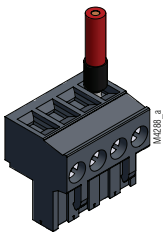
SAFEMASTER PRO Configurable Safety System
Output Modules OSSD
UG 6912.02, UG 6912.04

0266150


UG 6912.02


UG 6912.04

Pluggable Terminal Block



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

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

- 2 or 4 safety dual channel semiconductor outputs (OSSD), separate control in pairs
- To extend SAFEMASTER PRO via DIN rail bus (IN-Rail Bus) in an easy way
- One feedback circuit for each of the 2 or 4 safety outputs with individual start options
- 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
- Input / Output module UG 6916.10
- Input module UG 6913.08, UG 6913.12 and UG 6913.16
- 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-connetcion on field bus systems UG 6952 (PROFIBUS DP), UG 6951 (CANopen), UG 6954 (PROFINET)

Approvals and Marking

CE TÜV SÜD c UL us LISTED Canada / USA

Additional Information about this topic

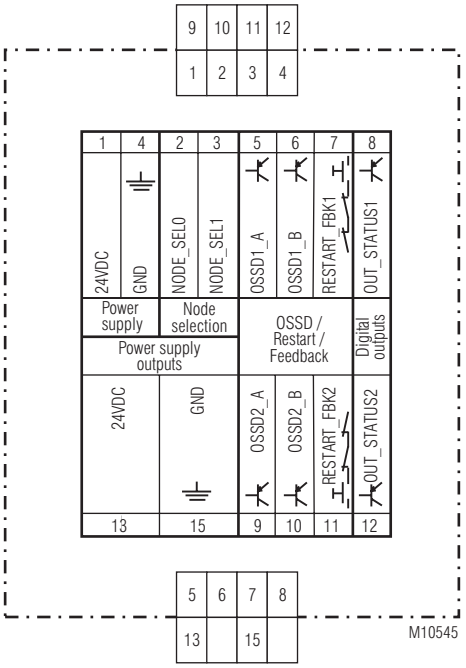
- A short description of SAFEMASTER PRO can be found in system overview SAFEMASTER PRO.
- Information about the single modules of SAFEMASTER PRO can be found in the separate data sheets.

Applications

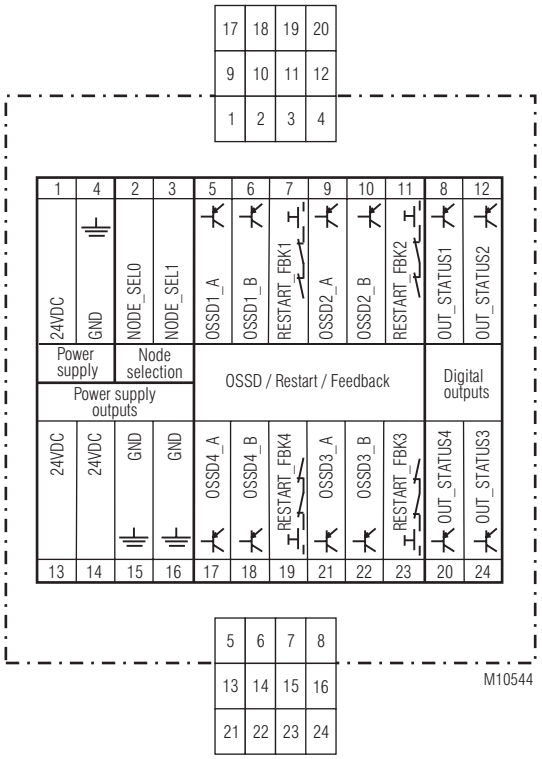
The output modules UG 6912.02 and UG 6912.04 extend the number of safety outputs of the control unit UG 6911.

Function

To extend the number of I/Os of the control unit UG 6911, up to 3 output modules with 2 or 4 outputs each can be integrated in the system together with other extension modules. The connection between the modules is done by snapping the units on the DIN rail bus of SAFEMASTER PRO.



UG 6912.02



UG 6912.04

Connection Terminals Output Module OSSD UG 6912.02

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 at DC 24 V *)
8	OUT_STATUS1	Output	Output state 1A/1B	PNP active high
9	OSSD2_A	Output	Static output 12	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	Output state 2A/2B	PNP active high
13	24VDC	-	24V DC power supply	power supply OSSD1/2
14	N.C.	-	-	-
15	GND	-	0V DC power supply	-
16	N.C.	-	-	-

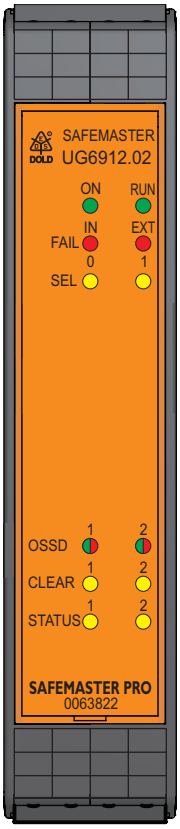
*) Input ("Type B" according to EN 61131-2)

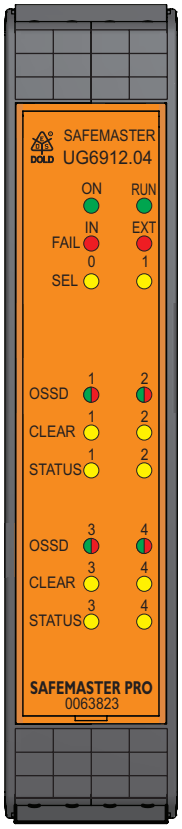
Connection Terminals Output Module OSSD UG 6912.04

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 at DC 24 V *)
12	OUT_STATUS2	Output	Programmable digital output 2	PNP active high
13	24VDC	-	24V DC power supply	power supply OSSD1/2
14	24VDC	-	24V DC power supply	power supply OSSD3/4
15	GND	-	0V DC power supply	-
16	GND	-	0V DC power supply	-
17	OSSD4_A	Output	Static output 4	PNP active high
18	OSSD4_B	Output		PNP active high
19	RESTART_FBK4	Input	Feedback/Restart 4	I_N: 7...10 mA at DC 24 V *)
20	OUT_STATUS4	Output	Programmable digital output 4	PNP active high
21	OSSD3_A	Output	Static output 3	PNP active high
22	OSSD3_B	Output		PNP active high
23	RESTART_FBK3	Input	Feedback/Restart 3	I_N: 7...10 mA at DC 24 V *)
24	OUT_STATUS3	Output	Programmable digital output 3	PNP active high

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

Indication





DESCRIPTION	LED						
	RUN GREEN	IN FAIL RED	EXT FAIL RED	SEL ORANGE	OSSD1/4 RED/ GREEN	CLEAR1/4 YELLOW	STATUS1/4 YELLOW
Power ON - initial TEST	ON	ON	ON	ON	Rot	ON	ON

Indication at start-up and test mode

DESCRIPTION	LED						
	RUN GREEN	IN FAIL RED	EXT FAIL RED	SEL ORANGE	OSSD1/4 RED/ GREEN	CLEAR1/4 YELLOW	STATUS1/4 YELLOW
Normal operation	**OFF** if the unit is waiting for the first communication from the CONTROL UNIT **Flashes** if no INPUT or OUTPUT requested by the configuration **ON** if INPUT or OUTPUT requested by the configuration	OFF Function OK	OFF Function OK	Indicate the signals NODE_SEL1/2	**RED** with output OFF **GREEN** with output ON	**ON** waiting for RESTART **Flashing** NO Feed-back	OUTPUT state

Indication during normal operation

Troubleshooting

DESCRIPTION	LED							REMEDY
	RUN GREEN	IN FAIL RED	EXT FAIL RED	SEL ORANGE	OSSD1/4 RED/GREEN	CLEAR1/4 YELLOW	STATUS1/4 YELLOW	
Internal fault	OFF	2 x or 3 x flashing	OFF	Indicate the physical address of the unit	Red	OFF	OFF	The modul has to be repaired Return the unit to DOLD
Compatibility error	OFF	5 x flashing	OFF		5 x flashing	5 x flashing	5 x flashing	• Firmware-Version not compatible to control unit UG 6911.10 Return the unit to DOLD for Firmware-uptade .
OSSD output error	OFF	4 x flashing	OFF		4 x flashing (only the LED corresponding to the output in FAIL mode)	OFF	OFF	• Check the OSSD1/4 connections • If the problem persists return the UG 6912.02 / 04 to DOLD. The modul has to be repaired.
Error in communication with control unit	OFF	5 x flashing	OFF		OFF	OFF	OFF	• Restart the system • If the problem persists return the UG 6912.02 / 04 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	• 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	• Change the unit's address (see table below "Signal description ")

Troubleshooting UG 6912.02; UG 6912.04

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_SEL0
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

Outputs

OSSD

UG 6912.02:	2 pairs
UG 6912.04:	4 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

UG 6912.02:	2
UG 6912.04:	4
	programmable - PNP active high
	max. 100 mA at DC 24 V

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	
Storange 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 lengh:	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 comination 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 evalutation 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 Types

UG 6912.02 DC 24 V
Article number: 0063822
- 2 safety, dual-channel outputs
- Nominal voltage: DC 24 V
- Width: 22.5 mm

UG 6912.04 DC 24 V
Article number: 0063823
- 4 safety, dual-channel outputs
- 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