

SEA Modules

Additional Functions for National Instruments CompactRIO™ and CompactDAQ



Communication: 4G (LTE) / 3G (UMTS) / 2G (GSM) / GPS / WLAN / 802.11p
Interface: LIN, K-Line / EnDat / BiSS, SSI/ ARINC-429 / Ethernet Switch
Measurement & Control: Analog and Digital IO
Display: High resolution graphic display

Communication Modules

SEA 4G/GPS Mobile Communication Modules

- SEA 9744
ord.no.: 60000072
- SEA 9745
ord.no.: 60000066
- SEA 9754 (LTE/GPS)*
ord.no.: 60000079
- SEA 9755 (LTE/GPS)**
ord.no.: 60000084



- fastest mobile communication using 4th Generation cellular technology
 - compatible with cellular technology 3rd Generation (UMTS,HSPA,HSUPA)
 - compatible with cellular technology 2nd Generation (GPRS,EDGE)
 - high precision GEO positioning and time synchronization using GPS technology
- * Only for Linux based CompactRIO Systems (e.g. NI cRIO-9068)
 ** USA version: AT&T ; Japan version: NTT = NTT DoCoMo SIM lock

- perfect for mobile or stand alone applications requiring remote access and position information
- data transfer rates up to 100 Mbit/s (DL) and 50 Mbit/s (UL)
- SIM card reader with SIM lock mechanism
- receiving and sending SMS messages
- GPS data rate time telegram: up to 4 Hz
- backup battery for GPS cold start
- operating temperature range: -25 °C to +60 °C

SEA 3G/GPS Mobile Communication Modules

- SEA 9724 (HSDPA NTT*/GPS)
ord. no.: 60000060
- SEA 9741
ord.no.: 60000066
- SEA 9751**(HSPA/GPS)
ord.no.: 60000078



- fast mobile communication using 3rd Generation cellular technology (UMTS, HSDPA, HSUPA)
 - compatible with cellular technology 2nd Generation (GPRS,EDGE)
 - high precision GEO positioning and time synchronization using GPS technology
 - perfect for mobile or stand alone applications requiring remote access and position information
- * Japan version: NTT = NTT DoCoMo SIM lock
 ** Only for Linux based CompactRIO Systems (e.g. NI cRIO-9068)

- data transfer rates between 384 kbit/s to 7,2 Mbit/s
- SIM card reader with SIM lock mechanism
- receiving and sending SMS messages
- GPS data rate time telegram: up to 4 Hz
- ** backup battery for GPS cold start
- operating temperature range:
SEA 9721 -20 °C bis +60 °C
SEA 9724 -20 °C bis +60 °C,
SEA 9741 30 °C bis +70 °C
SEA 9751 -30 °C bis +70 °C

SEA GPS Modules

- SEA 9405*
ord. no.: 60000201
- SEA 9410*
ord.no.: 60000077
- SEA 9414
ord.no.: 60000202



- high precision GEO positioning and time synchronization using GPS technology
- data rate time telegram: up to 4-10 Hz depending on module type
- programmable sync output connector on front panel (Timepulse)
- Timepulse signal available on FPGA via backplane

- * backup battery for GPS cold start
- operating temperature range:
SEA 9405 , SEA 9410 -25 °C to +60 °C
SEA 9414 -40 to +80°C

SEA WLAN Communication Modules

- SEA 9711
ord. no.: 60000009
- SEA 9712 *
ord. no.: 60000035



- perfect for wireless short range, high data rate applications in industrial control and measurement
- best suitable data logging applications
- connection of other network devices
- 3 port 10/100 Mbit/s Ethernet switch with Ethernet-to-wireless bridging function
- data rate acc. to IEEE 802.11 b/g up to 54 Mbit

- 2 free ports for connection of external Ethernet devices
- secure data transmission: AES with 128,192,256 bit and WPA/PSK with 128 bit
- usable with standard TCP LabVIEW functions within LabVIEW RT
- operating temperature range: -40 °C to +60 °C

* Japan version

SEA 9719 802.11p V2X Communication Module

- SEA 9719
ord. no.: 60000090



- compliant with 802.11p standard for WAVE and ETSI ITS G5 operation
- use with all CompactRIO systems
- integrated ARM processor
- time synchronisation via PPS pulse via front connector and backplane

- full LabVIEW API
- no cRIO FPGA resource usage
- applicable for Linux and Windows

SEA 9715 Ethernet Switch Module

- SEA 9715
ord.no.: 60000085



- five-port Ethernet switch
- 10/100 Mbit/s Data rate
- defeatable support of the sleep mode in the CompactRIO chassis

- no software required
- operational temperature range: -40 °C to +70 °C

Interface Modules

SEA LIN/K-Line Interface Module

- SEA 9804
ord.no.: 60000004



- serial communication with LIN devices
- simulation/stimulation
- Hardware-In-the-Loop (HIL) tests
- LIN data logging
- 2-port galvanically isolated LIN bus interface for LIN V 2.0
- additional K-Line port for the ISO 9141 protocol (functional)
- each port configurable for LIN master or slave mode
- LIN read and write functions
- modification of timing and framing parameters
- operational temperature range: -40 °C to +85 °C

SEA ARINC 429 Interface Module

- SEA 9811
ord.no.: 60000065



- serial field bus communication for commercial aircraft
- low-speed and high speed communication with data rates between 10,5 and 125 kBit/s via 1-to-n connections
- 8 receive channels of ARINC 429 telegrams and 1 send channel
- galvanic isolation of the backplane
- both CompactRIO - as well as in PXI systems usable
- operating temperature: -40 °C to + 85 °C

SEA BiSS / SSI Interface Module

- SEA 9521
ord.no.: 60000069



- galvanic isolation to the CompactRIO Chassis
- BiSS clock rates of up to 8 MHz
- 3 BiSS-C / SSI encoder interfaces per module
- Sensor supply with 5 V/350 mA per sensor
- operating temperature: -20 °C to + 70 °C

SEA EnDat Interface Module

- SEA 9510
ord.no.: 60000006



- communication with EnDat position encoders
- digital drive systems and feedback loop with position encoders
- transmission of user parameters and position values with high accuracy (28/40 bit)
- 3 independent EnDat master ports with M12 connectors
- galvanically isolated from the CompactRIO backplane
- precise timing controlled by integrated FPGA technology
- position synchronization of up to 3 axis within the module
- provided sensor supply 5.25 V / 350 mA per axis
- operation temperature range: -40 °C to +70 °C

Measurement & Control

SEA Health Status Module

- SEA 9210
ord.no.: 60000083



- diagnostic supervision of autonomous CompactRIO™ systems
- monitoring of environment including power supply and backup battery
- multiple signal types: Voltage, current, power, digital IO, digital sensors (e.g. temperature)
- integrated power supply for digital sensors
- operating temperature range: -40 °C to + 70 °C

Displays

CompactRIO Display Modules

- SEA 4912
ord.no.: 61000126
- SEA 4914
ord.no.: 61000121



- color display for text and graphics
- resistive touchscreen
- general-purpose IO for switches, LEDs, etc.
- RS-232 communication interface
- programming interface for LabVIEW
- integrated speaker



Mounting Kit: Massive aluminium frame, anodized (colour: petrol, similar to RAL 6012), clamp bracket and two screws

All modules include LabVIEW driver software for LabVIEW-RT and -FPGA as well as documentation manuals for software and hardware. For further information please refer to: www.sea-gmbh.com

