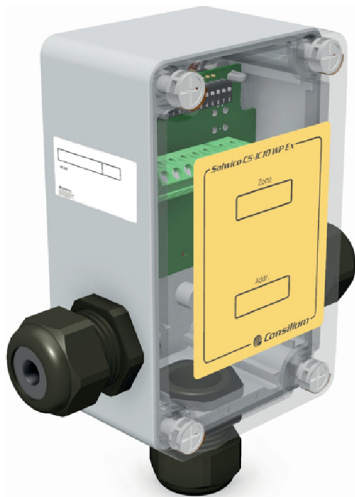




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System: CFD5000

Input Loop Unit

CS-IC10 WP Ex

Part no. 5210080-00A

General description

The CS-IC10 WP Ex is an intrinsically safe input unit for various integration of safety inputs. It has been designed for use in harsh environments and to comply with the standards for the industrial, maritime, offshore and rolling stock markets up to Safety Integrity Level 2 (SIL 2).



The CS-IC10 WP Ex has one input that can be connected to external equipment with a dry contact. The CS-IC10 WP Ex supervises the cable to the external equipment for cable break and short circuit, and the input can be configured as active high or active low. The function of the input can be configured to be:

- a general input
- a fault
- an alarm from a manual call point
- an alarm from a smoke sensor
- an alarm from a heat sensor
- an alarm from a flame sensor

Features:

- One supervised input for a dry contact
- Communication with the loop-line
- Handling of short circuits and cable breaks on the loop-line

Data

Operating voltage	16–38 VDC
Operating current:	
- Normal condition	≈0.1 mA
- Alarm condition with LED activated	≈1.6 mA
Sub-Loop (Remote indication, supervised dry-contact reading)	Current limited: 3 mA
Loop communication protocol	IDAxt
Operating temperature	-40 °C to +70 °C
Storage temperature	-50 °C to +70 °C
Relative humidity	≤ 95 % RH non-condensing
Addressing method	DIP switch
Ingress protection	IP66/67
Cable gland	M25 for cable ø 9–17 mm Material: Black polyamide
Cable terminals	2.5 mm ²
Material	PC/ABS
Weight	160 g ± 5%
Colour	Transparent/RAL7035
Loop cable requirement	See the Installation & Commissioning manual

Certifications

Input/Output device	CS-IC10 WP Ex
IECEx IMQ 16.0013X	Part.No.: 5210080-00A Rev.: RR
IMQ 16 ATEX 020X	Ex II 1G Ex ia IIC T5 Ga
CE 0470	-40 °C ≤ Ta ≤ +70 °C
U: 28VDC, I _i : 93mA, P: 653mW	Ser.No.: YYWWXXXXX
C _i : 1073pF, L _i : negligible	
Consilium	WARNING -
Consilium Marine & Safety AB	POTENTIAL ELECTROSTATIC CHARGING
Salsmästaregatan 21	HAZARD - SEE INSTRUCTIONS.
SE-422 46 Hisings Backa	Made in EU
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ATEX Ex ia	Certificate No: IMQ16ATEX020X Certified according to: IEC 60079-0, IEC 60079-11  II 1G
IECEX Ex ia	Certificate No: IECEX IMQ16.0013X Certified according to: IEC 60079-0, IEC 60079-11 Ex ia IIC T5 Ga -40 °C ≤ Ta ≤ +70 °C
MED	Certificate No: 2531-MED- CMC10094(Module B) 2531-MED- CMA10020(Module D) Certified according to: EN54-17, EN54-18, IEC60533, IEC60092-504  2531/yyyy yyyy = year of production
CPR	Certificate No: 2531-CPR-CSP10865 DOP No: 6304104 Certified according to: EN 54-17, EN 54-18
SIL	Certificate No: TÜV NORD 44 788 13082116 SIL2 certified according to: IEC 61508

Ex parameters

Maximum voltage (U_i)	28 V
Maximum current (I_i)	93 mA
Internal capacitance (C_i)	1073 pF
Internal inductance (L_i)	Negligible
Maximum power (P_i)	0.653 W

Functional Safety Data

Type	B
HFT	0
SFF	93 %
PFD_{avg}	2.63×10^{-4}
PFD_{avg} is calculated for MTTR 8 h and proof test interval 1 year.	
Suitable for use in SIL 1 and SIL 2 environments.	

Data for built-in Short Circuit Isolator (SCI)

I_c max (Maximum Continuous current)	500 mA
I_s max (Maximum Switching current)	800 mA
Current when short circuited (I_L max)	< 1 mA
Open to Close voltage	16 ± 3 VDC
Open to Close, maximum load expressed in ohms on the non-energized side	≈ 2 k Ω
Close to Open voltage	12 ± 3 VDC

Configuration of Safe I/O

The CS-IC10 Ex has one configurable input/output, called Safe I/O.

Table 1. The allowed configurations of Safe I/O

Safe I/O		Active High/Low	Monitored ¹⁾	CS-IC10 Ex
Input	Alarm ²⁾	H/L	X	X
	Fault	H/L	X	X
	General	H/L	X	X
Output	Alive signal	NA		
	Remote Indication (RIL)	NA		

- 1) Monitored for cable break and short circuit.
- 2) A Safe I/O configured as an Alarm input can be assigned the alarm sub-types: 'Smoke', 'Heat', 'Flame' and 'MCP'.

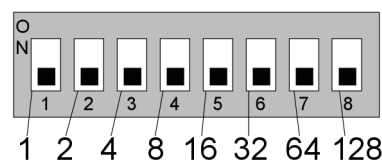
Address switch

The loop units are identified by a physical address. The address number is set on an 8 pole DIP switch located on the loop unit. (For settings use a pointed tool of suitable size.)



CAUTION!

Due to a technical limitation in the address card, using consecutive addressing is prevented. If the loop unit has address x, the next unit on the loop-line shall have address x+2 (or higher).



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1 to 150 are valid addresses. The DIP switch value follows the binary system.

Location of DIP switches

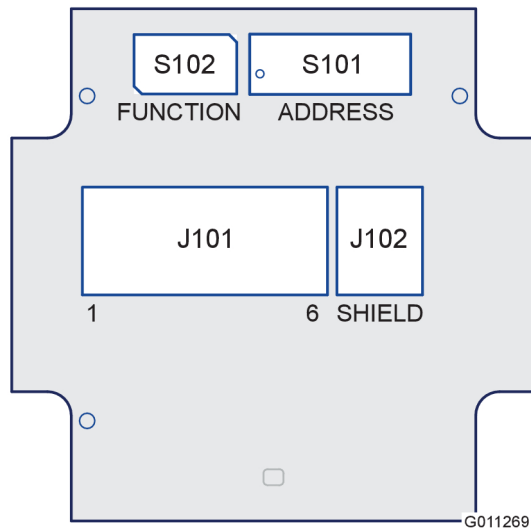


Figure 1. Location of DIP switches and terminals on the PCB

Address switch S101 (8 pole) for the loop address.

Function switch S102 (5 pole) is factory set to ID0. Do not change!

For terminal no. see section [Connection](#).

Connection

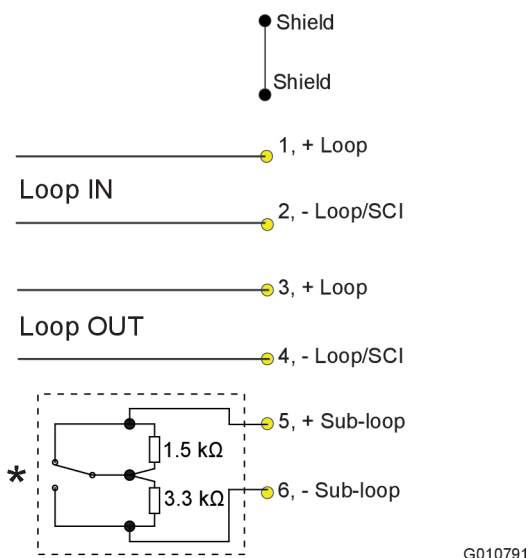


Figure 2. Terminals J101 and J102

* External connection shown in normal not active state



NOTE!

If a shielded cable is used on the sub-loop it shall only be terminated at one end. If the shield is terminated in the I/O unit it is connected to the shield terminal, this is only possible if the loop line is shielded.

Local intelligence via an integrated CPU

The integrated CPU makes it possible to make decisions locally, like evaluation of the alarm condition.

IDAxt protocol

The IDAxt protocol is an extension of Consilium's communication protocol (IDA) and meets the demands on data integrity, reliability and robustness required for use in SIL 1 and SIL 2 safety functions and safety systems.

Periodic BIST

The Periodic Built-In Self-Test is a central mechanism which the system uses to ensure long proof test intervals.

Countermeasures (defences) have been implemented in order to address the fault modes (threats) in the fire detection system. These countermeasures are done in order to increase the confidence in the system.

The system has two types of Built-In Self-Tests (BIST). The first BIST is made continuously; for instance when reading A/D values from hardware. This typically involves evaluation of the read value to determine if the hardware is broken; i.e. gives measurements outside an acceptable interval.

The second BIST is the Periodic Built-In Self-Test (Periodic BIST) which is made once every five minutes in order to verify the safety function by testing communication paths. All internal communication paths and all testable parts of the loop-units are included in the Periodic BIST mechanism, to verify the whole path from detection to reporting (fire) status.

The system creates a log with the results of the Periodic BIST. This log can be extracted from the system with a USB memory stick.

Short Circuit Isolator (SCI)

The built-in SCI isolates short circuits on the loop-line and also has a probe function for evaluating a short circuit. The SCI ensures that the fire detection system does not lose contact with the loop units when there is one short circuit on the loop-line. The probe function makes it

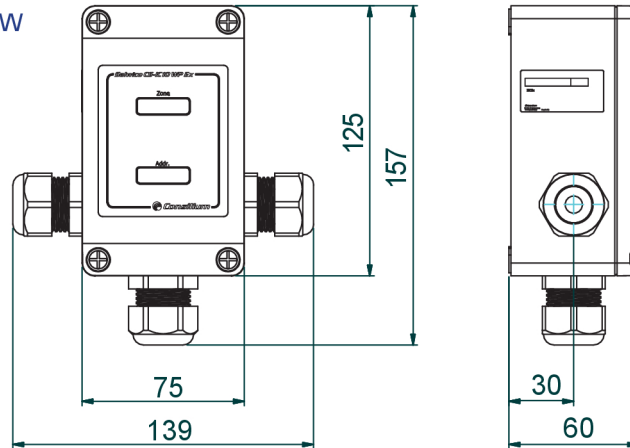
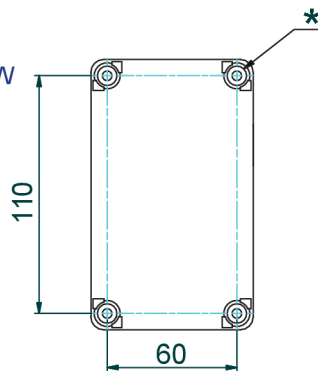
possible to reset the short circuit condition without restart of the loop-line.

**NOTE!**

When used in a hazardous area the loop unit must be connected to a CS-Isolator. Refer to the 5210050-00A CS-Isolator data sheet for connection examples.

Cleaning**WARNING!****Potential electrostatic charging hazard**

If the unit requires cleaning, only clean exterior with a damp cloth to avoid electrostatic charge build up.

Dimensions (mm)**FRONT VIEW****BACK VIEW**

* Holes for wall mounting (x4): Max screw thread Ø4. Max screw head Ø8

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