IMI TA

TA-Smart

Smart valves

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

IMI Hydronic Engineering

Breakthrough Engineering

TA-Smart

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.
- **Optional ΔT and temperature return limitation**
  Optimize the efficiency of your production units by ensuring optimal temperature regimes.
- **Change-over functionality**
  Possibility to switch between two operating conditions to manage seasonality or heating and cooling with the same valve in change-over applications.
- **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)
ΔT and temperature return limitation
Reading (flow, power, energy, supply/return temperature, ΔT, position)
Change-over function
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 20-125

Pressure class:
DN 20-50: PN 25
DN 65-125: 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 20: 380 - 1900 l/h
DN 25: 540 - 2700 l/h
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
DN 100: 14200 - 71000 l/h
DN 125: 22400 - 112000 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:
±2% from 5% to 100% of q_{nom} in water,
±3% from 5% to 100% of q_{nom} in water-glycol mixtures (0-57%),
(see “Flow accuracy”).
Temperature difference:
±0.1 K @ ΔT = 6 K (for cooling)
±0.15 K @ ΔT = 10 K (for heating)
±0.2 K @ ΔT = 20 K (for heating)

Control accuracy:
±5% from 4% to 100% of q_{nom}
±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 20-50: Leakage rate <0.01% of q_{nom} with correct flow direction (Class IV according to EN 60534-4)
DN 65-125: 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 ±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 20-50:
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)
DN 100-125:
Operation: < 7.7 W (24 VDC);
< 10.8 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 kΩ.
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):
0-4.5 / 5.5-10 VDC.
2-5.5 / 6.5-10 VDC.
0-3.3 / 6.7-10 VDC.
2-4.7 / 7.3-10 VDC.
0-9 / 11-20 mA.
4-11 / 13-20 mA.
Default setting: Proportional 0-10 VDC.

Output signal:
BACnet/Modbus
0(2)-10 VDC, max. 8 mA, min. 1.25 kΩ.

Wireless:
Bluetooth Low Energy (BLE)
Thread

Temperature sensor cable:
DN 20-50: 3 m halogen free
DN 65-125: 5 m halogen free
10 m halogen free cable on request.

Ingress protection:
IP54
(according to EN 60529)

Protection class:
(according to EN 61140)
III (SELV)

Material:
DN 20-50:
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 65-125:
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 20-125):
Cover: PC/ABS, red.
Housing: PC/ABS, TPE.

Actuators:
DN 20-50:
Cover: PC/ABS GF8, white RAL 9016, grey RAL 7047.
Housing: PA GF40.
Swivelling nut: Nickel-plated brass.
DN 65-125:
Cover: PBT, orange RAL 2011, grey RAL 7043.
Bracket: Alu EN44200

Cables: Halogen free

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

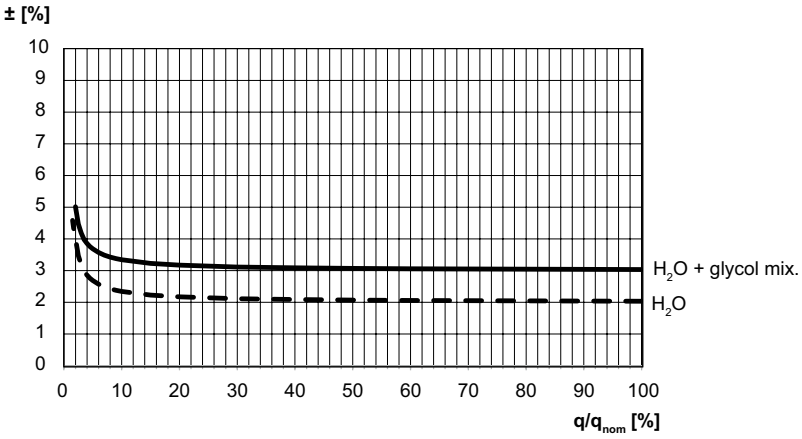
Surface treatment:
DN 20-50: Non treated
DN 65-125: Electrophoretic painting

Marking:
Valve body:
DN 20-50: IMI TA, PN, DN, inch size, country of origin and flow direction arrow.
DN 65-125: 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 20-50: Male thread according to ISO 228.
DN 65-125: Flanges according to EN-1092-2, type 21. Face to face length according to EN 558, series 1.

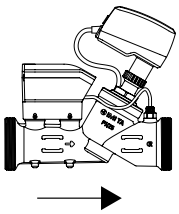
Certification and directives:
EMC-D. 2014/30/EU: EN 60730-1, -2-14.
Product standards EN 60730-x.
PED: 2014/68/EU

Flow accuracy

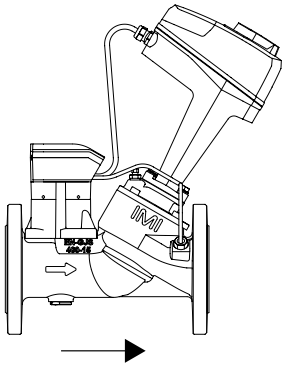


Installation

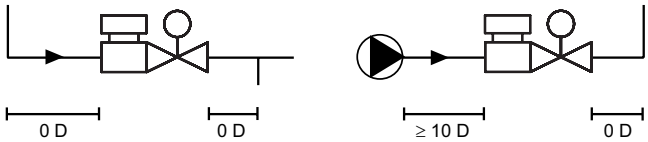
DN 20-50



DN 65-125

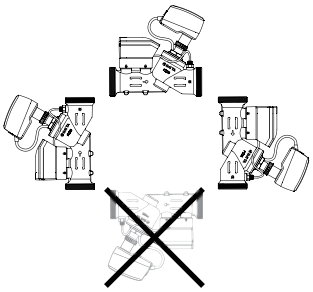


DN 20-50

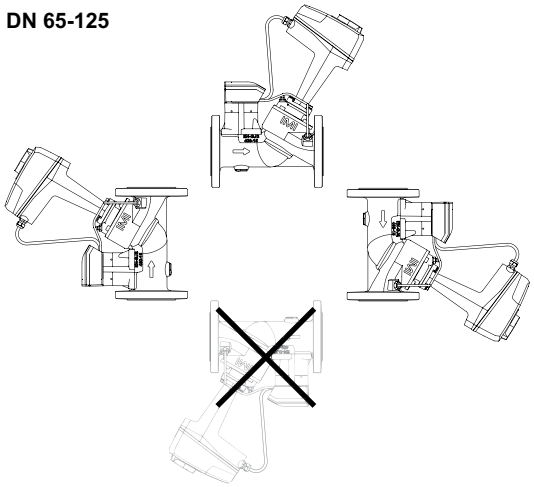


DN 65-125

DN 20-50

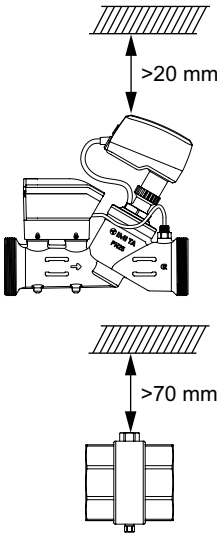


DN 65-125

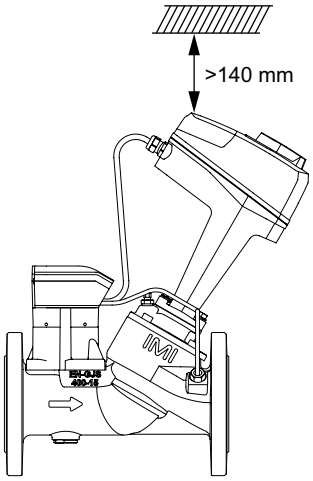


Note: Free space is required above the actuator/temperature sensor pocket for easy mounting/dismounting.

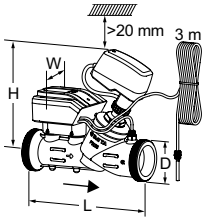
DN 20-50

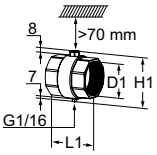


DN 65-125



Articles





TA-Smart DN 20-50

Including temperature housing and 3 m temperature sensor cable.
(10 m cable on request, please contact IMI Hydronic Engineering)
Male threads according to ISO 228.

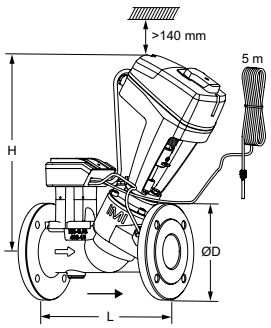
DN	D	L	H	W	Kvs	Kg	EAN	Article No
20	G1	180	174	97	3,15	1,6	7318794174207	322231-00020
25	G1 1/4	187	174	97	4,35	1,8	7318794174306	322231-00025
32	G1 1/2	200	199	97	7,28	2,1	7318794164307	322231-00032
40	G2	218	198	97	12,3	3,0	7318794164406	322231-00040
50	G2 1/2	239	198	97	21,2	3,9	7318794164505	322231-00050

Temperature housing incl. temperature sensor pocket

Included in TA-Smart/-Dp DN 20-50.
Female threads according to ISO 228.

DN	D1	L1	H1
20*	G3/4	60	56
25	G1	62	61
32	G1 1/4	66	70
40	G1 1/2	67	76
50	G2	68	89

*) Can be connected to smooth pipes by KOMBI compression coupling.



TA-Smart DN 65-125

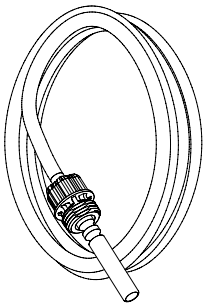
Including temperature sensor pocket and 5 m temperature sensor cable.
(10 m cable on request, please contact IMI Hydronic Engineering)
Free space >70 mm is required above the temperature pocket.
Flanges according to EN-1092-2, type 21.

DN	Number of bolt holes	D	L	H	Kvs	Kg	EAN	Article No
PN 16								
65	4	185	290	377	49	16,5	7318794171206	322231-01265
80	8	200	310	380	73	18,6	7318794171305	322231-01280
100	8	220	350	438	120	29	7318794176904	322231-01290
125	8	250	400	444	190	35	7318794177000	322231-01291
PN 25								
65	8	185	290	377	49	16,5	7318794170803	322231-01365
80	8	200	310	380	73	18,6	7318794170902	322231-01380
100	8	235	350	438	120	29	7318794177307	322231-01390
125	8	270	400	444	190	35	7318794177406	322231-01391

→ = Flow direction

Kvs = m^3/h at a pressure drop of 1 bar and fully open valve.

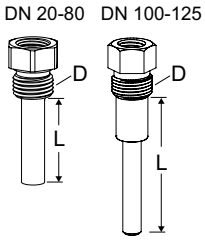
Accessories



Temperature sensor

Included in TA-Smart/-Dp.
(10 m cable on request, please contact IMI Hydronic Engineering)
Tool for exchanging temperature sensor is included.

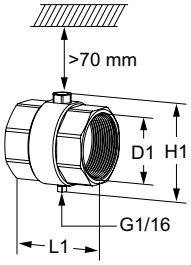
Valve DN	Length [m]	EAN	Article No
20-25	3	7318794178229	322230-01106
32-50	3	7318794173705	322230-01100
65-125	5	7318794173804	322230-01101



Temperature sensor pocket

Included in TA-Smart/-Dp DN 65-125.
For mounting directly on pipe. Free space >70 mm is required above the temperature sensor pocket.

Valve DN	D	L	EAN	Article No
20-25	G1/4	14	7318794174603	322230-00401
20-25	G1/2	14	7318794178199	322230-00403
32-80	G1/4	30	7318794174009	322230-00400
32-80	G1/2	30	7318794178205	322230-00404
100-125	G3/8	58	7318794178175	322230-00402

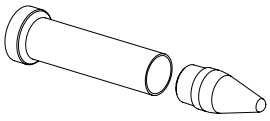


Temperature housing incl. temperature sensor pocket

Included in TA-Smart DN 20-50.
To be ordered separately if the pipe size does not match the valve size.
Female threads according to ISO 228.

DN	D1	L1	H1	EAN	Article No
20*	G3/4	60	56	7318794174900	322230-00020
25	G1	62	61	7318794175006	322230-00025
32	G1 1/4	66	70	7318794171404	322230-00032
40	G1 1/2	67	76	7318794171503	322230-00040
50	G2	68	89	7318794171602	322230-00050

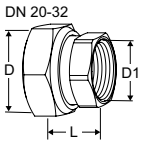
*) Can be connected to smooth pipes by KOMBI compression coupling.

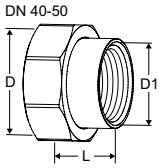


Service tool

	EAN	Article No
For exchange of temperature sensor	7318794178144	322033-00000
For exchange of TA-Slider cable	7318794178151	322033-00001

Connections

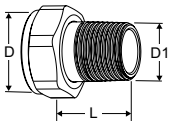




With female thread

Threads according to ISO 228. Thread length according to ISO 7-1. Swivelling nut. Brass/AMETAL®

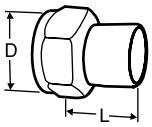
Valve DN	D	D1	L*	EAN	Article No
20	G1	G3/4	23	7318794017009	52 163-020
25	G1 1/4	G1	23	7318794017108	52 163-025
32	G1 1/2	G1 1/4	31	7318794017207	52 163-032
40	G2	G1 1/2	30	7318794032705	52 163-040
50	G2 1/2	G2	32	7318794032804	52 163-050



With male thread

Threads according to ISO 7-1. Swivelling nut. Brass

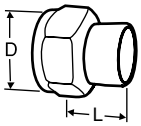
Valve DN	D	D1	L*	EAN	Article No
20	G1	R3/4	32,5	4024052516810	0601-03.350
25	G1 1/4	R1	35	4024052517015	0601-04.350
32	G1 1/2	R1 1/4	38,5	4024052517213	0601-05.350



Welding connection

Swivelling nut. Brass/Steel 1.0045 (EN 10025-2)

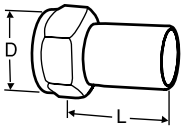
Valve DN	D	Pipe DN	L*	EAN	Article No
20	G1	20	40	7318792748608	52 009-020
25	G1 1/4	25	40	7318792748707	52 009-025
32	G1 1/2	32	40	7318792748806	52 009-032
40	G2	40	45	7318792748905	52 009-040
50	G2 1/2	50	50	7318792749001	52 009-050



Soldering connection

Swivelling nut. Brass/gunmetal CC491K (EN 1982)

Valve DN	D	Pipe Ø	L*	EAN	Article No
20	G1	18	15	7318792749506	52 009-518
20	G1	22	18	7318792749605	52 009-522
25	G1 1/4	28	21	7318792749704	52 009-528
32	G1 1/2	35	26	7318792749803	52 009-535
40	G2	42	30	7318792749902	52 009-542
50	G2 1/2	54	35	7318792750007	52 009-554



Connection with smooth end

For connection with press coupling. Swivelling nut. Brass/AMETAL®

Valve DN	D	Pipe Ø	L*	EAN	Article No
20	G1	18	44	7318793810700	52 009-318
20	G1	22	48	7318793810809	52 009-322
25	G1 1/4	28	53	7318793810908	52 009-328
32	G1 1/2	35	59	7318793811004	52 009-335
40	G2	42	70	7318793811103	52 009-342
50	G2 1/2	54	80	7318793811202	52 009-354

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

TA-Smart EN ed.5 02.2023