Product Information

SN2-VIBRATO

CompactPCI® Serial • 5-Port Gigabit Ethernet NIC

M12 Front Panel Connectors

Document No. 6946 • 7 October 2015

SN2-0100-VIBRATO

General

The SN2-VIBRATO is a peripheral slot card for CompactPCI® Serial systems, equipped with five independent Gigabit Ethernet controllers, wired to associated M12 circular front panel connectors, either X-Coded (1000Mbps) or classic D-Coded (100Mbps).

The Intel® I210-IT (option I211-AT) Ethernet NICs provide latest networking technology, e.g. power management and Audio-Video Bridging (AVB) for tightly controlled media stream synchronisation, buffering, and reservation.

The on-board PCI Express® packet switch allows for operation of the SN2-VIBRATO either in a CompactPCI® Serial fat pipe slot, or even a standard peripheral backplane slot. The optimum performance can be achieved with a PCIe x 4 link established via the backplane connector P1.

The SN2-VIBRATO is well suited for high performance industrial and transportation networking applications. Drivers are available for all major operation systems.

Theory of Operation

The SN2-VIBRATO is equipped with five independent Intel® I210IT industrial temperature range Gigabit Ethernet controllers. Each of them requires a PCI Express® x1 lane, which is provided by a PCI Express® Gen2 packet switch. The downstream ports operate at 2.5GT/s, fully sufficient for the 1Gbps Ethernet data transfer speed. The PCIe x 4 upstream port of the PCI Express® packet switch is capable to operate at 4 x 5.0GT/s (Gen2), if supported by the CompactPCI® Serial system slot controller (CPU board) for the chosen SN2-VIBRATO card slot. As an option for cost sensible applications, the I210IT can be replaced by I211AT (commercial temperature).

The PCI Express® packet switch is a flexible interface between one to four PCI Express® lanes, derived from the CompactPCI® Serial backplane connector P1 (upstream link), and 5 GbE NICs (single lane PCIe downstream links). For maximum GbE data throughput the SN2-VIBRATO should be inserted either into a CompactPCI® Serial fat pipe slot (which provides 8 PCIe lanes), or PCIe x 4 capable standard peripheral slot. For typical applications however, reasonable performance can be already achieved in a PCIe x 1 CompactPCI® Serial peripheral slot, especially in combination with the 100Mbps Ethernet D-coded M12 connectors.

SN2-0100-VIBRATO (M12 X-Coded Connectors)

M12 X-Coded 8-Lead Gigabit Ethernet Connectors
Designed for Optimum Performance

Feature Summary

- PICMG® CompactPCI® Serial standard (CPCI-S.0) peripheral slot card
- Single Size Eurocard 3U 100x160mm^2, front panel width 8HP
- cPCI-S backplane connector P1
- Suitable for PCIe x 1 or PCIe x 4 standard peripheral slots, and fat pipe peripheral slots

- PLX PCI Express® Gen2 packet switch for optimum bandwidth distribution
- 1 x Upstream port PCIe x 4 oder PCIe x 1, Gen2 or Gen1 PCI Express® over backplane
- 5 x Downstream ports PCIe x 1 to Gigabit Ethernet NICs

- Five independent Gigabit Ethernet controllers (5 x MAC address) Intel® I210-IT
- Intel® I211-AT Gigabit Ethernet controllers populated as a value alternate (on request only)
- Integrated PHYs 1000BASE-T, 100BASE-TX, 10BASE-T (IEEE 802.3, 802.3u, 802.3ab)
- IEEE 802.3ab Auto Negotiation for automatic link configuration
- Auto MDI, MDI-X Crossover at all speeds
- Full duplex operation at 10/100/1000Mbps
- 9.5KB Jumbo Frame support
- Hardware-based time stamping (IEEE 1588) and support for 802.1AS - Precise Timing Protocol
- Support for Energy Efficient Ethernet (EEE) standard of IEEE 802.3az
- Option IEEE 802.1Qav compliant Audio-Video Bridging (AVB)
- IPv4, IPv6, TCP/UDP checksum offloads
- Driver support for all major operating systems
- Five front panel M12 circular connectors
- Choice of high performance X-coded or classic D-coded (aka railway) type connectors
- SN2-0100-VIBRATO: M12 X-coded connectors (8-leads, 1000Mbps Ethernet)
- SN2-0200-VIBRATO: M12 D-coded connectors (4-leads, 100Mbps Ethernet)

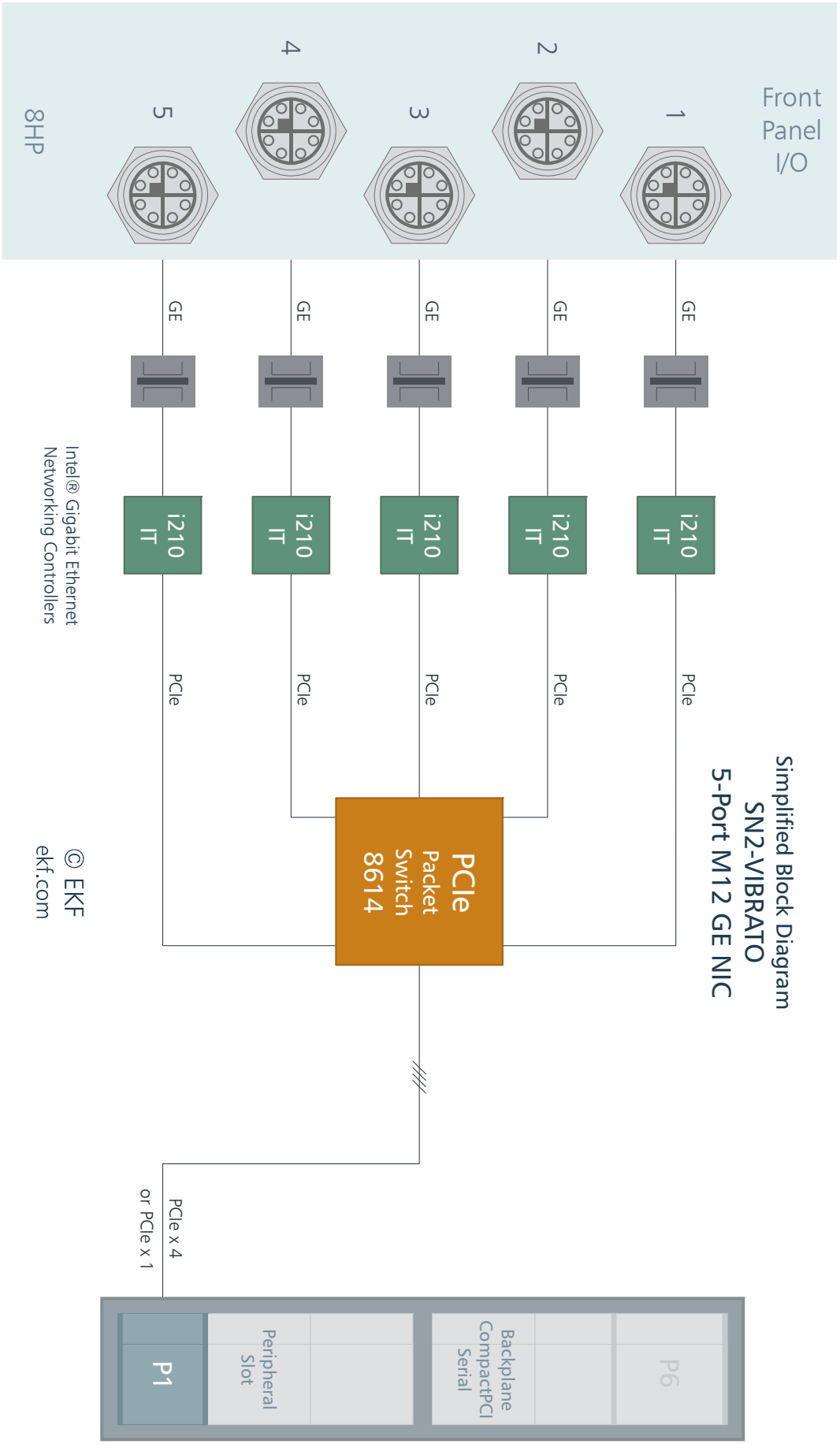
- Designed & manufactured in Germany
- ISO 9001 certified quality management
- Long term availability
- Rugged solution
- Conformal coating (railway applications), not available with I211AT value option
- RoHS compliant
- Industrial operating temperature range -40°C to +85°C
- Commercial operating temperature range 0°C to +70°C (value option w. I211AT, 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 33.6 years
- EC Regulations EN55022, EN55024, EN60950-1 (UL60950-1/IEC60950-1)

items are subject to changes

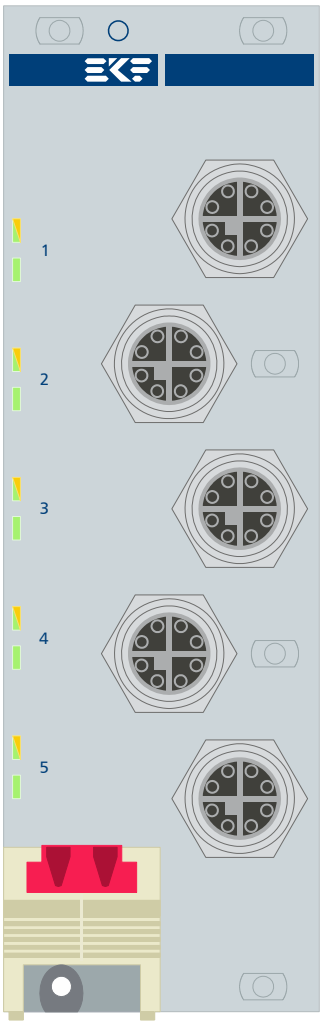
SN2-0200-VIBRATO (M12 D-Coded Connectors)

M12 D-Coded 4-Lead 100Mbps Ethernet Connectors
Designed for Legacy Applications (Railway)

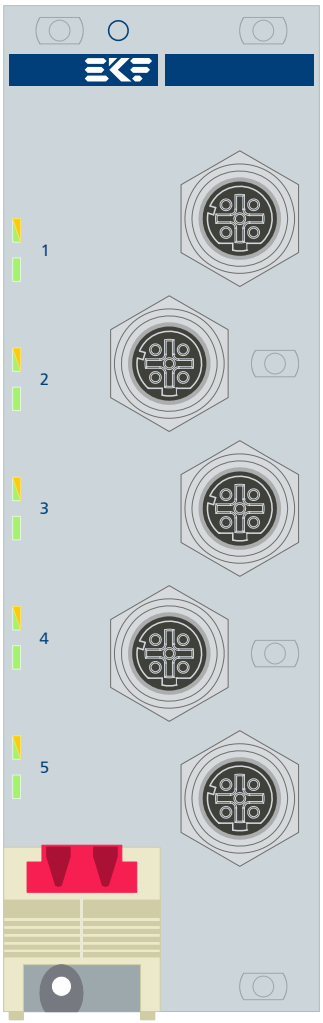
Block Diagram



Front Panel Options



SN2-0100-VIBRATO
C31-M12X



SN2-0200-VIBRATO
C34-M12D

X-Coded and D-Coded M12 Cable Assemblies Available

M12 to M12 Cable
Phoenix Contact

M12 Cable Connector
Phoenix Contact

M12 to RJ45 Cable
Phoenix Contact

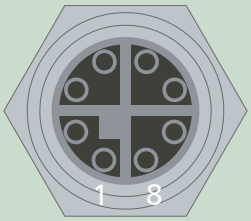
M12 Gigabit Ethernet Cable Assembly

Ordering Information Cable Assemblies
Gigabit Ethernet cable M12 to M12: #271.14.008.xx (xx=length/meter) Gigabit Ethernet cable M12 to RJ-45: #271.15.008.xx (xx=length/meter)
100Mbps Ethernet cable M12 to M12: #271.14.004.xx (xx=length/meter) 100Mbps Ethernet cable M12 to RJ-45: #271.15.004.xx (xx=length/meter)

M12 Front Panel Connectors

C31-M12X
Gigabit Ethernet • 271.12.008.00 • M12-X Flush-type socket 1+10 Gigabit Ethernet

271.12.008.00



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Draft - Do Not Scale

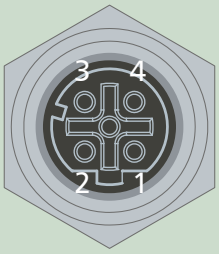
Upper F/P LEDs
yellow=1Gbit/s green=100Mbit/s off=10Mbit/s

Lower F/P green LEDs
on=link established blinking=activity (data)

Ports 1-5	1	MDX0+
	2	MDX0-
	3	MDX1+
	4	MDX1-
	5	MDX3+
	6	MDX3-
	7	MDX2-
	8	MDX2+

C34-M12D
100Mbit Ethernet • 271.12.004.00 • M12-D Flush-type socket 100Mbps Ethernet

271.12.004.00



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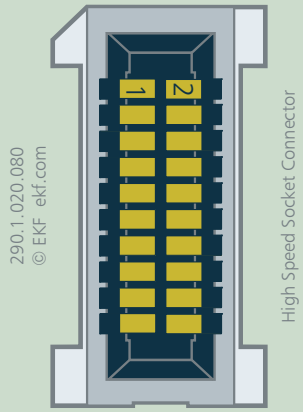
Upper F/P LEDs
yellow=1Gbit/s green=100Mbit/s off=10Mbit/s

Lower F/P green LEDs
on=link established blinking=activity (data)

Ports 1-5	1	MDX0+ TX+
	2	MDX1+ RX+
	3	MDX0- TX-
	4	MDX1- RX-

Internal Connectors

High Speed Dual Row Socket 0.8mm Pitch (290.1.020.080)



MDX3-	01	02	
MDX3+	03	04	
	05	06	MDX2-
	07	08	MDX2+
	09	10	
	11	12	
	13	14	MDX1-
	15	16	MDX1+
MDX0-	17	18	
MDX0+	19	20	

This high speed connector is in use on-board for each network port between the SN2-VIBRATO and the riser cards C31-M12X or C34-M12D. Custom specific riser cards with a mixture of M12 X-coded (e.g. uplink) and M12 D-coded (e.g. downstream) or even proprietary connectors can be designed - please contact sales@ekf.de

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	PE TX02+	PE TX02-	GND	PE RX02+	PE RX02-	GND	PE TX03+	PE TX03-	GND	PE RX03+	PE RX03-
5	PE TX00+	PE TX00-	GND	PE RX00+	PE RX00-	GND	PE TX01+	PE TX01-	GND	PE RX01+	PE RX01-	GND
4	GND	USB2+	USB2-	GND	PE CLK+	PE CLK-	GND	SATA TX+	SATA TX-	GND	SATA RX+	SATA RX-
3	USB3 TX+	USB3 TX-	GA0	USB3 RX+	USB3 RX-	GA1	SATA SDI	SATA SDO	GA2	SATA SCL	SATA SL	GA3
2	GND	I2C SCL	I2C SDA	GND	RSV	RSV	GND	RST#	WAKE#	GND	PE EN#	SYS EN#
1	+12V	STBY	GND	+12V	+12V	GND	+12V	+12V	GND	+12V	+12V	GND

pin positions printed gray: not connected

SN2-VIBRATO Links	
SN2-VIBRATO Home	www.ekf.com/s/sn2/sn2.html
Intel® I210/I211 Driver Download	www.ekf.com/s/sn2/sn2.html
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 SN2-VIBRATO SKUs please refer to www.ekf.com/liste/liste_21.html#SN2

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