

# M300

## Contents

Introduction	178
Specifications	180
Mating Profiles	181
Female PCB Connectors	182
Female Cable Connectors	183
Female Cable Assemblies	185
Male PCB Connectors	186
Male Cable Connectors	187
Male Cable Assemblies	189
Tooling	190

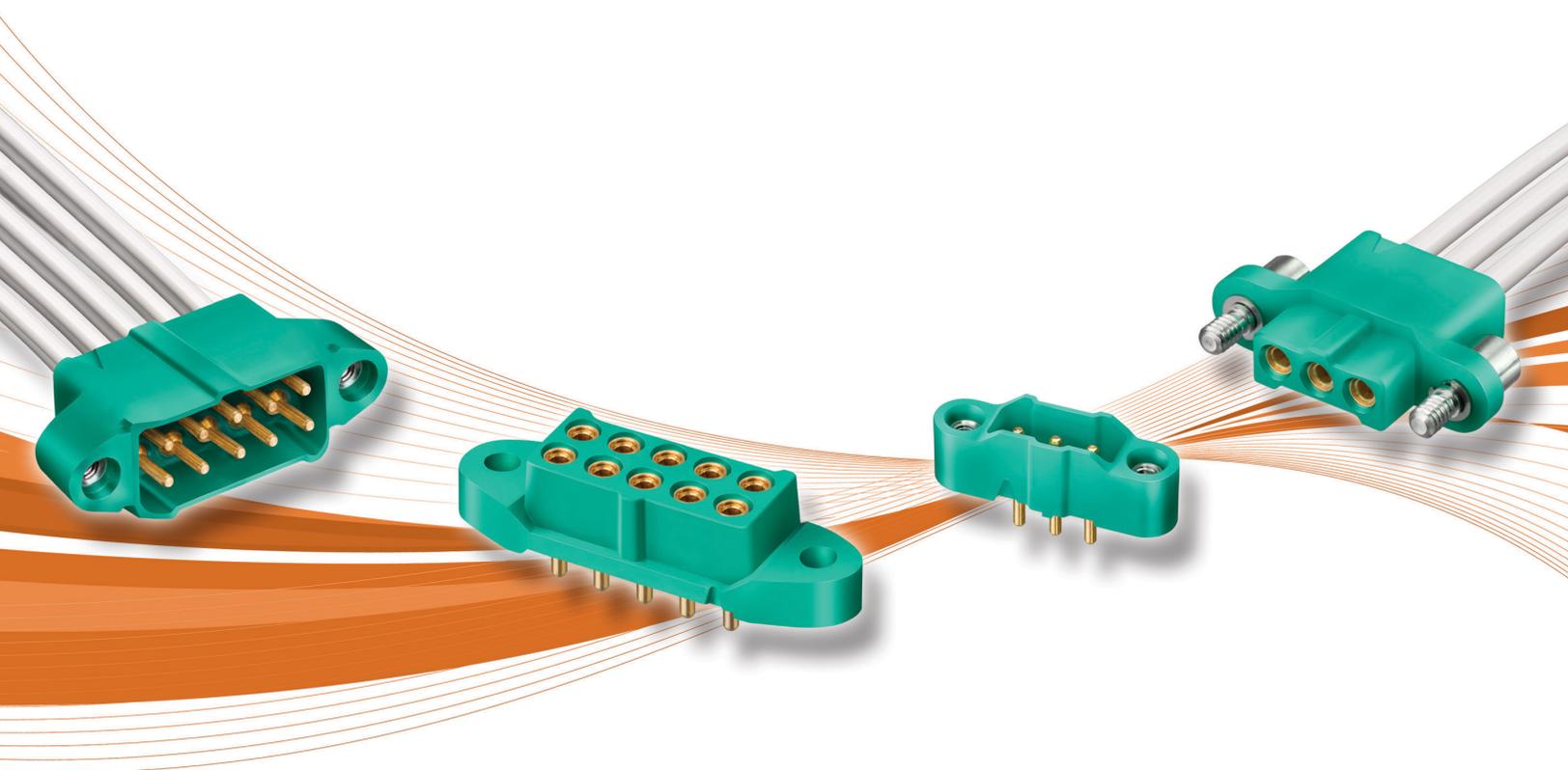
# M300 Connectors Introduction

M300

M300 Series is a 3.00mm pitch High-Reliability, high performance connector range from Harwin. Building on the Datamate series design, these connectors increase the power-handling capacity in a larger contact size, while maintaining compactness and weight saving features.

The M300 series provides a robust mid-range power connector range for board-to-board, board-to-cable and cable-to-cable requirements. The compact form can carry up to 10A in a small space envelope, suited to aerospace, defense, industrial and other harsh environments. Stainless Steel jackscrews, replicated from both Datamate and Gecko, provide the vibration and shock resistance required in these applications. Housings are manufactured from Halogen-free and Red-Phosphorus-free glass-filled thermoplastic and all connectors are fully RoHS compliant.

- ❖ Up to 5A or up to 10A current ratings (dependent on cable size choice)
- ❖ Increased durability of 1,000 mating operations (minimum)
- ❖ Improved heat resistance: withstands -65°C to +175°C operating temperature
- ❖ Recessed contact design to help prevent damage in blind-mating conditions
- ❖ Ready-made cable assemblies manufactured in-house by experienced Harwin personnel
- ❖ Strong stainless steel jackscrews for maximum strain relief



# M300 Connectors Product Features

## Four Finger Beryllium Copper Contact

Proven high-reliability contact design ensures signal integrity under extremes of bump, vibration and shock. Durable to over 1,000 mating cycles.



## Keyway Polarization Points

3 polarizing points on each component prevent mis-mating.



## No. 1 Position identified

Housings are clearly marked with identifier for fast visual inspection.



## Rugged Construction

For use in harsh environments where high vibration, shock and temperature are a consideration.



## Pre-assembled Cable Configurations

Cable connectors supplied in ready-made cable assemblies. Single-ended configurations available in standard lengths off-the-shelf, or custom assemblies on request.



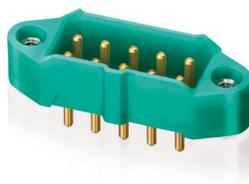
## Potting Wall

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



## Minimal Outgassing

Low outgassing properties from future-proofed plastic; within NASA and ESA recommendations.



## Comprehensive Operating Temperature

Performance is maintained across the full operating temperature range of -65°C to +175°C.



# M300 Connectors Specifications

M300

## 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

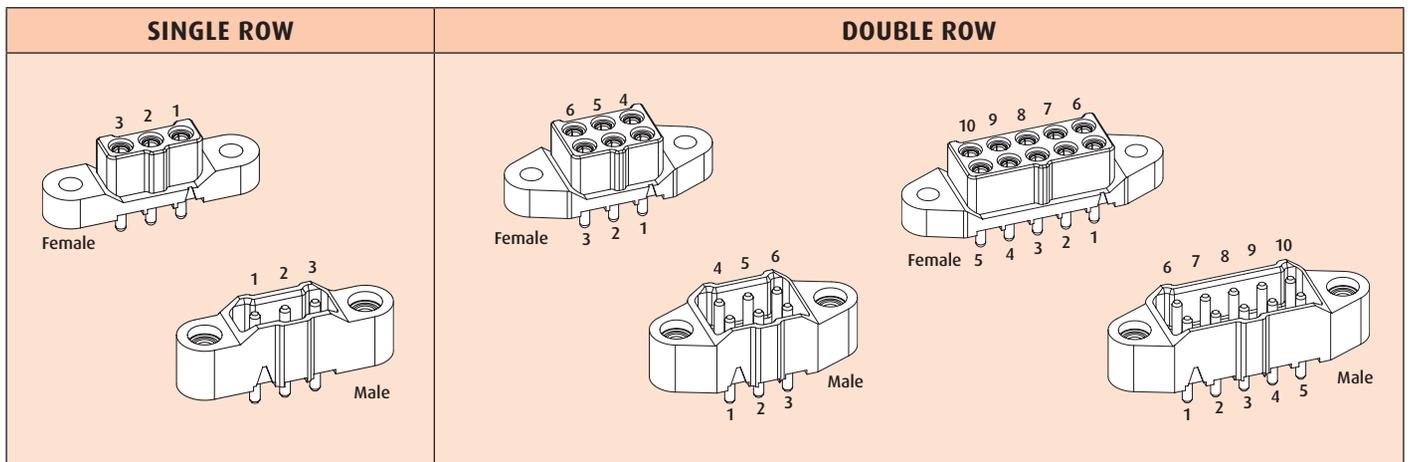
## Mechanical

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

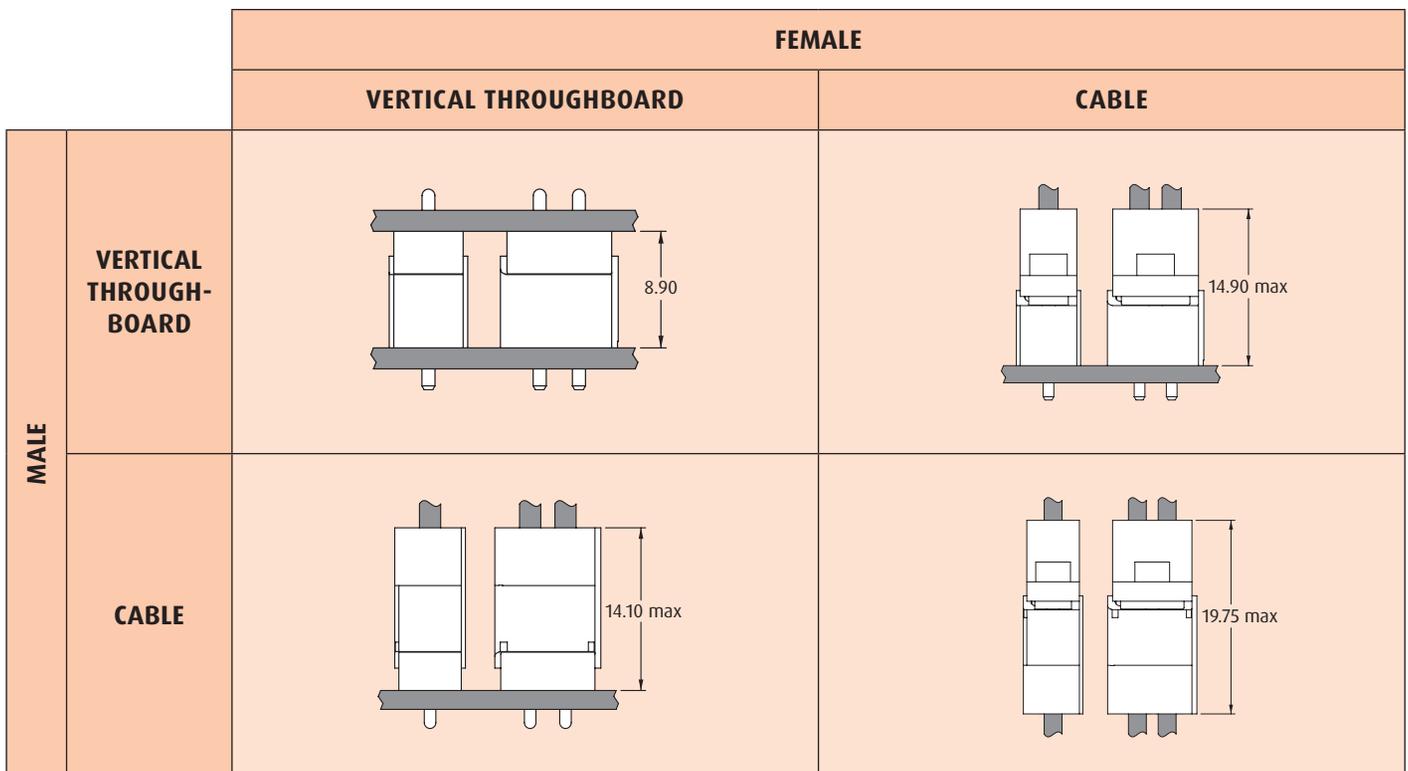
Environmental Classification:	65/175/56 days at 90%RH
Operating temperature:	-65°C to +175°C
Vibration sensitivity:	10Hz to 2000Hz, 1.52mm, 196.1m/s <sup>2</sup> (20G), 12 hours
Bump severity:	390m/s <sup>2</sup> (40G), 4000 bumps
Shock severity:	981m/s <sup>2</sup> (100G), 6ms
Acceleration severity: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

# M300 Connectors Pin Numbering



M300

# M300 Connectors Mating Profiles

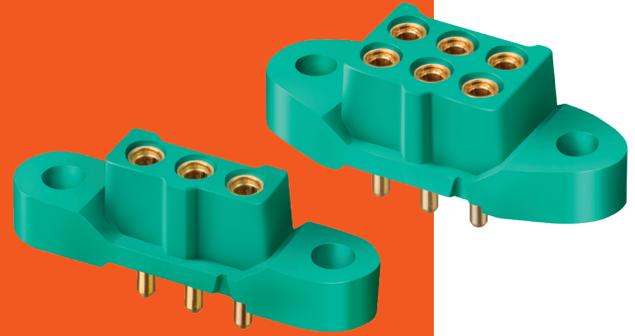


All dimensions in mm.

# M300 Connectors

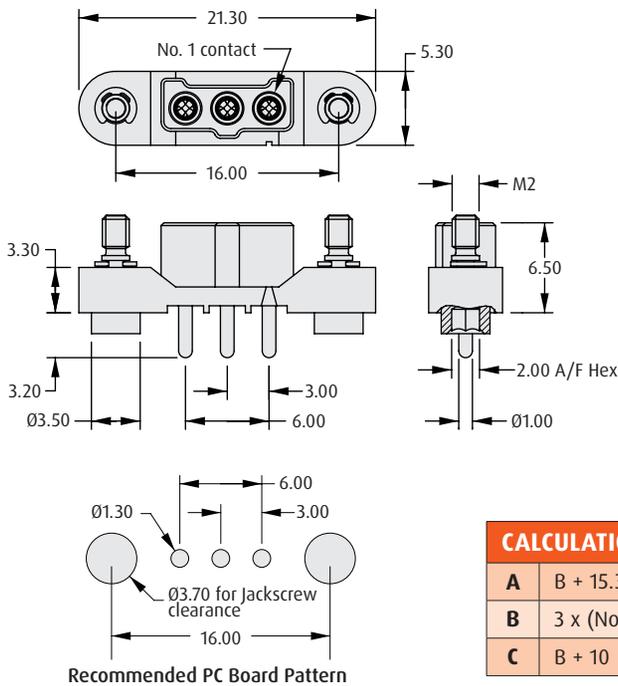
## Female Throughboard

- ❖ 4-finger Beryllium Copper contact.
- ❖ Positive keyway polarization 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.

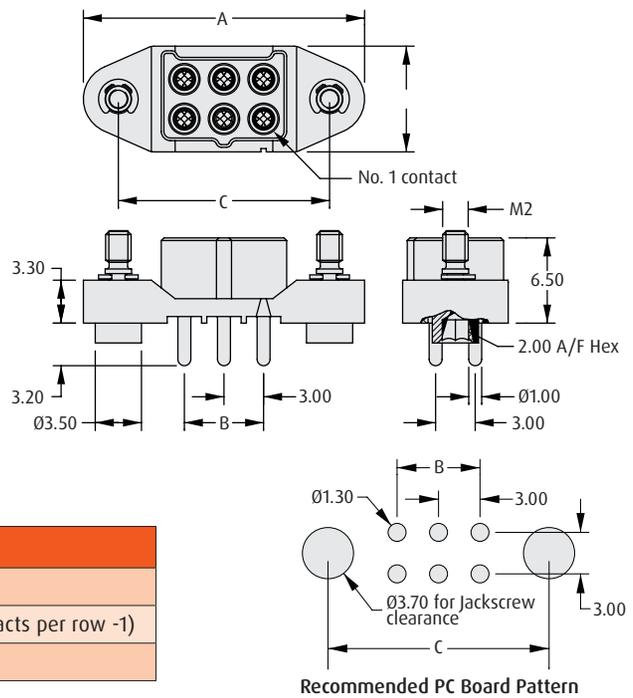


M300

### SINGLE ROW



### DOUBLE ROW



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

### HOW TO ORDER

**M300 - F VX XX 45 XX**

**SERIES CODE**

**GENDER**

**F** Female

**TYPE**

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

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

FINISH	
<b>45</b>	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 polarizing points on each housing to prevent mis-mating.
- Features potting wall for extra security.
- No. 1 position identified on housing.
- Scoop-proof contacts.
- 10A current capacity, resists high vibration and shock.
- Withstands extremes of temperature: -65°C to +175°C.



M300

SINGLE ROW	DOUBLE ROW								
<table border="1"> <thead> <tr> <th colspan="2">CALCULATION</th> </tr> </thead> <tbody> <tr> <td><b>A</b></td> <td><math>B + 15.3</math></td> </tr> <tr> <td><b>B</b></td> <td><math>3 \times (\text{No. of contacts per row} - 1)</math></td> </tr> <tr> <td><b>C</b></td> <td><math>B + 10</math></td> </tr> </tbody> </table>		CALCULATION		<b>A</b>	$B + 15.3$	<b>B</b>	$3 \times (\text{No. of contacts per row} - 1)$	<b>C</b>	$B + 10$
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	
<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

FINISH	
<b>96</b>	Housing

All dimensions in mm.

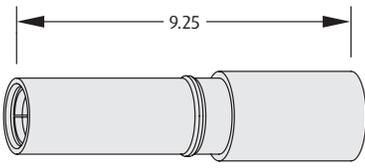
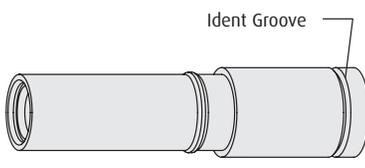
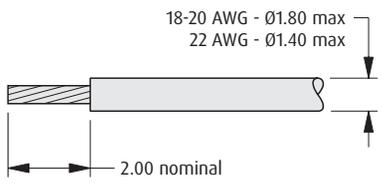
# M300 Connectors

## 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										
<p><b>18-20 AWG</b></p>  <p><b>22 AWG</b></p> 	 <p>18-20 AWG - Ø1.80 max 22 AWG - Ø1.40 max</p> <p>2.00 nominal</p>										
<h3>TOOLS</h3>											
<p><b>Recommended Crimp Tool</b> - M22520/2-01  <b>Positioner</b> - Z80-058  <b>Contact Insertion/Removal Tool</b> - Z300-902</p>	<ul style="list-style-type: none"> <li>❖ Female crimp housings shown on previous page.</li> <li>❖ Full cable assemblies shown on following page.</li> <li>❖ Instruction sheets available at <a href="http://www.harwin.com/instructions">www.harwin.com/instructions</a>.</li> </ul>										
<h3>HOW TO ORDER</h3>											
<p style="text-align: center;"><b>M300 - 00X 00 45</b></p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="146 1627 324 1669" style="border: 1px solid black; padding: 2px;"> <b>SERIES CODE</b> </div> <div data-bbox="146 1701 479 1816" style="border: 1px solid black; padding: 2px;"> <table border="1"> <thead> <tr> <th colspan="2">TYPE</th> </tr> </thead> <tbody> <tr> <td>001</td> <td>18-20 AWG crimp contact</td> </tr> <tr> <td>002</td> <td>22 AWG crimp contact</td> </tr> </tbody> </table> </div> <div data-bbox="1323 1690 1469 1764" style="border: 1px solid black; padding: 2px;"> <table border="1"> <thead> <tr> <th colspan="2">FINISH</th> </tr> </thead> <tbody> <tr> <td>45</td> <td>Gold</td> </tr> </tbody> </table> </div> </div>		TYPE		001	18-20 AWG crimp contact	002	22 AWG crimp contact	FINISH		45	Gold
TYPE											
001	18-20 AWG crimp contact										
002	22 AWG crimp contact										
FINISH											
45	Gold										

All dimensions in mm.

# M300 Connectors

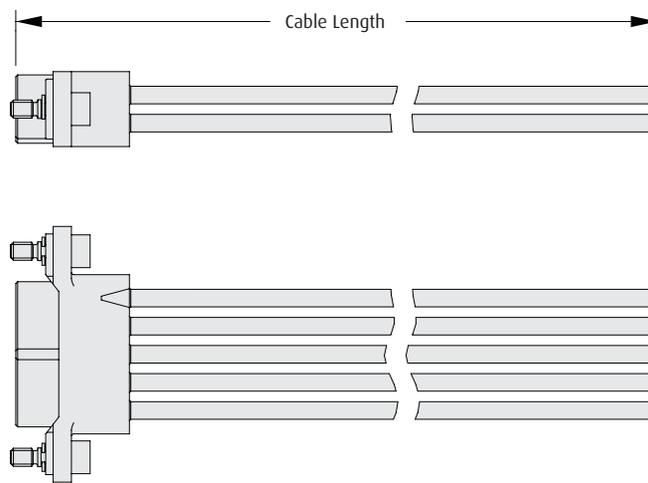
## Female Cable Assemblies

- Ready-made cable assemblies, fully tested and inspected.
- No. 1 position identified on housing.
- 10A current capacity, resists high vibration and shock.
- Back potted for added strain relief.
- White cables with PTFE insulation.



M300

### 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
<b>XXXX</b>	XXXXmm

#### 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

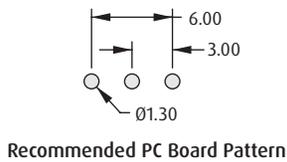
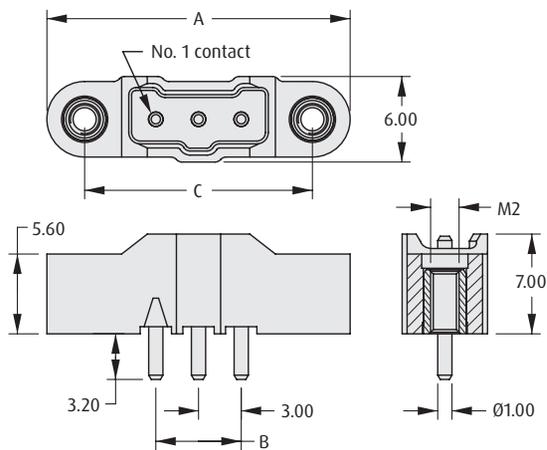
## Male Throughboard

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

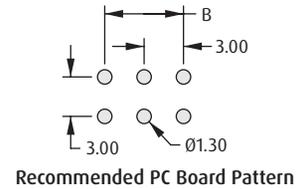
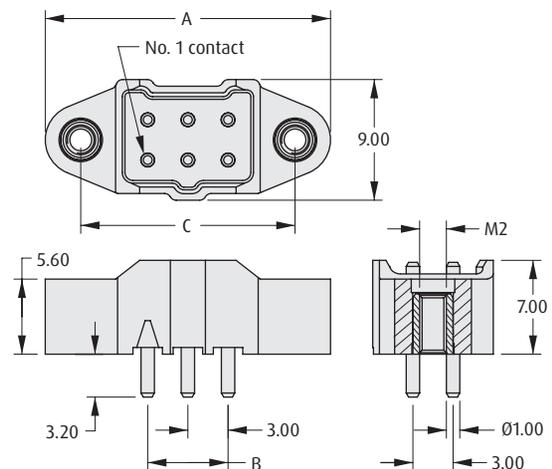


M300

### 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**

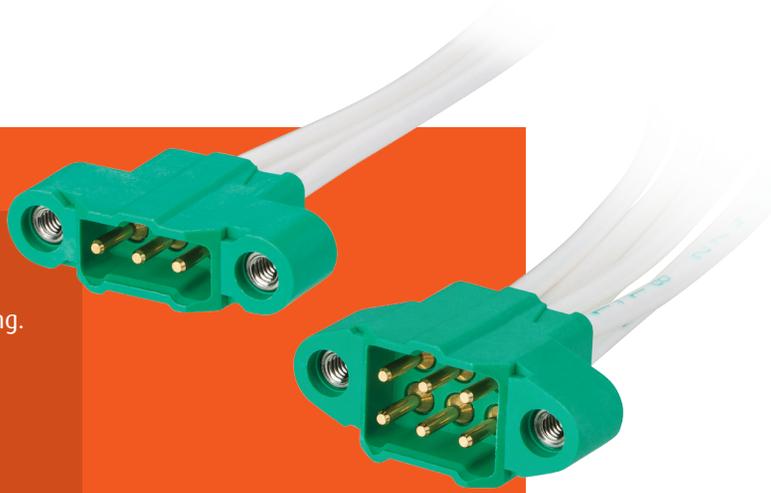
<b>SERIES CODE</b>	M300	<b>TYPE</b>	M1 Jackscrew
<b>GENDER</b>	M Male	<b>FINISH</b>	45 Gold
<b>TYPE</b>	V1 Single Row V3 Double Row	<b>TOTAL NO. OF CONTACTS</b>	03 Single Row 06, 10 Double Row

All dimensions in mm.

# M300 Connectors

## Male Cable Connector Housings

- ❖ Features potting wall for extra security.
- ❖ No. 1 position identified on housing.
- ❖ 3 polarizing 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.



M300

SINGLE ROW	DOUBLE ROW								
<table border="1"> <thead> <tr> <th colspan="2">CALCULATION</th> </tr> </thead> <tbody> <tr> <td>A</td> <td><math>B + 15.3</math></td> </tr> <tr> <td>B</td> <td><math>3 \times (\text{No. of contacts per row} - 1)</math></td> </tr> <tr> <td>C</td> <td><math>B + 10</math></td> </tr> </tbody> </table>		CALCULATION		A	$B + 15.3$	B	$3 \times (\text{No. of contacts per row} - 1)$	C	$B + 10$
CALCULATION									
A	$B + 15.3$								
B	$3 \times (\text{No. of contacts per row} - 1)$								
C	$B + 10$								

## 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**

<b>SERIES CODE</b>	M300	-	32X	XX	96	M1	
<b>TYPE</b>	324	Double Row	325	Single Row			<b>TYPE</b> M1 Jackscrew
<b>TOTAL NO. OF CONTACTS</b>	03	Single Row	06, 10	Double Row			<b>FINISH</b> 96 Housing

All dimensions in mm.

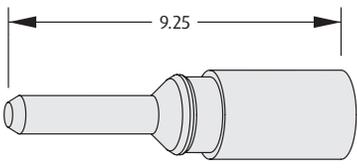
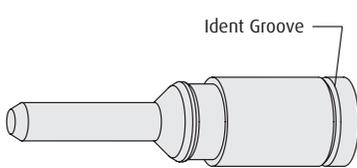
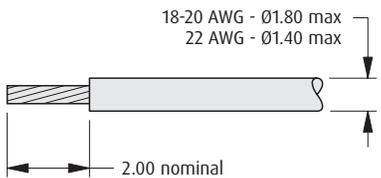
# M300 Connectors

## 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
<p><b>18-20 AWG</b></p>  <p><b>22 AWG</b></p> 	 <p>18-20 AWG - 0.180 max 22 AWG - 0.140 max</p> <p>2.00 nominal</p>

## TOOLS

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

- Male crimp housings shown on previous page.
- Full cable assemblies shown on following page.
- Instruction sheets available at [www.harwin.com/instructions](http://www.harwin.com/instructions).

## HOW TO ORDER

**M300 - 10X 00 45**



All dimensions in mm.

# M300 Connectors

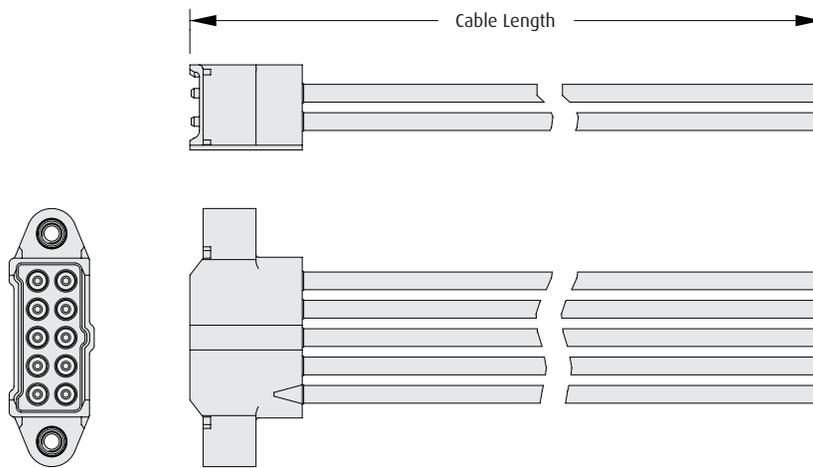
## Male Cable Assemblies

- ❖ Ready-made cable assemblies, fully tested and inspected.
- ❖ No. 1 position identified on housing.
- ❖ 10A current capacity, resists high vibration and shock.
- ❖ Back potted for added strain relief.
- ❖ White cables with PTFE insulation.



M300

### 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
<b>XXXX</b>	XXXXmm

#### 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).

M300

## HAND CRIMP TOOL

- ❖ Standard circular crimp tool BS5210-3A-300 and MIL specification M22520/2-01.
- ❖ Precision tool with ratchet mechanism and 8-indent form.
- ❖ Must be used together.
- ❖ Instruction sheet available.



### ORDER CODE

Hand Crimp Tool	<b>M22520/2-01</b>
Positioner	<b>Z80-058</b>

## INSERTION/REMOVAL TOOL

- ❖ For inserting and removing crimped contacts into the rear of housings.
- ❖ Instruction sheet available.



### ORDER CODE

**Z300-902**

## HEX DRIVE BIT

- ❖ 2mm A/F Hex end for M300 Hex Socket jackscrews.
- ❖ For use with torque tooling or similar equipment.



### ORDER CODE

**Z9951-00**

## BALL HEX DRIVER

- ❖ 2mm A/F Hex end for M300 Hex Socket jackscrews.
- ❖ Ball-shaped end can be used at a wide range of angles.



### ORDER CODE

**Z9953-00**

All dimensions in mm.