



Advantages of SAFEMASTER PRO

- For safety applications up to PLe, Cat. 4 and SIL 3
- Less wiring because of configuration software SAFEMASTER PRO Designer
- Easy planning because of Drag & Drop via graphic configuration software
- Time and cost saving installation
- Reduced wiring and space saving in cabinets
- Flexible extension with safety input and output modules
- Easy extendable via BUS-Rail
- Comprehensive fault localisation and diagnostic
- Memory card as option for simple maintenance
- Compact design: Base- and extension modules with only 22.5 mm width

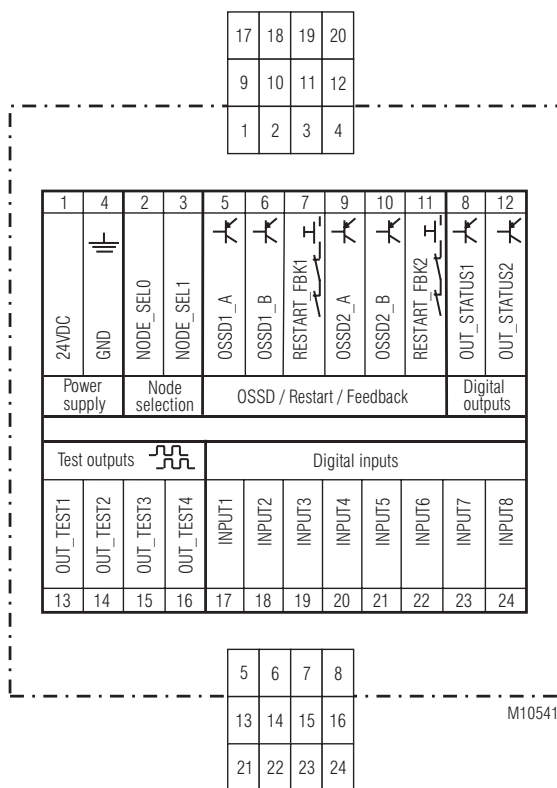
Features

- 8 safety, single-channel inputs, dual-channel connection in pairs
- 2 separate safety, dual-channel outputs (OSSD)
- 1 Feedback circuit each für every safety output with individual configurable reset
- 4 separate test outputs for sensor monitoring
- To extend SAFEMASTER PRO via DIN rail bus (IN-Rail Bus) in an easy way
- Status LEDs and 2 programmable status outputs for diagnosis
- With pluggable terminal block for easy exchange of devices

More system components for SAFEMASTER PRO

- Control unit UG 6911.10
- Input module UG 6913.08, UG 6913.12 and UG 6913.16
- Output module OSSD UG 6912.02 and UG 6912.04
- Output module Relay with 1 e.g. 2 safety relay outputs for volt free contact multiplication of the OSSDs UG 6912.14 and UG 6912.28
- Bus Extender UG 6918
- Field bus modules for diagnostic-connection on field bus systems UG 6952 (PROFIBUS DP), UG 6951 (CANopen), UG 6954 (PROFINET)

Circuit Diagram



Approvals and Marking



Additional Information about this topic

- A short description of SAFEMASTER PRO can be found in system overview SAFEMASTER PRO.
- Information about the single modules of SAFEMASTER PRO can be found in the separate data sheets.

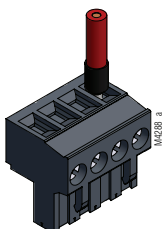
Applications

The Input / Output module UG 6916 is used to extend the number of inputs and outputs together with the test outputs of the control unit UG 6911.10 of the SAFEMASTER PRO system.

Function

To extend the number of inputs of the control unit UG 6911 up to 4 input modules can be implemented to the SAFEMASTER PRO system together with other extension modules

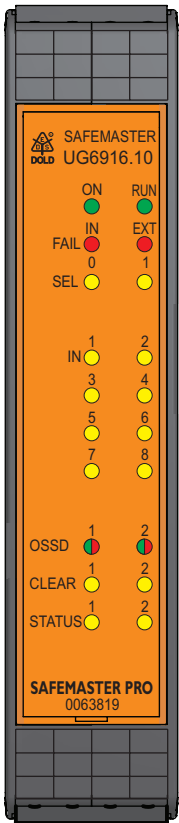
Pluggable Terminal Block



Terminal block with screw terminals (PS / plug in screw)

Terminal	SIGNAL	TYPE	DESCRIPTION	OPERATION
1	24VDC	-	24V DC power supply	-
2	NODE_SEL0	Input	Node selection	I _N : 7...10 mA at DC 24 V*)
3	NODE_SEL1	Input		I _N : 7...10 mA at DC 24 V*)
4	GND	-	0V DC power supply	-
5	OSSD1_A	Output	Static output 1	PNP active high
6	OSSD1_B	Output		PNP active high
7	RESTART_FBK1	Input	Feedback/Restart 1	I _N : 7...10 mA bei DC 24 V *)
8	OUT_STATUS1	Output	Programmable digital output 1	PNP active high
9	OSSD2_A	Output	Static output 2	PNP active high
10	OSSD2_B	Output		PNP active high
11	RESTART_FBK2	Input	Feedback/Restart 2	I _N : 7...10 mA bei DC 24 V *)
12	OUT_STATUS2	Output	Programmable digital output 2	PNP active high
13	OUT_TEST1	Output	Short circuit detection output	PNP active high
14	OUT_TEST2	Output	Short circuit detection output	PNP active high
15	OUT_TEST3	Output	Short circuit detection output	PNP active high
16	OUT_TEST4	Output	Short circuit detection output	PNP active high
17	INPUT1	Input	Digital input 1	I _N : 7...10 mA at DC 24 V*)
18	INPUT2	Input	Digital input 2	I _N : 7...10 mA at DC 24 V*)
19	INPUT3	Input	Digital input 3	I _N : 7...10 mA at DC 24 V*)
20	INPUT4	Input	Digital input 4	I _N : 7...10 mA at DC 24 V*)
21	INPUT5	Input	Digital input 5	I _N : 7...10 mA at DC 24 V*)
22	INPUT6	Input	Digital input 6	I _N : 7...10 mA at DC 24 V*)
23	INPUT7	Input	Digital input 7	I _N : 7...10 mA at DC 24 V*)
24	INPUT8	Input	Digital input 8	I _N : 7...10 mA at DC 24 V*)

*) Input ("Type B" according to EN 61131-2)



DESCRIPTION	LED							
	RUN GREEN	IN FAIL RED	EXT FAIL RED	SEL ORANGE	IN1 ... 8 YELLOW	OSSD1/4 RED/ GREEN	CLEAR1/2 YELLOW	STATUS1/2 YELLOW
Power ON - initial TEST	ON	ON	ON	ON	ON	Red	ON	ON

Indication at start-up and test mode

DESCRIPTION	LED							
	RUN GREEN	IN FAIL RED	EXT FAIL RED	SEL ORANGE	IN1 ... 8 YELLOW	OSSD1/2 RED/ GREEN	CLEAR1/2 YELLOW	STATUS1/2 YELLOW
Normal operation	OFF if the unit is waiting for the first communication from the CONTROL UNIT	OFF	OFF	Indicate the signals NODE_SEL1/2	INPUT state	RED with output OFF GREEN with output ON	ON waiting for RESTART	OUTPUT state
	Flashes if no INPUT or OUTPUT requested by the configuration ON if INPUT or OUTPUT requested by the configuration		ON incorrect external connection detected		only the number of the INPUT with the incorrect connection flashes	Flashing NO Feed-back		

Indication during normal operation

Troubleshooting

DESCRIPTION	LED								REMEDY
	RUN GREEN	IN FAIL ROT	EXT FAIL ROT	SEL ORANGE	INI ... 8 YELLOW	OSSD1/2 RED/GREEN	CLEAR1/2 YELLOW	STATUS1/2 YELLOW	
Internal fault	OFF	2 x or 3 x flashing	OFF		OFF	Rot	OFF	OFF	The modul has to be repaired Return the unit to DOLD
Configuration error	OFF	5 x flashing	OFF		5 x flashing	5 x flashing	5 x flashing	5 x flashing	<ul style="list-style-type: none"> Firmware-Version not compatible to control unit UG 6911.10 Return the unit to DOLD for Firmware-updade. .
OSSD output error	OFF	4 x flashing	OFF	Indicate the physical address of the unit	OFF	4 x flashing (only the LED corresponding to the output in FAIL mode)	OFF	OFF	<ul style="list-style-type: none"> Check the OSSD1/2 connections If the problem persists return the UG 6916.10 to DOLD. The modul has to be repaired
Error in communication with control unit	OFF	5 x flashing	OFF		OFF	OFF	OFF	OFF	<ul style="list-style-type: none"> Restart the system If the problem persists return the UG 6916.10 to DOLD. The modul has to be repaired
Error on other extension module or error at control unit UG 6911.10	OFF	ON	OFF		OFF	OFF	OFF	OFF	<ul style="list-style-type: none"> Restart the system Check which unit is in FAIL mode
Same type of expansion unit with same address detected	OFF	5 x flashing	5 x flashing		OFF	OFF	OFF	OFF	<ul style="list-style-type: none"> Change the unit's address (see table below "Signal description ")

Troubleshooting UG 6916.10

Signal Description - NODE_SEL -

The NODE_SEL0 and NODE_SEL1 inputs on the expansion units are used to attribute a physical address to the expansion units with the connections

	NODE_SEL0	NODE_SEL1
SLAVE-MODUL 0	0 (or not connected)	0 (or not connected)
SLAVE-MODUL 1	0 (or not connected)	24VDC
SLAVE-MODUL 2	24VDC	0 (or not connected)
SLAVE-MODUL 3	24VDC	24VDC

Technical Data

Nominal voltage: DC 24V ± 20%
Nominal consumption: max. 3 W

Inputs

Digital Outputs*): 8
**Inputs for feedback circuit
FBK/RESTART*):** 2
EDM control / possible automatic or
manual operation with RESTART button

**Input for Node selection
NODE_SEL0/1*):** 2

*) "Typ B" according to EN 61131-2 I_N: 7...10 mA at DC 24 V

Outputs

OSSD: 2 pairs
static outputs
PNP active high
max. 400 mA at DC 24V

Reaction time of OSSD:

UG 6911.10: 10.6 ms ... 12.6 ms + T_{Filter__Input}
UG 6911.10 + 1 extension: 11.8 ms ... 26.5 ms + T_{Filter__Input}
UG 6911.10 + 2 extensions: 12.8 ms ... 28.7 ms + T_{Filter__Input}
UG 6911.10 + 3 extensions: 13.9 ms ... 30.8 ms + T_{Filter__Input}
UG 6911.10 + 4 extensions: 15.0 ms ... 33.0 ms + T_{Filter__Input}
UG 6911.10 + 5 extensions: 16.0 ms ... 35.0 ms + T_{Filter__Input}
UG 6911.10 + 6 extensions: 17.0 ms ... 37.3 ms + T_{Filter__Input}
UG 6911.10 + 7 extensions: 18.2 ms ... 39.5 ms + T_{Filter__Input}
UG 6911.10 + 8 extensions: 19.3 ms ... 41.7 ms + T_{Filter__Input}
UG 6911.10 + 9 extensions: 20.4 ms ... 43.8 ms + T_{Filter__Input}
UG 6911.10 + 10 extensions: 21.5 ms ... 46.0 ms + T_{Filter__Input}
UG 6911.10 + 11 extensions: 22.5 ms ... 48.1 ms + T_{Filter__Input}
UG 6911.10 + 12 extensions: 23.6 ms ... 50.3 ms + T_{Filter__Input}
UG 6911.10 + 13 extensions: 24.7 ms ... 52.5 ms + T_{Filter__Input}
UG 6911.10 + 14 extensions: 25.8 ms ... 54.6 ms + T_{Filter__Input}

Digital Outputs: 2
programmable - PNP active high
max. 100 mA at DC 24 V

Test outputs: 4
to check for short-circuits - overloads

General Data

Connection to control unit: proprietary 5-pole bus (DOLD IN-RAIL-BUS)
Nominal operating mode: continuous operation
Temperature range
Operation temperature: -10 ... + 55 °C
Storage temperature: -20 ... + 85 °C
Relative humidit: 10 % ... 95 %
Degree of protection:
Housing: IP 40 IEC/EN 60 529
Terminals: IP 20 IEC/EN 60 529
Plug in with screw terminals
max. cross section for connection: 1 x 0,25 ... 2,5 mm² solid or stranded ferruled (isolated) or 2 x 0,25 ... 1,0 mm² solid or stranded ferruled (isolated)
Insulation of wires or sleeve length: 7 mm
Wire fixing: captive slotted screw M3
Tightening torque: 0.5 ... 0.6 Nm
Max. cable length: 100 m
Mounting: DIN-Rail IEC/EN 60 715
Weight: approx. 190 g

Dimension

Width x height x depth: 22.5 x 109 x 120.3 mm

Technical Data

Safety Related Data

(only in combination with SAFEMASTER PRO)

Values according to EN ISO 13849-1:

Category: 4
PL: e
MTTF_d: 30 ... 100 a
DC_{avg}: high

Values according to IEC EN 62061 / IEC EN 61508:

SIL CL: 3 IEC EN 62061
SIL 3 IEC EN 61508
DC_{avg}: high
PFH_D: 10E-8 ... 10E-7 h⁻¹



The evaluation of the max. possible values is made according to the system configuration by the SAFEMASTER PRO DESIGNER software.

The safety relevant data of the complete system has to be determined by the manufacturer of the system.

UL-Data

The safety functions were not evaluated by UL. Listing is accomplished according to requirements of Standard UL 508, "general use applications"

Nominal voltage U_N: DC 24 V
± 20 % / current supply class II or voltage and current limits.

Nominal consumption: max. 3 W

Switching capacity:

OSSD semiconductor outputs: 24Vdc, 400mA
Status output: 24Vdc, 100 mA

Wire connection: 60°C / 75°C copper conductors only
AWG 30 - 12 Sol/Str Torque 5-7 lb-in

Note: For use in pollution degree 2
overvoltage category II environment only



Technical data that is not stated in the UL-Data, can be found in the technical data section.

Standard Type

UG 6916.10 DC 24 V

Article number: 0063819

- Nominal voltage: DC 24 V
- Width: 22.5 mm

System Components for SAFEMASTER PRO and Accessories

TYPE	DESCRIPTION	Article number
UG 6911.10	Control unit (8 inputs / 2 dual-channel OSSDs with SAFEMASTER PRO DESIGNER Software)	0063818
UG 6916.10	Input / Output module (8 inputs / 2 dual-channel OSSDs)	0063819
UG 6913.08	Input module (8 inputs)	0063820
UG 6913.12	Input module (12 inputs)	0064865
UG 6913.16	Input module (16 inputs)	0063821
UG 6912.02	Output module OSSD (2 dual-channel OSSD)	0063822
UG 6912.04	Output module OSSD (4 dual-channel OSSD)	0063823
UG 6912.14	Output module Relay (1 safety relay output)	0063824
UG 6912.28	Output module Relay (2 safety relay outputs)	0063825
UG 6918	Bus Extender	0064866
UG 6951	Fieldbus module (CANopen)	0063828
UG 6952	Fieldbus module (Profibus DP)	0063826
UG 6954	Fieldbus module (PROFINET)	0064861
OA 6911	Memory chip (external memory)	0063829
OA 6920	USB-cable for PC connection	0064160
BU 6921	Mounting kit IN-RAIL-Bus 250 mm for DIN-rail 7.5 mm	0064244
BU 6922	Mounting kit IN-RAIL-Bus 250 mm for DIN-rail 15 mm	0064245