

# FL SWITCH APL 2224-4A-213-PA - Industrial Ethernet Switch



1384244

<https://www.phoenixcontact.com/pc/products/1384244>

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24-port Ethernet-APL + PROFIBUS PA field switch, Zone 2 mountable, Ex 'ia' APL ports, four uplink ports, Power class A/B ports

## Your advantages

- Six isolation groups of four spurs
- Redundant power connections
- APL-managed switch
- Top-down wiring terminations
- PROFINET-managed switch
- Dynamic reconfiguration
- Proxy capability
- Connects to Ex ia devices in Zone 1/0 hazardous locations using 2-WISE, FISCO, or intrinsically safe entity parameters
- Global approvals
- MRP and S2 PROFINET System Redundancy

## Commercial data

Item number	1384244
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DNN128
GTIN	4063151759506
Weight per piece (including packing)	5,833.8 g
Weight per piece (excluding packing)	5,334.5 g
Customs tariff number	85176200
Country of origin	US

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## Technical data

### Dimensions

Dimensional drawing	
Width	270 mm
Height	215 mm
Depth	127 mm
Note on dimensions	Depth valid when a TH 35-15 DIN rail is used (according to EN 60715).

### Notes

Note on application	
Note on application	Only for industrial use

### Material specifications

Housing material	Die-cast aluminum
	PC

### Mounting

Mounting type	Panel mount
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### Interfaces

Ethernet (RJ45)	
Number of interfaces	2
Connection method	RJ45
Note on the connection method	Auto negotiation and autocrossing
Transmission speed	10/100 Mbps
Transmission physics	Copper
Transmission length	100 m (per segment)
Signal LEDs	Data receive, link status
No. of channels	2 (RJ45 ports)

Ethernet (SFP)	
Number of interfaces	2
Connection method	SFP
Note on the connection method	Full duplex
Transmission speed	100/1000 Mbps (full duplex)

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Transmission physics	FO
Transmission length	Depending on the SFP module used
No. of channels	2 (SFP ports)

## Ethernet (APL)

Connection method	Screw connection
Note on the connection method	APL, full duplex
Transmission speed	10 Mbps
Transmission physics	Copper
No. of channels	24 (APL ports)

## Power Source Equipment (PSE) Port: Class A

Power Class	SPAA
Note	Each port configurable via software
Output nominal voltage	$\geq 9.6$ V DC
Output current	$\geq 55.56$ mA
Output power	$\geq 0.54$ W

## Power Source Equipment (PSE) Port: Class B, length 20 m

Power Class	SPBA
Note	Each port configurable via software
Output nominal voltage	$\geq 8.9$ V DC
Output current	$\leq 100$ mA
Output power	$\leq 0.89$ W

## Power Source Equipment (PSE) Port: Class B, length 200 m

Power Class	SPBA
Note	Each port configurable via software
Output nominal voltage	$\geq 8.9$ V DC
Output current	$\geq 84$ mA
Output power	$\leq 0.739$ W

## Power Source Equipment (PSE) Port: Class B, length 120 m

Power Class	SPBA
Note	Each port configurable via software
Output nominal voltage	$\geq 9.52$ V DC
Output current	$\geq 95$ mA
Output power	$\leq 0.845$ W

## Product properties

Product family	Managed Switch 2000
MTTF	37.59 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	19.62 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	11.6 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)

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Special properties	PROFIBUS PA field switch
	Zone 2 mountable
	Ex 'ia' APL ports
	four uplink ports

## Insulation characteristics

Protection class	III (IEC 61140, EN 61140, VDE 0140-1)
Overvoltage category	II
Degree of pollution	2

## Switch functions

Diagnostic functions	RMON History
	LLDP (Link Layer Discovery Protocol)
	SNMP-Traps
	N:1-Portmirroring
	ACD (Address Conflict Detection)
	SysLog
	CRC-Surveillance
Filter functions	Quality of Service (8 priority classes)
	Class of Service
	DiffServ/DSCP
	Port prioritization
	VLAN (up to 32 VLANs)
	IGMP Snooping/Querier (v1/v2)
	Auto-Query-Port
	Extended Multicast Filtering
IP parameterization	DHCP client
	DHCP Option 82 (Relay Agent)
	DHCP server (pool-based, port-based)
	BootP
	DCP (Discovery and Configuration Protocol)
MAC address table	8k
Management	Web-based management (HTTP/HTTPS)
	Role-based user management (LDAP, RADIUS)
	SNMPv1/v2/v3
Redundancy	MRP (Media Redundancy Protocol)
	RSTP (Rapid Spanning Tree Protocol)
	Large Tree Support
	LACP (Link Aggregation Control Protocol)
	PROFINET S2 system redundancy
Time synchronization	SNTP (Simple Network Time Protocol)

## Electrical properties

Current consumption	5.75 A
Power consumption	25 W (No-load)

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	max. 63 W (24 Class A ports at max. load (22 V DC supply voltage at 70°C))
Maximum power dissipation for nominal condition	50 W (24 Class A ports at max. load (22 V DC supply voltage at 70°C))
Test section	Supply Voltage/spurs 1500 V ACrms
	100BASE-T / Spurs 1500 V ACrms
	SFP / Spurs 1500 V ACrms
	Spurs / Earth Ground (Housing) 500 V ACrms
	Block of Spurs / Block of Spurs 500 V ACrms
	Supply / 100BASE-T 2000 V ACrms
	100BASE-T / 100BASE-T 2000 V ACrms
	Supply / SFP 1500 V ACrms

## Supply

Supply voltage (DC)	24 V DC (redundant)
Supply voltage range	22 V DC ... 30 V DC (redundant)
Max. current consumption	5.75 A
Current consumption	5.75 A

## Connection data

Connection method	Pluggable screw connection
Conductor cross-section, rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section, flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross-section AWG	24 ... 12
Stripping length	7 mm

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-40 °C ... 70 °C (horizontal)
	-40 °C ... 60 °C (vertical)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	2000 m (maximum)
Permissible humidity (operation)	5 % ... 95 % (non-condensing)
Permissible humidity (storage/transport)	5 % ... 95 % (non-condensing)
Shock (operation)	15g (IEC 600868-2-27)
Vibration (operation)	1g, according to EN 60068-2-6

## Approvals

### ATEX

Identification	⊕ II 3(1) G Ex ic ec [ia Ga] IIC T4 Gc
	II (1) D [Ex ia Da] IIIC
Certificate	UL 23 ATEX 2992X

### IECEX

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Identification	Ex ic ec [ia Ga] IIC T4 Gc
	[Ex ia Da] IIIC
Certificate	IECEX UL 23.0028X

## UL, USA/Canada

Identification	Ind. Cont. Eq. E238705 also Listed
	Ind. Cont. Eq. for haz. loc. E196811
	Install in: Class I, Div. 2, Groups A, B, C, D T4
	Intrinsically safe outputs for: Class I, Div. 2, Groups A, B, C, D; Class II, Groups E, F, G; Class III; [Ex ia] Haz. Loc.
	Class I, Zone 2, AEx ic ec [ia Ga] IIC T4 Gc, [AEx ia Da] IIIC
	Ex ic ec [ia Ga] IIC T4 Gc X
	[Ex ia Da] IIIC X

## CCC

Identification	Ex ic ec [ia Ga] IIC T4 Gc
	[Ex ia Da] IIIC

## Ex data

### Safety data

Max. output voltage $U_o$	13.23 V
Max. output current $I_o$	279.38 mA
Max. output power $P_o$	1.66 W
Safety-related maximum voltage $U_m$	60 V
A, B / IIC: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	0.15 mH / 0.5 $\mu$ F
C/II B, IIIC: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	1.5 mH / 1.3 $\mu$ F
D/II A, E, F, G, Class III: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	2.6 mH / 1.4 $\mu$ F
A, B / IIC: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	0.15 mH
C/II B, IIIC: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	1.5 mH
D/II A, E, F, G, Class III: Max. external inductivity $L_o$ / Max. external capacitance $C_o$	2.6 mH

## EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU (Test requirements for NE 21, IEC 61326-7 also considered as per the APL EMC specifications)
Conformance with EMC directives	EN 61000-6-2 EN 61000-4-2 (ESD) Criterion A, $\pm 6$ kV contact discharge, $\pm 8$ kV air discharge
	EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A, Field intensity: 10 V/m
	EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A, supply lines: $\pm 2$ kV, signal/data lines: $\pm 1$ kV

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	EN 61000-6-2 EN 61000-4-5 (surge) Criterion A, $\pm 1$ kV supply line L-PE; $\pm 1$ kV supply line N-PE; $\pm 1$ kV shielded I/O signal lines for metallic enclosure devices
	EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A, 10 Vrms
	EN 61000-6-2 IEC 61000-4-16 (common mode disturbances) Criterion A: 10V (10 kHz to 150 kHz)
	EN 61000-6-4 EN 55011 (emitted interference) Class A
Noise immunity	EN 61000-6-2
Noise emission	
Standards/regulations	EN 61000-6-4



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/pc/products/1384244>



**cULus Listed**

Approval ID: E238705



**IECEX**

Approval ID: IECEX UL 23.0028X



**ATEX**

Approval ID: UL 23 ATEX 2992X



**cULus Listed**

Approval ID: E196811



**UKCA-EX**

Approval ID: UL23UKEX2830X

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## Classifications

### ECLASS

ECLASS-13.0	19170401
ECLASS-15.0	19170401

### ETIM

ETIM 10.0	EC000734
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### UNSPSC

UNSPSC 21.0	43222600
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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

### China RoHS

Environment friendly use period (EFUP)	EFUP-10
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

### EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
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## Accessories

DT-LAN-CAT.6+ - Surge protection device

2881007

<https://www.phoenixcontact.com/pc/products/2881007>



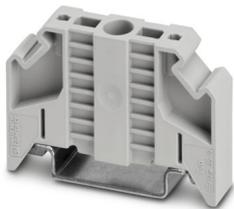
Surge protection in accordance with Class E<sub>A</sub> (CAT6<sub>A</sub>), for Gigabit Ethernet (up to 10 Gbps), token ring, FDDI/CDDI, ISDN, and DS1. Suitable for Power over Ethernet (PoE++ / 4PPoE) "Mode A" and "Mode B". RJ45 attachment plug with separate grounding cable and ground connection snap-on foot for NS 35 DIN rails.

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E/NS 35 N - End bracket

0800886

<https://www.phoenixcontact.com/pc/products/0800886>



End clamp, width: 9.5 mm, color: gray

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## FL SFP FX - Media module

2891081

<https://www.phoenixcontact.com/pc/products/2891081>



The small form-factor plug-in module provides a fiber optic interface with a data transmission speed of 100 Mbps with a wavelength of 1310 nm (long).

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## FL SFP LX - Media module

2891767

<https://www.phoenixcontact.com/pc/products/2891767>



Gigabit SFP module for transmission up to 30 km with a wavelength of 1310 nm.

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## FL SFP SX - Media module

2891754

<https://www.phoenixcontact.com/pc/products/2891754>



Gigabit SFP module for transmission up to 1 km with a wavelength of 850 nm.

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## FL SFP SX2 - Media module

2702397

<https://www.phoenixcontact.com/pc/products/2702397>



Gigabit SFP module for transmission up to 2 km with a wavelength of 1310 nm.

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## FL SFP FX SM - Media module

2891082

<https://www.phoenixcontact.com/pc/products/2891082>



The small form-factor plug-in module provides a fiber optic interface with a data transmission speed of 100 Mbps with a wavelength of 1310 nm (long).

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## FL SFP FE WDM20-A - Media module

2702437

<https://www.phoenixcontact.com/pc/products/2702437>



Fast Ethernet SFP WDM module for transmission up to a maximum of 20 km on a single fiber with a wavelength of 1310/1550 nm.

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## TTC-6P-3-APL-24DC-UT-I - Surge protection device

1635592

<https://www.phoenixcontact.com/pc/products/1635592>



Surge protection, consisting of protective plug and base element, with integrated status indicator for three signal wires. For HF applications. Protective circuit exclusively with gas discharge tubes. For use in two-wire Ethernet systems with cable shielding up to 10 Mbps (SPE). Ex e approval for zone 2. Can be used in safety-related circuits up to SIL 3.

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## TTC-6P-3-APL-EX-24DC-UT-I - Surge protection device

1635587

<https://www.phoenixcontact.com/pc/products/1635587>



Surge protection, consisting of protective plug and base element, with integrated status indicator for a 3-wire Ex i signal circuit. For HF applications. Protective circuit exclusively with gas discharge tubes. For use in two-wire Ethernet systems with cable shielding (APL, 2-WISE) and in the fieldbus system (e.g. , PROFIBUS PA) in accordance with the FISCO concept. Can be used in safety-related circuits up to SIL 3.

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