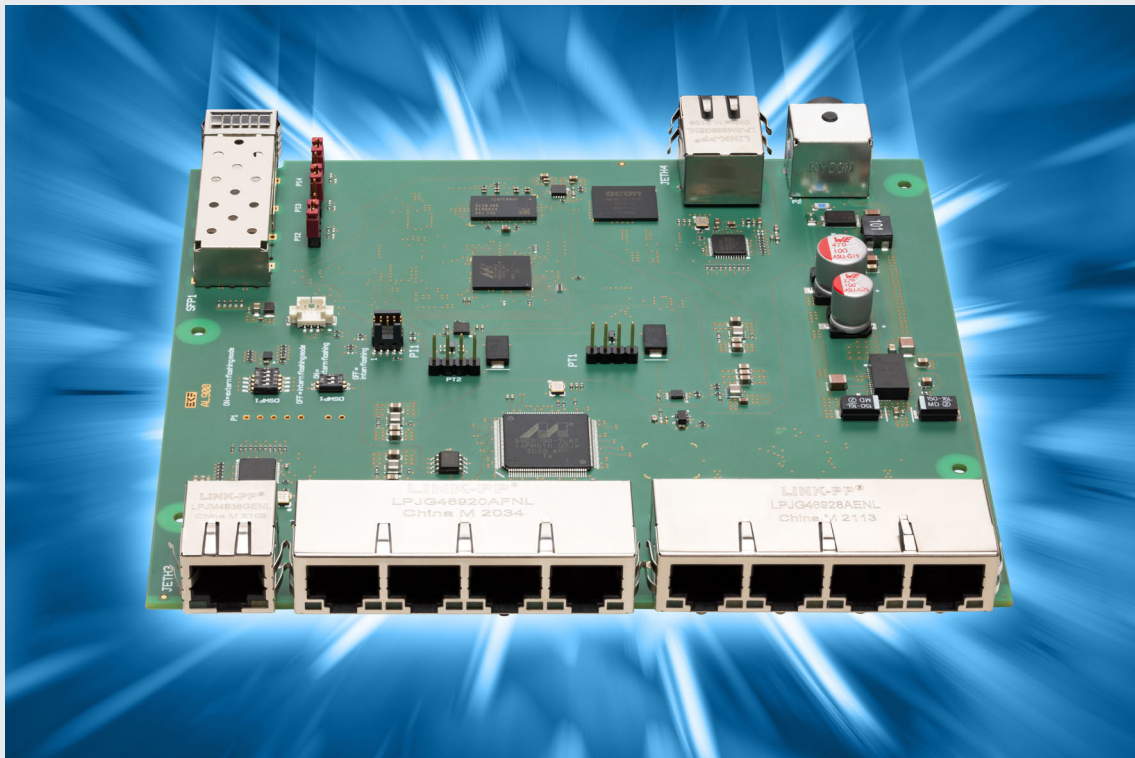




GL900 • *Embedded Gold*

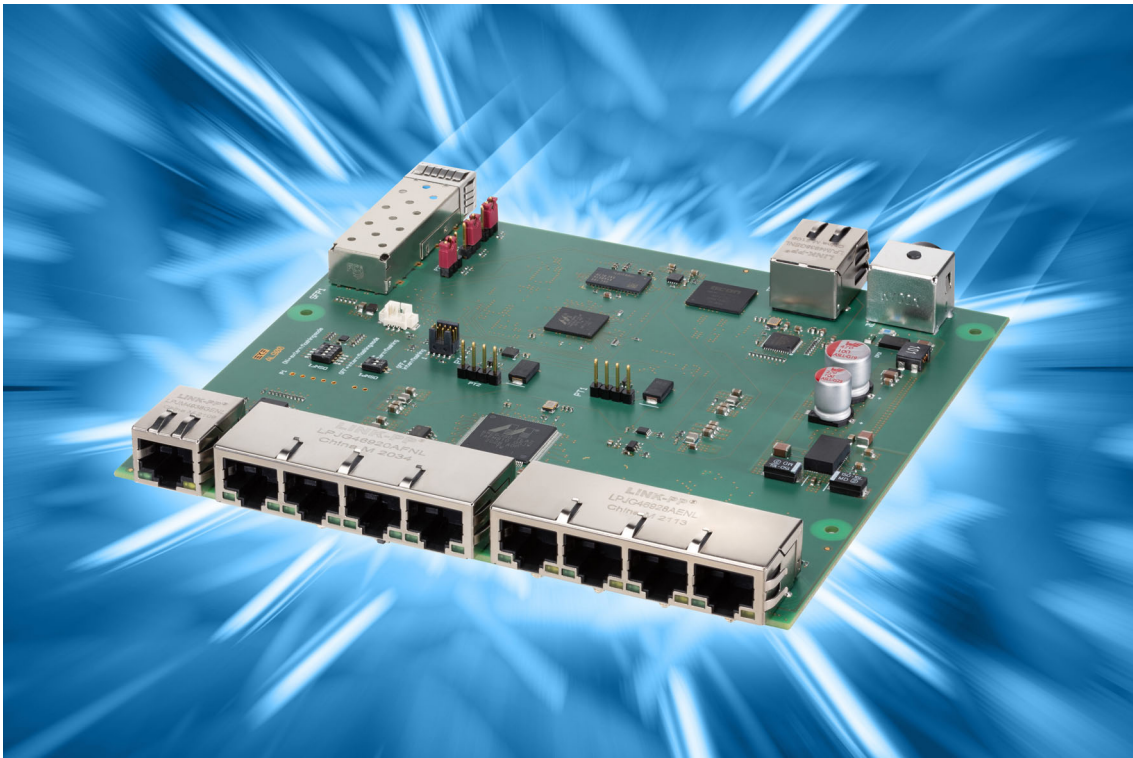
Manageable Gigabit Ethernet Switch
9 x 1000BASE-T (4 x PoE+)
AVB/TSN Protocol Stack



Overview

The GL900 is a 9-port PoE+ capable Gigabit Ethernet switch board, designed for rugged industrial applications. The PCB is provided with 1000BASE-T RJ45 jacks at the front, and in addition a SFP cage at the rear edge for switch expansion. Four front ports are enabled for 802.3at Power-over-Ethernet, up to 120W in total.

The GL900 is equipped with the Marvell® 88E6390 (Peridot) Gigabit Ethernet switch, and in addition the Marvell® Armada® 88F3700 SoC (ARM® v8 Cortex-A53). While the powerful switch is basically self-managed, the CPU enables additional features such as AVB/TSN operation, by means of the optional software stack.



Technical Features

General

- ▶ 1000BASE-T Ethernet switch, 9 + 1 ports
- ▶ PCB assembly, intended for rugged industrial applications, ready-for-use (Embedded Gold)
- ▶ 9 x RJ45 Gigabit Ethernet front connectors
- ▶ 4 x 802.3at PoE+ (up to 30W/port)
- ▶ PoE+ support up to 120W in total
- ▶ 1 x SFP 2500BASE-X rear connector

- ▶ Self-managed operation, or ARM® V8 CPU management support
- ▶ Protocol options e.g. AVB/TSN & VLAN

- ▶ PCB Dimensions: 152mm (W) x 139mm (D) w/o connector overlap
- ▶ Rear edge 4-pos. circular power adapter connector
- ▶ Nominal 48VDC/54VDC power input operation

Front I/O

- ▶ 9 x RJ45 Ethernet front connectors in total
- ▶ 8 x AVB capable ports 1-8, 1 x non AVB capable port 0
- ▶ 4 x PoE+ enabled ports 5-8
- ▶ 1000BASE-T, 100BASE-TX, 10BASE-T compliant data transfer rate

Rear I/O

- ▶ 1 x SFP 2500BASE-X (switch board to switch board interconnection for doubling the port count)
- ▶ 1 x RJ45 Ethernet connector (CPU management console) 1000BASE-T, 100BASE-TX, 10BASE-T
- ▶ 1 x Power jack 4-pos. circular receptacle (aka Power-DIN connector)

Gigabit Ethernet Switch

- ▶ Marvell® 88E6390 (Peridot) Gigabit Ethernet switch
- ▶ Front ports GbE MAC/PHY 1000BASE-T
- ▶ 4 x RJ45 connectors PoE+ enabled
- ▶ 5 x RJ45 connectors w/o. PoE+
- ▶ 1 x SFP 2.5Gbps SerDes (two GL900 boards can be virtually combined into a single switch)
- ▶ 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 or management *

* CPU Software stack required, for front ports 1-8 & SFP rear port

Technical Features

CPU

- ▶ Marvell® Armada® 88F3720 dual-core or 88F3710 single-core SoC
- ▶ ARM® v8 Cortex-A53
- ▶ Up to 1GHz for industrial temperature range
- ▶ 32 KB-instruction / data (4-way) set associative L1 cache with parity/ECC protection
- ▶ Integrated power switches for dynamic shut down of CPU cores and unused functions
- ▶ Optimal performance-per-Watt
- ▶ High-performance security offload engine including IPSec, SSL, DTLS, and IKE
- ▶ Hardware compliance with ARM Trustzone® architecture for DRM
- ▶ FIPS-140 certified
- ▶ DDR4 2400 1GB, high-speed DRAM memory controller
- ▶ e•MMC 5.1 Flash 16GB (up to 64GB)
- ▶ SPI Flash 64Mb
- ▶ 1 x 2.5 Gigabit Ethernet (SERDES) in use for switch host management
- ▶ 1 x 1 Gigabit Ethernet (RGMII) for rear panel I/O usage 1000BASE-T RJ45

Ecosystem

- ▶ Complete SDK available including U-Boot, Mainline Linux BSP (Marvell NDA customers only)
- ▶ Ubuntu 18.04 & Buildroot
- ▶ OpenWrt, Yocto, Linaro Open Data Plane (ODP) - support on request
- ▶ KVM and Containers - support on request
- ▶ JTAG port (on-board pin header) suitable for deep hardware/software debugging
- ▶ UART wired to USB via FT234XD for diagnosis and programming
- ▶ USB UART drivers suite (FTDI website)

Software

- ▶ Web Server for firmware updates (rear I/O RJ45)
- ▶ AVB/TSN Stack (optionally available, RJ45 front ports 1-8):
 - ▶ IEEE 802.1Q-2011 - Qav (FQSS) & Qat (SRP)
 - ▶ IEEE 802.1AS-2011 - Time Synchronization (PTPv2)
 - ▶ VLAN
 - ▶ AVNU® MILAN® Bridge Certified
- ▶ Industrial and custom specific protocols on request

Power over Ethernet

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

Technical Features

Applications

- ▶ General industrial networking, Real-Time/TSN, machine vision & monitoring
- ▶ Infotainment/professional audio/video - AVB/Dante™/Milan®
- ▶ Systems with need for custom specific protocols and management 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
- ▶ EC Regulatory EN55035, EN55032, EN62368-1 (CE)
- ▶ FCC (planned)
- ▶ MTBF 68.6 years

Power Requirements

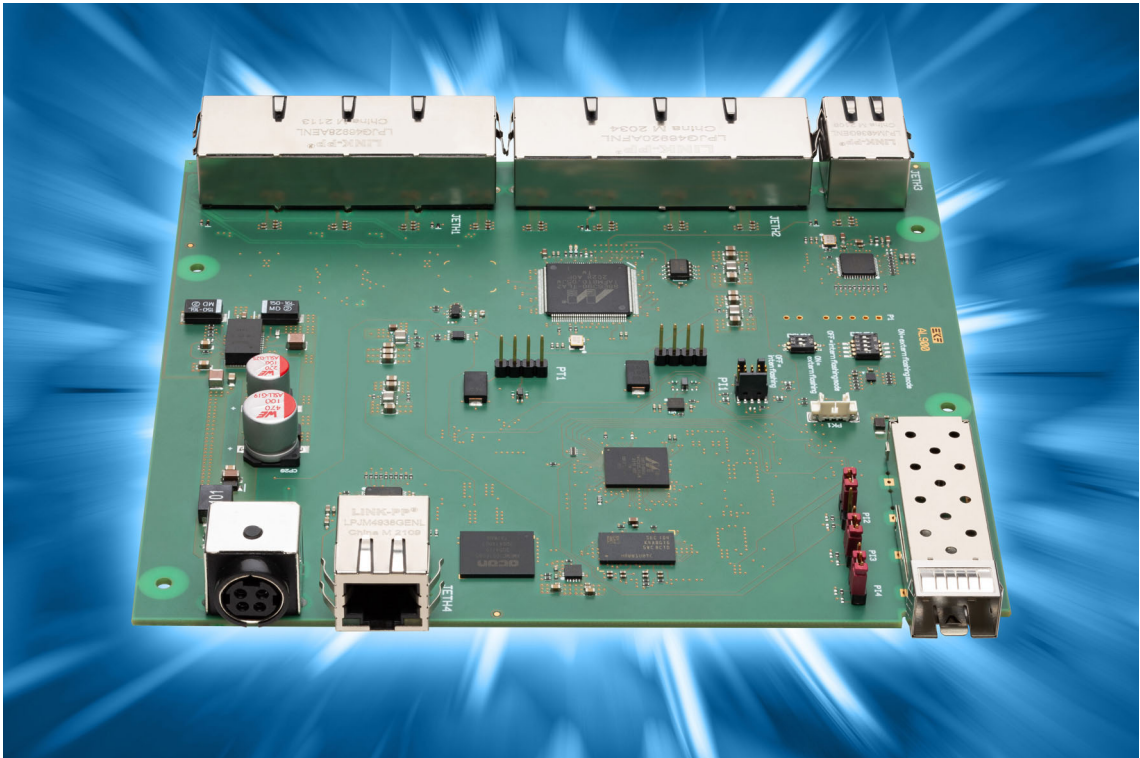
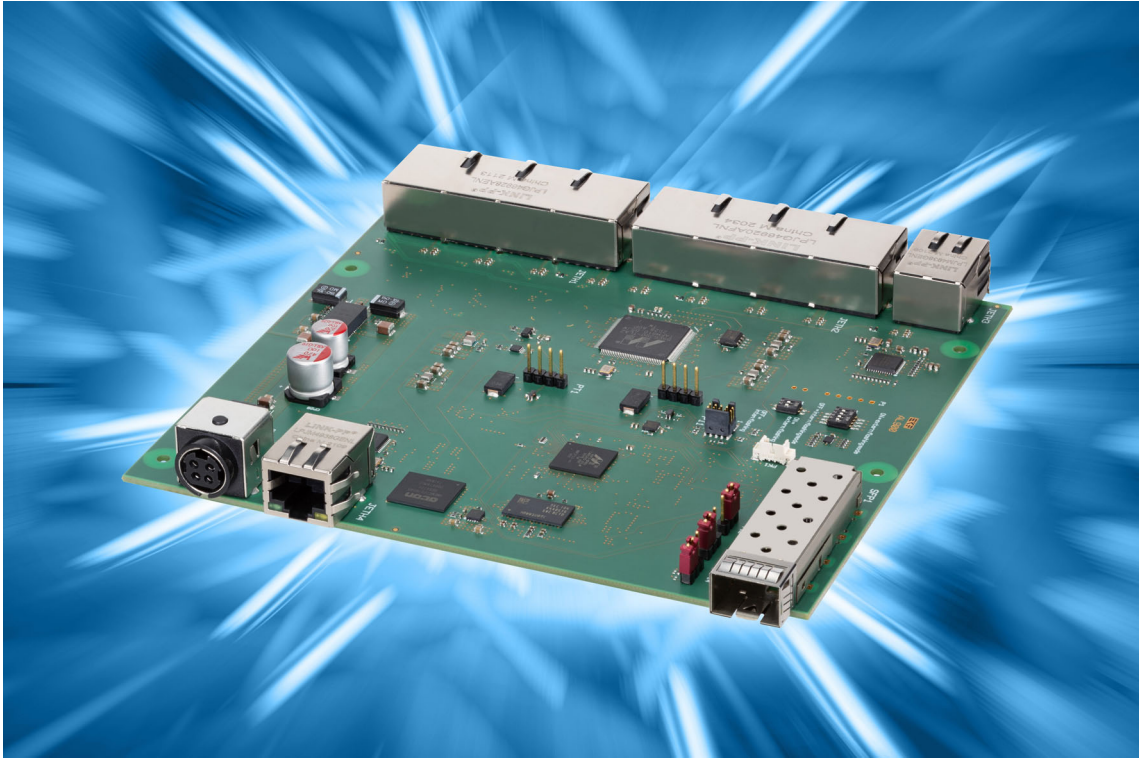
- ▶ DC Input, 44V-57V (48VDC, 54VDC), 3A max.
- ▶ Power consumption 135W max. (@120W external load)
- ▶ Fast acting chip fuse (PCB soldered type)
- ▶ Protected against reverse polarity
- ▶ ESD protection (TVS)
- ▶ Common mode input filter
- ▶ Rear power connector (desktop supply 4-pos. circular connector)

items may be subject to changes

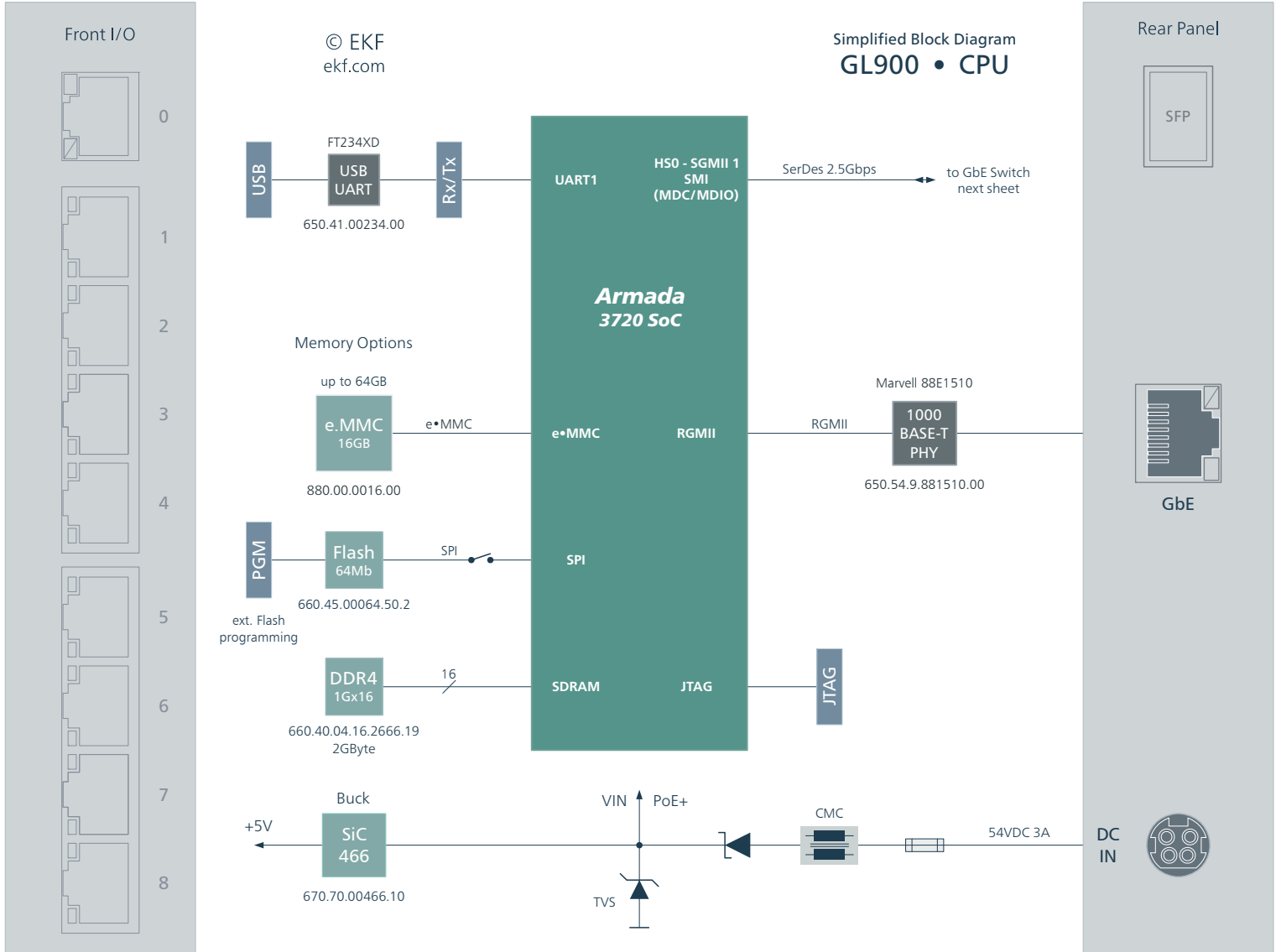
Please note: For the current revision level of this which describes known issues and their potential availability of this document, which may be

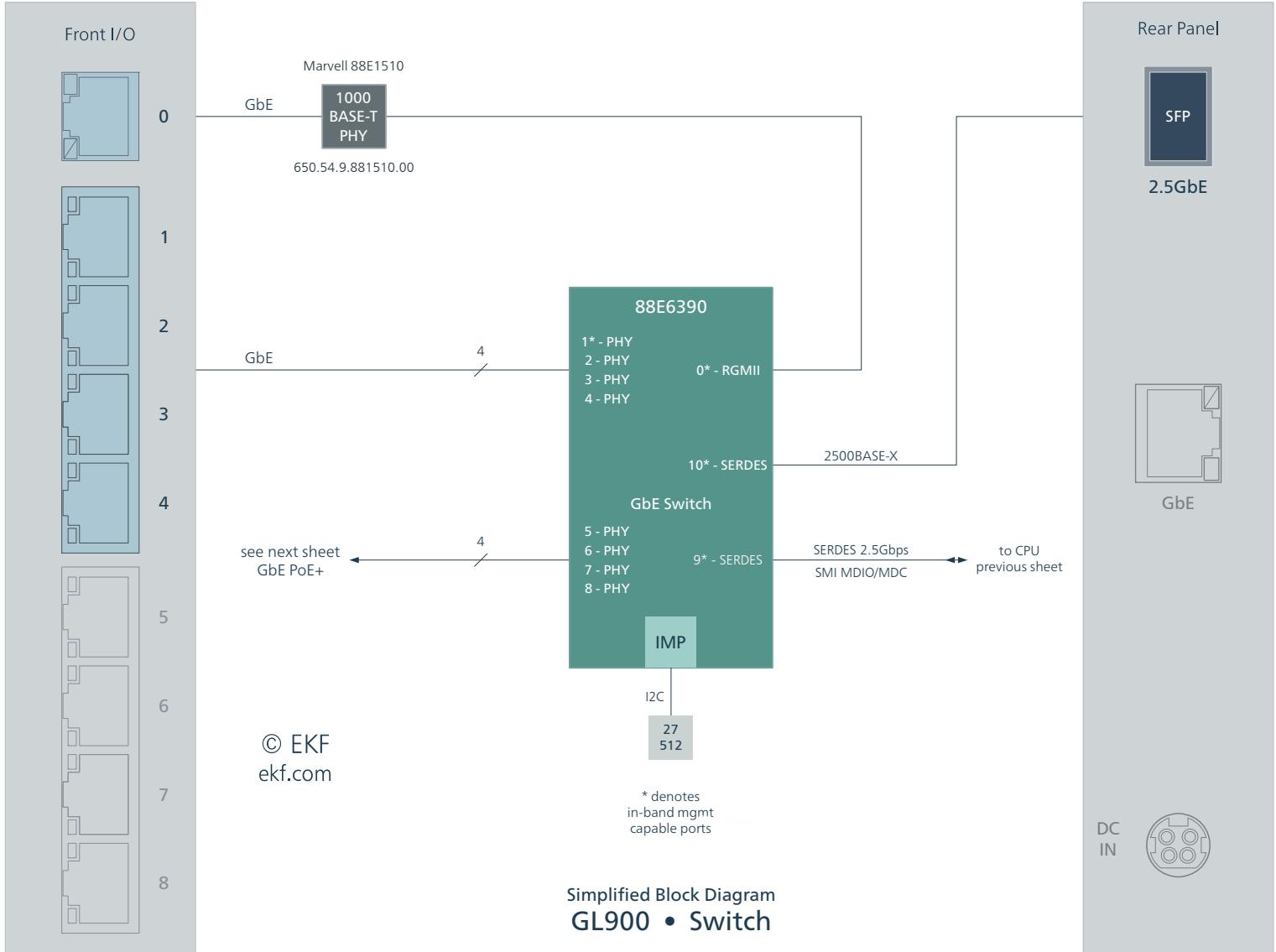


product a 'Sightings Report' is additionally available, workaround. Please contact support@ekf.com for important for proper usage.



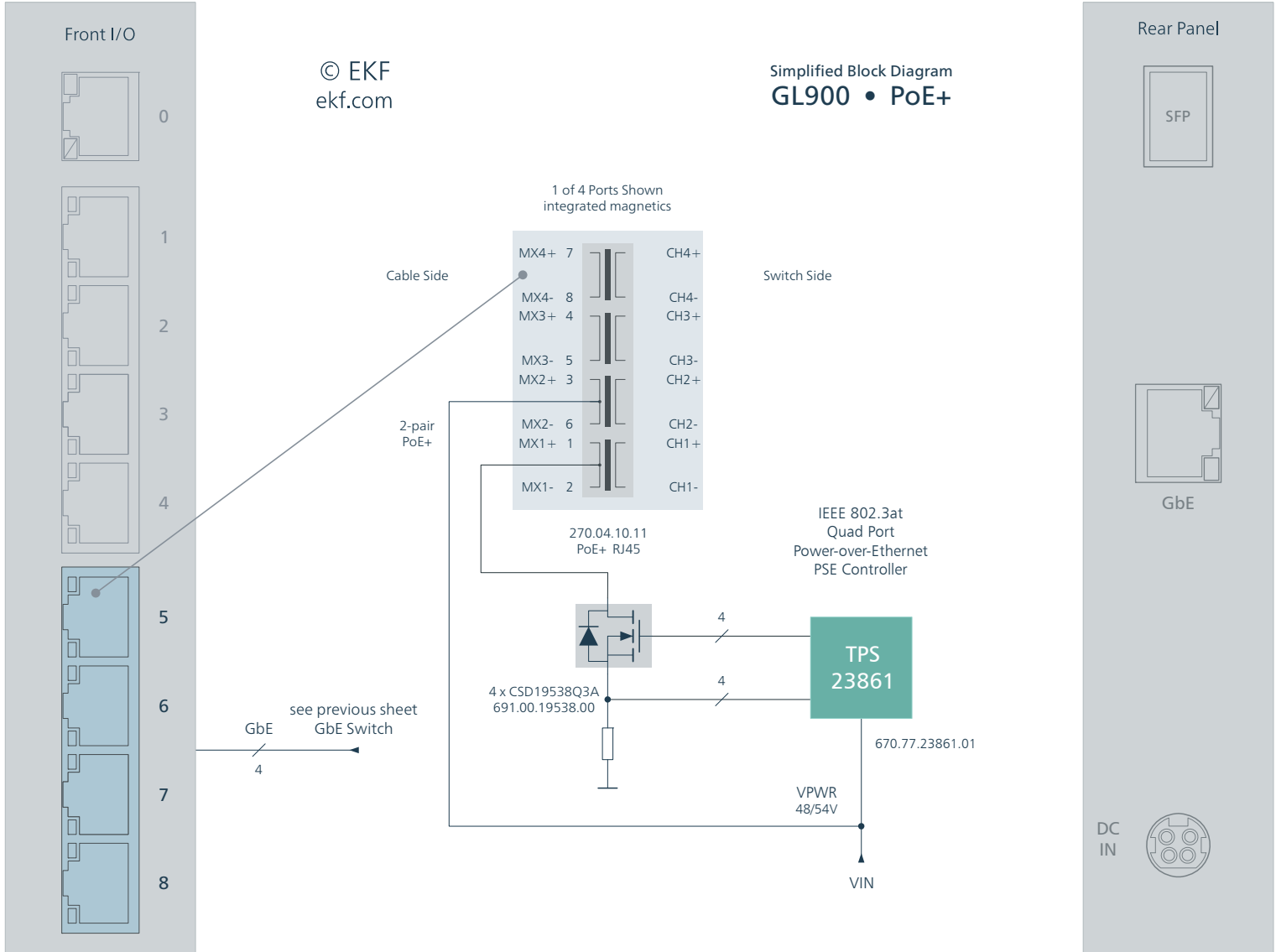
Block Diagram



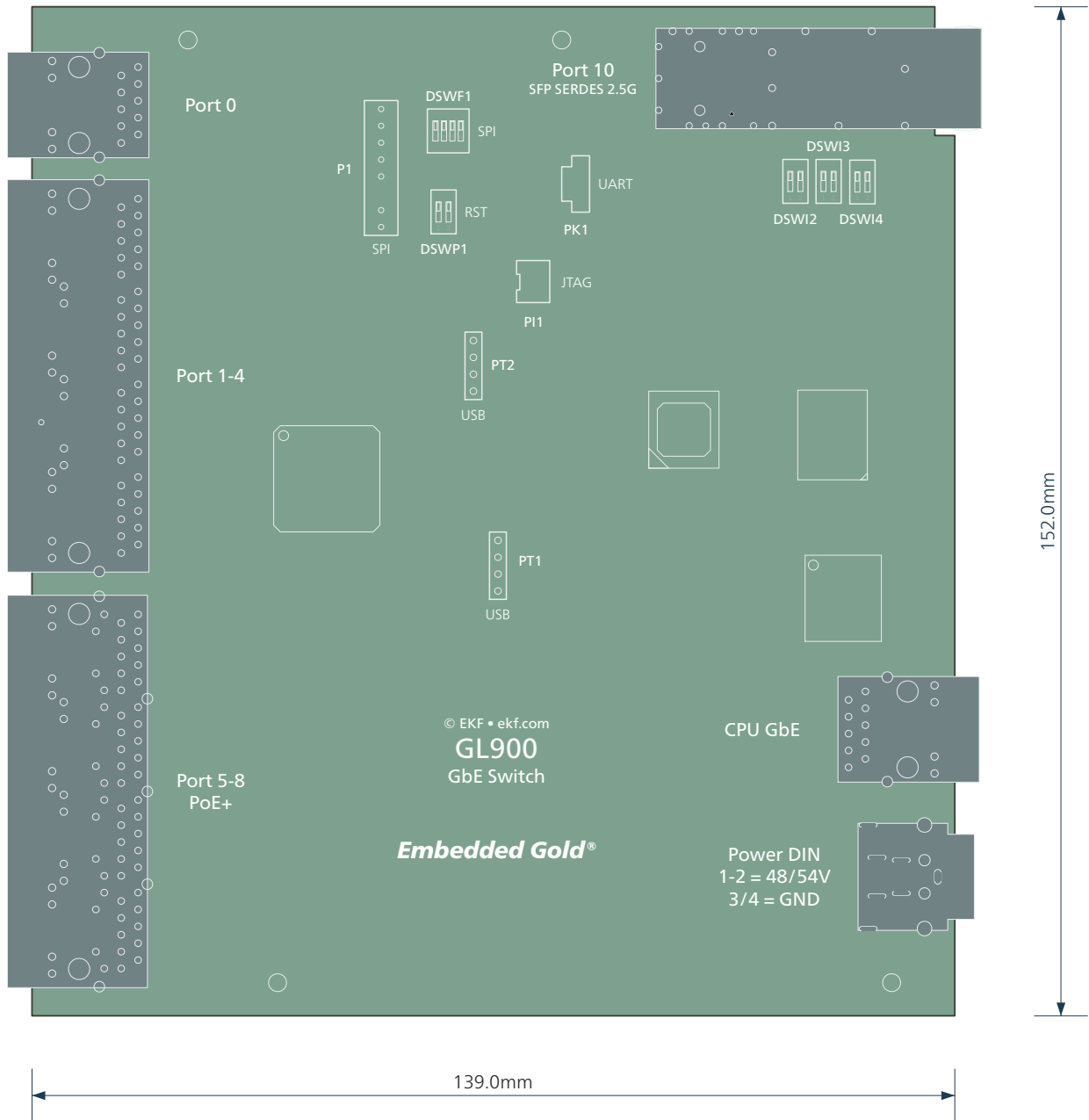


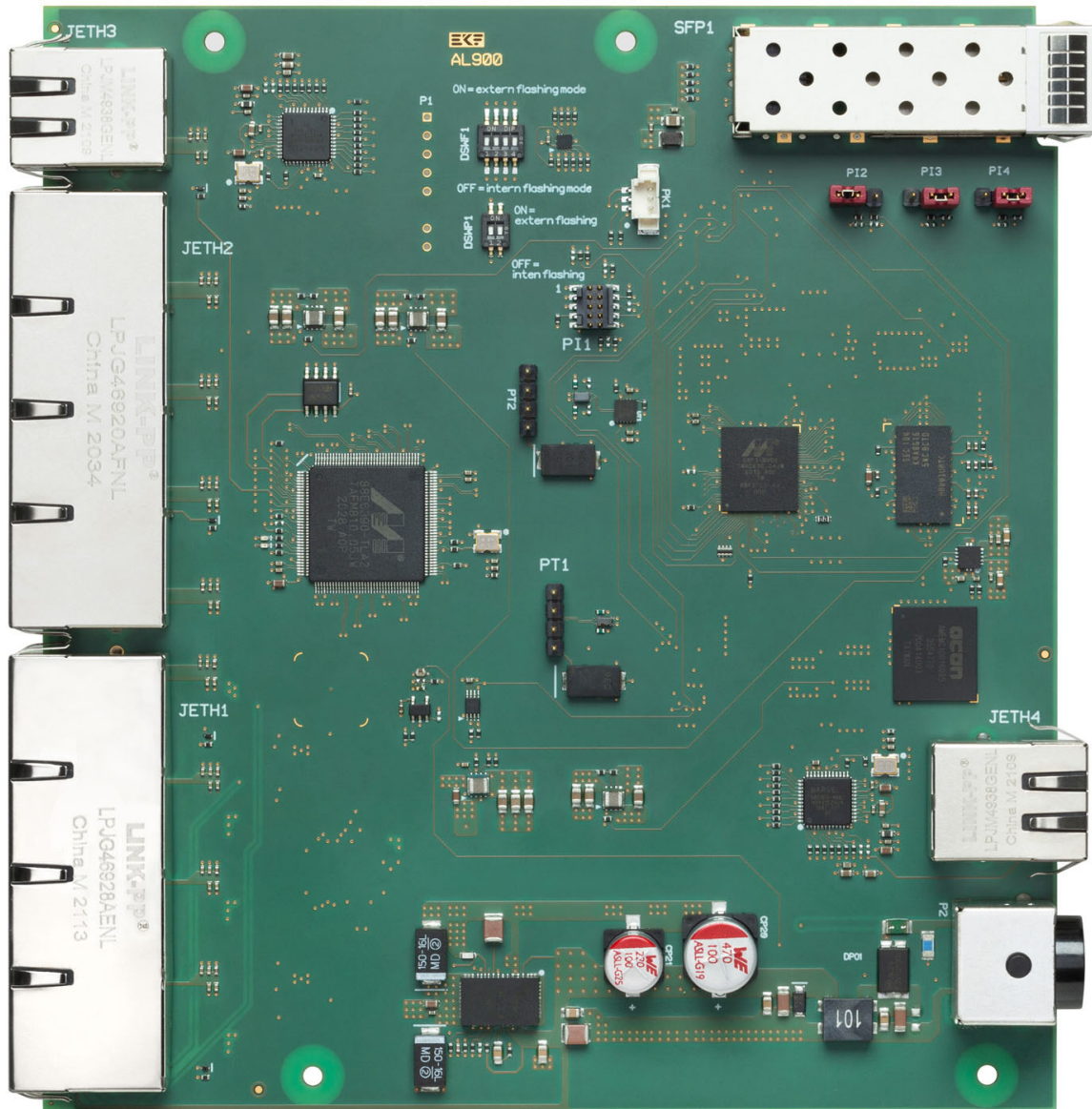
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ekf.com

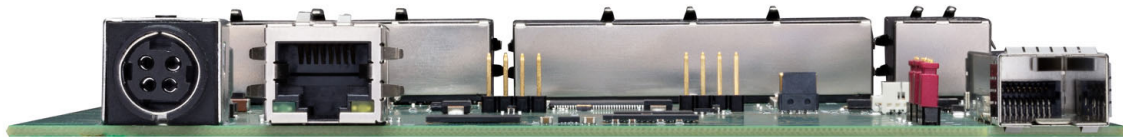
Simplified Block Diagram
GL900 • PoE+



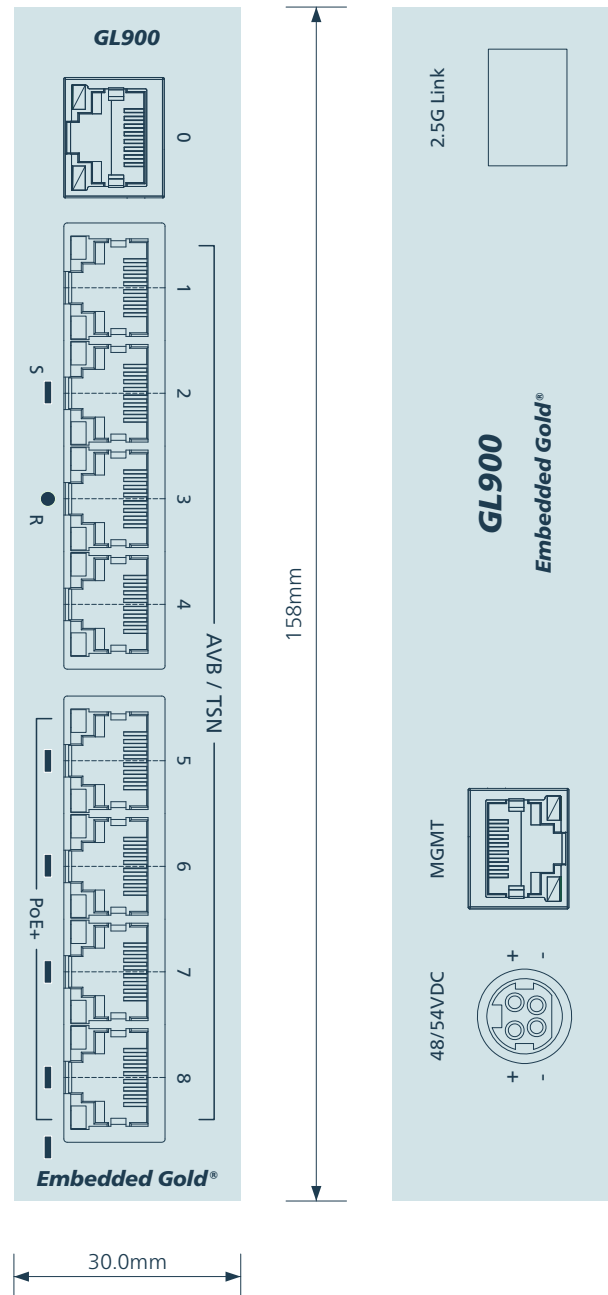
Dimensions



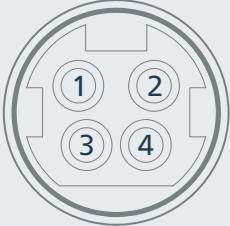




Recommended Panel Design



Power Connector

Circular 4-Position Power Receptacle			
 <p>271.04.004.20</p>	<p>+V=48/54VDC</p>	1	+V
		2	+V
		3	-V (GND)
		4	-V (GND)
		Shell/Inner Shield	NC
		Outer Shield	FE (Frame)

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

Ordering Information

For popular GL900 SKUs please contact sales@ekf.de

Product Homepage

<https://www.ekf.com/g/gl900/gl900.html>

Related Products

GJ100	PoE+ Injector M12-X
GJ200	PoE+ Injector RJ45
GL100	5 to 15 Port unmanaged GbE switch M12-X
GL200	8 Port unmanaged GbE switch RJ45
GL220	8 Port unmanaged PoE+ GbE switch RJ45
GL600	7 Port SPE (Single Pair Ethernet) switch 100BASE-T1







Webserver



Login

Username:
Password:



-  **CHOOSE FILE** | **UPLOAD**
-  **UPDATE**
-  **VERSION**
-  **REBOOT**
-  **DEBUG**
-  **LOGOUT**

the webserver is available via the rear I/O RJ45 jack

Embedded Gold

Ready-for-Use Industrial PCB Assemblies



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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