



# I/O Modules



>>> **RIO (Remote Input Output)** is a compact and modular remote I/O product line to control sensors and actuators through a fieldbus. The modular structure of each RIO block guarantees a high level of flexibility, reducing the installation and maintenance costs: in fact, in the event of a malfunction, the electronic part of each block can be easily replaced without disconnecting the cables. Moreover, the status of all Inputs and Outputs is indicated by led and the connection of external cables is done by inserting the cable into a spring contact.

**MODULAR RIO:** this system allows each I/O node to be configured to meet the specific needs of each application. Each node is made up of a CANopen or Profibus bus coupler and up to 8 I/O modules. The individual module can interface digital or analogue signals or can perform specific functions like counting, positioning or interfacing temperature sensors.



**COMPACT RIO:** this product line is complementary to the modular system. Each node includes digital I/O and CANopen or Profibus interface in a single module.

These modules can be used when there is a limited number of I/O or when the I/O nodes must be positioned remotely in the machine. The fieldbus flexibility allows nodes to be connected several hundred meters apart while still operating at high communication speeds.

The strength of the COMPACT RIO is wherever 16 or less I/O points are required. In addition the I/O channels are configurable to allow the mix of inputs and outputs to be optimized.



## >>> Modbus I/O Modules

These modules, both in digital and analog version, are interfaced with the control unit via a serial port RS485 using Modbus RTU protocol at a maximum speed of 115Kbaude. They can be installed on a DIN rail up to 1.000 meters distance with the possibility of replacing them without disconnecting wires. All modules have a 24V power supply. Digital I/O modules support 24V optoisolated inputs and 0,5A or relay output. Analog modules are available both for  $\pm 10V$  and 4-20mA and have a 16bit resolution.





# I/O Modules

## Modular and Compact RIO

Power supply	+24V			
Assembly/Connection/wiring	DIN rail / single switch connection / Spring contacts without screw			
Optoisolation	Every Input and Output (excluded Analog modules)			
Dimensions	Bus coupler: 63x93x50 mm - I/O modules: 69x93x51 mm			
<b>DIGITAL modules</b>	<b>RIO 8I/O</b>	<b>RIO 8I 8I/O</b>	<b>RIO 16I</b>	<b>RIO 16O</b>
I/O number	8 configurable I/O	8 Input + 8 configurable I/O	16 Input	16 Output
Current for each output	max. 1A (max. 8A total)		-	max. 1A (max. 8A total)
Input signal level	+24V; High: +15V ÷ +30V; Low: -30V ÷ +5V			
<b>POWER modules</b>	<b>RIO 4I-120</b>	<b>RIO4I-230</b>	<b>RIO 8O-2A</b>	<b>RIO 4O-R</b>
I/O number	4 Input 120Vac	4 Input 230Vac	8 Output	4 Output Relay contact
Current for each output	-		2A (max.8A total)	5A (max.12A total)
Input signal level	High: 74÷132Vac; Low: 0÷20Vac	High: 159÷253Vac; Low: 0÷40Vac	-	-
<b>ANALOG modules</b>	<b>RIO 4AI ±10V</b>	<b>RIO 4AI 20mA</b>	<b>RIO 4AI/4AO ±10V</b>	<b>RIO 4AI/4AO 20mA</b>
I/O number	4 Input 12 bit resolution		4 Input + 4 Output 12 bit resolution	
Input/Output range	±10V	0÷20mA	±10V	0÷20mA
<b>RIO-THERMO modules</b>	<b>RIO T10-10V</b>		<b>RIO T20-10</b>	
Temperature sensor	Thermoresistor Pt100, Pt100		Thermocouples K,J,L	
Input number	4 Input 16 bit resolution		4 Input 24 bit resolution	
<b>RIO-COUNTER modules</b>	<b>RIO C24-10</b>			
Input number	12 Input / 4 Output (same characteristics as Digital I/O modules)			
Counter number/frequency	4 x 16 bit or 2 x 32 bit resolution / max.200KHz			
<b>RIO-POSITIONING</b>	<b>RIO P24-10</b>			
Input number	10 Input / 6 Output (same characteristics as Digital I/O modules); 2 controlled axes; Count frequency max. 200KHz			
<b>BUS COUPLER</b>	<b>RIO EC CANopen / Profibus</b>			
Number of slave modules	8 (max. 2 analog or special)			
Diagnostic functions	YES		NO	
<b>RIO COMPACT I/O</b>	<b>RIO 8I/O CANopen</b>		<b>RIO 8I 8I/O CANopen</b>	
I/O number	8 configurable I/O		8 Input + 8 configurable I/O	
Current for each output	max. 1A (max. 8A total)			
Input signal level	+24V; High: +15V ÷ +30V; Low: -30V ÷ +5V			

## MODBUS I/O Modules

<b>Wiring/Mounting</b>	Removable screw connector with possibility to replace electronics without disconnecting wires/ DIN rail
<b>Insulation</b>	I/O opto-isolated from bus and power supply
<b>Power supply</b>	10 to 30 Vdc
<b>Dimension</b>	100 x 120 x 17.5 mm
<b>Baudrate</b>	up to 115Kbps
<b>24V DIGITAL I/O Modules:</b>	8 input + 8 output / 8 Input
<b>Input:</b>	V input: +10V÷ +30V (high level) and 0V÷ +5V (low level); Less than 45mA current at 24Vdc
<b>Output:</b>	Max current 0,5A - max. 4A for each single module; Short circuit protection
<b>POWER DIGITAL I/O Modules:</b>	4 digital input + 4 relay output
<b>Input:</b>	V input: +10V÷ +30V (high level) and 0V÷ +5V (low level); Less than 45mA current at 24Vdc
<b>Output:</b>	2 relay SPDT type + 2 relay SPST N type; Max current 2A - Max voltage 250Vac or 110Vdc
<b>ANALOG I/O Modules:</b>	4 analog input 0÷10V / 4 analog output 0÷10V
<b>Input:</b>	Input voltage: 0 ÷ +10V; Sampling frequency: 0,5÷ 2 sec; 16 bit resolution
<b>Output:</b>	Output voltage: 0 ÷ +10V (current ±10mA); Update frequency: 0,06 ÷ 4 sec; 16 bit resolution
<b>EXPERT I/O Module:</b>	4 analog input for thermo resistors
<b>Input:</b>	Input signal from RTD, resistor or potentiometer; Linearity error ±0,2%; Sampling frequency: 0,5 ÷ 2 sec; 16 bit resolution