Series PX

SERIES PX MODULAR ELECTRONIC SYSTEM

- **Maximum flexibility**
- **Digital and analogue I/O modules**
- **Stand alone solution connectable via SUB-D cable to all manifolds**
- **Manufactured in technopolymer**
- **Wide range of communication protocols**

FLEXIBILITY IN A COMPACT SPACE

Series PX modular electronic system has been designed to offer control and acquisition hardware for pneumatic and electric devices; it supports the most diffused communication protocols and can be configured with I/O modules, both digital and analog.
Series PX in stand alone version can be connected to every solenoid valves battery by using SUB-D connector, on the other hand Series PX can be directly connected to the following Pneumax solenoid valves series:

- Optyma S
- Optyma F
- Optyma T
- 2700
- 3000

Technopolymer bodies and sub-base and compact design has been studied to optimise room taken by the whole system, they make Series PX extremely light and guarantee maximum flexibility.
The ability to quickly and easily configure the system, the range of modules and accessories available meet at the best the specific application needs of many industrial sectors.

Configurable on Cadenas platform

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Configurator

Version	
3	For 3000 EVO, Optyma S-F-T EVO and 2700 EVO

Type	
P	Technopolymer

Endplates accessories	
	Without DIN rail adapter
G	With DIN rail adapter

Electric connection	
C3	CANopen® node 64 IN - 64 OUT (32 fixed)
C4	CANopen® node 64 IN - 64 OUT (48 fixed)
P3	PROFIBUS DP node 64 IN - 64 OUT (32 fixed)
P4	PROFIBUS DP node 64 IN - 64 OUT (48 fixed)
I4	EtherNet/IP node 128 IN - 128 OUT (48 fixed)
A4	EtherCAT® node 128 IN - 128 OUT (48 fixed)
N4	PROFINET IO RT node 128 IN - 128 OUT (48 fixed)
G4	CC-Link IE Field Basic node 128 IN - 128 OUT (48 fixed)
K3	IO-Link protocol interface 64 IN - 64 OUT (32 fixed)
K4	IO-Link protocol interface 64 IN - 64 OUT (48 fixed)

Electric connection accessories	
	Without DIN rail adapter
G	With DIN rail adapter

SINGLE MODULE CONFIGURATION

Number of repetitions per module	
	Indicate the number of repetitions of the same module (no value for a single module)

Inputs module - Analogue / Digital	
D8	8 M8 digital inputs module
D12	8 M12 digital inputs module
D3	32 digital inputs SUB-D 37 poles
T1	2 analogue inputs 0-5V module (voltage signal)
T2	2 analogue inputs 0-10V module (voltage signal)
T3	4 analogue inputs 0-5V module (voltage signal)
T4	4 analogue inputs 0-10V module (voltage signal)
C1	2 analogue inputs 0-20mA module (current signal)
C2	2 analogue inputs 4-20mA module (current signal)
C3	4 analogue inputs 0-20mA module (current signal)
C4	4 analogue inputs 4-20mA module (current signal)
P1	2 Pt100 2 wires inputs module
P2	2 Pt100 3 wires inputs module
P3	2 Pt100 4 wires inputs module
P4	4 Pt100 2 wires inputs module
P5	4 Pt100 3 wires inputs module
P6	4 Pt100 4 wires inputs module
Outputs module - Analogue / Digital	
M8	8 M8 digital outputs module
M12	8 M12 digital outputs module
M3	32 digital outputs SUB-D 37 poles
V1	2 analogue outputs 0-5V module (voltage signal)
V2	2 analogue outputs 0-10V module (voltage signal)
V3	4 analogue outputs 0-5V module (voltage signal)
V4	4 analogue outputs 0-10V module (voltage signal)
L1	2 analogue outputs 0-20mA module (current signal)
L2	2 analogue outputs 4-20mA module (current signal)
L3	4 analogue outputs 0-20mA module (current signal)
L4	4 analogue outputs 4-20mA module (current signal)

Additional modules (Optional)	
P12	M12 additional power supply module

Module accessories	
	Without DIN rail adapter
G	With DIN rail adapter

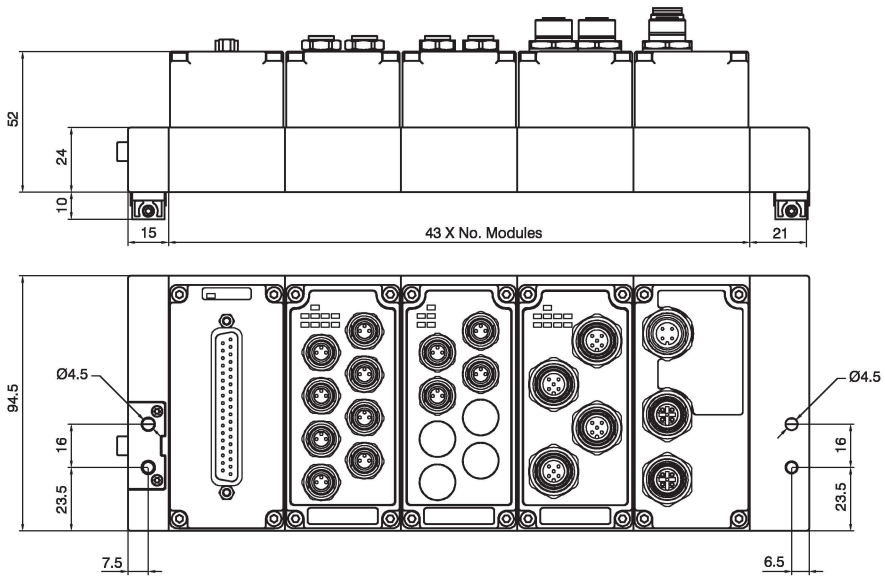
Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Configuration examples

Example shown: PX3-P-N4-D8-V4-M3-D12
Multiprotocol module with PROFINET IO RT protocol node, M8 digital input module, M8 analogue output module, 37 pin (SUB-D) digital output module and M12 digital input module.

Example shown: PX3-P-G-A4-3D8-2M12
Multiprotocol module with EtherCAT® protocol node, 3 M8 digital input modules and 2 M12 digital output modules; also includes DIN rail adaptors.

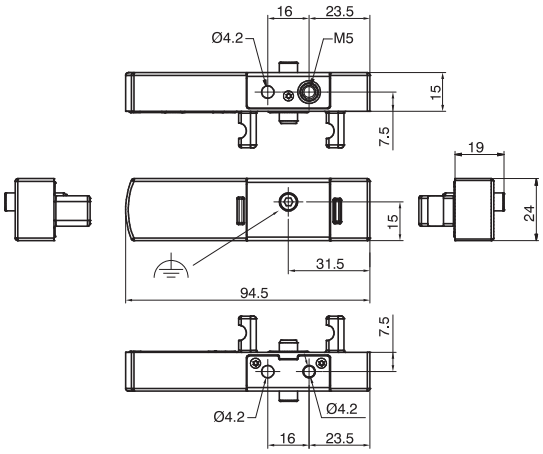
Overall dimensions



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Left endplate kit

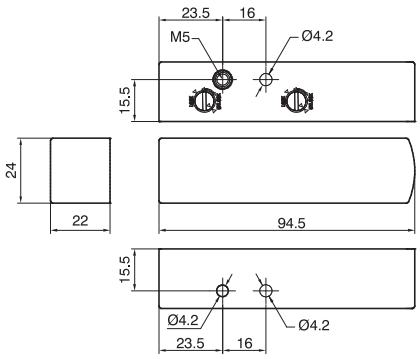
Coding: 3100.KT.00



Weight 52 g

Right endplate kit

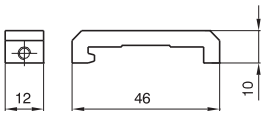
Coding: 3100.KT.03



Weight 51 g

DIN rail adapter

Coding: 3100.16



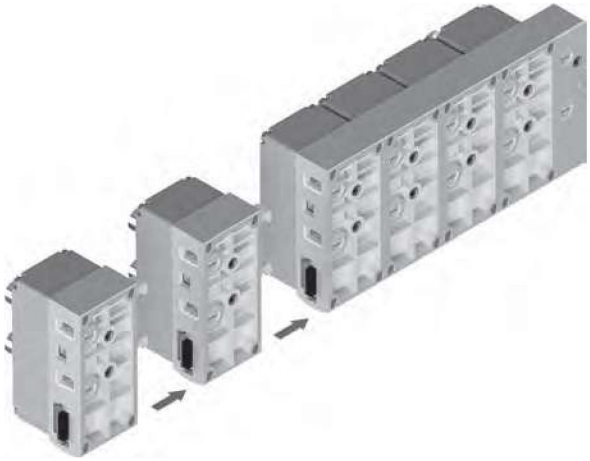
Weight 12 g

Cable complete with connector, male 37 poles, IP65

Coding: 2400.37.M.Ⓛ.Ⓒ

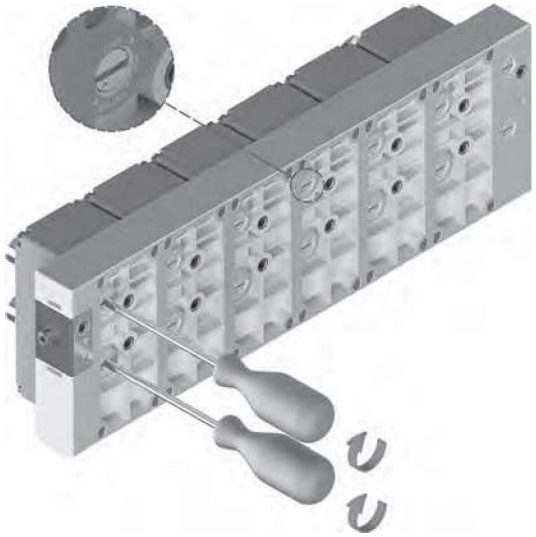
Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

1. Assemble the required modules starting with 3100.KT.03 right endplate kit.

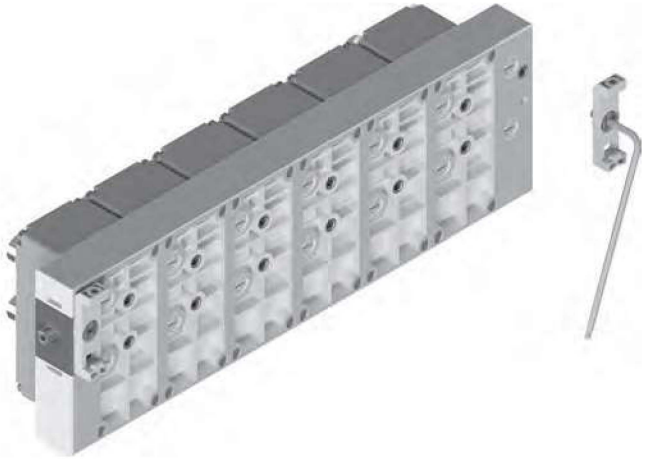


2. Complete the assembly with the 3100.KT.00 left endplate kit.

3. To lock: rotate anticlockwise (in the direction of the LOCK print on the case).
To unlock: rotate clockwise (in the direction of the UNLOCK print on the case).
The same procedure shall be used to add or remove any module.



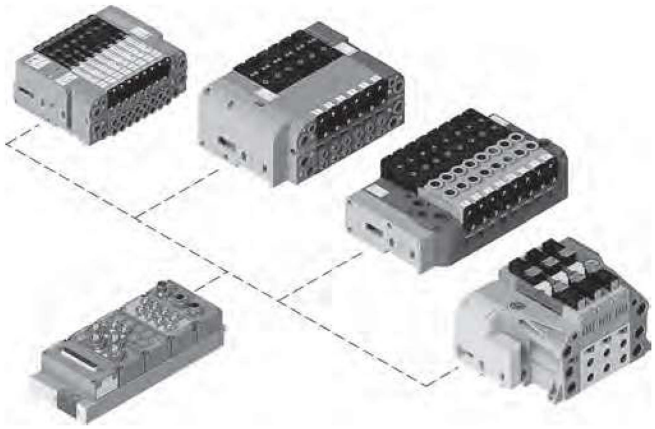
4. If required, assemble the DIN rail adapter using an 3 mm allen key.



A. For integration with a manifold it is necessary to remove the 3100.KT.03 right endplate kit.

B. Series PX modular electronic system can be integrated with the following valve manifold series:

- Optyma S
- Optyma F
- Optyma T
- 2700



The Series 3000 manifolds already integrates with the PX Series modules with dedicated fixing options.
Please refer to www.pneumaxspa.com for more details.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

CANopen® protocol node kit

CANopen® node manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Connection to CANopen® fieldbus is made via two M12, male and female, 5 pins, type A circular connectors, in parallel between them; connectors pinout is compliant to CiA Draft recommendation 303-1 (V. 1.3 : 30 December 2004).
Transmission speed and address, as well as termination resistor activation are set via DIP-switches.
CANopen® node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: K5530.64.ⓋCO

	VERSION
Ⓥ	**32** = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

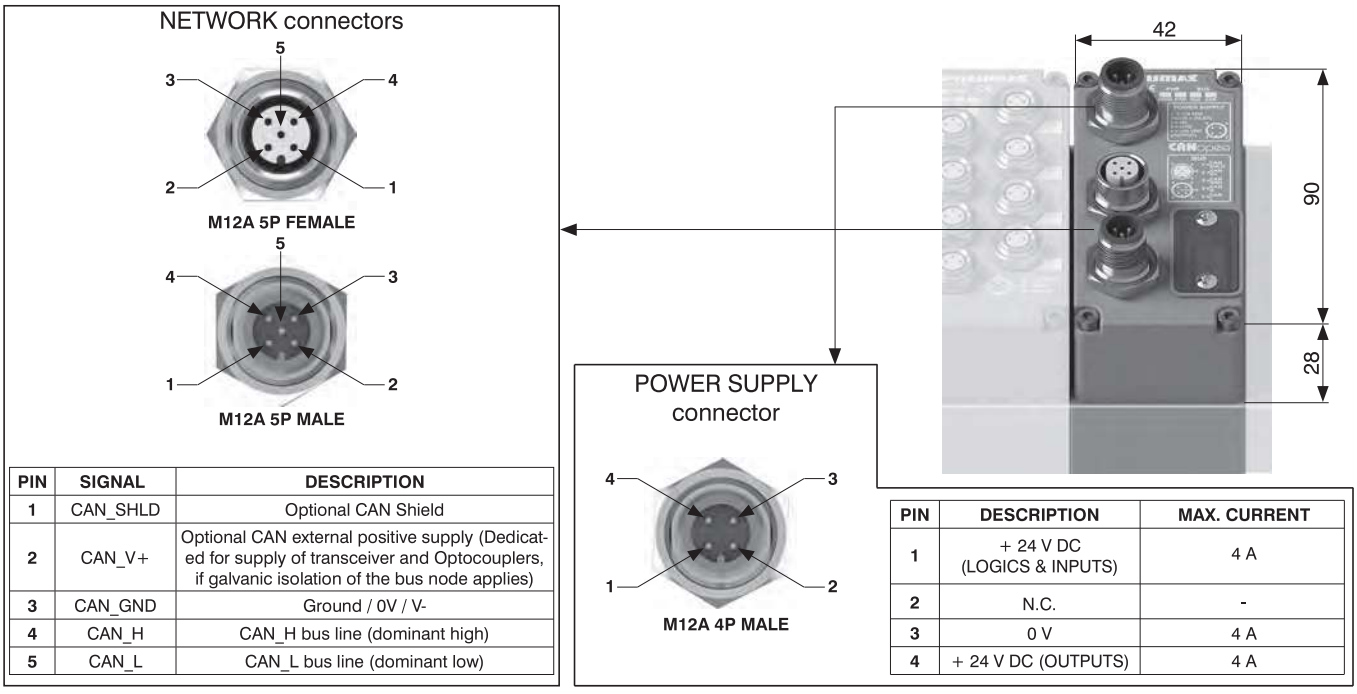
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	CAN_SHLD	Optional CAN Shield
2	CAN_V+	Optional CAN external positive supply (Dedicated for supply of transceiver and Optocouplers, if galvanic isolation of the bus node applies)
3	CAN_GND	Ground / 0V / V-
4	CAN_H	CAN_H bus line (dominant high)
5	CAN_L	CAN_L bus line (dominant low)

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Specifications		CiA Draft Standard Proposal 301 V 4.10 (15 August 2006)
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	40 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 5 pins male-female connectors type A (IEC 60947-5-2)
	Baud rate	10 - 20 - 50 - 125 - 250 - 500 - 800 - 1000 Kbit/s
	Addresses possible numbers	From 1 to 63
	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

PROFIBUS DP protocol node kit

PROFIBUS DP node manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Connection to PROFIBUS DP fieldbus is made via two M12, male and female, 5 pins, type B circular connectors, in parallel between them; connectors pinout is PROFIBUS Interconnection Technology specifications compliant (Version 1.1, August 2001).
Address as well as termination resistor activation are set via DIP-switches.
PROFIBUS DP node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: K5330.64.Ⓥ PB

Ⓥ	VERSION
	32 = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

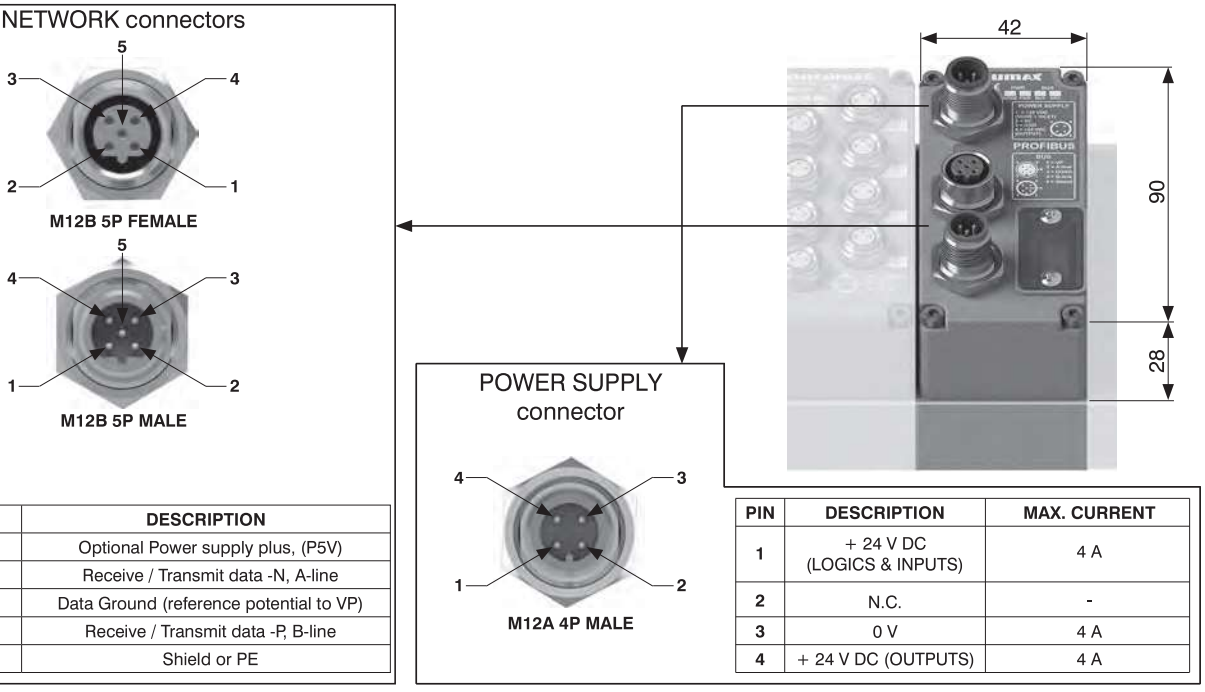
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

⚠ In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	VP	Optional Power supply plus, (P5V)
2	A-line	Receive / Transmit data -N, A-line
3	DGND	Data Ground (reference potential to VP)
4	B-line	Receive / Transmit data -P, B-line
5	SHIELD	Shield or PE

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Specifications		PROFIBUS DP
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	70 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 5 pins male-female connectors type B
	Baud rate	9,6 - 19,2 - 93,75 - 187,5 - 500 - 1500 - 3000 - 6000 - 12000 Kbit/s
	Addresses possible numbers	From 1 to 99
	Maximum nodes number in network	100 (slave + master)
	Bus maximum recommended length	100 m at 12 Mbit/s - 1200 m at 9,6 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

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EtherNet/IP protocol node kit

EtherNet/IP node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48EI provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48EI

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

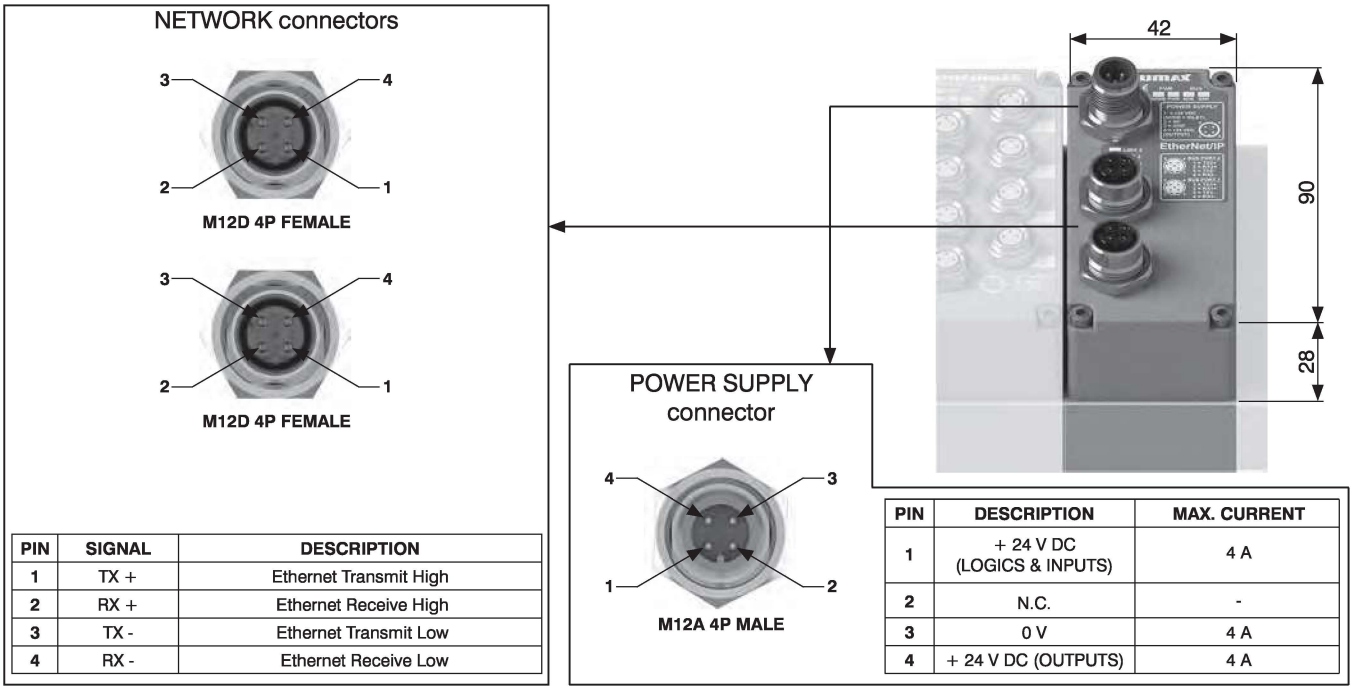
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

EtherCAT® protocol node kit

EtherCAT® node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48EC provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48EC

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	I_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

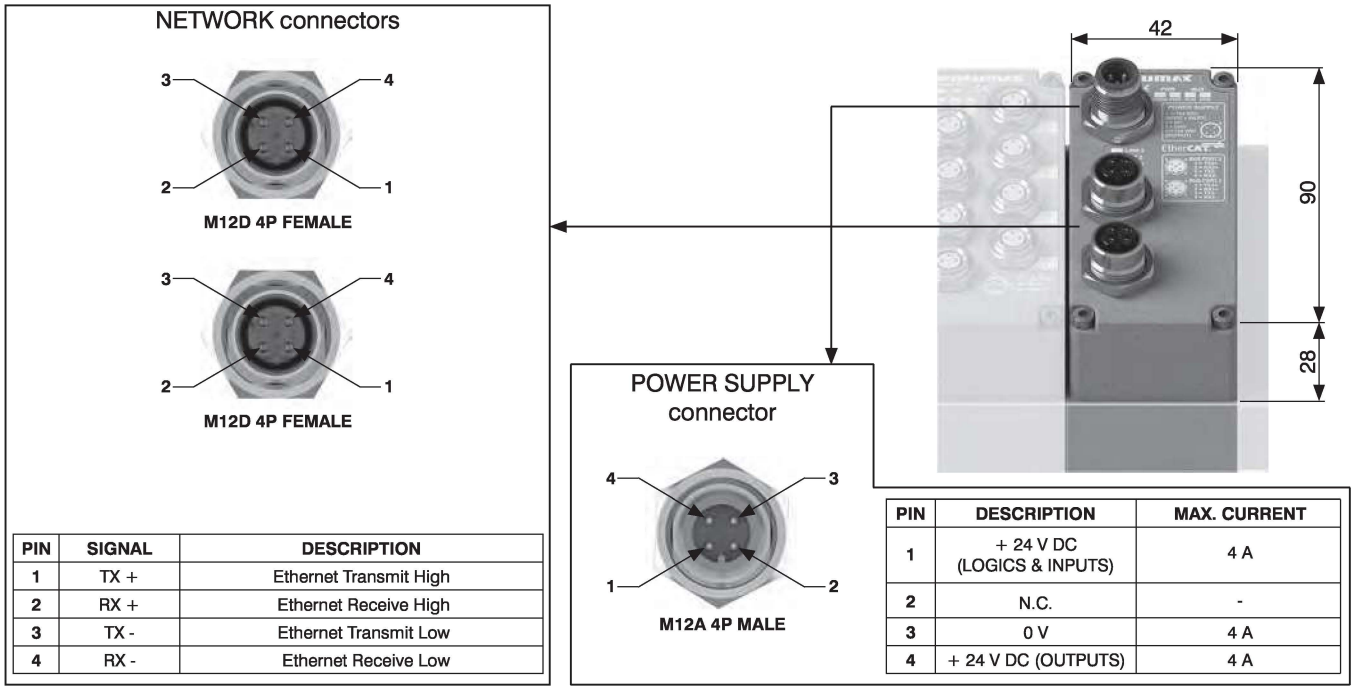
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

⚠ In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

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PROFINET IO RT protocol node kit

PROFINET IO RT node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48PN provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48PN

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

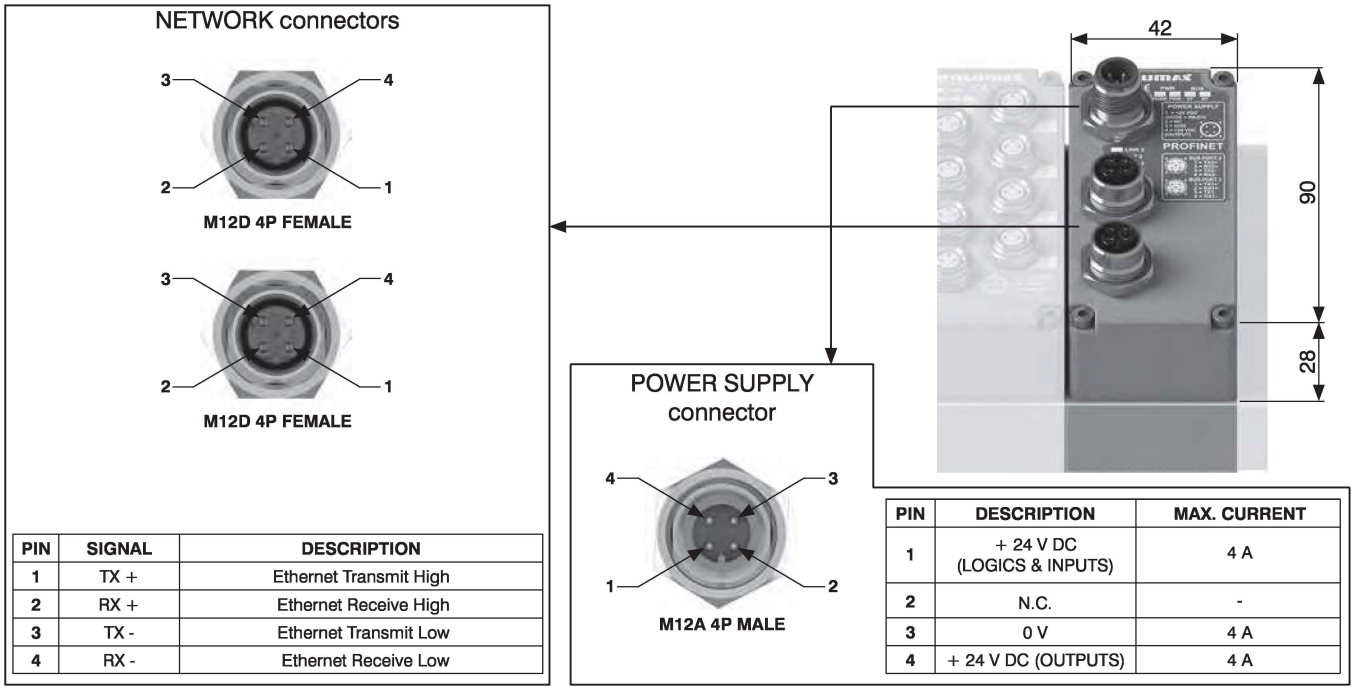
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

CC-Link IE Field Basic protocol node kit

CC-Link IE Field Basic node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48CL provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48CL

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	I_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

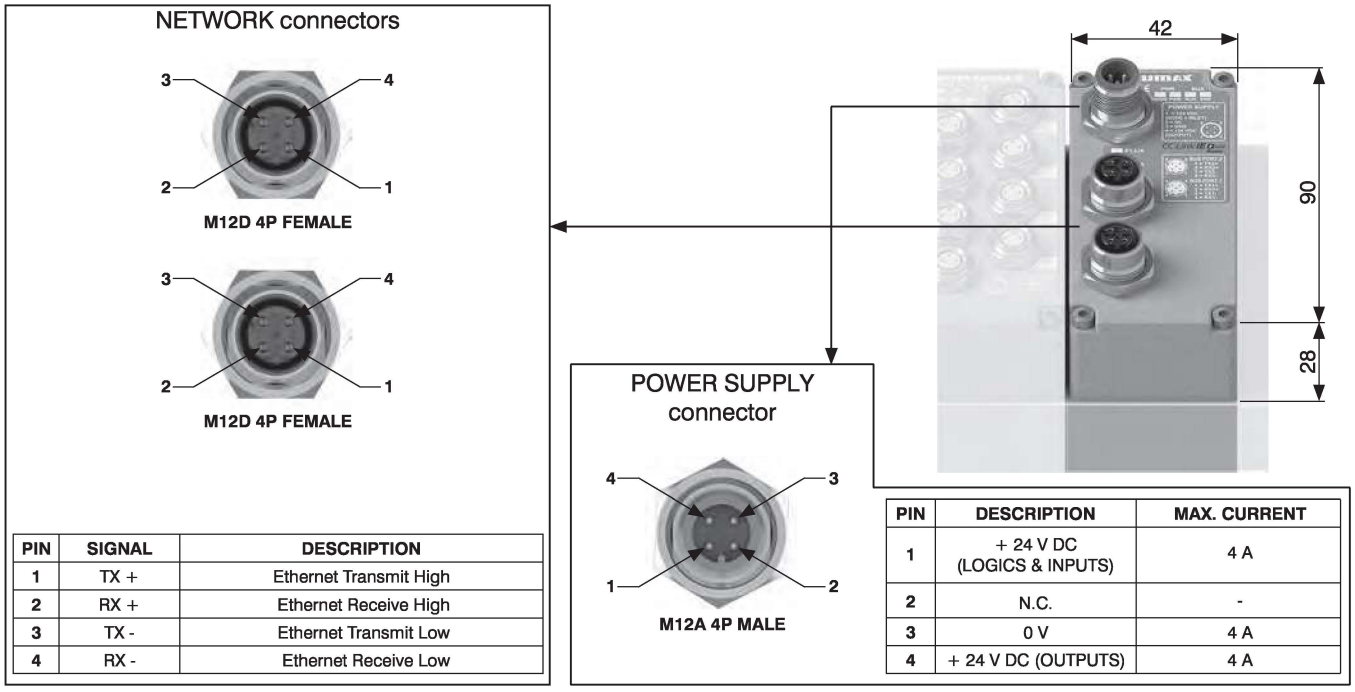
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	1 Green LED and 1 red status LED + 2 link and activity LEDs'
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

IO-Link protocol interface kit

IO-Link interface manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Electric power supply and IO-Link connection to the Master are made via M12, male, 5 pins, type A, circular connector, "CLASS B", according to IO-Link specifications.
Electric rails L+/L- supply interface only, while P24/N24 rails supply additional modules and solenoid valves.
Either power supplies are galvanically isolated in the IO-Link interfaces.
IO-Link interface is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: K5830.64.Ⓥ IK

Ⓥ	VERSION
	32 = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections

Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by pin 2 and pin 5 (P24 / N24).

To compute the maximum current on the P24 / N24 supply, please use the following formula::

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules

$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)

$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

m = number of installed solenoid pilots

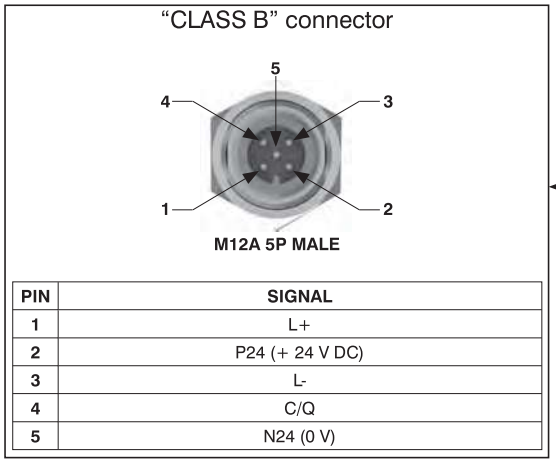
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

= maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL
1	L+
2	P24 (+ 24 V DC)
3	L-
4	C/Q
5	N24 (0 V)

Technical characteristics		
Specifications		IO-Link Specification v1.1
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC +/- 10%
	Interface current consumption on + 24 V DC (L+ / L-)	25 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	"Class B" port
	Communication speed	38.4 kbaud/s
	Maximum distance from Master	20 m
	Bus diagnosis	Green / red status LED
	Vendor ID / Device ID	1257 (hex 0x04E9) / 3000 (hex 0x0BB8)
Configurations file IODD		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

8 digital inputs module kit M8

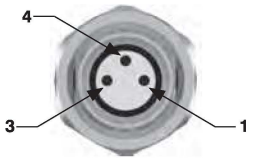
M8 digital inputs module provides 8 M8, 3 pins, female connectors.
Inputs have PNP logic, + 24 V DC ± 10%.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Coding: K5230.08.M8

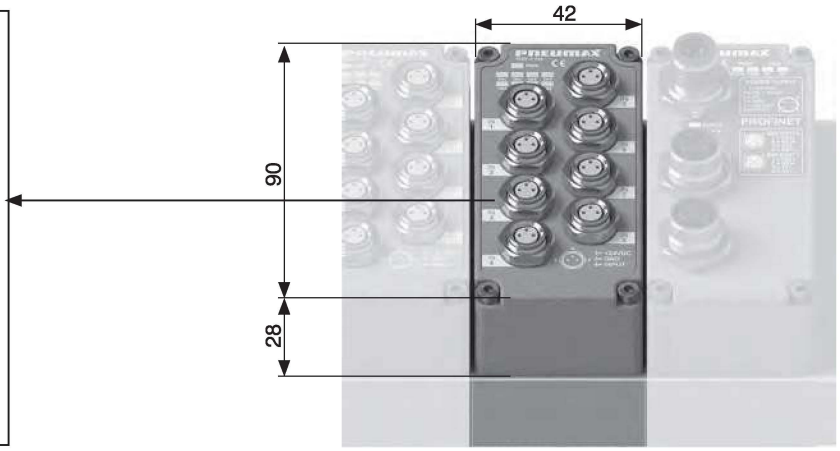
Technical characteristics	
Maximum current per module	300 mA
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA

Scheme / Overall dimensions and I/O layout

M8 3P female connector



PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
3	0 V
4	INPUT



8 digital inputs module kit M12

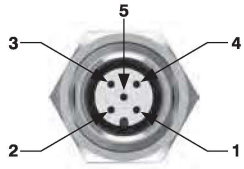
M12 digital inputs module provides 4 M12, 5 pins, female connectors.
Inputs have PNP logic, + 24 V DC ± 10%.
Every connector takes two input channels.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Coding: K5230.08.M12

Technical characteristics	
Maximum current per module	300 mA
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA

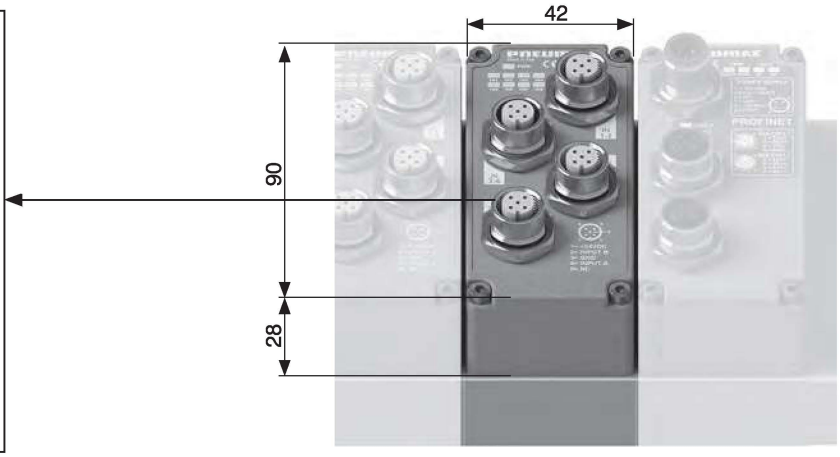
Scheme / Overall dimensions and I/O layout

M12 5P female connector



M12A 5P FEMALE

PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
2	INPUT B
3	0 V
4	INPUT A
5	N.C.



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

8 digital outputs module kit M8

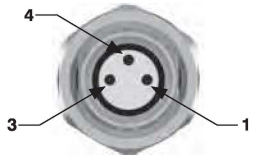
M8 digital inputs module provides 8 M8, 3 pins, female connectors.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by "PWR OUT" green LED light-on.
Each output has a LED indicator associated which lights up when output's signal status is high.

Coding: K5130.08.M8

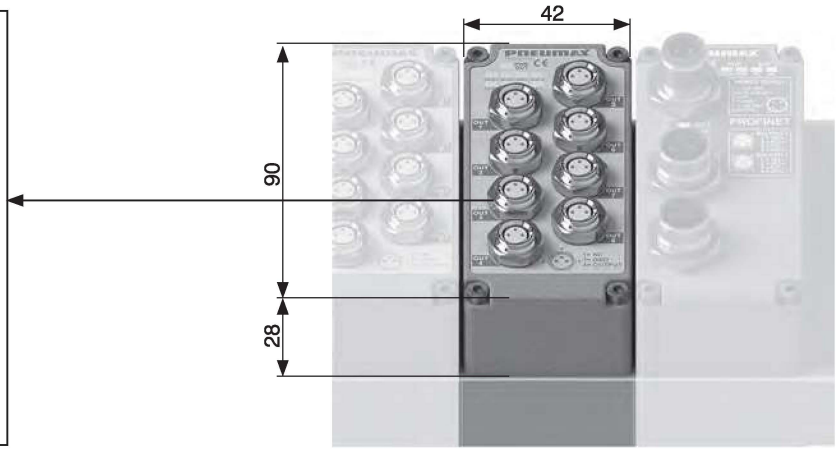
Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Scheme / Overall dimensions and I/O layout

M8 3P female connector



PIN	DESCRIPTION
1	N.C.
3	0 V
4	OUTPUT



8 digital outputs module kit M12

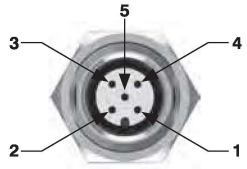
M12 digital inputs module provides 4 M12, 5 pins, female connectors.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by "PWR OUT" green LED light-on.
Each output has a LED indicator associated which lights up when output's signal status is high.

Coding: K5130.08.M12

Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

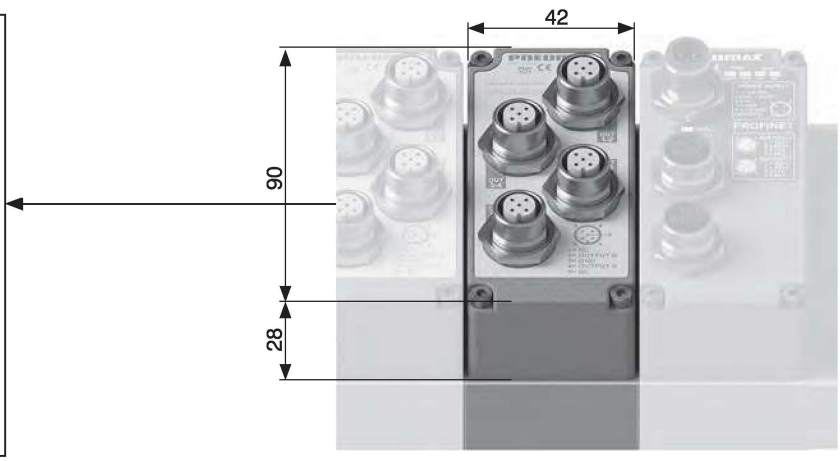
Scheme / Overall dimensions and I/O layout

M12 5P female connector



M12A 5P FEMALE

PIN	DESCRIPTION
1	N.C.
2	OUTPUT B
3	0 V
4	OUTPUT A
5	N.C.



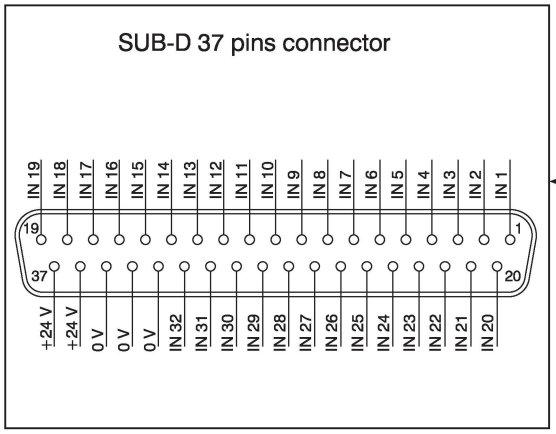
32 digital inputs module kit (37 pins SUB-D connector)

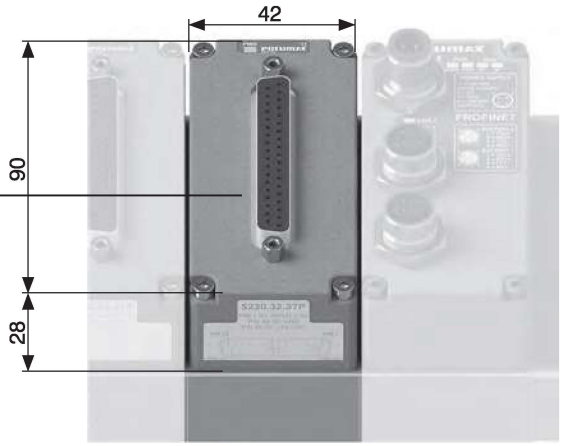
The module provides a SUB-D 37 pins female connector.
Inputs have PNP logic, + 24 V DC ± 10%.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Coding: K5230.32.37P

Technical characteristics	
Maximum current per module	1 A
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	32 bit
INPUTS + 24 V DC current consumption of the module only	10 mA

Scheme / Overall dimensions and I/O layout





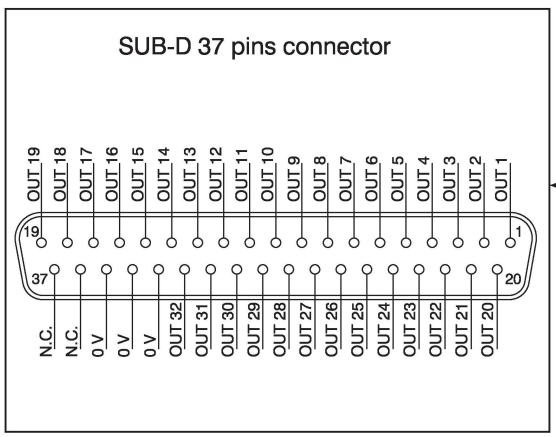
32 digital outputs module kit (37 pins SUB-D connector)

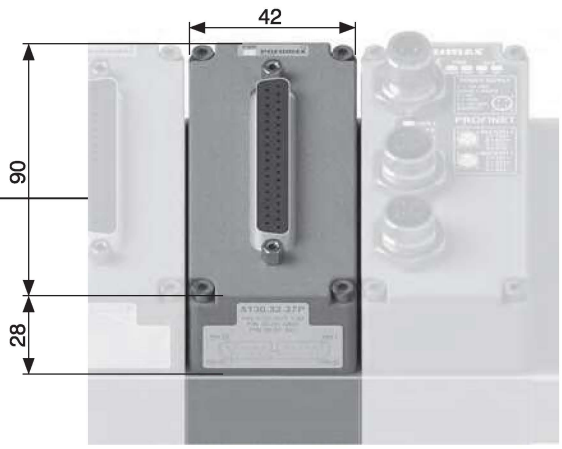
The module provides a SUB-D 37 pins female connector.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by "PWR OUT" green LED light-on.

Coding: K5130.32.37P

Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	32 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Scheme / Overall dimensions and I/O layout





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Analogue inputs module kit M8

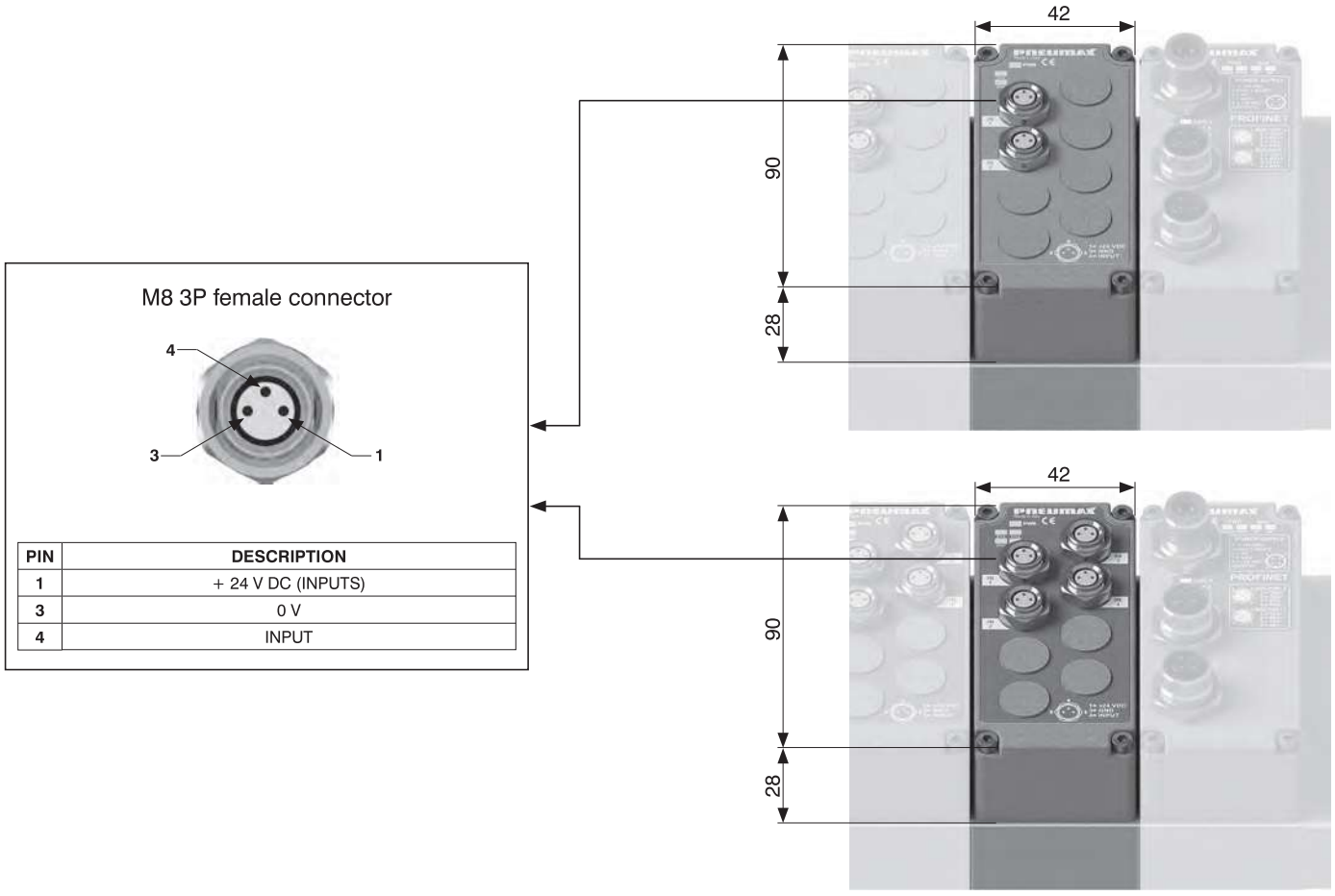
M8 analogue inputs module converts analogue signals into digital signals and transfers acquired data to field bus, via network node.
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Coding: K5230.Ⓒ Ⓢ

Ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
Ⓢ	SIGNAL
	T.00 = VOLTAGE (0-10 V)
	T.01 = VOLTAGE (0-5 V)
	C.00 = CURRENT (4-20 mA)
	C.01 = CURRENT (0-20 mA)

Technical characteristics	
Protection (pin 1)	Overcurrent (auto-resettable fuse)
Input impedance (voltage inputs)	33 kΩ
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Input data allocation	16 bit per channel
Diagnostic LED	Input signal overcurrent or overvoltage
Accuracy	0,3% F.S.
Overall maximum current 2 channels (pin 1)	300 mA
Overall maximum current 4 channels (pin 1)	750 mA (375 mA for each pair of channels)
INPUTS + 24 V DC current consumption of the module only	15 mA

Scheme / Overall dimensions and I/O layout



PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
3	0 V
4	INPUT

Analogue outputs module kit M8

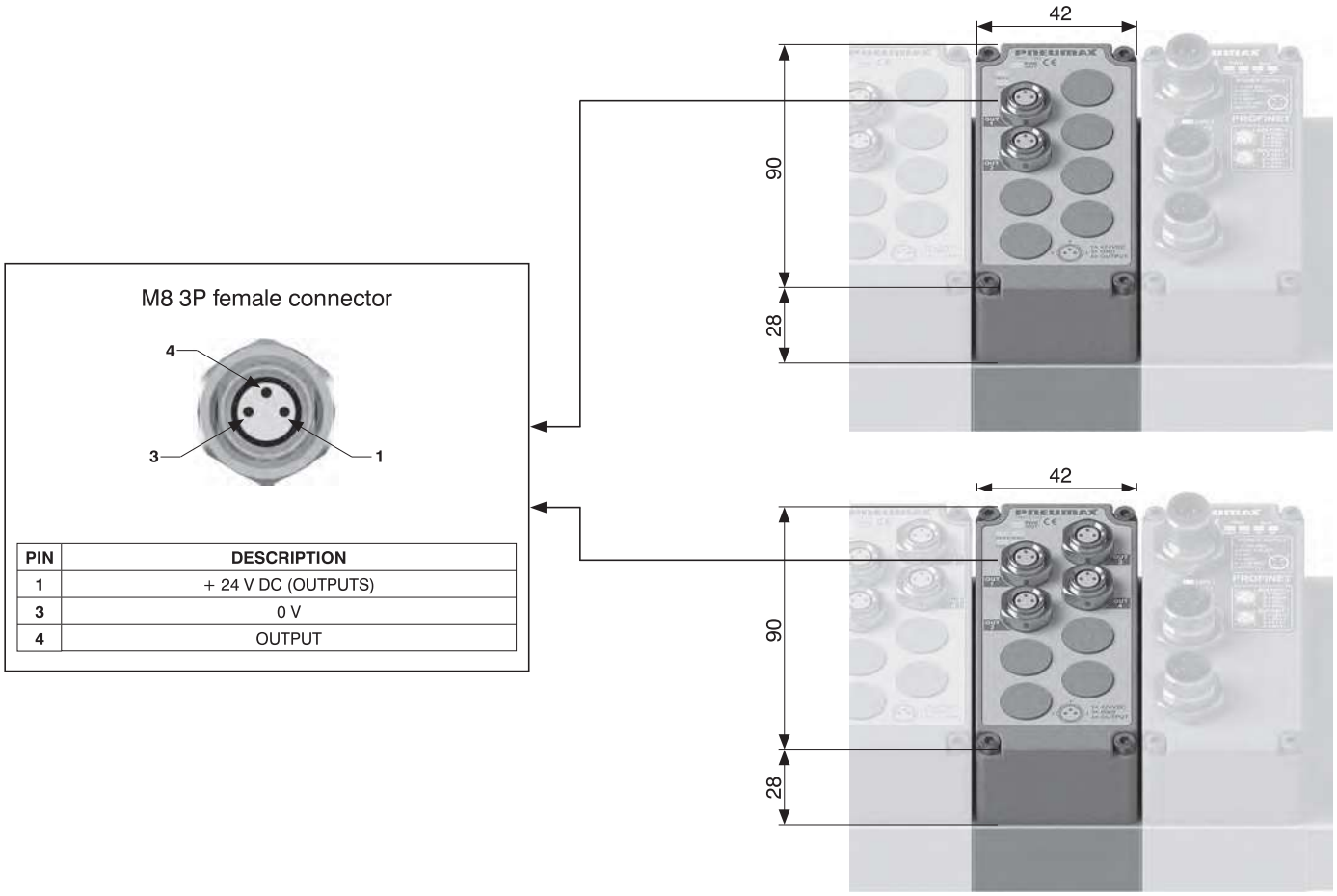
M8 analogue outputs module converts output data, received from field bus via network node, into analogue signal.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Coding: K5130.Ⓒ Ⓢ

Ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
Ⓢ	SIGNAL
	T.00 = VOLTAGE (0-10 V)
	T.01 = VOLTAGE (0-5 V)
	C.00 = CURRENT (4-20 mA)
	C.01 = CURRENT (0-20 mA)

Technical characteristics	
Protection (pin 1)	Overcurrent (auto-resettable fuse)
Protection (pin 4)	Overcurrent (auto-resettable fuse)
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Output data allocation	16 bit per channel
Diagnostic LED	Output signal overcurrent
Accuracy	0,3% F.S.
Overall maximum current 2 channels (pin 1)	300 mA
Overall maximum current 4 channels (pin 1)	750 mA (375 mA for each pair of channels)
INPUTS + 24 V DC current consumption of the module only	15 mA
OUTPUTS + 24 V DC current consumption of the module only (2 channels)	35 mA
OUTPUTS + 24 V DC current consumption of the module only (4 channels)	70 mA

Scheme / Overall dimensions and I/O layout



PIN	DESCRIPTION
1	+ 24 V DC (OUTPUTS)
3	0 V
4	OUTPUT

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pt100 inputs module kit

Pt100 inputs module digitizes signals from Pt100 probes and transfers acquired data to field bus, via network node.
It is possible to connect two, three or four wires probes.
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Coding: K5230.ⓒP.0Ⓣ

ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
Ⓣ	TYPE
	0 = Pt100 2 wires
	1 = Pt100 3 wires
	2 = Pt100 4 wires

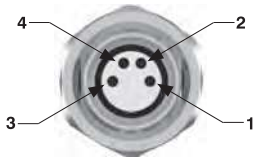
Technical characteristics	
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Input data allocation	16 bit per channel
Diagnostic LED	Probe presence Temperature out of range
Accuracy	±0,2°C
Probe temperature range	-100°C ... +300°C
INPUTS + 24 V DC current consumption of the module only (2 channels)	25 mA
INPUTS + 24 V DC current consumption of the module only (4 channels)	35 mA

Conversion formula (°C)

$$\text{Temperature (°C)} = \left(\frac{\text{Points}}{4095} \times 400\right) - 100$$

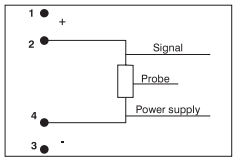
Scheme / Overall dimensions and I/O layout

M8 4P female connector



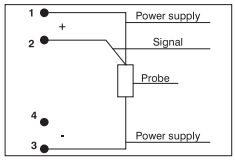
Connection scheme 2 wires probe

PIN	DESCRIPTION
1	N.C.
2	SENSOR +
3	POWER SUPPLY -
4	N.C.



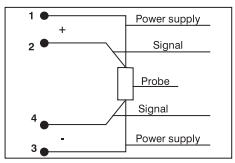
Connection scheme 3 wires probe

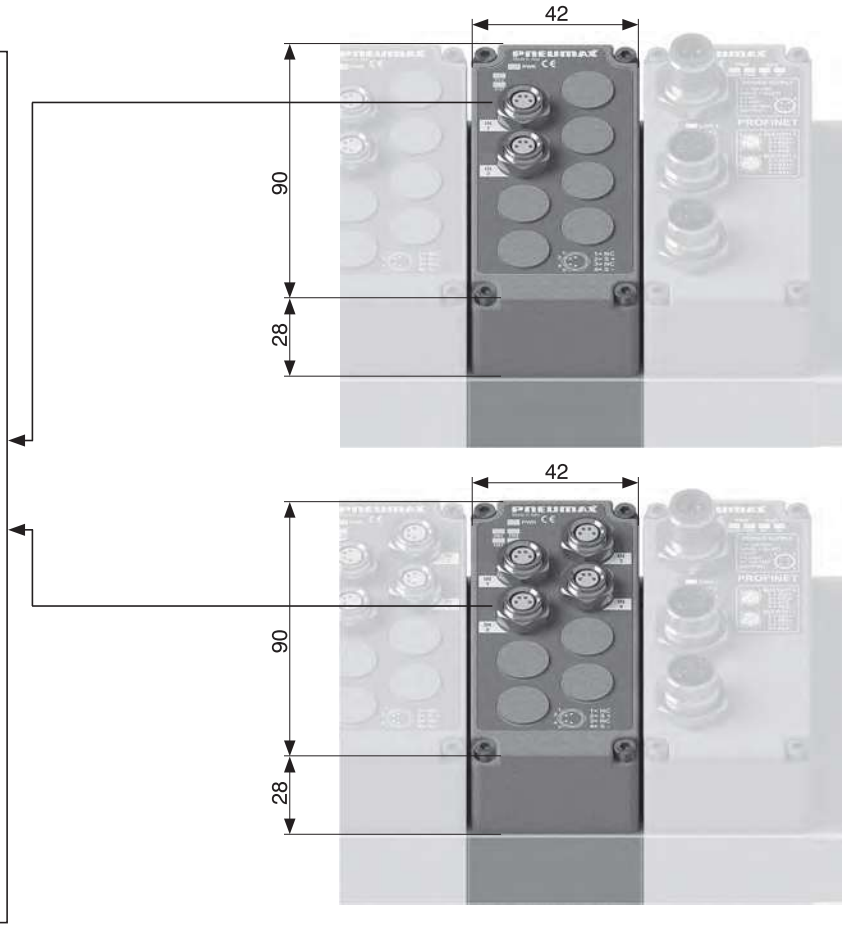
PIN	DESCRIPTION
1	POWER SUPPLY +
2	SENSOR +
3	POWER SUPPLY -
4	N.C.



Connection scheme 4 wires probe

PIN	DESCRIPTION
1	POWER SUPPLY +
2	SENSOR +
3	POWER SUPPLY -
4	SENSOR -



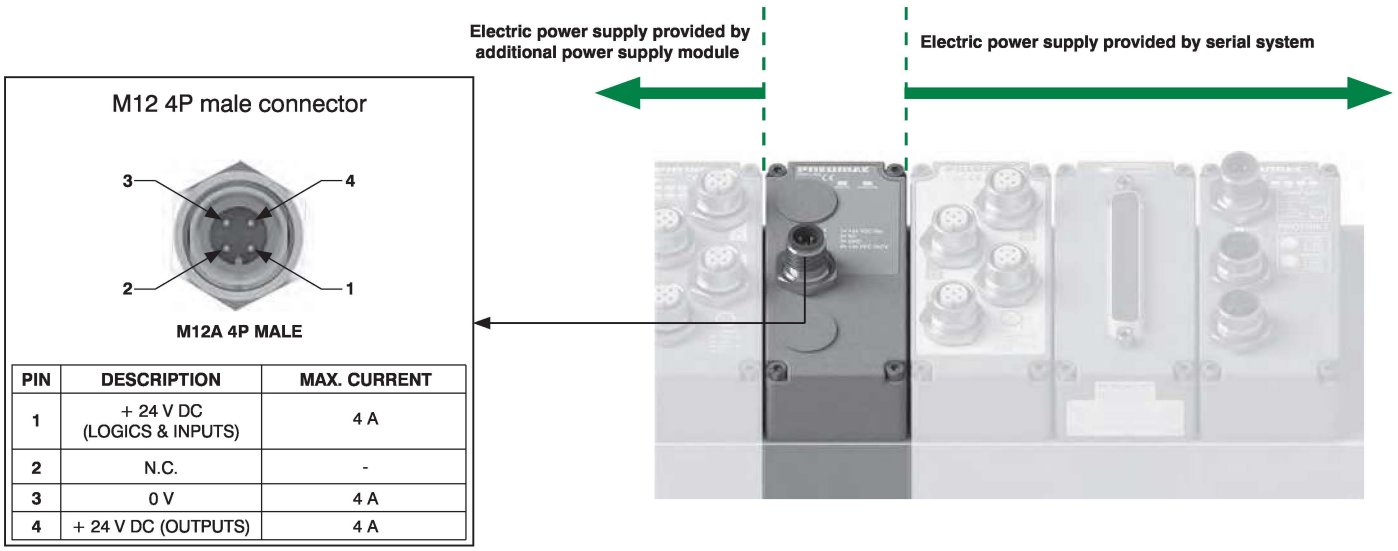


Additional power supply module kit

Additional power supply module supplies additional electric power for downstream optional modules, where "downstream" means farther from serial node, **resetting the current limits of the network node / IO-Link interface**.
Electric connection of the module to external power supply unit occurs via an M12 4 pins type A male connector.
M12 connector has two different pins to power up logics and inputs (Pin 1) and outputs (Pin 4).
Presence of each power supply rail is indicated by corresponding green LED.
When using IO-Link interface, the additional power supply module is useful for separating the module power supplies of input from the output modules placed downstream.

Coding: K5030.M12

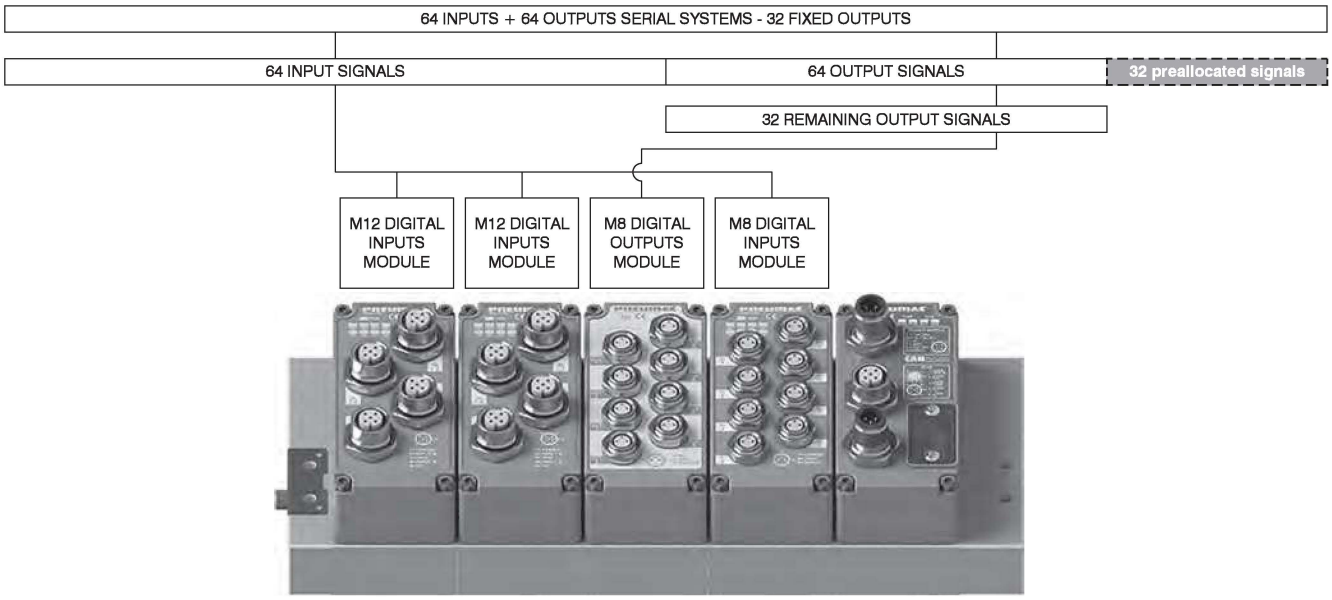
Scheme / Overall dimensions and I/O layout



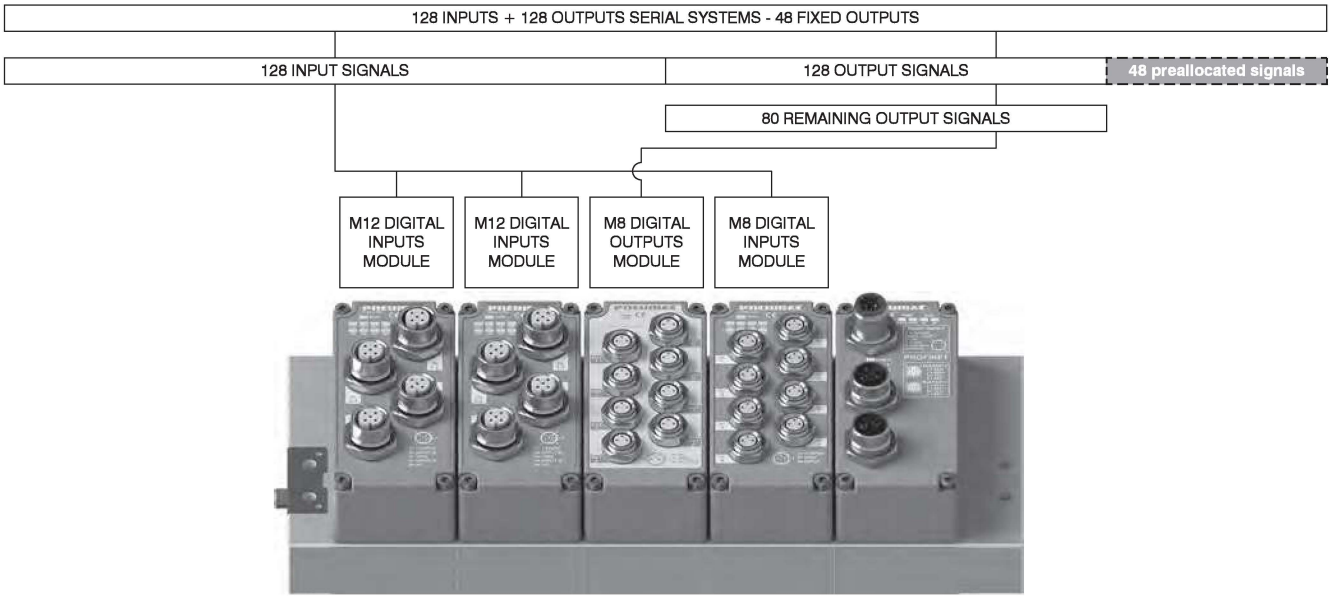
PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

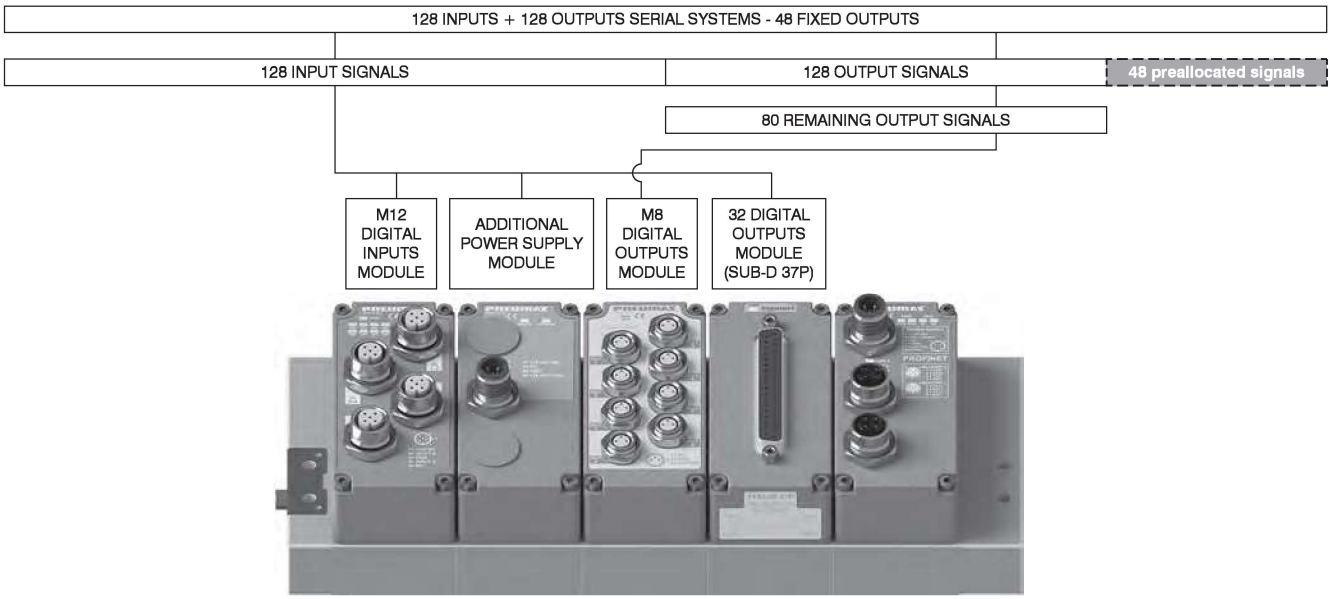
Signal management
64 INPUT + 64 OUTPUT serial systems - 32 fixed OUTPUT (Ex. PROFIBUS DP and CANopen®)



128 INPUT + 128 OUTPUT serial systems - 48 fixed OUTPUT (Ex. EtherNet/IP - EtherCAT® - PROFINET IO RT)



128 INPUT + 128 OUTPUT serial systems - 48 fixed OUTPUT (Ex. EtherNet/IP - EtherCAT® - PROFINET IO RT)



POWER SUPPLY connectors

Straight connector M12A 4P female

Coding: 5312A.F04.00

Upper view slave connector

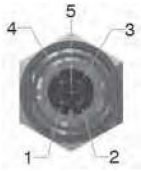
PIN	DESCRIPTION
1	+ 24 V DC (LOGICS AND INPUTS)
2	N.C.
3	0 V
4	+ 24 V DC (OUTPUTS)

Power supply socket

NETWORK connectors

Straight connector M12A 5P female

Coding: 5312A.F05.00



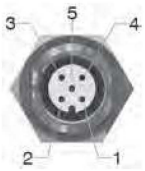
Upper view slave connector

PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Socket for bus CANopen® and IO-Link

Straight connector M12A 5P male

Coding: 5312A.M05.00



Upper view slave connector

PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Plug for bus CANopen®

Straight connector M12D 4P male

Coding: 5312D.M04.00

Upper view slave connector

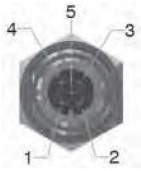
PIN	SIGNAL	DESCRIPTION
1	TX+	EtherNet Transmit High
2	RX+	EtherNet Receive High
3	TX-	EtherNet Transmit Low
4	RX-	EtherNet Receive Low

Plug for bus EtherCAT®, PROFINET IO RT and EtherNet/IP

Trademarks: EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Straight connector M12B 5P female

Coding: 5312B.F05.00



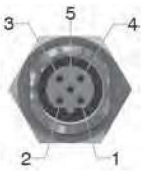
Upper view slave connector

PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

Socket for bus PROFIBUS DP

Straight connector M12B 5P male

Coding: 5312B.M05.00



Upper view slave connector

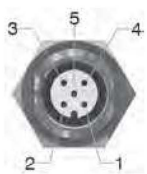
PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

Socket for bus PROFIBUS DP

INPUTS connectors

Straight connector M12A 5P male

Coding: 5312A.M05.00



Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC
2	INPUT B
3	0 V
4	INPUT A
5	N.C.

Plug for inputs modules

Straight connector M8 3P male

Coding: 5308A.M03.00

Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC
4	INPUT
3	0 V

Plug for inputs modules

Plugs

M12 plug

Coding: 5300.T12

M8 plug

Coding: 5300.T08

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