



Delta Controller Engine (DCE) - 3.40 Firmware

BACNET PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT

Date: August 22, 2011
Vendor Name: Delta Controls Inc.
Product Name: Delta Controller Engine
Product Model Number: DCE
Product Version: 3.40 Firmware
BACnet Protocol Revision: 6

Product Description

The *Delta Controller Engine (DCE)* and associated firmware provides fully programmable capabilities to a range of Delta controller products. Although hardware features (Ports, RTC, I/O) may vary in each product, they all use the same BACnet firmware and communicate on a BACnet MS/TP network (Ethernet and IP are also supported on some models). All products support all the BACnet capabilities indicated unless otherwise noted.

Product Description	Product Model	Device Profile			Ethernet & IP
		ASC	AAC	BC	
System Controllers	DSC-R2424E			✓	✓
	DSC-R1616E			✓	✓
	DSC-1616E			✓	✓
	DSC-1212E			✓	✓
	DSC-1146E			✓	✓
	DSC-1180E			✓	✓
	DSC-606E			✓	✓
	DSC-633E			✓	✓
	DSC-T305			✓	
System Managers	DSM-RTR			✓	✓
	DSM-T0B			✓	
Access System Manager	ASM-24E			✓	✓
Application Controllers	DAC-1600		✓		
	DAC-1146		✓		
	DAC-1146E		✓		✓
	DAC-1180		✓		
	DAC-1180E		✓		✓
	DAC-606		✓		
	DAC-606E		✓		✓
	DAC-633		✓		
	DAC-633E		✓		✓
	DAC-304		✓		
	DAC-322		✓		
	DAC-T305		✓		
Application Controllers: VAV	DVC-V304		✓		
	DVC-V304E		✓		✓
	DVC-V322		✓		
	DVC-V322E		✓		✓

continued on the next page...



Delta Controller Engine (DCE) - 3.40 Firmware
BACNET PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT

Product Description	Product Model	Device Profile			Ethernet & IP
		ASC	AAC	BC	
Application Controllers: Fan Coil	DFC-304R3		✓		
	DFC-322R3		✓		
Programmable Network Thermostat	DNT-T305		✓		
Lighting Controllers	DLC-P1036			✓	
	DLC-P1036E			✓	✓
	DLC-P1024			✓	
	DLC-P1024E			✓	✓
	DLC-P1012			✓	
	DLC-P1012E			✓	✓
	DLC-P1008			✓	
	DLC-P1008E			✓	✓
	DLC-P704			✓	
	DLC-P704E			✓	✓
	DLC-G1212			✓	

BACnet Standardized Device Profile (Annex L):

- BACnet Operator Workstation (B-OWS)
- 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)

NOTES

See product lists above.
 See product lists above.



BACnet Interoperability Building Blocks Supported (Annex K):

BACnet Interoperability Building Block	Supported
Data Sharing	
Data Sharing-ReadProperty-A (DS-RP-A)	<input checked="" type="checkbox"/>
Data Sharing-ReadProperty-B (DS-RP-B)	<input checked="" type="checkbox"/>
Data Sharing-ReadPropertyMultiple-A (DS-RPM-A)	<input checked="" type="checkbox"/> ⁴
Data Sharing-ReadPropertyMultiple-B (DS-RPM-B)	<input checked="" type="checkbox"/>
Data Sharing-ReadPropertyConditional-A (DS-RPC-A)	<input type="checkbox"/>
Data Sharing-ReadPropertyConditional-B (DS-RPC-B)	<input type="checkbox"/>
Data Sharing-WriteProperty-A (DS-WP-A)	<input checked="" type="checkbox"/>
Data Sharing-WriteProperty-B (DS-WP-B)	<input checked="" type="checkbox"/>
Data Sharing-WritePropertyMultiple-A (DS-WPM-A)	<input type="checkbox"/>
Data Sharing-WritePropertyMultiple-B (DS-WPM-B)	<input checked="" type="checkbox"/>
Data Sharing-COV-A (DS-COV-A)	<input checked="" type="checkbox"/>
Data Sharing-COV-B (DS-COV-B)	<input checked="" type="checkbox"/>
Data Sharing-COVP-A (DS-COVP-A)	<input checked="" type="checkbox"/>
Data Sharing-COVP-B (DS-COVP-B)	<input checked="" type="checkbox"/>
Data Sharing-COV-Unsolicited-A (DS-COVU-A)	<input checked="" type="checkbox"/>
Data Sharing-COV-Unsolicited-B (DS-COVU-B)	<input checked="" type="checkbox"/>
Scheduling	
Scheduling-Internal-B (SCHED-I-B)	<input checked="" type="checkbox"/>
Scheduling-External-B (SCHED-E-B)	<input checked="" type="checkbox"/>
Trending	
Trending-Viewing and Modifying Trends-A (T-VMT-A)	<input type="checkbox"/>
Trending-Viewing and Modifying Trends-Internal-B (T-VMT-I-B)	<input checked="" type="checkbox"/>
Trending-Viewing and Modifying Trends-External-B (T-VMT-E-B)	<input checked="" type="checkbox"/>
Trending-Automated Trend Retrieval-A (T-ATR-A)	<input type="checkbox"/>
Trending-Automated Trend Retrieval-B (T-ATR-B)	<input checked="" type="checkbox"/>
Network Management	
Network Management-Connection Establishment-A (NM-CE-A)	<input checked="" type="checkbox"/>
Network Management-Connection Establishment-B (NM-CE-B)	<input checked="" type="checkbox"/>
Network Management-Router Configuration-A (NM-RC-A)	<input type="checkbox"/>
Network Management-Router Configuration-B (NM-RC-B)	<input type="checkbox"/>
Alarm and Event Management	
Alarm and Event-Notification-A (AE-N-A)	<input checked="" type="checkbox"/> ³
Alarm and Event-Notification Internal-B (AE-N-I-B)	<input checked="" type="checkbox"/>
Alarm and Event-Notification External-B (AE-N-E-B)	<input checked="" type="checkbox"/>
Alarm and Event-ACK-A (AE-ACK-A)	<input type="checkbox"/>
Alarm and Event-ACK-B (AE-ACK-B)	<input checked="" type="checkbox"/>
Alarm and Event-Alarm Summary-A (AE-ASUM-A)	<input type="checkbox"/>
Alarm and Event-Alarm Summary-B (AE-ASUM-B)	<input checked="" type="checkbox"/>
Alarm and Event-Enrollment Summary-A (AE-ESUM-A)	<input type="checkbox"/>
Alarm and Event-Enrollment Summary-B (AE-ESUM-B)	<input checked="" type="checkbox"/>
Alarm and Event-Information-A (AE-INFO-A)	<input type="checkbox"/>
Alarm and Event-Information-B (AE-INFO-B)	<input checked="" type="checkbox"/>
Alarm and Event-LifeSafety-A (AE-LS-A)	<input type="checkbox"/>
Alarm and Event-LifeSafety-B (AE-LS-B)	<input type="checkbox"/>



Delta Controller Engine (DCE) - 3.40 Firmware

BACNET PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT

BACnet Interoperability Building Block	Supported
Device Management	
Device Management-Dynamic Device Binding-A (DM-DDB-A)	<input checked="" type="checkbox"/>
Device Management-Dynamic Device Binding-B (DM-DDB-B)	<input checked="" type="checkbox"/>
Device Management-Dynamic Object Binding-A (DM-DOB-A)	<input checked="" type="checkbox"/>
Device Management-Dynamic Object Binding-B (DM-DOB-B)	<input checked="" type="checkbox"/>
Device Management-DeviceCommunicationControl-A (DM-DCC-A)	<input type="checkbox"/>
Device Management-DeviceCommunicationControl-B (DM-DCC-B)	<input checked="" type="checkbox"/>
Device Management-Private Transfer-A (DM-PT-A)	<input checked="" type="checkbox"/>
Device Management-Private Transfer-B (DM-PT-B)	<input checked="" type="checkbox"/>
Device Management-Text Message-A (DM-TM-A)	<input checked="" type="checkbox"/>
Device Management-Text Message-B (DM-TM-B)	<input type="checkbox"/>
Device Management-TimeSynchronization-A (DM-TS-A)	<input checked="" type="checkbox"/> ¹
Device Management-TimeSynchronization-B (DM-TS-B)	<input checked="" type="checkbox"/> ²
Device Management-UTCTimeSynchronization-A (DM-UTC-A)	<input checked="" type="checkbox"/> ¹
Device Management-UTCTimeSynchronization-B (DM-UTC-B)	<input checked="" type="checkbox"/> ²
Device Management-AutomaticTimeSynchronization-A (DM-ATS-A)	<input checked="" type="checkbox"/> ³
Device Management-ReinitializeDevice-A (DM-RD-A)	<input type="checkbox"/>
Device Management-ReinitializeDevice-B (DM-RD-B)	<input checked="" type="checkbox"/>
Device Management-Backup and Restore-A (DM-BR-A)	<input type="checkbox"/>
Device Management-Backup and Restore-B (DM-BR-B)	<input checked="" type="checkbox"/>
Device Management-List Manipulation-A (DM-LM-A)	<input type="checkbox"/>
Device Management-List Manipulation-B (DM-LM-B)	<input type="checkbox"/>
Device Management-Object Creation and Deletion-A (DM-OCD-A)	<input type="checkbox"/>
Device Management-Object Creation and Deletion-B (DM-OCD-B)	<input checked="" type="checkbox"/>
Device Management-Virtual Terminal-A (DM-VT-A)	<input type="checkbox"/>
Device Management-Virtual Terminal-B (DM-VT-B)	<input type="checkbox"/>

¹ – Only supported by B-BC products. Based on the UTC setting in the Device object. When UTC is enabled, both DM-TS-A and DM-UTC-A is supported, otherwise only DM-TS-A is supported.

² – Based on the UTC setting in the Device object. When UTC is enabled, DM-UTC-B is supported. When UTC is disabled DM-TS-B is supported. Dates before January 1, 2000 or after December 31, 2099 will be ignored.

³ – Only supported by B-BC products.

⁴ – Only supported by B-BC and Ethernet capable B-AAC products.

Segmentation Capability:

Segmented Requests Supported	<input checked="" type="checkbox"/>	Window Size:	1
Segmented Responses Supported	<input checked="" type="checkbox"/>	Window Size:	1

Standard Object Types Supported:

Object-Type	Supported	Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
Analog Input	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Device Type, Reliability, Min Pres Value, Max Pres Value, Update Interval, Resolution, COV Increment, Notify Type, Acked Transitions, Event Time Stamps	Object Name, Description, COV Increment, Present Value (conditional), Out of Service, Reliability (conditional), Time_Delay, Notification_Class, High_Limit, Low_Limit, Deadband, Limit_Enable, Event_Enable



Delta Controller Engine (DCE) - 3.40 Firmware

BACNET PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT

Object-Type	Supported	Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
Analog Output	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Device Type, Reliability, Min Pres Value, Max Pres Value, Resolution, COV Increment, Notify Type, Acked Transitions, Event Time Stamps	Object Name, Description, Present Value, COV Increment, Relinquish Default, Out of Service, Reliability (conditional), Time Delay, Notification Class, High Limit, Low Limit, Deadband, Limit Enable, Event Enable
Analog Value	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Reliability, COV Increment	Object Name, Description, Present Value (conditional), COV Increment, Out of Service, Reliability (conditional), Units
Averaging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Binary Input	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Device Type, Reliability, Active Text, Inactive Text, Change Of State Time, Change Of State Count, Time of State Count Reset, Acked Transitions, Notify Type, Event Time Stamps	Object Name, Description, Polarity, Present Value (conditional), Out of Service, Reliability (conditional), Time Delay, Notification Class, Alarm Value, Event Enable
Binary Output	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Device Type, Reliability, Active Text, Inactive Text, Change Of State Time, Change Of State Count, Time of State Count Reset, Min On Time, Min Off Time, Acked Transitions, Notify Type, Event Time Stamps	Object Name, Description, Present Value, Polarity, Relinquish Default, Min On Time, Min Off Time, Out of Service, Reliability (conditional), Time Delay, Notification Class, Feedback Value, Event Enable
Binary Value	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Reliability, Active Text, Inactive Text	Object Name, Description, Present Value (conditional), Out of Service, Reliability (conditional)
Calendar	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description	Object Name, Description, Date List
Command	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Device	<input checked="" type="checkbox"/>	N/A	N/A	Description, Location, APDU Segment Timeout, Time Synch Recipients, Max Master, Max Info Frames, Max Segments Accepted, Local Time, Local Date, UTC Offset, DST Status, Active COV Subscription, Backup Failure Timeout, Last Restore Time, Configuration Files	Object Name, Description, Location, Time Synch Recipients, UTC Offset, APDU Segment Timeout, APDU Timeout, Number of APDU Retries, Max Master, Max Info Frames
Event Enrollment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Notification Class	Object Name, Description, Event Type, Event Parameters, Object Property Reference, Event Enable, Notification Class
File	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Description	Object Name, Description, File Type, Archive
Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Life Safety Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		



Delta Controller Engine (DCE) - 3.40 Firmware

BACNET PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT

Object-Type	Supported	Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
Life Safety Zone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Load Control	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, State Description, Reliability,	Object Name, Description, Requested Shed Level, Start Time, Shed Duration, Duty Window, Enable, Expected Shed Level, Actual Shed Level, Shed Levels, Shed Description, State Description
Loop	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Reliability, Update Interval, Proportional Constant, Proportional Units, Integral Constant, Integral Units, Derivative Constant, Derivative Units, Bias, Maximum Output, Minimum Output, COV Increment	Object Name, Description, Action, Manipulated Var Ref, Controlled Variable Ref, Controlled Var Units, Setpoint, Setpoint Ref, Proportional Constant, Proportional Constant Units, Integral Constant, Derivative Constant, Bias, COV Increment, Out of Service, Present Value (conditional), Reliability (conditional)
Multi-state Input	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Reliability, Device Type, State Text, Acked Transitions, Notify Type, Event Time Stamps	Object Name, Description, Present Value (conditional), Out of Service, Reliability (conditional), Time Delay, Notification Class, Alarm Values, Fault Values, Event Enable
Multi-state Output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Multi-state Value	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Reliability, State Text	Object Name, Description, Present Value (conditional), Out Of Service, Reliability (conditional)
Notification Class	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description	Object Name, Description, Ack Required, Priority, Recipient List
Program	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Reliability, Description of Halt, Reason for Halt	Object Name, Description, Program Change, Out of Service, Reliability (conditional)
Schedule	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Weekly Schedule, Exception Schedule	Object Name, Description, Effective Period, Weekly Schedule, Exception Schedule, List of Object Property Reference, Priority for Writing
Structured View	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Node Sub Type, Subordinate Annotations, Profile Name	Object Name, Description, Node Type, Node Sub Type, Subordinate List, Subordinate Annotations, Profile Name
Trend Log	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Description, Start Time, Stop Time, Log Device Object Prop, Log Interval, COV Resubscription Interval, Notification Threshold, Records Since Notification, Notification Class, Event Enable, Acked Transition, Notify Type, Event Time Stamps	Object Name, Description, Log Enable, Start Time, Stop Time, Log Device Object Prop, Log Interval, Stop When Full, Buffer Size, Record Count
Proprietary	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		



Range Restrictions

Object-Type	Property	Range Restriction
All Object Types	Object Name	[1, 67] printable ASCII characters, inclusive
Binary Input, Binary Output	Change Of State Count	Accepts writes of value of zero (0) only
Loop	Bias	[0.0, 100.0] inclusive
Calendar Schedule	Date List Exception Schedule	BACnet Date <ul style="list-style-type: none"> Will accept dates that include any wild combinations in the individual fields (example: unspecified day of week, unspecified day of month, January, unspecified year) BACnet DateRange <ul style="list-style-type: none"> Will not accept Start/End dates that includes wild combinations in the individual fields (example: unspecified day of week, unspecified day of month, unspecified month, year 2004). Will accept Start/End dates in which all individual fields are wild (example: unspecified day of week, unspecified day of month, unspecified month, unspecified year). Will not accept DateRanges in which both the Start and End date are wild. WeekNDay <ul style="list-style-type: none"> Will accept dates that include any wild combinations in the individual fields (example: Mondays, unspecified week of month, December)
Schedule	Effective Period	End Date > Start Date (End date must be later date than the Start Date)

Data Link Layer Options:

- BACnet IP, (Annex J)
- BACnet IP, (Annex J), Foreign Device
- ISO 8802-3, Ethernet (Clause 7) (10Base2, 10Base5, 10BaseT, Fiber)
- 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): 9600, 19200, 38400, 76800
- MS/TP slave (Clause 9), baud rate(s):
- Point-To-Point, EIA 232 (Clause 10), baud rate(s): 9600, 1920, 38400
- Point-To-Point, modem, (Clause 10), baud rate(s): 9600, 19200, 38400
- LonTalk, (Clause 11), medium:
- Other:

NOTES

Only supported by Ethernet-capable products.
 Only supported by Ethernet-capable products.
 Only supported by Ethernet-capable products.

Only supported by B-BC products.
 Only supported by B-BC products.

Device Address Binding:

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

Networking Options:

- Router Router between 1 Ethernet network, 1 BACnet/IP network, 2 MS/TP networks, and 1 PTP network. Only supported by B-BC products.
- Annex H, BACnet Tunneling



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BACNET PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT

BACnet/IP Broadcast Management Device (BBMD)

Only supported by Ethernet-capable B-BC products.

Does the BBMD support registrations by Foreign Devices?

Only supported by Ethernet-capable B-BC products.

Character Sets Supported:

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

ANSI X3.4

UTF-8

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

Not applicable.