

# FR 1,27/ 20-FWL - IDC female connectors

1378546

<https://www.phoenixcontact.com/us/products/1378546>

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IDC female connector, nominal current: 1.4 A, test voltage: 500 V AC, number of positions: 20, pitch: 1.27 mm, color: black, contact surface: Au, contact connection type: Socket

## Your advantages

- Time savings during the development process with customer-specific simulations for data integrity
- Design-in support during device development using MCAD/ECAD data and a free sample service
- Can be ordered pre-assembled: IDC female connectors with flat-ribbon cable enable immediate use in the device
- Gold-plated contacts ensure transfer quality remains stable over the long term

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1378546       |
| Packing unit                         | 121 pc        |
| Minimum order quantity               | 121 pc        |
| Sales key                            | AA24          |
| Product key                          | AAXMAA        |
| GTIN                                 | 4063151747244 |
| Weight per piece (including packing) | 2.679 g       |
| Weight per piece (excluding packing) | 1.21 g        |
| Customs tariff number                | 85366990      |
| Country of origin                    | CN            |

## Technical data

### Notes

|                    |   |
|--------------------|---|
| Notes on operation | <p>The permissible voltage during operation depends on the application, taking into consideration the air clearances and creepage distances within the scope of insulation requirements in accordance with IEC 60664-1.</p> <p>The possible data transmission rate of an FR 1,27 cable assembly is influenced by various factors, such as the cable length. Up to 1 Gbps is possible.</p> |
|--------------------|---|

### Product properties

|                     |                      |
|---------------------|----------------------|
| Product type        | IDC female connector |
| Product family      | FR 1,27/...-FWL      |
| Number of positions | 20                   |
| Pitch               | 1.27 mm              |
| Number of rows      | 2                    |

### Electrical properties

#### Properties

|                       |   |
|-----------------------|---|
| Nominal current $I_N$ | 1.4 A IEC 60512-5-2:2002-02 (at 20°C 50-pos.) |
| Contact resistance    | 10 mΩ   |
| Test voltage          | 500 V AC IEC 60512-4-1:2003-05                |

### Connection data

#### Conductor connection

|                             |                         |
|-----------------------------|-------------------------|
| Connection method           | Displacement connection |
| Conductor cross-section AWG | 30                      |

#### Interlock

|               |                 |
|---------------|-----------------|
| Locking type  | Snap-in locking |
| Mounting type | Latching flange |

### Dimensions

|            |          |
|------------|----------|
| Pitch      | 1.27 mm  |
| Width [w]  | 19.05 mm |
| Height [h] | 14.55 mm |
| Length [l] | 5 mm     |

#### Application

|                   |   |
|-------------------|---|
| Contact cover     | 0.9 mm  |
| Center offset     | ± 0.7 mm in longitudinal and transverse direction |
| Angular tolerance | ± 5 ° in longitudinal and transverse direction    |

### Material specifications

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## Material data - contact

|   |  |
|---|--|
| Note  | WEEE/RoHS-compliant, free of whiskers according to IEC 60068-2-82/JEDEC JESD 201 |
| Contact material                            | Cu alloy   |
| Surface characteristics                     | Selective coating  |
| Metal surface terminal point (top layer)    | Tin (3 µm - 6 µm Sn)   |
| Metal surface terminal point (middle layer) | Nickel (1.27 µm - 4 µm Ni)   |
| Metal surface contact area (top layer)      | Gold (min. 0.5 µm Au)  |
| Metal surface contact area (middle layer)   | Nickel (1.27 µm - 4 µm Ni)   |

## Material data - housing

|  |              |
|--|--------------|
| Color (Housing)                        | black (9005) |
| Insulating material                    | LCP          |
| Insulating material group              | IIIb         |
| CTI according to IEC 60112             | 150          |
| Flammability rating according to UL 94 | V0           |

## Connector

### Connection 1

|                            |     |
|----------------------------|-----|
| Insulating material        | LCP |
| CTI according to IEC 60112 | 150 |

## Electrical tests

### Thermal test | Test group C

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-5-2:2002-02 |
|---------------|-----------------------|

### Insulation resistance

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-3-1:2002-02 |
| Insulation resistance, neighboring positions | ≥ 5 GΩ                |

### Air clearances and creepage distances |

|   |         |
|---|---------|
| Insulating material group                         | IIIb    |
| Minimum value for clearance and creepage distance | 0.32 mm |

## Environmental and real-life conditions

### Durability test

|  |                                   |
|--|-----------------------------------|
| Specification                                | IEC 60512-9-1:2010-03 (following) |
| Contact resistance R <sub>1</sub>            | 10 mΩ                             |
| Contact resistance R <sub>2</sub>            | 12 mΩ                             |
| Insertion/withdrawal cycles                  | 500                               |
| Insulation resistance, neighboring positions | ≥ 5 GΩ                            |

### Vibration test

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60068-2-6:2007-12 |
|---------------|-----------------------|

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|                        |  |
|------------------------|--|
| Frequency              | 10 - 2000 - 10 Hz                        |
| Sweep speed            | 1 octave/min                             |
| Amplitude              | 1.5 mm (10 Hz ... 58 Hz)                 |
| Acceleration           | 200 m/s <sup>2</sup> (58 Hz ... 2000 Hz) |
| Test duration per axis | 1 h                                      |
| Test directions        | X-, Y- and Z-axis                        |

## Shocks

|                 |                                   |
|-----------------|-----------------------------------|
| Specification   | IEC 60068-2-27:2008-02            |
| Pulse shape     | Semi-sinusoidal                   |
| Acceleration    | 490 m/s <sup>2</sup>              |
| Shock duration  | 11 ms                             |
| Test directions | X-, Y- and Z-axis (pos. and neg.) |

## Ambient conditions

|   |                   |
|---|-------------------|
| Ambient temperature (storage/transport) | -40 °C ... 70 °C  |
| Relative humidity (storage/transport)   | 30 % ... 70 %     |
| Ambient temperature (assembly)          | -5 °C ... 100 °C  |
| Ambient temperature (operation)         | -55 °C ... 125 °C |

## Ambient conditions

|   |                   |
|---|-------------------|
| Ambient temperature (operation)         | -55 °C ... 125 °C |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C  |
| Relative humidity (storage/transport)   | 30 % ... 70 %     |
| Ambient temperature (assembly)          | -5 °C ... 100 °C  |

## Packaging specifications

|                      |        |
|----------------------|--------|
| Type of packaging    | Tray   |
| Outer packaging type | Carton |

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## Drawings

Diagram



Type: FR 1,27/...-FWL with FR 1,27/...-MV 3,25

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1378546>

|  <b>cUL Recognized</b><br>Approval ID: E118976-20230317 |                       |                       |                   |                      |
|--|-----------------------|-----------------------|-------------------|----------------------|
|  | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $mm^2$ |
| keine  |                       |                       |                   |                      |
| Only flexible conductors   | 29.9 V                | 1.4 A                 | - 30              | -                    |

|  <b>UL Recognized</b><br>Approval ID: E118976-20230317 |                       |                       |                   |                      |
|---|-----------------------|-----------------------|-------------------|----------------------|
|   | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $mm^2$ |
| keine   |                       |                       |                   |                      |
| Only flexible conductors  | 29.9 V                | 2 A                   | - 30              | -                    |

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27460202 |
| ECLASS-15.0 | 27460202 |

### ETIM

|           |          |
|-----------|----------|
| ETIM 10.0 | EC002638 |
|-----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121400 |
|-------------|----------|

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## Environmental product compliance

### EU RoHS

|   |                    |
|---|--------------------|
| Fulfills EU RoHS substance requirements | Yes, No exemptions |
|---|--------------------|

### China RoHS

|  |  |
|--|--|
| Environment friendly use period (EFUP) | EFUP-E                                   |
|  | No hazardous substances above the limits |

### EU REACH SVHC

|                                     |                            |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

### EF3.1 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 0.245 kg CO2e |
|---------|---------------|

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