COMTRAXX® COM465IP/COM465DP

Condition Monitor with integrated Gateway
for the connection of Bender devices to PROFIBUS DP
and Ethernet-TCP/IP networks

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BENDER

COMTRAXX® COM465IP/COM465DP

Condition Monitor with integrated Gateway for the connection of Bender devices to PROFIBUS DP and Ethernet-TCP/IP networks

Data transfer interfaces

Modbus

PI CERTIFIED PROFIBUS • PROFINET

SNMP Simple Network Management Protocol

MQTT

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 or external BMS bus, via BCOM, via Modbus RTU or Modbus TCP
- Individual visualisation can be generated, which is displayed via the web browser
- Additional to COM465DP only: integrated gateway between the Bender system and PROFIBUS DP.

Intended use

COMTRAXX® COM465IP is referred to in this manual as "COM465IP".
COMTRAXX® COM465DP is referred to in this manual as "COM465DP".
The devices are referred to as "COM465…P" in texts that apply to both.

The COM465…P connects the following devices to Ethernet TCP/IP and PROFIBUS DP networks

- Bender devices with BMS bus or BCOM interface
- Bender devices with Modbus RTU or Modbus TCP

A COM465…P converts alarms, measured values and states of the devices into Modbus TCP, SNMP and HTTP protocols. This conversion enables coupling to Modbus TCP networks as well as data display and evaluation using standard web browsers.
It is operated and configured using the web user interface integrated into the device.

COM465DP only: The gateway makes the system information available on PROFIBUS DP.

Applications

- Optimum display and visualisation of device and plant statuses in the web browser
- Monitoring and analysis of compatible Bender products and third-party devices
- Customised plant overview through individual plant description
- Selective notification to various users in the event of alarms
- Using professional visualisation programs, which are implemented on the Modbus TCP, Modbus RTU, or PROFIBUS DP protocol
- Clear setting of device parameters. Storing, documenting and restoring parameters is possible
- Commissioning and diagnosis of Bender systems
- Remote diagnosis, remote maintenance

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) and external[1)] BMS bus (max. 99 x 150 devices)
  - BCOM (max. 255 devices)
  - Modbus RTU and Modbus TCP (max. 247 devices each)
- Remote display of the latest measured values, status/alarm messages and parameters[1)]
- Gateway to Modbus TCP: Reading the latest measured values, status/alarm messages from addresses 1…10 of the respective interface via Modbus TCP
- Gateway to Modbus RTU: Reading the latest measured values, status/alarm messages from addresses 1…10 of the internal BMS interface via Modbus RTU
- Ethernet interface with 10/100 Mbit/s for remote access via LAN, WAN or Internet
- Setting of internal device parameters and parameters of devices connected via Modbus RTU and Modbus TCP [2)]
- Time synchronisation for all assigned devices
- History memory (20,000 entries)
- Data logger, freely configurable (30 x 10,000 entries)
- 50 data points from third-party devices (via Modbus RTU or Modbus TCP) can be integrated into the system
- A virtual device with 16 channels can be created.

[1)] Displaying the parameters of BMS bus devices is only possible if the gateway is connected to the internal BMS bus.

[2)] Parameters can be set via web application and externally (via BMS/ICOM/BCOM), but not via Modbus. The parameters of assigned devices can only be read; function module C is necessary for modification of settings.

Additional for COM465DP only:

- Support for external applications (e.g. visualisation programs or PLCs) by means of the PROFIBUS DP protocol.
- Reading the latest measured values, status and alarms messages from all assigned devices. Uniform access to all assigned devices by means of PROFIBUS DP via integrated servers.

Examples

- To write parameters via Modbus, function modules B and C are required.
- To read parameters via Modbus, function module B is required.
- In order to use a visualisation in combination with the individual texts, the function modules A and D are required.
- Parameterisation via PROFIBUS is only possible with COM465DP and function module C.

Function module A

- Assignment of individual texts for devices, channels (measuring points) and alarms
- Device failure monitoring
- E-mail notification to different users in case of alarms or system errors.
- Device documentation of any device in the system can be generated.*
  It contains all parameters and measured values belonging to the device, as well as device information such as serial number and software version.
- System documentation can be generated. It documents all devices in the system at once.

* Generating device documentation of BMS bus devices is only possible if the gateway is connected to the internal BMS bus.

Function module B

- Reading the latest measured values, status and alarms 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.
- Access via PROFINET to alarms and measured values.
- Alarms and measured values are provided via MQTT.

Function module C

- Fast and easy parameter setting of all devices* assigned to the gateway via a web browser.
- Device backups of all devices in the system can be created and restored.

* The parameterisation of BMS bus devices is only possible if the gateway is connected to the internal BMS bus.

Function module D

- 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 BMS test and reset commands and to control external devices via Modbus TCP.

Function module E

100 virtual devices with 16 channels each can be created.

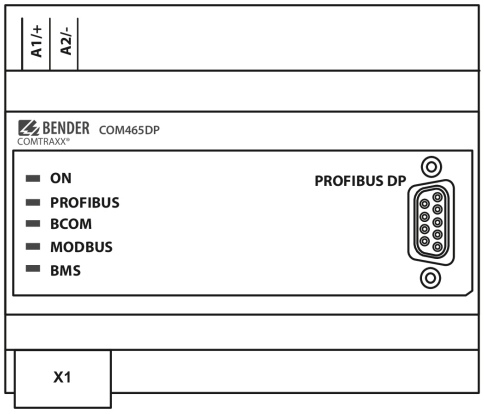
Function module F

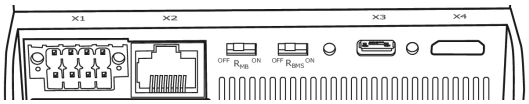
1600 data points from third-party devices (via Modbus RTU or Modbus TCP) can be integrated into the system.

Connections and control elements

For UL applications, the following must be observed:

- Maximum ambient temperature: 55 °C
- Use 60/70°C copper lines only





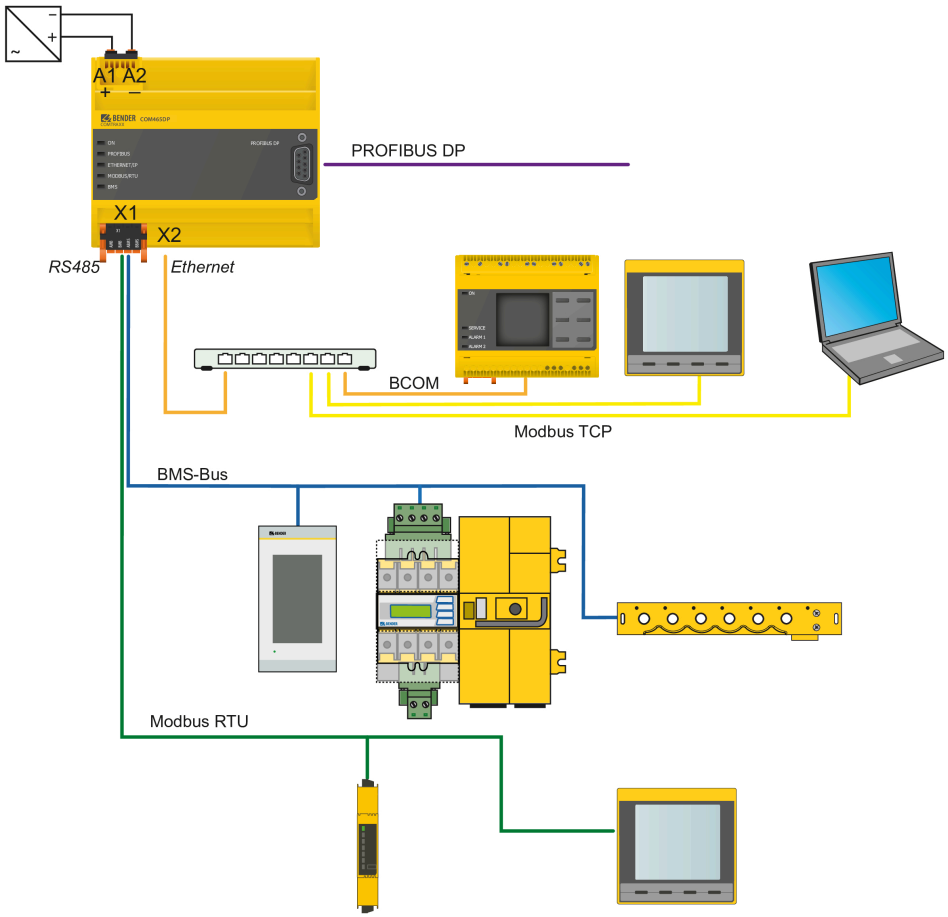
Element	Explanation
A1/+; A2/-	Power supply
PROFIBUS DP	PROFIBUS DP connection (COM465DP only)
Plug **X1**	Modbus/RTU interface: Terminals **A**MB and **B**MB
	BMS bus (Bender measuring device interface): Terminals **A**BMS and **B**BMS
Plug **X2**	Ethernet connection (RJ45) for the connection to the PC network as well as to BCOM
R_{MB}	Modbus RTU terminating resistor switch
R_{BMS}	BMS bus terminating resistor switch
Plug **X3**	Micro-USB interface (currently has no function)
Plug **X4**	Not equipped

LED	Function
ON	"ON" LED: Flashes during the start process. The LED lights continuously as soon as the device is ready for operation.
PROFIBUS BCOM MODBUS BMS	LEDs indicate activity on the various interfaces. The LED "PROFIBUS" exists only in the COM465DP.

Wiring diagram

Wiring diagram COM465…P (example)

PROFIBUS DP for COM465DP only



Technical data

( )* = Factory setting

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

Rated voltage	AC 250 V
Rated impulse withstand voltage/ overvoltage category	4 kV / III
Pollution degree	3
Protective separation (reinforced insulation) between	(A1/+, A2/-) - [(AMB, BMB), (ABMS, BBMS), (X2), (X3, X4), (PROFIBUS DP)]

Supply voltage

Supply voltage U_s	AC/DC 24…240 V
Frequency range U_s	50…60 Hz
Power consumption	≤ 6.5 VA / ≤ 4 W

Indications

LEDs	
ON	operation indicator
PROFIBUS *(COM465DP only)*	data traffic PROFIBUS DP
BCOM	data traffic Ethernet
MODBUS	data traffic Modbus
BMS	data traffic BMS
Ethernet (terminal X2)	lights during network connection flashes during data transfer

Memory

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

Visualisation

Number of pages	50
Background image size	3 MB

Interfaces

Ethernet

Connection	RJ45
Cable length	< 100 m
Data rate	10/100 MBit/s, autodetect
HTTP mode	HTTP/HTTPS (HTTP)*
DHCP	on/off (on)*
t_{off} (DHCP)	5…60 s (30 s)*
IP address	
nnn.nnn.nnn.nnn	(192.168.0.254)*
can always be reached via	169.254.0.1
Netmask	nnn.nnn.nnn.nnn (255.255.0.0)*
Protocols (depending on function module selected)	TCP/ IP, Modbus TCP, Modbus RTU, DHCP, SMTP, NTP

BMS-Bus (internal/external)

Interface/protocol	RS-485/BMS internal or BMS external (BMS internal)*
Operating mode	master/slave (master)*
Baud rate BMS internal	9.6 kBit/s
Baud rate BMS external	(19.2 / 38.4 / 57.6) kBit/s
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	X1 (ABMS, BBMS)
Connection type	see connection "Push-wire terminal X1"
Terminating resistor	120 Ω (0.25 W), can be switched on internally
Device address, internal/external BMS bus	1…150 (1)*/2…99

BCOM

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

Modbus

Bender Modbus image	V1, V2 (V2)*

Modbus TCP

Interface/protocol	Ethernet/Modbus TCP
Operating mode	client for Bender devices and "third-party devices" assigned
Operating mode	server for access to process image and for Modbus control commands
Parallel data access from different clients	max. 25

Modbus RTU

Interface/protocol	RS-485/Modbus RTU
Operating mode	master/slave (master)*
Baud rate	9,6…57.6 kBit/s
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	X1 (AMB, BMB)
Connection type	see connection "Push-wire terminal X1"
Terminating resistor	120 Ω (0.25 W), can be switched on internally
Supported Modbus RTU slave addresses	2…247

PROFINET

Interface/protocol	Ethernet/PROFINET
Operating mode	slave (IO device)

SNMP

Interface/protocol	Ethernet/SNMP
Versions	1, 2c, 3
Supported devices	queries to all devices (channels) possible
Trap support	yes

MQTT

Interface/protocol	Ethernet/MQTT
Operating mode	Publisher (provides data for brokers)

PROFIBUS DP (COM465DP only)

Interface/protocol	electrically isolated/PROFIBUS DP
Operating mode	slave
Baud rate	automatic baud rate detection: 9,6 kBit/s…1,5 MBit/s (9,6 / 19,2 / 93,75 / 187,5 / 500) kBit/s / 1,5 MBit/s
Connection	Sub D 9-pin
Device address, PROFIBUS DP	1…125 (3)*

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

Ambient temperatures

Operating temperature	–25…+55 °C
Transport	–40…+85 °C
Long-term storage	–25…+70 °C

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

Connection

Connection type	pluggable push-wire terminals

Push-wire terminals

Conductor sizes	AWG 24-12
Stripping length	10 mm
rigid/flexible	0.2…2.5 mm²
flexible with ferrule with/without plastic sleeve	0.25…2.5 mm²
Multiple conductor, flexible with TWIN ferrule with plastic sleeve	0.5…1.5 mm²

Push-wire terminal X1

Conductor sizes	AWG 24-16
Stripping length	10 mm
rigid/flexible	0,2…1.5 mm²
flexible with ferrule without plastic sleeve	0.25…1.5 mm²
flexible with ferrule with plastic sleeve	0.25…0.75 mm²

Other

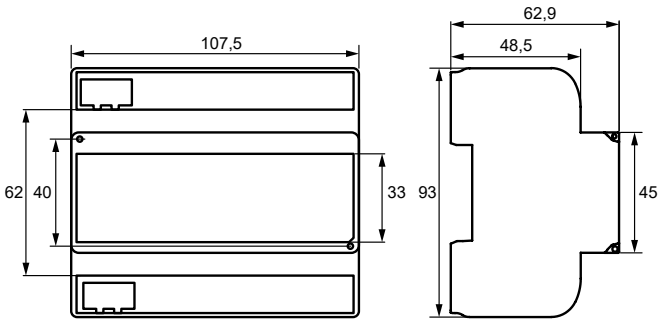
Operating mode	continuous operation
Mounting position	front-orientated, air must pass through cooling slots vertically
Degree of protection, internal components (IEC 60529)	IP30
Degree of protection, terminals (IEC 60529)	IP20
Snap-on mounting on a DIN rail	IEC 60715
Screw mounting	3 x M4
Type of enclosure	J460
Enclosure material	polycarbonate
Flammability class	UL94V-0
Dimensions (W x H x D)	107.5 x 93 x 62.9 mm
Software	D0472
Weight	≤ 240 g

( )* = Factory setting

Standards, approvals and certifications

Certification by the PROFIBUS Nutzerorganisation e.V. (PNO) is available. PROFIBUS conformity: Z02007

Dimensions



Dimension diagram (in mm)

Ordering information

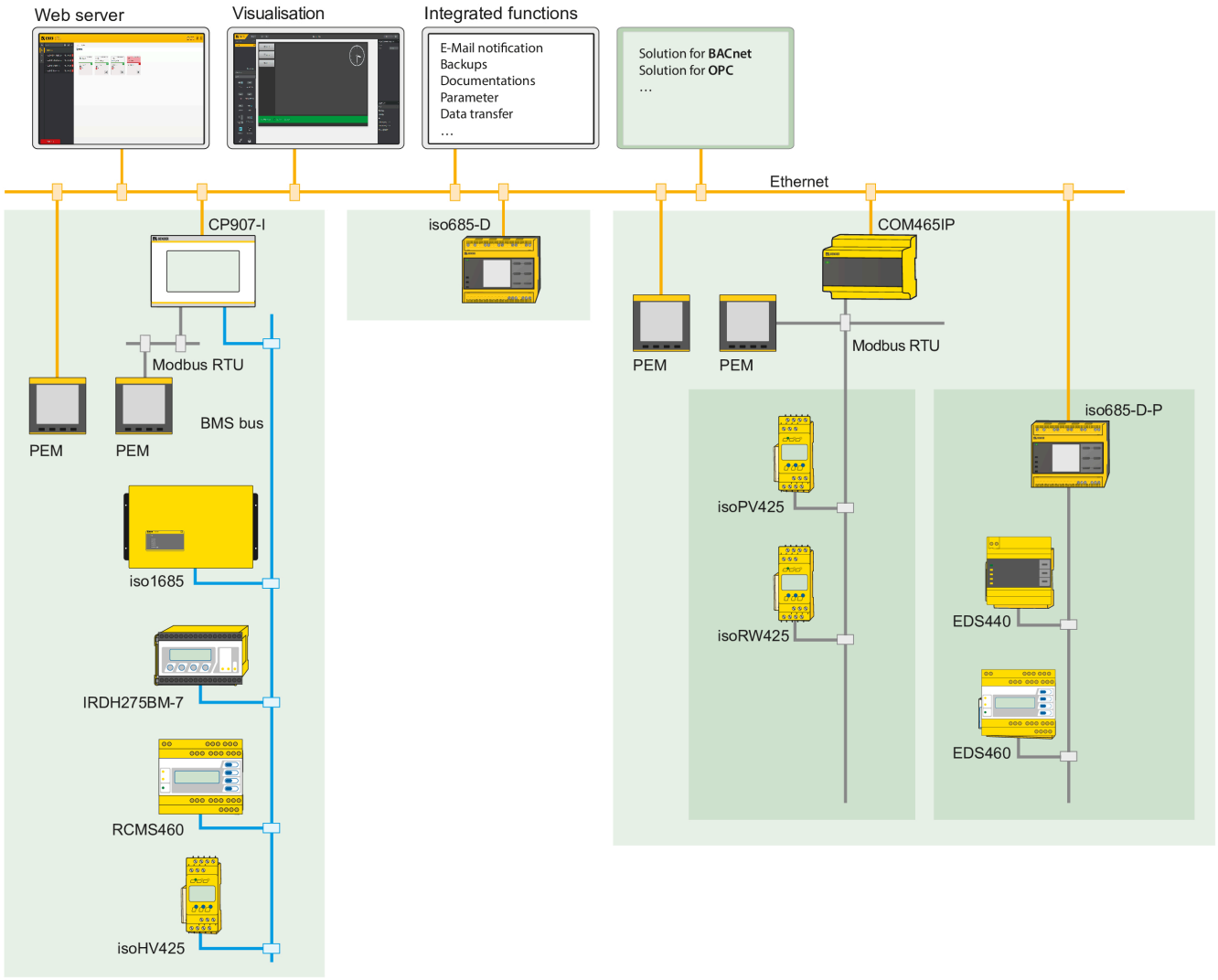
Device

Type	Application	Supply voltage/ frequency range U_s	Power consumption	Art. No.
COM465DP-230V	Condition monitor with an integrated gateway (Bender system / PROFIBUS DP / Ethernet)	AC/DC 24…240 V 50…60 Hz	≤ 6.5 VA / ≤ 4 W	B95061060
COM465IP-230V	Condition monitor with an integrated gateway (Bender system / Ethernet)	AC/DC 24…240 V 50…60 Hz	≤ 6.5 VA / ≤ 4 W	B95061065

Function modules

Function module (Software licence)	Function	Art. No.
Function module **A**	Individual texts for devices/channels, device failure monitoring, e-mail in the event of an alarm, device documentation	B75061011
Function module **B**	Provision of data via Modbus TCP and Modbus RTU, SNMP server with trap function, PROFINET, MQTT	B75061012
Function module **C**	Parameterisation of all integrated devices, device backups	B75061013
Function module **D**	Visualisation application	B75061014
Function module **E**	Virtual devices	B75061015
Function module **F**	Integrating third-party devices	B75061016

Application example



Schematic diagram COM465…P

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