



## Product Information

### *CompactPCI® Serial* • SL1-COMBO

7-Port Gigabit Ethernet Switch

Document No. 7678 • 9 February 2015



SL1-0200-COMBO

## General

The SL1-COMBO is a peripheral slot card for CompactPCI® Serial systems. The board is equipped with a 7-port Gigabit Ethernet switch. While 5 GbE ports are wired to associated RJ45 front panel jacks, a separate GbE port is available for backplane communication via the CPCI-S connector P6.

The on-board Marvell® 88E6350R GbE switch is self-managed and provides a rich feature set. As an option, the SL1-COMBO is available with an Intel® I210-IT (I211) Gigabit Ethernet controller (NIC) in addition, which is internally connected to the GbE switch. The NIC requires a PCIe® lane available from the P1 connector.



SL1-0200-COMBO

## Feature Summary

### *General*

- ▶ PICMG® CompactPCI® Serial standard (CPCI-S.0) peripheral slot card
- ▶ Single Size Eurocard 3U 4HP 100x160mm<sup>2</sup>
- ▶ cPCI-S backplane connectors P1, P6
- ▶ Suitable for PCIe® x 1 capable standard peripheral slots
- ▶ Stand-alone operation (option)

### *Front Panel I/O*

- ▶ 5 x RJ45 front panel GbE ports
- ▶ Integrated 12-core magnetics for optimum noise immunity

### *Backplane I/O (Option)*

- ▶ Option on-board GbE NIC (SL1-0200-COMBO)
- ▶ CompactPCI® Serial backplane connector P1 used for PCI Express® x 1 lane to I210 (I211) Gigabit Ethernet Controller (SL1-0200-COMBO)
- ▶ Option GbE backplane communication
- ▶ CompactPCI® Serial backplane connector P6 used for 1 x GbE over backplane (star fabric)

### *Gigabit Ethernet Switch*

- ▶ Marvell® 88E6350R based Gigabit Ethernet switch (5 x PHY, 2 x RGMII)
- ▶ High performance, non-blocking, Gigabit Ethernet
- ▶ Support for up to 1K MAC addresses, 10KByte Jumbo Frames
- ▶ Unmanaged solution

### *Gigabit Ethernet Controller (Option)*

- ▶ Intel® I210IT (I211) Gigabit Ethernet Controller internally wired to GbE switch (SL1-0200-COMBO)
- ▶ 9.5KB Jumbo Frame support
- ▶ Hardware-based time stamping (IEEE 1588) and support for 802.1AS
- ▶ Option IEEE 802.1Qav compliant Audio-Video Bridging (AVB)
- ▶ IPv4, IPv6, TCP/UDP checksum offloads
- ▶ Driver support for all major operating systems

### *Environmental, Regulatory*

- ▶ Designed & manufactured in Germany
- ▶ Long term availability
- ▶ Rugged solution
- ▶ Coating, sealing, underfilling on request
- ▶ RoHS compliant 2002/95/EC
- ▶ Operating temperature 0°C to +70°C (commercial temperature range)
- ▶ Operating temperature -40°C to +85°C (industrial temperature range) 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 tbd
- ▶ EC Regulations EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)

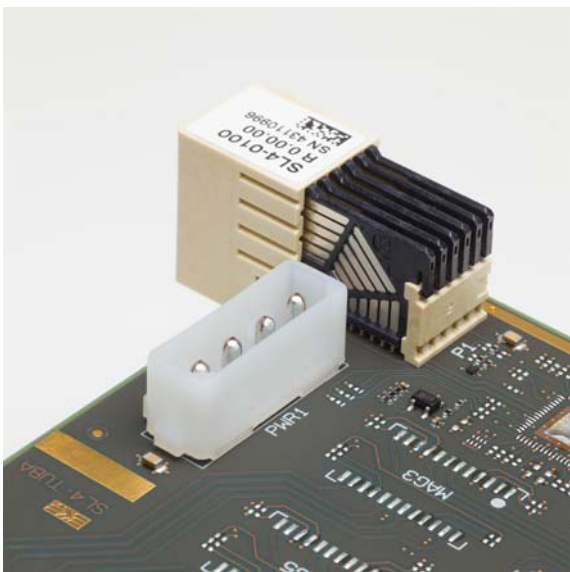
## Theory of Operation

As the main component, the SL1-COMBO is equipped with a Marvell® 88E6350R Gigabit Ethernet switch. This device provides 5 ports with integrated Ethernet transceivers (PHY) and another two digital interfaces (RGMII).

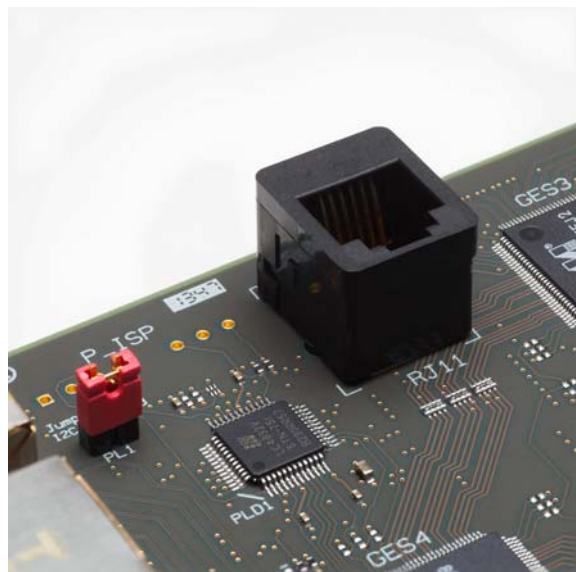
A total of 7 GbE ports is available on-board, wired to the front panel (5), and the CompactPCI® Serial backplane connector P6 (1). Another port is connected to the on-board Gigabit Ethernet controller.

While the front panel RJ45 jacks are provided with integrated magnetics, the remaining two internal GbE ports are isolated by on-board magnetics modules and equipped with a discrete GbE PHY each.

The SL1-COMBO can be inserted into any CompactPCI® Serial peripheral slot. A single PCI Express® lane would be sufficient for communication via the on-board Gigabit Ethernet controller.

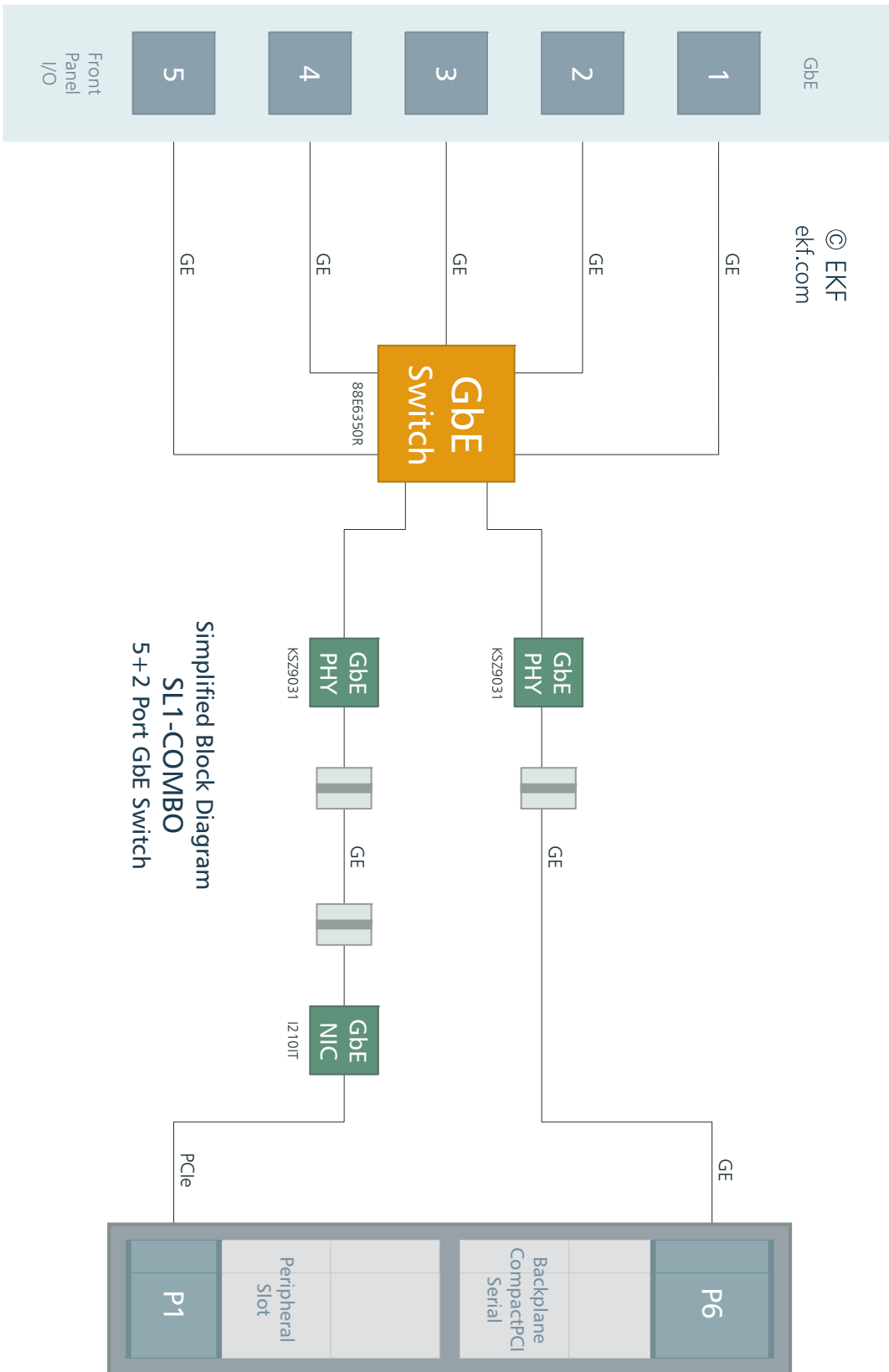


Option Power Connector  
for Standalone Operation



Option Management I/F  
(Marvell NDA Customers Only)

### Block Diagram



Simplified Block Diagram  
SL1-COMBO  
5+2 Port GbE Switch

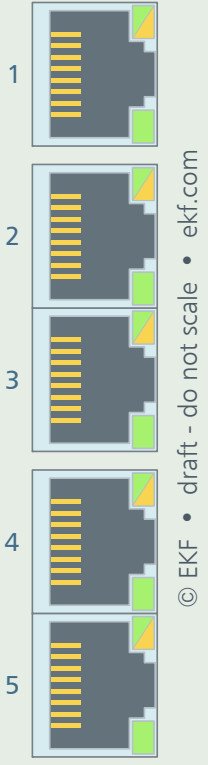
## Front Panel



© EKF • draft - do not scale • ekf.com

SL1-COMBO  
5-Port GE Switch

Front Panel RJ45 Jacks 1-5

Gigabit Ethernet			
270.01.08.5 Single RJ45 Jack • 270.02.08.5 2 x Dual RJ45 Jacks			
 <p>Upper yellow LEDs (1): on=1Gbit/s off=10/100Mbit/s</p> <p>Lower green LEDs (2): on=link established blinking=activity (data)</p>	RJ45 F/P Jacks 1-5	1	MDX0+
		2	MDX0-
		3	MDX1+
		4	MDX2+
		5	MDX2-
		6	MDX1-
		7	MDX3+
		8	MDX3-



## Backplane Connector P1

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	<i>PE TX 02+</i>	<i>PE TX 02-</i>	GND	<i>PE RX 02+</i>	<i>PE RX 02-</i>	GND	<i>PE TX 03+</i>	<i>PE TX 03-</i>	GND	<i>PE RX03 +</i>	<i>PE RX03- -</i>
5	<i>PE TX 00+</i>	<i>PE TX 00-</i>	GND	<i>PE RX 00+</i>	<i>PE RX 00-</i>	GND	<i>PE TX 01+</i>	<i>PE TX 01-</i>	GND	<i>PE RX 01+</i>	<i>PE RX 01-</i>	GND
4	GND	<i>USB2 +</i>	<i>USB2 -</i>	GND	<i>PE CLK+</i>	<i>PE CLK-</i>	GND	<i>SATA TX+</i>	<i>SATA TX-</i>	GND	<i>SATA RX+</i>	<i>SATA RX-</i>
3	<i>USB3 TX+</i>	<i>USB3 TX-</i>	GA0	<i>USB3 RX+</i>	<i>USB3 RX-</i>	GA1	<i>SATA SDI</i>	<i>SATA SDO</i>	GA2	<i>SATA SCL</i>	<i>SATA 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 white/italic: not connected

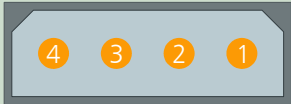
## Backplane Connector P6

P6 CompactPCI® Serial Peripheral Slot Backplane Connector												
EKF Part #250.3.1208.20.02 • 96 pos. 12x8, 18mm width												
P6	A	B	C	D	E	F	G	H	I	J	K	L
8	GND	8 <i>ETH</i> <i>A+</i>	8 <i>ETH</i> <i>A-</i>	GND	8 <i>ETH</i> <i>B+</i>	8 <i>ETH</i> <i>B-</i>	GND	8 <i>ETH</i> <i>C+</i>	8 <i>ETH</i> <i>C-</i>	GND	8 <i>ETH</i> <i>D+</i>	8 <i>ETH</i> <i>D-</i>
7	7 <i>ETH</i> <i>A+</i>	7 <i>ETH</i> <i>A-</i>	GND	7 <i>ETH</i> <i>B+</i>	7 <i>ETH</i> <i>B-</i>	GND	7 <i>ETH</i> <i>C+</i>	7 <i>ETH</i> <i>C-</i>	GND	7 <i>ETH</i> <i>D+</i>	7 <i>ETH</i> <i>D-</i>	GND
6	GND	6 <i>ETH</i> <i>A+</i>	6 <i>ETH</i> <i>A-</i>	GND	6 <i>ETH</i> <i>B+</i>	6 <i>ETH</i> <i>B-</i>	GND	6 <i>ETH</i> <i>C+</i>	6 <i>ETH</i> <i>C-</i>	GND	6 <i>ETH</i> <i>D+</i>	6 <i>ETH</i> <i>D-</i>
5	5 <i>ETH</i> <i>A+</i>	5 <i>ETH</i> <i>A-</i>	GND	5 <i>ETH</i> <i>B+</i>	5 <i>ETH</i> <i>B-</i>	GND	5 <i>ETH</i> <i>C+</i>	5 <i>ETH</i> <i>C-</i>	GND	5 <i>ETH</i> <i>D+</i>	5 <i>ETH</i> <i>D-</i>	GND
4	GND	4 <i>ETH</i> <i>A+</i>	4 <i>ETH</i> <i>A-</i>	GND	4 <i>ETH</i> <i>B+</i>	4 <i>ETH</i> <i>B-</i>	GND	4 <i>ETH</i> <i>C+</i>	4 <i>ETH</i> <i>C-</i>	GND	4 <i>ETH</i> <i>D+</i>	4 <i>ETH</i> <i>D-</i>
3	3 <i>ETH</i> <i>A+</i>	3 <i>ETH</i> <i>A-</i>	GND	3 <i>ETH</i> <i>B+</i>	3 <i>ETH</i> <i>B-</i>	GND	3 <i>ETH</i> <i>C+</i>	3 <i>ETH</i> <i>C-</i>	GND	3 <i>ETH</i> <i>D+</i>	3 <i>ETH</i> <i>D-</i>	GND
2	GND	2 <i>ETH</i> <i>A+</i>	2 <i>ETH</i> <i>A-</i>	GND	2 <i>ETH</i> <i>B+</i>	2 <i>ETH</i> <i>B-</i>	GND	2 <i>ETH</i> <i>C+</i>	2 <i>ETH</i> <i>C-</i>	GND	2 <i>ETH</i> <i>D+</i>	2 <i>ETH</i> <i>D-</i>
1	1 <i>ETH</i> <i>A+</i>	1 <i>ETH</i> <i>A-</i>	GND	1 <i>ETH</i> <i>B+</i>	1 <i>ETH</i> <i>B-</i>	GND	1 <i>ETH</i> <i>C+</i>	1 <i>ETH</i> <i>C-</i>	GND	1 <i>ETH</i> <i>D+</i>	1 <i>ETH</i> <i>D-</i>	GND

pin positions printed white/italic: not connected

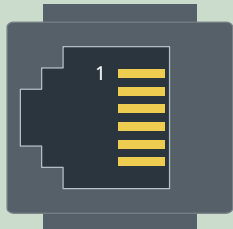
### Stand-Alone Operation (Option)

The SL1-COMBO can be optionally provided with a MATE-N-LOK header for attachment of +5V power on pin 4. This header is suitable for most ATX style power supplies (also in use on classic hard disk drives).

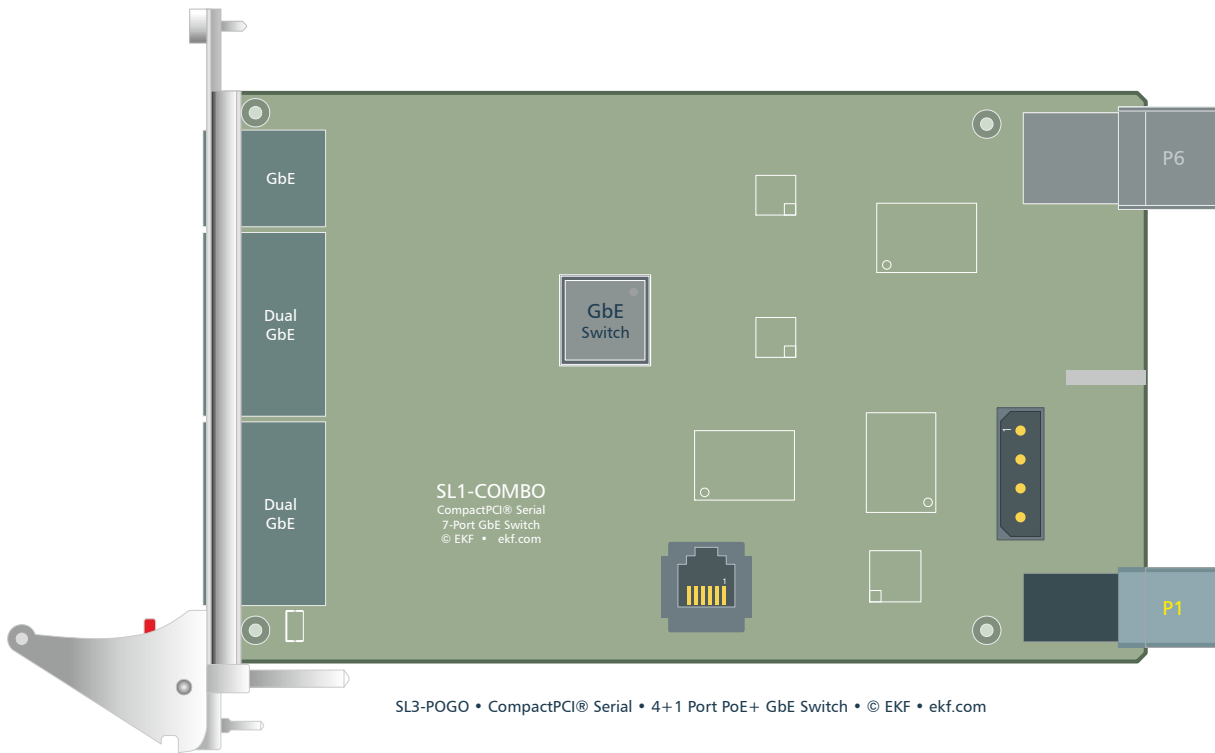
P2 (Option) +12V Power Stand-Alone • 264.02.004.13 • MATE-N-LOK		
 <p>© EKF • ekf.com</p> <p>264.02.004.13 AMP MATE-N-LOK</p>	1	+12V
	2	GND
	3	GND
	4	NC

### Switch Management (Option)

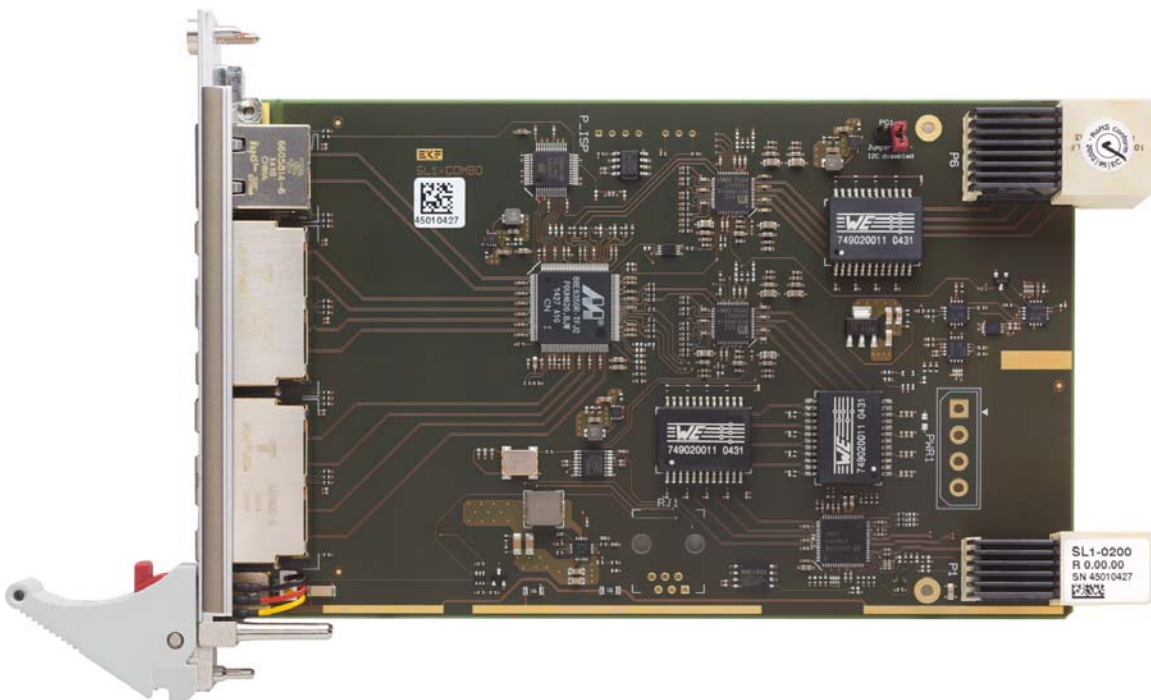
The SL1-COMBO may be optionally provided with an RJ-11 jack for attachment of the Marvell® USB-2-SMI adapter module. The Windows® based Marvell® SOHO-GUI then can be used to access the GbE switch internal registers and tables. The USB-2-SMI is connected to the CL2-BRASS by means of a four lead cable (only pins 2 - 5 from the table above in use). The USB-2-SMI adapter module must be ordered directly from Marvell®. Signing of a Marvell® non-disclosure agreement (NDA) may be required. Please contact your nearest Marvell® sales office or distributor in your area, which can be located at <http://extranet.marvell.com/sales/>.

Option Serial Management Interface • 270.10.06.00 • RJ-11 Modular Jack		
 <p>270.10.06.00 © EKF • ekf.com</p>	1	NC
	2	SMI DATA
	3	GND
	4	GND
	5	SMI CLOCK
	6	NC

### Component Assembly



Please note: Some components are optional - actual assembly may vary



SL1-COMBO Links	
SL1-COMBO Home	<a href="http://www.ekf.com/s/sl1/sl1.html">www.ekf.com/s/sl1/sl1.html</a>
Intel® I210 (I211) Driver Download	<a href="http://www.ekf.com/s/sl1/sl1.html">www.ekf.com/s/sl1/sl1.html</a>
CompactPCI® Serial Technology Overview	<a href="http://www.ekf.com/s/smart_solution.pdf">www.ekf.com/s/smart_solution.pdf</a>

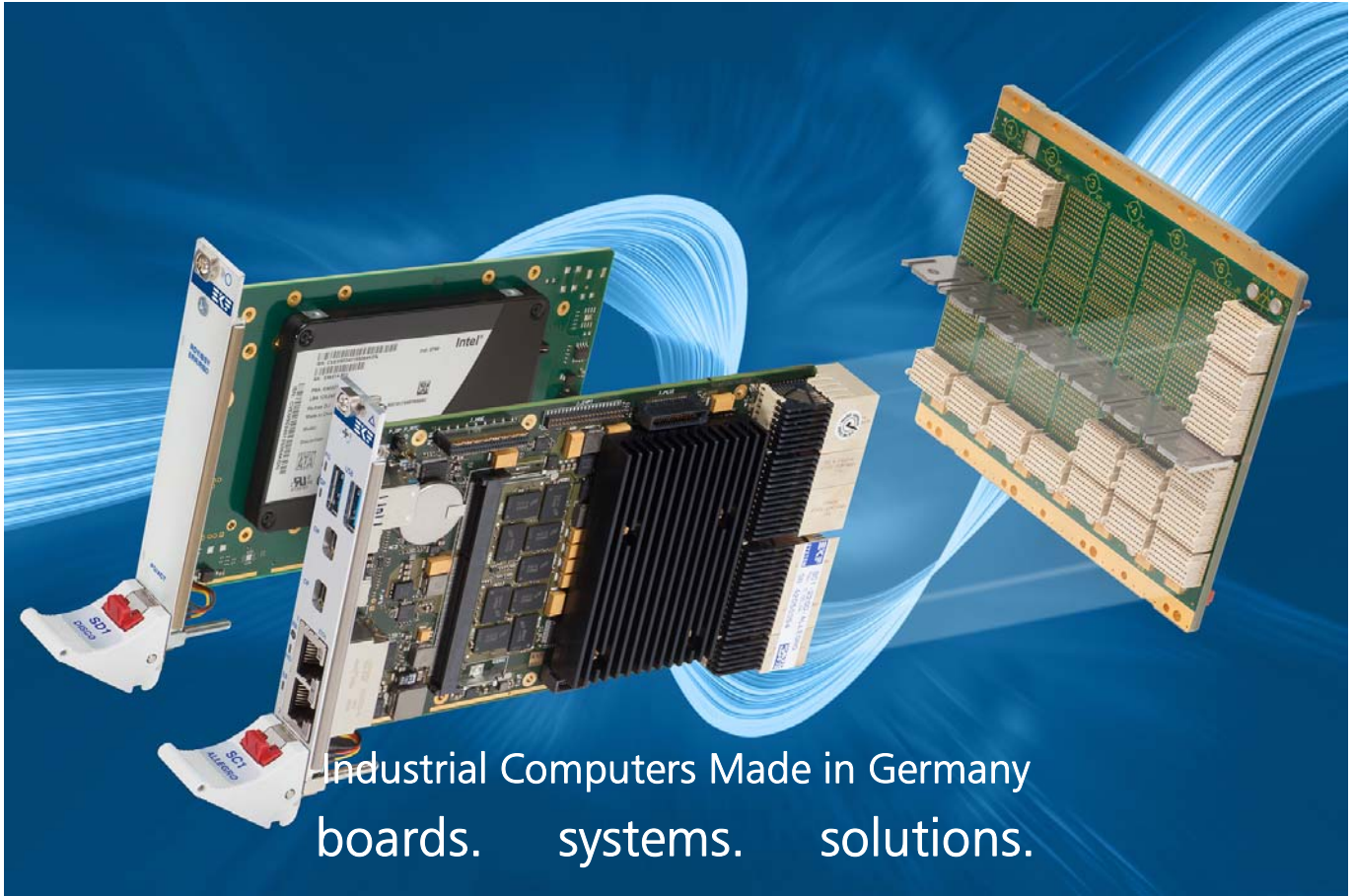
#### Ordering Information

For popular SL1-COMBO SKUs please refer to  
[www.ekf.com/liste/liste\\_21.html#SL1](http://www.ekf.com/liste/liste_21.html#SL1)



SL1-0100-COMBO





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