



96x96

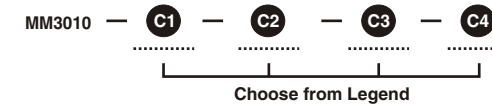
FEATURES

- Compact PLC with built-in HMI.
- 4 line x 16 characters LCD display.
- Windows based user friendly software for ladder programming and HMI configuration.
- RTC available.
- RS 485 based communication with MODBUS Protocol.
- Inbuilt 45 IOs and expandable upto 150 IOs.

SPECIFICATIONS

Display	LCD (backlight) 4 line x 16 characters. Font Size 5 x 7mm		
No. of Keys	18 (10 numeric keys) -14 User Configurable		
RTC	Yes		
Supply Voltage	110-270V AC/DC, 24V DC		
DIGITAL INPUT			
Input Type	PNP		
Input Voltage Range	11-28V DC (abs. max.: 30V DC)		
Response Time (Inputs other than fast counter)	Programmable upto 1 to 255ms from Front End (Default 10ms)(Also depends on ladder execution time)		
Isolation	4 kV		
FAST COUNTER INPUT (Applicable for 19 DIQ Card only)			
Input Type	NPN		
Operating Modes / Frequency	Bidirectional, Unidirectional : 7.5 kHz, Quadrature : 2.5 kHz		
Maximum Count	10 digits		
DIGITAL OUTPUT - RELAY			
Contact Rating	NO Type : 4ch / 8ch : 5A resistive @ 240V AC 11ch : 3A resistive @ 240V AC		
Isolation	4 kV		
DIGITAL OUTPUT - TRANSISTOR			
Transistors Output Rating	PNP Type : 24V,100 mA		
Min. Switching Time	1 ms (or as per Ladder Scan Time)		
ANALOG INPUT			
Sensors	J, K, T, R, S, C, E, B, N, L, U, W, PLTNL, RTD, MVOLT(0-60mV), VOLT (0-10 V),CURR (0-20 mA)		
Resolution	16 bits	0 - 10V	1mV
		0 - 20mA	1µA
		TC / RTD	0.1°C
Conversion Time	100 msec.		

ANALOG OUTPUT	
Output Type	Current - 0-20 mA ; Voltage - 0-10 V
Resolution	14.5 bit
Conversion Time	20 msec.
Linearity Error	0.1%
COMMUNICATION	
Communication Ports	Master - RS485 Slave - RS485 / RS232 (Selectable via jumper)
Communication Protocol	MODBUS RTU
ENVIRONMENTAL CONDITIONS	
Temperature	Operating : 0 to 50°C Storage : -20 to 60°C
Humidity (non-condensing)	95% RH

CARD SELECTION & ORDERING INFORMATION


LEGEND		
Slots	Cards	Order Code
C1 Digital Input Cards	8 Digital Input	DI08
	13 Digital Input	DI13
	19 Digital Input + 1 Quad	DIQ19
C2 Digital output Cards	8 Digital Output (Relay type)	DR08
	11 Digital Output (Relay type)	DR11
	14 Digital Output, PNP, 100mA (Transistor type)	DT14
C3 Digital / Analog Mixed I/ Other Cards	Mixed Digital I/O : 8DI + 4DO (Relay type)	MDI08R04
	6 Channel Analog I/P (TC / RTD type)	AI06-T/R
	6 Channel Analog I/P (Voltage / Current type)	AI06-V/I
	2 Channel Analog I/P (Universal type)(TC/RTD/V/I)	AI02
	Mixed Analog I/O : 4AI + 2AO 4AI (Universal I/P) - Set internal Jumpers (Default TC/RTD) 2AO [Factory set to be specified while ordering (0-10V/0-20mA)]	MAI04O02
C4 Power Supply	110 to 270V AC/DC	270 V
	24V DC	24V DC

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 BS EN 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:

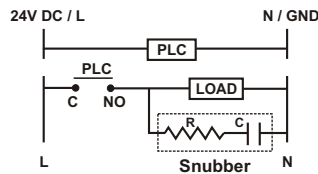
1. Use of MOV / Snubber circuit across load / Contactors of the unit and snubber circuits across the load are recommended.
1. MOV Part no.: AP-MOV-03
 2. Snubber Part no.: APRC-01.

CAUTION

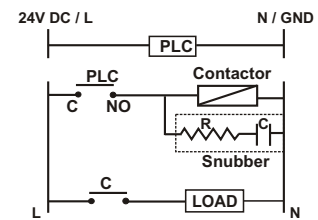
NOTE : Below mentioned diagram is applicable only for 230V Relay Outputs.

TYPICAL CONNECTIONS FOR LOADS :

For load current < 0.5A



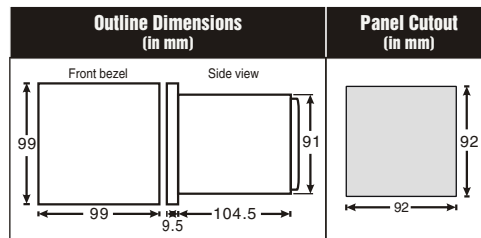
For bigger loads use interposing relay/contactor



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

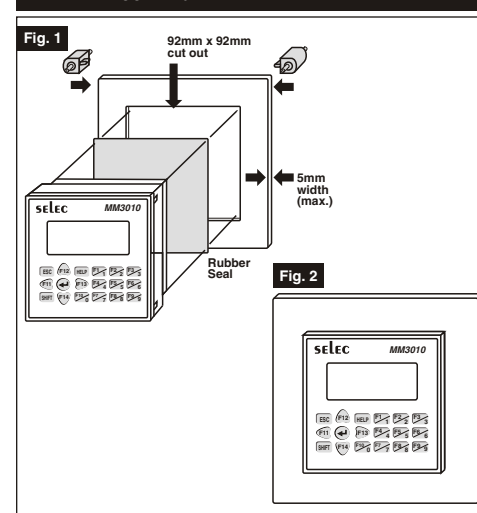
1. To avoid blockage of ventilation holes, clean the equipment regularly using a soft cloth.
2. Do not use Isopropyl alcohol or any other organic Solvents for cleaning.

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



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

MM3010 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-001 (D-Type 9 Pin Cable)
Windows-based software for ladder programming	ACD-003
4 Relay module	AR-04-5A-NO/NC (SPDT)
	AR-04-5A-NO (SPST)
Power Supply Module	PS-CF-24V-1.1A
Converters	
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 wire)	AC-USB-RS485-02
USB to RS485 (with jack)	AC-USB-RS485-03

Ordering information for IO610 EXPANSION MODULES ON MASTER RS485 BUS.

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]

? 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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