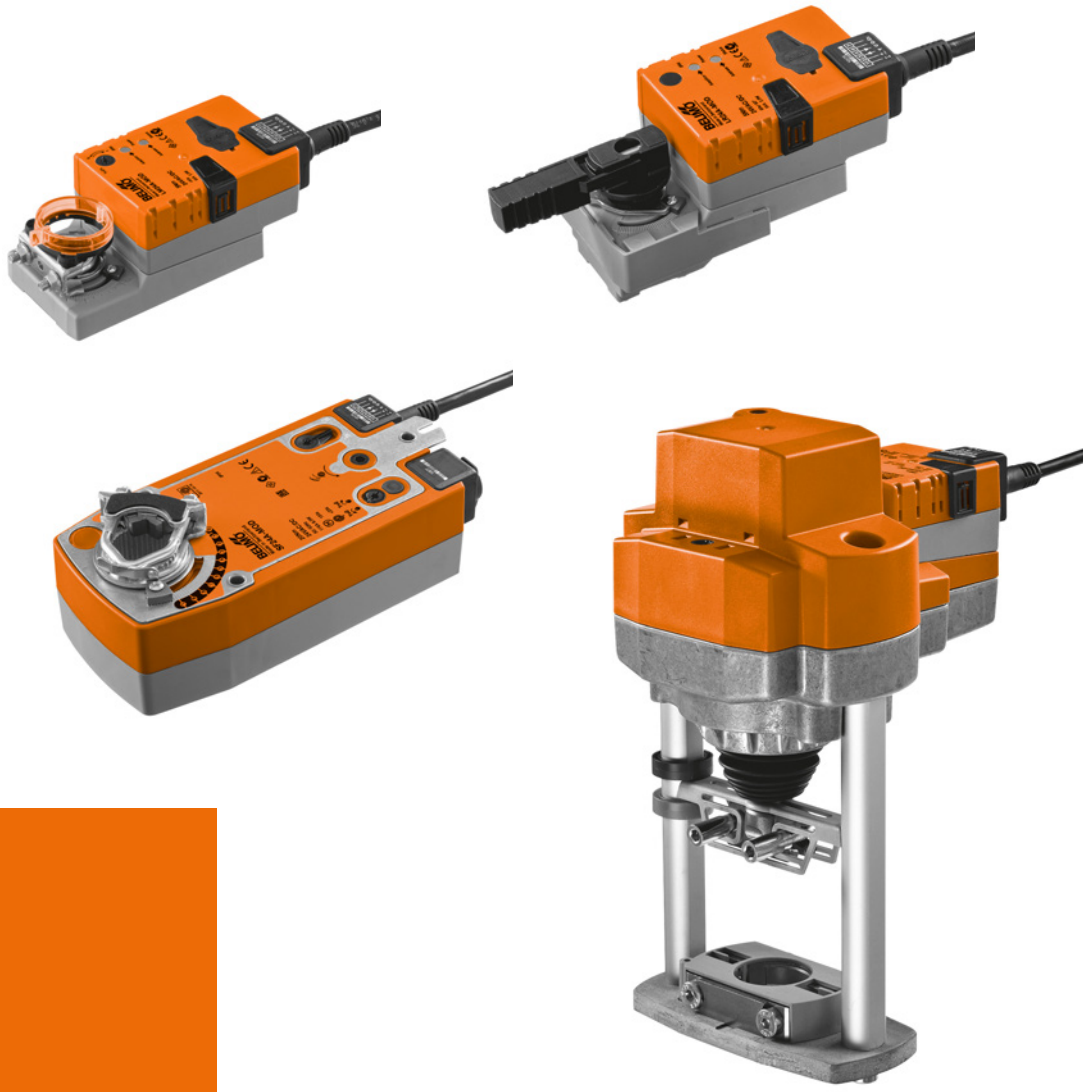


BACnet Interface Description

Air/water actuators
General actuators for air and water

Edition 2026-05 / V3.08

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PICS
Protocol Implementation Conformance Statement

General information

Date	05/09/2023
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
Application Software Version	Modbus Module V1.0
Firmware Revision	BTL:0002 B:0001
BACnet Protocol Revision	12
Product Description	General actuator for air and water
BACnet Standard Device Profile	BACnet Application Specific Controller (B-ASC)
Segment Capability	No
Data Link Layer Options	MS/TP Manager Node
Device Addressing 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 bus load
Terminating Resistor	120 Ω

Configuration

Tool	Belimo Assistant 2



All writeable objects which are persistent are **not** supposed to be written on a regular basis. Designated objects are highlighted in colour in the document.

Standard object types supported

Object type	Optional properties	Writeable properties
Device	Description Location Active COV Subscriptions Max Manager Max Info Frames Profile Name	Object Identifier Object Name Location Description APDU Timeout (1'000...60'000) Number of APDU Retries (0...10) Max Manager (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 writeable strings is based on single-byte characters.
– Object name 32 char
– Location 64 char
– Description 64 char

Service processing

The device supports the DeviceCommunicationControl services.
No password is required.

A maximum of 6 active COV subscriptions with a lifetime of 1...28'800 s (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).

Object descriptions

Object name	Object type [Instance]	Description Comment Status_Flags	Values	COV increment	Access
Device	Device [Inst.No]	BACnet internetwork-wide unique number for device identification.	0...4'194'302 Default: 1	–	W
RelPos	AI[1]	**Relative position in %** Overridden = true if gear train is disengaged	0...100	0.01...100 Default: 1	R
AbsPos	AI[2]	**Absolute position in degrees** The unit depends on the device: [°] for actuators with rotary movement [mm] for actuators with linear movement Overridden = true if gear train is disengaged	0...max. angle / stroke	0.01...65'535 Default: 1	R
SpAnalog	AI[6]	**Analog setpoint in %** Shows setpoint in % if actuator is controlled 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 Sens1Type 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
SpRel	AO[1]	**Relative setpoint in %** Setpoint for actuator scaled between Min AV[97] 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%	0...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 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 Default: 0	0.01...1'000 Default: 1	W
Fail-Safe Bridging Time	AV[131]	**Fail-safe bridging time in s** In the event of a power failure, the actuator will remain stationary in accordance with the set bridging time. Only for electronic fail-safe actuators	0...10 Default: 0	1...10 Default: 1	W
Fail-Safe Position	AV[132]	**Fail-safe position in %** In the event of a power failure, the actuator will move into the selected fail-safe position, taking into account the bridging time that has been set. The rotary knob must be set to "Tool" position. Only for electronic fail-safe actuators	0...100 Default: 0	0.01...100 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 Sens1Type 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
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: Adaptation 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 train 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 train disengaged 4: Mechanical travel increased *	R
StatusDevice	MI[110]	**Status device** Indicates general status of the device. Bus Watchdog triggered: Timeout for Bus Watchdog expired.	1: OK 2: Bus Watchdog triggered	R
Override	MO[1]	**Override control** Overrides the setpoint (SpRel AO[1] or analog signal) with defined values. Use of Fast open / Fast close: Fast open and Fast close cycles lead to increased mechanical load. Usage should be limited to certain time-critical events (e.g. frost protection). See information on cycles and running times in the specific data sheet.	1: None 2: Open 3: Close 4: Min_V_{min} 5: Mid_V_{mid} 6: Max_V_{max} 7: Fast open 8: Fast close 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: Adaption 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: Analog(1)	W
Sens1Type	MV[220]	**Sensor 1 type** If SpSource MV[122] is Analog(1), then Out_Of_Service is TRUE. Note: After changing the sensor type, it might be necessary to restart the actuator in order for correct sensor values to be read out. For setting "5: Switch" it is mandatory that the control signal is configured to 2...10 V.	1: None 2: Active / hybrid 3: Passive_1K 4: Passive_20K 5: Switch 6: PT1000_C 7: NI1000_C 8: NTC10K2_C 9: PT1000_F 10: NI1000_F 11: NTC10K2_F Default: None(1)	W

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

Alles inklusive

Belimo ist Weltmarktführer in Entwicklung, Herstellung und Vertrieb von Feldgeräten zur energieeffizienten Regelung von Heizungs-, Lüftungs- und Klimaanlagen. Klappenantriebe, Regelventile, Sensoren und Zähler bilden dabei unser Kerngeschäft.

Stets den Kundenmehrwert im Fokus, liefern wir mehr als nur Produkte. Bei uns erhalten Sie das komplette Sortiment von Antriebs- und Sensorlösungen zur Regelung und Steuerung von HLK-Systemen aus einer Hand. Dabei setzen wir auf geprüfte Schweizer Qualität mit fünf Jahren Garantie. Unsere Vertretungen in weltweit über 80 Ländern gewährleisten zudem kurze Lieferzeiten und einen umfassenden Support über die gesamte Produktlebensdauer. Bei Belimo ist in der Tat alles inklusive.

Die «kleinen» Belimo-Produkte üben einen grossen Einfluss auf Komfort, Energieeffizienz, Sicherheit, Installation und Instandhaltung aus.

Kurzum: Small devices, big impact.

- 5 Jahre Garantie
- Weltweit vor Ort
- Komplettes Sortiment
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EN – 2026-05 – Subject to technical modifications

BELIMO Automation AG
Brunnenbachstrasse 1, 8340 Hinwil, Schweiz
+41 43 843 61 11, info@belimo.ch, www.belimo.com