V-TORK®

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VSM Series Electric Actuator

Advanced technology
Safe and reliable design idea
Support multiple control modes
Support multi communication agreements of field bus such as PROFIBUS, FF, MODBUS and etc.

VSM series product introduction

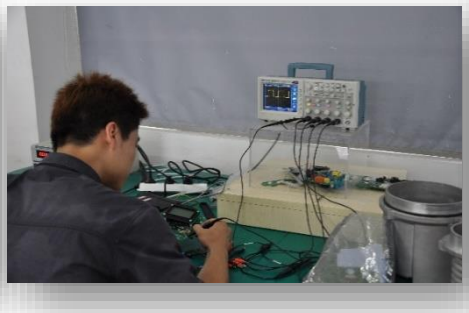
Product Introduction

VSM series multi-turn intelligent electric actuator is a new generation product. Based on the design idea of safety and reliability, it integrates the advanced technology of actuators development and processed two designs with integrated and separated according to the product applications. It can meet the frequent adjust requirement as well as the discontinuous-control, and is widely used in power station, petrochemical, petroleum, chemical, metallurgy, steel, oil pipeline and water treatment and other automation fields.

Product Characteristics

Main Charateristic：

- Adoption of large-scale digital integrated chip, in possession of powerful function and high precision level.
- Support multi communication agreement of field bus such as PROFIBUS, FF, MODBUS, HART,etc and multiple redundant control modes.
- Achievement of continuous measurement of output torque by establishing mathematical model through detecting data of current, voltage, magnetic flux , etc and a adoption of advanced algorithm.
- The accuracy of valve positioning is up to level one by adopting displacement sensor with absolute encoder and no need of battery memory.
- The actuator function, parameter setting, debugging and field electric operation can be completed by hand-held remote control or knob.
- Connection mode of plug type or sunflower disk type for easy and fast maintenance
- Menu operation interface for better learning and understanding.
- Enclosure protection rating IP68
- Explosion-proof rating dIICT4



Product characteristic

1. The protection class for standard enclosure is IP68.
2. The connection parts adopt double sealing structure to block the entry of water and gas effectively.
3. The terminal port can be rotated by 90°, so the installation direction of the electric actuator is not limited by the direction of cable, and ensure that the cable inlet port can always be downward to prevent the intrusion of rain as well as snow.
4. The connection between the wiring end cover and the box adopt fixed bolts, and the nylon lanyard is collected between the end cover and the box, so it is convenient for the wiring operation of field staff.
5. The manual mechanism adopts new double seal design, which solves the problem of lubricating oil leakage in the hand wheel parts commonly existed in the electric actuators.
6. Using the most advanced magnetic electric absolute encoder, the output shaft drives the absolute encoder to rotate, and the encoded signal is sent to the main control chip to calculate the valve position value, which is always correct and will not be affected by the power loss or interference of the absolute encoder.
7. The graphic dot-matrix LCD can display Chinese, digital, graphics and other forms of actuator torque, valve position, limit setting and other working status and alarm, it also support Chinese, English and other languages.
8. Remote and local mode selection knob; Local valve opening and closing knobs
9. The LED displays the full open and closed position of the valve, which can be seen from a distance.
10. The back up battery can also display the valve position when there is no main power supply.
11. Three phase power supply can be used, please consult factory for details.
12. Torque measurement-Achievement of continuous measurement of output torque by establishing mathematical model through detecting data of current, voltage, magnetic flux , etc and a adoption of advanced algorithm.
13. Non-invasive setting
    a)Local/remote selection knobs and local operation knobs use hall sensor
    b) It is not necessary to open the enclosure of the actuator when using the wireless setter for setting, checking and querying.
    c) No need to open the enclosure to avoid the erosion of dust, harmful gases and moisture in the environment; It can be easily adjusted in the occasions of rain or combustible gas; The various states of the actuators can be easily queried.
14. Protection function :
    a)Torque protection b)Valve position limit protection c)Automatic phase sequence adjustment
    d) Instantaneous reversal protection e) Power supply phase loss protection
    f)The action after valve jammed is optional g)overheat protection
    h)Electric protection
15. Configuration alarm
    a) Valve position feedback of full open\full close b) Overtorque alarm
    c)ESD trigger alarm d)Motor temperature alarm e)Power supply phase loss alarm
    f) Remote loss alarm g) Operating knob status h) PST success signal
16. Other function
    a) multi-speed control b)Field bus control ST-Ring; Profibus; Modbus; Foundation Fieldbus; Hart
    c)Electronic latch function d)Advanced real-time clock
    e) Intelligent diagnostic function

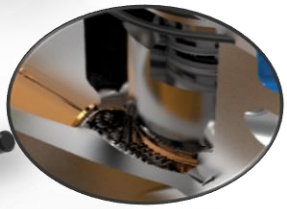
Product characteristic

Simple and reliable structure , the optimized transmission chain parameter design for high transmission efficiency, the worm adopts angular contact bearing to improve the axial load capacity.

New design of motor installation structure for easy disassembly and high reliability.

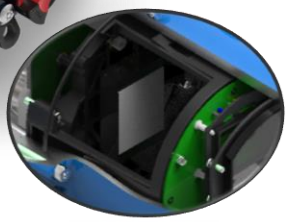
ISO5210 and other international standard flanges, special flanges can be customized.

Oil bath worm gear improves accuracy and good for heat dissipation.

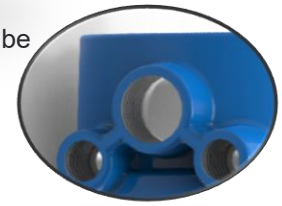


The connection parts adopt double sealing structure to block the entry of water and gas effectively.

The electric part adopts shock-proof structure with suspension type.

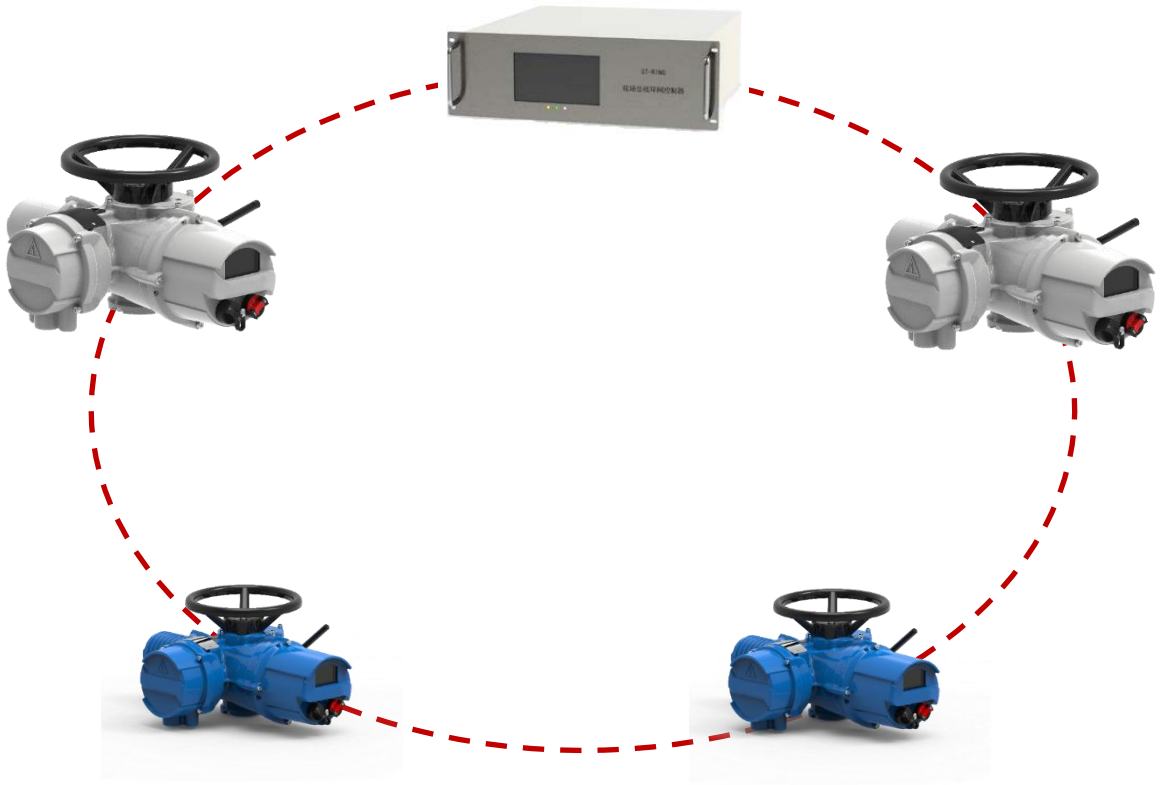


Cable inlet port can be customized



Knob anti-collision design

Field bus Control System



Field bus Control System

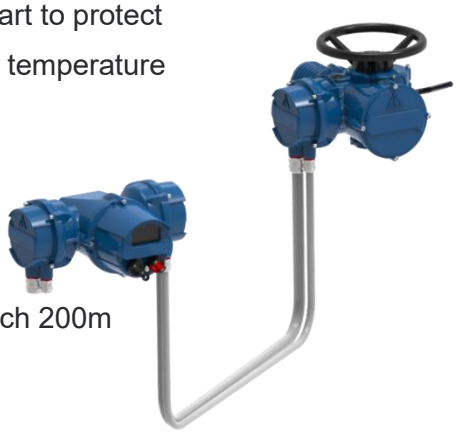
In addition to support conventional control methods, V-TORK's VSM series actuators also support seamless connection with a variety of field bus control systems that meet international standards, such as PROFIBUS, FF, MODBUS, HART, etc. V-TORK's VSM series actuators can support EDDL and FDT/DTM device descriptions as well as a variety of bus redundancy methods.

V-TORK's advanced ST-RING controllers support a ring network with up to 250 actuators, enabling independent remote control and diagnosis of actuators without DCS/ PLCS.

- Field bus control with two-wire system
- Intelligent terminal
- Support a variety of actuator device
- Support a maximum of 250 devices /per host
- The maximum distance of the loop is 20Km(without repeater)
- Compatible with smart plus detectors
- Response delay 50ms

VSM series sizing content overview

Separated electric actuator(alternate options)



- Designed for harsh conditions.
- The electrical part is separated from the mechanical part to protect the electrical parts from harsh conditions such as high temperature and vibration
- Separated layout
- Modular design, highly versatile components
- Original functions and applications are not affected
- The maximum distance of the separate layout can reach 200m
- IP68 waterproof standard IP68
- IEC ATEX DIICT4 explosion proof standard
- Please make a note at purchasing: need separated electric actuator

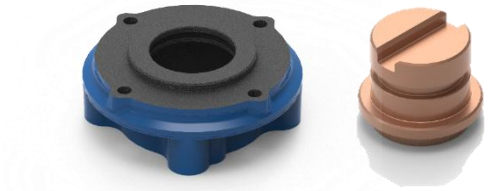
Smart plus detector (alternate options)

- Bind the actuators quickly with infrared light radiation.
- Bluetooth effective distance 30m
- Ergonomic design
- 3 inch LCD liquid crystal display, what you see is what you get, real-time display of the actuator screen content
- Wireless charging
- Support HART agreement
- Secure type
- Off-line parameter setting
- No need to set one by one
- Suitable for small space, high altitude, underground settings
- The historical data log of the actuator can be downloaded for analysis and comparison in the PLUS settings or on the computer.
- * VSM SMART PLUS detector is an additional purchase, and the actuator attached is a common wireless setter.

VSM series sizing content overview

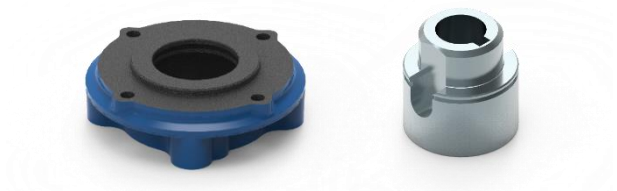
Driving type

Driving type



Thrust type(Type A sleeve)

Mainly used for the occasion of large axial force, different drive sleeve can be chosen according to the valve stem shaft.



Non thrust type（Type B sleeve）

Mainly used in the absence of axial force, different drive sleeve can be chosen according to the valve stem shaft diameter and mode .

LOT Module （alternate options）

- V-TORK SMART – IiOT LOT module （alternate options）
- Essential products for actuators entered industry 4.0
- Data monitoring in the wireless age
- Wireless 4G\5G link adaptation
- Plant safety application

Gearbox adaption

Worm gear and worm

Angular travel gearbox

Cone/spur gear

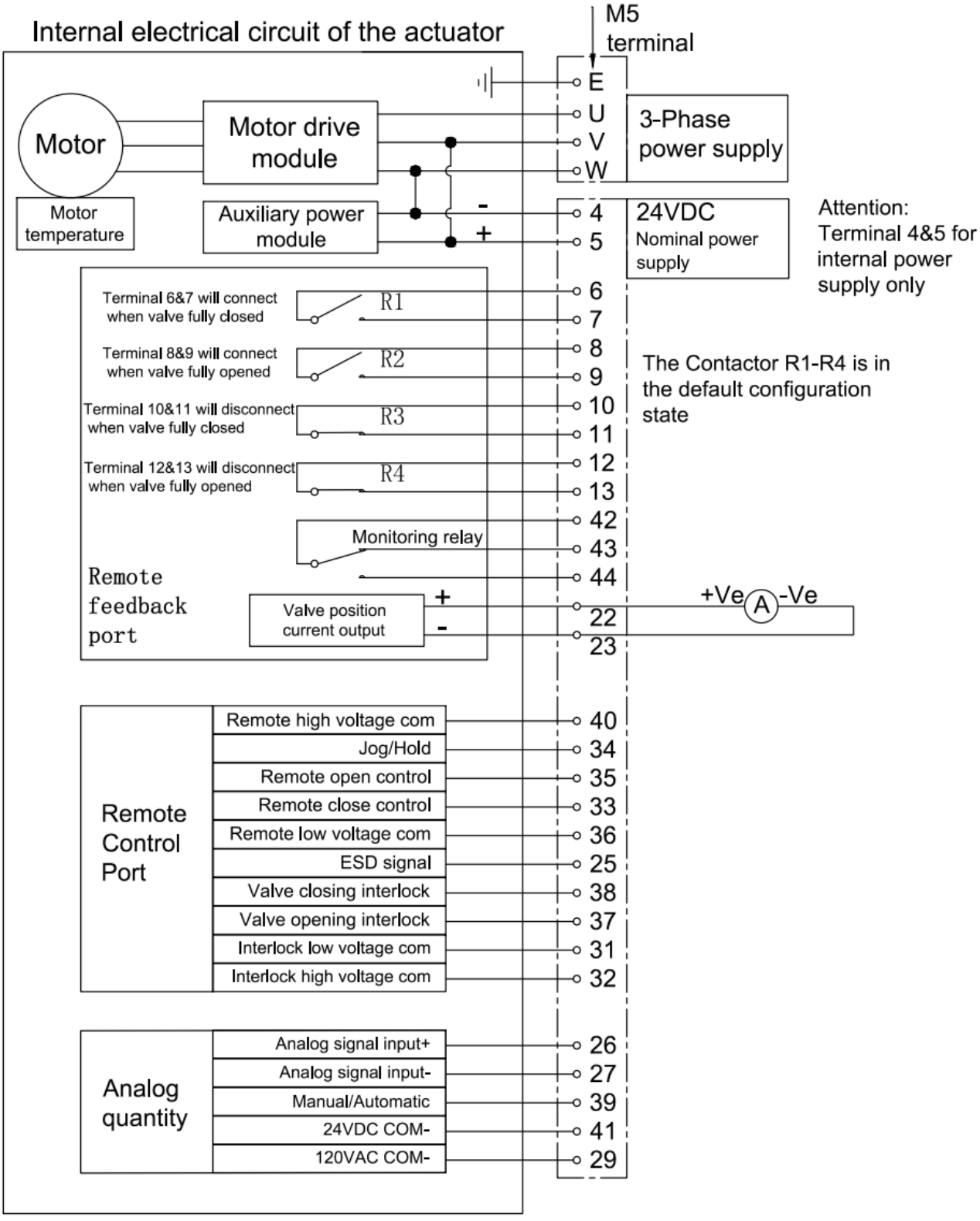
Multi-turn gear box

linear motion

Linear thrust unit

Variety of paint specification and colors are available

VSM series wiring diagram



The electrical circuit shown is in the power off state of the product, and the actuator is currently in the middle position of the stroke.

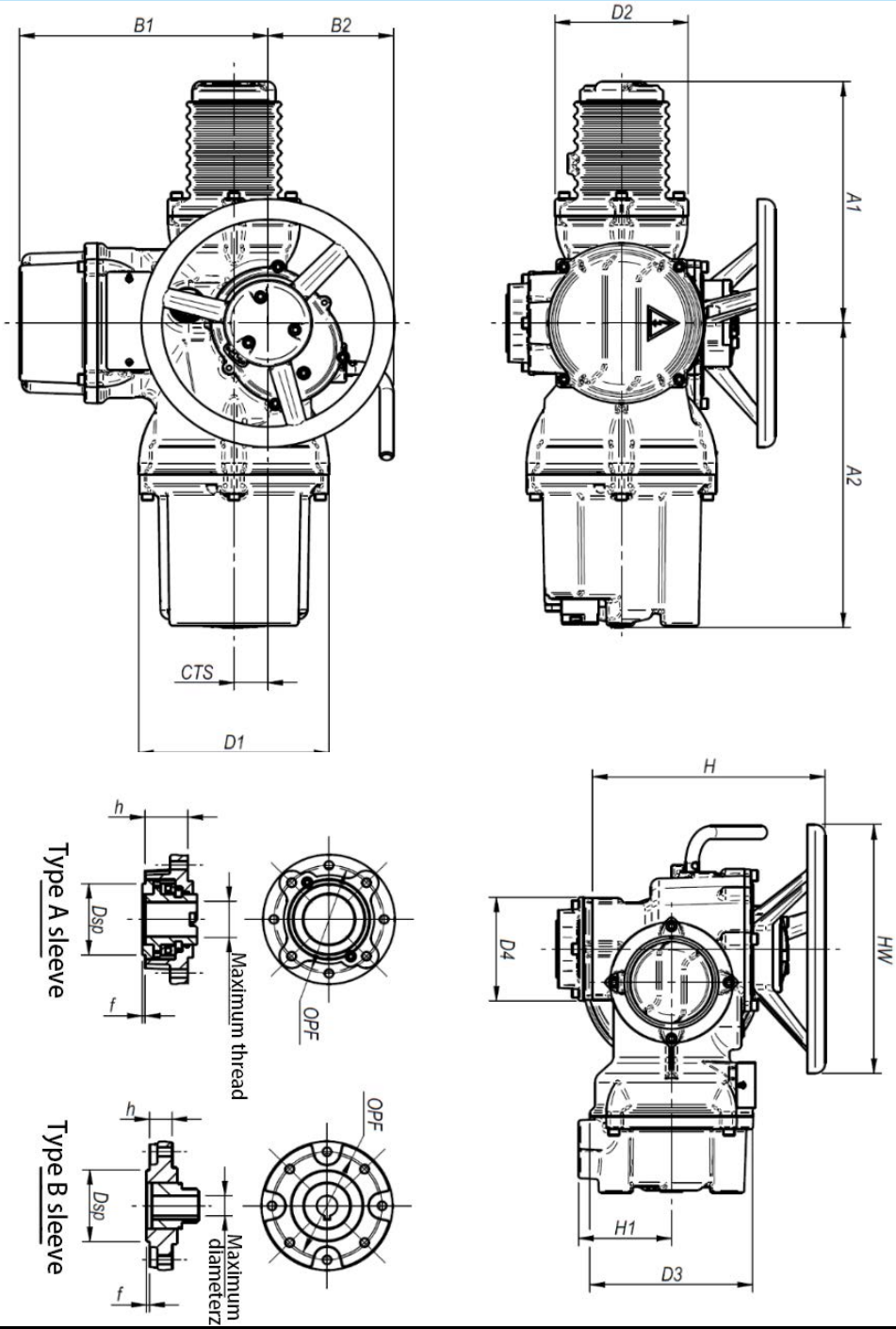
VSM series multi-turn electric actuator

Model	380V Actuator 50Hz parameters								Weight
	18 RPM				24 RPM				
	Torque	Power	Rated current	Locked current	Torque	Power	Rated current	Locked current	
VSM35	35	0.09KW	0.63A	1.5A	35	0.12KW	0.85A	2.1A	36kg
VSM80	80	0.18KW	1.0A	2.5A	80	0.25KW	1.4A	3.5A	36kg
VSM110	110	0.25KW	1.4A	3.5A	110	0.37KW	1.8A	4.5A	37kg
VSM200	200	0.37KW	1.8A	4.5A	200	0.4KW	1.9A	4.75A	60kg
VSM400	400	0.55KW	2.4A	6A	400	0.75KW	3A	7.5A	62kg
VSM600	600	1.1KW	4A	10A	600	1.5KW	5A	12.5A	75kg
VSM1000	1000	1.5KW	5A	12.5A	1000	2.2KW	7A	17.5A	172kg
VSM1500	1500	2.5KW	7.5A	18.7A	1500	3.0KW	9A	22.5A	172kg
VSM2000	2000	4.0KW	10.5A	26.2A	2000	5.5KW	13.8A	34.5A	175kg
VSM3000	-				3000	7.5KW	17.5A	43.7A	175kg

The torque shown in the table is the maximum allowable set torque in two directions of rotation. The locked torque is 1.4 to 2 times this value, and these parameters will vary depending on the speed and voltage.
Other speeds: 36, 48, 72, 96, 144, 192RPM can be customized. If you have any requirements, please consult the factory for detailed information;

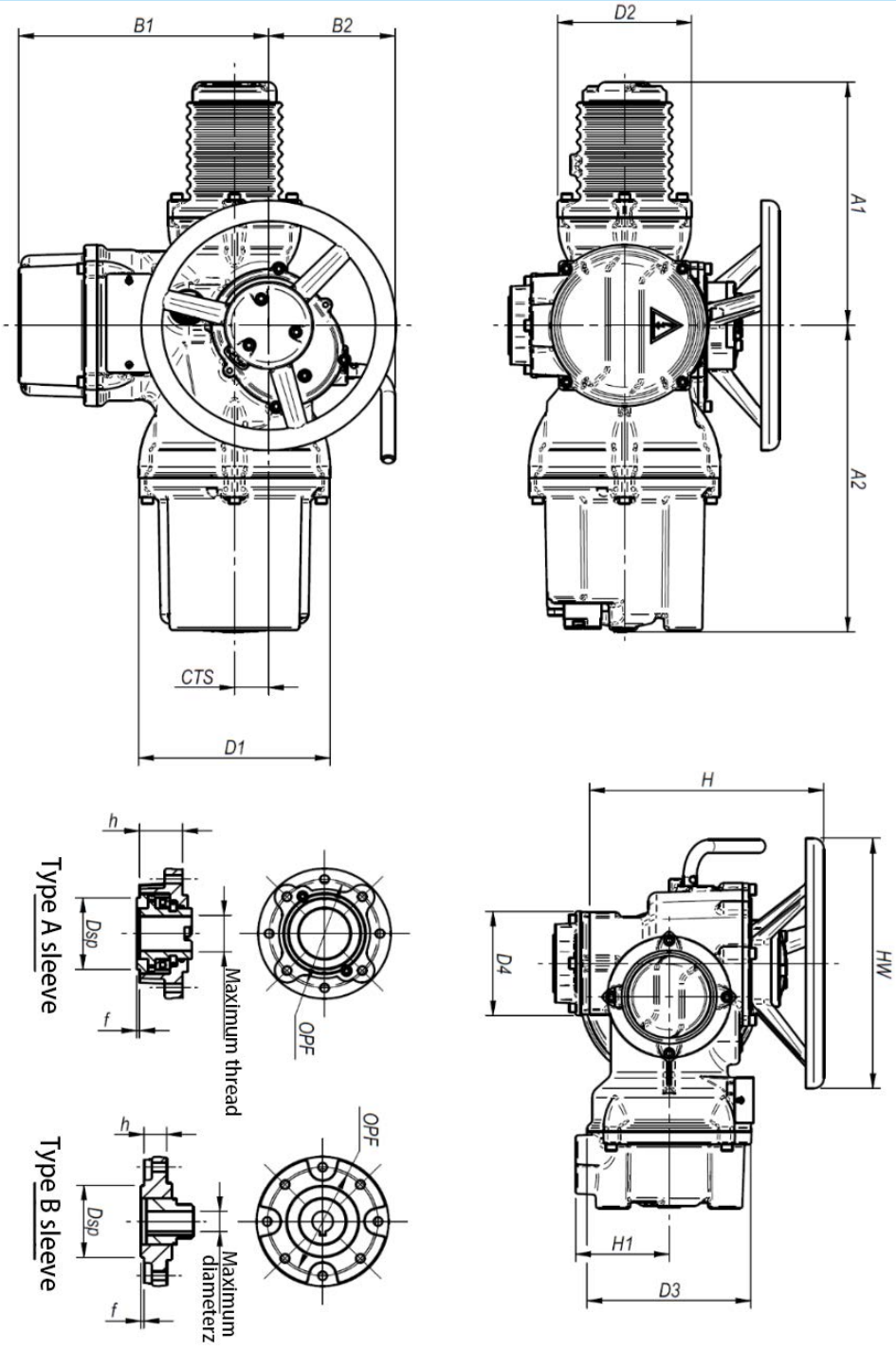
VSM series model specifications and main performance parameters

Size diagram of VSM series multi-turn intelligent DC electric actuators



Model	A1	A2	B1	B2	H	H1(Dust cover not included)	D1	D2	D3	CTS	Hand wheel HW
VSM35	297	374	299	151	280	112	229	160	196	41	305
VSM80	297	374	299	151	280	112	229	160	196	41	305
VSM110	297	374	299	151	280	112	229	160	196	41	305
VSM200	353.5	409	321	145	292	112	229	191	196	60	450
VSM400	353.5	409	321	145	292	112	229	191	196	60	450
VSM600	421	439	366	230	326	112	229	230	196	91	400
VSM1000	488	469	366	314	360	112	229	269	196	91	400
VSM1500	488	469	366	314	360	112	229	269	196	91	400
VSM2000	561	469	366	314	360	112	229	269	196	91	400
VSM3000	561	469	366	314	360	112	229	269	196	91	400

VSM series multi-turn intelligent DC electric actuator



Model	OPF	Dsp	Inlet hole		Type A sleeve			Type B sleeve		
			1	2	h	f	Max thread	h	1	2
VSM35	F10/FA10	70/58.7	M40x1.5	2xM25x1.5	41	3	32	22	3	20
VSM80	F10/FA10	70/58.7	M40x1.5	2xM25x1.5	41	3	32	22	3	20
VSM110	F10/FA10	70/58.7	M40x1.5	2xM25x1.5	41	3	32	22	3	20
VSM200	F14/FA14	100/95.25	M40x1.5	2xM25x1.5	69	4	51	25	4	32
VSM400	F14/FA14	100/95.25	M40x1.5	2xM25x1.5	69	4	51	25	4	32
VSM600	F16/FA16	130/127	M40x1.5	2xM25x1.5	98	5	73	45	5	60
VSM1000	F16/FA16	130/127	M40x1.5	2xM25x1.5	98	5	73	45	5	60
VSM1500	F16/FA16	130/127	M40x1.5	2xM25x1.5	98	5	73	45	5	60
VSM2000	F25/FA25	200/152.4	M40x1.5	2xM25x1.5	98	5	73	45	5	60
VSM3000	F30/FA30	230/177.8	M40x1.5	2xM25x1.5	122	5	83	45	5	60

Field use examples










⚠ Notice

The performance data of products such as pressure and rated temperature recorded on this sample are based on national standard specifications and summarized by our company based on design, calculation, internal testing, and actual use of on-site products. The products introduced on this sample are mainly provided to customers who use them under general conditions. If you need to use these products under special conditions, please contact our company in advance, or the customer can conduct research and evaluation on the performance of these products before using them. Our company is not responsible for any damage or personal injury caused by careless use. In addition, although our company has made every effort to prepare samples, we cannot be held responsible for any errors, inadequacies, or inadequacies. The content described on this sample can be corrected at any time as deemed necessary by our company: discontinuation of product production, design changes, and product introductions.

Last update	2024/5/22
Ver	A2

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