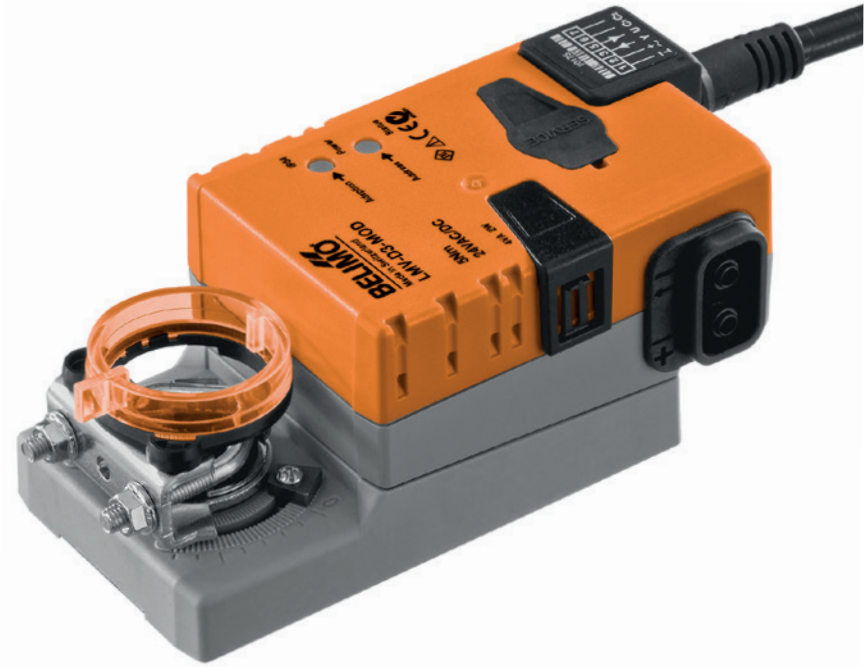

BACnet Interface Description

VAV-Compact
Volumetric flow compact control device

Edition 2024-09 / V3.08

Contents

Protocol Implementation Conformance Statement – PICS

General information

Date	01.12.2023
Vendor Name	BELIMO Automation AG
Vendor ID	423
Product Name	VAV-Compact
Product Model Number	..MV-D3-MOD, ..HV24A-MOD
Application Software Version	Modbus Module V1.0
Firmware Revision	BTL:0002 B:0001
BACnet Protocol Revision	12
Product Description	Volumetric flow compact control device
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

Parametrisation

Tool	ZTH EU

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

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 Value [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).

BACnet object description

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. This value plus the parameterized MAC address (0...127) defines the Device-ID	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 or mm** 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
RelFlow	AI[10]	**Relative flow in %** Relative flow of V'_{nom}	0...100	0.01...100 Default: 1	R
AbsFlow_UnitSel	AI[19]	**Absolute flow in selected unit** Flow in selected unit in MV[121]	0...V'_{nom}	0.01...1'000 Default: 1	R
Sens1Analog	AI[20]	**Sensor 1 as analog value in mV / –** 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)	–	0.01...1'000 Default: 1	R
SpRel	AO[1]	**Relative setpoint in %** The setpoint is related to either the position or the volumetric flow (of V'min, V'max). It is scaled between Min and Max limits if controlled via bus. See also AV[97], AV[98]. 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 %** V'_{min} has to be ≤ Max	0...V'_{max} Default: 0	0.01...100 Default: 1	W
Max	AV[98]	**Max setpoint in %** V_{max} has to be ≥ Min and > 20%	V'_{min}...100 Default: 100	0.01...100 Default: 1	W
Vnom_UnitSel	AV[104]	**Nominal flow in selected unit** V'_{nom} in selected unit in MV[121]	–	0.01...100 Default: 1	R
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 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 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 Adaptation: Adaptation is running.	1: None 2: Test 3: Adaptation	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).	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
UnitSelFlow	MV[121]	**Unit selection flow** The selected unit is valid for AI[19] and AV[104].	1: m^3/s 2: m^3/h 3: l/s 4: l/min 5: l/h 6: gpm 7: cfm Default: m^3/h(2)	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
ControlMode	MV[123]	**Control mode** PosCtrl: Position control FlowCtrl: Flow control	1: PosCtrl 2: FlowCtrl Default: FlowCtrl(2)	W
Sens1Type	MV[220]	**Sensor 1 sype** 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 parametrised to 2...10 V.	1: None 2: Active / hybrid 3: – 4: – 5: Switch 6: – 7: – 8: – 9: – 10: – 11: – Default: None(1)	W

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

All inclusive.

Belimo as a global market leader develops innovative solutions for the controlling of heating, ventilation and air-conditioning systems. Damper actuators, control valves, sensors and meters represent our core business.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The "small" Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.

- 5-year warranty
- On site around the globe
- Complete product range
- Tested quality
- Short delivery times
- Comprehensive support

EN – 2024-09/A – Subject to technical modifications

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