

## BACnet MS/TP Module

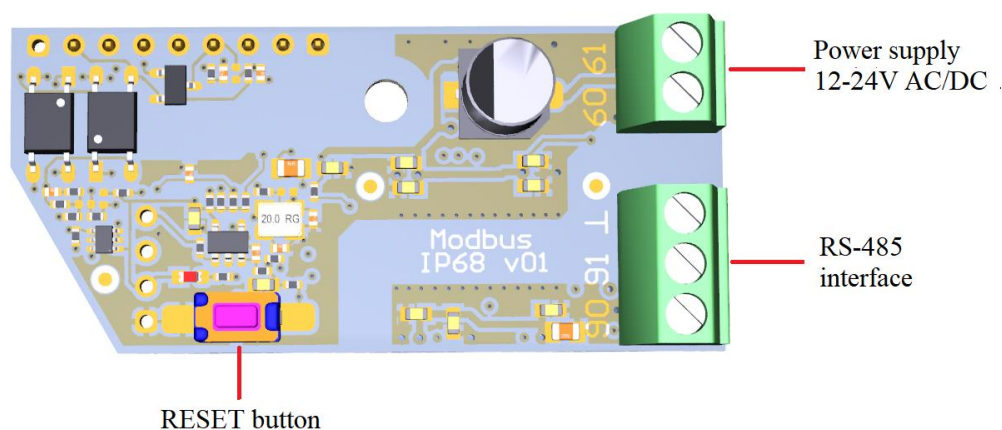
For calculator QalcoMet E1

### Description:

BACnet is a data communication protocol for building automation and controls network. BACnet is both an international (ISO) and ANSI standard for interoperability between cooperating building automation devices. Developed under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

The module has a separate, independent processor for retrieving data from the meter by configuring it at a selected interval. Later, the processed data is transmitted to the reading systems via the RS485 interface.

### Connection:



Polarity independent connection for SELV power supply  
Voltage  
Max power consumption  
Typical current supply

60 and 61 connectors  
12-24 V AC/DC  
2 W  
50 mA

Connectors  
Communication protocol  
Slave address  
Baud rate  
Data format  
Data update interval  
Communication with energy meter

90 and 91 (GND optional, for serial communication)  
BACnet on MS/TP  
1 – 127 (MAC address – **according to meter's M-Bus**)  
9600, 19200, 38400 (**default**), 57600, 76800, 115200  
**8E1** (8 data bits, Even parity, 1 stop bit) – **default**  
300 sec (configurable)  
2400 baud rate, 8 data bits, Even parity, 1 stop bit (!not configurable)  
According to MS/TP Master / Slave  
No  
ANSI X3.4  
BACnet Application Specific Controller (B-ASC)

## Status LED and SET button functionality:

Status LED is signaling every Modbus communication event. Status LED is blinking every time during communication request and even to response messages.

The RESET button is used when it is necessary to reset the module parameters after a failed configuration, forgotten address, baud rate, etc. In order to reset module, procedure is this:

- Turn off module from power supply (wait until module discharge)
- Press and hold RESET button. Then, turn on module power supply
- Wait until Status LED starts blinking frequently (after about 12 sec.)

## BACnet Protocol Implementation Conformance Statement (PICS):

Date	2022-01-03
Vendor Name	Axioma Metering
Vendor ID	1006
Product Name	Axioma BACnet MS/TP base module
Application Software Version	2.1
Firmware Revision	0.8.3
BACnet Protocol Revision	9

## List all BACnet Interoperability Building Blocks Supported

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

## Standard Object Types Supported:

Description	ID	Name	Used units	Read / Write
Device	Last 5 digits of serial number	Axioma BACnet	Dimensionless	Read
Analog Input	AI-0	Meter serial number	Dimensionless	Read
Analog Input	AI-1	Accumulated heat energy (E1)	kWh, MWh	Read
Analog Input	AI-2	Accumulated cooling energy (E2) / Energy 1	kWh, MWh	Read
Analog Input	AI-3	Tariff 1 / Energy 2	kWh, MWh	Read
Analog Input	AI-4	Tariff 2	kWh, MWh	Read
Analog Input	AI-5	Accumulated volume (V1)	l, m <sup>3</sup>	Read
Analog Input	AI-6	Pulse input A accumulated / Accumulated volume (V2)	l, m <sup>3</sup> , kWh, MWh	Read
Analog Input	AI-7	Accumulated volume (V-2)	l, m <sup>3</sup>	Read
Analog Input	AI-8	Pulse input B accumulated / Accumulated volume (V3)	l, m <sup>3</sup> , kWh, MWh	Read
Analog Input	AI-9	Accumulated volume (V4)	l, m <sup>3</sup>	Read
Analog Input	AI-10	Accumulated volume (V5)	l, m <sup>3</sup>	Read
Analog Input	AI-11	Actual power	W, kW, MW	Read
Analog Input	AI-12	Actual power 2	W, kW, MW	Read
Analog Input	AI-13	Actual power 3	W, kW, MW	Read
Analog Input	AI-14	Actual flow	l/h, m <sup>3</sup> /h	Read
Analog Input	AI-15	Actual flow 2	l/h, m <sup>3</sup> /h	Read
Analog Input	AI-16	Actual flow 3	l/h, m <sup>3</sup> /h	Read
Analog Input	AI-17	Actual flow 4	l/h, m <sup>3</sup> /h	Read
Analog Input	AI-18	Actual flow 5	l/h, m <sup>3</sup> /h	Read
Analog Input	AI-19	Flow temperature / Temperature 1	°C	Read
Analog Input	AI-20	Return temperature / Temperature 2	°C	Read
Analog Input	AI-22	Temperature 3	°C	Read
Analog Input	AI-23	Temperature 4	°C	Read
Analog Input	AI-24	Temperature 5	°C	Read
Analog Input	AI-25	Pressure 1	kPa	Read
Analog Input	AI-26	Pressure 2	kPa	Read
Analog Input	AI-27	Battery operation time	sec.	Read
Analog Input	AI-28	Time without error	sec.	Read
Analog Input	AI-29	Time without error 2	sec.	Read
Analog Input	AI-30	Info code	Dimensionless	Read
Analog Input	AI-31	Error 1	Dimensionless	Read
Analog Input	AI-32	Error 2	Dimensionless	Read

## Detailed Object Information (Device Object):

Property Identifier	Property Datatype	Conformance Code	Value
Object_Identifier	BACnetObjectIdentifier	W	Last 5 digits of serial number
Object_Name	CharacterString	W	"Axioma BACnet"
Object_Type	BACnetObjectType	R	Device
System_Status	BACnetDeviceStatus	R	OPERATIONAL
Vendor_Name	CharacterString	R	"Axioma Metering"
Vendor_Identifier	Unsigned16	R	"1006"
Firmware_Revision	CharacterString	R	"0.8.3"

### Axioma Metering UAB

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Company code: 304545403  
VAT number: LT100011040315

Luminor Bank AS  
Acc. No LT762140030003958401

Application_Software_Version	CharacterString	R	"2.1"
Description	CharacterString	O	"Axioma BACnet MS/TP base module"
Protocol_Version	Unsigned	R	1
Protocol_Revision	Unsigned	R	9
Protocol_Services_Supported	BACnetServicesSupported	R	{F, F, F, F, F, F, F, F, F, F, F, T, F, T, T, T, F, F, T, F, F, F, F, F, F, F, F, F, F, T, T, T, F, T, F, F, F} ReadProperty ReadPropertyMultiple WriteProperty WritePropertyMultiple DeviceCommunicationControl ReinitializeDevice TimeSynchronization Who-Has Who-Is UtcTimeSynchronization
Protocol_Object_Types_Supported	ProtocolObjectTypesSupported	R	{F, F, F, F, F, F, 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, T, T, T, F, T, F, F, F} Analog_Input Device
Object_List	BACnetARRAY[N] of BACnetObjectIdentifier	R	{ (Device, last 5 digits of serial number) (Analog-Input, 0), (Analog-Input, 1), (Analog-Input, 2), (Analog-Input, 3), (Analog-Input, 4), (Analog-Input, 5), (Analog-Input, 6), (Analog-Input, 7), (Analog-Input, 8), (Analog-Input, 9), (Analog-Input, 10), (Analog-Input, 11), }
Max_APDU_Length_Accepted	Unsigned	R	206
Segmentation_Supported	BACnetSegmentation	R	no-segmentation
APDU_Timeout	Unsigned	R	3000
Number_Of_APDU_Retries	Unsigned	R	3
Max_Master	Unsigned (1...127)	W	127
Max_Info_Frames	Unsigned	W	2
Database_Revision	Unsigned	R	0

## Analog-Input Object:

Property Identifier	Property Datatype	Conformance Code	Value
Object_Identifier	BACnetObjectIdentifier	R	(Analog-Input, 0-11)
Object_Name	CharacterString	R	See standard object table above
Object_Type	BACnetObjectType	R	Analog-Input
Present_Value	REAL	R (W)	-
Status_Flags	BACnetStatusFlags	R	{ IN_ALARM, FAULT, OVERRIDDEN, OUT_OF_SERVICE }
Event_State	BACnetEventState	R	NORMAL
Out_Of_Service	BOOLEAN	R (W)	TRUE or FALSE
Unit	BACnetEngineeringUnits	R	See standard object table above