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# PCB Connectors

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# M40-600/620 Connectors Specification

A range of double row 1.00mm pitch SMT male and female connectors for board-to-board stacking.

## Materials

Housings: Contacts: Finish:

1mm (.039") PITCH

High Temp Thermoplastic, UL94V-0 Phosphor Bronze Tin

## Electrical

Current: Working voltage: Voltage proof: Contact resistance: Insulation resistance: 0.5A per contact 150V AC 250V AC 50mΩ max 500MΩ min

## Mechanical

Durability:
Insertion force (max):
Withdrawal force (min):

30 operations 2.7N per contact 0.4N per contact

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### Environmental

Operating temperature:	-20°C to +125°C
Solderability:	210°C for 5 seconds
Soldering heat resistance:	260°C for 10 seconds

# **Mating Profile**



# M40-600/620 Connectors

## **Vertical Surface Mount**

- Locating pegs to ensure correct positioning onto the board.
- Polarized to prevent mis-mating.
- Staggered pin-out to help board layout.



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1mm (.039") PITCH



# M40-310/320 Connectors Specification

1mm (.039") PITCH

#### A range of double row 1.00mm pitch SMT pin header and socket connectors.

## Materials

Housings:

Contacts Male: Female: Finish: High Temp Thermoplastic, UL94V-0 Brass Phosphor Bronze

Gold

### Electrical

Current: Voltage proof: Contact resistance: Insulation resistance:

### 1.0A per contact 500V AC 30mΩ max 1,000MΩ min

#### Mechanical

Durability:
Insertion force (max):
Withdrawal force (min):
Vibration sensitivity:
Shock severity:

300 operations 1.5N per contact 0.1N per contact 50 – 2000Hz, 45 minutes duration 294m/s<sup>2</sup> (30G) for 11ms

#### Environmental

Operating temperature: Solderability: Soldering heat resistance: -40°C to +105°C 245°C for 5 seconds 260°C for 10 seconds

# **Mating Profile**





# M40-310/320 Connectors

## **Vertical Surface Mount**

- Locating pegs to ensure correct positioning onto the board.
- Supplied in tape and reel packaging with pick and place caps as standard.
- Twin beam female connector for higher durability.



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# M40 Cable-to-Board Specification

A range of cable-to-board connectors on 1.00mm pitch - SMT male connectors and cable female connectors in single and double row options.

## Materials

Housings SMT Connectors: Cable Housings: Contacts: Finish:

High Temp Thermoplastic, UL94V-0 Thermoplastic, UL94V-0 Phosphor Bronze Tin

## > Electrical

Current: Working voltage: Voltage proof: Contact resistance: Insulation resistance: 1A per contact 50V AC/DC 500V AC/DC 30mΩ max 100MΩ min

# **Mating Profiles**

#### Mechanical

Durability:	50 operations
Insertion force (max):	2.0N per contact
Withdrawal force (min):	0.4N per contact
Crimped wire retention (min) 28 AWG wire: 30 AWG wire: 32 AWG wire:	12.7N 9.8N 4.9N
Vibration sensitivity: Shock severity:	10 – 55Hz, 1.5mm, 6 hours duration 490m/s <sup>2</sup> (50G) for 11ms

#### Environmental

Operating temperature: Solderability: Soldering heat resistance: -25°C to +85°C 245°C for 5 seconds 260°C for 5 seconds



## Female Crimp Housings

- Crimp contacts or pre-cabled contacts are ordered separately - see following pages.
- Crimped contacts on wires are inserted into rear of connector housing - no additional tooling required.



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## Female Crimp Contacts

- Open crimp design, ideal for automation.
- Use with female crimp housings shown on previous page.
- Pre-crimped contacts with wire attached shown on following page.
- Requires crimp machine with applicable tooling for crimping to wires.

## CONTACTS

1mm (.039") PITCH



All dimensions in mm.

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## Female Crimp Contacts - Pre-Crimped Wires

- Female crimp contacts pre-assembled with a choice of wire sizes and lengths.
- PVC insulated multi-strand tinned copper equipment wire to UL1571.
- Use with female crimp housings shown on previous page.
- Ideal for prototype and pre-production applications.
- Individual contacts without wire shown on previous page.

#### **FEMALE SINGLE ENDED**





## Male Vertical Surface Mount

- Shrouded male connectors.
- Double row connector features locating pegs to ensure correct positioning onto the board.
- Tape and Reel option supplied fitted with pick and Place cap.



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## Male Horizontal Surface Mount

- Shrouded male connectors.
- **Tape and Reel option does not require Pick and Place cap.**





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# M30 Connectors Specification

#### A range of 1.25mm pitch male and female connectors, for cable-to-board applications.

## Material

Housings SMT: Others: Contacts

Male: Female: Finish: Nylon 6T, UL94V-0 Nylon 66, UL94V-0 Brass

Phosphor Bronze Tin

#### Electrical

Current: Working voltage: Voltage proof: Contact resistance: Insulation resistance: 1A per contact 150V AC 500V AC/DC 30mΩ max 500MΩ min

#### Mechanical

Durability:	50 operations
Insertion force (max):	4.9N per contact
Withdrawal force (min):	0.5N per contact
Crimp retention (min):	4.9N per contact
Crimped wire retention (min)	
26 AWG wire:	19.6N
28 AWG wire:	9.8N
30 AWG wire:	7.8N
Vibration sensitivity:	10 – 55Hz, 1.5mm, 6 hours duration
Shock severity:	490m/s2 (50G) for 11ms

#### Environmental

Operating temperature: Solderability: Soldering heat resistance PC Tail: SMT: -25°C to +85°C 245°C for 5 seconds

250°C for 5 seconds 260°C for 10 seconds

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# **Mating Profiles**



## Female Crimp Housing

- Loose or reeled contacts.
- Crimp contacts or pre-cabled contacts are ordered separately - see the following pages.



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## **Female Crimp Contacts**

- Loose or reeled contacts.
- Open crimp design, ideal for automation.
- Use with female crimp housings shown on previous page.
- Pre-crimped contacts with wire attached shown on following page.



## CONTACTS

### Reeled (continuous strip)

• Order code is for one reel of 10,000 contacts.



## Loose (cropped)

• Order code is for one pack of 100 contacts.

# HAND CRIMP TOOL

- Instruction sheet is available at www.harwin.com/instructions.
- For use with loose contacts.



#### WIRE STRIPPING DETAILS





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## Female Crimp Contacts – Pre-Crimped Wires

- Female crimp contacts pre-assembled with a choice of wire sizes and lengths.
- PTFE-insulated, multi-strand silver-plated copper conductor equipment wire.
- Use with female crimp housings shown on previous page.
- Ideal for prototype and pre-production applications.
- Individual contacts without wire shown on previous page.

#### **FEMALE SINGLE ENDED**



All dimensions in mm.



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## Male Vertical

- Shrouded male connectors.
- SMT version features metal solder-down tabs and locating pegs to ensure correct positioning onto the board.
- **•** Tape and Reel option supplied fitted with Pick and Place cap.



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# Archer Connectors - M50 Specification

1.27mm pitch male pin headers (with 0.4mm square pins) and female sockets, for board-to-board connection.

#### Materials

Housings: Contacts: Finish: High Temperature Plastic UL94V-0 Copper Alloy See individual pages

#### Electrical

Current: Voltage proof:

Contact resistance: Insulation resistance: 1A per contact 300V AC, 500V DC for 1 minute (see individual drawings) 30mΩ max 500MΩ min

### Mechanical

Durability M50-310, 312, 491: M50-311: M50-315: M50-353, 363, 393: Others:

Insertion force (max) M50-303, 313, 314: Jumper sockets: Others:

Withdrawal force (min) Jumper sockets: Others: Vibration sensitivity: Shock severity: 100 operations 600 operations 25 operations 500 operations 300 operations

1.17N per contact 10.0N 2.0N per contact

1.3N 0.1N per contact 10 - 55Hz, 1.5mm, 6 hours duration 294m/s<sup>2</sup> (30G) for 11ms

#### Environmental

Operating temperature: Solderability: Soldering heat resistance: -40°C to +105°C 245°C for 5 seconds 260°C for 5 seconds



# Archer Connectors - M50 Mating Profiles





All dimensions in mm.

1.27mm (.050") PITCH

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# 1.27mm (.050") PITCH

# Archer Connectors – M50

Female Vertical Throughboard



All dimensions in mm.

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# Female Horizontal Throughboard • Horizontal connector has two point solder fixing for connector rigidity. • Twin beam connector for higher durability. HORIZONTAL HORIZONTAL



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# 1.27mm (.050") PITCH

# Archer Connectors – M50

## Female Vertical Surface Mount

- Locating pegs (posts) available to ensure correct positioning on the board.
- Alternative height connectors available on the following page.
- Dual entry connector can be used as either top or bottom entry.



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## Female Vertical Surface Mount, Low Profile

• Lower profile surface mount connector with twin beam contacts for additional board-to-board height options.



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## Female Vertical Surface Mount, Low Profile

- Locating pegs (posts) available on double row to ensure correct positioning on the board.
- Dual entry connectors can be used as either top or bottom entry.



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## **Jumper Sockets**

- Can be fitted and removed by hand, giving an alternative on-board programming method to DIP switches.
- Suitable for use with male M50 pin headers.
- Choice of colors available.
- Closed top with handle available for easier handling, placing and removing.





All dimensions in mm.

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## Male Vertical Throughboard

 Suitable for use with female connectors and jumper sockets.



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1.27mm (.050") PITCH

#### **SINGLE ROW**



## Male Horizontal Throughboard

 Suitable for use with female connectors and jumper sockets.

![](_page_25_Picture_4.jpeg)

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## **SINGLE ROW**

![](_page_25_Figure_6.jpeg)

## Male Vertical Surface Mount Single Row

- Suitable for use with female connectors and jumper sockets.
- Tape and Reel packaging option includes Pick and Place cap for automated assembly.

![](_page_26_Picture_4.jpeg)

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#### CALCULATION **SINGLE ROW** 1.27 x No. of contacts per row Α В 1.27 x (No. of contacts per row - 1) R - 2.10 6.00 回 Ħ 闰 回 Ξ Ĭ 3.00 1.27 0.65 1.27 Recommended PC Board Pattern 3.00 <u></u>−1.00 r 1.50 0.40 square — 5.00 HOW TO ORDER M50 - 363 XX 42 X PACKAGING **SERIES CODE** Blank Loose R Tape & Reeled **NO. OF CONTACTS PER ROW FINISH** 02 to 06, 08, 10, 20 42 Gold + Tin

## Male Vertical Surface Mount Double Row

- Suitable for use with female connectors and jumper sockets.
- Available with or without location posts.
- Tape and Reel packaging option includes Pick and Place cap for automated assembly.

![](_page_27_Picture_5.jpeg)

1.50 ]

1.50

1.27--

6.50

1.27 ----

Α

В

C

CALCULATION

Recommended PC Board Pattern

В

B - 1.27

**Recommended PC Board Pattern** 

6 30

Ø0.80

0.74

1.27 x No. of contacts per row

1.27 x (No. of contacts per row - 1)

0.65

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## WITHOUT POSTS

1.27mm (.050") PITCH

![](_page_27_Figure_7.jpeg)

## WITH POSTS

![](_page_27_Figure_9.jpeg)

![](_page_27_Figure_10.jpeg)

![](_page_27_Figure_11.jpeg)

# Archer Connectors – Polarized Specification

1.27mm pitch male and female connectors, for board-to-board connection with polarization.

#### Materials

Housings: Contacts: Finish: High Temperature Plastic UL94V-0 Copper Alloy Gold

#### **:** Electrical

Current: Voltage proof: Contact resistance: Insulation resistance: 1A per contact 300V AC, 500V DC for 1 minute 30mΩ max 500MΩ min

## Mechanical

Durability: Insertion force (max): Withdrawal force (min): 100 operations 2.0N per contact 0.15N per contact

#### Environmental

Operating temperature: Solderability: Soldering heat resistance: -40°C to +105°C 245°C for 5 seconds 260°C for 10 seconds

# Mating Profiles

![](_page_28_Figure_16.jpeg)

![](_page_28_Picture_20.jpeg)

# Archer Connectors – Polarized

## Vertical Surface Mount

- Mating connectors in Surface Mount format.
- Female connector is also suitable for use with male PC Tail connectors on the following page.
- Polarization to prevent mis-mating.

1.27mm (.050") PITCH

- Locating pegs of different sizes ensure correct orientation and positioning on the board.
- Shrouded for additional pin protection.

![](_page_29_Picture_7.jpeg)

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![](_page_29_Figure_8.jpeg)

# Archer Connectors – Polarized

## Male Throughboard

- Throughboard male connectors suitable for use with female connector M50-430 Series, shown on previous page.
- Polarization to prevent mis-mating.
- Shrouded for additional pin protection.

![](_page_30_Picture_5.jpeg)

1.27mm (.050") PITCH

![](_page_30_Figure_6.jpeg)

All dimensions in mm.

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# Archer Connectors – M50 IDC Specification

► 1.27mm pitch cable-to-board connectors, with latching and polarization.

## Materials

#### Housings

PCB Connectors: IDC Cable Connectors:

Contacts: Finish

M50-380: Others: LCP, UL94V-0 PBT, UL94V-0 Copper Alloy

Gold on contact area Gold on contact area, Tin on tails

#### Electrical

#### Current

- M50-330, 91X: M50-355, 365: M50-380, 90X:
- Voltage proof M50-90X/91X: Others:

#### Contact resistance:

Insulation resistance M50-90X, 91X: Others: 1A per contact 1.75A per contact 0.5A per contact

300V DC for 1 minute 1,000V AC for 1 minute 30m0 max

5MΩ min 1,000MΩ min

IDC Cable Connectors: Cable Assembly: Solderability:

: Mechanical

Insertion force (max):

Withdrawal force (min):

Environmental

**Operating temperature** PCB Connectors:

**Durability:** 

Soldering heat resistance:

100 operations

1.0N per contact

0.15N per contact

-55°C to +125°C -40°C to +105°C -20°C to +105°C 245°C for 5 seconds 260°C for 10 seconds

# **Mating Profiles**

![](_page_31_Figure_24.jpeg)

# Archer Connectors – M50 IDC

## Female Cable Connector & Cable Assembly

- Suitable for use with male vertical latching connectors shown on the following page.
- **DC** connection for fast termination of multiple contacts.
- Polarized to prevent mis-mating.
- Secure cable retention with positive latching to header.
- Standard cable assembly lengths from stock.
- Instruction sheet for Hand Tool is available at www.harwin.com/instructions.

# 

#### **FEMALE IDC** FEMALE-TO-FEMALE CABLE Uses 0.635mm pitch 30 AWG Ribbon cable to UL2678. Constructed with Contact 1 attached to Contact 1, Contact 2 to Contact 2, etc. - 1.27 5.10 -1.90 4 05 ANTALALAR INTERACTION INTERACTOR L3 20 -0.635 - 1.90 Cable Length proving provi 3.05 HAND TOOL CALCULATION **ORDER CODE** B + 5.47 Α Z50-020 B 1.27 x (No. of contacts per row - 1) **HOW TO ORDER** M50 - XXX XX 42 **SERIES CODE** FINISH 42 Gold + Tin **TYPE NO. OF CONTACTS PER ROW** 330 Female IDC Connector 910 150mm Cable Assembly 05, 10, 13, 17, 20, 25 All 300mm Cable Assembly 06, 07, 08 M50-330 only 911

![](_page_32_Picture_11.jpeg)

# Archer Connectors – M50 IDC

## Male Vertical Latching Connectors

- Suitable for use with female cable connectors shown on previous page.
- Surface mount option has locking pegs for location and retention.
- Shrouded for robust pin protection.
- Polarized to prevent mis-mating.
- Secure, positive latch & ejection system.
- Tape and Reel packaging option includes Pick and Place cap for automated assembly.

## THROUGHBOARD

![](_page_33_Figure_9.jpeg)

![](_page_33_Figure_10.jpeg)

All dimensions in mm.

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# Archer Connectors – M50 IDC

## Male Cable Connector & Cable Assembly

- Male transitional cable connector suitable for soldering directly to PCB, permits cost effective cable to PCB attachment.
- **DC** connection for fast termination of multiple contacts.
- Suitable for mating with other sockets from the Archer range.
- Low profile, small footprint.
- Instruction sheet for Hand Tool is available at www.harwin.com/instructions.

## MALE IDC

## MALE-TO-FEMALE CABLE

RARARA RARARA

A MAY AND AND

Uses 0.635mm pitch 30 AWG Ribbon cable to UL2678. -3.00 Constructed with Contact 1 attached to Contact 1, Contact 2 to Contact 2, etc. 1.90 - A -- 0.635 3.20 -5.10 R – 0.40 square 3.10 1 77 Cable Length 1.27 HAND TOOL 3.10 -- 5 10 -R -1.27 ┌ 1.27 CALCULATION ó o o∥o o ó**⊥** Recommended **ORDER CODE** B + 5.47 Α PC Board Pattern 0 0 0 0 0 TQ Z50-030 B 1.27 x (No. of contacts per row - 1) Ø0.70 **HOW TO ORDER** M50 - XXX XX 42 **SERIES CODE** FINISH 42 Gold + Tin TYPE Male IDC Connector **NO. OF CONTACTS PER ROW** 380 150mm Cable Assembly 05, 10, 13, 17, 20, 25 All 901 902 300mm Cable Assembly 06, 07, 08 M50-380 only

![](_page_34_Picture_13.jpeg)

![](_page_34_Picture_14.jpeg)

# Archer Connectors – M52 Specification

1.27mm x 2.54mm pitch male pin headers (with 0.46mm square pins) and female sockets, for vertical board-to-board connection.

## Materials

Housings: Contacts: Finish:

1.27mm (.050") PITCH

High Temperature Plastic UL94V-0 Copper Alloy Gold

## Electrical

Current: Voltage proof: Contact resistance: Insulation resistance 1A per contact 500V AC, 1,000V DC for 1 minute 30mΩ max 1,000MΩ min

Mechanical	
Durability:	300 operations
Insertion force (max) M52-500, 510: Others:	1.0N per contact 1.5N per contact
Withdrawal force (min) M52-500, 510: Others:	0.12N per contact 0.1N per contact
Vibration sensitivity:	50-2,000Hz, 3.13G, 45 minutes duration
Shock severity:	294m/s² (30G) for 11ms

### Environmental

Operating temperature: Solderability: Soldering heat resistance: -40°C to +105°C 245°C for 5 seconds 260°C for 5 seconds

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# **Mating Profiles**

![](_page_35_Figure_13.jpeg)

![](_page_35_Picture_16.jpeg)

# 1.27mm (.050") PITCH

# Archer Connectors – M52

## Female Vertical Throughboard

- Choice of connector height.
- Suitable for use with male connectors with 0.46mm square pins.

![](_page_36_Picture_5.jpeg)

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![](_page_36_Figure_6.jpeg)

## **Female Vertical Surface Mount**

- Suitable for use with male pin headers with 0.46mm square pins.
- Twin beam contact for cost-effective reliability.

![](_page_37_Picture_5.jpeg)

![](_page_37_Figure_6.jpeg)

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## Male Vertical Throughboard

 Suitable for use with female connectors shown on previous page.

![](_page_38_Picture_3.jpeg)

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#### **SINGLE ROW** - 2.50 1.27 -4.00 0000 $\square$ Ø0 65 **Recommended PC Board Pattern** -2.50 - 2.30 1.27 — 0.46 square CALCULATION **DOUBLE ROW** 1.27 x No. of contacts per row Α В 1.27 x (No. of contacts per row - 1) 5.00 -2.54 R 1.27 – 4.00 $\bigcirc \bigcirc \bigcirc \bigcirc$ (2.54 Ø0.65 2 50 **Recommended PC Board Pattern** -2.30 — 0.46 square 1 77 **HOW TO ORDER** M52 - 040023 X XX 45 **SERIES CODE FINISH** 45 Gold TYPE **NO. OF CONTACTS PER ROW** v Single Row 05, 10, 20, 25 W Double Row

1.27mm (.050") PITCH

## Male Vertical Surface Mount

Suitable for use with female connectors shown on previous page.

![](_page_39_Picture_4.jpeg)

## SINGLE ROW

![](_page_39_Figure_6.jpeg)

All dimensions in mm.

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