NICOMATIC specializes in the design, development and manufacture of electronic connectors. The CMM MICRO CONNECTOR interconnection system offers a 2mm pitch connector (square matrix) with proven high reliability under the most extreme environmental conditions:

- **Flexible architecture:** “Board to Board”, “Board to Wire” and “Wire to Wire” configurations
- **Modular and hybrid design:** mixed layout full option with Low Frequency – LF (over 5 Amp), High Frequency – HF (over 11 GHz) and High Power – HP (over 30 Amp)
- **High reliability contact design & High performance under harsh use conditions**

Source single-point excursions on mating by spring lock.

The CMM MICRO CONNECTOR is a complete and standard range of connectors:

- **CMM 100 series:** 1 row – from 2 to 25 LF contacts
- **CMM 220 series:** 2 rows – from 8 to 60 LF contacts, or up to 15 HF or HP contacts (series 22)
- **CMM 220 series 2 rows:** from 8 to 120 LF contacts, or up to 20 LF or HP contacts (series 22)
- **CMM 260 series 2 rows:** from 8 to 60 LF contacts and up to 16 HF or HP contacts (series 22)

**Direct benefits:**
- **Space saving:** - 40% in surface and over - 60% in volume
- **Weight saving:** - 20 to - 50% vs. usual solution for same functionalities
- **Reduce number of connectors:** 2 or 3 connectors in 1 thanks to a modular concept
- **Cost effective solution:** custom connector assembly from standard components
- **Proven success stories:** in on-board electronic systems
- **Full traceability with EN9100:2003**
- **Short lead time:** 1 week express service, Premium service, fast sampling and prototyping

The CMM MICRO CONNECTOR has been developed for the aerospace, avionics, instrumentation & control, defense and transportation markets, with applications that include IFES, HUDs, flight controls, DASD, really, radars, radars, electro-optical sighting systems, satellites, mobile radios, power supplies, UAVs and engine controls. It is also used in a growing number of medical and telecom applications.
CMM Series Micro-connectors

NICOMATIC specializes in the design, development and manufacture of electronic connectors. The CMM MICRO CONNECTOR interconnection system offers a 2mm pitch connector (square matrix) with proven high reliability under the most extreme environmental conditions:

- Flexible architecture: “Board to Board”, “Board to Wire” and “Wire to Wire” configurations
- Modular and hybrid design: mixed layout full option with Low Frequency – LF (over 5 Amp) – and High Frequency – HF – (over 11 GHz) and High Power - HP - (over 30 Amp)
- High reliability contact design & High performance under harsh use conditions
- Secure: integral jacking mechanism or locking by spring load

The CMM MICRO CONNECTOR is a complete and standard range of connectors:

- CMM 100 series: 1 row – from 2 to 25 LF contacts
- CMM 200 series: 2 rows – from 4 to 50 LF contacts
- CMM 220 series: 2 rows – from 4 to 60 LF contacts, or up to 35 HF or HP contacts (series 30)
- CMM 320 series: 3 rows – from 6 to 120 LF contacts, or up to 20 HF or HP contacts (series 30)
- CMM 340 series: 3 rows – min. 6 LF contacts and up to 64 HF or HP contacts (series 22)

Direct benefits:
- Space saving: - 40% in surface and over - 60% in volume
- Weight saving: - 20 to - 50% vs. usual solution for same functionalities
- Reduce number of connectors: 2 or 3 connectors in 1 thanks to a modular concept
- Custom effective solution: custom connector assembly from standard components
- Proven success stories in on-board electronic systems
- Full traceability with EN9100:2003
- Short lead time: 1 week express service, Premium service, fast sampling and prototyping
- Online interactive configurators: Free use of 2D & 3D drawings, automatic part number & mating-half configurators, technical support under technic@nicomatic.fr

For more information about the NICOMATIC distribution network, please visit our web site
http://www.nicomatic.com
Dimension Tables

CMM 100/200 SERIES in male & female styles for LF contacts

<table>
<thead>
<tr>
<th>Series</th>
<th>Male LF Contacts</th>
<th>Female LF Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100-200</td>
<td>100-200</td>
</tr>
<tr>
<td>200</td>
<td>200-200</td>
<td>200-200</td>
</tr>
</tbody>
</table>

CMM 220 SERIES in male & female styles for LF contacts

<table>
<thead>
<tr>
<th>Series</th>
<th>Male LF Contacts</th>
<th>Female LF Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>220</td>
<td>220-220</td>
<td>220-220</td>
</tr>
</tbody>
</table>

CMM 320 SERIES in male & female styles for LF contacts

<table>
<thead>
<tr>
<th>Series</th>
<th>Male LF Contacts</th>
<th>Female LF Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>320</td>
<td>320-320</td>
<td>320-320</td>
</tr>
</tbody>
</table>

CMM 340 SERIES in male & female styles for LF contacts

<table>
<thead>
<tr>
<th>Series</th>
<th>Male LF Contacts</th>
<th>Female LF Contacts</th>
</tr>
</thead>
</table>

CMM Specifications (with LF contacts)

**MATERIALS**

- **INSULATING**
  - Spun PTFE (Polytetrafluoroethylene) filled thermostabilized LF 146°F
- Radiation resistance
- Fire hazard resistance
- Resistant to detergents

- **Crimp LF Contacts**
  - Male: copper alloy / Ni + Au > 1µ
  - Female: copper alloy / Ni + Au > 1,25µ

- **Fixing Hardware**
  - Portable, Stainless steel

- **Lugs**
  - Beryllium copper/plated nickel (CMM 100/200 series only)

**ELECTRICAL**

- **All contacts**
  - 3 A max. @ 72°C
  - 11 A max. @ 85°C
  - Operating voltage (see list)
  - Insulating resistance (min. 10 MΩ)
  - Insulation resistance (min. 10 MΩ)
- **Contact resistance (male)**
  - 2.2 Ω max. @ 4D tolerance absorption: 4D = 3 axial movements + 1 rotation
- **Contact resistance (female)**
  - 2.5 A max. @ 260°C
  - 12 A max. @ 85°C
  - Touch test at 113°C
  - Contact resistance (min. 2 cycles, Crimp contacts only)

**MECHANICAL**

- **Mechanical operations**
  - Up to 100 cycles
- **Contact insertion and withdrawal force**
  - 2 N max. / 0.5 N min per contact
- **Contact retention in insulator**
  - 10 N max.
- **Contact replacement in insulator**
  - 2 cycles (Crimp contacts only)

**ENVIRONMENTAL**

- **Temperature range**
  - From -40°C to +260°C
- **Vibration resistance**
  - 0.75” sine, 16 g RMS 8-hour long test without deterioration
- **Shock resistance**
  - 150 g for 6 ms
- **Solenoid resistance**
  - 115, 165 kHz (ATOCHEM) max

**Note:**

- The CMM Micro-contacts are designed to insert or extract for inherent electrical and environmental performances described in MIL-DTL-39012, MIL-DTL-38999 and MIL-DTL-53650 standards.

**Manufacturer and designer of innovative interconnect solutions**

- **MICRO-D MIX™ DM SERIES MICRO-CONNECTORS**
  - Low weight, up to 35% in fully cable
  - Faster, easier installation with CMM & CRIMP™
  - High quality pin (20 g) at 4D tolerance absorption: 4D = 3 axial movements + 1 rotation
  - High productivity: 2 to 20 contacts in 1 string

- **OMM SERIES MICRO-CIRCULAR CONNECTORS**
  - High density of contacts in smallest circular connector shape
  - Space saving feature
  - Custom solutions
  - Low profile connection
  - Easily captive fixing hardware

- **MICROFLEX HARNESS SOLUTION**
  - Custom products up to 1000 pins
  - Custom made harness, sizes 18 to 16 AWG, miniaturized connectors, lead length
  - Custom solutions, size and lead length

- **4D-FLATCONNECTORS**
  - High efficiency, high productivity, 4D tolerance absorption: 4D = 3 axial movements + 1 rotation
  - Custom products up to 1000 pins
  - Custom solutions, size and lead length

**CUSTOM PRODUCTS**

- You can rely on our R&D department know-how and long experience.
- Our permanent innovation was recognized and labelised as "highly Innovative" by the European Union.
- Our in-house production and assembly capacity offers you the possibility to create customized products:
  - Custom connectors (custom size, lead length, wire size), CRIMP™
  - Customized development, dimensions, measures and tests.
- Fully engaged industrial company, NICOMATIC can reduce your risks, can assure your development and achieve the solution that will make the difference on the market.

**Note:**

- Use the correct size, see page 123.
- The CMM Micro-contacts are designed to insert or extract for inherent electrical and environmental performances described in MIL-DTL-39012, MIL-DTL-38999 and MIL-DTL-53650 standards.

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CMM Specifications (with LF contacts)

**MATERIALS**

INSULATOR: Polyethylene terephthalate (PET) Teflon filled thermoplastic UL 94 V0

- Radiation resistance
- Flammability resistance
- Ozone resistant

Note: PET characteristics are recognized for space applications

**PC LF CONTACTS**

- Male: Copper alloy / 76 x 0.5
- Female: Copper alloy / 76 x 0.5

**CRIMP LF CONTACTS**

- Male: Copper alloy / 76 x 0.5
- Female: Copper alloy / 76 x 0.5

**FIXING HARDWARE**

- Stainless Steel nickel plated

- Lycra: Cotton covered/polyester (CMM 100/200 series only)

**ELECTRICAL**

- All contacts: 2A max @ 24V
- Crimping force (max/min): Tested at 85°C
- Hood voltage: Tested at 105°C
- Contact resistance (ratively): max. 11 mΩ
- Isolation resistance: 1000 MΩ

**MECHANICAL**

- Mechanical operations: Up to 3000 cycles
- Contact insertion and withdrawal force: 2 N max / 0.5 N min per contact
- Contact retention in insulator: 15 N max.
- Contact replacement in insulator: 2 cycles (crimping only)

**ENVIRONMENTAL**

- Temperature range: From -40°C to +260°C
- Relative humidity: 0% to 95% non-condensing air

- Reliability: Tested dust test for 1200 hours at 20°C / 85% RH 1500 cycles (High speed Logic Testing) 100% tested with life test 150°C / 85% RH 1500 cycles

- Shock: 100 g for 6 ms

- Vibration severity: 0.75 mm, 10 g RMS 6 hours long random with superimposed sinusoid. No intermittencies measured when using an H.S.L.I (High Speed Logic Interrupt)

**MANUFACTURER & DESIGNER OF INNOVATIVE INTERCONNECT SOLUTIONS**

- High density of contacts in smallest circular connector shape
- Simple and easy to design-in
- High productivity: 2 to 30 contacts in 1 string
- Adaptable to customer requests

**CUSTOM PRODUCTS**

- Fully printed circuit board and module company Nimomatic can reduce your risks, can secure your development and achieve the solution that will make the difference on the market.

- Our permanent innovation was recognized and labeled as “Highly Innovative” by the European Union.
- Our in-house production and assembly capacity offers you the possibility to create customized products. From design, engineering, molding, forging, assembly, testing and delivery we can answer your specific requirements, measure and test.

- Our in-house production and assembly capacity offers you the possibility to create customized products: From design, engineering, molding, forging, assembly, testing and delivery we can answer your specific requirements, measure and test.

- Fully integrated industrial company Nimomatic can reduce your risks, can secure your development and achieve the solution that will make the difference on the market.

- The CMM micro-connectors are designed to meet or exceed the relevant electrical and environmental performances described in MIL-STD-55302 & MIL-STD-5533 standards.
# HF / HP contacts specifications

## MATERIALS
- Spring loaded parts: Be/Cu gold plated
- Other metal parts: Copper alloy
- Insulator: PTFE (HF)
- Retaining clip: Be/Cu Ni plated

## MECHANICAL
- Mechanical operations: Up to 2500 cycles
- Insertion force: From 0.60 to 5 N per contact
- Withdrawal force: From 0.50 to 2 N per contact
- Secure overlapping: 1.30 mm
- Contact replacement in insulator: 50 cycles for HF / HP 30 series (5 cycles for HF / HP 22 series)

## ELECTRICAL

### High Power (HP) Contact
- **Intensity**: Series 30: 20 A, Series 22: 10 A depending on cable
- **Contact resistance**: max. 6 mΩ
- **Operating voltage (sea level)**: 1000 V (RMS)
- **Operating voltage (sea level)**: 180 V AC/500 mA

### High Frequency (HF) Contact
- **Impedance**: 50Ω / 75Ω
- **Impedance**: depending on cable
- **Insulation resistance**: 10 MΩ / 250 V (RMS)
- **SWR (Stationary wave rate)**: < 1.05 + 0.04 F (GHz)
- **Frequency range**: Series 30: 6 GHz
- **Frequency range**: Series 22: 1.5 GHz

## ENVIRONMENTAL
- **Temperature range**: From -60°C to +260°C
- **Salt spray test**: 96 hrs
- **Humidity test**: 56 days @ 90% humidity

## HF / HP CONTACTS PART NUMBERING

- **“30”**: series 30 [ø 3mm] (CMM 220 / 320)
- **“22”**: series 22 [ø 2.2mm] (CMM 340)

These two digits are linked to the connector. Do not use them inside a CMM part number (when loaded).

### Contact type:
- 3 = Straight
- 4 = Right Angle
- 5 = SMT Right Angle
- 6 = SMT straight

### Termination length (only for PCB contacts)
- “CMM” = standard 3 mm
- “45” = 4,5 mm
- “…”

### Contact termination:
- “00” = PCB
- “xx” = cable diameter x 10
- “…”

### Special contacts:
- 1 = male HF
- 2 = female HF
- 3 = male HP
- 4 = female HP

---

**Important notice:**

According to the routines test other than MIL our technical features for CMM Micro-connectors reach a higher result. Please contact technic@nicomatic.fr for more information.

For example:
- LF: up to 5A max. @ 25°C
- HF: up to 11 GHz
- HP: up to 30 A
- Mechanical operations: up to 5 000 cycles
- High temperature test: 1 000H at 250°C
- Application with LVDS signal @ 400 MHz, impedance 100 Ohm
- High speed: USB, 1Gb/s Ethernet…
HIGHLIGHT ON CMM CONNECTOR BENEFITS

• Unlimited style of connector:
  - Mixed-layout: High, Low frequency & High power in 1 connector
  - PCB solder, SMT, press fit, crimp contacts
  - Board to board, board to wire, wire to wire connections
  - Very small footprint: 2 mm pitch (saves up to 60% space & 50% weight over conventional connectors)

• Meets or exceeds the relevant electrical & environmental performances described in MIL-DTL-55302F & BS-9525-F0033 standards

• Excellent mechanical & environmental characteristics

• Built-in jackscrews for high vibrations

• Resistance to solvents, radiations & oxygen free

• Allows infrared, wave or vapour phase soldering

• High reliability contact design: up to 2 500 cycles

• RoHS & Whiskers free (all contacts are gold plated)

• Short lead time: 1 week delivery service

• 100% quality control

• Proven track record in defense, aerospace & railway as well as other high reliability or technology field applications

• Connector housing marking for full traceability

• Large range of accessories & tools
**LF : low frequency contacts**

### PRESENTATION

- **Male**
  - Straight PCB Type Y
  - 90° PCB Type V
  - Straight SMT Type T
  - 90° SMT Type R
  - Crimp Type S - C
  - Straight PCB Type PF Press fit

- **Female**
  - Straight PCB Type Y
  - 90° PCB Type V
  - Straight SMT Type T
  - 90° SMT Type R
  - Crimp Type S - C
  - Straight PCB Type PF Press fit

### INFORMATION TABLE

<table>
<thead>
<tr>
<th>CMM RANGE</th>
<th>STRAIGHT ON PCB</th>
<th>90° ON PCB</th>
<th>STRAIGHT SMT</th>
<th>90° SMT</th>
<th>CRIMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>100/200</td>
<td>Male Y L=3,0, L=4,5 YM L=5,1, L=9,1 YX</td>
<td>V L=3,0, L=4,5</td>
<td>T L=2,25, L=3,35</td>
<td>R L=0,9</td>
<td>C S</td>
</tr>
<tr>
<td></td>
<td>Female Y L=3,0, L=4,5 YM YL L=1,2 PF Press fit</td>
<td>V L=3,0, L=4,5</td>
<td>T L=2,25, L=3,35</td>
<td>R L=0,9</td>
<td>C S</td>
</tr>
<tr>
<td>220</td>
<td>Male Y L=3,0, L=4,5 YM L=5,1, L=9,1 YX</td>
<td>V L=3,0, L=4,5</td>
<td>T L=2,25, L=3,35</td>
<td>R L=0,9</td>
<td>C S</td>
</tr>
<tr>
<td></td>
<td>Female Y L=3,0, L=4,5 YM YL L=1,2 PF Press fit</td>
<td>V L=3,0, L=4,5</td>
<td>T L=2,25, L=3,35</td>
<td>R L=0,9</td>
<td>C S</td>
</tr>
<tr>
<td>320</td>
<td>Male Y L=3,0, L=4,5 YM L=5,1, L=9,1 YX</td>
<td>V L=3,0, L=4,5</td>
<td>T L=2,25, L=3,35</td>
<td>R L=0,9</td>
<td>C S</td>
</tr>
<tr>
<td></td>
<td>Female Y L=3,0, L=4,5 YM YL L=1,2 PF Press fit</td>
<td>V L=3,0, L=4,5</td>
<td>T L=2,25, L=3,35</td>
<td>R L=0,9</td>
<td>C S</td>
</tr>
<tr>
<td>340</td>
<td>Male Y L=3,0, L=4,5 YM L=5,1, L=9,1 YX</td>
<td>V L=3,0, L=4,5</td>
<td>T L=2,25, L=3,35</td>
<td>C S</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female Y L=3,0, L=4,5 YM YL L=1,2 PF Press fit</td>
<td>V L=3,0, L=4,5</td>
<td>T L=2,25, L=3,35</td>
<td>C S</td>
<td></td>
</tr>
</tbody>
</table>

L=6.50 / 8.00 / 10.50 / 12.00 / 14.50 / 16.00 mm upon request (only for straight on PCB male contacts)

**Standard contact**

- Any other type of contact upon request only

---

![Image of contact types and dimensions](image-url)
HF: high frequency contacts (series 30)

**PRESENTATION**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
</tbody>
</table>

**INFORMATION TABLE**

<table>
<thead>
<tr>
<th>CMM RANGE</th>
<th>TYPE OF CONTACTS TO BE USED IN THE CMM CONNECTOR WITH CAVITIES FOR HF/HP CONTACTS ONLY</th>
<th>TYPICAL USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>100/200</td>
<td>Type D for special contacts on PCB (eg. 221D00F22-00, nbr of special contacts -1300CM)</td>
<td>Type E for special contacts on cable</td>
</tr>
<tr>
<td>220</td>
<td>Straight on PCB</td>
<td>90° on PCB</td>
</tr>
<tr>
<td>320</td>
<td>Male</td>
<td>30-1300-CMM L=3,0</td>
</tr>
<tr>
<td>Female</td>
<td>30-2200-CMM L=3,0</td>
<td>30-2200-45 L=4,5</td>
</tr>
<tr>
<td>340</td>
<td>Male</td>
<td>30-1300-CMM L=3,0</td>
</tr>
<tr>
<td>Female</td>
<td>30-2300-12 L=3,0</td>
<td>30-2300-14 L=4,5</td>
</tr>
</tbody>
</table>

Standard contact
Any other type of contact upon request only

**Dimensions**

- Central contact: “S” = crimp, “Z” = solder
- Shield: “S” = crimp, “Z” = solder
- Double shield: “DS”
# HP: high power contacts (series 30)

## PRESENTATION

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Male Straight PCB" /></td>
<td><img src="image2" alt="Female Straight PCB" /></td>
</tr>
<tr>
<td><img src="image3" alt="Male 90° PCB" /></td>
<td><img src="image4" alt="Female 90° PCB" /></td>
</tr>
<tr>
<td><img src="image5" alt="Male Straight SMT" /></td>
<td><img src="image6" alt="Female Straight SMT" /></td>
</tr>
<tr>
<td><img src="image7" alt="Male 90° SMT" /></td>
<td><img src="image8" alt="Female 90° SMT" /></td>
</tr>
<tr>
<td><img src="image9" alt="Male 90° SMT Card edge" /></td>
<td><img src="image10" alt="Female 90° SMT Card edge" /></td>
</tr>
<tr>
<td><img src="image11" alt="Male Straight Crimp" /></td>
<td><img src="image12" alt="Female Straight Crimp" /></td>
</tr>
<tr>
<td><img src="image13" alt="Male 90° Crimp" /></td>
<td><img src="image14" alt="Female 90° Crimp" /></td>
</tr>
<tr>
<td><img src="image15" alt="Male Straight solder" /></td>
<td><img src="image16" alt="Female Straight solder" /></td>
</tr>
<tr>
<td><img src="image17" alt="Male 90° solder" /></td>
<td><img src="image18" alt="Female 90° solder" /></td>
</tr>
</tbody>
</table>

## INFORMATION TABLE

### CMM Range

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image19" alt="Male Straight PCB" /></td>
<td><img src="image20" alt="Female Straight PCB" /></td>
</tr>
<tr>
<td><img src="image21" alt="Male 90° PCB" /></td>
<td><img src="image22" alt="Female 90° PCB" /></td>
</tr>
<tr>
<td><img src="image23" alt="Male Straight SMT" /></td>
<td><img src="image24" alt="Female Straight SMT" /></td>
</tr>
<tr>
<td><img src="image25" alt="Male 90° SMT" /></td>
<td><img src="image26" alt="Female 90° SMT" /></td>
</tr>
<tr>
<td><img src="image27" alt="Male 90° SMT Card edge" /></td>
<td><img src="image28" alt="Female 90° SMT Card edge" /></td>
</tr>
<tr>
<td><img src="image29" alt="Male Straight Crimp" /></td>
<td><img src="image30" alt="Female Straight Crimp" /></td>
</tr>
<tr>
<td><img src="image31" alt="Male 90° Crimp" /></td>
<td><img src="image32" alt="Female 90° Crimp" /></td>
</tr>
<tr>
<td><img src="image33" alt="Male Straight solder" /></td>
<td><img src="image34" alt="Female Straight solder" /></td>
</tr>
<tr>
<td><img src="image35" alt="Male 90° solder" /></td>
<td><img src="image36" alt="Female 90° solder" /></td>
</tr>
</tbody>
</table>

### Typical Use

**Type D for special contacts on PCB**
- Straight on PCB
- 90° on PCB
- Straight SMT
- 90° SMT
- 90° SMT Card edge
- Straight Crimp
- 90° Crimp
- Straight solder
- 90° solder

**Type E for special contacts on cable**
- Straight Crimp
- 90° Crimp
- Straight solder
- 90° solder

### CMM Range Details

<table>
<thead>
<tr>
<th>100/200</th>
<th>Male</th>
<th>220</th>
<th>Male</th>
<th>Female</th>
<th>320</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-3300-CMM</td>
<td>30-3300-05</td>
<td>30-4300-CMM</td>
<td>30-4300-05</td>
<td>30-4300-12</td>
<td>30-4300-14</td>
<td>30-4400-CMM</td>
<td>30-4400-05</td>
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<tr>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
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<td>30-3400-CMM</td>
<td>30-3400-05</td>
<td>30-4400-CMM</td>
<td>30-4400-05</td>
<td>30-4400-12</td>
<td>30-4400-14</td>
<td>30-4500-CMM</td>
<td>30-4500-05</td>
</tr>
<tr>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
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<td>L=4.5</td>
</tr>
<tr>
<td>30-3600-CMM</td>
<td>30-3600-05</td>
<td>30-4600-CMM</td>
<td>30-4600-05</td>
<td>30-4600-12</td>
<td>30-4600-14</td>
<td>30-4500-CMM</td>
<td>30-4500-05</td>
</tr>
<tr>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
</tr>
<tr>
<td>30-3500-CMM</td>
<td>30-3500-05</td>
<td>30-4500-CMM</td>
<td>30-4500-05</td>
<td>30-4500-12</td>
<td>30-4500-14</td>
<td>30-4600-CMM</td>
<td>30-4600-05</td>
</tr>
<tr>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
<td>L=3.0</td>
<td>L=4.5</td>
</tr>
</tbody>
</table>

### Notes

XX = 05, 08...
- Eg. 08 for 8A
- Please refer to page 94

### Standard Contact

- Any other type of contact upon request only

![Diagram 1](image37)

![Diagram 2](image38)

![Diagram 3](image39)
**HF : high frequency contacts (series 22)**

### PRESENTATION

<table>
<thead>
<tr>
<th>CMM Range</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>100/200</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>220</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>320</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>340</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
</tbody>
</table>

### INFORMATION TABLE

<table>
<thead>
<tr>
<th>CMM Range</th>
<th>Type of contacts to be used in the CMM connector with cavities for HF/HP contacts only</th>
</tr>
</thead>
<tbody>
<tr>
<td>100/200</td>
<td>Type D for special contacts on PCB</td>
</tr>
<tr>
<td>220</td>
<td>Type E for special contacts on cable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>340</td>
<td>![Image]</td>
</tr>
</tbody>
</table>

**Standard contact**

- Any other type of contact upon request only

- **First row**: 22-1400-12 / 22-1400-14 / 22-2400-12 / 22-2400-14

**Typical use**

- Straight on PCB
- 90° on PCB
- Straight SMT
- 90° SMT
- Straight Crimp
- 90° Crimp
- Straight solder
- 90° solder

12 = cable Ø 1.2
20 = cable Ø 2.0

When a two-row connector mixes a 22-2400-12 and a 22-2400-22 contact, the P/N of the HF contact changes to 2400-02.

When a two-row connector mixes a 22-2400-14 and a 22-2400-24 contact, the P/N of the HF contact changes to 2400-04.

When a two-row connector mixes a 22-1400-12 and a 22-1400-22 contact, the P/N of the HF contact changes to 1400-02.

When a two-row connector mixes a 22-1400-14 and a 22-1400-24 contact, the P/N of the HF contact changes to 1400-04.
### HP: high power contacts (series 22)

#### PRESENTATION

<table>
<thead>
<tr>
<th>Type D</th>
<th>Type E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight PCB</td>
<td>90° PCB</td>
</tr>
<tr>
<td>90° PCB</td>
<td>Straight SMT</td>
</tr>
<tr>
<td>Straight SMT</td>
<td>90° SMT</td>
</tr>
<tr>
<td>Straight Crimp</td>
<td>90° Crimp</td>
</tr>
<tr>
<td>90° Crimp</td>
<td>Straight solder</td>
</tr>
<tr>
<td>Straight solder</td>
<td>90° solder</td>
</tr>
</tbody>
</table>

#### INFORMATION TABLE

<table>
<thead>
<tr>
<th>CMM Range</th>
<th>TYPE D FOR SPECIAL CONTACTS ON PCB</th>
<th>TYPE E FOR SPECIAL CONTACTS ON CABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>100/200</td>
<td>Straight on PCB</td>
<td>90° on PCB</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>340</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22-3300-12 L=3,0</td>
<td>22-3300-14 L=4,5</td>
</tr>
<tr>
<td>Female</td>
<td>22-4300-12 L=3,0</td>
<td>22-4400-14 L=4,5</td>
</tr>
</tbody>
</table>

Standard contact
Any other type of contact upon request only

* First row: 22-3400-12 / 22-3400-14 / 22-4400-12 / 22-4400-14


---

When a two-row connector mixes a 22-3400-12 and a 22-3400-22 contact, the P/N of the HF contact changes to 3400-02.

When a two-row connector mixes a 22-3400-14 and a 22-3400-24 contact, the P/N of the HF contact changes to 3400-04.

---

When a two-row connector mixes a 22-4400-12 and a 22-4400-22 contact, the P/N of the HF contact changes to 4400-02.

When a two-row connector mixes a 22-4400-14 and a 22-4400-24 contact, the P/N of the HF contact changes to 4400-04.
Male housing marking

**CMM 100/200**

Marking: NCM (Nicomatic) + date code (Lot number)

Marking 1: NCM (Nicomatic) + date code (Lot number) + Connector P/N
- LF contact number 1

Marking 2: NCM (Nicomatic) + date code (Lot number)
- CMM 220 mixed layout (LF + HF/HP)
- CMM 220 with HF/HP contacts
- CMM 220 with 04 LF contacts

Marking LF contacts type: Y-YL-V-VL-T-S-C

**CMM 220**

Marking 1: NCM (Nicomatic) + date code (Lot number) + Connector P/N
- LF contact number 1

Marking on two faces if the number of LF contacts is < to 10.

Marking 2: NCM (Nicomatic) + date code (Lot number)
- CMM 220 mixed layout (LF + HF/HP)
- CMM 220 with HF/HP contacts
- CMM 220 with 04 LF contacts

Marking LF contacts type: Y-YL-V-VL-T-S-C

**CMM 320/340**

Marking 1: NCM (Nicomatic) + date code (Lot number)
- Connector P/N
- LF contact number 1

Marking 2: NCM (Nicomatic) + date code (Lot number)
- CMM 320 mixed layout
- CMM 320 with HF/HP contacts
- CMM 340

Marking LF contacts type: Y-YL-V-VL-S-C
Female housing marking

**CMM 100/200**

Marking: NCM (Nicomatic) + date code (Lot number)

**Marking 1:** NCM (Nicomatic) + date code (Lot number)
- Connector P/N
- LF contact number 1

**Marking 2:** NCM (Nicomatic) + date code (Lot number): CMM 320 mixed layout HF/HP contact
- CMM 340

Marking LF contacts type: Y-YL-V-VL-S-C-PF

**CMM 220**

Marking 1: NCM (Nicomatic) + date code (Lot number)
- Connector P/N
- LF contact number 1

Marking on two faces if the number of LF contacts is < to 10.

**Marking 2:** NCM (Nicomatic) + date code (Lot number): CMM 220 mixed layout (LF + HF/HP)
- CMM 220 with HF/HP contacts
- CMM 220 with 04 LF contacts

Marking LF contacts type: Y-YL-V-VL-R-T-S-C-PF

**CMM 320/340**

Marking 1: NCM (Nicomatic) / date code (Lot number)
- Connector P/N
- LF contact number 1

Marking LF contacts type: Y-YL-V-VL-S-C-PF

Marking 2: NCM (Nicomatic) / date code (Lot number): CMM 320 mixed layout HF/HP contacts
- CMM 320 with HF/HP contacts
- CMM 340
<table>
<thead>
<tr>
<th>Code with Low Frequency contacts only</th>
<th>Additional code for mixed-layout connector (HF/HP)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Series</strong></td>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td>10</td>
<td>1 male 2 female</td>
</tr>
<tr>
<td>20</td>
<td>1 male 2 female</td>
</tr>
<tr>
<td>22</td>
<td>1 male 2 female</td>
</tr>
<tr>
<td>32</td>
<td>1 male 2 female</td>
</tr>
<tr>
<td>34</td>
<td>1 male 2 female</td>
</tr>
</tbody>
</table>

**Note:**
For any configuration outside of this part numbering system, please contact us.
<table>
<thead>
<tr>
<th>编号系统</th>
<th>CMM 100/200 Series</th>
<th>p. 17 to 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMM 220 Series</td>
<td>p. 27 to 46</td>
<td></td>
</tr>
<tr>
<td>CMM 320 Series</td>
<td>p. 47 to 59</td>
<td></td>
</tr>
<tr>
<td>CMM 340 Series</td>
<td>p. 60 to 74</td>
<td></td>
</tr>
<tr>
<td>High Frequency and High Power contacts (HF)</td>
<td></td>
<td>p. 75 to 102</td>
</tr>
<tr>
<td>Tools and accessories</td>
<td></td>
<td>p. 103 to 112</td>
</tr>
<tr>
<td>Cable instructions &amp; assembly</td>
<td></td>
<td>p. 113 to 122</td>
</tr>
</tbody>
</table>
# CMM 100 / 200

## Code with Low Frequency contacts only

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Termination Style</th>
<th>Number of LF contacts</th>
<th>Fixing Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 1 row
- **1 male**
- **2 female**
- Refer to table on page 7
- 02 to 25
- With Latch “L”, “FL”, “LS” page 22
- Without Latch “ ”

### 2 rows
- **1 male**
- **2 female**
- Refer to table on page 7
- 04 to 50
- With Latch “L”, “FL”, “LS” page 22
- Without Latch “ ”

## PART NUMBERING REMINDER
Configuration
CMM 100

CONNECTOR SPACING

CONTACTS POSITIONS

Female connectors (shown looking onto mating face)

Male connectors (shown looking onto mating face)
Configuration
CMM 200

CONNECTOR SPACING

CONTACTS POSITIONS

Female connectors
(shown looking onto mating face)

Male connectors
(shown looking onto mating face)

LF contacts min. 04 / max. 50

LF contacts min. 04 / max. 50
CMM 100 / 200 male

STRAIGHT PCB

Part numbering:

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
<th>Y</th>
<th>YL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>4,5</td>
<td></td>
</tr>
</tbody>
</table>

Calculation:

<table>
<thead>
<tr>
<th>Type</th>
<th>CMM 100</th>
<th>CMM 200</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A = (nn x 2) - 2</td>
<td>A = nn - 2</td>
</tr>
<tr>
<td></td>
<td>B = A + 4,7</td>
<td>B = A + 4,7</td>
</tr>
<tr>
<td></td>
<td>C = A + 5,4</td>
<td>C = A + 5,4</td>
</tr>
</tbody>
</table>

Refer to dimension table on cover page

90° PCB

Part numbering:

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
<th>V</th>
<th>VL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>4,5</td>
<td></td>
</tr>
</tbody>
</table>

Calculation:

<table>
<thead>
<tr>
<th>Type</th>
<th>CMM 100</th>
<th>CMM 200</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A = (nn x 2) - 2</td>
<td>A = nn - 2</td>
</tr>
<tr>
<td></td>
<td>B = A + 4,7</td>
<td>B = A + 4,7</td>
</tr>
<tr>
<td></td>
<td>C = A + 5,4</td>
<td>C = A + 5,4</td>
</tr>
</tbody>
</table>

Refer to dimension table on cover page
**CMM 100 / 200 male**

### Straight SMT

**Part numbering:**

- "1" = Series 100
- "2" = Series 200

<table>
<thead>
<tr>
<th>Series</th>
<th>Formula</th>
<th>Calculation</th>
</tr>
</thead>
</table>
| CMM 100 | \((nn \times 2) - 2\) | \(A = (nn \times 2) - 2\)  
\(C = A + 5.4\)  |
| CMM 200 | \(nn - 2\) | \(A = nn - 2\)  
\(C = A + 5.4\)  |

*Refer to dimension table on cover page*

### 90° SMT

**Part numbering:**

- "1" = Series 100
- "2" = Series 200

<table>
<thead>
<tr>
<th>Series</th>
<th>Formula</th>
<th>Calculation</th>
</tr>
</thead>
</table>
| CMM 100 | \((nn \times 2) - 2\) | \(A = (nn \times 2) - 2\)  
\(C = A + 5.4\)  |
| CMM 200 | \(nn - 2\) | \(A = nn - 2\)  
\(C = A + 5.4\)  |

*Refer to dimension table on cover page*

**nn** = number of LF contacts
CMM 100 / 200 male

CRIMP

Part numbering:
- "1" = Series 100
- "2" = Series 200
- Type: S or C
- "L", "FL" = with latch page 22
- "-" = without latch

<table>
<thead>
<tr>
<th>Type</th>
<th>Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>24-28</td>
</tr>
<tr>
<td>C</td>
<td>22</td>
</tr>
</tbody>
</table>

nn = number of LF contacts

Calculation:

<table>
<thead>
<tr>
<th></th>
<th>CMM 100</th>
<th>CMM 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(nn x 2) - 2</td>
<td>nn - 2</td>
</tr>
<tr>
<td>C</td>
<td>A + 5.4</td>
<td>A + 5.4</td>
</tr>
</tbody>
</table>

Refer to dimension table on cover page

RETENTION LATCHES FOR CMM 100 / 200 MALE

Straight latch with locking “L”

Straight latch without locking “FL”

Latch for CMM connector with T termination style “LS”

Latch for CMM connector with R termination style “LS”

The strain relief straps are supplied with all male CMM 100 / 200 connectors mounted with latches L or FL type except for Y & YL terminations

<table>
<thead>
<tr>
<th>PCB Thickness</th>
<th>P/N</th>
<th>Termination style</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2.5 mm</td>
<td>13218</td>
<td>V</td>
</tr>
<tr>
<td>&gt; 2.5 mm</td>
<td>13816</td>
<td>VL</td>
</tr>
</tbody>
</table>

If no strain relief straps with your connector, please order under P/Ns on the left
CMM 100 / 200 female

STRAIGHT PCB

Part numbering:

- Type: Y-YL

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>YL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

nn = number of LF contacts

Calculation:

<table>
<thead>
<tr>
<th>CMM 100</th>
<th>CMM 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = (nn x 2) - 2</td>
<td>A = nn - 2</td>
</tr>
<tr>
<td>B = A + 5</td>
<td>B = A + 5</td>
</tr>
</tbody>
</table>

Refer to dimension table on cover page

90° PCB

Part numbering:

- Type: Y-YL

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

nn = number of LF contacts

Calculation:

<table>
<thead>
<tr>
<th>CMM 100</th>
<th>CMM 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = (nn x 2) - 2</td>
<td>A = nn - 2</td>
</tr>
<tr>
<td>B = A + 5</td>
<td>B = A + 5</td>
</tr>
</tbody>
</table>

Refer to dimension table on cover page
CMM 100 / 200 female

STRAIGHT SMT

Part numbering:
- "1" = Series 100
- "2" = Series 200

\[ A = (nn \times 2) - 2 \]
\[ B = A + 5 \]

nn = number of LF contacts

Calculation:

<table>
<thead>
<tr>
<th></th>
<th>CMM 100</th>
<th>CMM 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(nn x 2) - 2</td>
<td>nn - 2</td>
</tr>
<tr>
<td>B</td>
<td>A + 5</td>
<td>A + 5</td>
</tr>
</tbody>
</table>

Refer to dimension table on cover page

Optional: Packaging in reel available upon request

CRIMP

Part numbering:
- "1" = Series 100
- "2" = Series 200

\[ A = (nn \times 2) - 2 \]
\[ B = A + 5 \]

nn = number of LF contacts

Calculation:

<table>
<thead>
<tr>
<th></th>
<th>CMM 100</th>
<th>CMM 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(nn x 2) - 2</td>
<td>nn - 2</td>
</tr>
<tr>
<td>B</td>
<td>A + 5</td>
<td>A + 5</td>
</tr>
</tbody>
</table>

Refer to dimension table on cover page

Optional: Packaging in reel available upon request
CMM 100 / 200 female

STRAIGHT PRESS FIT

Part numbering:

- "1" = Series 100
- "2" = Series 200

nn = number of LF contacts

Calculation:

<table>
<thead>
<tr>
<th>CMM 100</th>
<th>CMM 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = (nn \times 2) - 2</td>
<td>A = nn - 2</td>
</tr>
<tr>
<td>B = A + 5</td>
<td>B = A + 5</td>
</tr>
</tbody>
</table>

Refer to dimension table on cover page

90° SMT

Part numbering:

- "1" = Series 100
- "2" = Series 200

nn = number of LF contacts

Optional: Packaging in reel available upon request

Upon request only

nn min = 02  nn max = 25
nn min = 04  nn max = 50
# CMM 220 with LF contacts

**PART NUMBERING REMINDER**

<table>
<thead>
<tr>
<th>Code with Low Frequency contacts only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series</td>
</tr>
<tr>
<td>2 rows</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Part Numbering Reminder**

- 27
- CMM 220 with LF contacts

**Diagram**

- LF contact type "R" (x24)
- LF contact type "S" (x16)
- M18 fixing hardware
- Male connector
- Female connector

**Notes**

- Refer to table on page 7
- Refer to pages 43 to 46
CMM 220 male

**STRAIGHT PCB**

Part numbering:

- Type: Y, YL

221 [nn]

See Fixing on page 43, 44
“Fxx” without fixing

- nn = number of LF contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>YL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Calculation:

- A = nn - 2
- B = A + 7
- C = A + 12

Refer to dimension table on cover page

**90° PCB**

Part numbering:

- Type: V, VL

221 [nn]

See Fixing on page 43, 44
“Fxx” without fixing

- nn = number of LF contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Calculation:

- A = nn - 2
- B = A + 7
- C = A + 12

Refer to dimension table on cover page
CMM 220 male

STRAIGHT SMT

Part numbering:
- nn min = 04
- nn max = 60

**Type:** F-TL

See Fixing on page 43, 44
"Fxx" without fixing

nn = number of LF contacts

Optional: Packaging in reel available upon request

Calculation:
- A = nn - 2
- B = A + 7
- C = A + 12

Refer to dimension table on cover page

90° SMT

Part numbering:
- nn min = 04
- nn max = 60

See Fixing on page 43, 44
"Fxx" without fixing

nn = number of LF contacts

Optional: Packaging in reel available upon request

Calculation:
- A = nn - 2
- B = A + 7
- C = A + 12

Refer to dimension table on cover page
CMM 220 male

CRIMP

Part numbering:

Type: S-C

See Fixing on page 43, 44
"Fixe" without fixing

nn = number of LF contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>24-28</td>
</tr>
<tr>
<td>C</td>
<td>22</td>
</tr>
</tbody>
</table>

Calculation:

\[ A = nn - 2 \]
\[ B = A + 7 \]
\[ C = A + 12 \]

Refer to dimension table on cover page
CMM 220 female

**STRAIGHT PCB**

Part numbering:

Type: Y-YL

\[ 222 \text{ nn } 8 \text{ nn} \]

See Fixing on page 45-46

“Max” without fixing

nn = number of LF contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>YL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Calculation:

\[ \begin{align*}
A &= nn - 2 \\
B &= A + 7 \\
C &= A + 12
\end{align*} \]

Refer to dimension table on cover page

---

**90° PCB**

Part numbering:

Type: V-VL

\[ 222 \text{ nn } 8 \text{ nn} \]

See Fixing on page 45

“Max” without fixing

nn = number of LF contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Calculation:

\[ \begin{align*}
A &= nn - 2 \\
B &= A + 7 \\
C &= A + 12
\end{align*} \]

Refer to dimension table on cover page
**CMM 220 female**

### STRAIGHT SMT

**Part numbering:**

- **Type:** T-TL

![Image of STRAIGHT SMT](image)

**Part numbering:**

- **nn min = 04**
- **nn max = 60**

**Optional:** Packaging in reel available upon request

**Calculation:**

\[
A = nn - 2 \\
B = A + 7 \\
C = A + 12
\]

*Refer to dimension table on cover page*

### 90° SMT

**Part numbering:**

- **nn min = 04**
- **nn max = 60**

![Image of 90° SMT](image)

**Part numbering:**

- **nn min = 04**
- **nn max = 60**

**Optional:** Packaging in reel available upon request

**Calculation:**

\[
A = nn - 2 \\
B = A + 7 \\
C = A + 12
\]

*Refer to dimension table on cover page*
CMM 220 female

STRAIGHT PRESS FIT

Part numbering:

```
222PF nn
```

See Fixing on page 45-46
“Mxx” without fixing

nn = number of LF contacts

Calculation:

- A = nn - 2
- B = A + 7
- C = A + 12

Refer to dimension table on cover page

CRIMP

Part numbering:

```
222 nn
```

See Fixing on page 45-46
“Mxx” without fixing

nn = number of LF contacts

Calculation:

- A = nn - 2
- B = A + 7
- C = A + 12

Refer to dimension table on cover page
### CMM 220 mixed-layout

**CODE WITH LOW FREQUENCY CONTACTS ONLY**

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Termination Style</th>
<th>Number of LF contacts</th>
<th>Fixing Hardware</th>
<th>Number of HF/HP contacts pin 1 side (LF contact number 1)</th>
<th>Number of HF/HP contacts opposite to LF contact number 1</th>
<th>HF/HP Contact Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>1 male</td>
<td>Refer to table on page 7</td>
<td>04 to 60</td>
<td></td>
<td>Depends upon the number of LF contacts</td>
<td>If use with shifted central key, please refer to page 42</td>
<td>HP/HP 30</td>
</tr>
<tr>
<td></td>
<td>2 female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>please refer to pages 75 to 94</td>
</tr>
</tbody>
</table>

**ADDITIONAL CODE FOR MIXED-LAYOUT CONNECTOR (HF/HP)**

- HF contacts are supplied - not filled under P/N 35-2220-SS.
- Type of HF/HP contact: please refer to pages 8-9.
CMM 220
Male mixed-layout

STRAIGHT PCB

Part numbering:
- Number of contacts LF pin 1 side
- Number of contacts opposite side LF pin 1

Pattern for special contact:
- Type: YL
- See Fixing on page 43, 44
- "Fx" without fixing

HF or HP P/N refer to page 75

nn = number of LF contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
<th>YL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>4.5</td>
</tr>
</tbody>
</table>

A = (zz x 4) - 4
B = A + 9
C = B + 5

Refer to dimension table on cover page

STRAIGHT PCB FOR HP/HF CONTACTS ONLY

Part numbering:
- Number of HF or HP contacts
- See Fixing on page 43, 44
- "Fx" without fixing

HF or HP P/N refer to page 75

Pattern for special contact:
- Type L
- Y, YL 3, 4, 5

nn = number of LF contacts

A = nn - 2
B = (yy + zz) x 4 + A + 7
Bmax = 65 mm
C = B + 5

Refer to dimension table on cover page

A = (zz x 4) - 4
B = A + 9
C = B + 5

Special contacts min.: 02
max.: 15
**CMM 220**

**Male mixed-layout**

### 90° PCB

#### Part numbering:

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

#### Pattern for special contact:

- Pattern for special contact:
  - **A** = \((zz \times 4) - 4\)
  - **B** = **A** + 9
  - **C** = **B** + 5

Refer to sizes information table on cover page

### 90° PCB FOR HP/HF CONTACTS ONLY

#### Part numbering:

- **A** = \(nn - 2\)
- **B** = \(((yy+zz)\times4) + A + 7\)
- **Bmax.** = 65 mm
- **C** = **B** + 5

**Special contacts min.:** 02  
**max.:** 15

See Fixing on page 43, 44

- "Fxx" without fixing
CMM 220
Male mixed-layout

CRIMP

Part numbering:
- Number of contacts LF pin 1 side
- Number of contacts opposite side LF pin 1

A = (zz x 4) - 4
B = A + 9
C = B + 5

Refer to dimension table on cover page

CRIMP FOR HP/HF CONTACTS ONLY

Part numbering:
- Number of HF or HP contacts

A = (zz x 4) - 4
B = (yy+zz)x4 + A + 7
Bmax. = 65 mm
C = B + 5

Refer to dimension table on cover page

---

Part numbering:
- Number of LF contacts

2

nn = number of LF contacts

Type : S-C
See Fixing on page 43, 44 "Fxx" without fixing
HF or HP P/N refer to page 75

<table>
<thead>
<tr>
<th>Type</th>
<th>Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>24-28</td>
</tr>
<tr>
<td>C</td>
<td>22</td>
</tr>
</tbody>
</table>

CRIMP FOR HP/HF CONTACTS ONLY

Part numbering:
- Number of HF or HP contacts

See Fixing on page 43, 44 "Fxx" without fixing
HF or HP P/N refer to page 75

A = nn - 2
B = {(yy+zz)x4} + A + 7
Bmax. = 65 mm
C = B + 5

Refer to dimension table on cover page

Special contacts min.: 02
max.: 15
**CMM 220**

**Female mixed-layout**

**STRAIGHT PCB**

**Part numbering:**
- **Number of contacts**:
  - LF pin 1 side
  - Opposite side LF pin 1

<table>
<thead>
<tr>
<th>nn</th>
<th>M</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>M</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>L</td>
</tr>
</tbody>
</table>

**Pattern for special contact:**

- **Type** : Y, YL
- **See Fixing on page 45**
- **“Max” without fixing**
- **HF or HP P/N refer to page 75**

**STRAIGHT PCB FOR HP/HF CONTACTS ONLY**

**Part numbering:**
- **Number of HF or HP contacts**

**Pattern for special contact:**

- **HF 30 - 3300 - xx PCB lay-out**
- **HF 30 - 4300 - xx PCB lay-out**

**Special contacts min. : 02**
**max. : 15**
**CMM 220**

Female mixed-layout

### 90° PCB

**Part numbering:**
- Number of contacts LF pin 1 side
- Number of contacts opposite side LF pin 1

\[
\begin{align*}
A &= (zz \times 4) - 4 \\
B &= A + 9 \\
C &= B + 5
\end{align*}
\]

Refer to dimension table on cover page

**Pattern for special contact:**

- Type : V-L

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**90° PCB FOR HP/HF CONTACTS ONLY**

**Part numbering:**
- Number of HF or HP contacts

\[
\begin{align*}
A &= (zz \times 4) - 4 \\
B &= A + 9 \\
C &= B + 5
\end{align*}
\]

Special contacts min.: 02
max.: 15

**Pattern for special contact:**

- HF 30-2400-xx PCB lay-out
- HP 30-4400-xx PCB lay-out
CMM 220
Female mixed-layout

**CRIMP**

Part numbering:

- **LF pin 1 side**
  - Number of contacts
  - Type: 5-C
  - See Fixing on page 45
  - "Max" without fixing
- **Opposite side LF pin 1**
  - Number of contacts
  - \( nn = \) number of LF contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>24-28</td>
</tr>
<tr>
<td>C</td>
<td>22</td>
</tr>
</tbody>
</table>

Ref: C0664-P
Female crimp contact "S" for AWG 22 table

Ref: C1460-P
Female crimp contact "S" for AWG 20-28

**CRIMP FOR HP/HF CONTACTS ONLY**

Part numbering:

- **Number of HP or HP contacts**
- See Fixing on page 45
  - "Max" without fixing
- **HF or HP P/N**
  - Refer to page 75

\[
\begin{align*}
A &= nn - 2 \\
B &= (yy + zz) \times 4 + A + 7 \\
B_{\text{max}} &= 65 \text{ mm} \\
C &= B + 5
\end{align*}
\]

- **Special contacts**
  - Min.: 02
  - Max.: 15

Refer to dimension table on cover page
Part numbering with shifted polarization key position

**PART NUMBERING**

- **Number of LF contacts**
  - \( n_n \) min. = 06

- **Polarized key direction shifted from the housing center**
  - \( k = 1 \) direction of contact LF number 1
  - \( k = 2 \) opposite direction to LF contact number 1

- **Digits to be added**

**EXPLANATION**

Shown looking onto mating face (Example with Male housing)

**CMM220 with LF contacts only with shifted polarized key.**

Example: 2 2 2 2 2 2 0 1 0 1

**CMM220 with LF contacts and Special contacts with shifted polarized key.**

Example: 2 2 0 0 0 0 0 0 0 0 0 0

**CMM220 with Special contacts only with shifted polarized key.**

Example: 2 2 0 0 0 0 0 0 0 0 0 0

**EXAMPLES**

**Connectors Male & Female CMM series 220 LF and special contacts mixed**

Male: 2 2 1 0 0 0 0 0 0 0 0 0 0 0
Female: 2 2 1 0 0 0 0 0 0 0 0 0 0 0

**Connectors Male & Female CMM series 220 special contacts only**

Male: 2 2 1 0 0 0 0 0 0 0 0 0 0 0
Female: 2 2 1 0 0 0 0 0 0 0 0 0 0 0
## FIXING HARDWARE FOR CMM 220 MALE

### REFERENCE

**F27**
- **Assembly on PCB**
- **Overall dimensions**
- **Recommendation**

**F34**
- **Assembly on PCB**
- **Overall dimensions**
- **Recommendation**

**F28**
- **Assembly on PCB**
- **Overall dimensions**
- **Recommendation**

Please refer to the CMM Catalogue Guidelines for any other fixing not listed here.
**Fixing for CMM 220 male**

## Fixing Hardware for CMM 220 Male

<table>
<thead>
<tr>
<th>Reference</th>
<th>Assembly on PCB</th>
<th>Overall Dimensions</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>F21</td>
<td>Straight on PCB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F22</td>
<td>Straight on PCB</td>
<td>0.8 min / 2 max</td>
<td></td>
</tr>
<tr>
<td>F22H</td>
<td>Straight on PCB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F24</td>
<td>Straight on PCB</td>
<td>1.5 min / 4 max</td>
<td></td>
</tr>
<tr>
<td>F24H</td>
<td>Straight on PCB</td>
<td>6 max</td>
<td></td>
</tr>
<tr>
<td>F24L</td>
<td>Straight on PCB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F22xx</td>
<td>Straight on PCB</td>
<td>with floating option</td>
<td></td>
</tr>
<tr>
<td>F25</td>
<td>90° on PCB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F26</td>
<td>90° on PCB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F30</td>
<td>90° on PCB</td>
<td>2.5 max.</td>
<td></td>
</tr>
<tr>
<td>F30H</td>
<td>90° on PCB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F31</td>
<td>90° on PCB</td>
<td>4.5 max.</td>
<td></td>
</tr>
<tr>
<td>F31H</td>
<td>90° on PCB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please refer to the CMM Catalogue Guidelines for any other fixing not listed here.
Fixing for CMM 220 female

**Fixing Hardware for CMM 220 Female**

<table>
<thead>
<tr>
<th>Hexagonal Nut</th>
<th>Standard Nut</th>
<th>&quot;W&quot; Code for Additional Washer</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Hexagonal Nut" /></td>
<td><img src="image2.png" alt="Standard Nut" /></td>
<td><img src="image3.png" alt="W Code" /></td>
</tr>
</tbody>
</table>

**Reference**

<table>
<thead>
<tr>
<th>M16</th>
<th>M11</th>
</tr>
</thead>
</table>

**Assembly on PCB**

- **M16**: Straight on PCB
- **M11**: Straight on PCB

**Overall Dimensions**

<table>
<thead>
<tr>
<th>M16/M11</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4.png" alt="Overall Dimensions" /></td>
</tr>
</tbody>
</table>

**Recommendation**

- **M16/M11**: CMM Female: Y-LS-TS-C-E (D: straight)

<table>
<thead>
<tr>
<th>M12</th>
</tr>
</thead>
</table>

**Assembly on PCB 0.8 min / 2 max**

- **M12**: Straight on PCB

**Overall Dimensions**

<table>
<thead>
<tr>
<th>M12</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image5.png" alt="Overall Dimensions" /></td>
</tr>
</tbody>
</table>

**Recommendation**

- **M12**: CMM Female: Y-TS-C (D-E: straight)
- **M12H**: CMM Female: Y-T (D: straight)

<table>
<thead>
<tr>
<th>M12L</th>
</tr>
</thead>
</table>

**Assembly on PCB 1.5 min / 4 max**

- **M12L**: Straight on PCB

**Overall Dimensions**

<table>
<thead>
<tr>
<th>M12L</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image6.png" alt="Overall Dimensions" /></td>
</tr>
</tbody>
</table>

**Recommendation**

- **M12L**: CMM Female: Y-TS-C (D-E: straight)
- **M12LH**: CMM Female: YL-T (D: straight)

<table>
<thead>
<tr>
<th>M1xx</th>
</tr>
</thead>
</table>

**Assembly on PCB with floating option**

- **M1xx**: Straight on PCB with floating option

**Example**: for 3 mm PCB, the reference is M132

**Overall Dimensions**

<table>
<thead>
<tr>
<th>M1xx</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image7.png" alt="Overall Dimensions" /></td>
</tr>
</tbody>
</table>

**Recommendation**

- **M1xx**: CMM Female: S-C (E: straight)

<table>
<thead>
<tr>
<th>M21</th>
</tr>
</thead>
</table>

**Assembly for PCB 1.6 mm (L = 4 mm)**

- **M21**: 90° on PCB

**Overall Dimensions**

<table>
<thead>
<tr>
<th>M21</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image8.png" alt="Overall Dimensions" /></td>
</tr>
</tbody>
</table>

**Recommendation**

- **M21**: CMM Female: VR-S-C-E (D: 90°)
- **M21L**: CMM Female: YL-R-S-C-E (D: 90°)

<table>
<thead>
<tr>
<th>M18</th>
</tr>
</thead>
</table>

**Cover Option**

- **M18**: CMM female: S-C (E: straight)

**Please refer to the CMM Catalogue Guidelines for any other fixing not listed here.**
## Other fixing hardware for CMM 220

### Fixing Hardware for CMM 220 Female/Male

<table>
<thead>
<tr>
<th>Reference</th>
<th>Assembly on PCB</th>
<th>Overall Dimensions</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>M46</td>
<td>Straight on PCB 1,5 min. / 2,5 max.</td>
<td>![M46 Diagram]</td>
<td>M46 : CMM female : Y-TS-C (D-E : straight)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M46H : CMM female : Y-T (D : straight)</td>
</tr>
<tr>
<td>M47</td>
<td>Straight on PCB 1,5 min. / 4 max.</td>
<td>![M47 Diagram]</td>
<td>M47 : CMM female : YL-TS-C (D-E : straight)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M47H : CMM female : YL-T (D : straight)</td>
</tr>
<tr>
<td>M48M</td>
<td>for PCB 1,6 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(L = 3 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M48L</td>
<td>for PCB 3,2 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(L = 5 mm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M49H : CMM female : Y-T (D : straight)</td>
</tr>
<tr>
<td>F60</td>
<td>Straight on PCB</td>
<td>![F60 Diagram]</td>
<td>F60 : CMM male : Y-YL-TS-C-E (D : straight)</td>
</tr>
<tr>
<td>F61</td>
<td>Straight on PCB</td>
<td>![F61 Diagram]</td>
<td>F61 : CMM male : Y-YL-TS-C-E (D : straight)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F62H : CMM male : Y-T (D : straight)</td>
</tr>
<tr>
<td>F63</td>
<td>90° on PCB</td>
<td>![F63 Diagram]</td>
<td>F63 : CMM male : V-R-S-C-E (D : 90°)</td>
</tr>
<tr>
<td></td>
<td>for PCB 1,6 mm</td>
<td></td>
<td>F63L : CMM male : VL-R-S-C-E (D : 90°)</td>
</tr>
<tr>
<td></td>
<td>for PCB 3,2 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CMM 320 with LF contacts

**PART NUMBERING REMINDER**

<table>
<thead>
<tr>
<th>Code with Low Frequency contacts only</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Series</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>32</td>
</tr>
<tr>
<td>2 female</td>
</tr>
</tbody>
</table>

**PART NUMBERING REMINDER**

**3 rows**

**321YL033F44**
- LF contact type "YL" (x33)
- Female connector

**322V042H08**
- LF contact type "V" (x42)
- Male connector

**PART NUMBERING REMINDER**

**PART NUMBERING REMINDER**
CMM 320
Configuration

CONNECTOR SPACING

CONTACTS POSITIONS
CMM 320 Male

**STRAIGHT PCB FOR LF CONTACTS ONLY**

Part numbering:

Type: Y-YL

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>YL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

See Fixing on pages 69 to 74

"Fix" without fixing

| nnn  | number of LF contacts |

A = \[-2\]

B = \[A + 9\]

C = \[A + 15\]

Refer to dimension table on cover page

**90° PCB FOR LF CONTACTS ONLY**

Part numbering:

Type: V-VL

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

See Fixing on pages 69 to 74

"Fix" without fixing

| nnn  | number of LF contacts |

A = \[\frac{nnn \times 2}{3}\]

B = \[A + 9\]

C = \[A + 15\]

Refer to dimension table on cover page

nnn min = 006

nnn max = 120
CMM 320 Male

**90° SMT FOR LF CONTACTS ONLY**

Part numbering:

\[ \text{Type: S-C} \]

See Fixing on pages 69 to 74

"Fxx" without fixing

nnn = number of LF contacts

Optional: Packaging in reel available upon request

\[ \begin{align*}
A &= \left[ \frac{\text{nnn} \times 2}{3} \right] - 2 \\
B &= A + 9 \\
C &= A + 15 \\
\text{nnn min} &= 006 \\
\text{nnn max} &= 120
\end{align*} \]

Refer to dimension table on cover page

**CRIMP FOR LF CONTACTS ONLY**

Part numbering:

\[ \text{Type: S-C} \]

See Fixing on pages 69 to 74

"Fxx" without fixing

nnn = number of LF contacts

\[ \begin{align*}
\text{Type} & \quad \text{Gauge} \\
S & \quad 24-28 \\
C & \quad 22
\end{align*} \]

nnn min = 006

nnn max = 120

\[ \begin{align*}
A &= \left[ \frac{\text{nnn} \times 2}{3} \right] - 2 \\
B &= A + 9 \\
C &= A + 15
\end{align*} \]

Refer to dimension table on cover page
CMM 320 Female

STRAIGHT PCB FOR LF CONTACTS ONLY

Part numbering:

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>YL</td>
<td>4,5</td>
</tr>
</tbody>
</table>

See Fixing on pages 69 to 74
"Mxx" without fixing

nnn = number of LF contacts

Part numbering:

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4,5</td>
</tr>
</tbody>
</table>

See Fixing on pages 69 to 74
"Mxx" without fixing

nnn = number of LF contacts

90° PCB FOR LF CONTACTS ONLY

nnn min = 006
nnn max = 120

A = \left\lfloor \frac{nnn \times 2}{3} \right\rfloor \times 2

B = A + 9

C = A + 15

Refer to dimension table on cover page
**CMM 320 Female**

**CRIMP FOR LF CONTACTS ONLY**

Part numbering:

- **Type**: S-C
- **nnn** = number of LF contacts

See Fixing on pages 69 to 74

“Max” without fixing

**Part numbering:**

<table>
<thead>
<tr>
<th>Type</th>
<th>Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>24-28</td>
</tr>
<tr>
<td>C</td>
<td>22</td>
</tr>
</tbody>
</table>

**Type Gauge**

- **S**: 24-28
- **C**: 22

**nnn min = 006**

**nnn max = 120**

- **A** = \( \frac{nnn \times 2}{3} \)
- **B** = **A** + 9
- **C** = **A** + 15

Refer to dimension table on cover page
CMM 320 with mixed-layout

PART NUMBERING REMINDER

<table>
<thead>
<tr>
<th>Code with Low Frequency contacts only</th>
<th>Additional code for mixed-layout connector (HF/HP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series</td>
<td>Gender</td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>32</td>
<td>1 male</td>
</tr>
<tr>
<td>2 female</td>
<td>Refer to pages 69 to 74</td>
</tr>
</tbody>
</table>
**CMM 320**

**Male mixed-layout**

---

**STRAIGHT PCB**

Part numbering:
- **Number of contacts**
  - LF pin 1 side
  - Opposite side LF pin
- **Type**: Y, YL

Pattern for special contact:
- **HF 30-1200-xx PCB lay-out**
- **HF 30-3500-xx PCB lay-out**

---

**STRAIGHT PCB FOR HP/HF CONTACTS ONLY**

Part numbering:
- **Number of HF or HP contacts**

Pattern for special contact:
- **HF 30-1200-xx PCB lay-out**
- **HF 30-3500-xx PCB lay-out**

---

**Part numbering**:
- **Type**: L, Y, YL

**Pattern for special contact**:
- **Number of contacts**
  - LF pin 1 side
  - Opposite side LF pin
  - HF or HP P/N

**Type**: Y -YL

**See Fixing on pages 69 to 74**

"Fxx" without fixing

**HF or HP P/N**

Refer to page 75
**Pattern for special contact:**

For **90° PCB**:

\[ A = (zz \times 4) - 4 \]

\[ B = A + 11 \]

\[ C = A + 17 \]

For **90° PCB FOR HP/HF CONTACTS ONLY**:

\[ A = \left( (yy+zz)x4+n_{LF}\right)x2 \]

\[ B = A + 9 \]

\[ B_{max} = 87 \]

\[ C = A + 15 \]

**Part numbering:**

**90° PCB**:

- **Type:** L
- **V:** 3
- **VL:** 4, 5

**90° PCB FOR HP/HF CONTACTS ONLY**:

- **Type:** V-VL
- **See Fixing on pages 69 to 74 “Fix” without fixing**
- **HF or HP P/N refer to page 75**

**Special contacts mounted**
CRIMP

Part numbering:

Number of contacts
LF pin 1 side
Number of contacts
opposite side LF pin 1

Part numbering:

Number of HF or HP contacts

CRIMP FOR HP/HF CONTACTS ONLY

Part numbering:

Number of HF or HP contacts

See Fixing on pages 69 to 74 “Fix” without fixing
HF or HP P/N refer to page 75

Type Gauge
S 24-28
C 22

Special contacts min.: 02
max.: 20

A = (zz × 4) - 4
B = A + 11
C = A + 17
**CMM 320**

**Female mixed-layout**

**STRAIGHT PCB**

**Part numbering:**

- **Number of contacts LF pin 1 side**
- **Number of contacts opposite side LF pin 1**

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
<th>YL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**Pattern for special contact:**

- **A = (zz x 4) - 4**
- **B = A + 11**
- **C = A + 17**

**STRAIGHT PCB FOR HP/HF CONTACTS ONLY**

**Part numbering:**

- **Number of HF or HP contacts**

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Pattern for special contact:**

- **A = ((yy+zz)x4+nnn)x2**
- **B = A + 9**
- **B max. = 87**
- **C = A + 15**
- **Special contacts min.: 02**
- **max.: 20**

See Fixing on pages 69 to 74

"Mxx" without fixing

HF or HP P/N refer to page 75

LF pin 1 side

HF or HP P/N refer to page 75

Special contacts min.: 02

max.: 20
**CMM 320**

**Female mixed-layout**

### 90° PCB

**Part numbering:**

- Number of contacts
  - LF pin 1 side
  - Number of contacts opposite side LF pin

**Pattern for special contact:**

\[
A = (\text{zz} \times 4) - 4
\]

\[
B = A + 11
\]

\[
C = A + 17
\]

**Type**: V, VL

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

See Fixing on pages 69 to 74. "Max” without fixing. Refer to page 75.

**Part numbering:**

- Type: V, VL
- See Fixing on pages 69 to 74
- "Max” without fixing
- Refer to page 75

**Pattern for special contact:**

- HF 30-2400-xx PCB lay-out
- HF 30-4400-xx PCB lay-out

### 90° PCB FOR HP/HF CONTACTS ONLY

**Part numbering:**

- Number of HF or HP contacts
- See Fixing on pages 69 to 74
- "Max” without fixing
- Refer to page 75

**Pattern for special contact:**

- HF 30-2400-xx PCB lay-out
- HF 30-4400-xx PCB lay-out

**Special contacts:**

- Min.: 02
- Max.: 20

---

**See Fixing on pages 69 to 74**

**“Mxx” without fixing**

**HF or HP P/N refer to page 75**
\[ A = (zz \times 4) - 4 \]
\[ B = A + 11 \]
\[ C = A + 17 \]

Part numbering:
- **Number of contacts LF pin 1 side**: \( n \)
- **Number of contacts opposite side LF pin 1**: \( m \)
- **Type**: S-C
- **See Fixing on pages 69 to 74” “Max” without fixing
- **HF or HP P/N refer to page 75
- **nnn = number of LF contacts**

<table>
<thead>
<tr>
<th>Type</th>
<th>Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>24-28</td>
</tr>
<tr>
<td>C</td>
<td>22</td>
</tr>
</tbody>
</table>

**CRIMP**

**CRIMP FOR HP/HF CONTACTS ONLY**

Part numbering:
- **Number of HF or HP contacts**: \( n \)
- **See Fixing on pages 69 to 74” “Max” without fixing
- **HF or HP P/N refer to page 75

\[ A = (zz \times 4) - 4 \]
\[ B = A + 11 \]
\[ C = A + 17 \]

Special contacts min.: 02
max.: 20
### Code with Low Frequency contacts only

<table>
<thead>
<tr>
<th>Series</th>
<th>Gender</th>
<th>Termination Style</th>
<th>Number of LF contacts</th>
<th>Fixing Hardware</th>
<th>Number of HF/HP contacts pin 1 side (LF contact number 1)</th>
<th>Number of HF/HP contacts opposite to LF contact number 1</th>
<th>HF/HP Contact Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>1 male</td>
<td>Refer to table on page 7</td>
<td>Refer to the series 320</td>
<td>Refer to pages 69 to 74</td>
<td>Depends upon the number of LF contacts</td>
<td>HF / HP: 64 contacts max.</td>
<td>HP/HP 22 please refer to pages 95 to 102</td>
</tr>
<tr>
<td>34</td>
<td>2 female</td>
<td>Refer to table on page 7</td>
<td>Refer to the series 320</td>
<td>Refer to pages 69 to 74</td>
<td>Depends upon the number of LF contacts</td>
<td>HF / HP: 64 contacts max.</td>
<td>HP/HP 22 please refer to pages 95 to 102</td>
</tr>
</tbody>
</table>

### Additional code for mixed-layout connector (HF/HP)

- **HF/HP Contact Type**
- **y y**
- **z z**

- **PART NUMBERING REMINDER**
  - Additional code for mixed-layout connector (HF/HP)
  - Number of HF/HP contacts pin 1 side (LF contact number 1)
  - Number of HF/HP contacts opposite to LF contact number 1
  - HF/HP Contact Type

- **HF contacts are supplied - not fitted - under P/N 22-4310**
- "E" stated in P/N for connectors on cable with only special contacts.
CMM 340
Configuration

CONNECTOR SPACING

CONTACTS POSITIONS
CMM 340
Male mixed-layout

**STRAIGHT PCB**

Part numbering:

<table>
<thead>
<tr>
<th>Type</th>
<th>Y</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>YL</td>
<td>4,5</td>
<td></td>
</tr>
</tbody>
</table>

Pattern for special contact:

\[
A = \left( \frac{(n_n x 2)}{3} \right)^2, \text{ if } \text{yy and zz} \neq 0:
\]

\[
B = \left[ \frac{(\text{yy})+(\text{zz})}{2} \right] x 2,5+14,5+A, \text{ if } \text{yy or zz} = 0:
\]

B max. = 87

C = B + 6

**STRAIGHT PCB FOR HP/HF CONTACTS ONLY**

Part numbering:

<table>
<thead>
<tr>
<th>Number of HF or HP contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>04 to 64</td>
</tr>
</tbody>
</table>

Pattern for special contact:

\[
A = \left( \frac{(xx x 2,5)}{2} \right)^2, \text{ Special contacts min.: 04 max.: 64}
\]

B = A + 10
C = B + 6

Refer to dimension table on cover page
CMM 340
Male mixed-layout

90° PCB

Part numbering:

- Number of contacts, LF pin 1 side
- Number of contacts, opposite side LF pin 1
- Type: V, VL

Pattern for special contact:

<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4.5</td>
</tr>
</tbody>
</table>

90° PCB FOR HP/HF CONTACTS ONLY

Part numbering:

- Number of HF or HP contacts

Pattern for special contact:

Special contacts min.: 04
max.: 64
CMM 340
Male mixed-layout

CRIMP

Part numbering:

- Number of contacts LF pin 1 side
- Number of contacts opposite side LF pin 1

3 = 3
4 = 4
5 = 5
6 = 6
7 = 7
8 = 8
9 = 9

Type: S-C

See Fixing on pages 69 to 74 “Fxx” without fixing

HF or HP P/N refer to page 95

<table>
<thead>
<tr>
<th>Type</th>
<th>Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>24-28</td>
</tr>
<tr>
<td>C</td>
<td>22</td>
</tr>
</tbody>
</table>

CRIMP FOR HP/HF CONTACTS ONLY

Part numbering:

- Number of HF or HP contacts

E = 0
F = 0
G = 0
H = 0
I = 0
J = 0
K = 0
L = 0
M = 0
N = 0
O = 0
P = 0
Q = 0
R = 0
S = 0
T = 0
U = 0
V = 0
W = 0
X = 0
Y = 0
Z = 0

Type: S-C

See Fixing on pages 69 to 74 “Fxx” without fixing

3 = 3
4 = 4
1 = 1
0 = 0

<table>
<thead>
<tr>
<th>Type</th>
<th>Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>24-28</td>
</tr>
<tr>
<td>C</td>
<td>22</td>
</tr>
</tbody>
</table>

A = \( \left( \frac{\text{nnn} \times 2.5}{2} \right) \) - 2.5
B = A + 10
C = B + 6

Special contacts min.: 04
max.: 64

Refer to dimension table on cover page
STRAIGHT PCB

Pattern for special contact:

\[ A = \begin{cases} (\text{max}2) \div 3 & \text{if } yy \text{ and } zz = 0 \\ \frac{(yy+zz)}{2} \times 2.5 + 14.5 + A & \text{if } yy \text{ or } zz = 0 \end{cases} \]

\[ B = \begin{cases} (\text{max}2) \div 3 & \text{if } yy \text{ and } zz = 0 \\ \frac{(yy+zz)}{2} \times 2.5 + 11.75 + A & \text{if } yy \text{ or } zz = 0 \end{cases} \]

Number of LF contacts:

- Type: Y
- L
- YL

Pattern for special contact:

\[ C = B + 6 \]

STRAIGHT PCB FOR HP/HF CONTACTS ONLY

Pattern for special contact:

\[ A = \left( \frac{zz \times 2.5}{2} \right) \times 2.5 \]

\[ B = A + 10 \]

Number of HF or HP contacts:

\[ C = B + 6 \]

Refer to dimension table on cover page
**CMM 340**

**Female mixed-layout**

### 90° PCB

**Part numbering:**
- **Number of contacts**
  - LF pin 1 side
  - Opposite side LF pin 1

```
<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4.5</td>
</tr>
</tbody>
</table>
```

**Pattern for special contact:**
- **HF 22-4400-xx PCB Lay-out**
- **HP 22-4400-xx PCB Lay-out**

### 90° PCB FOR HP/HF CONTACTS ONLY

**Part numbering:**
- **Number of HF or HP contacts**

```
<table>
<thead>
<tr>
<th>Type</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>3</td>
</tr>
<tr>
<td>VL</td>
<td>4.5</td>
</tr>
</tbody>
</table>
```

**Pattern for special contact:**
- **HF 22-4400-xx PCB Lay-out**
- **HP 22-4400-xx PCB Lay-out**

### Calculations:

#### 90° PCB

- **A =** \(-2,5\) if \(yy\) and \(zz\) ≠ 0
- **B =** \(-2 \times 2,5 + 14,5 + A\) if \(yy\) or \(zz\) = 0
- **B max. = 87**
- **C =** \(B + 6\)

#### 90° PCB FOR HP/HF CONTACTS ONLY

- **A =** \(\frac{1}{2} \times (zzx2.5)\) - 2.5
- **B =** \(A + 10\)
- **C =** \(B + 6\)

Special contacts min.: 04 max.: 64

Refer to dimension table on cover page.
CMM 340
Female mixed-layout

CRIMP

Part numbering:

Number of contacts
LF pin 1 side
Number of contacts
opposite side LF pin 1

A = -2,5
B = A + 10
C = B + 6

See fixing on pages 69 to 74
"Max" without fixing
HF or HP P/N refer to page 95

n
n
n
n
n
nnn = number of LF contacts

<table>
<thead>
<tr>
<th>Type</th>
<th>Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>24-28</td>
</tr>
<tr>
<td>C</td>
<td>22</td>
</tr>
</tbody>
</table>

Ref: C10469-L Female crimp contact "C" for AWG 22-26 cable

CRIMP FOR HP/HF CONTACTS ONLY

Part numbering:

Number of HF or HP contacts

A = \left(\frac{\text{max}2,5}{2}\right) - 2,5
B = A + 10
C = B + 6

Special contacts min.: 04
max.: 64

See fixing on pages 69 to 74
"Max" without fixing
HF or HP P/N refer to page 95

Ref to dimension table on cover page
Fixing hardware for CMM SERIES 320/340

Letter code: A to F
Number code: 1 to 6

Male: 10 to 49
Female: 50 to 99

Example: P10A1 mounting with P50A1

Male type P10xx
Female type P50xx

Male housing
Female housing

Contacts No.1

Letters contact No.1 side
## Fixing hardware for CMM 320/340

### RACK INTERCONNECTION

#### Male Connectors CMM Series 320 & 340 Rack

<table>
<thead>
<tr>
<th>Type of contact in connector</th>
<th>PCB Contacts</th>
<th>Contacts on cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of PCB mount</td>
<td>PCB thickness (mm)</td>
<td>Straight</td>
</tr>
<tr>
<td>Fixing</td>
<td>M35</td>
<td>M35H</td>
</tr>
<tr>
<td>0.8 min. 2 max.</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>1.5 min. 4 max.</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>0.8 min. 2 max.</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>1.5 min. 4 max.</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>Floating</td>
<td>OK</td>
<td>OK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Female Connectors Series 320 &amp; 340 Rack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts on cable</td>
</tr>
<tr>
<td>Fixing</td>
</tr>
<tr>
<td>0.8 min. 2 max.</td>
</tr>
<tr>
<td>1.5 min. 4 max.</td>
</tr>
<tr>
<td>4 max.</td>
</tr>
<tr>
<td>Floating</td>
</tr>
</tbody>
</table>

### Recommended Torque: 0.2 N/m

#### Assembly on PCB

- **F40**: Straight on PCB
- **F48**: 90° on PCB 4 max.
- **F58**: Straight on PCB 0.8 min / 2 max
- **F58H**: Straight on PCB 1.5 min / 4 max
- **F59**: CMM male : YL (D : straight)
- **F59H**: CMM male : YL (D : straight)

### Overall Dimensions

- **F40**: CMM female : Y-YL-S-C-E (D : straight)
- **F48**: CMM female : V-VL-S-C-E (D : 90°)
- **F58**: CMM male : Y (D : straight)
- **F58H**: CMM male : Y (D : straight)
- **F59**: CMM male : YL (D : straight)
- **F59H**: CMM male : YL (D : straight)

Make it a habit! Use easy & automatic configurators for CMM micro-connectors single part and mating-half construction on [www.nicomatic.com](http://www.nicomatic.com).
## Fixing hardware for CMM 320/340

### Rack Interconnection

<table>
<thead>
<tr>
<th>Reference</th>
<th>Assembly on PCB</th>
<th>Overall Dimensions</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>M35</td>
<td>Straight on PCB 0,8 min / 2 max</td>
<td><img src="image1.png" alt="Image" /></td>
<td>M35 : CMM female : Y-S-C (D-E : straight) CMM male : S-C (E : straight)</td>
</tr>
<tr>
<td>M35H</td>
<td>Straight on PCB 1,5 min / 4 max</td>
<td><img src="image2.png" alt="Image" /></td>
<td>M39 : CMM female : YL-S-C (D-E : straight) CMM male : S-C (E : straight)</td>
</tr>
<tr>
<td>M39</td>
<td>Straight on PCB 0,8 min / 2 max</td>
<td><img src="image3.png" alt="Image" /></td>
<td>M39H : CMM female : YL (D : straight)</td>
</tr>
<tr>
<td>M39H</td>
<td>Straight on PCB 1,5 min / 4 max</td>
<td><img src="image4.png" alt="Image" /></td>
<td>M38 : CMM female : Y (D : straight)</td>
</tr>
<tr>
<td>M38</td>
<td>Straight on PCB 0,8 min / 2 max</td>
<td><img src="image5.png" alt="Image" /></td>
<td>M38H : CMM female : Y (D : straight)</td>
</tr>
<tr>
<td>M36</td>
<td>Straight on PCB 1,5 min / 4 max</td>
<td><img src="image6.png" alt="Image" /></td>
<td>M36 : CMM male : YL (D : straight)</td>
</tr>
<tr>
<td>M36H</td>
<td>Straight on PCB 1,5 min / 4 max</td>
<td><img src="image7.png" alt="Image" /></td>
<td>M36H : CMM male : YL (D : straight)</td>
</tr>
<tr>
<td>M3xx</td>
<td>Straight on PCB with floating option</td>
<td><img src="image8.png" alt="Image" /></td>
<td>M3xx : CMM female : S-C (E : straight) CMM male : S-C (E : straight)</td>
</tr>
<tr>
<td>H11</td>
<td>90° on PCB 4 max.</td>
<td><img src="image9.png" alt="Image" /></td>
<td>H11 : CMM female : V-VL-S-C-E (D : 90°) CMM male : V-VL-R-S-C-E (D : 90°)</td>
</tr>
</tbody>
</table>

**Hexagonal Nut**

**Standard Nut**

---

**Reference Assembly on PCB**

- **M35**: Straight on PCB 0,8 min / 2 max
- **M35H**: Straight on PCB 1,5 min / 4 max
- **M39**: Straight on PCB 0,8 min / 2 max
- **M39H**: Straight on PCB 1,5 min / 4 max
- **M38**: Straight on PCB 0,8 min / 2 max
- **M38H**: Straight on PCB 1,5 min / 4 max
- **M36**: Straight on PCB 1,5 min / 4 max
- **M36H**: Straight on PCB 1,5 min / 4 max
- **M3xx**: Straight on PCB with floating option
- **H11**: 90° on PCB 4 max.

**Overall Dimensions**

- M35: CMM female : Y-S-C (D-E : straight) CMM male : S-C (E : straight)
- M35H: CMM female : YL (D : straight)
- M39: CMM female : YL-S-C (D-E : straight) CMM male : S-C (E : straight)
- M39H: CMM female : YL (D : straight)
- M38: CMM female : Y (D : straight)
- M38H: CMM female : Y (D : straight)
- M36: CMM male : YL (D : straight)
- M36H: CMM male : YL (D : straight)
- M3xx: CMM female : S-C (E : straight) CMM male : S-C (E : straight)
- H11: CMM female : V-VL-S-C-E (D : 90°) CMM male : V-VL-R-S-C-E (D : 90°)

**H11**: 90° on PCB 4 max.
# Fixing hardware for CMM 320/340

## Locked Interconnection

### Male Connectors CMM Series 320 & 340 with Locking

<table>
<thead>
<tr>
<th>Type of contact in connector</th>
<th>PCB Contacts</th>
<th>90° Contacts on cable</th>
<th>90° Contacts on cable with cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of PCB mount</td>
<td>Straight</td>
<td>Floating fixing</td>
<td></td>
</tr>
<tr>
<td>PCB thickness (mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.8 min. 2 max.</td>
<td>F42</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>1.5 min. 4 max.</td>
<td>F42H/F44H</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>4 max.</td>
<td>F46/F45H/F51</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>F50/F51</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>F52/F52H/F52H</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>F46</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>F46</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>F46</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>F46</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>Floating fixing</td>
<td>F46xx</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>With cover</td>
<td>F41</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>With cover</td>
<td>F41</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>With cover</td>
<td>M45</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
</tbody>
</table>

### Female Connectors CMM Series 320 & 340 with Locking

<table>
<thead>
<tr>
<th>Type of contact in connector</th>
<th>PCB Contacts</th>
<th>90° Contacts on cable</th>
<th>90° Contacts on cable with cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of PCB mount</td>
<td>Straight</td>
<td>Floating fixing</td>
<td></td>
</tr>
<tr>
<td>PCB thickness (mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.8 min. 2 max.</td>
<td>H08</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>1.5 min. 4 max.</td>
<td>H08M</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>4 max.</td>
<td>H08L</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>H01</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>H01C</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>H41</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>H46</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>No fixing on PCB</td>
<td>H51</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>Floating fixing</td>
<td>H46xx</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>With cover</td>
<td>H41</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
<tr>
<td>With cover</td>
<td>M45</td>
<td>[OK] OK OK OK A A</td>
<td>[OK] OK OK OK A A</td>
</tr>
</tbody>
</table>

### PCB Mount Straight

- PCB thickness: 0.8 min. 1.5 min. 4 max.
- 90° Contacts on cable: Straight

### PCB Mount 90°

- PCB thickness: 0.8 min. 1.5 min. 4 max.
- 90° Contacts on cable: 90°

### Other Information

- **Make it a habit!** Use easy & automatic configurators for CMM micro-connectors single part and mating-half construction on [www.nicomatic.com](http://www.nicomatic.com).

---

**CMM 320/340 Male and Female Threaded Fixing Hardware**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Assembly on PCB</th>
<th>Overall Dimensions</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>H01</td>
<td>Straight on PCB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H01C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H08 PCB</td>
<td>1 min. / 2 max.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H08M PCB</td>
<td>2 min. / 3 max.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H08L PCB</td>
<td>3 min. / 4 max.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**H01/H01C**: CMM female: Y-YL-S-C-E (D: straight)

**H08/H08M/H08L**: CMM female: V-VL-S-C-E (D: 90°)

**CMM male**: V-VL-R-S-C-E (D: 90°)
## Locked Interconnection

### Hexagonal Nut

<table>
<thead>
<tr>
<th>Reference</th>
<th>Assembly on PCB</th>
<th>Overall Dimensions</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>F4XX</td>
<td>Straight on PCB floating option</td>
<td></td>
<td>F4XX :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM female :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-C (E : straight)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM male :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-C (E : straight)</td>
</tr>
<tr>
<td>F4I</td>
<td>Straight on PCB</td>
<td></td>
<td>F41 :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM female :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Y-YL-S-C-E (D : straight)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM male :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-C-E</td>
</tr>
<tr>
<td>F52</td>
<td>Straight on PCB 0,8 min / 2 max</td>
<td></td>
<td>F52 :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM female :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Y-S-C (D-E : straight)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM male :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-C (E : straight)</td>
</tr>
<tr>
<td>F52H</td>
<td></td>
<td></td>
<td>F52H :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM female :</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Y (D : straight)</td>
</tr>
<tr>
<td>F45</td>
<td>Straight on PCB 1,5 min / 4 max</td>
<td></td>
<td>F45 :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM female :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>YL-S-C (D-E : straight)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM male :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-C (E : straight)</td>
</tr>
<tr>
<td>F45H</td>
<td></td>
<td></td>
<td>F45H :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM female :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>YL (D : straight)</td>
</tr>
<tr>
<td>F42</td>
<td>Straight on PCB 0,8 min / 2 max</td>
<td></td>
<td>F42 :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM male :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Y (D : straight)</td>
</tr>
<tr>
<td>F42H</td>
<td></td>
<td></td>
<td>F42H :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM male :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Y (D : straight)</td>
</tr>
<tr>
<td>F44</td>
<td>Straight on PCB 1,5 min / 4 max</td>
<td></td>
<td>F44 :</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>YL (D : straight)</td>
</tr>
<tr>
<td>F44H</td>
<td></td>
<td></td>
<td>F44H :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CMM male :</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>YL (D : straight)</td>
</tr>
</tbody>
</table>

### Standard Nut

- **Recommended Torque**: 0,2 N/m
# Fixing for CMM 320/340

## CMM 320/340 Male and Female Tapped Fixing Hardware

<table>
<thead>
<tr>
<th>Reference</th>
<th>Assembly on PCB</th>
<th>Overall Dimensions</th>
<th>Recommendation</th>
</tr>
</thead>
</table>
| F46       | 90° on PCB 4 max. | ![Image](image1.png) | **F46**: CMM female: V-VL-S-C-E (D : 90°)  
CMM male: V-VL-R-S-C-E (D : 90°) |
| F51       | 90° on PCB 4 max. | ![Image](image2.png) | **F51**: CMM female: V-VL-S-C-E (D : 90°)  
CMM male: V-VL-R-S-C-E (D : 90°) |
| F50       | 90° on PCB 4 max. | ![Image](image3.png) | **F50**: Card edge  
LF contact or mixed |
| F57       | Cover option only | ![Image](image4.png) | Male and female  
S-C (E : straight) |
| M45       | Cover option only | ![Image](image5.png) | Male and female  
S-C (E : straight) |
HF : High Frequency contacts series 30
HP : High Power contacts series 30

FOR CMM 220 AND 320

PART NUMBERING FOR PCB HF & HP SPECIAL CONTACTS

These two digits are linked to the connector. Do not use them inside a CMM part number when loaded. All dash signs also disappear.

Contact type:
3 = straight
4 = right angle
S = SMT 90°
6 = SMT straight

Termination length:
“CMM” = 3mm
“45” = 4.5mm
“12” = 3mm (Female CMM320)
“14” = 4.5mm (Female CMM320)
“…”

Coaxmatic 30™
1 = male coax
2 = female coax
3 = high power male
4 = high power female

Contact type:
3 = straight
4 = right angle
5 = SMT 90°
6 = SMT straight

These two digits are linked to the connector. Do not use them inside a CMM part number when loaded. All dash signs also disappear.

Special contacts:
1 = male HF
2 = female HF
3 = male HP
4 = female HP

Contact termination:
10 = for HP 10A
15 = for HP 15A
20 = for HP 20A
12 = for HP cable 1.2mm
20 = for HP cable 2mm
24 = for HP cable 2.4mm
26 = for HP cable 2.6mm
47 = for HP cable type UT47
85 = for HP cable type UT85

Use these 2 digits only with 75 Ohm cables.

Use these 2 digits only with 1.2mm dia. cables mounted on a HF straight contact.
Crimp shield type: 01 = refer to page 81
02 = refer to page 81

HF male contact insertion

HF female contact insertion
HF: High Frequency contact series 30

**MALE STRAIGHT ON PCB P/N 30-1300-xx**

- Connector support face
- PCB layout
- Insulator
- Center
- Ground

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1300CMM</td>
<td>3 mm</td>
</tr>
<tr>
<td>130045</td>
<td>4.5 mm</td>
</tr>
</tbody>
</table>

**FEMALE STRAIGHT ON PCB P/N 30-2300-xx**

- Connector support face
- PCB layout
- Insulator
- Center
- Ground

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>2300CMM</td>
<td>3 mm</td>
</tr>
<tr>
<td>230045</td>
<td>4.5 mm</td>
</tr>
</tbody>
</table>

**PCB LAYOUT 30-1300-xx & 30-2300-xx**

- A = nn - 2
- B = ((yy + zz) x 4 + A + 7
- B max. = 65 mm

- A = \left(\frac{(yy + zz) x 4 + nn}{3}\right) x 2
- B = A + 9
- B max. = 87
HF : High Frequency contact series 30

**MALE 90° PCB P/N 30-1400-xx**

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1400CMM</td>
<td>3 mm</td>
</tr>
<tr>
<td>140045</td>
<td>4.5 mm</td>
</tr>
</tbody>
</table>

**PCB LAYOUT 30-1400-xx**

- **A** = nn - 2
- **B** = (yy + zz) x 4 + A + 7
- **B max.** = 65 mm

**FEMALE 90° PCB P/N 30-2400-xx**

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>2400CMM</td>
<td>3 mm</td>
</tr>
<tr>
<td>240045</td>
<td>4.5 mm</td>
</tr>
</tbody>
</table>

**PCB LAYOUT 30-2400-xx**

- **A** = -2
- **B** = A + 9
- **B max.** = 87

- **Loaded Length L**
  - **1400CMM**: 3 mm
  - **140045**: 4.5 mm
  - **2400CMM**: 3 mm
  - **240045**: 4.5 mm
HF : High Frequency contact series 30

MALE 90° SMT FOR CMM 220 SERIES (WITHOUT CONTACTS)
P/N 30-1500-CMM

- Insulator Center
- Ground
- PCB layout

PCB LAYOUT 30-1500-CMM

- Number of contacts

PART NUMBERING

A = (nn x 4) - 4
B = A + 9
C = B + 5
**HF : High Frequency contact series 30**

**MALE 90° SMT FOR CMM 220 SERIES P/N 30-1500-12**

**PCB LAYOUT 30-1500-12**

**PART NUMBERING**

- Number of contacts opposite side LF pin 1
- Number of contacts LF pin 1 side
- Number of LF contacts

\[
\begin{align*}
A &= \text{nn} - 2 \\
B &= (\text{yy} + \text{zz}) \times 4 + A + 7 \\
\text{B max.} &= 65 \text{ mm} \\
C &= B + 5
\end{align*}
\]
HF: High Frequency contact series 30

MALE 90° SMT FOR CMM 320 SERIES P/N 30-1500-12

PCB LAYOUT 30-1500-CMM

PART NUMBERING

Number of contacts LF pin 1 side: 32
Number of contacts opposite side LF pin 1: 50
Number of LF contacts: zz
HF : High Frequency contact series 30

**MALE STRAIGHT SMT FOR CMM 220 SERIES P/N 30-1600**

![Diagram of male straight SMT contact]

- Ground
- Center

**FEMALE STRAIGHT SMT FOR CMM 220 SERIES P/N 30-2600**

![Diagram of female straight SMT contact]

- Ground
- Center

**PCB LAYOUT 30-1600 & 30-2600**

![Diagram of PCB layout]

- Recommended PCB Layout
- A and B depending on fixing hardware
- 3.5 without special contacts

---

A

B

\[A = \{(y+z)x4\} + A + 7\]
HF : High Frequency contact series 30

MALE STRAIGHT CRIMP ON CABLES Ø 1.2 P/N 30-1312-ZS

FEMALE STRAIGHT CRIMP ON CABLES Ø 1.2 P/N 30-2312-ZS

Cable assy instruction IC30HF01 on page 118
HF : High Frequency contact series 30

MALE STRAIGHT CRIMP ON CABLE P/N 30-13xx-SS & 30-13xx-ZS

FEMALE STRAIGHT CRIMP ON CABLE P/N 30-23xx-SS & 30-23xx-ZS

Cable assy instruction IC30HF02 on page 119

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>Cable A</th>
<th>ØB</th>
<th>ØC</th>
<th>ØD</th>
<th>Hex. E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1320SS</td>
<td>30-1320-SS</td>
<td>Ø 2.0</td>
<td>1 mm</td>
<td>2.2 mm</td>
<td>0.5 mm</td>
<td>2.4 on flat</td>
</tr>
<tr>
<td>1324SS</td>
<td>30-1324-SS</td>
<td>Ø 2.4</td>
<td>1.5 mm</td>
<td>2.8 mm</td>
<td>0.6 mm</td>
<td>2.8 on flat</td>
</tr>
<tr>
<td>1326SS</td>
<td>30-1326-SS</td>
<td>Ø 2.7</td>
<td>1.7 mm</td>
<td>2.8 mm</td>
<td>0.6 mm</td>
<td>2.8 on flat</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>Cable A</th>
<th>ØB</th>
<th>ØC</th>
<th>ØD</th>
<th>Hex. E</th>
</tr>
</thead>
<tbody>
<tr>
<td>2320SS</td>
<td>30-2320-SS</td>
<td>Ø 2.0</td>
<td>1 mm</td>
<td>2.2 mm</td>
<td>0.5 mm</td>
<td>2.4 on flat</td>
</tr>
<tr>
<td>2324SS</td>
<td>30-2324-SS</td>
<td>Ø 2.4</td>
<td>1.5 mm</td>
<td>2.8 mm</td>
<td>0.6 mm</td>
<td>2.8 on flat</td>
</tr>
<tr>
<td>2326SS</td>
<td>30-2326-SS</td>
<td>Ø 2.7</td>
<td>1.7 mm</td>
<td>2.8 mm</td>
<td>0.6 mm</td>
<td>2.8 on flat</td>
</tr>
</tbody>
</table>
HF : High Frequency contact series 30

MALE 90° CRIMP ON CABLE P/N 30-14xx-ZS

Cable assy instruction IC30HF03 on page 120

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>Cable A</th>
<th>ØB</th>
<th>ØC</th>
<th>Hex. E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1412ZS</td>
<td>30-1412-ZS</td>
<td>Ø 1.2</td>
<td>0.7 mm</td>
<td>1.3 mm</td>
<td>1.9 on flat</td>
</tr>
<tr>
<td>1420ZS</td>
<td>30-1420-ZS</td>
<td>Ø 2.0</td>
<td>1 mm</td>
<td>2.2 mm</td>
<td>2.4 on flat</td>
</tr>
<tr>
<td>1424ZS</td>
<td>30-1424-ZS</td>
<td>Ø 2.4</td>
<td>1.5 mm</td>
<td>2.8 mm</td>
<td>2.8 on flat</td>
</tr>
<tr>
<td>1426ZS</td>
<td>30-1426-ZS</td>
<td>Ø 2.7</td>
<td>1.7 mm</td>
<td>2.8 mm</td>
<td>2.8 on flat</td>
</tr>
</tbody>
</table>

FEMALE 90° CRIMP ON CABLE P/N 30-24xx-ZS

Cable assy instruction IC30HF03 on page 120

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>Cable A</th>
<th>ØB</th>
<th>ØC</th>
<th>Hex. E</th>
</tr>
</thead>
<tbody>
<tr>
<td>2412ZS</td>
<td>30-2412-ZS</td>
<td>Ø 1.2</td>
<td>0.7 mm</td>
<td>1.3 mm</td>
<td>1.9 on flat</td>
</tr>
<tr>
<td>2420ZS</td>
<td>30-2420-ZS</td>
<td>Ø 2.0</td>
<td>1 mm</td>
<td>2.2 mm</td>
<td>2.4 on flat</td>
</tr>
<tr>
<td>2424ZS</td>
<td>30-2424-ZS</td>
<td>Ø 2.4</td>
<td>1.5 mm</td>
<td>2.8 mm</td>
<td>2.8 on flat</td>
</tr>
<tr>
<td>2426ZS</td>
<td>30-2426-ZS</td>
<td>Ø 2.7</td>
<td>1.7 mm</td>
<td>2.8 mm</td>
<td>2.8 on flat</td>
</tr>
</tbody>
</table>
**HF : High Frequency contact series 30**

### MALE STRAIGHT ON CABLE SEMI-RIGID P/N 30-13xx-ZZ

1. Solder inner contact over conductor.
2. Push cable with inner contact in body.
3. Solder cable to body. (Tooling reference C14777)

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>Cable A</th>
<th>øB</th>
<th>øC</th>
<th>øD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1347ZZ</td>
<td>30-1347-ZZ</td>
<td>UT 47</td>
<td>1.4 mm</td>
<td>1 mm</td>
<td>0.5 mm</td>
</tr>
<tr>
<td>1385ZZ</td>
<td>30-1385-ZZ</td>
<td>UT 85</td>
<td>2.3 mm</td>
<td>1.7 mm</td>
<td>0.6 mm</td>
</tr>
</tbody>
</table>

### FEMALE STRAIGHT ON CABLE SEMI-RIGID P/N 30-23xx-ZZ

1. Solder inner contact over conductor.
2. Push cable with inner contact in body.
3. Solder cable to body. (Tooling reference C14777)

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>Cable A</th>
<th>øB</th>
<th>øC</th>
<th>øD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2347ZZ</td>
<td>30-2347-ZZ</td>
<td>UT 47</td>
<td>1.4 mm</td>
<td>1 mm</td>
<td>0.5 mm</td>
</tr>
<tr>
<td>2385ZZ</td>
<td>30-2385-ZZ</td>
<td>UT 85</td>
<td>2.3 mm</td>
<td>1.7 mm</td>
<td>0.6 mm</td>
</tr>
</tbody>
</table>
HF : High Frequency contact series 30

MALE 90° ON CABLE SEMI-RIGID P/N 30-14xx-ZZ

1/ Solder conductor over inner contact.
2/ Solder cable to body.  (Tooling reference C14777)
3/ Assembly the cap to body.  (Tooling reference C14772)

Loaded  Unloaded  Cable A  ØB  ØC
1447ZZ    30-1447-ZZ  UT 47  1.4 mm  1 mm
1485ZZ    30-1485-ZZ  UT 85  2.3 mm  1.7 mm

FEMALE 90° ON CABLE SEMI-RIGID P/N 30-24xx-ZZ

1/ Solder conductor over inner contact.
2/ Solder cable to body.  (Tooling reference C14777)
3/ Assembly the cap to body.  (Tooling reference C14772)

Loaded  Unloaded  Cable A  ØB  ØC
2447ZZ    30-2447-ZZ  UT 47  1.4 mm  1 mm
2485ZZ    30-2485-ZZ  UT 85  2.3 mm  1.7 mm
HP : High Power contact series 30

MALE STRAIGHT ON PCB P/N 30-3300-XX

FEMALE STRAIGHT ON PCB P/N 30-4300-XX

PCB LAYOUT 30-3300-XX & 30-4300-XX
HP: High Power contact series 30

MALE 90° PCB P/N 30-3400-XX

PCB LAYOUT 30-3400-XX

FEMALE 90° PCB P/N 30-4400-XX

PCB LAYOUT 30-4400-XX

Loaded Length L

<table>
<thead>
<tr>
<th>P/N</th>
<th>Loaded</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>3400CMM</td>
<td>3 mm</td>
<td></td>
</tr>
<tr>
<td>340045</td>
<td>4.5 mm</td>
<td></td>
</tr>
</tbody>
</table>

A = nn - 2
B = (yy + zz) x 4 + A + 7
B max. = 65 mm

A = -2
B = A + 9
B max. = 87

Loaded Length L

<table>
<thead>
<tr>
<th>P/N</th>
<th>Loaded</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>4400CMM</td>
<td>3 mm</td>
<td></td>
</tr>
<tr>
<td>440045</td>
<td>4.5 mm</td>
<td></td>
</tr>
</tbody>
</table>
HP : High Power contact series 30

MALE 90° SMT 30-3500

PCB LAYOUT 30-3500

FEMALE 90° SMT 30-4500

PCB LAYOUT 30-4500
HP: High Power contact series 30

MALE 90° SMT CARD EDGE (WITHOUT LF CONTACTS) 30-3500-CMM

PCB LAYOUT 30-3500-CMM

PART NUMBERING

A = (nn x 4) - 4
B = A + 9
C = B + 5
HP : High Power contact series 30

**MALE 90° SMT CARD EDGE 30-3500-12 (FOR CMM 220 SERIES)**

**PART NUMBERING**

- Number of contacts 
  - LF pin 1 side
  - opposite side LF pin 1

**PCB LAYOUT 30-3500-12**

- A = nn - 2
- B = (yy + zz) x 4 + A + 7
- B max. = 65 mm
- C = B + 5
HP: High Power contact series 30

**MALE 90° SMT CARD EDGE 30-3500-12 (FOR CMM 320 SERIES)**

**PCB LAYOUT 30-3500-12**

**PART NUMBERING**

A = \left[ \frac{(yy + zz) \times 4 + nn}{3} \right] \times 2

B = A + 9

B max. = 87

C = A + 15

Number of contacts

LF pin 1 side

Number of contacts

Opposite side LF pin

Number of LF contacts
# HP: High Power contact series 30

## MALE STRAIGHT ON CABLE P/N 30-33xx (solder or crimp)

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>Ampere</th>
<th>Cable A</th>
<th>ØB</th>
<th>ØC</th>
<th>Length D hole</th>
<th>Length E body</th>
<th>Length F conductor</th>
<th>Solder</th>
<th>Crimp by HX3 Hexagon size/Dies</th>
<th>Crimp by AF8</th>
</tr>
</thead>
<tbody>
<tr>
<td>3305</td>
<td>30-3305</td>
<td>5A</td>
<td>X</td>
<td>1.1 mm</td>
<td>1.65 mm</td>
<td>6.2 mm</td>
<td>6.7 mm</td>
<td>4.5 mm</td>
<td>OK</td>
<td>Hex. 1.9 mm/C14923</td>
<td>OK</td>
</tr>
<tr>
<td>3308</td>
<td>30-3308</td>
<td>8A</td>
<td>X</td>
<td>1.35 mm</td>
<td>1.85 mm</td>
<td>6.2 mm</td>
<td>6.7 mm</td>
<td>4.5 mm</td>
<td>OK</td>
<td>Hex. 1.9 mm/C14923</td>
<td>OK</td>
</tr>
<tr>
<td>3310</td>
<td>30-3310</td>
<td>10A</td>
<td>X</td>
<td>1.7 mm</td>
<td>6.2 mm</td>
<td>6 mm</td>
<td>6 mm</td>
<td>OK</td>
<td>OK</td>
<td></td>
<td>OK</td>
</tr>
<tr>
<td>3315</td>
<td>30-3315</td>
<td>15A</td>
<td>X</td>
<td>2 mm</td>
<td>6.2 mm</td>
<td>6 mm</td>
<td>6 mm</td>
<td>OK</td>
<td>OK</td>
<td></td>
<td>OK</td>
</tr>
<tr>
<td>3320</td>
<td>30-3320</td>
<td>20A</td>
<td>X</td>
<td>2.6 mm</td>
<td>5.5 mm</td>
<td>6 mm</td>
<td>5.3 mm</td>
<td>OK</td>
<td>OK</td>
<td></td>
<td>OK</td>
</tr>
</tbody>
</table>

## FEMALE STRAIGHT ON CABLE P/N 30-43xx (solder or crimp)

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>Ampere</th>
<th>Cable A</th>
<th>ØB</th>
<th>ØC</th>
<th>Length D hole</th>
<th>Length E body</th>
<th>Length F conductor</th>
<th>Solder</th>
<th>Crimp by HX3 Hexagon size/Dies</th>
<th>Crimp by AF8</th>
</tr>
</thead>
<tbody>
<tr>
<td>4305</td>
<td>30-4305</td>
<td>5A</td>
<td>X</td>
<td>1.1 mm</td>
<td>1.65 mm</td>
<td>6.2 mm</td>
<td>6.7 mm</td>
<td>4.5 mm</td>
<td>OK</td>
<td>Hex. 1.9 mm/C14923</td>
<td>OK</td>
</tr>
<tr>
<td>4308</td>
<td>30-4308</td>
<td>8A</td>
<td>X</td>
<td>1.35 mm</td>
<td>1.85 mm</td>
<td>6.2 mm</td>
<td>6.7 mm</td>
<td>4.5 mm</td>
<td>OK</td>
<td>Hex. 1.9 mm/C14923</td>
<td>OK</td>
</tr>
<tr>
<td>4310</td>
<td>30-4310</td>
<td>10A</td>
<td>X</td>
<td>1.7 mm</td>
<td>6.2 mm</td>
<td>6 mm</td>
<td>6 mm</td>
<td>OK</td>
<td>OK</td>
<td></td>
<td>OK</td>
</tr>
<tr>
<td>4315</td>
<td>30-4315</td>
<td>15A</td>
<td>X</td>
<td>2 mm</td>
<td>6.2 mm</td>
<td>6 mm</td>
<td>6 mm</td>
<td>OK</td>
<td>OK</td>
<td></td>
<td>OK</td>
</tr>
<tr>
<td>4320</td>
<td>30-4320</td>
<td>20A</td>
<td>X</td>
<td>2.6 mm</td>
<td>5.5 mm</td>
<td>6 mm</td>
<td>5.3 mm</td>
<td>OK</td>
<td>OK</td>
<td></td>
<td>OK</td>
</tr>
</tbody>
</table>
The special contact gender is determined by the body and not by the central contact.

**PART NUMBERING FOR PCB HF & HP SPECIAL CONTACTS**

- **Termination length**
  - "12" = 1st row 3mm
  - "22" = 2nd row 3mm
  - "14" = 1st row 4.5mm
  - "24" = 2nd row 4.5mm
- **Contact type**:
  - 3 = straight
  - 4 = right angle
  - 5 = SMT 90°
  - 6 = SMT straight

**PART NUMBERING FOR HF & HP SPECIAL CONTACTS ON-CABLE**

- **For HF contacts only inner contact**
  - Z = solder
  - S = crimp
- **Special contacts**:
  - 1 = male HF
  - 2 = female HF
  - 3 = male HP
  - 4 = female HP
- **For HF contacts only shield**
  - Z = solder
  - S = crimp
- **Contact termination**:
  - 10 = for HP 10A
  - 12 = for HF cable 1.2mm
  - 20 = for HF cable 2mm

- **Coaxmatic 22™**
  - 1 = male coax
  - 2 = female coax
  - 3 = high power male
  - 4 = high power female

- **Contact type**:
  - 3 = straight
  - 4 = right angle
  - 5 = SMT 90°
  - 6 = SMT straight
- **Termination length**
  - "12" = 1st row 3mm
  - "22" = 2nd row 3mm
  - "14" = 1st row 4.5mm
  - "24" = 2nd row 4.5mm

- **Use these 2 digits only with 75 Ohm cables**

**INSERTION**

- HF female contact insertion
- HF male contact insertion

These two digits are linked to the connector. Do not use them inside a CMM part number when loaded. All dash signs also disappear.
HF : High Frequency contacts series 22

MALE STRAIGHT ON PCB P/N 22-1300-xx

- Connector support face
- PCB
- Insulator
- Center
- Ground

**Loaded | Length L**
- 130012 | 3 mm
- 130014 | 4.5 mm

FEMALE STRAIGHT ON PCB P/N 22-2300-xx

- Connector support face
- PCB
- Insulator
- Center
- Ground

**Loaded | Length L**
- 230012 | 3 mm
- 230014 | 4.5 mm

PCB LAYOUT 22-1300-xx & 22-2300-xx

\[
A = \left(\frac{\text{mm2}}{3}\right)^{0.2}
\]

if \(yy\) and \(zz\) ≠ 0:

\[
B = \left(\frac{\text{yy} + \text{zz}}{2}\right)^{0.2} \times 2.5 + 14.5 + A
\]

if \(yy\) or \(zz\) = 0:

\[
B = \left(\frac{\text{yy} + \text{zz}}{2}\right)^{0.2} \times 2.5 + 11.75 + A
\]

\(B \max = 87\)
**HF : High Frequency contacts series 22**

### MALE 90° PCB P/N 22-1400-xx

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Loaded</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>First row</td>
<td>140012</td>
<td>it mounted in same connector</td>
</tr>
<tr>
<td>Second row</td>
<td>140022</td>
<td>3 mm</td>
</tr>
<tr>
<td>First row</td>
<td>140014</td>
<td>it mounted in same connector</td>
</tr>
<tr>
<td>Second row</td>
<td>140024</td>
<td>4.5 mm</td>
</tr>
</tbody>
</table>

### PCB LAYOUT 22-1400-xx

A = $\frac{(\text{max})2}{3} \times 2$

if $yy$ or $zz$ ≠ 0 :

$B = \left( \frac{(yy) + (zz)}{2} \right) \times 2.5 + 14.5 + A$

if $yy$ or $zz$ = 0 :

$B = \left( \frac{(yy) - (zz)}{2} \right) \times 2.5 + 11.75 + A$

B max. = 87

### FEMALE 90° PCB P/N 22-2400-xx

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Loaded</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>First row</td>
<td>240012</td>
<td>it mounted in same connector</td>
</tr>
<tr>
<td>Second row</td>
<td>240022</td>
<td>3 mm</td>
</tr>
<tr>
<td>First row</td>
<td>240014</td>
<td>it mounted in same connector</td>
</tr>
<tr>
<td>Second row</td>
<td>240024</td>
<td>4.5 mm</td>
</tr>
</tbody>
</table>

### PCB LAYOUT 22-2400-xx

A = $\frac{(\text{max})2}{3} \times 2$

if $yy$ and $zz$ ≠ 0 :

$B = \left( \frac{(yy) + (zz)}{2} \right) \times 2.5 + 14.5 + A$

if $yy$ or $zz$ = 0 :

$B = \left( \frac{(yy) - (zz)}{2} \right) \times 2.5 + 11.75 + A$

B max. = 87
HF : High Frequency contacts series 22

**MALE STRAIGHT TO CRIMP ON CABLE Ø 1.2 P/N 22-1312-ZS-xx**

- 1.7 conductor
- 6.5 dielectric

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>ØB</th>
<th>ØC</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1312ZS01</td>
<td>22-1312-ZS-01</td>
<td>1 mm</td>
<td>1,25 mm</td>
<td>For cable type NEXANS 50VMTX</td>
</tr>
<tr>
<td>1312ZS02</td>
<td>22-1312-ZS-02</td>
<td>0.85 mm</td>
<td>1,15 mm</td>
<td>For cable type AXON SM50</td>
</tr>
</tbody>
</table>

Cable assy instruction IC22HF01 on page 116

**FEMALE STRAIGHT TO CRIMP ON CABLE Ø 1.2 P/N 22-2312-ZS-xx**

- 1.7 conductor
- 6.5 dielectric

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>ØB</th>
<th>ØC</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2312ZS01</td>
<td>22-2312-ZS-01</td>
<td>1 mm</td>
<td>1,25 mm</td>
<td>For cable type NEXANS 50VMTX</td>
</tr>
<tr>
<td>2312ZS02</td>
<td>22-2312-ZS-02</td>
<td>0.85 mm</td>
<td>1,15 mm</td>
<td>For cable type AXON SM50</td>
</tr>
</tbody>
</table>

Cable assy instruction IC22HF02 on page 117
HF: High Frequency contacts series 22

**MALE STRAIGHT ON CABLE P/N 22-1320-ZZ**

1. Solder inner contact over conductor.
2. Push cable with inner contact in body.
3. Solder shield to body.

**FEMALE STRAIGHT ON CABLE P/N 22-2320-ZZ**

1. Solder inner contact over conductor.
2. Push cable with inner contact in body.
3. Solder shield to body.

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1320ZZ</td>
<td>22-1320-ZZ</td>
</tr>
<tr>
<td>2320ZZ</td>
<td>22-2320-ZZ</td>
</tr>
</tbody>
</table>
HP : High power contacts series 22

**MALE STRAIGHT ON PCB P/N 22-3300-xx**

- **Loaded**
  - 330012: 3 mm
  - 330014: 4.5 mm

**FEMALE STRAIGHT ON PCB P/N 22-4300-xx**

- **Loaded**
  - 430012: 3 mm
  - 430014: 4.5 mm

**PCB LAYOUT 22-3300-xx & 22-4300-xx**

\[
\begin{align*}
A &= \left(\frac{(yy^2)+zz}{2}\right) - 2 \\
&\quad \text{if } yy \text{ and } zz \neq 0; \\
B &= \left(\frac{(yy^2)+zz}{4}\right) - 2 \times 2.5 + 14.5 + A \\
&\quad \text{if } yy \text{ or } zz = 0; \\
B_{\text{max}} &= 87
\end{align*}
\]
HP : High power contacts series 22

### MALE 90° PCB P/N 22-3400-xx

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>First row 340012 it mounted in same connector</td>
<td>340002 3 mm</td>
</tr>
<tr>
<td>Second row 340022</td>
<td></td>
</tr>
<tr>
<td>First row 340014 it mounted in same connector</td>
<td>340004 4.5 mm</td>
</tr>
<tr>
<td>Second row 340024</td>
<td></td>
</tr>
</tbody>
</table>

### FEMALE 90° PCB P/N 22-4400-xx

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Length L</th>
</tr>
</thead>
<tbody>
<tr>
<td>First row 440012 it mounted in same connector</td>
<td>440002 3 mm</td>
</tr>
<tr>
<td>Second row 440022</td>
<td></td>
</tr>
<tr>
<td>First row 440014 it mounted in same connector</td>
<td>440004 4.5 mm</td>
</tr>
<tr>
<td>Second row 440024</td>
<td></td>
</tr>
</tbody>
</table>

### PCB LAYOUT 22-3400-xx & 22-4400-xx

**Shown looking onto mating face**

- HP contact Ø1.3 min.
- LF contact Ø0.65 min.
- Ø2.2 min. example with F46

4.5 without special contacts

**A** = \( \frac{(mnz)}{3} \)

if yy and zz = 0:

\[ B = \left( \frac{(yy)+(zz)}{2} \right) \times 2.5 + 14.5 + A \]

if yy or zz = 0:

\[ B = \left( \frac{(yy)-(zz)}{2} \right) \times 2.5 + 11.75 + A \]

B max. = 87
### HP: High power contacts series 22

#### MALE STRAIGHT ON CABLE P/N 22-33XX (solder & crimp)

![Diagram of male straight contact](image)

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>Ampere</th>
<th>Cable A</th>
<th>ØB</th>
<th>ØC</th>
<th>Length D hole</th>
<th>Length E body</th>
<th>Length F conductor</th>
<th>Solder</th>
<th>Crimp by HX3</th>
<th>Crimp by AF8</th>
</tr>
</thead>
<tbody>
<tr>
<td>3305</td>
<td>3305</td>
<td>5A</td>
<td>X</td>
<td>1.1 mm</td>
<td>1.65 mm</td>
<td>6.2 mm</td>
<td>8.8 mm</td>
<td>4.5 mm</td>
<td>OK</td>
<td>Hex. 1.9 mm/CI4923</td>
<td>OK</td>
</tr>
<tr>
<td>3308</td>
<td>3308</td>
<td>8A</td>
<td>X</td>
<td>1.35 mm</td>
<td>1.85 mm</td>
<td>6.2 mm</td>
<td>8.8 mm</td>
<td>4.5 mm</td>
<td>OK</td>
<td>Hex. 1.9 mm/CI4923</td>
<td>OK</td>
</tr>
<tr>
<td>3310</td>
<td>3310</td>
<td>10A</td>
<td>X X X</td>
<td>1.7 mm</td>
<td></td>
<td>6.2 mm</td>
<td>8.8 mm</td>
<td>6 mm</td>
<td>OK</td>
<td>Hex. 1.9 mm/CI4923*</td>
<td>OK</td>
</tr>
</tbody>
</table>

* only for AWG 16

#### FEMALE STRAIGHT ON CABLE P/N 22-43XX (solder & crimp)

![Diagram of female straight contact](image)

<table>
<thead>
<tr>
<th>Loaded</th>
<th>Unloaded</th>
<th>Ampere</th>
<th>Cable A</th>
<th>ØB</th>
<th>ØC</th>
<th>Length D hole</th>
<th>Length E body</th>
<th>Length F conductor</th>
<th>Solder</th>
<th>Crimp by HX3</th>
<th>Crimp by AF8</th>
</tr>
</thead>
<tbody>
<tr>
<td>4305</td>
<td>4305</td>
<td>5A</td>
<td>X</td>
<td>1.1 mm</td>
<td>1.65 mm</td>
<td>6.2 mm</td>
<td>7.7 mm</td>
<td>4.5 mm</td>
<td>OK</td>
<td>Hex. 1.9 mm/CI4923</td>
<td>OK</td>
</tr>
<tr>
<td>4308</td>
<td>4308</td>
<td>8A</td>
<td>X</td>
<td>1.35 mm</td>
<td>1.85 mm</td>
<td>6.2 mm</td>
<td>7.7 mm</td>
<td>4.5 mm</td>
<td>OK</td>
<td>Hex. 1.9 mm/CI4923</td>
<td>OK</td>
</tr>
<tr>
<td>4310</td>
<td>4310</td>
<td>10A</td>
<td>X X X</td>
<td>1.7 mm</td>
<td></td>
<td>6.2 mm</td>
<td>7.7 mm</td>
<td>6 mm</td>
<td>OK</td>
<td>Hex. 1.9 mm/CI4923*</td>
<td>OK</td>
</tr>
</tbody>
</table>

* only for AWG 16
Crimp barrel accommodation for LF contacts

<table>
<thead>
<tr>
<th>Hand crimp tool reference</th>
<th>Positioner</th>
<th>Contacts type</th>
<th>Contacts reference</th>
<th>Wire size (AWG)</th>
<th>Crimp tool setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANIELS MH800</td>
<td>K1692</td>
<td>Male</td>
<td>12960</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>DANIELS MH800</td>
<td>K1692</td>
<td>Male S</td>
<td>12969</td>
<td>24</td>
<td>7</td>
</tr>
<tr>
<td>DANIELS MH800</td>
<td>K1692</td>
<td>Female C</td>
<td>C13064-P</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>DANIELS MH800</td>
<td>K1692</td>
<td>Female S</td>
<td>C12468</td>
<td>24</td>
<td>7</td>
</tr>
<tr>
<td>DANIELS MH800</td>
<td>K1692</td>
<td>Female S</td>
<td>C12468</td>
<td>26 &amp; 28</td>
<td>6</td>
</tr>
</tbody>
</table>

Crimp barrel accommodation for central contact HF30 series

<table>
<thead>
<tr>
<th>Hand crimp tool reference</th>
<th>Positioner</th>
<th>Conductor</th>
<th>Crimp tool setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANIELS MH800</td>
<td>K1131</td>
<td>Ø 0.30</td>
<td>2 &amp; 3</td>
</tr>
<tr>
<td>DANIELS MH800</td>
<td>K1131</td>
<td>Ø 0.50</td>
<td>3 &amp; 4</td>
</tr>
</tbody>
</table>

DANIELS AF8 TOOL P/N 16459

<table>
<thead>
<tr>
<th>Tools reference</th>
<th>Reference Nicomatic</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANIELS AF8 only</td>
<td>16459</td>
</tr>
<tr>
<td>DANIELS AF8 + C16460</td>
<td>C16462</td>
</tr>
<tr>
<td>DANIELS AF8 + C16461</td>
<td>C16463</td>
</tr>
</tbody>
</table>

Crimp barrel accommodation for crimping HP contact

<table>
<thead>
<tr>
<th>Hand crimp tool reference</th>
<th>Positioner</th>
<th>HP contact serie</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANIELS AF8</td>
<td>C16460</td>
<td>30</td>
</tr>
<tr>
<td>DANIELS AF8</td>
<td>C16461</td>
<td>22</td>
</tr>
</tbody>
</table>
Tools

**DANIELS HX3 TOOL P/N 13858**

<table>
<thead>
<tr>
<th>Tools reference</th>
<th>Reference Nicomatic</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANIELS HX3 only</td>
<td>13858</td>
</tr>
<tr>
<td>DANIELS HX3 &amp; C13847</td>
<td>C12238</td>
</tr>
<tr>
<td>DANIELS HX3 &amp; C14680</td>
<td>C14770</td>
</tr>
</tbody>
</table>

Crimp barrel accommodation for crimping coaxial contact shield

<table>
<thead>
<tr>
<th>Hand crimp tool reference</th>
<th>Dies</th>
<th>Hexagonal imprint</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANIELS HX3</td>
<td>C13847</td>
<td>Hex. 1.9 / Hex. 2.4 / Hex. 2.8</td>
</tr>
<tr>
<td>DANIELS HX3</td>
<td>C14680</td>
<td>Hex. 3.25 / Hex. 4</td>
</tr>
</tbody>
</table>

**CRIMP DIE C13847 FOR DANIELS HX3 TOOL (HF CONTACT)**

**CRIMP DIE C14680 FOR DANIELS HX3 TOOL (HF CONTACT)**
Tools

**LF CONTACTS INSERTION & WITHDRAWAL TOOL P/N C12935**

<table>
<thead>
<tr>
<th>Rep</th>
<th>Reference</th>
<th>Assembly C12935</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13241</td>
<td>Body</td>
</tr>
<tr>
<td>2</td>
<td>13240</td>
<td>Plug</td>
</tr>
<tr>
<td>3</td>
<td>13170</td>
<td>Female contact extraction tip</td>
</tr>
<tr>
<td>4</td>
<td>13242</td>
<td>Male contact extraction tip</td>
</tr>
<tr>
<td>5</td>
<td>13171</td>
<td>24-28 AWG insertion tip</td>
</tr>
<tr>
<td>6</td>
<td>13712</td>
<td>22 AWG insertion tip</td>
</tr>
</tbody>
</table>

**HF / HP SERIES 22 CONTACTS REMOVAL P/N C13997**

<table>
<thead>
<tr>
<th>Rep</th>
<th>Reference</th>
<th>Assembly C13997</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13241</td>
<td>Body</td>
</tr>
<tr>
<td>2</td>
<td>13240</td>
<td>Plug</td>
</tr>
<tr>
<td>3</td>
<td>13995</td>
<td>Female contact extraction tip</td>
</tr>
<tr>
<td>4</td>
<td>13996</td>
<td>Male contact extraction tip</td>
</tr>
<tr>
<td>5</td>
<td>16139</td>
<td>Male &amp; female contact insertion tool</td>
</tr>
</tbody>
</table>

**HF / HP SERIES 30 CONTACTS REMOVAL P/N 12368**
Tools

**LATCH SEPARATION TOOL P/N C14790**

```
<table>
<thead>
<tr>
<th>Series</th>
<th>A max.</th>
<th>LF contacts</th>
<th>A min.</th>
<th>LF contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMM 100</td>
<td>53</td>
<td>25</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>CMM 200</td>
<td>53</td>
<td>50</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>
```

**SCREWDRIVER P/N C14743 FOR NUT P/N 12685**

Optional: dynamometric screwdriver specifically designed for low torques (includes bits & adjusting key).

**SUCOFLEX SOLDER TOOL P/N C14777**

**MOUNTING OF C14772 BACK CAPS**

Hex. 5mm tool not delivered.
Accessories

**STRAIGHT COVER FOR CMM SERIES 220 (male & female)**
P/N CMM-C2-XX (other upon request)

Material: high temp. thermoplastic (-55°C to +200°C)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Length B (in mm)</th>
<th>Length A (in mm)</th>
<th>Screw (x2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMM-C2-11</td>
<td>11</td>
<td>23.7</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-15</td>
<td>15</td>
<td>23.7</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-17</td>
<td>17</td>
<td>17.2</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-25</td>
<td>25</td>
<td>26.7</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-27</td>
<td>27</td>
<td>26.7</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-31</td>
<td>31</td>
<td>29.7</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-39</td>
<td>39</td>
<td>29.7</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-45</td>
<td>45</td>
<td>33.7</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-47</td>
<td>47</td>
<td>33.7</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-49</td>
<td>49</td>
<td>33.7</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-53</td>
<td>53</td>
<td>33.7</td>
<td></td>
</tr>
<tr>
<td>CMM-C2-55</td>
<td>55</td>
<td>33.7</td>
<td></td>
</tr>
</tbody>
</table>

Length B in mm (distance between fixing hardware axies)

Reference Length B Length A Screw (x2)
CMM-C2-17-45 17 mm 24.4 mm Included

Note: F28 and M18 fixings are not included with the cover.

**45° COVER FOR CMM SERIES 220 (male & female)**
P/N CMM-C2-XX-45 (upon request)

Material: high temp. thermoplastic (-55°C to +200°C)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Length B (in mm)</th>
<th>Length A (in mm)</th>
<th>Screw (x2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMM-C2-17-45</td>
<td>17 mm</td>
<td>24.4 mm</td>
<td>Included</td>
</tr>
</tbody>
</table>

Length B in mm (distance between fixing hardware axies)

Note: F28 and M18 fixings are not included with the cover.

**90° COVER FOR CMM SERIES 220 (male & female)**
P/N CMM-C2-XX-90 (upon request)

Material: high temp. thermoplastic (-55°C to +200°C)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Length B (in mm)</th>
<th>Length A (in mm)</th>
<th>Screw (x2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMM-C2-53-90</td>
<td>53 mm</td>
<td>26 mm</td>
<td>Included</td>
</tr>
</tbody>
</table>

Length B in mm (distance between fixing hardware axies)

Note: Aluminum covers are available upon request. Contact us.
Accessories

COVERS STRAIGHT FOR CMM SERIES 320 & 340 (male & female)
P/N CMM-C3-XX.X

Material: high temp. thermoplastic (-55°C to +200°C)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Length B</th>
<th>Length A</th>
<th>Screw (x2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMM-C3-27.5</td>
<td>27.5 mm</td>
<td>34.4 mm</td>
<td>Included</td>
</tr>
<tr>
<td>CMM-C3-45.0</td>
<td>45.0 mm</td>
<td>34.4 mm</td>
<td></td>
</tr>
</tbody>
</table>

For CMM320/340 male & female
M45 or F57 fixing not included with cover

SHIELDING FOR CMM SERIES 220 (male straight on PCB)
P/N 12997-XX (upon request)

XX = distance between fixing axis B

SHIELDING FOR CMM SERIES 220 (male 90° on PCB)
P/N 12998-XX (upon request)

XX = distance between fixing axis B

SHIELDING FOR CMM SERIES 220 (female on cable)
P/N C13024-XX (upon request)

XX = distance between fixing axis B
Accessories

BACKPOTTING SHAPE FOR CMM SERIES 200 (female)  
P/N 14501-XX

Material: thermoplastic 100°C max.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Length B</th>
</tr>
</thead>
<tbody>
<tr>
<td>14501-07</td>
<td>min. 7 mm</td>
</tr>
<tr>
<td>14501-09</td>
<td>9 mm</td>
</tr>
<tr>
<td>14501-11</td>
<td>11 mm</td>
</tr>
<tr>
<td>14501-13</td>
<td>13 mm</td>
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<tr>
<td>14501-15</td>
<td>15 mm</td>
</tr>
<tr>
<td>14501-17</td>
<td>17 mm</td>
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<td>14501-19</td>
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<td>14501-21</td>
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<td>14501-23</td>
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<td>14501-25</td>
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<td>14501-27</td>
<td>27 mm</td>
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<td>14501-29</td>
<td>29 mm</td>
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<td>14501-31</td>
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<td>14501-33</td>
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<td>14501-35</td>
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<td>14501-37</td>
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<td>14501-51</td>
<td>51 mm</td>
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<tr>
<td>14501-53</td>
<td>max. 53 mm</td>
</tr>
</tbody>
</table>

Note: Special housing with integrated backpotting available upon request.

BACKPOTTING SHAPE FOR CMM SERIES 220 (male & female)  
P/N 14143-XX

Material: thermoplastic 100°C max.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Length B</th>
</tr>
</thead>
<tbody>
<tr>
<td>14143-09</td>
<td>min. 9 mm</td>
</tr>
<tr>
<td>14143-11</td>
<td>11 mm</td>
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<td>14143-13</td>
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<td>14143-23</td>
<td>23 mm</td>
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<td>14143-25</td>
<td>25 mm</td>
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<td>14143-27</td>
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<tr>
<td>14143-63</td>
<td>63 mm</td>
</tr>
<tr>
<td>14143-65</td>
<td>max. 65 mm</td>
</tr>
</tbody>
</table>

Note: Special housing with integrated backpotting available upon request.
CONTACTS ALIGNMENT PLATE P/N 14601-120
Material: high temperature thermoplastic (-55°C to +200°C)

SILICON INTERFACIAL SEAL (for male connector except S-C types)

Note: systematically delivered and mounted on the CMM 320 series “right angle” (V and VL types)

Mix-layout on request
COAX CABLE CRIMP TERMINATION
(straight for cables Ø 2 and Ø 2.7)

COAX CABLE CRIMP TERMINATION
(90° for cables Ø 2 and Ø 2.7)
**Accessories**

**COAX CABLE CRIMP TERMINATION**

P/N C13313 for RG 178 and P/N C14765 for RG 178 DS

<table>
<thead>
<tr>
<th>Ø C</th>
<th>Hex. E</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2 mm</td>
<td>2.4 mm</td>
</tr>
<tr>
<td>2.8 mm</td>
<td>2.8 mm</td>
</tr>
</tbody>
</table>

**COAX CABLE CRIMP TERMINATION**

P/N C12780 for cables RG 316

**CRIMP GAUGE REDUCER**

for awg 30-32 for LF contacts P/N 12922 & 14142
Cable instructions (ICLF01)

1 - Set the Hand crimp tool according to Crimp barrel accommodation table above.
   1.1 - Select the crimp tool setting with the selector knob.
   1.2 - Put the Positioner K1692 in the positioner guide.

2 - Check the wire stripping
   2.1 - Insert the Wire in the contact
   2.2 - The conductor must be visible through the inspection window of the contact

3 - Insert the contact and Wire assembly in the crimp guide of the hand crimp tool
   3.1 - In the crimp guide, the contact and Wire assembly must be in the end stop position
   3.2 - During the crimping, keep the wire in position
   3.3 - Just one crimping operation is allowed per contact and wire assembly

4 - Visually check the crimping
   4.1 - The crimping must not deform the inspection window
   4.2 - The contact must not have visible fractures or cracks
   4.3 - The contact barrel must not be deformed or bent

5 - Check the contact is firmly crimped, by pulling gently
   5.1 - For that purpose two (2) fingers are enough: pinch the wire and pull smoothly along the axis of the crimped contact.
### Cable instructions

<table>
<thead>
<tr>
<th>Supplier</th>
<th>P/N Terminal</th>
<th>Ø Cable</th>
<th>Series</th>
<th>Gender</th>
<th>Ref. Contact</th>
<th>Central Contact</th>
<th>Impedance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nexans (Axon *)</td>
<td></td>
<td>1.2 mm</td>
<td>50VMTX (SM 50 °)</td>
<td>Male</td>
<td>30-1312-ZS-01</td>
<td>Crimped Hex. 1.9 mm</td>
<td>50 Ohm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(30-1312-ZS-02 *)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>30-1412-ZS</td>
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<td>30-2312-ZS-01</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>(30-2312-ZS-02 *)</td>
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DT = DS (Double Shield)
### Cable instructions

#### Normes

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<th>Gender</th>
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<th>Impedance</th>
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*Axon*
Cable instructions (IC22HF01)

1/ 1.1 - Thread the sleeve until stop onto the cable.
   1.2 - Place the shield on the sleeve.

2/ - Thread the insulator.
   - Solder the inner contact on the conductor.

3/ - Thread to the body.
   - Beware that the inner contact’s hook goes entirely through the body’s insulator.

4/ CRIMP:
   - Tool: DANELS HX3
   - Die: ID3847
   - Position: 8.95 coax 22
   - Hexagone: 1.9mm / Plato

Solder inner contact over conductor

1.7 Conductor
6.5 Dielectric

0.8 (dielectric in contact)

Male HF contact
Cable instructions (IC22HF02)

1/ 1.1 - Thread the sleeve until stop onto the cable.
1.2 - Place the shield on the sleeve.

2/ - Thread the insulator.
    - Solder the inner contact on the conductor.

3/ - Put the contact body in the tool C16447.
    - Thread to the body.
    - Beware that the inner contact’s hook goes entirely through the body’s insulator.

4/ CRIMP:
   - Tool: DANIELS HX3
   - Die: C13847
   - Position: 0.95 coax 22
   - Hexagon: 19mm / plats
   - Position: 8.95mm

Solder inner contact over conductor

0.8 (Dielectric in contact)

1.7 conductor

6.5 Dielectric

Hex. 1.9
Cable instructions (IC30HF01)

1 - Thread the sleeve until stop onto the cable
   - Place the shield on the sleeve

2 - Thread the insulator
   - Solder the inner contact on the conductor

3 - Thread to the body.

4 - CRIMP
   - Tool: DANIELS HX3
   - Die: C13847
   - Hexagone: 1.9 mm / flat
   - Position: 9.95 mm

Solder inner contact over conductor

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<th>ØC</th>
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1 - Mount the inner contact on the conductor and solder or crimp.
(crimping with DANIELS MH800 positioner K1131)

2 - Thread the sleeve onto the cable and bent the shield at 90°.

3 - Push until stop inside the body.

4 - Thread the sleeve until stop on the body so as to bent the shield.

5 - Crimp the sleeve

---

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<th>Cable ØA</th>
<th>Body ØB</th>
<th>Sleeve ØC</th>
<th>Contact ØD</th>
<th>conductor Ø 0,3</th>
<th>conductor Ø 0,5</th>
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<td>Hex.4</td>
<td>Die CI4680</td>
<td>Die CI4680</td>
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Cable ØA Body ØB Sleeve ØC Contact ØD conductor Ø 0.3 conductor Ø 0.5 Positioner K1131 Die CI3847 Die CI4680 Solder : P/N terminal ZS Crimp : P/N terminal SS

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Female HF contact Male HF contact
Cable instructions (IC30HF03)

Example with male HF contact

1. Thread the sleeve on cable and bent the shield at 90°

2. Place the inner contact until stop in the body. Insert the cable and solder the conductor onto the inner contact

3. Thread the sleeve until stop on the body so as to bent the shield

4. Crimp the sleeve with DANIELS HX3 tool and mount the back cap with tool P/N C14772

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<td>1.7 mm</td>
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<td>x</td>
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</table>

Hexagonal imprint E sleeve crimp DANIELS HX3 tool

1. Stop
2. Solder
3. Solder
4. Solder

Female HF contact

Male HF contact
Cable instructions (IC22HP02)

1 - Insert the cable into the contact.

2 - Set the hand crimp tool according to crimp barrel accommodation table above.
   2.1 - Select the number selector with the selector knob (see crimp tool setting).
   2.2 - Put the positioner C16461 on the hand crimp tool 16459.

3 - Insert the contact and wire assembly in the crimp guide of the hand crimp tool.
   3.1 - In the crimp guide, the contact and wire assembly must be in the ends stop position.
   3.2 - During crimping, keep the wire in position.
   3.3 - Just one crimping operation is allowed per contact and wire assembly.

4 - Visually check crimping
   4.1 - Crimping must not deform the inspection window.
   4.2 - Contact must not have visible fractures or cracks.
   4.3 - Contact barrel must not be deformed or bent.
   4.4 - Crimping must not deform the end of the contact.

5 - Check it is firmly crimped by pulling gently
   5.1 - For that purpose two (2) fingers are enough: pinch the wire and pull smoothly along the axis of the cramped contact.
Cable instructions (IC30HP02)

1. Insert the cable into the contact.

2. Set the hand crimp tool according to crimp barrel accomodation table above.

2.1. Select the selector number with the selector knob (see crimp tool setting).

2.2. Put the positioner C16460 on the hand crimp tool 16459.

3. Insert the contact and wire assembly in the crimp guide of the hand crimp tool.

3.1. In the crimp guide, the contact and wire assembly must be in the end stop position.

3.2. During crimping, keep the wire in position.

3.3. Just one crimping operation is allowed per contact and wire assembly.

4. Visually check crimping

4.1. Crimping must not deform the inspection window.

4.2. Contact must not have visible fractures or cracks.

4.3. Contact barrel must not be deformed or bent.

4.4. Crimping must not deform the end of the contact.

5. Check it is firmly crimped by pulling gently

For that purpose two (2) fingers are enough: pinch the wire and pull smoothly along the axis of the cramped contact.
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**CMM Specifications (with LF contacts)**

**MATERIALS**
- **ISOLATOR**: Special PPS (Polyphenylene Sulfide Fiberglass filled thermoset) UL 94 V0
- Radiation resistance
- No flammability absorption
- Copper free

Notes: PPS characteristics are recognized for space applications.

**FC LF CONTACTS**:
- **Male**: Body - copper alloy / 76 × 4.5 / 165.2
- Contact area - copper alloy / 76 × 4.5 / 165.2

**CRIMP LF CONTACTS**:
- **Male**: Body - copper alloy / 76 × 4.5 / 165.2
- **Female**: Body - copper alloy / 76 × 4.5 / 165.2
- Solder - Beryllium copper / Ni + Au > 2.5µ

**Fixing HARDWARE**:
- **Jawless Stainless steel**
- **Type**: Round Ø3.5 mm

**Electrical**
- **All contacts**: 24 max @ 72°C / 21.6 max @ 80°C
- **Contact voltage**: Tested at 80V DC
- **Contact resistance (initially)**: max. 10 mΩ
- **Insulation resistance (initially)**: 1000 MΩ
t

**Mechanical**
- **Mechanical operations**
  - Up to 2000 cycles
- **Contact insertion and withdrawal force**: 2 N max / 0.2 N min per contact
- **Contact resistance in cleaner**: 10 mΩ
- **Contact replacement in cleaner**: 2 cycles (Crimp contacts only)

**Environmental**
- **Temperature range**: From -40°C to +260°C
- **Vibration resistance**: 0.35g (10g Rms 4 hours long) with superimposed around 50Hz ± 10% ± 5% (High speed loading framing)
- **Shock resistance**: 100 g for 4 sec
- **Salt resistance**: N/A (IT SPECS ATOD/CHR screams)

**Notes**
- The CMM micro-connectors are designed in stock or custom for relevant electrical and environmental performances described in MIL-DTL-38999 & MIL-DTL-38512 standards.

**Manufacturer & designer of innovative interconnect solutions**

**Micro-D Mix™ DMW SERIES MICRO-CONNECTORS**
- See pick and place, high density micro connector
- Capable of high reliability
- New alternative under MIL-DTL-38512 & MIL-DTL-38512F and recent very flexible custom design (using hardware, cables, etc.)

**CMM SERIES MICRO-CIRCULAR CONNECTORS**
- High density of contacts in smallest circular connector shape:
  - Space saving feature
  - Lensless carrying
  - Fast plugging in
  - Latchable captive fixing hardware

**Microflex Harness Solution**
- Low weight, no gap up to 30% in bulky cable
- Smaller space factor
- 2 in 1 technology with CRIMP & CRIMPflex
- High quality of entry (ISO 17, DIN 7)
- High productivity 2 to 9 contacts in 1 string
- Adaptable to customer requests

**4D-Floating Connectors**
- 4D tolerance absorption : 4D = 3 movements + 1 rotation
- High efficiency “Bone design” (round shape and 4 spring-lips contact)
- Compatible with MIL-DTL-38512F
- Self cabling connector
- Security of connection
- Space saving feature
- High density of contacts in smallest circular connector shape
- Very flexible custom design (fixing hardware, contacts...)
- Simple and easy to design-in
- Low weight: save up to -30% vs. bulky cable
- Security of connection
- Simple and easy to design-in
- Low weight: save up to -30% vs. bulky cable
- Security of connection
- Simple and easy to design-in
- Low weight: save up to -30% vs. bulky cable

**Custom Products**
- You can rely on our R&D department know-how and long experience.
- Our passion for innovation was recognized and labeled as “highly innovative” by the European Union.
- Our in-house production and assembly capacity offers you the possibility to create customized products from shaping and molding micro-connector housing, over customized development, measurements, test and last.
- Fully integrated industrial company Nicomatic can reduce your risks, can secure your development and achieve the solution that will make the difference on the market.

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Nicomatic reserves a policy of ongoing developments and improvements & therefore reserves the right to change the specifications without notice.
This catalogue is non-committal and subject to change.
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NICOMATIC specializes in the design, development and manufacturing of electronic connectors.

The CMM MICRO CONNECTOR interconnection system offers a 2mm pitch connector (square matrix) with proven high reliability under the most extreme environmental conditions:

- Flexible architecture: “Board to Board”, “Board to Wire” and “Wire to Wire” configurations
- Modular and hybrid design: mixed layout full option with Low Frequency – LF (over 5 Amp) – and High Frequency – HF – (over 11 GHz) and High Power – HP – (over 30 Amp)
- High reliability contact design & High performance under harsh use conditions
- Secure: integral jacking mechanism or locking by spring latch

The CMM MICRO CONNECTOR is a complete and standard range of connectors:

- CMM 100 series: 1 row – from 2 to 25 LF contacts
- CMM 200 series: 2 rows – from 4 to 50 LF contacts
- CMM 220 series: 2 rows – from 4 to 60 LF contacts, or up to 20 HF or HP contacts (series 30)
- CMM 320 series: 3 rows – from 6 to 120 LF contacts, or up to 20 HF or HP contacts (series 30)
- CMM 340 series: 3 rows – min. 6 LF contacts and up to 64 HF or HP contacts (series 22)

Direct benefits:
- Space saving: -40% in surface and over -60% in volume
- Weight saving: -20 to -50% vs. usual solution for same functionalities
- Reduce number of connectors: 2 or 3 connectors in 1 thanks to a modular concept
- Cost effective solution: custom connector assembly from standard components
- Proven success stories in on-board electronic systems
- Short lead time: 1 week express service, Premium service, fast sampling and prototyping
- Online customer services: free use of My NICOMATIC service (2D & 3D drawings), automatic part number & mating-half configurators, technical support under technic@nicomatic.fr

The CMM has been developed for the aerospace, avionics, instrumentation & control, defense and transportation markets, with applications that include IFES, HUDs, flight controls, DASS/ADS, radios, radars, electro-optical sighting systems, satellites, mobile radios, power supplies, MILS and engine controls. It is also used in a growing number of medical and telecom applications.