



48mm x 96mm

## FEATURES

- PLC with built-in HMI
- Configurable LED display
- RS485 based communication with MODBUS RTU protocol

## SPECIFICATIONS

|                                 |                                                                                                |              |
|---------------------------------|------------------------------------------------------------------------------------------------|--------------|
| Display                         | Top Red – 8 digits (7 segment)                                                                 |              |
|                                 | Bottom Green – 6 digits (7 segment)                                                            |              |
|                                 | 8 LED's (4 Red + 4 Green)                                                                      |              |
| No. of Keys                     | 5 (4-user configurable)                                                                        |              |
| Supply Voltage                  | 230V AC (90 - 270 VAC)                                                                         | 18V - 30V DC |
| Sensor Supply (SS)              | 12V, 50mA                                                                                      |              |
| FUNCTIONAL SPECIFICATIONS (CPU) |                                                                                                |              |
| Programming Language            | Windows based user friendly SELPRO software for ladder logic programming.                      |              |
| Memory                          | Program Memory : 240 kB                                                                        |              |
|                                 | Data Memory : 32 kB                                                                            |              |
|                                 | EEPROM Memory : 2 kB                                                                           |              |
|                                 | VAR_IN-OUT & VAR_OUTPUT TYPE Variable<br>Max 120 bytes retention                               |              |
| Scan Time                       | Typical 1ms                                                                                    |              |
| Function Blocks                 | Timer On delay, Timer Off delay, Pulse Timer, Special Timer, Up/Down Counter, PID control etc. |              |
| Memory Retention                | 10 Years                                                                                       |              |

## DIGITAL INPUTS

\*1 = 90° Phase shift signals

| Number of Digital Inputs               |                    | 8 (including 2 inputs(0-10Vdc) & 2 Fast Input)                           |                |             |                |               |
|----------------------------------------|--------------------|--------------------------------------------------------------------------|----------------|-------------|----------------|---------------|
| Operating Modes (user configurable)    |                    | Unidirectional / Bidirectional / Quadrature / Dual Unidirectional / None |                |             |                |               |
| Channel                                | DI                 | MODE                                                                     |                |             |                |               |
|                                        |                    | UNI                                                                      | BI             | QUAD        | DUAL UNI       | None          |
| FC0                                    | I0                 | Rate Totalizer                                                           | Rate Totalizer | 1st input*1 | Rate Totalizer | Digital Input |
|                                        | I1                 | Digital Input                                                            | Direction      | 2nd input*1 | Totalizer      | Digital Input |
| Operating Range                        |                    | 5 ~ 30V DC                                                               |                |             |                |               |
| Input current                          |                    | 3 mA @10V                                                                |                |             |                |               |
| Action Level                           | Level 1 ➡ Level 0  | <3V DC                                                                   |                |             |                |               |
|                                        | Level 0 ➡ Level 1  | ≥5V DC                                                                   |                |             |                |               |
| Response Time                          | Digital Input mode | Typical 1ms (based on ladder scan time)                                  |                |             |                |               |
|                                        | Fast Input mode    | 100µsec                                                                  |                |             |                |               |
| Input Impedance                        |                    | 7.5 kΩ                                                                   |                |             |                |               |
| Debounce Time                          |                    | 0 ~ 255 ms (Default = 10 ms)                                             |                |             |                |               |
| Maximum counting Frequency             |                    | Normal Input : 30 Hz<br>Fast Input : 5 KHz                               |                |             |                |               |
| Protection against polarity Inversions |                    | Yes                                                                      |                |             |                |               |

## RELAY OUTPUTS

|                                             |                                                                                |
|---------------------------------------------|--------------------------------------------------------------------------------|
| Number of Relay Outputs                     | 5                                                                              |
| Output Type                                 | NO contact type                                                                |
| Output Current                              | 3A @28VDC (Resistive), 3A @240VAC (Resistive)                                  |
| Response Time                               | 10ms                                                                           |
| Life Expectancy                             | Mechanical -: 2 x 10 <sup>7</sup> ops<br>Electrical -: 1 x 10 <sup>6</sup> ops |
| Isolation                                   | No                                                                             |
| Existence of common points between channels | 2 COM for 5 Relay Outputs                                                      |

## ANALOG INPUTS

|                                       | TC Type                                                                 | RTD Type                | Voltage             | Current |
|---------------------------------------|-------------------------------------------------------------------------|-------------------------|---------------------|---------|
| Number of channels                    | 2                                                                       |                         | 2                   | 2       |
| Sensor type                           | J, K, T, R, S, C, E, B, N, L, U, W, PLATINEL II, MILLIVOLT (-5 to 65mV) | PT100                   | 0-10V               | 0-20mA  |
| Type of input                         | Non-differential                                                        |                         |                     |         |
| Temperature Resolution                | 0.1°C                                                                   |                         | --                  |         |
| Digital Resolution for MILLIVOLT      | 12 bits                                                                 | NA                      | 12 bits             |         |
| Input impedance in signal range       | 560 kΩ                                                                  | 750 kΩ                  | 330 kΩ              | 100 Ω   |
| Analog input error at 25°C            | 0.25% of full scale ±1°C                                                | 0.1% of full scale ±1°C | 0.25% of full scale |         |
| Conversion time                       | 100 ms                                                                  |                         |                     |         |
| Protection against polarity inversion | Yes                                                                     | NA                      | Yes                 | Yes     |
| Channel isolation                     | No                                                                      |                         |                     |         |

## ANALOG OUTPUT

|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| Number of channel | 1                                                         |
| Output Type       | Voltage - 0-10 V / Current - 0-20 mA (selectable via S/W) |
| Resolution        | 14 bits                                                   |
| Conversion Time   | 10 msec.                                                  |
| Linearity Error   | 0.1%                                                      |

## COMMUNICATION

|                        |                                                                                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Communication Port     | RS485 Slave                                                                                                                                   |
| Communication Protocol | MODBUS RTU                                                                                                                                    |
| Baud Rate              | 9600, 19200, 38400, 57600, 115200<br>(user configurable via software and hardware)<br>Default = 19200 (Preferred ladder downloading at 19200) |

## ENVIRONMENTAL CONDITIONS

|                           |                 |
|---------------------------|-----------------|
| Operating Temperature     | 0 to 55°C       |
| Storage Temperature       | -20 to 70°C     |
| Humidity (non-condensing) | 95%             |
| Mounting                  | Panel Mounted   |
| Weight                    | Approx. 240 gms |
| Pollution Degree          | 2               |
| Altitude                  | 2000 m          |
| Over Voltage Category     | 2               |

## FUNCTIONAL DETAILS

TWIX-2-230V / TWIX-2-24VDC 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.

For details of the software, please refer to the software

## SAFETY PRECAUTIONS

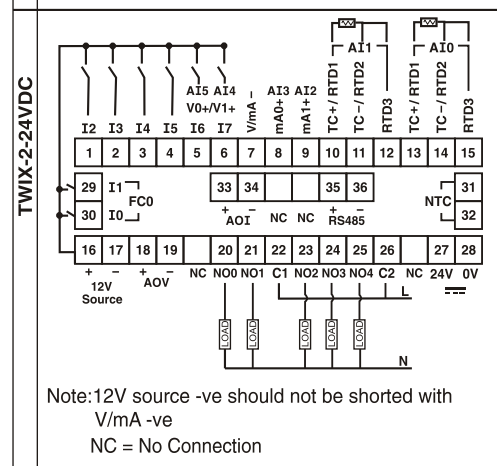
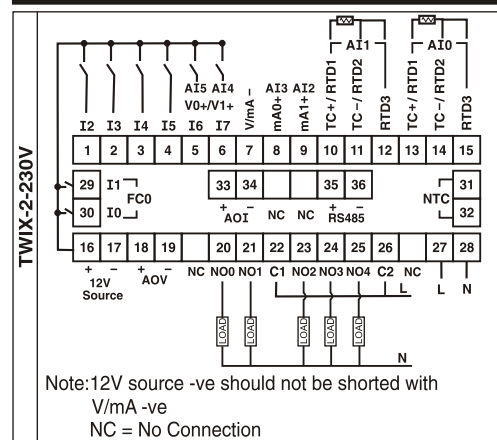
This manual is meant for personnel involved in wiring, installation, operation and routine maintenance of the equipment.

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.

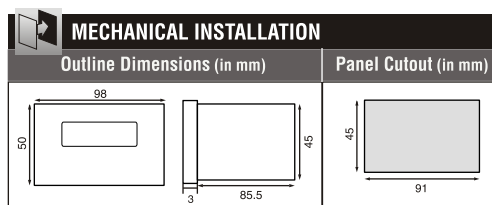
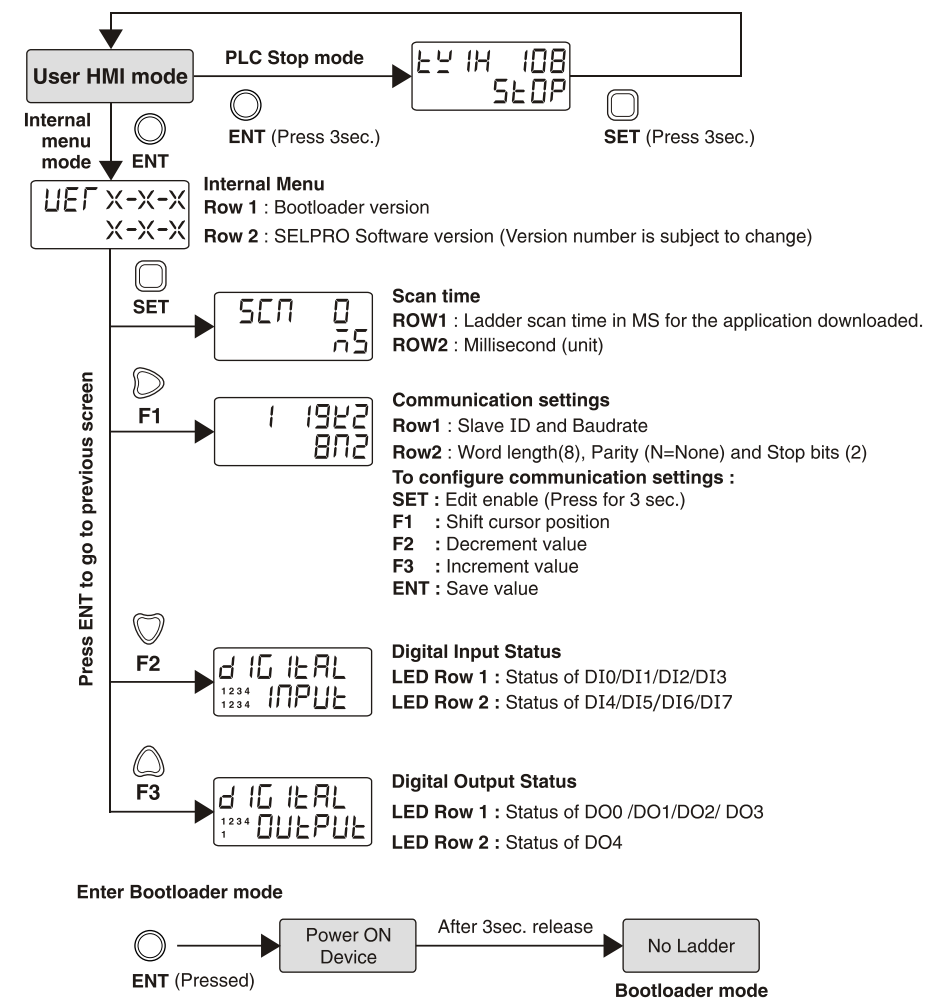
**CAUTION** : Read complete instructions prior to Installation and operation of the unit.

**CAUTION** : Risk of electric shock.

## WIRING DIAGRAM



## MENU DESCRIPTION



- For installing the controller
1. Prepare the panel cutout with proper dimensions as shown above.
  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 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 soft cloth.
2. Do not use Isopropyl alcohol or any other organic

## 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. 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 CE standard procedure.
6. 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.
7. 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 :

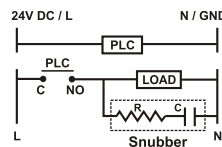
Use of Selec make Snubber across load is recommended.

Snubber Part no. : SNUBBER

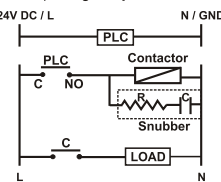
**NOTE :** Below mentioned diagram is applicable only for 230V relay outputs.

#### Typical Connections For Loads :

For load current < 0.5A



For bigger loads use interposing relay / contactor



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

B) Use separate shielded wires for inputs.

## 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.

## INSTRUCTIONS D'INSTALLATION

### ⚠ ATTENTION

1. Cet équipement, étant de type encastré, devient normalement une partie du panneau de contrôle principal et les terminaux ne restent pas accessibles à l'utilisateur après l'installation.
2. Les conducteurs ne doivent pas entrer en contact avec le circuit interne de l'équipement, sous peine d'entraîner un risque de sécurité pouvant mettre la vie en danger ou causer un choc électrique à l'opérateur.
3. Un disjoncteur ou un interrupteur principal doit être installé entre la source d'alimentation et les bornes d'alimentation pour faciliter la fonction "MARCHE" ou "ARRÊT" de l'alimentation.
4. L'équipement ne doit pas être installé dans des conditions environnementales autres que celles spécifiées dans le présent manuel.
5. Comme cet équipement fait partie du tableau de commande principal, ses bornes de sortie sont connectées à l'équipement hôte. Cet équipement doit également être conforme aux exigences EMI / EMC et de sécurité comme la procédure de la norme CE.
6. La dissipation thermique de l'équipement est assurée par des trous de ventilation prévus sur le boîtier de l'équipement. L'obstruction de ces orifices de ventilation peut entraîner un risque pour la sécurité.
7. Les bornes de sortie doivent être chargées strictement selon les valeurs / plages spécifiées par le fabricant.

### LES PRÉCAUTIONS À PRENDRE EN MATIÈRE D'ÉLECTRICITÉ PENDANT L'UTILISATION

Le bruit électrique généré par la commutation de charges inductives peut créer des perturbations momentanées, un affichage erratique, un verrouillage, une perte de données ou des dommages permanents à l'instrument.

#### Pour réduire le bruit :

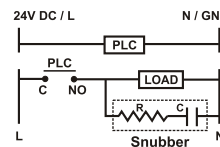
l'utilisation de Selec make Snubber à travers la charge est recommandée.

Snubber Référence : SNUBBER

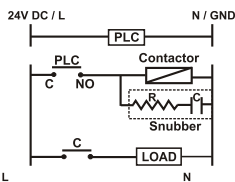
**NOTE :** Le schéma ci-dessous n'est applicable que pour les sorties relais 230V.

#### Connexions typiques pour les charges :

Pour un courant de charge < 0,5A



Pour les charges plus importantes, utilisez relais d'interposition / contacteur



**NOTE :** A) Utilisez le snubber comme indiqué ci-dessus pour augmenter la durée de vie du relais interne.

B) Utilisez des fils blindés séparés pour les entrées.

## INSTRUCTIONS DE CÂBLAGE

### ⚠ ATTENTION

1. Pour éviter tout risque de choc électrique, l'alimentation électrique de l'équipement doit être coupée pendant le câblage.
2. Les bornes et les pièces chargées électriquement ne doivent pas être touchées lorsque l'appareil est sous tension.
3. Le câblage doit être effectué en respectant strictement la disposition des bornes prévue dans le manuel d'utilisation.
4. Pour éliminer les interférences électromagnétiques, utilisez des fils courts de calibre adéquat et des torsades de même taille.
5. Le câble de raccordement à l'alimentation électrique doit avoir une section de 1sq.mm ou plus et une capacité d'isolation d'au moins 1,5KV.

## ORDERING INFORMATION

| ORDER CODE         | CE | RoHS | UL |
|--------------------|----|------|----|
| TWIX-2-230V        | X  | X    | X  |
| TWIX-2-24V         | X  | X    | X  |
| TWIX-2-24V-CU-RoHS | X  | ✓    | ✓  |

## ACCESSORIES (To be ordered separately)

| ORDER CODE      | DESCRIPTION                          |
|-----------------|--------------------------------------|
| AC-USB-RS485-02 | USB to RS485 cable (2 pin open wire) |

## ? 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., India

Factory Address :

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Tel. No. : +91-22-41 418 419/430 | Fax No. : +91-22-28471733

Toll free : 1800 227 353 (BSNL/MTNL Subscribers only)

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