

M300

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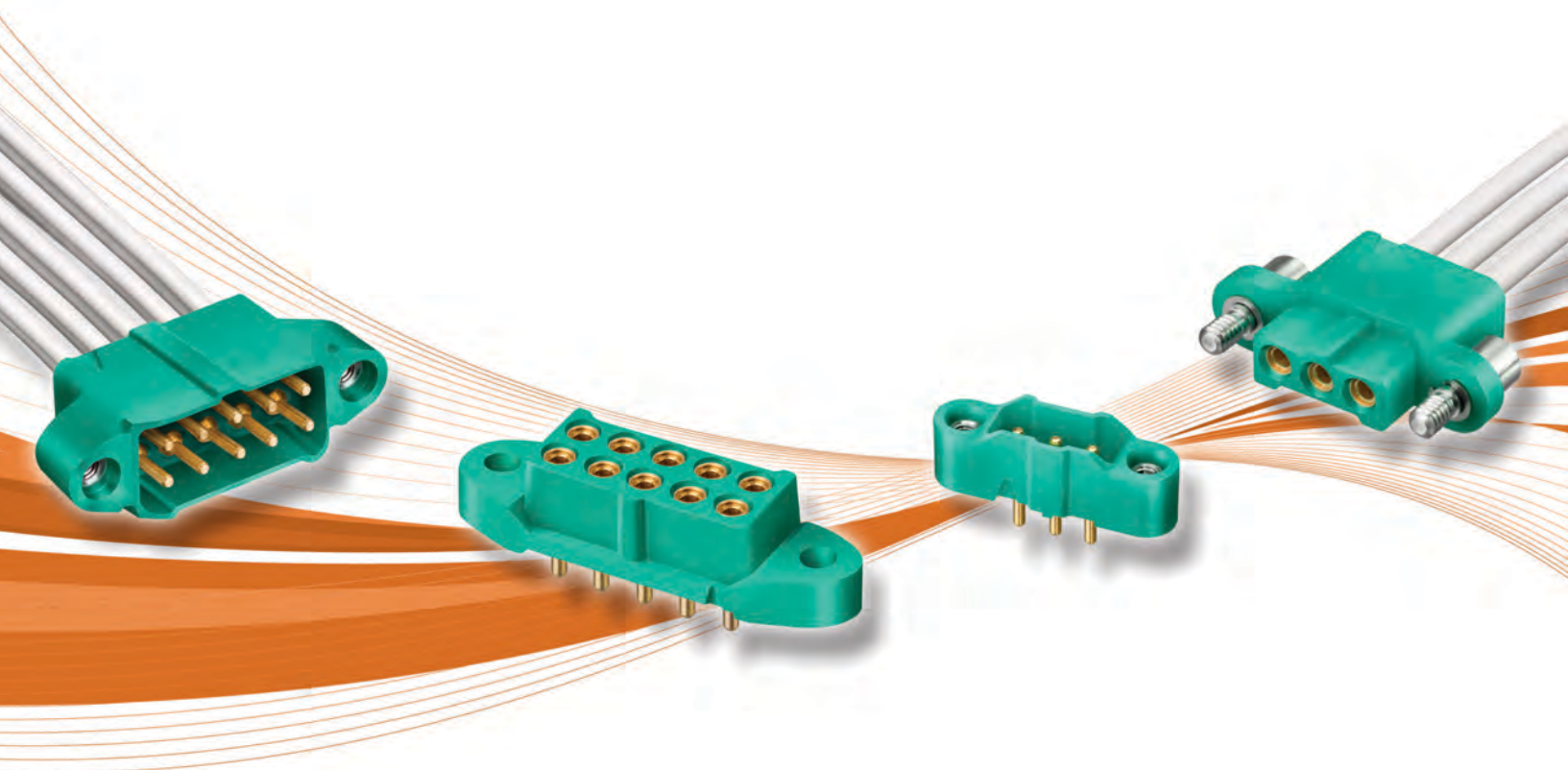
M300 Connectors Introduction

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

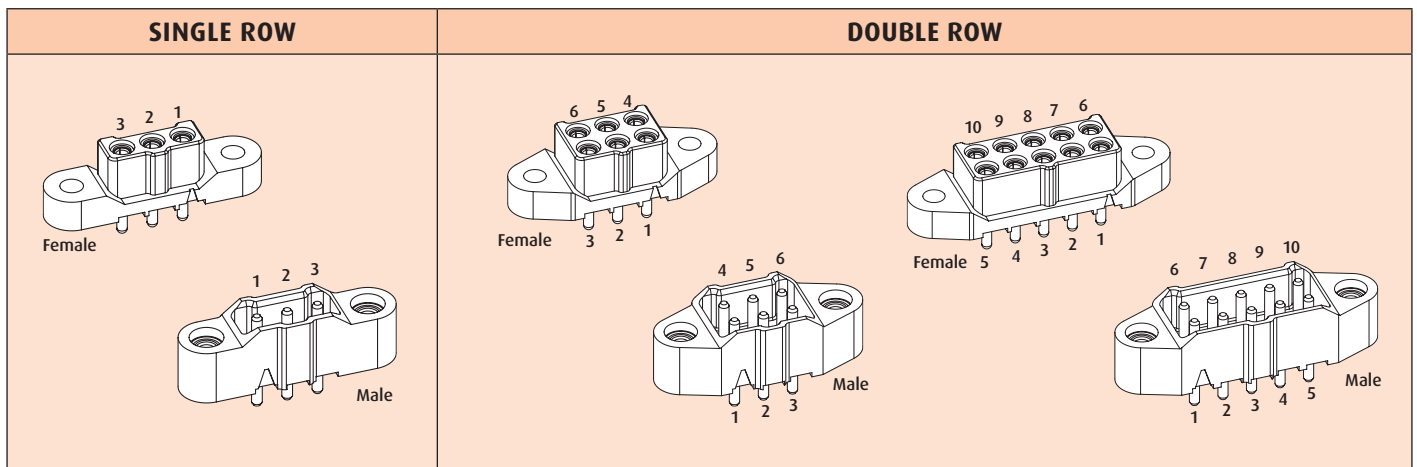
Mechanical

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

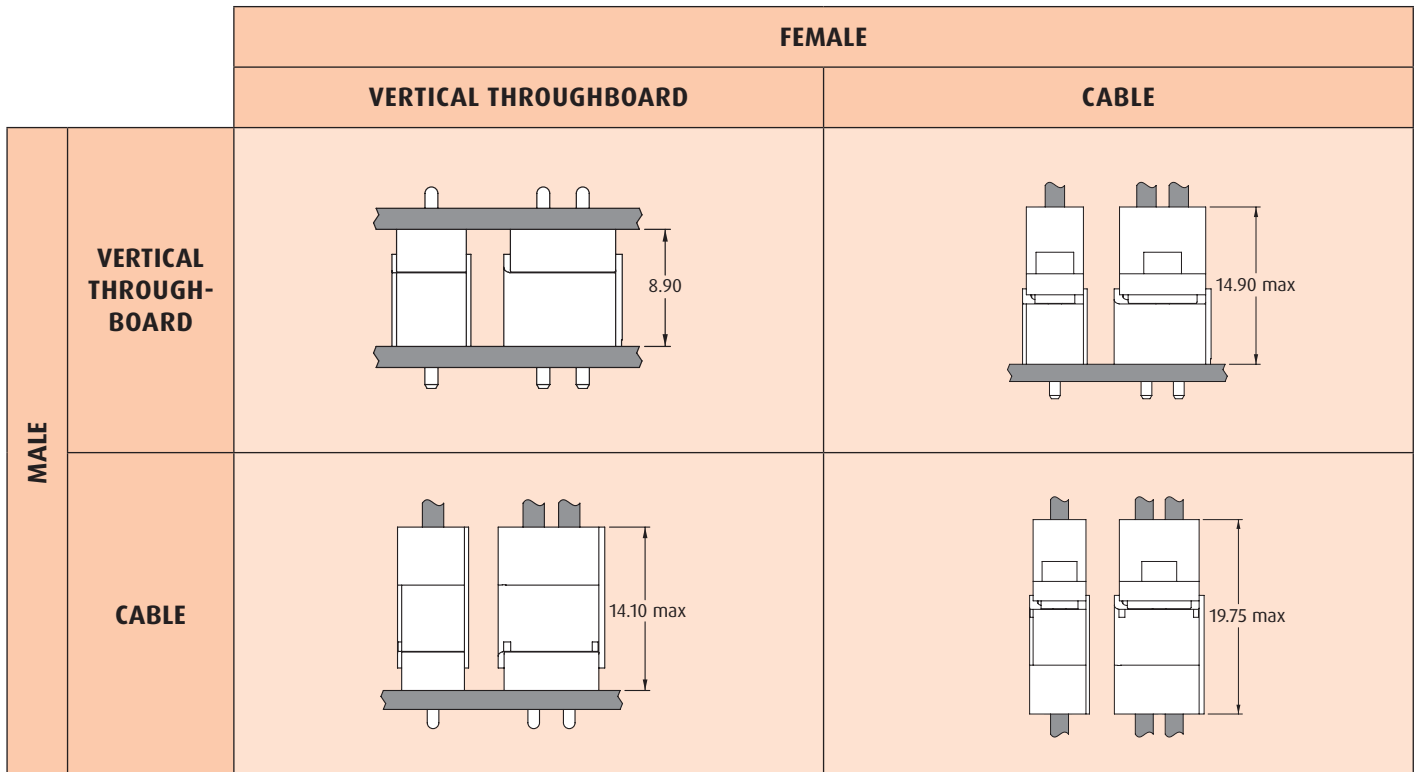
Environmental Classification:	65/175/56 days at 90%RH
Operating temperature:	-65°C to +175°C
Vibration sensitivity:	10Hz to 2000Hz, 1.52mm, 196.1m/s ² (20G), 12 hours
Bump severity:	390m/s ² (40G), 4000 bumps
Shock severity:	981m/s ² (100G), 6ms
Acceleration severity:	490m/s ² (50G)

M300 Connectors Pin Numbering



M300

M300 Connectors Mating Profiles

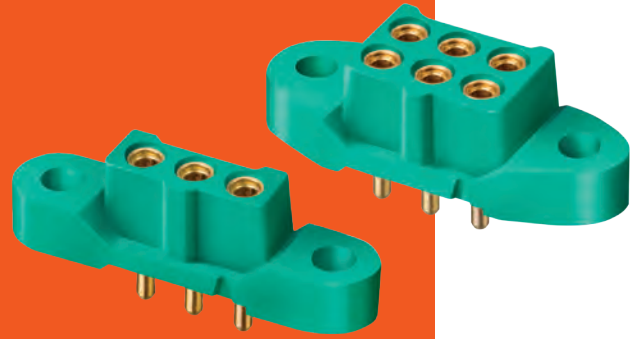


All dimensions in mm.

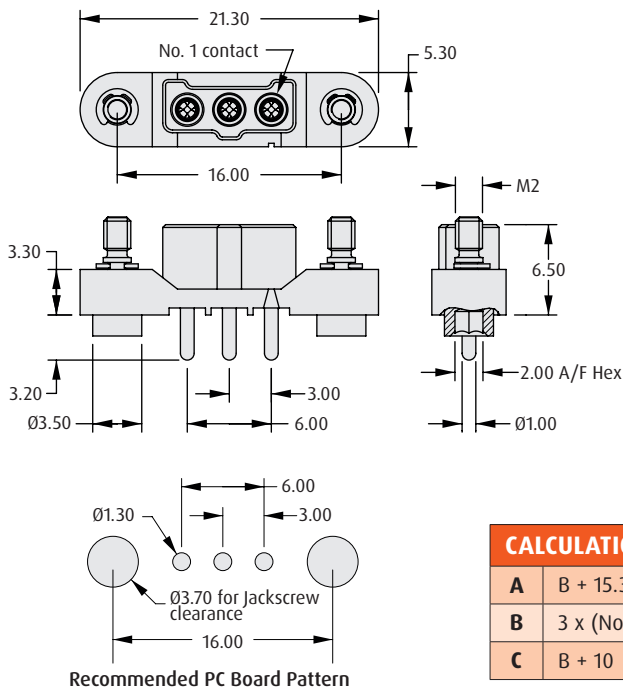
M300 Connectors

Female Throughboard

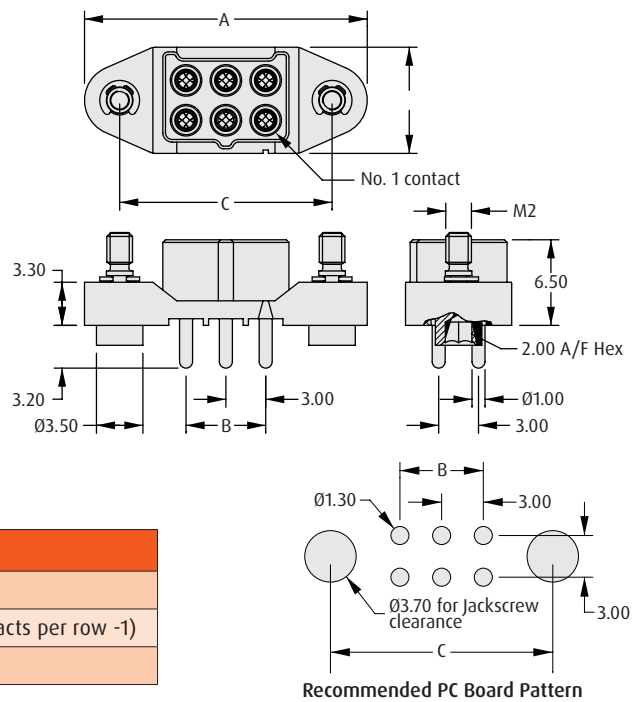
- ❖ 4-finger Beryllium Copper contact.
- ❖ Positive keyway polarization features.
- ❖ 10A current capacity, resists high vibration and shock.
- ❖ Withstands extremes of temperature: -65°C to +175°C.
- ❖ Scoop-proof contacts.
- ❖ No. 1 position ident on housing.



SINGLE ROW



DOUBLE ROW



CALCULATION

A	$B + 15.3$
B	$3 \times (\text{No. of contacts per row} - 1)$
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

00 No Jackscrew
F2 Hex Socket Jackscrew

FINISH

45 Gold

TOTAL NO. OF CONTACTS

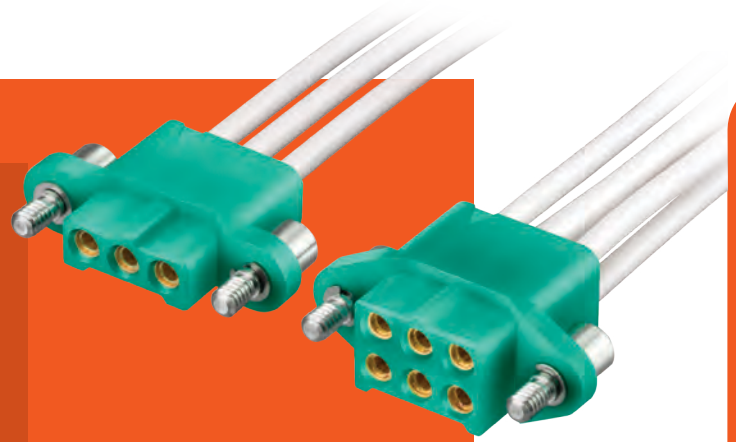
03 Single Row
06, 10 Double Row

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" style="background-color: #f4a460; width: 100%;"> <thead> <tr> <th colspan="2">CALCULATION</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>$B + 15.3$</td> </tr> <tr> <td>B</td> <td>$3 \times (\text{No. of contacts per row} - 1)$</td> </tr> <tr> <td>C</td> <td>$B + 10$</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

- Female contacts shown on following pages.
- Instruction sheets available at www.harwin.com/instructions.

HOW TO ORDER

M300 - 22X XX 96 F2

SERIES CODE	M300
TYPE	22X XX
TOTAL NO. OF CONTACTS	96
FIXING	F2
FINISH	96

TYPE	224 Double Row	225 Single Row
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FIXING	F2 Hex Socket Jackscrew
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TOTAL NO. OF CONTACTS	03 Single Row	06, 10 Double Row
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FINISH	96 Housing
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All dimensions in mm.

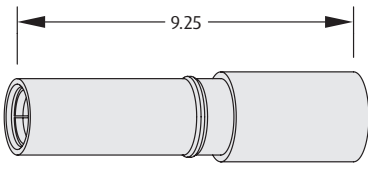
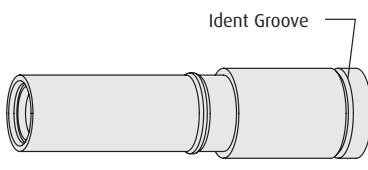
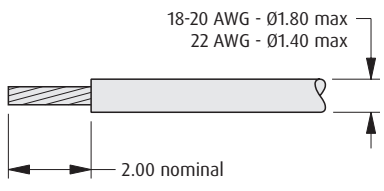
M300 Connectors

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
<p>18-20 AWG</p>  <p>22 AWG</p> 	 <p>18-20 AWG - Ø1.80 max 22 AWG - Ø1.40 max</p> <p>2.00 nominal</p>

TOOLS

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

- ❖ Female crimp housings shown on previous page.
- ❖ Full cable assemblies shown on following page.
- ❖ Instruction sheets available at www.harwin.com/instructions.

HOW TO ORDER

M300 - 00X 00 45

SERIES CODE

TYPE	
001	18-20 AWG crimp contact
002	22 AWG crimp contact

FINISH

45	Gold
----	------

All dimensions in mm.

M300 Connectors

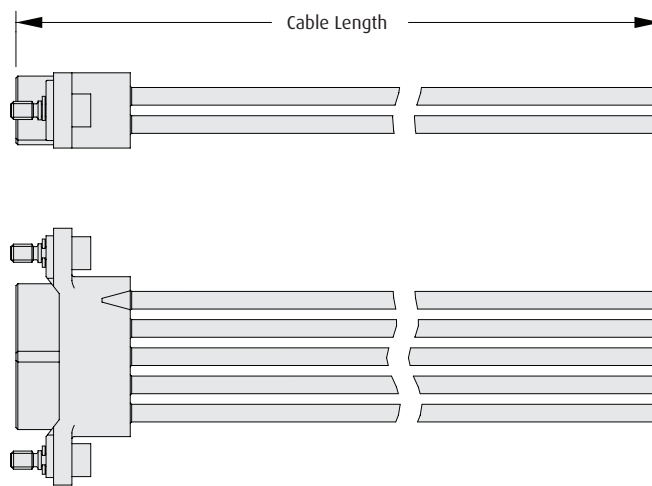
Female Cable Assemblies

- 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

1	18 AWG, for Double Row
2	20 AWG, for Double Row
3	22 AWG, for Double Row
5	18 AWG, for Single Row
6	20 AWG, for Single Row
7	22 AWG, for Single Row

TERMINATION - SECOND END

L Loose cut end

CABLE LENGTH

0150	150mm
0300	300mm
0450	450mm
XXXX	XXXXmm

FIXING

F2 Hex Socket Jackscrew

TOTAL NO. OF CONTACTS

03	Single Row
06, 10	Double Row

All dimensions in mm.

M300 Connectors

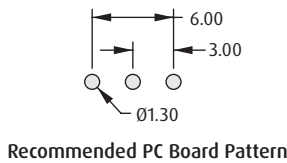
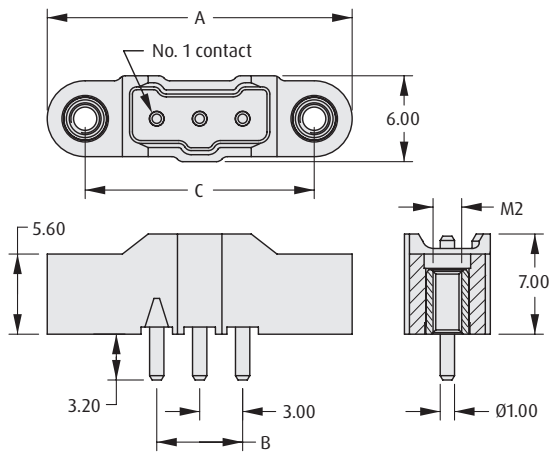
Male Throughboard

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

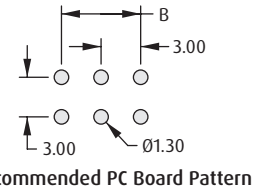
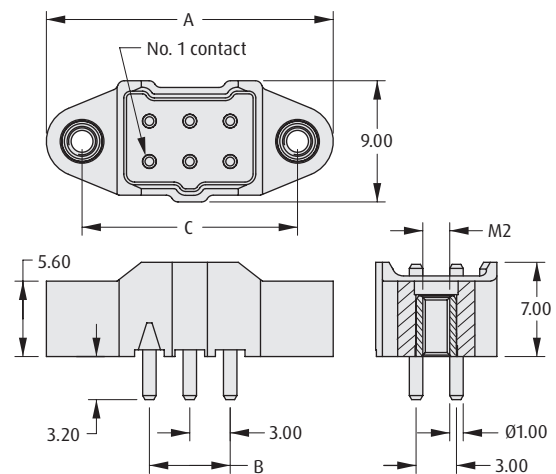


M300

SINGLE ROW



DOUBLE ROW



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

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

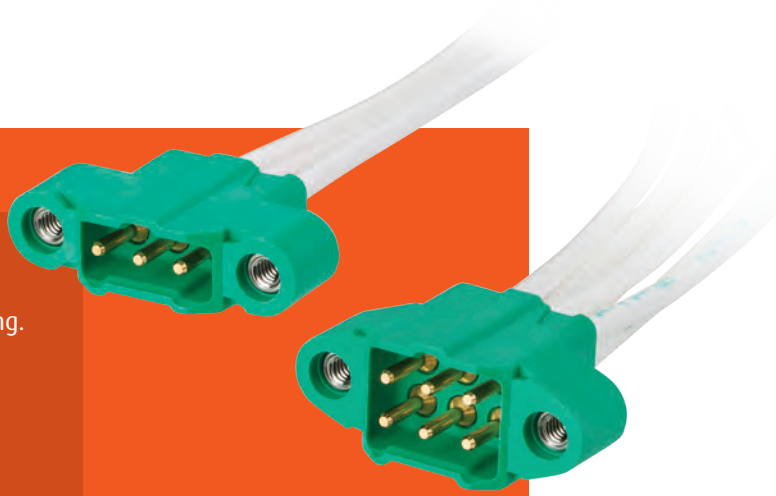
03 Single Row
06, 10 Double Row

All dimensions in mm.

M300 Connectors

Male Cable Connector Housings

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

HOW TO ORDER

M300 - 32X XX 96 M1

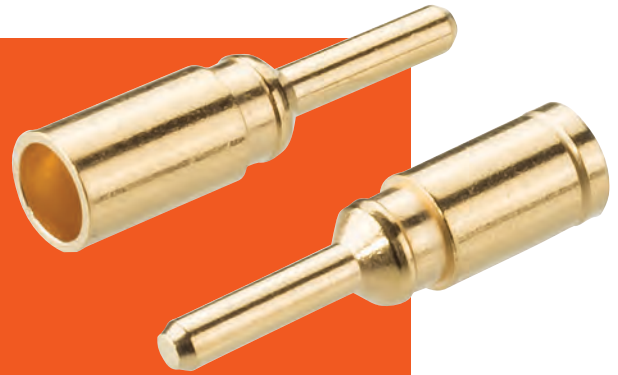
SERIES CODE	M300	-	32X	XX	96	M1	
TYPE	324	Double Row	325	Single Row			
TOTAL NO. OF CONTACTS	03	Single Row	06, 10	Double Row			
TYPE	M1	JackscREW					
FINISH	96	Housing					

All dimensions in mm.

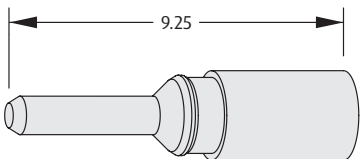
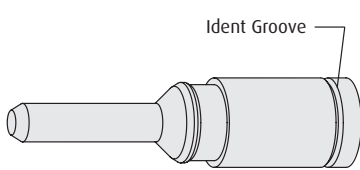
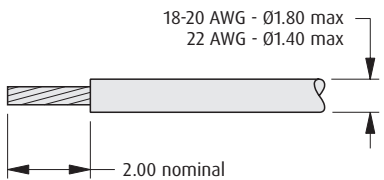
M300 Connectors

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>18-20 AWG</p>  <p>22 AWG</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.

HOW TO ORDER

M300 - 10X 00 45



All dimensions in mm.

M300 Connectors

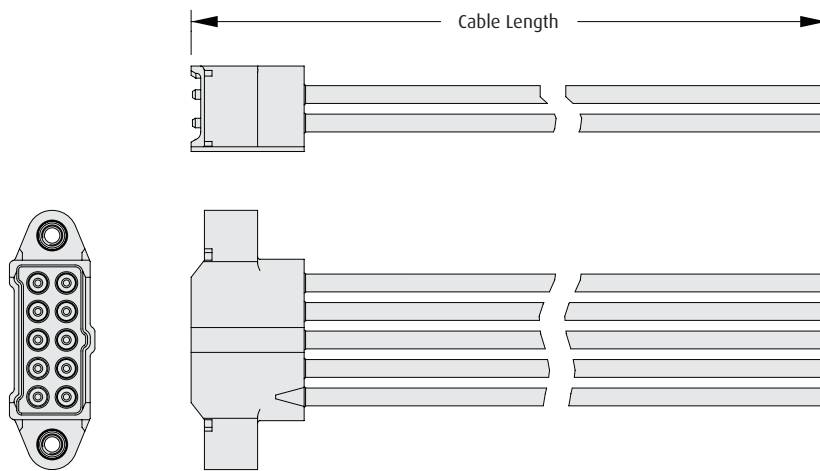
Male Cable Assemblies

- ❖ 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

1	18 AWG, for Double Row
2	20 AWG, for Double Row
3	22 AWG, for Double Row
5	18 AWG, for Single Row
6	20 AWG, for Single Row
7	22 AWG, for Single Row

TERMINATION - SECOND END

L Loose cut end

CABLE LENGTH

0150	150mm
0300	300mm
0450	450mm
XXXX	XXXXmm

FIXING

M1 Jackscrew

TOTAL NO. OF CONTACTS

03	Single Row
06, 10	Double Row

All dimensions in mm.

M300 Connectors Tooling

❖ Instruction sheets can be accessed at www.harwin.com/instructions.

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	M22520/2-01
Positioner	Z80-058

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.