

### CCTHV-407

Vendor Name:	Cristal Controls Ltd
Product Name:	CCTHV-407
Product Model Number:	CCTHV407
Product Version:	1.33
BACnet Protocol Revision:	13
Product Description:	<p>The Cristal Controls CCTHV-407 can be used with any Building Management System using the BACnet protocol. This product has been designed with flexibility in mind; it is fully configurable with our free BACnet Browser configuration tool. Each output has its own BACnet object so you may command it when unused by the thermostat.</p> <p>With its 4 relays, 2 digital inputs, 2 SSR outputs, 1 analogue 0-10V input, 1 analogue 0-10V output and a choice for a local or remote temperature sensor, this low-voltage thermostat offers many possibilities. It is used from a single output thermostat to heat-pump application as large as 4 heating and 2 cooling stages.</p>

[This document is only available in English](#)

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## Standardized Device Profile (Annex L)

BACnet Operator Workstation (B-OWS)	<input type="checkbox"/>
BACnet Building Controller (B-BC)	<input type="checkbox"/>
BACnet Advanced Application Controller (B-AAC)	<input type="checkbox"/>
BACnet Application Specific Controller (B-ASC)	<input checked="" type="checkbox"/>
BACnet Smart Sensor (B-SS)	<input type="checkbox"/>
BACnet Smart Actuator (B-SA)	<input type="checkbox"/>

## Interoperability Building Blocks (Annex K)

<b><i>Data Sharing</i></b>	
ReadProperty-B	DS-RP-B
WriteProperty-B	DS-WP-B
ReadPropertyMultiple-B	DS-RPM-B
<b><i>Device and Network Management</i></b>	
Dynamic Device Binding-B	DM-DDB-B
Dynamic Object Binding-B	DM-DOB-B
DeviceCommunicationControl-B	DM-DCC-B
ReinitializeDevice-B	DM-RD-B
<b><i>Alarm and Event Management</i></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

## Segmentation Capability

Not supported
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## Object Types Supported

Object Type	Required Properties	Optional Properties
Binary Input	Object_Identifier Object_Name Object_Type Present_Value Status_Flags Event_State Out_Of_Service (W) Polarity	Description Reliability
Binary Output	Object_Identifier Object_Name Object_Type Present_Value (W) Status_Flags Event_State Out_Of_Service (W) Polarity Priority_Array Relinquish_Default	Description
Binary Value	Object_Identifier Object_Name Object_Type Present_Value (W) Status_Flags Event_State Out_Of_Service	Description Priority_Array Relinquish_Default

# CRISTAL

Analog Input	Object_Identifier Object_Name Object_Type Present_Value Status_Flags Event_State Out_Of_Service Units	Description Reliability Min_Pres_Value Max_Pres_Value Time_Delay Notification_Class High_Limit Low_Limit Deadband limit-enable: {false,false} event-enable: {true,true,true} acked-transitions: {true,true,true} notify-type: alarm event-time-stamps: ?
Analog Output	Object_Identifier Object_Name Object_Type Present_Value (W) Status_Flags Event_State Out_Of_Service (W) Units Priority_Array Relinquish_Default	Description
Analog Value	Object_Identifier Object_Name Object_Type Present_Value (W) Status_Flags Event_State Out_Of_Service Units	Description Reliability

# CRISTAL

Device	Object_Identifier (W) Object_Name (W) Object_Type System_Status Vendor_Name Vendor_Identifier Model_Name Firmware_Revision Application_Software_Version Protocol_Version Protocol_Revision Protocol_Services_Supported Protocol_Object_Types_Supported Object_List Max_APDU_Length_Accepted Segmentation_Supported APDU_Timeout (W) Number_Of_APDU_Retries (W) Device_Address_Binding Database_Revision	Description Max_Master (W) Max_Info_Frames (W) MSTP_MAC (W) (Proprietary 512)
Multi-state Value	Object_Identifier Object_Name Object_Type Present_Value (W) Status_Flags Event_State Out_Of_Service Number_Of_States	Description State_Text
Notification Class	Object_Identifier Object_Name Object_Type Notification_Class Priority Ack_Required Recipient_List	Description

(W) = Writable property

# CRISTAL

## Data Link Layer Options

BACnet IP, (Annex J)	<input type="checkbox"/>
BACnet IP, (Annex J), Foreign Device	<input type="checkbox"/>
SO 8802-3, Ethernet (Clause 7)(10Base2, 10Base5, 10BaseT, Fiber)	<input type="checkbox"/>
MS/TP Master (Clause 9), Baud Rate(s): 9600, 19200, 38400, and 76800	<input checked="" type="checkbox"/>
MS/TP Slave (Clause 9), Baud Rate(s)	<input type="checkbox"/>
Point-to-Point, EIA 232 (Clause 10), Baud Rate(s): 9600, 19200, 38400	<input type="checkbox"/>
Point-to-Point, Modem (Clause 10), Baud Rate(s): 9600, 19200, 38400	<input type="checkbox"/>

## Device Address Binding

Is static device binding supported?	<input type="checkbox"/>
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## Networking Options

Router	<input type="checkbox"/>
Annex H, BACnet Tunneling	<input type="checkbox"/>
BACnet/IP Broadcast Management Device (BBMD)	<input type="checkbox"/>
Does the BBMD Support Registrations by Foreign Devices?	<input type="checkbox"/>

## Character Sets

Indicating support for multiple characters sets does not imply that Maximum supported string length is 64 bytes (any character set).

ANSI X3.4 (UTF-8)	<input checked="" type="checkbox"/>
IBM/Microsoft DBCS	<input type="checkbox"/>
JIS C 6226	<input type="checkbox"/>
ISO 10646 (UCS-4)	<input type="checkbox"/>
ISO 10646 (UCS2)	<input type="checkbox"/>
ISO 8859-1	<input type="checkbox"/>

## BACnet Objects list

Object	Instance	Name	Min Value	Max Value	Default	Description
Device		CCTHV-407-BAC	0	4194302		
BI	0	DIGITAL IN1	0 = OFF	1 = ON		Digital input DI 1
BI	1	DIGITAL IN 2	0 = OFF	1 = ON		Digital input DI 2
BO	0	RELAY AU	0 = OFF	1 = ON	0 = OFF	Auxiliary Relay "AU"
BO	1	RELAY G	0 = OFF	1 = ON	0 = OFF	Fan Relay "G"
BO	2	RELAY Y1	0 = OFF	1 = ON	0 = OFF	Cooling Relay "Y1"
BO	3	RELAY Y2	0 = OFF	1 = ON	0 = OFF	Cooling Relay "Y2"
BV	0	OCCUPIED MODE	0 = UNOCCUPIED	1 = OCCUPIED	1 = OCC	Occupied mode. Will allow thermostat to change the setpoint.
BV	1	FAN STATUS	0 = OFF	2 = UNCONFIGURED	2 = UNCONFIGURED	Fan Relay state feedback
AI	0	TEMPERATURE INT	-327.6°C	327.6°C		On-board internal 10K temperature sensor.
AI	1	TEMPERATURE REM	-327.6°C	327.6°C		Optional remote 10K temperature sensor.
AI	2	INPUT 0-10V	0.0%	100.0%		From 0-10 Volts DC analog input "0-10_In".
AI	3	TEMPERATURE 0-10V	-3276.7°C	819.0°C		Optional 0-10V temperature sensor.
AO	0	TRIAC W1	0.0%	100.0%	0.0%	Heating Triac "W1". Value will pulse at 1Hz.
AO	1	TRIAC W2	0.0%	100.0%	0.0%	Heating Triac "W2". Value will pulse at 1Hz.
AO	2	OUTPUT 0-10V	0.0%	100.0%	0.0%	0-10 Volts DC analog output "0-10_Out".
AV	0	OFFSET INT	-10.0°C	10.0°C	-2.9°C	Internal temperature calibration.
AV	1	OFFSET REM	-10.0°C	10.0°C	-0.5°C	External temperature calibration.
AV	9	SET-POINT HEAT	-3276.7°C	819.0°C	21.0°C	Temperature setpoint for heating.
AV	10	SET-POINT COOL	-3276.7°C	819.0°C	23.0°C	Temperature setpoint for cooling.

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AV	2	SET-POINT HEAT UNOCC	-3276.7°C	819.0°C	18.0°C	Unoccupied temperature setpoint for heating.
AV	3	SET-POINT COOL UNOCC	-3276.7°C	819.0°C	25.0°C	Unoccupied temperature setpoint for cooling.
AV	4	SET-POINT MIN	10.0°C	70.0°C	15.0°C	Minimum temperature setpoint adjustable on the thermostat.
AV	5	SET-POINT MAX	10.0°C	70.0°C	25.0°C	Maximum temperature setpoint adjustable on the thermostat.
AV	6	HEATING STATUS	0.0%	100.0%	0.0%	Heating status of the thermostat, output independent.
AV	7	COOLING STATUS	0.0%	100.0%	0.0%	Cooling status of the thermostat, output independent.
AV	8	POWER LIMIT	0.0%	100.0%	100.0%	Allowed maximum value for the outputs. 0% = Full Shedding.
AV	11	SETPOINT HEAT LIMIT	-99.0°C	99.0°C	99.0°C	Disable shedding if temperature fall below this limit.
AV	12	SETPOINT COOL LIMIT	-99.0°C	99.0°C	-99.0°C	Disable shedding if temperature increase over this limit.
AV	13	TEMPERATURE 0-10V MIN	-3276.7°C	819.0°C		Minimal value in °C for the 0-10V input. Value in °C corresponding to 0V.
AV	14	TEMPERATURE 0-10V MAX	-3276.7°C	819.0°C		Maximal value in °C for the 0-10V input. Value in °C corresponding to 10V.
MSV	0	HVAC MODE	1	6	1	Enable/Disable Cooling, Heating and Emergency Heat
MSV	1	FAN MODE	1	5	2	Fan mode behavior adjustment.