MODBUS Expansion Module

EXP FLEX 2M

Features:

- Compatible with any Flexys I/O card (one per module)
- Connect up to 7 modules to a single Master PLC
- Selectable Baud rates: 19200 or 115200 bps
- Separate RS485 Slave IN & OUT terminals for easy loop wiring
- 4 LED indicators for status monitoring
- 4-way DIP switch for setting Slave ID and baud rate
- Independent / configurable operation*

Technical Specifications

Display Specifications			
LED	**Color**	**Status**	**Indication**
PWR (Power)	Green	On	Device is powered
Rx (Receive)	Green	Blinking	Receiving RS485 command from master
Tx (Transmit)	Red	Blinking	Transmitting RS485 response to master
Err (LED)	Red	On	I/O card not connected
		Flashing (2s ON, 0.3s OFF)	I/O card mismatched as per configuration
		Flashing (0.3s ON/OFF)	No master communication for 6 seconds
		Off	Normal operation (no errors)

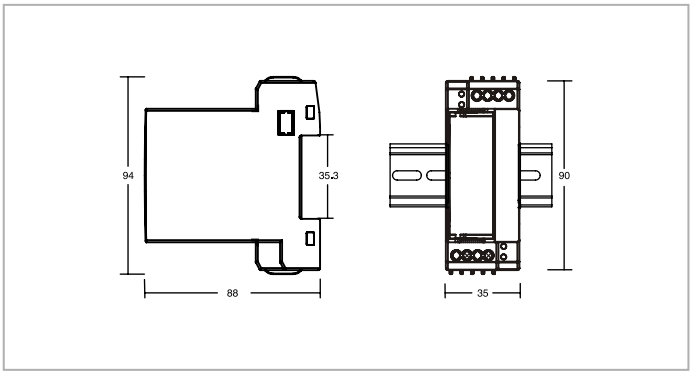
DIP Switch				
Slave ID		**DIP Switch**		
	1	2	3	4
NA	X	OFF	OFF	OFF
1		OFF	OFF	ON
2		OFF	ON	OFF
3		OFF	ON	ON
4		ON	OFF	OFF
5		ON	OFF	ON
6		ON	ON	OFF
7		ON	ON	ON
Baud Rate				
19200	OFF	X	X	X
115200	ON	X	X	X

	EXP FLEX 2M	EXP FLEX 2M V3
No of IO Slots	1	
Digital Input Specifications		
No. of Inputs	As per Card Configurations: 4 / 10 / 14 inputs	
Input Type	PNP	
Voltage Range	6-30V DC	
Input Current	2mA @12V	
Debounce Time	Programmable 1-255ms (Default: 10ms)	
Isolation (Power ↔ Input)	Yes	
Isolation (CPU ↔ Input)	NO	
Protection against Polarity Inversion	Yes	
Timer Accuracy	NA	
Response Time	Typical 1m sec (Based on ladder scan time)	
Analog Input Specifications		
No. of Channels	As per Card Configurations: 1 / 3 / 4 / 6 inputs	
Input Type	J, K, T, R, S, C, E, B, N, L, U, W, PLTNL, mVolt (-5 to 65mV), 0-10V, 0-20mA	
Accuracy	0.25% ±1°C (TC), 0.1% ±1°C (RTD) at 25°C, ±0.25% of FS. ±1 count for AI's, ±2°C for NTC	
Resolution	12 Bit	
Conversion Time	TC - 100ms, RTD - 100ms, 0-10V - 100ms, 0-20mA - 100ms, NTC - 100ms	
Linearity	0.10%	
Max Non-Destructive Input	AIV= 17V, AII=31mA	

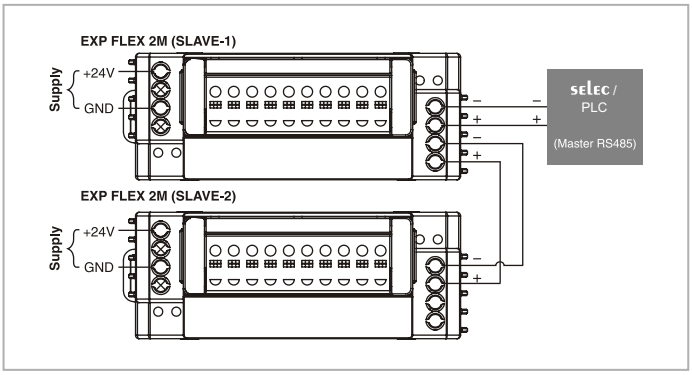
Channel-to-Channel Isolation	Yes for Differential Input
Reverse Polarity Protection	TC - YES, RTD - N/A, 0-10V - YES, 0-20mA - YES, NTC - YES
Input Impedance	TC - 330kΩ, RTD - 510KΩ, 0-10V - 330KΩ, 0-20mA - 100Ω, NTC - NA
Digital Output Specifications	
No. of Outputs	As per Card Configurations: 4 / 8 (NO) type Relay, 1 Common Lines for 4 Relay
Contact Rating	5A @ 250V AC (resistive load), 5A @ 30V DC (resistive load)
Relay Type	SPST
Isolation (CPU ↔ Output)	2.5kV
Isolation (Output ↔ Output)	NO
Polarity Inversion Protection	Yes
Response Time	20ms
Mechanical Life	5 Million Operations
Digital Output - Transistor	
No. of Outputs	As per Card Configurations: 8 Transistorized
Output Rating	100mA @ 24V DC (current sourcing output), 18-30V DC (External Supply)
Output type	PNP (Source)
Short Circuit Protection	Yes
Isolation (CPU ↔ Output)	2.5kV
Isolation (Output ↔ Output)	NO
Polarity Inversion Protection	Yes
Response Time	10ms
Nominal Load	240Ω (likely referring to the typical load resistance)
Breaking Current	110mA (maximum current that can be interrupted)
Analog Output Specifications	
No. of Channels	As per Card Configurations: 1 / 2 / 4
Output Range	0-10V DC / 0-20mA DC
Resolution	12 Bits
Load Limit	0-10V DC ≥ 1 kΩ, 0-20mA < 700 Ω
Digital Resolution	0.0-100.0% = 0-10.000V DC, 0.0-100.0% = 0-20.000mA
Conversion Time	100ms
Isolation (CPU ↔ Output)	Yes
Isolation (Output ↔ Output)	NO
Output Error @25 °C	±0.25% of Full Scale
Linearity	0.10%
Functional Features	
Timer Operational Modes	Response time ranges from 100 ms to 2 seconds, depending on the number of devices and I/O card type.
Counter Modes	-
Other Functional Blocks	-
Memory Retention	-
Real-Time Clock (RTC)	-
Clock drift	-
Communication Specifications	
Communication Port	RS485 [Slave]
Communication Protocol	MODBUS RTU
Connector	Screw Terminal
Transmission Mode	Half Duplex
Transmission Speed	19200 or 115200 bps (user configurable via Dip switch , default: 19200)
Data Bits	8
Parity	None
Stop Bits	1

Environmental Specifications	
Operating Temp	0°C to 55°C
Storage Temp	-20°C to 70°C
Humidity	10% to 95% RH (Non-condensing)
Atmosphere	Must be free from Corrosive Gases
IP rating	Terminal - IP 20
Mechanical Specifications	
Weight	87.1 grams
Mounting	Din rail
Dimensions in mm (WHD)	35 x 90 x 90
Auxiliary Supply Specifications	
Supply Voltage	18-30V DC
Inrush Current	2.3A
Power Consumption	2.5W
Polarity Inversion Protection	YES
Isolation (Power ↔ Communication)	YES
Source Supply Output	NA

Dimensions (All are in mm)



Terminal Connection



Ordering information

Product code	Description	Certification
EXP FLEX 2M	Expansion slot - Flexys IO cards	CE RoHS
EXP FLEX 2M V3	Independent Remote IO base card	CE RoHS

Accessories (To Be Ordered Separately)

Product Code	Description
Power Supplies	
RPS60-24-CE	60W, 24V/2.5A DIN rail mounted power supply in plastic housing - CE Certified
Software - www.selec.com/software	
Selpro	Windows-based software for ladder logic and built-in HMI programming
USB to Serial Driver	USB to Serial cable drivers
EXP FLEX 2M V3 Utility	Windows-based software for configuring EXP FLEX 2M V3 modules

Supported I/O cards

IO cards	Description	Certification
FL-SC-DI10-CE-RoHS	Flexys IO – 10 Digital Input Card	CE RoHS
FL-SC-DI14-CE-RoHS	Flexys IO – 14 Digital Input Card	CE RoHS
FL-SC-TO08-CE-RoHS	Flexys IO – 8 Channel Transistor Output Card	CE RoHS
FL-SC-RO08-CE-RoHS	Flexys IO – 8 Channel Relay Output Card	CE RoHS
FL-SC-DI04-RO04-CE-RoHS	Flexys IO – 4 Digital Input & 4 Digital Output Card	CE RoHS
FL-SC-AI04-U	Flexys IO – 4 Channel Analog Input Card – Universal (Jumper Selectable)	CE RoHS in process
FL-SC-AI06-V-CE-RoHS	Flexys IO – 6 Channel Analog Input Card – Voltage	CE RoHS
FL-SC-AI06-I-CE-RoHS	Flexys IO – 6 Channel Analog Input Card – Current	CE RoHS
FL-SC-AI06-V/I	Flexys IO – 6 Channel Analog Input Card – Voltage/Current	CE RoHS
FL-SC-AI06-V/I-ISO	Flexys IO – 6 Channel Analog Input Card – Voltage/Current (Isolated)	CE RoHS
FL-SC-AI04-TC-CE-RoHS	Flexys IO – 4 Channel Analog Input Card – Thermocouple	CE RoHS
FL-SC-AIDF05-TC-CE-RoHS	Flexys IO – 5 Channel Differential Analog Input Card – Thermocouple	CE RoHS in process
FL-SC-AIDF05-TC-ISO-CE-RoHS	Flexys IO – 5 Channel Differential Analog Input Card – Thermocouple (Isolated)	CE RoHS in process
FL-SC-AI04-RTD-CE-RoHS	Flexys IO – 4 Channel Analog Input Card – RTD (PT-100)	CE RoHS
FL-SC-AI01-AO01-V/I	Flexys IO – 1 Channel Analog Inputs, 1 Channel Analog Output (Voltage/Current)	CE RoHS in process
FL-SC-AI03-U-AO02-U	Flexys IO – 3 Channel Analog Input – Universal, 2 Channel Analog Output – Universal Card (Jumper Selection)	CE RoHS in process
FL-SC-AI03-NTC-AI03-I	Flexys IO – 3 Channel Analog Inputs – NTC, 3 Channel Analog Inputs – Current Card	CE RoHS
FL-SC-AO04-V-CE-RoHS	Flexys IO – 4 Channel Analog Output Card – Voltage	CE RoHS
FL-SC-AO04-I-CE-RoHS	Flexys IO – 4 Channel Analog Output Card – Current	CE RoHS
FL-SC-LC04	Flexys IO – 4 Channel Loadcell Input Card (24 bits)	CE RoHS in process

Refer to the IO card and base module compatibility guidelines to ensure effective and valid IO card combinations.