



# HARWIN

## Component Specification

**C04711**

**Kontrol  
M55 Series 1.27mm Pitch Connectors  
October 2024**

<b>SECTION</b>	<b>TITLE</b>	<b>PAGE</b>
1	Description of Connector System	2
2	Ratings	2
Appendix 1	Mating Heights/Lengths	4
Appendix 2	Double Row Connector Misalignment	5
Appendix 3	Single Row Connector Misalignment	6
Appendix 4	Contact Numbering	7
Appendix 5	Cable Assembly Orientations	8

## 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 SMT 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
- 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

## 2.2. Electrical Characteristics

### Current Rating:

PCB Connectors (M55-6XX/7XX/2XX/3XX)	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	25m $\Omega$ max
After Conditioning	Additional 10m $\Omega$ max variation

### Insulation Resistance (EIA-364-21C):

PCB Connectors (M55-6XX/7XX)	10G $\Omega$ min
PCB & Cable Connectors (M55-2XX/3XX/4XX/5XX/8XX)	1G $\Omega$ 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/s<sup>2</sup>) 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 $\pm$ 5°C for 5 $\pm$ 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

**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)
M55-600XX42R	M55-700XX42R	8.00mm	9.50mm
	M55-701XX42R	9.50mm	11.00mm
	M55-702XX42R	11.10mm	12.60mm
M55-601XX42R	M55-700XX42R	10.80mm	12.30mm
	M55-701XX42R	12.30mm	13.80mm
	M55-702XX42R	13.90mm	15.40mm
M55-602XX42R	M55-700XX42R	15.40mm	16.90mm
	M55-701XX42R	16.90mm	18.40mm
	M55-702XX42R	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)
<b>Vertical</b>	<b>Horizontal</b>	-
M55-600XX42R	M55-710XX42R	11.25mm
M55-601XX42R	M55-710XX42R	14.05mm
M55-602XX42R	M55-710XX42R	18.65mm
<b>Horizontal</b>	<b>Vertical</b>	-
M55-610XX42R	M55-700XX42R	12.55mm
M55-610XX42R	M55-701XX42R	14.05mm
M55-610XX42R	M55-702XX42R	15.65mm

**A1.4. Cable to Board Connectors**

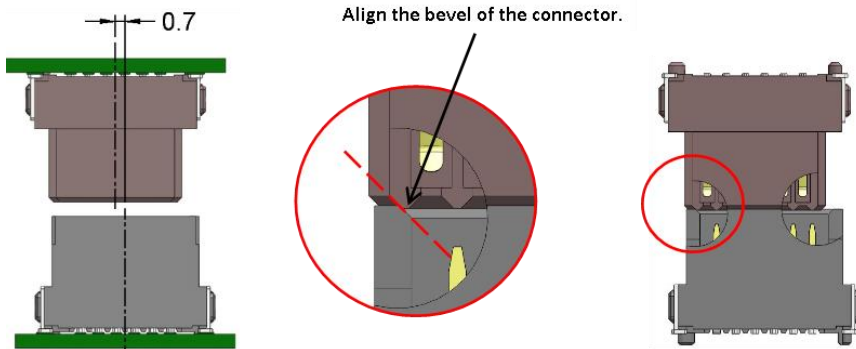
Female Connector	Male Connector	Mating Height (fully mated)
M55-800XX42-XXXXA or M55-820XX42	M55-700XX42R	13.95mm
	M55-701XX42R	15.45mm
	M55-702XX42R	17.05mm
M55-400XX42-XXXXA	M55-300XX42R	15.75mm
	M55-310XX42R	17.60mm
M55-500XX42-XXXXA	M55-210XX42R	23.60mm

**A1.5. Cable to Cable Connectors**

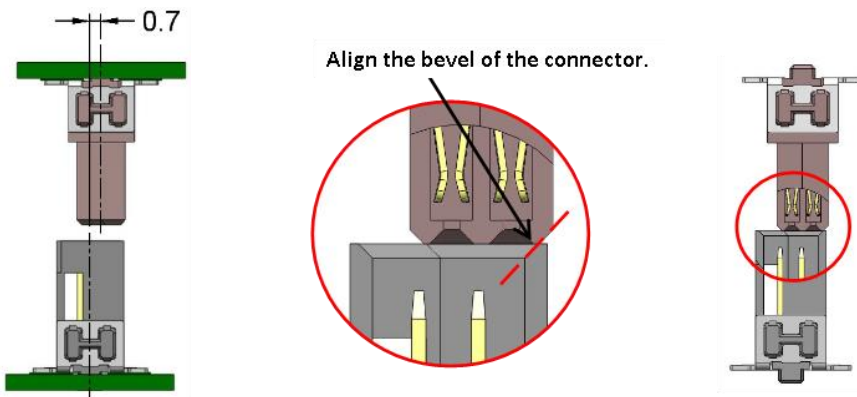
Female Connector	Male Connector	Mating Height (fully mated)
M55-400XX42-XXXXA	M55-500XX42-XXXXA	26.50mm

**APPENDIX 2 – DOUBLE ROW CONNECTOR MISALIGNMENT**

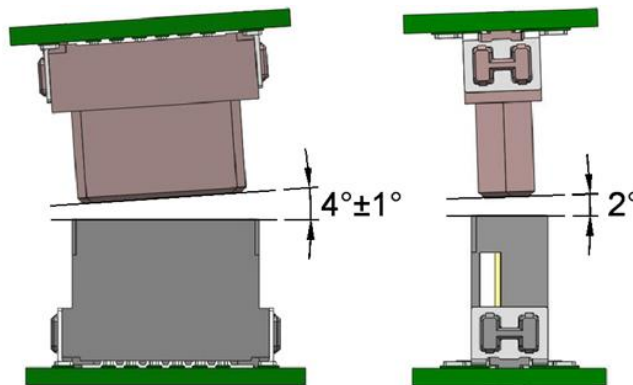
Misalignment tolerance (float) for assembling single connector – front view:



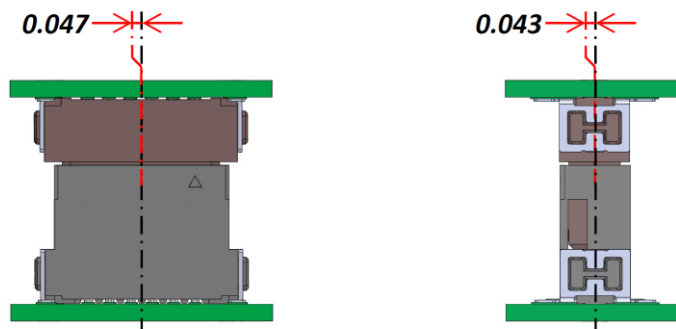
Misalignment tolerance (float) for assembling single connector – side view:



Misalignment angle for assembling single connector:

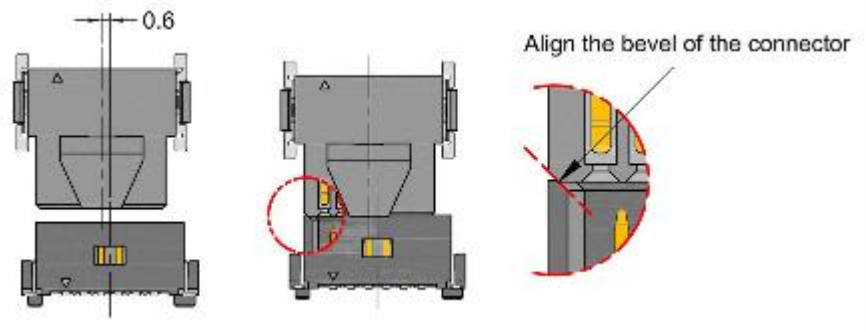


Allowable linear final misalignment for single connector:

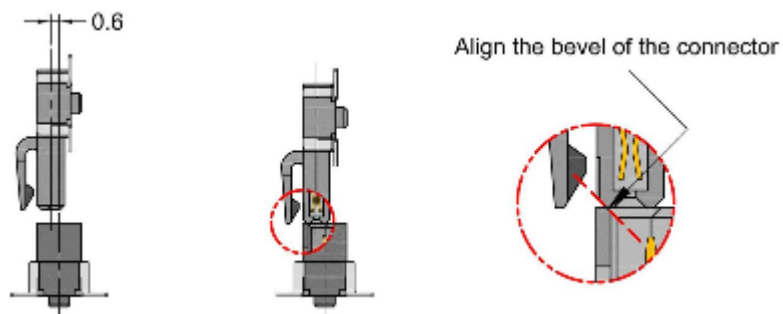


**APPENDIX 3 – SINGLE ROW CONNECTOR MISALIGNMENT**

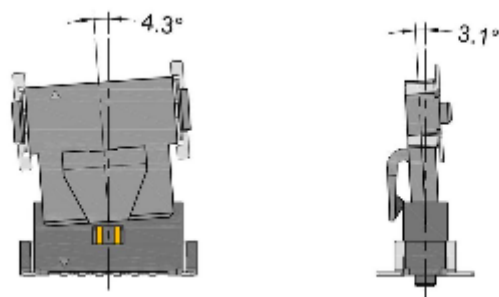
Misalignment tolerance (float) for assembling single connector – front view:



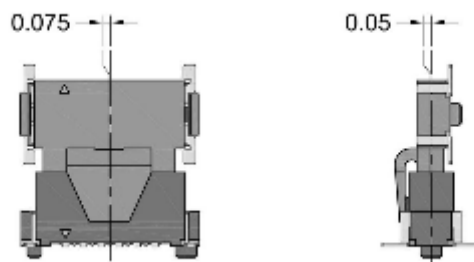
Misalignment tolerance (float) for assembling single connector – side view:



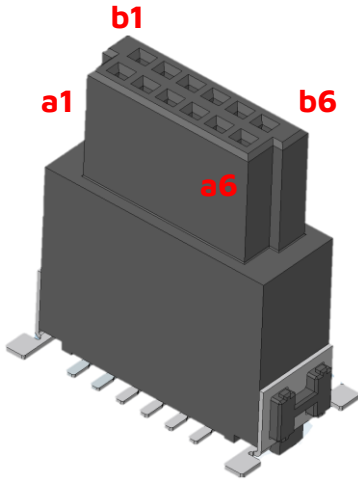
Misalignment angle for assembling single connector:



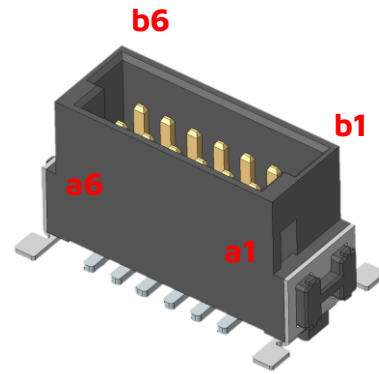
Allowable linear final misalignment for single connector:



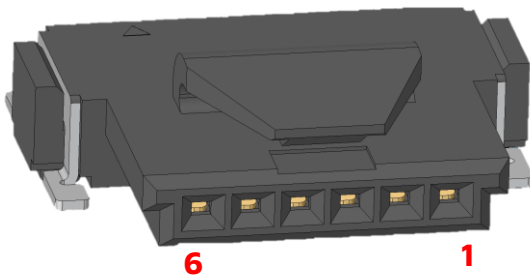
**APPENDIX 4 – CONTACT NUMBERING**



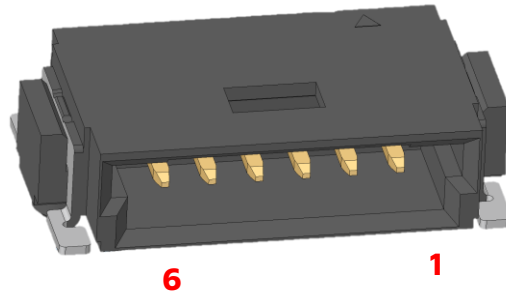
Double Row Female Connectors



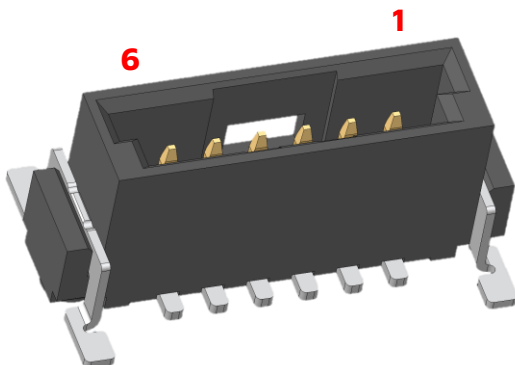
Double Row Male Connectors



Single Row Horizontal Female Connectors



Single Row Horizontal Male Connectors



Single Row Vertical Male Connectors

**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.

