kamstrup

Protocol Implementation
Conformance Statement (PICS)

MULTICAL® 403
MULTICAL® 603

BACnet®

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BACnet® Protocol Implementation Conformance Statement

Date:	2018.04.12
Vendor Name:	Kamstrup A/S
Vendor ID:	546
Product Name:	BACnet MS/TP module for MULTICAL XX3
Product Model Number:	HC-003-66
Application Software Version:	1.0
Firmware Revision:	E1
BACnet Protocol Revision:	14

Product Description

The BACnet base module for MULTICAL® heat cooling and water meters communicates with BACnet on MS/TP via RS-485 as master or slave.

The module is supported by following products: MULTICAL® 403/603.

BACnet Standardized Device Profile (Annex L)

- ☐ BACnet Operator Workstation (B-OWS)
- ☐ BACnet Advanced Operator Workstation (B-AWS)
- ☐ BACnet Operator Display (B-OD)
- ☐ BACnet Building Controller (B-BC)
- ☐ BACnet Advanced Application Controller (B-AAC)
- ☑ **BACnet Application Specific Controller (B-ASC)**
- ☐ BACnet Smart Sensor (B-SS)
- ☐ BACnet Smart Actuator (B-SA)

List all BACnet Interoperability Building Blocks Supported (Annex K)

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
DS-COV-B*	Data Sharing – Change Of Value-B	SubscribeCOV		X
		ConfirmedCOVNotification	X	
		UnconfirmedCOVNotification	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

*DS-COV-B, DM-DDB-B and DM-DOB-B are only supported when acting as a master.

Segmentation Capability

☐ Able to transmit segmented messages Window Size _____

☐ Able to receive segmented messages Window Size _____

Description	ID	Name	Most often used units	Read/Write
Device	Last 5 digits of meter number	Kamstrup HC-003-66	Dimensionless	Read
Analog Input	AI-0	Flow 1	l/h, m^3/h	Read
Analog Input	AI-1	Flow 2	l/h, m^3/h, No Units	Read
Analog Input	AI-2	Actual power	W, kW, MW, j, kj, Gj (No Units)	Read
Analog Input	AI-3	Temp. 1 Inlet	°C	Read
Analog Input	AI-4	Temp. 2 Outlet	°C	Read
Analog Input	AI-5	Temp 3	°C, No Units	Read
Analog Input	AI-6	Temp 4	°C, No Units	Read
Analog Input	AI-7	Differential temp.	°K	Read
Analog Input	AI-8	Pressure 1	Bar, No Units	Read
Analog Input	AI-9	Pressure 2	Bar, No Units	Read
Analog Input	AI-10	Heat energy E1	Wh,kWh, MWh	Read
Analog Input	AI-11	E2	Wh,kWh, MWh, No Units	Read
Analog Input	AI-12	Cooling energy E3	Wh,kWh, MWh	Read
Analog Input	AI-13	Energy E4	Wh,kWh, MWh, No Units	Read
Analog Input	AI-14	Energy E5	Wh,kWh, MWh, No Units	Read
Analog Input	AI-15	Energy E6	Wh,kWh, MWh, No Units	Read
Analog Input	AI-16	Energy E7	Wh,kWh, MWh, No Units	Read
Analog Input	AI-17	Energy E8 (T1*m3)	m3 x C (No Units)	Read
Analog Input	AI-18	Energy E9 (T2*m3)	m3 x C (No Units)	Read
Analog Input	AI-19	Energy E10	Wh,kWh, MWh, No Units	Read
Analog Input	AI-20	Energy E11	Wh,kWh, MWh, No Units	Read
Analog Input	AI-21	Tariff 2		Read
Analog Input	AI-22	Tariff 3		Read
Analog Input	AI-23	Tariff 4		Read
Analog Input	AI-24	Heat with discount A1	kWh, MWh	Read
Analog Input	AI-25	Heat with surcharge A2	kWh, MWh	Read
Analog Input	AI-26	Volume V1	l, m3	Read
Analog Input	AI-27	Volume V2	l, m3, No Units	Read
Analog Input	AI-28	Pulse input A	l, m3, kWh, MWh	Read
Analog Input	AI-29	Pulse input B	l, m3, kWh, MWh	Read
Analog Input	AI-30	Pulse input A2	l, m3, kWh, MWh, No Units	Read
Analog Input	AI-31	Pulse input B2	l, m3, kWh, MWh, No Units	Read
Analog Input	AI-32	Coefficient of performance CP		Read
Analog Input	AI-33	T5 Limit		Read
Analog Input	AI-34	VB Power		Read
Analog Input	AI-35	QP Avg Time	Seconds, Minutes	Read
Analog Input	AI-36	Tariff Limit 2		Read
Analog Input	AI-37	Tariff Limit 3		Read
Analog Input	AI-38	Tariff Limit 4		Read
Analog Input	AI-39	Mass 1	Ton, No Units	Read
Analog Input	AI-40	Mass 2	Ton, No Units	Read
Positive Integer Value	PIV-0	Info code	No Units	Read
Positive Integer Value	PIV-1	Hour Counter	Hours	Read
Positive Integer Value	PIV-2	Error Hour Counter	Hours	Read
Positive Integer Value	PIV-3	Config. No. 1	No Units	Read
Positive Integer Value	PIV-4	Config. No. 2	No Units	Read
Positive Integer Value	PIV-5	Config. No. 3	No Units	Read
Positive Integer Value	PIV-6	Config. No. 4	No Units	Read
Positive Integer Value	PIV-7	Meter No. (high)	No Units	Read
Positive Integer Value	PIV-8	Meter No. (low)	No Units	Read
Positive Integer Value	PIV-9	Serial Number	No Units	Read
Positive Integer Value	PIV-10	Meter Type	No Units	Read
Positive Integer Value	PIV-11	Meter Main/Sub Type	No Units	Read

Detailed Object information

Device Object:

Property Identifier	Property Datatype	Conformance Code	Value
Object_Identifier	BACnetObjectIdentifier	W	(Device, 0-4194303)
Object_Name	CharacterString	W	“Kamstrup HC-003-66” (Max. 31 characters)
Object_Type	BACnetObjectType	R	Device
System_Status	BACnetDeviceStatus	R	OPERATIONAL
Vendor_Name	CharacterString	R	“Kamstrup A/S”
Vendor_Identifier	Unsigned16	R	546
Model_Name	CharacterString	R	“HC-003-66”
Firmware_Revision	CharacterString	R	“B1”
Application_Software_Version	CharacterString	R	“1.0”
Description	CharacterString	O	"BACnet MS/TP module for MULTICAL xx3"
Property List	BACnetARRAY[N] of BACnetPropertyIdentifier	R	{[25 Elements]}
Active COV Subscriptions	BACnetLIST of BACnetCOVSubscription	O	{}
Protocol_Version	Unsigned	R	1
Protocol_Revision	Unsigned	R	14
Protocol_Services_Supported	BACnetServicesSupported	R	{F,F,F,F,F,T,F,F,F,F,F,F,T,F,T,T,T,T,F,F,T,F,F,F,F,F,F,F,F,F,F,F,F,F,T,T,T,F,T,F,F,F,F} SubscribeCov* ReadProperty ReadPropertyMultiple WriteProperty WritePropertyMultiple DeviceCommunicationControl ReinitializeDevice TimeSynchronization Who-Has* Who-Is* UtcTimeSynchronization
Protocol_Object_Types_ Supported	ProtocolObjectTypes Supported	R	{T,F,F,F,F,F,F,F,F,T,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,T,F,F,F,F,F,F,F} Analog_Input Device Positive Integer Value

Object_List	BACnetARRAY[N] of BACnetObjectIdentifier	R	{
			(device, last 5 digits of meter number)
			(analog-input 0-40),
			(positive-integer-value, 0-11),
			}

Max_APDU_Length_Accepted	Unsigned	R	480
Segmentation_Supported	BACnetSegmentation	R	no-segmentation
Local_Time	Time	O	hh:mm:ss:ms
Local_Date	Date	O	yy:mm:dd, wday
UTC_Offset	INTEGER	W	0 (-780 to 780)
Daylight_Savings_Status	BOOLEAN	O	FALSE
APDU_Timeout	Unsigned	R	10000
Number_Of_APDU_Retries	Unsigned	R	3
Max_Master**	Unsigned(1..127)	W	127 (1 – 127)
Max_Info_Frames	Unsigned	W	2 (1 – 255)
Device_Address_Binding	List of DeviceAddressBinding	R	{}
Database_Revision	Unsigned	R	0

*SubscribeCov, Who-Has and Who-Is are only supported when acting as a master.

**Max Master is only writable when acting as a master.

Analog-input Object

Property Identifier	Property Datatype	Conformance Code	Value
Object_Identifier	BACnetObjectIdentifier	R	(analog-input, 0-40)
Object_Name	CharacterString	R	See standard object table above
Object_Type	BACnetObjectType	R	analog-input
Present_Value	REAL	R (W)	-
Description	CharacterString	R	Object Name plus unit description.
Property List	BACnetARRAY[N] of BACnetPropertyIdentifier	R	{[8 Elements]}

Status_Flags	BACnetStatusFlags	R	{
			IN_ALARM,
			FAULT,
			OVERRIDDEN,
			OUT_OF_SERVICE
			}

Event_State	BACnetEventState	R	NORMAL
Reliability	BACnetReliability	O	NO_FAULT_DETECTED, NO_SENSOR
Out_Of_Service	BOOLEAN	W	TRUE or FALSE
Unit	BACnetEngineeringUnits	R	See standard object table above
COV Increment	REAL	O	1

Positive Integer Value

Property Identifier	Property Datatype	Conformance Code	Value
Object_Identifier	BACnetObjectIdentifier	R	(positive-integer-value, 0-11)
Object_Name	CharacterString	R	See standard object table above
Object_Type	BACnetObjectType	R	positive-integer-value
Description	CharacterString	R	Object Name plus unit description.
Property List	BACnetARRAY[N] of BACnetPropertyIdentifier	R	{[7 Elements]}
Present_Value	Unsigned	R (W)	-

Status_Flags	BACnetStatusFlags	R	{
			IN_ALARM,
			FAULT,
			OVERRIDDEN,
			OUT_OF_SERVICE
			}

Reliability	BACnetReliability	O	NO_FAULT_DETECTED
Out_Of_Service	BOOLEAN	W	TRUE or FALSE
Unit	BACnetEngineeringUnits	R	See standard object table above
COV Increment	Unsigned	O	1

Data Link Layer Options

☐ BACnet IP, (Annex J)
☐ BACnet IP, (Annex J), Foreign Device
☐ ISO 8802-3, Ethernet (Clause 7)
☐ ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
☐ ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s) _____
☑ **MS/TP master (Clause 9), baud rate(s): 9600, 19200, 38400, 57600, 76800, 115200**
☑ **MS/TP slave (Clause 9), baud rate(s): 9600, 19200, 38400, 57600, 76800, 115200**
☐ Point-To-Point, EIA 232 (Clause 10), baud rate(s):
☐ Point-To-Point, modem, (Clause 10), baud rate(s): _____
☐ LonTalk, (Clause 11), medium: _____
☐ BACnet/ZigBee (ANNEX O)
☐ Other: _____

Device Address Binding

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) ☐ Yes ☑ No

Networking Options

☐ Router, Clause 6 - List all routing configurations, e.g. ARCNET-Ethernet, Ethernet-MS/TP, etc.
☐ Annex H, BACnet Tunneling Router over IP
☐ BACnet/IP Broadcast Management Device (BBMD)

Does the BBMD support registrations by Foreign Devices? ☐ Yes ☐ No
Does the BBMD support network address translation? ☐ Yes ☐ No

Network Security Options

☐ Non-secure Device - is capable of operating without BACnet Network Security
☐ Secure Device - is capable of using BACnet Network Security (NS-SD BIBB)
  ☐ Multiple Application-Specific Keys:
  ☐ Supports encryption (NS-ED BIBB)
  ☐ Key Server (NS-KS BIBB)

Character Sets Supported

Indicating support for multiple character sets does not imply that they can all be supported simultaneously

☑ **ISO 10646 (UTF-8)**	☐ IBM™/Microsoft™ DBCS	☐ ISO 8859-1	☐ ANSI X3.4
☐ ISO 10646 (UCS-2)	☐ ISO 10646 (UCS-4)	☐ JIS X 0208	

If this product is a communication gateway, describe the types of non-BACnet equipment/networks(s) that the gateway supports: N/A