CARLO GAVAZZI GS 7510 2101 Safety Input Module Instruction Manual

DuplineSafe
Safety Input Module
Type GS 7510 2101

Contents

GS 7510 2101 Safety Input Module

- Bus-powered input module
- Single input for potential-free contacts
- Small dimension IP67 housing for de-central installation at the actual location of the switch
- Safety approved according to EN 13849-1:2015 Cat.4 / PLe, EN 62061:2021 SIL 3, EN 61508 Parts 1-7:2010 SIL 3
- Approval authority: TÜV Rheinland Group
- Uses two Dupline ® channels
- Operates on a standard Dupline ® network
- It is possible to use DuplineSafe modules and standard Dupline ® modules on the same bus
- Address coding with GS73800080
- Typically used for emergency stops or other NC safety con- tacts

Product Description

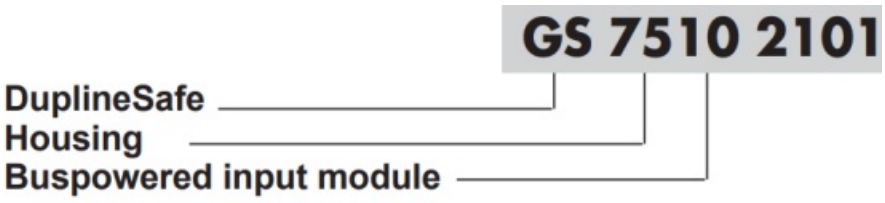
Bus-powered safety input module approved according by TÜV. The module has a single input for potential-free contacts, and it uses two Dupline channels for sending the safety signal. The small dimension IP67 housing makes it suitable for de-central installation, e.g. inside a pull-cord switch. The module is always used in conjunction with the Dup- ® lineSafe Safety Relay GS 38300143230. The “safe state” signal is transmitted continuously to the Safety Relay as long as the input contacts are closed and the module self-check is OK.

Type Selection

Supply	Ordering no. DuplineSafe Safety Input Module
By Dupline ®	GS 7510 2101

Safety Specifications

Standards Approval authority SFF PFD (T1 = 1 year) PFH
EN ISO 13849-1:2015,
EN 62061:2005 + AC:2010
+ A1:2013 + A2:2015,
IEC 61508, parts 1 – 7: 2010,
IEC 61131-2:2017,
EN 50178:1997,
EN 61326-3-1:2017
TÜV Rheinland Group 96%
5.0 x 10 5.9 x 10 -6 -9 /h
Supply Specifications
Power Supply
Reverse polarity protection Current consumption
Supplied by Dupline Yes Typ. 1,0 mA
Specifications are subject to change without notice (22-08-2024)
Dupline ® is a registered trademark. A product of the CARLO GAVAZZI Group
Ordering Key



Input Specifications

Inputs	1 NC Contact
Open loop voltage	2.5 V
Short-circuit current	100 µA
Contact resistance	< 1kΩ
Cable length	max. 1 m
Dielectric voltage Inputs – Dupline Response time 1 From input contact opens to safety relay releases Response time 2 Fr om input contact closes to safety relay activates	None max 300 ms max 600 ms

General Specifications

Power ON delay	< 5s
Environment Degree of protection Pollution degree Operatin g temperature Storage temperature	IP 67 3 (IEC 60664) -40°C to 70°C -40° C to 70°C
Humidity (non-condensing)	20 – 80%
Mechanical resistance Shock Vibration	15 G (11 ms) 2 G (6 to 55 Hz)
Housing Material Dimensions	Valox PBT, Yellow 57,5 x 36,0 x 16,4 mm
Termination Material Length Dimension	Cable PVC, Black 300 mm 6 x 0.5 mm 2

Mode of Operation

The DuplineSafe Safety Input module GS75102101 is used to monitor the status of one potential-free contact in a safety device, e.g. an emergency stop palm button or pull cord switch. The status of the safety contact is continuously transmitted on the Dupline bus using a dynamic signaling principle on two Dupline ® channels. The Safety Input module is always used in conjunction with the DuplineSafe Safety Relay GS38300143230, which can monitor up to 63 Safety Input modules all connected to the same Dupline ® ® bus. If one or more GS75102101's fails to send the "safe state" signal the
Safety Relay will release.

Addressing

For addressing of GS75102101, the DuplineSafe Configuration Unit GS73800080 is used. The GS75102101 must have 3 Dupline channels assigned to it ®

- Synchronization channel (same for all safety transmitters). Factory settings: A1
- Safety Transmit channel 1 Factory settings: A3
- Safety Transmit channel 2 Factory settings: A4

Please refer to the usermanual for the DuplineSafe Configuration UnitGS73800080 for detailedinstructions on how toconfigure the SafetyTransmitter GS75102101with the desired addresses. The synchronization channel is used by the Safety Relay to send out a synchronization signal to theSafety
Input modules on the bus. Therefore, all the Safety Input modules and the Safety Relay must be coded for the same synchronization channel.

Safety Transmit channel 1 and Safety transmit channel 2 are used by the GS75102101 to transmit the status of the safety switch in a dynamic way, ensuring redundancy, diversity and continuous updating. Each GS75102101 must be coded for a unique channel pair not used by any other GS75102101. Please refer to the datasheet for the safety relay GS38300143230 for detailed instructions how to ensure correct addressing, installation and configuration of a DuplineSafe safety system.

Installation Rules

Due to fact that the Dup-lineSafe input mod-ule is a single channel device (one input), there are specific installation rules that have to be followed in order to achieve an installation complying with IEC/EN 61508-SIL3, IEC/EN 62061-SIL3 and ISO/EN 13849-1 PL e:

A short circuit between the 2 wires in the cable between the terminals of the input
modules and the E-stop but-ton must be excluded. This is possible, when the condi-tions, which are mentioned in EN ISO 13849-2 table D.4 (see below), are met.

– Short circuits between the adjacent terminals at the input of the input module and between the terminals at the E-Stop push-button must be excluded. This is possible, when the conditions men-tioned in EN ISO 13849-2 table D.6 (see below) are met.

– The E-Stop button must meet the requirements for direct opening according to EN 60947-5-1 Annex K. In this case it is ensured, that the contact in the E-Stop button opens, when the push-button is pressed (see table D.8 in EN ISO 13849-2 below).

These 3 conditions are usually fulfilled, if the input module is placed very close to the E-Stop push-button and in a closed housing, which meets IP 54 rating or higher. The push-but-ton and the cabling must not be stressed by external mechanical influences. The E-Stop push-button must have been approved accord-ing to EN 60947-5-1 for dir-ect opening.

Table D.4 – Conductors/cables

Fault considered	Fault exlusion	Remarks
Short-circuit between any two conductors	Short-circuit between conductors wich are – Permanently connected (fixed) and p rotected against external damage, e.g . by cable ducting, armouring, or – sep erate multicore cables, or – within an el ectrical enclosure (se remark 1)), or – i ndividually shielded with earth connecti on.	1) Provided both the co nductors and enclosed meet the appropri- ate r equirements (see EN 6 0204-1 (IEC 60204-1))
Short-circuit of any conductor to an exposed conductive part or to earth or to th e protective bonding conductor.	Short-circuits between conductors whic h are within an electrical enclosure (see remark 1).	
Open-circuit of any conductor	None	

Table D.6 – Terminal block

Fault considered	Fault exlusion	Remarks
Short-circuit between adjacent terminals	Short-circuit between adjacent terminals in accordance with remarks 1) or 2).	1)The terminals used are in accordance with a CENELEC or IEC standard and the requirement of EN 60204-1:1997 (IEC 60204-1:1997), 14.1.1 are satified. 2) The design by itself ensures that short-circuit is avoiding, e.g. by shapping shrink down plastic tubing over connection point.
Open-circuit of individual terminals	None	–

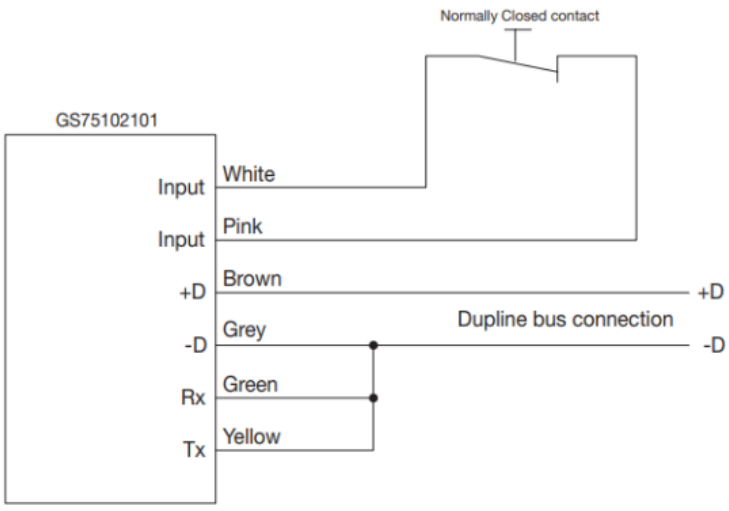
D.5.3. Switches

Table D.8 — Electromechanical position switch, manually operated switch

(e.g. push-button, reset actuator. DIP switch, magnetically operated contacts, reed switch, pressure switch, temperature switch).

Fault considered	Fault exlusion	Remarks
Contact will not close	None	—
Contact will not open	Contact in accordance with EN 60947-5-1:1997 (IEC 60947-5-1:1997), annex K are expected to open.	–
Short-circuit between adjacent contacts insulated from each other.	Short-circuit can be excluded for switches in accord- ance with EN 60947-5-1 (IEC 60947-5-1) (see remark 1)).	1)Conductive parts which become loose should not be able to bridge the insulation between contacts.
Simultaneous short-circuit between three terminals of change-over contacts.	Simultaneous short-circuit can be excluded for switch-es in accordance with EN 60947-5-1 (IEC 60947-5-1) (see remark 1)).	
NOTE: The fault lists for the mechanical aspects are considered in annex A.		

Wiring Diagram



Caution: Modules can be damaged by static electrical discharge. Before handling any modules, Electrostatic

Discharge (ESD) protection must always be used.

Wire Connections

Brown: +D
Grey: -D
Green: Rx
Ye llow: Tx
White: Input
Pink: Input

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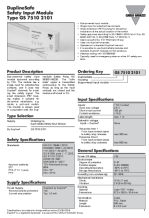
Documents / Resources

	CARLO GAVAZZI GS 7510 2101 Safety Input Module [pdf] Instruction Manual GS 7510 2101, GS 38300143230, GS 7510 2101 Safety Input Module, GS 7510 2101, Safety I nput Module, Input Module

References

- User Manual