

TA-Smart

- NPT threads/ANSI flanges



Smart valves

2-way control valve with uniquely shaped EQM characteristics with flow, temperature and power measurement capabilities

TA-Smart – NPT threads/ANSI flanges

The ultrasonic flow measurement technology combined with unique actuation algorithms capabilities provide best-in-class control performances. The TA-Smart controls can be set to flow or power, giving high on-site flexibility and providing highly effective comfort in heating and cooling applications. Its compact arrangement and simple set-up reduces installation and commissioning time.



Key features

- > **Best-in-class control**
Accurate and fast control response even at very low flows in common part load conditions. Ensures full modulating control for the complete operating stroke leading to world class control and efficiencies.
- > **Optional cloud connection**
Easy remote access to data and configuration parameters allows to verify and adjust system performance.
- > **High measurement accuracy**
High flow and temperature measurement accuracies in all configurations (medium type, and temperature) for all flow regimes.
- > **Compactness and limited number of components**
Reduces installation time and space requirements facilitating retrofit installation.
- > **Convenient, reliable setup**
Fully customizable and commissionable using Bluetooth enabled smart device reducing commissioning and diagnostic time.
- > **Easy diagnostics**
Continuous measurement (flow, temperature, power...) enables accurate error identification in system hydronics.
- > **Versatility in communication**
Digital (key Bus protocols and MQTT) and Analog (0(2)-10 VDC or 0(4)-20 mA).

Technical description

Application:

Heating and cooling systems.

Functions:

Control (flow, power, position)
Pre-setting (max./min. flow, max. power, max./min. position)
Reading (flow, power, energy, supply/return temperature, ΔT , position)
Manual override (via HyTune app)
Mode, status and position indication
Valve blockage protection
Valve clogging detection
Error safe position
Diagnostic
Logging
Delayed start-up

Dimensions:

DN 32-80

Pressure class:

DN 32-50: PN 25
DN 65-80: PN 16, PN 25

Differential pressure (ΔpV):

Max. differential pressure (ΔpV_{max}):
400 kPa = 4 bar
Closing pressure: 600 kPa = 6 bar
 ΔpV_{max} = The maximum allowed pressure drop over the valve to fulfill all stated performances.

Flow range:

The flow ranges ($q_{setmin} - q_{nom}$) for different dimensions:
DN 32: 920 - 4600 l/h
DN 40: 1560 - 7800 l/h
DN 50: 2680 - 13400 l/h
DN 65: 5800 - 29000 l/h
DN 80: 8640 - 43200 l/h
Minimum controllable flows ($q_{contr.min}$) 0.5% of q_{nom} .
 q_{setmin} = Minimum settable flow.
 q_{nom} = Maximum settable flow.

Measurement accuracy:

Flow:
 $\pm 3\%$ from 5% to 100% of q_{nom} (see "Flow accuracy")
Temperature difference:
 ± 0.1 K @ $\Delta T = 6$ K (for cooling)
 ± 0.15 K @ $\Delta T = 10$ K (for heating)
 ± 0.2 K @ $\Delta T = 20$ K (for heating)

Control accuracy:

$\pm 5\%$ from 4% to 100% of q_{nom}
 $\pm 10\%$ from 0.5% to 4% of q_{nom}

Temperature:

Max. working temperature: 110°C
Min. working temperature: -10°C
Operating environment: 0°C – +50°C (5-95%RH, non-condensing)
Storage environment: -20°C – +70°C (5-95%RH, non-condensing)

Media:

Water or neutral fluids, water-glycol mixtures (0-57%).

Leakage rate:

DN 32-50: Leakage rate <0.01% of q_{nom} with correct flow direction (Class IV according to EN 60534-4)

DN 65-80: Tight sealing with correct flow direction (Class V according to EN 60534-4)

Characteristics:

Settable: Stepless between EQM 0.25 and inverted EQM 0.25.

Supply voltage:

24 VAC/VDC $\pm 15\%$.

Frequency 50/60 Hz ± 3 Hz.

NOTE: 24 VAC/VDC power supply must be provided only with safety isolating transformer according to EN 61558-2-6.

Power consumption:

DN 32-50:

Operation: < 4.0 W (24 VDC);

< 5.6 VA (24 VAC)

Standby: < 1.9 W (24 VDC);

< 3.3 VA (24 VAC)

DN 65-80:

Operation: < 5.8 W (24 VDC);

< 10 VA (24 VAC)

Standby: < 1.9 W (24 VDC);

< 3.3 VA (24 VAC)

Input signal:

By BACnet/Modbus or Analog signal.

Analog in VDC or mA, selectable by jumper in the SmartBox;

0(2)-10 VDC, R_i 47 k Ω .

Adjustable sensitivity 0.1-0.5 VDC.

0.33 Hz low pass filter.

0(4)-20 mA R_i 500 Ω .

Proportional:

0-10, 10-0, 2-10 or 10-2 VDC.

0-20, 20-0, 4-20 or 20-4 mA.

Proportional split-range:

0-5, 5-0, 5-10 or 10-5 VDC.

0-4.5, 4.5-0, 5.5-10 or 10-5.5 VDC.

2-6, 6-2, 6-10 or 10-6 VDC.

0-10, 10-0, 10-20 or 20-10 mA.

4-12, 12-4, 12-20 or 20-12 mA.

Proportional dual-range (for change-over):

0-3.3 / 6.7-10 VDC,

10-6.7 / 3.3-0 VDC,

2-4.7 / 7.3-10 VDC or

10-7.3 / 4.7-2 VDC.

Default setting: Proportional 0-10 VDC.

Output signal:

BACnet/Modbus

0(2)-10 VDC, max. 8 mA, min. 1.25 k Ω .

Wireless:

Bluetooth Low Energy (BLE)

Thread

Sensor cable:

DN 32-50: 3 m halogen free

DN 65-80: 5 m halogen free

Ingress protection:

IP54 (according to EN 60529)

Protection class:

(according to EN 61140)

III (SELV)

Material:

DN 32-50:

Valve body: AMETAL[®]

Valve insert: AMETAL[®]

Valve plug: AMETAL[®] and PTFE

Spindle: Stainless steel

Spindle seal: EPDM O-ring

Internal plastic parts: PPS

Springs: Stainless steel

O-rings: EPDM

Temperature housing: AMETAL[®].

DN 65-80:

Valve body: Ductile iron EN-GJS-400-15

Valve insert: Ductile iron EN-GJS-400-15 and brass

Valve plug: Stainless steel and EPDM

O-ring

Valve seat: Stainless steel

Spindle: Stainless steel

Spindle seal: EPDM

Springs: Stainless steel

O-rings: EPDM

SmartBox (DN 32-80):

Cover: PC/ABS, red.

Housing: PC/ABS, TPE.

Actuators:

DN 32-50:

Cover: PC/ABS GF8, white RAL 9016, grey RAL 7047.

Housing: PA GF40.

Swivelling nut: Nickel-plated brass.

DN 65-80:

Cover: PBT, orange RAL 2011, grey RAL 7043.

Bracket: Alu EN44200

Cables: Halogen free

AMETAL[®] is the dezincification resistant alloy of IMI Hydronic Engineering.

Surface treatment:

DN 32-50: Non treated

DN 65-80: Electrophoretic painting

Marking:

Valve body:

DN 32-50: IMI TA, PN, DN, inch size,

country of origin and flow direction arrow.

DN 65-80: IMI TA, DN, inch size, material

and flow direction arrow. Label with

technical specification, country of origin

and CE.

SmartBox: IMI TA

Actuator: IMI TA, model, technical spec.,

LED info.

Pipe connection:

DN 32-50: Male thread according to

ISO 228. Connections (accessories) with

female thread NPT according to ANSI/

ASME B1.20.1-1983, or for soldering

according to ASME/ANSI B16.18.

DN 65-80: Flanges according to ASME 7

ANSI B16.42 Class 150.

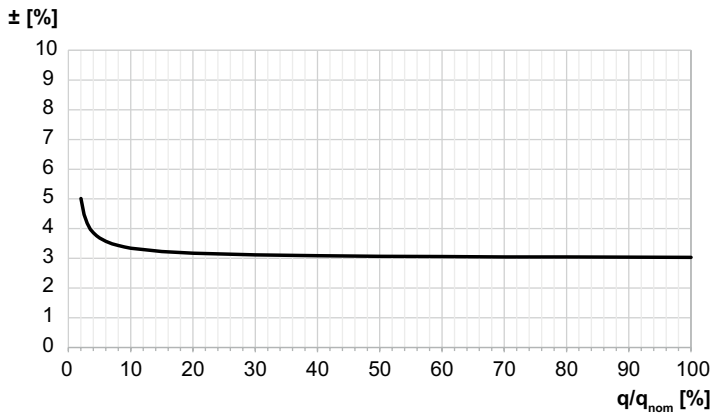
Certification and directives:

EMC-D. 2014/30/EU: EN 60730-1, -2-14.

Product standards EN 60730-x.

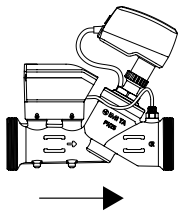
PED: 2014/68/EU

Flow accuracy

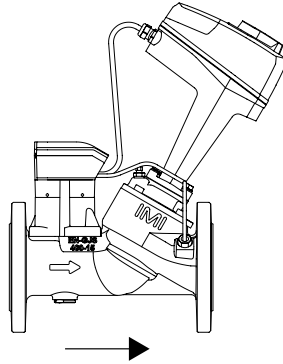


Installation

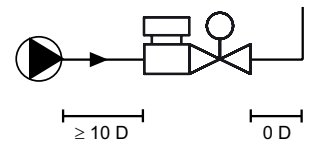
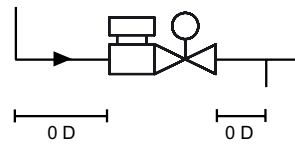
DN 32-50



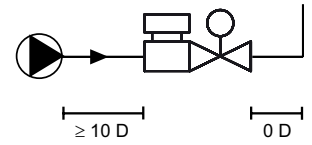
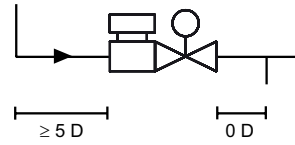
DN 65-80



DN 32-50

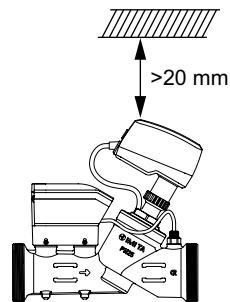


DN 65-80

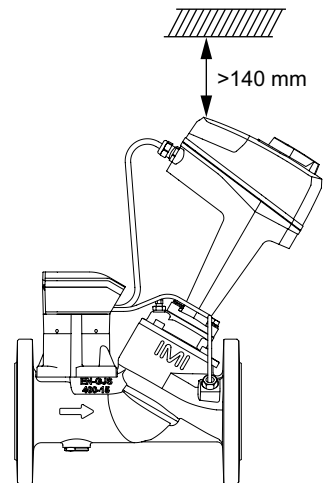


Note: Free space is required above the actuator for easy mounting/dismounting.

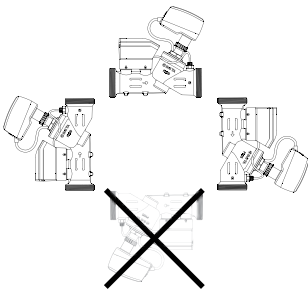
DN 32-50



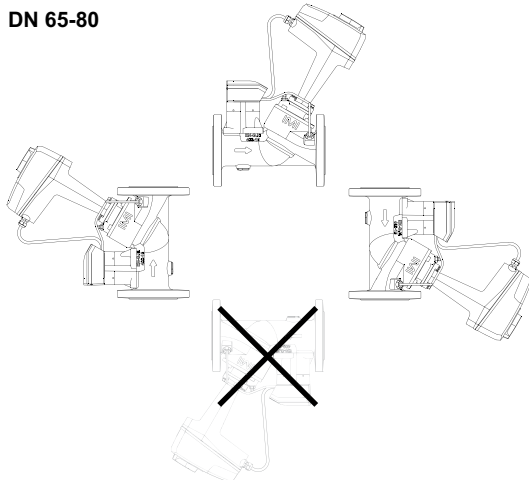
DN 65-80



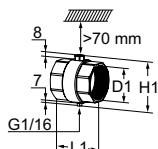
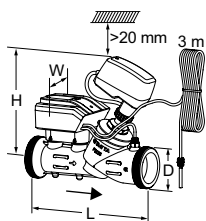
DN 32-50



DN 65-80



Articles



TA-Smart DN 32-50

Including temperature housing.

Male threads according to ISO 228. NPT threads - see "Connections".

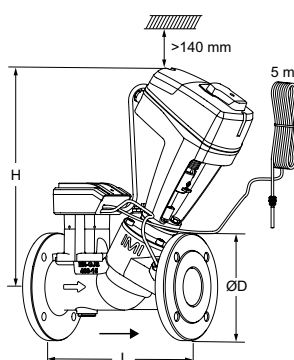
DN	(size)	D	L	H	W	Kvs	Kg	EAN	Article No
32	(1 1/4")	G1 1/2	226	223	97	7,28	2,1	7318794164604	322231-00132
40	(1 1/2")	G2	232	227	97	12,3	3,0	7318794164703	322231-00140
50	(2")	G2 1/2	245	235	97	21,3	3,9	7318794164802	322231-00150

Temperature housing incl. temperature pocket

Included in TA-Smart DN 32-50.

Female thread NPT according to ANSI/ASME B1.20.1-1983.

DN	(size)	D1	L1	H1
32	(1 1/4")	1 1/4 NPT	66	70
40	(1 1/2")	1 1/2 NPT	67	76
50	(2")	2 NPT	68	89



TA-Smart DN 65-80

Including temperature pocket. Free space >70 mm is required above the temperature pocket.

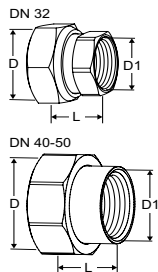
Flanges according to ASME 7 ANSI B16.42 Class 150.

DN	(size)	Number of bolt holes	D	L	H	Kvs	Kg	EAN	Article No
Class 150									
65	(2 1/2")	4	180	290	377	50	16,5	7318794171008	322231-01465
80	(3")	4	190	310	380	70	18,6	7318794171107	322231-01480

→ = Flow direction

Kvs = m³/h at a pressure drop of 1 bar and fully open valve.

Connections

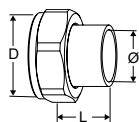


With female thread NPT

Threads according to ANSI/ASME B1.20.1-1983.

Swivelling nut
Brass/AMETAL®

Valve DN	D	D1	L*	EAN	Article No
32	G1 1/2	1 NPT	27	7318794018501	52 163-332
32	G1 1/2	1 1/4 NPT	31	7318794018204	52 163-232
40	G2	1 NPT	30	7318794033108	52 163-340
40	G2	1 1/2 NPT	32	7318794032903	52 163-240
50	G2 1/2	1 1/2 NPT	32	7318794033207	52 163-350
50	G2 1/2	2 NPT	32	7318794033009	52 163-250



Soldering connection

According to ASME/ANSI B16.18

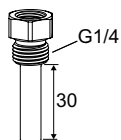
Swivelling nut
Brass/gunmetal CC491K (EN 1982)

Valve DN	D	Pipe Ø [in]	~ [mm]	L*	EAN	Article No
32	G1 1/2	1.380	35	28	7318794023208	52 009-732
40	G2	1.630	41	31	7318794033900	52 009-740
50	G2 1/2	2.130	54	38	7318794034006	52 009-750

*) Fitting length (from the gasket surface to the end of the connection).

Other type of connections (ISO), see international version of TA-Smart.

Accessories

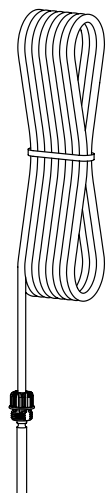


Temperature pocket

Included in TA-Smart DN 65-80.

For mounting directly on pipe. Free space >70 mm is required above the temperature pocket.

	EAN	Article No
G1/4	7318794174009	322230-00400



Temperature sensor

Included in TA-Smart (3 m DN 32-50, 5 m DN 65-80).

Length [m]	EAN	Article No
3	7318794173705	322230-01100
5	7318794173804	322230-01101

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