

1. SCOPE

1.1 Content

This specification covers the requirements for the product performance, test methods and quality assurance provisions of the M Series Connector family.

1.2 Qualification

When tests are performed on subject product line, procedures specified in Tyco 109 Series specifications shall be used unless otherwise stated. All inspections shall be performed using the applicable inspection plan and product drawings.

2. APPLICABLE DOCUMENTS

The following documents form part of this specification to the extent specified herein. In the event of conflict between requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between requirements of this specification and the referenced documents, this specification shall take precedence.

2.1 Drawings

2.1.1 Tyco Drawings

for M8 part numbers
1814431 to 181441

for M12 part numbers
1814423, 1838235 to 1838237
1838239 to 1838259

Revision Summary

| | | | | | |
|--|---------------------|----------------------------|-------------------|-----------------------------|-------------------|
| REV. A First Issue as Product Specification | | | | | |
| Drawn:- A. Morey | Date 1 June 2007 | Checked F. Wheeler-King | Date 1 Jun '07 | Approved F. Wheeler-King | Date 1 Jun '07 |

2.2 Other Documents

- 2.2.1 DIN IEC512
- DIN IEC68
- DIN IEC529

3. REQUIREMENTS

3.1 Design and Construction

Product shall be of design, construction and physical dimensions specified on applicable product drawings.

3.2 Materials and Finishes

Materials are as designated within Production Drawings.

3.3 Ratings

3.3.1 Electrical

| | |
|------------------------|---------------------------------|
| Operating temperature: | -25°C to +90°C |
| Contact Resistance | 10 mOhm maximum |
| Current Rating | 2 Amps for M8 and 5Amps for M12 |
| Breakdown Voltage | 500 V AC minimum |
| Insulation Resistance | 100 Mohm minimum |

3.3.2 Environmental

| | |
|----------------------|------------|
| Sealing Requirements | IP67 |
| Durability | 500 cycles |

3.4 Performance and Test Description.

The product is designed to meet the Electrical, Mechanical and Environmental performance requirements as specified in paragraph 3.5 below here. Unless otherwise specified, all tests are to be performed at ambient environmental conditions as per IEC 512.

VISUAL

| | Test Description | Performance Requirements or severity | Procedure |
|--------------|-------------------------------|---|---------------------------------------|
| 3.4.1 | Visual examination of product | Parts to be inspected for defects before and after specified tests. | In accordance with IEC 512-2, test 1a |

ELECTRICAL and ENVIRONMENTAL

| | Test Description | Performance Requirements or severity | Procedure |
|--------------|--------------------------------|---|--|
| 3.4.2 | Contact Resistance | Contact Resistance to be 10 mOhm max. | Measure across mated contacts with 20 mV max, 100 mA max current flow in accordance with IEC 512-2, test 2a. |
| 3.4.3 | Current/Temp Capability Rating | 30°C above ambient at 2A (M8) and 5A (M12) | Measure Temperature Rise |
| 3.4.4 | Voltage Proof | No breakdown or flash over at 500 V AC | 500 V AC |
| 3.4.5 | Sealing Requirement | IP67 | Test in accordance with IEC 529 and VDE 0470 part 1. |
| 3.4.6 | Insulation Resistance | 100 Mohm minimum | 500 V DC per minute |

MECHANICAL

| | Test Description | Performance Requirements or severity | Procedure |
|---------------|----------------------------------|---|--|
| 3.4.7 | Mating Force (Single Contact) | 0.05N minimum | Insertion Force measured at a speed of 25mm/min. |
| 3.4.8 | Un-Mating Force (Single Contact) | 0.05N minimum | Extraction Force measured at a speed of 25mm/min. |
| 3.4.9 | Vibration | Contact Resistance 10 mOhm maximum | 10-55 Low Hz. Displacement 1.5mm Peek to Peek Sweep. Linear Sweep Rate 1.5Hz/sec. Duration 2hours/axis (Longitudinal and transversal) |
| 3.4.10 | Durability | Contact Resistance 10 mOhm maximum | 500 cycles at speed of 150 to 200mm/minute |

3.5 Test / Test Group Matrix

The test groups assigned for testing this product are as shown.

| Test or Examination | Test Group | | | |
|---------------------------------------|---------------|-----|-----|-----|
| | 1 | 2 | 3 | 4 |
| | Test Sequence | | | |
| 3.4.1 Visual Examination | 1,3 | 1,7 | 1,5 | 1,7 |
| 3.4.2 Contact Resistance | | 3,6 | 2,4 | 2,6 |
| 3.4.3 Current/Temperature Rating | 2 | | | |
| 3.4.4 Voltage proof | | | | 5 |
| 3.4.5 Sealing Requirements | | | | 3 |
| 3.4.6 Insulation Resistance | | | | 4 |
| 3.4.7 Mating Force (Single contact) | | 2 | | |
| 3.4.8 Un-Mating Force Single Contact) | | 4 | | |
| 3.4.9 Vibration | | | 3 | |
| 3.4.9 Durability | | 5 | | |

3.6 Test Group Details

Test groups 1 to 6 to have two connectors for each Connector Version, ie

- 5 x M8, 3posn., Male, Straight, PVC Jacketed Cable (1814430-1)
- 5 x M8, 3posn., Female, Straight, PVC Jacketed Cable (1814434-1)
- 5 x M8, 4posn., Male, Straight, PUR Jacketed Cable (1814433-1)
- 5 x M8, 4posn., Female, Right Angled, PUR Jacketed Cable (1814441-1)

- 5 x M12, 3posn., Male, Straight, PUR Jacked Cable (1838237-1)
- 5 x M12, 3posn., Female, Straight, PUR Jacketed Cable (1838243-1)
- 5 x M12, 5posn., Male, Right Angled, PVC Jacked Cable (1838252-1)
- 5 x M12, 5posn., Female, Right Angled, PVC Jacketed Cable (1838258-1)

4.0 QUALITY ASSURANCE PROVISIONS

4.1 Acceptance

Acceptance is based on verification that the product meets the requirements of section 3.4. Failures attributed to equipment, test set-up or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples re-submitted for qualification. Testing to confirm corrective action is required before re-submittal.

4.2 Quality Conformance Inspection

Applicable Tyco quality inspection plans will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.