

# FL MC 2000E SM40 LC - FO converters



2891156

<https://www.phoenixcontact.com/us/products/2891156>

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FO converter with LC duplex fiber optic connection (1300 nm), for converting 100Base-TX to single mode fiberglass. Auto MDI(X) function. Comprehensive link diagnostics. DIN rail mountable, 12 ... 57 V DC supply. Meets IEC 61850-3 and IEEE 1613 standards.

## Your advantages

- Data transfer rates of 100 Mbps
- Auto MDI/MDI-X switch-over
- Link fault pass through (LFPT) function for easy connection monitoring
- Network structure according to IEC 61850
- IEEE 1613

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 2891156       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | DN06          |
| Product key                          | DNC312        |
| GTIN                                 | 4046356914239 |
| Weight per piece (including packing) | 488.4 g       |
| Weight per piece (excluding packing) | 488.4 g       |
| Customs tariff number                | 85176200      |
| Country of origin                    | TW            |

## Technical data

### Notes

#### Note on application

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

### Product properties

|              |                                                                             |
|--------------|-----------------------------------------------------------------------------|
| Product type | Media converter                                                             |
| MTTF         | 79.3 Years (MIL-HDBK-217F standard, temperature 25°C, operating cycle 100%) |
| Signal delay | 700 ns (Pass-through mode, 100 Mbps, static)                                |

### Electrical properties

|                                          |                                |
|------------------------------------------|--------------------------------|
| Electrical isolation                     | VCC // FE // Ethernet          |
| Test voltage data interface/power supply | 1500 V AC (500 V AC, 1 minute) |

#### Supply

|                             |                     |
|-----------------------------|---------------------|
| Supply voltage range        | 12 V DC ... 57 V DC |
| Nominal supply voltage      | 24 V DC<br>48 V DC  |
| Typical current consumption | 110 mA (24 V DC)    |

### Output data

#### Switching

|                           |              |
|---------------------------|--------------|
| Output name               | Relay output |
| Output description        | Alarm output |
| Number of outputs         | 1            |
| Contact switching type    | N/C contact  |
| Maximum switching voltage | 24 V DC      |
| Max. switching current    | 100 mA       |

### Connection data

#### Supply

|                                         |                                                              |
|-----------------------------------------|--------------------------------------------------------------|
| Connection method                       | Plug-in screw terminal block (COMBICON), redundancy possible |
| Conductor cross-section, flexible [AWG] | 24 ... 12                                                    |
| Conductor cross-section AWG             | 24 ... 12                                                    |
| Tightening torque                       | 5 Nm ... 7 Nm                                                |

### Interfaces

|        |          |
|--------|----------|
| Signal | Ethernet |
|--------|----------|

#### Data: optical FO

|                            |        |
|----------------------------|--------|
| Transmit capacity, minimum | -5 dBm |
| Transmit capacity, maximum | 0 dBm  |

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|                                               |                                              |
|-----------------------------------------------|----------------------------------------------|
| Transmission length incl. 3 dB system reserve | 40 km (fiberglass with F-G 9/125 0.36 dB/km) |
|                                               | 36 km (fiberglass with F-G 9/125 0.4 dB/km)  |
|                                               | 29 km (fiberglass with F-G 9/125 0.5 dB/km)  |
| Connection method                             | LC duplex                                    |
| Wavelength                                    | 1310 nm                                      |
| Minimum receiver sensitivity                  | -35 dBm                                      |
| Maximum receiver sensitivity                  | -3 dBm                                       |
| Transmission medium                           | Single-mode fiberglass                       |

Data: Ethernet interface, 100Base-Tx in acc. with IEEE 802.3u

|                             |                                |
|-----------------------------|--------------------------------|
| Data rate                   | 100 Mbps                       |
| Serial transmission speed   | 100 Mbps                       |
| Connection method           | RJ45 jack, shielded            |
| No. of channels             | 1                              |
| Transmission length         | 100 m (twisted pair, shielded) |
| Transmission medium         | Copper                         |
| Signal LEDs                 | LNK/ACT, 100                   |
| Link through                | Link fault pass through        |
| MDI-/MDI-X switchover       | Auto-MDI(X)                    |
| Data flow control/protocols | IEC 61850-3, IEEE 1613         |

## Dimensions

|        |        |
|--------|--------|
| Width  | 30 mm  |
| Height | 130 mm |
| Depth  | 100 mm |

## Material specifications

|                  |          |
|------------------|----------|
| Housing material | Aluminum |
|------------------|----------|

## Cable/line

FO cable

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

## Mechanical tests

|                                                                    |                                    |
|--------------------------------------------------------------------|------------------------------------|
| Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6 | : 5g, 150 Hz, Criterion 3          |
| Shock in accordance with EN 60068-2-27/IEC 60068-2-27              | : 30g, 11 ms half-sine shock pulse |

## Environmental and real-life conditions

Ambient conditions

|                                 |                  |
|---------------------------------|------------------|
| Degree of protection            | IP20             |
| Ambient temperature (operation) | -40 °C ... 75 °C |

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|                                          |                                            |
|------------------------------------------|--------------------------------------------|
| Ambient temperature (storage/transport)  | -40 °C ... 85 °C                           |
| Altitude                                 | 4850 m                                     |
| Permissible humidity (operation)         | 5 % ... 95 % (non-condensing)              |
| Permissible humidity (storage/transport) | 5 % ... 95 % (non-condensing)              |
| Shock                                    | 300 m/s <sup>2</sup> , 11 ms (IEC 60068-2) |
| Air pressure (operation)                 | 66 kPa ... 108 kPa                         |
| Air pressure (storage/transport)         | 66 kPa ... 108 kPa                         |

## Approvals

### Conformity/Approvals

|                  |                                    |
|------------------|------------------------------------|
| Conformance      | CE-compliant                       |
| UL, USA / Canada | Class I, Div. 2, Groups A, B, C, D |

## EMC data

|                               |                                            |
|-------------------------------|--------------------------------------------|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU  |
| Noise immunity                | IEC 61850-3, IEEE 1613, EN 61000-6-2: 2005 |

### Noise emission

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

## Mounting

|                   |                                                    |
|-------------------|----------------------------------------------------|
| Mounting type     | DIN rail mounting                                  |
| Mounting position | on horizontal DIN rail NS 35 in acc. with EN 60715 |

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## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

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

## Environmental product compliance

### EU RoHS

|                                         |                    |
|-----------------------------------------|--------------------|
| Fulfills EU RoHS substance requirements | Yes                |
| Exemption                               | 6(c), 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)                 |
| SCIP                                | 327f171a-26bd-4de2-8da8-67646f915ddb |