

# FL SWITCH 2512-2GC-2SFP - Industrial Ethernet Switch



1088856

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## Your advantages

- MRP (client and manager)
- Ambient temperature -40 °C ... 70 °C
- RSTP
- DHCP client, DHCP server (pool-based and port-based), DHCP option 82
- VLANs
- Web-based management, SNMP
- Configuration memory
- Easy and fast startup and commissioning with the FL NETWORK MANAGER software
- Suitable for PROFINET and EtherNet/IP™ networks

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1088856       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | DN17          |
| Product key                          | DNN122        |
| GTIN                                 | 4055626889689 |
| Weight per piece (including packing) | 1,281 g       |
| Weight per piece (excluding packing) | 1,035 g       |
| Customs tariff number                | 85176200      |
| Country of origin                    | DE            |

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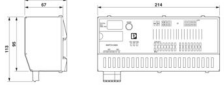


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## Technical data

### Dimensions

|                     |  |
|---------------------|--|
| Dimensional drawing |  |
| Width               | 214 mm   |
| Height              | 113 mm   |
| Depth               | 67 mm  |

### Material specifications

|                     |  |
|---------------------|--|
| Material base plate | Die-cast aluminum, corrosion-resistant |
| Housing material    | Stainless steel 1.4301                 |

### Mounting

|               |                   |
|---------------|-------------------|
| Mounting type | DIN rail mounting |
|---------------|-------------------|

### Interfaces

#### Ethernet (RJ45)

|                               |                                   |
|-------------------------------|-----------------------------------|
| Connection method             | RJ45                              |
| Note on the connection method | Auto negotiation and autocrossing |
| Transmission speed            | 10/100/1000 Mbps                  |
| Transmission physics          | Copper                            |
| Transmission length           | 100 m (per segment)               |
| Signal LEDs                   | Data receive, link status         |
| No. of channels               | 12 (RJ45 ports)                   |

#### Ethernet (SFP)

|                      |  |
|----------------------|--|
| Number of interfaces | 2  |
| Connection method    | SFP  |
| Transmission speed   | 100/1000 Mbps (full duplex)                    |
| Transmission physics | Depending on the SFP module                    |
| Transmission length  | up to 80 km (depending on the SFP module used) |
| Signal LEDs          | Data receive, link status                      |
| No. of channels      | 2 (SFP ports)                                  |

#### Ethernet (combo)

|                               |  |
|-------------------------------|--|
| Number of interfaces          | 2  |
| Connection method             | SFP/RJ45   |
| Note on the connection method | Auto negotiation and autocrossing                    |
| Transmission speed            | 10/100/1000 Mbps (full duplex)                       |
| Transmission physics          | Depending on the SFP module                          |
| Transmission length           | up to 80 km (Depending on the fiber/SFP module used) |

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|                 |                           |
|-----------------|---------------------------|
| Signal LEDs     | Data receive, link status |
| No. of channels | 2 (Combo ports)           |

## Product properties

|                    |  |
|--------------------|--|
| Product type       | Switch   |
| Product family     | Managed Switch 2000  |
| Type               | Block design   |
| MTTF               | 238.46 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)          |
|                    | 137.07 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)       |
|                    | 21.04 Years (SN 29500 standard, temperature 70°C, operating cycle 100%)          |
| Special properties | Extended temperature range   |
|                    | Development process certified in accordance with IEC 62443-4-1                   |
|                    | Product certified in accordance with IEC 62443-4-2                               |
| Signal delay       | ≥ 1.9 μs (Store-and-Forward mode, 10/100/1000 Mbps, depending on the frame size) |

## Insulation characteristics

|                     |                |
|---------------------|----------------|
| Protection class    | III (VDE 0106) |
| 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                                   |
| Basic functions                | Store-and-forward switch, complies with IEEE 802.3 |
| Signal contact control voltage | typ. 24 V DC                                       |
| PROFINET conformance class     | Conformance Class B                                |
| PROFINET device function       | PROFINET device                                    |
|                                | Fast Startup                                       |
| Filter functions               | Quality of Service (8 priority classes)            |
|                                | Class of Service                                   |
|                                | DiffServ/DSCP                                      |
|                                | Port-Priorisierung                                 |
|                                | VLAN (up to 32 VLANs)                              |
|                                | IGMP Snooping/Querier (v1/v2)                      |
|                                | Auto-Query-Port                                    |
| IP parameterization            | Extended Multicast Filtering                       |
|                                | DHCP client  |
|                                | DHCP Option 82 (Relay Agent)                       |

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|                                  |   |
|----------------------------------|---|
|                                  | 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  |
|                                  | Command Line Interface (Telnet, SSH)  |
| Redundancy                       | MRP (Media Redundancy Protocol)   |
|                                  | RSTP (Rapid Spanning Tree Protocol)   |
|                                  | FRD (Fast Ring Detection)   |
|                                  | Large Tree Support  |
|                                  | LACP (Link Aggregation Control Protocol)  |
|                                  | PROFINET S2 system redundancy   |
| Status and diagnostic indicators | LEDs: US1, US2 (power supply), Fail (alarm contact), 2 LEDs per Ethernet port (Link/Activity and Speed) |
| Additional functions             | Jumbo frames (max. 9,600 bytes)   |
|                                  | Transmission of MMS and GOOSE (IEC 61850-8-1)   |
|                                  | Transmission of Modbus/TCP  |
| Time synchronization             | SNTP (Simple Network Time Protocol)   |

## Security functions

|                 |  |
|-----------------|--|
| Port security   | MAC-based, RADIUS (IEEE 802.1X), MAC Authentication Bypass |
| Basic functions | Store-and-forward switch, complies with IEEE 802.3         |

## Electrical properties

|   |  |
|---|--|
| Local diagnostics                               | US1/2 Supply voltage US1, US2 Green LED                  |
|   | FAIL Div. LED red  |
|   | LNK/ACT Link status Green/orange LED                     |
|   | SPD Data transmission speed Green/orange LED             |
| Maximum power dissipation for nominal condition | 14.88 W ( $U_S = \max$ , $T_{amb} = \max$ )              |
| Test section                                    | 24 V supply / functional ground 500 V DC 1 min           |
|   | Ethernet interface/all other potentials 2.25 kV DC 1 min |
| Transmission medium                             | Copper   |
|   | FO   |

## Supply

|                             |  |
|-----------------------------|--|
| Supply voltage (DC)         | 24 V DC (redundant)  |
| Supply voltage range        | 19.2 V DC ... 32 V DC  |
| Power supply connection     | Via COMBICON, max. conductor cross-section 2.5 mm <sup>2</sup> |
| Residual ripple             | 3.6 V <sub>PP</sub> (within the permitted voltage range)       |
| Max. current consumption    | 820 mA ( $U_S = \min$ , $T_{amb} = \max$ )                     |
| Typical current consumption | 490 mA (at $U_S = 24$ V DC and 25 °C ambient temperature)      |

## Function

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|                                |              |
|--------------------------------|--------------|
| Signal contact control voltage | typ. 24 V DC |
|--------------------------------|--------------|

## Connection data

|                                   |  |
|-----------------------------------|--|
| Connection method                 | Push-in spring connection  |
| Note on the connection method     | Use only copper connecting cables providing the permitted temperature range (-40 °C ... 75 °C) |
| pluggable                         | yes  |
| Conductor cross-section, rigid    | 0.2 mm <sup>2</sup> ... 1.5 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 ... 16  |
| Stripping length                  | 10 mm  |

## Environmental and real-life conditions

### Ambient conditions

|  |   |
|--|---|
| Degree of protection                     | IP20  |
| Ambient temperature (operation)          | -40 °C ... 70 °C  |
| Ambient temperature (storage/transport)  | -40 °C ... 85 °C  |
| Permissible humidity (operation)         | 10 % ... 95 % (non-condensing)  |
| Permissible humidity (storage/transport) | 10 % ... 95 % (non-condensing)  |
| Shock (operation)                        | 30g (EN 60068-2-27)   |
| Vibration (operation)                    | in acc. with IEC 60068-2-6: 5g, 150 Hz                                  |
| Air pressure (operation)                 | 79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating) |
| Air pressure (storage/transport)         | 79 kPa ... 108 kPa up to 2000 m above mean sea level (Without derating) |

## Standards and regulations

|   |     |
|---|-----|
| Free from substances that could impair the application of coating | Yes |
|---|-----|

## Approvals

### UL, USA/Canada

|                |       |
|----------------|-------|
| Identification | cULus |
|----------------|-------|

### Corrosive gas test

|                |                                  |
|----------------|----------------------------------|
| Identification | ISA S71.04.2013 G3 Harsh Group A |
|----------------|----------------------------------|

### Shipbuilding data

|             |   |
|-------------|---|
| Temperature | B   |
| Humidity    | B   |
| Vibration   | A   |
| EMC         | B   |
| Enclosure   | Required protection according to the Rules shall be provided upon installation on board |

## EMC data

|                               |   |
|-------------------------------|---|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |
|-------------------------------|---|

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|                                 |  |
|---------------------------------|--|
| Conformance with EMC directives | EN 61000-6-2 EN 61000-4-2 (ESD) Criterion B                    |
|                                 | EN 61000-6-2 EN 61000-4-3 (electromagnetic fields) Criterion A |
|                                 | EN 61000-6-2 EN 61000-4-4 (EFT burst) Criterion A              |
|                                 | EN 61000-6-2 EN 61000-4-5 (surge) Criterion A                  |
|                                 | EN 61000-6-2 EN 61000-4-6 (line noise immunity) Criterion A    |
|                                 | EN 61000-6-2 EN 61000-6-4 (interference) Class A               |
|                                 | EN 61000-6-2 EN 61000-6-4 (conducted interference) Class A     |
| Noise immunity                  | EN 61000-6-2   |

## Noise emission

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-6-4 |
|-----------------------|--------------|

## System properties

### Functionality

|                 |  |
|-----------------|--|
| Basic functions | Store-and-forward switch, complies with IEEE 802.3 |
|-----------------|--|

## Signaling

|                |   |
|----------------|---|
| Status display | LEDs: US1, US2 (power supply), Fail (alarm contact), 2 LEDs per Ethernet port (Link/Activity and Speed) |
|----------------|---|

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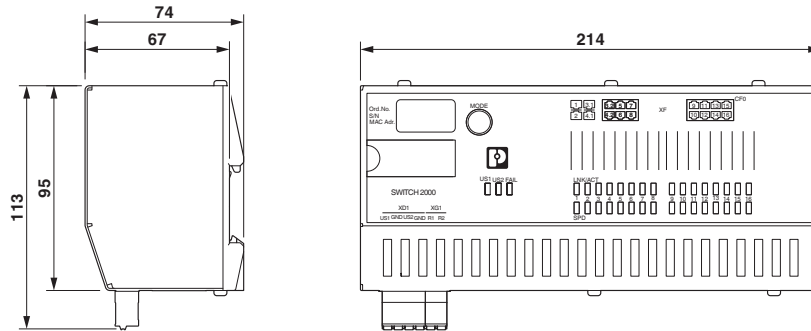


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## Drawings

Dimensional drawing



Connection diagram



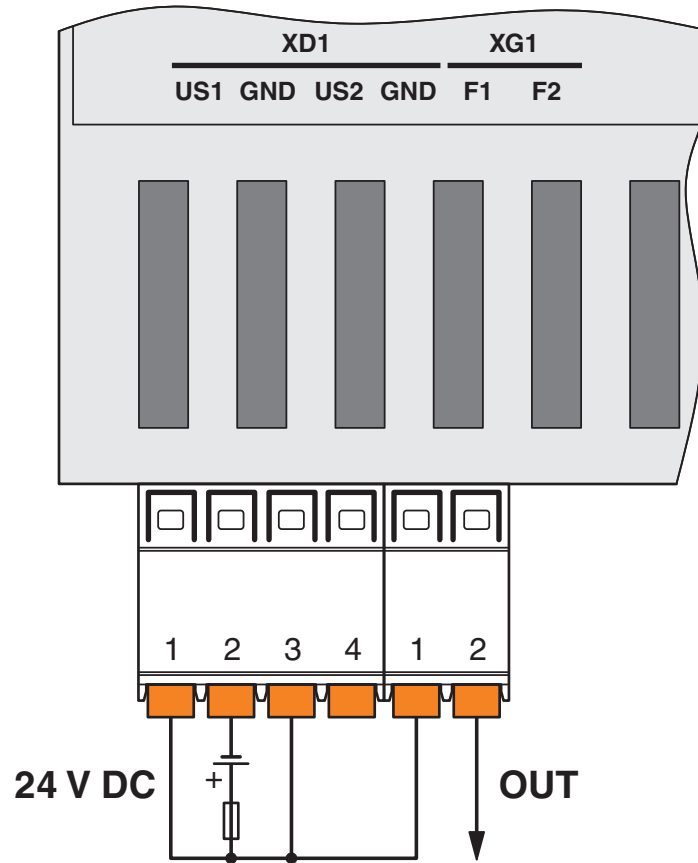
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Connection diagram



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## Approvals

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**DNV GL**

Approval ID: TAA00000YV



**LR**

Approval ID: LR22250919TA



**BV**

Approval ID: 48146\_B1 BV

**BSH**

Approval ID: 1045

**ABS**

Approval ID: 21\_2066186\_1\_PDA



**RINA**

Approval ID: ELE014724XG001



**cULus Listed**

Approval ID: E238705

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 19170401 |
| ECLASS-15.0 | 19170401 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC000734 |
|----------|----------|

### 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-50   |
|  | 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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