

# FL MC EF 1300 MM SC - FO converters



2902853  
<https://www.phoenixcontact.com/us/products/2902853>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



FO converter with SC duplex fiber optic connection (1300 nm), for converting 10/100Base-T(X) to multi-mode fiberglass (50/125 µm). Auto negotiation and auto MDI(X) function. Comprehensive link diagnostics. DIN-rail mountable, 18 ... 30 V DC supply.

## Product description

Optical transmission with FO technology provides superior immunity to interference at maximum transmission ranges without restricting the transmission bandwidth.

## Your advantages

- Transmission ranges up to 10 km
- Auto negotiation
- Auto MDI/MDI-X switch-over
- Link fault pass through (LFPT) and far end fault (FEF) functions for easy connection monitoring
- 10/100 Mbps
- Shipbuilding approval in accordance with DNV GL

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2902853       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | DN06          |
| Product key                          | DNC311        |
| GTIN                                 | 4046356689236 |
| Weight per piece (including packing) | 168.9 g       |
| Weight per piece (excluding packing) | 115 g         |
| Customs tariff number                | 85176200      |
| Country of origin                    | US            |

# FL MC EF 1300 MM SC - FO converters



2902853

<https://www.phoenixcontact.com/us/products/2902853>

## Technical data

### Notes

#### Note on application

|                     |                         |
|---------------------|-------------------------|
| Note on application | Only for industrial use |
|---------------------|-------------------------|

#### Utilization restriction

|            |                                                               |
|------------|---------------------------------------------------------------|
| CCCex note | Use in potentially explosive areas is not permitted in China. |
|------------|---------------------------------------------------------------|

### Product properties

|                 |                                                                                                          |
|-----------------|----------------------------------------------------------------------------------------------------------|
| Product type    | Media converter                                                                                          |
| MTTF            | 1400 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)                                    |
|                 | 599 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)                                  |
|                 | 101 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)                                    |
| MTBF            | 479 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))     |
|                 | 140 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day)) |
| Signal delay    | ± 1.3 µs (Store and Forward mode, 10/100 Mbps, depending on the frame size)                              |
| Basic functions | Store-and-forward media converter                                                                        |

### System properties

#### Functionality

|                 |                                   |
|-----------------|-----------------------------------|
| Basic functions | Store-and-forward media converter |
|-----------------|-----------------------------------|

### Electrical properties

|                                                 |                                       |
|-------------------------------------------------|---------------------------------------|
| Electrical isolation                            | according to IEEE 802.3               |
|                                                 | VCC // FE // Ethernet                 |
| Maximum power dissipation for nominal condition | 2.4 W                                 |
| Test voltage data interface/power supply        | 0.5 kV <sub>rms</sub> (50 Hz, 1 min.) |

#### Supply

|                             |                                                                                                           |
|-----------------------------|-----------------------------------------------------------------------------------------------------------|
| Supply voltage range        | 18 V DC ... 30 V DC (Screw connection)                                                                    |
|                             | 18 V DC ... 30 V DC (as an alternative or redundant, via backplane bus contact and system current supply) |
| Typical current consumption | < 100 mA (24 V DC)                                                                                        |
| Protective circuit          | Reverse polarity protection                                                                               |

### Connection data

#### Supply

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| Connection method | Plug-in screw terminal block (COMBICON), redundancy possible |
|-------------------|--------------------------------------------------------------|

# FL MC EF 1300 MM SC - FO converters



2902853

<https://www.phoenixcontact.com/us/products/2902853>

|                                         |                     |
|-----------------------------------------|---------------------|
| Single conductor/terminal point, rigid  | 0.2 mm² ... 2.5 mm² |
| Single-wire/terminal point, flexible    | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section, flexible [AWG] | 24 ... 14           |
| Stripping length                        | 7.00 mm             |
| Tightening torque                       | 0.56 Nm ... 0.79 Nm |

## Interfaces

|                 |                                   |
|-----------------|-----------------------------------|
| Signal          | Ethernet                          |
| Basic functions | Store-and-forward media converter |

### Data: optical FO

|                                               |                                                          |
|-----------------------------------------------|----------------------------------------------------------|
| Transmit capacity, minimum                    | ≥ -23.5 dBm ((50/125 µm) dynamic in link mode (average)) |
|                                               | ≥ -20 dBm ((62,5/125 µm) dynamic in link mode (average)) |
| Transmit capacity, maximum                    | ≤ -14 dBm ((50/125 µm) dynamic in link mode (average))   |
|                                               | ≤ -14 dBm ((62,5/125 µm) dynamic in link mode (average)) |
| Transmission length incl. 3 dB system reserve | 6.4 km (F-G 50/125 0.7 dB/km F 1000)                     |
|                                               | 2.8 km (F-G 50/125 1.6 dB/km F 800)                      |
|                                               | 10 km (F-G 62.5/125 0.7 dB/km F 1000)                    |
|                                               | 3 km (F-G 62.5/125 2.6 dB/km F 600)                      |
| Connection method                             | SC duplex                                                |
| Wavelength                                    | 1300 nm                                                  |
| Minimum receiver sensitivity                  | -31 dBm (dynamic in link mode (average))                 |
| Maximum receiver sensitivity                  | -14 dBm (dynamic in link mode (average))                 |
| Transmission medium                           | Multi-mode fiberglass                                    |
|                                               | GI-HCS fiber                                             |

### Data: Ethernet interface, 10/100Base-T(X) in accordance with IEEE 802.3

|                        |                                    |
|------------------------|------------------------------------|
| Transmission speed     | 10/100 Mbps                        |
| Connection method      | RJ45 jack, shielded                |
| No. of channels        | 1                                  |
| Transmission length    | 100 m (shielded twisted pair)      |
| Transmission medium    | Copper                             |
| Signal LEDs            | Activity, link status, 10/100 Mbps |
| Auto-negotiation modes | Auto                               |
| Link through           | Link fault pass through            |
| MDI-/MDI-X switchover  | Auto-MDI(X)                        |

## Dimensions

|                     |         |
|---------------------|---------|
| Dimensional drawing |         |
| Width               | 22.5 mm |

# FL MC EF 1300 MM SC - FO converters



2902853

<https://www.phoenixcontact.com/us/products/2902853>

|        |          |
|--------|----------|
| Height | 99 mm    |
| Depth  | 114.5 mm |

## Material specifications

|                    |                  |
|--------------------|------------------|
| Color (Housing)    | green (RAL 6021) |
| Material (Housing) | PA 6.6-FR        |

## Cable/line

### FO cable

|             |             |
|-------------|-------------|
| Fiber types | 50/125 µm   |
|             | 62.5/125 µm |
|             | Fiberglass  |

## Mechanical tests

|                                                                    |                                                                 |
|--------------------------------------------------------------------|-----------------------------------------------------------------|
| Free fall in accordance with IEC 60068-2-32                        | Free fall: 1 m                                                  |
| Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6 | Vibration (operation): 5g, 10...150 Hz, 2.5 h, in XYZ direction |
| Shock in accordance with EN 60068-2-27/IEC 60068-2-27              | Shock (operation): 25g, 11 ms period, half-sine shock pulse     |

## Environmental and real-life conditions

### Ambient conditions

|                                          |                                                                                        |
|------------------------------------------|----------------------------------------------------------------------------------------|
| Degree of protection                     | IP20                                                                                   |
| Ambient temperature (operation)          | -40 °C ... 65 °C                                                                       |
| Ambient temperature (storage/transport)  | -40 °C ... 85 °C                                                                       |
| Altitude                                 | ≤ 5000 m (For restrictions, see the manufacturer's declaration for altitude operation) |
|                                          | ≤ 2000 m (in acc. with UL)                                                             |
| Permissible humidity (operation)         | 5 % ... 95 % (non-condensing)                                                          |
| Permissible humidity (storage/transport) | 5 % ... 95 % (non-condensing)                                                          |

## Approvals

### CE

|             |              |
|-------------|--------------|
| Certificate | CE-compliant |
|-------------|--------------|

### ATEX

|                |                                                                           |
|----------------|---------------------------------------------------------------------------|
| Identification | ⚡ II 3 G Ex nA IIC T4 Gc X                                                |
| Note           | Please follow the special installation instructions in the documentation! |

### ATEX, FO interface

|                |                                                                           |
|----------------|---------------------------------------------------------------------------|
| Identification | ⚡ II (2) D [Ex op is Db] IIIC                                             |
|                | ⚡ II (2) G [Ex op is Gb] IIC                                              |
| Certificate    | PTB 06 ATEX 2042 U                                                        |
| Note           | Please follow the special installation instructions in the documentation! |

# FL MC EF 1300 MM SC - FO converters



2902853

<https://www.phoenixcontact.com/us/products/2902853>

## UL, USA/Canada

|                |                                    |
|----------------|------------------------------------|
| Identification | 508 Listed                         |
|                | Class I, Zone 2, AEx nA IIC T4     |
|                | Class I, Zone 2, Ex nA IIC T4 Gc X |
|                | Class I, Div. 2, Groups A, B, C, D |

## KC approval for South Korea

|             |                      |
|-------------|----------------------|
| Certificate | MSIP-REI-PCK-2902853 |
|-------------|----------------------|

## Corrosive gas test

|                |                                  |
|----------------|----------------------------------|
| Identification | ISA-S71.04-1985 G3 Harsh Group A |
|----------------|----------------------------------|

## Shipbuilding

|                |        |
|----------------|--------|
| Identification | DNV GL |
|----------------|--------|

## Shipbuilding data

|             |                                                                                         |
|-------------|-----------------------------------------------------------------------------------------|
| Temperature | B                                                                                       |
| Humidity    | A                                                                                       |
| 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 |
|-------------------------------|-------------------------------------------|

## Electrostatic discharge

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-2 |
|-----------------------|--------------|

## Electrostatic discharge

|                    |                       |
|--------------------|-----------------------|
| Contact discharge  | ± 6 kV (Test Level 3) |
| Discharge in air   | ± 8 kV (Test Level 3) |
| Indirect discharge | ± 6 kV                |
| Comments           | Criterion B           |

## Electromagnetic HF field

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-3 |
|-----------------------|--------------|

## Electromagnetic HF field

|                 |                                 |
|-----------------|---------------------------------|
| Frequency range | 80 MHz ... 3 GHz (Test Level 3) |
| Field intensity | 10 V/m                          |
| Comments        | Criterion A                     |

## Fast transients (burst)

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

## Fast transients (burst)

|       |                       |
|-------|-----------------------|
| Input | ± 2 kV (Test Level 3) |
|-------|-----------------------|

# FL MC EF 1300 MM SC - FO converters



2902853

<https://www.phoenixcontact.com/us/products/2902853>

|          |                       |
|----------|-----------------------|
| Signal   | ± 2 kV (Test Level 3) |
| Comments | Criterion B           |

## Surge current load (surge)

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-5 |
|-----------------------|--------------|

## Surge current load (surge)

|          |                                  |
|----------|----------------------------------|
| Input    | ± 0.5 kV (DC supply)             |
| Signal   | ± 1 kV (Data line, asymmetrical) |
| Comments | Criterion B                      |

## Conducted interference

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

## Conducted interference

|                 |                     |
|-----------------|---------------------|
| Frequency range | 0.15 MHz ... 80 MHz |
| Comments        | Criterion A         |
| Voltage         | 10 V                |

## Emitted interference

|                       |                                  |
|-----------------------|----------------------------------|
| Standards/regulations | EN 55032                         |
| Comments              | Class A, industrial applications |

## Criteria

|             |                                                                                      |
|-------------|--------------------------------------------------------------------------------------|
| Criterion A | Normal operating behavior within the specified limits.                               |
| Criterion B | Temporary impairment to operational behavior that is corrected by the device itself. |

## Standards and regulations

|                                                                   |                         |
|-------------------------------------------------------------------|-------------------------|
| Free from substances that could impair the application of coating | VDMA 24364:2018-05      |
| Electrical isolation                                              | according to IEEE 802.3 |

## Mounting

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

# FL MC EF 1300 MM SC - FO converters

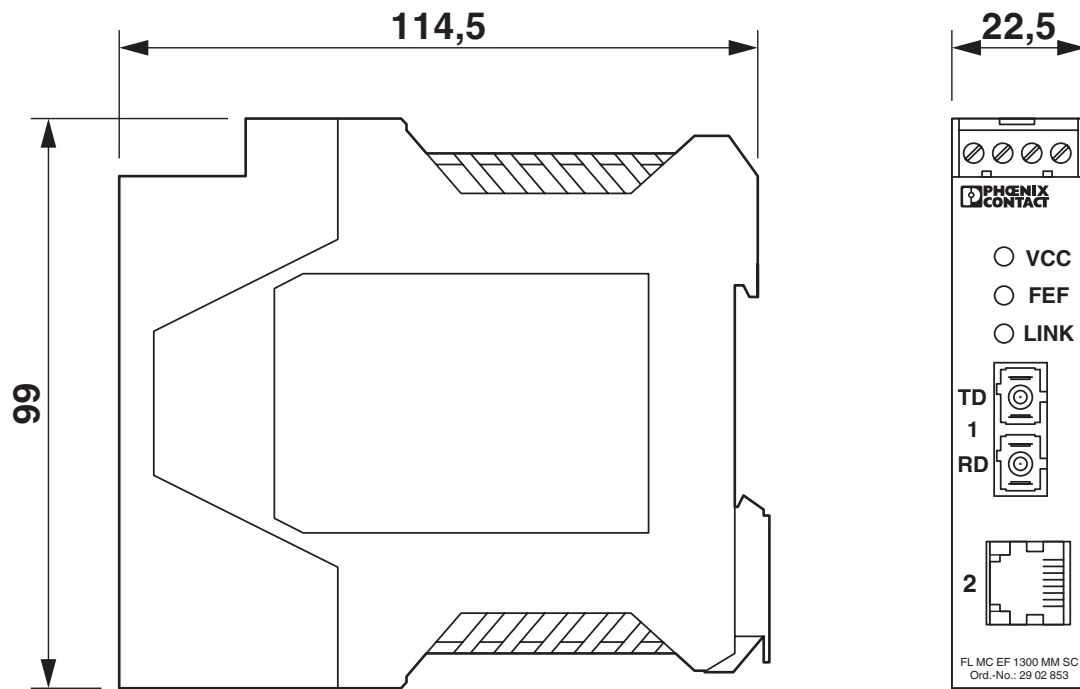
2902853

<https://www.phoenixcontact.com/us/products/2902853>



## Drawings

Dimensional drawing



Slim design

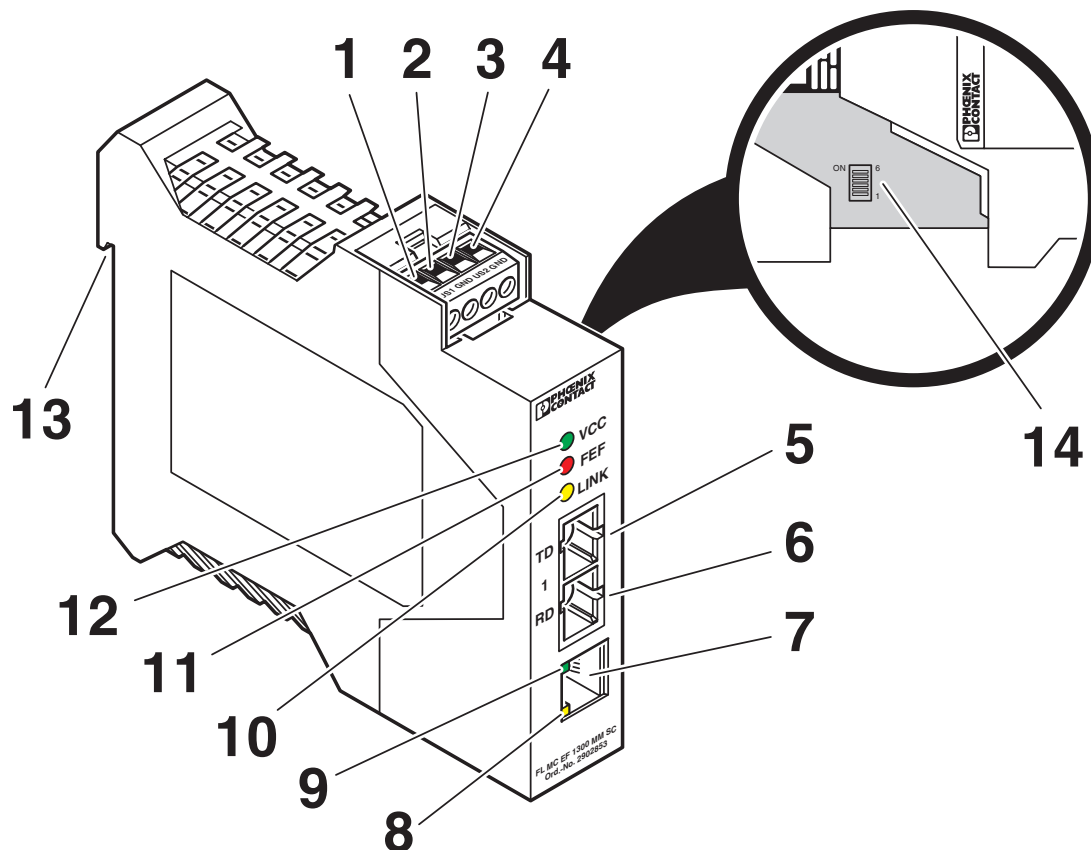
# FL MC EF 1300 MM SC - FO converters

2902853

<https://www.phoenixcontact.com/us/products/2902853>



Schematic diagram



Function elements

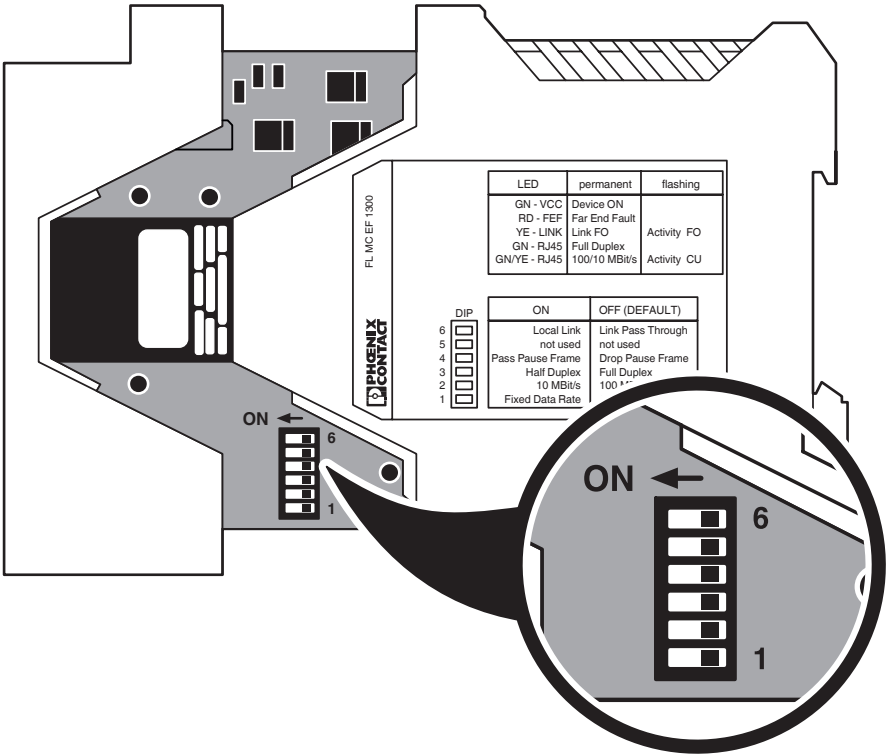
# FL MC EF 1300 MM SC - FO converters



2902853

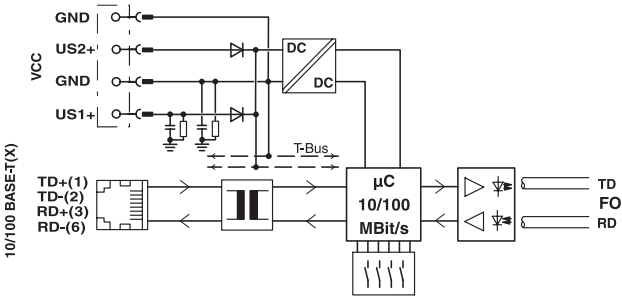
<https://www.phoenixcontact.com/us/products/2902853>

Schematic diagram



DIP switches

Block diagram



Basic circuit diagram

# FL MC EF 1300 MM SC - FO converters



2902853

<https://www.phoenixcontact.com/us/products/2902853>

## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2902853>



**EAC**

Approval ID: RU D-DE.GB09.B.00312



**KC**

Approval ID: MSIP-REI-PCK-2902853



**UL Listed**

Approval ID: E238705



**cUL Listed**

Approval ID: E238705



**EAC**

Approval ID: RU D-DE.GB09.B.00312



**cUL Listed**

Approval ID: E238705



**UL Listed**

Approval ID: E238705



**KC**

Approval ID: MSIP-REI-PCK-2902853



**cUL Listed**

Approval ID: E199827



**UL Listed**

Approval ID: E199827



**UL Listed**

Approval ID: E199827

# FL MC EF 1300 MM SC - FO converters



2902853

<https://www.phoenixcontact.com/us/products/2902853>



**cUL Listed**

Approval ID: E199827



**IECEx**

Approval ID: IECEx ULD 24.0009X



**ATEX**

Approval ID: UL 24 ATEX 3197X

# FL MC EF 1300 MM SC - FO converters



2902853

<https://www.phoenixcontact.com/us/products/2902853>

## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 19170411 |
| ECLASS-15.0 | 19170411 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001467 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 43201500 |
|-------------|----------|

## 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)                 |
| SCIP                                | 70fbbb78-61fb-46e5-96c4-7b683755c9b8 |