

COMPONENT SPECIFICATION**M30 SERIES CONNECTORS**

SEPTEMBER 2011

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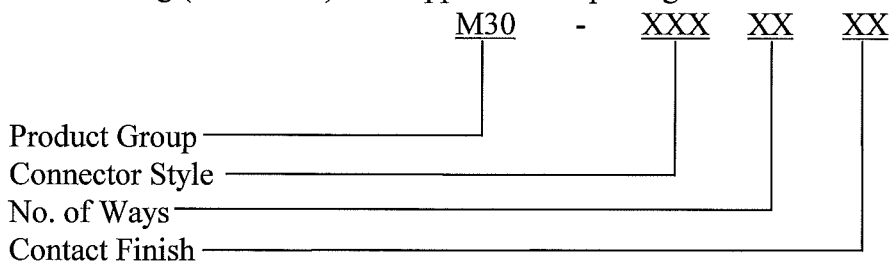
COMPONENT SPECIFICATION
M30 SERIES CONNECTORS

1. DESCRIPTION OF CONNECTOR AND INTENDED APPLICATION.

A selection of 1.25mm pitch connectors, comprising P.C. tail and surface mount vertical headers and crimp sockets with housings.

2. MARKING OF THE CONNECTOR AND/OR PACKAGE (ORDER CODE).

The marking (order code) shall appear on the package and shall be of the following style:



Connector Style:

- Reeled Crimp Socket contacts100
- Loose Crimp Socket contacts101
- SIL Crimp Housing110
- SIL Surface Mount Vertical Header600
- SIL P.C. Tail Vertical Header610

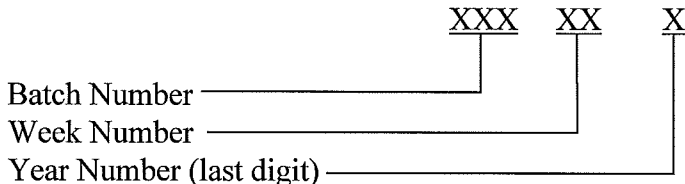
No. of Ways:

02 to 15

Finish:

- Tin06
- None (Crimp Housing).....00

The batch code shall appear on the package and shall be of the following style:



The batch number is 001 to 999 repeated each week.

3. RATINGS.

3.1. MATERIAL & FINISH.

Materials:

- Crimp Moulding66 Nylon, UL94V-0
- Header Mouldings46 Nylon, UL94V-0
- Crimp ContactPhosphor Bronze
- Header contacts.....Brass
- Fixtures on surface mountPhosphor Bronze

Finish:

- Crimp Contact1-2µ Tin over 0.5µ min Copper
- Header contacts.....3µ min 90/10 Tin/Lead over 1µ min Copper
- Fixtures on surface mount1-2µ Tin over 0.5µ min Copper

COMPONENT SPECIFICATION
M30 SERIES CONNECTORS (continued)

3. RATINGS (continued).

3.2. ELECTRICAL CHARACTERISTICS.

Rated Current	1.0A AC/DC
Rated Voltage.....	150V AC/DC
Maximum contact resistance (initial) (see Appendix A1.2.1.i)	30 mΩ
Maximum contact resistance (after conditioning) (see Appendix A1.2.1.i)	25 mΩ
Dielectric Withstanding Voltage (see Appendix A1.2.1.ii)	500V AC rms for 1 minute
Minimum insulation resistance (see Appendix A1.2.1.iii)	500 MΩ

3.3. ENVIRONMENTAL CHARACTERISTICS.

Temperature Range	-55°C to +85°C
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3.4. MECHANICAL CHARACTERISTICS.

High temperature, short term (no electrical load)	10 seconds at 260°C
Pin retention in moulding (headers only).....	9.8N min
Crimp retention in moulding.....	5.9N min
Crimp wire retention:	
For wire 26AWG	19.6N min
For wire 28AWG	14.7N min
For wire 30AWG	5.9N min
Maximum insertion force per contact (initial)	4.9N
Insertion force per contact (after 30 cycles).....	4.9N
Minimum withdrawal force per contact (initial)	0.5N
Withdrawal force per contact (after 30 cycles)	0.5N

COMPONENT SPECIFICATION
M30 SERIES CONNECTORS (continued)

APPENDIX A - TEST METHODS AND PERFORMANCE.

A1.1. TEST CONDITIONS.

Unless otherwise specified, all tests and measurements shall be performed under the following conditions in accordance with MIL-STD-202:

Temperature.....	15° to 35°C
Humidity.....	45% to 75% RH
Atmospheric pressure.....	650 to 800mmHg

A1.2. TEST METHODS.

A1.2.1. Electrical.

i) Contact Resistance.

Solder a header to a PC Board. Mate a crimp socket housing loaded with crimped contacts to the header. Measure the contact resistance using the 4-terminal method as shown in Figure 1. Apply the low-level condition of 20mV max. for the open circuit voltage, and 10mA DC max. for the closed circuit current. Contact resistance must not exceed the values stated in section 3.2.

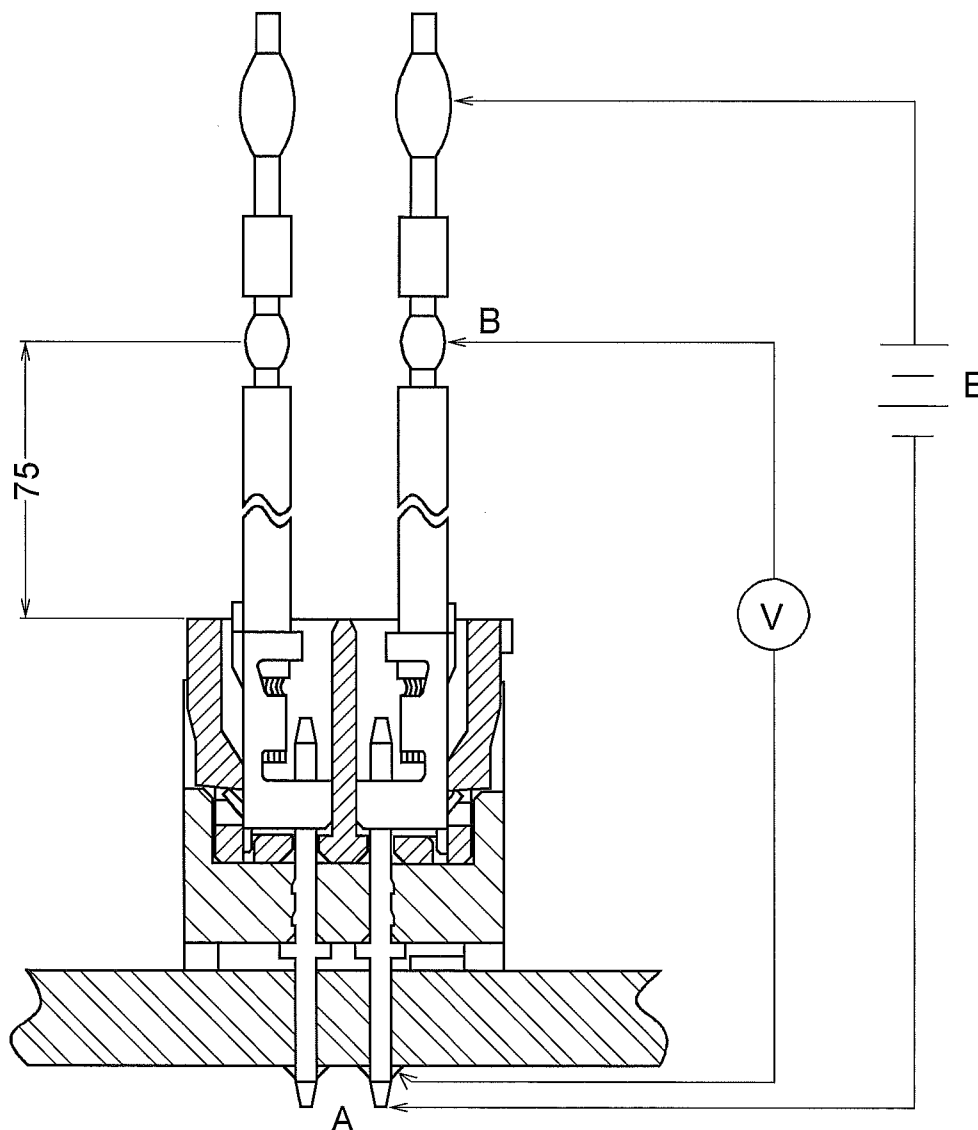


Figure 1: Contact Resistance = R_{AB} - Resistance of 75mm wire

COMPONENT SPECIFICATION
M30 SERIES CONNECTORS (continued)

APPENDIX A - TEST METHODS AND PERFORMANCE (continued).

A1.2. TEST METHODS (continued).

A1.2.1. Electrical (continued).

ii) Dielectric Withstanding Voltage.

Mate a loaded crimp socket housing to a header (not soldered to a PC Board). Apply between neighbouring contacts a 500V AC rms current for 1 minute in accordance with MIL-STD-202, Method 301. No creeping discharge, flash-over or insulator break-down is allowed.

iii) Insulation Resistance.

Mate a loaded crimp socket housing to a header (not soldered to a PC Board). Apply between neighbouring contacts a 100V DC voltage before the measurement of resistance between contacts is taken. Measurement is taken in accordance with MIL-STD-202, Method 302. Insulation resistance must not be less than the value stated in section 3.2.

A1.2.2. Environmental.

i) Thermal Shock.

Solder a header to a PC Board. Mate a crimp socket housing loaded with crimped contacts to the header. Expose the mated connectors to the following environment in accordance with MIL-STD-202, Method 107 Condition B:

Temperature.....	-65° (30 minutes) → +125°C (30 minutes)
Transition time.....	5 minutes max.
Number of cycles.....	5

Contact resistance before and after the test must meet the values stated in section 3.2.

ii) Humidity.

Solder a header to a PC Board. Mate a crimp socket housing loaded with crimped contacts to the header. Expose the mated connectors to the following environment in accordance with MIL-STD-202, Method 103 Condition B:

Temperature.....	40° ±2°C
Humidity.....	90% to 95% RH
Duration.....	96 hours

Contact resistance before and after the test must meet the values stated in section 3.2.

iii) Salt Spray.

Solder a header to a PC Board. Mate a crimp socket housing loaded with crimped contacts to the header. Expose the mated connectors to the following environment in accordance with MIL-STD-202, Method 101 Condition B:

Temperature.....	35°C
Salt water density.....	5% (by weight)
Duration.....	48 hours

Contact resistance before and after the test must meet the values stated in section 3.2. No detrimental damage affecting the performance must occur.

COMPONENT SPECIFICATION
M30 SERIES CONNECTORS (continued)

APPENDIX A - TEST METHODS AND PERFORMANCE (continued).

A1.2. TEST METHODS (continued).

A1.2.2. Environmental (continued).

iv) Gas.

Solder a header to a PC Board. Mate a crimp socket housing loaded with crimped contacts to the header. Expose the mated connectors to the following environment:

Chamber temperature	25° ±2°C
Humidity	75% RH
Gas	H ₂ S, 10ppm
Duration	24 hours

Contact resistance before and after the test must meet the values stated in section 3.2. Detrimental damage affecting the performance must not occur.

v) Vibration.

Solder a header to a PC Board. Mate a crimp socket housing loaded with crimped contacts to the header. Place the mated connectors on a vibrator machine, and apply the following vibration in accordance with MIL-STD-202, Method 201. Care should be taken to fix the board firmly to the vibrator machine to avoid any unnecessary resonance of the board. During the testing, run a 100mA DC current to check for any electrical discontinuity. The test cycle must cover the following parameters:

- a) Frequency 10Hz → 55Hz → 10Hz over 1 minute approx.
- b) Directions Three mutually perpendicular directions
- c) Total amplitude 1.52mm
- d) Sweep duration Two hours for each direction, totalling 6 hours.

Contact resistance before and after testing must meet the values specified in section 3.2. No electrical discontinuity greater than 10 μseconds must occur during testing. Looseness amongst parts, chipping, breakage or other detrimental damage must not occur.

vi) Shock.

Solder a header to a PC Board. Mate a crimp socket housing loaded with crimped contacts to the header. Place the mated connectors on a shock machine, and apply the following shock in accordance with MIL-STD-202, Method 213 Condition A. Care should be taken to fix the board firmly to the shock machine to avoid any unnecessary resonance of the board. During the testing, run a 100mA DC current to check for any electrical discontinuity. The test cycle must cover the following parameters:

- a) Maximum shock 50g (490m/s²)
- b) Standard duration 11 milliseconds
- c) Wave form Half-sinusoidal

No electrical discontinuity greater than 10 μseconds must occur during testing. Looseness amongst parts, chipping, breakage or other detrimental damage must not occur.

vii) Solderability.

Dip the solder tine of a header in a flux of RMA or R type for 5 to 10 seconds. Then dip the tine into a solder bath (245° ±5°C) for 5 ±0.5 seconds. This test is in accordance with MIL-STD-202, Method 208. More than 95% of the dipped surface must be evenly wet.

COMPONENT SPECIFICATION
M30 SERIES CONNECTORS (continued)

APPENDIX A - TEST METHODS AND PERFORMANCE (continued).

A1.2. TEST METHODS (continued).

A1.2.2. Environmental (continued).

viii) Soldering Heat Resistance (PC Tail).

Insert the solder tines of a PC tail connector into some PC Board holes. Dip the tines exposed from the back of the board into the solder bath ($260^{\circ} \pm 5^{\circ}\text{C}$) for 3 ± 0.5 seconds. This test is in accordance with MIL-STD-202, Method 210A. Looseness of the pins or cracks in the header must not occur.

ix) Soldering Heat Resistance (Surface Mount).

Subject a surface mount connector to the following reflow soldering profile (see Figure 2), no more than twice:

Pre-heat.....	150°C for 60-120 seconds
Reflow solder.....	220°C min. for 10-30 seconds
	260° ±5°C for 10 seconds max.

Detrimental damage affecting the performance of the connector must not occur.

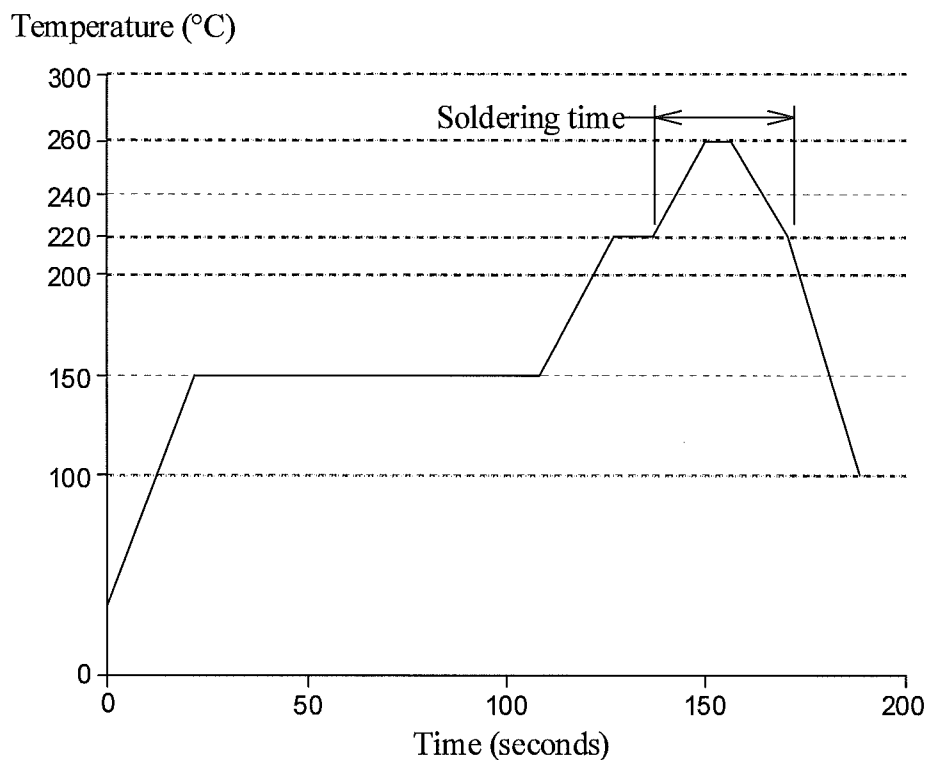


Figure 2: Reflow Temperature Profile.

A1.2.3. Mechanical.

i) Pin Retention Force.

Place a header on a push-on/pull-off machine. Apply force onto the pin header and push the pin in the direction opposite to insertion, at a speed of 25 ± 3 mm/min. Measure the force when the pin dislodges from the header. Pin retention must conform to the figure stated in section 3.4.

COMPONENT SPECIFICATION
M30 SERIES CONNECTORS (continued)

APPENDIX A - TEST METHODS AND PERFORMANCE (continued).

A1.2. TEST METHODS (continued).

A1.2.3. Mechanical (continued).

ii) Crimp Retention Force.

Load a crimp socket housing with crimped contacts. Place the loaded crimp housing onto a push-on/pull-off machine. Pull on the wire end of a contact at a speed of 25 ± 3 mm/min. Measure the force when the contact dislodges from the housing. Crimp retention must conform to the figure stated in section 3.4.

iii) Crimp Wire Retention Force.

Place a crimped contact onto a push-on/pull-off machine. Pull on the wire end of a contact at a speed of 25 ± 3 mm/min. Measure the force when the wire breaks away. Note that the insulation barrel is kept open during testing. Crimp wire retention must conform to the figures stated in section 3.4.

iv) Retainer Retention Force.

Place a header on a push-on/pull-off machine. Apply force onto the retainer in the direction opposite to insertion, at a speed of 25 ± 3 mm/min. Measure the force when the retainer dislodges from the header. Retainer retention must not be less than 9.8N.

v) Soldered Retainer Retention Force.

Solder a header to a PC Board, using only the retainers. Place the board onto a push-on/pull-off machine. Pull the header at a speed of 25 ± 3 mm/min. Measure the force when the retainer breaks away from the board. The Soldered retainer retention must not be less than 29.4N.

vi) Repeated Insertion/Withdrawal Force.

Solder a header to a PC Board. Load a crimp socket housing with crimped contacts. Place the board and loaded crimp housing onto a push-on/pull-off machine. Repeat insertion and withdrawal for 30 cycles, at a speed of 25 ± 3 mm/min. along the mating axis. Insertion and withdrawal forces before and after the test must conform to those stated in section 3.4.

vii) Electrical Continuity Durability.

Solder a header to a PC Board. Load a crimp socket housing with crimped contacts. Place the board and loaded crimp housing onto a push-on/pull-off machine. Repeat insertion and withdrawal for 30 cycles, at a speed of 25 ± 3 mm/min. along the mating axis. Contact resistance before and after the test must meet the values stated in section 3.2.