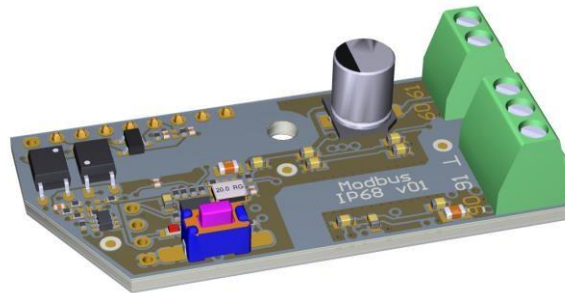




TECHNICAL DESCRIPTION USER MANUAL



BACNET PROTOCOL FOR IFX-MX-E3



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Applications

The BACnet module is destined to heat meters in order to connect the heat meters to BACnet network using EIA-485 channel.

Features

- Galvanic isolation EIA-485 network interface used for easy and safe connection up to 256 devices in one network bus
- BACnet on MS/TP protocol is realized according to specifications by American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

Power supply

Polarity independent connection for SELV power supply – connectors 60 and 61

Voltage 12-24 V (AC/DC)

Maximum power consumption 2 W max.

Typical supply current 50 mA

Communication interface

Connectors 90 (noninverting, +) and 91 (inverting, -)

Communication protocol BACnet on MS/TP

Baud rate (bits per second) 9600, 19200, 38400default, 57600, 76800, 15200

Data format 8N1 (8 data bits, None parity bit, 1 stop bit) -default

Status LED and Status Button functionality

Status LED is signaling every BACnet communication event. Status LED is blinking on during request and response sending.

Press the button, then power on the module and hold the button pushed longer than 15seconds to reset device to factory settings (Communication interface to defaults parameters – 38400 bps baud rate and 8E1 data format).

BACnet® Protocol Implementation Conformance Statement (PICS)

Date: 2019-06-24

Vendor Name: ISOIL Industria

Vendor ID: 0589

Product Name: BACnet MS/TP base module

Product Model Number:

Application Software Version: 2.0

Firmware Revision: 0.8.3

BACnet Protocol Revision: 9

Product Description:

The BACnet module is destined to heat meters in order to connect the heat meters to BACnet MS/TP network using EIA485 channel

BACnet Standardized Device Profile (Annex L):

- ACnet 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
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

Segmentation Capability:

- Able to transmit segmented messages Window Size _____
- Able to receive segmented messages Window Size _____

Standard Object Types Supported:

Description	ID	Name	Used units	Read/Write	Devices
Device	Last 5 digits of meter number	MULTICAL BACnet	Dimensionless	Read	E1, E3, QME1, E2, F1
Analog Input	AI-0	Meter serial number	Dimensionless	Read	E1, E3, QME1, E2, F1
Analog Input	AI-1	Accumulated heat energy (E1)	MWh	Read	E1, E3, QME1, E2

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Analog Input	AI-2	Accumulated cooling energy (E2) / Energy 1	MWh	Read	E1, E3, QME1, E2
Analog Input	AI-3	Tariff1 / Energy2	MWh	Read	E1, E3, QME1, E2
Analog Input	AI-4	Tariff2	MWh	Read	E1, E3
Analog Input	AI-5	Accumulated volume (V1)	l, m3	Read	E1, E3, QME1, E2, F1
Analog Input	AI-6	Pulse input A accumulated/ Accumulated volume (V2)	l, m3, kWh, MWh	Read	E1, E3, QME1, E2, F1
Analog Input	AI-7	Accumulated volume (V-2)	l, m3	Read	QME1, E2
Analog Input	AI-8	Pulse input B accumulated/ Accumulated volume (V3)	l, m3, kWh, MWh	Read	E1, E3, QME1, E2, F1
Analog Input	AI-9	Accumulated volume (V4)	l, m3	Read	QME1, E2
Analog Input	AI-10	Accumulated volume (V5)	l, m3	Read	QME1
Analog Input	AI-11	Actual power	W, kW, MW	Read	E1, E3, QME1, E2
Analog Input	AI-12	Actual power 2	W, kW, MW	Read	QME1, E2
Analog Input	AI-13	Actual power 3	W, kW, MW	Read	QME1, E2
Analog Input	AI-14	Actual flow	l/h, m3/h	Read	E1, E3, QME1, E2, F1
Analog Input	AI-15	Actual flow 2	l/h, m3/h	Read	QME1, E2
Analog Input	AI-16	Actual flow 3	l/h, m3/h	Read	QME1, E2
Analog Input	AI-17	Actual flow 4	l/h, m3/h	Read	QME1, E2
Analog Input	AI-18	Actual flow 5	l/h, m3/h	Read	QME1
Analog Input	AI-19	Flow temperature / Temperature 1	°C	Read	E1, E3, QME1, E2, F1
Analog Input	AI-20	Return temperature / Temperature 2	°C	Read	E1, E3, QME1, E2
Analog Input	AI-21	Differential temperature	K	Read	E1, E3
Analog Input	AI-22	Temperature 3	°C	Read	QME1, E2
Analog Input	AI-23	Temperature 4	°C	Read	QME1, E2

Analog Input	AI-24	Temperature 5	°C	Read	QME1
Analog Input	AI-25	Pressure 1	kPa	Read	QME1, E2
Analog Input	AI-26	Pressure 2	kPa	Read	QME1, E2
Analog Input	AI-27	Battery operation time	sec.	Read	QME1, E2,
					F1
Analog Input	AI-28	Time without error	sec.	Read	QME1, E2
Analog Input	AI-29	Time without error2	sec.	Read	QME1
Analog Input	AI-30	Info code	Dimensionless	Read	E1, E3, QME1, E2, F1
Analog Input	AI-31	Error 1	Dimensionless	Read	QME1, E2
Analog Input	AI-32	Error 2	Dimensionless	Read	QME1

Detailed Object information Device Object:

Property Identifier	Property Datatype	Conformance Code	Value
Object_Identifier	BACnetObjectIdentifier	W	(Device, last 5 digits of meter serial number)
Object_Name	CharacterString	W	" Isoil BACnet "
Object_Type	BACnetObjectType	R	Device
System_Status	BACnetDeviceStatus	R	OPERATIONAL
Vendor_Name	CharacterString	R	"ISOIL Industria"
Vendor_Identifier	Unsigned16	R	"0589"
Firmware_Revision	CharacterString	R	" 0.8.3"
Application_Software_Version	CharacterString	R	"2.0"
Description	CharacterString	O	"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,F,F,F,T,F,T,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	ProtocolObjectTypes Supported	R	{T,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}
			Analog_Input Device

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Object_List	BACnetARRAY[N] of BACnetObjectIdentifier	R	{ (device, last 5 digits of meter 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

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
- MS/TP slave (Clause 9), baud rate(s): 9600, 19200, 38400, 57600, 76800
- 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

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