

M8/M12 I/O Distribution Box

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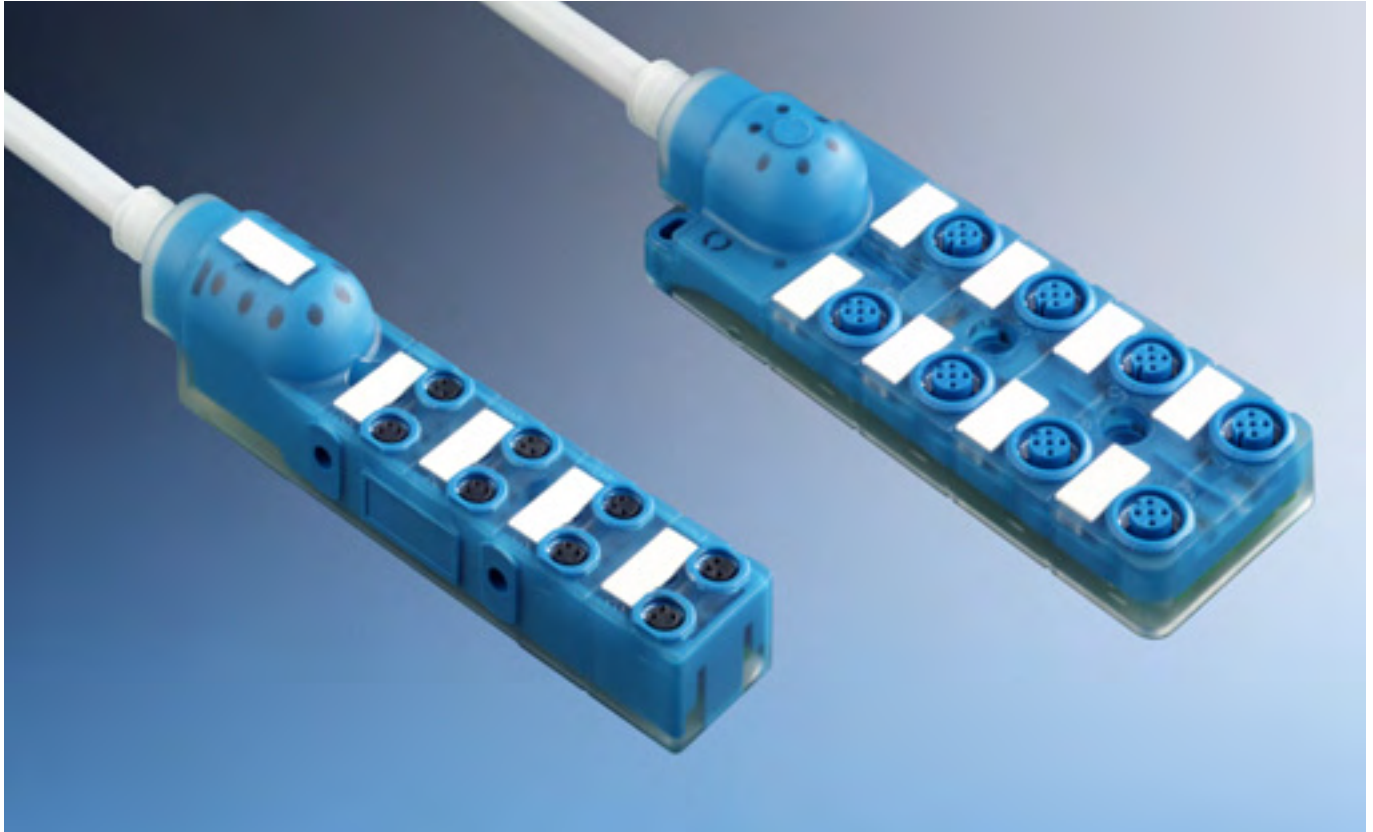
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Sensor/Actuator Passive Distribution Box

From sensors and actuators towards control system: ERNI Electronics expands its M8/M12 product line by passive I/O distribution boxes.

Complementary to M8/M12 cable assemblies and field-attachable connectors suitable for industrial use, with I/O distribution boxes ERNI offers another element of the information chain between field devices and control level.

Distribution boxes bundle signals from sensors/actuators and establish uplink to the control system. The I/O modules are well accepted within industrial automation not least because they avoid parallel cabling and complex installation towards control units or switch cabinets. Instead of using numerous single cables, sensors and actuators can be directly connected in close vicinity to the machine or process. This concept is simple, efficient and cost-effective.

The usage of common connection technology and standard interfaces allows for:

- reliable connections,
- safety in the automation solution and provides for
- highly available field devices.

The idea of decentralized modules and a more structured installation enables sensor/actuator lines to be easily, quickly and faultlessly replaceable. Hindering cable loops are then a relic of the past. Efficient cabling minimizes downtime of machine or equipment and enables flexibility at installation and maintenance.

This saves both time and money and consequently assures competitive advantages.



All distribution boxes of the product range are designed for IP65/IP67 protection and hence are predestined for use in harsh and humid industrial environments. The housing – available in various port numbers – is built in a compact and robust way; fully encapsulated, it withstands vibration to a high extent. Various mounting holes allow for direct attachment on the machine and thus ensure close installation to the process.

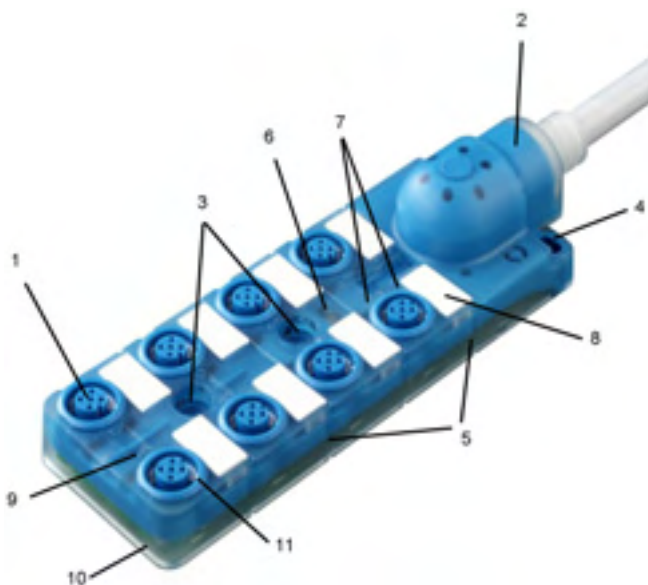
The connection to the control level is realized by a pre-assembled trunk cable available in different standard lengths. Designed as hybrid cable it is both power supply and data link for sensors and actuators connected to the I/O box.

Areas of application for sensor/actuator boxes:

- Assembly and Materials Handling Equipment
- Industrial Automation
- Machine & Plant Engineering
- Robotics
- Test Equipment
- Paper & Printing Industry
- Packaging Industry

Advantage and benefit:

- standard interfaces for signal and power
- compact design to close on-site installation
- reduction of installation and maintenance
- flexibility at upgrade of system or machine
- avoiding machine downtime
- constant availability of application
- cost and time benefits



- 1 I/O ports
- 2 Pre-assembled trunk cable PUR/PVC;
horizontal cable outlet
- 3 Mounting holes inline
- 4 Mounting holes top (M12 box)
- 5 Lateral mounting holes (M8 box)
- 6 Operation mode display (LED)
- 7 LEDs to display status of I/O ports
- 8 Identification label
- 9 Port numbering
- 10 Casted/encapsulated housing
- 11 Cost-effective moulded fastening thread M8/M12

Electrical and Mechanical Characteristics

	Standard	M8	M12
Type		4 x, 6 x, 8 x, 10 x Sockets	4 x, 8 x Sockets
Technical Data			
Number of Pins	IEC 61076-2-101/-104	3, 4	4, 5
Coding	IEC 61076-2-101/-104	A	A
Connection	IEC 61076-2-101/-104	Screw locking M8x1 (max. tightening torque 0.4 Nm)	Screw locking M12x1 (max. tightening torque 0.6 Nm)
Cable Specification			
Jacket material		PUR/PVC	PUR/PVC
Jacket color		grey (RAL 7040)	grey (RAL 7040)
Jacket diameter		4 x 3pin: 7.6 mm 4 x 4pin: 9.2 mm 6 x 3pin: 8.5 mm 6 x 4pin: 9.5 mm 8 x 3pin: 9.2 mm 8 x 4pin: 10.4 mm 10 x 3pin: 9.3 mm 10 x 4pin: 11.3 mm	4 x 4pin: 7.4 mm 4 x 5pin: 8.1 mm 8 x 4pin: 8.1 mm 8 x 5pin: 10.0 mm
Wire insulation		PVC	PVC
Flex. conductor diameter		Power supply: 2 x 0.75 mm ² I/O's: 0.34 mm ²	Power supply: 3 x 0.75 mm ² I/O's: 0.34 mm ²
Temperature range (cable)		-30/80 °C (fixed installation) -5/80 °C (flexible installation)	-30/80 °C (fixed installation) -5/70 °C (flexible installation)
Bending cycles		min. 2 Mio. at max. 2 m/s	min. 2 Mio. at max. 2 m/s
Bending radius		min. 10 x cable diameter	min. 10 x cable diameter
Resistance		<ul style="list-style-type: none"> - very good resistance to oil, gas and chemicals - abrasion resistant, hydrolysis resistant - drag chain capable 	
Materials			
Core / parts of housing		TPU, PA6	TPU, PA6
Insulation body		PA6T/66	PA6
Contact		CuNi2Si HV160U	CuNi2Si HV160U
Contact finish, mating area		1.0 µm CuNi, 0.5 µm Pd, 0.1 µm Au	0.8 µm Au
Gasket		TPU	TPU



M8/M12 I/O Distribution Box

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Electrical and Mechanical Characteristics

Standard	M8	M12	
Type	4 x, 6 x, 8 x, 10 x Sockets	4 x, 8 x Sockets	
Electrical Data			
Voltage rating	24 V DC (18-30 V DC)	24 V DC (18-30 V DC)	
Current rating per contact	max. 2 A	max. 4 A	
Total current	10 A	10 A	
Dielectric strength	0.8 kV	0.8 kV	
Contact resistance	max. 5 mΩ	max. 5 mΩ	
Insulation resistance	min. 1000 MΩ	min. 1000 MΩ	
Input current per LED	1.5 mA (white) 4.1 mA (yellow) 7.0 mA (green)	4 mA	
Vibration, sine	IEC 60512 test 6d 5 – 500 Hz 10 g	5 – 500 Hz 10 g	
Shock, halvesine	IEC 60512 test 6c 30 g 11 ms	50 g 11 ms	
Product-approvals			
Protection class	IEC 60529	IP65, IP67 (mated and locked)	IP65, IP67 (mated and locked)
Pollution degree		3	3
UL flammability	UL94	HB	HB
Insulation category	IEC 60664-1	III	III
UL		UL/CSA	UL/CSA

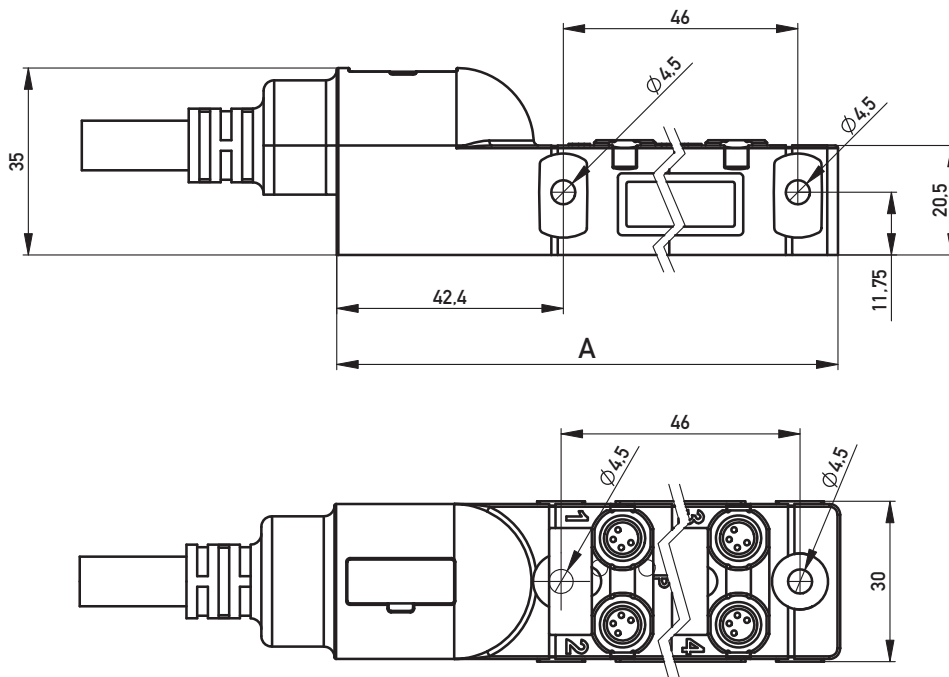


M8 Distribution Box



- 4-, 6-, 8- and 10-port design
- 3-pin and 4-pin sockets
- M8x1 screw locking
- Protection class IP65/IP67
- LED display for operation and port signals
- Removable identification label on individual ports
- PUR/PVC cable in standard lengths of 3 m, 5 m, 10 m, 15 m; suitable for use in drag chains
- UL/CSA approved
- Housing features
 - high abrasion and wear resistance
 - flexible at low temperatures
 - highly resistant to oil and lubricants
 - fully encapsulated for excellent vibration resistance

Dimensional Drawing

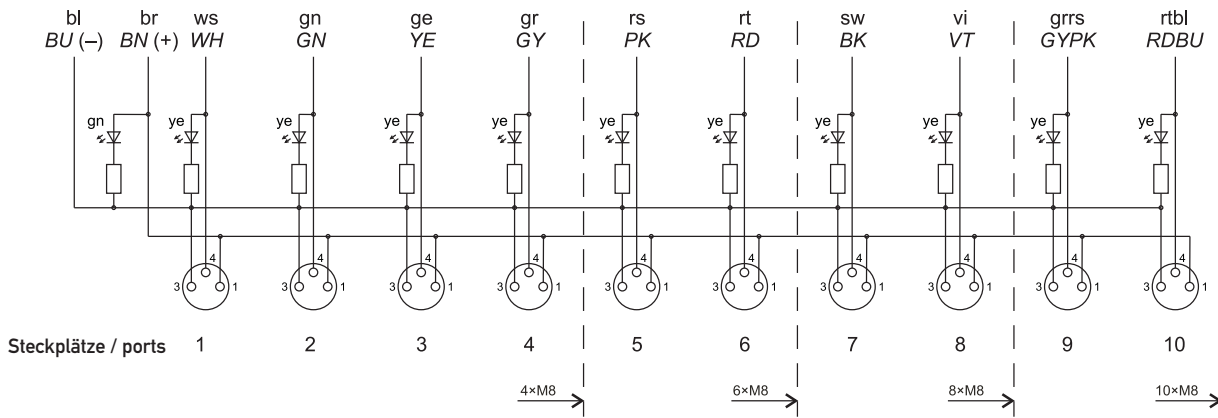


4	90
6	109
8	132
10	155
Steckplätze No. of Ports	A

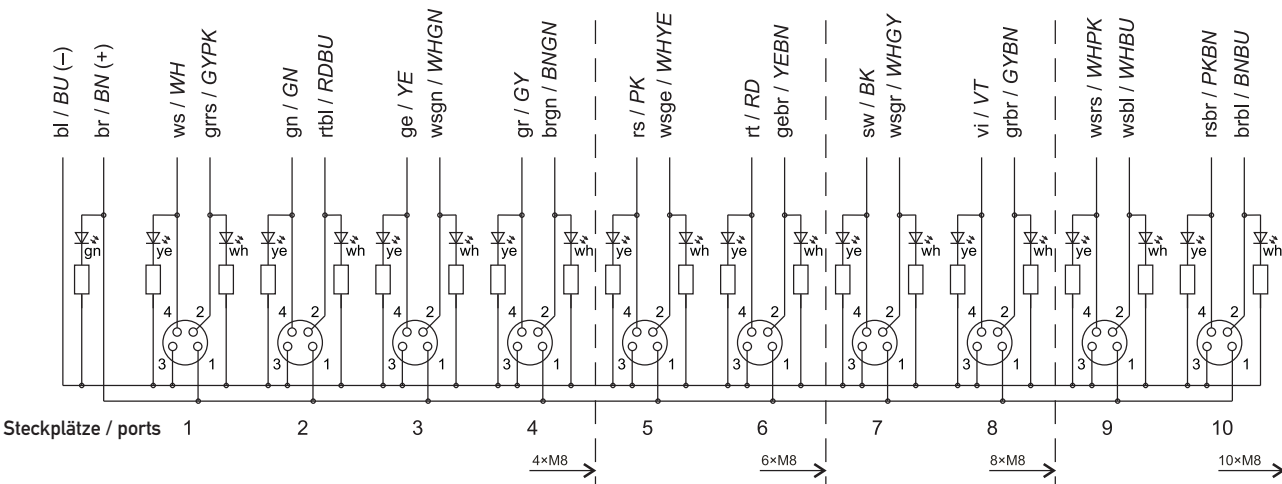
All dimensions in mm.



Schematic Diagram for 3-pin Versions



Schematic Diagram for 4-pin Versions



Wire Configurations

3-pin Versions (1 signal per port)

Port	Pin	Color of Conductor	Configuration
1-10	1	brown	+ 24 V DC
1-10	3	blue	0 V DC
1	4	white	Signal 1
2	4	green	Signal 1
3	4	yellow	Signal 1
4	4	grey	Signal 1
5	4	pink	Signal 1
6	4	red	Signal 1
7	4	black	Signal 1
8	4	violet	Signal 1
9	4	grey/pink	Signal 1
10	4	red/blue	Signal 1

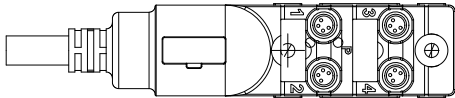
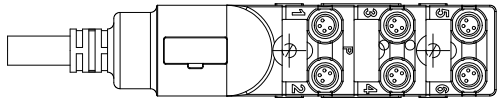
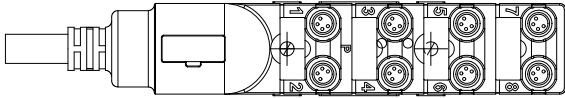
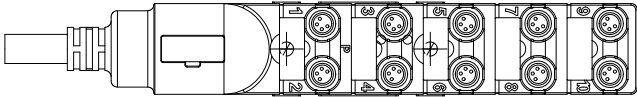
4-pin Versions (2 signals per port)

Port	Pin	Color of Conductor	Configuration
1-10	1	brown	+ 24 V DC
1-10	3	blue	0 V DC
1	4	white	Signal 1
1	2	grey/pink	Signal 2
2	4	green	Signal 1
2	2	red/blue	Signal 2
3	4	yellow	Signal 1
3	2	white/green	Signal 2
4	4	grey	Signal 1
4	2	brown/green	Signal 2
5	4	pink	Signal 1
5	2	white/yellow	Signal 2
6	4	red	Signal 1
6	2	yellow/brown	Signal 2
7	4	black	Signal 1
7	2	white/grey	Signal 2
8	4	violet	Signal 1
8	2	grey/brown	Signal 2
9	4	white/pink	Signal 1
9	2	white/blue	Signal 2
10	4	pink/brown	Signal 1
10	2	brown/blue	Signal 2



M8 Distribution Box

Ordering Information

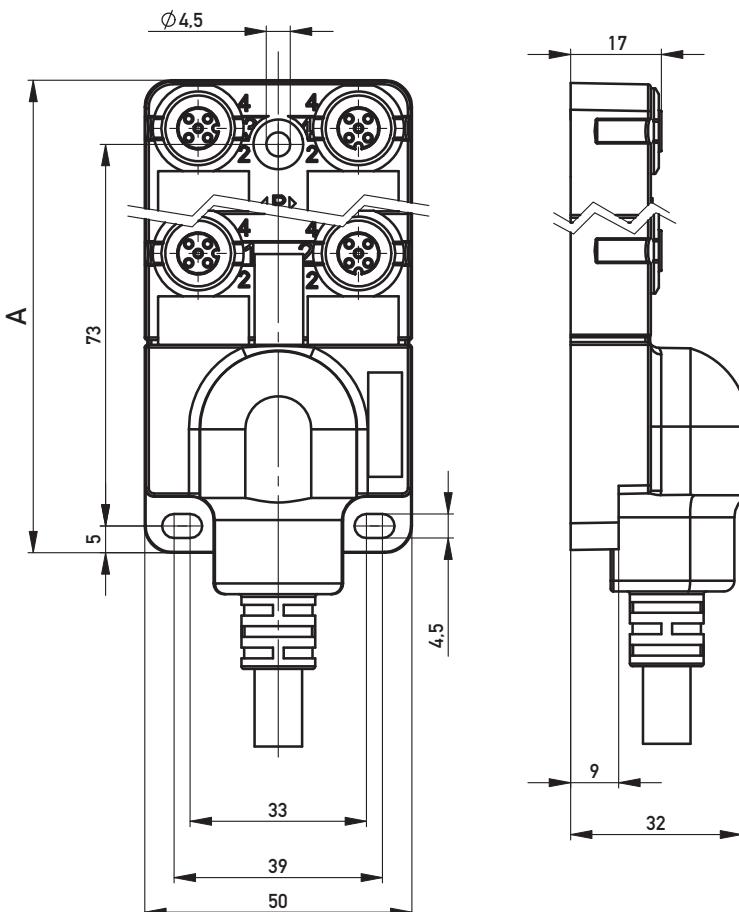
Ports	No. of Pins	Coding	Cable Type	Cable Length	Part Number
					
4	3	A	PUR/PVC	3.0 m	354855
4	4	A	PUR/PVC	3.0 m	354856
					
6	3	A	PUR/PVC	3.0 m	354857
6	4	A	PUR/PVC	3.0 m	354858
					
8	3	A	PUR/PVC	3.0 m	354859
8	4	A	PUR/PVC	3.0 m	354860
					
10	3	A	PUR/PVC	3.0 m	354861
10	4	A	PUR/PVC	3.0 m	354862

Other standard cable lengths on request.



- 4- and 8-port design
- 4-pin and 5-pin sockets, A coded
- M12x1 screw locking
- Protection class IP65/IP67
- LED display for operation and port signals
- Removable identification label on individual ports
- PUR/PVC cable in standard lengths of 3 m, 5 m, 10 m, 15 m; suitable for use in drag chains
- UL/CSA approved
- Housing features
 - high abrasion and wear resistance
 - flexible at low temperatures
 - highly resistant to oil and lubricants
 - fully encapsulated for excellent vibration resistance

Dimensional Drawing



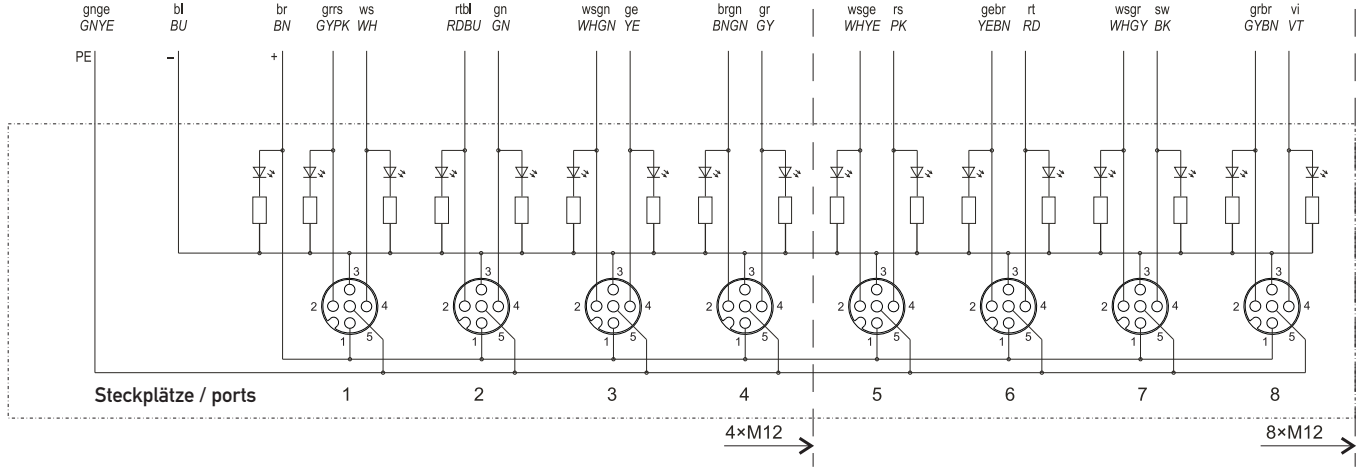
4	90
8	140
Steckplätze No. of Ports	A

All dimensions in mm.



M12 Distribution Box

Schematic Diagram for 4- and 5-pin Versions



Wire Configurations

4-pin Versions (1 signal per port)

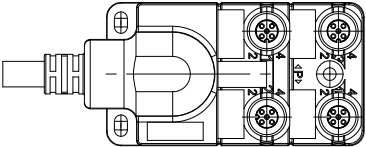
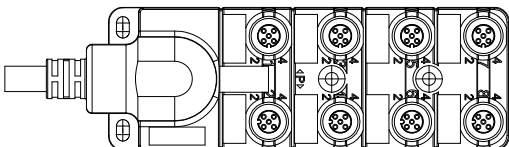
Port	Pin	Color of Conductor	Configuration
1-8	1	brown	+ 24 V DC
1-8	3	blue	0 V DC
1-8	3	green/yellow	PE
1	4	white	Signal 1
2	4	green	Signal 1
3	4	yellow	Signal 1
4	4	grey	Signal 1
5	4	pink	Signal 1
6	4	red	Signal 1
7	4	black	Signal 1
8	4	violet	Signal 1

5-pin Versions (2 signals per port)

Port	Pin	Color of Conductor	Configuration
1-8	1	brown	+ 24 V DC
1-8	3	blue	0 V DC
1-8	3	green/yellow	PE
1	4	white	Signal 1
1	2	grey/pink	Signal 2
2	4	green	Signal 1
2	2	red/blue	Signal 2
3	4	yellow	Signal 1
3	2	white/green	Signal 2
4	4	grey	Signal 1
4	2	brown/green	Signal 2
5	4	pink	Signal 1
5	2	white/yellow	Signal 2
6	4	red	Signal 1
6	2	yellow/brown	Signal 2
7	4	black	Signal 1
7	2	white/grey	Signal 2
8	4	violet	Signal 1
8	2	gray/brown	Signal 2



Ordering Information

Ports	No. of Pins	Coding	Cable Type	Cable Length	Part Number
					
4	4	A	PUR/PVC	3.0 m	354851
4	5	A	PUR/PVC	3.0 m	354853
					
8	4	A	PUR/PVC	3.0 m	354852
8	5	A	PUR/PVC	3.0 m	354854

Other standard cable lengths on request.





M8 cable assembly, straight or angled, 3- and 4-pin



M12 cable assembly, straight or angled, 4- and 5-pin



M8 field-attachable connector (IDC), straight, 3- and 4-pin



M12 field-attachable connector (IDC), straight, 4-pin



Adapter



T-Coupler



Member



VMEbus INTERNATIONAL TRADE ASSOCIATION



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