## selec

#### MIBRX-6M-X-1-1-X-X-24VDC/MIBRX-6M-1-X-X-230V

Operating Instructions

#### FEATURES

- > Flexible Card Selection
- ➤ Compact PLC with User Selectable HMI
- > Windows based User Friendly Selpro Software for Ladder Programming
- > RTC with Time Switch function (optional)
- > RS485 based Master & Slave Communication
- ➤ Ethernet Slave Communication (optional)
- > CAN Communication (optional)
- Data logging

### Patents applied worldwide

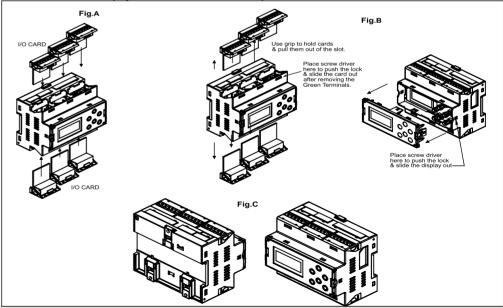
|                          | ratents     | applied wo        | Huwide  | , ,   | Jata logging  |   |                |
|--------------------------|-------------|-------------------|---|---|---------------|---|----------------|
| SPECIF                   | ICATIONS    |                   |   |   |               |   |                |
|                          |             |                   | MIBRX-6M-1-X-2  | X-230V  | MIBRX-6M-X-1- | -1-X-X-24VDC                                    |                |
| SUPPLY VOLTAGE           |             |                   | 90-270V AC/DC   | 50/60Hz   | 18-30VDC      |   |                |
| Sensor Supply (SS)       |             |                   | 24V@ 50mA   |   | NA            |   |                |
| I/O Card Slots           |             |                   |   | 6   |               |   |                |
| RTC                      |             |                   | Yes (Optional)  |   |               |   |                |
| FIXED I                  | NPUTS (Ma   | x. Counting       | g Frequenc  | y: 50Hz)  |               |   |                |
| Input Type               |             |                   | PNP   |   |               |   |                |
| Input Voltage Range (V+) |             |                   | 5-30V DC  |   |               |   |                |
| No. of Inputs            |             |                   | 11 Digital Inputs Incl. 1 Fast Input Channel 12 Digital Inputs incl. 2 Fast Input Chann |   |               |   |                |
|                          | pato        |                   |   | 1 Configurable Analog Input (0-10VDC) NA                                |               |   |                |
| Response Time            |             |                   | 10 ms max.  |   |               |   |                |
| Isolation                |             |                   | No Yes (optional)   |   |               |   |                |
| FAST C                   | OUNTER IN   | <b>PUT</b> (On Fi | xed card)   |   |               |   |                |
| Input Type               |             |                   | PNP   |   |               |   |                |
| No. of Digital Inputs    |             |                   |   | 2(Uni)/1(Bi/Quad)/<br>11Standard Digital Inputs                         |               | 4(Uni)/2(Bi/Quad)/<br>12Standard Digital Inputs |                |
| Oper                     | ating Modes | / Frequenc        | у   | Unidirectional / Bidirectional / Quadrature / Dual Uni ( 5kHz for All ) |               |   | 5kHz for All ) |
|                          | н           |                   | 21  | MODE  |               |   |                |
|                          | п           | DI                |   | UNI   | ВІ            | QUAD  | DUAL UNI       |
| CH0                      | CH1**       | DIO               | DI2**   | RT  | RT            | 1 <sup>st</sup> IP*                             | RT             |
| CHU                      | CHI         | DI1               | DI3**   | STD IP  | Direction     | 2 <sup>nd</sup> IP*                             | Т              |
|                          |             |                   |   |   |               |   |                |

| DIGITAL OUTPUT - RELAY (On Board) (Only for 230V variants) |  |                               |  |  |
|--|--|-------------------------------|--|--|
| Number of Relay Outputs                                    | 4  |                               |  |  |
| Contact Rating   | NO Type : (5A resistive @ 230V AC / 30V DC)  |                               |  |  |
| Isolation  | 2.5 kV   |                               |  |  |
| Initial Max. Contact Resistance                            | 100mΩ (@1A, 6V DC)   |                               |  |  |
| Switching Time   | 20ms max.  |                               |  |  |
| COMMUNICATION  |  |                               |  |  |
| Communication Port   | 1. PORT 1 - RS485 Slave (MODBUS RTU) 2. PORT 2 - RS485 Master (MODBUS RTU) For Expansion 3. ETHERNET SLAVE (MODBUS RTU/MODBUS TCP) 4. CAN 5. USB (24VDC variant) |                               |  |  |
| ENVIRONMENTAL CONDITIONS                                   |  |                               |  |  |
| Temperature  | Operating : 0 to 55°C; Storage: -20 to 70°C  |                               |  |  |
| Humidity (non-condensing)                                  | 10% to 95% RH  |                               |  |  |
| Enclosure  | Din Rail Mounting  |                               |  |  |
| Weight   | 270 grams (Without I/O cards)  | 250 grams (Without I/O cards) |  |  |

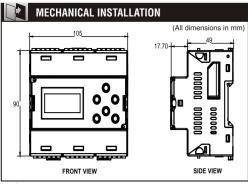
#### CONFIGURABLE I/O CARD SPECIFICATIONS

| CONFIGURABLE I/O CARD SPECIFICATIONS                     |  |           |                                    |  |  |  |
|--|--|-----------|------------------------------------|--|--|--|
| DATA LOGGING (Optional)                                  |  |           |                                    |  |  |  |
| Memory Storage   | 1MB (FIXED), 2MB (I/O CARD)  |           |                                    |  |  |  |
| Minimum Logging Interval Time                            | 10 Sec   |           |                                    |  |  |  |
| Data Retention   | 10 Years   |           |                                    |  |  |  |
| DIGITAL OUTPUT - RELAY                                   |  |           |                                    |  |  |  |
| Contact Rating NO Type (5A Resistive @ 230V AC / 30V DC) |  |           | 230V AC / 30V DC)                  |  |  |  |
| Isolation  | 2.5 kV   | 2.5 kV    |                                    |  |  |  |
| Initial Max. Contact Resistance                          | 100mΩ (@1A 6V DC)  |           |                                    |  |  |  |
| Max. Switching Time                                      | 20ms Max.  |           |                                    |  |  |  |
| DIGITAL OUTPUT - TRANSISTOR                              |  |           |                                    |  |  |  |
| Transistor Rating  | PNP Type : 24V, 100mA  |           |                                    |  |  |  |
| Switching Time   | 10ms Max.  | 10ms Max. |                                    |  |  |  |
| ANALOG INPUT   |  |           |                                    |  |  |  |
| Sensors  | J, K, T, R, S, C, E, B, N, L, U, W, PLTNL II, RTD<br>MVOLT (0-60mV), VOLT (0-10V), CURR (0-20mA) |           |                                    |  |  |  |
|  |  | 0 - 10V   | 2.5mV (1 Count)                    |  |  |  |
| Resolution   | 12 Bits  | 0 - 20mA  | 5μΑ                                |  |  |  |
|  |  | TC / RTD  | 0.1° C (Note : 1°C for R & S Type) |  |  |  |
| Conversion Time  | 100 msec.  |           |                                    |  |  |  |
| Accuracy @ 25 <sup>o</sup> C                             | 0.25% of Full Scale  |           |                                    |  |  |  |
| ANALOG OUTPUT  |  |           |                                    |  |  |  |
| Output Type  | Current: 0-20mA; Voltage: 0-10V  |           |                                    |  |  |  |
| Resolution   | esolution 14 Bits  |           |                                    |  |  |  |
| Conversion Time  | 10 msec.   |           |                                    |  |  |  |
| Linearity Error  | 0.1%   |           |                                    |  |  |  |
|  |  |           |                                    |  |  |  |

Note: Refer I/O Card & Display Card Datasheets for detailed specifications



- 1. Insert the I/O card as shown in Fig. A.
- 2. Fig. C shows a fully assembled MiBRX-6M unit with LCD display module.
- 3. To remove the card from the slot, use a screw driver to push the lock & slide the card out as shown in Fig. B. Remove the Green Terminal before sliding the card out for easy operation.
- 4. To remove the display module, use a screw driver to push the lock and pull it out, refer Fig. B.



#### **A** 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**

- Use twisted input power cables with shortest possible connections.
- 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.
- Do not use Isopropyl Alcohol or any other organic solvent for cleaning.

#### INSTALLATION INSTRUCTIONS

#### **▲** CAUTION

- 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.
- 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.
- Circuit breaker or mains switch must be installed between the power source and supply terminals to facilitate power 'ON' & 'OFF' function.
- The equipment shall not be installed in environmental conditions other than those specified in this manual.
- Since this equipment forms a 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 CE standard procedure.
- Thermal dissipation of the equipment is met through ventilation holes provided on the housing of the 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.

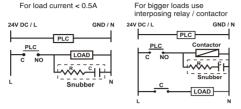
#### To reduce noise:

Use of MOV / Snubber circuit across load / contactors of the unit are recommended.

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

**NOTE**: Below mentioned diagram is applicable only for 230V relay outputs.

#### Typical Connections For Loads:



**NOTE**: Use snubber as shown above to increase life of internal relay. Use separate shielded wires for inputs.

#### SAFETY PRECAUTIONS

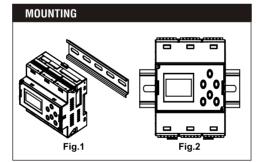
This manual is meant for personnel involved in wiring istallation, operation and routine maintenance of the equipment. All safety related conditions, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure operator and instrument safety. Any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



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



Risk of electric shock.



- Snap the controller onto the DIN Rail as shown in Fig. 1 Above.
- 2. When properly mounted, the controller is squarely placed on the DIN Rail as shown in Fig. 2.

#### 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.

#### **FUNCTIONAL DETAILS**

MiBRX is a modular PLC with User Selectable HMI. The user can configure the product, it's I/O slots and display type using SELPRO software.

#### SELPRO has two sections:

- 1. Ladder Logic Programming section
- 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 provided along with the product.

Note: Ensure Card inserted in any Slot is the same one configured.

#### ORDERING INFORMATION

Logic & Power Supply

# ORDER CODE DESCRIPTION MiBRX-6M-1-1-1-230V 230V POWER SUPPLY WITH RTC & MASTER 230V POWER SUPPLY WITHOUT RTC & MASTER 24V POWER SUPPLY WITH MASTER

MIBRX-6M-1-1-1-0-0-24VDC 24V POWER SUPPLY WITH MASTER

MIBRX-6M-2-1-1-1-24VDC 24V POWER SUPPLY WITH ISOLATION MASTER, RTC, CAN & ETHERNET

MIBRX-6M-2-1-1-1-0-24VDC 24V POWER SUPPLY WITH ISOLATION UNITS MASTER, RTC & CAN

MiBRX-6M-2-1-1-0-0-24VDC 24V POWER SUPPLY WITH ISOLATION MASTER & RTC

MIBRX-6M-2-1-1-0-1-24VDC 24V POWER SUPPLY WITH ISOLATION MASTER,RTC & ETHERNET

#### SUPPORTED I/O CARDS

| OUT OTTIED I/O OTTIED |                                       |  |  |  |  |
|-----------------------|---------------------------------------|--|--|--|--|
| MIBRX-SC-DI04         | 4 Digital Input (For Non-ISO varient) |  |  |  |  |
| MIBRX-SC-DI04-ISO     | 4 Isolated Digital input              |  |  |  |  |
| MIBRX-SC-DI06         | 6 Digital Input (For Non-ISO varient) |  |  |  |  |
| MIBRX-SC-DI06-ISO     | 6 Isolated Digital input              |  |  |  |  |
| MIBRX-SC-RO03         | 3 Relay Output                        |  |  |  |  |
| MIBRX-SC-RO04         | 4 Relay Output                        |  |  |  |  |
| MIBRX-SC-R005         | 5 Relay Output                        |  |  |  |  |
| MIBRX-SC-TO04         | 4 Transistor Output                   |  |  |  |  |
| MIBRX-SC-DI02-RO02    | 2 Digital Input & 2 Relay Output      |  |  |  |  |
| MIBRX-SC-DI02-TO02    | 2 Digital Input & 2 Transistor Output |  |  |  |  |
| MIBRX-SC-Al02-V       | 2 Analog Input (Voltage)              |  |  |  |  |
| MIBRX-SC-AI02-I       | 2 Analog Input (Current)              |  |  |  |  |
| MIBBX-SC-AI02-BTD     | 2 Analog input RTD (PT100)            |  |  |  |  |

## MIBRX-S

MIBRX-SC-AI02-TC 2 Analog input TC
MIBRX-SC-AI02-NTC 2 Analog Inputs (NTC)

MIBRX-SC-AI02-PT1000 2 Analog input PT1000

 MIBRX-SC-AI02-PTC
 2 Analog Inputs (PTC)

 MIBRX-SC-AO01V/I
 1 Analog Output(Voltage/Current)

 MIBRX-SC-AI02-V-I
 2 Analog Input (Voltage & Current)

 MIBRX-SC-DI02-AI01-T
 2 Digital Input & 1Analog input TC/RTD

MIBRX-SC-LC02 2 Load cell - 24 Bits
MIBRX-SC-PD Portable Downloader
MIBRX-SC-DL Data logging (2MB)
MIBRX-SC-FI02 2 fast input (10 Khz )

MIBRX-SC-F001-T001 1 fast output\*1 Transistor output

Upto 200 Khz Note: Fast output conditions

Max Freq Condition

200 Khz Max 1 slot\*\*

100 Khz Max 2 slot\*\*

60 Khz Max 3 slot\*\*

10 Khz Normal Condition

#### SUPPORTED DISPLAY CARDS

MiBRX-DSP-6M-8-2-08-A

MiBRX-DSP-IND-96-8-4-16-B

MiBRX-DSP-IND-96-8-2-16-B

MiBRX-DSP-IND-96-8-0-00-B

MiBRX-DSP-IND-96-8-2-16-B

MiBRX-DSP-AP-6M

#### **ACCESSORIES**

Accessories for Communication

- 1 AC-USB-RS485-03 (USB to 6-pin RJ25 Jack)
- 2 AC-USB-RS485-02 (USB to 2-pin Open Wire)
- 3 AC-IOEXP-03 (Port Expansion Adapter)
- 4 ACH-004
- 5 RPS60-24-CE

#### INTERNAL MEMORY

| Variant     | 230V   | 24VDC  |
|-------------|--------|--------|
| Data Memory | 1 MB   | 1 MB   |
| Code Memory | 240 KB | 480 KB |
| EEPROM      | 4 KB   | 1 KB   |

#### TERMINAL CONNECTION

MiBRX-6M-1-X-X-230V

C3 NO3 C2 NO2 C1 NO1 C0 NO







MiBRX-6M-X-1-1-X-X-24VDC



□ 010 D12 D13 D14 D15 D16 D17 D18 D19 D110D111 GND +241

#### ? 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: Tel. No.: + 91-7498077172 | Email: service@selec.com

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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