



- Multifunction, modular safety system with field bus interface

#### Your Advantages

- Free interconnection of input and output functions
- As option for E-Stop and control functions via radio control für höhere Verfügbarkeit Ihrer Maschinen und Anlagen
- Group hierarchy easily achieved
- No programming required
- Simple set up via internal switches
- Function selection set by screwdriver
- Control of a large system is possible without complicated wiring
- Flexible on site adjustment available to change functions
- System is easily extended via extender modules
- System indication on all modules via LED and semiconductor outputs
- Field bus interface option available to signal the system status
- Multifunction allows ease of design and build
- System can be interfaced to all other systems on the marked

#### Approvals and marking



Dold did not apply for an extension of validity of the existing BG certificate. In the mean time no significant changes had been made to the product.

#### Application

##### Multi purpose and flexible

The SAFEMASTER M multifunction system offers an ideal solution to control the safety functions for many areas in machine building and plant processing. For example: Paper and printing industry, Forming machinery, Food, Beverage and Packaging industry, Robot cells, Machine tools and complet production transfer lines.

In many cases this system offers a complete solution to the ever-increasing demand in automation to process more and more safety functions, the SAFEMASTER M offering a highly flexible but cost effective solution compared with conventional safety modules.

This system is suitable to link and control safety functions to safety category 4.

Ideal solutions for mobile and stationary machines and plants with dangerous areas

- during automatic operation e. g. to clear failures
- during set up e. g. to adjust machine parameters, maintenance, set up

#### Features

- Up to 26 single-channel or 13 2-channel input circuits
- As option with radio receiver RE 5910 for:
  - \* E-Stop
  - \* Control signals for 15 non-safety semiconductor outputs
- Up to 15 redundant, safety output contacts according to category 4
- 4 start button-inputs for enabling/acknowledgement
- 2 Semiconductor monitoring output in each input module and control unit
- 1 input for a feed back circuit in output module each
- Manual/Auto-Start
- with/without cross fault detection
- wahlweise sofort- oder verzögert schaltende Relais- oder Halbleiterausgänge
- System indication via optional field bus interface
- 4 output groups operated either separately, together or individually combined.

#### Additional Information about this topic

- You will find information about the single modules of SAFEMASTER M in each datasheets (see „system components“)
- You will find detailed information in the System description SAFEMASTER M

## More Functions, More Flexibility and High Safety Level

The software free safety system SAFEMASTER M allows individual safety solutions. Monitoring of different safety functions like e-stop, safety gates, light barriers, light curtains, safety mats, 2-hand controls according to EN 574 IIIA/IIIC etc. can be made. Instantaneous stop or controlled disconnection with delayed contacts is possible.

## Free Assignment of Input Modules to Output Modules

The SAFEMASTER M includes the most important functions of a small safety plc. It controls as master unit the safety functions of machines and production lines. The input modules can be assigned individually to output modules. A gateway as option allows to connect the system to existing, non-safety bus systems for indication purposes.

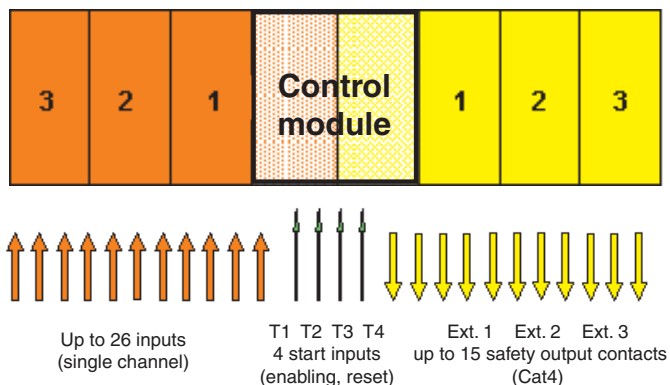
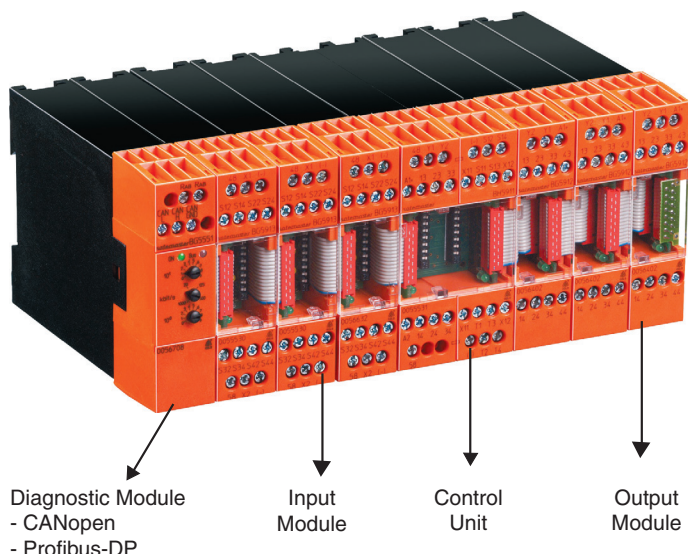
## No Software Necessary

Software is not required. The configuration is made using simple DIP-switches. This means no cost for programming, configuration and service tools, no problems and no cost for updates when new operating systems are introduced. Cost for software training is also saved.

## Partner for a Standard PLC

The SAFEMASTER M is an ideal supplement to a standard plc. While the plc is responsible for the machine control, SAFEMASTER M handles all safety related switching functions. Safety relevant states can be transferred by standard semiconductor outputs or via field bus connection to the plc for indication.

## The System



Ext. 1-3 = Extension modules 1-3

## The Control Module

The heart of SAFEMASTER M is the control module. It is the controller of the whole system but includes already input and outputs. A dual channel input for Cat4 e-stop is integrated. When using single channel Cat2 e-stops, 2 e-stop loops are available. 4 start inputs are also integrated in the control module. The assignment of the start buttons to the input modules is made via DIP-switches in each individual input module.

Up to 3 input modules can be placed on the left side and up to 3 output modules to the right side of the control module on a DIN rail. The electrical connection is made by a flat type cable.

## The Input Modules

The safety functions are programmed in the firmware of the input modules. A speciality of the input modules is that up to 4 safety functions of Cat4 are integrated i.e. 8 safety input channels.

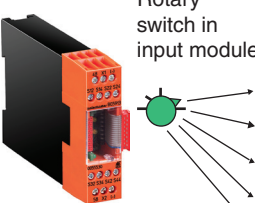
Modules can have 4 identical safety functions, ore mixed functions. DOLD has made a pre-selection of the most common required combinations in practice. To reduce the number of possible combinations to a minimum each module contains up to 4 different combinations of the 4 possible safety functions that can be chosen on site by the user. This multifunction feature reduces stock cost.

The selection of the right input module is very important to get the optimum solution. For demonstration see below example with the modules BG5913/00MF0 and BG 5913/01MF0.

If a wireless safety function is required a special radio controlled input module is available.

### BG 5913/01MF0

### Dual channel safety functions



-	1 x	3 x	-
-	2 x	2 x	-
-	1 x	1 x	1 x
1 x	-	1 x	1 x
-	3 x	1 x	-

## The Output Modules

Each output module has safety related (redundant) outputs according to EN 954 Cat4. All contacts in one module switch together. Different contact combinations are available e.g.

- 4 NO contacts
- 3 NO contacts, 1 NC contact
- instantaneous switching
- delayed switching
- combination of instantaneous and delayed
- relay outputs
- solid state outputs

Each input module has 2 semiconductor outputs for indication e. g. to a plc. Each output module integrates a feed back input to monitor external contactors.

## Input Modules - Properties and Application

2-channel	2-channel	2-channel	2-channel	1-channel / 2-channel	1-channel / 2-channel
4 x - - -	- 1 x 3 x -	1 x 1 x 1 x -	3 x 1 x - -	8 x / - -	8 x / - -
- 4 x - -	- 2 x 2 x -	4 x - - -	2 x 2 x - -	6 x / 1 x -	6 x / 1 x -
- - 4 x -	- 3 x 1 x -	- - 1 x 1 x	1 x 3 x - -	6 x / - 1 x	6 x / - 1 x
- - - 4 x	- 1 x 1 x 1 x	- 2 x - 1 x	2 x - - 1 x	- - -	- - -
	1 x - 1 x 1 x	2 x - - 1 x	1 x 1 x - 1 x		galvanic separation inputs

BG 5913.08/00MF0    BG 5913.08/01MF0    BG 5913.08/02MF0    BG 5913.08/03MF0    BG 5914.08/00MF0    BH5914.08/00MF0

manual start	auto-start	manual start
2-channel	2-channel	2-channel
2 x - - -	2 x - - -	1 x - - 1 x
or 2 x 1 x - -	or 2 x 1 x - -	- 1 x - 1 x
- 2 x - -	- 3 x - -	- - 1 x 1 x
or - - - 1 x		with wireless safety
or - - - 2 x		
- - - 1 x		
or - - - 2 x		
- - 1 x		
or 1 enabling switch		

BG 5915.08/01MF0    BH 5915.04/0RMF\_

## Output Modules - Properties and Application

BG 5912.04    BG 5912.48    BG 5912.86    BG 5912.95    BG 5912.88    BG 5912.89

## The System Components

Function	Application										Safe output contact			aux. contact	Type	
	E-Stop	Light Curtain	Safety Gate	Two-Hand	Wireless	Category acc. to EN 954-1 1)	PL to EN 13849 1)	SIL to EN 62061 1)	Redundant NO Contacts	Time Delay	Semiconductor	Semiconductor, Time Delay	NC Contact	Feedback for External Monitoring		Width [mm]
Control Unit																
Control Unit	+	+				4	2)	2)	3				+	45	BH 5911.03	
Control Unit	+	+				4	2)	2)	2			1	+	45	BH 5911.22	
Input Module																
Input Module	+	+	+	IIIA, IIIC		4	2)	2)						22.5	BG 5913.08/_0_ _ _	
Input Module, with isolated inputs	+	+	+	IIIA, IIIC		4	2)	2)						45	BH 5913.08/_0_ _ _	
Input Module	+	+	+	IIIC		4	2)	2)						22.5	BG 5913.08/_1_ _ _	
Input Module	+	+	+	IIIC		4	2)	2)						22.5	BG 5913.08/_2_ _ _	
Input Module	+	+		IIIC		4	2)	2)						22.5	BG 5913.08/_3_ _ _	
Input Module	+	+				4	2)	2)						22.5	BG 5914.08/_0_ _ _	
Input Module, with isolated inputs	+	+				4	2)	2)						45	BH 5914.08/_0_ _ _	
Input Module, with monitoring	+		+			4	2)	2)						22.5	BG 5915.08/_1_ _ _	
Input Module, with monitoring and isolated inputs	+		+			4	2)	2)						45	BH 5915.08/_1_ _ _	
Input Module with wireless safety	+	+	+		+	4	2)	2)						45	BG 5915.04/_R_ _ _	
Output Module																
Output Module						4	2)	2)	4				+	22.5	BG 5912.04	
Output Module						4	2)	2)	3			1	+	22.5	BG 5912.48	
Output Module						4	2)	2)		3			+	22.5	BG 5912.86	
Output Module						4	2)	2)		2		1	+	22.5	BG 5912.95	
Output Module with semiconductor outputs						4	2)	2)		2			+	22.5	BG 5912.88	
Output Module with semiconductor outputs						4	2)	2)		2	2		+	22.5	BG 5912.89	
Diagnostic module																
Diagnostic Module for CANopen														22.5	BG 5551	
Diagnostic Module for Profibus DP														45	BH 5552	

1) Standardisation see datasheets.