



Product Information

CompactPCI® Serial • SL1-COMBO

7-Port Gigabit Ethernet Switch

Document No. 7678 • 3 November 2017



SL1-0300-COMBO

General

The SL1-COMBO is a 7-port Gigabit Ethernet switch on a peripheral slot card for CompactPCI® Serial systems. The on-board Marvell® 88E6350R GbE switch is self-managed and provides a rich feature set.

While five GbE ports are wired to associated RJ45 front panel jacks, the 6th GbE port is in use for backplane communication via the CompactPCI® Serial connector P6.

As an option, the SL1-COMBO is available with an Intel® I210-IT Gigabit Ethernet controller (NIC) in addition, which is internally connected to the 7th port of the GbE switch. Usage of the NIC requires a PCIe Express® enabled CompactPCI® Serial backplane slot.

The Gigabit Ethernet switch provides many features such as 802.1 Audio Video Bridging (AVB) and Quality of Service (QoS) support.



SL1-0300-COMBO

Feature Summary

General

- ▶ PICMG® CompactPCI® Serial standard (CPCI-S.0) peripheral slot card
- ▶ Single Size Eurocard 3U 4HP 100x160mm²
- ▶ 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 (SL1-0300-COMBO)
- ▶ CompactPCI® Serial backplane connector P1 used for PCI Express® x 1 lane to I210 (I211) Gigabit Ethernet Controller (SL1-0300-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
- ▶ Management available on request via Marvell® SOHO Switch GUI Software

Gigabit Ethernet Controller (Option)

- ▶ Intel® I210IT (I211) Gigabit Ethernet Controller internally wired to GbE switch (SL1-0300-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
- ▶ Certified quality management according to ISO 9001
- ▶ Long term availability
- ▶ Rugged solution
- ▶ Coating, sealing, underfilling on request
- ▶ RoHS compliant
- ▶ 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 45.8 years
- ▶ EC Regulations EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)

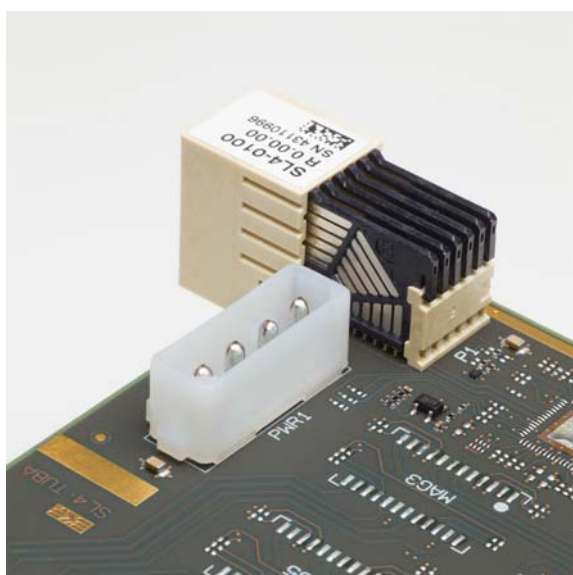
Theory of Operation

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).

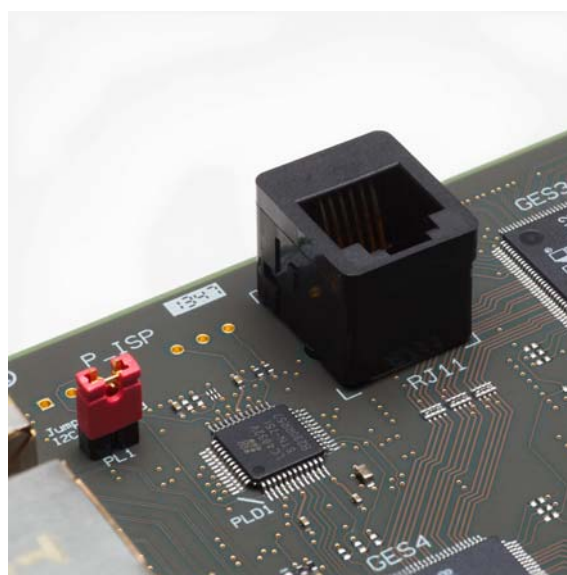
A total of 7 GbE ports is available on-board, wired to the front panel (5), and the CompactPCI® Serial backplane connector P6 (1). Another port is connected to the on-board Gigabit Ethernet controller.

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

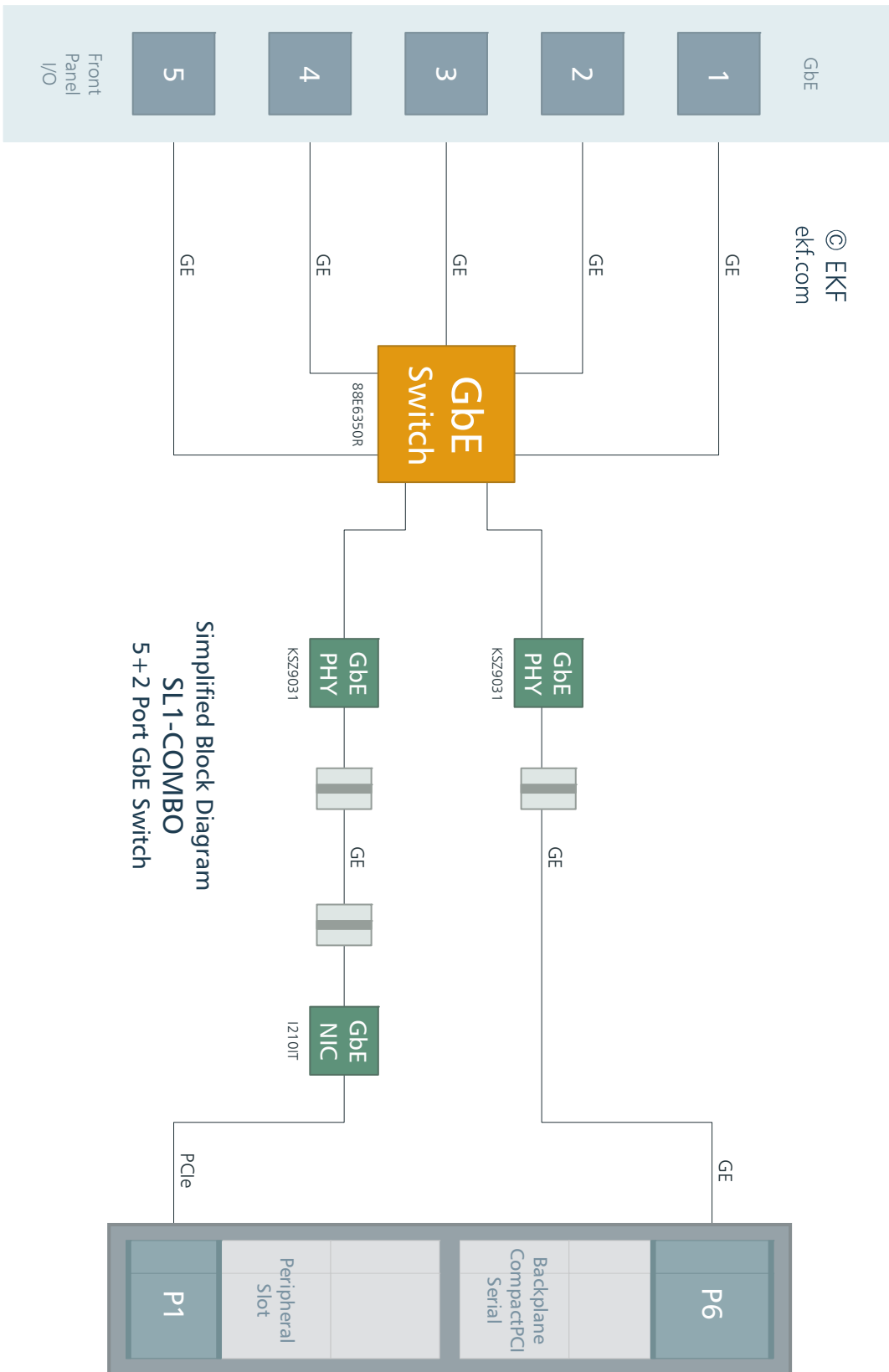


Option Management I/F
(Marvell NDA Customers Only)

By default, the SL1-COMBO is self-managed. As an option, management is available by means of a USB to SMI adapter which connects to the optional on-board MDIO (SMI) interface RJ11 jack. This is the method with the highest level of protection against external attacks.

For convenience, remote management can be done via front panel Ethernet port 4 or 5 (neither activated for management by default). The Marvell® SOHO Switch GUI (Windows®) is required for either method of management. Please contact support@ekf.de for details.

Block Diagram




Front Panel



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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>© EKF • draft - do not scale • ekf.com</p> <p>Upper LEDs: yellow=1Gbit/s green=100Mbit/s off=10Mbit/s</p> <p>Lower green LEDs: 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#	<i>SYS EN#</i>
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

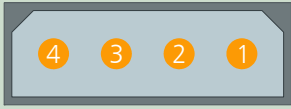
EKF Part #250.3.1208.20.02 • 96 pos. 12x8, 18mm width

P6	A	B	C	D	E	F	G	H	I	J	K	L
8	GND	<i>8</i> <i>ETH</i> <i>A+</i>	<i>8</i> <i>ETH</i> <i>A-</i>	GND	<i>8</i> <i>ETH</i> <i>B+</i>	<i>8</i> <i>ETH</i> <i>B-</i>	GND	<i>8</i> <i>ETH</i> <i>C+</i>	<i>8</i> <i>ETH</i> <i>C-</i>	GND	<i>8</i> <i>ETH</i> <i>D+</i>	<i>8</i> <i>ETH</i> <i>D-</i>
7	<i>7</i> <i>ETH</i> <i>A+</i>	<i>7</i> <i>ETH</i> <i>A-</i>	GND	<i>7</i> <i>ETH</i> <i>B+</i>	<i>7</i> <i>ETH</i> <i>B-</i>	GND	<i>7</i> <i>ETH</i> <i>C+</i>	<i>7</i> <i>ETH</i> <i>C-</i>	GND	<i>7</i> <i>ETH</i> <i>D+</i>	<i>7</i> <i>ETH</i> <i>D-</i>	GND
6	GND	<i>6</i> <i>ETH</i> <i>A+</i>	<i>6</i> <i>ETH</i> <i>A-</i>	GND	<i>6</i> <i>ETH</i> <i>B+</i>	<i>6</i> <i>ETH</i> <i>B-</i>	GND	<i>6</i> <i>ETH</i> <i>C+</i>	<i>6</i> <i>ETH</i> <i>C-</i>	GND	<i>6</i> <i>ETH</i> <i>D+</i>	<i>6</i> <i>ETH</i> <i>D-</i>
5	<i>5</i> <i>ETH</i> <i>A+</i>	<i>5</i> <i>ETH</i> <i>A-</i>	GND	<i>5</i> <i>ETH</i> <i>B+</i>	<i>5</i> <i>ETH</i> <i>B-</i>	GND	<i>5</i> <i>ETH</i> <i>C+</i>	<i>5</i> <i>ETH</i> <i>C-</i>	GND	<i>5</i> <i>ETH</i> <i>D+</i>	<i>5</i> <i>ETH</i> <i>D-</i>	GND
4	GND	<i>4</i> <i>ETH</i> <i>A+</i>	<i>4</i> <i>ETH</i> <i>A-</i>	GND	<i>4</i> <i>ETH</i> <i>B+</i>	<i>4</i> <i>ETH</i> <i>B-</i>	GND	<i>4</i> <i>ETH</i> <i>C+</i>	<i>4</i> <i>ETH</i> <i>C-</i>	GND	<i>4</i> <i>ETH</i> <i>D+</i>	<i>4</i> <i>ETH</i> <i>D-</i>
3	<i>3</i> <i>ETH</i> <i>A+</i>	<i>3</i> <i>ETH</i> <i>A-</i>	GND	<i>3</i> <i>ETH</i> <i>B+</i>	<i>3</i> <i>ETH</i> <i>B-</i>	GND	<i>3</i> <i>ETH</i> <i>C+</i>	<i>3</i> <i>ETH</i> <i>C-</i>	GND	<i>3</i> <i>ETH</i> <i>D+</i>	<i>3</i> <i>ETH</i> <i>D-</i>	GND
2	GND	<i>2</i> <i>ETH</i> <i>A+</i>	<i>2</i> <i>ETH</i> <i>A-</i>	GND	<i>2</i> <i>ETH</i> <i>B+</i>	<i>2</i> <i>ETH</i> <i>B-</i>	GND	<i>2</i> <i>ETH</i> <i>C+</i>	<i>2</i> <i>ETH</i> <i>C-</i>	GND	<i>2</i> <i>ETH</i> <i>D+</i>	<i>2</i> <i>ETH</i> <i>D-</i>
1	<i>1</i> <i>ETH</i> <i>A+</i>	<i>1</i> <i>ETH</i> <i>A-</i>	GND	<i>1</i> <i>ETH</i> <i>B+</i>	<i>1</i> <i>ETH</i> <i>B-</i>	GND	<i>1</i> <i>ETH</i> <i>C+</i>	<i>1</i> <i>ETH</i> <i>C-</i>	GND	<i>1</i> <i>ETH</i> <i>D+</i>	<i>1</i> <i>ETH</i> <i>D-</i>	GND

pin positions printed white/italic: not connected

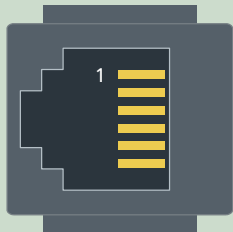
Stand-Alone Operation (Option)

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

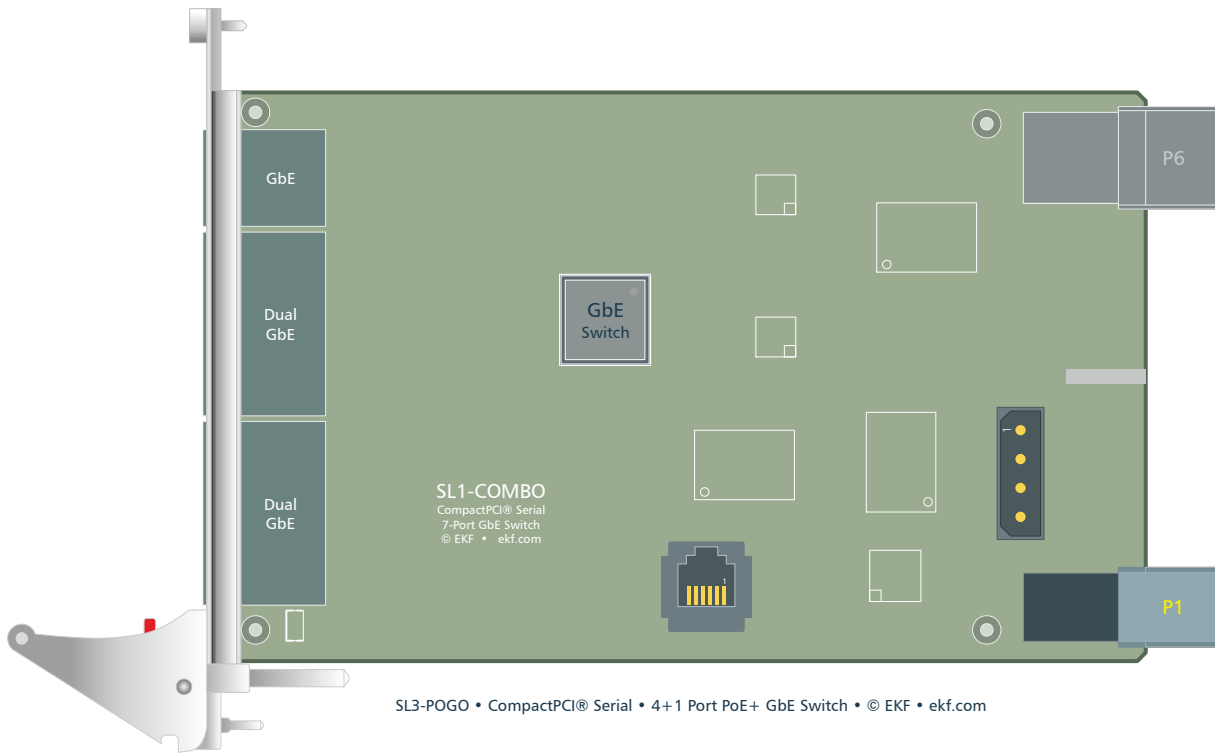
Switch Management (Option)

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 is an engineering (diagnostic) tool for experienced users which allows access to the GbE switch internal registers and tables. The USB-2-SMI is connected to the SL1-COMBO by means of a four lead cable (only pins 2 - 5 from the table below 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/>.

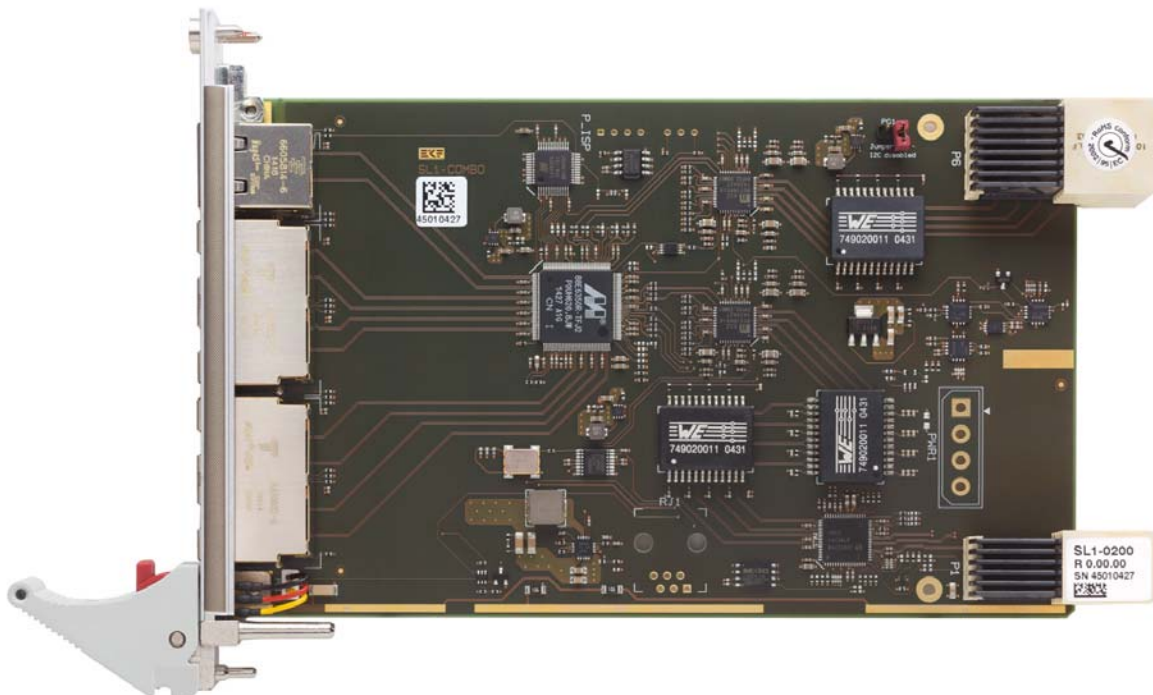
Option Serial Management Interface • 270.10.06.00 • RJ-11 Modular Jack		
 <p>270.10.06.00 © EKF • ekf.com</p>	1	NC
	2	SMI DATA
	3	GND
	4	GND
	5	SMI CLOCK
	6	NC

The SL1-COMBO can be configured also for remote in-band management across the front panel GbE jacks 4/5. This is not enabled by default in order to prevent from external attacks. Please contact sales@ekf.com for in-band diagnostic availability before ordering.

Component Assembly



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



SL1-COMBO Links

SL1-COMBO Home	www.ekf.com/s/sl1/sl1.html
Intel® I210 (I211) Driver Download	www.ekf.com/s/sl1/sl1.html
CompactPCI® Serial Technology Overview	www.ekf.com/s/smart_solution.pdf

Ordering Information

For popular SL1-COMBO SKUs please refer to
www.ekf.com/liste/liste_21.html#SL1



Sample System w. SL1-COMBO



SL1-0100-COMBO





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