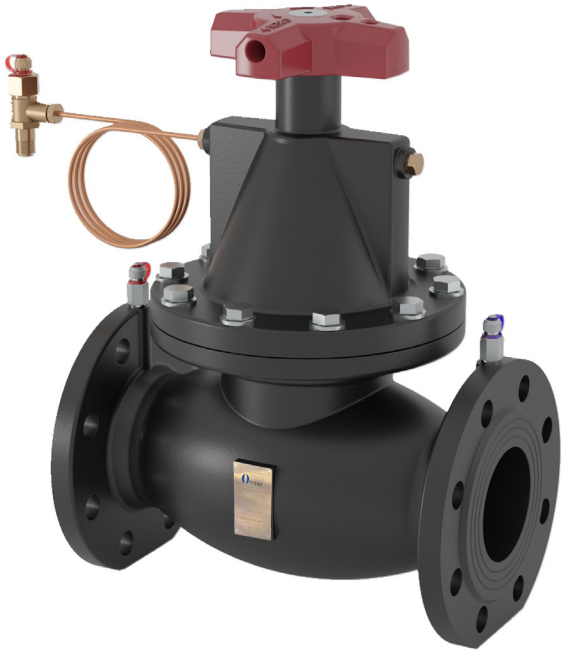
DIFFERENTIAL PRESSURE CONTROL VALVES - TD200/201



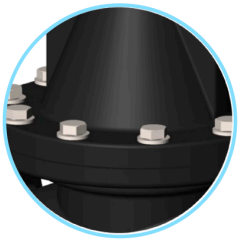
Specifications

DN mm	DN65 - DN250
DN inch	2"1/2 - 10"
Temperature	-10°C to 120°C
Type of body	Flanges
Application	Cold/hot water, Glycol solution concentration < 50%
Connection	Flanged ISO 7005-2 PN16
Test	EN 12266-2 (Test body safety and tightness, Test seat tightness)
Options	Other specifications on request

Advantages

Digital Handwheel

The DP can be set by rotating the handwheel and the number on handwheel can show the cycles which is easy for operation and convenient for debugging and recording.

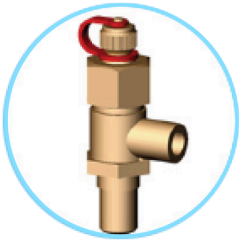


Build-in Diaphragm Capsule

The valve adopts the build-in diaphragm capsule which could make the valve smaller and significantly avoid damaging during installation.

3-port Test Plug with Close-off Function

Closing the test plug can avoid the tube from blocking during washing pipes. During normal use, keep the test plug open so as to achieve the balancing function of the valve.



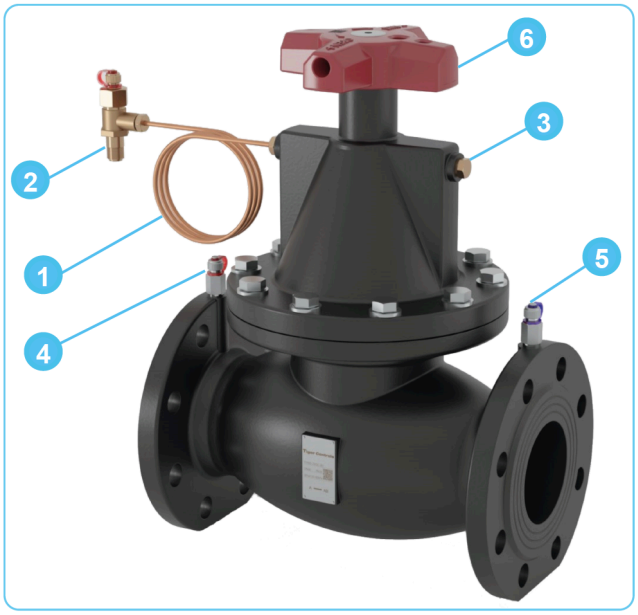
Stainless Steel Test Plug

There are stainless steel higher/lower test plugs on the valve body, which have higher strength and not easy to be damaged.

Type summary

Valve Body			Type PN16	Type PN16	ΔPset	Caliber [in.]	DN [mm]	Kvs
PN16 Medium Temp. -10~120°C		Flanged	TYF65-2VGC-80	TYF65-2VGD-80	20-80kPa	2-1/2"	65	47
			TYF80-2VGC-80	TYF80-2VGD-80	20-80kPa	3"	80	60
			TYF100-2VGC-80	TYF100-2VGD-80	20-80kPa	4"	100	86
			TYF125-2VGC-80	TYF125-2VGD-80	20-80kPa	5"	125	161
			TYF150-2VGC-80	TYF150-2VGD-80	20-80kPa	6"	150	182
			TYF200-2VGC-80	TYF200-2VGD-80	20-80kPa	8"	200	339
			TYF250-2VGC-80	TYF250-2VGD-80	20-80kPa	10"	250	410
			TYF65-2VGC-160	TYF65-2VGD-160	40-160kPa	2-1/2"	65	47
			TYF80-2VGC-160	TYF80-2VGD-160	40-160kPa	3"	80	60
			TYF100-2VGC-160	TYF100-2VGD-160	40-160kPa	4"	100	86
			TYF125-2VGC-160	TYF125-2VGD-160	40-160kPa	5"	125	161
			TYF150-2VGC-160	TYF150-2VGD-160	40-160kPa	6"	150	182
			TYF200-2VGC-160	TYF200-2VGD-160	40-160kPa	8"	200	339
			TYF250-2VGC-160	TYF250-2VGD-160	40-160kPa	10"	250	410

Operating instruction



Description of spare parts number: (1) Capillary pipe, (2) 3-port test plug. (3) Air hole plug, (4) (5) test plugs, (6) Handwheel

The 1st step: Connect capillary pipe (1). As shown on the installation diagram, one end of capillary pipe connects DPCV, the other end connects with the low end of static balancing valve through 3-port test plug (2), at this time, the system should be in a state of low pressure.

The 2nd step: Open the valve air hole plug (3), then open the 3-port test plug (2), until there is water flow out, lock the air hole plug after all the air in the valve body is discharged.

The 3rd step: As shown on the installation diagram, use a digital DP meter to measure the DP on both P2, P3 ends, that is ΔP set.

The 4th step: Set ΔPset, the DP can be set by rotating the handwheel (6), accurately adjust can be made according to the data of digital DP meter.

Test plugs (4) (5): Remove the cover and insert probe into self-sealing test plugs.

(4) is the High Pressure End, (5) is the Low Pressure End.

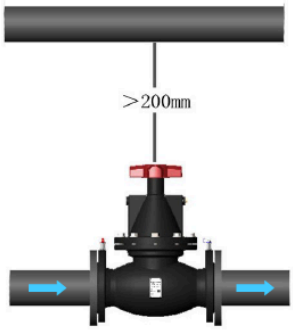
Capillary pipe (1): the factory default length is 1m, if longer one is needed, 2m capillary pipe is optional.

⚠ Attention! Must use matched capillary pipe.

Installation instruction

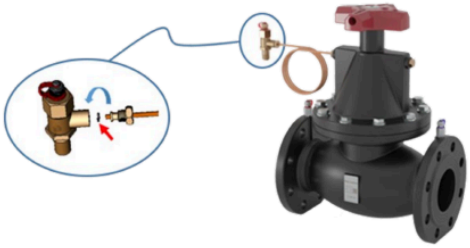
Note:

1. DPCV must be installed on the return pipe
2. Pay attention to the medium flow direction, which is consistent with the flow mark on the valve body!
3. Valve installation should be reserved enough space, easy to debug and maintenance.

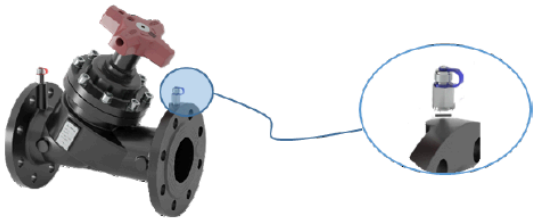


- When there is a static balance valve in the system, the 3-port test plug is connected to the low pressure end of the static balancing valve (i.e. replacing the blue test plug on the static balance valve). The installation steps are as follows:

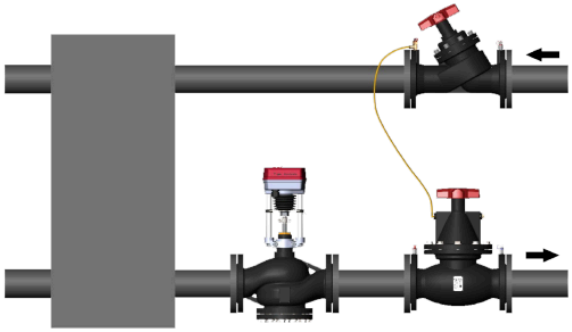
1. Use the S14 wrench to remove the 3-port test plug, don't discard the sealing ring at the red arrow!



2. Use the S14 wrench to remove the blue test plug at the low pressure end of the static balancing valve.

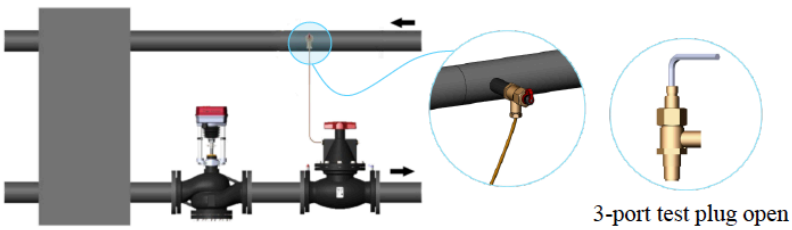


3. Open the 3-port test plug of DPCV and screw it into the low pressure end of the static balancing valve. After the 3-port test plug is installed, tighten it and capillary pipe; Note that the sealing ring should be put back in place!



- If there is no static balancing valve in the system, the installation steps as follows:

Make a hole of φ20 in the pipeline, and weld the tube on the pipeline; then screw the 3-port test plug into the weld tube and tighten it with the capillary pipe. Finally, open the 3-port test plug



3-port test plug open

Note:

1. The 3-port test plug can't be welded directly on the pipe, high temperature will damage the internal parts during welding, welding tube and pipe must be welded first, then connect the 3-port test plug.

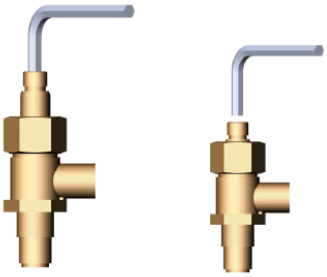
2. The pressure hole should be taken from the horizontal side of the pipeline center line, and shouldn't be placed at the upper or lower end of the pipeline. The upper end installation may lead to the inaccurate pressure taking if pipeline is not full flow, the lower end installation may cause the pressure pipe is blocked by dirt.

Debugging instruction

Note:

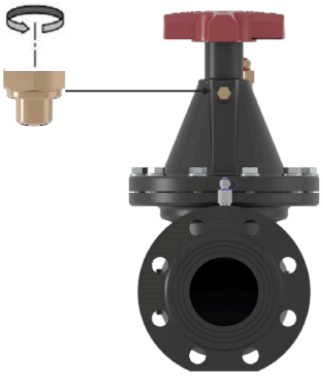
1. Check whether the valve is in a fully open state before the water and pressure test of the pipeline, you can use a hexagonal wrench to counterclockwise tighten it and the valve is fully open. Usually the factory default state is fully open.
2. Make sure that the 3-port test plug is installed on the low pressure end of the static balancing valve and it is in the open state. See Step 1 for details!
3. Rotate the handwheel counterclockwise to the Max. DP set value to prevent the valve closed when the pressure is too high during pressure test.
4. Exhaust all the air in the valve body before debugging. See Step 2 for details!

1. Before debugging, open the 3-port test plug, turn the Allen wrench (5mm) counterclockwise to open it.

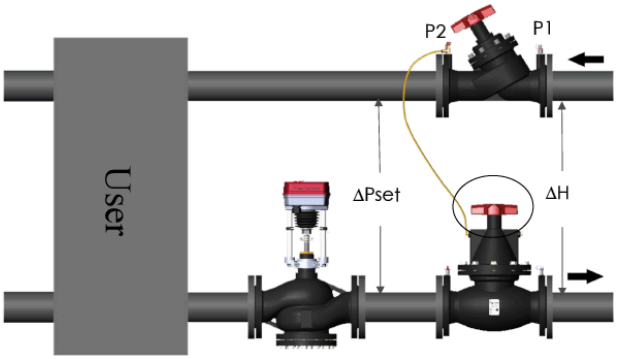


3-port test plug open 3-port test plug closed

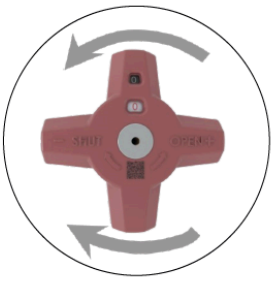
2. Water exhaust: open the plug of valve air hole until a continuous water column is discharged, the exhaust is finished and close the plug.



3. Use the hydraulic debugging instrument to measure the DP between P2 and P3, insert the measuring probe into the test plugs of the DPCV, rotate the handwheel, observe the DP on the instrument, and adjust the set DP; When Δ H > 2 * Δ Pset, DPCV starts to work.

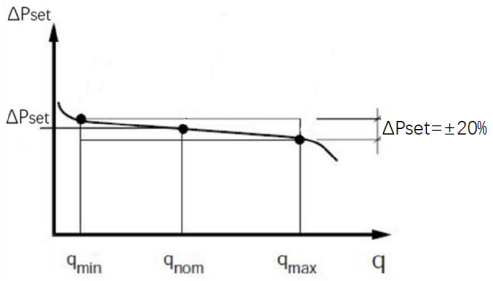


Counterclockwise, increase the set DP



Clockwise, decrease the set DP

Working range



Type selection

1. Select the desired △PL from the tables.
2.Select the same size of the valve as the pipe.
3. Check that the desired flow is smaller than the specified q_{max}, If not,select the most similar large dimension,or a larger △PL.

The tables work in the following situation:
$\Delta H \geq 2x\Delta P_L$, the valve will work effectively from $2x\Delta P_L$ to 350kPa+ΔP_L

20~80kPa
q_{min} / q_{nom} / q_{max}(m^3/h)

DN	$\triangle p_L$(kPa)																				
	20			30			40			50			60			70			80		
	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	0.65	10.8	15.5	0.78	13.6	19.3	0.90	16.1	23.7	1.10	19.6	28.0	1.20	20.5	29.5	1.20	21.6	31.1	1.40	24.5	35.2
80	0.81	13.6	19.4	1.20	21.1	30.5	1.35	23.2	34.2	1.70	29.5	42.1	1.85	32.1	46.1	1.85	32.5	46.8	2.10	36.4	52.1
100	2.04	35.0	50.0	2.60	44.7	64.0	2.75	48.5	69.3	3.12	54.1	77.3	3.40	59.4	85.0	3.50	64.2	92.1	4.10	70.1	100.0
125	2.95	52.0	74.3	3.52	61.5	88.0	4.20	72.8	104.0	4.51	81.2	116.0	5.11	89.0	127.2	5.42	96.5	138.0	6.20	105.0	150.6
150	3.80	66.5	95.0	4.80	84.5	120.6	5.26	93.4	134.1	6.50	112.0	160.0	6.73	117.0	167.8	7.14	126.3	181.0	7.50	132.0	188.7
200	9.5	83.1	118.8	10.7	93.6	133.8	12.3	107.8	153.7	13.5	118.1	168.4	14.9	130.3	186.3	15.7	137.4	196.3	17.7	149.6	213.5
250	10.8	94.5	135.0	12.5	109.4	156.3	14.5	126.9	181.3	16.4	143.5	205.0	17.8	155.8	222.5	18.6	162.8	232.5	19.2	168.0	240.0

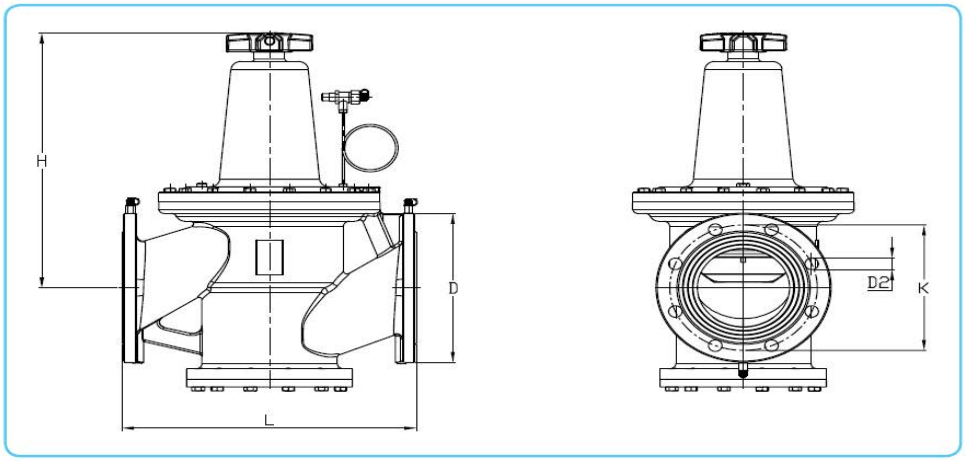
40~160kPa

q_{min} / q_{nom} / q_{max}(m^3/h)

DN	Δp_L(kPa)																				
	40			50			60			70			80			90			100		
	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	1.05	17.2	24.5	1.21	20.0	28.5	1.35	21.5	30.7	1.33	23.1	33.0	1.50	25.0	35.2	1.61	26.5	37.7	1.69	27.7	39.6
80	1.41	24.0	34.4	1.62	27.1	38.7	1.80	32.3	46.1	2.01	35.5	50.7	2.17	36.4	52.0	2.25	39.1	55.5	2.40	40.5	58.2
100	2.72	50.6	72.1	3.16	55.8	78.5	3.50	60.0	86.2	3.72	66.2	95.0	4.06	70.1	100.0	4.20	73.5	105.2	4.40	77.0	110.0
125	4.33	75.0	107.5	4.82	82.1	118.4	5.28	92.5	132.0	5.72	97.6	141.2	6.00	105.0	151.7	6.50	112.0	160.4	7.10	122.3	175.0
150	5.06	87.0	125.6	6.22	110.3	156.1	6.47	113.5	162.6	7.13	121.5	175.0	7.50	130.0	186.3	8.20	143.5	205.0	8.50	148.5	212.2
200	12.2	106.8	152.2	14.3	125.1	178.8	15.2	133.0	190.0	17.1	149.6	213.8	18.8	164.5	235.0	19.8	173.3	247.5	20.5	179.4	256.3
250	13.6	119.0	170.0	15.1	132.1	188.8	16.4	143.5	205.0	18.5	161.9	231.3	19.2	168.0	240.0	21.3	186.4	266.3	22.5	196.9	281.3

DN	Δp_L(kPa)																	
	110			120			130			140			150			160		
	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}	q_{min}	q_{nom}	q_{max}
65	1.65	28.5	41.0	1.70	30.0	42.5	1.80	31.0	44.3	1.91	31.5	44.5	2.04	32.5	46.0	2.15	33.5	47.8
80	2.41	42.3	60.5	2.55	44.2	63.1	2.63	45.6	65.1	2.72	46.7	66.7	2.85	47.8	68.1	2.96	50.0	71.3
100	4.71	81.6	116.4	4.82	85.1	120.4	5.00	87.5	124.6	5.23	91.3	130.4	5.40	94.5	135.0	5.60	98.1	140.1
125	7.12	124.2	177.5	7.30	127.5	182.2	7.50	130.0	185.7	7.61	133.0	190.0	8.10	141.6	202.0	8.30	144.6	206.5
150	8.76	154.1	220.0	9.20	160.0	228.5	9.40	165.0	235.0	9.60	170.1	243.0	9.82	173.5	247.8	10.1	175.5	251.2
200	21.3	186.4	266.3	23.2	203.0	290.0	24.1	210.9	301.3	24.8	217.0	310.0	25.7	224.9	321.3	27.5	240.6	343.8
250	23.7	207.4	296.3	24.5	214.4	306.3	25.5	223.1	318.8	26.7	233.6	333.8	28.2	246.8	352.5	29.3	256.4	366.3

Dimension figure



PN16						
DN	D2 mm	K mm	D mm	L mm	H mm	Weight kg
65	4-19	145	185	290	410	33.8
80	8-19	160	200	310	440	44.0
100	8-19	180	220	350	480	61.7
125	8-19	210	250	400	500	80.4
150	8-23	240	285	480	540	117.4
200	12-23	295	340	500	614	161
250	12-28	355	405	600	704	237

PN25						
DN	D2 mm	K mm	D mm	L mm	H mm	Weight kg
65	8-19	145	185	290	410	34
80	8-19	160	200	310	440	46
100	8-23	190	235	350	480	64
125	8-28	220	270	400	500	85
150	8-28	250	300	480	540	122
200	12-28	310	360	500	614	166
250	12-31	370	425	600	704	243

Technical parameter

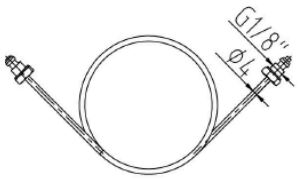
- Operating Parameters

Caliber range	DN65~DN250
Permissible pressure	PN16, PN25 are optional
DP setting range	20~80kPa or 40~160kPa
Max.working DP	△Pv≤350kPa
Connection standard	Flanged connection ISO7005-2
Medium temperature	-10~120°C
Applicable medium	Chilled/hot water, cooling water, glycol solution under 50%

- Spare Parts Material

Valve body	Ductile iron QT450-10
Valve stem	Stainless steel
Valve core	Stainless steel
Handwheel	Aluminum die casting
Diaphragm	EPDM

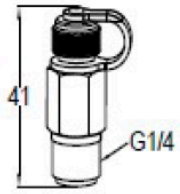
Accessories



Capillary pipe

The standard length is 100mm, if longer one is needed, 200mm is optional

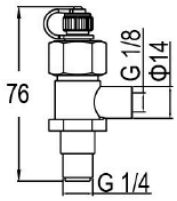
L(mm)	Article No.
100	PIPE-100
200	PIPE-200



Test plug

Red is high pressure end, Blue is low pressure end

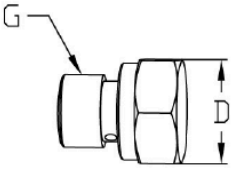
Specifications	Article No.
Red	CY-001-R
Blue	CY-001-B



3-port test plug with close off function

With two test plugs and close off function

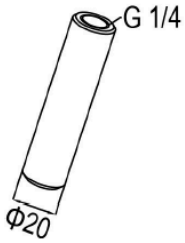
Article No.
CY-002



Plug

Air hole

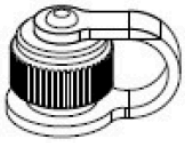
G	D [mm]	Article No.
G1/16	12	TYL-001
G1/8	14	TYF-001



Joint

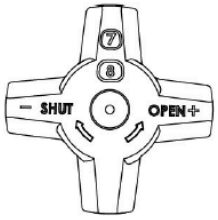
Used for connecting of pipeline and 3-port test plug

Article No.
TYF-002



Seal-capping

Specification	Article No.
Red	CY-003-R
Blue	CY-003-B



Handwheel

Supplied with the valve

Specification	Article No.
DN65~DN150	SL-002
DN200~DN250	SL-003

Hydraulic Balancing Debugging Instrument
TPS-200KPA.BOX
TPS-650KPA,BOX
TPS is a debugging instrument for measuring and documenting of differential pressure, flow, temperature and power consumption in hydronic systems. It connects to the specialized APP software in an Android phone via Bluetooth which could debug faster and more economical.

• **Technical Parameter**	
Max. Permissible Pressure	650kPa
DP range	TPS-200KPA.BOX: 0~200kPa TPS-650KPA.BOX: 0~650kPa
Pressure Range during Flow measurement (Recommended Value)	TPS-200KPA.BOX: 3~200kPa TPS-650KPA.BOX: 3~650kPa
Measured Deviation	DP Sensor: ≤0.5% Flow: DP Deviation+ Valve Deviation
Battery Capacity	3000mA
Operating time	＞20h
Charge Time	6h
Ambient Temperature	Operating and charging status: 0~40℃ Storage status: -20~60°C (Please exhaust the water in sensor when there is a risk of freezing)
Ambient Humidity	Max. 90% RH
Charger	Output Voltage: 12.6V DC Output Current: 500mA