

# SELEC

**MM101X Series**  
Operating Instructions



48X96

- PLC with built in HMI.
- Configurable LED display.
- Windows based user friendly software for ladder programming and HMI configuration.

### SPECIFICATIONS

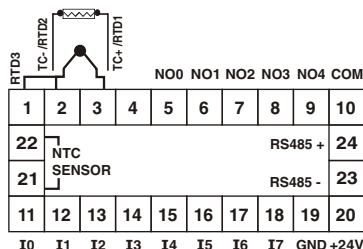
<b>Display</b>	7 segment LED
<b>Digits</b>	3 digit + (4 + 4) digit
<b>No. of Keys</b>	5 (4 user configurable)
<b>DIGITAL INPUT</b>	
<b>Input Type</b>	PNP
<b>Input Voltage Range</b>	11 - 28V DC (abs. max.: 30V DC)
<b>Response Time</b>	Programmable from 1 to 255ms from Front End (Default 10ms)(Also depends on ladder execution time)
<b>Isolation</b>	2 kV
<b>DIGITAL OUTPUT- Relay</b>	
<b>Contact rating</b>	NO Type : 5A resistive @240V AC (for 230V operated models) 3A resistive @240V AC (for 24V operated models)
<b>Isolation</b>	2 kV
<b>Response Time</b>	20 ms
<b>COMMUNICATION</b>	
<b>Communication Ports</b>	RS485 port (slave)
<b>Communication Protocol</b>	MODBUS RTU
<b>Environmental Conditions</b>	
<b>Temperature</b>	Operating : 0 to 50°C Storage : -20 to 60°C
<b>Humidity (non-condensing)</b>	95% RH

### To Configuring Table

	MM1010-T/R	MM1010-V/I	MM1010-1AI (T/R)-DR03	MM1012	MM1012-1	MM1012-2	MM1013	MM1015
Digital Inputs	8	8	—	6	6	6	8	10
Relay Outputs	5	5	3	4	4	4	5	6
Analog Inputs	1(TC/RTD)	1(V/I)	1(RTD)	2(T/R/V/I)	2(T/R/V/I)	2(T/R/V/I)	—	—
Analog Outputs	—	—	—	—	1(0-10V)	1(0-20mA)	—	—
Selpro Model Selection	MM1010-1	MM1010-2	MM1010-4	MM1012	MM1012	MM1012	MM1013	MM1015

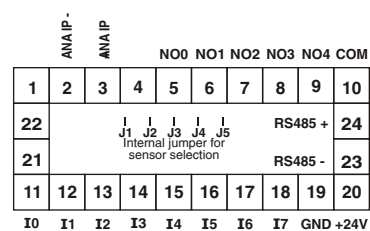
### TERMINAL CONNECTIONS

#### MM1010-T/R 24V



For TC/RTD

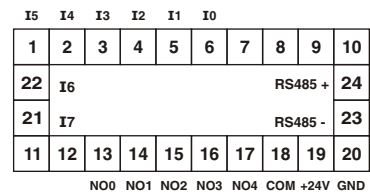
#### MM1010-V/I 24V



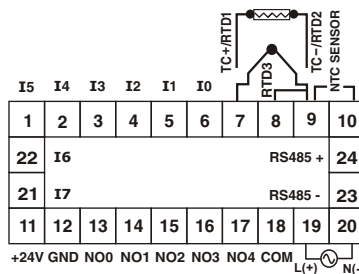
For Volt : Short J3 & J4

For Current : Short J4 & J5

#### MM1013 24V

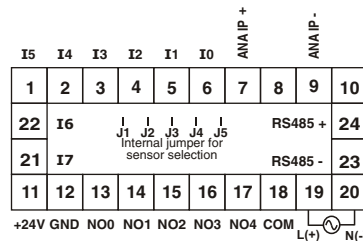


#### MM1010-T/R 230V



For TC/RTD

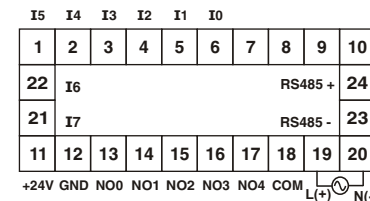
#### MM1010-V/I 230V



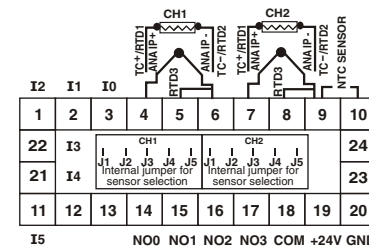
For Volt : Short J3 & J4

For Current : Short J4 & J5

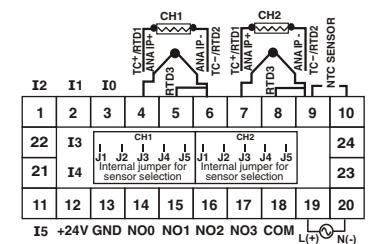
#### MM1013 230V



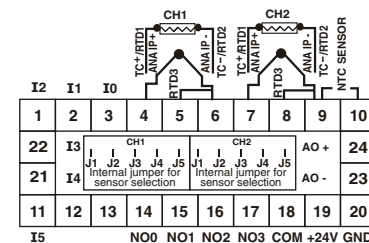
#### MM1012 24V



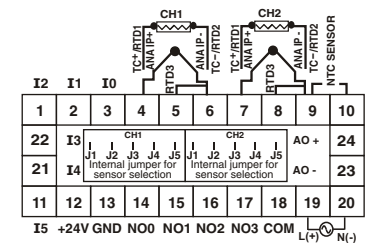
#### MM1012 230V



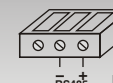
#### MM1012-1/2 24V



#### MM1012-1/2 230V



RS485 on side terminal



Front side view

- For TC/RTD Short J4 & J5
- For Volt Short J3 & J4
- For Current Short J1 & J2

Back side view

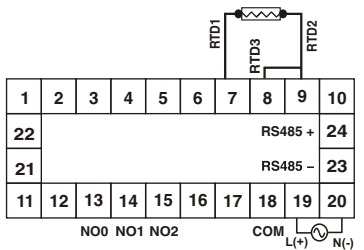
## TERMINAL CONNECTIONS

MM1015 230V

I9	I8	I7	I6	I5	I4	I3	I2	I1	I0	
1	2	3	4	5	6	7	8	9	10	
22	+24V								RS485 +	24
21	GND								RS485 -	23
11	12	13	14	15	16	17	18	19	20	
NO0 NO1 NO2 NO3 NO4 NO5 COM										

L(+) N(-)

MM1010-1AI(T/R)-DR03 230V



## 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. The equipment shall not be installed in environmental conditions other than those specified in this manual.
4. 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 61326 and BSEN 61010.

5. Thermal dissipation of equipment is met through ventilation holes provided on chassis of equipment. Obstruction of these ventilation holes may lead to a safety hazard.
6. The output terminals shall be loaded strictly as per the values/range specified by the manufacturer.

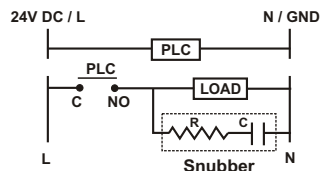
### ELECTRICAL PRECAUTIONS DURING USE

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

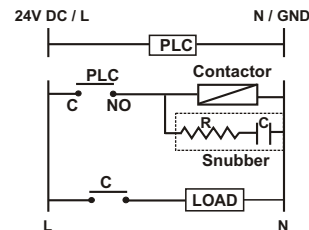
**To reduce noise:**

- A) Use of MOV/Snubber circuits across the load is recommended.
  1. Snubber Part no. : APRC-01
  2. MOV Part no. : AP-MOV-03

**Typical connections for loads :** For load current < 0.5A



**For bigger loads use interposing relay/contacter**



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

**B) Use separate shielded wires for inputs**

## MECHANICAL INSTALLATION

Outline Dimensions (in mm)	Panel cutout Dimensions (in mm)

1. Remove the clamp from the PLC.
2. 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 by products.

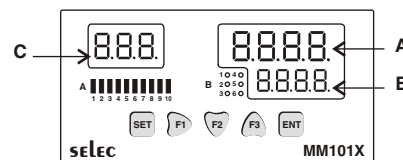
### EMC Guidelines:

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 clean soft cloth.
2. Do not use Isopropyl alcohol or any other organic solvents for cleaning.

## 101X DISPLAY INTERFACE



### Display Size Specifications

Display	Height (mm)	Width (mm)
A	10	5.5
B	7	4.3
C	8	7

## 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. Use lugged terminals to meet M3.5 screws.
5. To eliminate electromagnetic interference use short wire with adequate ratings and twists of equal size.
6. The power supply connection cable must have a cross section of 1sq.mm or greater and insulation capacity of at least 1.5KV.

## FUNCTIONAL DETAILS

MM101X 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

PRODUCT	ORDER CODE
MM1010-1	MM1010-T/R-24V
	MM1010-T/R-230V
MM1010-2	MM1010-V-24V
	MM1010-V-230V
	MM1010-I-24V
	MM1010-I-230V
MM1010-4	MM1010-1AI(T/R)-DR03-230V
MM1012	MM1012-24V
	MM1012-230V
MM1012-1	MM1012-1-24V
	MM1012-1-230V
MM1012-2	MM1012-2-24V
	MM1012-2-230V
MM1013	MM1013-24V
	MM1013-230V
MM1015	MM1015-230V

Accessories (To be ordered separately)	Order Code
Communication cable	ACH-001 (D-Type 9 Pin Cable)
Windows-based software for ladder programming	ACD-003
Power Supply Module	PS-CF-24V-1.1A
<b>Converters</b>	
RS485 to RS232	AC-RS485-RS232-01 (Non Isolated)
	AC-RS485-RS232-ISO (Isolated)
USB to RS485	AC-USB-RS485-02

## 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 )

### Selec Controls Pvt. Ltd.

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