

Climate
Control

IMI TA

TA-Smart-Dp Fail-safe



Smart valves

2-way Smart electronic differential pressure controller with flow, temperature and power measurement capabilities and electronic fail-safe function

TA-Smart-Dp Fail-safe

The TA-Smart-Dp Fail-safe combines ultrasonic flow measurement with advanced actuation algorithms for top-tier control performance. Designed to maintain stable differential pressure, it enhances control valve authority, reduces noise, and simplifies balancing. In case of a power outage, the valve moves to a safety position, ensuring high system uptime. With flow or power control options, it offers flexibility for heating and cooling applications. Its compact design and easy setup minimize installation and commissioning time.



Key features

Precise and stable differential pressure control

Delivers desired differential pressure ensuring accurate balancing.

Fully configurable fail-safe

Setting of position (extended, retracted) or intermediate position, flow or power. Possibility to set delay for entering/ leaving failsafe mode for a reliable and optimal fail-safe function. Ability to perform quick health check of fail-safe function.

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.

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:

Differential pressure control
Electronic fail-safe function
Control (flow, power, position)
Pre-setting Δp over the load (Δp_L), max./min. flow, max. power, max./min. position
 ΔT and temperature return limitation
Measuring (Δp_L)
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

Fail-safe function:

Programmable actuator's stem extended, retracted or intermediate position, flow or thermal power on power supply failure.

Dimensions:

DN 15-125

Pressure class:

DN 15-50: PN 25
DN 65-125: PN 16, PN 25

Differential pressure (Δp_V):

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

Setting range, differential pressure

Dp sensor:

10-100 kPa
40-400 kPa
Max. differential pressure (Δp_{burst}):
500 kPa = 5 bar
1200 kPa = 12 bar
 Δp_{burst} = Maximum differential pressure that may be applied to the sensor.

Flow range:

The flow ranges ($q_{setmin} - q_{nom}$) for different dimensions:
DN 15: 160 - 1200 l/h
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 ($q_{contr.min}$)
DN 15 0.33% of q_{nom} , DN 20-125 0.5% of q_{nom}
 q_{setmin} = Minimum settable flow.
 q_{nom} = Maximum settable flow.

Measurement accuracy:**Flow:**

Water: From 2% accuracy at 100% of q_{nom} to 2.4% accuracy at 5% of q_{nom} (according MID-Class 2 EN1434).
 Water+glycol: From 3% accuracy at 100% of q_{nom} to 4% accuracy at 5% of q_{nom} (according to MID-Class 3 EN1434). (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)

Dp sensor:

<2.5 kPa for 10-100 kPa sensor
 <10 kPa for 40-400 kPa sensor

Flow 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)
 Dp sensor:
 Max. working temperature: 80°C
 Min. working temperature: -15°C
 Operating environment: -15°C – +80°C (5-95%RH, non-condensing)
 Storage environment: -40°C – +80°C (5-95%RH, non-condensing)

Media:

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

Leakage rate:

DN 15-50: 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 $\pm 15\%$.
 Frequency 50/60 Hz ± 3 Hz.
 Dp sensor:
 18-33 VDC or 24 VAC $\pm 15\%$ (0-10 V)

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

Power consumption:

DN 15-50:
 Peak: < 4.5 W (24 VDC);
 < 6.6 VA (24 VAC)
 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:
 Peak: < 10.5 W (24 VDC);
 < 18.4 VA (24 VAC)
 Operation: < 5.8 W (24 VDC);
 < 10 VA (24 VAC)
 Standby: < 1.9 W (24 VDC);
 < 3.3 VA (24 VAC)
 DN 100-125:
 Peak: < 10.5 W (24 VDC);
 < 18.4 VA (24 VAC)
 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

Output signal:

BACnet/Modbus
 0(2)-10 VDC, max. 8 mA, min. 1.25 k Ω .
 Dp sensor: 0-10 V

Fail-safe delay:

Adjustable between 0 and 10 seconds.
 Default setting: 2 s

Pre-charging time:

DN 15-50: < 40 s
 DN 65-80 < 60 s
 DN 100-125 < 125 s

Wireless:

Bluetooth Low Energy (BLE)
 Thread

Temperature sensor cable:

DN 15-50: 3 m halogen free
 DN 65-125: 5 m halogen free
 10 m halogen free cable on request.

Dp sensor cable:

1.5 m, 3x0.25 mm², PVC, PG7.

Ingress protection:

IP54
 Dp sensor: IP65
 (according to EN 60529)

Protection class:

(according to EN 61140)
 III (SELV)

Material:

DN 15-50:
 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 15-125):

Cover: PC/ABS, red.
 Housing: PC/ABS, TPE.

Actuators:

DN 15-50:
 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

Dp sensor:

Sensor housing: Stainless steel
 X8CrNiS18-9 (No 1.4305 EN 10 088-3).
 Membrane: Ceramic
 Sealing: EPDM

AMETAL® is the dezincification resistant alloy of IMI.

Surface treatment:

DN 15-50: Non treated
 DN 65-125: Electrophoretic painting

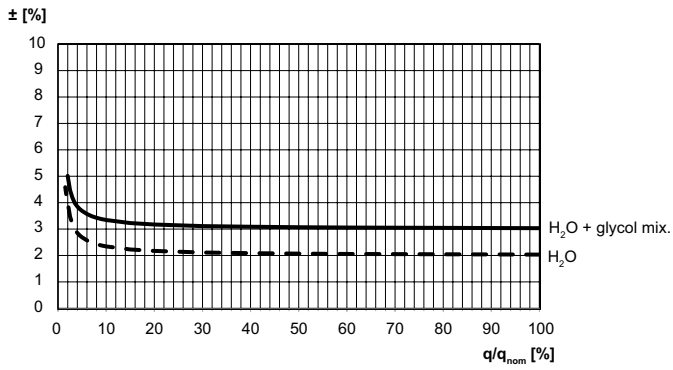
Pipe connection:

DN 15-50: External 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.

Certifications and directives:

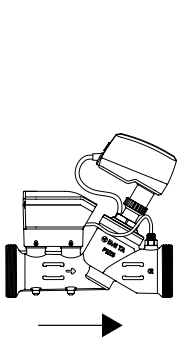
EMC-D. 2014/30/EU: EN 60730-1, -2-14.
 Product standards EN 60730-x.
 PED: 2014/68/EU
 Dp sensor:
 CE certification EN 61326-2-3.

Flow accuracy

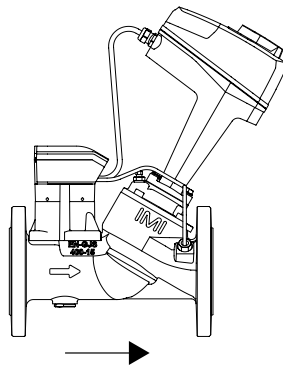


Installation

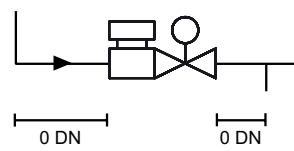
DN 15-50



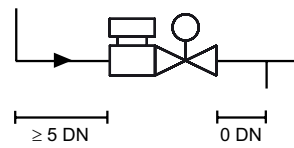
DN 65-125



DN 15-50

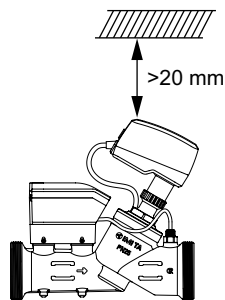


DN 65-125

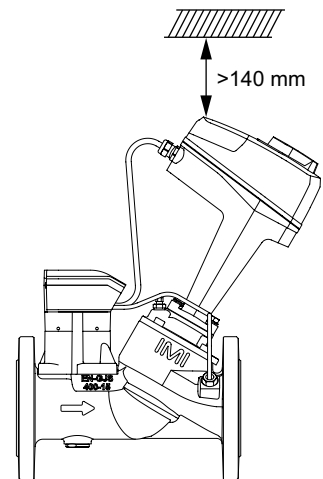


Note: Free space is required above the actuator/temperature sensor pocket for easy mounting/dismounting.

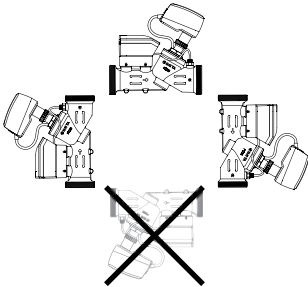
DN 15-50



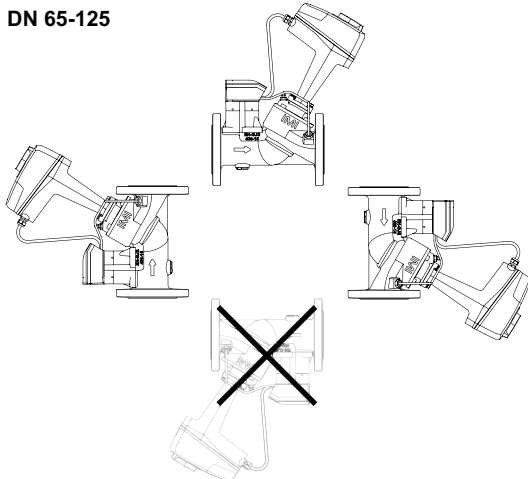
DN 65-125



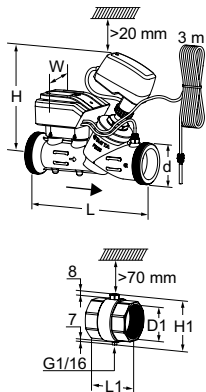
DN 15-50



DN 65-125



Articles



TA-Smart-Dp Fail-safe DN 15-50

Including temperature housing and 3 m temperature sensor cable.
External threads according to ISO 228.

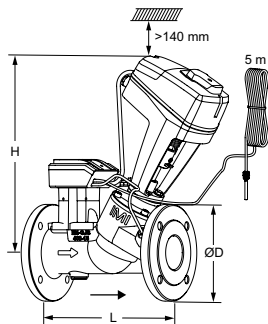
DN	d	L	H	W	Kvs	Kg	EAN	Article No
15	G3/4	167	173	97	1,90	1,4	7318794178557	322234-00015
20	G1	180	174	97	3,15	1,6	7318794178564	322234-00020
25	G1 1/4	187	174	97	4,35	1,8	7318794178571	322234-00025
32	G1 1/2	200	199	97	7,28	2,1	7318794178588	322234-00032
40	G2	218	198	97	12,3	3,0	7318794178595	322234-00040
50	G2 1/2	239	198	97	21,2	3,9	7318794178601	322234-00050

Temperature housing incl. temperature sensor pocket and capillary pipe connection

Included in TA-Smart-Dp Fail-safe DN 15-50.
Internal threads according to ISO 228.

DN	D1	L1	H1
15*	G1/2	48	55
20*	G3/4	60	56
25	G1	62	61
32	G1 1/4	70	71
40	G1 1/2	70	77
50	G2	78	89

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



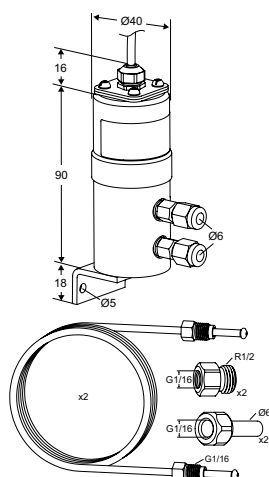
TA-Smart-Dp Fail-safe DN 65-125

Including temperature sensor pocket and 5 m temperature sensor cable.
Free space >70 mm is required above the temperature pocket.
Flanges according to EN-1092-2, type 21.

DN	Number of bolt holes	ØD	L	H	Kvs	Kg	EAN	Article No
PN 16								
65	4	185	290	377	49	17	7318794178618	322234-00065
80	8	200	310	380	73	19	7318794178625	322234-00080
100	8	220	350	438	120	29	7318794178632	322234-00090
125	8	250	400	444	190	35	7318794178649	322234-00091
PN 25								
65	8	185	290	377	49	17	7318794178656	322234-01365
80	8	200	310	380	73	19	7318794178663	322234-01380
100	8	235	350	438	120	29	7318794178670	322234-01390
125	8	270	400	444	190	35	7318794178687	322234-01391

→ = Flow direction

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

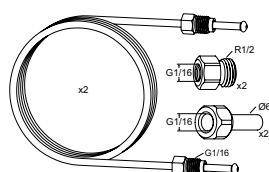


Dp sensor set

1 differential pressure sensor, 2x1 m capillary pipes Ø6 mm with G1/16 connections,
2 transitions nipples G1/16xG1/2, 2 transitions nipples G1/16xØ6.

	Δp_{burst}	Kg	EAN	Article No
10-100 kPa	500 kPa	0,43	5902276817656	325020-10008
40-400 kPa	1200 kPa	0,43	5902276817663	325020-10009

Δp_{burst} = Maximum differential pressure that may be applied to the sensor.



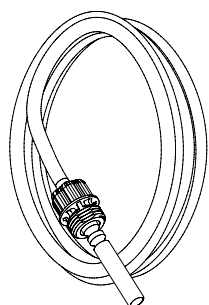
Connection set

2x1 m capillary pipes Ø6 mm with G1/16 connections, 2 transitions nipples G1/16xG1/2,
2 transitions nipples G1/16xØ6.

(Without Dp sensor. Only compatible with IMI type of Dp sensor)

	EAN	Article No
	5902276817670	326040-10001

Accessories



Temperature sensor

Included in TA-Smart/Fail-safe/-Dp.

Tool for exchanging temperature sensor is included.

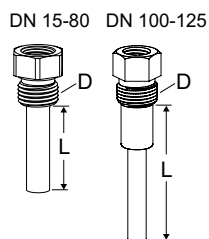
For DN	Length [m]	EAN	Article No
15-25	3	7318794178229	322230-01106
32-50	3	7318794173705	322230-01100
65-125	5	7318794173804	322230-01101

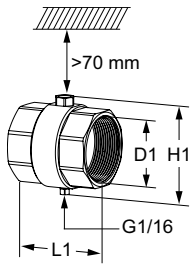
Temperature sensor pocket

Included in TA-Smart/Fail-safe/-Dp DN 65-125.

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

For DN	D	L	EAN	Article No
15-25	G1/4	14	7318794174603	322230-00401
15-25	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 and capillary pipe connection

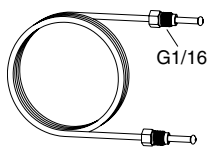
Included in TA-Smart-Dp DN 15-50.

To be ordered separately if the pipe size does not match the valve size.

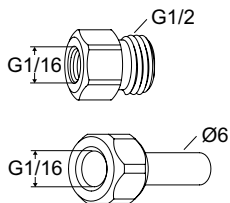
Internal threads according to ISO 228.

DN	D1	L1	H1	EAN	Article No
15*	G1/2	48	55	7318794178298	322230-00015
20*	G3/4	60	56	7318794174900	322230-00020
25	G1	62	61	7318794175006	322230-00025
32	G1 1/4	70	71	7318794171404	322230-00032
40	G1 1/2	70	77	7318794171503	322230-00040
50	G2	78	89	7318794171602	322230-00050

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

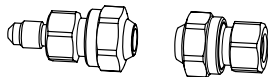

Capillary pipe

L	EAN	Article No
1 m	7318793661500	52 265-301


Transition nipple

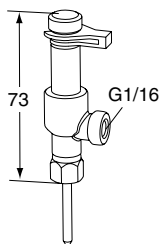
For capillary pipe with G1/16 connection.

	EAN	Article No
G1/16xG1/2	5902276817878	326040-10003
G1/16xØ6	5902276817861	326040-10002


Extension kit for capillary pipe

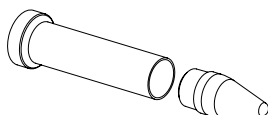
Complete with connections for 6 mm pipe

	EAN	Article No
	7318793781505	52 265-212

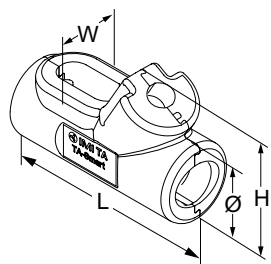

Measuring point, two-way

For connection of capillary pipe while permitting simultaneous use of our balancing instrument.

	EAN	Article No
	7318793784100	52 179-200


Service tool

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



Insulation

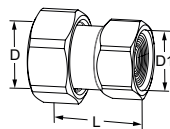
For heating and non-condensing cooling applications.

Material: EPP.

Fire class: E (EN 13501-1), B2 (DIN 4102).

For DN	L	H	W	Ø	EAN	Article No
15	-	-	-	-	-	-
20	215	112	76	69	5902276819681	322230-00620
25	225	119	86	82	5902276819698	322230-00625
32	238	153	92	96	5902276819438	322230-00632
40	256	168	110	114	5902276819360	322230-00640
50	284	183	134	143	5902276819377	322230-00650

Connections



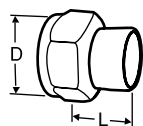
With internal thread

Threads according to ISO 228. Thread length according to ISO 7-1.

Swivelling nut.

Brass

Valve DN	D	D1	L	EAN	Article No
15	G3/4	G1/2	31,5	5902276820038	52 009-815
15	G3/4	G3/4	36,5	5902276820045	52 009-915
20	G1	G3/4	33,5	5902276820052	52 009-820
20	G1	G1	39,5	5902276820069	52 009-920
25	G1 1/4	G1	39	5902276820076	52 009-825
25	G1 1/4	G1 1/4	43	5902276820083	52 009-925
32	G1 1/2	G1 1/4	42	5902276820090	52 009-832
32	G1 1/2	G1 1/2	46	5902276820106	52 009-932
40	G2	G1 1/2	50	5902276820113	52 009-840
40	G2	G2	53	5902276820120	52 009-940
50	G2 1/2	G2	50	5902276820137	52 009-850
50	G2 1/2	G2 1/2	58	5902276820144	52 009-950

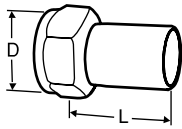


Soldering connection

Swivelling nut.

Brass/gunmetal CC491K (EN 1982)

For DN	D	Pipe Ø	L*	EAN	Article No
15	G3/4	15	13	7318792749308	52 009-515
15	G3/4	16	13	7318792749407	52 009-516
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®

For DN	D	Pipe Ø	L*	EAN	Article No
15	G3/4	15	39	7318793810601	52 009-315
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).



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