BENDER
The Power in Electrical Safety™

COM460IP

Ethernet and Modbus/TCP Communication Gateway
For Supported BENDER Devices

Technical Bulletin

NAE4122010 / 11.2012

Ethernet and Modbus/TCP Communication Gateway COM460IP

COM460IP

Features

- Modular, expandable gateway between BENDER communication bus and TCP/IP
- Gateway between BENDER communication bus and Ethernet
- Optional Modbus/TCP communication gateway for status information of BENDER devices
- Customizable features available through options
- Capability for remote access via LAN, WAN, or Internet

Description

The COM460IP is a full-featured communication gateway for connecting BENDER devices to modern networks. The COM460IP connects via Ethernet connections to an existing communication network. The integrated web server displays the status of the entire network of BENDER devices, and may be viewed through the web browser (with Silverlight plugin installed) of any connected PC. No additional software is required. The COM460IP has many customizable options, including the ability to act as a Modbus/'TCP gateway for status information.

The following options / features are available. Any combination of optional packages may be selected to add on to the standard features.

Standard Features

- GUI for displaying status information of all connected BENDER devices, viewed through standard web browsers on connected PCs
- Alternate GUI optimized for smartphones
- Displays alarm messages and measured values in real-time
- BENDER bus diagnostic / analytics tools
- Time syncronization for connected BENDER devices
- Built-in Ethernet switch: 2 x RJ45, 10 / 100 Mbit/s
- LCD display for simple address setting
- Supports static IP address or DHCP (dynamic)
- Modbus/TCP data access for ten BENDER devices directly connected to the COM460IP
- Remote access and remote diagnostics via LAN, WAN or Internet
- Password protection

Option A: Customizable Messages and Data Logging

- Customizable messages for devices and monitoring points / alarms
- Timestamped data logging of events
- Ability to provide e-mail notifications of alarms
- Reporting function with PDF export

Option B: Modbus/TCP Gateway

- Complete Modbus/TCP communication gateway for status information of all connected BENDER devices

Option C: Device Admin Station

- GUI for modifying settings for all connected BENDER devices from one central location
- Reporting function with PDF export

Option D: System Visualization

- Allows for the importing of system schematics / drawings
- Device placement on drawings with alarm notification, simplifying location and notification of alarms

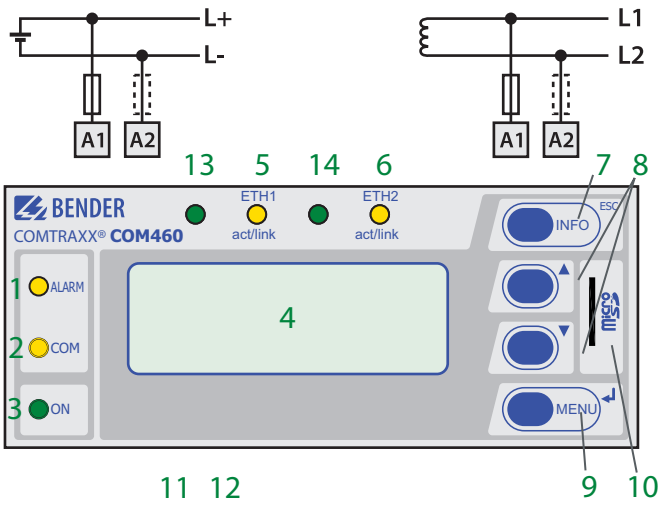
Applications

- Central location for connected BENDER devices
- Areas requiring remote notification to maintenance personnel
- Large systems with existing or new communication networks
- Bidirectional data exchange with SCADA systems or PLCs (Programmable Logic Controllers) via Modbus/TCP
- System analysis, logging and trending

Supported BENDER devices

- IRDH275 / IRDH375 / IRDH575 "B" Series Ground Fault Detectors
- RCMS460 / RCMS490 Series Ground Fault Monitors
- LIM2010 Line Isolation Monitor
- EDS460 / EDS490 / EDS461 / EDS491 Series Ground Fault Location Modules
- RCMA421H / RCMA426H "DCB" Series GFCI Modules
- MK2430 / MK800 Series Remote Indicators

Wiring



1- ALARM LED, lights when an internal device error occurs

2 - COM LED, lights during TX/RX between COM460IP and connected BENDER devices

3 - Power LED

4 - LCD Display

5 - Link/Active LED Ethernet 1; lights when connected, flashes during TX/RX

6 - Link/Active LED Ethernet 2; lights when connected, flashes during TX/RX

7 - INFO button: Displays status of device

"ESC" button: Exits the main menu

8 - Arrow buttons : Scroll through main menu

9 - "MENU" button: Opens the main menu

Enter button: Confirms changes in menu

10 - Micro SD card slot

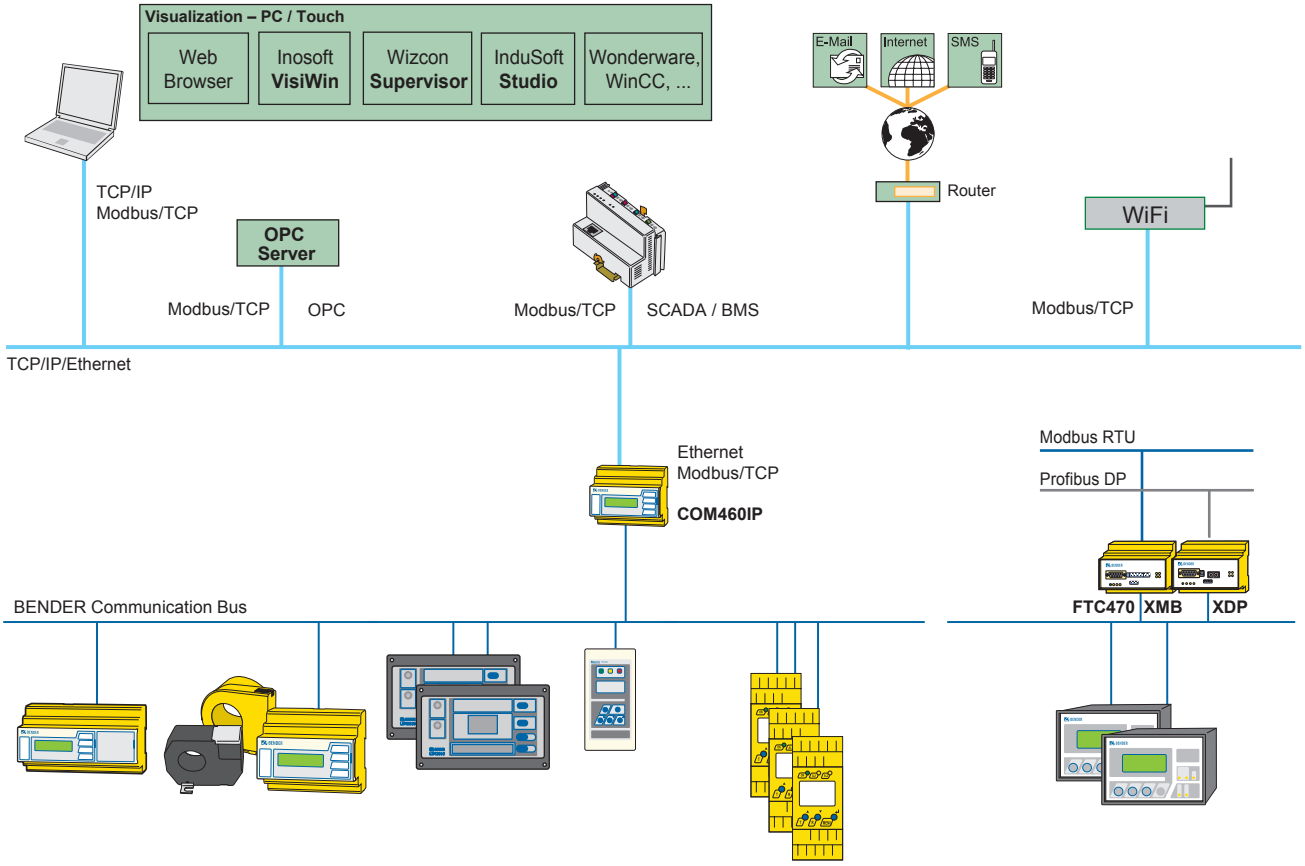
11 - Supply voltage connections

12 - Ethernet connection (2 x RJ45)

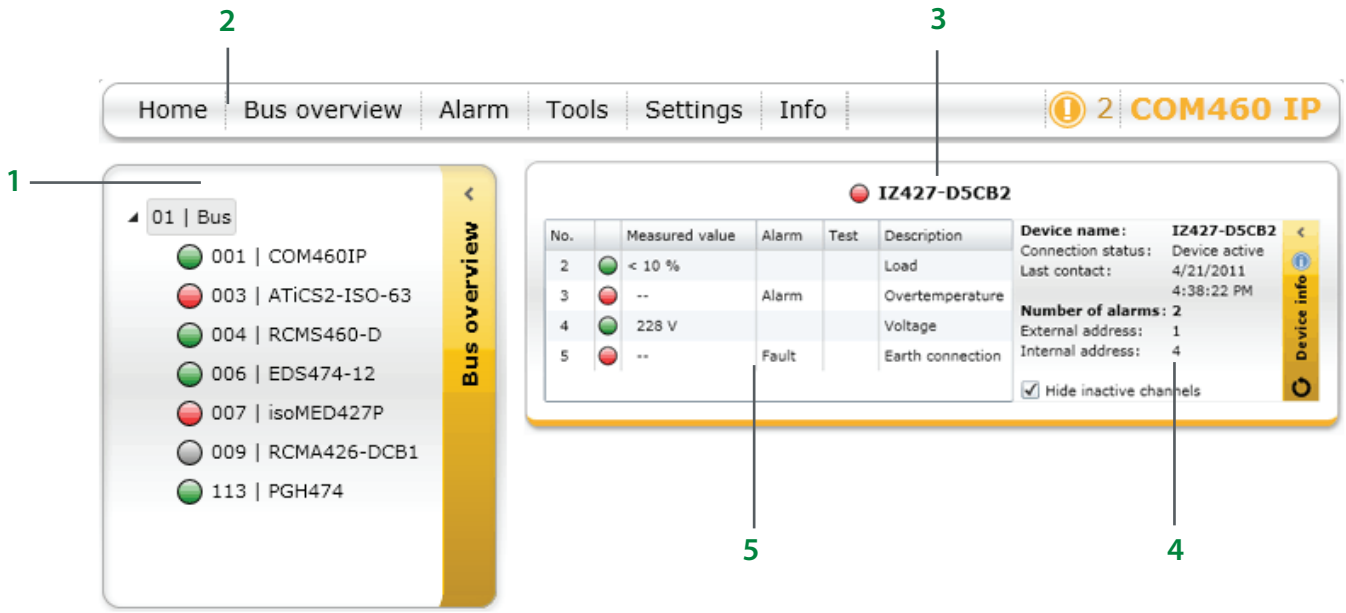
13 - LED: Reserved for future use

14 - LED: Reserved for future use

Application Example



Interface Example (Standard Model)



1- Selectable list of connected devices

2 - Main menu

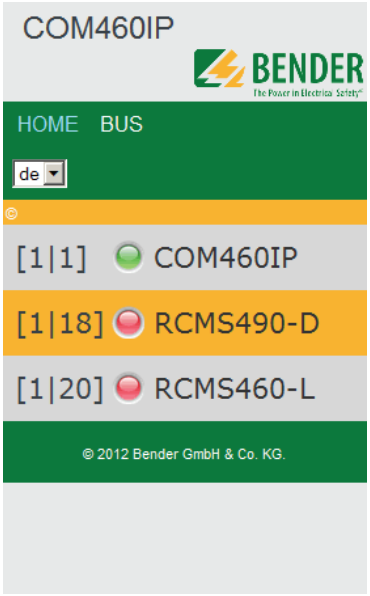
3 - Selected device name

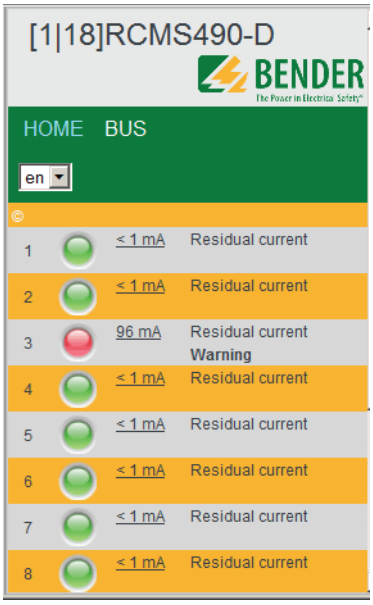
4 - Device information and options

5 - Real-time readings of measured values. Depending on the device, this may indicate a single value, values for multiple channels, or values for different types of alarms.

Interface Example - Mobile (Standard Model)

The standard COM460IP also features a mobile interface, accessable from smartphones when connected to a wireless network. The mobile interface shows the status of all connected devices with alarm values.





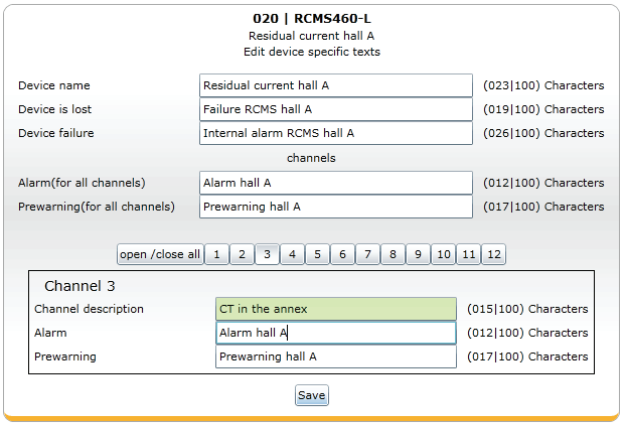
Option Packages

Any combination of options may be added onto the standard COM460IP device. Each option includes additional features to enhance reporting, nofitication, and simplicity of your BENDER electrical safety system.

Option A - Custom Names and Reporting

Option A allows for assigning custom name tags to devices and alarms, simplifying the process of notifying personnel of names and locations of alarms. Additional features provided include:

- Provisions for e-mail and SMS notifications
- Built-in history memory for alarms and warning messages
- PDF report export, including meadured values and settings

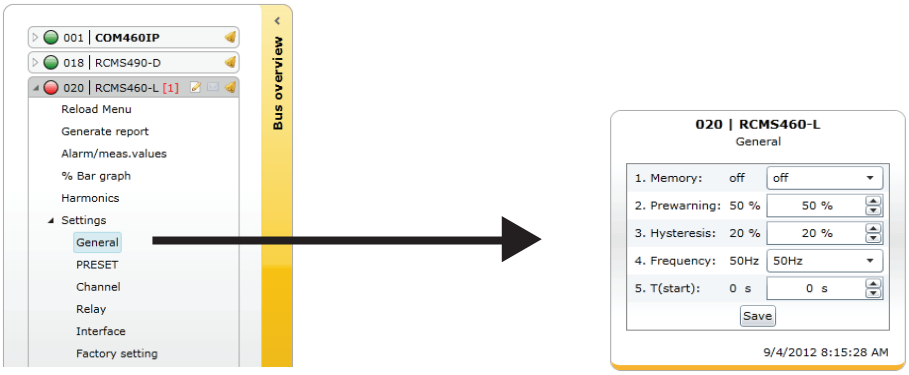


Option B - Modbus/TCP

Option B allows for the connection of up to 150 BENDER devices directly to the COM460IP. Utilizing BENDER's external communcation bus allows for the connection of more devices. Using the standard Modbus/TCP protocl, the COM460IP acts as a slave device on the network and may be queried for device status information.

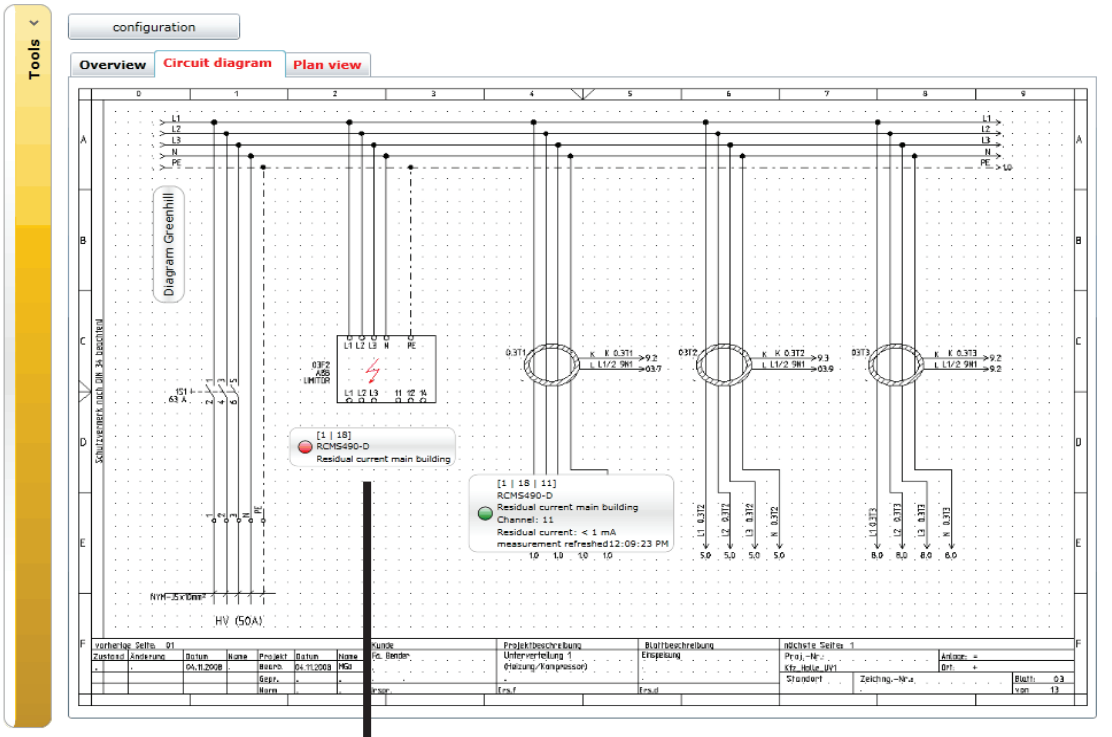
Option C - Remote Admin Station

Option C allows for the simple, remote changing of settings for connected BENDER devices through the COM460IP's browser-based interface. Connected BENDER devices may have settings changed from a single station, greatly simplifying the commissioning process. PDF report exporting is also included with option C.



Option D - System Visualization

Option D allows for the importing of schematics, layouts, and drawings into the COM460IP's built-in visualization. Connected BENDER devices may then be mapped to these drawings to allow for an overall layout of device locations. Alarms are then visually shown by location, and detailed device information may be displayed directly from the drawings.



018 | RCMS490-D [1]
Residual current main building

No.		Measured value	Alarm	Channel description	Test
1		< 1 mA		Residual current	
2		< 1 mA		Residual current	
3		95 mA	Warning	Residual current	
4		< 1 mA		Residual current	
5		< 1 mA		Residual current	
6		< 1 mA		Residual current	
7		< 1 mA		Residual current	
8		< 1 mA		Residual current	
9		< 1 mA		Residual current	
10		< 1 mA		Residual current	
11		< 1 mA		Residual current	
12		< 1 mA		Residual current	
13		--		--	
14		--		--	
15		--		--	
16		--		--	

Device name: RCMS490-D
Last contact: 9/13/2012 12:11:07 PM
Number of alarms: 1
Internal address: 18

Device info

Technical data

Insulation coordination acc. to IEC 60664-1

Rated insulation voltage	AC 250 V
Rated impulse withstand voltage/pollution degree	4 kV/3
Overvoltage category	III

Supply voltage

Supply voltage U_S	see ordering information
Frequency range U_S	AC 50…400 Hz / DC
Power consumption	≤ 8 VA

BMS interfaces

Interface / protocol RS-485 (internal/external)	
Baud rate / Internal Bus (internal/external)	9600 baud / 57600 baud
Cable length	≤ 3900 ft (1200 m)
Cable (twisted pairs, shielded, shield connected to gnd on one side)	J-Y(St)Y 2 x 2x0.8 recommended
Mode	Master / Slave
Connection terminals	A/B
Terminating resistor	120 Ω (0.25 W)
Device address, BENDER bus (internal/external)	1 (2)…150 / 1…99
Factory setting, device address (internal)	2
Ethernet	
Connection	2 x RJ45
Data rate	10 / 100 Mbit / s, autodetect
Available protocols utilized	TCP / IP, Modbus/TCP, DHCP, SMTP, NTP
Alarm LEDs	Link/Act
Memory card (µSD card)	2 GB

General data

EMC immunity	EN 61000-6-2
EMC emission	EN 61000-6-4
Classification of climatic conditions acc. to IEC 60721	
Stationary use	3K5
Transport	2K3
Long-time storage	1K4
Operating temperature	+14 °F…+131 °F (-10 °C…+55 °C)
Classification of mechanical conditions acc. to IEC 60721	
Stationary use	3M4
Transport	2M2
Long-time storage	1M3
Operating mode	continuous operation
Mounting	any position
Connection type	screw terminals / RJ45 plug

Connection capacity

rigid / flexible / conductor sizes	0.2…4 / 0.2…2.5 mm² / AWG 24…12
Multi-conductor connection (2 conductors with the same cross section):	
rigid/flexible	0.2…1.5 / 0.2…1.5 mm²
Stripping length	8…9 mm
Tightening torque	0.5…0.6 Nm
Degree of protection, internal components (IEC 60529)	IP30 (NEMA 1)
Degree of protection, terminals (IEC 60529)	IP20 (NEMA 1)
Type of enclosure / dimension diagram	X470
Screw mounting	2 x M4
DIN rail mounting	acc. to IEC 60715
Installation	into distribution boards
Flammability class	UL94V-0
Operating manual	TGH1452
Weight	≤ 310 g

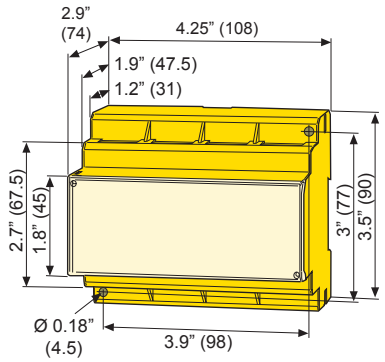
Ordering information

Type	Description / Supply voltage U_S	Art. No.
COM460IP	Ethernet gateway, standard device AC / DC / 76… 276 V*	B 9506 1010
Option package A	Customizable messages	B 7506 1011
Option package B	Modbus/TCP gateway	B 7506 1012
Option package C	Central admin station	B 7506 1013
Option package D	System visualization import	B 7506 1014

Any combination of options may be selected in addition to the standard device. Options are added as additional line items.

Dimensions

Dimensions in inches (mm)



Feature	Standard	Option A (Page 6)	Option B (Page 6)	Option C (Page 6)	Option D (Page 7)
Complete system overview with indication of alarm messages and measured values	X				
Standalone web server, accessible via web browser on connected network	X				
Can be operated on the internal and external bus (max. 99 x 139 addresses)	X				
Multilingual menu structure	X				
Static or dynamic (DHCP) IP addressing	X				
Time synchronisation for the BMS bus system via (S)NTP****	X				
Built-in switch with 2 x RJ45, cable auto detection	X				
Diagnostics function (bus log, analyser…)	X				
Modbus/TCP data access for the BMS addresses 1…10 on the internal BMS bus	X				
Individual text messages for all devices / channels		X			
History memory for alarms, warnings and tests		X			
Data logger		X			
E-mail / alarm message (SMS via external Service)		X			
PDF report function		X		X	
Modbus/TCP data access for all BMS devices			X		
Parameter setting for all BMS devices				X	
Complete system visualization import function with visual device monitoring					X

**** This feature is only available when the COM460IP is set as the master of the BENDER communication bus.

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