

PERTRONIC INDUSTRIES LTD

MANUFACTURER'S RECOMMENDATION



Cable Testing to NZS4512:2010, Issue 1

Overview

NZS4512:2010 requires system manufacturers to specify test methods for the external circuit cabling.

Loop Resistance Tests : NZS4512:2010 - Appendix J, Electrical Tests:

When new cable is being laid, it is prudent to check the quality of the cable by performing a Loop Resistance Test. This is easily performed while the cable is being laid by short-circuiting one end of the cable (Conductor A to Conductor B), then measure the Resistance of the looped cable from the other end.

The results of Loop Resistance Tests depends upon the electrical characteristics of the cable and the length of the cable run:

- for Pertronic 2-core Fire Alarm cable (EVACCBL), the maximum Loop Resistance is 31.2Ω/km or 6.24Ω per 200m drum.

Note: Loop Resistance measurement cannot be readily undertaken where Short-Circuit Isolators (eg. M500X, MCPs with Isolators, Loop Responders with Isolators, etc) have been installed. Where testing of Loop Resistance is necessary, Isolators should be bridged out before performing the test.

Insulation Resistance Tests : NZS4512:2010, Clauses 503a and 603.11:

Because of the impracticality of traditional high-voltage insulation ('Megger') testing of leakage to Earth due to the presence of electronic devices and analogue addressable circuit techniques, Pertronic Fire Alarm Systems incorporate Earth Fault monitoring between external circuits and Earth - Analogue Loops, Conventional Circuits, Sprinkler, Sounder circuits, External RS485, Power Supply 27.4Vdc and 0V.

This fault sensing relies upon the presence of the Earth connection to the Master board and other ancillary monitored PCBs.

To comply with NZS4512:2010, Pertronic Industries does not "require" Megger testing, however cable testing is good practice before devices are connected.

Earth Fault monitoring on Pertronic panels means regular testing is not necessary.

Despite the presence of these system tests, Insulation Resistance (IR) Testing ('Megger') remains a powerful tool when installing cables or current leakage is suspected.

Appropriate 'Megger' tests are :

- | | |
|----------------------------------|-------------------------------|
| (i) Conductor A to Earth | NZS4512:2010 - Section 603.11 |
| (ii) Conductor B to Earth | NZS4512:2010 - Section 603.11 |
| (iii) Conductor A to Conductor B | |

The results of IR tests depends upon the properties of the 'Megger' meter used, but for a Test Voltage of 250V, the Insulation Resistance for each of the three measurements should be greater than 1MΩ.

Note: Megger testing must only be undertaken on un-terminated cable and MUST NOT be performed while devices are connected to the cable, because the Test Voltage applied (typically 250V or 500V) may damage the devices connected.

Pertronic panels constantly monitor the integrity of external circuit cabling, so regular Cable and Insulation Resistance tests are not required post-commissioning. Panels report a Defect if Loop Resistance or Earth Leakage becomes too high

- a) Analogue Addressable systems also constantly check for open-circuit voltages.
- b) Conventional circuits provide a High Defect if the is excessive current leakage.