

SCHMERSAL Tech Briefs: Serial Diagnostics



Overview

Safety sensors and interlocks with serial diagnostic output have a serial input and output pin instead of the conventional PNP diagnostic output. If these SD components are daisy-chained, the safety channels as well as the serial I/O diagnostic channels are wired in series. The thus created "bus line" of diagnostic information is passed to a serial diagnostic gateway. In this way, a maximum of 31 components can be consecutively daisy chained to one gateway, which can consist of different variants of the Schmersal electronic devices.

The SD Gateways for the different field bus systems convert the serial diagnostic signal of the sensors and solenoid interlocks into the desired field bus protocol.

The following protocols can be achieved by the specific SD Gateways:

- PROFIBUS DP-V0
- PROFINET IO
- DeviceNet
- EtherNet IP
- EtherCAT
- CC-Link
- CANopen and
- Modbus/TCP

The SD Gateways are integrated as a slave in the available field bus system. In this way, the diagnostic signals can be evaluated through the connected control system.

Every connected safety sensor/solenoid interlock loads status signals, warning or failure messages to the linked PLC. The PLC sends control commands to the components of the series-connected chain, e.g. to unlock a solenoid interlock.

This concept has multiple advantages: not only is the amount of wiring considerably reduced which also reduces installation costs, it furthermore provides useful information about each participating sensor and the control of the individual interlock releases from the connected PLC. This function can considerably reduce machine downtime.

Schmersal Pulse-Echo and RFID Devices

Schmersal's radio frequency identification (RSS type) and the patent Pulse-Echo (CSS type) safety devices feature a microprocessor based non-contact technology. Internal self-diagnostics eliminate the need for a proprietary dedicated safety controller while maintaining PLe to ISO 13849 and SIL 3 to IEC 61508, even when wired in series. The electronic SD options provide detail status information for each component wired to a Gateway. Device options include locking and non-locking, magnetic locking, integrated door handle assemblies, IP69K and ECOLAB approved safety devices.

Available Literature



Installation Systems for Safe Series Connection



Electronic Safety Sensors & Solenoid Interlocks

Ordering Details

Universal Gateway

SD-I-U⓪

① Communication Protocol	
PN	PROFINET IO
EIP	Ethernet IP
DN	DeviceNET
CCL	CC-Link
CAN	CANopen
MT	Modbus/TCP
EC	EtherCAT

PROFIBUS Gateway

SD-I-DP-V0-2

Safety PLC With Integrated Gateway

PSC1...FB	Safety Programming
	Software Controller

Accessories

CSS-Y-8P	M12 Y-adaptor
CSS-Y-POWER	Power adaptor
CSS-Y-A-8P	M12 series end

With stainless steel connectors

CSS-Y-8P-VA	M12 Y-adaptor
CSS-Y-POWER-VA	Power adaptor
CSS-Y-A-8P-VA	M12 series end

M12 to M12 8-pole cables

101217786	0.5 meters
101217787	1.0 meters
101217788	1.5 meters
101217789	2.5 meters
101217790	5.0 meters

Passive Field Box

PFB-SD-4M12-SD	4 device junction box
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Safety Device with SD

Non-Locking

AZ 200	Integrated door handle
CSS 34	Rectangular profile
CSS 30	M30 metal, cylindrical
CSS 30S	IP69K, cylindrical
CSS 300	M30 plastic, cylindrical
RSS 16	AZ16 footprint
RSS 260	Compact design
RSS 36	Integrated latching

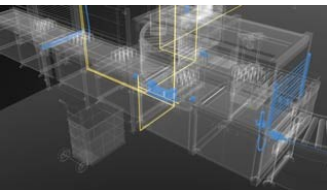
Locking

AZM 200	Integrated door handle
AZM 300	IP69K
MZM 100	Magnetic locking

Features



The PSC1 modular system combines safety programming logic with options for safe drive monitoring with integrated Gateway



Extensive real-time information for each device throughout the entire system



Quick and easy system installation either by M12 Y-adaptor or M12 fused junction box



Various electronic devices offering the SD option for all types of applications and environments, which can all be series connected

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