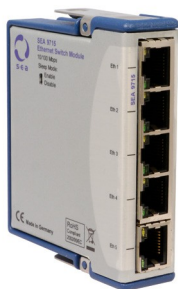


SEA 9715

Ethernet Switch Module



Order no.: 6000085



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Getting Started



The safety ratings and specifications in this document are specific to the SEA 9715 and may differ for other components in the system. To determine the safety ratings and specification of the entire system refer to each component in the system.

Before operating the SEA 9715 module you have to agree to the terms and conditions. If you do NOT agree you can send back the complete package within a period of two weeks after delivery. In this case, S.E.A. will refund the product price and shipping costs. The terms and conditions are listed in the software manual (section Disclaimer, Limitation of Liability and User Responsibilities), which is provided on the installation medium.

Before starting to work with the SEA 9715 module please read this document carefully. If there are any questions about operating the module or if any term in this manual is not understood, please contact the vendor before using the module.



Refer to the appropriate National Instruments™ documentation for details on National Instruments™ hardware.

We believe that all information in this manual is accurate. The document has been carefully reviewed for technical accuracy. In the event of technical or typographical errors, we reserve the right to make changes to sub-

sequent editions of this document without prior notice to holders of this edition. The reader should consult the vendor if errors are suspected.

Please check the S.E.A. website: www.sea-gmbh.com for updates of the manuals.

Safety Guidelines

To protect persons against any harm and the module from damage, the operation of the SEA 9715 module is only allowed according to the rules described in this document.



Hot or Cold Surface

The metallic surface of the module might become hot or cold as well. Touching the surface may result in bodily injury.
Do not dismount the module from the chassis during operation. Wait until the module temperature has reached 20 °C.



Do not insert, remove the module from the system or connect/disconnect wires or connectors to/from the module unless power has been switched completely off. Make sure working in an ESD safe environment.



Do not open or disassemble the module or other hardware parts. Guarantee void if seal is broken!



Safety Critical Applications



The module is not failure tolerant and therefore not suitable for use in safety critical applications.



Do not use for medical applications or any live supporting apparatus.

Hazardous Locations



The module is suitable for use in non hazardous locations only. Keep the module always away from hazardous locations and explosive areas.



Protect the module from thunderstorm and lightning strikes or other electrical hazards.



Use the module only in dry areas. Do not operate the module in bath areas, kitchens etc., where water or vapor can be in contact with the module or cables.

Hazardous Voltages

A voltage is hazardous when higher than 25 V_{RMS} or 60 VDC to earth ground according to IEC 60364-4-41 (SELV). If the module specifications allow to connect hazardous voltages to the module, take following precautions, when connecting hazardous voltages to the module:



Make sure that only qualified personnel wires hazardous voltage adhering to local electrical standards.



Do not mix hazardous voltage circuits and human-accessible circuits on the same module.



The module must not be operated in high voltage areas.

Prerequisites

The SEA 9715 module is shipped with the following accessory:

- Printed hardware manual with operating instructions, safety guidelines and specifications.

In order to operate the module the following components are required (not shipped with the module):

- CompactRIO™ or CompactDAQ™ system from National Instruments™

The SEA 9715 can currently be operated in the following CompactRIO™ systems:

- Reconfigurable Chassis: all types
- Expansion Chassis: all types
- CompactDAQ: all types

In order to operate the SEA 9715 module no software driver is required.

Connecting SEA 9715

SEA 9715 is a Ethernet switch module with RJ45 connectors (ports) to connect up to five Ethernet based devices. The power is supplied via the backplane connector (D-SUB-15) to the SEA 9715 module.



Fig. 1: Front Side (five RJ 45 connectors)

All Ethernet ports are internally connected to a switch and are functionally equivalent among each other. The switch has no data connection to the backplane connector.



The SEA 9715 only transfers data between the five Ethernet ports. Data from Ethernet devices cannot be made available on the backplane connector (in the FPGA).

Every of the module's RJ45 ports supports auto-negotiation for speed in the modes 10BaseT and 100BaseTX according to the IEEE 802.3u standard.

Each port provides two LED indicators, refer to Fig. 1:

- **Link/Act (yellow):** indication for hardware link and activity. The LED is permanently ON if a powered network device is connected to the module's RJ45 port. The LED flashes, when activity (data transfer) is detected.
- **Speed (green):** indication for the negotiated speed mode. If the LED is OFF 10 Mbit/s speed mode is active. If the LED is ON 100 Mbit/s speed mode is active.

Sleep Mode

This module supports a low-power sleep mode. In sleep mode typically there is no communication with the module and the power consumption is minimized. The system thermal dissipation may decrease. Refer to the Specifications section for more information about power consumption and thermal dissipation. The sleep mode can be enabled by software.

The SEA 9715 provides an additional hardware switch (*Sleep Mode*) that allows to ignore the sleep mode selection by software. This is useful if the entire system should be set to the sleep mode but still be accessible via the Ethernet port of SEA 9715 on network. If the hardware sleep mode switch is set to *Enable* the sleep mode selection by software takes effect on SEA 9715. Otherwise (*Sleep Mode: Disable*) the SEA 9715 ignores the sleep mode software selection and continues to operate.



Fig. 2: *Sleep Mode* DIP Switch

Specifications

The following specifications are typical for the range -40°C to +70°C unless otherwise noted.

Switch Characteristics

Network type	IEEE 802.3, 802.3u, 802.3x
Network mode	Switching (unmanaged)
Data rate	10/100 Mbit/s
Connector type	RJ45
Number of ports	5

Power Requirements

Operating voltage	5 VDC, $\pm 5\%$
Power consumption at 5V:	
Operating current in active mode	typ. 178 ¹ mA
Operating current in sleep mode	< 0.1 mA

Physical Characteristics

Weight	ca. 150 g
Dimensions	90 x 23 x 73 mm

1 All 5 ports in use, ambient temperature 25 °C

Environmental Conditions

The SEA 9715 module is intended for indoor use only. For outdoor use, mount the CompactRIO™ system in a suitable rated enclosure. Refer to the installation instructions for the chassis for more information about how to meet these specifications.

Operating temperature.....	-40 to +70 °C
Storage temperature.....	-40 to +85 °C
Ingress protection.....	IP 30
Operating humidity.....	10 to 90 % relative humidity, non condensing

Shock and Vibration

To meet these specifications, the CompactRIO™ system has to be panel mounted.

Operation vibration,

random (IEC 60068-2-64)	5 g _{rms} , 10 to 575 Hz, operation vibration
sinusoidal (IEC 60068-2-6)	5 g, 10 to 575 Hz , operation shock
(IEC 60068-2-27)	15 g, 11 ms half sine,
	30 g, 11 ms half sine,
	50 g, 3 ms half sine,
	(10 shocks at 6 orientations)

Maintenance

The module should only be wiped with a dry towel. It is not water resistant and should not be operated in humid environments.

The module contains no components, which have to be maintained.



The opening of the module will destroy the heat conductors and will void warranty.

Contact and Support

Address:

S.E.A. Datentechnik GmbH
Mülheimer Straße 7
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Germany

Support:

1. web site: www.sea-gmbh.com
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