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# Component Specification

## C04711

Kontrol
M55 Series 1.27mm Pitch Connectors
February 2025


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## 1. DESCRIPTION OF CONNECTOR SYSTEM

A range of 1.27mm (0.05") pitch connectors, male and female shrouded connectors for board-to-board, cable-to-board, and cable-to-cable connection. All connector part numbers start with the series code M55.

The socket connectors are twin-beam female contacts, and these mate to solid pin male connectors. PCB connectors are available in both single and double row as Surface Mount connectors, supplied in tape-and reel packaging (pick-and-place caps included when applicable). All PCB connector housings include location pegs for additional placement assistance on the board, and either SMT or through hole retention side tabs for additional peel strength and strain relief when soldered down. All housings include polarization within the design.

The PCB connectors are available in the following orientations:

- Double Row (male and female) – Vertical or Horizontal orientations, with 3 height options on the Vertical connectors, and two hold down options (SMT and through hole retention)
- Single Row (male) – Vertical or Horizontal orientations, with one height options on the Vertical connector
- Single Row (female) – Horizontal orientation, with latch

This gives the following board-to-board configurations:

- Double Row – parallel board-to-board (mezzanine layouts), right-angle motherboard-to-daughterboard, or co-planar / edge-to-edge layouts
- Single Row – right-angle motherboard-to-daughterboard, or co-planar / edge-to-edge layouts

Cable connections are IDC, using PVC ribbon cable. The female cable connector housings feature a latch for quick and secure mating to the male connectors.

- Double row – female connectors are available as individual connectors or double-ended cable assemblies. They mount at right angles to the cable.
- Single row – male and female connectors are available as double-ended cable assemblies. They mount inline/straight to the cable.

## 2. RATINGS

### 2.1. Materials

*All materials are listed on individual drawings.*

Contacts:

| | |
|---|---|
| Materials (M55-6XX/7XX/8XX) | Phosphor Bronze |
| Materials (M55-2XX/3XX) | Chromium Zirconium Copper |
| Materials (M55-4XX/5XX) | Copper Nickel |
| Finish | Gold finish on contact area, 100% Tin on terminations, all over Nickel |
| Housing (M55-6XX/7XX/8XX) | LCP, UL94V-0 |
| Housing (M55-2XX/4XX/5XX) | PPA, UL94V-0 |
| Housing (M55-3XX) | PA9T, UL94V-0 |
| SMT Side Tabs | Brass, 100% Tin over Nickel finish |
| Latch Cover (cable connectors) | PA66, UL94V-0 |
| Spring (cable connectors) | Stainless Steel |
| Cable (M55-8XX cable assemblies) | PVC, UL2678, 30AWG |
| Cable (M55-4XX/5XX cable assemblies) | PVC, UL2678, 26AWG |
| Cap (M55-6XX/7XX/8XX) | LCP, UL94V-0 |
| Cap (M55-30X) | PA9T, UL94V-0 |

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## 2.2. Electrical Characteristics

Current Rating:
- PCB Connectors (M55-2XX/3XX/6XX/7XX) ..... 1.2A max per contact
- Cable Connectors (M55-8XX) ..... 0.5A max per contact
- Cable Connectors (M55-4XX/5XX) ..... 1.2A max per contact

Voltage Rating ..... 100V AC
Dielectric Withstanding Voltage (EIA-364-20C, Method B) ..... 500V AC for 1 minute
Contact Resistance (EIA-364-23B):
- Initial ..... 25mΩ max
- After Conditioning ..... Additional 10mΩ max variation

Insulation Resistance (EIA-364-21C):
- PCB Connectors (M55-6XX/7XX) ..... 10GΩ min
- PCB & Cable Connectors (M55-2XX/3XX/4XX/5XX/8XX) ..... 1GΩ min

## 2.3. Environmental Characteristics

Operating Temperature Range:
- PCB Connectors (M55-2XX/3XX/6XX/7XX) ..... -55°C to +125°C
- Cable Connectors (M55-4XX/5XX/8XX) ..... -20°C to +105°C

Vibration (EIA-364-28D, Condition IV) ..... 10-2000Hz, 20G (196m/s²) peak, 1.52mm amplitude, duration 4 hours each axis, 12 hours total
Thermal Shock (EIA-364-32C, Condition III):
- PCB Connectors (M55-2XX/3XX/6XX/7XX) ..... -55°C to +125°C, 10 cycles, 30 mins each extreme
- Cable Connectors (M55-4XX/5XX/8XX) ..... -20°C to +105°C, 10 cycles, 30 mins each extreme

Temperature Life (EIA-364-17B, Method A):
- PCB Connectors (M55-2XX/3XX/6XX/7XX) ..... +125°C, 96 hours
- Cable Connectors (M55-4XX/5XX/8XX) ..... +105°C, 96 hours

Humidity (EIA-364-31B, Condition A) ..... 90-95% RH at +40°C for 96 hours
Salt Spray (EIA-364-26B) ..... 24 hours at +35°C, concentration 5%
Solderability (EIA-364-52):
- PCB Connectors (M55-2XX/3XX/6XX/7XX) ..... +245±5°C for 5±0.5 seconds
- Cable Connectors (M55-4XX/5XX/8XX) ..... N/A

Soldering Heat Resistance:
- PCB Connectors (M55-2XX/3XX/6XX/7XX) ..... +260°C for 10 seconds max
- Cable Connectors (M55-4XX/5XX/8XX) ..... N/A

## 2.4. Mechanical Characteristics

Durability (EIA-364-09C) ..... 500 operations
Insertion Force (EIA-364-13C):
- Initial per contact (M55-6XX/7XX/8XX) ..... 0.8N max
- Initial per connector (M55-2XX/3XX/4XX/5XX/8XX) ..... 15N max

Withdrawal Force (per contact, EIA-364-13C) ..... 0.2N min
Contact Retention in housing (EIA-364-29C) ..... 3.9N min per contact

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## APPENDIX 1 – MATING HEIGHTS/LENGTHS

### A1.1. Vertical PCB to Vertical PCB Connectors

| Female Connector | Male Connector | Mating Height (fully mated) | Mating Height (with 1.5mm separation) |
|---|---|---|---|
| M55-600 / M55-605 | M55-700 / M55-705 | 8.00mm | 9.50mm |
| | M55-701 / M55-706 | 9.50mm | 11.00mm |
| | M55-702 / M55-707 | 11.10mm | 12.60mm |
| M55-601 / M55-606 | M55-700 / M55-705 | 10.80mm | 12.30mm |
| | M55-701 / M55-706 | 12.30mm | 13.80mm |
| | M55-702 / M55-707 | 13.90mm | 15.40mm |
| M55-602 / M55-607 | M55-700 / M55-705 | 15.40mm | 16.90mm |
| | M55-701 / M55-706 | 16.90mm | 18.40mm |
| | M55-702 / M55-707 | 18.50mm | 20.00mm |

### A1.2. Horizontal PCB to Horizontal PCB Connectors

Double Row (M55-61X/71X):
Fully Mated .....15.80mm
With 1.5mm Separation.....17.30mm
Single Row (M55-21X/31X):
Fully Mated .....14.80mm

### A1.3. Horizontal PCB to Vertical PCB Connectors

Single Row (M55-21X/30X):
Fully Mated .....12.85mm
Double Row (M55-6XX):

| Female Connector | Male Connector | Mating Height (fully mated) |
|---|---|---|
| **Vertical** | **Horizontal** | - |
| M55-600 / M55-605 | M55-710 / M55-715 | 11.25mm |
| M55-601 / M55-606 | M55-710 / M55-715 | 14.05mm |
| M55-602 / M55-607 | M55-710 / M55-715 | 18.65mm |
| **Horizontal** | **Vertical** | - |
| M55-610 / M55-615 | M55-700 / M55-705 | 12.55mm |
| M55-610 / M55-615 | M55-701 / M55-706 | 14.05mm |
| M55-610 / M55-615 | M55-702 / M55-707 | 15.65mm |

### A1.4. Cable to Board Connectors

| Female Connector | Male Connector | Mating Height (fully mated) |
|---|---|---|
| M55-800XX42-XXXXA or M55-820XX42 | M55-700 / M55-705 | 13.95mm |
| | M55-701 / M55-706 | 15.45mm |
| | M55-702 / M55-707 | 17.05mm |
| M55-400XX42-XXXXA | M55-300XX42R | 15.75mm |
| | M55-310XX42R | 17.60mm |
| M55-500XX42-XXXXA | M55-210XX42R | 23.60mm |

### A1.5. Cable to Cable Connectors

| Female Connector | Male Connector | Mating Height (fully mated) |
|---|---|---|
| M55-400XX42-XXXXA | M55-500XX42-XXXXA | 26.50mm |

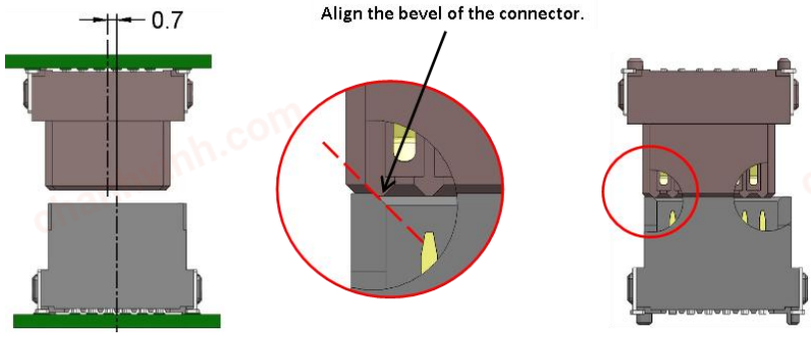
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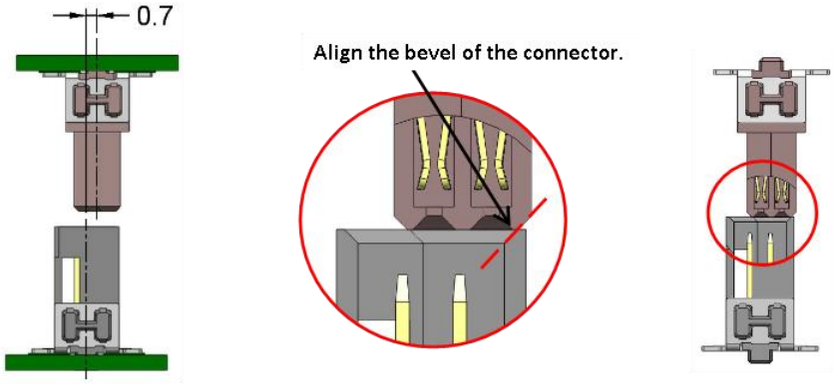
## APPENDIX 2 – DOUBLE ROW CONNECTOR MISALIGNMENT

**Note**: These values are independent of hold down tab variant.

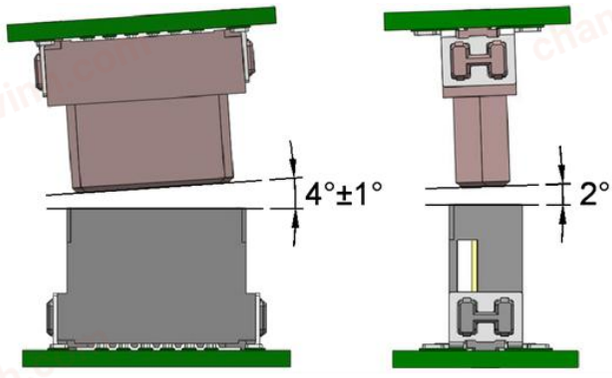
Misalignment tolerance (float) for assembling single connector – front view:



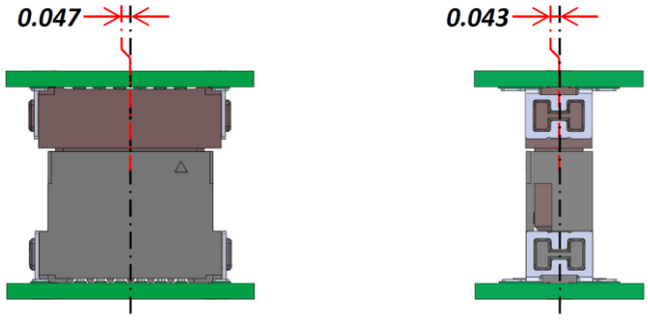

Misalignment tolerance (float) for assembling single connector – side view:




Misalignment angle for assembling single connector:




Allowable linear final misalignment for single connector:

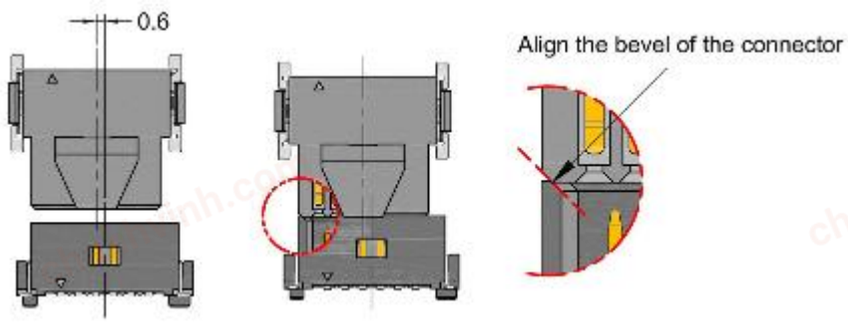


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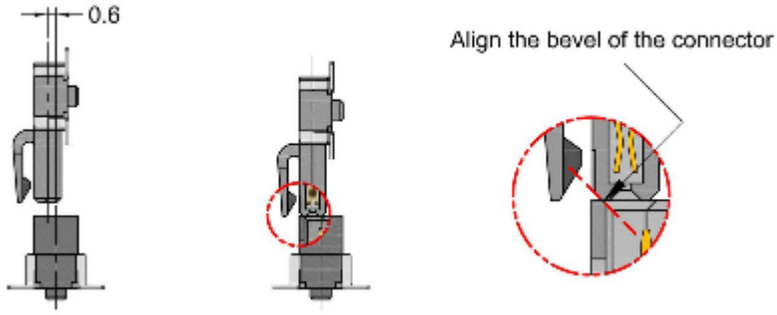


## APPENDIX 3 – SINGLE ROW CONNECTOR MISALIGNMENT

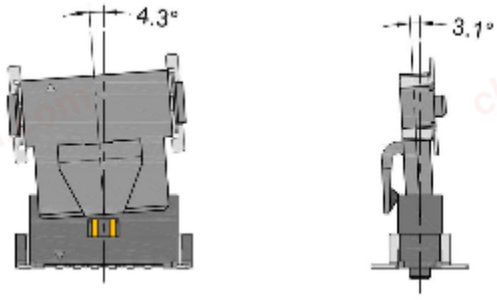
Misalignment tolerance (float) for assembling single connector – front view:



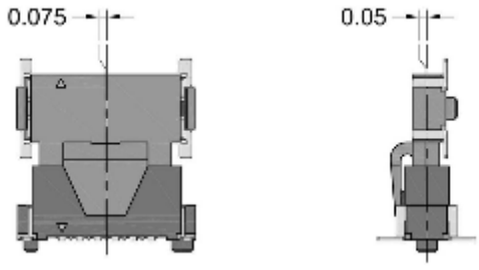

Misalignment tolerance (float) for assembling single connector – side view:




Misalignment angle for assembling single connector:



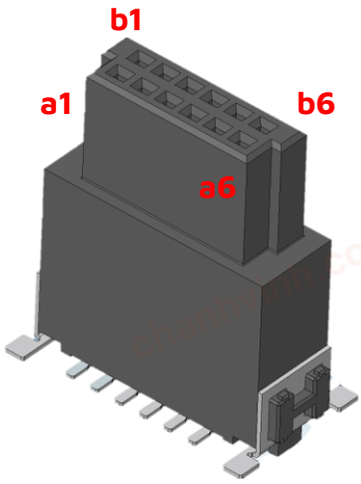

Allowable linear final misalignment for single connector:



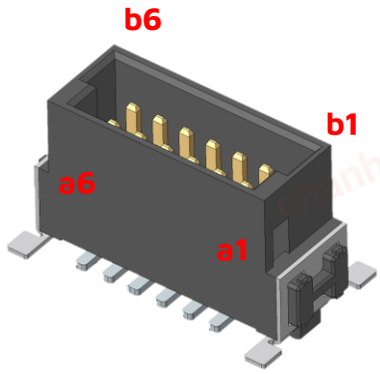
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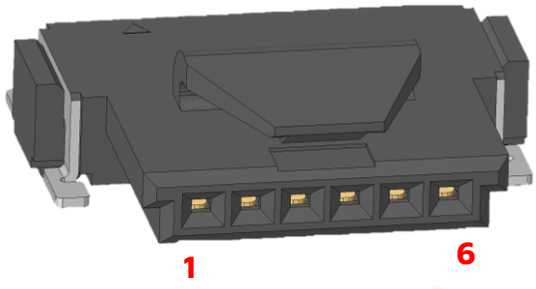
## APPENDIX 4 – CONTACT NUMBERING



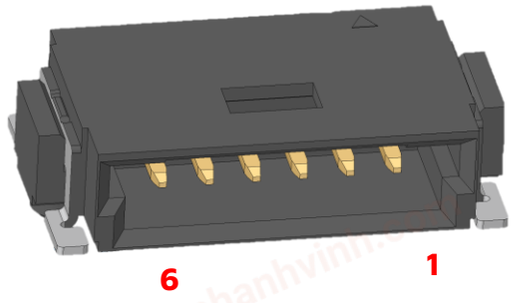

Double Row Female Connectors



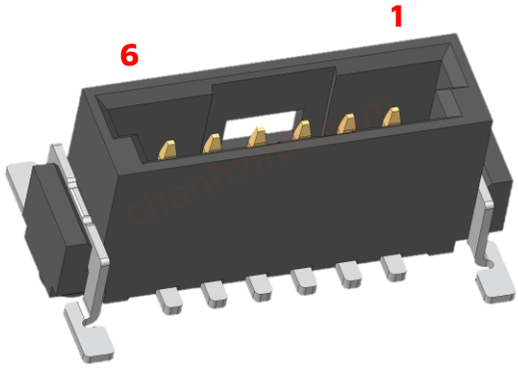

Double Row Male Connectors




Single Row Horizontal Female Connectors




Single Row Horizontal Male Connectors




Single Row Vertical Male Connectors

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## APPENDIX 5 – DOUBLE ROW CABLE ASSEMBLY ORIENTATIONS

- All M55-800XX42-XXXXA cable assemblies are supplied in the orientation shown.
- Cable assemblies are female-to-female and use cable connectors M55-820XX42 on both ends.
- Wiring of connector: Contact a1 to Contact a1, Contact b1 to Contact b1, etc.

