

# Remote I/O

## ARIO 500 Modular remote I/O system

ARIO 500 is a compact and modular remote I/O system, composed by fieldbus couplers, power modules and I/O modules.

To improve interchangeability and maintenance, the I/O modules are composed by two separable parts: the mechanical part, including a jagged clamp (that allows tidy wiring), the communication bus contacts, the power contacts and the hooking system for the 35mm DIN rail, and the electronic I/O part.

**Mounting and maintenance**  
The installation is immediate and doesn't imply the use of specific tools. Every module include the mechanical DIN rail fastening by means of a lever lock and can be replaced without removing the adjoining ones. Thanks to the 'slide&plug' mechanism, it is possible to replace the electronic part without removing the mechanical one, nor its wiring («Permanent Wiring»). The electrical connection diagram of the module is printed on the side of the electronic part.



**Signalling**  
Every module includes status signalling LEDs for the single I/O and diagnostic LEDs.



**I/O identification**  
To identify every single I/O, removable and customizable tags are inserted on each module.

# Fieldbus coupler and power modules



**Fieldbus coupler**  
The coupler manages the communication with the control system via the fieldbus and the communication with the single I/O modules via the internal high performance bus. Every coupler is bundled with a power module, that comes physically paired at delivery.

The ARIO 500 system includes three fieldbus couplers, with the following standards:  
→ EtherCAT  
→ CANOpen  
→ Modbus TCP



**Power modules**  
The power modules, depending on the quantity and the type of installed modules, integrate the power supplied by the coupler.

# I/O modules



**Digital modules**  
The digital modules, with 4 or 8 channels, include input units with rates of response up to 2µs and output units with 0,5A and 2A. Some of the modules include diagnostic functionalities.

**Analog modules**  
Analog modules, with 2 or 4 channels and 16bit resolution, include input and output units for tension or current, and temperature measure units for the most common sensors. All modules include diagnostic functionalities.

**Encoder modules**  
The counter/encoder modules, with 1 or 2 channels, include TTL and HTL incremental encoders and SSI absolute encoders.



**System configurability**  
The couplers can support up to 64 I/O modules. Depending on their configuration it may be necessary to integrate their power supply with the specific additional modules. The couplers are bundled with a plastic terminal cover to protect the contacts of the last module.

# Integrated control systems

The ARIO 500 system completes the ASEM PAC portfolio, based on the CODESYS soft-PLC. The fieldbus coupler and the I/O modules are completely configurable and programmable with the CODESYS development framework.



Programmable Automation Controller Panel or Book Mounting



FIELDBUS



ARIO 500 system

# Technical data

FIELDBUS COUPLER				
<b>CANopen</b>	Up to 64 I/O modules	16 Rx and 16 Tx PDO	Support for all transfer rate	
<b>EtherCAT</b>	Up to 64 I/O modules	CANopen over Ethernet support		
<b>MODBUS TCP</b>	Up to 64 I/O modules	I/O access from max 8 stations	Parameterization via integrated web server	Auto negotiation and auto crossover
DIGITAL INPUT				
<b>DI 4x3ms 24VDC</b>	4 digital inputs	IEC 61131-2, type 1 input curve	Edge input delay 3ms	
<b>DI 8x3ms 24VDC</b>	8 digital inputs	IEC 61131-2, type 1 input curve	Edge input delay 3ms	
<b>DI 4x2µs+3ms 24VDC</b>	4 digital inputs	IEC 61131-2, type 1 input curve	Parametrizable input delay 2µs+3ms	
<b>DI 8x0,5ms 24VDC</b>	8 digital inputs	IEC 61131-2, type 1 input curve	Edge input delay 500µs	
<b>DI 8x100µs 24VDC dgn</b>	8 digital inputs	IEC 61131-2, type 3 input curve	Parametrizable 100µs+20ms input delay	Diagnostic function
DIGITAL OUTPUTS				
<b>DO 4x0.5A 24VDC</b>	8 digital outputs	Output current 0,5A	Edge Output delay 0=1: 30µs Edge Output delay 1=0: 175µs Switching frequency up to 1kHz	
<b>DO 8x0.5A 24VDC</b>	4 digital outputs	Output current 0,5A	Edge Output delay 0=1: 100µs Edge Output delay 1=0: 175µs Switching frequency up to 1kHz	
<b>DO 4x2A 24VDC</b>	4 digital outputs	Output current 2A	Edge Output delay 0=1: 100µs Edge Output delay 1=0: 250µs Switching frequency up to 1kHz	
<b>DO 8x0.5A 24VDC dgn</b>	8 digital outputs	Output current 0,5A	Edge Output delay 0=1: 350µs Edge Output delay 1=0: 350µs Switching frequency up to 1kHz	Diagnostic function
ANALOG INPUT				
<b>AI 4x16bit ±10V</b>	4 analog inputs, 16bit	Frequency suppression 50/60Hz	Conversion time 480µs	Diagnostic and interrupt functions
<b>AI 4x16bit 0/4...20mA</b>	4 analog inputs, 16bit	Frequency suppression 50/60Hz	Conversion time 240µs	Diagnostic and interrupt functions
ANALOG OUTPUT				
<b>AO 4x16bit ±10V</b>	4 analog outputs, 16bit		Conversion time 200µs	Diagnostic function
<b>AO 4x16bit 0/4...20mA</b>	4 analog outputs, 16bit		Conversion time 400µs	Diagnostic function
ANALOG MEASURE				
<b>AI 2x16bit TC</b>	2 analog inputs, 16bit	For J, K, N, R, S, T, B, C, E, L type sensor For voltage measuring range ±80mV	Internal temperature compensation	Diagnostic and interrupt functions
<b>AI 4x16bit R / RTD</b>	4 analog inputs, 16bit	Resistive sensors 0=3000Ω and measure with 2, 3 and 4 wires Pt100, Pt1000, NI100 and NI1000 sensors		Diagnostic function Complete parameter list (22)
<b>AI 4x16bit R / RTD</b>	4 analog inputs, 16bit	Resistive sensors 0=3000Ω and measure with 2, 3 and 4 wires Pt100, Pt1000, NI100 and NI1000 sensors		Diagnostic function Partial parameter list (8)
INCREMENTAL ENCODER				
<b>CNT RS422 1x32bit</b>	1 32bit counter, 5V DC differential	AB 1/2/4-fold evaluation or pulse and direction Comparison value, set value, input filter, reset	Max counting frequency 2MHz	Diagnostic and interrupt functions with µs time stamp µs time stamp for counter value
<b>CNT HTL 2x32bit</b>	2 32bit counters, 24V DC	AB 1/2/4-fold evaluation or pulse and direction Comparison value, set value, input filter, reset	Max counting frequency 400kHz	Diagnostic and interrupt functions with µs time stamp µs time stamp for counter value
ABSOLUTE ENCODER				
<b>SSI RS422 1x32bit</b>	1xSSI 8...32bit, 125kHz+2MHz	Integrated gray/dual conversion Normalization of encoded value	Clock for master/listening modes	Diagnostic and interrupt functions with µs time stamp µs time stamp for counter value
POWER MODULES				
<b>PS 24VDC/10A</b>	10A / 24VDC for power integration of the I/O on the filed		Overvoltage protection Polarity inversion protection	
<b>PS 5VDC/2A 24VDC/4A</b>	4A / 24VDC for power integration of the I/O on the filed 2A / 5VDC for electronic modules power supply		Overvoltage protection Polarity inversion protection	