ABB CONTROL SYSTEMS

Freelance DCS

Product Catalog



5.5 S900 Remote I/O

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TU 921N



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TU 921S/B





5.5.1 Introduction to S900 I/O system

S900 provides the input and output modules needed for intrinsically safe field signal connection. The field signals are digitized in every S900 functional module, electrically isolated, and then output via an internal serial bus. The communication interface converts the signals to adapt them to the standardized PROFIBUS-DP V1 fieldbus protocol.

Supervisory process control systems, DCS or SCADA systems use an intrinsically safe fieldbus to communicate with the communication interface. A PROFIBUS connect allows the configuration of the individual S900 stations with cyclic data exchange, acyclic services and communication with HART-compatible field instruments. All functional modules can be replaced easily and quickly, which is an advantage especially in the installation or maintenance phase in hazardous area. The functional modules and the – optionally redundant – communication interface modules placed in Zone 1 can be removed and plugged in while operation is running.

Integrated encapsulated switch-off mechanisms allow for hot swapping of the power supplies. Due to its little space requirements and robust design and its environmentally ruggedized case, the S900 Remote I/O System is a cost-saving solution for use on site, in hazardous Zone 1 or Zone 2 areas (ATEX).

No external signal adaptation or routing required
S900 provides various input and output modules: Analog input modules with or without integral transmitter supply, or with direct temperature measuring input for 2-, 3- or 4-wire resistance thermometers or thermocouples with internal cold junction compensation. Analog output modules for direct positioner or actuator control. Solenoid driver units or NAMUR inputs for intrinsically safe and short-circuit-proof power supply of digital field instruments.

Additionally, options are available for critical applications, allowing for channel-wise electrical isolation of the inputs and outputs. S900 permits direct connection of the entire field level through only 2 lines. As no separate routing, power supply or fusing is needed, the installation cost is reduced considerably.

Three different series with different use and with different approvals are available.

Series	Assembly	Field devices / signals	Hazardous area approval
S	In Zone 1	In Zones 2, 1, and 0 (intrinsically safe signals)	ATEX Zone 1 (Blue TU921S)
B	In Zone 2	In Zones 2, 1, and 0 (intrinsically safe signals)	ATEX Zone 2 (Blue TU921B)
N	In safe areas	In safe areas	No (Black TU921N)

For details about S900 I/O please refer to the S900 catalog, document number 3BDD010420.

5.5.2 Redundant termination unit TU921S/B/N

- Termination unit for up to 16 I/O modules
- Prepared for redundant system power and communication
- Up to 4 terminals per channel
- Preselection of fieldbus address
- Prepared for certified field housing
- Mounting in Zone 1 or Zone 2 possible



Name	Short description	Article no.
TU921S	Redundant Termination Unit (TU16R-Ex)	3KDE175111L9210
	For 16 I/O-modules. Redundant communication and power. (Delivery includes CD910).	
TU921B	Redundant Termination Unit (TU16R-B)	3KDE175112L9210
	For 16 I/O-modules. Redundant communication and power. (Delivery includes CD910).	
TU921N	Redundant Termination Unit (TU16R)	3KDE175113L9210
	For 16 I/O-modules. Redundant communication and power. (Delivery includes CD910).	

5.5.3 Power supplies SA920S/B/N

The remote S900 I/O system, type B and type S must be equipped in such way that total power consumption of all S900 I/O modules and S900 Communication Interfaces does not exceed 55 watts.

SA920S, Power Supply for 24 V DC. Compared to previously used power supply SA910S (45 W) the SA920S (55 W) has a 10 W higher output power.

SA920B, Power supply for redundant termination unit TU921B (TU16R-B) in S900 I/O. For installation in hazardous area Zone 2. For connecting intrinsically safe field devices installed in Zone 2 or Zone 1 or Zone 0.

With an S900 I/O System of type N, the total power consumption of the power units SA920N in an S900 I/O System station must not exceed the power limit of 70 watts.



Name	Short description	Article no.
SA920S	Power Supply	3BDH000602R1
	For 24 VDC. The power supply filter type BP901S is not required. Do not mix SA910S with SA920S for redundancy (observe Release Notes).	
SA920B	Power Supply	3BDH000601R1
	For 24 VDC. The power supply filter type BP901S is not required. SA920B is the functional replacement for SA910B Do not mix SA910B with SA920B for redundancy (observe Release Notes).	
SA920N	Power Supply	3BDH000600R1
	For 24 VDC. The power supply filter type BP901S is not required. SA920N is the functional replacement for SA910N Do not mix SA910N with SA920N for redundancy (observe Release Notes).	

5.5.4 Digital I/O modules

Digital I/O modules DX910S/B/N

- Input for dry contacts or proximity switches (NAMUR)
- Output for low power intrinsically safe valves
- Short and break detection
- Electrical isolation between input / bus and input / power
- Common return for all inputs / outputs
- Configurable as a mixture of inputs and outputs
- 8 I/O channel



Name	Short description	Article no.
DX910S	Digital Input or Output (DIO8-Ex)	3KDE175311L9100
	Input for dry contact or NAMUR initiator. Output for low power intrinsic safe valves.	
DX910B	Digital Input or Output (DIO8-B)	3KDE175312L9100
	Input for dry contact or NAMUR initiator. Output for low power intrinsic safe valves.	
DX910N	Digital Input or Output (DIO8)	3KDE175313L9100
	Input for dry contact or NAMUR initiator. Output for low power valves.	

Solenoid driver DO910S/B/N

- Output for intrinsically safe valves or alarms
- Integrated driving power
- Short and break detection
- Electrical isolation between output / bus and output / power
- Electrical isolation channel to channel
- 4 channels



Name	Short description	Article no.
DO910S	Digital Output (DO4-Ex)	3KDE175321L9100
	Output for intrinsic safe valves.	
DO910B	Digital Output (DO4-B)	3KDE175322L9100
	Output for intrinsic safe valves.	
DO910N	Digital Output (DO4)	3KDE175323L9100
	Output for valves.	