GL200 - GL220 • *Embedded Gold*

Industrial Gigabit Ethernet Switch

Technical Features

General

- 8-Port 1000BASE-T Ethernet switch, basically self-managed operation
- GL200 Version - non PoE
- GL220 Version - PoE+
- Intended for rugged industrial applications, ready-for-use (*Embedded Gold*)
- Industrial PCB assembly
- PCB Dimensions 133.0mm x 78.0mm
- 8 x RJ45 Gigabit Ethernet connectors
- GL220 Version 802.3at PoE+ (up to 30W/port)
- Terminal block power connector
- Wide DC power input operation 9-57V (GL200)
- Nominal DC power input 48V/54V as required for PoE+ (GL220)
- Option scalable 16/24 GbE ports (stacked construction up to three GL200/GL220 PCBs)
- Option CPU mezzanine board GC370 stacked (for AVB/TSN protocol software) - GL210/GL230

I/O Connectors

- RJ45 Ethernet connectors, with integrated magnetics
- 1000BASE-T, 100BASE-TX, 10BASE-T compliant data transfer rate
- Terminal Block 3.5mm pitch 4-position screw lock power input

Gigabit Ethernet Switch

- Marvell® 88E6390 (Peridot) based Gigabit Ethernet switch
- PCBs can be stacked for 16/24 ports (option)
- Switches connected via 2.5Gbps SERDES (mezzanine stacking connectors)
- Integrated GbE MAC/PHY 1000BASE-T
- RJ45 Connectors w. integrated 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 (managed solution with additional mezzanine CPU card GC370)
- Up to two mezzanine stacking connectors for communication to adjacent switch PCB or CPU (option)
- Option GC370 management CPU ARM® v8 mezzanine card (GL210 - GL230)
- Stacked switch PCBs are virtually combined into a single switch with aggregated performance

Technical Features

Power over Ethernet

- PSE PoE+ according to IEEE 802.at
- Maximum power delivered per port 30W
- Maximum power delivered in total 120W
- IEEE 802.at PSE Type 2 mode A (power over RJ45 pins 1/2 & 3/6, 600mA)
- GL220 (unmanaged) or GL230 (with GC370 mezzanine CPU)

Power Requirements

- DC Input, 9 - 57V (12VDC, 24VDC, 48VDC) - GL200
- DC Input, 48VDC, 54VDC - GL220
- Rated power consumption 3W (GL200)
- Rated power consumption up to 125W (GL220 @ 120W external load via PoE+)
- Fast acting chip fuse
- Protected against reverse polarity
- TVS ESD Protection
- Common mode input filter
- 4-Position terminal block power connector, 3.50mm pitch, screw lock removable cable plug

Applications

- For easy system integration
- Industrial networks - IIoT - TSN/AVB*
- Transportation vehicles
- Construction and harvesting machinery
- Railway
- Rugged environments
- Customized connector loading
- Customized board design

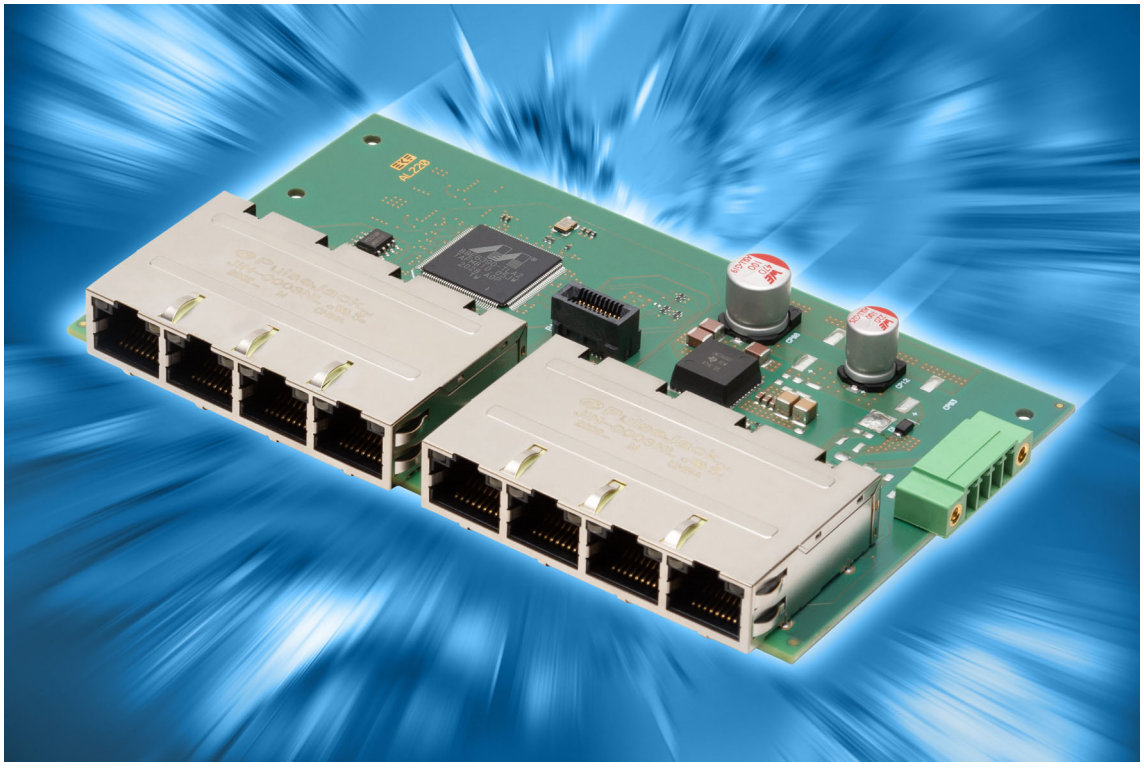
Technical Features

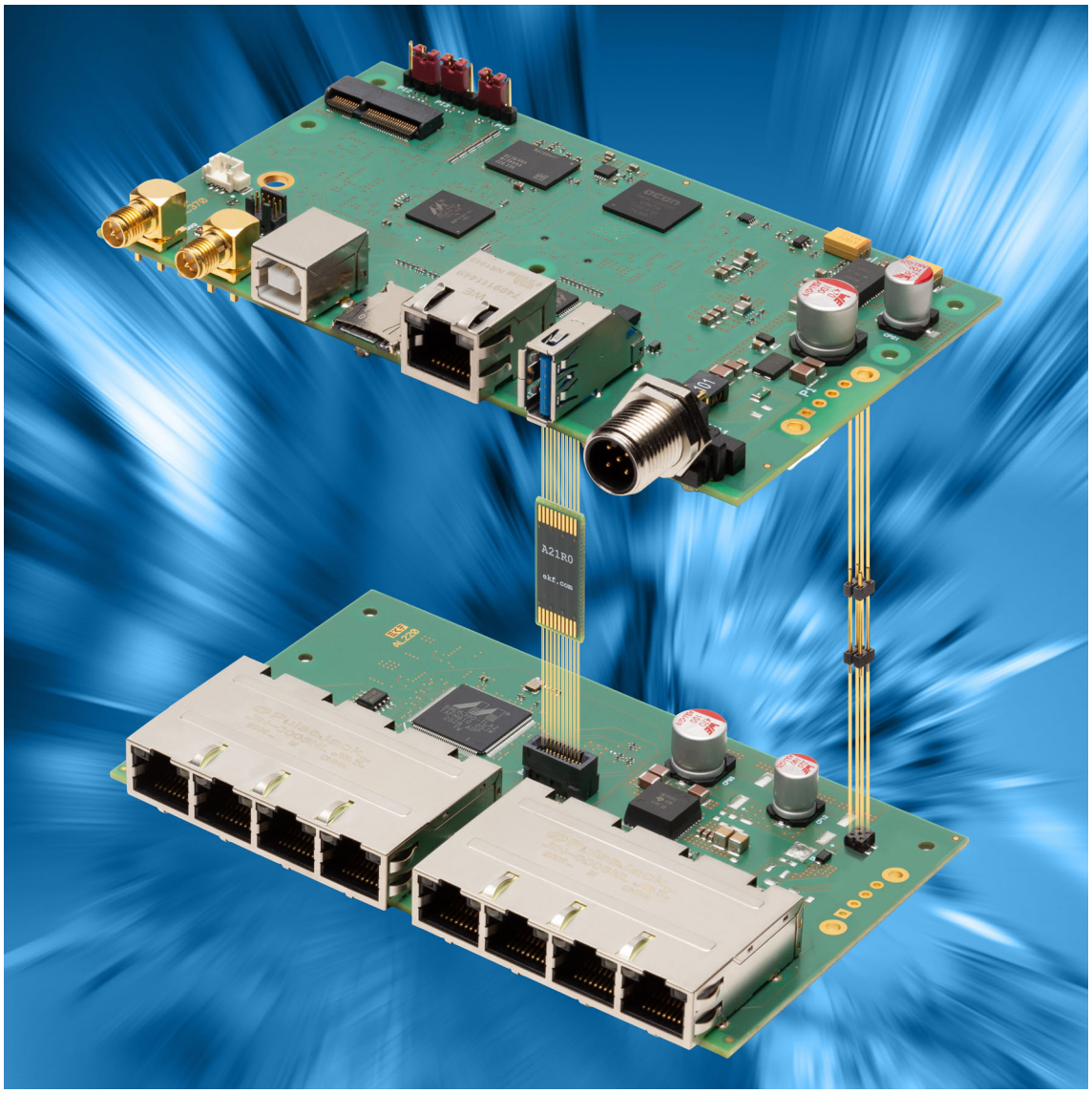
Environmental, Regulatory

- Designed & manufactured in Germany
- ISO 9001 certified quality management
- Long term availability
- Rugged solution
- Conformal coating, sealing, underfilling on request
- 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 EN55024, EN55032, EN62368-1
- MTBF tbd years

* AVB/TSN protocols with additional mezzanine CPU card GC370 support (GL210 - GL230)

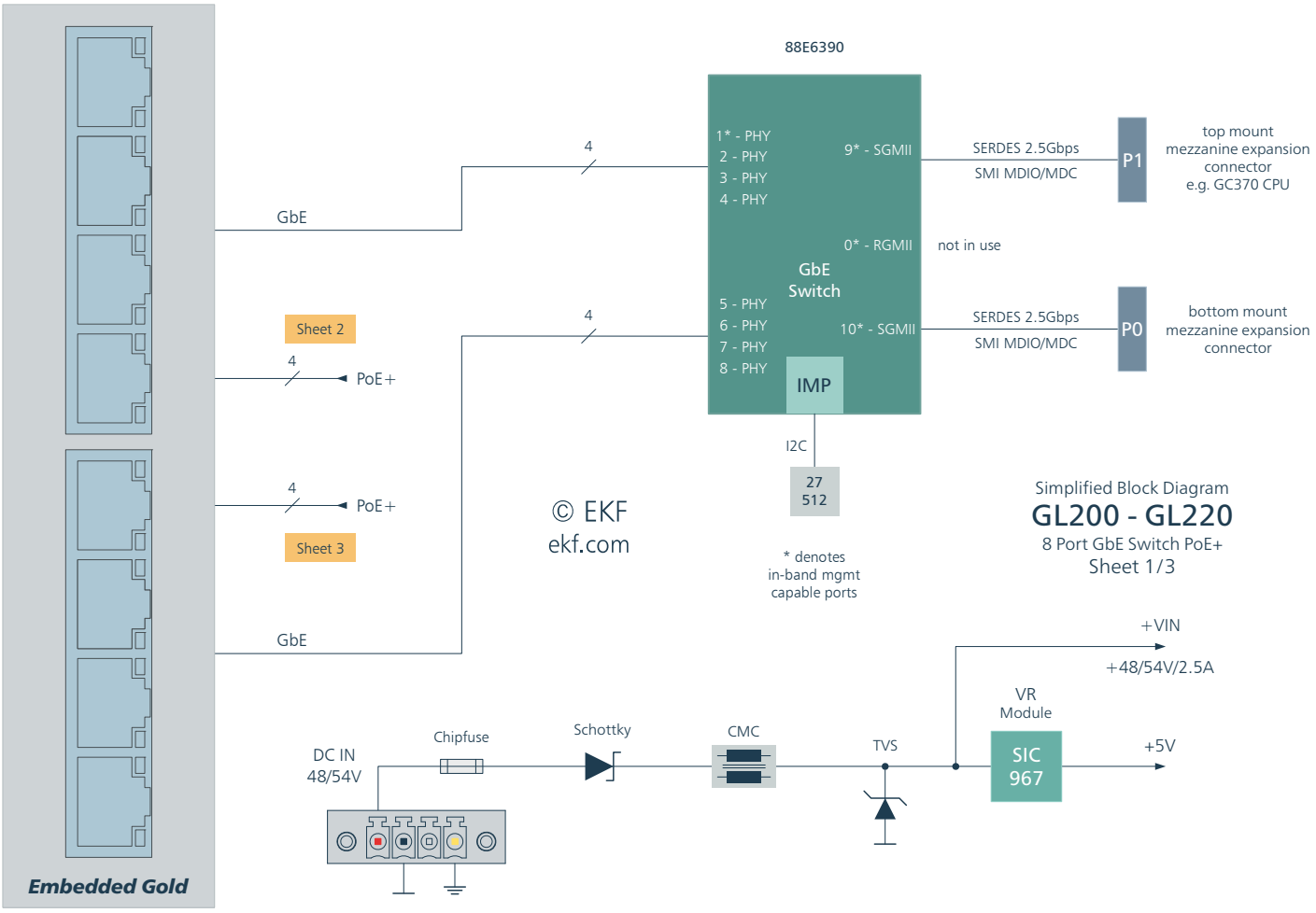
items may be subject to changes

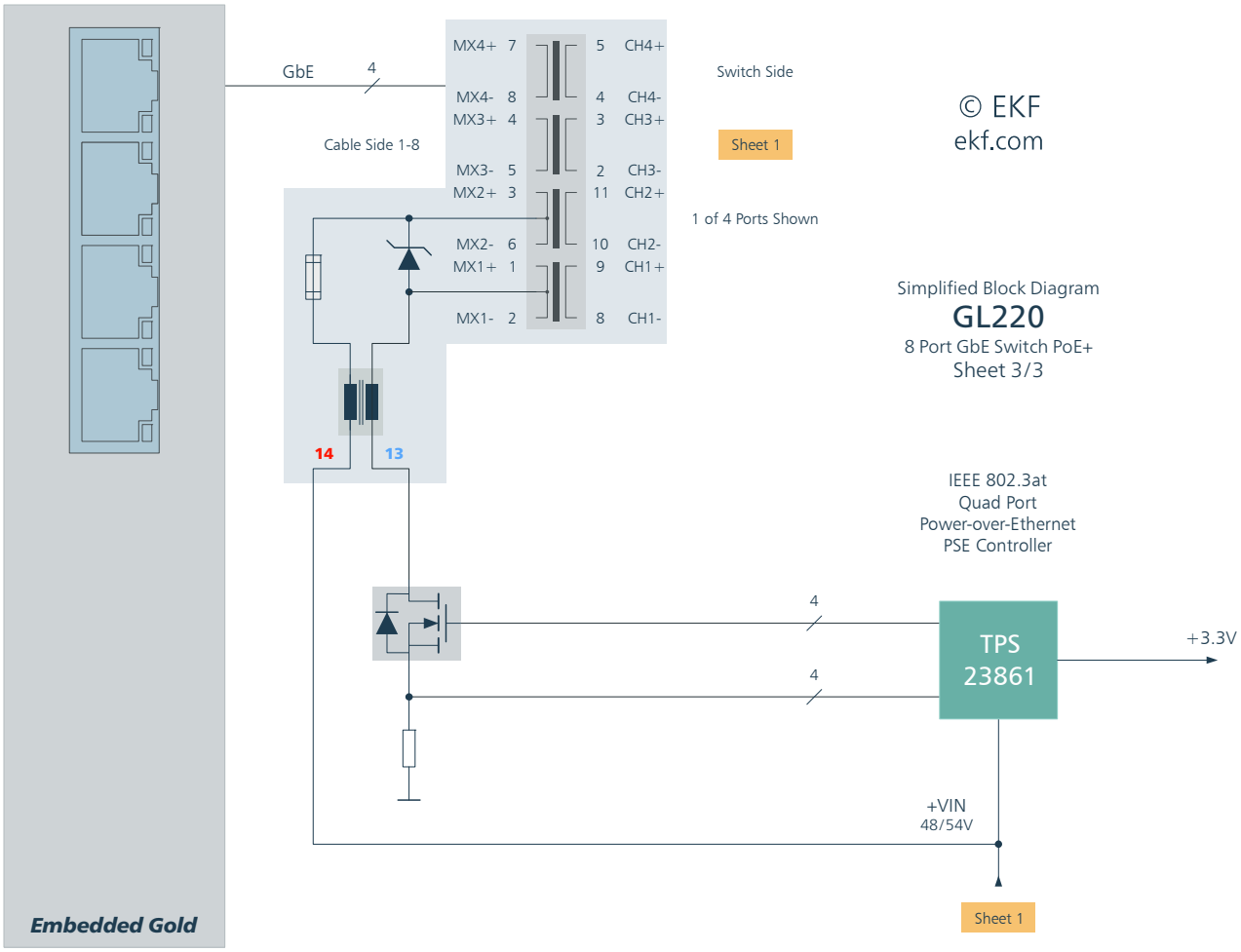


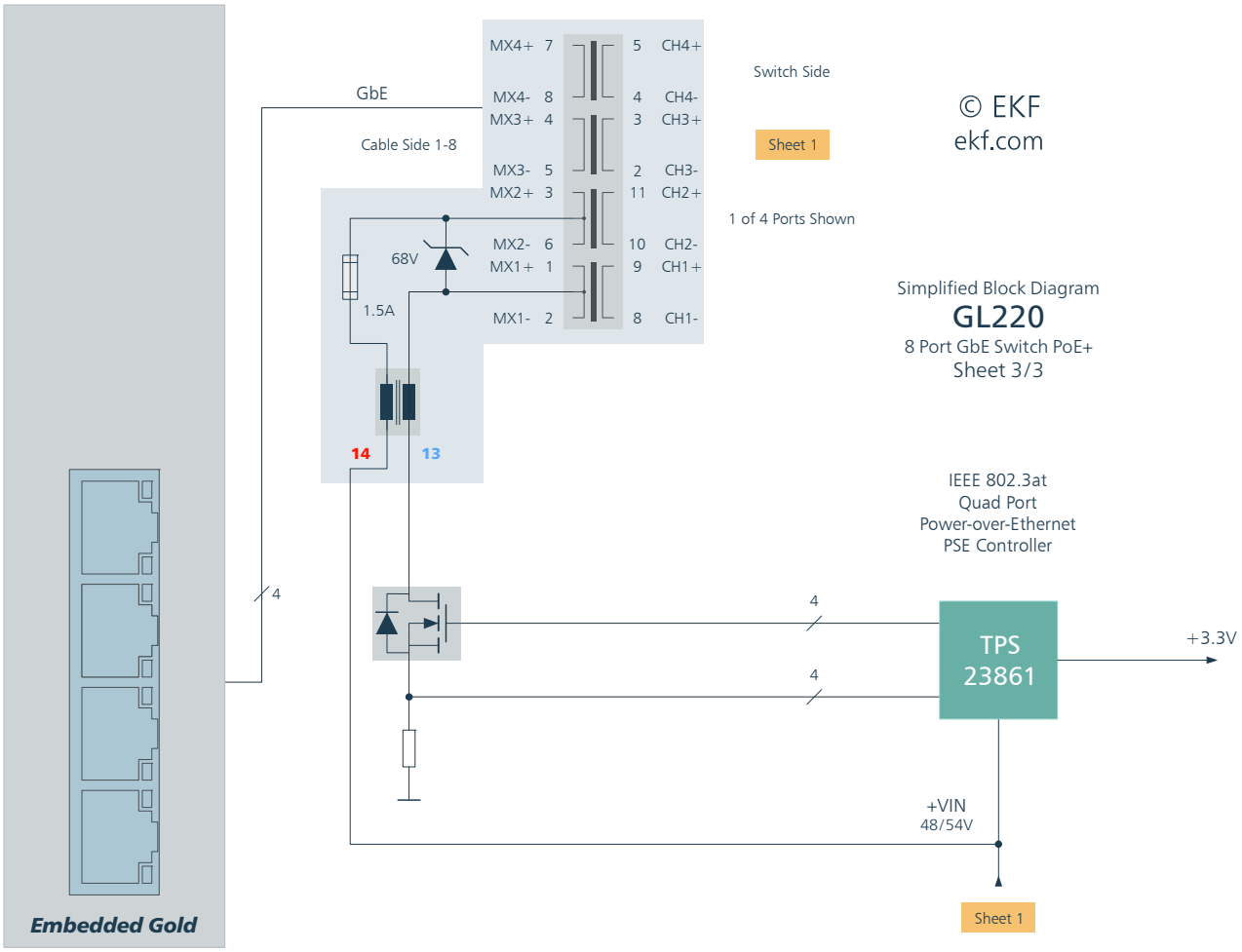


GL200 w. GC370 (CPU Card for AVB Protocol Support)

Block Diagram




GbE
4
Cable Side 1-8
MX4+ 7
MX4- 8
MX3+ 4
MX3- 5
MX2+ 3
MX2- 6
MX1+ 1
MX1- 2
5 CH4+
4 CH4-
3 CH3+
2 CH3-
11 CH2+
10 CH2-
9 CH1+
8 CH1-
Switch Side
Sheet 1
1 of 4 Ports Shown
14
13
© EKF
ekf.com
Simplified Block Diagram
GL220
8 Port GbE Switch PoE+
Sheet 3/3
IEEE 802.3at
Quad Port
Power-over-Ethernet
PSE Controller
4
4
TPS
23861
+3.3V
+VIN
48/54V
Sheet 1
Embedded Gold


GbE
Cable Side 1-8
MX4+ 7
MX4- 8
MX3+ 4
MX3- 5
MX2+ 3
MX2- 6
MX1+ 1
MX1- 2
5 CH4+
4 CH4-
3 CH3+
2 CH3-
11 CH2+
10 CH2-
9 CH1+
8 CH1-
Switch Side
Sheet 1
1 of 4 Ports Shown
68V
1.5A
14
13
4
4
4
TPS
23861
+3.3V
+VIN
48/54V
Sheet 1
Embedded Gold
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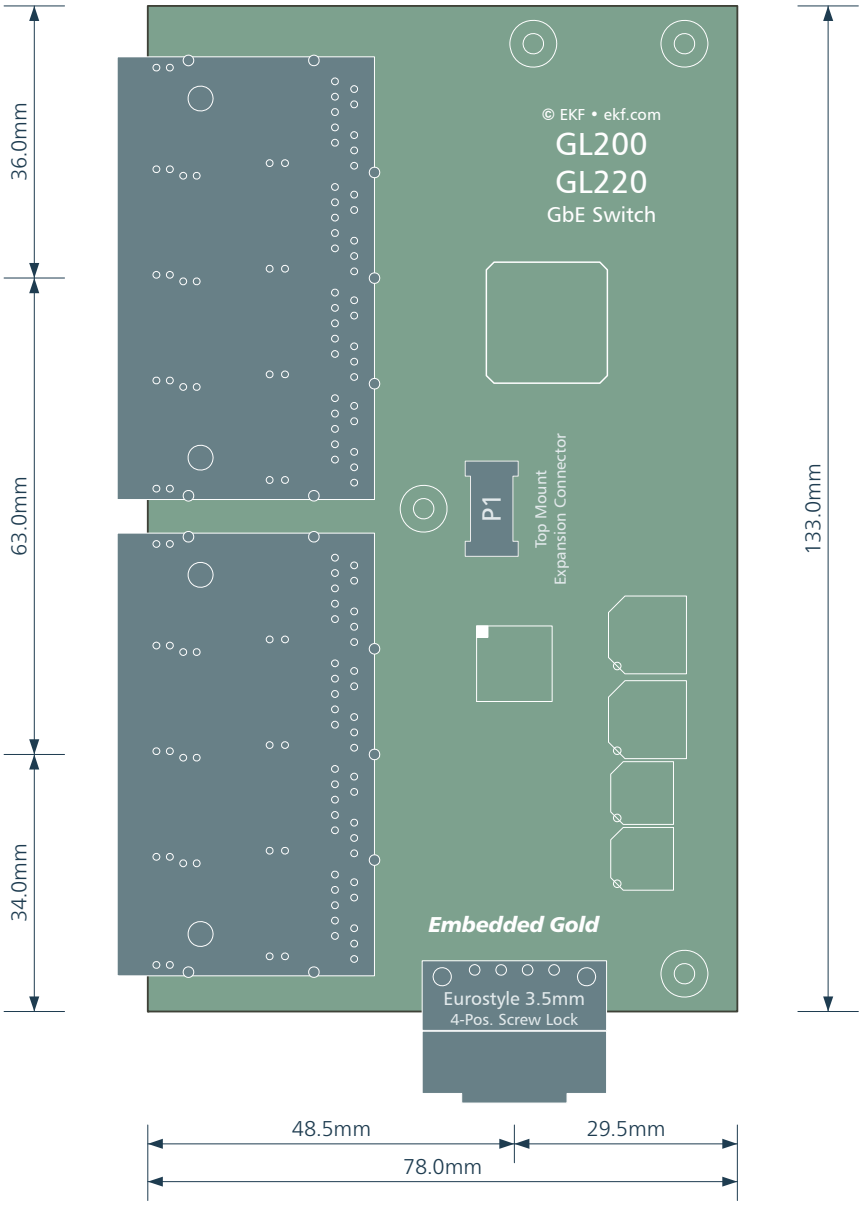
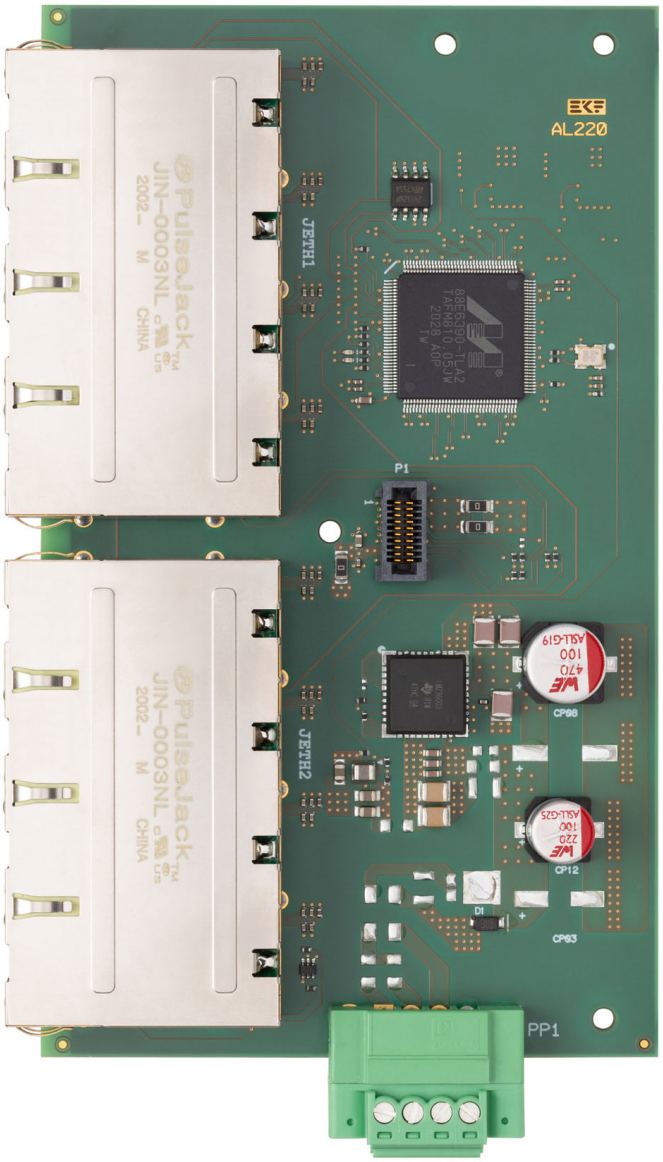
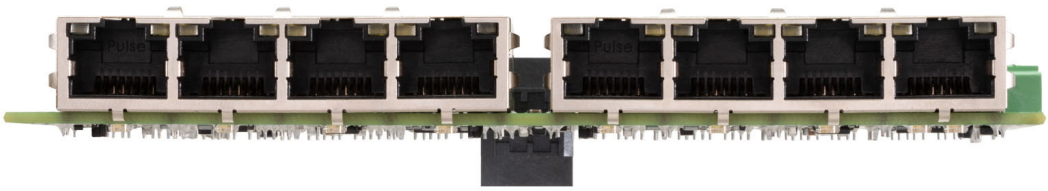
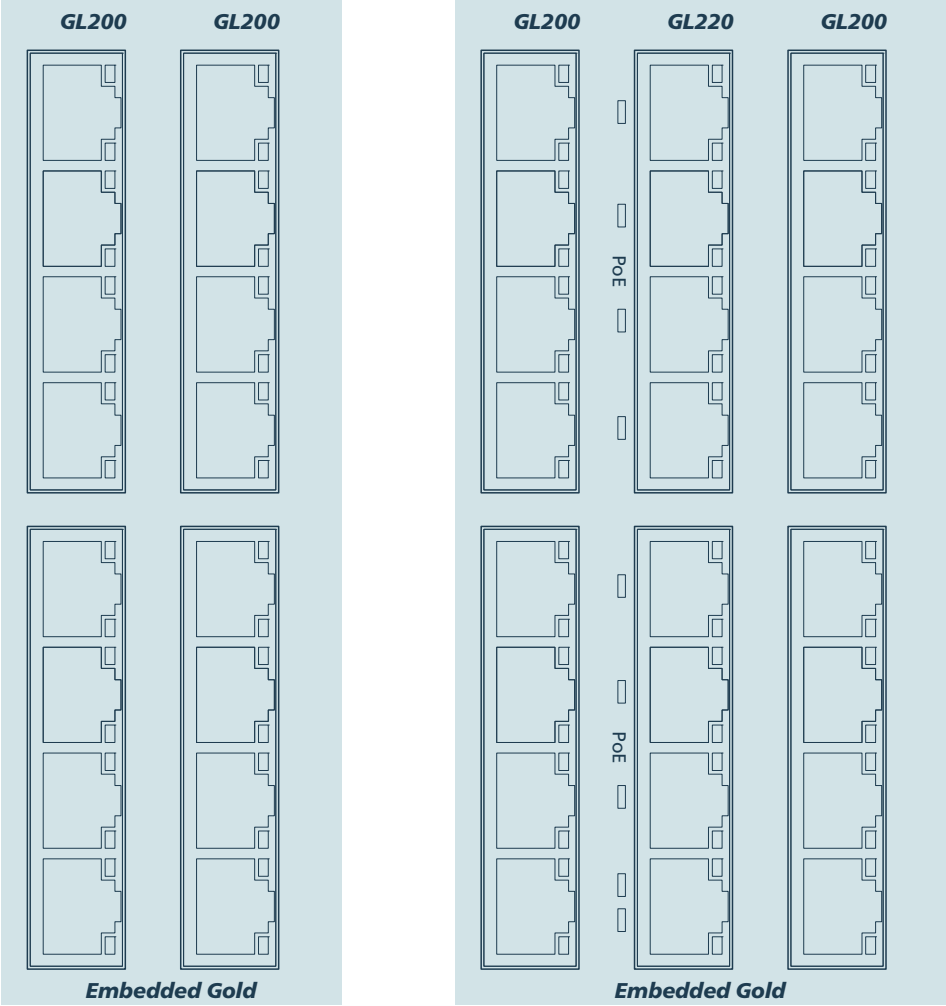
ekf.com
Simplified Block Diagram
GL220
8 Port GbE Switch PoE+
Sheet 3/3
IEEE 802.3at
Quad Port
Power-over-Ethernet
PSE Controller

Dimensions

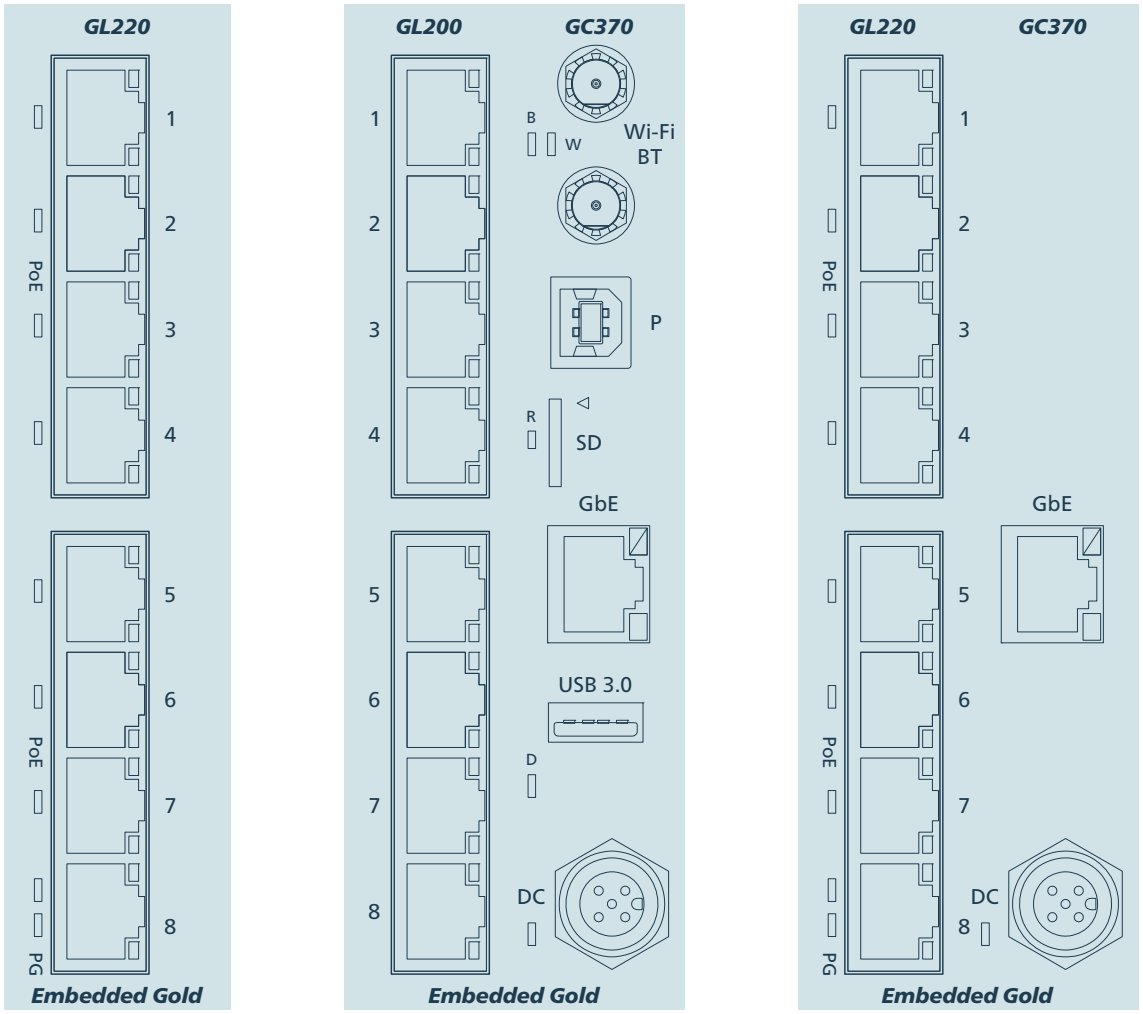

36.0mm
63.0mm
34.0mm
133.0mm
© EKF • ekf.com
GL200
GL220
GbE Switch
P1
Top Mount
Expansion Connector
Embedded Gold
Eurostyle 3.5mm
4-Pos. Screw Lock
48.5mm
29.5mm
78.0mm


AL220
JETH1
JETH2
P1
PP1
CP08
CP12
CP03
D1



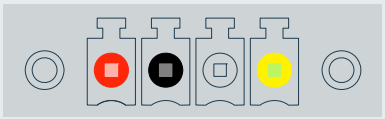


Sample GL200 - GL220 F/P 16-24 Port Stack



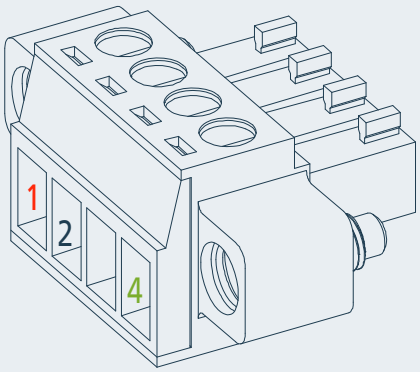
Sample GL200 - GL220 F/P with & w/o Management CPU

Terminal Block Power Connector Pin Assignment

3.50mm 4-Position Terminal Block 8A/Contact			
245.35.04.00  1 2 3 4	V=48/54VDC	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

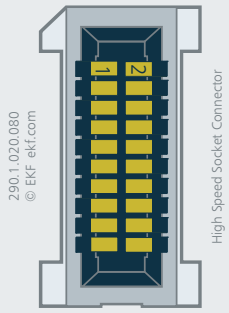
Option Terminal Block Plug Power Cabling

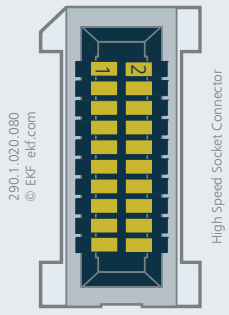


245.35.04.20

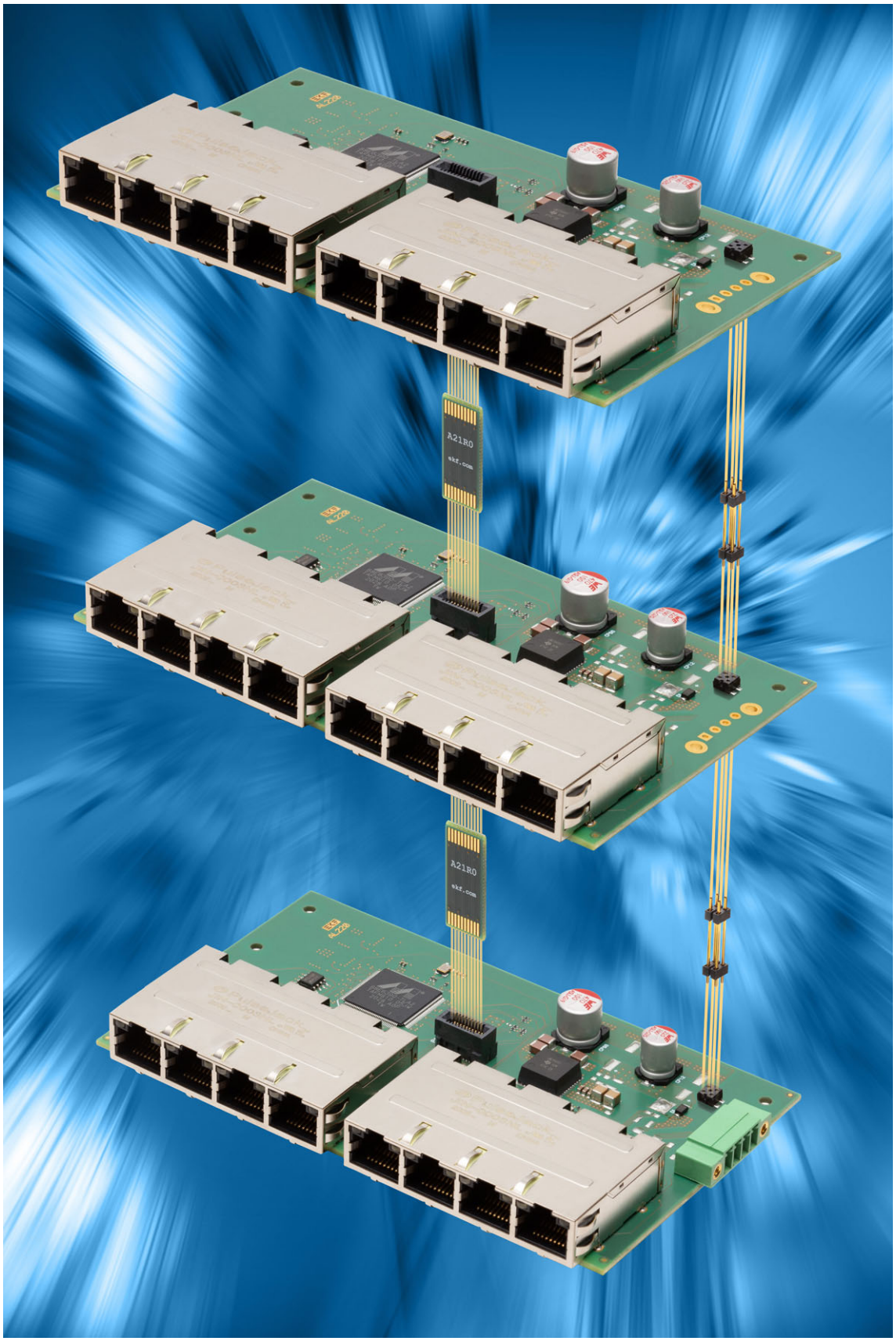
Mating DIN Rail Power Supply	
EKF	352.1.120.48.1
Meanwell	NDR-120-48, 120W 48VDC/2.5A

Stacking Connectors

P1 (Top) 290.1.020.080				
	GND	1	2	GND
	SERDES (P9) RXN	3	4	+5V
	SERDES (P9) RXP	5	6	+5V
	GND	7	8	GND
	SERDES (P9) TXN	9	10	RSV
	SERDES (P9) TXP	11	12	RSV
	GND	13	14	GND
	+5V	15	16	MDC
	+5V	17	18	MDIO
	GND	19	20	GND

P0 (Bottom) 290.1.020.080				
	GND	1	2	GND
	SERDES (P10) TXN	3	4	+5V
	SERDES (P10) TXP	5	6	+5V
	GND	7	8	GND
	SERDES (P10) RXN	9	10	RSV
	SERDES (P10) RXP	11	12	RSV
	GND	13	14	GND
	+5V	15	16	MDC
	+5V	17	18	MDIO
	GND	19	20	GND

Associated Mezzanine Interposer Card	
A21	30mm PCB pitch
C21	20.32mm (4HP) PCB pitch


A21R0
ekf.com
A21R0
ekf.com

Ordering Information	
For popular GL200 - GL230 SKUs please contact sales@ekf.de	
GL200	8-Port switch, 9V-57VDC
GL210	8-Port switch, 9V-57VDC, with GC370 management CPU (full I/O e.g. USB & Wi-Fi)
GL220	8-Port switch, 4-Port PoE+, 48V/54VDC
GL230	8-Port switch, 4-Port PoE+, 48V/54VDC, with GC370 management CPU (isolated I/O only i.e. RJ45 GbE)

Product Homepage
https://www.ekf.com/g/gl220/gl220.html

Related Products	
GC370	ARM® V8 Industrial Microcontroller
GJ100	PoE+ Injector M12-X
GJ200	PoE+ Injector RJ45
GL100	5 to 15 Port unmanaged GbE switch M12-X
GL600	7 Port SPE (Single Pair Ethernet) switch 100BASE-T1
GL900	9 Port PoE+ GbE switch RJ45 w. CPU for AVB protocol support

Embedded Gold

Ready-for-Use Industrial PCB Assemblies

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