



**THE DATASHEET OF  
M50-3121545**



# HARWIN

## Component Specification

**C02913**

Archer  
M50 and M52 Series Connectors  
June 2023

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## 1. DESCRIPTION OF CONNECTOR AND INTENDED APPLICATION

A range of 1.27mm pitch connectors, jumper sockets and IDC cable connectors, comprising vertical surface mount, vertical and horizontal throughboard, plugs and sockets of varying heights. Board-to-board spacing and configuration is obtained by the selection of an appropriate height plug and socket.

- M50 connectors are spaced 1.27mm between rows and based on 0.40mm square/round pins.
- M52 connectors are spaced 2.54mm between rows and based on 0.46mm square pins.

## 2. RATINGS

Note:

- Individual components may exceed below ratings – check individual customer information sheets.
- For M50 Pin Header variants, use the relevant specifications for M50-350, 360 and 390. For M52 Pin Header variants, these are specified as "M52-PH".

### 2.1. Material & Finish

**All materials are listed on individual drawings.**

Housing Material:

|                           |  |
|---------------------------|--|
| PCB connectors .....      | High Temperature Thermoplastic, UL94V-0, Black |
| IDC Cable connectors..... | 30% Glass Filled PBT, UL94V-0 Black            |
| Jumper Sockets .....      | 30% Glass Filled PBT, UL94V-0                  |
| Contact Material.....     | Copper alloy                                   |

Contact Finish:

|                                       |   |
|---------------------------------------|---|
| M50-380 .....                         | Nickel all over, Gold Flash on contact area                       |
| Other connectors: 42 finish code..... | Nickel all over, Gold Flash on contact area,<br>100% Tin on tails |
| Other connectors: 45 finish code..... | Gold Flash over Nickel  |

### 2.2. Electrical Characteristics

Current Rating, per contact (EIA-364-70A):

|                                |           |
|--------------------------------|-----------|
| M50-355, M50-365 .....         | 1.75A max |
| M50-380, M50-90X, M50-91X..... | 0.5A max  |
| Others.....                    | 1A max    |

Contact Resistance (EIA-364-06C) ..... 20mΩ max (initial),  
30mΩ max (after conditioning)

Dielectric Withstanding Voltage - Voltage Proof (EIA-364-20D):

|  |   |
|--|---|
| M50-380 .....  | 1,000V AC <sub>rms</sub> for 1 minute                             |
| M50-310/312/430/470/480/490 .....                        | 300V AC, 500V DC for 1 minute                                     |
| M50-311 .....  | 1,000V AC for 1 minute (initial),<br>250V AC for 1 minute (final) |
| M50-303/313/314/315/330/350/353/355/363/365/390/393 .... | 500V AC for 1 minute (initial),<br>250V AC for 1 minute (final)   |
| M50-19X/20X/320 .....                                    | 800V AC <sub>rms</sub> for 1 minute                               |
| M50-90X/91X .....  | 300V DC for 10 seconds  |
| M52-500/510 .....  | 500V AC, 1,000V DC for 1 minute                                   |
| Others.....  | 1,000V AC <sub>rms</sub> /DC for 1 minute                         |

Insulation Resistance (EIA-364-21D):

|                                   |             |
|-----------------------------------|-------------|
| M50-355/365 .....                 | 5,000MΩ min |
| M50-310/312/430/470/480/490 ..... | 500MΩ min   |
| M50-90X/91X .....                 | 5MΩ min     |
| Others.....                       | 1,000MΩ min |

### 2.3. Environmental Characteristics

Operating Temperature Range (EIA-364-17B):

|                   |                 |
|-------------------|-----------------|
| M50-355/365 ..... | -55°C to +125°C |
| M50-90X/91X ..... | -20°C to +105°C |
| Others .....      | -40°C to +105°C |

Vibration (EIA-364-28D):

|  |   |
|--|---|
| M50-19X/20X/300/320/350/360/380/390, All M52 ..... | 50-2,000Hz, 3.13G <sub>rms</sub> , duration 45 mins |
| M50-303/313/314/311/315 .....                      | 10-55Hz, 10G, duration 2hrs                         |
| Others .....                                       | Not tested  |

Shock (EIA-364-27B):

|  |              |
|--|--------------|
| M50-19X/20X/300/320/350/360/380/390, All M52 ..... | 30G for 11ms |
| M50-311/315 .....                                  | 50G for 11ms |
| M50-310/312/430/470/480/490 .....                  | Not tested   |

### 2.4. Mechanical Characteristics

Durability (EIA-364-09C):

|   |                |
|---|----------------|
| M50-310/312/330/380/430/470/480/490/90X/91X ..... | 100 operations |
| M50-311 .....                                     | 600 operations |
| M50-315 .....                                     | 25 operations  |
| M50-353/363/393 .....                             | 500 operations |
| Others .....                                      | 300 operations |

Maximum Insertion force (EIA-364-13D):

|  |                  |
|--|------------------|
| M50-19X/20X .....                                  | 10N              |
| M50-320/330/380/90X/91X, M52-500/510 .....         | 1N per contact   |
| M50-310/312/430 .....                              | 2N per contact   |
| M50-311 .....                                      | 0.8N per contact |
| M50-300/303/313/314/315, M52-501/505/511/515 ..... | 1.5N per contact |

Minimum Withdrawal force (EIA-364-13D):

|   |                   |
|---|-------------------|
| M50-19X/20X .....                         | 1.3N              |
| M50-310/312/315/330/380/430/90X/91X ..... | 0.15N per contact |
| M50-320, M52-500/510 .....                | 0.12N per contact |
| M50-300, M52-501/505/511/515 .....        | 0.1N per contact  |
| M50-303/313/314 .....                     | 0.2N per contact  |

Minimum Contact Retention in Housing (EIA-364-29C):

|   |                  |
|---|------------------|
| M50-19X/20X .....                                     | 4N               |
| M50-300/320/350/360/390, M52-PH/501/505/511/515 ..... | 9.8N per contact |
| M50-310/312/430/470/480/490, M52-500/510 .....        | 1.5N per contact |
| M50-303/311/313/314/315 .....                         | 3N per contact   |
| M50-353/363/393 .....                                 | 2N per contact   |

### 2.5. Soldering Data

Solderability - PCB connectors (EIA-364-52A):

|               |                     |
|---------------|---------------------|
| M50-311 ..... | 230°C for 3 seconds |
| M50-315 ..... | 260°C for 3 seconds |
| Others .....  | 245°C for 5 seconds |

Soldering heat resistance - PCB connectors (EIA-364-56D) ..... 260°C for 10 seconds



### Appendix A

Permissible initial angular misalignment for secure self-centering (M50-315) - From Tip of Chamfer:



Permissible angular misalignment for secure self-centering (M50-315) - From End of Chamfer:






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