selec

70 x 90 x 66.4mm

FEATURES

➢ PLC with built-in HMI
➢ 2 Line x 8 character LCD display
➢ RS485 based communication with MODBUS RTU protocol
➢ RTC available

SPECIFICATIONS

Display	2 x 8 LCD (Green back-light)
No. of Keys	5 (4-user configurable)
Supply Voltage	24VDC ± 10%

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 : 1 kB
	VAR_INOUT & VAROUTPUT TYPE Variables : - Max 120 bytes retention
Scan Time	Typical 2ms
Function Blocks	Timer On delay, Timer Off delay, Pulse Timer, Special Timer, Up/Down Counter etc.
Memory Retention	10 Years

DIGITAL INPUTS

$*^1$ = 90^0 Phase shift signals

Number of Digital Inputs	10 (Including 2 Fast Input)
Operating Modes (user configurable)	Unidirectional / Bidirectional / Quadrature / Dual Unidirectional / None

Channel	DI	MODE				
		UNI	BI	QUAD	DUAL UNI	None
FC0	DI0	Rate Totalizer	Rate Totalizer	1st input$*^1$	Rate Totalizer	Digital Input
	DI1	Digital Input	Direction	2nd input $*^1$	Totalizer	Digital Input

Operating Range		5 ~ 30V DC
Input current		3 mA @24V
Action Level	Level 1 ➡ Level 0	<3V DC
	Level 0 ➡ Level 1	≥5V DC
Response Time	Digital Input mode	Typical 2 ms (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 (Fast Input)		5kHz
Protection against polarity Inversions		Yes

TRANSISTOR OUTPUT

Number of Transistor Outputs	6 nos
Output Type	PNP
Rated voltage	18 to 30V DC (External)
Output Current	100mA max.per output
Response Time	Typical 2ms (based on ladder scan time)
Short Circuit protection	Yes
Isolation	No
Reverse polarity protection	Yes

COMMUNICATION

Communication Port	Jack(RJ25,6PIN)	RS485 Slave
	2 PIN Terminal	RS485 Master
Communication Protocol		MODBUS RTU
Baud Rate		9600, 19200, 38400, 57600, 115200 (user configurable via software and hardware) Default = 19200 (Preferred ladder downloading at 19200)

ENVIRONMENTAL CONDITIONS

Operating Temperature	0 to 55^{0}C
Storage Temperature	-20 to 70^{0}C
Humidity (non-condensing)	95%
Mounting	Din Rail Mounted
Weight	Approx. 240 gms

⚠ 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.

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. 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.
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.

Typical Connections For Loads :

For load current < 0.5A

For bigger loads use interposing relay / contactor
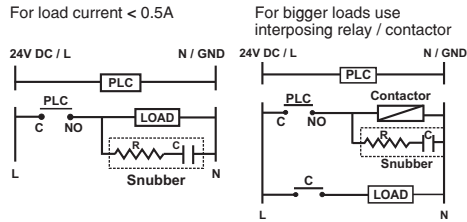
NOTE : Use snubber as shown above to increase life of internal relay.
Use separate shielded wires for inputs.

MECHANICAL INSTALLATION
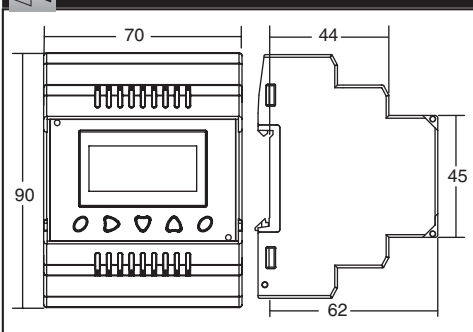
⚠ CAUTION

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.

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.
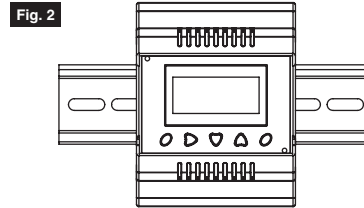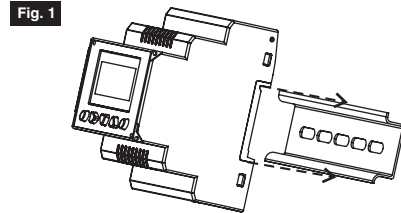
FUNCTIONAL DETAILS

DIGIX-4-1-1-24VDC 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 user manual.

PANEL MOUNTING
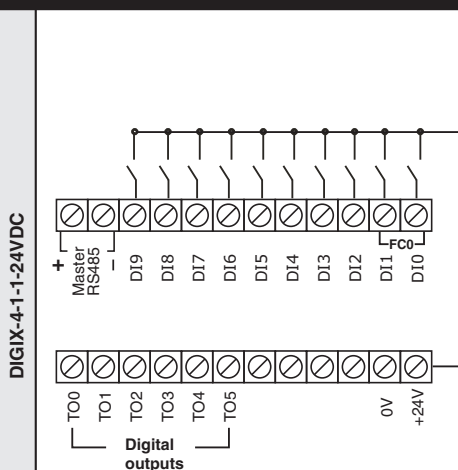
Fig. 1

Fig. 2

1. Snap the controller onto the Din Rail as shown in fig. 1 above.
2. When properly mounted, the controller is squarely situated on the Din-rail shown in Fig. 2. above
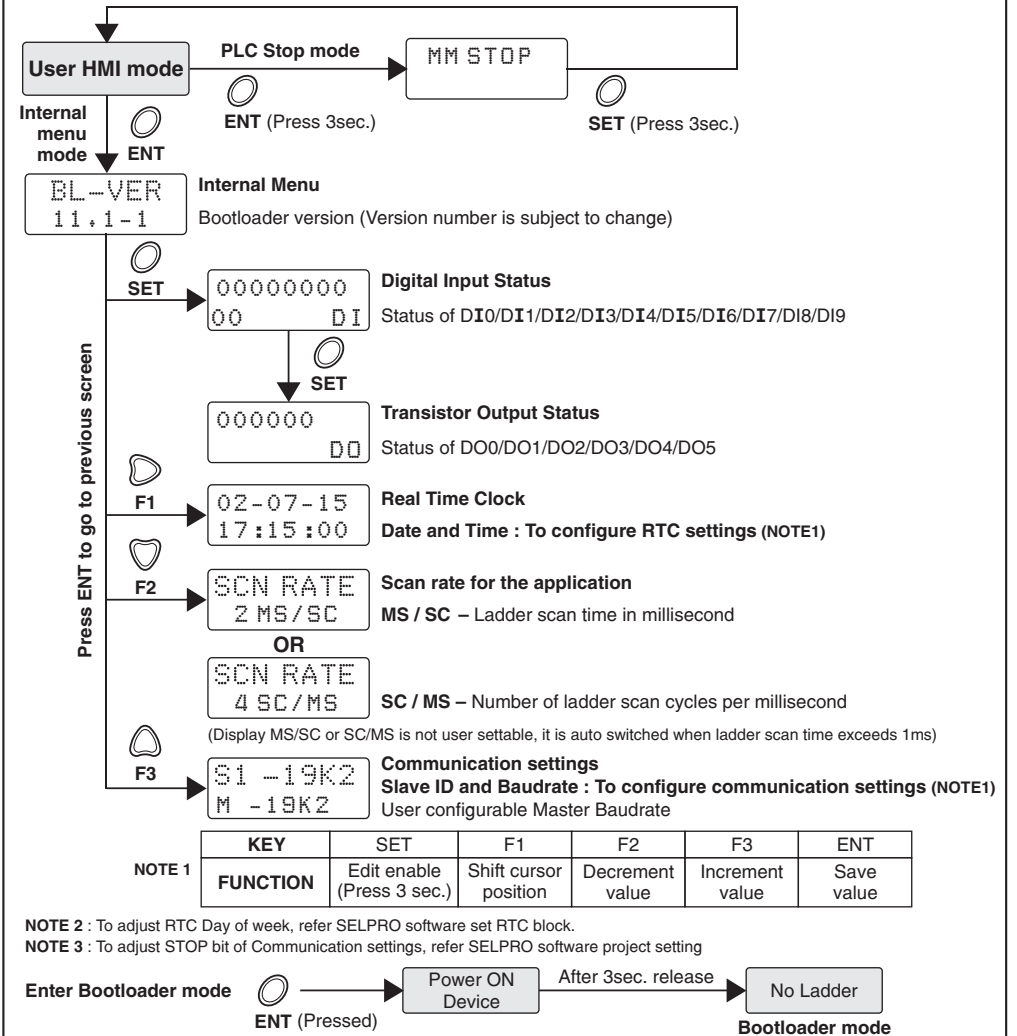
INTERNAL PINOUT FOR COMMUNICATION RS485 PORT

PIN 1

PIN	DESCRIPTION
1	RS485+ (Slave)
2	——
3	——
4	——
5	——
6	RS485– (Slave)

WIRING DIAGRAM

DIGIX-4-1-1-24VDC

+ Master RS485 – D I9 D I8 D I7 D I6 D I5 D I4 D I3 D I2 D I1 D I0 — FC0

TO0 TO1 TO2 TO3 TO4 TO5 0V +24V

Digital outputs

MENU DESCRIPTION

User HMI mode → **PLC Stop mode** → `MM STOP`

ENT (Press 3sec.) SET (Press 3sec.)

Internal menu mode ↓ ENT

`BL-VER 11.1-1`

Internal Menu
Bootloader version (Version number is subject to change)

SET →

`00000000 00     DI`

Digital Input Status
Status of DI0/DI1/DI2/DI3/DI4/DI5/DI6/DI7/DI8/DI9

SET ↓

`000000        DO`

Transistor Output Status
Status of DO0/DO1/DO2/DO3/DO4/DO5

F1 →

`02-07-15 17:15:00`

Real Time Clock
Date and Time : To configure RTC settings (NOTE1)

F2 →

`SCN RATE 2 MS/SC`

Scan rate for the application
MS / SC – Ladder scan time in millisecond

OR

`SCN RATE 4 SC/MS`

SC / MS – Number of ladder scan cycles per millisecond
(Display MS/SC or SC/MS is not user settable, it is auto switched when ladder scan time exceeds 1ms)

F3 →

`S1 -19K2 M -19K2`

Communication settings
Slave ID and Baudrate : To configure communication settings (NOTE1)
User configurable Master Baudrate

Press ENT to go to previous screen

NOTE 1

KEY	SET	F1	F2	F3	ENT
FUNCTION	Edit enable (Press 3 sec.)	Shift cursor position	Decrement value	Increment value	Save value

NOTE 2 : To adjust RTC Day of week, refer SELPRO software set RTC block.
NOTE 3 : To adjust STOP bit of Communication settings, refer SELPRO software project setting

Enter Bootloader mode ⊙ → Power ON Device → After 3sec. release → No Ladder
ENT (Pressed) **Bootloader mode**

ORDER CODE INFORMATION

Product	RS485 Master	RTC
DIGIX-4-1-1-24VDC	Yes	Yes

ACCESSORIES (To be ordered separately)

ORDER CODE	DESCRIPTION
AC-USB-RS485-03	USB to RS485 cable (6 pin jack for downloading)
AC-USB-RS485-02 *	USB to RS485 cable (2 pin open wire)
ACH-004	RJ25 (6-pin) cable
AC-IOEXP-02	Port Expansion adapter

Note: * Along with ACH-004 & AC-IOEXP-02 for networking

? 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.)