kamstrup

Data sheet

BACnet® MS/TP-module

Communication module for MULTICAL® 62/601/602/801/6L2/6M2

- Compatible with ASHRAE 135 and ISO 16484-5
- Complies with BACnet® Application Specific Controller Profile (B-ASC)
- Up to 76,800 bits/sec.
- Two pulse inputs for additional water and electricity meters
- Supports multiple property reading and writing for efficient communications
- Supports automatic device and object discovery by BACnet® devices and workstations
- Supports BACnet® automatic time synchronization including support for cross time zone synchronization via UTC Time Synchronization service
- RS-485 galvanically isolated from meter

BACnet® is a registered trademark of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

Contents

Description	2
BACnet® MS/TP Addressing	3
Supported BACnet® services	3
BACnet® Object Map	4
BACnet® Interoperability Building Blocks (BIBBs)	5
Connection	6
Technical data	7
Ordering	8

Description

Application
BACnet® is a widespread and established field bus protocol used within building automation.

BACnet® is standardized according to ASHRAE 135 and ISO 16484-5.

The MS/TP BACnet® base module for MULTICAL® ensures a simple integration from Kamstrup's heat, cooling and water meters to BACnet® based systems.

The BACnet® module is mounted in MULTICAL® and is used for data transfer from MULTICAL® heat, cooling and water meters to a BACnet® system.

Functionality
The BACnet® module communicates with BACnet® on MS/TP via RS-485 as a master/slave or slave device.

The BACnet® module transfers a number of both actual data as well as accumulated data.

Furthermore, info codes for general alarm, flow error, temperature, error, water leakage, pipe burst, air in system, and wrong flow direction can be transmitted to the BACnet® Controller.

The two pulse inputs allow connection and reading of two additional meters for e.g. water and electricity with pulse output.

Reliability
The RS-485 port of the BACnet® module is galvanically separated from the meter's voltage potential thereby improving the security for smooth operations. At the same time, the risk of influencing the meter due to influences of the RS-485 port is reduced to a minimum.

The BACnet® module is in full compliance with and included in the MID approval for MULTICAL®.

BACnet® MS/TP Addressing

The module can be addressed as master in the MAC address range 1-127 and as slave when configured to use an MAC address in the range of 128-254. MAC address 0 is used for auto assignment and 255 is used for broadcast.

Default the BACnet® MAC address is equal to the last three digits of the meters customer number.

If the customer number of the meter results in an address larger than 254, only the last two digits are used for the BACnet® MAC address of the module.

The address of the BACnet® module is changeable via the optical interface of the meter and the PC programs METERTOOL and Address Changer.

The instance number of the BACnet® module is default determined by the last 5 digits of the meter's customer number.

Please contact Kamstrup for further information.

Supported BACnet® services

The BACnet® module supports the following service

- BACnet® Application Specific Controller (B-ASC)
- BACnet® Master Mode by the use of address range 1-127
- BACnet® Slave Mode by the use of address range 128-254

BACnet® Object Map

Below listed BIBBs are supported:

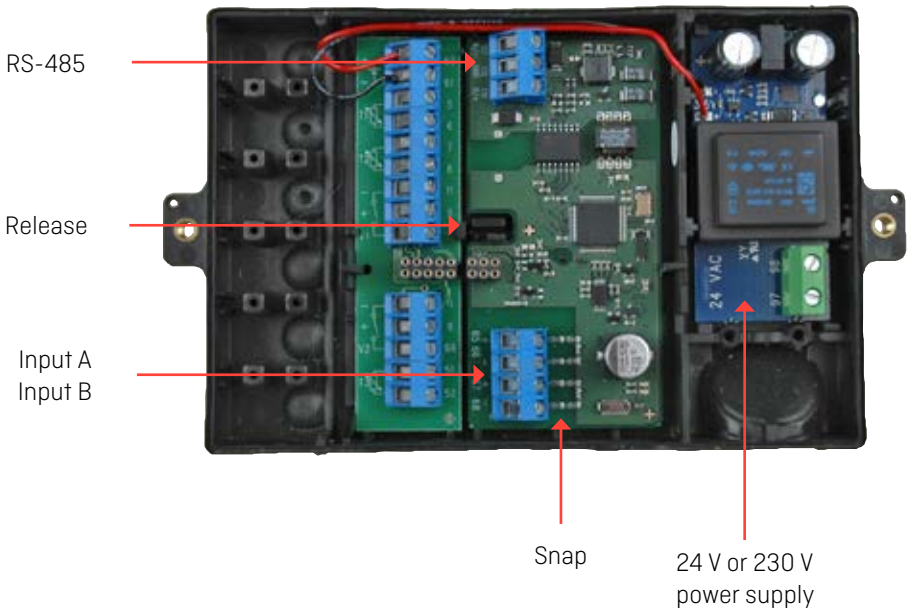
Description	ID	Name	Used units
Device	Last 5 digits of meter number	MULTICAL BACnet	Dimensionless
Analog input	AI-0	Serial number	Dimensionless
Analog input	AI-1	Accumulated heat energy (E1)	kWh, MWh
Analog input	AI-2	Accumulated cooling energy (E3)	kWh, MWh
Analog input	AI-3	Accumulated volume (V1)	l, m^3
Analog input	AI-4	Actual flow	l/h, m^3/h
Analog input	AI-5	Actual power	W, kW, MW
Analog input	AI-6	Pulse input A accumulated	l, m^3, kWh, MWh
Analog input	AI-7	Pulse input B accumulated	l, m^3, kWh, MWh
Analog input	AI-8	IInfo code	Dimensionless
Analog input	AI-9	Flow temperature	°C
Analog input	AI-10	Return temperature	°C
Analog input	AI-11	Differential temperature	K

BACnet® Interoperability Building Blocks (BIBBs)

Below listed BIBBs are supported:

BIBB	Name	BACnet® Service	Init	Exec
Data Sharing				
DS-RP-B	Data Sharing - Read Property-B	ReadProperty		X
DS-RPM-B	Data Sharing - Read Property Multiple-B	ReadPropertyMultiple		X
DS-WP-B	Data Sharing - Write Property-B	WriteProperty		X
DS-WPM-B	Data Sharing - Write Property Multiple-B	WritePropertyMultiple		X
Device Management				
DM-DDB-B	Device Management - Dynamic Device Binding-B	Who-Is		X
		I-Am	X	
DM-DOB-B	Device Management - Dynamic Object Binding-B	Who-Has		X
		I-Have	X	
DM-DCC-B	Device Management - Device Communication Control-B	DeviceCommunicationControl		X
DM-TS-B	Device Management - Time Synchronization-B	TimeSynchronization		X
DM-UTC-B	Device Management - UTC Time Synchronization-B	UTCTimeSynchronization		X
DM-RD-B	Device Management - Reinitialize Device-B	ReinitializeDevice		X

Connection



The module is mounted in the connecting base of the meter in the following way:

The module is placed in the "Snap" at an angle and is thereafter pushed towards the connecting base until the "Release" clicks around the meter's PCB.

The module is removed in the following way:

The module is released by pressing the "Release" upwards, and at the same time drawing the connection terminals at the top of the module..

Electrical connection:

The BACnet® module is automatically connected with the meter via the 6-pole connector just below the "Release" when the top part of the meter is mounted.

The RS-485 cable is connected via the cable inlets on the connecting base.

Technical data

Device Instance Number	Last 5 digits of the meter number. The meter number is configurable via METERTOOL and Kamstrup Module Programmer.
Transferred data	- Meter number (programmable) - Serial number - Accumulated heat energy (E1) - Accumulated cooling energy (E3) - Accumulated volume flow (V1) - Flow temperature - Return temperature - Temperature difference - Actual flow - Actual power - Accumulated values from additional meters with via pulse InA, InB - Info codes
Hardware	The module is power supplied from the meter's internal 230 VAC/3.6 VDC or 24 VAC/3.6 VDC supply module.
Supported meter types	MULTICAL® 62/601/602/801/6L2/6M2
Bus communication	RS-485 twisted pair
RS-485 connection	Screw terminals for - A/- - B/+ - GND
Bus termination	By use of external resistor
BACnet® Vendor ID Number	Kamstrup Vendor ID: 546
Device Object Name	MULTICAL BACnet
Data Link Layer	According to MS/TP Master/Slave
Communication speed	The module supports following communication speeds with auto speed detection: - 9600 bit/sec. - 19200 bit/sec. - 38400 bit/sec. - 76800 bit/sec.
Data update interval	MULTICAL® 601: 30 sec. MULTICAL® 62/602/801/6L2/6M2: 10 sec.
Approvals	
– CE	
– BTL certification	BACnet® Application Specific Controller Profile (B-ASC)
– WSPCert	BACnet® Application Specific Controller Profile (B-ASC)
Related documentation	BACnet® Protocol Implementation Conformance Statement (PICS) – 5512-1160

Ordering

Type No.	Model No.	Description
67 00 66	5550-1240	BACnet® MS/TP + pulse inputs
	5098-834	Module Programmer for Windows 7+8+10, www.kamstrup.com

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