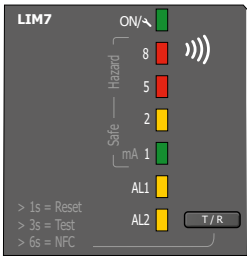
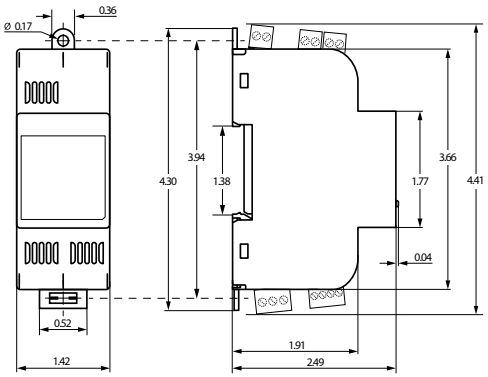
LIM7-L-2

Line Isolation Monitor for isolated power systems





Dimensions in inches

Quick-start guide for the following devices

Type	Supply and system voltage	Art. No.	Manual No.
LIM7-L-2	AC 100...240 V	B81625520	D00476

Intended Use

The Line Isolation Monitor (LIM) LIM7-L-2 measures the impedance of the connected isolated power system to ground. The device uses the measured values to calculate the total hazard current (THC), which is displayed in milliamperes (mA) via the status LEDs and connected display devices. To meet the requirements for a Line Isolation Monitor in accordance with NFPA 99 and UL 1022, the LIM must be operated in combination with an external control panel such as the CP305.

For intended operation, observe the specifications in the manual. Any other use than that described in this manual is regarded as improper.

Scope of delivery

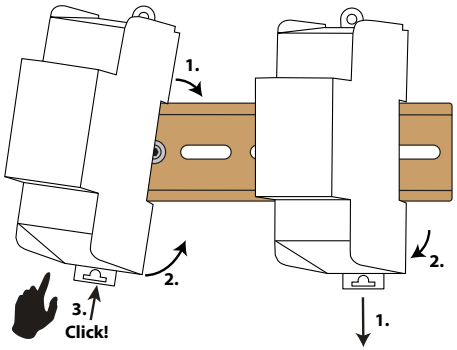
- LIM7-L-2
- Quick-start guide
- Safety instructions
- Plug kit for screw terminals

Manual

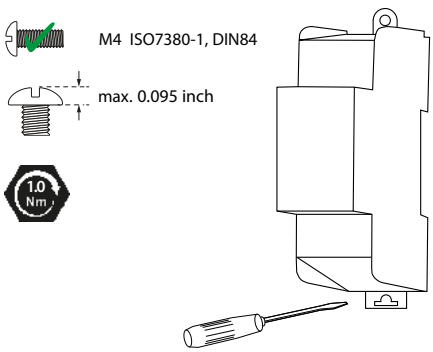
This quick-start guide does not replace the manual. You can download the manual from our homepage.

Mounting

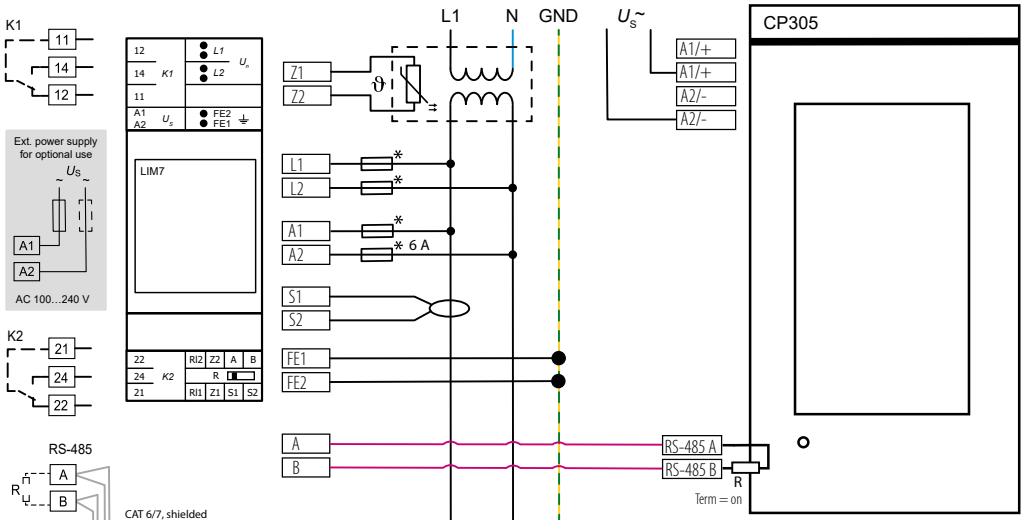
DIN rail mounting



Screw mounting



Wiring diagram



Terminal	Connection
FE1/FE2	Seperate connections to Ground
L1, L2	Connection to the ungrounded system to be monitored
A1, A2	Connection to power supply
11, 14, 12	Alarm relay K1 (top)
21, 24, 22	Alarm relay K2 (bottom)

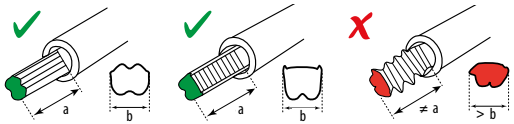
Terminal	Connection
A, B	Interface: RS-485; Protocol: Bender Smart Connect (BCS) Connection to CP305
Z1, Z2	Connection to temperature sensor
RI1, RI2	Connection to a RIC410 or LIM7 Testbox
ON (R)	Termination RS-485 interface
S1, S2	Connection for measuring current transformer

** Remote Indicator Converter (RIC410) is required for use when connecting to MK2000 series remotes.*

For applications in accordance with AS_NZS_4510 (e.g. Australia, New Zealand) that require the use of the LIM7 TESTBOX, please observe the wiring instructions in the manual (Chapter 7.4).

If there are several devices with their own power supply units on the bus, protection against direct contact shall be ensured, as the maximum permissible total leakage current of 0.5 mA can be exceeded.

RS-485 bus termination: The bus line must be terminated at both ends with resistors (120 Ω, > 0.25 W). A terminating resistor is installed in the device and can be enabled or disabled with the DIP switch at the underside of the housing.



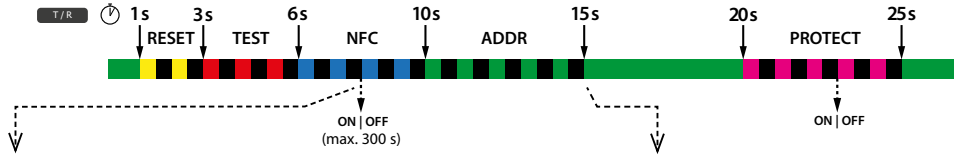
a: 0,314 inch
b: 0,059 inch

Caution! Short circuit. *When finely stranded cables are inserted directly into the terminals, spliced wires can cause a short circuit.*

For UL applications use 60/75 °C copper lines only.

Test & Reset button (configuration)

Activates different operating modes:



NFC mode

Via the NFC interface, the LIM7-L-2 can be parameterized in both energized and de-energized state. This function is only available via the ***Bender Connect app***. The NFC interface is activated via the T/R button for a maximum of 5 minutes when the device is powered, but it is always active when the power is off.

Bender Connect App

GET IT ON Google Play

Download on the App Store

First steps for commissioning

1. Connect FE1 and FE2 seperately to ground.
2. Connect the measuring current transformer (STW3) to S1 and S2.
3. Connect RS-485 interface (A, B) to control panel and optional capable COMTRAXX® device.
4. Connect relays K1 and K2.
5. Connect temperature sensor to Z1 and Z2.
6. Connect any other optional peripheral devices (RIC410 or LIM7 TESTBOX) according to wiring diagram.
7. Connect L1 and L2 to the system to be measured.
8. Connect supply voltage U_S.
9. Switch on supply voltage U_S.
10. Parameterization and commissioning (via Bender Connect App, Control panel (e. g. CP305) or COMTRAXX® Gateway)
    - Parametrize interfaces (details: see manual). The interface parameters of the gateway and LIM7-L-2 must be synchronized.
    - Set the response values according to the required protection level.
    - Configure alarm addresses for LIM7-L-2 in the control panel (e. g. CP305)
    - Check function (via self-test).

BSC address input via BCD

Manual parametrising the device address by BCD-Code. For further information please read the manual.

If no entry is made for a period of 5 minutes, the addressing mode is automatically exited. The device then adopts the currently set BSC address.

Operating status

LED		Operating status
ON		Start phase / Normal operation
		Addressing for RS-485 (BSC)
		- exceeding leakage capacity > max. value µF - below insulation resistance < max. value R - below impedance < max. value Z
		- Loss of L1/L2 connection - Loss of FE1/FE2 connection - Loss of CT connection - Loss of temperature sensor connection - Loss of RIC410 connection - Loss of LIM7 TESTBOX connection
		Device error: Restart or replacement of the unit is required
		No RS-485 master connected
		NFC active (deactivates automatically after 5 min)
		Protect mode
AL1		Prewarning based on THC (> 3.7mA)
		Overvoltage
		- Overtemperature - Overcurrent - Loss of temperature sensor connection
AL2		Main alarm based on THC (≥ 5mA)
		Undervoltage
8 mA		on: THC ≥ 6.5 mA
5 mA		on: THC ≥ 5 mA
2 mA		on: THC ≥ 1.5 mA
1 mA		on: always active | off: not used during normal operation

Technical data LIM7-L-2 (* = factory setting)

Supply voltage

Supply voltage U_s ..... AC 100…240 V
Tolerance of U_s ..... -30…+15 %

Isolated power system being monitored

Nominal system voltage U_n ..... AC 100…240 V
Tolerance of U_n ..... -30…+10 %
Frequency range of U_n ..... 50…60 Hz

Response values

Response value THC_{an} ..... 5 mA
Response value R_{an} and Z_{an} ..... off, 50…500 kΩ (off)*
Response value C_{an} ..... off, 25 nF…5 µF (off)*

Contact data according to IEC 60947-5-1:

Utilisation category ..... AC-13 / AC-14 / DC-12 / DC12 / DC-12 / DC-12
Rated operational voltage ..... 240 V / 240 V / 24 V / 48 V / 110 V / 220 V
Rated operational current ..... 2 A / 2 A / 1 A / 0.5 A / 0.2 A / 0.1 A
Min. recommended contact load ..... 10 mA at AC/DC ≥ 10 V *

* Refers to relays that were not operated with high contact currents.

RS-485 interface

Protocol ..... BSC (Bender Smart Connect)
Data rate ..... max. 115.2 kbit/s (19.2 kbit/s)*
Parity ..... even, no, odd (even)*
Stop bits ..... 1, 2, auto (auto)*
Device address ..... 1…247 (100 + last 2 digits of serial number)*
Terminating resistor ..... 120 Ω, internal via DIP switch

NFC interface

Frequency ..... 13.56 MHz
Transmitting power (modulating, at a distance of 0 m, e.g.) ..... 0 W*

* The device does not emit radio waves when used as intended.
EMC interference can cause communication failures in the NFC interface.

Connection A1, A2 and relays

Connection type ..... pluggable screw type
Connection properties
- rigid ..... AWG 24…14
- with ferrule with plastic sleeve ..... AWG 24…14
- with ferrule without plastic sleeve ..... AWG 23…14

Stripping length ..... 0.28 inches
Tightening torque ..... 0.5 Nm…0.6 Nm

Connection (other Terminals)

Connection type ..... pluggable screw type
Connection properties
- rigid ..... AWG 24…16
- flexible - ferrule without plastic sleeve ..... AWG 23…16
- flexible - ferrule with plastic sleeve ..... AWG 23…19

Stripping length ..... 0.28 inches
Tightening torque ..... 0.22…0.25 Nm

EU Declaration of Conformity

The full text of the EU Declaration of Conformity is available via the QR Code:

UKCA Declaration of Conformity

The full text of the UK Declaration of Conformity is available via the QR Code:

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