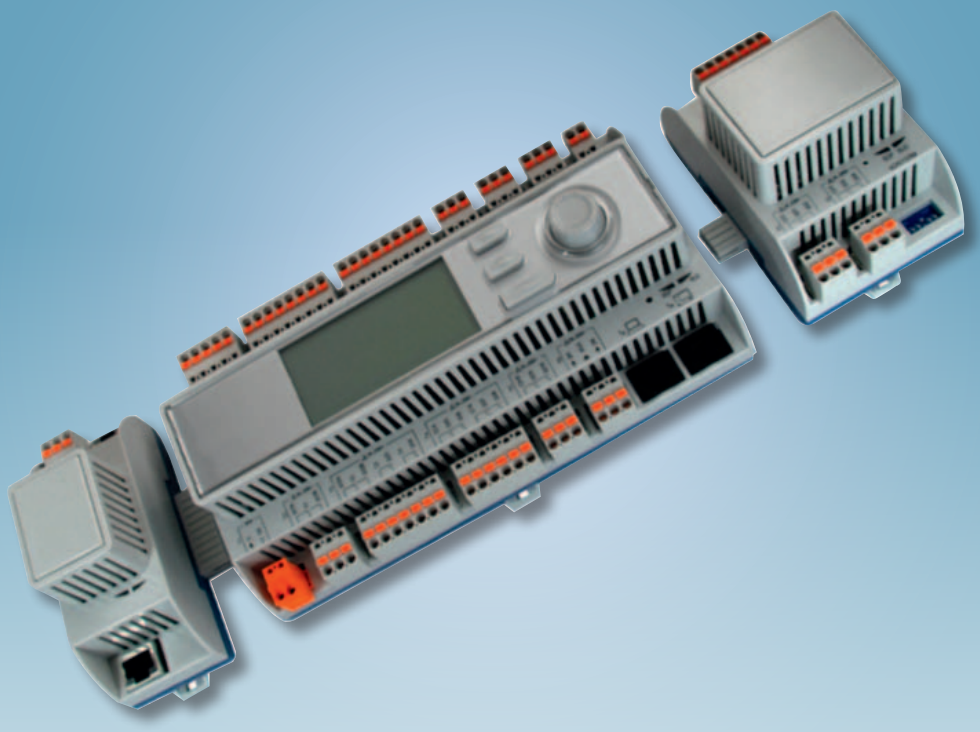
Chillers

Technical Data

Communication modules



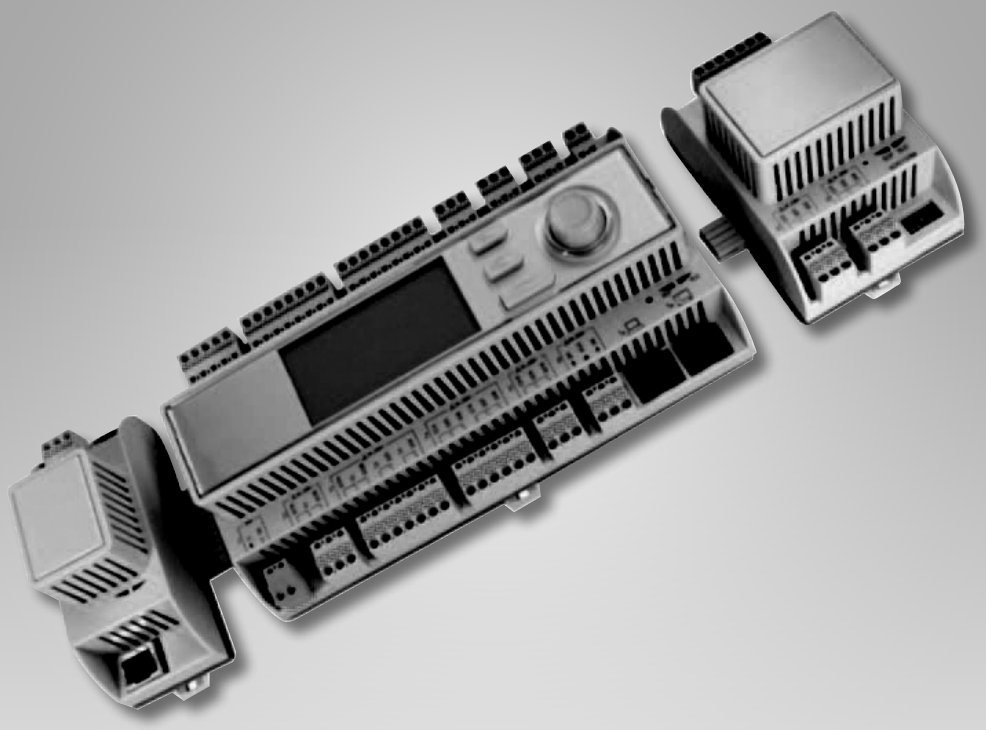
EEDEN12-436

DAIKIN

Chillers

Technical Data

Communication modules



EEDEN12-436

TABLE OF CONTENTS

Communication modules

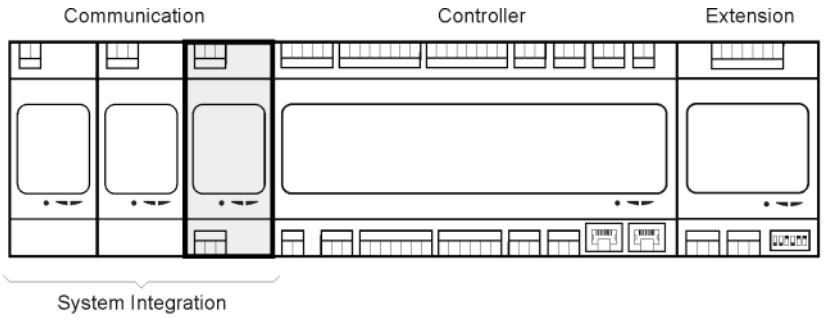
Modbus communication module EKCM200J

Communication module to connect a MicroTech controller to a Modbus network.

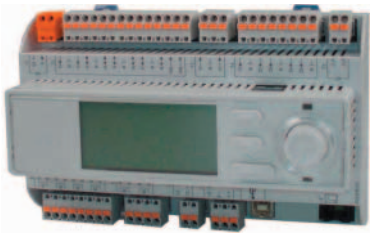
The EKCM200J communication module offers the following features:

- **Integration into a building automation and control system via RS 485 Modbus RTU**
- **The module features 2 Modbus slave communication ports**
- **Galvanically isolated connection to the Modbus network**
- **The module must be connected to a controller**

Installation concept



Technical data

General data	Dimensions	W x H x D: 45 x 110 x 75 mm
	Weight excl. packaging	85 g
	Base	Plastic, pigeon-blue RAL 5014
	Housing	Plastic, light-grey RAL 7035
	Power supply	Via system interface from controller DC 5 V (+5%/–5%), max. 140 mA
Modbus	RS-485 (EIA-485)	T1 and T2
	Two Modbus interfaces	
	Bus electronics	Galvanically isolated
	Bus connection	+, -, REF
	Bus cable	Shielded if length >3 m, twisted pair
	Bus termination (switch by software)	680 Ω / 120 Ω +1nF / 680 Ω
	Baud rate	2400, 4800, 9600, 19200 and 38400
Connection terminals	Equipped with plug	2 Phoenix FKCT 2,5 /3-ST
 **Example FKCT**		
	Solid wire	0.5…2.5 mm²
	Stranded wire (twisted or with ferrule)	0.5…1.5 mm²
COMM interface plug	Board-to-board	ZEC1,0/10-LPV-3,5 GY35AUC2CI1
  Board-to-board connector 		
System interface	Equipped with board-to-board plug	ZEC1,0/10-LPV-3,5 GY35AUC2CI1

Environmental conditions

Operation	IEC 721-3-3
Temperature	-40...70 °C
Humidity	<90% r.h.
Atmospheric pressure	Min. 700 hPa, corresponding to max. 3,000 m above sea level
Transport	IEC 721-3-2
Temperature	-40...70 °C
Humidity	<95% r.h.
Atmospheric pressure	Min. 260 hPa, corresponding to max. 10,000 m above sea level

Protection

Degree of protection	IP20 (EN 60529)

Standards

Product safety	
Automatic electrical controls	EN 60730-1
Electromagnetic compatibility	
Immunity	EN 60730-1 +A16
Emissions	EN 60730-1 +A16
Immunity in the industrial sector	EN 61000-6-2
Emissions in the domestic sector	EN 61000-6-3
CE conformity	
EMC directive	2004/108/EC
Low-voltage directive	2006/95/EC
Listings	UL916, UL873
	CSA C22.2M205
RoHS directive	2002/95/EC (Europe)
	ACPEIP (China)

Register and mappings

Only one slave configured	2 slaves configured
2000 coils	2000 coils (per slave)
2000 state	2000 state (per slave)
2000 holding	1000 holding (per slave)
2000 input	1000 input (per slave)
2000 active mappings	2000 active mappings total for both slaves (max. 1000 on slave 1 and max. 1000 on slave 2)

Ordering data

Modbus module	EKCM200J

Modbus service pin LEDs for diagnostics

Service pin button > 

LEDs for BSP and BUS diagnostics (green, red and yellow)

Mode	BUS LED status
	Green on
	Yellow on
Hardware error	Red on

Mode	BSP LED status
BSP running and communication with controller	Green on
BSP running but no communication with controller	Yellow on
BSP error (software error)	Red blinking at 2 Hz
Hardware error	Red on
BSP upgrade mode	BSP LED green, BUS LED alternating at 1 Hz between red and green

Engineering notes

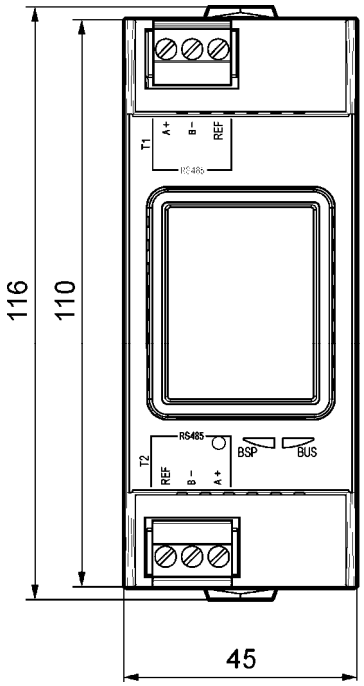
- The communication module is attached to the controller with a board-to-board connector
- The connection to the Modbus is made via the connector T1 and T2 ports

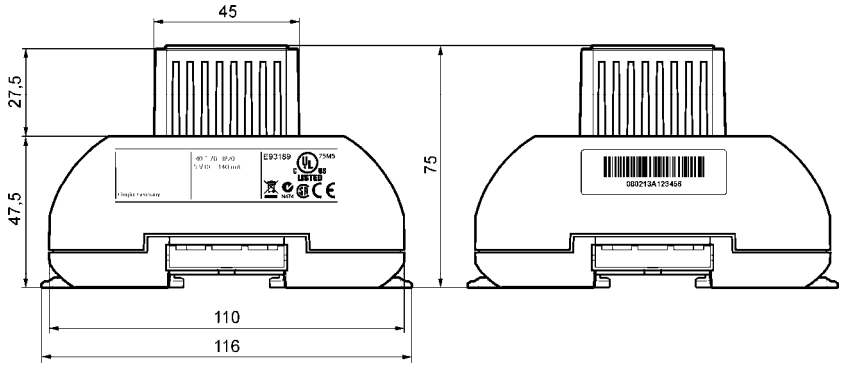
Disposal notes

The module contains electrical and electronic components and must not be disposed of together with household waste.

Local and currently valid legislation must be observed!

Layout of EKCM200J communication module





Right side

Left side

LON communication Module EKCMLON

Communication module to connect a MicroTech controller to a LON network.

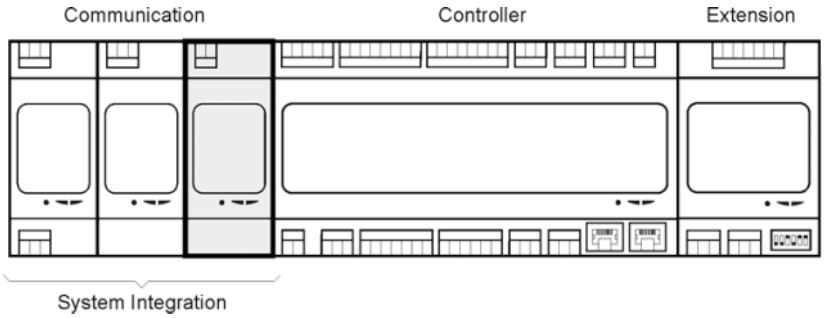
The EKCMLON communication module offers the following features:

- **Integration into a building automation and control system via LON network**
- **It includes a LON network controller (Neuron chip) which handles the complete LON network protocol and the user application**
- **Galvanically isolated connection to the LON network via the 78 kbaud TP/FT-10 transceiver**
- **User applications can be downloaded into the flash memory using standard LON tools**
- **Tooling via LON**
- **The module must be connected to the left side of a controller**

The LON protocol

LonWorks is a networking platform specifically created to address the unique performance, reliability, installation, and maintenance needs of control applications. The platform is built on a protocol created by Echelon Corporation for networking devices via media such as twisted pair, powerlines, fiber optics, and RF. It is popular for the automation of various functions within buildings such as lighting and HVAC.

Installation concept



Technical data

General data	Dimensions	W x H x D: 45 x 110 x 75 mm
	Weight excl. packaging	85 g
	Base	Plastic, pigeon-blue RAL 5014
	Housing	Plastic, light-grey RAL 7035
	Power supply	Via system interface from controller DC 5 V (+5% / –5%), max. 80 mA
LON	LON interfaces	Plug-in terminals Galvanically isolated 2 wires, interchangeable
	LON data memory	56 kbyte flash memory for the user application
Connection terminals	Equipped with plug	1 Phoenix FKCT 2,5 /2-ST
	Solid wire	0.5…2.5 mm²
	Stranded wire (twisted or with ferrule)	0.5…1.5 mm²
COMM interface plug	Board-to-board	ZEC1,0/10-LPV-3,5 GY35AUC2CI1


Example FKCT


Board-to-board connector

System interface	Equipped with board-to-board plug	ZEC1,0/4-LPV-3,5 GY35AUC2CI1
Environmental conditions	Operation	IEC 721-3-3
	Temperature	-40...70 °C
	Humidity	<90% r.h.
	Atmospheric pressure	Min. 700 hPa, corresponding to max. 3,000 m above sea level
	Transport	IEC 721-3-2
	Temperature	-40...+70 °C
	Humidity	<95% r.h.
	Atmospheric pressure	Min. 260 hPa, corresponding to max. 10,000 m above sea level
Protection	Degree of protection	IP20 (EN 60529)
Standards	Product safety	
	Automatic electrical controls	EN 60730-1
	Electromagnetic compatibility	
	Immunity	EN 60730-1 +A16
	Emissions	EN 60730-1 +A16
	CE conformity	
	EMC directive	2004/108/EC
	Low-voltage directive	2006/95/EC
	Listings	
		UL916, UL873
		CSA C22.2M205
	RoHS directive	
		2002/95/EC (Europe)
		ACPEIP (China)
Ordering data	LON module	EKCMLON

LON service pin and LEDs for diagnostics

Service pin button > used for LON addressing

LEDs for BSP and BUS diagnostics (green, red and yellow)

Mode	BUS LED status
Lon communication ok	Green on
Initialization of LON communication	Yellow on
Hardware error	Red on

Mode	BSP LED status
BSP running and communication with controller	Green on
BSP running but no communication with controller	Yellow on
BSP error (software error)	Red blinking at 2 Hz
Hardware error	Red on
BSP upgrade mode	Every second alternating between red and yellow

Engineering notes

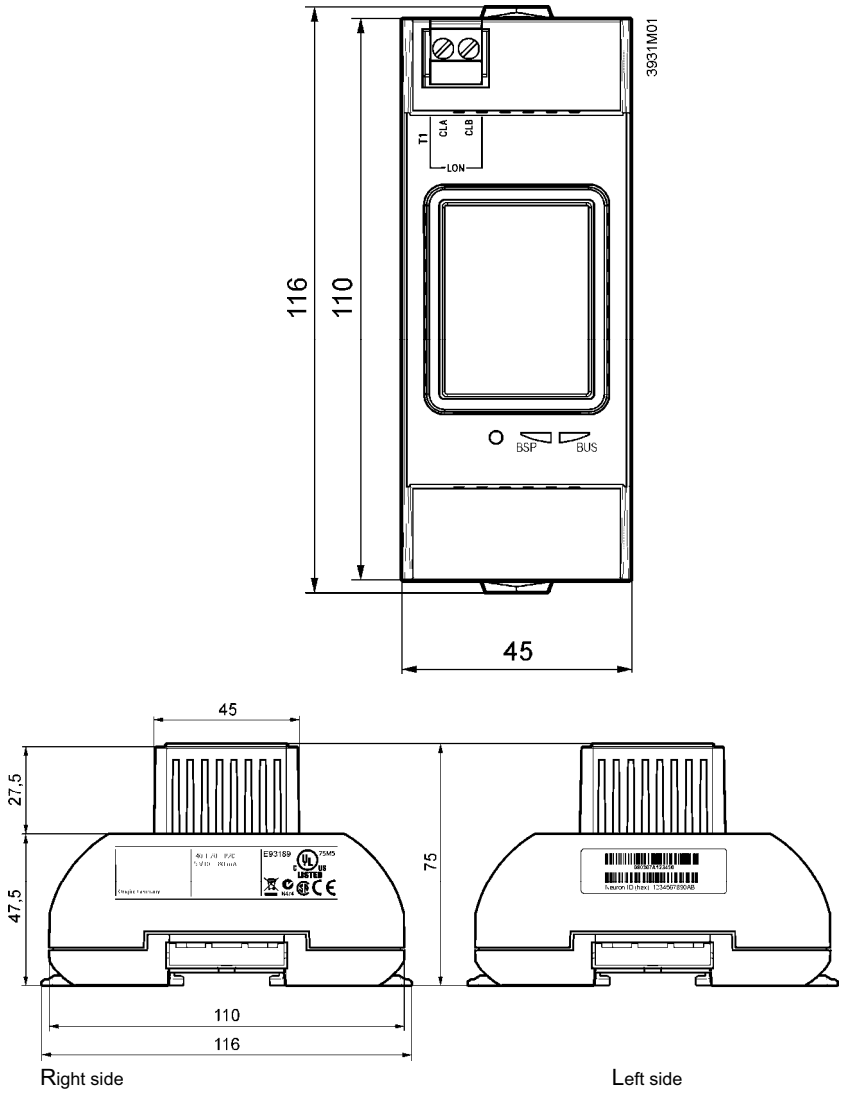
- The communication module is attached to the controller with a board-to-board connector
- The connection to the LON bus is made via the T1 port

Disposal notes

The module contains electrical and electronic components and must not be disposed of together with household waste.

Local and currently valid legislation must be observed!

Layout of EKCMLON communication module



Subject to change

BACnet IP communication module EKCMBACIP

Communication module to connect a MicroTech controller to a BACnet IP network.

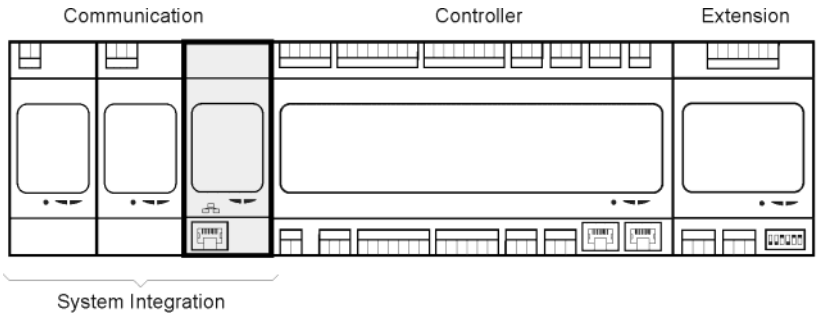
The EKCMBACIP communication module offers the following features:

- **Integration into a building automation and control system via BACnet IP**
- **Client communication to other BACnet devices**
- **Preloaded generic BACnet server**
- **Supports BACnet/IP (B-BC profile and BBMD)**
- **Network parameters configurable via controller, HMI or SCOPE**
- **The module must be connected to the left side of a controller**

The BACnet / IP protocol

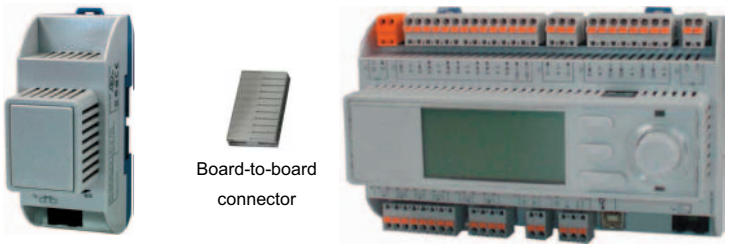
BACnet protocol was designed specifically to meet the communication needs of building automation and control systems for applications such as heating, ventilation, and air conditioning control, lighting control, access control, and fire detection systems and their associated equipment.
The BACnet protocol provides mechanisms by which computerized building automation devices can exchange information, regardless of the particular building service they perform. As a result, the BACnet protocol may be used by head-end workstations, general-purpose direct digital controllers, and application-specific or unitary controllers with equal effect.

Installation concept



Technical data

General data	Dimensions	W x H x D: 45 x 110 x 75 mm
	Weight excl. packaging	97g
	Base	Plastic, pigeon-blue RAL 5014
	Housing	Plastic, light-grey RAL 7035
	Power supply	Via system interface from controller DC 5 V (+5% / –5%), max. 270 mA
BACnet IP	Ethernet 10/100 Mbit (IEEE 802.3U)	
	Cable connection	RJ45 jack, 8 pins
	BACnet / IP interface	Supports B-AAC profile
COMM interface plug	Board-to-board	ZEC1,0/10-LPV-3,5 GY35AUC2CI1
System interface	Equipped with board-to-board plug	ZEC1,0/10-LPV-3,5 GY35AUC2CI1



Environmental conditions	Operation	IEC 721-3-3
	Temperature	-40...70 °C
	Humidity	<90% r.h.
	Atmospheric pressure	Min. 700 hPa, corresponding to max. 3,000 m above sea level
	Transport	IEC 721-3-2
	Temperature	-40...70 °C
	Humidity	<95% r.h.
	Atmospheric pressure	Min. 260 hPa, corresponding to max. 10,000 m above sea level
Protection	Degree of protection	IP20 (EN 60529)
Standards	Product safety	
	Automatic electrical controls	EN 60730-1
	Electromagnetic compatibility	
	Immunity	EN 60730-1 +A16
	Emissions	EN 60730-1 +A16
	CE conformity	
	EMC directive	2004/108/EC
	Low-voltage directive	2006/95/EC
	Listings	
		UL916, UL873
		CSA C22.2M205
	RoHS directive	
		2002/95/EC (Europe)
		ACPEIP (China)
Ordering data	BACnet / IP module	EKCMBACIP

BACnet IP
LEDs for diagnostics

LEDs for BSP and BUS diagnostics (green, red and yellow)

Mode	BUS LED status
BACnet IP running and communication ok	Green on
IP not running	Yellow on
Hardware error	Red on

Mode	BSP LED status
BSP running and communication with controller	Green on
BSP running but no communication with controller	Yellow on
BSP error (software error)	Red blinking at 2 Hz
Hardware error	Red on
BSP upgrade mode	Every second alternating between red and yellow

Engineering notes

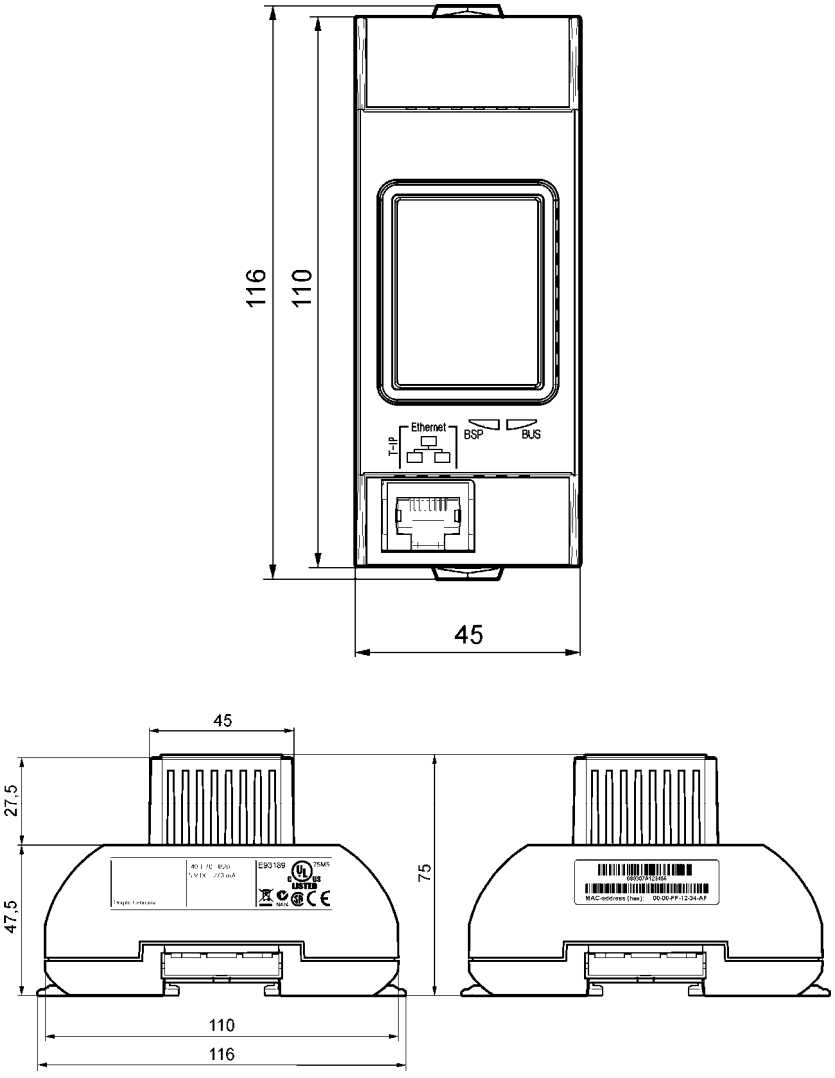
- The communication module is attached to the controller with a board-to-board connector
- The connection to Ethernet is made via T-IP port (RJ45 jack)

Disposal

The module contains electrical and electronic components and must not be disposed of together with household waste.

Local and currently valid legislation must be observed!

Layout of EKCMBACIP communication module



Right side

Left side

Subject to change

BACnet MS/TP communication module EKCMBACMSTP

Communication module to connect a MicroTech controller to a BACnet MS/TP network.

The EKCMBACMSTP communication module offers the following features:

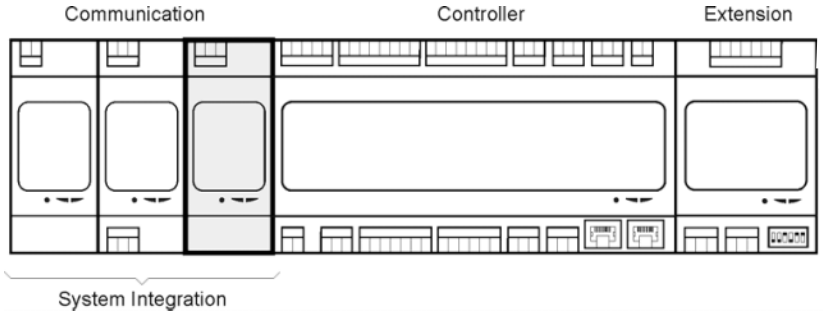
- **Integration into a building automation and control system via BACnet MS/TP**
- **The module must be connected to a controller**
- **Supports BACnet MS/TP (B-BC profile) with different Baud rates**
- **Network parameters configurable via controller, HMI or SCOPE**
- **Preloaded generic BACnet server**

The BACnet MS/TP protocol

BACnet protocol was designed specifically to meet the communication needs of building automation and control systems for applications such as heating, ventilation, and air conditioning control, lighting control, access control, and fire detection systems and their associated equipment.
The BACnet protocol provides mechanisms by which computerized building automation devices can exchange information, regardless of the particular building service they perform. As a result, the BACnet protocol may be used by head-end workstations, general-purpose direct digital controllers, and application-specific or unitary controllers with equal effect.

MS/TP (Master-Slave/Token-Passing) is also unique to BACnet and is implemented using the EIA-485 signaling standard. This is a shielded twisted-pair (STP) LAN operating at speeds from 9.6 kbit/s up to 76.8 kbit/s. This LAN type is low cost and particularly suitable for unitary controller communications.

Installation concept



Technical data

General data	Dimensions	W x H x D: 45 x 110 x 75 mm
	Weight excl. packaging	98g
	Base	Plastic, pigeon-blue RAL 5014
	Housing	Plastic, light-grey RAL 7035
	Power supply	Via bus connector DC 5 V (+5% / –5%), max. 270 mA
BACnet MS/TP	RS-485 (EIA-485)	
	Bus connection / electronics	Galvanically isolated
	Bus connection	A+, B-, REF (3 wires)
	Bus termination (switch by software)	680 Ω / 120 Ω +1 nF / 680 Ω
Connection terminals	Equipped with plug	Phoenix FKCT 2,5 /3-ST
	Solid wire	0.5…2.5 mm²
	Stranded wire (twisted or with ferrule)	0.5…1.5 mm²

Example FKCT

COMM interface plug

Board-to-board

Board-to-board connector

ZEC1,0/10-LPV-3,5 GY35AUC2CI1

System interface	Equipped with board-to-board plug	ZEC1,0/10-LPV-3,5 GY35AUC2CI1
Cable types	RS-485 interface	3-wire twisted pair, shielded
Environmental conditions	Operation	IEC 721-3-3
	Temperature	-40...70 °C
	Humidity	<90% r.h.
	Atmospheric pressure	Min. 700 hPa, corresponding to max. 3,000 m above sea level
	Transport	IEC 721-3-2
	Temperature	-40...70 °C
	Humidity	<95% r.h.
	Atmospheric pressure	Min. 260 hPa, corresponding to max. 10,000 m above sea level
Protection	Degree of protection	IP20 (EN 60529)
Standards	Product safety	
	Automatic electrical controls	EN 60730-1
	Electromagnetic compatibility	
	Immunity	EN 60730-1 +A16
	Emissions	EN 60730-1 +A16
	CE conformity	
	EMC directive	2004/108/EC
	Low-voltage directive	2006/95/EC
	Listings	
		UL916, UL873
		CSA C22.2M205
	RoHS directive	
		2002/95/EC (Europe)
		ACPEIP (China)
Ordering data	BACnet MS/TP module	EKCMBACMSTP

MSTP
LEDs for diagnostics

LEDs for BSP and BUS diagnostics (green, red and yellow)

Mode	BUS LED status
BACnet MS/TP running and communication ok	Green on
MS/TP not running	Yellow on
Hardware error	Red on
Mode	**BSP LED status**
BSP running and communication with controller	Green on
BSP running but no communication with controller	Yellow on
BSP error (software error)	Red blinking at 2 Hz
Hardware error	Red on
BSP upgrade mode	Every second alternating between red and yellow

Engineering notes

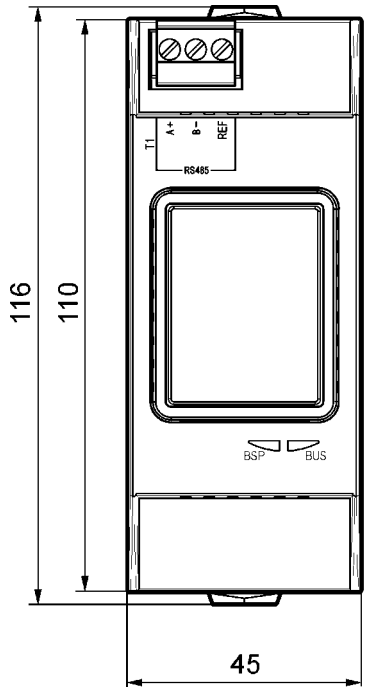
- The communication module is attached to the controller with a board-to-board connector
- The connection to the MSTP network is made via theT1 port

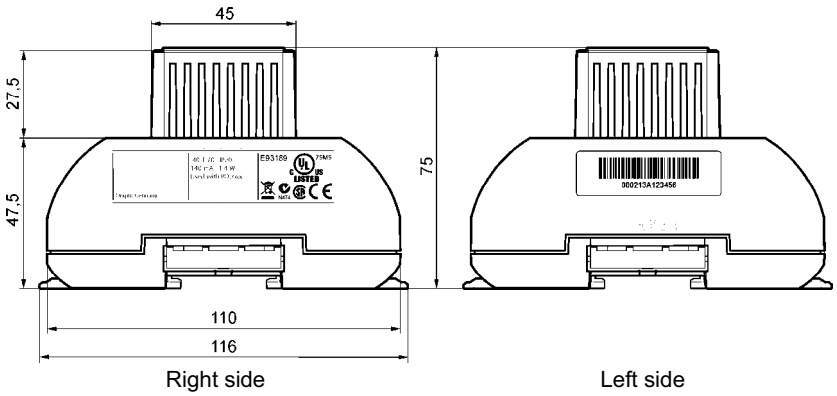
Disposal notes

The module contains electrical and electronic components and must not be disposed of together with household waste.

Local and currently valid legislation must be observed!

Layout of EKCMBACNSTP communication module





Right side

Left side

Subject to change

Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues. For several years Daikin has had the intention to become a leader in the provision of products that have limited impact on the environment. This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.

Daikin products are distributed by:

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Responsible Editor: Daikin Europe N.V., Zandvoordestraat 300, B-8400 Oostende