



Harwin Test Report Summary

HT00201

Voltage Breakdown and Insulation Resistance
of Datamate (M80 Series) Connectors

Datamate

A decorative graphic consisting of numerous thin, red, wavy lines that flow across the bottom half of the page, creating a sense of motion and depth.

1. Introduction.

1.1. Description and Purpose.

The Harwin Datamate (M80 series) connector is manufactured to the requirements of BS9525-F0033. The following tests were carried out on a selection of Datamate connectors, to establish the ultimate breakdown voltage across a two millimetre (adjoining contacts), four millimetre and six millimetre contact pitches.

1.2. Conclusion.

The following test data has been taken from Harwin test report T43/97 and 413. The connectors tested achieved a greater flashover voltage than the BS9525-F0033 Voltage Proof requirement of 360 Volts_{dc}, and can be rated to an 800V_{dc} working Voltage and 1200V_{dc} maximum Voltage. However, it must be noted that these tests were conducted under standard factory conditions. Any requirement to use the connectors should consider these conditions, and also the spacing of the printed circuit board tracking to which the assemblies are connected.

The specified insulation resistance of 1,000M Ω minimum at 500V_{dc} for 1 minute was also confirmed during these tests.

2. Test Method, Requirements and Results.

2.1. List of Test Samples.

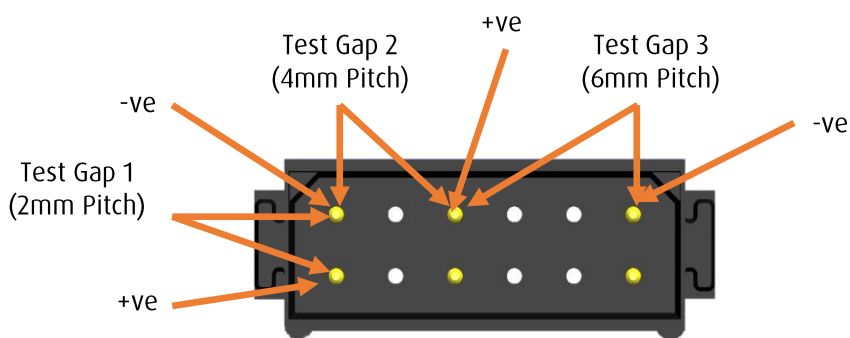
- A. M80-8691822 – Male assembly with through-board termination
- B. M80-8871801 – Female assembly with through-board termination
- C. M80-8891805 – Female assembly with crimp termination
- D. M80-8691822 and M80-8871801 – Mated pair, both through board terminations
- E. M80-5010642 – Male assembly with through-board termination
- F. M80-4100642 – Female assembly with through-board termination
- G. M80-5011442 – Male assembly with through-board termination
- H. M80-4101442 – Female assembly with through-board termination
- I. M80-5012042 – Male assembly with through-board termination
- J. M80-4102042 – Female assembly with through-board termination

2.2. Specification Parameters.

| | BS9525 F0033 Specification | Elevated specification required |
|---|---------------------------------|---------------------------------|
| Working Voltage (dc nominal or ac peak) | 120V | 800V |
| Voltage Proof (dc or ac peak) | 360V for 5 seconds | 1,200V for 1 minute |
| Insulation Resistance (initial) | 1,000M Ω minimum at 500V | 1,000M Ω minimum at 500V |

2.3. Test Method and Results – Insulation Resistance from T43/97.

A 500V_{dc} test voltage was applied to each test gap in turn (See Figure 1), for a period of 60 seconds.



Results:

| | SAMPLE | | | |
|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | A | B | C | D |
| Test Gap 1 (2mm pitch) | 20 x 10 ⁶ MΩ | 15 x 10 ⁶ MΩ | 5 x 10 ⁶ MΩ | 15 x 10 ⁶ MΩ |
| Test Gap 2 (4mm pitch) | 20 x 10 ⁶ MΩ | 20 x 10 ⁶ MΩ | 9 x 10 ⁶ MΩ | 15 x 10 ⁶ MΩ |
| Test Gap 3 (6mm pitch) | 20 x 10 ⁶ MΩ | 15 x 10 ⁶ MΩ | 15 x 10 ⁶ MΩ | 15 x 10 ⁶ MΩ |

2.4. Test Method and Results – Voltage Proof from T43/97.

An increasing dc voltage was applied to each test point in turn, until either breakdown or flashover occurred.

Results:

All flashovers occurred across the contacts mating face “air gap” at the following voltages:

| | SAMPLE | | | |
|------------------------|----------------------|----------------------|----------------------|----------------------|
| | A | B | C | D |
| Test Gap 1 (2mm pitch) | 2,500V _{dc} | 3,500V _{dc} | 2,500V _{dc} | 3,000V _{dc} |
| Test Gap 2 (4mm pitch) | 4,000V _{dc} | 4,000V _{dc} | 5,000V _{dc} | 4,000V _{dc} |
| Test Gap 3 (6mm pitch) | 5,000V _{dc} | 5,000V _{dc} | 6,500V _{dc} | 5,500V _{dc} |

2.5. Test Method and Results – 1,200V Voltage Proof from 413.

1,200V_{dc} voltage was applied to adjacent contacts for the duration of 1 minute to see if breakdown or flashover occurred.

Results:

- Sample E – No breakdown or flashover occurred.
- Sample F – No breakdown or flashover occurred.
- Sample G – No breakdown or flashover occurred.
- Sample H – No breakdown or flashover occurred.
- Sample I – No breakdown or flashover occurred.
- Sample J – No breakdown or flashover occurred.