

COMTRAXX® EDGE500

Condition Monitor with gateway functionality
for the integration and provision of Bender device data



Intended use

The EDGE500 converts alarms, measured values and states of the devices into Modbus TCP, Modbus RTU, SNMP, MQTT and HTTP / HTTPS. This enables connection to customer networks as well as visualisation and evaluation with standard web browsers. It is operated and configured using the web user interface integrated into the device.

Interfaces for acquiring device data

- BCOM
- BMS (intern)
- Modbus RTU
- Modbus TCP

Interfaces for providing device data

- Modbus RTU
- Modbus TCP
- SNMP
- MQTT

The device must always be adapted to the systems and operating conditions on site by means of individual parameterisation in order to meet the requirements of the standards.

Please observe the limits of the application range specified in the technical data. Any other use or use beyond that specified is considered improper.

Applications

- Optimum display and visualisation of device and plant statuses
- Monitoring and analysing Bender devices and compatible third-party devices
- Customised system overview thanks to a wide range of options
- Selective notification to various users in the event of alarms
- Use of professional visualisation programs through conversion to the Modbus TCP, Modbus RTU, SNMP and MQTT protocols
- Clear setting of device parameters. It is possible to save, document and restore parameters
- Commissioning and diagnosis of Bender systems
- Remote diagnosis, remote maintenance

Device features

- Condition monitor for Bender systems
- Integrated modular gateway between Bender systems and TCP/IP enables remote access via LAN, WAN or Internet
- Range of functions adjustable through function modules
- Support of devices that are connected to the internal BMS bus, via BCOM, via Modbus RTU or Modbus TCP
- Individual visualisation can be generated, which is displayed via the web browser

Data transfer interfaces**Function**

The EDGE500 are integrated into the existing IT structure in the same way as PCs. After connection to the network and compatible Bender products, all devices in the system can be accessed from any PC via a web browser. This means that all important system information is directly available. The software is compatible with all standard web browsers.

Scope of functions

Basic device (without function modules)

- Condition monitor with web interface
- Interfaces for the integration of devices
 - Internal BMS bus (max. 150 devices)
 - BCOM (max. 255 devices)
 - Modbus RTU and Modbus TCP (max. 247 devices each)
- Gateway to Modbus TCP: Reading the latest measured values, status/alarm messages from addresses 1...5 of the respective interface via Modbus TCP
- Gateway to Modbus RTU: Reading the latest measured values, status/alarm messages from addresses 1...5 of the internal BMS interface via Modbus RTU
- 2 Ethernet interfaces with 10 Mbit/s | 100 Mbit/s | 1 Gbit/s for remote access via LAN, WAN or Internet
- Parameterisation of the individual EDGE500... device parameters
- Time synchronisation for all assigned devices
- 10 data points from third-party devices (via Modbus RTU or Modbus TCP) can be integrated into the system
- 8 digital inputs
- 3 relay outputs

Function module A: Interfaces

- Reading the latest measured values, status and alarm messages from all assigned devices. Uniform access to all assigned devices via Modbus TCP over integrated server.
- Reading the latest measured values, status and alarm messages from all assigned devices via internal BMS. Uniform access to all assigned devices via Modbus RTU.
- Control commands: From an external application (e.g. visualisation software or PLC), commands can be sent to BMS devices via Modbus TCP or Modbus RTU.
- Access to alarms and measured values via SNMP (V1, V2c or V3). SNMP traps are supported.
- Alarms and measured values are provided via MQTT.
- 2000 data points from third-party devices (Modbus RTU or Modbus TCP) can be integrated into the system.

Function module B: Basic functions

- Display of current measured values, operating/alarm messages and parameters in the system overview
- History memory (20,000 entries)
- Data logger, freely parameterisable (30 x 10,000 entries)
- Creating 100 virtual devices with 16 channels
- Assignment of individual texts for devices, channels (measuring points) and alarms
- Device failure monitoring
- E-mail notification of alarms and system errors to different users
- Creation of device documentation for each device in the system including all parameters and measured values associated with the device, as well as device information such as serial number and software version.
- Creation of system documentation of all devices in the system at once.
- Quick and easy parameterisation of all devices assigned to the gateway using a web browser.
- Creating and restoring device backups for all devices in the system.

Function module C: Visualisation

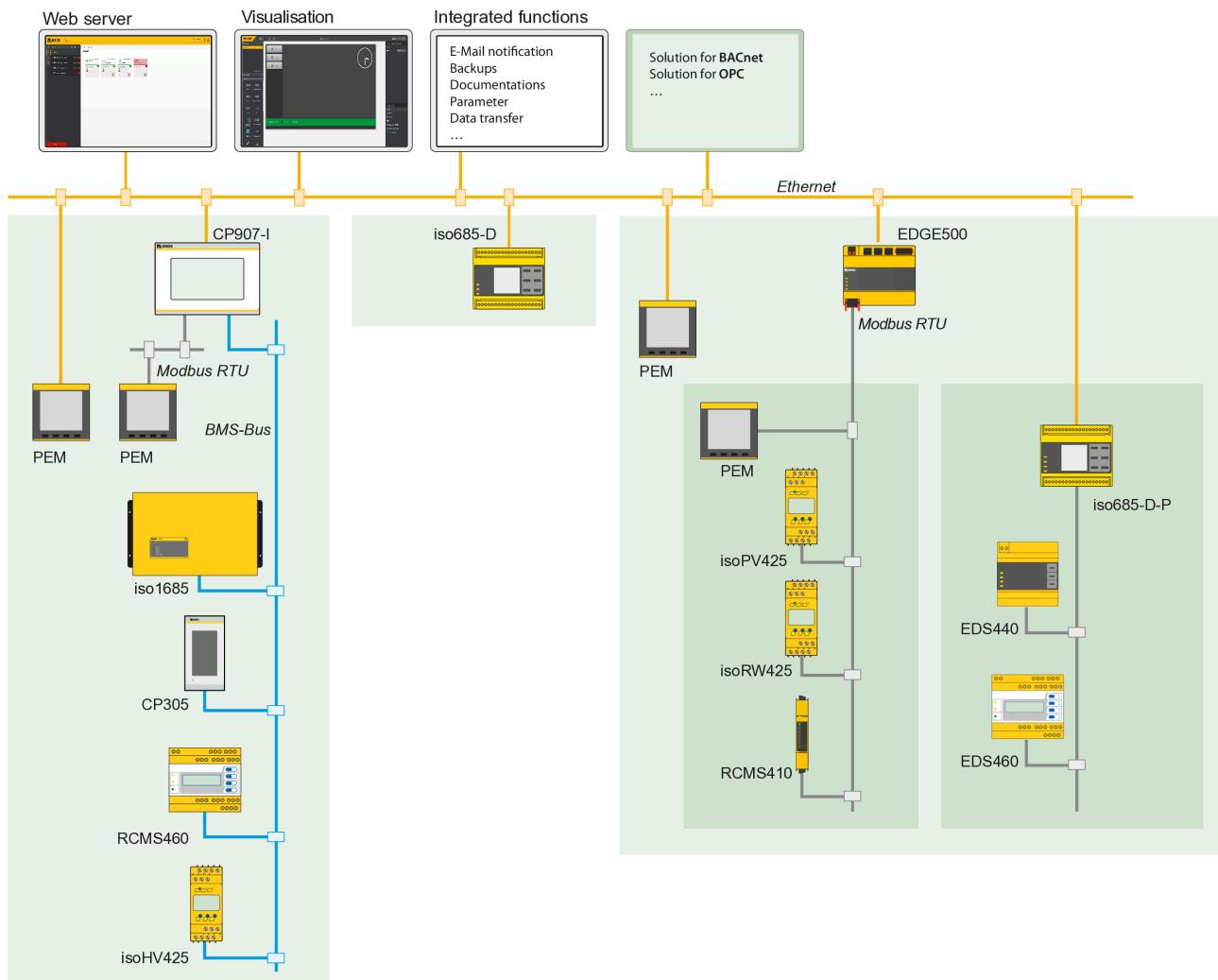
- Quick and easy-to-create visualisation of the system. Integrated editor provides access to a variety of widgets and functions.
- Display on up to 50 overview pages on which, for example, room plans can be stored. Navigation within these overview pages is possible.
- Access to all measured values available in the system.
- Buttons and sliders can be used to send test and reset commands and to control external devices via Modbus TCP.

Interfaces

EDGE500 communicates with the assigned devices and systems via various interfaces:

- Internal BMS bus (RS-485) for Bender systems such as ISOSCAN® EDS150, LINETRAXX® RCMS460-D or ATICS®. EDGE500 can be operated as a master or as a slave. When operated as a master, requests are answered more quickly.

- BCOM (Ethernet) for Bender systems with Ethernet communication such as ISOMETER® iso685-D
- Modbus RTU (RS-485) for Bender devices such as LINETRAXX® SmartDetect RCMS410
- Modbus TCP (Ethernet) for Bender devices such as LINETRAXX® PEM353

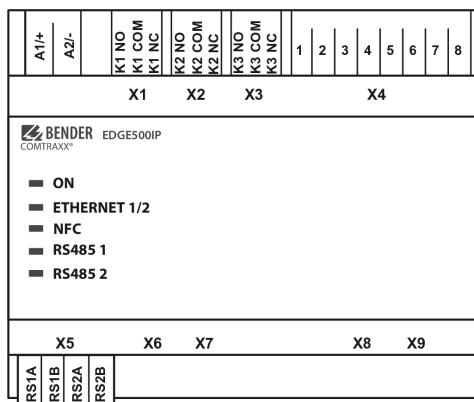


Block diagram

Connections and control elements

For UL applications, the following must be observed:

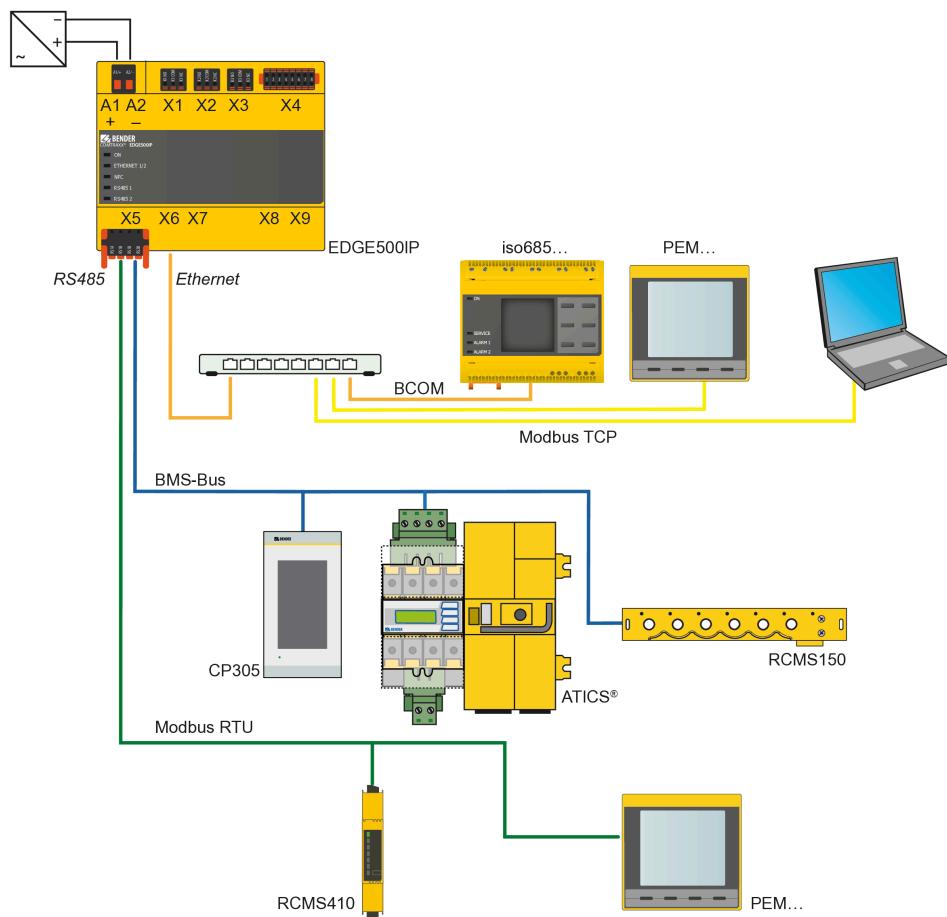
- Maximum ambient temperature: 55 °C
- Use 60/75°C copper lines only



Element	Explanation	Clamp
A1/+; A2/-	Power supply	
Plug X1	Relay output K1	K1 NO K1 COM K1 NC
Plug X2	Relay output K2	K2 NO K2 COM K2 NC
Plug X3	Relay output K3	K3 NO K3 COM K3 NC
Plug X4	Digital inputs	IN1...8
Plug X5	RS-485 interfaces	RS1A RS1B RS2A RS2B
Plug X6	Ethernet interface 1	ETH1
Plug X7	Ethernet interface 2	ETH2
Plug X8	USB-C interface 1	USB1
Plug X9	USB-C interface 2	USB2

Connection diagram

Connection diagram EDGE500 (Example)



Technical data**Insulation coordination in acc. with IEC 60664-1/IEC 60664-3**

Rated voltage	AC 50 V
Overvoltage category	II
Pollution degree	2
Protective separation (reinforced insulation) between	(A1/+, A2/-) - [(X1), (X2), (X3), (X5)]

i Overvoltage category II and pollution degree 2 are related to the **relay contacts**. Further insulation coordination takes place based on functional separation.

Supply voltage

Connections	A1/+. A2/-
Supply voltage U_s	DC 24 V
Range U_s	DC 18...30 V
Protection class Power supply unit	2 or 3
Permissible ripple	5 %
Typical power consumption	≤ 3.5 W
Maximum power consumption	≤ 10.5 W
Inrush current (< 5 ms)	< 1.5 A
Maximum cable length when supplied via B94053111 (24 V DC power supply unit 1.75 A)	
0.28 mm ²	75 m
0.5 mm ²	130 m
0.75 mm ²	200 m
1.5 mm ²	400 m
2.5 mm ²	650 m

Indications

LEDs	
ON	Operation indicator
ETHERNET 1/2	Data traffic ETH1...2
NFC	<i>In preparation</i>
RS485 1	Data traffic RS-485 interface 1
RS485 2	Data traffic RS-485 interface 2

Memory

Number of data points for "third-party devices" on the Modbus TCP and Modbus RTU	50
Individual texts (function module B)	Unlimited number of texts each with 100 characters
E-mail configurations and device failure monitoring (function module B)	Max. 250 entries
Number of data loggers (function module B)	30
Number of data points per data logger (function module B)	10,000
Number of entries in the history memory (function module B)	20,000

Visualisation (Function module C)

Number of dashboards	50
Background image size	Max. 3 MB

Interfaces**RJ45 (X6...7)****Ethernet**

Connection	2 x RJ45
Cable	Shielded, min. Cat. 5
Cable length	< 100 m
Data rate	10/100/1000 MBit/s, autodetect
HTTP mode	HTTP/HTTPS (HTTP)*
DHCP	on/off (off)*
t_{off} (DHCP)	5...60 s (30 s)*
IP address	
First IP address: freely configurable	ETH1 (192.168.0.254)*
nnn.nnn.nnn.nnn	ETH2 (10.0.0.254)*
Second fixed IP address (e.g. for commissioning)	ETH1: 169.254.0.1 ETH2: 169.254.0.2
Netmask	nnn.nnn.nnn.nnn (255.255.0.0)*
Protocols (depending on the selected function module)	TCP/IP, Modbus TCP, Modbus RTU, MQTT, DHCP, SMTP, NTP

BCOM

Interface/protocol	ETH1 / BCOM
BCOM system name	(SYSTEM)*
BCOM subsystem address	1...255 (1)*
BCOM device address	0...255 (0)*

Modbus TCP

Interface/protocol	ETH1...2 / Modbus TCP
Client operating mode	Client for assigned Bender devices and "third-party devices"
Server operating mode	Server for access to process image and for Modbus control commands
Parallel data access from different clients	max. 25
Bender Modbus image	V1, V2 (V2)*

SNMP

Interface/protocol	ETH1...2 / SNMP
Versions	1, 2c, 3
Supported devices	Queries to all devices (channels) possible
Trap support	Yes

MQTT

Interface/protocol	ETH1...2 / MQTT
Operating mode	Publisher (provides data for brokers)
Slots for transferring measured values	255

RS-485 (X5)**BMS bus (internal)**

Interface/protocol	RS-485/BMS internal
Operating mode	Master/slave (master)*
Baud rate	9.6 kBaud
Cable length	≤ 1200 m
Cable	Shielded, one end of shield connected to PE
Cable recommended	CAT6/CAT7 min. AWG23
Cable alternatively	Twisted pair, J-Y (St) Y min. 2x0.8
Connection	X5 (RS2A, RS2B)
Connection type	See connection "Push-wire terminal B"
Terminating resistor	120 Ω (0.25 W), can be switched on via COMTRAXX® software
Device address, internal BMS bus	1...150 (1)*

Modbus RTU

Interface/protocol	RS-485/Modbus RTU
Operating mode	Master/slave (master)*
Baud rate	9.6...57.6 kBaud
Cable length	Depending on the baud rate
9.6 kBaud	< 1200 m
19.2 kBaud	< 1000 m
38.4 kBaud	< 800 m
57.6 kBaud	< 800 m
Cable	Shielded, one end of shield connected to PE
Cable recommended	CAT6/CAT7 min. AWG23
Cable alternatively	Twisted pair, J-Y (St) Y min. 2x0.8
Connection	X5 (RS1A, RS1B)
Connection type	See connection "Push-wire terminal B"
Terminating resistor	120 Ω (0.25 W), can be switched on via COMTRAXX® software
Supported Modbus RTU slave addresses	2...247

USB (X8...9)

Number	2
Connection type	USB-C
Operating mode	USB-2.0-Host (5 V, 500 mA)
Data rate	480 Mbit/s
Cable length	< 3 m

Digital inputs (X4)

Number	8
Galvanic separation	Yes
Maximum cable length	< 1000 m
Operating mode	Selectable for each input: high-active or low-active
Factory setting	high-active
Voltage range (high)	DC 12...30 V
Voltage range (low)	DC 0...2 V
Max. current per channel (at AC/DC 30 V)	8 mA
Connection plug-in terminal	(1-1) (2-2) (3-3) ... (8-8)

Switching elements (X1...3)

For UL applications: Intended use	General purpose relay
Number of changeover contacts	3
Voltage connected to the relay	SELV
Rated operating voltage	DC 24 V
Rated operating current	8 A
Operating principle	N/C operation N/O operation
Function	Programmable
Electrical endurance under rated operating conditions	10,000 operating cycles
Minimum contact load (reference specification of the relay manufacturer)	10 mA / 12 V DC
Connection plug-in terminal	K1 NO K1 COM K1 NC K2 NO K2 COM K2 NC K3 NO K3 COM K3 NC

Overview: Used ports

53	DNS (UDP/TCP)
67, 68	DHCP (UDP)
80	HTTP (TCP)
123	NTP (UDP)
161	SNMP (UDP)
162	SNMP TRAPS (UDP)
443	HTTPS (TCP)
502	MODBUS (TCP)
4840	OPCUA (TCP)
5353	MDNS (UDP)
48862	BCOM (UDP)

Environment / EMC

EMC	EN 61326-1 Table 1 - basic electromagnetic environment EN 61326-1 Table 2 - industrial electromagnetic environment IEC 62974-1:2024-08 Ed. 2.0 Clause 6.7, 7.3 Class 1
Electromagnetic environment	Other than residential environments, CISPR 11:2015/AMD1:2016/AMD2:2019, Group 1, Class A Residential environments, CISPR 11:2015/AMD1:2016/AMD2:2019, Group 1, Class B

Ambient temperatures

Operating temperature	-25...+55 °C
Transport	-40...+85 °C
Long-term storage	-25...+70 °C
Operating altitude	≤ 2000 m AMSL

Classification of climatic conditions acc. to IEC 60721

Stationary use (IEC 60721-3-3)	3K22
Transport (IEC 60721-3-2)	2K11
Long-term storage (IEC 60721-3-1)	1K22

Mechanical conditions acc. to IEC 60721

Stationary use (IEC 60721-3-3)	3M11
Transport (IEC 60721-3-2)	2M4
Long-term storage (IEC 60721-3-1)	1M12

Device connections**Push-wire terminal A (A1/+, A2/-)**

Conductor sizes	AWG 24-12
Stripping length	10 mm
rigid/flexible	0.2...2.5 mm ²
flexible with ferrule with/without plastic sleeve	0.25...2.5 mm ²
Multiple conductor, flexible with TWIN ferrule with plastic sleeve	0.5...1.5 mm ²

Push-wire terminal B (X1, X2, X3, X4, X5)

Conductor sizes	AWG 24-16
Stripping length	10 mm
rigid/flexible	0.2...1.5 mm ²
flexible with ferrule without plastic sleeve	0.2...1.5 mm ²
flexible with ferrule with plastic sleeve	0.2...1.5 mm ²

Other

Operating mode	Continuous operation
Mounting position	Front-orientated, air must pass through cooling slots vertically
Degree of protection, internal components (IEC 60529)	IP30
Degree of protection, terminals (IEC 60529)	IP20
Snap-on mounting on a DIN rail	IEC 60715
Screw mounting	3 x M4
Type of enclosure	J460
Enclosure material	Polycarbonate
Flammability class	UL94V-0
Dimensions (W x H x D)	107.5 x 93 x 62.9 mm
Weight	≤ 240 g

()* = Factory setting

Approvals



EU Declaration of Conformity

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

https://www.bender.de/fileadmin/content/Products/CE/CEKO_EDGE500.pdf

UKCA Declaration of Conformity

The full text of the UKCA Declaration of Conformity is available via:

https://www.bender.de/fileadmin/content/Products/UKCA/UKCA_EDGE500.pdf

Ordering information

Device

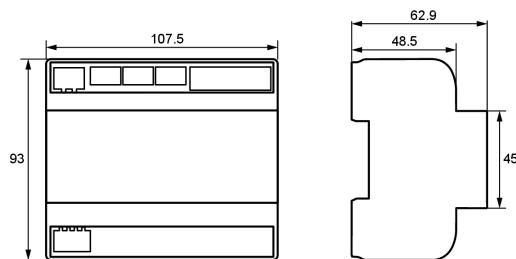
Type	Application	Supply voltage U_s	Power consumption	Art. No.
EDGE500IP	<ul style="list-style-type: none"> Condition monitor with gateway functionality Integration and provision of Bender device data 	DC 24 V	≤ 3.5 W	B95061250

Function modules

Function module (Software licence)	Function	Art. No.
Function module A	Interfaces Modbus TCP / RTU: Full data access Modbus TCP / RTU Control commands BMS SNMP MQTT Integrate Modbus third-party devices (2,000 data points)	B75061030
Function module B	Technical (Engineering) System overview Parameterisation Backups Documentation Customised texts E-mail notification Device failure monitoring History memory Data logger Virtual devices	B75061031
Function module C	Visualisation Visualisation / Editor Alarm addresses / test addresses Customised system overview	B75061032

Dimension diagram

Dimensions in mm





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Subject to change!

The specified standards take into account the
edition valid until 12.2025 unless otherwise
indicated.