

1. BACNET PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT

Date: 23-Jul-2019
Vendor Name: Trend Control Systems Ltd.
Product Name: IQ4
Product Model Number: IQ411/BAC/230, IQ411/LAN/BAC/230, IQ411/BAC/24, IQ411/LAN/BAC/24, IQ412/BAC/230, IQ412/LAN/BAC/230, IQ412/BAC/24, IQ412/LAN/BAC/24, IQ422/12/BAC/230, IQ422/12/LAN/BAC/230, IQ422/12/BAC/24, IQ422/12/LAN/BAC/24, IQ4E/16/BAC/230, IQ4E/32/BAC/230, IQ4E/64/BAC/230, IQ4E/96/BAC/230, IQ4E/128/BAC/230, IQ4E/160/BAC/230, IQ4E/192/BAC/230, IQ4E/16/LAN/BAC/230, IQ4E/32/LAN/BAC/230, IQ4E/64/LAN/BAC/230, IQ4E/96/LAN/BAC/230, IQ4E/128/LAN/BAC/230, IQ4E/160/LAN/BAC/230, IQ4E/192/LAN/BAC/230, IQ422/12/XNC/BAC/24VAC, IQ422/12/XNC/BAC/230, IQ422/12/XNC/LAN/BAC/24VAC, IQ422/12/XNC/LAN/BAC/230, IQ422/00/XNC/BAC/24VAC, IQ422/00/XNC/BAC/230, IQ422/00/XNC/LAN/BAC/24VAC, IQ422/00/XNC/LAN/BAC/230, IQ4E/96/XNC/BAC/230, IQ4E/96/XNC/LAN/BAC/230, IQ4E/16/BAC/24VAC, IQ4E/32/BAC/24VAC, IQ4E/64/BAC/24VAC, IQ4E/96/BAC/24VAC, IQ4E/128/BAC/24VAC, IQ4E/160/BAC/24VAC, IQ4E/192/BAC/24VAC, IQ4E/16/LAN/BAC/24VAC, IQ4E/32/LAN/BAC/24VAC, IQ4E/64/LAN/BAC/24VAC, IQ4E/96/LAN/BAC/24VAC, IQ4E/128/LAN/BAC/24VAC, IQ4E/160/LAN/BAC/24VAC, IQ4E/192/LAN/BAC/24VAC, IQ4E/96/XNC/BAC/24VAC, IQ4E/96/XNC/LAN/BAC/24VAC, IQ4E/128/INT/BAC/230, IQ4E/128/INT/BAC/24VAC, IQ4E/128/INT/LAN/BAC/230, IQ4E/128/INT/LAN/BAC/24VAC, IQ4E/16/INT/BAC/230, IQ4E/16/INT/BAC/24VAC, IQ4E/16/INT/LAN/BAC/230, IQ4E/16/INT/LAN/BAC/24VAC, IQ4E/160/INT/BAC/230, IQ4E/160/INT/BAC/24VAC, IQ4E/160/INT/LAN/BAC/230, IQ4E/160/INT/LAN/BAC/24VAC, IQ4E/192/INT/BAC/230, IQ4E/192/INT/BAC/24VAC, IQ4E/192/INT/LAN/BAC/230, IQ4E/192/INT/LAN/BAC/24VAC, IQ4E/32/INT/BAC/230, IQ4E/32/INT/BAC/24VAC, IQ4E/32/INT/LAN/BAC/230, IQ4E/32/INT/LAN/BAC/24VAC, IQ4E/64/INT/BAC/230, IQ4E/64/INT/BAC/24VAC, IQ4E/64/INT/LAN/BAC/230, IQ4E/64/INT/LAN/BAC/24VAC, IQ4E/96/INT/BAC/230, IQ4E/96/INT/BAC/24VAC, IQ4E/96/INT/LAN/BAC/230, IQ4E/96/INT/LAN/BAC/24VAC, IQ411/INT/230, IQ411/INT/24VAC, IQ411/INT/BAC/230, IQ411/INT/BAC/24VAC, IQ411/INT/LAN/230, IQ411/INT/LAN/24VAC, IQ411/INT/LAN/BAC/230, IQ411/INT/LAN/BAC/24VAC, IQ412/INT/230, IQ412/INT/24VAC, IQ412/INT/BAC/230, IQ412/INT/BAC/24VAC, IQ412/INT/LAN/230, IQ412/INT/LAN/24VAC, IQ412/INT/LAN/BAC/230, IQ412/INT/LAN/BAC/24VAC, IQ422/00/INT/BAC/230, IQ422/00/INT/BAC/24VAC, IQ422/00/INT/LAN/BAC/230, IQ422/00/INT/LAN/BAC/24VAC, IQ422/12/INT/230, IQ422/12/INT/24VAC, IQ422/12/INT/BAC/230, IQ422/12/INT/BAC/24VAC, IQ422/12/INT/LAN/230, IQ422/12/INT/LAN/24VAC, IQ422/12/INT/LAN/BAC/230, IQ422/12/INT/LAN/BAC/24VAC

Applications Software Version: v4.30 **Firmware Revision:** v4.30 **BACnet Protocol Revision:** 15

1.1. PRODUCT DESCRIPTION

The IQ™4 is a configurable plant controller using BACnet over IP to interface with 3rd party BACnet systems.

1.2. BACNET STANDARDISED 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)

1.3. LIST ALL BACNET INTEROPERABILITY BUILDING BLOCKS SUPPORTED (ANNEX K)

| ID | BIBB | Title |
|------|-----------|---|
| 1.1 | DS-RP-A | Data Sharing-ReadProperty-A |
| 1.2 | DS-RP-B | Data Sharing-ReadProperty-B |
| 1.3 | DS-RPM-A | Data Sharing Read Property Multiple A |
| 1.4 | DS-RPM-B | Data Sharing ReadPropertyMultiple-B |
| 1.7 | DS-WP-A | Data Sharing-WriteProperty-A |
| 1.8 | DS-WP-B | Data Sharing-WriteProperty-B |
| 1.10 | DS-WPM-B | Data Sharing-WritePropertyMultiple-B |
| 1.11 | DS-COV-A | Data Sharing-ChangeOfValue-A |
| 1.12 | DS-COV-B | Data Sharing-ChangeOfValue-B |
| 1.15 | DS-COVU-A | Data Sharing-COV-Unsolicited-A |
| 2.2 | AE-N-I-B | Alarm and Event-Notification Internal-B |
| 2.5 | AE-ACK-B | Alarm and Event-ACK-B |
| 2.9 | AE_ESUM_B | Alarm And Event Enrolment Summary |
| 2.11 | AE-INFO-B | Alarm and Event-Information-B |
| 3.2 | SHED_I_B | Scheduling-Internal-B |
| 3.3 | SCHED_E_B | Scheduling-External-B |
| 4.2 | T-VMT-I-B | Trending-Viewing and Modifying Trends Internal- B |
| 4.5 | T-ATR-B | Trending_ Automated Trend Retrieval-B |
| 5.1 | DM-DDB-A | Device Management-Dynamic Device Binding-A |
| 5.2 | DM-DDB-B | Device Management-Dynamic Device Binding-B |
| 5.4 | DM-DOB-B | Device Management-Dynamic Object Binding-B |
| 5.6 | DM-DCC-B | Device Management-DeviceCommunicationControl-B |
| 5.12 | DM-TS-B | Device Management-TimeSynchronisation-B |
| 5.14 | DM-UTC-B | Device Management-UTCTimeSynchronisation-B |
| 5.16 | DM-RD-B | Device Management-ReinitializeDevice-B |
| 5.18 | DM-BR-B | Device Management-Backup and Restore-B |

1.4. SEGMENTATION CAPABILITY

- Segmented requests supported Window Size = 1
- Segmented responses supported Window Size = 1

1.5. STANDARD OBJECT TYPES SUPPORTED

An object type is supported if it may be present in the device. For each standard Object Type supported provide the following data:

- 1) Whether objects of this type are dynamically creatable using the CreateObject service.
- 2) Whether objects of this type are dynamically deletable using the DeleteObject service.
- 3) List of the optional properties supported.
- 4) List of all properties that are writable where not otherwise required by this standard.
- 5) List of proprietary properties and for each its property identifier, datatype, and meaning.
- 6) List of all properties that are conditionally writable where not otherwise required by this standard.
- 7) List of any property range restrictions.

1.5.1. Analogue Input Object Type A

1. Creatable: No
2. Deletable: No
3. Optional Properties Supported:
 - Device_Type
 - Reliability
 - Event_Enable
 - High_Limit
 - Limit_Enable
 - Low_Limit
 - Notification_Class
 - Time_Delay
 - Acked_Transactions
 - Notify_Type
 - Deadband
 - Event_Timestamps
 - COV_Increment
4. Writeable Properties:
 - Event_Enable
 - High_Limit
 - Limit_Enable
 - Low_Limit
 - Notification_Class
 - Time_Delay
 - COV_Increment
5. Proprietary Properties: None
6. Property Range Restrictions:

| | |
|--------------------|-------------------------------------|
| High_Limit | -1e20 to 1e20, resolution: 7 digits |
| Low_Limit | -1e20 to 1e20, resolution: 7 digits |
| Time_Delay | 0 to 172800, resolution: 1 |
| Notification_Class | Must be a valid notification class |
| EVENT_ENABLE | FFT not allowed |

1.5.2. Analogue Input Object Type B

1. Creatable: No
2. Deletable: No
3. Optional Properties Supported:
 - Device_Type
 - Reliability
 - COV_Increment
4. Writeable Properties:
 - COV_Increment
5. Proprietary Properties: None
6. Property Range Restrictions: None

1.5.3. Analogue Output Object Type

1. Creatable: No
2. Deletable: No
3. Optional Properties Supported:
 - Device_Type
 - Reliability
 - COV_Increment
4. Writeable Properties:
 - Present_Value
 - COV_Increment
5. Proprietary Properties: None
6. Property Range Restrictions:
 - Present_Value -1e20 to 1e20, resolution: 7 digits

1.5.4. Analogue Value Object Type

1. Creatable: No
2. Deletable: No
3. Optional Properties Supported:
 - Reliability
 - COV_Increment
4. Writeable Properties:
 - Present_Value
 - COV_Increment
 - Units
5. Proprietary Properties: None
6. Property Range Restrictions:
 - Present_Value -1e20 to 1e20, resolution: 7 digits
 - Units 0 to 255 bytes

1.5.5. Binary Input Object Type

1. Creatable: No
2. Deletable: No
3. Optional Properties Supported:
 - Device_Type
 - Alarm_Value
 - Elapsed_Acative_Time
 - Event_Enable
 - Notification_Class
 - Notify_Type
 - Reliability
 - Time_Delay
 - Acked_Transitions
 - Event_Time_Stamps
 - Time_Of_Aactive_Time_Reset
4. Writeable Properties:
 - Alarm_Value
 - Elapsed_Active_Time
 - Event_Enable
 - Notification_Class
 - Time_Delay
5. Proprietary Properties:
6. Property Range Restrictions: None
 - Elapsed_Active_Time 0 to 235926008, resolution: 1
 - Time_Delay 0 to 172800, resolution: 1
 - Notification_Class Must be a valid notification class
 - Event_Enable FFT and FTT not allowed

1.5.6. Binary Output Object Type

- 1. Creatable: No
- 2. Deletable: No
- 3. Optional Properties Supported:
 - Device_Type
 - Elapsed_Active_Time

Property held internally as elapsed active hours - type REAL, therefore values of greater than 7 digits in resolution may have minor inaccuracies due to Floating Point to integer conversion process.

- Reliability
 - Time_Of_Active_Time_Reset
- 4. Writeable Properties:
 - Present_Value
 - Elapsed_Active_Time

- 5. Proprietary Properties: None
- 6. Property Range Restrictions:
 - Elapsed_Active_Time

0 to 235926008, resolution 1

1.5.7. Binary Value Object Type

- 1. Creatable: No
- 2. Deletable: No
- 3. Optional Properties Supported:
 - Reliability
- 4. Writeable Properties:
 - Present_Value
- 5. Proprietary Properties: None
- 6. Property Range Restrictions: None

1.5.8. Device Object Type

- 1. Creatable: No
- 2. Deletable: No
- 3. Optional Properties Supported:
 - Location
 - Max_Segments_Accepted
 - Local_Date
 - Local_Time
 - Utc_Offset
 - Daylight_Savings_Status
 - Apdu_Segment_Timeout
 - Active_Cov_Subscriptions
 - Configuration_Files
 - Last_Restore_Time
 - Backup_Failure_Timeout
 - Backup_Preperation_Time
 - Restore_Preparation_Time
 - Restore_CompletionTime
 - Bacup_And_Restore_State

- 4. Writeable Properties:
 - Local_Date
 - Local_Time
 - Utc_Offset
 - Object_Name
 - Backup_Failure_Timeout

- 5. Proprietary Properties: None
- 6. Property Range Restrictions:
 - Utc_Offset
 - Local_Date

-780 to +780, resolution: 1
01/01/2000 to 12/31/2099

1.5.9. Notification Class Object Type

- 1. Creatable: No
- 2. Deletable: No
- 3. Optional Properties Supported: None
- 4. Writeable Properties:
 - Recipient_List
- 5. Proprietary Properties: None
- 6. Property Range Restrictions: None

1.5.10. Schedule Object Type

1. Creatable: No
2. Deletable: No
3. Optional Properties Supported:
 - Weekly_Schedule
 - Exception_Schedule
4. Writeable Properties:
 - Schedule_Default
 - Effective_Period
 - List_Of_Object_Property_References
5. Proprietary Properties: None
6. Property Range Restrictions: None

Note: The list of List_Of_Object_Property_References property will maintain entries that are configured within the Trend strategy file.

1.5.11. Trend Log Object

1. Creatable: No
2. Deletable: No
3. Optional Properties Supported:
 - Records_Since_Notification
 - Last_Notify_Record
 - Notification_Class
 - Event_Enable
 - Acked_Transactions
 - Notify_Type
 - Event_Time_Stamps
4. Writeable Properties:
 - Notification_Threshold
 - Log_Interval
 - Record_Count
 - Log_Enable
5. Proprietary Properties: None
6. Property Range Restrictions:

| | | |
|------------------------|---------------------------------|---|
| Notification_Threshold | 0 to 1000 | |
| Log_Interval | 0 to 8640000, resolution 100 | This property is held internally as seconds so values with the bottom two digits set will be truncated. |
| Record_Count | Only writes of value 0 allowed. | |

1.5.12. Calendar Object

1. Creatable: Yes
2. Deletable: Yes
3. Optional Properties Supported: None
4. Writeable Properties Supported:
 - Date_List
5. Proprietary Properties: None
6. Property Range Restrictions: None

1.5.13. File Object

1. Creatable: No
2. Deletable: No
3. Optional Properties Supported: none
4. Writeable Properties:
 - File_Size
 - Archive
5. Proprietary Properties: None
6. Property Range Restrictions:
 - File_Access_Method = STREAM_ACCESS only.

1.6. DATA LINK LAYER OPTIONS

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7)
- ANSI/ATA 878.1, 2.5 Mb. ARCNET (Clause 8)
- ANSI/ATA 878.1, RS-485 ARCNET (Clause 8), baud rate(s):
- MS/TP master (Clause 9), baud rate(s):
- 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:

1.7. 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.

1.8. 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

1.9. 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)
- ISO 10646 (UCS-4)
- JIS C 6226

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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