EDS441-LNA-KITS

Ground Fault Location Kits for
Modular Isolation Power Panels

EDS441-LNA KITS - Ground Fault Location Monitoring

EDS441-LNA KIT 2

Product Description

Compatible with Bender's line of Modular Isolated Power Panels; the EDS441LNA Fault Location Modules provide quick and efficient monitoring and detection of branch circuits in the event of a ground fault.

Once a ground fault is detected, the accompanying Line Isolation Monitor (LIM2010) activates an alarm and sends out a tracer pulse which is detected by the CT sensors and evaluated by the EDS module. This will alert technicians and staff of the circuit with a resistive ground fault, thereby reducing tedious troubleshooting.

Fault location modules can be pre-installed at the factory or post-installation with easy-to-install upgrade kits. Kits are available to monitor up to 12 or 16 circuits simultaneously.

Features

- Automatic detection and indication of faulty branch circuits
- LED Indicators showing faulty branch circuit
- Can be pre-installed at factory or field upgraded
- Simple RS-485 communications connectivity between devices
- Monitor up to 16 Circuits
- Pre-wired teminal block for easy wiring
- "Plug-n-play" installation
- Includes over-current protection with field replaceable fuses.

Applications

- For use with Bender's line of Modular Isolation Power panels

General Safety Information

Installation, connection and commissioning of electrical equipment shall only be carried out by qualified electricians. Particular attention shall be paid to:

- The current safety regulations
- The Safety and Installation instructions provided by Bender's Instruction Manuals for Modular Isolated Power Panels and Add-On Manual.
- The operating manual(s) of any other connected Bender device including but not limited to: LIM2010, EDS441, CMS460, COM465IP, MK800 and others.

Prior to installation and before any work is carried out on the connecting cables, make sure that the MAIN POWER to the panel is disconnected. Failure to comply with this safety information may cause electric shock to personnel. Substantial damages to the electrical installation and destruction of the device may occur.

**EDS Harness
P43800091**
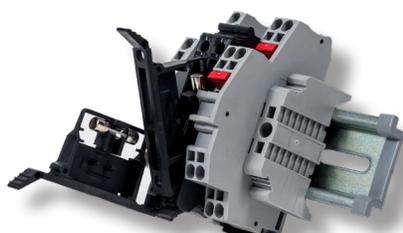
**Accessory Terminal Block
S10200800**
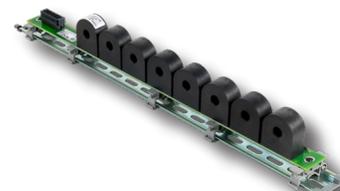
**CTAC10 Current Transformer Strip
S43800004 / S43800005**

What's Included?

EDS441 Module (Single Unit)
S43800002

Current Transformer
Module - LEFT Mount
S43800004

Current Transformer
Module - RIGHT Mount
S43800005

Accessory Terminal Block - **S10200800**

EDS441 TO CT HARNESS
P43800091

1	Fault Location Module - One module can monitor up to 12 circuits
2	Fault Location Modules - Two modules can monitor up to 16 circuits
3	Current Transformer Strips; mounted on din-rail and brackets for easy installation. Each strip is designated for mounting on either left or right side of loadcenter.

EDS441LNA-KIT 1 shown
All mounting brackets & hardware are included

EDS441 Module (Dual Unit)
S43800001

Current Transformer
Module - LEFT Mount
S43800004

Current Transformer
Module - RIGHT Mount
S43800005

Accessory Terminal Block - **S10200800**

4	Terminal Block Accessory pre-wired from factory along with fuses to provide power and protection for all modular add-on accessories including: EDS441LNA Kits, CMS460 Kits, and COM465IP Kits.
5	Fault Location Module wiring harness equipped with quick disconnects to provide hassle-free wiring from EDS Modules to Current Transformer Strips.

EDS441 TO CT HARNESS
P43800091

EDS441LNA-KIT 2 shown
All mounting brackets & hardware are included

What's Included?

Ordering Information

Model #	Description	Number of Circuits Monitored	Article #
EDS441LNA-KIT 1	One EDS Module, CT Strips, Harness, & Terminal Block	Up to 12	B571300118
EDS441LNA-KIT 2	Two EDS Modules, CT Strips, Harness, & Terminal Block	Up to 16	B571300119

Frequently Purchased with

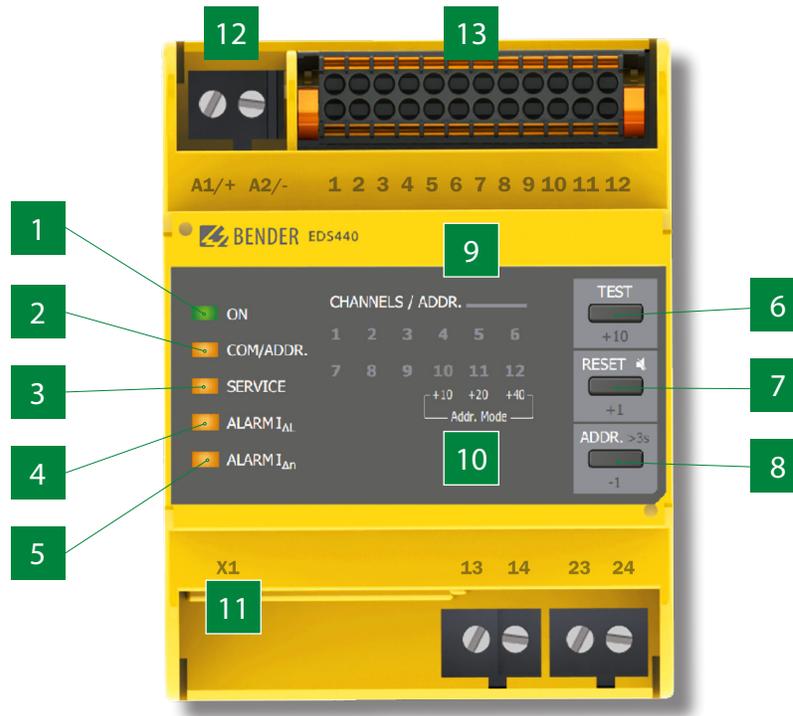| Model #	Description	Article #
COM465IP KIT	Communications Module & Accessory Terminal Block	B571300003
MK800-12RS	Central Monitoring Station, Flush Mount	B521301094

EDS441 Module (Single Unit)
S43800002

EDS441 Module (Dual Unit)
S43800001

Replacement Components

Model #	Description	Article #
EDS441-LNA (Single Unit)	One EDS Module w/ Din Rail Mounting (12 Circuits)	S43800002
EDS441-LNA (Dual Unit)	Two EDS Modules w/ Din Rail Mounting (16 Circuits)	S43800001
Accessory Terminal Block	Pre-Wired & Fused Accessory Terminal Block	S10200800
EDS441 to CT Harness	EDS to CT Strip Harness	P43800091
CT Module - LEFT	Current Monitoring Strip w/ Din Rail mounting - LEFT Side (odd numbered circuits)	S43800004
CT Module - RIGHT	Current Monitoring Strip w/ Din Rail mounting - RIGHT Side (even numbered circuits)	S43800005

Operating and Display Elements

1	The "ON" LED will flash until the device is ready for operation during power up.	
2	The "COM/ADDR." LED flashes quickly while the device communicates via the RS-485 interface.	
3	The "SERVICE" LED lights up either when there is a device error, a connection fault of the measuring current transformers, or an error message.	
4	The "ALARM $I_{\Delta L}$" LED signals the main alarm. The LED lights when an insulation fault is detected (EDS function) on one of t he monitored circuits.	
5	The "ALARM $I_{\Delta n}$" LED lights up if the set response value for currents is exceeded. The factory setting for the response value is 200 µA for the EDS441.	
6	TEST Button - Pressing this button triggers the self test feature of the device.	

7 RESET Button - Allows user to reset the fault memory. The fault memory can only be reset if it is activated and the fault has been eliminated.

8 ADDRESS Buton - Pressing and holding this button for 3 econds activates the address assignment function. The addressing can be set up in steps of one (+1 and -1) and steps of ten.

9 The channel LEDs "1"…"12" light up:
A channel LED lights up if a ground fault is detected on the respective monitored circuit.

10 Addr. Mode: Indication of the present tens counter by means of the channel LEDs 10, 11 and 12.

11 RS-485 communcations wiring terminals.

12 Supply voltage input terminals.

13 EDS to current transformer harness connections.

Technical Information

EDS441-LNA

System Ratings

Supply voltage	AC/DC 24…240 V
Tolerance	-20…+15%
Frequency range of	DC, 50…400 Hz
Tolerance of the frequency range of US	-5…+15 %
Power consumption, typically 50 Hz (400 Hz) EDS44…-L	≤4 W/7 VA (≤4 W, 28 VA)
Power consumption, typically (DC via BB–Bus) EDS44…	-S ≤1 W

Response Values

Response value insulation fault location (IΔL)	0.2…1 mA
Relative uncertainty (IΔL)	±30 %, ±0.2 mA
Response value residual current measurement (IΔn)	100 mA…1 A
Relative uncertainty (IΔn)	(61…1000 Hz) -20…0 %
Hysteresis	20 %

Time Response

Scanning time for all channels insulation fault location (IΔL)	
	profile-dependent, min. 6 s
Response time for measuring current transformer monitoring ≤ 400 ms	
Data rate Data rate	

LEDs
CTAC10-99 Current Transformer

Insulation coordination acc. to IEC 60664-1

Rated insulated voltage	AC 300 V
Rated impulse voltage	4 kV
Overvoltage category	III
Polution degree	3
Protective separation	(prim)–(sec)
Voltage test according to IEC 61010-1	2,2 kV

For primary routing through the current transformer, use an insulated cable which at least complies with the requirements for basic insulation.

CT circuit

Rated primary residual current	20 A
Rated secondary residual current	5.55 mA
Rated burden	max. 27 Ω
Nominal power	0.83 mVA
Frequency range	42 Hz…3 kHz
Rated continuous thermal current I_{cth}	80 A
Rated short-time thermal current I_{th}	60 x I_{cth} = 2.4 kA/1 s
Rated dynamic current I_{dyn}	2.5 x I_{th} = 6.0 kA/40 ms

Environment

Operating temperature	-25…+55 ℃
Climatic class acc. to IEC 60721	
Stationary use (IEC 60721-3-3)	3K5 (except condensation and formation of ice)
Transport (IEC 60721-3-2)	2K5
Long-time storage (IEC 60721-3-1)	1K5

ON (operation LED)	green
COM	yellow
SERVICE	yellow
IΔL ALARM	yellow
IΔn ALARM	yellow
1…12 channel indication	yellow

Interfaces

Interface/protocol	RS-485/BS
Data rate	9600 baud/s
Cable length	≤ 1200 m
Cable: Twisted pair, one end of shield to ground	:J-Y (St) min.2x0.8

Other

Operating mode	continuous operation
Degree of protection internal components	IP40
Degree of protection terminals	IP20
DIN rail mounting acc. to	EC 60715
Screw fixing	2 x M4 with mounting clip
Enclosure material	polycarbonate
Flammability class	UL 94V-0
Dimensions (W x H x D)	2.8" x 3.6" x 2.5"
Approvals and certifications	UL508 open type device
Weight	≤ 450 g

Connection

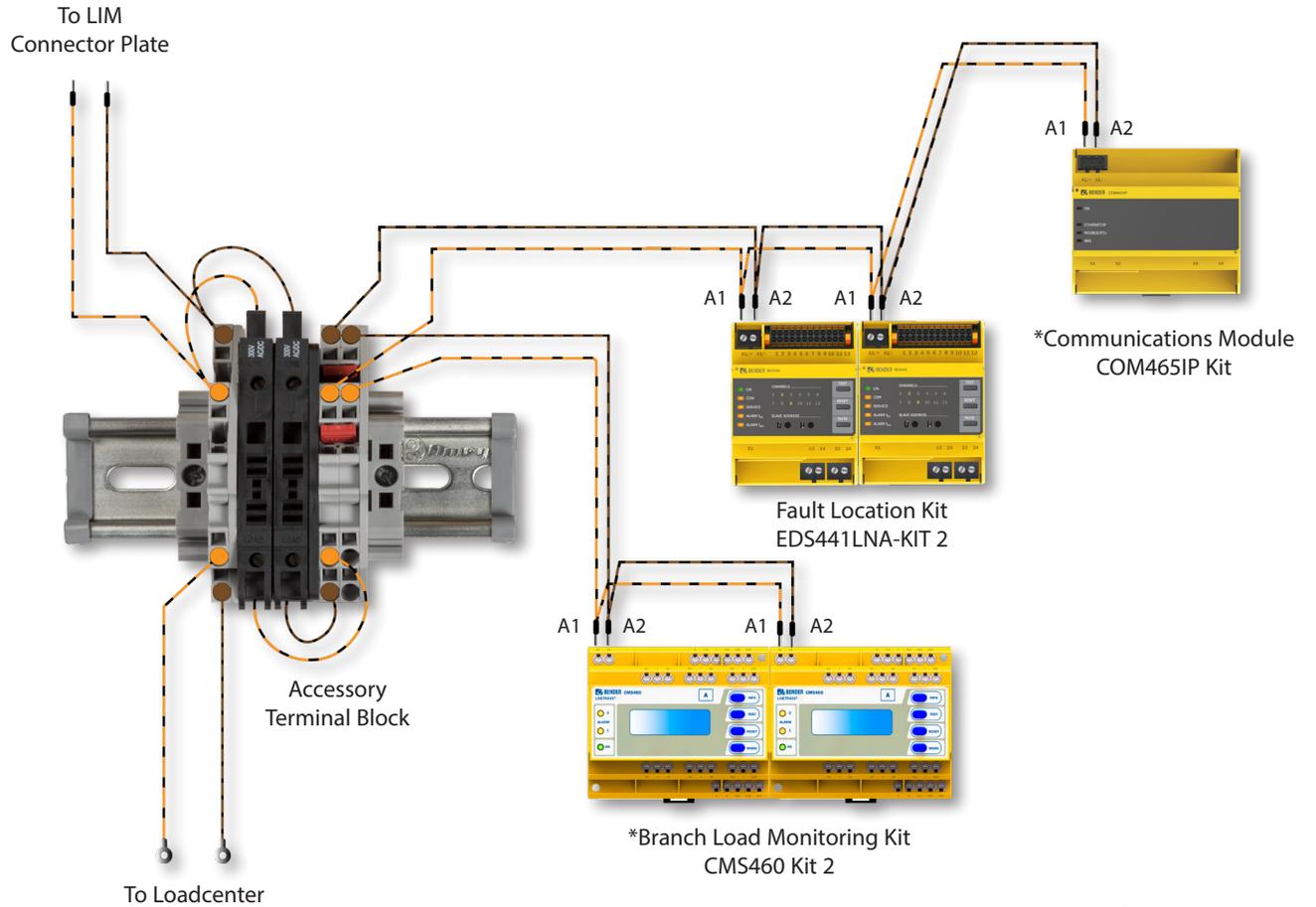|	
Connector	TRM Connect 16x3,5
Clamping range, rated connection	0.75…1.5 mm²
single wire	0.75…1.5 mm²
flexible	0.75…1.5 mm²
flexible with plastic collar ferrule acc. to DIN 46228/4	0.75…1 mm²
flexible with ferrule acc. to DIN 46228/1	0.75…1.5 mm²
Stripping length	10 mm

Connection EDS, CMS

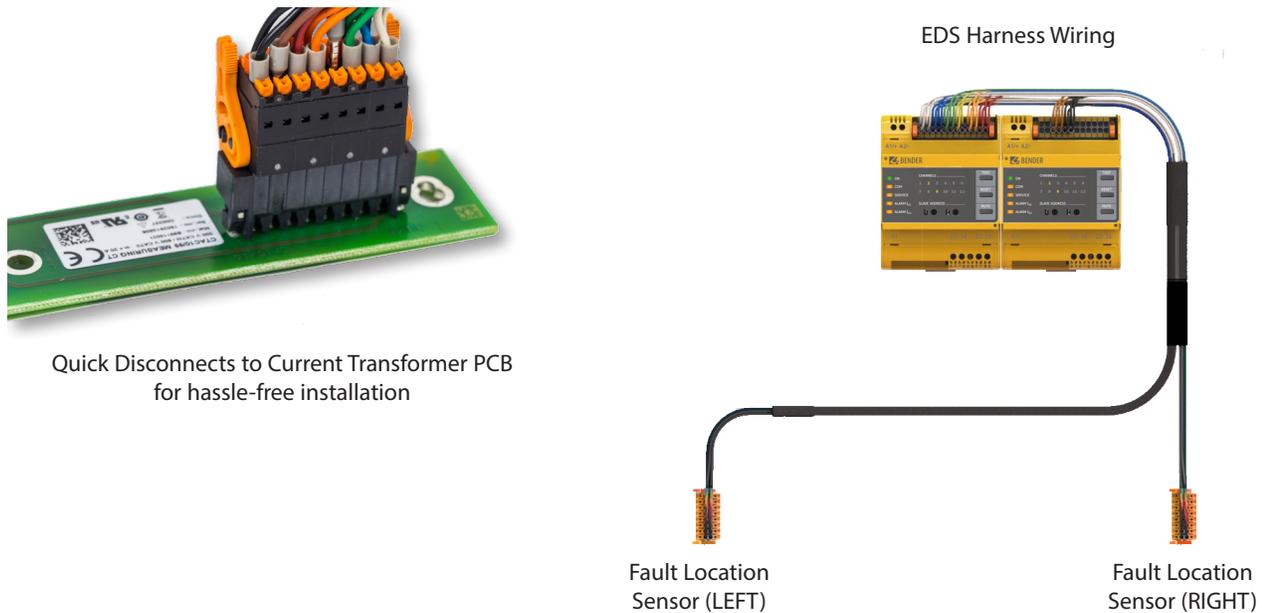|	
Single wire ≥ 0.75 mm²	0…1 m
Single wire, twisted ≥ 0.75 mm²	0…10 m

Other

Degree of protection, internal components (DIN EN 60529)	
Degree of protection, terminals (IEC 60529)	
Screw mounting	Mounting bracket Phoenix 1201578 USA 10
Screw	Pan head screw TX10 M3.0x8
Flammability class	UL94 V-0
Approvals and certifications	UL508 open type device
Weight	≤ 450 g

Accessory Terminal Block Power Wiring

To LIM
Connector Plate

A1 A2

*Communications Module
COM465IP Kit

A1 A2   A1 A2

Fault Location Kit
EDS441LNA-KIT 2

Accessory
Terminal Block

A1 A2   A1 A2
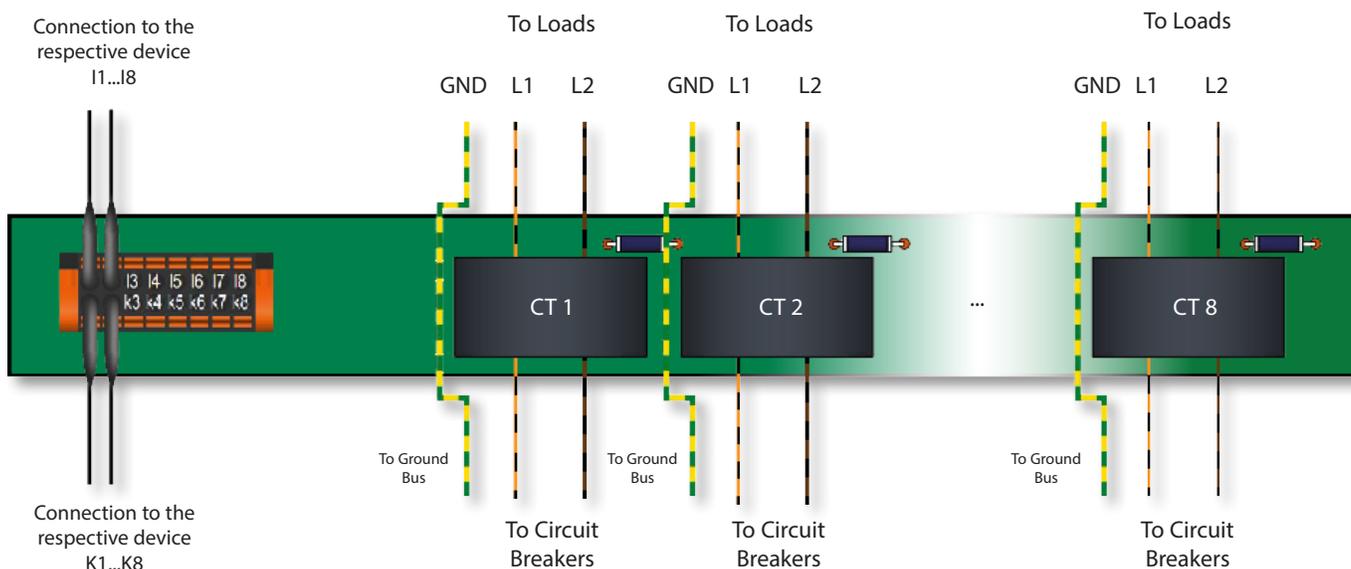
To Loadcenter

*Branch Load Monitoring Kit
CMS460 Kit 2

*Optional Components
*All power wiring is provided with Accessory Terminal Block
*All unused wiring will be covered with wire nuts

EDS to Current Transformer Wiring Harness

EDS Harness Wiring

Quick Disconnects to Current Transformer PCB
for hassle-free installation

Fault Location
Sensor (LEFT)

Fault Location
Sensor (RIGHT)

Current Transformer Wiring

Connection to the
respective device
I1...I8

To Loads   To Loads   To Loads

GND   L1   L2   GND   L1   L2   GND   L1   L2

CT 1   CT 2   ...   CT 8

To Ground
Bus

To Ground
Bus

To Ground
Bus

Connection to the
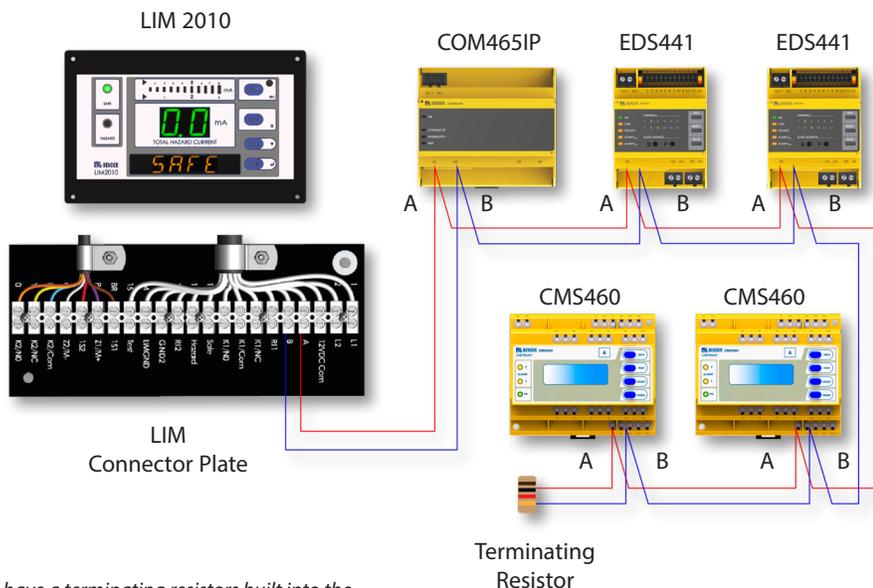respective device
K1...K8

To Circuit
Breakers

To Circuit
Breakers

To Circuit
Breakers

*Maximum AWG #10 wire permitted through CTAC10/99 sensor opening

RS-485 Communications Wiring

All RS-485 equipment must be connected in a daisy-chain configuration. Star connections are not permitted. Devices within multiple panels / areas must also be connected in a serial manner. Refer to figure below for sample RS485 connection between multiple panels and a nurse's station with an RS-485 connected remote indicator.

Additionally, each device requires a unique RS-485 address. Duplicate addressing will cause communication collisions and network interference. Re-addressing may be required when integrating equipment into existing installations. RS-485 addresses are not required to be numerically sequenced in the order they are wired. However, do not skip any numbers when addressing. If the system has a communication gateway, it must remain address 1.

LIM 2010

COM465IP   EDS441   EDS441

A   B   A   B   A   B

CMS460   CMS460

LIM
Connector Plate

A   B   A   B

Terminating
Resistor

*Select Bender devices have a terminating resistors built into the device itself. No external resistor required on these devices

Add-Ons and Accessories

COM465IP KIT - Remote Communications

Adds remote communication capabilities to EDS Fault Location Kit. The expansion kit can be added at the factory or post-installation with easy-to-install upgrade kits.

Bender's COM465IP gives technicians and staff the ability to see the status of their Fault Location Devices as well as monitor any alarm indications and location monitoring in real time via a web server. This can be accessed from any network-connected PC, Tablet, or Smartphone.

Additionally, the COM465IP acts as a Modbus TCP gateway, providing integration capabilities into building management systems.
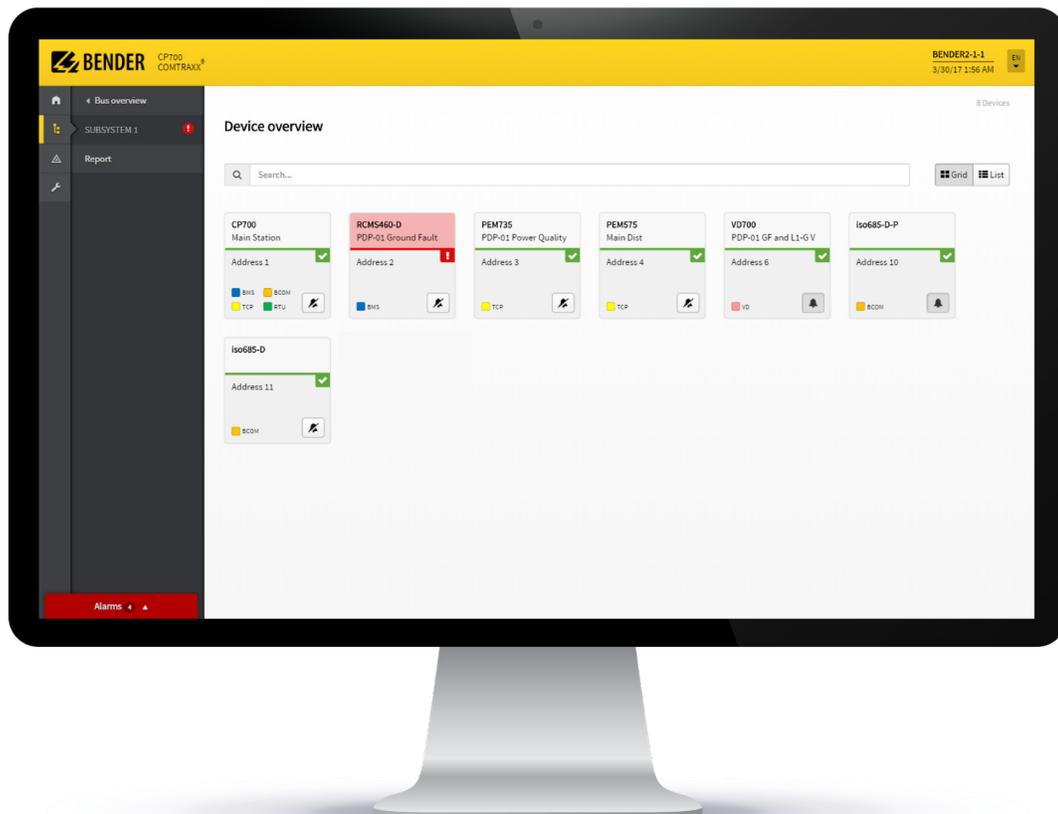
COMTRAXXX ® Webserver

- Easy to use status indication for connected devices
- Unified status screen for all connected devices
- Communication buses (Bender RS-485 bus, Bender Ethernet bus, Modbus/RTU, Modbus/TCP)
- Drill-down for each device shows detailed information, including readings for all branches for multi-channel devices
- Configure compatible connected devices remotely
- Modern design - HTML5-based interface, works in most modern web browsers

- Configure compatible connected devices remotely
- Modern design - HTML5-based interface, works in most modern web browsers
- Responsive layout - touch-friendly layout for mobile devices
- Grid-type and list-type views available for viewing status
- Create custom system visualizations
- Custom alarms created using virtual setpoints appear in the same list as connected devices

Add-Ons and Accessories

MK800-12RS - Alarm Indicating Station

The universal MK800-12RS remote alarm indicating Station and test combination is used for:

- Indication and visualization of EDS Fault Location Kits and other Bender RS-485 communications compatible devices.
- Provides central operation and parameter setting of Bender devices
- Indication and visualization of operating status, alarm indications, circuit monitoring
- Indicatior light with 3 LEDs to differentiate between normal, warning, and alarm messages.
- Does not require networked PC for operation.

The MK800-12RS is available for flush and surface mounting.
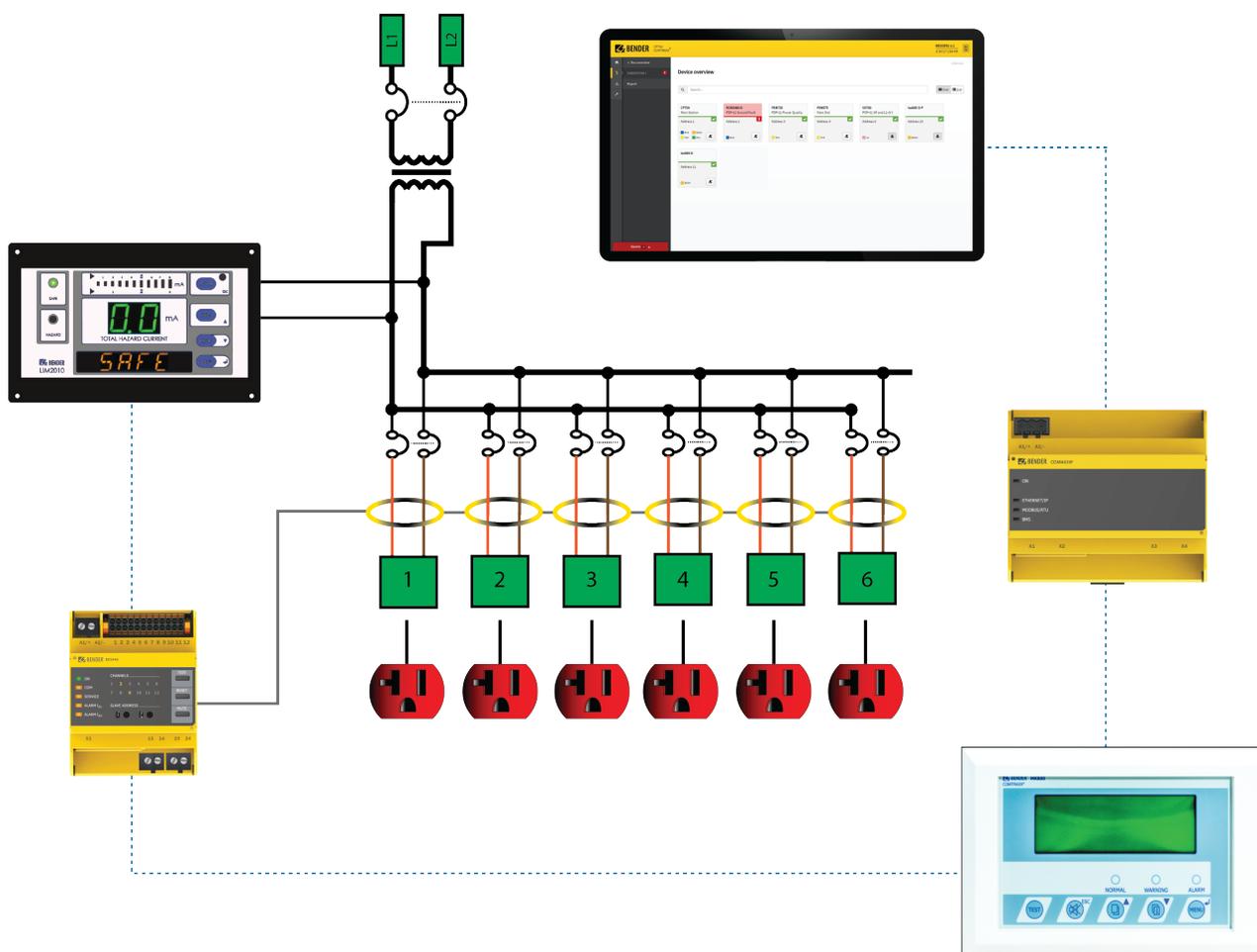
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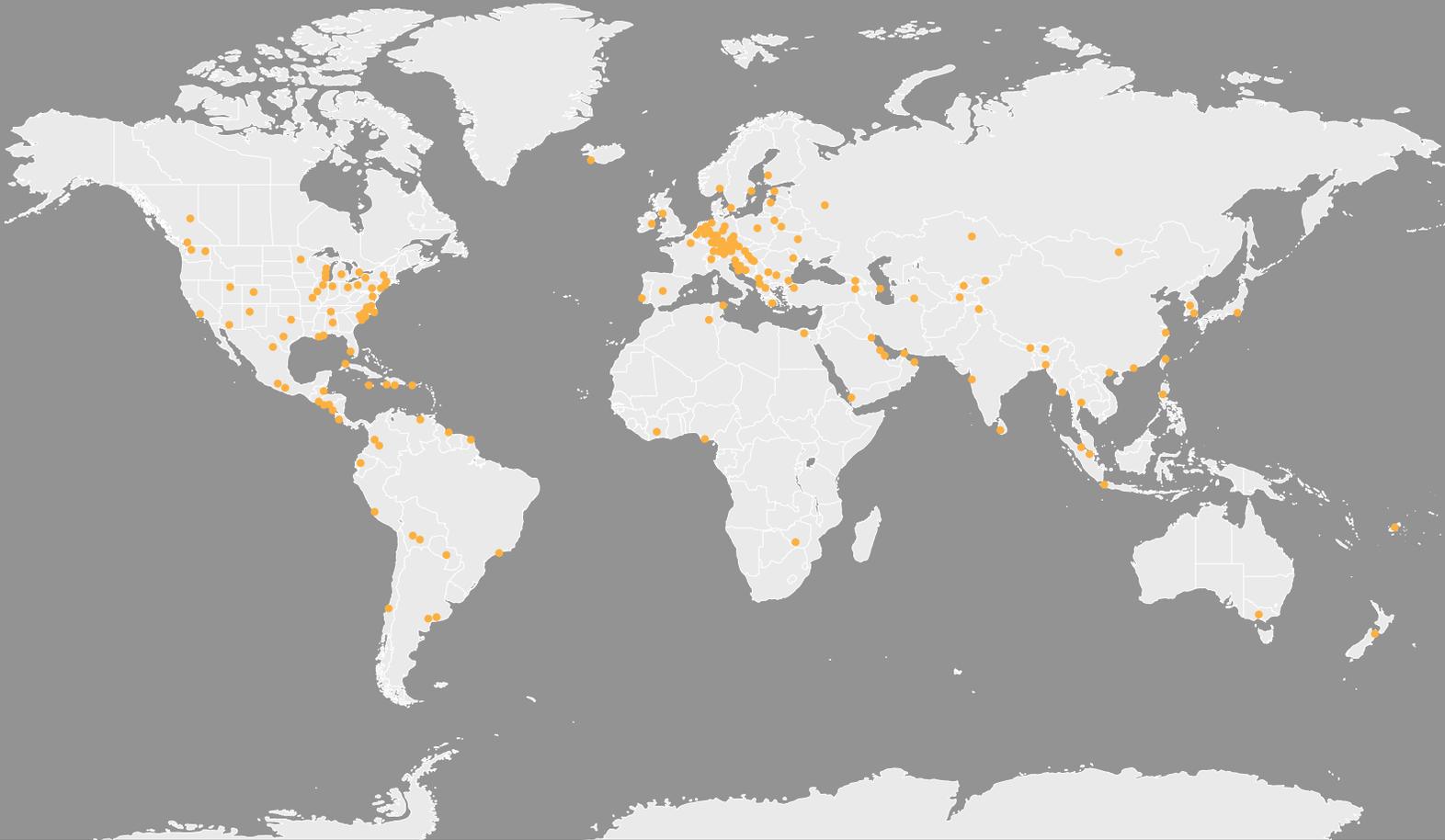
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