



AL220 - AL230 • *Embedded Blue*®

PoE+ Gigabit Ethernet Switch



Overview

The AL220 is an eight port industrial Gigabit Ethernet switch box, 1000BASE-T, 100BASE-TX and 10BASE-T compliant. All ports are PoE+ (30W) enabled. The box is available for DIN rail or wall mount, and requires a fixed supply voltage 48/54VDC, applied via a pluggable terminal block.

The AL220 is based on the Marvell® 88E6390 self-managed Ethernet switch, and equipped with IEEE 802.3at Power-over-Ethernet controllers (TI TPS 23861).

For AVB/TSN protocol support the box is also available as AL230, provided with a Marvell® ARMADA® CPU in addition.



Technical Features

General

- ▶ 1000BASE-T Ethernet switch box, for DIN rail mount or wall mount
- ▶ 8 x RJ45 Gigabit Ethernet connectors, 802.3at PoE+ (up to 30W/port)
- ▶ PoE+ support up to 120W in total
- ▶ Intended for industrial use
- ▶ Self-managed operation
- ▶ Dimensions AL220: 30mm (W) x 140mm (H) x 90mm (D) w/o DIN rail brackets
- ▶ Dimensions AL230: 45mm (W) x 140mm (H) x 90mm (D) w/o DIN rail brackets
- ▶ Metal case, TS35 DIN rail bracket or wall mount plate
- ▶ Terminal block power connector, pluggable & screw lock
- ▶ Option desktop power adapter connector
- ▶ M12-A power connector (AL230)
- ▶ Nominal 48VDC/54VDC power input operation

Front Panel I/O

- ▶ RJ45 Ethernet connectors, with integrated PoE+ magnetics
- ▶ 1000BASE-T, 100BASE-TX, 10BASE-T compliant data transfer rate front ports
- ▶ Terminal block 3.5mm pitch 4-position screw lock (bottom of box) power input

AL230 only (CPU)

- ▶ M12-A five pin male power connector
- ▶ Gigabit Ethernet RJ45 (console management)

Power Requirements

- ▶ DC Input, 44V-57V (48VDC, 54VDC)
- ▶ Power consumption 125W max. @120W external load (AL220)
- ▶ Fast acting chip fuse (PCB soldered type - no replacement on-site)
- ▶ Protected against reverse polarity
- ▶ ESD protection (TVS)
- ▶ Common mode input filter
- ▶ 4-Position terminal block 3.50mm pitch screw locked for DC power input (AL220)
- ▶ M12-A connector 5-position DC power input (AL230)
- ▶ Option rear power connector (desktop supply 4-pos. circular connector)

Technical Features

Gigabit Ethernet Switch

- ▶ Marvell® 88E6390 (Peridot) Gigabit Ethernet switch
- ▶ Front ports GbE MAC/PHY 1000BASE-T
- ▶ 8 x RJ45 connector(s) w. integrated PoE+ magnetics
- ▶ High performance, non-blocking, Gigabit Ethernet
- ▶ Support for up to 16K MAC addresses, 10KByte Jumbo Frames
- ▶ Supports 802.1 Audio Video Bridging (AVB) Gen 2*
- ▶ Time Sensitive Networking (TSN) Standards*, IEEE 1588v2 one-step PTP Synchronous Ethernet*
- ▶ Quality of Service (QoS) support with 8 traffic classes
- ▶ Supports 4096 802.1Q VLANs, three levels of 802.1Q security
- ▶ Unmanaged solution (protocol support with additional mezzanine CPU card - AL230)
- ▶ 2.5Gbps SERDES & SMI mezzanine connectors for additional mezzanine CPU card

* AVB/TSN protocols require additional CPU support (AL230)
please refer also to AC370 product information

Power over Ethernet

- ▶ PSE PoE+ according to IEEE 802.3at
- ▶ Maximum power delivered per port 30W
- ▶ Maximum power delivered in total 120W
- ▶ Type 2 endpoint PSE (power over RJ45 pins 1/2 & 3/6, 600mA)

Applications

- ▶ Industrial networks - IIoT
- ▶ Rugged environments
- ▶ Edge computing
- ▶ Transportation
- ▶ Custom specific programming (AL230)

Technical Features

Environmental, Regulatory

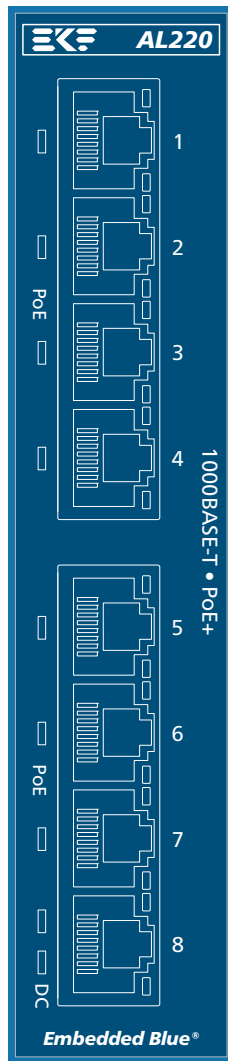
- ▶ Designed & manufactured in Germany
- ▶ ISO 9001 certified quality management
- ▶ Long term availability
- ▶ Rugged solution
- ▶ RoHS compliant
- ▶ Operating temperature -40°C to +85°C (industrial temperature range)
- ▶ Storage temperature -40°C to +85°C, max. gradient 5°C/min
- ▶ Humidity 5% ... 95% RH non condensing
- ▶ Altitude -300m ... +3000m
- ▶ Shock 15g 0.33ms, 6g 6ms
- ▶ Vibration 1g 5-2000Hz
- ▶ International Protection EN60529 IP20
- ▶ EC Regulatory EN55035, EN55032, EN62368-1 (CE)
- ▶ MTBF 78.4 years (MIL-HDBK-217F, SN29500 @+40°C)

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

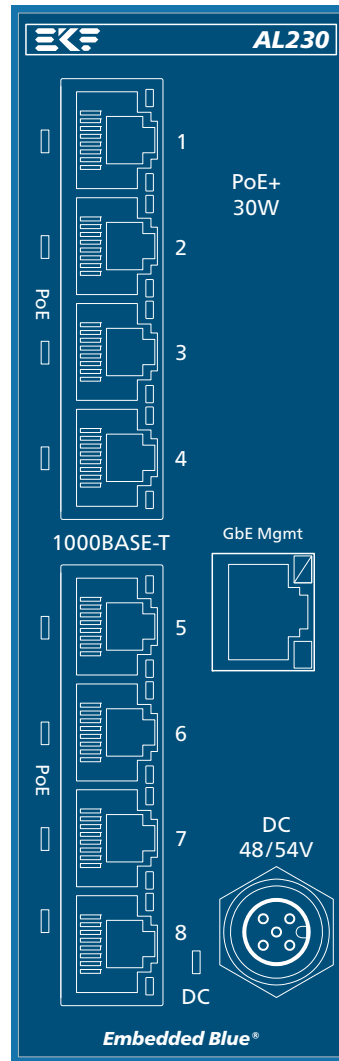




Front View

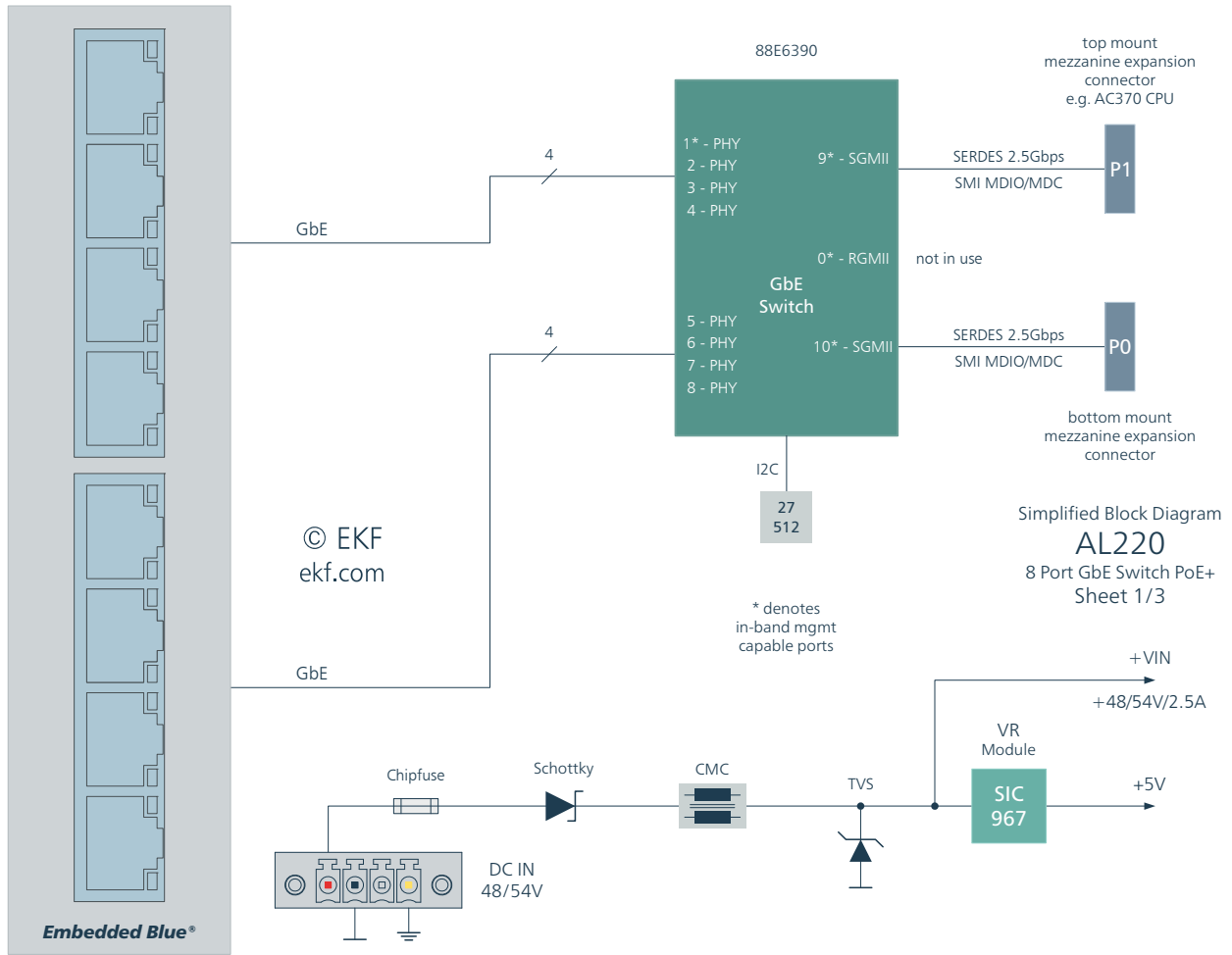


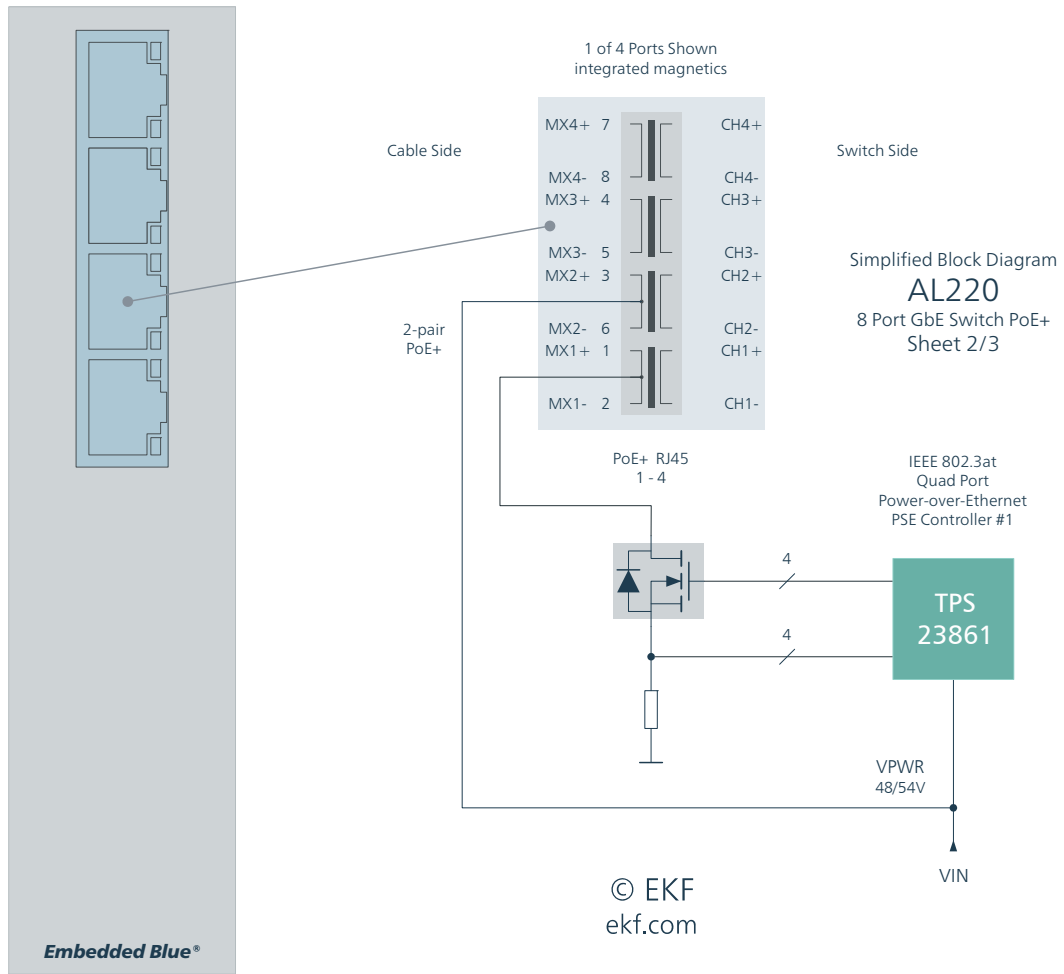
AL220 (Front)

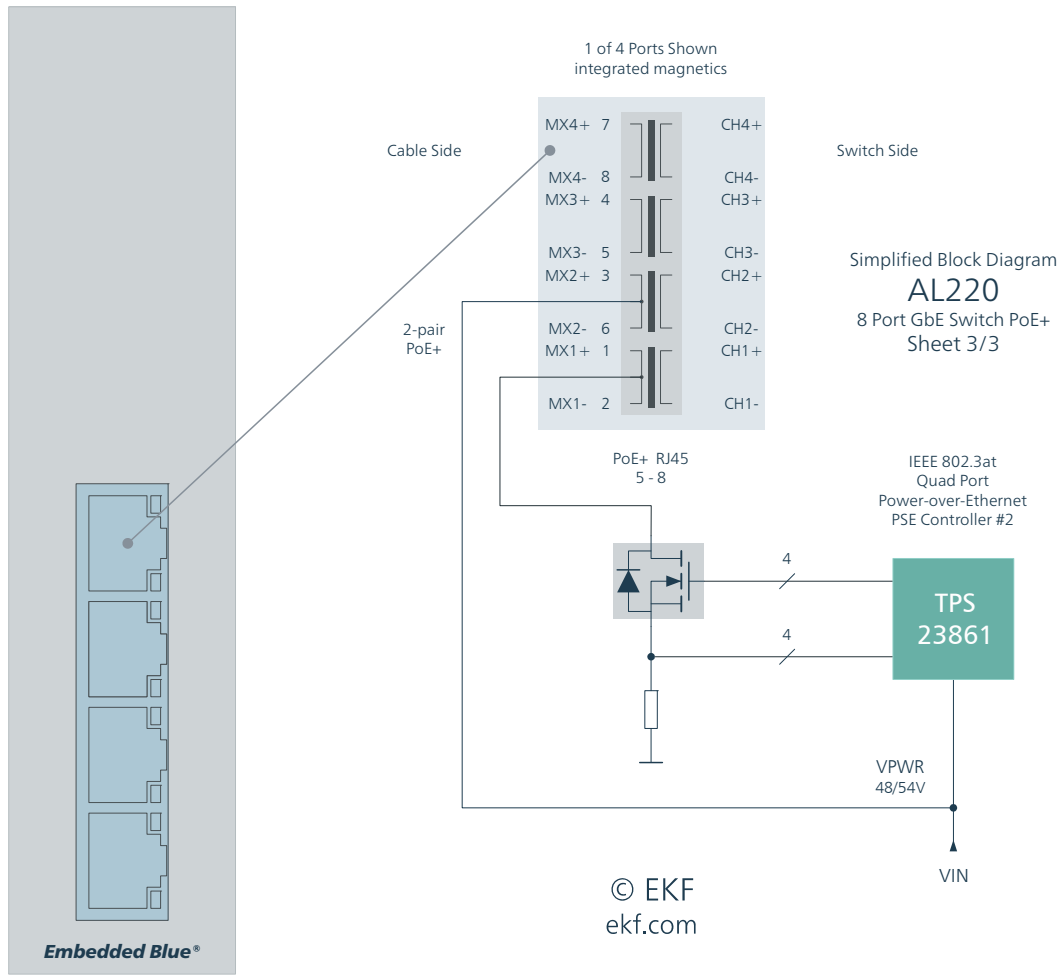


AL230 (Front)

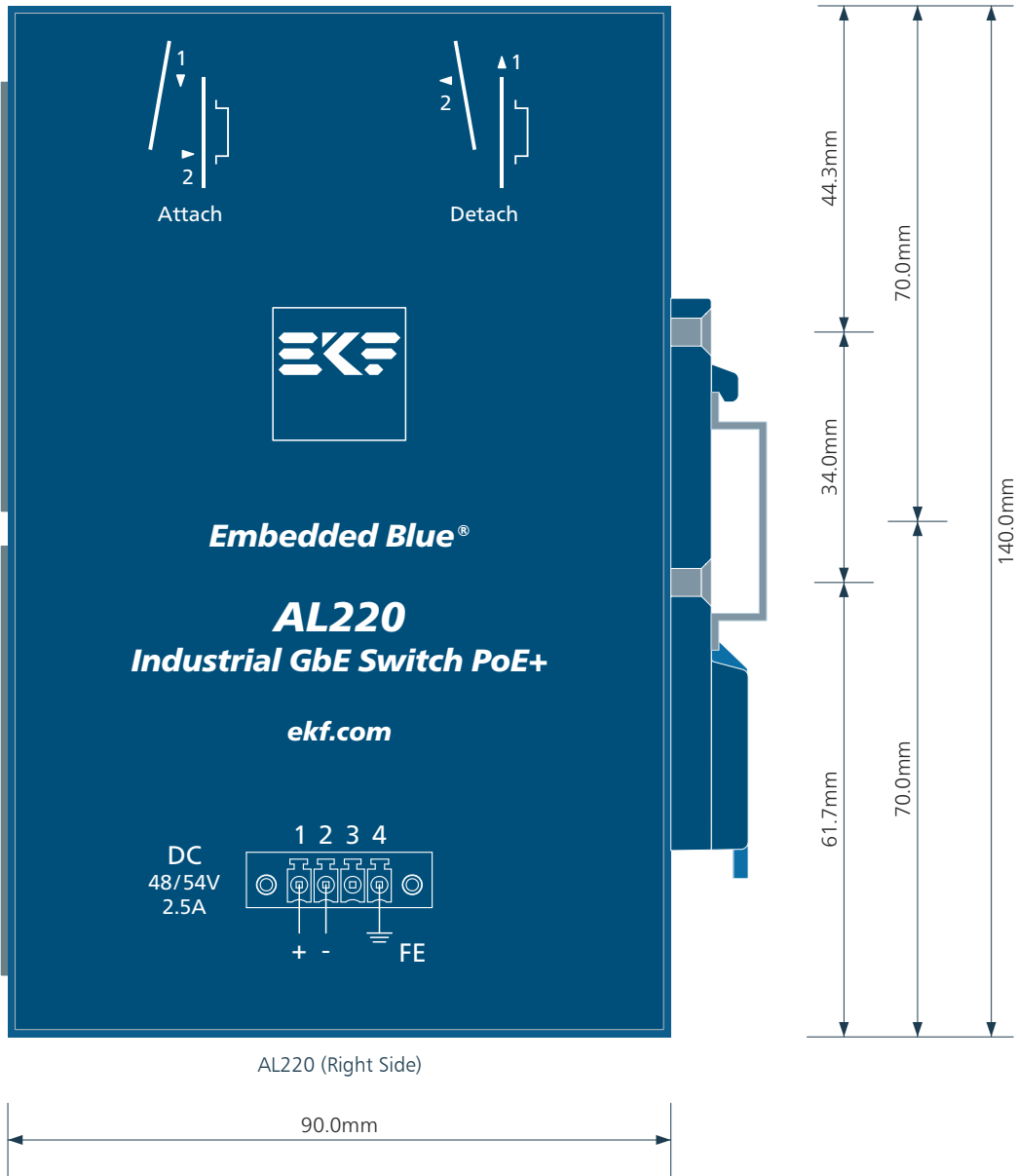
Block Diagram

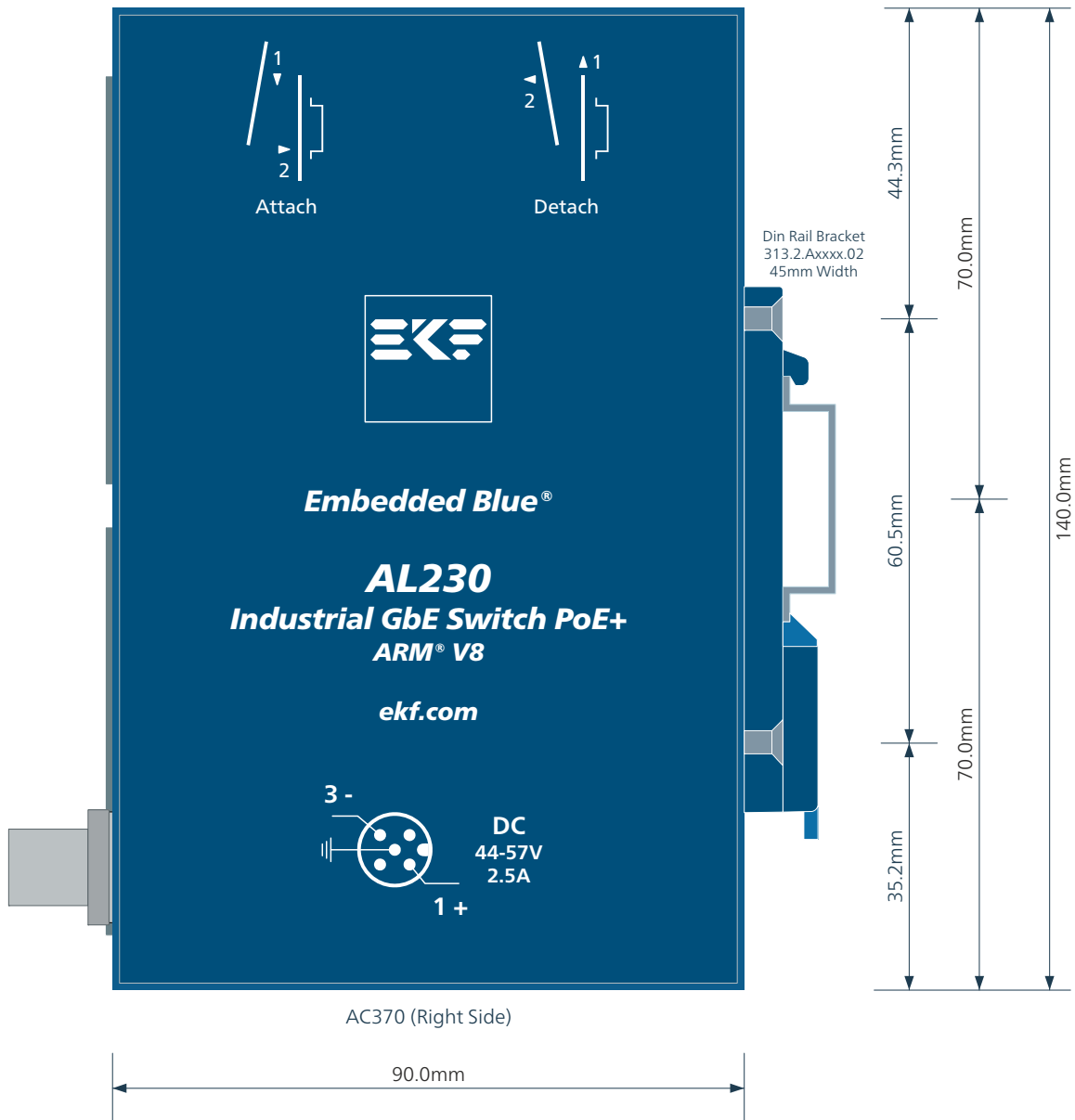






Dimensions

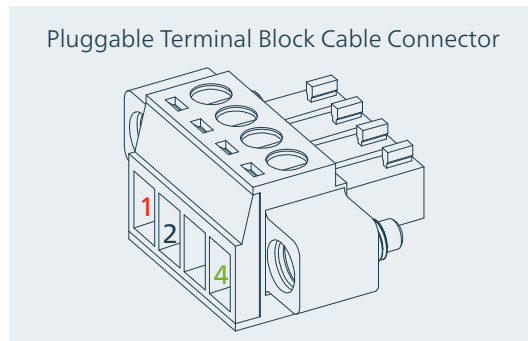




Terminal Block Power Connector

3.50mm 4-Position Terminal Block 8A/Contact		
<p>1 2 3 4</p>	<p>+V=48/54VDC pin assignment valid from PCB Rev. 1 off</p>	1 +V
		2 GND
		3 RSV
		4 FE (Shield)

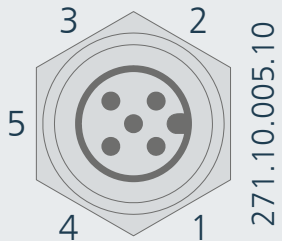
Mating Plugs w. Screw Lock	
EKF	245.35.04.20
FCI Amphenol	20020000-C041B01LF
Molex	39504-0004
Phoenix Contact	1847071
Tyco	284510-4





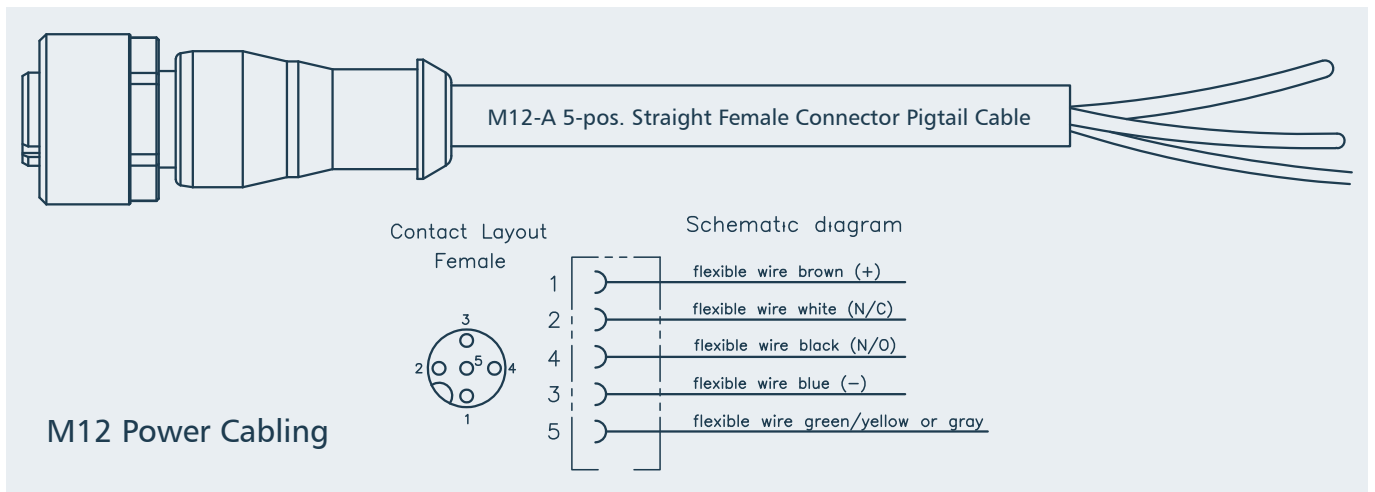
Mating DIN Rail Power Supply	
EKF	352.1.120.48.1
Meanwell	NDR-120-48, 120W 48VDC/2.5A

M12 Power Connector (AL230)

PCB Connector M12-A 5-Position Male 4A/Pin	
	+V=48/54VDC
	1 +V
	2 RSV
	3 GND
	4 RSV
5 FE (Shield)	

FE (Functional Earth) is a connection to the metal case. Attachment e.g. to PE of a cabinet is not mandatory for functionality of the switch, but can improve the overall noise immunity under harsh conditions.

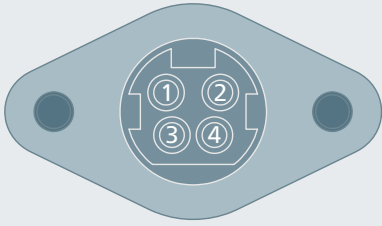
Mating Pigtail Cable Assemblies 1.5m w. Female Straight Plug	
EKF	271.10.505.22.015
Phoenix Contact	1669822
Tyco (TE)	2273035-1



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

Mating DIN Rail Power Supply	
EKF	352.1.075.24.1
Meanwell	NDR-75-24, 75W 24VDC/3.2A

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)
		Shield	Reserved *

* power supply cable harness may connect GND to Shield



Option Rear Connector

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

Din Rail Handling



https://www.ekf.com/a/DIN_Rail_on_off_500x280.mp4

Ordering Information

For popular AL220/AL230 SKUs please contact sales@ekf.de



Related Products

AC370	ARM® V8 Industrial Microcontroller
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
AL600	Single Pair Ethernet switch 7x100BASE-T1 (IP20) 1x1000BASE-T
AL700	Single Pair Ethernet switch 5x100BASE-T1 (M8-Hybrid) 2x1000BASE-T

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EKF Elektronik GmbH
Philipp-Reis-Str. 4 (Haus 1)
Lilienthalstr. 2 (Haus 2)
59065 HAMM
Germany



Phone +49 (0)2381/6890-0
Fax +49 (0)2381/6890-90
Internet www.ekf.com
E-Mail sales@ekf.com