

# 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: Gold, 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) | 1.66 g        |
| Weight per piece (excluding packing) | 1.66 g        |
| Customs tariff number                | 85366990      |
| Country of origin                    | CN            |

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## Technical data

### Notes

|                              |                                                                                                                                        |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Note regarding documentation | Current documents such as 3D models, products family drawings, data sheets or packaging drawings are available in the Download Center. |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|

### 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

|                       |                                               |
|-----------------------|-----------------------------------------------|
| Nominal current $I_N$ | 1.4 A IEC 60512-5-2:2002-02 (at 20°C 50-pos.) |
| Degree of pollution   | 3                                             |
| Contact resistance    | 10 mΩ                                         |
| Test voltage          | 500 V AC IEC 60512-4-1:2003                   |

### Connection data

#### Conductor connection

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

#### Interlock

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

#### Material data - contact

|                  |                                                                                  |
|------------------|----------------------------------------------------------------------------------|
| Note             | WEEE/RoHS-compliant, free of whiskers according to IEC 60068-2-82/JEDEC JESD 201 |
| Contact material | Cu alloy                                                                         |

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|                                             |                   |
|---------------------------------------------|-------------------|
| Surface characteristics                     | Selective coating |
| Metal surface contact area (top layer)      | Gold (Au)         |
| Metal surface contact area (middle layer)   | Nickel (Ni)       |
| Metal surface soldering area (top layer)    | Tin (Sn)          |
| Metal surface soldering area (middle layer) | Nickel (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 | $\geq 5 \text{ G}\Omega$ |

### Air clearances and creepage distances |

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

## Environmental and real-life conditions

### Vibration test

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

### 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 | $\geq 5 \text{ G}\Omega$          |

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## 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 (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 |

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

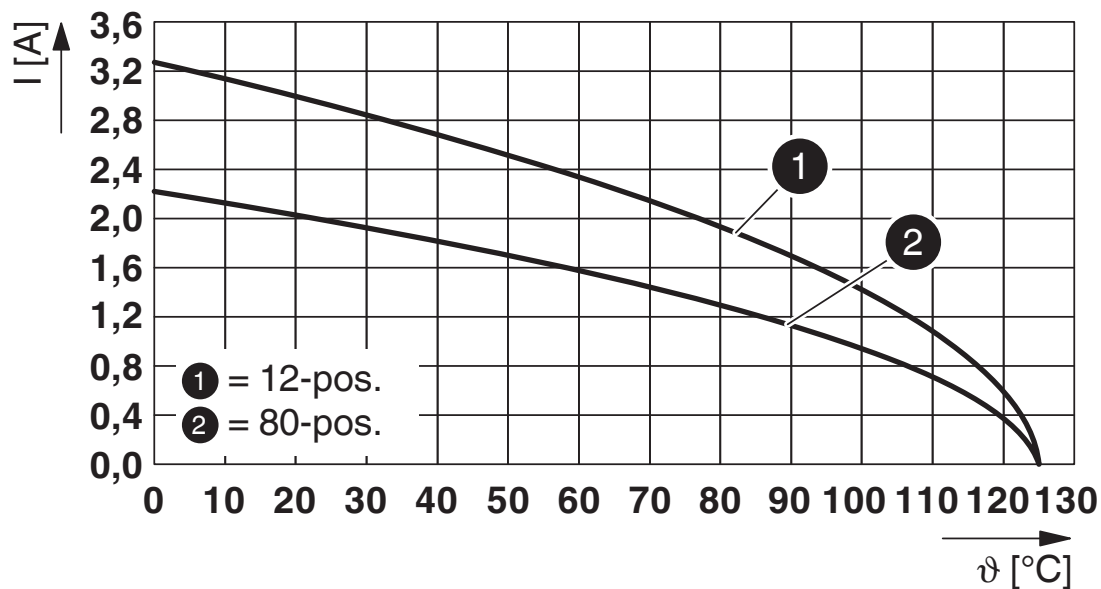


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## Drawings

Diagram



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

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



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## Approvals

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

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

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

| <b>cULus Recognized</b> |  |  |  |  |
|-------------------------|--|--|--|--|
|-------------------------|--|--|--|--|

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27460202 |
| ECLASS-12.0 | 27460202 |
| ECLASS-13.0 | 27460202 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC002638 |
|----------|----------|

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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%               |

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## Mandatory accessories

### FR 1,27/ 20-MV 3,25 - SMD male connectors

1337140

<https://www.phoenixcontact.com/us/products/1337140>



SMD male connector, nominal current: 2.2 A, Test voltage: 840 V AC, number of positions: 20, pitch: 1.27 mm, color: black, contact surface: Gold, contact connection type: Pin, mounting: SMD soldering

### FR 1,27/ 20-MH - SMD male connectors

1377299

<https://www.phoenixcontact.com/us/products/1377299>



SMD male connector, nominal current: 2 A, Test voltage: 500 V AC, number of positions: 20, pitch: 1.27 mm, color: black, contact surface: Gold, contact connection type: Pin, mounting: SMD soldering

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

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## FR 1,27/ 20-MV 1,75 - SMD male connectors

1373866

<https://www.phoenixcontact.com/us/products/1373866>

SMD male connector, nominal current: 2.2 A, Test voltage: 840 V AC, number of positions: 20, pitch: 1.27 mm, color: black, contact surface: Gold, contact connection type: Pin, mounting: SMD soldering



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## Accessories

### FR 1,27/ 20-SR - Strain relief

1399642

<https://www.phoenixcontact.com/us/products/1399642>

Strain relief, number of positions: 20, pitch: 1.27 mm, color: black



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## FR 1,27 CA - Preassembled IDC female connector

1498845

<https://www.phoenixcontact.com/us/products/1498845>



Assembled IDC female connector, rated current: 1.4 A, cable length: Free input (0.05 ... 0.95 m). For preassembled samples, see the "Accessories" tab.

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