



Product Information

SN5-TOMBAK

CompactPCI[®] Serial • Dual-Port SFP+ 10Gbps Ethernet NIC

Document No. 8117 • 10 October 2016



General

The SN5-TOMBAK is a peripheral slot card for CompactPCI® Serial systems. The board is equipped with a dual port 10Gbps Ethernet controller. Both ports are available via SFP+ front bezel connector cages, suitable for attachment of either optical cables via SFP+ transceivers or SFP+ twinaxial copper cables. The Intel® 82599ES Ethernet NIC is known for its high performance, low latency, reliability, and flexibility, and is backward compatible to 1Gbps and 100Mbps speeds.

The SN5-TOMBAK is based on PCI Express® 2.1 (up to 5GT/s) and supports x1, x2, x4 and x8 link widths. For optimum performance, the board should be installed in a CompactPCI® Serial fat pipe slot.

The SN5-TOMBAK is well suited for high performance industrial networking applications. Drivers are available for all major operation systems.



Feature Summary

General

- ▶ PICMG® CompactPCI® Serial (CPCI-S.0) peripheral slot card
- ▶ Single Size Eurocard 3U 4HP 100x160mm²
- ▶ CompactPCI® Serial backplane connectors P1 & P2
- ▶ Suitable for PCIe x 1 to PCIe x 8 standard peripheral slots, and fat pipe peripheral slots
- ▶ Power consumption 8W max.

Ethernet Controller

- ▶ Intel® 82599ES (aka X520 Niantic) dual port 10Gb 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+
- ▶ Ethernet optical fiber cable length depending on transceiver solution up to 10km
- ▶ Front LEDs 1G, 10G, Link, Activity

Typical Applications

- ▶ High speed industrial networking
- ▶ Distance SR (short range transceiver/cable) up to 300m, LR (long range) up to 10km
- ▶ High performance vision systems & image processing with 10GbE cameras attached
- ▶ Distributed and parallel industrial computing
- ▶ Data concentrator pathway from IoT (field) to cloud (big data)
- ▶ Server link - backup and remote storage, database access

Feature Summary

Regulatory

- ▶ Designed & manufactured in Germany
- ▶ ISO 9001 certified quality management
- ▶ Long term availability
- ▶ Rugged solution (coating, sealing, underfilling available on request)
- ▶ RoHS compliant
- ▶ Commercial operating temperature range 0°C to +70°C
- ▶ Industrial operating temperature range -40°C to +85°C on request
- ▶ 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 60.7 years
- ▶ EC Regulations EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)

items are subject to changes

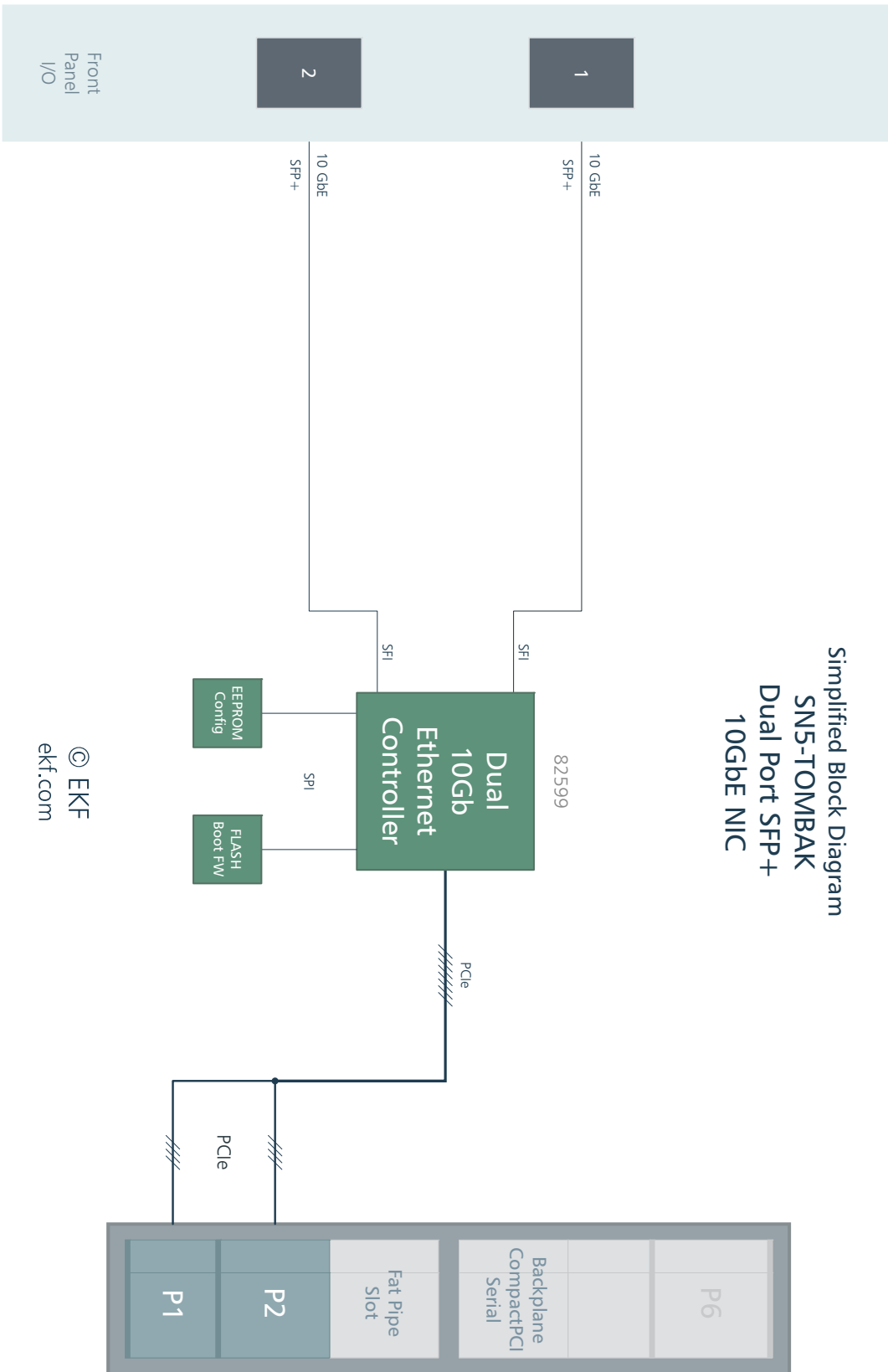


SN5-TOMBAK w. Copper Cables



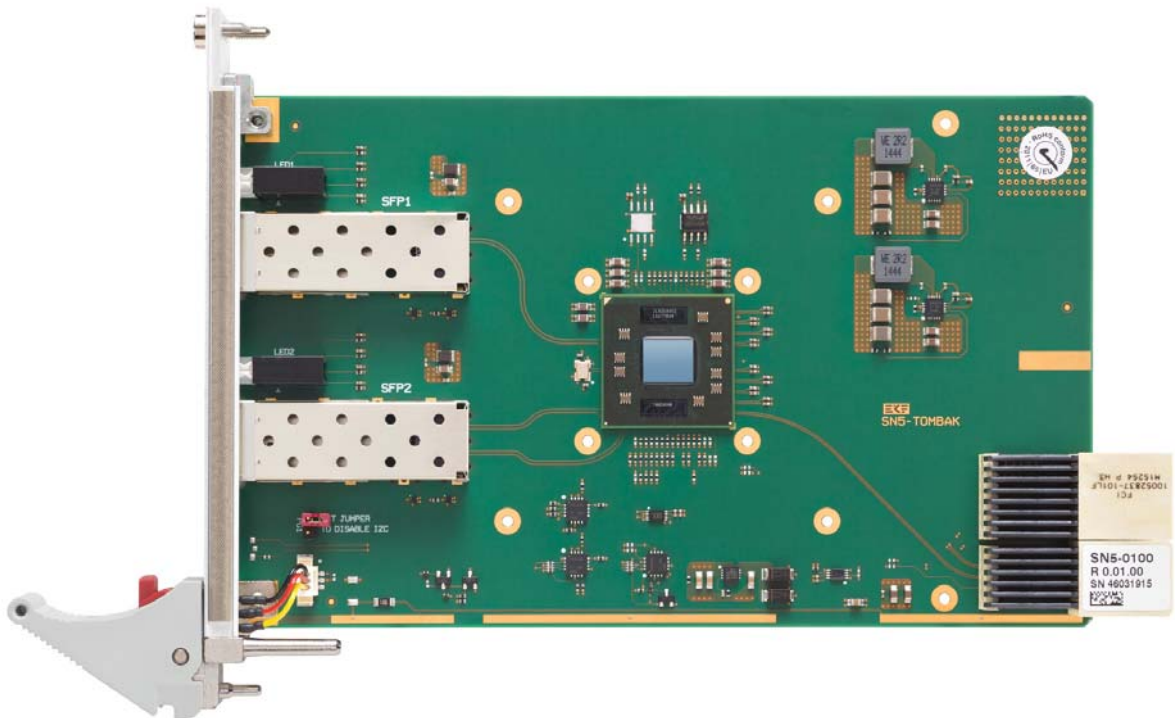
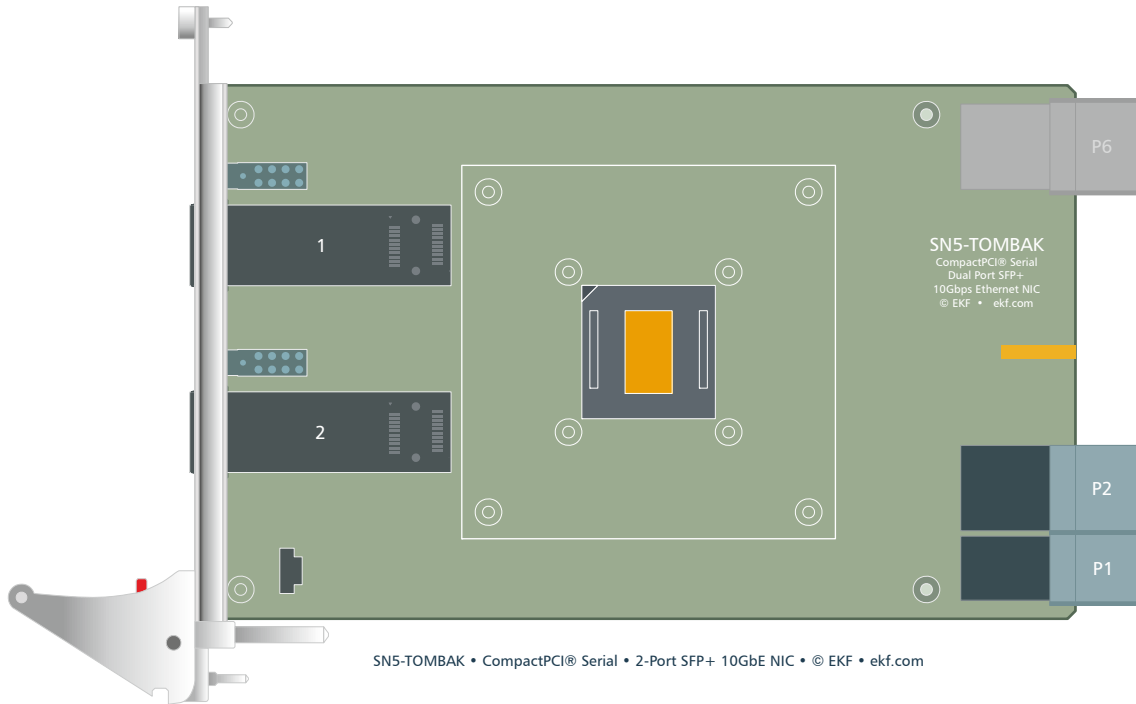
SN5-TOMBAK w. Optical Transceivers

Block Diagram

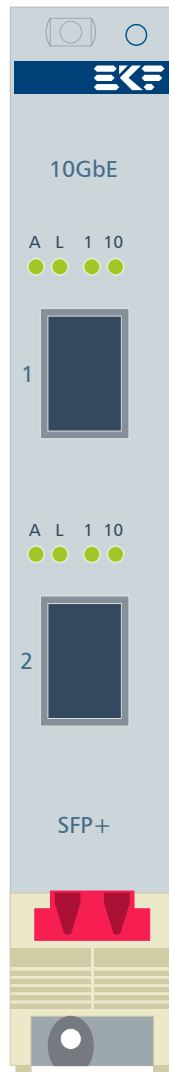


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Component Assembly



Front Panel



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SN5-TOMBAK
2-Port SFP+
10Gbps NIC

LED Assignment

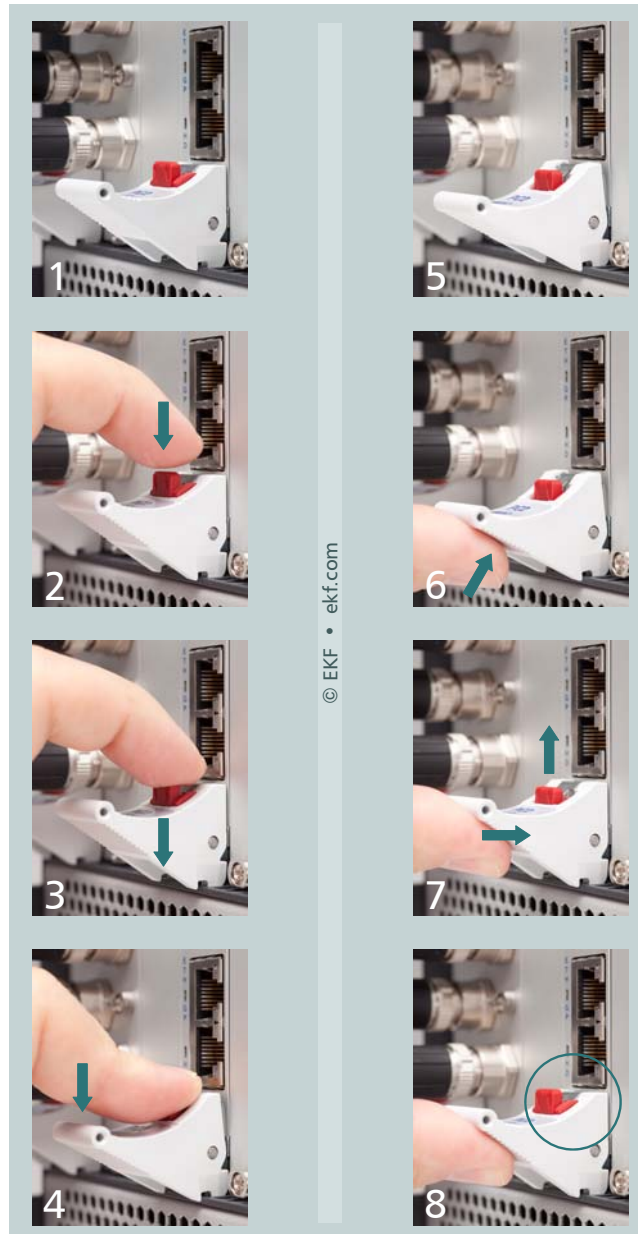
A (blinking) = Activity

L (continuous on) = Link Established

1 (continuous on) = 1Gigabit Ethernet transceiver/cable

10 (continuous on) = 10Gigabit Ethernet transceiver/cable

Please note: 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

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

Ethernet Driver Download

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

P1 CompactPCI® Serial Backplane Connector

P1 CompactPCI® Serial Peripheral Slot Backplane Connector												
EKF Part #250.3.1206.20.02 • 72 pos. 12x6, 14mm Width												
P1	A	B	C	D	E	F	G	H	I	J	K	L
6	GND	1 PE TX02+	1 PE TX02-	GND	1 PE RX02+	1 PE RX02-	GND	1 PE TX03+	1 PE TX03-	GND	1 PE RX03+	1 PE RX03-
5	1 PE TX00+	1 PE TX00-	GND	1 PE RX00+	1 PE RX00-	GND	1 PE TX01+	1 PE TX01-	GND	1 PE RX01+	1 PE RX01-	GND
4	GND	<i>1_</i> <i>USB2+</i>	<i>1_</i> <i>USB2-</i>	GND	PE_CLK IN+	PE_CLK IN-	GND	<i>1</i> <i>SATA</i> <i>TX+</i>	<i>1</i> <i>SATA</i> <i>TX-</i>	GND	<i>1</i> <i>SATA</i> <i>RX+</i>	<i>1</i> <i>SATA</i> <i>RX-</i>
3	<i>1</i> <i>USB3</i> <i>TX+</i>	<i>1</i> <i>USB3</i> <i>TX-</i>	GA0	<i>1</i> <i>USB3</i> <i>RX+</i>	<i>1</i> <i>USB3</i> <i>RX-</i>	GA1	<i>SATA</i> <i>SDI</i>	<i>SATA</i> <i>SDO</i>	GA2	<i>SATA</i> <i>SCL</i>	<i>SATA</i> <i>SL</i>	GA3
2	GND	I2C SCL	I2C SDA	GND	<i>RSV</i>	<i>RSV</i>	GND	RST#	WAKE#	GND	PE_ EN#	SYS EN#
1	+12V	<i>STBY</i>	GND	+12V	+12V	GND	+12V	+12V	GND	+12V	+12V	GND

pin positions printed italic/gray: not connected

For signal descriptions please refer to PICMG CPCI-S.0 R1.0 CompactPCI® Serial Specification



P2 CompactPCI® Serial Backplane Connector

P2 CompactPCI® Serial Fat Pipe Peripheral Slot Backplane Connector												
EKF Part #250.3.1208.20.00 • 96 pos. 12x8, 16mm Width												
P2	A	B	C	D	E	F	G	H	I	J	K	L
8	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>
7	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND
6	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>
5	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND
4	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>
3	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND	<i>IO</i>	<i>IO</i>	GND
2	GND	1 PE TX06+	1 PE TX06-	GND	1 PE RX06+	1 PE RX06-	GND	1 PE TX07+	1 PE TX07-	GND	1 PE RX07+	1 PE RX07-
1	1 PE TX04+	1 PE TX04-	GND	1 PE RX04+	1 PE RX04-	GND	1 PE TX05+	1 PE TX05-	GND	1 PE RX05+	1 PE RX05-	GND

pin positions printed italic/white: not connected

For signal descriptions please refer to PICMG CPCI-S.0 R1.0 CompactPCI® Serial Specification

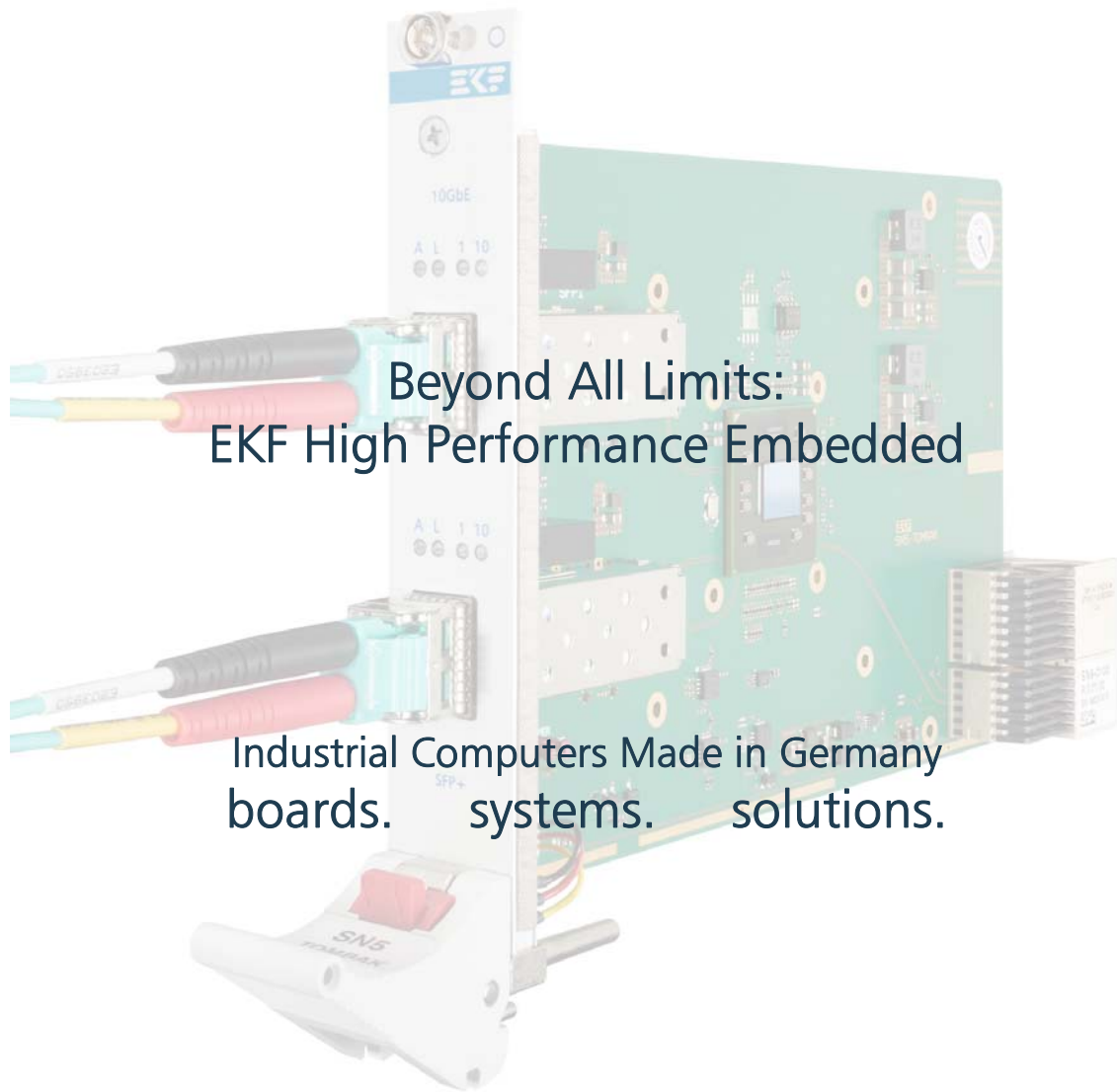
SN5-TOMBAK Links	
SN5-TOMBAK Home (2 x 10GbE SFP+)	www.ekf.com/s/sn5/sn5.html
Intel® Driver Download	https://downloadcenter.intel.com/SearchResult.aspx?lang=eng&keyword=82599
SN3-GONG Home (2 x 10GbE RJ45)	www.ekf.com/s/sn3/sn3.html
CompactPCI® Serial Ethernet Switches	www.ekf.com/s/serial.html#SL
CompactPCI® Serial Ethernet Controllers	www.ekf.com/s/serial.html#SN
CompactPCI® Serial Overview	www.ekf.com/s/serial_concise.pdf
CompactPCI® Serial - All You Need to Know	www.ekf.com/s/smart_solution.pdf

Ordering Information

For popular SN5-TOMBAK SKUs please refer to
www.ekf.com/liste/liste_21.html#SN5



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