SAFEMASTER PRO
Configurable Safety System
System Overview

0266171

- Configurable, modular safety system with field bus

Advantages of SAFEMASTER PRO

- For safety applications 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

Short Description

SAFEMASTER PRO is a configurable, modular safety system consisting of a controller and 0-14 extension modules. To optimise the system according to the application input modules, output modules and combination input/output modules are available. These can be used in various combination with max. 4 units of the same type. In addition diagnostic modules allow to connect the system to a fieldbus. The communication between the modules is done via a 5 pole bus in the DIN rail (DOLD IN-RAIL-BUS). To extend the system, the extension modules are just clipped on the DIN rail.
In addition to the mentioned components relay extension modules UG 6912.14 and UG 6912.28 are available with 1 or 2 safety related relay outputs to extend the OSSDs with voltfree contacts. These extension modules are wired to the OSSDs of the output modules (take care of the total current).

Features

- Monitoring of opto electronical sensors, light curtains, magnetic actuated sensors, E-stop buttons, safety mats, mechanical switches, two-hand control
- up to 128 safety, single-channel inputs, dual-channel connection in pairs
- up to 16 separate safety, dual-channel outputs (OSSD),
- up to 32 separate test outputs for sensor monitoring
- 1 Feedback circuit each für every safety output with individual configurable reset
- Configuration by PC via Mini USB Port
- Using of control unit UG 6911 as stand alone unit possible
- Flexible safety logic to create and amend the safety functions
- Safe integrated logic testing
- Communication of the modules via 5 pole DIN-rail bus at the back of the units (In-Rail Bus)
- Indicator outputs, status-LEDs and bus connection via field bus modules for comprehensive diagnostics

Applications

With larger installations and more complex solutions the number of safety related functions is increasing. Also often logic interconnections, e. g. to connect or disconnect parts of a larger system are required. The modular configurable safety system SAFEMASTER PRO monitors all safety related parts of a machine or plant, simple, flexible and safe.

Approvals and Marking

CE, TÜV SÜD, cULus LISTED Canada / USA

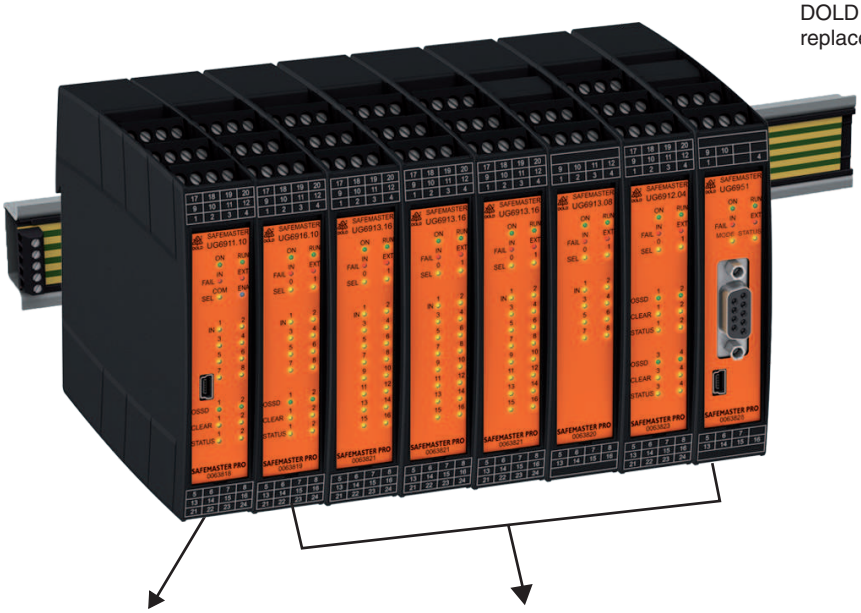
*) see separate datasheet

Additional Information about this topic

- Information about the single modules of SAFEMASTER PRO can be found in the separate data sheets.

The system mounting

DOLD In-Rail-Bus
replaces individual wiring



Control Unit
UG 6911.10
8 safety inputs and
2 safety dual-channel
OSSD oututs

Up to 14 extension module, possible:
- Input /Output Module UG 6916.10
- Input Module UG 6913.08, UG 6913.12 and UG 6913.16
- Output Module OSSD UG 6912.02 and UG 6912.04
- Field bus Modules for diagnostic-connetcion on field bus systems
  UG 6952 (PROFIBUS DP), UG 6951 (CANopen), UG 6954 (PROFINET)
  - with up to 128 inputs and
    16 safety dual-channel outputs

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

The Control Unit

The UG 6911.10 can be used as stand alone safety monitor without extensions or as control unit for the flexible system SAFEMASTER PRO. The highly integrated flexibility allows nearly any combination between control unit and extension modules. Up to 72 safety inputs and 8 safety outputs (OSSD) are available. Field bus modules as option offer extensive diagnostic functions and simple integration to the conventional control.

The Output Modules Relay

To achieve relay outputs in a simple way as well as to extend the semiconductor output by voltfree contacts the extension units are available. They offer 1 or 2 relay outputs with 2 NO safety contacts and 1 NC monitoring contacts each. The inputs of these modules are directly connected to the OSSD outputs of SAFEMASTER PRO. To monitor the relay contacts they are looped into the feedback circuit of the corresponding output module.

The Input Modules

If the 8 inputs of the control unit are not sufficient an extension with input modules of 8, 12 or 16 inputs can be made. as alternative to only input modules a module with 8 inputs and 2 OSSD outputs is available. Depending on the input configuration all sorts of safety actuators can be connected. These could be optoelectronic safety scanners, light curtains, magnetic coded sensors, e-stop buttons, safety mats, mechanical switches, 2-hand controls etc.

The Diagnostic Modules

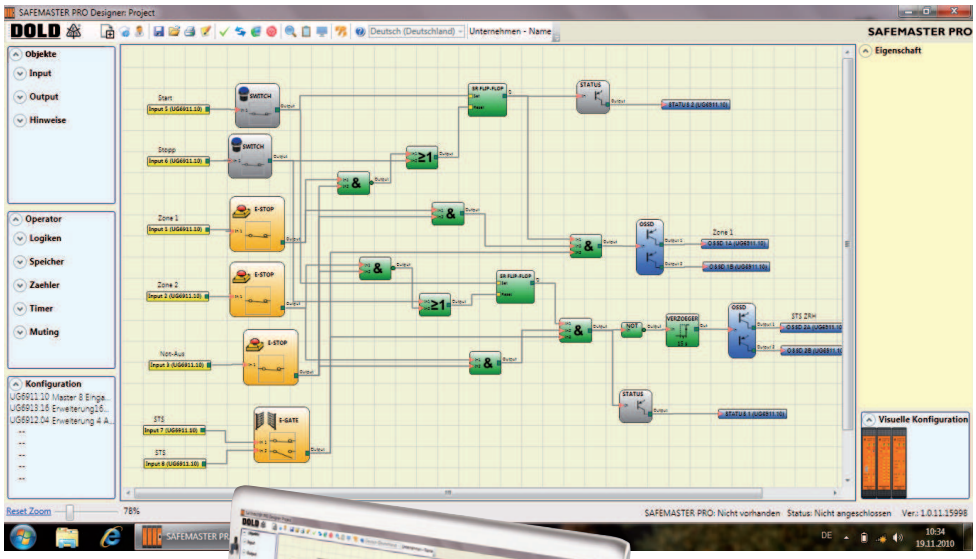
3 different field bus modules for diagnostic-connetcion on field bus systems are available: UG 6952 (PROFIBUS DP), UG 6951 (CANopen), UG 6954 (PROFINET). The connection between the modules is done by snapping the units on the DIN rail bus of SAFEMASTER PRO.

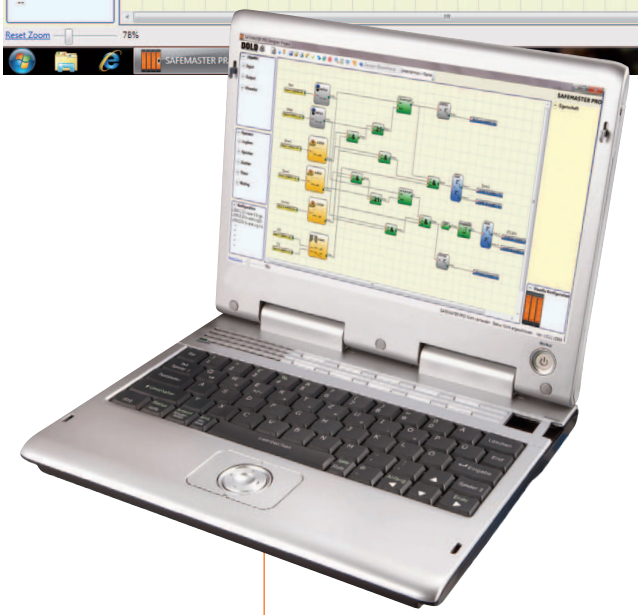
The Output Modules OSSD

To extend the 2 safety outputs of the controller output modules with 2 or 4 dual channel semiconductor outputs are available. Also the combination input/output module with 8 safety inputs and 2 OSSD outputs can extend the number of outputs. The output modules also provide a feed back circuit input per safety output. This allows to monitor external contacts e.g. of relay modules UG 6912.14 or UG 6912.28.

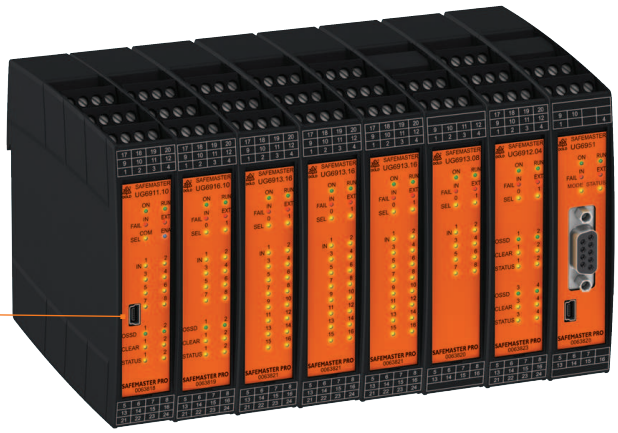
System Configuration

The configuration of the TUEV approved system is done very simple on a PC with the free configuration software SAFEMASTER PRO Designer. Using complex logic circuits can be designed with logic operators and safety functions like muting, timer, counter etc. This is handled by a simple graphic configuration tool.
The configuration designed on the PC is transferred via USB connection to the control unit UG 6911. Using the optional memory card OA 6911 (accessory) easy transfer of the configuration to a replacement unit is possible.





Mini USB-Port



Simple configuration in only 3 steps:

1. Select and configure safety functions
2. Assign in- and outputs and connect them comfortably on the PC
3. Test safety logic and transfer it via USB cable to the safety module - ready!

General Technical Data

Inputs max.	128		
OSSD-outputs max.	16 2-channel-outputs		
Indicator output max.	16		
Extension modules max. (not UG 6912.14 - UG 6912.28)	14		
Extension modules of the same type (not UG 6912.14 - UG 6912.28)	4		
Nominal voltage	DC 24 V ± 20%		
Digital INPUTS	„Type B“ according to EN 61131-2; I_N: 7...10 mA at DC 24 V		
OSSD (UG 6911.10, UG 6916.10, UG 6912.02, UG 6912.04)	PNP active high – max. 400mA at 24VDC		
Indicator outputs (UG 6911.10, UG 916.10, UG 6912.02, UG 6912.04)	PNP active high – max. 100mA at 24VDC		
Relay output (UG 6912.14, UG 6912.28)	250 V, 6 A, resistive (ohmic)		
Reaktionszeit	UG 6911.10	10 ms	+ T_{Filter}_Input
	UG 6911.10 + 1 extension	19,5 ms	+ T_{Filter}_Input
	UG 6911.10 + 2 extensions	22 ms	+ T_{Filter}_Input
	UG 6911.10 + 3 extensions	24 ms	+ T_{Filter}_Input
	UG 6911.10 + 4 extensions	26 ms	+ T_{Filter}_Input
	UG 6911.10 + 5 extensions	28 ms	+ T_{Filter}_Input
	UG 6911.10 + 6 extensions	30,5 ms	+ T_{Filter}_Input
	UG 6911.10 + 7 extensions	32,5 ms	+ T_{Filter}_Input

Safety Related Data

Values according to EN ISO 13849-1:

Category:	4	
PL:	e	
$MTTF_d$:	30 ... 100	a
DC_{avg}:	high	
Service life:	20	a (year)

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:	10^{-8} ... 10^{-7}	h^{-1}

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
OSSD relay output: 6A 250Vac, resistive
Status output: 24Vdc, 100 mA

Wire connection: 60°C / 75°C copper conductors only
0,5 ... 2,5 mm²
AWG 12 - 30 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.

System Components for SAFEMASTER PRO and Accessories

Type	Safety inputs	Safety semicond. outputs	Safety relay outputs	Unit	Article number
Control unit with Designer Software	8	2		UG 6911.10	0063818
Input module	8			UG 6913.08	0063820
Input module	12			UG 6913.12	0064865
Input module	16			UG 6913.16	0063821
Output module OSSD		2		UG 6912.02	0063822
Output module OSSD		4		UG 6912.04	0063823
Input / Output module	8	2		UG 6916.10	0063819
Output module Relay			1 x 2 NO, 1 NC	UG 6912.14	0063824
Output module Relay			2 x 2 NO, 2 x 1 NC	UG 6912.28	0063825
Bus Extender				UG 6918	0064866
Fieldbus module PROFIBUS DP				UG 6952	0063826
Fieldbus module CANopen				UG 6951	0063828
Fieldbus module PROFINET				UG 6954	0064861
Memory chip				OA 6911	0063829
USB-cable for PC connection				OA 6920	0064160
Mounting kit IN-RAIL-Bus 250 mm for DIN-rail 7.5 mm				BU 6921	0064244
Mounting kit IN-RAIL-Bus 250 mm for DIN-rail 15 mm				BU 6922	0064245