



**Characterised control valve (CCV)  
with adjustable flow rate,  
sensor-operated flow control  
and monitoring of power and energy**

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## Protocol Implementation Conformance Statement - PICS

General information	<b>Date:</b>	24. May 2012
	<b>Vendor Name:</b>	BELIMO Automation AG
	<b>Vendor ID:</b>	423
	<b>Product Name:</b>	P..W..EV-BAC
	<b>Product Model Number:</b>	N/A
	<b>Applications Software Version:</b>	1.24.2.yyyymmdd
	<b>Firmware Revision:</b>	1.0.2
	<b>BACnet Protocol Revision:</b>	1.6
	<b>Product Description:</b>	The device is a characterised control valve (CCV) with adjustable flow rate, sensor-operated flow control and monitoring of power and energy. The set-point, configuration parameters and feedback values are communicated either via BACnet/IP or BACnet MS/TP. The commissioning of the device (BACnet Device Address, IP Address settings, MS/TP Address ...) is done via the integrated web-server.
	<b>BACnet Standard Device Profile:</b>	BACnet Application Specific Controller (B-ASC)
	<b>BACnet Interoperability Building Blocks supported:</b>	Data Sharing - ReadProperty-B (DS-RP-B) Data Sharing - ReadPropertyMultiple-B (DS-RPM-B) Data Sharing - WriteProperty-B (DS-WP-B) Device Management - DynamicDeviceBinding-B (DM-DDB-B) Device Management - DynamicObjectBinding-B (DM-DOB-B) Device Management - DeviceCommunicationControl-B (DM-DCC-B)
	<b>Segmentation Capability:</b>	No
	<b>Data Link Layer Options:</b>	BACnet IP, (Annex J) BACnet IP, (Annex J), Foreign Device  MS/TP master, baud rates: 9'600, 19'200, 38'400, 76'800, 115'200
	<b>Device Address Binding:</b>	No static device binding supported
	<b>Networking Options:</b>	None
<b>Character Sets Supported:</b>	ANSI X3.4	

PICS

(continued)

**Standard objects** The device provides datapoints for common operation as well as datapoints for parameterization.

Datapoint	BACnet Object
Setpoint Relative in %	AO [1]
Relative Position in %	AI [1]
Absolute Position in °	AI [2]
Relative Flow in %	AI [10]
Absolute Flow in l/min	AI [11]
Absolute Flow in m <sup>3</sup> /h	AI [12]
Absolute Flow in gpm	AI [13]
Temperature 1 (remote) in °C	AI [20]
Temperature 1 (remote) in °F	AI [25]
Temperature 2 (embedded) in °C	AI [21]
Temperature 2 (embedded) in °F	AI [26]
Delta Temperature in °C	AI [22]
Delta Temperature in °F	AI [27]
Power in kW	AI [30]
Power in kBTU/h	AI [35]
Cooling Energy in kWh	AI [31]
Cooling Energy in kBTU	AI [36]
Heating Energy in kWh	AI [32]
Heating Energy in kBTU	AI [37]
Override	MO [1]
Vmax	AV [100]
Vnom in l/min	AV [101]
Vnom in gpm	AV [102]
ControlMode	MV [100]
DeltaT Limitation	MV [101]
Setpoint DeltaT in °C	AV [103]
Setpoint DeltaT in °F	AV [104]

**Object processing**

Object type	Optional properties	Writeable properties
Analog Input	Description	
Analog Output	Description	Present_Value
Analog Value	Description	Present_Value
Binary Value	Description Active_Text Inactive_Text Relinquish_Default <sup>1)</sup> Priority_Array <sup>1)</sup>	Present_Value
Device	Description Location	Object_Identifier Object_Name Location APDU_Timeout Number_Of_APDU_Retries
Multi-state Value	Description State_Text Relinquish_Default <sup>1)</sup> Priority_Array <sup>1)</sup>	Present_Value
Multi-state Output	Description State_Text Relinquish_Default <sup>1)</sup> Priority_Array <sup>1)</sup>	Present_Value

1) Only if object commandable

- The properties Object\_Name and Location of the Device Object support up to 255 characters (all other character strings are read-only).
- The device does not support the CreateObject and DeleteObject service.

**Service processing**

- The device supports DeviceCommunicationControl service. No password is required.

## BACnet object description

Object Name	Object Type / Instance	Description	Values	Default
<i>Device_Name</i>	Device [x]			
SpRel	Analog Output [1]	Setpoint Relative in %  The set point is interpreted either as position setpoint or as flow setpoint (related to Vmax). See ControlMode for more information.	0 ... 100	0
RelPos	Analog Input [1]	Relative Position in %	0 ... 100	-
AbsPos	Analog Input [2]	Absolute Position in °	0 ... 90	-
RelFlow	Analog Input [10]	Relative Flow in %	0 ... 100	-
AbsFlow_SI1	Analog Input [11]	Absolute Flow in l/min	0 ... 100'000	-
AbsFlow_SI2	Analog Input [12]	Absolute Flow in m3/h	0 ... 600	-
AbsFlow_US	Analog Input [13]	Absolute Flow in gpm	0 ... 100'000	-
T1_SI	Analog Input [20]	Temperature 1 (remote) in °C	-10 ... +120	-
T1_US	Analog Input [25]	Temperature 1 (remote) in °F	14 ... 248	-
T2_SI	Analog Input [21]	Temperature 2 (embedded) in °C	-10 ... +120	-
T2_US	Analog Input [26]	Temperature 2 (embedded) in °F	14 ... 248	-
DeltaT_SI	Analog Input [22]	Delta Temperature in °C	-500 ... +500	-
DeltaT_US	Analog Input [27]	Delta Temperature in °F	-500 ... +500	-
P_SI	Analog Input [30]	Power in kW	0 ... 2.147e+9	-
P_US	Analog Input [35]	Power in kBTU/h	0 ... 2.147e+9	-
E_Cooling_SI	Analog Input [31]	Cooling Energy in kWh	0 ... 2.147e+9	-
E_Cooling_US	Analog Input [36]	Cooling Energy in kBTU	0 ... 2.147e+9	-
E_Heating_SI	Analog Input [32]	Heating Energy in kWh	0 ... 2.147e+9	-
E_Heating_US	Analog Input [37]	Heating Energy in kBTU	0 ... 2.147e+9	-
Override	Multi-state Output [1]	Override Control	None Open Close Vmax Vnom Stop	None
Vmax	Analog Value [100]	Maximum Flow Limit in %	0 ... 100	100
Vnom_SI	Analog Value [101]	Nominal volume flow in l/min (read-only)	0 ... 100'000	-
Vnom_US	Analog Value [102]	Nominal volume flow in gpm (read-only)	0 ... 100'000	-
ControlMode	Multi-state Value [100]	Control Mode  The value defines the interpretation of the setpoint.	PosCtrl FlowCtrl	FlowCtrl
DeltaT_Limitation	Multi-state Value [101]	DeltaT Limitation	NoLimiting DeltaTLimiting	NoLimiting
SpDeltaT_SI	Analog Value [103]	Setpoint DeltaT in °C	4 ... 20	0
SpDeltaT_US	Analog Value [104]	Setpoint DeltaT in °F	7 ... 36	0