

Subsea Qualified Serial Server Gateway

Model 922-QSS

Focal's Model 922 product line is a modular set of interface and telemetry cards specifically designed and tested for long term deployment in subsea communications systems. With full qualification to API/ISO standards, this flexible platform combines the high reliability and performance of custom, rugged solutions with the ready availability and cost-effectiveness of standard industrial products.



The Model 922-QSS is a quad serial server gateway enabling sensors, valves, and other I/O to communicate with a modern Ethernet-based control system. A single QSS card supports multiple serial, fault tolerant CAN bus and 4-20 mA channels reducing card count and system complexity. Each serial channel is completely isolated and independently configured, providing maximum fault tolerance and flexibility.

Supported communication formats include SIIS Level 3 Ethernet and serial protocols (RS-232/422/485, IWIS 422). The QSS also performs format conversion, such as Modbus RTU to Modbus TCP, so that system integrators can easily adapt legacy serial sensor interfaces to Ethernet based systems. Fault tolerant CAN bus and 4-20 mA channels are available via a separate expansion card.

Model 922 software provides advanced diagnostics via Modbus TCP for real-time health monitoring of the system as well as easy configuration of all interfaces and modes of operation.

Features

- User configurable serial server (RS-232/422/485, IWIS 422) with protocol conversions
- User configurable 10/100M Ethernet switch
- Option for SIIS level 2 CAN Bus (ISO 11893-3, Fault Tolerant) and SIIS level 1 (4-20 mA) with expansion cards
- Isolated, fault-tolerant power and signal interfaces
- Qualified per ISO 13628-6 and API 17F to Q1 levels
- Advanced diagnostics and setup via Modbus TCP or Telnet
- Proven hi-rel components rated for -40 °C to +85 °C
- Robust remote update method for subsea firmware with multistage validation and permanent factory fallback code
- UDP heartbeat packet with IP settings and key diagnostics
- 3U Eurocard size for card rack or bolt-down installation

Benefits

- Reduces overall system costs and size
- Delivers high performance optimized for subsea controls
- Saves costs for qualifications and obsolescence management; avoids requalification of industrial solutions
- Provides an easy upgrade path via remote code updates to "future proof" system designs
- Supports multiple types of sensor interfaces

Applications

- Subsea sensor interfaces for drilling and production controls
- Subsea Electronics Modules (SEM) and other subsea nodes
- Upgrades to existing subsea systems and sensor hubs
- Highly reliable industrial networking

Specifications

Series Interfaces	
No. Ports	4 (via DIN connector)
Protocols	RS-232, RS-422 (IWIS), RS-485 Software configurable
Baud Rate	230.4 kb/s max., NRZ
Protection	Over-voltage up to ± 25 V ESD ± 15 kV air, ± 8 kV contact 500 Vrms isolation
Options	Expansion card with: 16 x 4-20 mA channels 4 x CAN Bus (fault tolerant, ISO 11898.3)
Ethernet Interfaces (SIIS Level 3)	
No. Ports	2 x Copper (via DIN connector) 1 x Copper (via Micro-D connector)
Protocols	10/100Base-T(X), Copper
Protection	ESD and transient suppressors (TVS) 500 Vrms isolation
Gateway Modes	Serial (RS-232/485/422) to Ethernet (UDP) PPP server and client Modbus RTU-TCP conversion
Ethernet Switch Layer 2 Function	Includes broadcast storm protection, rate limiting, flow control, 802.1q VLAN, 802.1p port priority, port mirroring, fast aging
IP Configuration	DHCP with configurable static IP fallback
Diagnostics and Controls	Modbus TCP Webserver, CLI, Telnet
Diagnostics and Control Parameters	Includes temperature, humidity, voltage, current draw, optical power (Tx/Rx), on time and power off events, Ethernet port status/configuration, MIB counters, card mfr. data (s/n, p/n, FW revision)
Redundancy	IWIS RS-422

Connectors	
Rear Card Edge	1 x 96-pin DIN 41612 (Ethernet, serial, power)
Front Card Edge	1 x 9-pin Micro-D (Ethernet)
Power	
Consumption	5 W typical (8 W max.)
Voltage	+20 to +28 VDC, regulated input
Current	0.4 A max.
Protection	ESD, EMI, over-voltage, reverse voltage, overcurrent (no fuses), 500 Vrms isolation
Mechanical	
Dimensions	3U Eurocard, 4 HP, 160 mm x 100 mm
Mounting	3U Eurocard rack or M2.5 hardware
Options	Front panel, LED panel, heat plate
Reliability	
Design Life	> 20 years @ +40 °C
MTBF	> 250,000 hrs @ +40 °C
Testing	Factory Acceptance Test (FAT) At Tmin and Tmax design temperatures
Qualification	ISO 13628-6, API 17F (Q1 Levels) Includes 30 g shock, 5 g vibration
Firmware Update	Failsafe remote firmware update
Options	Environmental Stress Screening (ESS) Custom qualifications per OEM specification
Environmental	
Temperature	-18 °C to +70 °C (design and operation) -40 °C to +85 °C (storage)
Humidity	5 % to 85 % RH, non-condensing

All specifications and information are subject to change without notice. Please contact Focal for the latest updates.