



Air Water Actuators

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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	Air Water Actuator	
	Product Model Number	..M(C)24A-MOD, ..R24A-MOD, ..V(K)24A-MOD, ..F24A-MOD, ..RF24A-MOD	
	Applikations Software Version	03.04-0000	
	Firmware Revision	08.03.0003	
	BACnet Protocol Revision	12	
	Product Description	General actuator for air and water	
	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	
	Conformation	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)			
BACnet MS/TP	Device management – DeviceCommunicationControl-B (DM-DCC-B)		
	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	
Parameterisation	Terminating resistor	120 Ω	
	Tool	ZTH EU	



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.

Quick addressing Actuators support quick addressing via the „Address“ and „Adaption“ buttons.
For detailed information, please see product datasheet (chapter Service).

BACnet Object Description

Object Name	Object Type [Instance]	Description Comment <i>Status_Flags</i>	Values	COV Increment	Access
Device	Device [Inst.Nr]		0...4'194'302 <i>Default: 1</i>	–	W
RelPos	AI[1]	Relative Position in % <i>Overridden = true, if the gear is disengaged</i>	0...100	0.01...100 <i>Default: 1</i>	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 <i>Overridden = true, if the gear is disengaged</i>	0...max angle / stroke	0.01...65'535 <i>Default: 1</i>	R
SpAnalog	AI[6]	Analog Setpoint in % Shows the setpoint in % if actuator is control by analog signal (SpSource MV[122] is analog(1)) <i>If SpSource MV[122] is Bus(2) then Out_Of_Service is TRUE</i>	0...100	0.01...100 <i>Default: 1</i>	R
Sens1Analog	AI[20]	Sensor 1 as analog value in mV / Ω / – / °C / °F Current value of sensor 1 in case Sensor1 Type MV[220] is Active <i>If Sens1 Type MV[220] is not Active(2) or SpSource MV[122] is Analog(1) then Out_Of_Service is TRUE</i>	–	0.01...1'000 <i>Default: 1</i>	R
SpRel	AO[1]	Relative Setpoint in % Setpoint for actuator between Min AV[97] and Max AV[98] if controlled via bus <i>If SpSource MV[122] is Analog(1) then Out_Of_Service is TRUE</i>	0...100 <i>Default: 0</i>	0.01...100 <i>Default: 1</i>	C
Min	AV[97]	Min Setpoint in % Min has to be ≤ Max -30%	0...Max -30% <i>Default: 0</i>	0.01...100 <i>Default: 1</i>	W
Max	AV[98]	Max Setpoint in % Max has to be ≥ Min +30%	Min +30%...100 <i>Default: 100</i>	0.01...100 <i>Default: 1</i>	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 Relinquish_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 <i>Default: 0</i>	0.01...1'000 <i>Default: 1</i>	W

BACnet Object Description

Object Name	Object Type [Instance]	Description Comment <i>Status_Flags</i>	Values	Access
Sens1Switch	BI[20]	Sensor 1 as Switch Indicates value on sensor 1 in case Sensor1Type MV[220] is Switch(5) <i>If Sens1Type MV[220] is not Switch(5) or SpSource MV[122] is Analog(1) then Out_Of_Service is TRUE</i>	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
InternalActivity	MI[100]	Internal Activity Test: Internal test running, activated by bus Adaption: Adaption is running	1: None 2: Test 3: Adaption	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 disengaged 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 <i>Default: None(1)</i>	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: Adaption 3: Test 4: Reset <i>Default: None(1)</i>	W
SpSource	MV[122]	Setpoint Source <i>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]</i>	1: Analog 2: Bus <i>Default: Bus(2)</i>	W
ControlMode	MV[123]	Control Mode PosCtrl: Position Control FlowCtrl: Flow Control	1: PosCtrl 2: FlowCtrl <i>Default: FlowCtrl(2)</i>	W
Sens1Type	MV[220]	Sensor 1 Type <i>If SpSource MV[122] is Analog(1) then Out_Of_Service is TRUE</i>	1: None 2: Active / Hybrid 3: Passive_1K 4: Passive_20K 5: Switch 6: PT1000_C 7: NI1000_C 8: NTC10K_C 9: PT1000_F 10: NI1000_F 11: NTC10K_F <i>Default: None(1)</i>	W

Access: R = Read, W = Write, C = Commandable with priority array

* Status information must be reset with Command MV[120] -> Reset(4)