

**Nector\* M-Line 5-6-7 pos. Metal Clad version**

Metal Clad M-Line Socket



Metal Clad M-Line Pin



**Figure 1**

## 1. SCOPE

### 1.1. Content

This specification covers performance, tests and quality requirements for Nector M-Line 5-6-7 position couplers with metal clad protection, a system for power wiring applications:

- ◆ Electrical power distribution in building installations
- ◆ Lighting distribution

### 1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

### 1.3. Qualification Test Results

Successful qualification testing on the subject product line has not been completed. The Qualification Test Report number will be issued upon successful qualification testing.

## 2. APPLICABLE DOCUMENTS AND FORMS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

### 2.1. TE Documents

- ◆ 2213906 Bottom Shell, Nector M-line
- ◆ 2213907 TopShell, Nector M-line
- ◆ 107-133079: Packaging Specification
- ◆ 114-133079: Application Specification
- ◆ 501-19240: Qualification Test Report: Metal clad system connector for M-Line

### 2.2. Industry Documents

- ◆ IEC 61535-1

### 2.3. Reference Document

- ◆ [109-197](#) Test Specification (TE Test Specification vs EIA and IEC Test Methods)

### 3. REQUIREMENTS

#### 3.1. Design and Construction

Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawing.

#### 3.2. Materials

- ◆ Metal shells zinc die-cast with nickel plating
- ◆ Fasteners; Recommended TRITAP thread forming T10
- ◆ Washers: Recommended Lock Washer Steel / Stainless steel
- ◆ Heatshrink tubing for retention band; I.D supplied 6mm General purpose polyolefin
- ◆ Heatshrink tubing for wire; I.D supplied 15.3mm General purpose polyolefin
- ◆ Wire types for use in system

Wire manufactured in accordance with	Conductor cross section (mm <sup>2</sup> )
BS7211	1.5
BS7211	2.5

#### 3.3. Ratings

##### 3.3.1 Voltage / Current: 400 V AC / current rating according to table below

Nominal cross-sectional area (mm <sup>2</sup> )	Single & double phase circuit (2 ways loaded max.) Current max.	Three phase circuit (3 ways loaded max.) Current max.
1.5	16A	10A
2.5	20A	16A

##### 3.3.2 Operating temperature:

According to IEC 61535 installation couplers are suitable for use at ambient temperature not normally exceeding +40°C, but where the average temperature over a period of 24h does not exceed +35°C.

### 3.4. Test Requirements and Procedures Summary

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in the table below. All tests are performed at the following environmental conditions unless otherwise specified:

Preparation for all Test Groups:

Storage: 1 day at 50% rel. humidity

Acc. IEC68 Part 1.

Temperature: 25 ±10°C

Rel. Humidity: 45 - 75%

Air Pressure: 860 - 1060 mbar

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Initial examination of product	Meets requirements of product drawing.	Acc. To IEC 60512-1-1
Final examination of product	Meets visual requirements.	
<b>ELECTRICAL</b>		
Resistance measurement earth pin socket to metal shell (see figure 2)	25A for 1 minute Req: 0.05Ω max	
Resistance measurement earth wire to earth wire (see figure 3)	10A for 1 minute Req: 0.05Ω max	
Insulation / Voltage withstand	Dielectric withstanding voltage (50/60Hz) is applied for 1 min. -1500V between parts of different polarity -3000V between all parts connected together and the body	IEC61535 14
<b>MECHANICAL</b>		
Sinusoidal vibration	10-55 Hz sweeping, 1 octave/minute. Amplitude 1.5 mm. 2 hours in each of 3 mutual perpendicular axes. Requirement: Contact discontinuity 1 μs max.	EIA-365-28
Mechanical shock	Pulse shape: Half sine. Peak acceleration: 50g. Duration of pulse: 11 ms. Apply 3 shocks in each direction of 3 Mutual perpendicular axes (18 shocks). Requirement: Contact discontinuity 1 μs max.	EIA-364-27

Tensile test	250 N minimum, no breakage of cable. Maximum contact resistance 0.05Ω No displacement of the contacts in the plastic retention feature.	
<b>ENVIRONMENTAL</b>		
Humidity test	85% - 95% r.h. exposed for 48 hours followed by insulation resistance test  91% - 95% r.h. exposed for 48 hours followed by insulation resistance test and voltage withstand test	BS5733 §18.2 BS8488 §10.2
Resistance to heat	1 hour on temperature of 100 °C ± 2 °C mated condition. No deformation Resistance max: 0.05Ω	Reference IEC 61535 §21.2
Temperature rise	5 position max 45 K (single-phase) 6 and 7 position 50 K (multi-phase)	IEC 61535 §16



**NOTE**

Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Table 1.

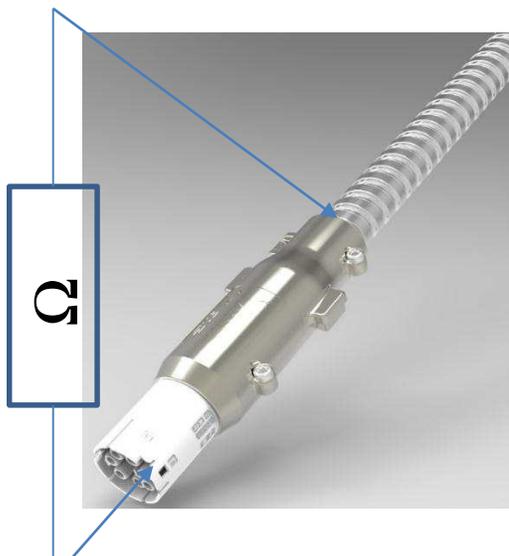


Figure 2

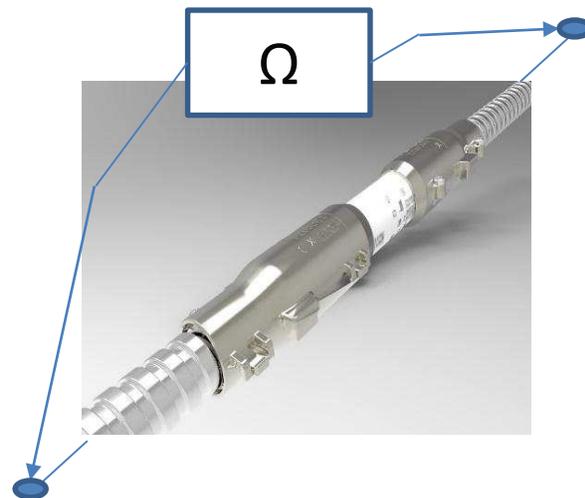


Figure 3

3.5. Product Qualification and Requalification Test Sequence

**Table 1**

TEST OR EXAMINATION	TEST GROUP (a)		
	1	2	3
	TEST SEQUENCE (b)		
Initial examination of product	1	1	1
Low resistance measurement earth pin socket to metal shell (see figure 2)	2		
Low resistance measurement earth wire to earth wire (see figure 3)	3		5
Insulation / Voltage withstand	4		3
Humidity test			2
Tensile test	5		
Resistance to heat			4
Temperature rise			6
Sinusoidal vibration		2	
Mechanical shock		3	
Final examination of product	6	4	7



**NOTE**

- (a) Numbers indicate the different groups that are tested.
- (b) Numbers indicate sequence in which tests are performed.

**4. SAMPLE COMPOSITION AND PREPARATION**

Connectors and shells are design to meet the electrical, mechanical and environmental performance requirements according to specified test conditions.

The sample shall be prepared in accordance with product drawing; they shall be selected at random from current production.

Test Group	Sample quantity
1	5 pieces of 2.5 mm <sup>2</sup> of the 7 positions with metal clad
2	5 pieces of 2.5 mm <sup>2</sup> of the 5 positions with metal clad
3	5 pieces of 2.5 mm <sup>2</sup> of the 5 positions with metal clad
3	3 pieces of 1.5 mm <sup>2</sup> of the 5 positions with metal clad

#### 4.1. Re-qualification testing

If changes significantly affecting form, fit or function are made to the product or the manufacturing process, of which negative influence of the product quality cannot be excluded, product assurance shall coordinate re-qualification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

#### 4.2. Quality conformance inspection

The applicable TE Connectivity quality inspection plan will specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.