

# Mating and unmating under load

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# Current test standard



**48B/2291/FDIS**

**FINAL DRAFT INTERNATIONAL STANDARD  
PROJET FINAL DE NORME INTERNATIONALE**

Project number <b>IEC 60512-99-001 Ed 1.0</b> Numéro de projet		
IEC/TC or SC <b>SC 48B</b>	CEI/CE ou SC	Secretariat / Secrétariat <b>Germany</b>
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Title  
**IEC 60512-99-001 Ed 1.0: Connectors for electronic equipment - Tests and measurements - Part 99-001: Test schedule for engaging and separating connectors under electrical load - Test 99a: Connectors used in twisted pair communication cabling with remote power**

## 1 Scope and object



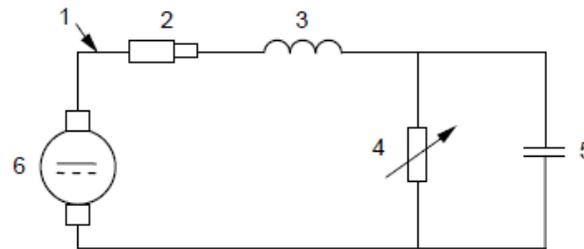
This part of IEC 60512 is used for the assessment of connectors within the scope of SC 48B that are used in twisted pair communication cabling with remote power, such as ISO/IEC 11801 Class D, or better, balanced cabling in support of IEEE Std 802.3at™-2009 (latest edition (PoE Plus – Power over Ethernet Plus)).

The object of this standard is to detail a test schedule to determine the ability of connectors to withstand a minimal number of engagements and separations when an electrical current is being passed through the connector in accordance with IEC 60512-9-3.

# Test configuration IEC 60512-99-001

## 5.1 General

The values for the circuit components and the details of the test circuit, referenced in IEC 60512-9-3, shall be as shown in Figure 1.



1	Cables in accordance with 4.1
2	Connector under test
3	Inductor 100 $\mu$ H
4	Variable resistor (e.g. 50 $\Omega$ to 300 $\Omega$ )
5	Capacitor 5 $\mu$ F
6	Power source

## 5.2 Voltage and current

The variable resistor(s) shall be set so that the electrical current in each circuit (mated contacts) of the specimen is 0,6 A. When specimen is unmated, the 'open circuit' voltage, in all circuits, shall be 55 V d.c. See Annex A.

IEEE 802.3 at specifies a maximum current of 0,3 A per conductor and an open circuit voltage of 55 V d.c. The test current has been doubled to 0,6 A in order to represent the high probability that one contact of any given pair will separate before the other. Therefore as in the cited application, where current is carried by pairs of contacts in multiple parallel circuits, the last contact to break will do so carrying all the current (twice the nominal).

An electrical load, current and open circuit voltage, as detailed in Clause 5, shall be applied to each specimen.

For the purpose of this test one connector shall be fixed and the other disengaged at a speed of

150  $\pm$  10 mm/s.

One engagement and one separation constitute one cycle.

25 cycles shall be performed.

The polarity of the d.c. source (direction of the electrical current) shall be reversed and 25 further cycles performed.

Flowing mixed gas test.  
Method 1

11g

4 days.

Half of the samples mated;  
half of the samples unmated

# Comments & Questions

1. I'm here as an expert and not as a representative from IEC
2. IEC SC48B is discussing to improve the test standard in order to reflect IEEE 802.3bt
3. Does this equivalent circuit diagram represents POE (af/at/bt) with PSE and PD correctly?
4. Could we reduce the test to unmating under load?
5. Which values for voltage and current should we take?

**Thank you for your attention!**

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