TigerIoT

Butterfly valve Datasheet

Actuator for Butterfly Valve

TWD...series 20N.m~200N.m

Product Features

- ### Integrated Design of Modulating & Floating Control, Optional for RS485

High control accuracy allows for effective flow regulation in butterfly valves DN200 and larger, surpassing traditional butterfly valves in control precision. Multiple signals 0 (2)-10V, 0 (4)-20mA are optional. The signals can be shifted freely on-site through the DIP switches.

- ### Multiple Control/Feedback Signals

0-10V, 2-10V, 0-20mA, 4-20mA are optional. Users can switch it on site through DIP switches.

- ### Smart Self-diagnosis & Anti-blocking Function

The actuator can self-diagnose the problem of valve blocking and fail closed. It features an intelligent self-limiting function at both the fully open and fully closed positions, eliminating the need for limit switch adjustments and making operation more convenient.

- ### Extra Large Visual Indication Window

Prominent dual-color red and green valve position indication allow on-site operators to easily monitor the butterfly valve s opening status.

- ### Support APP

The actuator's speed, control accuracy, and dead zone can be set via a mobile app.

- ### Speed Regulation

The running speed can be set freely within a specified range using a mobile APP.

- ### Degree of Protection IP68

Multi layer reinforced sealing structure ensures the waterproof and dustproof of IP68.

- ### Manual Function

Manual override function with power isolation protects actuator from damage.

TigerIoT

Low torque Butterfly Valve

TDJ...series
DN50~DN600

Butterfly Valve Features

- **Low Torque Valve Seat**

EPDM high-performance valve seat. For same-size valves, it required a lower torque actuator.

- **Backless Structure**

This structure can avoid leakage between valve body and valve seat.

- **Pinless Structure**

Effectively avoid the risks of corrosion, loosening, and leakage caused by prolonged exposure of pins.

- **Single Valve Shaft**

High degree of concentricity, reduces the closing torque of valve disc.

- **Flying Saucer-shaped Disc**

It conforms to the fluid flow characteristics and can reduce the fluid resistance, The nylon coating on the
surface has strong corrosion resistance.

- **Standard Upper Flanged Connection Interface**

The design of the upper flanged meets the connection requirements of the international standard IS05211, which
is convenient for matching actuator.

- **High-quality Materials**

The valve body is made of high-quality ductile iron (EN-GJS-450-10), and is treated with epoxy powder coating on the surface, providing excellent corrosion resistance and strength
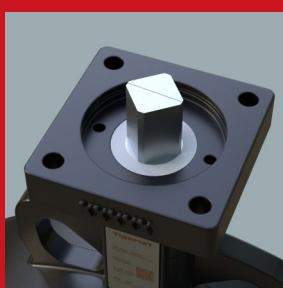
| Valve type Nylon plate | Valve type Stainless steel plate | Interface form | DN | Kvs | Actuator torque | | | | | |
					20N.M ▲Ps MPa	50N.M ▲Ps MPa	200N.M ▲Ps MPa	1000N.M ▲Ps MPa	2000N.M ▲Ps MPa	4000N.M ▲Ps MPa
TDJ50-LGC-F07A	TDJ50-HGC-F07A	F07A	50	193	1.4					
TDJ65-LGC-F07A	TDJ65-HGC-F07A	F07A	65	315	1.4					
TDJ80-LGC-F07A	TDJ80-HGC-F07A	F07A	80	425		1.4				
TDJ100-LGC-F07A	TDJ100-HGC-F07A	F07A	100	723		1.4				
TDJ125-LGC-F07B	TDJ125-HGC-F07B	F07B	125	1243			1.4			
TDJ150-LGC-F07B	TDJ150-HGC-F07B	F07B	150	1859			1.4			
TDJ200-LGC-F10C	TDJ200-HGC-F10C	F10C	200	3124			1.4			
TDJ250-LGC-F10D	TDJ250-HGC-F10D	F10D	250	4757			1.4			
TDJ300-LGC-F10E	TDJ300-HGC-F10E	F10E	300	7058			1.4			
TDJ350-LGC-F12F	TDJ350-HGC-F12F	F12F	350	8319				1.4		
TDJ400-LGC-F12F	TDJ400-HGC-F12F	F12F	400	11458				1.4		
TDJ450-LGC-F14G	TDJ450-HGC-F14G	F14G	450	13612					1.4	
TDJ500-LGC-F14G	TDJ500-HGC-F14G	F14G	500	18748					1.4	
TDJ600-LGC-F16G	TDJ600-HGC-F16G	F16G	600	25217						1.4

| Actuator Type | | | | | | |
Type	Force	Voltage	Matched valve	Interface pattern	Control type	Description
TWD20-D220F2-F07A	20N.m	110~230V	DN50-DN65	F07A	On-off / Floating	With 2 SPDT
TWD20-X220-F07A	20N.m	110~230V	DN50-DN65	F07A	Modulating	0(2)~10VDC, 0(4)~20mA
TWD20-X220S485-F07A	20N.m	110~230V	DN50-DN65	F07A	RS485 with sensor	RS485 with Dual T&P MP
TWD50-D220F2-F07A	50N.m	110~230V	DN80-DN100	F07A	On-off / Floating	With 2 SPDT
TWD50-X220-F07A	50N.m	110~230V	DN80-DN100	F07A	Modulating	0(2)~10VDC, 0(4)~20mA
TWD50-X220S485-F07A	50N.m	110~230V	DN80-DN100	F07A	RS485 with sensor	RS485 with Dual T&P MP
TWD200-D220F2-F07B	200N.m	110~230V	DN125-DN150	F07B	On-off / Floating	With 2 SPDT
TWD200-X220-F07B	200N.m	110~230V	DN125-DN150	F07B	Modulating	0(2)~10VDC, 0(4)~20mA
TWD200-X220S485-F07B	200N.m	110~230V	DN125-DN150	F07B	RS485 with sensor	0(2)~10VDC, 0(4)~20mA / RS485 with Dual T&P MP
TWD200-D220F2-F07C	200N.M	110~230V	DN200	F10C	On-off / Floating	With 2 SPDT
TWD200-X220-F07C	200N.M	110~230V	DN200	F10C	Modulating	0(2)~10VDC, 0(4)~20mA
TWD200-X220S485-F07C	200N.M	110~230V	DN200	F10C	RS485 with sensor	0(2)~10VDC, 0(4)~20mA / RS485 with Dual T&P MP
TWD200-D220F2-F10D	200N.M	110~230V	DN250	F10D	On-off / Floating	With 2 SPDT
TWD200-X220-F10D	200N.M	110~230V	DN250	F10D	Modulating	0(2)~10VDC, 0(4)~20mA
TWD200-X220S485-F10D	200N.M	110~230V	DN250	F10D	RS485 with sensor	0(2)~10VDC, 0(4)~20mA / RS485 with Dual T&P MP
TWD200-D220F2-F10E	200N.M	110~230V	DN300	F10E	On-off / Floating	With 2 SPDT
TWD200-X220-F10E	200N.M	110~230V	DN300	F10E	Modulating	0(2)~10VDC, 0(4)~20mA
TWD200-X220S485-F10E	200N.M	110~230V	DN300	F10E	RS485 with sensor	0(2)~10VDC, 0(4)~20mA / RS485 with Dual T&P MP
TBV1000-D	1000N.M	220V	DN 350-DN400	F12F	On-off / Floating	/
TBV1000-DF2	1000N.M	220V		F12F	On-off / Floating	With 2 SPDT
TBV1000-X.V	1000N.M	220V		F12F	Modulating	0-10V
TBV1000-X.MA	1000N.M	220V		F12F	Modulating	4~20mA
TBV2000-D	1000N.M	220V	DN450-DN500	F14G	On-off / Floating	/
TBV2000-DF2	2000N.M	220V		F14G	On-off / Floating	With 2 SPDT
TBV2000-X.V	2000N.M	220V		F14G	Modulating	0-10V
TBV2000-X.MA	2000N.M	220V		F14G	Modulating	4~20mA
TBV4000-D	4000N.M	220V	DN600	F16G	On-off / Floating	/
TBV4000-DF2	4000N.M	220V		F16G	On-off / Floating	With 2 SPDT
TBV4000-X.V	2000N.M	220V		F16G	Modulating	0-10V
TBV4000-X.MA	4000N.M	220V		F16G	Modulating	4~20mA

Wiring Instruction

1. Please cut off power supply during wiring in order to ensure personal safety!

2. Carefully check the power voltage when wiring, wire according to the product parameter, if not, it may cause fire and endanger personal safety in severe case!

3. Open the cover when wiring, prohibit disassembling other spare parts!

4. After wiring, please install the cover to the original position to avoid electric shock!

DIP Switch Instruction

20~200N.m

| DIP	Function	Description	
S1-1	Starting of control/ feed-back signal	ON	4~20mA or 2~10VDC
		OFF	0~20mA or 0~10VDC
S1-2	Type of control signal	ON	Current signal
		OFF	voltage signal
S1-3	Impedance match of control signal	ON	voltage signal
		OFF	Current signal
S1-4	Type of feedback signal	ON	Current signal
		OFF	voltage signal
S1-5	Operating mode	ON	when the control signal increases, actuator runs to"1" , when the control signal decreases, actuator runs to "0".
		OFF	when the control signal increases, actuator runs to"0" , when the control signal decreases, actuator runs to "1".
S1-6	Losing control signal mode	ON	When lose control signal (voltage type or current type), actuator will provide a min. control signal internally.
		OFF	1)When lose control signal (voltage type), actuator will provide a max. control signal internally. 2)When lose control signal (current type), actuator will provide a min. control signal internally.
S1-7	Self-stroking mode	ON	Power on each time, self-stroking starts automatically.
		OFF	Self-stroking starts only when press the self-stroking button manually.
S1-8	Control type (when S1-9 is OFF)	ON	3-position type
		OFF	Proportional type
S1-9	Control mode	ON	RS485
		OFF	Proportional type and 3-position type
S1-10	Losing signal position locked*	ON	When the control signal is disconnected, the actuator remains at the current position (only applicable to input
		OFF	The actuator operates according to S1-6 settings.

*Note: 1) S1-10 is only applicable when S1-2 is in the ON state.

2) S1-10 takes priority over S1-6.

DIP Switch Setting Instruction

- **Proportional**

Control signal/feedback signal: 4~20mA
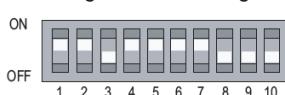
Control signal/feedback signal: 0~10VDC
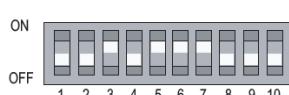
When S1-8 is set to OFF, the actuator is proportional type. Actuator can be controlled by control signal via connecting terminals:
When the control signal increases, actuator runs to "1", the valve tends to open.

When the control signal decreases, actuator runs to "0", the valve tends to close.

When the control signal has no changing, actuator shaft and valve stem stay in present position.

When voltage (or current) signal is disconnected, this is equivalent to input a min. control signal, actuator runs to "0", valve will close.

- **3-position**

When S1-8 is set to ON, the actuator is 3-position type. control the actuator by the switch. Terminal O, E and Y don't work by this time!

220V 3-position:
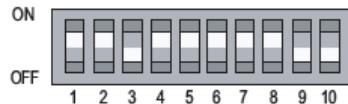
TWD20/50….

1, 2 connected: actuator runs to "0"

1, 3 connected: actuator runs to "1"

TWD200…

L, N and 2 connected to power: actuator runs to "0"

L, N and 3 connected to power: actuator runs to "1"

## Wiring Diagram

- TWD20/50...

Modulating
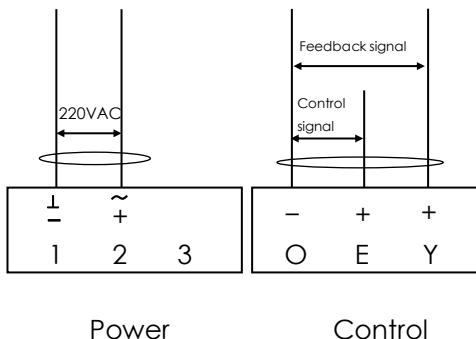
Power   Control
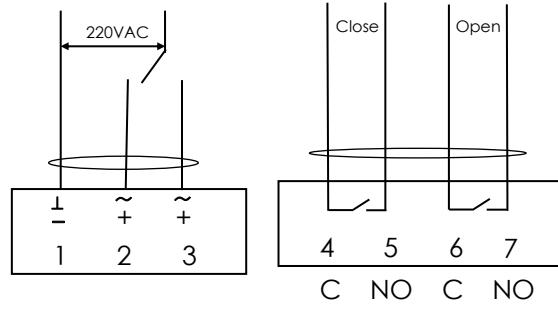
On-off

Power   F2 auxiliary switch
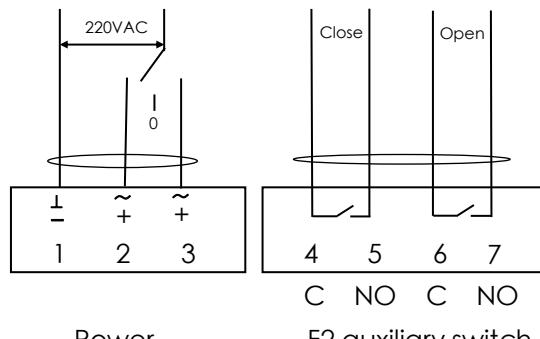
Floating

Power   F2 auxiliary switch

RS48(optional)
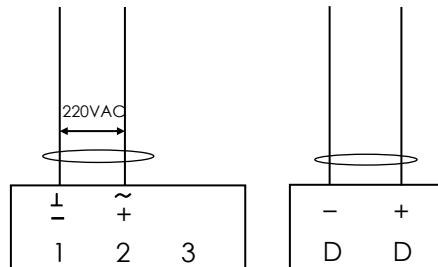
Power   RS485

- TWD200...

Modulating
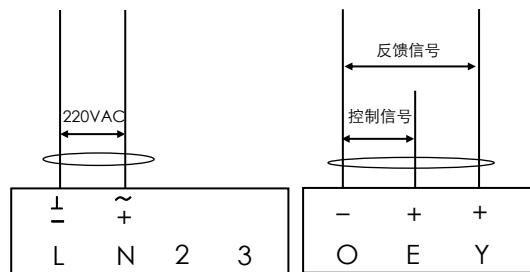
Power   Control
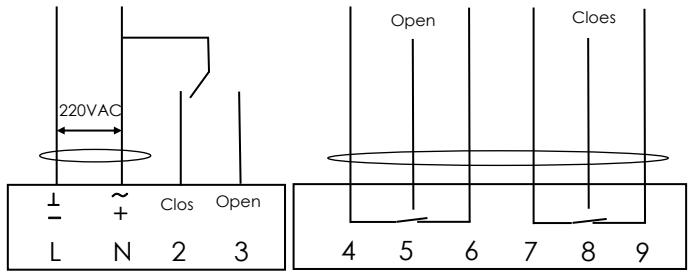
On-off

Power   F2 auxiliary switch

Floating

Power

F2 auxiliary switch
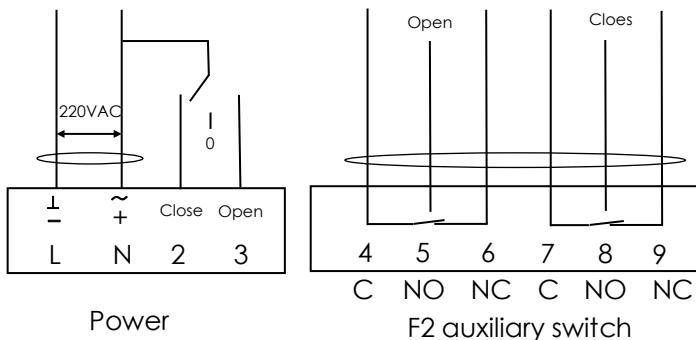
Auxiliary switch setting:
Open： 0~100% adjustable
Close： ＜10%

RS48(optional)

Power

RS485
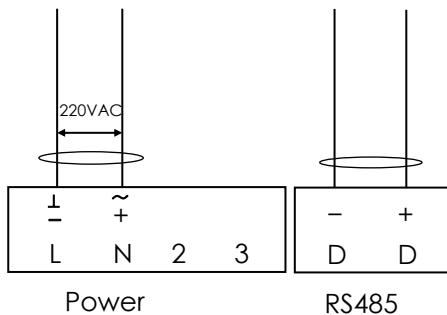
- TBV1000/2000/4000...
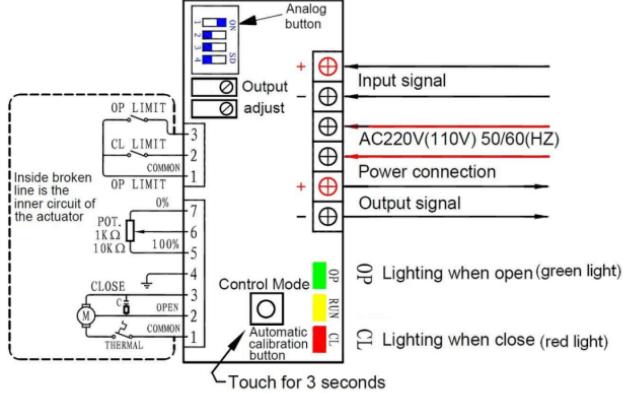
Modulating
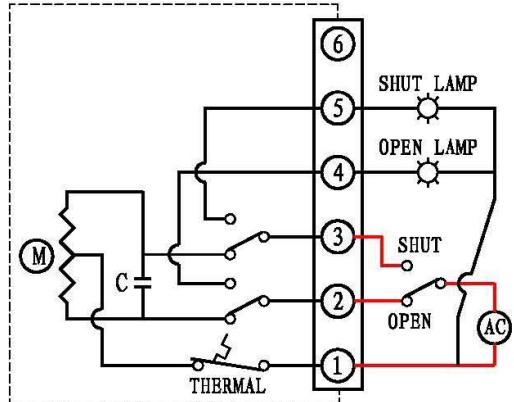
On-off
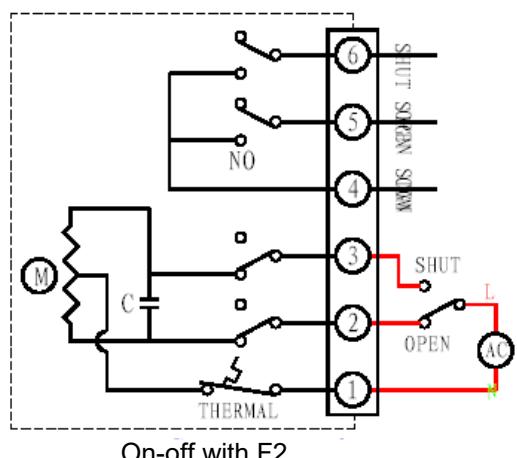
On-off with F2

Debugging Instruction

- **TWD200...opening setting 0~100% adjustable**

1.

Insert the wrench into the position as shown in Figure ①, turn the wrench in any direction and observe the display window at the bottom of the actuator as shown in Figure ②. Stop turning the wrench when the standard line overlaps with the set opening value.

①

②
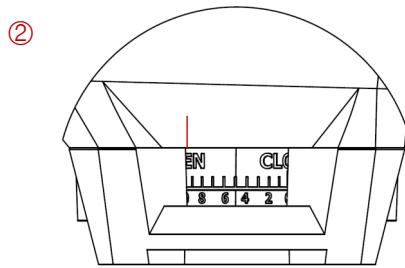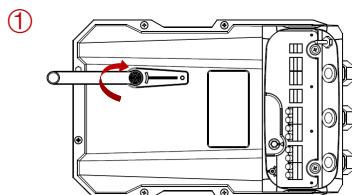
E.g., if the actuator is set to run in the open direction to 50% and output a feedback signal, as shown in the figure, the standard line should be aligned with the scale line of "5".

2.

Open the actuator junction box, insert the wrench into the position shown in Figure ③, and shake the wrench in any direction to align the two triangular marks A and B shown in Figure ④as shown in Figure ⑤. Then the setting is complete. When the actuator runs from 0 to 100% to the set value, it will output an opening feedback signal.

③

④

A
B

⑤
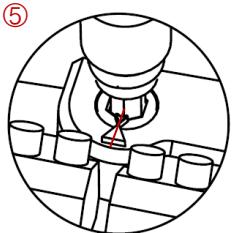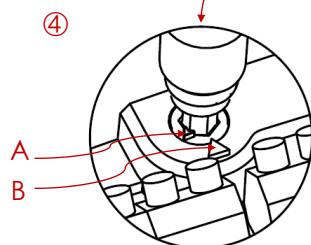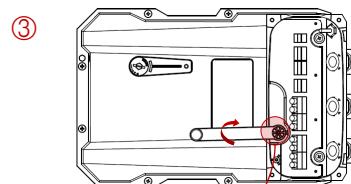
Installation and Debugging

- **Installation Steps**

1.

Place the wafer-type butterfly valve between the two special flanges for wafer-type butterfly valves to be installed, and align the bolt holes of the flanges with the circular holes of the butterfly valve body.


2.

Insert the bolts and nuts into the flange holes to connect the valve body to the flange. Be careful not to tighten the bolts and nuts too much.

- **Installation Steps**

3.

Weld the flange onto the pipeline by spot welding.
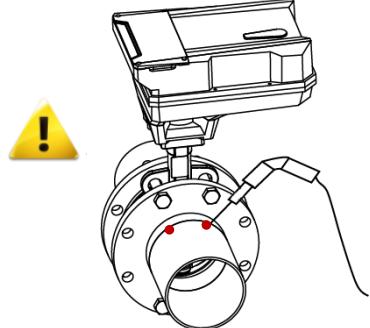
4.

Remove the wafer-type butterfly valve from the pipeline.
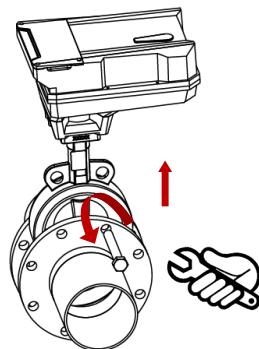
5.

Weld the two flanges completely onto the pipe to complete the fixation.
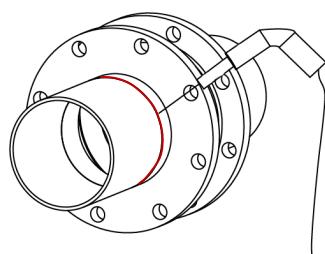
6.

After the pipeline temperature returns to normal, install the butterfly valve on the pipeline, correct the installation position and tighten the bolts.
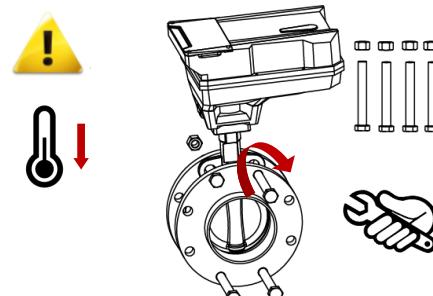
7.

Note: When installing, the nuts should be tightened diagonally.
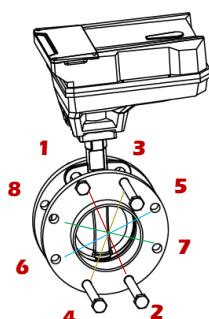
DN		DN	
DN50	M16	DN250	M24
DN65	M16	DN300	M24
DN80	M16	DN350	M24
DN100	M16	DN400	M27
DN125	M16	DN450	M27
DN150	M20	DN500	M30
DN200	M20	DN600	M33

>60mm
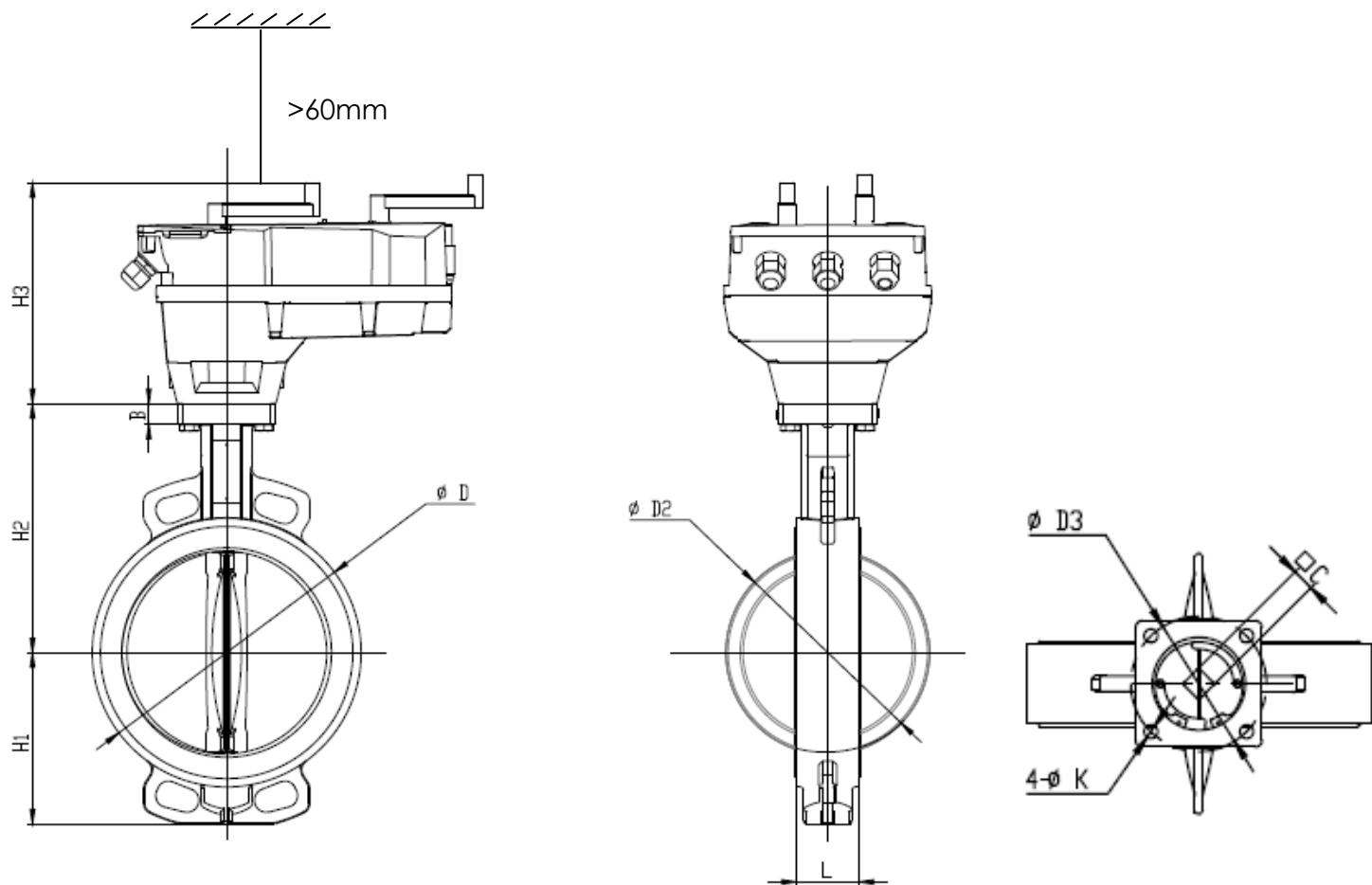
Valve size	Interface pattern	L mm	H1 mm	H2 mm	H3 20/50NM actuator mm	H3 200NM actuator mm	B mm	D1 mm	D2 mm	D3 mm	C mm	K mm
DN50	F07A	43	62	143	145	/	17	96	60	70	11	8.2
DN65	F07A	46	83	155	145	/	17	110	72	70	11	8.2
DN80	F07A	46	92	162	163	/	17	124	84	70	11	8.2
DN100	F07A	52	105	181	163	/	17	148	106	70	11	8.2
DN125	F07B	56	119	197	/	221	17	180	128	70	14	8.2
DN150	F07B	56	130	210	/	221	17	206	150	70	14	8.2
DN200	F10C	60	165	240	/	221	20	259	197	102	17	10.2
DN250	F10D	68	209	286	/	221	20	320	249	102	19	10.2
DN300	F10E	78	243	309	/	221	22	370	301	102	22	10.2

Dimension
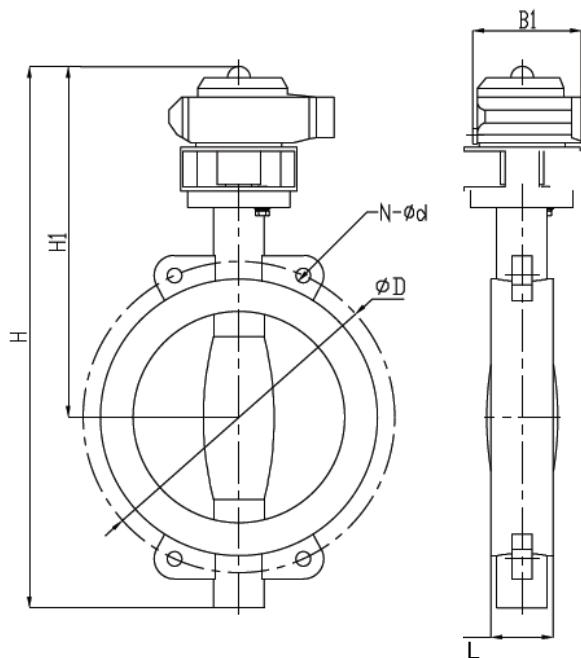
Valve size	L mm	H1 mm	H mm	D mm	N-φd mm	B1 mm	Actuator L*W*H
DN350	78	515	785	470	16-28	176	280*176*186
DN400	102	547	847	525	16-31	176	280*176*186
DN450	114	578	903	585	20-31	176	280*176*186
DN500	127	615	980	650	20-34	176	280*176*186
DN600	154	692	1092	770	20-37	296	408*269*200

Technical Parameters

• Functional data-Valve	
Nominal size	DN50-DN600
Nominal pressure	PN16
Flow Characteristics	Equal percentage
Leakage rate	Zero leakage
Permissible medium	Hot/chilled water, ethylene glycol solution with a maximum concentration of 50%
Medium temperature	Nylon plate: -20 to 80℃
	Stainless steel plate: -20 to 130℃
Connection	Wafer type ISO 7005-2
Upper Flange interface standard	ISO 5211
Rotation Angle	90°

Technical Parameters

• Functional data-Actuator 20~200N.m

Rate torque	20N.m/50N.m/200N.m
Operating voltage	110~230VAC
Modulating	0 (2) -10V, 0 (4) -20mA
On-off	2SPDT
Frequency	50 / 60Hz
Sensitivity	Modulating: 1.0 %
Protection level	20/50NM: IP65 200NM: IP68
Life time	100 thousand full open and close
Impedance (only for proportional type) Voltage Input Impedance Current Input Load Requirement	>100K <0.15K
Load Requirements (only for proportional type) Voltage Output Load Requirement Current Output Load Requirement	>2K <0.5K
F2 auxiliary switch	2*SPDT
Terminal post	Power supply/control/auxiliary switch: 2.5mm^2

• Functional data-Actuator 1000~4000N.m

Operating voltage	220±10%VAC
Control type	Modulating On-off
Rotation Angle	90°
Withstand voltage value	1500V
Protection	Thermal protective sleeve
Manual	With manual function
Protection level	IP68

• Material

Valve body	Dutile iron
Valve stem	Stainless steel
Plate	Cast iron + nylon coating or stainless steel
Actuator cover	PC
Actuator shell	Die-cast aluminum

TigerIoT 泰德尔物联