

# M300

# Clarke & Severn Electronics

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## Female Cable Connectors

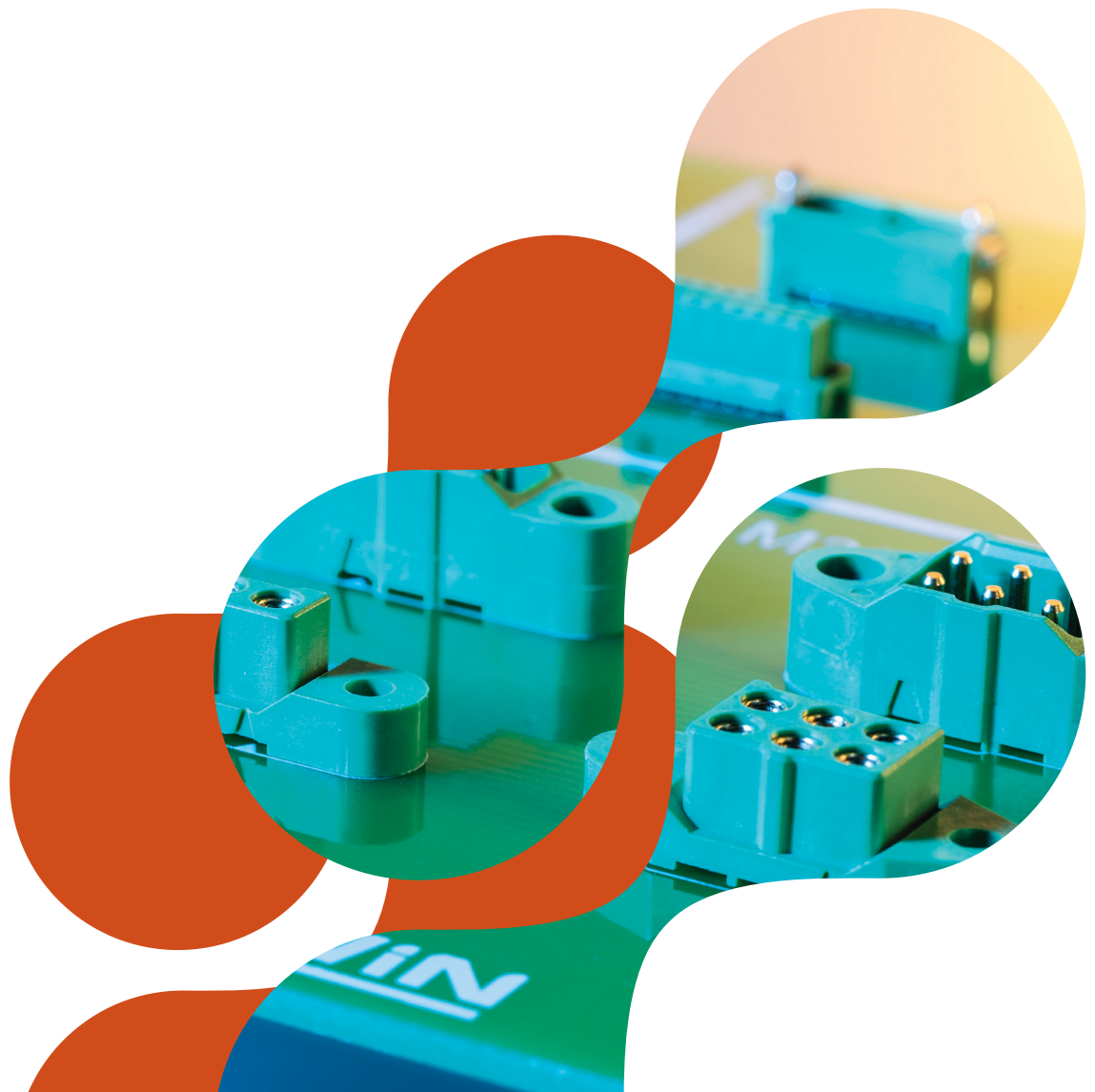
## Female Cable Assemblies

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## Male Cable Connectors

## Male Cable Assemblies

## Tooling



# M300 Connectors Introduction

## Harwin M300 - 5 & 10A Power Connectors High Reliability Connectors for Power Applications

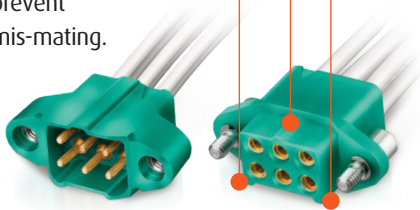
Harwin's M300 series is a 3.00mm pitch, high reliability / high performance connector system suited to aerospace, defense, industrial and other harsh environments. M300 provides a dual and single row cable-to-board and board-to-board solution for applications requiring up to 10A of power in a small space envelope. Featuring an extended rear potting wall for additional strain relief, the housings are clearly marked with a "position 1" identifier. Housings are manufactured from Halogen and Red Phosphorus-free glass-filled thermoplastic and all M300 connector assemblies are RoHS compliant.

### Features

- ❖ Up to 5 and up to 10 Amp versions
- ❖ Extremes of temperature -65 to +175°C
- ❖ Scoop-proof female contacts help prevent damage in blind-mating conditions
- ❖ Up to 1,000 operations

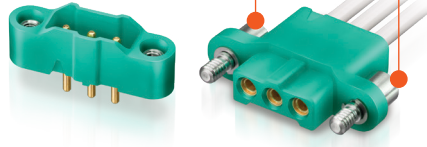
#### Keyway polarization points

3 polarizing points on each component prevent mis-mating.



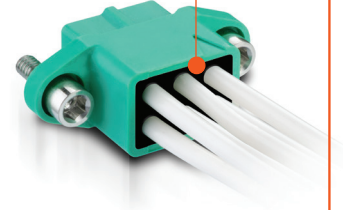
#### Jackscrew retention system

Optional Jackscrews for security of connection.



#### Potting Wall

Cable connectors feature a rear potting wall adding an extra level of strain relief.



#### Four Finger Beryllium Copper Contact

Unique high-reliability contact design ensures signal integrity under extremes of bump, vibration and shock.



#### No. 1 Position identified

Housings are clearly marked with identifier for fast visual inspection.



#### Environmentally Friendly Materials

Moldings are manufactured from halogen & Red Phosphorus free, glass-filled thermoplastic, an environmentally friendly material. All M300 connectors are RoHS compliant.



## Pin Numbering

SINGLE ROW	DOUBLE ROW
<p>Female</p> <p>Male</p>	<p>Female</p> <p>Male</p>

# M300 Connectors Specifications

## Materials

Housings:	Glass Filled Thermoplastic UL94V-0
Female contacts:	Beryllium Copper Contact Clip, Brass Shell
Male contacts:	Brass
Contact finish	Gold
Male contacts:	Brass
JackscREW hardware:	Stainless Steel

## Electrical

### Current

All contacts simultaneously with 18 AWG wire:	10A max (30°C temp. rise)
All contacts simultaneously with 22 AWG wire:	5A max (30°C temp. rise)

### Working voltage

(at sea level, 913/1050mb):	600V min DC or AC peak
(at altitude 21,336m/70,000ft, 44mb):	150V min DC or AC peak

### Voltage proof

(at sea level, 913/1050mb):	1800V max DC or AC peak
(at altitude 21,336m/70,000ft, 44mb):	450V max DC or AC peak

Contact resistance: 6mΩ max

Insulation resistance: 100MΩ min at 100V DC

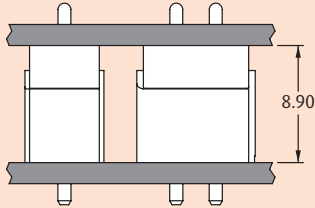
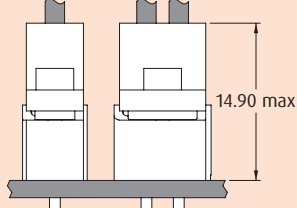
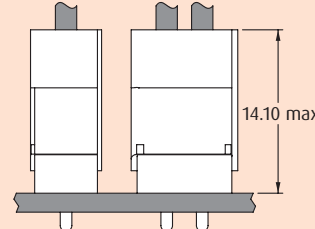
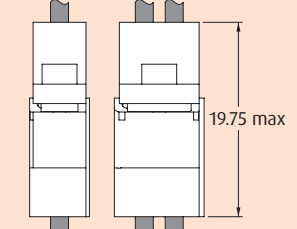
## Mechanical

Durability:	1000 operations
Mating forces (per contact pair)	
Insertion force:	9N max
Withdrawal force:	1N min
Contact retention in housing	
Cable contact:	15N min
PC-Tail contact:	5N min
Signal crimp accommodation:	18 AWG to 22 AWG BS 3G 210 Type A, MIL-16878E Type E

## Environmental

Environmental Classification:	65/175/56 days at 90%RH
Operating temperature:	-65°C to +175°C
Vibration sensitivity:	10Hz to 2000Hz, 1.52mm, 196.1m/s <sup>2</sup> (20G), 12 hours
Bump severity:	390m/s <sup>2</sup> (40G), 4000 bumps
Shock severity:	981m/s <sup>2</sup> (100G), 6ms
Acceleration severity:	490m/s <sup>2</sup> (50G)

# Mating Profiles

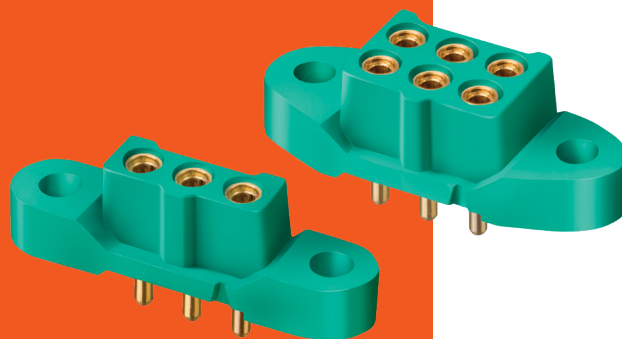
		FEMALE	
		VERTICAL PC TAIL	CABLE
MALE	VERTICAL PC TAIL		
	CABLE		

All dimensions in mm.

# M300 Connectors

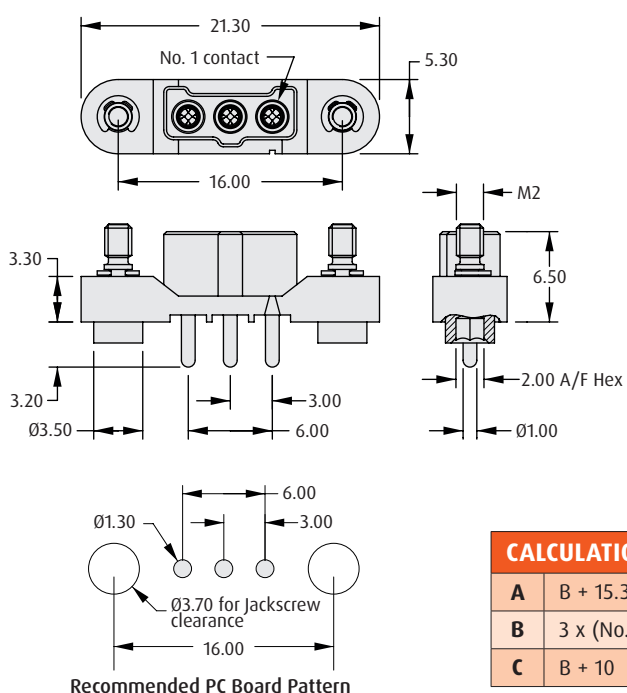
## Female PC Tail

- ❖ 4-finger Beryllium Copper contact.
- ❖ Positive keyway polarisation features.
- ❖ 10A current capacity, resists high vibration and shock.
- ❖ Withstands extremes of temperature: -65°C to +175°C.
- ❖ Scoop-proof contacts.
- ❖ No. 1 position ident on housing.



M300

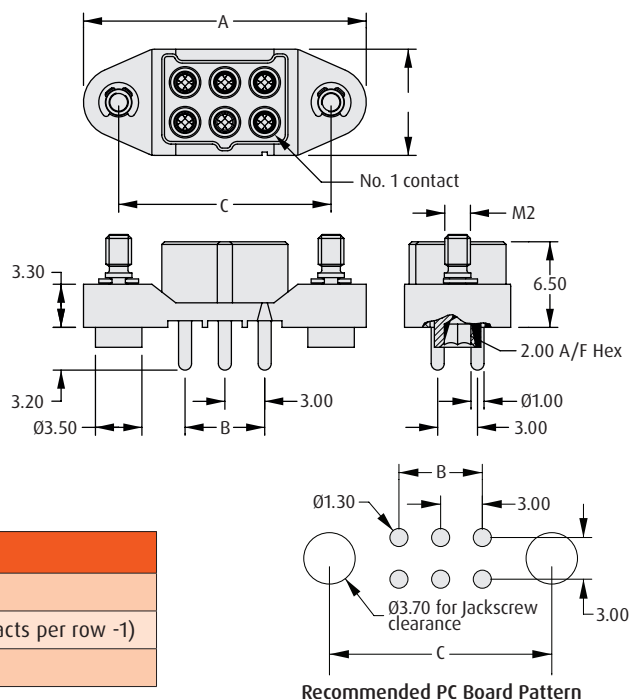
### SINGLE ROW



#### CALCULATION

A	B + 15.3
B	3 x (No. of contacts per row -1)
C	B + 10

### DOUBLE ROW



### HOW TO ORDER

**M300 - F VX XX 45 XX**

#### SERIES CODE

#### GENDER

**F** Female

#### TYPE

<b>V1</b>	Single Row
<b>V3</b>	Double Row

#### TYPE

<b>00</b>	No Jackscrew
<b>F2</b>	Hex Socket Jackscrew

#### FINISH

**45** Gold

#### TOTAL NO. OF CONTACTS

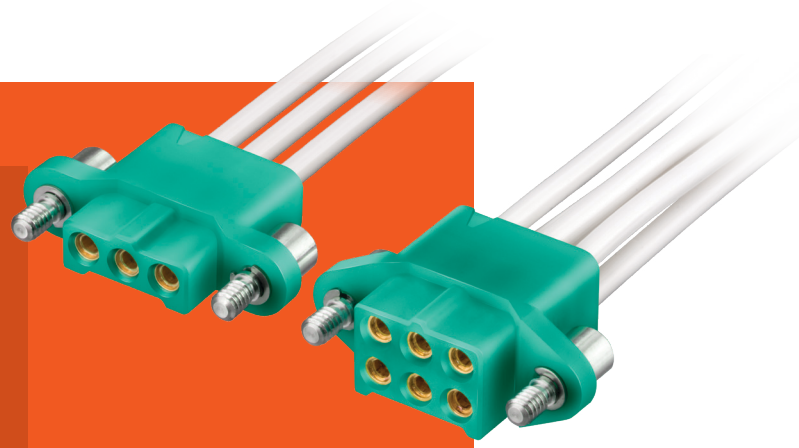
<b>03</b>	Single Row
<b>06, 10</b>	Double Row

All dimensions in mm.

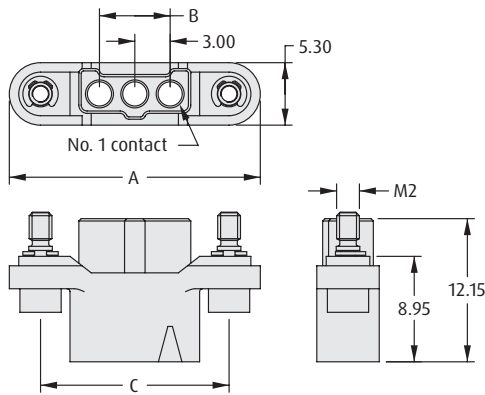
# M300 Connectors

## Female Cable Connector Housings

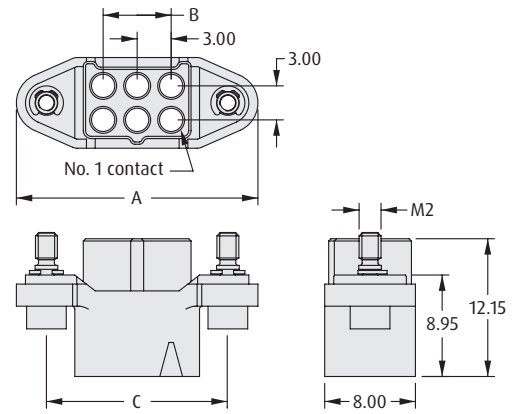
- ❖ 3 polarising points on each housing to prevent mis-mating.
- ❖ Features potting wall for extra security.
- ❖ No. 1 position identified on moulding.
- ❖ Scoop-proof contacts.
- ❖ 10A current capacity, resists high vibration and shock.
- ❖ Withstands extremes of temperature: -65°C to +175°C.



### SINGLE ROW



### DOUBLE ROW



#### CALCULATION

<b>A</b>	$B + 15.3$
<b>B</b>	$3 \times (\text{No. of contacts per row} - 1)$
<b>C</b>	$B + 10$

### TOOLS

**Recommended Crimp Tool** – M22520/2-01  
**Positioner** – Z80-058  
**Contact Insertion/Removal Tool** – Z300-902

- ❖ Female contacts shown on following pages.
- ❖ Instruction sheets available at [www.harwin.com/instructions](http://www.harwin.com/instructions).

### HOW TO ORDER

**M300 - 22X XX 96 F2**

#### SERIES CODE

#### TYPE

<b>224</b>	Double Row
<b>225</b>	Single Row

#### TOTAL NO. OF CONTACTS

<b>03</b>	Single Row
<b>06, 10</b>	Double Row

#### FIXING

<b>F2</b>	Hex Socket Jackscrew
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#### FINISH

<b>96</b>	Housing
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All dimensions in mm.

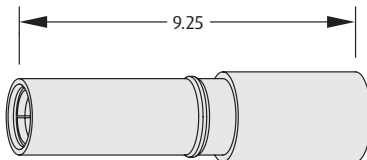
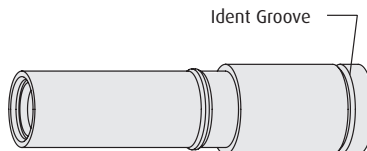
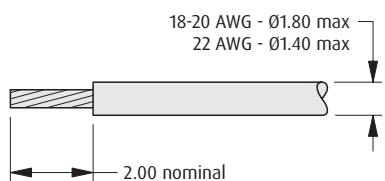
# M300 Connectors

## Female Cable Connector Contacts

- ❖ 4-finger Beryllium Copper contact.
- ❖ Crimp barrel meets all crimp guidelines and standards.
- ❖ 10A current capacity, resists high vibration and shock.
- ❖ Withstands extremes of temperature: -65°C to +175°C.



M300

CONTACTS		WIRE STRIPPING DETAILS							
<div>18-20 AWG</div>  <div>22 AWG</div> 									
TOOLS									
<div>Recommended Crimp Tool – M22520/2-01</div> <div>Positioner – Z80-058</div> <div>Contact Insertion/Removal Tool – Z300-902</div>		<div>❖ Female crimp housings shown on previous page.</div> <div>❖ Instruction sheets available at <a href="http://www.harwin.com/instructions">www.harwin.com/instructions</a>.</div>							
HOW TO ORDER									
<div>M300 - 00X 00 45</div>									
<div>SERIES CODE</div>		<div>FINISH</div>							
<table><tr><td>001</td><td>18-20 AWG crimp contact</td></tr><tr><td>002</td><td>22 AWG crimp contact</td></tr></table>		001	18-20 AWG crimp contact	002	22 AWG crimp contact	<table><tr><td>45</td><td>Gold</td></tr></table>		45	Gold
001	18-20 AWG crimp contact								
002	22 AWG crimp contact								
45	Gold								

All dimensions in mm.

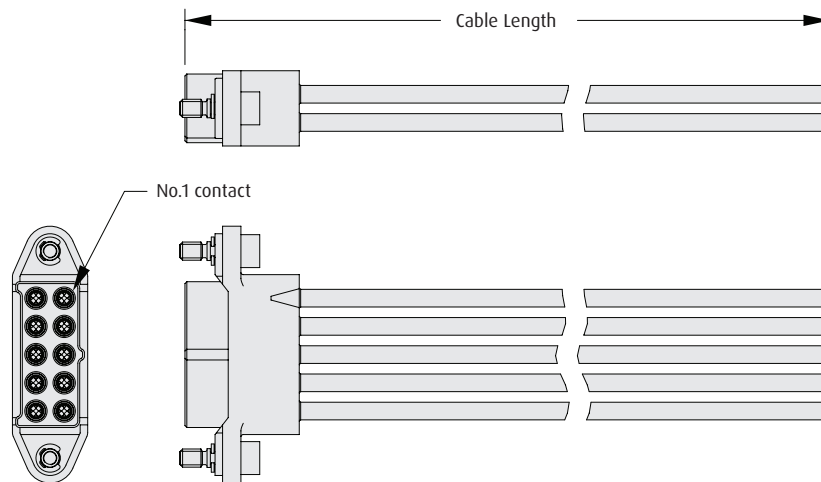
# M300 Connectors

## Female Cable Assemblies

- ❑ 4-finger Beryllium Copper contact.
- ❑ No. 1 position identified on moulding.
- ❑ 10A current capacity, resists high vibration and shock.
- ❑ Back potted for added strain relief.
- ❑ For non-standard cable lengths, please visit [harwin.com/cable-assemblies](http://harwin.com/cable-assemblies) and fill in your requirements.



### FEMALE



### HOW TO ORDER

**M300 - F C X XX 05 F2 - XXXX L**

#### SERIES CODE

#### GENDER - FIRST END

**F** Female

#### CABLE SIZE

<b>1</b>	18 AWG, for Double Row
<b>2</b>	20 AWG, for Double Row
<b>3</b>	22 AWG, for Double Row
<b>5</b>	18 AWG, for Single Row
<b>6</b>	20 AWG, for Single Row
<b>7</b>	22 AWG, for Single Row

#### TERMINATION - SECOND END

**L** Loose cut end

#### CABLE LENGTH

<b>0150</b>	150mm
<b>0300</b>	300mm
<b>0450</b>	450mm

#### FIXING

**F2** Hex Socket Jackscrew

#### TOTAL NO. OF CONTACTS

<b>03</b>	Single Row
<b>06, 10</b>	Double Row

All dimensions in mm.

# M300 Connectors

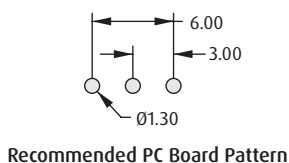
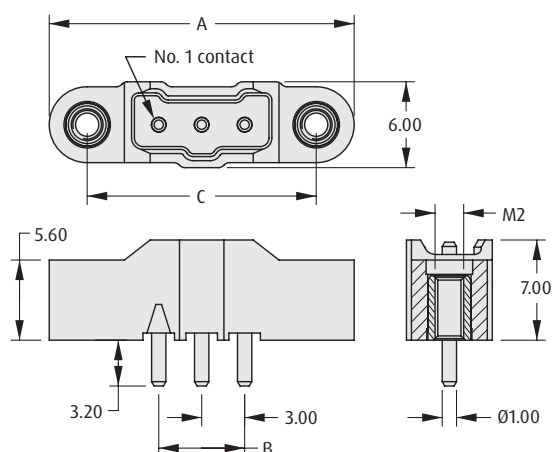
## Male PC Tail

- 10A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65°C to +175°C.

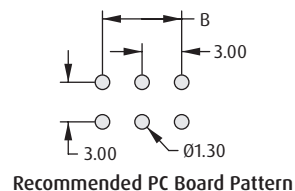
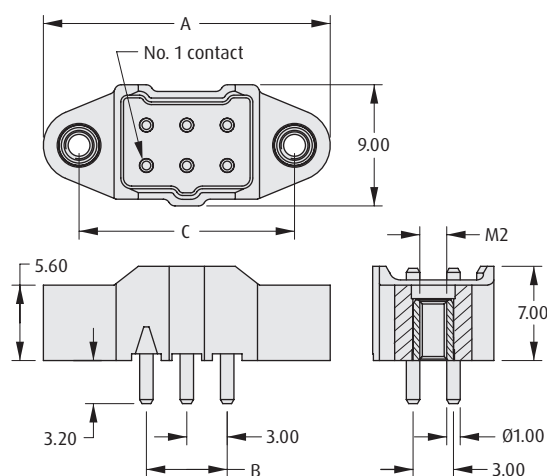


M300

### SINGLE ROW



### DOUBLE ROW



#### CALCULATION

<b>A</b>	$B + 15.3$
<b>B</b>	$3 \times (\text{No. of contacts per row} - 1)$
<b>C</b>	$B + 10$

### HOW TO ORDER

**M300 - M VX XX 45 M1**

#### SERIES CODE

#### GENDER

**M** Male

#### TYPE

**V1** Single Row  
**V3** Double Row

#### TYPE

**M1** Jackscrew

#### FINISH

**45** Gold

#### TOTAL NO. OF CONTACTS

**03** Single Row  
**06, 10** Double Row

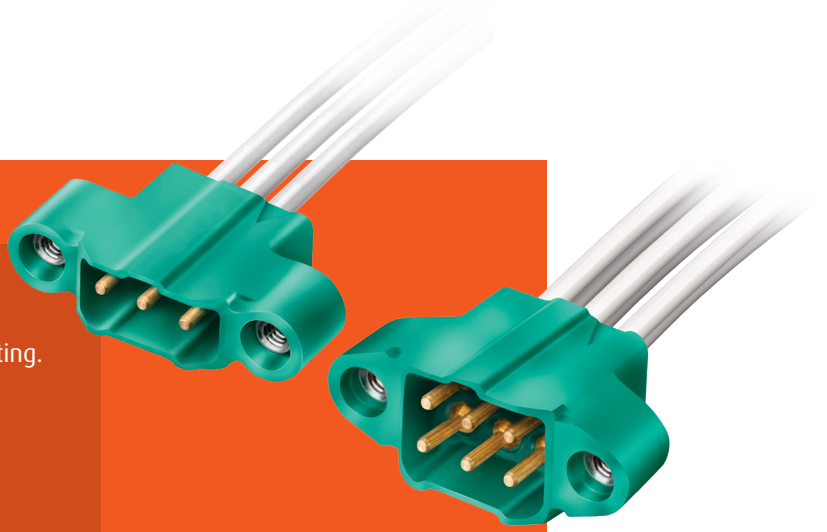
All dimensions in mm.



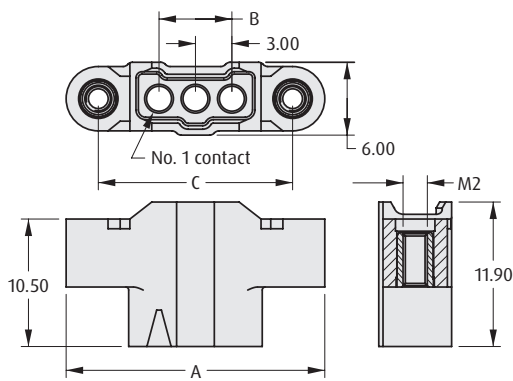
# M300 Connectors

## Male Cable Connector Housings

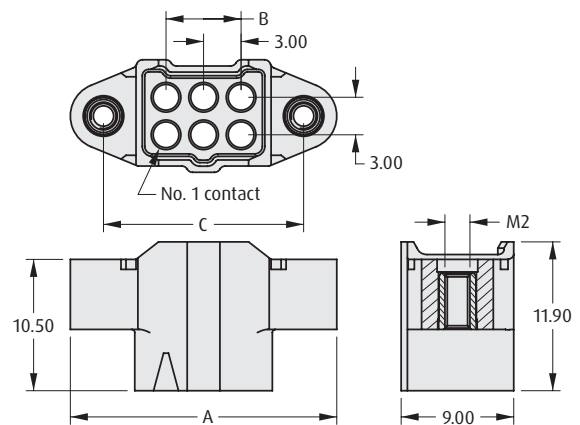
- ❖ Features potting wall for extra security.
- ❖ No. 1 position identified on moulding.
- ❖ 3 polarising points on each housing to prevent mis-mating.
- ❖ 10A current capacity, resists high vibration and shock.
- ❖ Withstands extremes of temperature: -65°C to +175°C.



### SINGLE ROW



### DOUBLE ROW



#### CALCULATION

<b>A</b>	$B + 15.3$
<b>B</b>	$3 \times (\text{No. of contacts per row} - 1)$
<b>C</b>	$B + 10$

### TOOLS

**Recommended Crimp Tool** – M22520/2-01  
**Positioner** – Z80-058  
**Contact Insertion/Removal Tool** – Z300-902

- ❖ Male contacts shown on following pages.
- ❖ Instruction sheets available at [www.harwin.com/instructions](http://www.harwin.com/instructions).

### HOW TO ORDER

**M300 - 32X XX 96 M1**

#### SERIES CODE

#### TYPE

<b>324</b>	Double Row
<b>325</b>	Single Row

#### TOTAL NO. OF CONTACTS

<b>03</b>	Single Row
<b>06, 10</b>	Double Row

#### TYPE

<b>M1</b>	Jack screw
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#### FINISH

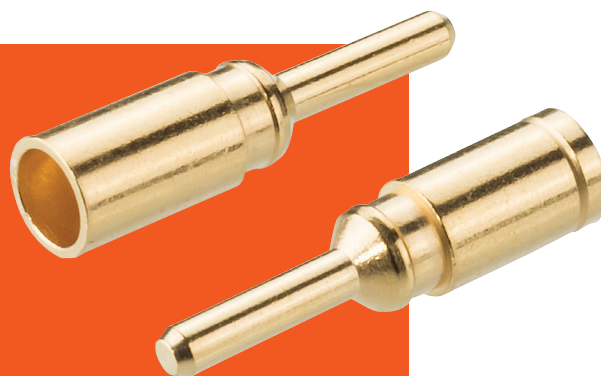
<b>96</b>	Housing
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All dimensions in mm.

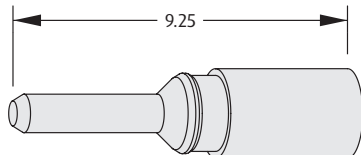
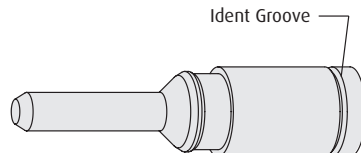
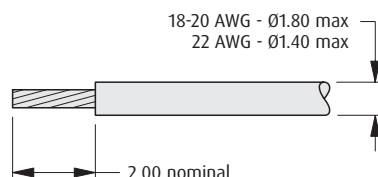
# M300 Connectors

## Male Cable Connector Contacts

- ❖ Crimp barrel meets all crimp guidelines and standards.
- ❖ 10A current capacity, resists high vibration and shock.
- ❖ Withstands extremes of temperature: -65°C to +175°C.



M300

CONTACTS		WIRE STRIPPING DETAILS					
<div>18-20 AWG</div>  <div>22 AWG</div> 							
TOOLS							
<div>Recommended Crimp Tool – M22520/2-01</div> <div>Positioner – Z80-058</div> <div>Contact Insertion/Removal Tool – Z300-902</div>		<div>❖ Male crimp housings shown on previous page.</div> <div>❖ Instruction sheets available at <a href="http://www.harwin.com/instructions">www.harwin.com/instructions</a>.</div>					
HOW TO ORDER							
		<div>M300 - 10X 00 45</div>					
<div>SERIES CODE</div>		<div>FINISH</div> <div>45Gold</div>					
<div>TYPE</div> <table><tr><td>101</td><td>18-20 AWG crimp contact</td></tr><tr><td>102</td><td>22 AWG crimp contact</td></tr></table>		101	18-20 AWG crimp contact	102	22 AWG crimp contact		
101	18-20 AWG crimp contact						
102	22 AWG crimp contact						

All dimensions in mm.

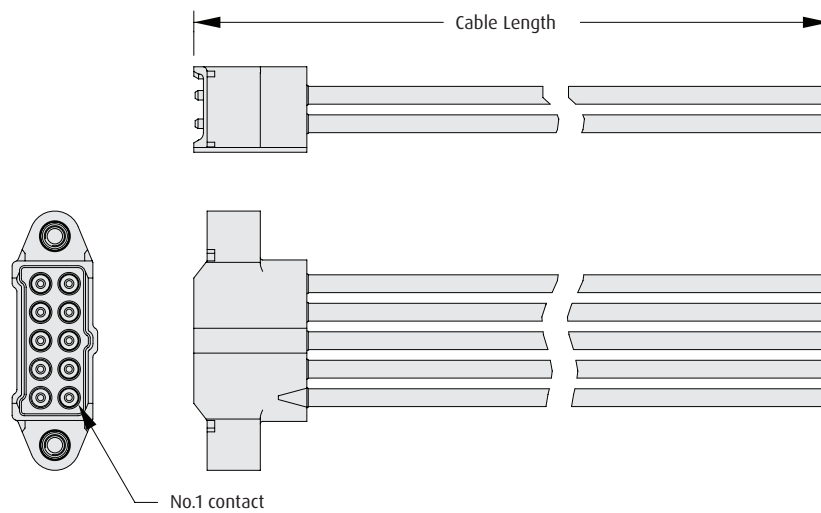
# M300 Connectors

## Male Cable Assemblies

- ❖ 4-finger Beryllium Copper contact.
- ❖ No. 1 position identified on moulding.
- ❖ 10A current capacity, resists high vibration and shock.
- ❖ Back potted for added strain relief.
- ❖ For non-standard cable lengths, please visit [harwin.com/cable-assemblies](http://harwin.com/cable-assemblies) and fill in your requirements.



### MALE



### HOW TO ORDER

**M300 - M C X XX 05 M1 - XXXX L**

#### SERIES CODE

#### GENDER - FIRST END

**M** Male

#### CABLE SIZE

<b>1</b>	18 AWG, for Double Row
<b>2</b>	20 AWG, for Double Row
<b>3</b>	22 AWG, for Double Row
<b>5</b>	18 AWG, for Single Row
<b>6</b>	20 AWG, for Single Row
<b>7</b>	22 AWG, for Single Row

#### TERMINATION - SECOND END

**L** Loose cut end

#### CABLE LENGTH

<b>0150</b>	150mm
<b>0300</b>	300mm
<b>0450</b>	450mm

#### FIXING

**M1** Jackscrew

#### TOTAL NO. OF CONTACTS

<b>03</b>	Single Row
<b>06, 10</b>	Double Row

All dimensions in mm.

# M300 Connectors Tooling

❖ Instruction sheets can be accessed at [www.harwin.com/instructions](http://www.harwin.com/instructions).

<div> <div> <b>HAND CRIMP TOOL</b> </div> <div> <ul style="list-style-type: none"> <li>❖ Standard circular crimp tool BS5210-3A-300 and MIL specification M22520/2-01.</li> <li>❖ Precision tool with ratchet mechanism and 8-indent form.</li> <li>❖ Must be used together.</li> <li>❖ Instruction sheet available.</li> </ul> <div>  </div> <div> <table> <tr> <th>ORDER CODE</th><th></th></tr> <tr> <td>Hand Crimp Tool</td><td>M22520/2-01</td></tr> <tr> <td>Positioner</td><td>Z80-058</td></tr> </table> </div> </div> </div>	ORDER CODE		Hand Crimp Tool	M22520/2-01	Positioner	Z80-058	<div> <div> <b>INSERTION/REMOVAL TOOL</b> </div> <div> <ul style="list-style-type: none"> <li>❖ For inserting and removing crimped contacts into the rear of mouldings.</li> <li>❖ Instruction sheet available.</li> </ul> <div>  </div> <div> <table> <tr> <th>ORDER CODE</th><th></th></tr> <tr> <td></td><td>Z300-902</td></tr> </table> </div> </div> </div>	ORDER CODE			Z300-902
ORDER CODE											
Hand Crimp Tool	M22520/2-01										
Positioner	Z80-058										
ORDER CODE											
	Z300-902										
<div> <div> <b>HEX DRIVE BIT</b> </div> <div> <ul style="list-style-type: none"> <li>❖ 2mm A/F Hex end for M300 Hex Socket jackscrews.</li> <li>❖ For use with torque tooling or similar equipment.</li> </ul> <div>  </div> <div> <table> <tr> <th>ORDER CODE</th><th></th></tr> <tr> <td></td><td>Z9951-00</td></tr> </table> </div> </div> </div>	ORDER CODE			Z9951-00	<div> <div> <b>BALL HEX DRIVER</b> </div> <div> <ul style="list-style-type: none"> <li>❖ 2mm A/F Hex end for M300 Hex Socket jackscrews.</li> <li>❖ Ball-shaped end can be used at a wide range of angles.</li> </ul> <div>  </div> <div> <table> <tr> <th>ORDER CODE</th><th></th></tr> <tr> <td></td><td>Z9953-00</td></tr> </table> </div> </div> </div>	ORDER CODE			Z9953-00		
ORDER CODE											
	Z9951-00										
ORDER CODE											
	Z9953-00										

All dimensions in mm.