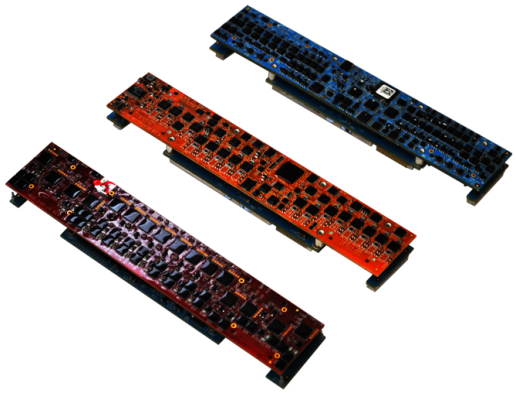
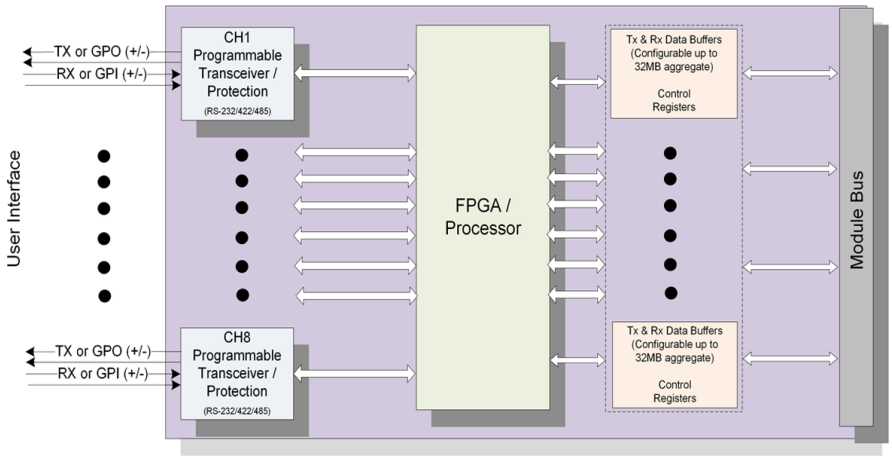
SC3 Communication Modules Serial Communications Function Modules

8 Serial Communication Channels, programmable RS-232/422/485 non-isolated

Serial Communication Module SC3 provides up to 8 high-speed, programmable RS-232, RS-422, RS-485, non-isolated communication channels. Each channel is programmable for either Serial Communications (SC) protocol or General Purpose I/O (GPIO) modes as either RS-422/485 (differential) or RS-232 (single ended) hardware level interfaces.

Each channel has one Transmit and one Receive signal pair (+/-) available as applicable. Synchronous (SYNC) communications mode (added feature) automatically configures the clock (clk) signal(s) on the companion pair channel: CH1-CH4 clk companion channels are CH5-CH8, respectively.





Features

- **Eight (8) high-speed, programmable RS-232, RS-422, RS-485, non-isolated communications channels**
- **General Purpose Input/Output (GPIO) mode**
- **Data transfers within two baud clocks for Async communications, 15 for Sync communications**
- **Digital Noise filtering on Receivers**
- **A Receiver Enable/Disable function allows the user to turn selected receivers ON/OFF**
- **Note: SC3 (Rev B) product update includes the additional synchronous (SYNC) mode functionality. The SC3 SYNC mode and function capability is available for products identified with DOM > 1/2020, Mod-HW ≥ Rev. B and FPGA/Firmware ≥ Rev. 0000100003.**

Specifications

Number of Channels/Types	**Eight (8) high-speed, programmable RS-232, RS-422, RS-485, non-isolated. Each channel is programmable for either Serial Communications (SC) protocol or General Purpose I/O (GPIO) modes as either RS-422, RS-485 (differential) or RS-232 (single ended) hardware level interfaces. Each channel has one Tx and one Rx signal pair (±) available as applicable.**
Data Rate (SC Mode)	**RS422 and RS-485:1.5 Mbit/s for each channel in asynchronous 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 (SC Mode)	**Data transfers within 300 ns, no latency issues.**
Receive/Transmit Buffers (SC Mode)	**1MB x 16 Receive and Transmit buffers.**
Mode of Operation	**RS-232: Single Ended, RS-422: Differential, RS-485: Differential**
Number of Drivers & Receivers on one line max typ	**RS-232: 1 driver and 1 receiver, RS-422: 1 driver and 10 receivers, RS-485: 32 drivers/receiver pairs.**
Maximum Data Rate	**RS-232: 250 kb/s, RS-422: 1.5 Mb/s, async or 10 Mb/s sync, RS-485: 1.5 Mb/s async or 10 Mb/s sync.**
Driver Output Signal Level (Min Loaded)	**RS-232: ±5 V @ 3 kΩ load, RS-422: ±2 V @ 100 Ω load, RS-485: ±1.5 V @ 54 Ω load**
Driver Load Impedance (Ohms)	**RS-232: 3k (min.), RS-422: 100, RS-485: 54**
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 (3k to 7k), RS-422: 125k (1/8 unit load) 120 (term enabled), RS-485: 125k (1/8 unit load) 120 (term enabled)**
Power (Per 8-Channels)	**5 VDC @ 200 mA, 360 mA fully loaded (54 Ω load per channel), (est.).**
Ground	**Signal common referenced to system (power) ground (non-isolated).**
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.