



## Product Information

**CompactPCI<sup>®</sup> Express** (PXI Express™) • EN9-SONIC

Dual Port SFP+ 10 Gigabit Ethernet NIC



## General

*The EN9-SONIC is a peripheral slot board for CompactPCI® Express and PXI Express™ systems, equipped with a dual port 10Gbps Ethernet controller. Both ports are available via SFP+ front bezel connector cages, suitable for attachment of SFP+ transceivers for optical cables, up to 10km length.*

*The Intel® 82599ES Ethernet NIC is known for its high performance and reliability. Intel® networking drivers are available for all major operating systems.*

The EN9-SONIC must be installed into a suitable peripheral slot e.g. Type 1 or Type 2 of a CompactPCI® Express (PXI Express™) backplane. The optimum performance can be achieved over a PCIe® Gen2 x8 link (XJ3 connector). The EN9-SONIC is a reliable solution for general industrial networking applications, e.g. as link from IOT/edge to server/cloud, or attachment of storage systems (NAS), and can also be used as router/gateway.



## Feature Summary

### General

- ▶ PICMG® CompactPCI® Express standard (EXP.0) peripheral slot card type 1 or type 2
- ▶ PXI Express™ peripheral slot card
- ▶ Single Size Eurocard 3U 4HP 100x160mm<sup>2</sup> with front extension
- ▶ Backplane connectors XJ3, XJ4 (type 2 peripheral slot)
- ▶ CompactPCI® Express backplane connector XJ4 with F2 key for CompactPCI® Express & PXI Express™ systems (F1 key available on request)
- ▶ PCIe® x8 redrivers for optimum signal integrity

### Networking Interface Controller (NIC)

- ▶ Intel® 82599ES (aka X520 Niantic) dual port 10G Ethernet controller
- ▶ SFP+ interface compatible to 100Mbps/1Gbps/10Gbps speeds
- ▶ Auto negotiation for automatic link configuration
- ▶ IPv4, IPv6, TCP/UDP checksum offloads
- ▶ Integrated LinkSec and IPsec security engines, IPv4 and IPv6 end-to-end layer 2/3 data protection
- ▶ Support for jumbo frames of up to 15.5 KB
- ▶ 802.1AS - Precise Timing Protocol
- ▶ IEEE 802.1q virtual local area network (VLAN) support , VMDq, VMDc
- ▶ Unified networking support (IEEE 802.1az, IEEE 802.1Qbb, FCoE, iSCSI)
- ▶ Driver support for all major operating systems
- ▶ Front bezel receptacles SFP+ for optical transceivers and twinaxial copper cables
- ▶ Front LEDs 1G, 10G, Link, Activity

### Applications

- ▶ General fast networking for CompactPCI® Express (PXI Express™) systems
- ▶ Up to 10km transmission with long range (LR) optical transceivers and cables
- ▶ Connection to server or storage systems (NAS)
- ▶ IIOT and edge computing

## Feature Summary

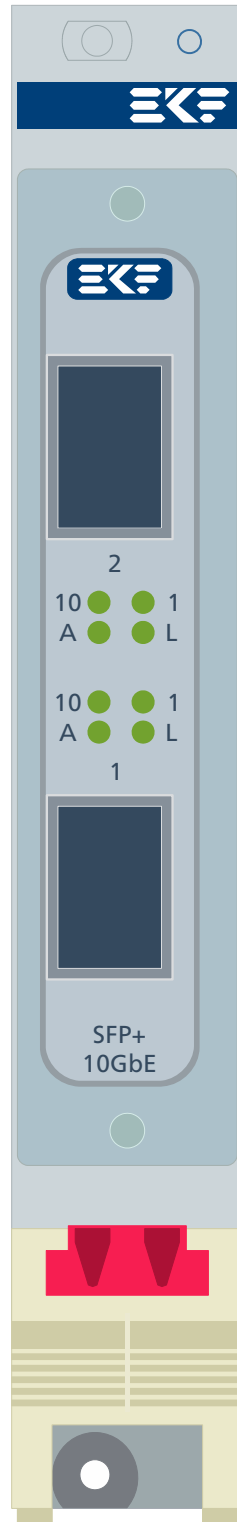
### Environment & Regulation

- ▶ Designed & manufactured in Germany
- ▶ ISO 9001 certified quality management system
- ▶ Long term availability
- ▶ Rugged solution (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
- ▶ MTBF 35 years
- ▶ EC Regulations EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)

### Ethernet Driver Download

<https://downloadcenter.intel.com/SearchResult.aspx?lang=eng&keyword=82599>

Front Panel



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EN9-SONIC

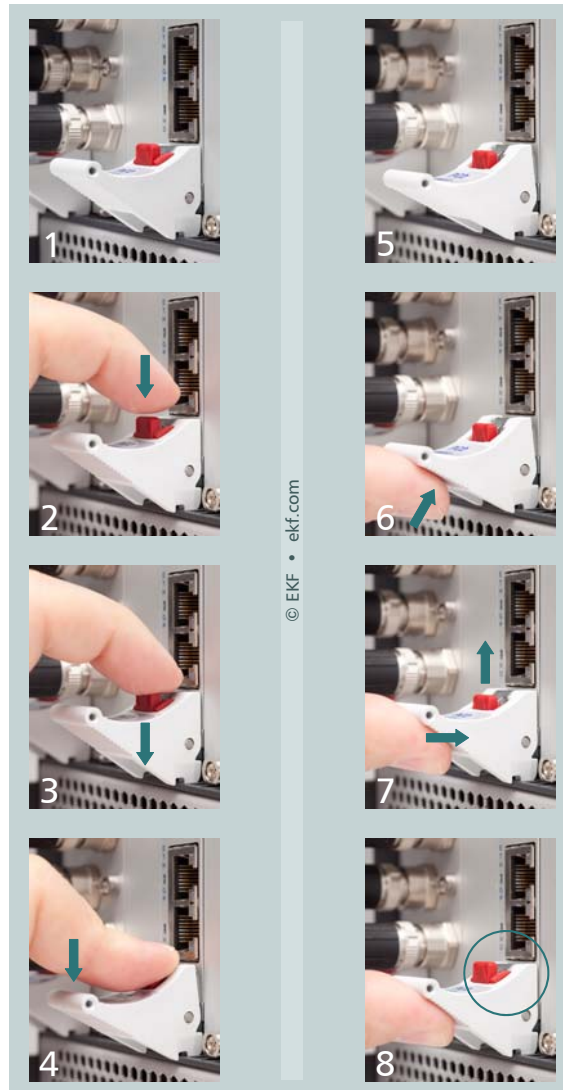
SFP+ Connector Cages

10 Gigabit Ethernet			
258.10.00020.00 SFP+ host connector 10G, 20 circuits			
VEE	11	10	VEE
RD-	12	9	RS1
RD+	13	8	RX_LOS
VEE	14	7	RS0
VCC	15	6	MOD_ABS
VCC	16	5	SCL
VEE	17	4	SDA
TD+	18	3	TX_DISABLE
TD-	19	2	TX_FAULT
VEE	20	1	VEE

Sample SFP+ Accessory	
258.80.001.03	SFP+ twinaxial cable 1/10Gbps, 3m
258.90.001.00	SFP+ optical transceiver module 10GBASE-SR SR (short range 300m), 850nm VCSEL laser duplex LC connector, power < 1W, 0°C to 70°C
258.90.001.01	SFP+ optical transceiver module 10GBASE-SR -40°C to +85°C
258.90.010.00	SFP+ optical transceiver module 10GBASE-LR LR (long range 10km), 1310nm DFB laser duplex LC connector, power < 1W, 0°C to 70°C
258.90.010.01	SFP+ optical transceiver module 10GBASE-LR -40°C to +85°C

## Front Handle

The front handle is provided with a built-in microswitch, which is used to disable the on-board power circuit when released. Vice versa, the *on-board devices are enabled not before the handle gets locked*. Please refer to the illustration below and make sure that the eject lever has reached its final position for proper board operation, as shown in picture 8. A gentle click should be audible, when the red actuator pin moves into its raised position, indicating that the board is locked and ready for use.



1 - 4: remove board

5 - 8: install board

1 & 8: on-board power enabled

2-7: on-board power disabled

XJ3 CompactPCI® Express Backplane Connector

Advanced Differential Fabric (ADF) Connector • EKF Part #250.2.0310.10.01						
XJ3	A	B	C	D	E	F
1	RSV <i>PXIe_CLK100+</i>	RSV <i>PXIe_CLK100-</i>	RSV <i>PXIe_SYNC100+</i>	RSV <i>PXIe_SYNC100-</i>	RSV <i>PXIe_DSTARC+</i>	RSV <i>PXIe_DSTARC-</i>
2	PRSNT#	PWREN#	RSV <i>PCIe_DSTARB+</i>	RSV <i>PCIe_DSTARB-</i>	RSV <i>PCIe_DSTARA+</i>	RSV <i>PCIe_DSTARA-</i>
3	SMB_DAT	SMB_CLK	RSV	RSV	RSV	RSV
4	MPWRGD	PERST#	RSV	RSV	1REFCLK+	1REFCLK-
5	1PETP0	1PETN0	1PERP0	1PERN0	1PETP1	1PETN1
6	1PETP2	1PETN2	1PERP2	1PERN2	1PERP1	1PERN1
7	1PETP3	1PETN3	1PERP3	1PERN3	1PETP4	1PETN4
8	1PETP5	1PETN5	1PERP5	1PERN5	1PERP4	1PERN4
9	1PETP6	1PETN6	1PERP6	1PERN6	1PETP7	1PETN7
10	RSV	RSV	RSV	RSV	1PERP7	1PERN7

all signals printed grey are NC • all signal names printed italic are specified for PXI Express™  
 all differential pair shield pins ab(1-10), cd(1-10) and ef(1-10) are tied to GND



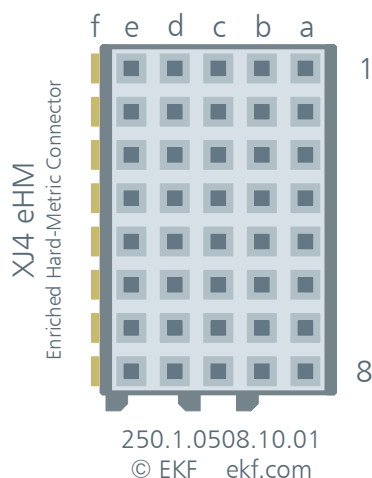


### XJ4 CompactPCI® Express Backplane Connector

Enriched Hard-Metric (eHM) Connector • EKF Part #250.1.0508.10.02					
XJ4	A	B	C	D	E
1	GA4 1)	GA3 1)	GA2	GA1	GA0
2	+5V_AUX	GND	SYSEN#	WAKE#	ALERT#
3	12V	12V	GND	GND	GND
4	GND	GND	3.3V	3.3V	3.3V
5	I/O <i>PXI_TRIG3</i>	I/O <i>PXI_TRIG4</i>	I/O <i>PXI_TRIG5</i>	GND <i>PXI_GND</i>	I/O <i>PXI_TRIG6</i>
6	I/O <i>PXI_TRIG2</i>	GND <i>PXI_GND</i>	ATNLED	I/O <i>PXI_STAR</i>	I/O <i>PXI_CLK10</i>
7	I/O <i>PXI_TRIG1</i>	I/O <i>PXI_TRIG0</i>	ATNSW#	GND <i>PXI_GND</i>	I/O <i>PXI_TRIG7</i>
8	I/O <i>PXI_RSV</i>	GND <i>PXI_GND</i>	I/O <i>PXI_RSV</i>	I/O <i>PXI_LBL6</i>	I/O <i>PXI_LBR6</i>

all signals printed grey are NC • all signal names printed italic are specified for PXI Express™

1) either backplane signal GA3/GA4 ≠ 0 (backplane slot >8) will disable the internal I2C circuitry



The XJ4 connector is mechanically coded either for pure usage with CompactPCI® Express (F1 key) or PXI Express™ (F2 key). By default, the F2 connector is populated, since it can be inserted into both types of backplane connectors XP4. Illustrated above is the F1 keyed connector.

### EN9-SONIC Links

EN9-SONIC Home

[www.ekf.com/e/en9/en9.html](http://www.ekf.com/e/en9/en9.html)

### Ordering Information

For popular EN9-SONIC SKUs please refer to  
[www.ekf.com/liste/liste\\_23.html#EN9](http://www.ekf.com/liste/liste_23.html#EN9)

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