

# (1) EU-TYPE EXAMINATION CERTIFICATE



- (2) Equipment and Protective Systems intended for use in Potentially Explosive Atmosphere - **Directive 2014/34/EU**
- (3) EU-Type Examination Certificate Number

**TÜV 21 ATEX 8666 X**

Issue: 01

- (4) Equipment: **Ethernet APL Rail Switch, Type ARS\*-B2-IA\***
- (5) Manufacturer: **Pepperl+Fuchs SE**
- (6) Address: **Lilienthalstraße 200  
68307 Mannheim, Germany**

- (7) This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The TÜV Rheinland Zertifizierungsstelle für Explosionsschutz of TÜV Rheinland Industrie Service GmbH, Notified Body No. 0035 in accordance with Article 21 of the Council Directive 2014/34/EU of 26th February 2014, certifies this product which has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmosphere, given in Annex II to the Directive. The examination and test results are recorded in the confidential report 557/Ex8666.01/21
- (9) Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule of this certificate, has been assessed by reference to:  
**EN IEC 60079-0:2018      EN IEC 60079-7: 2015 / A1: 2018**  
**EN 60079-11: 2012      IEC TS 60079-47:2021**
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EU-Type Examination Certificate relates only to the design and specification for construction of the equipment or protective system. It does not cover the process for actual manufacture or supply of the equipment or protective system, for which further requirements of the directive are applicable.
- (12) The marking of the equipment shall include the following:

- II 3 (1) G Ex ic ec [ia Ga] IIC T4 Gc**
- II (1) D [Ex ia Da] IIIC**

TÜV Rheinland Zertifizierungsstelle für Explosionsschutz

Cologne, 2022-10-14

Dipl.-Ing. Christian Mehrhoff



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TÜV Rheinland Industrie Service GmbH TÜV Rheinland Group Am Grauen Stein 51105 Köln  
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(13) Annex

(14) **EU Type Examination Certificate**  
**TÜV 21 ATEX 8666 X** Issue: 01

(15) Description of equipment

15.1 Equipment and type:

Ethernet APL Rail Switch type ARS\*-B2-IA\*

15.2 Description

General product information:

The ARS\* (Ethernet APL Rail Switch) series consists of multi-port APL (Advanced Physical Layer) field switches providing 8, 16 or 24 intrinsically safe powered ports (spurs). The spurs support the Ethernet APL power profile SPAA for Ex ia according to 2-WISE (IEC TS 60079-47) and the requirements for a FISCO source according IEC 60079-11, Annex G. The ports of the ARS\* provide an AC coupled single pair Ethernet 10 Mbit/s full duplex communication signal based on IEEE 10BASE-T1L on top of the DC output power. Alternatively for Fieldbus communication a 31.25 kbit/s Manchester encoded half duplex communication signal based on IEC 61158-2 is provided on top of the DC power.

As uplink ports two 10/100/1000 MBit/s Ethernet ports (RJ45 connection) as well as up to two slots for using SFP (small form factor pluggable) modules are supported.

There are several ARS\* variants available. All ARS\* variants described in this document are available with Ex ia IIC outputs.

Type code	Description
ARS*-B2-IA08*	8 spur outputs with level of protection Ex ia
ARS*-B2-IA16*	16 spur outputs with level of protection Ex ia
ARS*-B2-IA24*	24 spur outputs with level of protection Ex ia

The ARS\* can be mounted in a hazardous area of category 3G Zone 2. The ARS\* is an associated apparatus with intrinsically safe outputs allowing the signals from the Ethernet-APL spur port to go into 1G Zone 0 or 1D Zone 20. The reset switch of the device may be used in hazardous area of category 3G Zone 2.

Information about the installation practice of the switch spur ports used in a FISCO system can be found in the drawing DOCT-8462 provided by the manufacturer.

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Details of Change:

- 2<sup>nd</sup> source supplier was added for certain electronic parts. The resulting hardware changes were assessed to meet the requirements of the applicable standards.
- Update of the Entity parameters for the spur circuits.

Technical Data

Electrical data

Supply circuits..... (Terminals PWR A-, PWR A+, PWR B-, PWR B+ on 6-pole connector)	Un = 20 ... 60 VDC Safety maximum voltage: Um = 60 V		
Relay contact..... (Terminals Status 1 and Status 2 on 6-pole connector)	Un = 32 V, Safety maximum voltage: Um = 60 V In = 100 mA		
Spur circuits ..... between 8 and 24 connectors S1 to S24 (3-pole connectors: +, -, S)	Type of protection intrinsic safety Ex ia according to 2-WISE and FISCO U <sub>o</sub> = 17.5 V I <sub>o</sub> = 380 mA P <sub>o</sub> = 1.67 W C <sub>i</sub> = negligible L <sub>i</sub> = negligible  The following Entity values are applicable for circuits with both inductance and capacitance as well as for distributed and lumped inductance and capacitance:		
	Ex ia	IIB / IIIC	IIC
	Max. L <sub>o</sub>	0.5 mH	0.15 mH
	Max. C <sub>o</sub>	1.5 µF	0.25 µF
	The shield connection S may only be connected to the cable shield.		
Characteristic.....	DC supply power with modulated PAM-3 or Manchester encoded PAM-2 communication signal on top.		
PA Earth connection..... (screw terminal)	For connection to the equipotential bonding.		
Network interfaces.....	RJ45 connections, Safety maximum voltage: Um = 60 V SFP slot - only SFP Modules listed in the referenced SFP module certificate may be used.		

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Environmental data:

The permitted ambient temperature range depends on the orientation of the device (see instructions for permissible mounting orientations) and if SFP Modules are used:

Horizontal orientation without SFP Modules:

$-40\text{ °C} \leq T_a \leq +75\text{ °C}$

Horizontal orientation with SFP Modules:

$-40\text{ °C} \leq T_a \leq +70\text{ °C}$

Vertical orientation without SFP Modules:

$-40\text{ °C} \leq T_a \leq +60\text{ °C}$

Vertical orientation with SFP Modules:

$-40\text{ °C} \leq T_a \leq +55\text{ °C}$

List of used equipment and components:

Device	Manufacturer	Type	Ex-Marking	Certificate no.
SFP Module	Pepperl+Fuchs SE	SFP-*	II 3 G Ex ec IIC T4 Gc	TÜV 20 ATEX 8572 X

(16) Test-Report No. 557/Ex8666.01/21

(17) Special Conditions for safe use

1. The equipment shall only be used in an area of at least pollution degree 2, as defined in EN 60664-1.
2. The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP 54 in accordance with EN 60079-0.

(18) Basic Safety and Health Requirements

Covered by afore mentioned standard

TÜV Rheinland Zertifizierungsstelle für Explosionsschutz

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