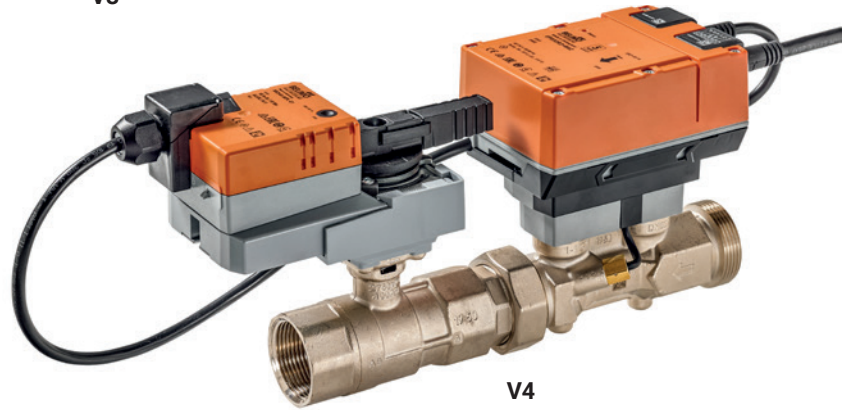


V3



V4

Replacement Guide V3 vs. V4

Guide for System Integrators on how to replace an old EPIV with an EPIV V4

Edition 2023-01/A

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Introduction

Intend of this document

In this document you will find the most important information on replacing an old 2-way EPIV Electric pressure-independent characterized control valve (version 3) with a 2-way EPIV (version 4) from the perspective of BACnet and Modbus. This document focuses only on the interfaces and does not address mechanical or application topics that need to be considered when replacing a device.

Identify the EPIV version number

If you want to determine the version number of the EPIV, please check the following.

	Version 3	Version 4
By product type:	EP..R+MOD, P6..W..E-MOD	EP..R2+BAC
By Application Software Version:	Version 3.03 / 3.04: BACnet: Device object -> Application Software Version 03.0x-xxx Modbus: Register No. 104 (firmware version) -> 3xx	Version 4.0: BACnet: Device object -> Application Software Version EPIV V4.0 Modbus: Register No. 104 (firmware version) -> 101
ZTH EU Tool:	 supported	 not supported
Belimo Assistant App:	 not supported	 supported

BACnet

Overview of changes

- BACnet Protocol Revision changes from 1.12 to 1.14 in V4.
- In version 4 Binary Value [BV] and Positive Integer Value [PIV] objects were introduced.
- Version 4 supports 5 active COV Subscriptions versus 6 active COV Subscriptions in Version 3.

Version 3

Object type	Optional properties	Writable properties
Device	Description	Object Identifier
	Location	Object Name
	Active COV Subscriptions	Location
	Max Master	Description
	Max Info Frames	APDU Timeout (1'000...60'000)
	Profile Name	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

Version 4

Object type	Optional properties	Writable properties
Device	Description	Object Identifier
	Location	Object Name
	Active COV Subscriptions	Location
	Max Master	Description
	Max Info Frames	APDU Timeout (1'000...60'000)
	Profile Name	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	-
Binary Value [BV]	Description Active Text State Text	Present Value
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
Positive Integer Value [PIV]	Description	-

Overview of changes

If you integrated any of the BACnet object in the list below actions are required, since the object type, the instance no., the unit, or the functionality of the object has been changed. If you do not adapt the implementation of the integration on the controller after the replacement it can lead to errors.

Version 3

Version 4

Object name	Object type [Inst.No.]	Object name	Object type [Inst.No.]	Remarks																								
AbsPos	AI[2]	AbsPos	AV[2]	Object type changed from Analog Input to Analog Value.																								
RelFlow	AI[10]	RelFlow	AV[10]	Object type changed from Analog Input to Analog Value.																								
AbsFlow_UnitSel	AI[19]	AbsFlow_UnitSel	AV[19]	Object type changed from Analog Input to Analog Value.																								
Sens1Analog	AI[20]	Sens1Active_Volt	AI[20]	Object name changed.																								
Max	AV[98]	V'max	AV[94]	Object name changed. Instance number changed. Not available in position control.																								
V'nom_UnitSel	AV[104]	V'nom_UnitSel	AV[100]	Instance number changed.																								
SummaryStatus	BI[101]	SummaryStatus	MV[99]	Object type changed from Binary Input to Multi-state Value.																								
BusTermination	BI[99]	BusTermination	BV[99]	Object type changed from Binary Input to Binary Value.																								
StatusActuator	MI[106]	StatusActuator	MV[106]	Object type changed from Multi-state Input to Multi-state Value.																								
Override	MO[1]	Override	MV[1]	Object type changed from Multi-state Output to Multi-state Value. Override "Mid" not supported anymore. Additional Overrides available.																								
				<table border="1"> <thead> <tr> <th>V3</th> <th>V4</th> </tr> </thead> <tbody> <tr> <td>1: None</td> <td>1: None</td> </tr> <tr> <td>2: Open</td> <td>2: Open Valve</td> </tr> <tr> <td>3: Close</td> <td>3: Close Valve</td> </tr> <tr> <td>4: Min_Vmin</td> <td>4: Minimum</td> </tr> <tr> <td>5: Mid_Vmid</td> <td>5: -</td> </tr> <tr> <td>6: Max_Vmax</td> <td>6: Maximum</td> </tr> <tr> <td></td> <td>7: Nominal</td> </tr> <tr> <td></td> <td>8: -</td> </tr> <tr> <td></td> <td>9: -</td> </tr> <tr> <td></td> <td>10: -</td> </tr> <tr> <td></td> <td>11: Motor Stop</td> </tr> </tbody> </table>	V3	V4	1: None	1: None	2: Open	2: Open Valve	3: Close	3: Close Valve	4: Min_Vmin	4: Minimum	5: Mid_Vmid	5: -	6: Max_Vmax	6: Maximum		7: Nominal		8: -		9: -		10: -		11: Motor Stop
V3	V4																											
1: None	1: None																											
2: Open	2: Open Valve																											
3: Close	3: Close Valve																											
4: Min_Vmin	4: Minimum																											
5: Mid_Vmid	5: -																											
6: Max_Vmax	6: Maximum																											
	7: Nominal																											
	8: -																											
	9: -																											
	10: -																											
	11: Motor Stop																											
Control Mode	MV[123]	Control Mode	MV[100]	Instance number changed.																								
UnitSelFlow	MV[121]	UnitSelFlow	MV[123]	Instance number changed.																								

Modbus

Modbus Register Description

If you integrated any of the registers in the list below actions are required, since the Register No., the unit, the mapping or the functionality of the register has been changed. If you do not adapt the implementation of the integration on the controller after the replacement it can lead to errors.

Version 3

Version 4

No.	Register	No.	Register	Remarks
2	Override control	2	Override control	Override "Mid" not supported anymore. Additional Overrides available. V3: 0: None 1: Open 2: Close 3: Min 4: Mid 5: MAX V4: 0: None 1: Open Valve 2: Close Valve 3: Minimum Flow 4: - 5: Maximum Flow 6: Nominal 7: - 8: - 9: - 10: Motor Stop
3	Command	3	Command	Mapping changed! Adaption, Test and Reset are no longer supported. There is no more need to reset Malfunction & Service Information. V3: 0: None 1: Adaption 2: Test 3: Sync 4: Reset V4: 0: None 1: - 2: Sync 3: - 4: -
..	-	..	-	-
7	Relative volumetric flow	7	Relative Volumetric Flow	Range changed from 0...10'000 to 0...15'000
8	Absolut volumetric flow	8	Absolut Volumetric Flow	– Unit changed from l/min to l/s – Scaling factor changed from 1 to 0.01
9	Sensor value 1 [mV] [-]	13	Sensor value 1 [mV] [-]	Register No. changed.
11/12	Absolute volumetric flow in unit selected	10/11	Absolute Volumetric Flow in unit selected	Register No. changed.
13	Setpoint analog	12	Analog Setpoint	Register No. changed.

Version 3

No.	Register
105	Malfunction and Service Information

Version 4

No.	Register
105	Malfunction and Service Information

Version 3		Version 4		Remarks																																		
105	Malfunction and Service Information	105	Malfunction and Service Information	Bit enumeration changed and additional malfunction and service information available																																		
				<table border="1"> <thead> <tr> <th>V3</th> <th>V4</th> </tr> </thead> <tbody> <tr> <td>-</td> <td>Bit 0: No communication to actuator</td> </tr> <tr> <td>Bit 1: Mech travel increase</td> <td>Bit 1: Gear disengaged</td> </tr> <tr> <td>Bit 2: Actuator cannot move</td> <td>Bit 2: Actuator cannot move</td> </tr> <tr> <td>-</td> <td>Bit 3: Reverse flow</td> </tr> <tr> <td>-</td> <td>Bit 4: Flow setpoint not reached</td> </tr> <tr> <td>-</td> <td>Bit 5: Flow with closed valve</td> </tr> <tr> <td>-</td> <td>Bit 6: Flow actual exceeds flow nominal</td> </tr> <tr> <td>-</td> <td>Bit 7: Flow measurement error</td> </tr> <tr> <td>Bit 8: Internal activity</td> <td>Bit 8: -</td> </tr> <tr> <td>Bit 9: Gear disengaged</td> <td>Bit 9: Flowbody temperature error</td> </tr> <tr> <td>Bit 10: Bus watchdog triggered</td> <td>Bit 10: Communication to sensor interrupted</td> </tr> <tr> <td>-</td> <td>Bit 11: Freeze warning</td> </tr> <tr> <td>-</td> <td>Bit 12: Glycol detected</td> </tr> <tr> <td>-</td> <td>Bit 13: -</td> </tr> <tr> <td>-</td> <td>Bit 14: -</td> </tr> <tr> <td>-</td> <td>Bit 15: Bus watchdog triggered</td> </tr> </tbody> </table>	V3	V4	-	Bit 0: No communication to actuator	Bit 1: Mech travel increase	Bit 1: Gear disengaged	Bit 2: Actuator cannot move	Bit 2: Actuator cannot move	-	Bit 3: Reverse flow	-	Bit 4: Flow setpoint not reached	-	Bit 5: Flow with closed valve	-	Bit 6: Flow actual exceeds flow nominal	-	Bit 7: Flow measurement error	Bit 8: Internal activity	Bit 8: -	Bit 9: Gear disengaged	Bit 9: Flowbody temperature error	Bit 10: Bus watchdog triggered	Bit 10: Communication to sensor interrupted	-	Bit 11: Freeze warning	-	Bit 12: Glycol detected	-	Bit 13: -	-	Bit 14: -	-	Bit 15: Bus watchdog triggered
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-	Bit 14: -																																					
-	Bit 15: Bus watchdog triggered																																					
107	Max [%]	107	V'max [%]	Register description and range changed from 3'000...10'000 in V3 to 2'500...10'000 in V4. Not available in position control.																																		
108	Sensor type 1	121	Sensor 1 Type	Register No. changed.																																		
111	Nominal volumetric flow [l/min]	111	Nominal volumetric flow [l/s]	Unit changed from l/min to l/s.																																		

Additional documentation

BACnet

- BACnet Interface description - EPIV (V4)
- BACnet Interface description - EPIV (V3)

Modbus

- Modbus Interface description - EPIV (V4)
- Modbus Interface description - EPIV (V3)

Further documentation can be found at www.belimo.com.

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



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