

This document is intended as a reference guide for installing and using a BENDER EDS460 / EDS490 series ground fault location modules (hereafter referred to as “EDS modules”). This document includes installation, setup, and usage instructions. For complete details, including installation, setup, settings, and troubleshooting, refer to the EDS series user manual, document number TGH1394en. This document is intended as a supplement and not a replacement to the complete user manual.

Only qualified maintenance personnel shall operate or service this equipment. These instructions should not be viewed as sufficient for those who are not otherwise qualified to operate or service this equipment. This document is intended to provide accurate information only. No responsibility is assumed by BENDER for any consequences arising from use of this document.



Installation

System Requirements

Properly implementing an installed ground fault location system requires multiple components. The types of components used vary depending on the type of system. Ensure that you have the correct components in one of the combinations listed below:

- | Type 1: Standard distribution systems | Type 2: Small distribution systems | Type 3: Medical isolated power systems |
|--|--|--|
| <ul style="list-style-type: none"> IRDH575 series ground fault detector, with location signal set between 10 mA and 25 mA, qty. 1 EDS460 / EDS490 series ground fault location module, qty. dependent on number of monitored branches One BENDER current transformer per branch. See section “Wiring - Current Transformers” for a list of compatible current transformers. | <ul style="list-style-type: none"> IRDH575 series ground fault detector, with location signal set no higher than 2.5 mA; Qty. 1 EDS461 / EDS491 series ground fault location module, qty. dependent on number of monitored branches One of the following BENDER current transformers per branch: W20-8000, W35-8000, W60-8000 | <ul style="list-style-type: none"> LIM2010 line isolation monitor, qty. 1 EDS461 / EDS491 series ground fault location module, quantity dependent on number of monitored branches One of the following BENDER current transformers per branch: W20-8000, W35-8000, W60-8000 |

Mounting

All EDS modules are intended for DIN rail mounting, or screw mounting using the black clips on the top and bottom of the device.

Wiring - General

See figure 1 for wiring an EDS460 or EDS461, or figure 2 for wiring an EDS490 or EDS491. Use minimum AWG 24, maximum AWG 12 wire. Refer to section “Wiring - Current Transformers” for detailed information regarding connecting current transformers.

NOTE: For medical isolation power systems, most panels with EDS systems come with all devices prewired in the panel, or in a separate panel. Contact the manufacturer or your local representative for more information.

! DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Disconnect all power before servicing.
- Observe all local, state, and national codes, standards, and regulations.

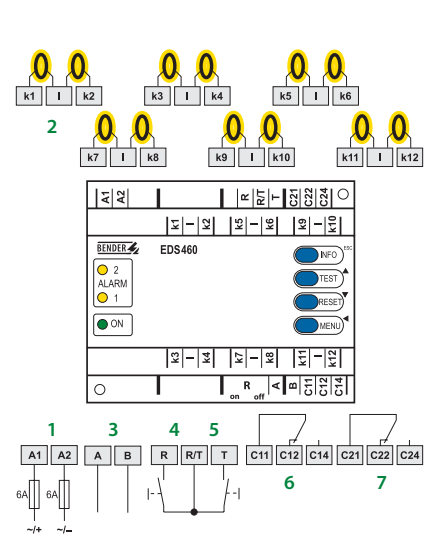


Figure 1 - EDS460 / EDS461 wiring diagram

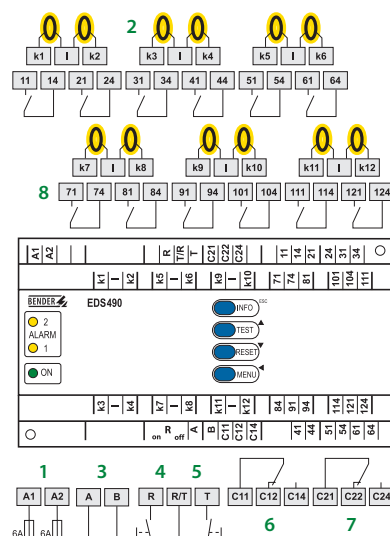


Figure 2 - EDS490 / EDS491 wiring diagram

- External supply voltage; 5 A fuse required for internal device protection
- Current transformer connections
- RS-485 interface
- External reset terminal (N/O contact)
- External test terminal (N/O contact)
- Alarm relay K1: Common SPDT alarm contact for all channels
- Alarm relay K2: Common SPDT alarm contact for all channels
- Individual SPST contacts for each channel (EDS490 / EDS491 series only; N/O or N/C depending on setting in menu)

Wiring - Current Transformers

Each branch monitored by an EDS module requires one BENDER current transformer. Only the following types of current transformers may be used with an EDS module:

EDS460 / EDS490 series

- W0-S20, W1-S35, W2-S70, W3-S105, W4-S140, W5-S210
- W20, W35, W60, W120, W210
- WR series
- WS series

EDS461 / EDS491 series

- W20-8000, W35-8000, W60-8000

All branch conductors must be placed through the current transformer. Refer to figure 3 for sample wiring schematic.

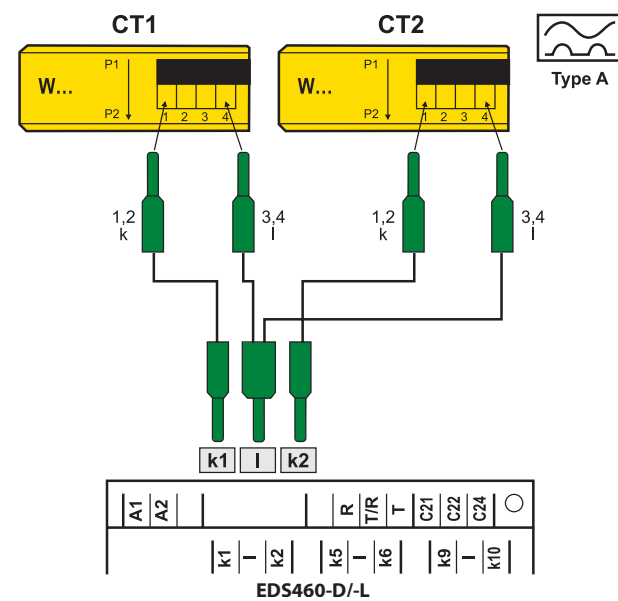


Figure 3 - Wiring diagram for BENDER current transformers

Wiring - RS-485

Minimum RS-485 Requirements

For proper operation of automatic ground fault location, an RS-485 connection is required between the ground fault detector and the EDS module(s). All devices shall be wired in series with each other via each device’s “A” and “B” terminals. Devices at the beginning and end of the chain require a 120 Ω termination resistor. Most devices have a switch to activate the termination resistor. Refer to the respective device’s user manual for more information. Refer to figure 4 for a sample diagram.

Communication Bus Address Settings

Each device must be set with a unique communication bus address. Refer to the reverse side of this document for setting the address on EDS modules. Refer to the respective device’s documentation for setting the address on other devices.

Expanding Communication Bus

Multiple BENDER ground fault location systems, along with other select BENDER equipment, may be interconnected via RS-485. Only the first and last devices in the completed communication bus require termination resistors.

Repeater Requirements

For every 3900 ft (1200 m) OR for every 32 connected devices (whichever comes first), an RS-485 repeater (mfr. P/N DI-1PSM) is required to be installed.

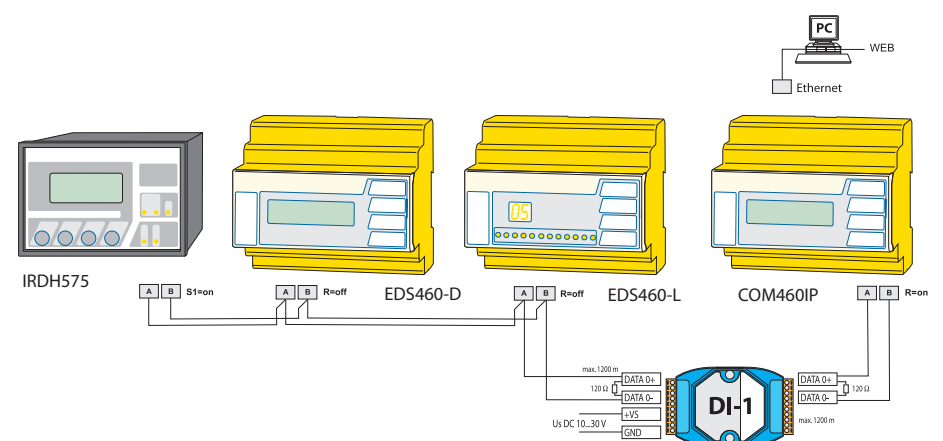
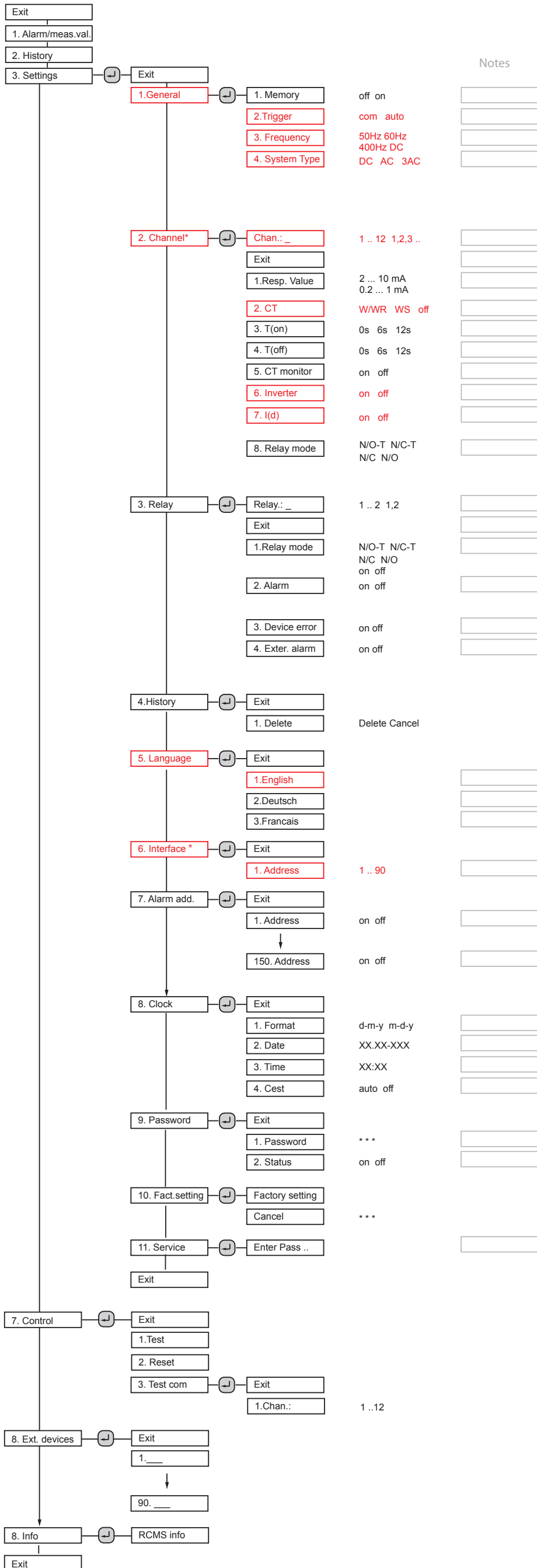
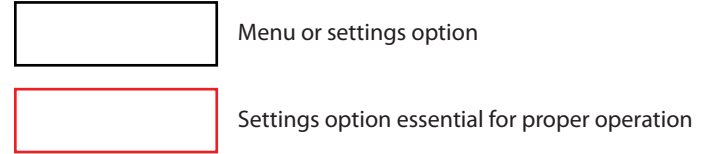


Figure 4 - Sample RS-485 wiring with IRDH575, EDS modules, and COM460IP Ethernet gateway

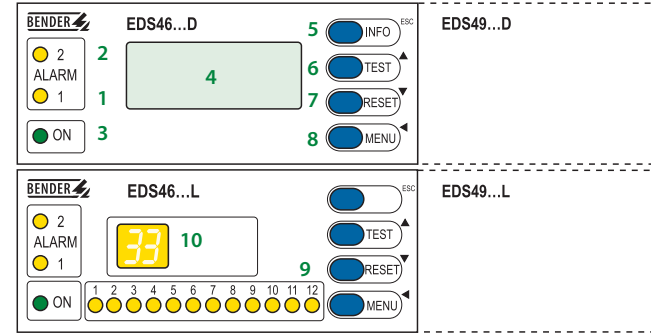


Menu Structure Flow Chart

Figure 5 shows the structure of the menu built into the EDS modules. The menu is used for viewing alarms, viewing the status of the system, and making any necessary settings changes. Use the supplied gray boxes to take note of applied settings for future reference.



Front Panel Display



- ALARM LED 1: Illuminates solid when the optional leakage current alarm is active. Blinks when connection alarm is active.
- ALARM LED 2: Illuminates when the ground fault location alarm is active.
- POWER ON LED: Illuminates when power is applied to the device.
- LCD display
- INFO / ESC key: Displays system information / goes back a step in menu
- TEST / UP key: Initiates self-test / moves up in menu
- RESET / DOWN key: Resets device when latching mode is active / moves down in menu
- MENU / ENTER key: Opens the main menu / confirms changes in menu
- ALARM LED chain ("L" versions only): Illuminates on the respective channel where the ground fault was detected
- Digital indication for device address and error codes (requires at least one connected "D" version for setting)

Device Setup Tips

- Ensure that all menu options in red in the menu structure flow chart are set correctly. Incorrect settings may lead to improper readings.
- Branches with large inverters must have the menu option CHANNEL > INVERTER set to "On."
- When connected to an IRDH575 or LIM2010 via RS-485, menu option GENERAL > TRIGGER on the EDS module should be set to "com" for proper operation.
- All twelve channels are active by factory default. If channels are not being used, they must be deactivated by changing menu option CHANNEL > MODE to "Off." Active channels with no current transformer connected will activate a CT connection error.
- If many channels will be utilized with similar settings, the recommended procedure is:
 - Change the CHANNEL > CHAN. setting to "1...12" and apply common settings to all channels.
 - Deactivate unused channels by changing CHANNEL > CHAN. to the respective individual channel number and changing MODE to "Off."
 - Apply channel-specific settings by changing CHANNEL > CHAN. to the respective individual channel number.

Technical Data

Refer to EDS series user manual (document TGH1394en) or EDS series datasheet (document NAE1012070) for detailed technical information.