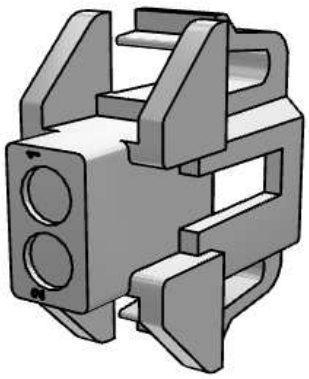
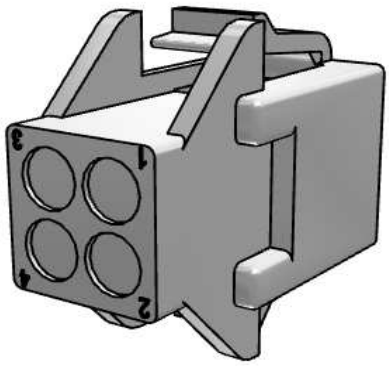
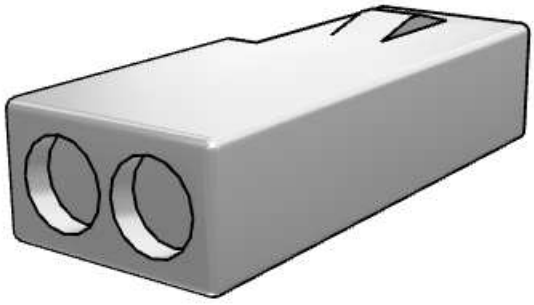
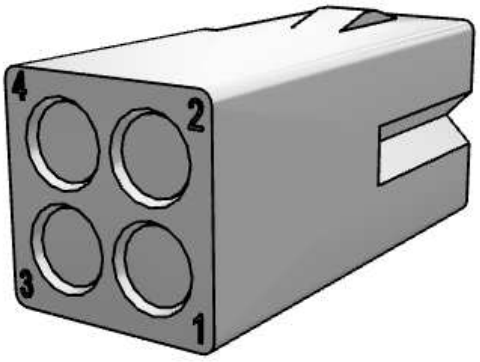
molex **PRODUCT SPECIFICATION**

# STANDARD .062”+

## WIRE TO WIRE CONNECTOR SYSTEM

| Single Row Plug Housing | Dual Row Plug Housing |
|---|---|
|  |  |
| Series: 150176 | Series: 150177 |

| Single Row Receptacle Housing | Dual Row Receptacle Housing |
|---|---|
|  |  |
| Series: 150178 | Series: 150179 |

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| REVISION: | ECM INFORMATION: | TITLE: | SHEET No. |
|---|---|---|---|
| B2 | EC No: 666346<br>DATE: 06/08/2021202 | PRODUCT SPEC STANDARD .062"+ WTW CONNECTOR | 1 of 14 |

| DOCUMENT NUMBER: | DOC TYPE: | DOC PART: | CREATED / REVISED BY: | CHECKED BY: | APPROVED BY: |
|---|---|---|---|---|---|
| 1501760001-PS | PS | 000 | SMAHAJANSHET | NCSR | NCSR |

| Male Crimp Terminal | Female Crimp Terminal |
|---|---|
|  |  |
| Series: 150180 | Series: 150181 |

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## 1.0 SCOPE

This Product Specification covers the 3.68 mm centerline (pitch) Wire to Wire connector system terminated with 16 to 22 AWG wire using crimp technology.

## 2.0 PRODUCT DESCRIPTION

### 2.1 DESCRIPTION, SERIES NUMBER, AND LINKS

| DESCRIPTION | SERIES NUMBER |
|---|---|
| Single Row Plug Housing | 150176 |
| Dual Row Plug Housing | 150177 |
| Single Row Receptacle Housing | 150178 |
| Dual Row Receptacle Housing | 150179 |
| Male Crimp Terminal | 150180 |
| Female Crimp Terminal | 150181 |

### 2.2 DIMENSIONS, MATERIALS, PLATINGS

Refer SD-150180-0001 for Male terminal and SD-150181-0001 for Female terminal and SD-150176-001 for (Single row plug housing), SD-150177-001for (Dual row plug housing), SD-150178-001 for (Single row receptacle housing) and SD-150179-001 for (Dual row receptacle housing).

### 2.3 ENVIRONMENTAL CONFORMANCE

To find product compliance information:
a. Go to molex.com
b. Enter the part number in the search field.
c. At the bottom of the page go to “Environmental” to see compliance status.

### 2.4 SAFETY AGENCY LISTINGS

UL File Number: E29179

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATION

### 3.1 MOLEX DOCUMENTS

Molex Quality Crimping Handbook Order No. 63800-0029
Molex Solderability Specification SMES-152
Molex Heat Resistance Specification AS-40000-5013
Molex Moisture Technical Advisory AS-45499-001
Molex Package Handling Specification 454990100-PK

Application Tooling Specification Sheet 16 AWG- UL1061: ATS-639036100
Application Tooling Specification Sheet 18 AWG- UL1061: ATS-639036200
Application Tooling Specification Sheet 18 AWG- UL1007: ATS-639036100
Application Tooling Specification Sheet 20 AWG- UL1061: ATS- 639036400
Application Tooling Specification Sheet 22 AWG- UL1061: ATS- 639036500
Application Tooling Specification Sheet 20-22 AWG- UL1007: ATS- 639036300
Refer section 7.0 for Environmental Test Sequences
ATS – Application Tooling Specification*

*Application Tooling Specification for terminals is not provided in this document. ATS for terminals can be available from respective terminal part number page in Molex.com*

### 3.2 INDUSTRY DOCUMENTS

EIA-364-1000
UL-60950-1

## 4.0 ELECTRICAL PERFORMANCE RATINGS

### 4.1 VOLTAGE

250 Volts AC (RMS) or DC.

* This connector voltage meets the connector level provided by the safety agency. For application voltage requirements per UL-60950 or other standards, the creepage & clearance also needs to be determined based upon pads/traces on the PCB.

### 4.2 APPLICABLE WIRES

| AWG | Outside insulation diameter | |
|---|---|---|
| | UL1007 | UL1061 |
| 16 | NA | 2.02mm ± 0.1 |
| 18 | 2.10mm ± 0.1 | 1.70mm ± 0.1 |
| 20 | 1.80mm ± 0.1 | 1.46mm ± 0.1 |
| 22 | 1.60mm ± 0.1 | 1.28mm ± 0.1 |

Note: Above mentioned wire outer diameter is for reference. Refer Application spec for details.

### 4.3 CURRENT RATINGS*

Ratings shown below represent maximum current carrying capacity of a fully loaded connector with all circuits powered using UL1061/UL1007 stranded wire. Ratings are based on a 30 °C maximum temperature rise limit over ambient (see section 5.1.4 for specification) without derating. Current is dependent on connector size, ambient temperature, and related factors. Actual current rating is application dependent and should be evaluated for each use.

| AWG | 1 CIRCUIT | 2 CIRCUIT | 3 CIRCUIT | 4 CIRCUIT | 6 CIRCUIT | 8 CIRCUIT | 10 CIRCUIT |
|---|---|---|---|---|---|---|---|
| 16 | 11.5 A* | 11.5 A | 10 A* | 9 A* | 8.5 A | 8.0 A* | 7.5 A |
| 18 | 8.5 A* | 8.5 A* | 7 A* | 6.5 A* | 6.5 A* | 6.0 A* | 6.0 A* |
| 20 | 7.5 A* | 7.5 A* | 6 A* | 5.5 A* | 5.5 A* | 5.0 A* | 5.0 A* |
| 22 | 6.5 A* | 6.5 A | 5.5 A* | 5.0 A* | 5.0 A | 4.5 A* | 4.5 A |

Interpolated values

### 4.4 TEMPERATURE

Operating Temperature Range* (includes T-Rise from applied current): - 40°C to + 105°C

### 4.5 DURABILITY

| Plating Type | Number of Cycles |
|---|---|
| Tin Plated | 25 |

*As tested in accordance with EIA-364-1000 test method (see section 6.2 item 3 of this specification). Durability per EIA-364-09*

## 5.0 QUALIFICATION

Laboratory condition, sample selection and test sequences are in accordance with EIA-364-1000.

## 6.0 PERFORMANCE

### 6.1 ELECTRICAL PERFORMANCE

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|---|---|---|---|
| 6.1.1 | Contact Resistance (Low Level) | Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA. EIA-364-23C | 10 milliohms MAXIMUM [initial] |
| 6.1.2 | Insulation Resistance | Mate connectors: Apply a voltage of 500 VDC between adjacent terminals and between terminals to ground. EIA-364-21C | 1000 Megohms MINIMUM |
| 6.1.3 | Dielectric Withstanding Voltage | Apply a voltage of 1500 VAC for 1 minute between adjacent terminals and between terminals to ground. EIA-364-20D | No breakdown. current leakage < 5 mA |
| 6.1.4 | Temperature Rise | Mate connectors: measure the temperature rise at the rated current EIA-364-70 Method 2 | Temperature rise: +30°C MAXIMUM Above ambient |
| 6.1.5 | Temperature Rise (18day Current Cycling) EIA-364-55 | Mate connectors: measure the temperature rise at the rated current after: 1) 96 hours (steady state) 2) 240 hours (45 minutes ON and 15 minutes OFF per hour) 3) 96 hours (steady state) | Temperature rise: +30°C MAXIMUM |

### 6.2 MECHANICAL PERFORMANCE

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|---|---|---|---|
| 6.2.1 | Connector mate and Unmate forces (initial) | Mate and unmate connector (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. EIA-364-13E | Mate force: 9 N/circuit maximum and Un mate force:4.5 N/circuit minimum |
| 6.2.2 | Terminal Retention Force (in Housing) | Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. | 50N MINIMUM retention force (Derived based on actual terminal check) |
| 6.2.3 | Durability EIA-364-1000 Test Group-7 | Insert and withdraw connectors 25 times at a maximum rate of 10 cycles per minute prior to environmental tests. | Contact Resistance 10 milliohms MAXIMUM (change from initial) & Visual: No Damage |
| 6.2.4 | Vibration (Random) Test Group-3 | Mate connectors and vibrate per EIA 364-28, test condition VII. Letter D. (Acceleration 3.1 g) | 10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond |
| 6.2.5 | Shock (Mechanical) Test Group-3 | Mate connectors and shock at 50 g's with ½ sine wave (11 milliseconds) shocks in the ±X, ±Y, ±Z axes (18 shocks total). EIA-364-27, Test Condition A | 10 milliohms MAXIMUM (change from initial]) & Discontinuity < 1 microsecond |
| 6.2.6 | Wire Pullout Force (Axial) | Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch) as Per EIA-364-08 | MINIMUM pullout forces 16 AWG - 89 N 18 AWG - 89 N 20 AWG - 36 N 22 AWG - 36 N (Per UL 1977) |
| 6.2.7 | Terminal Insertion Force (into Housing) | Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch). | 11 N Maximum |

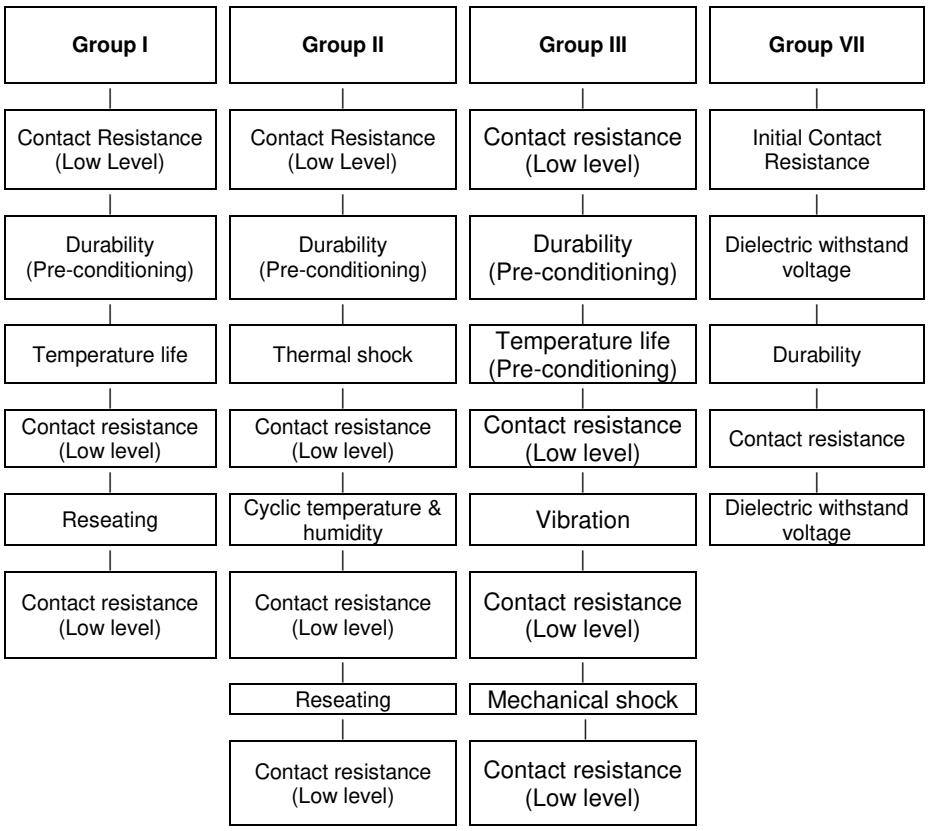
| 6.2 MECHANICAL PERFORMANCE (CONT.) | | | |
|---|---|---|---|
| **ITEM** | **DESCRIPTION** | **TEST CONDITION** | **REQUIREMENT** |
| 6.2.8 | Panel Insertion Forces | Insert the connector at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. | 52 N Max. |
| 6.2.9 | latch Retention force with Panel | Insert the connector in to panel and pull at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. | 200 N Min |
| 6.2.10 | Impact Housings | Drop the housings from 1meter height. | No Breakage, No Damage |

### 6.3 ENVIRONMENTAL PERFORMANCE

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|---|---|---|---|
| 6.3.1 | Temperature Life Group-1 | See next page for the test condition details | 10 milliohms MAXIMUM (change from initial]) & Visual: No Damage |
| 6.3.2 | Shock (Thermal) Group 2 | Mate connectors; expose to 5 cycles of:<br>Temperature °C — Duration (Minutes)<br>-55 +0/-3 — 30<br>+25 ±10 — 5 MAXIMUM<br>+85 +3/-0 — 30<br>+25 ±10 — 5 MAXIMUM | 10 milliohms MAXIMUM (change from initial) & Visual: No Damage |
| 6.3.3 | Humidity (Cyclic) Group 2 | Mate connectors: And Perform 24 cycles between Temperature 25 ± 3°C at 80 %± 3% Relative humidity and 65 ± 3°C at 50% ± 3% Relative humidity; Ramp time of 0.5 hours and dwell time of 1.0 hour; Dwell times start when the temperature and humidity have Stabilized within the specified levels. | 10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage |

## 7.0 TEST SEQUENCE

Reliability Test Sequences Per EIA-364-1000




**Temperature Life:**
Mate connectors and expose to +105°C for 132hrs (preconditioning) and then +105°C for 228hrs (Temperature Life).
Note: Temperature preconditioning applied for Test group 3 is +105°C for 132hrs.

**Individual Tests**

- Connector Mate and Un-mate Forces
- Terminal Retention Force
- Wire Pullout force
- Terminal Insertion Force
- Panel Insertion & Withdrawal Forces
- Latch Retention force with panel
- Impact Housings

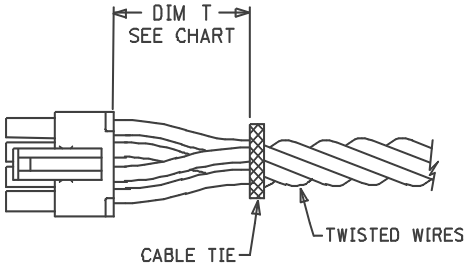
- Temperature Rise
- T-Rise Profiling
- Steady State Temperature Rise

## 8.0 PACKAGING

Parts shall be packaging to protect the parts from damage during standard shipping, storage, and handling. Refer Molex.com specific part number webpage to get the exact packaging document for that item.

## 9.0 CABLE TIE AND / OR TWIST TIE LOCATION

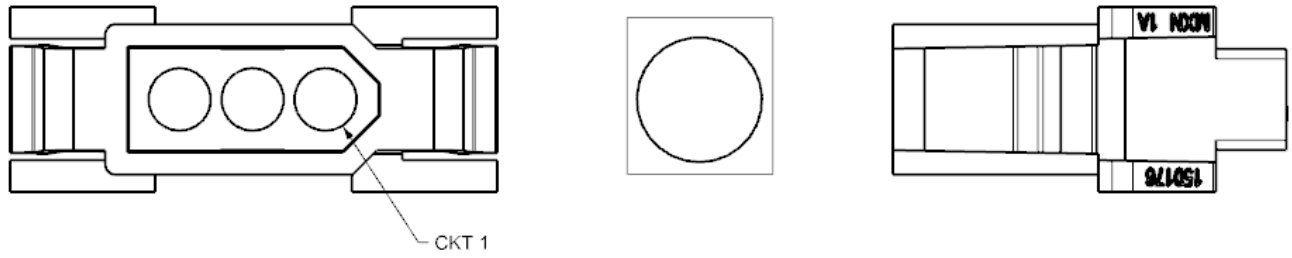
| CKT Sizes | Dim T Min. |
|---|---|
| 2-4 | .500 (12.70) |
| 5-8 | .750 (19.10) |
| 9-12 | 1.000 (25.40) |



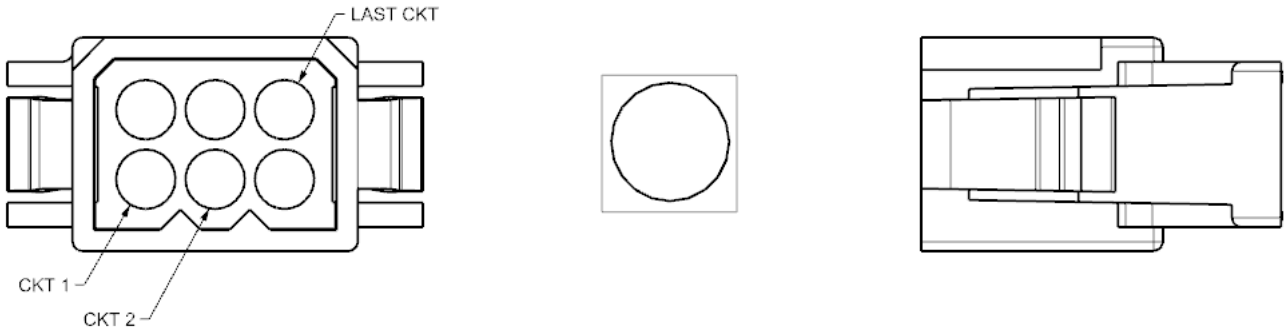

The “T” dimension defines a “free” length of wire, or a length of wire that is not subject to significant bias by external factors such as a wire tie, wire twisting, or other means of bending or deforming of the wires that repositions them from their natural relaxed state or location where they enter the housing. Wires are to be dressed in such a manner to allow the terminals to float freely in the pocket. This dimension is general recommendation and may need to be adjusted for different wire gauges and wire type and insulation thickness and insulation material.

## 10.0 POLARIZATION AND KEYING OPTIONS

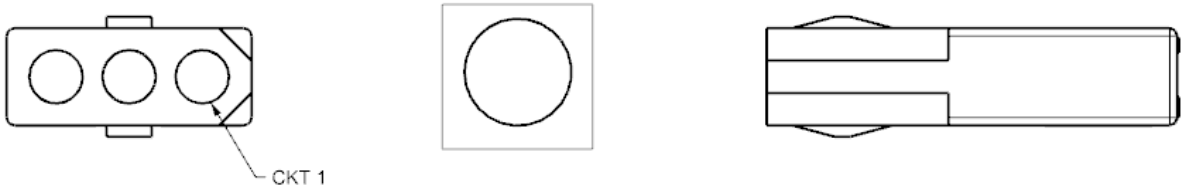
### 10.1 Single Row Plug Housing (Series: 150176)



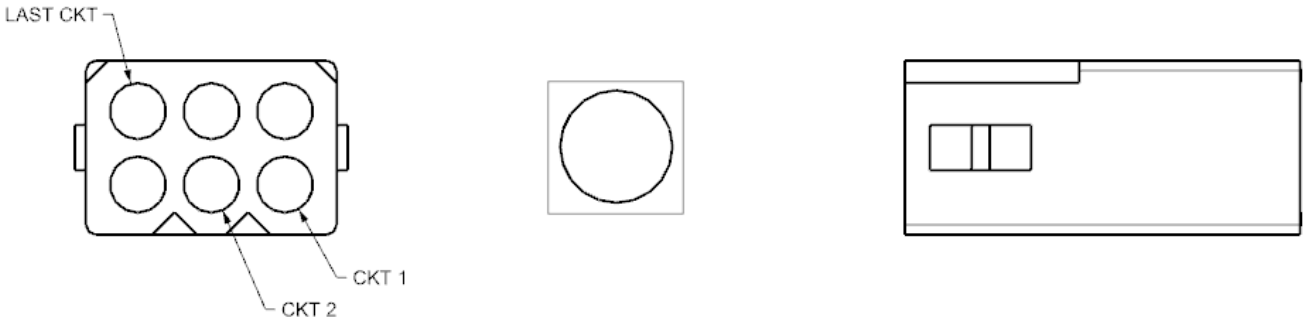

### 10.2 Dual Row Plug Housing (Series: 150177)




### 10.3 Single Row Receptacle Housing (Series: 150178)



### 10.4 Dual Row Receptacle Housing (Series: 150179)




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