

MMLG 01, 02, 03, 04

Test Blocks

Technical Data

MMLG_EN_TD_A

Note: The technical manual for this device gives instructions for its installation, commissioning, and operation. However, the manual cannot cover all conceivable circumstances or include detailed information on all topics. In the event of questions or specific problems, do not take any action without proper authorization. Contact the appropriate Alstom Grid technical sales office and request the necessary information.

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■ Types MMLG 01, 02, 03, 04 Test Blocks.

Types MMLB 01 Multi-finger Test Plug/MMLB 02 Single-finger Test Plug

Features

- Test block can be mounted adjacent to Midos modular relays and systems
- Test block obviates need to disturb protective system wiring for testing
- Monitoring, isolation and secondary injection testing are simplified and quickly performed

Types Available

- MMLG 01
Standard test block
- MMLG 02
Special test block designed for use in busbar protection schemes
- MMLG 03
Horizontal version of MMLG 01
- MMLG 04
Horizontal version of MMLG 02

- MMLB 01
Multi-finger test plug
- MMLB 02
Single-finger test plug

 MMLG 01 and MMLB 01 terminals 13 and 14 must not be used for CT connections since they may present a safety hazard.

Application

Although designed within the Midos range these test blocks offer facilities for monitoring and secondary injection testing any power system protection scheme, when used with the multi-fingered test plug type MMLB 01.

A single-finger test plug, type MMLB 02 is also available for monitoring the current flow in individual circuits which have been routed through the test block.

 Before use, the insulation of the flying leads should be visually checked for damage.

The continuity of the shorting plug/wire links, and the state of their insulation, should be checked before insertion into the MMLG 01 test block.

Description, Installation and Use

The Safety Statements Publication R5948 should be read before installing or using the test block (MMLG) or test plug (MMLB).

 Note. Terminals 13 and 14 have short contact fingers which must not be used for CT connections.

Refer to the Mechanical Details section for a description of the test block (MMLG) and test plug (MMLB). The MMLG cover, when in place, provides protection from electric shock hazard.

Care should be taken to ensure that MMLG 01 covers are correctly orientated when replaced.

The test block carries 14 circuits, each of which is brought out to separate pairs of terminals at the rear of the case.

Each circuit comprises a pair of internal contacts which are normally sprung together to complete the circuit link through the block when the associated protective equipment is in normal service.

Access to these internal circuits for testing purposes, can be gained by removing the front cover. A metallic probe secured to the inside face of the MMLG 01 cover is automatically withdrawn when the cover is removed, so interrupting the circuit between terminals 13 and 14. By routing the main dc auxiliary supply to the protection scheme or relay through this circuit, removal of the test block cover will thereby prevent inadvertent tripping of the protection during the ensuing tests.

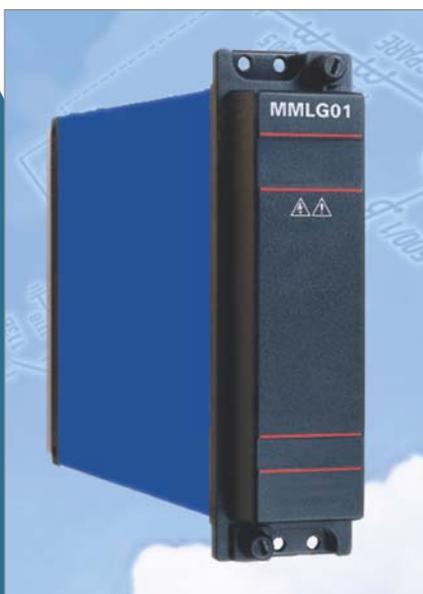


Figure 1

Type MMLG 01 test block

This link is not provided on the MMLG 02 because the contacts between terminals 13 and 14 are normally closed.

Note. These two terminals on MMLG 01/02 must not be used for CT connections since this will present a safety hazard. The reason for this is that the associated MMLB 01 test plug contact finger is shorter than the others. This would result in an open circuit path on MMLG 02.

Removal of the cover also reveals an orange coloured strip on the block front plate which gives a clear visual indication that the scheme is out of service.

Insertion of the test plug type MMLB 01, as shown in Figures 2 and 3, open circuits the contacts which connect terminal pairs.

The test plug carries 28 4mm sockets. Each socket is identified by a number which corresponds to the numbered case terminal to which the socket is connected when the plug is inserted.

The MMLB 02 single-finger test plug can be inserted into individual test positions in the test block as shown in Figure 7. See notes (a) and (b) below.

Notes.

- (a) Before using this test plug, refer to the current and voltages measurements warning.
- (b) The continuity of the test plug leads and the state of their insulation should be checked before insertion into the MMLG test block.

Current measurements

This single-finger test plug allows the current in any of the circuits routed through the test block to be monitored. When using the single-finger test plug to monitor secondary CT current, the leads from this must never be open circuited, otherwise lethal voltages may be generated. Before the single-finger test plug is inserted into the test block, the connected ammeter must be on the correct range. With this plug in the test block, the ammeter range must not be changed. This avoids potentially lethal voltages being generated.

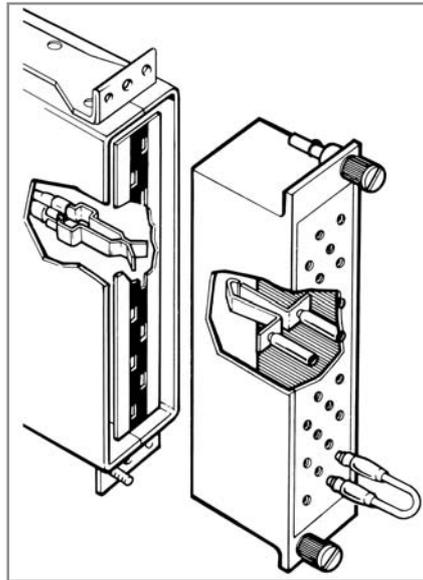


Figure 2 MMLG 01 test block and multi-finger test plug MMLB 01 (not inserted) with a CT shorting link.



Figure 3 MMLG 01 test block with multi-finger test plug MMLB 01 inserted.

Voltage measurements

Hazardous live voltages will be accessible via the single-finger test plug leads when using this for voltage measurements.

Connections to other equipment, eg., CTs, VTs and dc supplies, should be made to odd numbered terminals on the test block. This ensures that when the test plug MMLB is used, the sockets in the white half of the plug are the isolated relay circuits, and the sockets in the orange half are connected to the potentially live supplies as shown in Figure 4.



Note: It is important that the sockets in the MMLB 01 test plug which correspond to current transformer secondary windings are shorted using external links before the test plug is inserted into the MMLG test block. For a typical example, refer to Figure 2.

This ensures that current transformer secondary windings are short-circuited before they are disconnected from the protection relay or scheme, thereby avoiding dangerously high voltages. This is illustrated in Figures 2 and 4.

If it is desired to use the dc auxiliary supply during testing, then it can be linked across using the sockets in the test plug. Test equipment can be connected to the relay or scheme using the sockets in the white area of the test plug, and operation of contacts can be monitored.

Where more than one MMLG 01 test block is used in the connections to a relay, it may be advisable to route the dc supply through each of them as a safeguard against inadvertent operation.

Single-finger Test Plug

This test plug consists of two contact strips which are insulated from each other, and each of which is connected to a lead, as shown in Figure 6.

The test plug can be inserted into individual test positions in the test module as an alternative to the multi-finger test plug, as shown in Figure 7. This single-finger test plug allows the current in any of the circuits routed through the test module to be monitored.



Note: An ammeter on the correct range should be connected to the two leads before the plug is inserted, especially if a CT secondary circuit is being monitored.

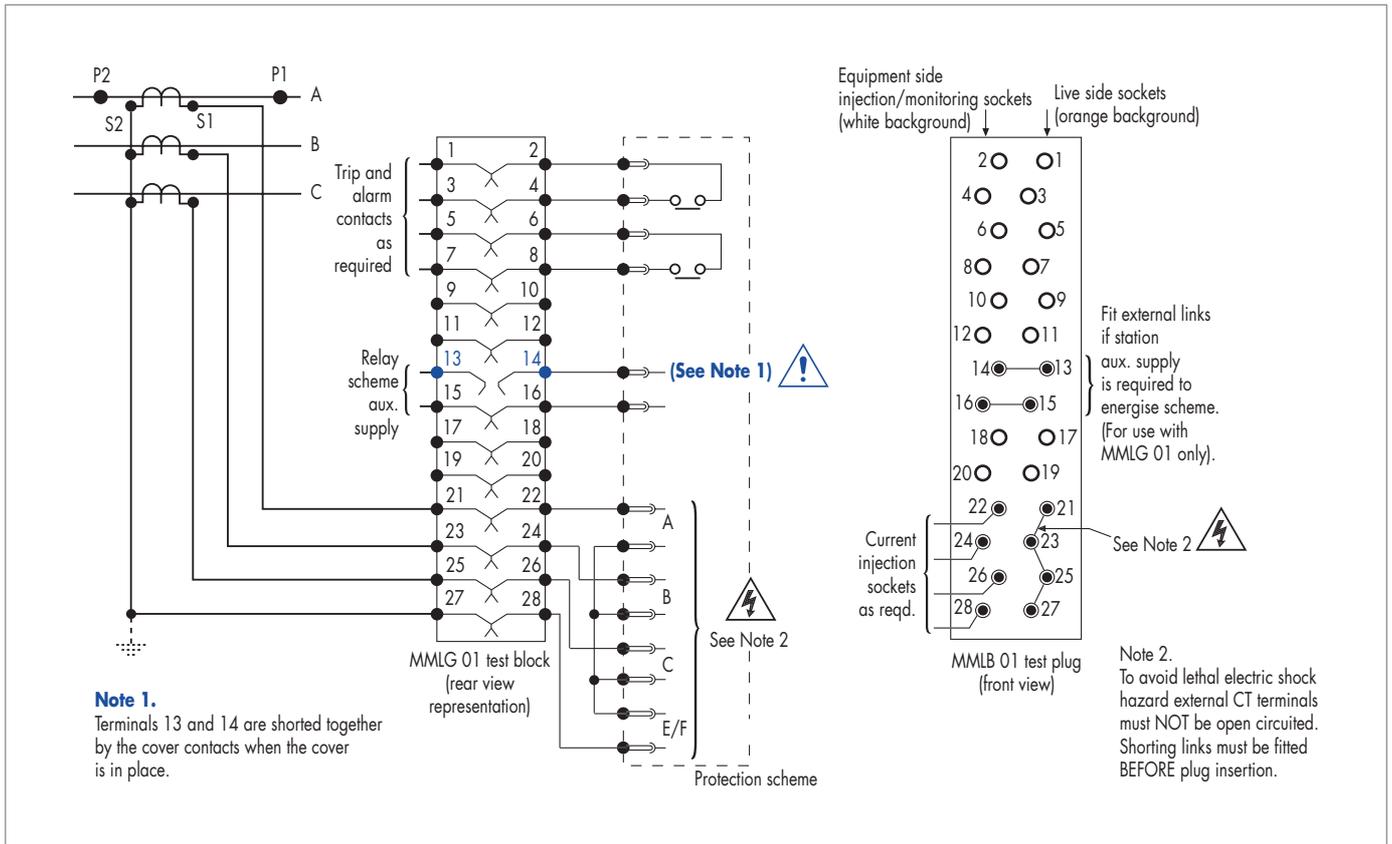


Figure 4 | Typical use of MMLG 01 test block and MMLB 01 test plug.

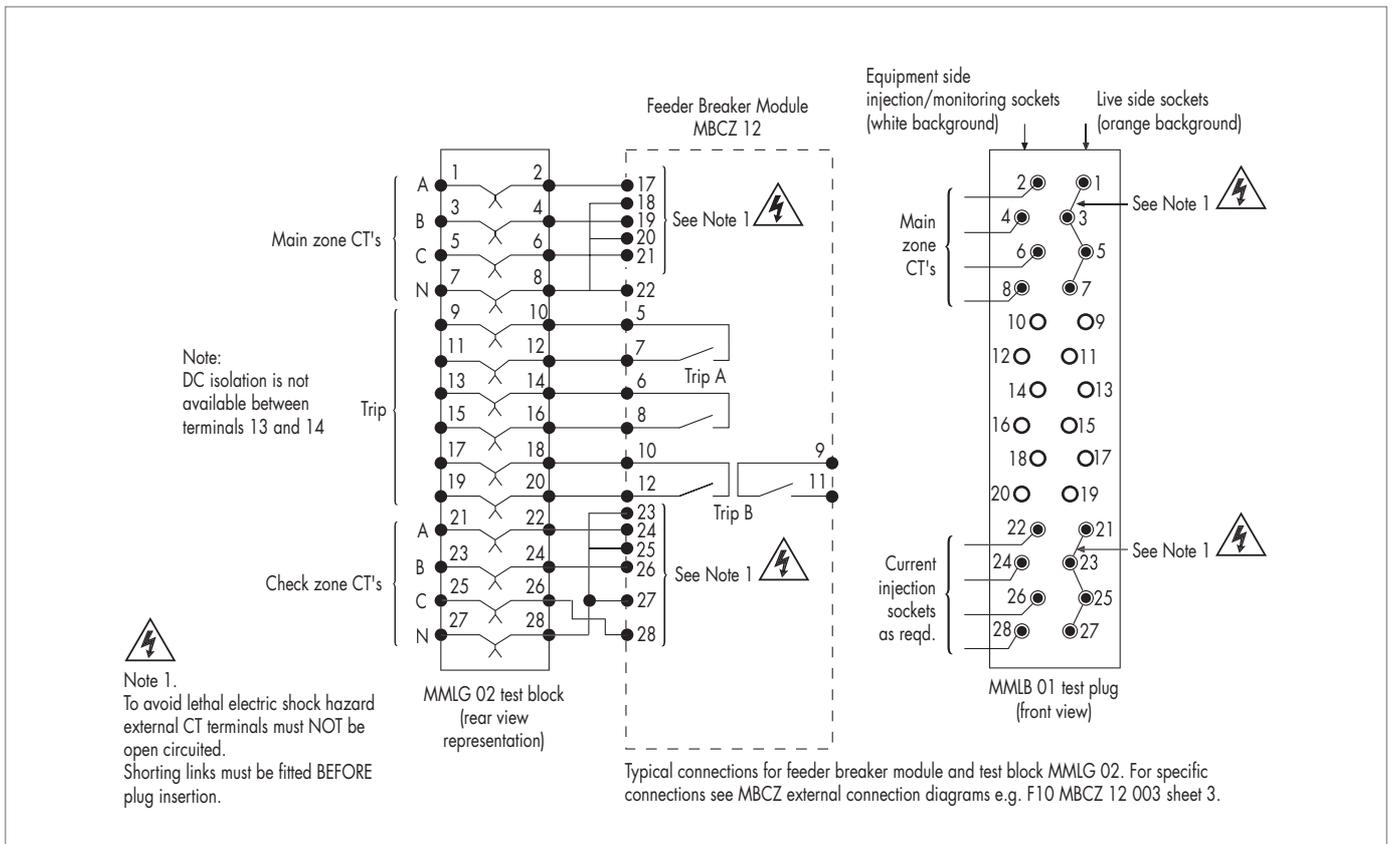


Figure 5 | Typical use of MMLG 02 test block and MMLB 01 test plug.

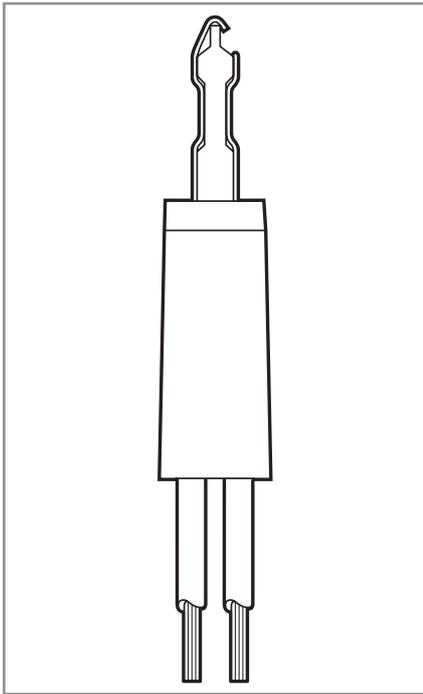


Figure 6 Type MMLB 02 single-finger test plug.



Figure 7 Type MMLG 01 test block with single-finger test plug type MMLB 02 inserted.

Technical Data

High voltage withstand

Insulation

IEC 60255-5: 1977

- MMLG 01/02:
 - 5kV rms for 1 minute between all case terminals connected together and the case earth terminal.
 - 2kV rms for 1 minute between any contact pair and either adjacent contact pair.
 - 5kV rms for 1 minute between any alternate contact pair, provided that the intermediate contact pair is not used.
- MMLG 01 only
 - 1kV rms for 1 minute between terminals 13 and 14 when the cover is removed (eg., opening the auxiliary supply or trip circuit).
- MMLB 01
 - As MMLG 01 plus
 - 2kV rms for 1 minute between incoming and outgoing contacts when inserted.
- MMLB 02
 - 1kV rms for 1 minute between finger contacts.

Current withstand

- MMLG 01/02, MMLB 01
 - All contact circuits rated at 20A continuously or 400A for 1s.
- MMLB 02
 - Rated at 10A continuously.

Maximum working voltage

- MMLG, MMLB 01
 - 300 volts ac or dc continuous rating
- MMLB 02
 - 300 volts ac or dc short term rating (ie. non-continuous).

Atmospheric environment

- Temperature
 - IEC 60255-6: 1988
 - Storage and transit -25°C to +70°C
 - Operating -25°C to +55°C
 - IEC 60068-2-1: 1990 Cold
 - IEC 60068-2-2: 1974 Dry Heat
- Humidity
 - IEC 60068-2-3: 1969
 - 56 days at 93% RH and +40°C
- Enclosure Protection
 - IEC 60529: 1989
 - MMLG with cover fitted IP50 (dust protected)
 - MMLG (without cover) and MMLB 01 IP20

Mechanical environment

- Vibration
IEC 60255-21-1: 1988:
Response Class 2

EMC compliance

89/336/EEC

These products have been classified as electromagnetically benign and are therefore excluded from the European Community EMC Directive (89/336/EEC).

- Product safety



73/23/EEC

Compliance with the European Commission Low Voltage Directive.

EN61010-1: 1993/A2: 1995

EN60950: 1992/A11: 1997

Compliance is demonstrated by reference to generic safety standards.

Mechanical Details

Test block type MMLG

The MMLG test block is a size 2 unit in the Midos system.

Relevant sizes and panel mounting details are given in Figure 8.

Each terminal has:

- 1) A 4mm screw outlet for 'L' shaped pre-insulated crimp terminations.
- 2) Two blades (4.8mm x 0.8mm cross-section) to accept snap-on connectors as defined in BS 5057.

Any combination of two of the above types of connections may be used on each terminal position.

An earth connection should be made to the protective earth terminal on the rear of the MMLG using 2.5mm² minimum wire.

If ring tabs are used for connection to the rear terminal block, these should be of the insulated crimp type to maintain design insulation levels.

Multi-fingered test plug type MMLB 01

The test plug locates securely into test sockets of the MMLG test block and can be retained by two knurled screws. Each of the 28 test sockets of the test plug accepts a 4mm diameter plug.

Accessories provided with each MMLB 01 test plug:

4 short plug-links, each link comprising two 4mm plugs joined by 50mm of interconnecting cable.

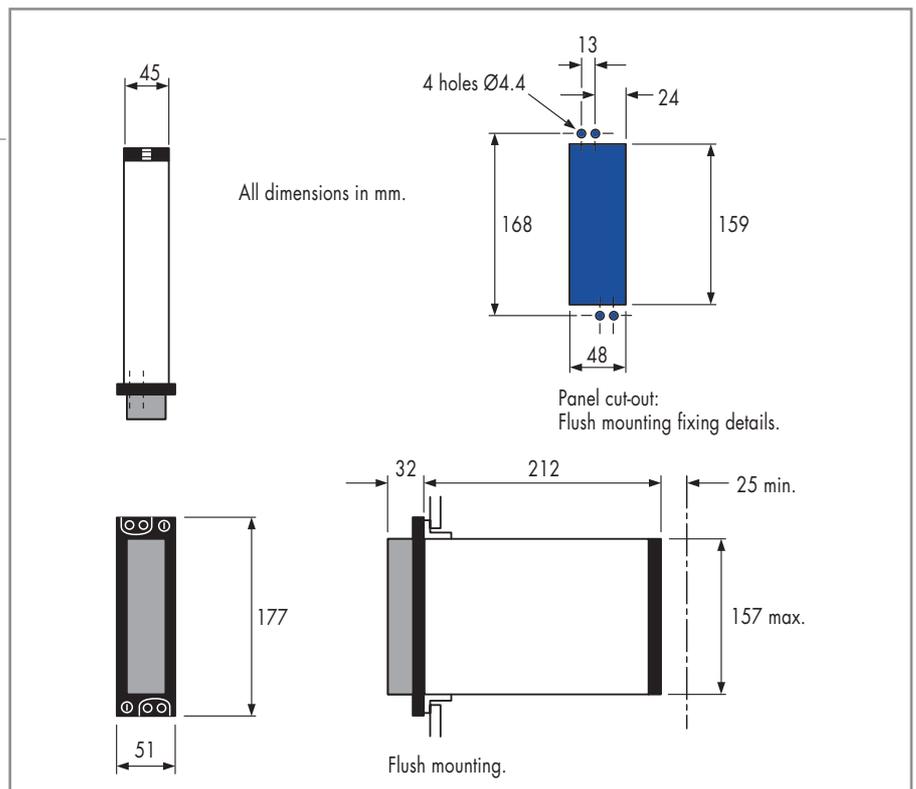
4 long plug-links, each link comprising two 4mm plugs joined by 150mm of interconnecting cable.

6 spare 4mm plugs that readily accept up to 2.5mm² flexible insulated cable for test-lead purposes.

Single-fingered test plug Type MMLB 02

Each plug is supplied pre-wired with a suitable length of 1.0mm² twin flexible insulated cable. One core is black, and the other red, for polarity identification.

Figure 8
Case outline size 2.



PUBLICATION: MMLG1EN TD/A

