RH

MECHANICAL SPECIFICATION

Mounting	Panel mounting and Din rail Mounting
Front Bezel	99 x 99 mm
Side View	62 x 90.5 mm
Panel Cutout	92 x 92 mm
Din Rail	35 mm
Weight (approx.)	350 gms

TERMINAL CONNECTIONS

MM3030-1, MM3030-2 and MM3030-4



PIN Configuration :

MM3030-1, MM3030-2 and MM3030-4 has two ports

For MM3030-1 :

Port 1- 6 Pin Jack (RS232-DCE)

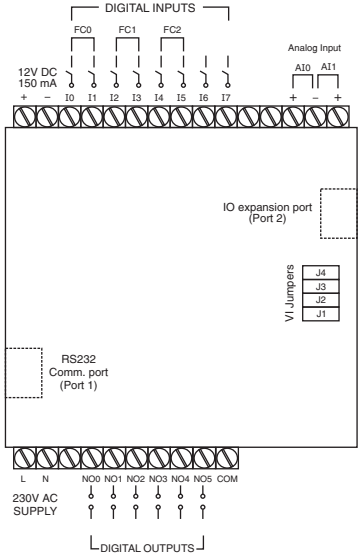
Port 2- 8 Pin Jack (IO Expansion)

For MM3030-2 and MM3030-4 :

Port 1- 6 Pin Jack (RS485-Slave)

Port 2- 8 Pin Jack (IO Expansion)

MM3030-3



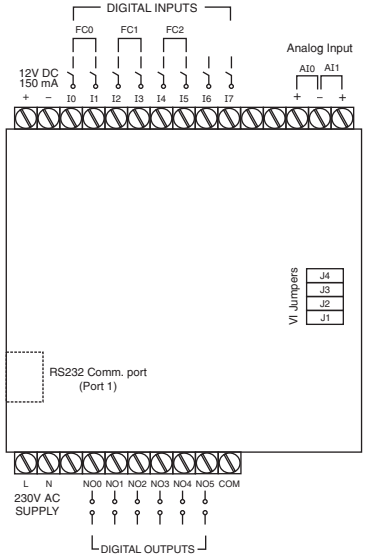
PIN Configuration :

MM3030-3 has two ports

Port 1- 6 Pin Jack (RS232-DCE)

Port 2- 8 Pin Jack (IO Expansion)

MM3032



PIN Configuration :

MM3032 has One port

Port 1- 6 Pin Jack (RS232-DCE)

Port 1
RS232
(MM3030-1, MM3030-3, MM3032)

PIN	DESCRIPTION
1	NC
2	GND
3	TXD (RS 232)
4	RXD (RS 232)
5	GND
6	NC

Port 2
IO Expansion
(MM3030-1, MM3030-3)

PIN	DESCRIPTION
1	NC
2	NC
3	GND
4	IO + ve
5	IO - ve
6	GND
7	NC
8	NC

Port 1
RS485
(MM3030-2 and MM3030-4)

PIN	DESCRIPTION
1	RS485 + ve
2	NC
3	NC
4	NC
5	NC
6	RS485 - ve

Port 2
IO Expansion (MM3030-2)

PIN	DESCRIPTION
1	RS485 + ve
2	RS485 - ve
3	GND
4	IO + ve
5	IO - ve
6	GND
7	NC
8	NC

Port 2
IO Expansion (MM3030-4)

PIN	DESCRIPTION
1	RS485 + ve
2	RS485 - ve
3	GND
4	NC
5	NC
6	GND
7	NC
8	NC

Jumper settings for Voltage and 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

CAUTION :
Please ensure jumper settings of J1 & J3 before applying 10V DC to Analog channels. Ignoring this directive may damage Analog channels.

SAFETY PRECAUTIONS

This manual is meant for personnel involved in wiring, installation, operation and routine maintenance of the equipment. All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure operator and instrument safety. Any misuse may impair the protection provided by the equipment.

CAUTION : Read complete instructions prior to installation and operation of the unit.

CAUTION : Risk of electric shock.

INSTALLATION INSTRUCTIONS

CAUTION :

1. This equipment, being built-in-type, normally becomes a part of the main control panel and the terminals do not remain accessible to the user after installation.
2. Conductors must not come in contact with the internal circuitry of the equipment else it may lead to a safety hazard that may endanger life or cause electrical shock to the operator.
3. Circuit breaker or mains switch must be installed between the power source and supply terminals to facilitate power 'ON' or 'OFF' function.
4. The equipment shall not be installed in environmental conditions other than those specified in this manual.
5. The equipment does not contain a built-in fuse. Installation of external fuse rated 275V AC / 1A is recommended.
6. Since this equipment forms part of the main control panel, its output terminals get connected to the host equipment. Such equipment shall also comply to EMI / EMC and safety requirements like BSEN 613261 and BSEN 61010.
7. Thermal dissipation of equipment is met through ventilation holes provided on housing of equipment. Obstruction of these ventilation holes may lead to a safety hazard.
8. The output terminals shall be loaded strictly as per the values/range specified by the manufacturer.

ELECTRICAL PRECAUTIONS DURING USE

Electrical noise generated by switching of inductive loads can create momentary disruption, erratic display, latch up, data loss or permanent damage to the instrument.

To reduce noise :

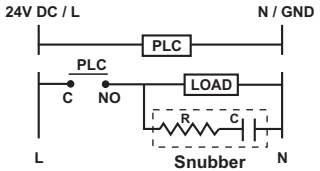
A) Use of MOV / Snubber circuit across load / Contactors of the unit and snubber circuits across the load are recommended.

1. MOV Part no.: AP-MOV-03
2. Snubber Part no.: APRC-01.

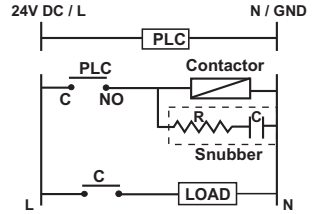
CAUTION :

NOTE : Below mentioned diagram is applicable only for 230V Relay Outputs.

TYPICAL CONNECTIONS FOR LOADS :
For load current < 0.5A



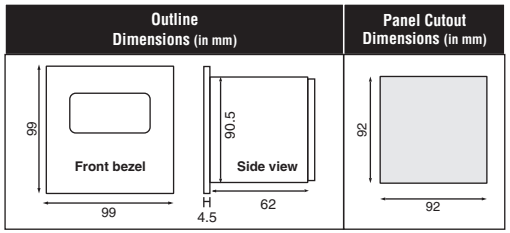
For bigger loads use interposing relay/contactor



NOTE : Use snubber as shown above to increase life of internal relay.

B) Use separate shielded wires for inputs.

MECHANICAL INSTALLATION



For installing the controller

1. Prepare the panel cutout with proper dimensions as shown above.
2. Remove the clamp from the PLC.
3. Fix the unit into the cutout. Insert the clamp from both sides and tighten the screws.

CAUTION

The equipment in its installed state must not come in close proximity to any heating sources, caustic vapors, oils, steam, or other unwanted process byproducts.

EMC Guidelines:

1. Use proper input power cables with shortest connections and twisted type.
2. Layout of connecting cables shall be away from any internal EMI source.

MAINTENANCE

1. To avoid blockage of ventilation holes, clean the equipment regularly using a soft cloth.
2. Do not use Isopropyl alcohol or any other organic solvents for cleaning.

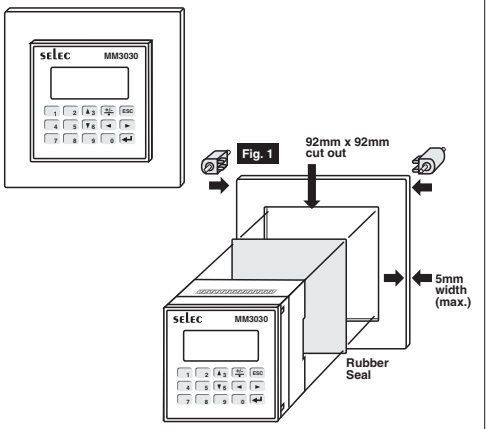
WIRING INSTRUCTIONS

CAUTION

1. To prevent risk of electric shock, power supply to the equipment must be kept OFF while wiring.
2. Terminals and electrically charged parts must not be touched when the power is ON.
3. Wiring shall be done strictly according to the terminal layout provided in the operating manual.
4. To eliminate electromagnetic interference use short wire with adequate ratings and twists of equal size.
5. The power supply connection cable must have a cross section of 1sq.mm or greater and insulation capacity of at least 1.5KV.

PANEL MOUNTING

Fig. 2



1. Before you begin, note that the mounting panel cannot be thicker than 5 mm (0.197").
2. Make a panel cut-out measuring 92mm x 92mm (3.622" x 3.622").
3. Slide the controller into the cut-out, ensuring that the rubber seal is in place.
4. Push the 2 mounting brackets into their slots on the sides of the controller as shown in Fig. 1.
5. Tighten the bracket screws against the panel. Hold the bracket securely against the unit while tightening the screw.
6. When properly mounted, the controller is squarely situated in the panel cut out as shown in Fig. 2.

FUNCTIONAL DETAILS

MM303X Series is a PLC with built in HMI. The user can configure the product using SELPRO software.

SELPRO has two sections:

1. Ladder logic programming section
2. Selec Machine Interface, used for configuration of HMI.

This software is provided with the product. For details of the software and configuration method, please refer to its user manual with the product.

ORDERING INFORMATION

Accessories (To be ordered separately)	Order Code
Communication cable	ACH-002
Windows-based software for ladder programming	ACD-003
Four Relay module	AR-04-5A-NO,NC (SPDT)
	AR-04-5A-NO (SPST)
Power Supply Module	PS-CF-24V-1.1A
IO Expansion Cable	ACH-003
IO Expansion Adapter	AC-IOEXP-01
Converter's	
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

Ordering information for IO610 & IO630 EXPANSION MODULES

- **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]
- **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]

SERVICE DETAILS

This device contains no user serviceable parts and requires special equipment and specialized engineers for repair.
Please contact service center for repair on the following numbers :

Toll free : 1800 227353 (BSNL/MTNL subscribers only)
Others : 91-22-40394200 / 40394202

NO WARRANTY ON UNIT DAMAGED DUE TO WRONG POWER SUPPLY.

(Specifications are subject to change, since development is a continuous process)

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