RAIC400

KONGSBERG

Remote Analogue Input, Current

The RAIC400 is an interface module between the Serial Process Bus and analogue input signals.

Features

- Up to 32 analogue inputs
- Dual Serial Process Bus (SPBus) interfaces to allow optional redundancy
- Each SPBus interface ensures electrical isolation from the control system
- Easy installation and replacement:
  - DIN standard rail-mounting
  - plug-in connections
- Status LED for normal operation or error condition
- Loop-check and debugging from operator station and local data terminal
- Short-circuit proof loop current driver
- Dual watch-dogs
- Fail-safe settings activated by watch-dog if communications fail
- Built-in test for self diagnostics and fault identification
- Single units are SIL 1 and SIL 2 compliant
- Line Fault Detection (LFD)
- Earth Fault Detection (EFD)

Description

The Kongsberg Maritime Remote Input and Output system (RIO400) uses a Serial Process Bus (SPBus) between a controller computer in the pro-cess network and the input and output (I/O) signals to remote devices such as valves, relays and temperature sensors.

The RAIC400 is an interface module between the SPBus and analogue inputs from field instruments.

The RIO400 system provides a cost-effective solution for connecting any number of inputs and outputs to a Kongsberg Maritime automation system, independent of the distance between the remote equipment and the controller computer.

Technical Specifications

Analogue Input

Number of channels:	32 current inputs
Current input:	0-20 mA (input resistor 220 ohm)
Current accuracy:	+/- 0.2% of full scale (resistor accuracy = 0.1%)
Current input filter:	RC = 33 µs
Digital resolution:	12 bits
Connectors:	screw terminals, 2.5 mm^2

Loop Current Driver

Loop driver:	1 A, short-circuit proof "High-Side" driver (HSD)
Loop driver trip current:	approximately 1.4 A (reset by command)
Loop driver OFF leakage:	maximum 2 mA at 24 VDC loop voltage

SPBus Interface

SPBus interfaces:	2
Power supply voltage from SPBus:	10 to 28.8 VDC
SPBus connector:	9-pin male DSUB
SPBus isolation:	500 V (optocoupler)
SPBus type:	RS-485 (multidrop)
SPBus frequency:	maximum 2 MHz
SPBus signal code:	Manchester encoded (self-clocked)

Dimensions

Height:	355 mm
Width:	158 mm
Depth:	87 mm
Weight:	1.35 kg

Electrical

Input voltage:	24 VDC +/- 20%
Power consumption:	maximum 21.6 W
Connectors:	screw terminals, 2.5 mm^2

Environmental Specifications

Ambient temperature	
operational:	0° C to 70° C
storage:	-25° C to 70° C
Ambient humidity	
operational:	up to 100% relative humidity
storage:	up to 100% relative humidity
Heat dissipation:	maximum 10 W
Protection standard:	IP20
EMC according to:	EN50081-2, EN50082-2, EN60945 and EN61135-2

Standards Applied

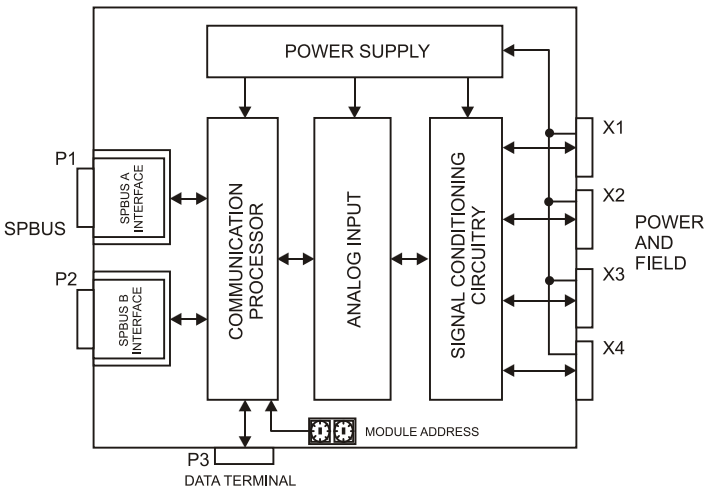
The equipment is designed to conform to the following standards:
IEC 61131-2, IEC 60945 and IACS E10.

CE Marking

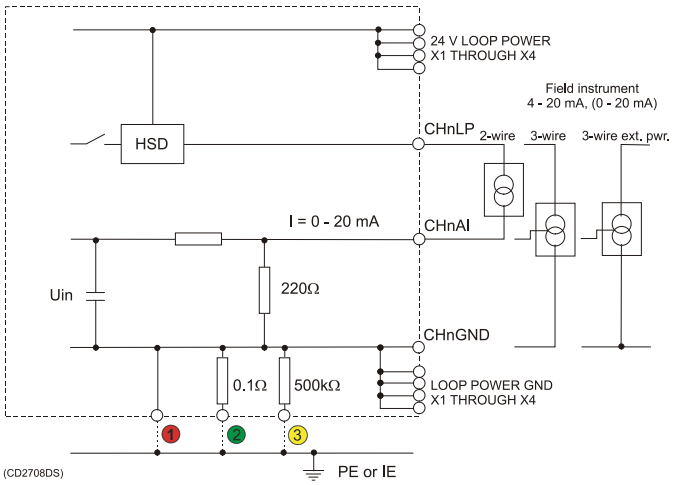
The module satisfies the relevant EU directives.

Approvals

The RAIC400 is approved by Det Norske Veritas (DNV) for ships and Mobile Offshore Units, the American Bureau of Shipping (ABS) for Mobile Offshore Drilling Units and ships and by TÜV in SIL3 functions as dual I/O and SIL2 with single I/O in accordance with IEC 61508.



Block Diagram



1. Fully earthed to PE or IE
2. Monitored earth across a 0.1 ohm resistor
3. Insulated by 500 kohm and monitored leakage to earth

Analogue input (current) loop typical

Article Number

RAIC400:	600120

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