PICS EE800D

BACnet Protocol Implementation Conformance Statement

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E+E ELEKTRONIK® Ges.m.b.H.

Content

1. GENERAL INFORMATION

Date:	19.5.2015
Vendor Name:	E+E Elektronik
Product Name:	EE800D
Product Model Number:	EE800D EE800D This is the generic denomination for EE800 devices with RS485 interface and BACnet MS/TP protocol. For type number of specific EE800 please see the data sheet at www.epluse.com
Application Software Version:	1.2
Firmware Revision:	1.2
BACnet Protocol Version:	1
BACnet Protocol Revision:	10

Product Description:
CO2, Temperature and Humidity BACNet MS/TP Smart Sensor Master device EE800D.

2. 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)

3. LIST OF ALL SUPPORTED BACNET INTEROPERABILITY BUILDING BLOCKS (ANNEX K):

DS-RP-B..... Data Sharing – Read Property – B
DS-RPM-B..... Data Sharing – Read Property Multiple – B
DS-WP-B..... Data Sharing – Write Property – B
DM-DDB-B ..... Data Management – Dynamic Device Binding – B
DM-DOB-B ..... Data Management – Dynamic Object Binding – B
DM-DCC-B ..... Data Management – Device Communication Control – B
DM-RD-B..... Data Management – Reinitialize Device – B

4. SEGMENTATION CAPABILITY:

- ☐ Able to transmit segmented messages
- ☐ Able to receive segmented messages

5. BACNET STANDARD OBJECT TYPES SUPPORTED

- ☐ Accumulator
- ☒ Analog Input
- ☐ Analog Output
- ☐ Analog Value
- ☐ Averaging
- ☐ Binary Input
- ☐ Binary Output
- ☐ Binary Value
- ☐ Calendar
- ☐ Command
- ☒ Device
- ☐ Event Enrollment
- ☐ File
- ☐ Group
- ☐ Life Safety Point
- ☐ Life Safety Zone
- ☐ Loop
- ☐ Multistate Input
- ☐ Multistate Output
- ☐ Multistate Value
- ☐ Notification Class
- ☐ Program
- ☐ Pulse Converter
- ☐ Schedule
- ☐ Trend Log

6. 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):
- ☐ 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:

7. 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

8. 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

9. 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)

10. 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
☐ ISO 10646 (UCS-2)	☐ SO 10646 (UCS-4)	☐ JIS X 0208

11. TRANSMITTER DIFFERENCES

Device Object	☒
Analog Input Object: Temperature	☒
Analog Input Object: Relative Humidity	☒
Analog Input Object: Water Vapor Partial Pressure	☒
Analog Input Object: Dew Point temperature	☒
Analog Input Object: Absolute humidity	☒
Analog Input Object: Maxing Ratio	☒
Analog Input Object: Enthalpy	☒
Analog Input Object: Frost Point Temperature	☒
Analog Input Object: CO2	☒
Analog Input Object: CO2 Raw*)	☒

***) PLEASE NOTE:** Only for special applications where faster response time is necessary. Please contact your E+E Sales representative.

12. BACNET OBJECTS

This part describes the various BACnet objects in detail. In the following sections the main properties of the individual objects are explained.

12.1 Device Object

Property	Data Type	Initial Value	R/O/P	Persistence
Object Identifier	BACnetObjectIdentifier	3 (EE800D)	R (W)	Non Volatile
Object Name	CharacterString[15]	“EE800D_0000003”	R (W)	Non Volatile
Object Type	BACnetObjectType (Enum.)	OBJECT_DEVICE	R (R)	Fixed
Description	CharacterString[15]	“EE800D”	O (W)	Non Volatile
System Status	BACnetDeviceStatus (Enum.)	STATUS_OPERATIONAL	R (R)	Volatile
Vendor Name	CharacterString	“E+E Elektronik”	R (R)	Fixed
Vendor Identifier	Unsigned16	623	R (R)	Fixed
Model Name	CharacterString	“EE800D”	R (R)	Fixed
Firmware Revision	CharacterString	“1.2”	R (R)	Fixed
Application Software Version	CharacterString	“1.2”	R (R)	Fixed
Location	CharacterString[15]	“AUT”	O (W)	Non Volatile
Protocol Version	Unsigned	1	R (R)	Fixed
Protocol Revision	Unsigned	10	R (R)	Fixed
Protocol Services Supported	BACnetProtocolServices Supported (Bit-String)	Read Property Read Property Multiple Write Property Device Comm. Control Reinitialize Device Who-Is Who-Has	R (R)	Fixed
Protocol Object Types Supported	BACnetObjectTypes Supported (Bit-String)	Device Analog Input	R (R)	Fixed
Object List	BACnetARRAY[N] of BACnetObjectIdentifier	Device Object AI0 (Temperature) AI1 (Relative Humidity) AI2 (Water Vap. Press.) AI3 (Dew Point Temp.) AI4 (Absolute Humidity) AI5 (Mixing Ratio) AI6 (Enthalpy) AI7 (Frost Point Temp.) AI8 (CO2) AI9 (CO2 raw)	R (R)	Fixed
Max APDU Length Accepted	Unsigned16	480	R (R)	Fixed
Segmentation Supported	BACnetSegmentation (Enum.)	NO_SEGMENTATION	R (R)	Fixed
APDU Timeout	Unsigned	3000	R (R)	Fixed
Number of APDU Retries	Unsigned	3	R (R)	Fixed
Device Address Binding	List of BACnetAddressBinding	NULL	R (R)	Fixed
Database Revision	Unsigned	0	R (W)	Non Volatile
Max Info Frames	Unsigned	1	O (R)	Fixed
Max Master	Unsigned	127	O (W)	Non Volatile
Communication Parameter	CharacterString	“38400-8n1”	P (W)	Non Volatile

R (R)..... Required Property (Readable)
R (W)..... Required Property (Read-/Writable)
O (R)..... Optional Property (Readable)
O (W)..... Optional Property (Read-/Writeable)
P (R)..... Proprietary Property (Readable)
P (W)..... Proprietary Property (Read-/Writeable)

Max Master Property:
The maximum “Max Master” Property is 127. This Property is writable via BACnet.

Communication Parameter:
For changing the RS485 communication parameters it is relevant to observe the character string format. The character string consists of following parts:

1. Baud rate (9600, 19200, 38400, 57600, 76800, 115200)
2. "-"
3. Number of data bits (8)
4. Parity (no)
5. Number of stop bits (1)

Example:
- Change parameters to: Baud = 76800, 8 data bits, no parity, 1 stop bit:
  String: "76800-8n1"

ATTENTION: The character string shall end with the terminating 0.

12.2 Analog Input Objects

Each analog input object has the same structure.

Property	Data Type	Initial Value	R/O/P	Persistence
Object Identifier	BACnetObjectIdentifier	0 … Temperature 1 … Relative Humidity 2 … Water Vap. Press. 3 … Dew Point Temp. 4 … Absolute Humidity 5 … Mixing Ratio 6 … Enthalpy 7 … Frost Point Temp. 8 … CO2 9 … CO2 Raw	R	Fixed
Object Name	CharacterString	"T" … Temperature "RH"… Rel. Humidity "e" … Wat. Vap. Press. "Td" … Dew Pnt. Temp. "dv" … Abs. Humidity "r" … Mixing Ratio "h" … Enthalpy "Tf" … Frost Pnt. Temp. "CO2" … CO2 "CO2raw" … CO2 Raw	R	Fixed
Description	CharacterString	(see below)	O	Fixed
Object Type	BACnetObjectType (Enum.)	OBJECT_ANALOG_INPUT	R	Fixed
Present Value	Real	0.0	R (W)[a.]	Volatile
Status Flags	BACnetStatusFlags (Bit-String)	false, false, false, false	R	Volatile
Event State	BACnetEventState	NORMAL	R	Volatile
Out of Service	Boolean	false	R (W)	Volatile
Units	BACnetEngineeringUnits (Enum.)	(see below)	R (W)	Non Volatile
Reliability	BACnetReliability (Enum.)	NO_FAULT_DETECTED	R (W)[a.]	Volatile

a.) When "Out of Service" flag is true, value is writable.

Description Property:
The following table shows the possible object descriptions depending on the selected units:

Initial Value	Alternative 1	Alternative 2
"Temperature [deg. C]"	"Temperature [deg. F]"	"Temperature [deg. K]"
"Relative humidity [%rH]"		
"Water vapor partial pressure [mbar]"	"Water vapor partial pressure [psi]"	
"Dew point temperature [deg. C]"	"Temperature [deg. F]"	"Temperature [deg. K]"
"Absolute humidity [g/m^3]"	"Absolute humidity [g/ft^3]"	
"Mixing ratio [g/kg]"	"Mixing ratio [g/lb]"	
"Enthalpy [kJ/kg]"	"Enthalpy [ft lbf/lb]"	"Enthalpy [BTU/lb]"
"Frost point temperature [deg. C]"	"Temperature [deg. F]"	"Temperature [deg. K]"
"CO2 [ppm]"		
"CO2 raw [ppm]"		

Present Value Property:
This property represents the actual sensor or actual calculation value. When the “Out of Service” flag is true, this value is writable. The default values when “Out of Service” is set are 50.0.

Status Flags Property:
The following table describes the possible states of the “Status Flags” property:

Flag	State	Reason
IN_ALARM	false	Value of “Event State” property is NORMAL (0)
	true	Value of “Event State” property is not NORMAL (0)
FAULT	false	Value of “Reliability” property is NO_FAULT_DETECTED
	true	Value of “Reliability” property is not NO_FAULT_DETECTED
OVERRIDDEN	false	Always false
OUT_OF_SERVICE	false	“Present Value” and “Reliability” properties are not writeable via BACnet
	true	“Present Value” and “Reliability” properties are writeable via BACnet

Units:
The following table lists the possible units for each analog input object:

Initial Value	Alternative 1	Alternative 2
Degrees Celsius (62)	Degrees Fahrenheit (64)	Degrees Kelvin (63)
Relative Humidity (29)	-	-
Millibars (134)	Pounds Force per Square Inch (56)	-
Degrees Celsius (62)	Degrees Fahrenheit (64)	Degrees Kelvin (63)
Grams per Cubic Meter (217)	Grams per Cubic Foot (256) a.)	-
Grams per Kilogram (210)	Grains per Pound (257) a.)	-
Kilojoules per Kilogram Dry Air (149)	Footpound per Pound Dry Air (258) a.)	BTU per Pound Dry Air (24)
Degrees Celsius (62)	Degrees Fahrenheit (64)	Degrees Kelvin (63)
Parts per Million (96)		
Parts per Million (96)		

a.) Not an ASHRAE defined Unit.

13. MISCELLANEOUS INFORMATION

Reinitialize Device (RD):
The RD function is used to restart/ reboot the entire transmitter via BACnet. To use reinitialize device functionality a password is needed. The password is: “BACnet123”.

Device Communication Control (DCC):
The DCC functionality is used to stop initiating messages on the BACnet network. After receiving a DCC stop initiate message, the device does not response to a request any more, except to RD or DCC requests. The use of the device communication control functionality is password protected. The password is: “BACnet123”.

HEAD OFFICE:

E+E ELEKTRONIK Ges.m.b.H.
Langwiesen 7
A-4209 Engerwitzdorf
Austria
Tel: +43 7235 605 0
Fax: +43 7235 605 8
info@epluse.com
www.epluse.com

SALES OFFICES:

E+E CHINA / BEIJING
info@epluse.cn www.epluse.cn

E+E CHINA / SHANGHAI
info@epluse.cn www.epluse.cn

E+E GERMANY
info@epluse.de www.epluse.de

E+E FRANCE
info@epluse.fr www.epluse.fr

E+E ITALY
info@epluse.it www.epluse.it

E+E KOREA
info@epluse.co.kr www.epluse.co.kr

E+E USA
office@epluse.com www.epluse.com