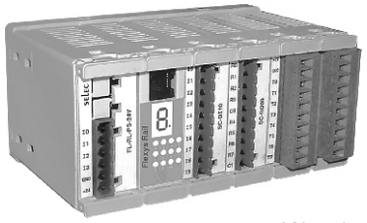
selec

Flexys Rail-CE-RoHS
Operating Instructions



140 x 72 x mm

FEATURES

- Flexible card selection
- Windows based user friendly software for ladder Programming
- RTC with Time Switch function (Optional)
- RS 485 based communication with MODBUS Protocol
- Expandable via IO expansions

SPECIFICATIONS

Display		12 LED's to indicate card status for selectable slot, One 7 segment display to indicate slot no., card failure indicated by blinking display			
No. of Keys		1 (To scroll through different slot status)			
RTC		Yes (Optional)			
Supply Voltage		18-26V DC			
IO Card Slots		4 (max)			
DIGITAL INPUT (Max. counting frequency 50Hz)					
Input Type		PNP			
Input Voltage Range (V+)		7-30V DC			
Response Time (Inputs other than fast counter)		10ms max			
Isolation		2.5 kV			
FAST COUNTER INPUT (on power supply card only)					
Input Type		PNP			
No. of Digital Input		4 (uni) / 2(Bi / Quad) / 4 standard digital input			
Operating Modes / Frequency		Unidirectional / Bidirectional / Quadrature Modes / Dual Uni (5kHz for all) / None			
CH	**DI**	**MODE**			
		UNI	**BI**	**QUAD**	**DUAL UNI**
CH0	I0	RT	RT	1st IP*	RT
	I1	STD IP	Direction	2nd IP*	T
CH1	I2	RT	RT	1st IP*	RT
	I3	STD IP	Direction	2nd IP*	T
DIGITAL OUTPUT - RELAY					
Contact Rating		NO Type : 8ch (5A resistive @ 230V AC) 8ch (5A resistive @ 30V DC)			
Isolation		2.5 kV			
Initial Max. Contact Resistance		100mΩ (@1A, 6V DC)			
Switching Time		20ms max.			
DIGITAL OUTPUT - TRANSISTOR					
Transistor Rating		PNP Type : 24V, 100 mA			
Switching Time		10ms max.			

*** 90° Phase shift signals ; RT - Rate Totalizer ; T - Totalizer ; STD IP - Standard Input**

ANALOG INPUT			
Sensors	J, K, T, R, S, C, E, B, N, L, U, W, PLTNL II, RTD, MVOLT(0-60mV), VOLT (0-10V), CURR (0-20mA)		
Resolution	12 bits	0 - 10V	2.5mV
		0 - 20mA	5µA
		TC / RTD	0.1°C (Note : 1°C for R & S type)
Conversion Time	100 msec.		
Accuracy at 25°C	0.25% of full scale		
ANALOG OUTPUT			
Output Type	**Current** - 0-20 mA ; **Voltage** - 0-10 V		
Resolution	14 bits		
Conversion Time	10 msec.		
Linearity Error	0.1%		
COMMUNICATION			
Communication Port - Port 1	1 : RS485 Slave 2 : RS485 Master for IO610 Expansion Module (Optional) 3 : Proprietary for IO630 Expansion Module (Optional)		
Communication Protocol	MODBUS RTU, Proprietary Protocol for IO 630 expansion port		
ENVIRONMENTAL CONDITIONS			
Temperature	Operating : 0 to 55°C ; Storage : -20 to 70°C		
Humidity (non-condensing)	10% to 95% RH		
Enclosure	Din Rail Mounted		
Weight	251.2gms (without IO Cards)		

INSTALLATION PROCEDURE

Fig. A

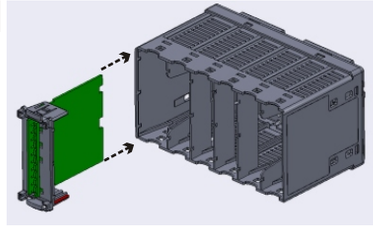


Fig. B

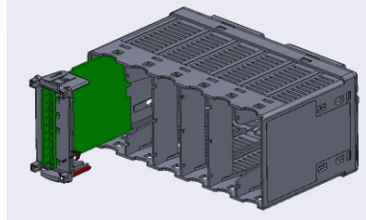


Fig. C

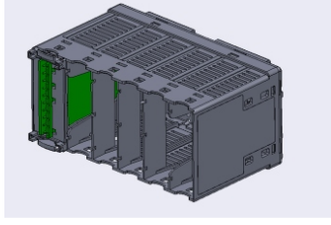
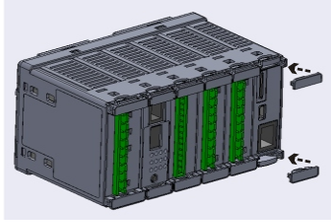


Fig. D



A. Card installation from left to right

1. **FL-RL-PS-24V (PS Card)**
2. **FL-RL-LG-1-1-1 (LG Card)**
3. **Slot 1 IO Card**
4. **Slot 2 IO Card**
5. **Slot 3 IO Card**
6. **Slot 4 IO Card**

B. Mount the slot card on the PLC slot by pressing the latch, refer fig. A
C. Slide the slot card in the PLC, refer fig. B
Note : The slot card will slide easily if it was mounted properly
D. Ensure that the latch is fitted properly inside the lock, refer fig. C side view
E. Place the lock plate to cover the Latch, refer fig. D

LED DESCRIPTION TABLE

At Power ON, indication value (7 Segment) is = -1. Press the key to change the indication value. Each value is linked with the status of 12 LED bank which is explained as below

INDICATION VALUE	LED No	DESCRIPTION	STATUS
-1	0	Proprietary Exp_RX	----
	1	Proprietary Exp_TX	----
	2	MASTER_COMM_RX	----
	3	MASTER_COMM_TX	----
	4	SLAVE_COMM_RX	----
	5	SLAVE_COMM_TX	----
	6	Reserved – Always OFF	----
	7	Reserved – Always OFF	----
	8	Reserved – Always ON	----
	9	PLC START/STOP	Start - LED ON, Stop - LED blinking
	10	Reserved – Always OFF	----
	11	Reserved – Always OFF	----
To Toggle between PLC START & STOP MODE, long press the key for 3 seconds			
0	0	IP0 (PS card)	Off – Input Off On – Input On
	1	IP1 (PS card)	
	2	IP2 (PS card)	
	3	IP3 (PS card)	
	4-11	Reserved – Always OFF	
Slot No (1 to 4)	0 to n	Channel status. Note : If Slot is not programmed, it will not display that slot no	e.g. 10 LEDs' status for DI10. 3 LEDs' status for 3AI-RTD If channel is OK then LED ON but if sensor open or reverse connected then LED OFF
Slot No (1 to 4) Flashes	If Slot I/O Card Error		
	0 – 9	Error Counter	Error Counter in 10 bit binary format.
	10 11	Both Flashing – Slot Empty LED10 On, LED11 Off – Slot Mismatch LED10 Off, LED11 On – Slot Stopped	Error Counter in 10 bit binary format.
8	7	Bootloader mode	ON

PORT DESCRIPTION

Port 1 (6 Pin jack)

PIN	DESCRIPTION
1	RS485 Slave +ve
2	RS485 Master +ve
3	RS485 Master -ve
4	Proprietary Expansion +ve
5	Proprietary Expansion -ve
6	RS485 Slave -ve

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. 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.
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 :

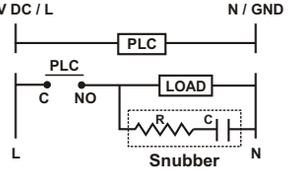
Use of MOV / Snubber circuit across load / contactors of the unit are recommended.

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

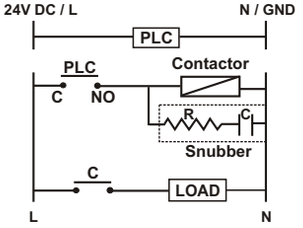
NOTE : Below mentioned diagram is applicable only for 230V relay outputs.

TYPICAL CONNECTIONS FOR LOADS :

For load current < 0.5A



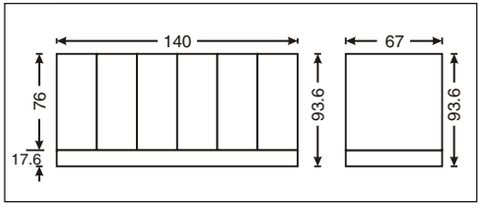
For bigger loads use interposing relay / contactor



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

B) Use separate shielded wires for inputs.

MECHANICAL INSTALLATION



Before mounting the PLC on DIN Rail, close DIN Rail latches. Press the DIN Rail mounting area of the PLC against the DIN Rail. The latches will momentarily open and lock in to place.

Fig. shows dimension DIN Rail mounting of PLC

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 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

Fig. 1

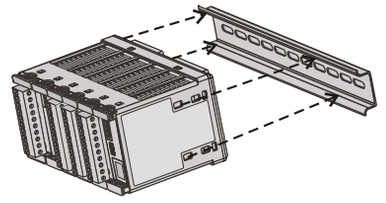
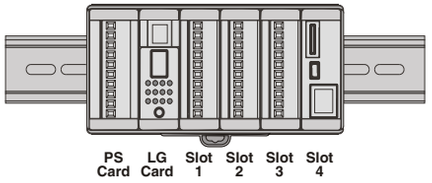


Fig. 2



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

FUNCTIONAL DETAILS

FLEXYS RAIL is Din Rail Mounted PLC. The user can configure the product using SELPRO software.

SELPRO has Ladder logic programming section. 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

ORDER CODE	DESCRIPTION	CERTIFICATION	
		CE	cULus LISTED
FL-RL-PS-24V-CE-RoHS	PS Card	✓	–
FL-RL-LG-1-1-1-CE-RoHS	Logic Card	✓	–
FL-RL-BS-6-CE-RoHS	Base Card	✓	–

FL-SC-DI10	10 Digital Inputs
FL-SC-RO08	8 Relay Outputs
FL-SC-TO08	8 Transistor Outputs
FL-SC-AI04-TC	4 Analog Inputs (TC - J, K, T, R, S, C,E, B, N, L, U, W,Platinel II and 0-60mV)
FL-SC-AI03-RTD	3 Analog Inputs (RTD – PT100)
FL-SC-AI05-V	5 Analog Inputs (0-10V)
FL-SC-AI05-I	5 Analog Inputs (0-20mA)
FL-SC-AO04-V/I	4 Analog Outputs (0-10V) / (0-20mA)

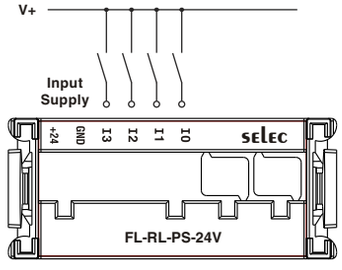
Expansion Modules on Master RS485 / Proprietary Port

DESCRIPTION	Modbus RTU protocol for IO 610	Proprietary protocol for IO 630
8 Digital Input	IO610-8DI	IO630-8DI
4 Relay Output	IO610-4RO	IO630-4RO
4 Transistor Output	IO610-4TO	IO630-4TO
2 Analog Input (Voltage / Current)	IO610-2AI-VI	IO630-2AI-VI
2 Analog Input (TC / RTD)	IO610-2AI-TCR	IO630-2AI-TCR
2 Analog Output (Voltage / Current)	IO610-2AO	IO630-2AO

ACCESSORIES

Accessories for Communication
AC-USB-RS485-03 (USB to 6 pin RJ25 jack) AC-USB-RS485-02 (USB to 2 pin open wire)
Accessories for Expansion Module
ACH 004 (6 pin to 6 pin RJ25 jack) for expansion only
AC-IOEXP-02 (Port expansion adapter)
Window-Based Software for Ladder Programming
ACD-005
Relay Module : 1) AR-04-5A-NONC (SPDT) 2) AR-04-5A-NO (SPST) 3) AR-S8-24V-1CO

TERMINAL CONNECTION



Power Supply Card

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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