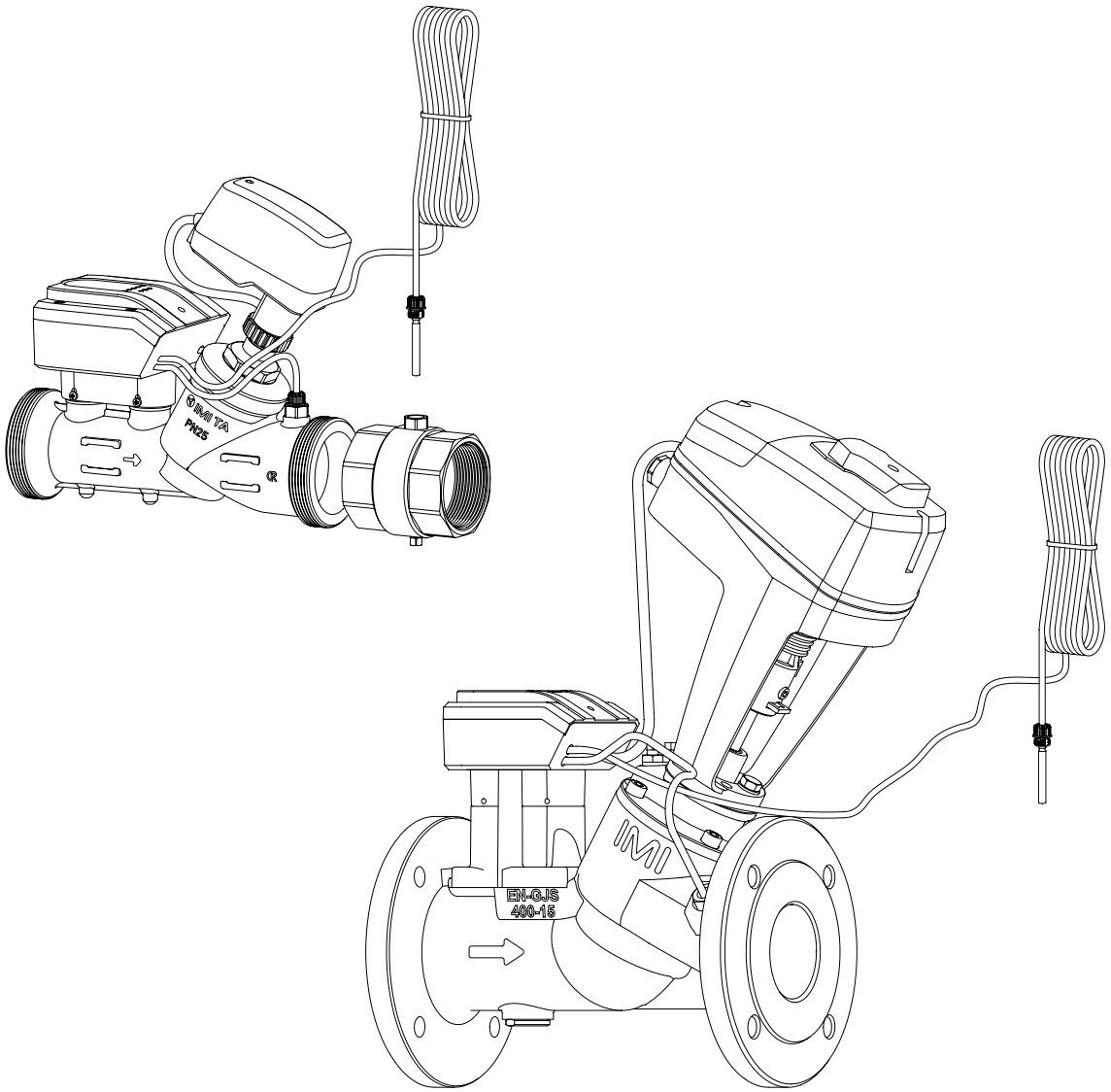
09.2023

IMI TA

TA-Smart BACnet IP

Protocol Implementation Conformance Statement – PICS



IMI Hydronic Engineering

General information

Date: 21/08/2023
Vendor Name: IMI Hydronic Engineering
Vendor ID: 926
Product Name: TA-Smart/TA-Smart-Dp DN 20 to 125
Product Model Number: 322231-XXXXX/322232-XXXXX
Application Software: 1.0
BACnet Protocol Revision: 16
Product Description: Digitally configurable connected 2-way control valve with integrated ultrasonic flow measurement (with remote differential pressure sensor in option)
BACnet Standard Device Profile: BACnet Application Specific Controller (B-ASC)
BACnet interoperability Building Blocks (BIBBS)

- Data Sharing - ReadProperty-B (DS-RP-B)
- Data Sharing - ReadPropertyMultiple-B (DS-RPM-B)
- Data Sharing - WriteProperty-B (DS-WP-B)
- Data Sharing - WritePropertyMultiple-B (DS-WPM-B)
- Device Management - DynamicDeviceBinding-B (DM-DDB-B)
- Device Management - DynamicObjectBinding-B (DM-DOB-B)
- Device Management - DeviceCommunicationControl-B (DM-DCC-B)†
- Device Management - TimeSynchronization (DM-TS-B)*
- Device Management - UTCTimeSynchronization (DM-UTC-B)*

Segmentation capabilitiy: Configurable (Tx, Rx, Both**, None)
Data Link Layer Options: BACnet/IP, BACnet/IP (Foreign Device)
Device Address Binding: Supported
Networking Option: None
Character Sets supported: ISO 10646 (UTF-8)

†) No password required
**) Valid range for years is 2000 – 2099*
***) Default value*

BACnet object description

Device Objects

Object type / address	Object name	Access	Value range	Description
Device	Object ID	RW	0 … 4194303	Value computed from the SN by default
Device	Object Name	RW	1 to 25 char	By default: “TA-Smart X YYYYYYYY” or “TA-Smart-Dp X YYYYYYYY” (X being the DN Size and YYYYYYYY being the 8 character serial number)
Device	Serial-number	R	XXXXXXX	8 characters
Device	Max-Master	RW	1 … 127	Maximum value for the "poll for master"
Device	Location	RW	25 char max	Empty by default
Device	Object description	R	25 char max	Valve name ("Unknown" by default)

Standard Objects

Object type / address	Object name	Access	Unit	Value range	Default	Description
AI:0	ValveNominalFlow_unit1	R	FlowUnit1	[0.0, 3.4e+38]	n.a.	Nominal flow of the valve expressed in the units selected in registers FlowUnit1 and FlowUnit2 respectively. This is the maximum value of flow that can be assigned to the valve.
AI:1	ValveNominalFlow_unit2	R	FlowUnit2	[0.0, 3.4e+38]	n.a.	
AI:2	ValveMinAdjustableFlow_unit1	R	FlowUnit1	[0.0, 3.4e+38]	n.a.	Min adjustable flow of the valve expressed in the units selected in registers FlowUnit1 and FlowUnit2
AI:3	ValveMinAdjustableFlow_unit2	R	FlowUnit2	[0.0, 3.4e+38]	n.a.	
AI:4	ValveNominalPower_unit1	R	PowerUnit1	[0.0, 3.4e+38]	n.a.	Nominal power of the valve expressed in the units selected in registers PowerUnit1 and PowerUnit2 respectively. This is the maximum value of power that can be assigned to the valve.
AI:5	ValveNominalPower_unit2	R	PowerUnit2	[0.0, 3.4e+38]	n.a.	
AI:6	ValveMinAdjustablePower_unit1	R	PowerUnit1	[0.0, 3.4e+38]	n.a.	Min adjustable power of the valve expressed in the units selected in registers PowerUnit1 and PowerUnit2 respectively. This is the minimum value of power that can be assigned to the valve.
AI:7	ValveMinAdjustablePower_unit2	R	PowerUnit2	[0.0, 3.4e+38]	n.a.	
AI:8	ValveNominalStroke_mm	R	mm	[0.0, 3.4e+38]	n.a.	Nominal stroke of the valve expressed in millimeters and inches respectively.
AI:9	ValveNominalStroke_inch	R	inch	[0.0, 3.4e+38]	n.a.	
AI:10	ValveMinAdjustableStroke_mm	R	mm	[0.0, 3.4e+38]	n.a.	Min adjustable stroke of the valve expressed in millimeters and inches respectively. This is the minimum value of limited stroke that can be assigned to the valve.
AI:11	ValveMinAdjustableStroke_inch	R	inch	[0.0, 3.4e+38]	n.a.	
AI:12	AnalogSetPointValue	R	VDC or mA	[0.0, 10.0] for VDC; [0.0, 20.0] for mA	n.a.	Analog input value in VDC or mA used as setpoint for controlling the valve if register ControlSource is set to Analog. Value is VDC or mA depending on register AnalogSignalType
AI:13	FlowSetPoint_unit1	R	FlowUnit1	[0.0, ValveNominalFlow_unit1]	n.a.	Flow setpoint

AI:14	FlowSetPoint_unit2	R	FlowUnit2	[0.0, ValveNominalFlow_unit2]	n.a.	
AI:15	PowerSetPoint_unit1	R	PowerUnit1	[0.0, ValveNominalPower_unit1]	n.a.	Power setpoint
AI:16	PowerSetPoint_unit2	R	PowerUnit2	[0.0, ValveNominalPower_unit2]	n.a.	
AI:17	PositionSetPoint_mm	R	mm	[0.0, ValveNominalStroke_mm]	n.a.	Position setpoint
AI:18	PositionSetPoint_inch	R	inch	[0.0, ValveNominalStroke_inch]	n.a.	
AI:19	RelativeMeasuredFlow	R	%	[0.0, 100.0]	n.a.	Measured flow expressed in percentage of the currently applicable maximum flow depending on register CurrentRegime
AI:20	MeasuredFlow_unit1	R	FlowUnit1	[0.0, 3.4e+38]	n.a.	Measured flow
AI:21	MeasuredFlow_unit2	R	FlowUnit2	[0.0, 3.4e+38]	n.a.	
AI:22	MeasuredSupplyTemp_degC	R	°C	[-40.0, 140.0]	n.a.	Measured supply temperature
AI:23	MeasuredSupplyTemp_degF	R	°F	[-40.0, 284.0]	n.a.	
AI:24	MeasuredReturnTemp_degC	R	°C	[-40.0, 140.0]	n.a.	Measured return temperature
AI:25	MeasuredReturnTemp_degF	R	°F	[-40.0, 284.0]	n.a.	
AI:26	MeasuredDeltaT_K	R	K	[0.0, 3.4e+38]	n.a.	Measured Delta T
AI:27	MeasuredDeltaT_degF	R	°F	[0.0, 3.4e+38]	n.a.	
AI:28	RelativeMeasuredPower	R	%	[0.0, 100.0]	n.a.	Measured power expressed in percentage of the currently applicable maximum power depending on register CurrentRegime
AI:29	MeasuredPower_unit1	R	PowerUnit1	[0.0, 3.4e+38]	n.a.	Measured power
AI:30	MeasuredPower_unit2	R	PowerUnit2	[0.0, 3.4e+38]	n.a.	
AI:31	EnergyCounterRegime1_unit1	R	EnergyUnit1	[0.0, 3.4e+38]	n.a.	Energy counter in regime 1
AI:32	EnergyCounterRegime1_unit2	R	EnergyUnit2	[0.0, 3.4e+38]	n.a.	
AI:33	EnergyCounterRegime2_unit1	R	EnergyUnit1	[0.0, 3.4e+38]	n.a.	Energy counter in regime 2
AI:34	EnergyCounterRegime2_unit2	R	EnergyUnit2	[0.0, 3.4e+38]	n.a.	
AI:35	RelativeMeasuredPosition	R	%	[0.0, 100.0]	n.a.	Measured position expressed in percentage of the currently applicable maximum position depending on register CurrentRegime
AI:36	MeasuredPosition_mm	R	mm	[0.0, 3.4e+38]	n.a.	Measured position
AI:37	MeasuredPosition_inch	R	inch	[0.0, 3.4e+38]	n.a.	
AI:38	MaxAdjustableDpStab_unit1[1)]	R	DpUnit 1	[0.0, 3.4e+38]	n.a.	Max adjustable stabilised Dp expressed in the units selected in registers DpUnit1 and DpUnit2 respectively. This is the maximum value of stabilised differential pressure that can be assigned to the valve given the Dp sensor that is connected to it.
AI:39	MaxAdjustableDpStab_unit2[1)]	R	DpUnit 2	[0.0, 3.4e+38]	n.a.	
AI:40	MinAdjustableDpStab_unit1[1)]	R	DpUnit 1	[0.0, 3.4e+38]	n.a.	Min adjustable stabilised Dp expressed in the units selected in registers DpUnit1 and DpUnit2 respectively. This is the minimum value of stabilised differential pressure that can be assigned to the valve given the Dp sensor that is connected to it.
AI:41	MinAdjustableDpStab_unit2[1)]	R	DpUnit 2	[0.0, 3.4e+38]	n.a.	
AI:42	MeasuredDpStab_unit1[1)]	R	DpUnit 1	[0.0, 3.4e+38]	n.a.	Stabilised differential pressure measured by Dp sensor
AI:43	MeasuredDpStab_unit2[1)]	R	DpUnit 2	[0.0, 3.4e+38]	n.a.	
AV:0	ControlCharCoefficient	R/W	n.a.	[0.01, 0.99]	0.25	This coefficient (thermal efficiency) allows to adjust the curvature of the EQM and Inverted EQM characteristics. Default value is 0.25.
AV:1	R1SetbackPercentage	R/W	%	[0.0, 100.0]	80.0	Setback percentage applied to MaxFlowRegime1 when CurrentRegime is set to Regime1Setback
AV:2	R2SetbackPercentage	R/W	%	[0.0, 100.0]	80.0	Setback percentage applied to MaxFlowRegime2 when CurrentRegime is set to Regime2Setback
AV:3	MaxFlowRegime1_unit1	R/W	FlowUnit1	[ValveMinAdjustableFlow_unit1, ValveNominalFlow_unit1]	ValveNominalFlow_unit1	Max flow assigned to the valve when the valve is in regime 1
AV:4	MaxFlowRegime1_unit2	R/W	FlowUnit2	[ValveMinAdjustableFlow_unit2, ValveNominalFlow_unit2]	ValveNominalFlow_unit2	
AV:5	MaxFlowRegime2_unit1	R/W	FlowUnit1	[ValveMinAdjustableFlow_unit1, ValveNominalFlow_unit1]	ValveNominalFlow_unit1	Max flow assigned to the valve when the valve is in regime 2
AV:6	MaxFlowRegime2_unit2	R/W	FlowUnit2	[ValveMinAdjustableFlow_unit2, ValveNominalFlow_unit2]	ValveNominalFlow_unit2	
AV:7	MinFlowRegime1_unit1	R/W	FlowUnit1	[0.0, MaxFlowRegime1_unit1]	0.0	Min flow assigned to the valve when the valve is in regime 1
AV:8	MinFlowRegime1_unit2	R/W	FlowUnit2	[0.0, MaxFlowRegime1_unit2]	0.0	
AV:9	MinFlowRegime2_unit1	R/W	FlowUnit1	[0.0, MaxFlowRegime2_unit1]	0.0	Min flow assigned to the valve when the valve is in regime 2
AV:10	MinFlowRegime2_unit2	R/W	FlowUnit2	[0.0, MaxFlowRegime2_unit2]	0.0	
AV:11	MaxPowerRegime1_unit1	R/W	PowerUnit1	[ValveMinAdjustablePower_unit1, ValveNominalPower_unit1]	ValveNominalPower_unit1	Max power assigned to the valve when the valve is in regime 1
AV:12	MaxPowerRegime1_unit2	R/W	PowerUnit2	[ValveMinAdjustablePower_unit2, ValveNominalPower_unit2]	ValveNominalPower_unit2	
AV:13	MaxPowerRegime2_unit1	R/W	PowerUnit1	[ValveMinAdjustablePower_unit1, ValveNominalPower_unit1]	ValveNominalPower_unit1	Max power assigned to the valve when the valve is in regime 2
AV:14	MaxPowerRegime2_unit2	R/W	PowerUnit2	[ValveMinAdjustablePower_unit2, ValveNominalPower_unit2]	ValveNominalPower_unit2	
AV:15	MaxPositionRegime1_mm	R/W	mm	[ValveMinAdjustableStroke_mm, ValveNominalStroke_mm]	ValveNominalStroke_mm	Max position assigned to the valve when the valve is in regime 1
AV:16	MaxPositionRegime1_inch	R/W	inch	[ValveMinAdjustableStroke_inch, ValveNominalStroke_inch]	ValveNominalStroke_inch	
AV:17	MaxPositionRegime2_mm	R/W	mm	[ValveMinAdjustableStroke_mm, ValveNominalStroke_mm]	ValveNominalStroke_mm	Max position assigned to the valve when the valve is in regime 2
AV:18	MaxPositionRegime2_inch	R/W	inch	[ValveMinAdjustableStroke_inch, ValveNominalStroke_inch]	ValveNominalStroke_inch	
AV:19	MinPositionRegime1_mm	R/W	mm	[0.0, MaxPositionRegime1_mm]	0.0	Min position assigned to the valve when the valve is in regime 1
AV:20	MinPositionRegime1_inch	R/W	inch	[0.0, MaxPositionRegime1_inch]	0.0	
AV:21	MinPositionRegime2_mm	R/W	mm	[0.0, MaxPositionRegime2_mm]	0.0	Min position assigned to the valve when the valve is in regime 2
AV:22	MinPositionRegime2_inch	R/W	inch	[0.0, MaxPositionRegime2_inch]	0.0	
AV:23	RelativeSetpoint	R/W	%	[0.0, 100.0]	100.0	Relative setpoint in percentage of currently applicable max value. This setpoint applies if register ControlSource is set to Bus

AV:24	AdditiveConcentration	R/W	%	[0.0, 57.0]	0.0	Additive concentration in water in % weight. Additive is defined through register FluidType. Register is not writable if FluidType is Water
AV:25	OverrideValue_unit1	R/W	n.a.	[0.0, 3.4e+38]	n.a.	Value of the max flow, power or position that applies if register OverrideType is set to 1, 2, 4 or 6. The value is expressed according in selected Unit1 for flow and power and in mm for position
AV:26	OverrideValue_unit2	R/W	n.a.	[0.0, 3.4e+38]	n.a.	Value of the max flow, power or position that applies if register OverrideType is set to 1, 2, 4 or 6. The value is expressed according in selected Unit2 for flow and power and in inch for position
AV:27	MinFlowThresholdRegime1_unit1[2)]	R/W	FlowUnit1	[0.05*ValveNominalFlow_unit1, 0.9*MaxFlowRegime1_unit1]	0.25*MaxFlowRegime1_unit1	Flow threshold under which temperature limitation ceases to operate in regime 1
AV:28	MinFlowThresholdRegime1_unit2[2)]	R/W	FlowUnit2	[0.05*ValveNominalFlow_unit2, 0.9*MaxFlowRegime1_unit2]	0.25*MaxFlowRegime1_unit2	Flow threshold under which temperature limitation ceases to operate in regime 1
AV:29	MinFlowThresholdRegime2_unit1[2)]	R/W	FlowUnit1	[0.05*ValveNominalFlow_unit1, 0.9*MaxFlowRegime2_unit1]	0.25*MaxFlowRegime2_unit1	Flow threshold under which temperature limitation ceases to operate in regime 2
AV:30	MinFlowThresholdRegime2_unit2[2)]	R/W	FlowUnit2	[0.05*ValveNominalFlow_unit2, 0.9*MaxFlowRegime2_unit2]	0.25*MaxFlowRegime2_unit2	Flow threshold under which temperature limitation ceases to operate in regime 2
AV:31	DeltaTSetpointRegime1_degK[2)]	R/W	K	[1.0, 50.0]	6.0	Delta temperature setpoint assigned to the valve when the valve is in regime 1
AV:32	DeltaTSetpointRegime1_degF[2)]	R/W	°F	[1.8, 90.0]	10.8	
AV:33	DeltaTSetpointRegime2_degK[2)]	R/W	K	[1.0, 50.0]	6.0	Delta temperature setpoint assigned to the valve when the valve is in regime 2
AV:34	DeltaTSetpointRegime2_degF[2)]	R/W	°F	[1.8, 90.0]	10.8	
AV:35	TReturnSetpointRegime1_degC[2)]	R/W	°C	[-9.0, 119.0]	12.0	Return temperature setpoint assigned to the valve when the valve is in regime 1
AV:36	TReturnSetpointRegime1_degF[2)]	R/W	°F	[15.8, 246.2]	53.6	
AV:37	TReturnSetpointRegime2_degC[2)]	R/W	°C	[-9.0, 119.0]	12.0	Return temperature setpoint assigned to the valve when the valve is in regime 2
AV:38	TReturnSetpointRegime2_degF[2)]	R/W	°F	[15.8, 246.2]	53.6	
AV:39	DpStabSetpointRegime1_unit1[1)]	R/W	DpUnit1	[MinAdjustableDpStab_unit1, MaxAdjustableDpStab_unit1]	MinAdjustableDpStab_unit1	Stabilised differential pressure setpoint assigned to the valve when the valve is in regime 1
AV:40	DpStabSetpointRegime1_unit2[1)]	R/W	DpUnit2	[MinAdjustableDpStab_unit2, MaxAdjustableDpStab_unit2]	MinAdjustableDpStab_unit2	
AV:41	DpStabSetpointRegime2_unit1[1)]	R/W	DpUnit1	[MinAdjustableDpStab_unit1, MaxAdjustableDpStab_unit1]	MinAdjustableDpStab_unit1	Stabilised differential pressure setpoint assigned to the valve when the valve is in regime 2
AV:42	DpStabSetpointRegime2_unit2[1)]	R/W	DpUnit2	[MinAdjustableDpStab_unit2, MaxAdjustableDpStab_unit2]	MinAdjustableDpStab_unit2	
AV:43	CyclicControlTimeout_min[3)]	R/W	min	[0.0, 120.0]	20	Delay period prior to initiating the Fallback procedure, during which TA-Smart moves towards a setpoint specified by the user, in the absence of any bus control signal or analog input signal received by TA-Smart.
AV:50	LastErrors[1]	R	n.a.	[-2^31, 2^31]	0	Newest error in error log. Positive for raised error, negative for cleared error. Description property is formatted as follows: +YYMMDD_HHMMSS_ShortErrorString or -YYMMDD_HHMMSS_ShortErrorString See object BSV:0 for the list of possible errors
AV:...	…					
AV:59	LastErrors[10]	R	n.a.	[-2^31, 2^31]	0	Oldest error in error log. Positive for raised error, negative for cleared error. Description property is formatted as follows: +YYMMDD_HHMMSS_ShortErrorString or -YYMMDD_HHMMSS_ShortErrorString See object BSV:0 for the list of possible errors
AV:60	LastEvents[1]	R	n.a.	[0, 2^32]	0	Newest event in event log. Description property is formatted as follows: YYMMDD_HHMMSS_ShortEventString See table Events for the list of possible events
AV:…	…					
AV:69	LastEvents[10]	R	n.a.	[0, 2^32]	0	Oldest event in event log. Description property is formatted as follows: YYMMDD_HHMMSS_ShortEventString See table Events for the list of possible events
MSI:0	ValveFamily	R	n.a.	1: TA-Smart 2: TA-Smart-Dp	n.a.	Family to which the valve belongs
MSI:1	ValveVersion	R	n.a.	1: Standard	n.a.	Version of the valve
MSI:2	ValveSize	R	n.a.	3: DN20 - 3/4" 4: DN25 - 1" 5: DN32 - 1"1/4 6: DN40 - 1"1/2 7: DN50 - 2" 8: DN65 - 2"1/2 9: DN80 - 3" 10: DN100 - 4" 11: DN125 - 5"	n.a.	Size of the valve
MSI:3	AnalogSignalType	R	n.a.	1: Voltage (VDC) 2: Current (mA)	1	Defines the type of analog input signal as set by jumper inside the SmartBox
MSI:4	TemperatureLimitationStatus[2)]	R	n.a.	1: Inactive 2: Active	1	Current status of the temperature limitation. There are conditions under which an enabled temp limitation is inactive (e.g. when the setpoint of the control source is below the temperature limitation target)

MSV:0	FluidType	R/W	n.a.	1: Water 2: Monoethylene glycol 3: Monopropylene glycol	1	Type of the fluid. It can be either water or one of the listed additives diluted in water
MSV:1	FlowSide	R/W	n.a.	1: Supply side 2: Return side	1	Piping side on which the valve is installed (supply or return)
MSV:2	ControlMode	R/W	n.a.	1: Flow control 2: Power control 3: Dp control[1)] 4: Position control	1	The control mode indicates which variable is being controlled by the valve
MSV:3	ControlCharacteristics	R/W	n.a.	1: Linear 2: Equal-percentage (EQM) 3: Inverted EQM	2	Signal characteristics applied to the setpoint value given in register RelativeSetpoint into a target value for the controlled variable. When control mode is set to flow control, the chosen characteristics should be selected as EQM and Linear in the other cases.
MSV:4	ControlSource	R/W	n.a.	1: Analog 2: Bus	1	Control source specifies whether the setpoint for controlling the valve is provided by the analog input (in which case bus is used just for monitoring) or by the bus
MSV:5	FlowUnit1	R/W	n.a.	1: m3/h 2: l/s 3: l/min 4: l/h 5: GPM	1	First selected flow unit
MSV:6	FlowUnit2	R/W	n.a.	1: m3/h 2: l/s 3: l/min 4: l/h 5: GPM	5	Second selected flow unit
MSV:7	PowerUnit1	R/W	n.a.	1: kW 2: W 3: Btu/h 4: kBtu/h 5: ton (refrig.)	1	First selected power unit
MSV:8	PowerUnit2	R/W	n.a.	1: kW 2: W 3: Btu/h 4: kBtu/h 5: ton (refrig.)	4	Second selected power unit
MSV:9	EnergyUnit1	R/W	n.a.	1: kWh 2: kJ 3: MJ 4: kBtu 5: MBtu 6: ton.h	1	First selected energy unit
MSV:10	EnergyUnit2	R/W	n.a.	1: kWh 2: kJ 3: MJ 4: kBtu 5: MBtu 6: ton.h	5	Second selected energy unit
MSV:11	RegimeSwitching	R	n.a.	1: None 2: Dual-range input signal 3: Bus 4: Temperature detection 5: Scheduling	1	Switching mode between regimes 1 and 2. To be changed by configuration with the HyTune app. When None, values input for regime 1 are used.
MSV:12	CurrentRegime	R/W	n.a.	1: Regime1 2: Regime2 3: Regime1Setback 4: Regime2Setback	1	Current change-over regime. Changing the current change-over regime via BACnet can be done only if register RegimeSwitching is set to 2.
MSV:13	OverrideType	R/W	n.a.	1: None 2: Flow 3: Power 4: Dp[1)] 5: Valve position 6: Stop 7: Simulated operation	1	Type of override defining which action is taken as an override to the configured control. The valve resets automatically to normal operation leaving the override after 3 hours.
MSV:14	TemperatureLimitationType[2)]	R/W	n.a.	1: None 2: DT limitation 3: T return limitation	1	Temperature limitation type to be chosen between DT or return temperature. It applies on top of the currently operating control mode provided that the flow is above a defined threshold.
MSV:15	DpUnit1[1)]	R/W	n.a.	1: kPa 2: bar 3: psi	1	First selected differential pressure unit
MSV:16	DpUnit2[1)]	R/W	n.a.	1: kPa 2: bar 3: psi	4	Second selected differential pressure unit
BSV:0	CurrentErrorState	R	n.a.	Bit 0 (0x01): 0/1	0	Error 1: ErrorLowPower (ELowPower)
				Bit 1 (0x02): 0/1	0	Error 2: ErrorInputLineBroken (EInLnBreak)
				Bit 2 (0x04): 0/1	0	Error 3: WarningFlowNotReached (WFlowNotRchd)
				Bit 3 (0x08): 0/1	0	Error 4: WarningPowerNotReached (WPwrNotRchd)
				Bit 4 (0x10): 0/1	0	Error 5: ErrorLocalTempSensorDisconnected (ELclTmpSnsrDsctd)
				Bit 5 (0x20): 0/1	0	Error 6: ErrorRemoteTempSensorDisconnected (ERmtTmpSnsrDsctd)
				Bit 6 (0x40): 0/1	0	Error 7: ErrorLocalTempSensorShortCircuit (ELclTmpSnsrShrtC)
				Bit 7 (0x80): 0/1	0	Error 8: ErrorRemoteTempSensorShortCircuit (ERmtTmpSnsrShrtC)

				Bit 8 (0x100): 0/1	0	Error 9: ErrorLocalTempSensorBelowMin (ELclTmpSnsrBlw)
				Bit 9 (0x200): 0/1	0	Error 10: ErrorRemoteTempSensorBelowMin (ERmtTmpSnsrBlw)
				Bit 10 (0x400): 0/1	0	Error 11: ErrorLocalTempSensorAboveMax (ELclTmpSnsrAbv)
				Bit 11 (0x800): 0/1	0	Error 12: ErrorRemoteTempSensorAboveMax (ERmtTmpSnsrAbv)
				Bit 12 (0x1000): 0/1	0	Error 13: WarningActuatorManualOverride (WActManOverrd)
				Bit 14 (0x4000): 0/1	0	Error 15: ErrorFlowMeasurement (EFlowMsrmt)
				Bit 16 (0x10000): 0/1	0	Error 17: Reverse Flow Detected (EFlowRev)
				Bit 17 (0x20000): 0/1	0	Error 18: ErrorActuatorComFailure (EActCommFailure)
				Bit 18 (0x40000): 0/1	0	Error 19: ErrorDpSensorDisconnected (EDpSensorDsctd)[1)]
				Bit 19 (0x80000): 0/1	0	Error 20: WarningAvailDpTooLowForDpStab (WAvDpLow4DpStab)[1)]
				Bit 20 (0x100000): 0/1	0	Error 21: WarningResistLoadTooLowForDpStab (WResLdLow4DpStab)[1)]
				Bit 21 (0x200000): 0/1	0	Error 22: WarningDpStabAboveMax (WDpStabAbv)[1)]
				Bit 22 (0x400000): 0/1	0	Error 23: ErrorBusCyclicControlTimeout (EBusCtrlTimeout)
				Bit 23 (0x800000): 0/1	0	Error 24: WarningHighFlow (WHghFlw)
MSI:10	StatusSummary	R	n.a.	1: Ok 2: Error 3: Warning	1	Summarizes all status information. An error is critical for the valve and the system operation and may stop the valve operation. A warning highlights a non-expected situation that does not stop the valve operation.
MSI:11	StatusFlowSensor	R	n.a.	1: Ok 2: ErrorFlowMeasurement	1	Provides status information related to the flow measurement section. **ErrorFlowMeasurement**: Ultrasonic flow measurement error rate prevents returning a useable flow value. TA-Smart falls back to position control mode as long as this error does not resolve.
MSI:12	StatusLocalTempSensor	R	n.a.	1: Ok 2: ErrorLocalTempSensorDisconnected 3: ErrorLocalTempSensorShortCircuit 4: ErrorLocalTempSensorBelowMin 5: ErrorLocalTempSensorAboveMax	1	Provides status information related to the local temperature measurement. **ErrorLocalTempSensorDisconnected**: The measured resistance of the temperature sensor embedded in TA-Smart body is very high. This very likely indicates that the temperature sensor is disconnected or that its cable has been cut. **ErrorLocalTempSensorShortCircuit**: The measured resistance of the temperature sensor embedded in TA-Smart body is very low. This very likely indicates a short circuit due to damaged cable. **ErrorLocalTempSensorBelowMin**: The temperature sensor embedded in TA-Smart body measures a temperature below -10°C (14°F). **ErrorLocalTempSensorAboveMax**: The temperature sensor embedded in TA-Smart body measures a temperature above 120°C (248°F).
MSI:13	StatusRemoteTempSensor	R	n.a.	1: Ok 2: ErrorRemoteTempSensorDisconnected 3: ErrorRemoteTempSensorShortCircuit 4: ErrorRemoteTempSensorBelowMin 5: ErrorRemoteTempSensorAboveMax	1	Provides status information related to the remote temperature measurement. **ErrorRemoteTempSensorDisconnected**: The measured resistance of the remote temperature sensor is very high. This very likely indicates that the temperature sensor is disconnected or that its cable has been cut. **ErrorRemoteTempSensorShortCircuit**: The measured resistance of the remote temperature sensor is very low. This very likely indicates a short circuit due to damaged cable. **ErrorRemoteTempSensorBelowMin**: The remote temperature sensor measures a temperature below -10°C (14°F). **ErrorRemoteTempSensorAboveMax**: The remote temperature sensor measures a temperature above 120°C (248°F).
MSI:14	StatusActuator	R	n.a.	1: Ok 2: WarningActuatorManualOverride 3: ErrorActuatorComFailure	1	Provides status information related to the actuator. **WarningActuatorManualOverride**: The TA-Slider actuator of TA-Smart has been stopped in manual or electrical override by a user. **ErrorActuatorComFailure**: Communication failed between the TA-Slider actuator and the Smartbox. Actuator is consequently restarted and performs a stroke calibration unless recalibration is disactivated.

MSI:15	StatusOperation	R	n.a.	1: Ok 2: ErrorLowPower 3: ErrorInputLineBroken	1	Provides status information related to the power supply of the valve and the analog input signal to the valve. **ErrorLowPower**: Supply voltage has dropped below 19 V. TA-Smart operations resume as soon as supplied voltage reaches 20.5 V. **ErrorInputLineBroken**: Signal received on analog input line is significantly below 2 VDC or 4 mA while the configured input range is 2-10 VDC or 4-20 mA. This can mean that the analog input line is broken or disconnected or that the controller is configured for a 0-10 VDC or 0-20 mA output.
MSI:16	StatusSystem	R	n.a.	1: Ok 2: WarningFlowNotReached 3: WarningPowerNotReached	1	Provides status information related to the ability of the valve to reach its setpoint. **Flow not reached**: Flow set-point is not reached while TA-Smart is fully open. This indicates either a too low available differential pressure or a too high hydronic resistance in the circuit controlled by TA-Smart. **Power not reached**: Power set-point is not reached while TA-Smart is fully open. This indicates too low flow and/or too low differential temperature. For too low flow, probable causes are either a too low available differential pressure or a too high hydronic resistance in the circuit controlled by TA-Smart. For too low differential temperature, probable causes are either lack of thermal energy input or reduced capacity of the heat exchange unit.
MSI:17	StatusDpSensor[1)]	R	n.a.	1: Ok 2: ErrorDpSensorDisconnected 3: WarningAvailDpTooLowForDpStab 4: WarningKvLoadTooHighForDpStab 5: WarningDpStabAboveMax	1	Provides status information related to the remote differential pressure sensor measurement. **ErrorDpSensorDisconnected**: The signal returned by the Dp sensor is null while flow runs through the subsystem it is measuring. This very likely indicates that the Dp sensor is disconnected, damaged or that its cable has been cut. **WarningAvailDpTooLowForDpStab**: The stabilised Dp setpoint is not reached while TA-Smart-Dp is fully open.This very likely means that the available differential pressure is too low. **WarningKvLoadTooHighForDpStab**: The stabilised Dp setpoint is not reached while TA-Smart-Dp has reached the defined max flow.This very likely means that the load on which Dp is stabilised has a significantly lower hydronic resistance than expected or that the defined max flow has been set too low. **WarningDpStabAboveMax**: The measured Dp is above the nominal measuring range of the Dp sensor connected to TA-Smart-Dp.

1) These registers are only available when using a TA-Smart-Dp (322232-XXXXX).
2) These registers are not available when using a TA-Smart Dp (322232-XXXXX).
3) These registers are only available from FW 8.0.0.

Event Table

Value	Short event string	Description
0x40000001	EvRstUsrDflt	Reset to user default
0x40000002	EvAdmnLogin	Login as Admin

Object processing

Object Type	Optionnal properties	Writable properties
Analog Input	Min Pre Value Max Pres Value	Present Value Out of Service
Analog Value	Description Min Pres Value	Present Value Out of Service
Binary Input	Inactive Text Active Text	Present Value Out of Service
Binary Value	Inactive Text Active Text	Present Value Out of Service
Device	Location Description Serial Number	Objecti Identified Object Name Location Description Segmentation supported Max Segments Accepted UTC Offset APDU Segment Timeout APDU Timeout Number of APDU Retries
Multi-State Input	State Text	Present Value Out of Service
Multi-State Value	State Text	Present Value Out of Service

The properties Object name and Location of the Device Object support up to 32 characters (all other character strings are read-only).