



# Delta Controller Engine (DCE) - 3.33 Firmware

## BACNET PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT

**Date:** April 27, 2007  
**Vendor Name:** Delta Controls Inc.  
**Product Name:** Delta Controller Engine  
**Product Model Number:** DCE  
**Product Version:** 3.33 Firmware  
**BACnet Protocol Revision:** 3

### 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 Controller: 24 x 24(Retro)(Ethernet & HOA Switches)	DSC-R2424E			✓	✓
System Controller: 16 x 16(Retro)(Ethernet & HOA Switches)	DSC-R1616E			✓	✓
System Controller: 16 x 16 (Base)	DSC-1616			✓	
System Controller: 16 x 16 (c/w HOA Switches)	DSC-1616H			✓	
System Controller: 16 x 16 (c/w Ethernet & HOA Switches)	DSC-1616E			✓	✓
System Controller: 12 x 12 (Base)	DSC-1212			✓	
System Controller: 12 x 12 (c/w HOA Switches)	DSC-1212H			✓	
System Controller: 12 x 12 (c/w Ethernet & HOA Switches)	DSC-1212E			✓	✓
System Controller: 12 x 8 (Base)	DSC-1280			✓	
System Controller: 12 x 8 (c/w HOA Switches)	DSC-1280H			✓	
System Controller: 12 x 8 (c/w Ethernet & HOA Switches)	DSC-1280E			✓	✓
System Controller: 11 x 10 (Analog)	DSC-1146			✓	
System Controller: 11 x 8 (Analog)	DSC-1180			✓	
System Controller: 6 x 6 (Binary)	DSC-606			✓	
System Controller: 6 x 6 (Analog)	DSC-633			✓	
System Controller: Room	DSC-T305			✓	
System Manager: Room	DSM-T0			✓	
System Manager: Router	DSM-RTR			✓	✓
System Controller: Room Interface (Custom Power Meter)	DSM-PWR			✓	
System Controller: Room Interface (Modbus Gateway)	DSM-MOD			✓	
System Controller: Room Interface (Custom Wireless Sensors)	DSM-WRL			✓	
Access System Manager	ASM-24E			✓	✓
Application Controller: 16 Inputs	DAC-1600		✓		
Application Controller: 11 x 10 (Analog)	DAC-1146		✓		
Application Controller: 11 x 8 (Analog)	DAC-1180		✓		
Application Controller: 6 x 6 (Binary)	DAC-606		✓		
Application Controller: 6 x 6 (Analog)	DAC-633		✓		

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Product Description	Product Model	Device Profile			Ethernet & IP
		ASC	AAC	BC	
Application Controller: 3 x 4 (Binary)	DAC-304		✓		
Application Controller: 3 x 4 (Analog)	DAC-322		✓		
Application Controller: VAV (Binary)	DVC-304		✓		
Application Controller: VAV (Analog)	DVC-322		✓		
Application Controller: Room	DAC-T305		✓		
Programmable Network Thermostat: Room	DNT-T305		✓		
Fan Coil Controller: (Binary)	DFC-304R3		✓		
Fan Coil Controller: (Analog)	DFC-322R3		✓		
Lighting Controller: GE 12 x 12	DLC-G1212		✓		
Lighting Controller: Douglas 9 x 36	DLC-D936		✓		
Lighting Controller: Douglas 6 x 24	DLC-D624		✓		
Lighting Controller: Douglas 3 x 12	DLC-D312		✓		
Lighting Controller: Panasonic 10 x 36 (Base)	DLC-P1036			✓	
Lighting Controller: Panasonic 10 x 36 (Ethernet)	DLC-P1036E			✓	✓
Lighting Controller: Panasonic 10 x 24 (Base)	DLC-P1024			✓	
Lighting Controller: Panasonic 10 x 24 (Ethernet)	DLC-P1024E			✓	✓
Lighting Controller: Panasonic 10 x 12 (Base)	DLC-P1012			✓	
Lighting Controller: Panasonic 10 x 12 (Ethernet)	DLC-P1012E			✓	✓
Lighting Controller: Panasonic 10 x 8 (Base)	DLC-P1008			✓	
Lighting Controller: Panasonic 10 x 8 (Ethernet)	DLC-P1008E			✓	✓
Lighting Controller: Panasonic 7 x 4 (Base)	DLC-P704			✓	
Lighting Controller: Panasonic 7 x 4 (Ethernet)	DLC-P704E			✓	✓

### 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):**

<b>BACnet Interoperability Building Block</b>	<b>Supported</b>
<b>Data Sharing</b>	
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"/>
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 type="checkbox"/>
Data Sharing-COVP-B (DS-COVP-B)	<input 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"/>
<b>Scheduling</b>	
Scheduling-B (SCHED-B)	<input checked="" type="checkbox"/>
Scheduling-Internal-B (SCHED-I-B)	<input checked="" type="checkbox"/>
Scheduling-External-B (SCHED-E-B)	<input checked="" type="checkbox"/>
<b>Trending</b>	
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"/>
<b>Network Management</b>	
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"/>
<b>Alarm and Event Management</b>	
Alarm and Event-Notification-A (AE-N-A)	<input checked="" type="checkbox"/> <sup>3</sup>
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"/>

BACnet Interoperability Building Block	Supported
<b>Device Management</b>	
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"/> <sup>1</sup>
Device Management-TimeSynchronization-B (DM-TS-B)	<input checked="" type="checkbox"/> <sup>2</sup>
Device Management-UTCTimeSynchronization-A (DM-UTC-A)	<input checked="" type="checkbox"/> <sup>1</sup>
Device Management-UTCTimeSynchronization-B (DM-UTC-B)	<input checked="" type="checkbox"/> <sup>2</sup>
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"/>

<sup>1</sup> – 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.

<sup>2</sup> – 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.

<sup>3</sup> – Only supported by B-BC 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	Object Name, Description, COV Increment, Present Value (conditional), Out of Service, Reliability (conditional)
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	Object Name, Description, Present Value, COV Increment, Relinquish Default, Out of Service, Reliability (conditional)
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"/>		

Object-Type	Supported	Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
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	Object Name, Description, Polarity, Present Value (conditional), Out of Service, Reliability (conditional)
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	Object Name, Description, Present Value, Polarity, Relinquish Default, Min On Time, Min Off Time, Out of Service, Reliability (conditional)
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 Seg 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"/>		
Life Safety Zone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
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	Object Name, Description, Present Value (conditional), Out of Service, Reliability (conditional)
Multi-state Output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Object-Type	Supported	Dynamically Creatable	Dynamically Deletable	Optional Properties Supported	Writable Properties
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
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	<p>BACnet Date</p> <ul style="list-style-type: none"> <li>Will accept dates that include any wild combinations in the individual fields (example: unspecified day of week, unspecified day of month, January, unspecified year)</li> </ul> <p>BACnet DateRange</p> <ul style="list-style-type: none"> <li>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).</li> <li>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).</li> <li>Will not accept DateRanges in which both the Start and End date are wild.</li> </ul> <p>WeekNDay</p> <ul style="list-style-type: none"> <li>Will accept dates that include any wild combinations in the individual fields (example: Mondays, unspecified week of month, December)</li> </ul>
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 B-BC products.

Only supported by Ethernet-capable B-BC products.

Only supported by Ethernet-capable B-BC 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  | <input checked="" type="checkbox"/> Router between 1 Ethernet network, 1 BACnet/IP network, 2 MS/TP networks, and 1 PTP network.<br>Only supported by B-BC products. |
| Annex H, BACnet Tunneling                               | <input type="checkbox"/>   |
| BACnet/IP Broadcast Management Device (BBMD)            | <input checked="" type="checkbox"/> Only supported by Ethernet-capable B-BC products.  |
| Does the BBMD support registrations by Foreign Devices? | <input checked="" type="checkbox"/> 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.

- |   |   |                                     |
|---|---|-------------------------------------|
| <input checked="" type="checkbox"/> ANSI X3.4 | <input type="checkbox"/> IBM/Microsoft DBCS | <input type="checkbox"/> JIS C 6226 |
| <input type="checkbox"/> ISO 10646 (ICS-4)    | <input type="checkbox"/> ISO 10646 (UCS2)   | <input type="checkbox"/> ISO 8859-1 |

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

Not applicable.