

# Ethernet-APL Rail Field Switch

## ARS12-B2-IC24-2



- Managed Ethernet-APL field switch for process industries
- Powered spur ports intrinsically safe Ex ic according to 2-WISE and FISCO
- PROFINET MRP, S2 redundancy and dynamic reconfiguration
- 2 ports each for 1000BASE-T and SFP transceivers
- Redundant power input 20 VDC ... 60 VDC
- Installation in Zone 2
- Physical layer diagnostics at the spur
- Configuration and diagnosis with FDI, web interface, PROFINET device functions and SNMP
- Support of network security

Ethernet-APL rail field switch with 24 intrinsically safe Ex ic spur ports and spring terminals



**ethernet-apl™**  
advanced physical layer



The Ethernet-APL rail field switch is a ruggedized, managed field switch offering connectivity for Ethernet-APL devices to Ethernet networks via any protocol. The connections, i. e., "spur" ports, provide intrinsically safe (Ex ic) power and communication to instruments located in Zone 2. APL field switches can be installed in Zone 2.

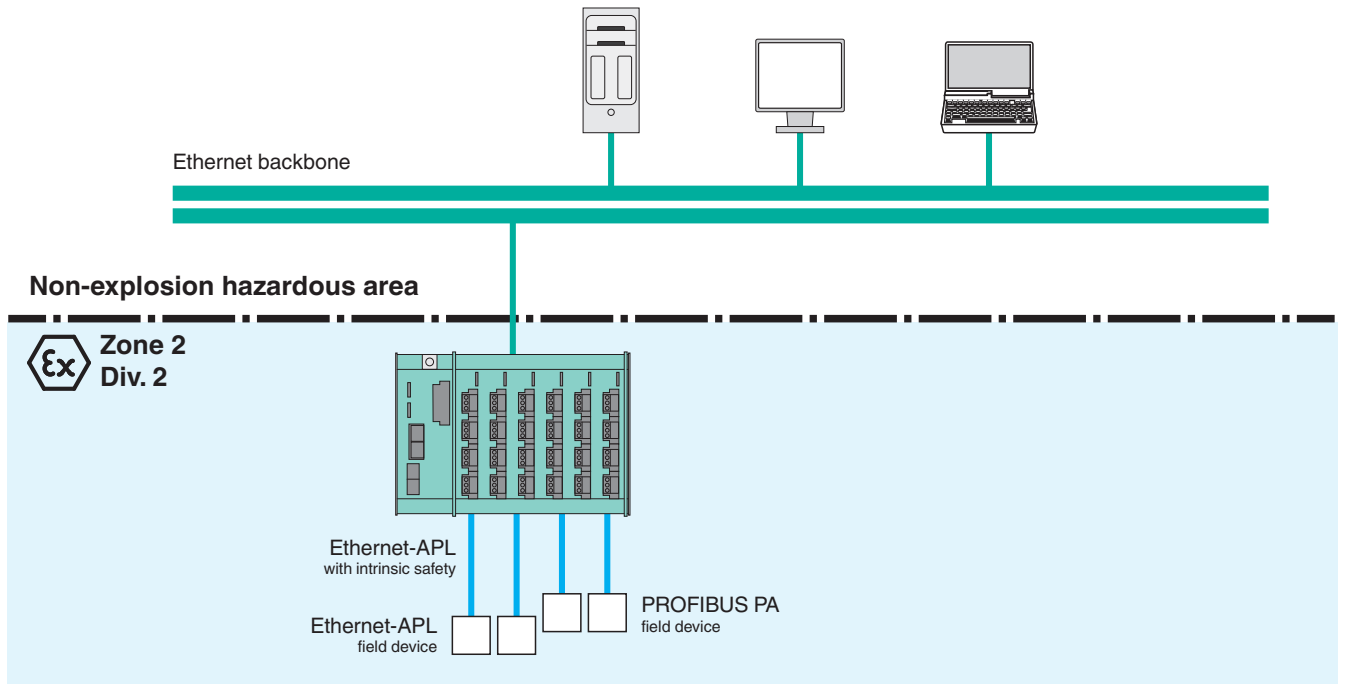
The APL field switch features 2 Gigabit Ethernet ports and 2 SFP ports. The SFP ports provide connections for a choice of optional SFP transceivers to be used in explosion-hazardous areas and different distances.

For PROFINET, the APL field switch supports Class B networks. For high-availability installations, the APL field switch provides redundancy mechanisms such as MRP ring redundancy and S2 system redundancy.

Easy configuration and diagnostics of the APL field switch are accessible via FDI and web-based management. PROFINET device functions and SNMP assure fast start-up and enable the use of predictive maintenance. Comprehensive network and physical layer diagnostics enable proactive management strategies to reduce risk of failure and downtime.

The APL field switch implements enhanced network security and supports SNMPv3, the locking of unused ports, and the HTTPS protocol.

# Function Principle



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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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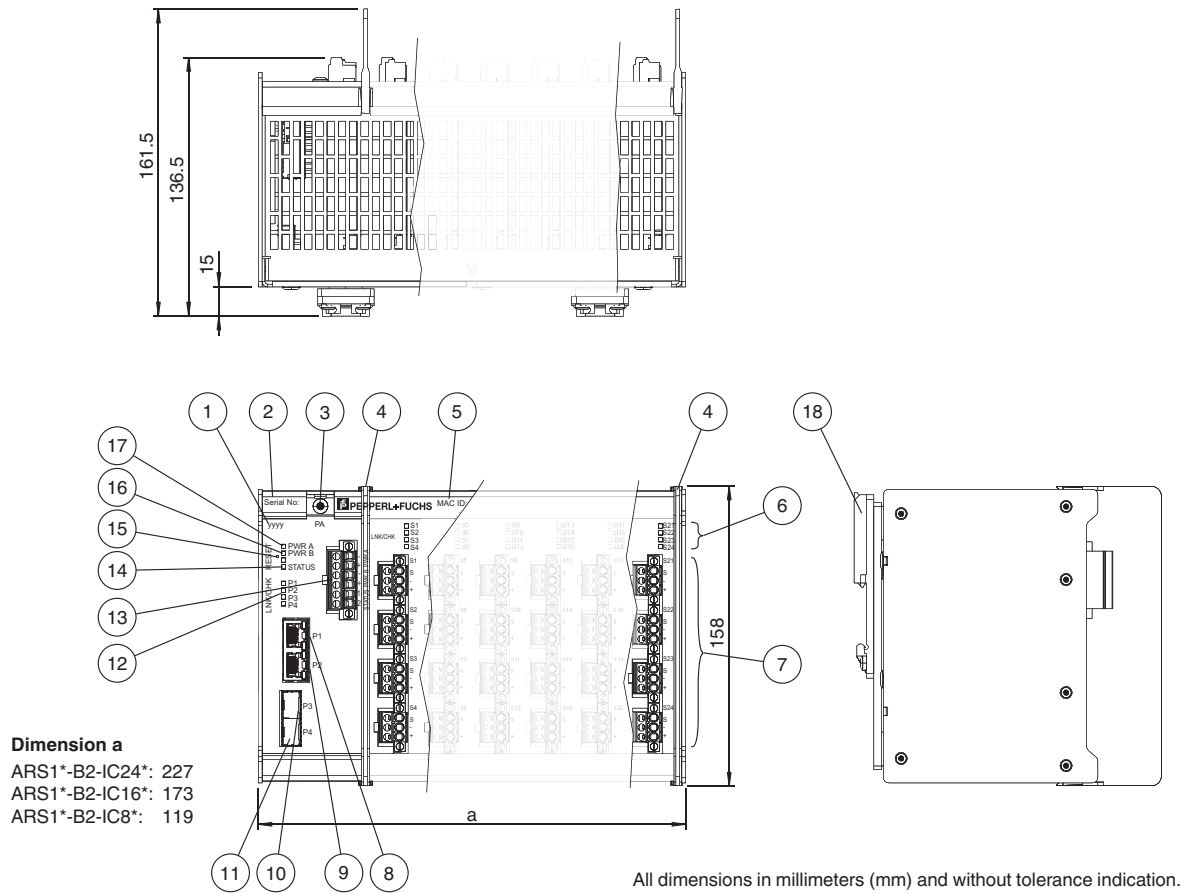
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**Dimensions**

**DIN Rail Mounting**



- 1 Year of production
- 2 Serial number
- 3 PA, connection to equipotential bonding
- 4 Slot for separation wall
- 5 MAC ID
- 6 LED S1 ... Sn, status spur ports S1 ... Sn
- 7 Connectors for intrinsically safe spurs S1 ... Sn
- 8 Ethernet port P1
- 9 Ethernet port P2
- 10 Ethernet SFP port P3
- 11 Ethernet SFP port P4
- 12 LED LNK/CHK P1 ... P4, communication status LED P1 ... P4
- 13 Connector for auxiliary power and status indication output
- 14 LED STATUS, status rail field switch
- 15 Reset button
- 16 LED PWR B, status power input B
- 17 LED PWR A, status power input A
- 18 DIN rail mounting brackets

**Technical Data**

| General specifications               |                |                      |  |
|--------------------------------------|----------------|----------------------|--|
| Design / Mounting                    |                | Cabinet installation |  |
| Fieldbus support                     |                | n/a                  |  |
| Supply                               |                |                      |  |
| Rated voltage                        | U <sub>r</sub> | 20 ... 60 V          |  |
| Rated current                        | I <sub>r</sub> | 0.85 ... 2.55 A      |  |
| Power dissipation                    |                | 26.7 W               |  |
| Voltage difference dual supply input |                | +/- 10 %             |  |

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## Technical Data

|                                       |  |
|---------------------------------------|--|
| Power consumption                     | max. 51 W  |
| Redundancy                            | dual supply input  |
| <b>Indicators/operating means</b>     |  |
| LED PWR A/B                           | green: power on  |
| LED LNK/CHK                           | Off: no communication link active ,<br>Green: communication link active ,<br>Green flashing: communication link activity ,<br>Red flashing: check function |
| LED ALARM                             | Off: Good<br>Blue: Maintenance required<br>Red flashing: Out of specification<br>Red: Failure  |
| LED STATUS                            | Off: Good ,<br>Blue: Maintenance required ,<br>Red: Failure  |
| Fault signal                          | VFC alarm 100 mA, 32 V DC, normally closed   |
| Button                                | Device reset   |
| <b>Interface 1</b>                    |  |
| Interface type                        | Ethernet-APL : 1 Vpp option spur connection  |
| Port classification                   | S P C C  |
| Number of ports                       | 24   |
| Port identification                   | S 1 ... S 24   |
| Power option                          | powered  |
| Transfer rate                         | 10 MBit/s full duplex  |
| Rated voltage                         | 11.61 V  |
| Rated current                         | 95 mA  |
| Rated power                           | 1.11 W   |
| Cable shield grounding option         | capacitive grounded  |
| Connection type                       | pluggable spring terminals   |
| Conductor cross section solid wire    | 2.08 ... 0.326 mm <sup>2</sup> , 14 ... 18 AWG   |
| Conductor cross section flexible wire | 2.08 ... 0.326 mm <sup>2</sup> , 14 ... 18 AWG   |
| <b>Interface 2</b>                    |  |
| Interface type                        | 1000BASE-T   |
| Number of ports                       | 2  |
| Port identification                   | P 1 ... P 2  |
| Transfer rate                         | 10/100/1000 Mbps   |
| Connection type                       | RJ-45 , EIA/TIA 568 B  |
| <b>Interface 3</b>                    |  |
| Interface type                        | Slot for SFP transceiver SFP Multi-Source (MSA) compliant  |
| Number of ports                       | 2  |
| Port identification                   | P 3 ... P 4  |
| <b>Galvanic isolation</b>             |  |
| Spurs/Supply                          | 1500 V AC  |
| SFP/Supply                            | 500 V AC   |
| 1000BASE-T/Supply                     | 1500 V AC  |
| 1000BASE-T/Spurs                      | 1500 V AC  |
| 1000BASE-T/1000BASE-T                 | 1500 V AC  |
| Housing/All                           | 620 V AC   |
| Fault signal/All                      | 1500 V AC  |
| <b>Directive conformity</b>           |  |
| Electromagnetic compatibility         |  |
| Directive 2014/30/EU                  | EN 61326-1:2013  |
| <b>Conformity</b>                     |  |
| Galvanic isolation                    | IEC 61010-1  |
| Electromagnetic compatibility         | EN 61326 , NE 21   |

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## Technical Data

|  |   |      |
|--|---|------|
| Degree of protection   | IEC 60529   |      |
| Ethernet   | IEEE 802.3z , IEEE 802.3u , IEEE 802.3cg  |      |
| Shock resistance   | EN 60068-2-27   |      |
| Vibration resistance   | EN 60068-2-6  |      |
| Climatic conditions  | DIN IEC 721   |      |
| <b>Software</b>  |   |      |
| Industrial protocols   | PROFINET , CC-B (PA) , dynamic reconfiguration , Netload Class III  |      |
| Management   | Web user interface , SNMP v1, v2 , v3 , PROFINET  |      |
| Redundancy   | PROFINET MRP , PROFINET system redundancy S2  |      |
| Management Information Base (MIB)                              | PROFINET conformance class B  |      |
| Cybersecurity  | HTTPS , Port locking , Protocol disabling , PROFINET security level 1   |      |
| Diagnostics function   | 10BASE-T1L physical layer , port , Packet statistics  |      |
| <b>Ambient conditions</b>                                      |   |      |
| Ambient temperature  | -40 ... 70 °C (-40 ... 158 °F) horizontally mounted no SFP installed<br>-40 ... 65 °C (-40 ... 149 °F) horizontally mounted SFP installed   |      |
| Storage temperature  | -40 ... 85 °C (-40 ... 185 °F)  |      |
| Relative humidity  | ≤ 95 % non-condensing   |      |
| Shock resistance   | 15 g 11 ms  |      |
| Vibration resistance   | 1 g 10 ... 150 Hz   |      |
| Pollution degree   | max. 2, according to IEC 60664  |      |
| Corrosion resistance   | acc. to ISA-S71.04-1985, severity level G3  |      |
| <b>Mechanical specifications</b>                               |   |      |
| Housing material   | stainless steel 1.4301 , PC (Polycarbonate)   |      |
| Housing width  | 227 mm  |      |
| Housing height   | 158 mm  |      |
| Housing depth  | 136.5 mm  |      |
| Degree of protection   | IP20 according to EN 60529  |      |
| Mass   | 3530 g  |      |
| Mounting   | DIN rail mounting , wall mounting   |      |
| <b>Data for application in connection with hazardous areas</b> |   |      |
| EU-type examination certificate                                | TÜV 20 ATEX 8571 X  |      |
| Marking  | Ⓢ II 3 G Ex ic ec nC [ic] IIC T4 Gc<br>Ⓢ II (3) D [Ex ic Dc] IIIC   |      |
| Supply   |   |      |
| Maximum safe voltage   | $U_m$   | 60 V |
| Interface 1  | 2-WISE power source   |      |
| Voltage $U_o$  | 17.5 V  |      |
| Current $I_o$  | 105 mA  |      |
| Interface 2  |   |      |
| Maximum safe voltage $U_m$                                     | 60 V  |      |
| Interface 3  |   |      |
| Maximum safe voltage $U_m$                                     | 60 V  |      |
| Directive conformity   |   |      |
| Directive 2014/34/EU   | EN 60079-0:2018 , EN 60079-11:2012 , EN 60079-7:2015+A1:2018 , EN 60079-15:2019 , IEC TS 60079-47:2021  |      |
| <b>International approvals</b>                                 |   |      |
| IECEx approval   | IECEx TUR 20.0105X  |      |
| Approved for   | Ex ic ec nC [ic] IIC T4 Gc<br>[Ex ic Dc] IIIC   |      |
| <b>Certificates and approvals</b>                              |   |      |
| Patents  | This product may be covered by the following patent: US 9,762,409   |      |
| <b>General information</b>                                     |   |      |
| Supplementary information                                      | Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> . |      |

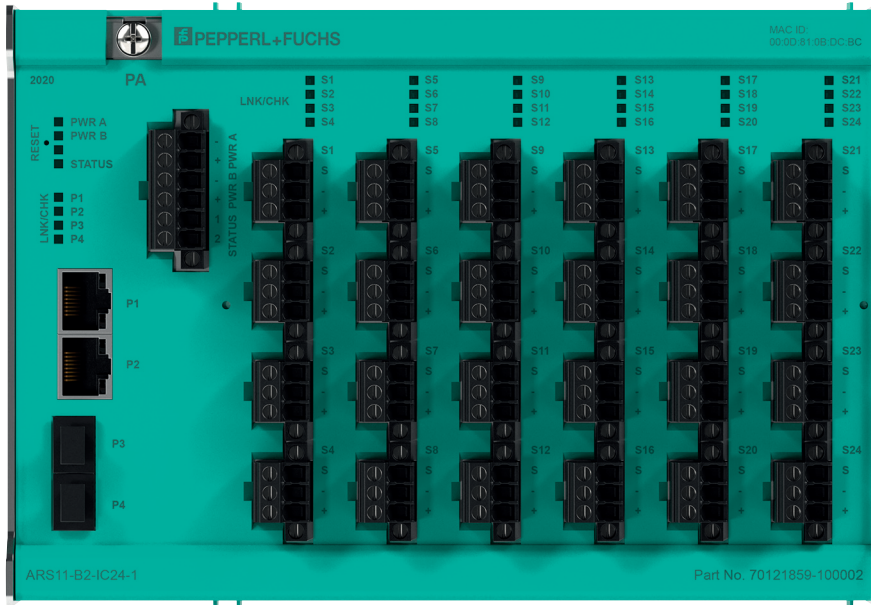
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**Assembly**



**Mounting**

**Wall Mounting Option**

For wall mounting the APL rail field switch use the accessory ACC-ARS-WM. See manual for details and dimensions.

**Type Code**

|      |     |   |   |   |    |     |   |     |
|------|-----|---|---|---|----|-----|---|-----|
| ARS1 | (1) | B | 2 | - | IC | (2) | - | (3) |
|------|-----|---|---|---|----|-----|---|-----|

| ARS1 | Device                         |
|------|--------------------------------|
| ARS1 | Ethernet-APL Rail Field Switch |

| (1) | PROFIBUS PA Proxy |
|-----|-------------------|
| 1   | With proxy        |
| 2   | Without proxy     |

| B | Power Supply                     |
|---|----------------------------------|
| B | Separately powered 20 V ... 60 V |


| 2 | Uplink Ports                        |
|---|-------------------------------------|
| 2 | 2 ports each for RJ45 and SFP slots |

| IC | Intrinsic Safety at Spurs |
|----|---------------------------|
| IC | Ex ic IIC                 |

| (2) | Spur Port Count |
|-----|-----------------|
| 08  | Spur ports      |
| 16  | Spur ports      |
| 24  | Spur ports      |

| (3) | Pluggable Terminal Types |
|-----|--------------------------|
| 1   | Screw terminals          |
| 2   | Spring terminals         |







**Accessories**

|   |                   |  |
|---|-------------------|--|
|  | <b>ACC-ARS-SW</b> | Separation wall for intrinsically safe port application (packaging unit: 2 pieces) |
|---|-------------------|--|

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**Accessories**

|   |                        |  |
|---|------------------------|--|
|  | <b>ACC-ARS-WMK</b>     | Wall mounting kit consisting of 2 mounting brackets            |
|  | <b>ACC-PC-SFP</b>      | Protective covers for SFP sockets (packaging unit: 10 pieces)  |
|  | <b>ACC-PC-45</b>       | Protective covers for RJ45 sockets (packaging unit: 10 pieces) |
|  | <b>SFP-1</b>           | SFP Module Multimode, 2 KM, 100BASE-FX, SFP-1                  |
|  | <b>SFP-2</b>           | SFP Module, Multimode, 550 M, 1000BASE-SX, SFP-2               |
|  | <b>DTM FieldConnex</b> | FieldConnex® DTM Collection                                    |

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