

Unit Control Board (UCB) Protocol Implementation Conformance Statement

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SE-SPU1011-0, SE-SPU1012-0

Refer to the [QuickLIT website](#) for the most up-to-date version of this document.

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Unit Control Board (UCB) Protocol Implementation Conformance Statement Technical Bulletin

Document Introduction

This document contains the Protocol Implementation Conformance Statement (PICS) and BACnet® Interoperability Building Blocks (BIBBs) for the Smart Equipment Controls (SEC) Unit Control Board (UCB) as required by the American National Standards Institute/American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ANSI/ASHRAE) Standard 135, BACnet protocol.

The PICS is a written document created by the manufacturer of a device to identify the particular options specified in the BACnet standard and implemented in the device.

BACnet interoperability building blocks are collections of one or more BACnet services. This document includes a listing of the BIBBs currently supported by the UCB.

Annex A - Protocol Implementation Conformance Statement (Normative)

Table 1: BACnet Protocol Implementation Conformance Statement

Date	August 18, 2014
Vendor Name	Johnson Controls, Inc.
Product Name	Smart Equipment Controls (SEC) Unit Control Board (UCB)
Product Model Numbers	SE-SPU1011-0, SE-SPU1012-0
Application Software Version	Not Applicable
Firmware Revision	3.0
BACnet Protocol Revision	Version 1, Revision 9.0

Product Description

The UCB is the main controller for the Smart Equipment Controls (SEC) unified platform. The UCB incorporates basic compressor protection, indoor blower control, and advanced features such as integration of ventilation control. All variants of the UCB product family conform to the BACnet Advanced Application Controller (B-AAC) profile.

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)
- BACnet Other (B-Other)

BACnet Interoperability Building Blocks (BIBBs) (Annex K)

The following table lists all BIBBs that are supported. The table is divided into BIBBs required for the BACnet Advanced Application Specific Controller (B-AAC) profile, followed by additional BIBBs that are supported but not required for the B-AAC profile.

Table 2: BACnet B-AAC BIBBs Support

BIBB Name (A = Initiates and B = Executes)	Designation
Required for B-AAC Profile	
Data Sharing - Read Property - B	DS-RP-B
Data Sharing - Read Property Multiple - B	DS-RPM-B
Data Sharing - Write Property - B	DS-WP-B
Data Sharing - Write Property Multiple - B	DS-WPM-B
Alarm and Event - Notification - Internal - B	AE-N-I-B
Alarm and Event - ACK - B	AE-ACK-B
Alarm and Event - Information - B	AE-INFO-B
Scheduling - Internal - B	SCHED-I-B
Device Management - Dynamic Device Binding - B	DM-DDB-B
Device Management - Device Communication Control - B	DM-DCC-B
Device Management - Dynamic Device Binding - A	DM-DDB-A
Device Management - Time Synchronization - B	DM-TS-B
Device Management - UTC Time Synchronization - B	DM-UTC-B
Device Management - Reinitialize Device - B	DM-RD-B
Not Required for B-AAC Profile	
Data Sharing - COV - B	DS-COV-B
Data Sharing - COVP - B	DS-COVP-B
Data Sharing - COVU - B	DS-COVU-B
Data Sharing - Write Group - Internal B	DS-WG-I-B
Data Sharing - Write Group - External - B	DS-WG-E-B
Alarm and Event - Alarm Summary - B	AE-ASUM-B
Alarm and Event - Enrollment Summary - B	AE-ESUM-B
Device Management - Restart - B	DM-R-B
Device Management - List Manipulation - B	DM-LM-B
Trending - Viewing and Modifying Trends Internal - B	T-VMT-I-B
Trending - Automated Trend Retrieval - B	T-ATR-B

Segmentation Capability

- Able to transmit segmented messages Window Size:1.0
- Able to receive segmented messages Window Size: 1.0

Standard Object Types Supported

The following is a list of the standard object types as defined by ASHRAE that are currently supported in the SE-SPU1011-0 and SE-SPU1012-0. See the section of the supported object type for details.

- Analog Value
- Calendar
- Device
- File
- Multistate Value
- Notification Class
- Schedule
- Trend Log
- Event Log

Analog Value

Dynamically Creatable: No

Dynamically Deletable: No

Table 3: Analog Value

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Writable	Range
PRESENT_VALUE	√					√	
OUT_OF_SERVICE	√						
UNITS	√					√	0–65,535
RELIABILITY		√					
PRIORITY_ARRAY		√					
RELINQUISH_DEFAULT		√				√	40 characters max
COV_INCREMENT		√				√ ¹	any value > = 0
DESCRIPTION		√			CharacterString	√	40 characters max
MAX_PRES_VALUE			√	65	Real	√	
MIN_PRES_VALUE			√	69	Real	√	
STATUS				512	Enumerated		
INTRINSIC_ALARMING_DEFINED			√	569	Boolean	√	
DISPLAY_PRECISION			√	661	Enumerated	√	0–12
ENABLED			√	673	Boolean	√	
RESTORE_COMMAND_PRIORITY			√	721	Bit String	√	
OBJECT_CATEGORY			√	908	Enumerated	√	0–249
OFFLINE			√	913	Boolean		
ALARM_STATE			√	1006	Enumerated		
USER_NAME			√	2390	CharacterString	√	400 characters max
USE_COV_MIN_SEND_TIME			√ ²	3930	Boolean	√	
ITEM_REFERENCE			√	32527	Character String	√	

1. Not writable in all instances.

2. Not present in all instances.

Calendar

Dynamically Creatable: Yes

Dynamically Deletable: Yes

Table 4: Calendar

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Writable	Range
DATE_LIST	√					√	
DESCRIPTION		√				√	40 characters max
STATUS			√	512	Enumerated		
ENABLED			√	673	Boolean	√	
OBJECT_CATEGORY			√	908	Enumerated	√	0-249
ALARM_STATE			√	1006	Enumerated		
GLOBAL_CALENDAR_REFERENCE			√	1096	Complex	√	
GLOBAL_CALENDAR_UPDATE			√	1097	Complex		
DATE_LIST_CHANGED			√	1098	Unsigned		
EXECUTION_PRIORITY			√	2197	Enumerated	√	0-3
USER_NAME			√	2390	CharacterString	√	400 characters max
ITEM_REFERENCE			√	32527	CharacterString		
ALLOW_CALENDAR_EDIT			√	64005	Boolean		

Device

Dynamically Creatable: No

Dynamically Deletable: No

Table 5: Device (Part 1 of 3)

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Writable	Range
APDU_TIMEOUT	√					√ ¹	1,000–65,535 in milliseconds
APP_SW_VERSION	√					√	5 characters
MAX_APDU_LENGTH	√					√ ¹	Any value > 5
APDU_RETRIES	√					√ ¹	2-10
APDU_SEGMENT_TIMEOUT		√				√	1,000-65,535
LOCATION		√				√	56 characters
ACTIVE_COV_SUBSCRIPTIONS		√					
MAX_SEGMENTS_ACCEPTED		√					
LAST_RESTART_REASON		√					
RESTART_NOTIFICATION_RECIPIENTS		√				√	
TIME_OF_DEVICE_RESTART		√					
CONFIG_FILES		√					
LAST_RESTORE_TIME		√					
BACKUP_FAIL_TIMEOUT		√				√	0-65,535
LOCAL_TIME		√					
LOCAL_DATE		√					
UTC_OFFSET		√				√	-900 to 900
DST_STATUS		√					
MAX_MASTER		√				√	
MAX_INFO_FRAMES		√				√	
DESCRIPTION		√				√	40 characters
STATUS		√	√	512	Enumerated		
SURROGATE_CACHE_CNT			√	571	Unsigned		
END_OF_LINE			√	603	Boolean		
SURROGATE_CACHE_MAX			√	639	Unsigned		
COV_RECEIVES_PER_MINUTE			√	650	Unsigned		
COV_TRANSMITS_PER_MINUTE			√	651	Unsigned		
ENABLED			√	673	Boolean	√	
SIGN_PRI_DB_SIZE			√	730	Unsigned		
SIGN_PRI_USED			√	731	Unsigned		
SIGN_PRI_PEAK			√	732	Unsigned		
TIMER_DB_SIZE			√	733	Unsigned		
TIMER_USED			√	734	Unsigned		

Table 5: Device (Part 2 of 3)

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Writable	Range
TIMER_PEAK				735	Unsigned		
BACNET_BROADCAST_RECEIVE_RATE			√	745	Unsigned		
HAS_UNBOUND_REFERENCES			√	767	Boolean		
NEXT_AVAILABLE_OID			√	787	Unsigned	√	30,000,001-41,799,991
JCI_SYSTEM_STATUS			√	847	Enumerated		
MAX_MESSAGE_BUFFER			√	848	Unsigned	√	98-65,535
ARCHIVE_DATE			√	849	Date		
ARCHIVE_TIME			√	850	Time		
BAS_LANG			√	897	Enumerated	√	
BAS_UNIT_SYSTEM			√	898	Enumerated	√	
OBJECT_CATEGORY			√	908	Enumerated	√	0-249
ALARM_STATE			√	1006	Unsigned		
ALLOCATED_POOL_SIZE			√	1139	Unsigned		
STARTUP_OFF_STATE_AUTO_RELEASE_TIME			√	1186	Unsigned	√	
ARCHIVE_STATUS			√	1187	Unsigned		
STARTUP_OFF_STATE_COMMAND_PRIORITY			√	1224	Unsigned	√	
REDISCOVER_COMPONENTS			√	1247	Boolean	√	
BACNET_OID_ALLOCATED			√	1291	Unsigned		
BACNET_OID_USED			√	1292	Unsigned		
PCODE			√	1320	String		
DEVICE_TIME_ZONE			√	1403	Enumerated	√	1-1,101
LOCAL_TIME_ZONE			√	1404	Enumerated		1-1,101
EVENT_LOST			√	1479	Unsigned		
SYS_RAM_RESOURCE			√	2016	Unsigned		
OBJENT_QUE_RESOURCE			√	2017	Unsigned		
CPU_USE_RESOURCE			√	2018	Unsigned		
PROT_ENG_IN_RESOURCE			√	2019	Unsigned		
PROT_ENG_OUT_RESOURCE			√	2020	Unsigned		
EXECUTION_PRIORITY			√	2197	Enumerated	√	0-3
DEFAULT_BASE_UNITS			√	2206	Enumerated		
EXTENDED_PROTO_VER			√	2291	Unsigned		
USER_NAME			√	2390	Character String	√	
ESTIMATED_FLASH_AVAILABLE			√	2395	Real		
JCI_EXCEPTION_SCHEDULE			√	2573	Enumerated	√	
MEMORY_USAGE			√	2581	Real		
OBJECT_MEMORY_USAGE			√	2582	Real		

Table 5: Device (Part 3 of 3)

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Writable	Range
CPU_USAGE			√	2583	Real		
FLASH_USAGE			√	2584	Real		
FC_MULTICAST_RESPONDER			√	3390	Unsigned	√	
FC_WAIT_BEFORE_POLLING			√	3391	Unsigned	√	
CONTROL_SEQUENCE_IN_TEST			√	3651	Unsigned	√	
SUPERVISOR_MAC_ADDRESS			√	3652	Unsigned		
SUPERVISOR_DEVICE_ONLINE			√	3653	Boolean	√	
COV_MIN_SEND_TIME			√	3929	Unsigned	√	10-255
ACS_VERSION			√	4128	Unsigned		
DMCS_VERSION			√	4129	Unsigned		
BACNET_OBJECT_CACHE_EXPOSED			√	4302	Enumerated		
ROUTING_MODE			√	4307	Enumerated	√	0-2
BACNET_ROUTED_MESSAGES_RATE			√	4310	Unsigned		
LOAD_BALANCER_LEVEL			√	4722	Enumerated		
TIMER_MSGS_ABORTED			√	4959	Unsigned		
ASSET_VERSIONS			√	4960	Complex		
ACCEPT_BACNET_TIME_SYNC			√	4970	Boolean		
LAST_BACNET_TIME_SYNC_RCVD			√	5728	Complex		
SUPERVISOR_OFFLINE_TIMEOUT			√	6002	Unsigned	√	1-255
LAST_IDLE_SAMPLE			√	30082	Real		
ITEM_REFERENCE			√	32527	Character String		
BACNET_ENCODE_TYPE			√	32578	Enumerated	√	0-2
TIME_ZONE			√	32583	Enumerated	√	1 - 1,101
FILTER_ENABLE			√	63999	Boolean	√	
MY_NAME			√	64722	String	√	
DEV_OBJECT_IDENTIFIER			√	65530	Unsigned	√	

1. Write does not take effect until after reboot.

File

Note: File objects can be modified by replacing the entire file.

File objects must be written sequentially.

File objects are only visible during a backup or restore operation.

Dynamically Creatable: No

Note: Object is dynamically creatable when restore is in progress.

Dynamically Deletable: No

Table 6: File

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Writable	Range
FILE_SIZE	√					√ ¹	
ARCHIVE	√					√	
DESCRIPTION		√			Character String	√	40 characters max
STATUS			√	512	Enumerated		
ENABLED			√	673	Boolean	√	
OBJECT_CATEGORY			√	908	Enumerated	√	0–249
ALARM_STATE			√	1006	Enumerated		
EXECUTION_PRIORITY			√	2197	Enumerated	√	0–3
USER_NAME			√	2390	Character String	√	400 characters max
MAX_FILE_SIZE			√	3380	Unsigned		
ITEM_REFERENCE			√	32527	Character String		

1. Can write zero (0) to file size but arbitrary truncation or expansion is not supported.

Multistate Value

Dynamically Creatable: No

Dynamically Deletable: No

Table 7: Multistate Value (Part 1 of 2)

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Writable	Range
PRESENT_VALUE	√					√	
OUT_OF_SERVICE	√						
NUMBER_OF_STATES	√					√ ¹	2–500
RELIABILITY		√				√	
PRIORITY_ARRAY		√ ²					
RELINQUISH_DEFAULT		√ ²				√	
STATE_TEXT		√				√	
EVENT_ENABLE		√ ³				√	
ALARM_VALUES		√ ³				√	0–500
FAULT_VALUES		√ ³					0-500
TIME_DELAY		√ ³				√	0–65,535
NOTIFICATION_CLASS		√ ³				√	1–4,194,303
NOTIFY_TYPE		√ ³				√	
ACKED_TRANSITIONS		√ ³					
EVENT_TIME_STAMPS		√ ³					
DESCRIPTION		√				√	40 characters max
STATUS			√	512	Enumerated		
ALARM_MESSAGE_TEXT			√ ³	536	CharacterString	√	
INTRINSIC_ALARMING_DEFINED			√	569	Boolean	√	
ENABLED			√	673	Boolean	√	
RESTORE_COMMAND_PRIORITY			√	721	Bit String	√	
OBJECT_CATEGORY			√	908	Enumerated	√	0–249
OFFLINE			√	913	Boolean		
STATES_TEXT			√	931	Enumerated		
ALARM_STATE			√	1006	Enumerated		
EXECUTION_PRIORITY			√	2197	Enumerated	√	0–3
USER_NAME			√	2390	CharacterString	√	400 characters max
NOTIFICATION_OBJ_REF			√ ³	4304	Complex	√	

Table 7: Multistate Value (Part 2 of 2)

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Range	Writable
INTRINSIC_ALARM_DISABLED			√ ³	4305	Boolean		√
STORED_EVENT_ENABLE			√ ³	4306	Bit String		
ITEM_REFERENCE			√	32527	CharacterString		
GRAPHIC			√ ³	32581	CharacterString		√
GRAPHIC_ALIAS			√ ³	32623	CharacterString		√

1. Not writable in all instances.
2. Not present in all instances.
3. Only present when intrinsic alarming is enabled.

Notification Class

Dynamically Creatable: No

Dynamically Deletable: No

Table 8: Notification Class

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Range	Writable
RECIPIENT_LIST	√						√
PRIORITY	√						√
RECIPIENT_LIST	√						√
ACK_REQUIRED	√						√
DESCRIPTION		√				40 characters max	√
STATUS			√	512	Enumerated		
ENABLED			√	673	Boolean		√
OBJECT_CATEGORY			√	908	Enumerated	0–249	√
ALARM_STATE			√	1006	Enumerated		
SEND_NOTIFICATIONS_TO_SUPERVISOR			√	1095	Boolean		√
EXECUTION_PRIORITY			√	2197	Enumerated	0–3	√
USER_NAME			√	2390	CharacterString	400 characters max	√
SUPERVISORY_DEVICE_PROCESS_ID			√	3052	Unsigned		
ITEM_REFERENCE			√	32527	CharacterString		
ROUTE_TO_METASYS			√	32580	Boolean		√

Schedule

Dynamically Creatable: Yes

Dynamically Deletable: Yes

Table 9: Schedule

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Writable	Range
EFFECTIVE_PERIOD	√					√	
LIST_OF_PROP_REFS	√					√	
OUT_OF_SERVICE	√					√	
PRESENT_VALUE	√					√ ¹	
PRIORITY_FOR_WRITING	√					√	
SCHEDULE_DEFAULT	√					√	
DESCRIPTION			√			√	40 characters max
EXCEPTION_SCHEDULE			√			√	
WEEKLY_SCHEDULE			√			√	
STATUS				√ 512	Enumerated		
ENABLED				√ 673	Boolean	√	
OBJECT_CATEGORY				√ 908	Enumerated	√	0–111
PERFORM_INDEX				√ 965	Unsigned		
ALARM_STATE				√ 1006	Enumerated		
EXECUTION_PRIORITY				√ 2197	Enumerated	√	0–3
USER_NAME				√ 2390	CharacterString	√	400 characters max
TODAYS_SCHEDULE				√ 4198	List		
ITEM_REFERENCE				√ 32527	CharacterString		

1. Writable when OUT_OF_SERVICE is true.

Trend Log

Dynamically Creatable: No

Dynamically Deletable: No

Table 10: Trend Log

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Writable	Range
ENABLE	√					√	
RECORD_COUNT	√					√ ¹	
STOP_WHEN_FULL	√					√	
DESCRIPTION		√				√	40 characters max
CLIENT_COV_INCREMENT		√				√	
COV_RESUBSC_INTERVAL		√				√	
INPUT_REFERENCE		√					
LOG_INTERVAL		√				√	0-60,480,000
START_TIME		√				√	
STOP_TIME		√				√	
TRIGGER		√				√	
STATUS			√	512	Enumerated		
INTRINSIC_ALARMING_DEFINED			√	569	Boolean	√	
ENABLED			√	673	Boolean	√	
OBJECT_CATEGORY			√	908	Enumerated	√	0-249
ALARM_STATE			√	1006	Enumerated		
EXECUTION_PRIORITY			√	2197	Enumerated	√	0-3
USER_NAME			√	2390	CharacterString	√	400 characters max
BUFFER_STATE			√	2565	Enumerated		
SAMPLE_INTERVAL			√	2566	Unsigned	√	
ITEM_REFERENCE			√	32527	CharacterString		

1. Only writes of the value zero are allowed.

Event Log

Dynamically Creatable: No

Dynamically Deletable: No

Table 11: Event Log

Property Name	Required	Optional	Proprietary	Property ID	Data Type	Writable	Range
ENABLE	√					√	
RECORD_COUNT	√					√	
STOP_WHEN_FULL	√					√	
DESCRIPTION		√				√	40 characters max
RELIABILITY		√					
START_TIME		√				√	
STOP_TIME		√				√	
STATUS			√	512	Enumerated		
INTRINSIC_ALARM_DEFINED			√	569	Boolean	√	
ENABLED			√	673	Boolean	√	
OBJECT_CATEGORY			√	908	Enumerated	√	0–249
ALARM_STATE			√	1006	Enumerated		
EXECUTION_PRIORITY			√	2197	Enumerated	√	0-3
USER_NAME			√	2390	Character String	√	
ITEM_REFERENCE			√	35527			

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 network (Clause 8)
- ATA 878.1, EIA-485 ARCNET network (Clause 8), baud rates: _____
- Master-Slave/Token-Passing (MS/TP) master (Clause 9), baud rates: Auto (default), 9600; 19,200;
38,400; 76,800
- MS/TP slave (Clause 9), baud rates: Auto (default), 9600; 19,200;
38,400; 76,800
- Point-To-Point, EIA 232 (Clause 10), baud rates: _____
- Point-To-Point, modem (Clause 10), baud rates: _____
- LonTalk® protocol (Clause 11), medium: _____
- BACnet/ZigBee® protocol (Annex O) _____
- Other: _____

Device Address Binding

- Yes No **Is static device binding supported?** (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.)

Networking Options

- Router, Clause 6: IP/MSTP MSTP/MSTP
 - 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

Character Sets Supported

Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- ANSI X3.4
- IBM®/Microsoft® Double-Byte Character Set (DBCS)
- ISO 8859-1
- ISO 10646 Universal Character Set-2 (UCS-2)
- ISO 10646 (UCS-4)
- Japanese Industrial Standard (JIS) X 0208

Communication Gateway (Annex H)

If this product is a communication gateway, describe the types of non BACnet equipment/network(s) that the gateway supports:

None

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)



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