

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

Contents

Intend of this document	2
Identify the Energy Valve version number	2
BACnet	3
Modbus	7

Intend of this document

In this document you will find the most important information on replacing an old Energy Valve (Version 1, 2 or 3) with an Energy Valve (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 Energy Valve version number

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

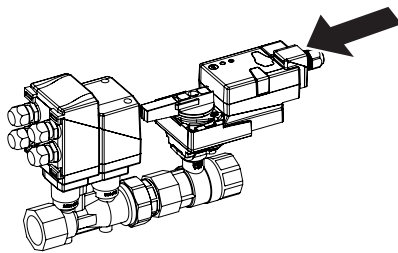
By product type:

Version 1/2/3:
EV...
Sizes 1/2" ...2"

Version 4:
EV...
Sizes 1/2" ...2"

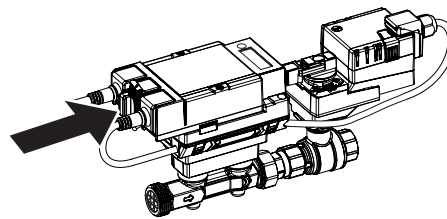
By Ethernet socket:

Version 1/2/3:



Ethernet socket on the actuator

Version 4:



Ethernet socket on flow sensor

By Application Software Version:

Version 1/2/3:
BACnet: Device object -> Application Software Version 01.24-xxxx (V1), 01.35-xxxx (V2) or 03.xx-xxxx (V3)
Modbus: Register No. 104 -> 3.xx (Version 1 or 2 didn't support Modbus)
Webserver: Status -> Version information -> Model version 1.xx.xxx (V1), 2.xx.xxx (V2) or 3.xx.xxx (V3)
Belimo Assistant App: not supported

Version 4:
BACnet: Device object -> Application Software Version 04.xx-xxxx
Modbus: Register No. 104 -> 4.xx
Webserver: Status -> Version information -> Model version 1.x.x
Belimo Assistant App: supported

BACnet

Here a short overview what changed in general terms.

- BACnet Protocol Revision changes from 1.6 (V1/V2) and 1.12 (V3) to 1.14 in V4.
- In V4 Binary Valve [BV] is no longer supported and Positive Integer Value [PIV] was introduced.
- Writable strings limited to 32 char respectively 64 char in V4
- Version 4 supports 6 active COV subscription versus 5 active COV subscriptions in Version 1,2,3 and max. Subscriptiontime was reduced from 12 hours in Version 3 to 8 hours.
- COV Increment is writeable in Version 4.
- Relinquish default for Analog Output [AO] is writable in Version 4.

Version 1, 2 or 3

Version 4

Object 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	
Analog Output [AO]	Description COV Increment	Present Value
Analog Value [AV]	Description	Present Value
Binary Input [BI]	Description Active text Inactive Text	
Binary Valve [BV]	Description Active text Inactive Text	Present Value
Multi-state Input [MI]	Description State Text	
Multi-state Output [MO]	Description State Text	Present Value
Multi-state Value [MV]	Description State Text	Present Value

Object 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
Positive Integer Value [PIV]	Description	

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. It can lead to errors, if you do not adapt the implementation of the integration on the controller after the replacement.

Version 3		Version 4		Remarks
Object name	Object Type [Inst.No.]	Object name	Object Type [Inst.No.]	
AbsPos	AI[2]	AbsPos	AV[2]	Object type changed from Analog Input to Analog Value
SpAnalog_V	AI[5]	SpAnalog_%	AI[6]	Object AI[5] is no longer supported. Use instead AI[6]. Be aware that the unit is different.
RelFlow	AI[10]	RelFlow	AV[10]	Object type changed from Analog Input to Analog Value
AbsFlow_lmin	AI[11]	AbsFlow_UnitSel	AV[19]	Object AI[11] is no longer supported. Use instead AV[19]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to l/min.
AbsFlow_m3h	AI[12]	AbsFlow_UnitSel	AV[19]	Object AI[12] is no longer supported. Use instead AV[19]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to m3/h.
AbsFlow_gpm	AI[13]	AbsFlow_UnitSel	AV[19]	Object AI[13] is no longer supported. Use instead AV[19]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to gpm
AbsFlow_ls	AI[14]	AbsFlow_UnitSel	AV[19]	Object AI[14] is no longer supported. Use instead AV[19]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to l/s.
AbsFlow_lh	AI[15]	AbsFlow_UnitSel	AV[19]	Object AI[15] is no longer supported. Use instead AV[19]. The unit can be selected in object MV[123]. The unit is by default l/h.
T1_C	AI[20]	T1_UnitSel	AI[22]	Object AI[20] is used different. Use instead AI[22]. The unit can be selected in object MV[127]. The unit is by default °C.
T2_C	AI[21]	T2_UnitSel	AI[23]	Object AI[21] is used different. Use instead AI[23]. The unit can be selected in object MV[127]. The unit is by default °C.

BACnet				
Object name	Object Type [Inst.No.]	Object name	Object Type [Inst.No.]	Remarks
DeltaT_K	AI[22]	DeltaT_UnitSel	AV[22]	Object AI[22] is no longer supported. Use instead AV[22]. The unit can be selected in object MV[128]. The unit is by default K.
T1_F	AI[25]	T1_UnitSel	AI[22]	Object AI[25] is no longer supported. Use instead AI[22]. The unit can be selected in object MV[127]. Be aware that the unit is by default °C and needs to be changed to °F.
T2_F	AI[26]	T2_UnitSel	AI[23]	Object AI[26] is no longer supported. Use instead AI[23]. The unit can be selected in object MV[127]. Be aware that the unit is by default °C and needs to be changed to °F.
DeltaT_F	AI[27]	DeltaT_UnitSel	AV[22]	Object AI[27] is no longer supported. Use instead AV[22]. The unit can be selected in object MV[128]. Be aware that the unit is by default K and needs to be changed to F.
AbsPower_kW	AI[30]	CoolingPower_UnitSel	AV[45]	Object AI[30] is no longer supported. Use instead AV[45] or AV[46].
		HeatingPower_UnitSel	AV[46]	The unit can be selected in object MV[124]. The unit is by default kW.
E_Cooling_kWh	AI[31]	CoolingEnergy_UnitSel	AV[47]	Object AI[31] is no longer supported. Use instead AV[47] or PIV[31]. The unit can be selected in object MV[125]. The unit is by default kW.
E_Heating_kWh	AI[32]	HeatingEnergy_UnitSel	AV[48]	Object AI[32] is no longer supported. Use instead AV[47] or PIV[32]. The unit can be selected in object MV[125]. The unit is by default kW.
E_Cooling_MJ	AI[33]	CoolingEnergy_UnitSel	AV[47]	Object AI[33] is no longer supported. Use instead AV[47] or PIV[31]. The unit can be selected in object MV[125]. Be aware that the unit is by default kWh and needs to be changed to MJ.
E_Heating_MJ	AI[34]	HeatingEnergy_UnitSel	AV[48]	Object AI[34] is no longer supported. Use instead AV[47] or PIV[32]. The unit can be selected in object MV[125]. Be aware that the unit is by default kWh and needs to be changed to MJ.
AbsPower_kBTUh	AI[35]	CoolingPower_UnitSel	AV[45]	Object AI[35] is no longer supported. Use instead AV[45] or AV[46].
		HeatingPower_UnitSel	AV[46]	The unit can be selected in object MV[124]. Be aware that the unit is by default kW and needs to be changed to kBTUh.
E_Cooling_kBTU	AI[36]	CoolingEnergy_UnitSel	AV[47]	Object AI[36] is no longer supported. Use instead AV[47] or PIV[31]. The unit can be selected in object MV[125]. Be aware that the unit is by default kWh and needs to be changed to kBTU.
E_Heating_kBTU	AI[37]	HeatingEnergy_UnitSel	AV[48]	Object AI[37] is no longer supported. Use instead AV[47] or PIV[32]. The unit can be selected in object MV[125]. Be aware that the unit is by default kWh and needs to be changed to kBTU.
RelPower	AI[40]	RelPower	AV[40]	Object type changed from Analog Input to Analog Value
AbsPower_ton	AI[45]	CoolingPower_UnitSel	AV[45]	Object AI[45] is no longer supported. Use instead AV[45] or AV[46].
		HeatingPower_UnitSel	AV[46]	The unit can be selected in object MV[124]. Be aware that the unit is by default kW and needs to be changed to ton.
E_Cooling_tonh	AI[46]	CoolingEnergy_UnitSel	AV[47]	Object AI[47] is no longer supported. Use instead AV[47] or PIV[32]. The unit can be selected in object MV[125]. Be aware that the unit is by default kWh and needs to be changed to tonh.
E_Heating_tonh	AI[47]	HeatingEnergy_UnitSel	AV[48]	Object AI[47] is no longer supported. Use instead AV[47] or PIV[32]. The unit can be selected in object MV[125]. Be aware that the unit is by default kWh and needs to be changed to tonh.
Glycol Concentration	AI[60]	Glycol Concentration	AV[60]	Object type changed from Analog Input to Analog Value.
Vmax_lmin	AI[90]	Vmax_UnitSel	AV[97]	Object AI[90] is no longer supported. Use instead AV[97]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to l/min
Vmax_gpm	AI[91]	Vmax_UnitSel	AV[97]	Object AI[91] is no longer supported. Use instead AV[97]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to gpm.
Pmax_kW	AV[95]	Pmax_UnitSel	AV[113]	Object AV[95] is no longer supported. Use instead AV[113]. The unit can be selected in object MV[124]. The unit is by default kW.

BACnet

Object name	Object Type [Inst.No.]	Object name	Object Type [Inst.No.]	Remarks	
Pmax_kBTUh	AV[96]	Pmax_UnitSel	AV[113]	Object AV[96] is no longer supported. Use instead AV[113]. The unit can be selected in object MV[124]. Be aware that the unit is by default kW and needs to be changed to kBTUh.	
ErrorState	AI[100]	ErrorState	AV[140]	Object type changed from Analog Input to Analog Value. Bit Enummaration changed	
				V1, V2, V3	V4
				Bit 0: Error Sensor T1	Bit 8: Remote temperature not OK
				Bit 1: Error Sensor T2	Bit 9: Flowbody temperature not OK
				Bit 2: Error Flow Sensor	Bit 10: Com. to sensor interrupted
				Bit 3: Actuator cannot move	Bit 2: Actuator cannot move
				Bit 4: Flow with closed valve	Bit 5: Flow with closed valve
				Bit 5: Airbubbles	Bit 7: Flow measurement error
				Bit 6: Flow not reached	Bit 4: Flow setpoint not reached
				Bit 7: Power not realized	Bit13: Power setpoint not reached
				Bit 9: Gear disengaged	Bit 1: Gear disengaged
				Bit11: Reverse flow detected	Bit 3: Reverse flow
				Bit12: MP communication faulty	Bit 0: No communication to actuator
Bit13: Freeze warning	Bit11: Freeze warning				
Vmax	AV[100]	Vmax	AV[94]	Instance number changed.	
Vnom_lmin	AI[101]	Vnom_UnitSel	AV[100]	Object AI[101] is no longer supported. Use instead AV[100]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to l/min.	
Vnom_gpm	AI[102]	Vnom_UnitSel	AV[100]	Object AI[102] is no longer supported. Use instead AV[100]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to gpm.	
SpDeltaT_K	AV[103]	SpDeltaT_UnitSel	AV[120]	Object AV[103] is no longer supported. Use instead AV[120]. The unit can be selected in object MV[128]. The unit is by default K.	
Pmax	AV[105]	Pmax	AV[110]	Instance number changed.	
Pnom_kW	AI[106]	Pnom_UnitSel	AV[116]	Object AV[106] is no longer supported. Use instead AV[116]. The unit can be selected in object MV[124]. The unit is by default kW.	
Pnom_kBTUh	AI[107]	Pnom_UnitSel	AV[116]	Object AV[107] is no longer supported. Use instead AV[116]. The unit can be selected in object MV[124]. Be aware that the unit is by default kW and needs to be changed to kBTUh.	
SpFlow_DeltaT_lmin	AV[108]	SpAbsFlowDeltaT_UnitSel	AV[127]	Object AI[108] is no longer supported. Use instead AV[127]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to l/min.	
SpFlow_DeltaT_gpm	AV[109]	SpAbsFlowDeltaT_UnitSel	AV[127]	Object AI[109] is no longer supported. Use instead AV[127]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to gpm.	
SpAbsFlow_lmin	AI[111]	SpAbsFlow_UnitSel	AV[17]	Object AI[111] is no longer supported. Use instead AV[17]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to l/min.	
SpAbsFlow_m3h	AI[112]	SpAbsFlow_UnitSel	AV[17]	Object AI[112] is no longer supported. Use instead AV[17]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to m3/h.	
SpAbsFlow_gpm	AI[113]	SpAbsFlow_UnitSel	AV[17]	Object AI[113] is no longer supported. Use instead AV[17]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to gpm.	
SpAbsFlow_ls	AI[114]	SpAbsFlow_UnitSel	AV[17]	Object AI[114] is no longer supported. Use instead AV[17]. The unit can be selected in object MV[123]. Be aware that the unit is by default l/h and needs to be changed to l/s.	
SpAbsFlow_lh	AI[115]	SpAbsFlow_UnitSel	AV[17]	Object AI[115] is no longer supported. Use instead AV[17]. The unit can be selected in object MV[123]. The unit is by default l/h.	

BACnet					
Object name	Object Type [Inst.No.]	Object name	Object Type [Inst.No.]	Remarks	
SpPosReached	BI[1]	-		does not exist anymore	
RstCoolEnergy	BV[31]	-		does not exist anymore	
RstHeatEnergy	BV[32]	-		does not exist anymore	
RstErrCount	BV[100]	-		does not exist anymore	
SummaryStatus	BI[101]	SummaryStatus	MV[99]	Object BI[101] is no longer supported. Use instead MV[99]. A thrid status „Warning“ was added.	
				V1, V2, V3	V4
				false: OK	1: OK
				true: not OK	2: Warning
					3: Not OK
Override	MO[1]	Override	MV[1]	Object type changed from Multi-state Output to Multi-state Value. Mapping changed! Please be aware the the override does not return to None(1) after 2 hours anymore.	
				V1, V2, V3	V4
				1: None	1: None
				2: Close	2: Open Valve
				3: Open	3: Close Valve
				4: Vnom	4: Minimum
				5: Vmax	5: not used
				6: MotStop	6: Maximum
				7: Pnom	7: Nominal
				8: Pmax	8: not used
					9: not used
	10: not used				
	11: Motor Stop				
DeltaT_MgrStatus	MI[102]	StatusDeltaTMgr	MV[102]	Object type changed from Multi-state Input to Multi-state Value. Object name changed.	
StatusSensor	MI[103]	StatusSensor	MV[103]	Object type changed from Multi-state Input to Multi-state Value. Mapping changed!	
				V1, V2, V3	V4
				1: OK	1: OK
				2: Flow sensor not OK	2: Flow measurement error
				3: T1 not OK	3: Flowbody temperature not OK
4: T2 not OK	4: Remote temperature not OK				
	5: Com. to flow sensor interrupted				
StatusFlow	MI[104]	StatusFlow	MV[104]	Object type changed from Multi-state Input to Multi-state Value. Mapping changed!	
				V1, V2, V3	V4
				1: OK	1: OK
				2: Reverse flow detected	2: Actual flow exceeds nominal flow
				3: Flow not reached	3: Flow with closed valve
4: Flow in closed position	4: Flow setpoint cannot be reached				
	5: Reverse flow				
StatusMedia	MI[105]	StatusMedia	MV[105]	Object type changed from Multi-state Input to Multi-state Value. Mapping changed! Airbubbles (2) now covered in MV[103]: Flow mesurement error (2)	
				V1, V2, V3	V4
				1: OK	1: OK
	2: Airbubbles	2: Glycol detected			
	3: Freeze warning	3: Freeze warning			
StatusActuator	MI[106]	StatusActuator	MV[106]	Object type changed from Multi-state Input to Multi-state Value.	
StatusPower	MI[107]	StatusPower	MV[107]	Object type changed from Multi-state Input to Multi-state Value.	

Modbus

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		Remarks	
No.	Register	No.	Register		
2	Override	2	Override	Mapping changed! Please be aware the the override does not return to None(1) after 2 hours anymore.	
				V1, V2, V3	V4
				1: None	1: None
				2: Close	2: Open Valve
				3: Open	3: Close Valve
				4: Vnom	4: Minimum
				5: Vmax	5: not used
				6: MotStop	6: Maximum
				7: Pnom	7: Nominal
				8: Pmax	8: not used
					9: not used
	10: not used				
	11: Motor Stop				
8/9	Absolute volumetric flow in UnitSel	10/11	Absolute volumetric flow in UnitSel	Register No. changed.	
10/11	Absolute volumetric flow in l/s	8	Absolute volumetric flow in l/s	Register No. changed. Scaling factor changed from 0.001 to 0.01. If you need higher resolution use Register No. 8/9.	
12/13	Absolute volumetric flow in gpm	9	Absolute volumetric flow in gpm	Register No. changed. Scaling factor changed from 0.001 to 0.1. If you need higher resolution use Register No. 8/9.	
14/15	Setpoint absolute volumetric flow in UnitSel	18/19	Setpoint absolute volumetric flow in UnitSel	Register No. changed.	
16	Setpoint Analog in V	12	Setpoint Analog in %	Register No. Changed. Be aware that the unit is different.	
17	Temperature 1 in °C	20	Temperature 1 in °C	Register No. changed.	
18	Temperature 1 in °F	21	Temperature 1 in °F	Register No. changed.	
19	Temperature 2 in °C	22	Temperature 2 in °C	Register No. changed.	
20	Temperature 2 in °F	23	Temperature 2 in °F	Register No. changed.	
21	Delta Temperature in K	24	Delta Temperature in K	Register No. changed.	
22	Delta Temperature in °F	25	Delta Temperature in °F	Register No. changed.	
23	Glycol Concentration in %	26	Glycol Concentration in %	Register No. changed.	
24	Relative Power in %	27	Relative power in %	Register No. changed.	
25/26	Absolute Power in UnitSel	32/33	Absolute Power Cooling in UnitSel	Register No. changed.	
		38/39	Absolute Power Heating in UnitSel	Register No. changed.	
27/28	Absolute Power in kW	28/29	Absolute Power Cooling in kW	Register No. changed.	
		34/35	Absolute Power Heating in kW	Register No. changed.	
29/30	Absolute Power in kBTU/h	30/31	Absolute Power Cooling in kBTU/h	Register No. changed.	
		36/37	Absolute Power Heating in kBTU/h	Register No. changed.	
31/32	Energy Cooling in UnitSel	70/71	Energy Cooling in UnitSel	Register No. changed.	

Modbus Register Description

Version 3		Version 4		Remarks	
No.	Register	No.	Register		
33/34	Energy Cooling in kWh	66/67	Energy Cooling in kWh	Register No. changed.	
35/36	Energy Cooling in kBTU	68/69	Energy Cooling in kBTU	Register No. changed.	
37/38	Energy Heating in UnitSel	76/77	Energy Heating in UnitSel	Register No. changed.	
39/40	Energy Heating in kWh	72/73	Energy Heating in kWh	Register No. changed.	
41/42	Energy Heating in kBTU	74/75	Energy Heating in kBTU	Register No. changed.	
105	Malfunction and Service info	105	Malfunction and Service info	Bit Enummaration changed	
				V1, V2, V3	V4
				Bit 0: Error Sensor T1	Bit 8: Remote temperature not OK
				Bit 1: Error Sensor T2	Bit 9: Flowbody temperature not OK
				Bit 2: Error Flow Sensor	Bit10: Com. to sensor interrupted
				Bit 3: Actuator cannot move	Bit 2: Actuator cannot move
				Bit 4: Flow with closed valve	Bit 5: Flow with closed valve
				Bit 5: Airbubbles	Bit 7: Flow measurement error
				Bit 6: Flow not reached	Bit 4: Flow setpoint not reached
				Bit 7: Power not realized	Bit13: Power setpoint not reached
				Bit 9: Gear disengaged	Bit 1: Gear disengaged
				Bit11: Reverse flow detected	Bit 3: Reverse flow
				Bit12: MP communication faulty	Bit 0: No communication to actuator
Bit13: Freeze warning	Bit11: Freeze warning				
106	Vmax	107	Vmax	Register No. changed.	
107/108	Absolute Vmax in l/s	130	Absolute Vmax in l/s	Register No. changed. Scaling factor changed from 0.001 to 0.01. If you need higher resolution use Register No. 132/133.	
109/110	Absolute Vmax in gpm	131	Absolute Vmax in gpm	Register No. changed. Scaling factor changed from 0.001 to 0.1. If you need higher resolution use Register No. 132/133.	
111/112	Vnom in UnitSel	113/114	Vnom in UnitSel	Register No. changed.	
113/114	Vnom in l/s	111	Vnom in l/s	Register No. changed. Scaling factor changed from 0.001 to 0.01. If you need higher resolution use Register No. 111/112.	
115/116	Vnom in gpm	112	Vnom in gpm	Register No. changed. Scaling factor changed from 0.001 to 0.1. If you need higher resolution use Register No. 111/112.	
117	Pmax	166	Pmax	Register No. changed.	
118/119	Absolute Pmax in kW	167/168	Absolute Pmax in kW	Register No. changed.	
120/121	Absolute Pmax in kBTU/h	169/170	Absolute Pmax in kBTU/h	Register No. changed.	
122/123	Pnom in UnitSel	164/165	Pnom in UnitSel	Register No. changed. Scaling factor changed from 0.001 to 0.1.	
124/125	Pnom in kW	160/161	Pnom in kW	Register No. changed.	
126/127	Pnom in kBTU/h	162/163	Pnom in kBTU/h	Register No. changed.	
131	DeltaT Limitation	180	DeltaT Limitation	Register No. changed.	
132	DeltaT Manager Status	181	DeltaT Manager Status	Register No. changed.	
133	Setpoint DeltaT in K	40	Setpoint DeltaT in K	Register No. changed.	
134	Setpoint DeltaT in °F	41	Setpoint DeltaT in °F	Register No. changed.	
135/136	Setpoint Flow at DeltaT in l/s	42/43	Setpoint Flow at DeltaT in l/s	Register No. changed.	
137/138	Setpoint Flow at DeltaT in gpm	44/45	Setpoint Flow at DeltaT in gpm	Register No. changed. Scaling factor changed from 0.001 to 0.01. If you need higher resolution use	
141	Control Mode	117	Control Mode	Register No. changed.	

Modbus Register Description

Version 3		Version 4		Remarks	
No.	Register	No.	Register		
142	Unit Selection for Flow	148	Unit Selection for Flow	Register No. changed.	
143	Unit Selection for Power	149	Unit Selection for Power	Register No. changed. Mapping changed!	
				V1, V2, V3	V4
				0: W	0: W
				1: kW	1: kW
				2: BTU/h	2: MW
				3: kBTU/h	3: BTU/h
				4: ton	4: kBTU/h
	5: ton				
144	Unit Selection for Energy	151	Unit Selection for Energy	Register No. changed. Mapping changed!	
				V1, V2, V3	V4
				0: J	0: J
				1: kWh	1: kJ
				2: MWh	2: MJ
				3: kBTU	3: GJ
				4: tonh	4: Wh
				5: MJ	5: kWh
				6: GJ	6: MWh
					7: BTU
	8: kBTU				
	9: tonh				
145	Setpoint Source	119	Setpoint Source	Register No. changed.	