Damper Actuator

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Protocol Implementation Conformance Statement – PICS

General information	Date	25.03.2019
	Vendor Name	BELIMO Automation AG
	Vendor ID	423
	Product Name	Damper Actuator
	Product Model Number	P..-BAC-..
	Applikations Software Version	03.04-0000
	Firmware Revision	08.05.0000
	BACnet Protocol Revision	12
	Product Description	Rotary actuator with high torque
	BACnet Standard Device Profile	BACnet Application Specific Controller (B-ASC)
	Segmentation capability	No
	Data Link Layer Options	MS/TP master
	Device Address Binding	No static device binding supported
	Networking Options	None
	Character Sets Supported	ISO 10646 (UTF-8)
	Gateway Options	None
	Network Security Options	Non-secure device
	Conformance	Listed by BTL
BACnet Interoperability Building Blocks supported BIBBs	Data sharing – ReadProperty-B (DS-RP-B) Data sharing – ReadPropertyMultiple-B (DS-RPM-B) Data sharing – WriteProperty-B (DS-WP-B) Data sharing – COV-B (DS-COV-B) Device management – DynamicDeviceBinding-B (DM-DDB-B) Device management – DynamicObjectBinding-B (DM-DOB-B) Device management – DeviceCommunicationControl-B (DM-DCC-B)	
BACnet MS/TP	Baud rates	9‘600, 19‘200, 38‘400, 76‘800 (Default: 38‘400)
	Address	0...127 (Default: 1)
	Number of nodes	Max 32 (without repeater), 1 full busload
	Terminating resistor	120 Ω
Parameterisation	Tool	Belimo Assistant App

All writeable objects which are persistent are **not** supposed to be written on a regular base.

Protocol Implementation Conformance Statement - PICS

Standard Object Types Supported

Objekt type	Optional properties	Writeable properties
Device	Description Location Active COV Subscriptions Max Master Max Info Frames Profile Name	Object Identifier Object Name Location Description APDU Timeout (1‘000…60‘000) Number of APDU Retries (0...10) Max Master (1...127) Max Info Frames (1...255)
Analog Input [AI]	Description COV Increment	COV Increment
Analog Output [AO]	Description COV Increment	Present Value COV Increment Relinquish Default
Analog Value [AV]	Description COV Increment	Present Value COV Increment
Binary Input [BI]	Description Active text Inactive Text	
Multi-state Input [MI]	Description State Text	
Multi-state Output [MO]	Description State Text	Present Value Relinquish Default
Multi-state Value [MV]	Description State Text	Present Value

The device does not support the services CreateObject and DeleteObject.
The specified maximum length of writable strings is based on single-byte characters.
– Object name: 32 char
– Location: 64 char
– Description: 64 char

Service processing

The device supports the DeviceCommunicationControl and ReinitializeDevice services. No password is required.
A maximum of 6 active COV subscriptions with a lifetime of 1…28‘800 sec. (8 hours) are supported.

BACnet Object Description

Object Name	Object Type [Instance]	Description Comment *Status_Flags*	Values	COV Increment	Access
Device	Device [Inst.Nr]		0…4‘194‘302 *Default: 1*	–	W
RelPos	AI[1]	Relative Position in % *Overridden = true, if the gear is disengaged*	0...100	0.01...100 *Default: 1*	R
AbsPos	AI[2]	Absolute Position in degree or mm The unit depends on the device: [°] for actuators with rotary movement [mm] for actuators with linear movement *Overridden = true, if the gear is disengaged*	0...max angle / stroke	0.01...65‘535 *Default: 1*	R
SpAnalog	AI[6]	Analog Setpoint in % Shows the setpoint in % if actuator is control by analog signal (SpSource MV[122] is analog(1)) *If SpSource MV[122] is Bus(2) then Out_Of_Service is TRUE*	0...100	0.01...100 *Default: 1*	R
Sens1Analog	AI[20]	Sensor 1 as analog value in V / Ω / – / °C / °F Current value of sensor 1 in case Sensor1Type MV[220] is Active *If Sens1Type MV[220] is not Active(2) or SpSource MV[122] is Analog(1) then Out_Of_Service is TRUE*	–	0.01...1‘000 *Default: 1*	R
Sens2Analog	AI[21]	Sensor 2 as analog value in V / Ω / – / °C / °F Current value of sensor 2 in case Sensor2 Type MV[221] is Active(2) *If Sens2 Type MV[221] is not Active(2) or SpSource MV[122] is Analog(1) then Out_Of_Service is TRUE*	–	0.01...1‘000 *Default: 1*	R
SpRel	AO[1]	Relative Setpoint in % Setpoint for actuator between 0 and Max AV[98] if controlled via bus *If SpSource MV[122] is Analog(1) then Out_Of_Service is TRUE*	0…100 *Default: 0*	0.01...100 *Default: 1*	C
Min	AV[97]	Min Setpoint in % Min has to be ≤ Max -30%	Min...Max -30% *Default: 0*	0.01...100 *Default: 1*	W
Max	AV[98]	Max Setpoint in % Max has to be ≥ Min +30%	Min +30%...100 *Default: 100*	0.01...100 *Default: 1*	W
Bus Watchdog	AV[130]	Timeout for Bus Watchdog in s 0 = watchdog deactivated If the Present_Value is not ZERO, the implementation tracks write procedures to Present_Value of AO[1] and MO[1] If the Present_Value of AO[1] or MO[1] is written, the timer is reset. Upon timeout the Priority_Array of the AO[1] is cleared and the Reliquish_Default becomes valid In Hybrid Mode (SpSource MV[122] is Analog(1)) the implementation tracks write procedures to Present_Value of MO[1]	0...3‘600 *Default: 0*	0.01...1‘000 *Default: 1*	W

Object Name	Object Type [Instance]	Description Comment *Status_Flags*	Values	Access
Sens1Switch	BI[20]	Sensor 1 as Switch Indicates value on sensor 1 in case Sensor1Type MV[220] is Switch(5) *If Sens1Type MV[220] is not Switch(5) or SpSource MV[122] is Analog(1) then Out_Of_Service is TRUE*	Inactive_Text: Inactive Active_Text: Active	R
Sens2Switch	BI[21]	Sensor 2 as Switch Indicates value on sensor 1 in case Sensor2Type MV[221] is Switch(5) *If Sens2Type MV[221] is not Switch(5) or SpSource MV[122] is Analog(1) then Out_Of_Service is TRUE*	Inactive_Text: Inactive Active_Text: Active	R
BusTermination	BI[99]	Bus Termination Indicates if bus termination (120 Ω) is enabled. Bus termination can be set with the configuration tools.	Inactive_Text: Inactive Active_Text: Active	R
SummaryStatus	BI[101]	Summary Status Summary of all Status (MI[106], MI[110])	Inactive_Text: OK Active_Text: Not OK	R

BACnet Object Description

Object Name	Object Type [Instance]	Description Comment *Status_Flags*	Values	Access
InternalActivity	MI[100]	Internal Activity Test: Internal test running, activated by bus	1: None 2: Test 3: -	R
StatusActuator	MI[106]	Status Actuator Actuator cannot move: Mechanical overload e.g. blocked actuator, etc. Gear disengaged: Button is pressed Mechanical travel increased: The actuator has been moved outside the adapted working range	1: OK 2: Actuator cannot move * 3: Gear disenganged 4: Mechanical travel increased *	R
StatusDevice	MI[110]	Status Device Indicates general status about the device Bus Watchdog triggered: Timeout for Bus Watchdog expired	1: OK 2: Bus Watchdog triggered	R
Override	MO[1]	Override Control Override the setpoint (SpRel AO[1] or analog signal) with defined values	1: None 2: Open 3: Close 4: Min_Vmin 5: Mid_Vmid 6: Max_Vmax *Default: None(1)*	C
Command	MV[120]	Initiate Function Initiation of actuator functions for service and test. After command is sent, value returns to None(1). With Reset(4) all status in StatusActuator MI[106] can be reset	1: None 2: - 3: Test 4: Reset *Default: None(1)*	W
SpSource	MV[122]	Setpoint Source *If Analog(1) then actuator is controlled by analog signal 0...10 V on wire 3.* *If Bus(2) then setpoint via bus SpRel AO[1]*	1: Analog 2: Bus *Default: Bus(2)*	W
Sens1Type	MV[220]	Sensor 1 Type *If SpSource MV[122] is Analog(1)* *then Out_Of_Service is TRUE*	1: None 2: Active 3: Passive_1k 4: Passive_20k 5: Switch 6: PT1000_C 7: NI1000_C 8: NTC10K_C 9: PT10000_F 10: NI1000_F 11: NTC10K_F *Default: None(1)*	W
Sens2Type	MV[221]	Sensor 2 Type *If SpSource MV[122] is Analog(1)* *then Out_Of_Service is TRUE*	1: None 2: Active 3: Passive_1k 4: Passive_20k 5: Switch 6: PT1000_C 7: NI1000_C 8: NTC10K_C 9: PT10000_F 10: NI1000_F 11: NTC10K_F *Default: None(1)*	W

Access: R = Read, W = Write, C = Commandable with priority array
* Status Information must be reset with Command MV[120] -> Reset (4)