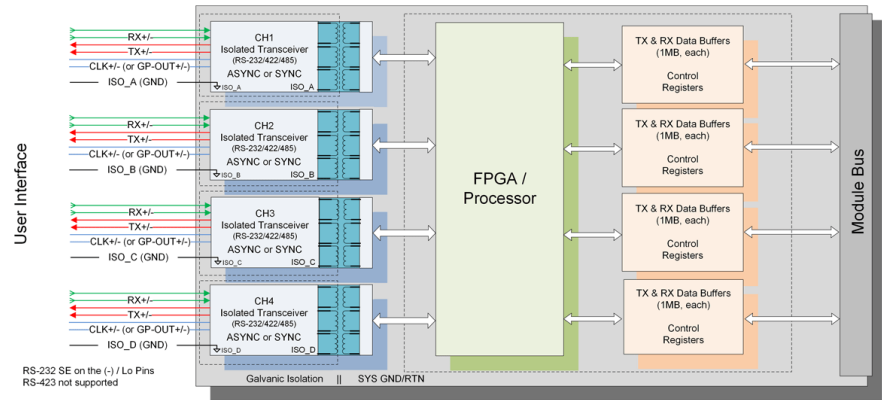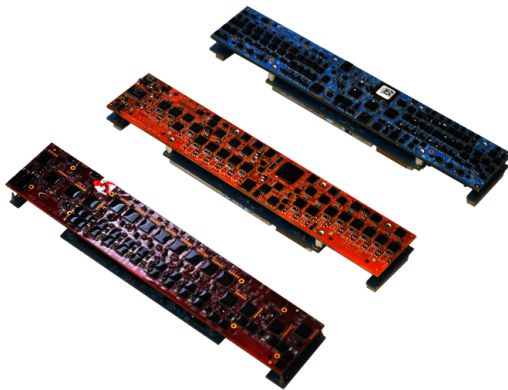# SC5 Communication Modules Serial Communications Function Modules
4 Serial Communication Channels, Programmable RS-232/422/485, Isolated

Serial Communication Module SC5 provides up to 4 high-speed, programmable RS-232/422/485, individually isolated communication channels. Each channel is programmable for either RS-422/485 (differential, DF) or RS-232 (single ended, SE) hardware level interfaces. Individual channel isolated returns are available as part of the channel user interface signal set (for SE or ISO-GND reference).

Each channel has one Transmit and one Receive signal pair (+/-) available, as applicable. Synchronous (SYNC) communications mode automatically configures the clock (CLK) signal(s) on the associated channel (added feature, as compared to the older-GEN deprecated SC2 function module). If Asynchronous (ASYNC) mode is programmed, the (CLK) signals can also be repurposed as a general-purpose output, with the signal voltage levels programmed as per the selected hardware interface level mode (RS-232/422/485).

Features

- **Four (4) high-speed isolated serial communications channels, as programmable RS-232/422/485**
- **Data Rates: Asynchronous (ASYNC) to 1.5 Mbps, Synchronous (SYNC) to 10 Mbps (high resolution programmable baud rates)**
- **SYNC Clock or General-Purpose Output**
- **Data transfers within (2) baud clocks for ASYNC communications, (15) baud clocks for SYNC communications**
- **Digital Noise filtering on Receivers**
- **A Receiver Enable/Disable function allows the user to turn selected receivers ON/OFF**
- **Common API/Register memory map with NAI SC3 module**

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Specifications

Number of Channels/Types	Four (4) high-speed, programmable RS-232/422/485, independently isolated. Each channel has one Tx, Rx and CLK (or General-purpose Output) signal pair (±) including an Isolated GND/Return reference.
Data Rate	RS422 and RS-485:1.5 Mb/s for each channel in asynchronous, or 10 Mb/s synchronous, differential mode (burst); RS-232: 250 Kb/s. Data rate will be within 1% of commanded rate. Data can be read 4 µs after receipt in UART (typical bus transfer). These data rates are verified with all channels running simultaneously.
Data Transfer	Data transfers within: (2) baud clocks for ASYNC communications; (15) baud clocks for SYNC communications. Digital Noise filtering on receivers, no latency issues.
Receive/Transmit Buffers	1MB Receive and Transmit buffers, per channel
Mode of Operation	RS-232: Single Ended; RS-422: Differential; RS-485: Differential
Drivers & Receivers fan out (typ max)	RS-232: 1 driver and 1 receiver; RS-422: 1 driver and 10 receivers; RS-485: 32 driver/receiver pairs.
Drv Out Sig Lvl (min) @ Drv Ld (max, min imp)	RS-232: ±5 V @ 3 kΩ load; RS-422: ±2 V @ 100 Ω load; RS-485: ±1.5 V @ 54 Ω (max load)
Max Driver Current in High-Z State (Power On)	RS-232: N/A; RS-422: N/A; RS-485: 100 µA
Max Driver Current in High-Z State (Power Off)	RS-232: 6 mA @ ±2 V; RS-422: 100 µA; RS-485: 100 µA
Receiver Input Voltage Range	RS-232: ±15 V; RS-422: -10 V to +10 V; RS-485: -7 V to +12 V
Receiver Input Sensitivity	RS-232: ±3 V; RS-422: ±200 mV; RS-485: ±200 mV
Receiver Input Resistance (typ) (Ohms)	RS-232: 5k typ. (3k to 7k); RS-422: 125k (1/8-unit load) or 120 (termination enabled); RS-485: 125k (1/8-unit load) or 120 (termination enabled)
Power (per 4 Channels)	5 VDC @ 200 mA, 360 mA fully loaded (54 Ω load per channel), (est.).
Ground	ISOLATED individual channel GND/REF; isolated from System GND and Chassis
Weight	1.5 oz. (42 g)

Architected for Versatility

NAI's Configurable Open Systems Architecture™ (COSA®) offers a choice of over 100 smart I/O, communications, or Ethernet switch functions, providing the highest packaging density and greatest flexibility of ruggedized embedded product solutions in the industry. Preexisting, fully-tested functions can be combined in an unlimited number of ways quickly and easily.

One-Source Efficiencies

Eliminate man-months of integration with a configured, field-proven system from NAI. Specification to deployment is a seamless experience as all design, state-of-the-art manufacturing, assembly and test are performed - by one trusted source. All facilities are located within the U.S. and optimized for high-mix/low volume production runs and extended lifecycle support.

Product Lifecycle Management

From design to production and beyond, NAI's product lifecycle management strategy ensures the long-term availability of COTS products through configuration management, technology refresh and obsolescence component purchase and storage.

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