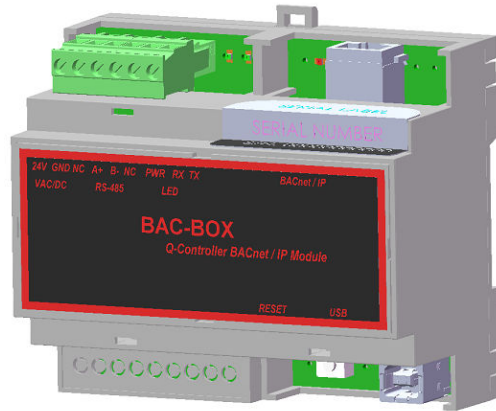


# QC BAC-BOX PIC STATEMENT



## BACnet Protocol Implementation Conformance (PIC) Statement

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ANNEX A - PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (NORMATIVE)

**Q-Controller BACnet Converter BACnet Protocol Implementation Conformance Statement**

**Date:** 2016-06-03

**Vendor Name:** Quatrosense Environmental Ltd

**Product Name:** QC-BAC-BOX

**Product Model Number:** QC-BAC-BOX

**Application Software Version:** QC-MMI-V1.28

**Firmware Revision:** 0.7.0

**BACnet Protocol Revision:** Version 1, Revision 7

**Product Description:**

Q-Controller BAC-Box allows Q-Controller to communication on a BACnet network. The BAC-Box works as a translator between the two networks allowing Q-Controller Gas System (gas concentrations, switch status and relay status) to show up as individual BACnet-compliant devices on a BACnet /IP network. It supports up to 192 AI objects, 32 AO objects, 16 BI objects and 64 BO objects for a Q-Controller Gas System.

**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-Data sharing-ReadProperty-B (DB-RP-B)
- BIBB-Data sharing-ReadPropertyMultiple-B (DB-RPM-B)
- BIBB-Data sharing-WriteProperty-B (DB-WP-B)
- BIBB-Device Management-Device Communication Control-B (DM-DCC-B)
- BIBB-Device Management-TimeSynchronization-B (DM-TS-B)
- BIBB-Device Management-UTCTimeSynchronization-B (DM-UTC-B)

**Segmentation Capability:**

- Able to transmit segmented messages    Window Size \_\_\_\_\_
- Able to receive segmented messages    Window Size \_\_\_\_\_

**Standard Object Types Supported:**

- Device Object
- Analog Input Object
- Analog Output Object
- Binary Input Object
- Binary Output Object

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

- ANSI X3.4
- IBM™/Microsoft™ DBCS
- ISO 8859-1
- 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:**

\_\_\_\_\_

**ANNEX K – BACnet INTEROPERABILITY BUILDING BLOCK (BIBBs) (NORMATIVE)**

**K.1.2 BIBB – Data Sharing – ReadProperty – B (DS-RP-B)**

The B device is a provider of data to device A

BACnet Service	Initiate	Execute
ReadProperty		X

**K.1.4 BIBB – Data Sharing – ReadPropertyMultiple – B (DS-RPM-B)**

The B device is a provider of data to device A and returns multiple values at one time.

BACnet Service	Initiate	Execute
ReadPropertyMultiple		X

**K.1.8 BIBB – Data Sharing – WriteProperty – B (DS-WP-B)**

The B device is a provider of data to device A.

BACnet Service	Initiate	Execute
WriteProperty		X

**K.5.2 BIBB – Device Management – Dynamic Device Binding – B (DM-DDB-B)**

The B device provides information about its device attributes and responds to requests to identify itself.

BACnet Service	Initiate	Execute
Who-Is		X
I-Am	X	

**K.5.6 BIBB – Device Management – DeviceCommunicationControl – B (DM-DCC-B)**

The B device responds to communication control exercised by the A device.

BACnet Service	Initiate	Execute
DeviceCommunicationControl		X

**K.5.12 BIBB – Device Management – TimeSynchronization – B (DM-TS-B)**

The B device interprets time synchronization messages from the A device.

BACnet Service	Initiate	Execute
TimeSynchronization		X

**K.5.13 BIBB – Device Management – UTCTimeSynchronization – B (DM-UTC-B)**

The B device interprets time synchronization messages from the A device.

BACnet Service	Initiate	Execute
UTCTimeSynchronization		X

**Property List of Objects**

Note: all string size should be less than 32 characters.

Device:

Property	Default Value	Access	Conformance Code
<b>object-identifier</b>	device, 4005	Read/Write	Required
<b>object-name</b>	"QC-BAC-Converter"	Read/Write	Required
<b>object-type</b>	Device	Read	Required
<b>system-status</b>	operational	Read	Required
<b>vendor-name</b>	"QEL (Quatrosense Environmental Ltd)"	Read	Required
<b>vendor-identifier</b>	464	Read	Required
<b>model-name</b>	"Q-Controller"	Read/Write	Required
<b>firmware-revision</b>	"BAC-BOX-V1.01"	Read	Required
<b>application-software-version</b>	"QC-MMI-V1.28"	Read	Required
<b>Location</b>	"Canada"	Read/Write	Optional
<b>description</b>	"Q-Controller Gas Detection System"	Read/Write	Optional
<b>protocol-version</b>	1	Read	Required
<b>protocol-revision</b>	10	Read	Required
<b>protocol-services-supported</b>	ReadProperty, ReadPropertyMultiple WriteProperty, DeviceCommunicationControl ReinitializeDevice, TimeSynchronization Who-is, UTCTimeSynchronization	Read	Required
<b>protocol-object-types-supported</b>	device, analog-input, analog-output, binary-input, binary-output	Read	Required
<b>object-list</b>	Device, 4005 Analog Input (max. 192) Analog Output (max. 32) Binary Input (max. 16) Binary Output (max. 64)	Read	Required
<b>max-APDU-length-accepted</b>	1476	Read	Required
<b>segmentation-supported</b>	NO-SEGMENTATION	Read	Required
<b>apdu-timeout</b>	3000 (ms)	Read	Required
<b>number-of-apdu-retries</b>	3	Read	Required
<b>device-address-binding</b>	()	Read	Required
<b>database-revision</b>	1	Read	Required
<b>Local_Time</b>	Time	Read	Optional
<b>Local_Date</b>	Date	Read	Optional
<b>UTC_Offset</b>	Integer	Read	Optional
<b>Daylight_Savings_Status</b>	Boolean	Read	Optional

Analog Input 0 to 191:

Property	Default Value	Access	Conformance Code
object-identifier	analog-input, 0 – 191	Read	Required
object-name	“Sensor 0 -127” and “AI-Box-x-x”	Read	Required
object-type	analog-input(0)	Read	Required
present-value	xxxx	Read/Write	Required
status-flag	health / overridden / fault / out of service	Read	Required
event-state	normal(0)	Read	Required
out-of-service	false	Read/Write	Required
units	Parts-per-million or Percent	Read	Required
description	“Digital Sensor Address 0 – 191 ” and “AI-Box-x Analog Input CH 1 - 8”	Read/Write	Optional

Binary Input 0 to 15:

Property	Default Value	Access	Conformance Code
object-identifier	binary-input, 0 - 15	Read	Required
object-name	“Switch 1 - 4” and “BI-Box-x-x”	Read	Required
object-type	binary-input (3)	Read	Required
present-value	active / inactive	Read/Write	Required
status-flag	health / overridden / fault / out of service	Read	Required
event-state	normal(0)	Read	Required
out-of-service	false	Read/Write	Required
description	“Onboard Switch4: Switch Input 1 - 4” and “BI-Box-x Switch Input CH 1 - 4”	Read/Write	Optional
Polarity	Normal (0)	Read	Optional

Analog Output 0 - 31:

Property	Default Value	Access	Conformance Code
object-identifier	analog-output, 0 - 31	Read	Required
object-name	"AO-Box-x-x"	Read	Required
object-type	analog-output(1)	Read	Required
present-value	xxxx	Read/Write	Required
units	2, Milliampere	Read	Required
status-flag	health / overridden / fault / out of service	Read	Required
event-state	normal(0)	Read	Required
out-of-service	false	Read/Write	Required
priority	normal	Read	Required
description	"AO-BOX-X: Analog Output CH 1 - 8"	Read/Write	Optional
priority-array	BAC-Box priority is 10	Read	Required
relinquish-default	0.00	Read	Required

Binary Output 0 - 63:

Property	Default Value	Access	Conformance Code
object-identifier	binary-output, 0 - 63	Read	Required
object-name	"Relay 1 - 4" or "BO-Box-x-x"	Read	Required
object-type	binary-output(4)	Read	Required
present-value	active / inactive	Read/Write	Required
status-flag	health / overridden / fault / out of service	Read	Required
event-state	normal(0)	Read	Required
out-of-service	false	Read/Write	Required
priority	normal	Read	Required
description	"Onboard Relay 1 – 4: 10A Pluggable" and "BO-Box-x: Relay Output CH 1 - 4"	Read/Write	Optional
priority-array	BAC-Box priority is 10	Read	Required
relinquish-default	Inactive	Read	Required