



## AJ100

### *Embedded Blue*®

DIN Rail PoE+ Injector • Two Port M12-X Gigabit Ethernet



## Technical Features

### *General*

- ▶ PoE+ 1000BASE-T Ethernet midspan power injector box, for DIN rail mount or wall mount
- ▶ PSE power sourcing equipment configuration
- ▶ 4 x M12-X Gigabit Ethernet connectors (2 x in, 2 x out)
- ▶ 802.3at PoE+ Type 2 Class 1-4 (up to 30W/port)
- ▶ Intended for industrial use
- ▶ Dimensions: 30mm (W) x 140mm (H) x 70mm (D) w/o DIN rail brackets
- ▶ Metal case, DIN rail bracket or wall mount plate
- ▶ M12-A 5-pin power connector
- ▶ Option terminal block power connector
- ▶ Option desktop power adapter connector
- ▶ Nominal 48VDC/54VDC power input operation

### *Front Panel I/O*

- ▶ Two groups of dual M12-X circular receptacles, shielded
- ▶ 1000BASE-T magnetics 1:1, PoE+
- ▶ 1000BASE-T, 100BASE-TX, 10BASE-T compliant data transfer rate
- ▶ NBASE-T, 2.5GBASE-T, 5GBASE-T, 10GBASE-T on request
  
- ▶ M12-A 5-pin front power connector
- ▶ Option terminal block power input 3.5mm pitch 4-position screw lock (bottom of box)

### *Power Requirements*

- ▶ DC Input, 44V-57V (48VDC, 54VDC)
- ▶ Power consumption 65W max. (@60W external load)
- ▶ Fast acting chip fuse (PCB soldered type - no replacement on-site)
- ▶ Protected against reverse polarity
- ▶ ESD protection (TVS)
- ▶ Common mode input filter
- ▶ M12-A 5-pin male power connector
- ▶ Option 4-position terminal block 3.50mm pitch screw locked
- ▶ Option rear power connector (desktop supply 4-pos. circular connector)

## Technical Features

### *Power over Ethernet*

- ▶ PSE PoE+ according to IEEE 802.3at-2009, Type 2 Class 1-4
- ▶ Maximum power delivered per port 30W (25.4W at powered device PD per specification)
- ▶ Maximum power delivered in total 60W
- ▶ IEEE 802.3at Type 2 Mode A (power over M12-X pins 1/2 & 3/4, 600mA)
- ▶ Option IEEE 802.3at Type 2 Mode B (M12-X pins 5/6 & 7/8)
- ▶ TPS23861 PSE controller, automatic mode
- ▶ Auto detect & classification, auto turn-on & disconnect

### *Applications*

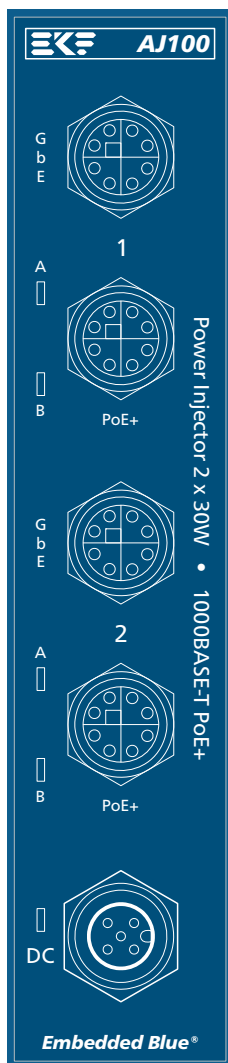
- ▶ Industrial networks - IIoT
- ▶ Rugged environments
- ▶ Edge computing
- ▶ Transportation
- ▶ Railway

### *Environmental, Regulatory*

- ▶ Designed & manufactured in Germany
- ▶ ISO 9001 certified quality management
- ▶ Long term availability
- ▶ Rugged solution
- ▶ RoHS compliant
- ▶ Operating temperature -40°C to +85°C (industrial temperature range)
- ▶ Storage temperature -40°C to +85°C, max. gradient 5°C/min
- ▶ Humidity 5% ... 95% RH non condensing
- ▶ Altitude -300m ... +3000m
- ▶ Shock 15g 0.33ms, 6g 6ms
- ▶ Vibration 1g 5-2000Hz
- ▶ EC Regulations EN55022, EN55035, EN60950-1 (UL60950-1/IEC60950-1)
- ▶ International Protection EN60529 IP20
- ▶ MTBF tbd years

all items may be subject to technical changes w/o further notice

Front



Ethernet Port 1-2 LEDs A/B	
green (weak)	PoE+ ready
blue	PoE+ active, normal operation
red (blinking or permanent)	internal fault (port chip fuse must be replaced)
A = Mode A, signal pair MX0/MX1 power	B = Mode B, signal pair MX2/MX3 power

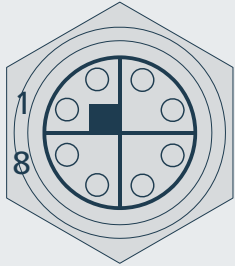
DC LED	
green	DC input power present
red	internal fault (main chip fuse must be replaced)

## Mounting Options





## M12 X-Coded Front Panel Receptacles

M12-X Front Panel I/O Receptacles Gigabit Ethernet			
	Ports 1-2  In/Out	1	MDX0+
		2	MDX0-
		3	MDX1+
		4	MDX1-
		5	MDX3+
		6	MDX3-
		7	MDX2-
		8	MDX2+

The pin numbers of an M12 X-coded connector do not reflect the RJ45 Gigabit Ethernet signal assignment. For cross-over patch cables M12 to RJ45 please refer to the table below.

M12-X	Signal Colors T568B	RJ45
1	MDX0+ white/orange	1
2	MDX0- orange	2
3	MDX1+ white/green	3
4	MDX1- green	6
5	MDX3+ white/brown	7
6	MDX3- brown	8
7	MDX2- white/blue	5
8	MDX2+ blue	4

Suitable industrial Gigabit Ethernet M12 cable assemblies can be ordered from EKF, or directly from well-known cable and connector manufacturers e.g. Metz, Phoenix, Escha and many others.



M12 to M12 Cable  
Phoenix Contact

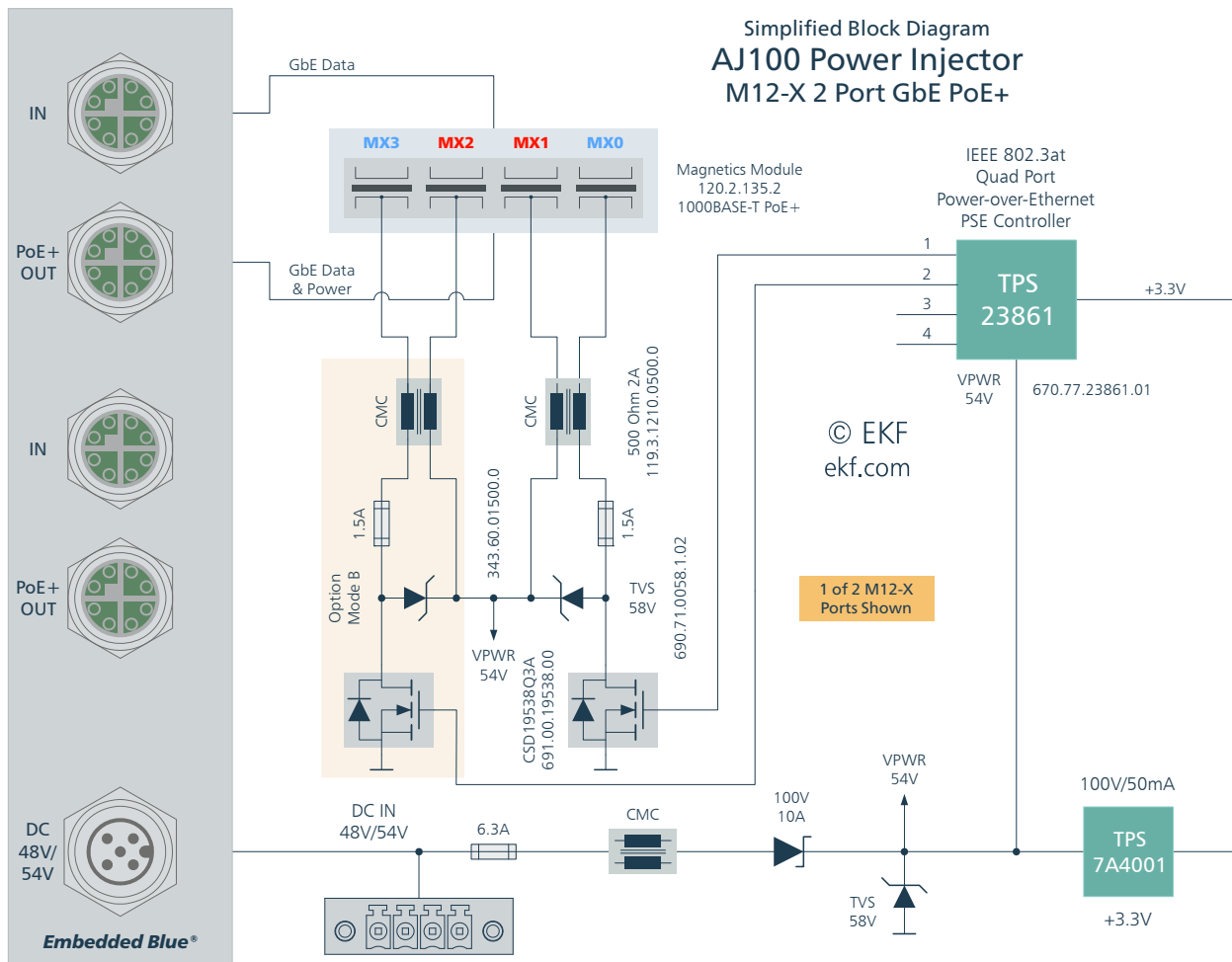


M12 Cable  
Connector  
Phoenix Contact



M12 to RJ45 Cable  
Phoenix Contact

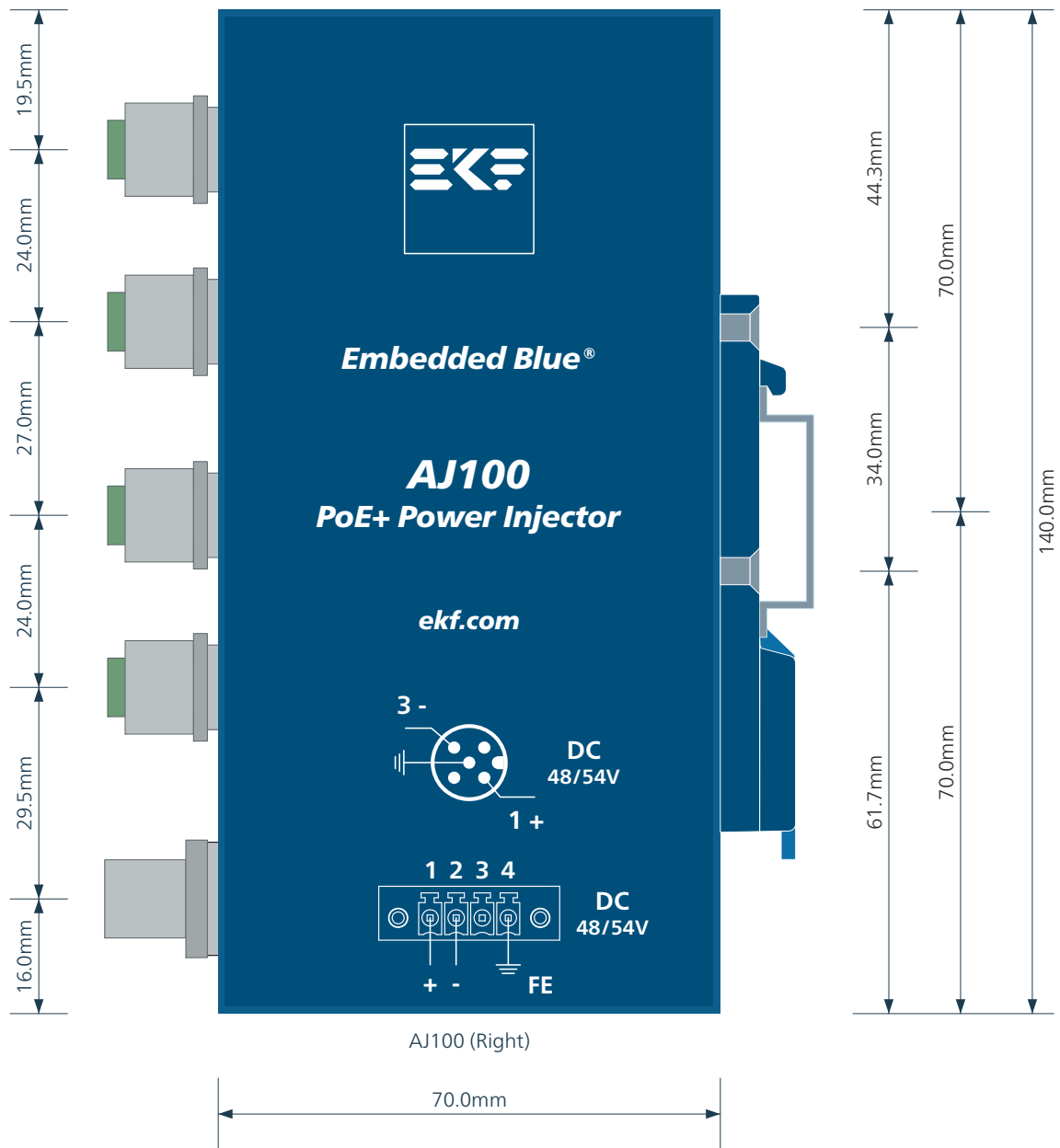
## Block Diagram



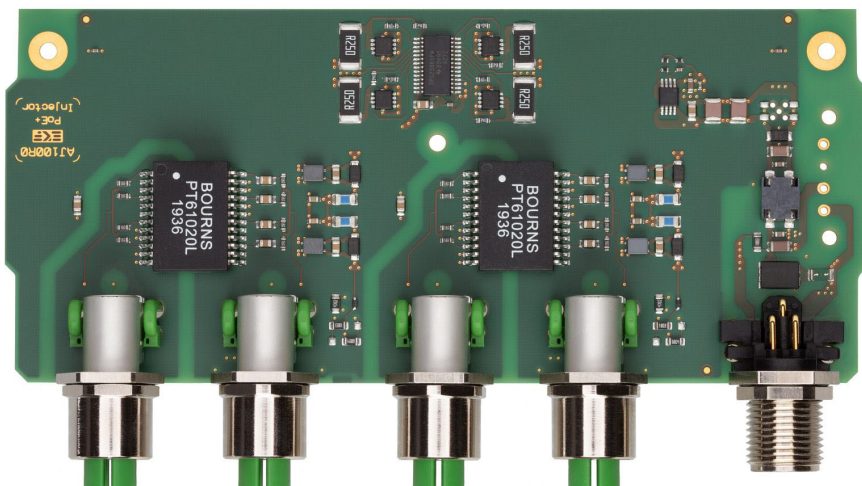
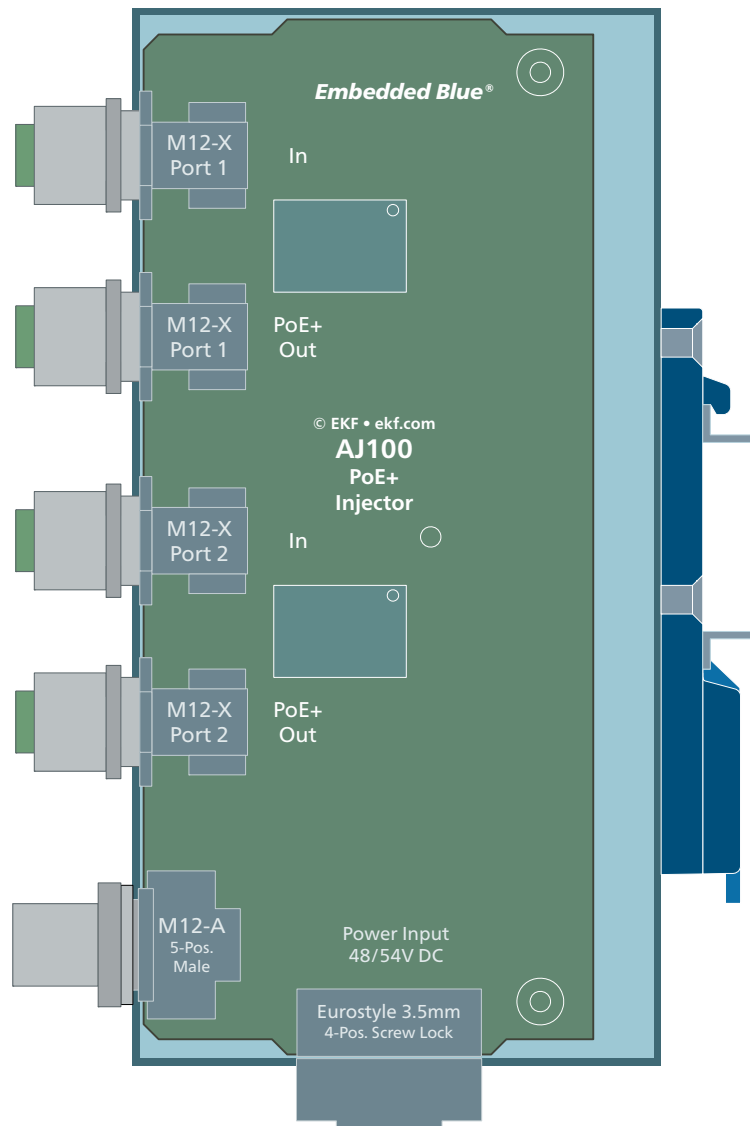
M12-X input and output connectors of each particular port are isolated between each other by means of magnetics modules. As a result, also any M12-X input connector is isolated from the input connector of another port. The power source however is common to all PoE+ injector ports, which implies that all PoE+ RJ45 output connectors are DC coupled, in a common domain with the external DC power supply. This is usual practice and does not affect normal operation. It is noted here for better understanding only.

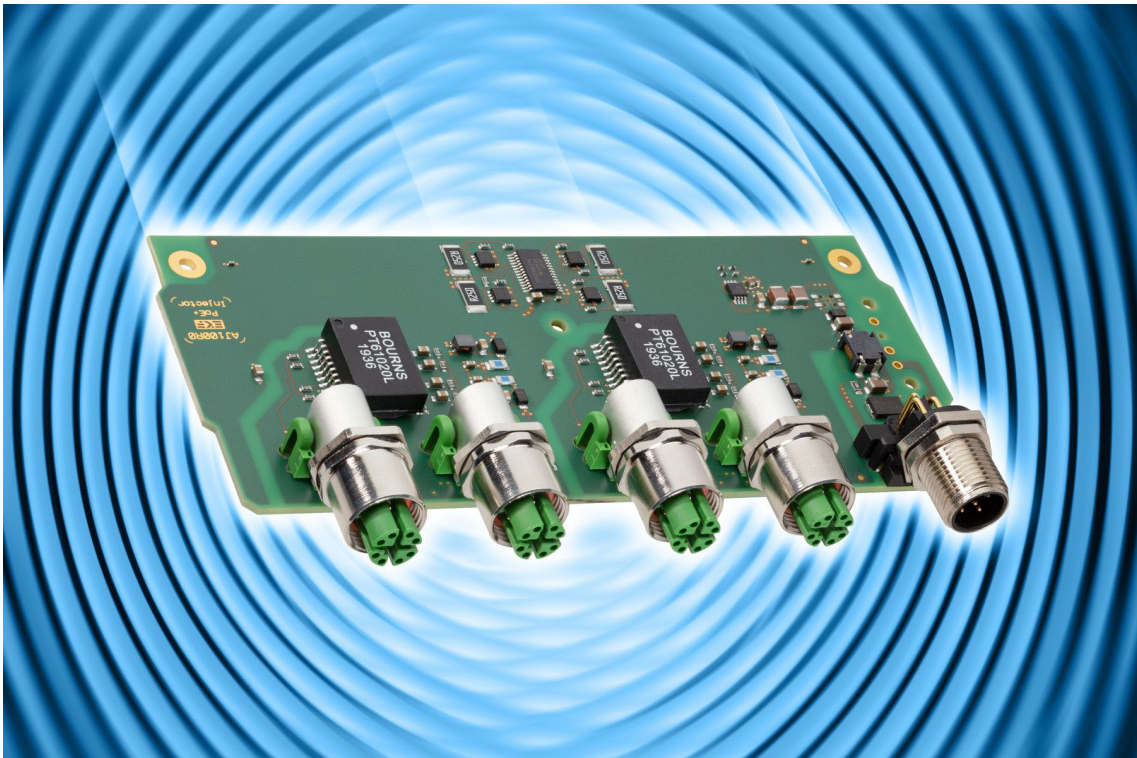


Dimensions

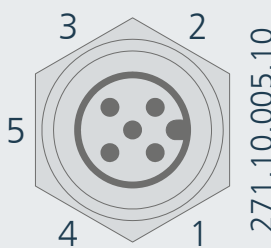


## Component Orientation

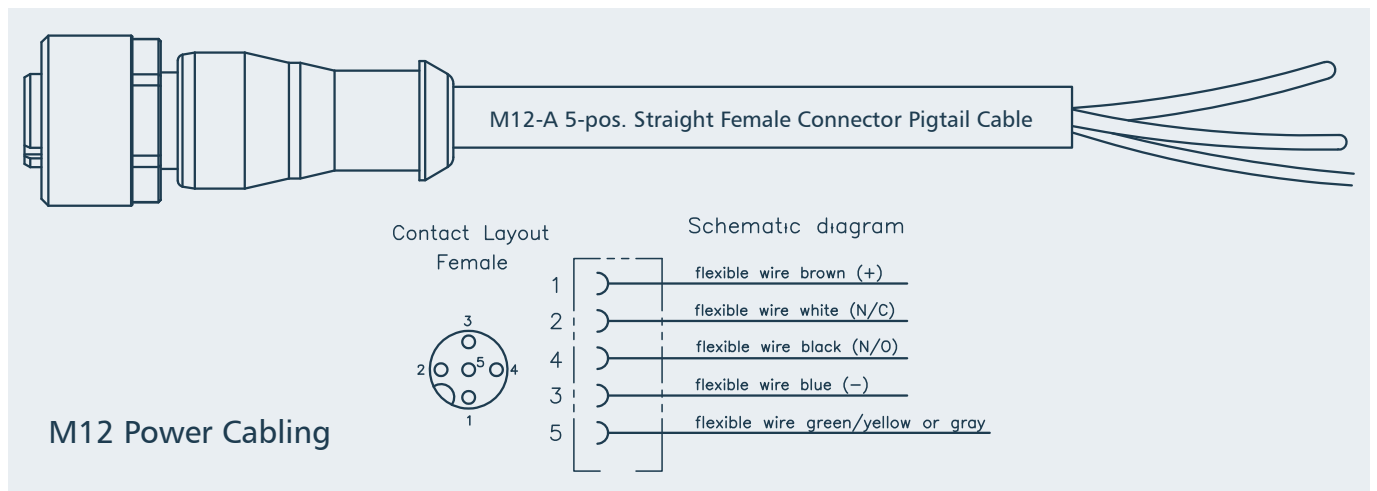




### Option M12-A Power Connector

M12-A 5-Position Male 4A/Pin			
 <p>271.10.0005.10</p>	+V=48/54VDC	1	+V
		2	Reserved
		3	-V (GND)
		4	Reserved
		5	FE (Shield)

Mating Pigtail Cable Assemblies 1.5m w. Female Straight Plug	
EKF	271.10.505.22.015
Phoenix Contact	1669822
Tyco	2273035-1



pre-assembled standard pigtail cables - wires #2 and #4 not in use (reserved)

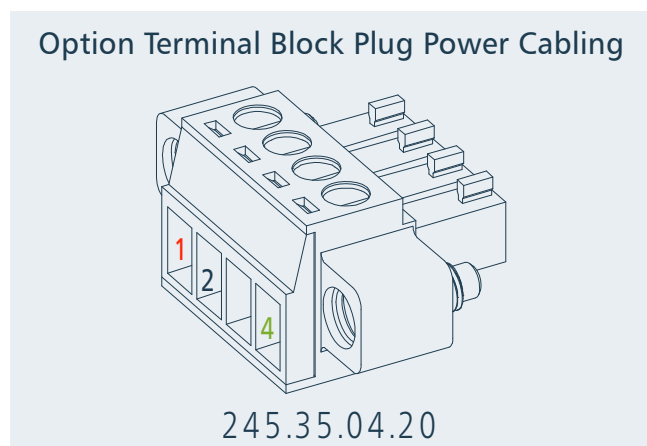


M12 Pigtail Cable

## Option Terminal Block Power Connector

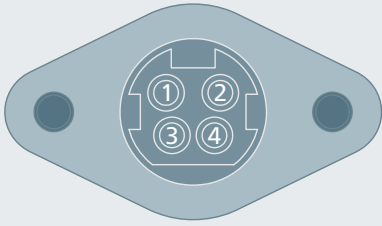
3.50mm 4-Position Terminal Block 8A/Pin			
<p>245.35.04.00</p> <p>1 2 3 4</p>	<p>+V=48/54VDC</p>	1	+V
		2	-V (GND)
		3	Reserved
		4	FE (Shield)

Mating Plugs w. Screw Lock	
EKF	245.35.04.20
FCI Amphenol	20020000-C041B01LF
Molex	39504-0004
Phoenix Contact	1847071
Tyco	284510-4



Mating DIN Rail Power Supply	
EKF	352.1.120.48.1
Meanwell	NDR-120-48, 120W 48VDC/2.5A

### Option Rear Power Connector

Circular 4-Position Power Receptacle 7.5A/pin			
 <p>271.04.004.10</p>	<p>+V=48/54VDC</p>	1	+V
		2	+V
		3	-V (GND)
		4	-V (GND)
		Shell	FE (Shield)



Option Rear Connector (Similar Photo)

Mating Desktop Power Adapter w. Cable Assy	
EKF	353.1.120.54.1
FSP Technology	FSP120-AWAN3, 120W 54VDC/2.2A

## Ordering Information

Ordering key: AJ100-0xy0

x=1-2: number of PoE+ injector ports populated

y=0: terminal block DC power input

y=1: M12-A front connector DC power input

For popular AJ100 SKUs please contact sales@ekf.de

## Related Products

AL100	M12-X 5 to 15 port unmanaged GbE switch
AL110	M12-X 5 port GbE switch w. ARM® V8 CPU
AL200	RJ45 8 port unmanaged GbE switch
AL210	RJ45 8 port GbE switch w. ARM® V8 CPU
AL220	RJ45 8 port unmanaged PoE+ GbE switch
AL230	RJ45 8 port PoE+ GbE switch w. ARM® V8 CPU
AJ100	M12-X PoE+ power injector
AJ200	RJ45 PoE+ power injector



[https://www.ekf.com/a/DIN\\_Rail\\_on\\_off\\_500x280.mp4](https://www.ekf.com/a/DIN_Rail_on_off_500x280.mp4)



# ***Embedded Blue®***



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