

MMLG/MMLB

01, 02, 03, 04/01

Technical Data
Test Blocks and Test Plugs

Publication reference: MMLG_MMLB/EN/TD/C



Types MMLG 01, 02, 03, 04 Test Blocks

Type MMLB 01 Multi-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



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

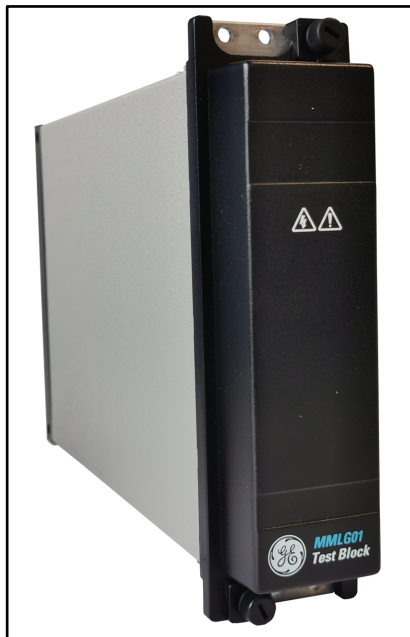


Figure 1. Type MMLG 02 Test Block

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.



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

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

Description, Installation and Use

The Safety Guide Publication Pxxx-SG-4LM must 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 must 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.

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.

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 6.

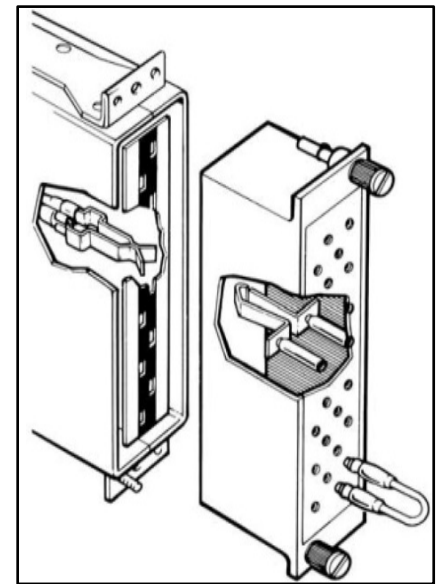


Figure 2. MMLG 01 test block and multi-finger test plug MMLB 01 (not inserted) with a CT shorting link



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 6.

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.

Types MMLG 01, 02, 03, 04 Test Blocks

Type MMLB 01 Multi-Finger 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.



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

Technical Data

High Voltage Withstand Insulation

IEC 60255-27: 2013

- 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.

Current withstand

- MMLG 01/02, MMLB 01
Thermal withstands: 20A continuous, 250A for 1s, 400A for 0.5s.
- Test cables FJ0865-1 Thermal withstands: 20A continuous 250A for 1s, 400A for 0.5s.

Maximum Working Voltage

- MMLG, MMLB 01
300 volts ac or dc continuous rating

Atmospheric Environment

- Temperature
IEC 60255-1: 2009
- Storage and transit
-25°C to +70°C
- Operating -25°C to +55°C
IEC 60068-2-1: 2007 Cold
IEC 60068-2-2: 2007 Dry Heat



Note. Test lead operating temperature range is -5°C to +35°C.

- Humidity
IEC 60068-2-78: 2001
56 days at 93% RH and +40°C
- Enclosure Protection
IEC 60529: 1992+A2:2013
MMLG with cover fitted
IP50 (dust protected)
MMLG (without cover) and MMLB 01
IP20

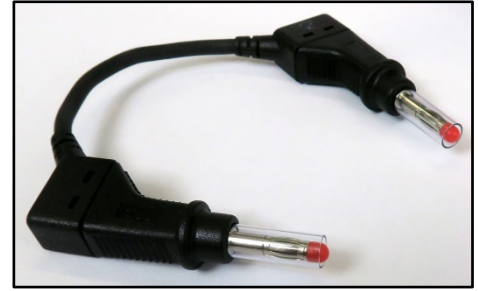



Figure 5. Test lead with retractable shrouded plugs

Mechanical Details

Mechanical environment

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

EMC compliance
2004/108/EC
These products have been classified as electromagnetically benign and are therefore excluded from the European Community EMC Directive (2004/108/EC).
- Product safety
 (2006/95/EC)
Compliance with the European Commission Low Voltage Directive.

EN60255-27: 2013
Compliance is demonstrated by reference to generic safety standards.

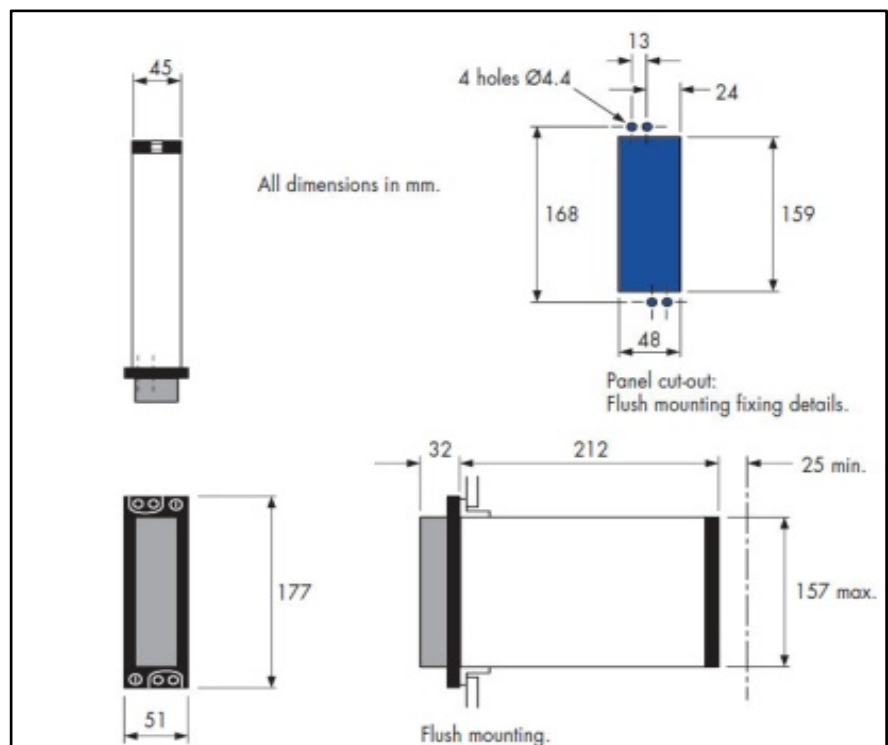


Figure 4. Case outline size 2

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Type MMLB 01 Multi-Finger Test Plug

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 4.

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 test cable with 4mm retractable shrouded plugs.

Accessories provided with each MMLB

01 test plug:

6 shorting plug links, each comprising two 4mm stackable plugs with retractable shrouds jointed by 150mm length cable.

2m length cables of the same design are available on request.

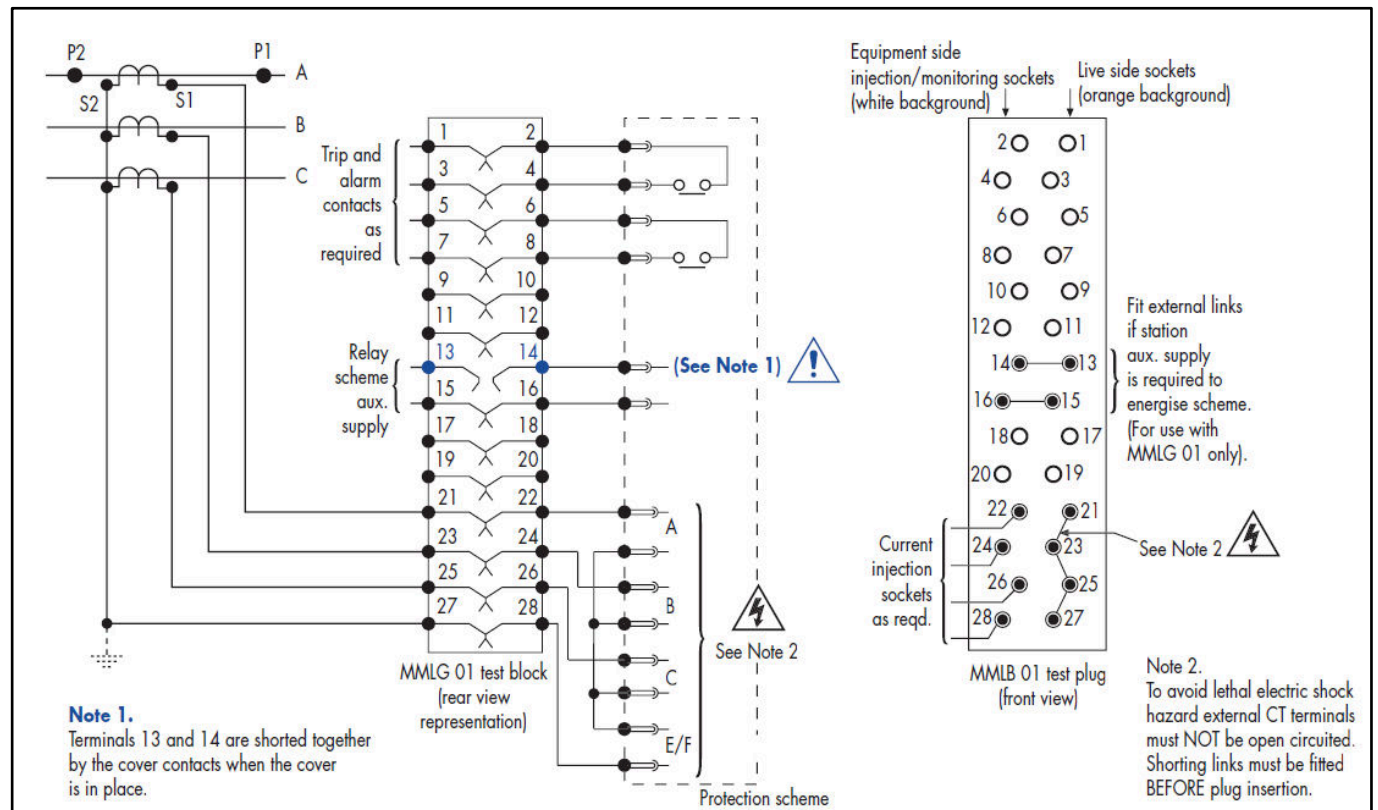


Figure 6. Typical use of MMLG 01 test block and MMLB 01 test plug



Imagination at work

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