

V-TORK®



## VTM Series Electric Actuator



**Quarter-Turn Electric Actuator**  
**Compact design to meet space requirements**  
**Wide range of sizes and torque outputs(20-5000NM)**  
**For On-Off or Modulating Control**

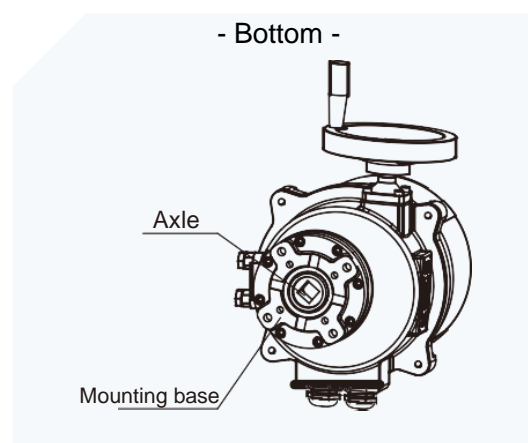
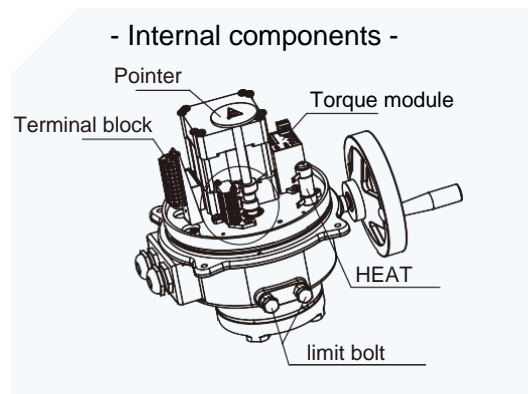
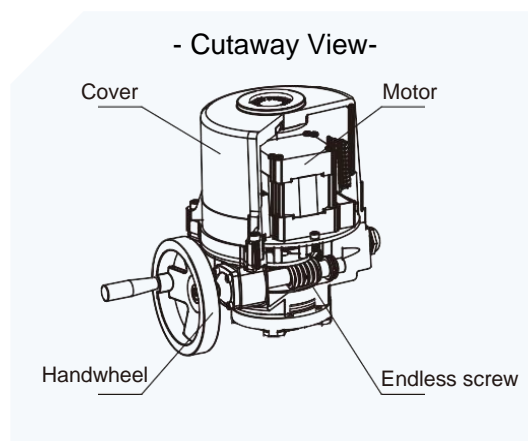


# VTM Series Electric Actuator

## Introduction

The Vtork VTM Series is a rugged, compact electric quarter-turn actuator for on-off and modulating control of valves and dampers. The VTM offers a cost-effective, high-quality, reliable valve automation solution.

## Product Details



Body	The shell is made of aluminum alloy, anodized, and coated with polyester powder.
Protection Grade	IP 67、Exd IIC T6Gb(TBD)、Ex tb IIIC T80°C Db(TBD)
Motor	Enclosed cage induction motor, Low rotational inertia, Insulation class F, Built-in overheat protection.
Hand wheel& endless screw	After a power failure, the hand wheel can be used for manual control, Internal endless screw design, and no clutch, light and easy to control.
Mounting base	ISO 5211 Design, high versatility, the transmission shaft adopts spline shaft design.
Limit Configuration	Mechanical Limiter + Electrical Limiter
Limiter	Power cut-off + passive feedback (Vmax 250V, Imax5A)
Pointer dial	For valve position indication, it will rotate with the valve.
Heater	Used to balance temperature differences and prevent condensation. Ensure that the internal electrical components work normally (Optional).
Temperature resistance	-20°C~+70°C (-4° F~158° F)
Humidity resistance	Maximum relative humidity 90% (non-condensing)
Seismic capacity	XYZ10g.0.2~34Hz,30mins

# VTM Series Electric Actuator

## 1.VTM Modulating Type

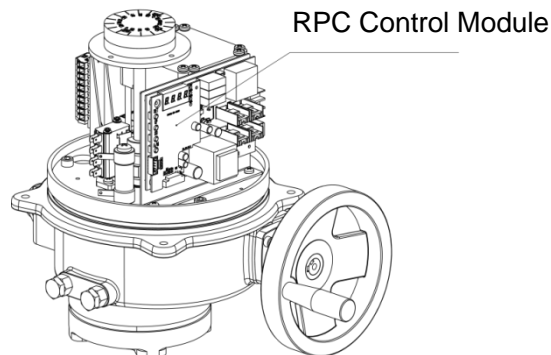
VTM Modulating electric actuators integrate a multi-functional servo amplifier and a position signal transmitter into the standard actuator to provide modulating control. All operations such as calibration, sensitivity setting, and automatic/manual switching are controlled by four buttons on the RPC Control Module making it quick and easy to install and set up. LEDs on the panel indicate actuator status.

### 1.1 RPC Control Module

The RPC Control Module is installed in the actuator enclosure and receives the 4~20mA control signal from the control system or other control device. An integral potentiometer acts as the electronic valve positioner input to the RPC Control Module.

### 1.2 Specifications

- Input Signal: 4~20mA、0~10mA
- Input Impedance:250Ω (4~20mA) or 500Ω (0~10mA)
- Valve Position Sensor: Single-turn absolute value encoder
- Valve Transmitting Output Signal: 4~20mA or 0~10mA
- Intrinsic Error: ≤+0.2%
- Motor Blocking Protection Time:1~25.4S (default 6.4S)
- Consumption Power: ≤3VA
- Actuator Operating Sensitivity: 0.1%~12.5%
- Insulation Strength: power frequency 1500V、1min
- Insulation Resistance: above 50MΩ
- Power Voltage: 220VAC/110VAC,50/60Hz±10% or 24VDC
- Signal loss, feedback loss, motor stalling failure protection function,
- Instantaneous Reverse Rotation Protection Function with adjustable time delay.
- Failure code warning function
- One-key calibration function
- Passive feedback output function for full close position and fully open position



# VTM Series Electric Actuator

## 2.The VTM Series Intelligent Electric Actuator

The VTM Series Intelligent Electric Actuator is intelligently controlled. It combines a multi-function server amplifier and a position signal transmitter.

It is not equipped with adjustable parts, all settings can be set by the infrared remote control, such as on-site debugging, sensitivity settings, manual automatic switching, and other functions. The LCD control panel will show the current working status of the product.

A control box is installed on the product, it will receive standard 4-20 mA current control or on-off control signals from the DCS control system or other upper computer control system and convert them into valve action parameters.

### 2.1 Main Parameter

- Input Signal: two types
  - ① Analog quantity control signal: 4 ~20 m A (Input impedance 150 Ω)
  - ② ON/OFF control signal: Point Control
- Valve Transmitting Output Signal: 4~20mA
- Basic deviation:  $\leq \pm 0.2\%$
- Motor Stall Protection Trigger Time: 1~25.4S (Default 6.4S)
- Power consumption:  $\leq 5$  VA
- Actuator action sensitivity: 0.4%~12.5%
- Insulation strength: power frequency 1500V、1min
- Insulation resistance: above 50 MΩ
- Power supply (Please specify in advance before ordering):
  - ① 440VAC/3Ø、50/60Hz $\pm 10\%$
  - ② 110VAC/220VAC、50/60Hz $\pm 10\%$
  - ③ 24VAC
- Our production has an electronic or mechanical over-torque protection function. When the working torque of the product exceeds the setting, the protection function will disconnect the power supply to protect the equipment.
- Three-phase motor braking function, it can significantly improve the operating accuracy of the executing mechanism (Please mark this requirement before ordering).
- Sudden reverse rotation protection function: When our product is operating, if the action command in the opposite direction is received, the control board will first stop the rotation of the motor in the product and delay a certain time (the delay time can be set as required) before executing the reverse action command. This function can protect the electric actuator motor, reducer, valve rod, and other devices.
- With fault code prompt function.
- It has the function of restoring factory settings.
- Signal alarm/feedback functions such as full opening, full closing, fault alarm, excessive torque alarm, remote control, local control status, etc.
- It has the function of an off signal and off feedback alarm. At the same time, after the signal is off, it can be set to maintain the current position, fully open position, full close position, or any other specified position as required.
- The on-site debugging and function setting of the control board can be set through the infrared remote control or two knobs on the shell.
- When the power supply is AC 380V, it has a three-phase automatic protection function and automatically adjusts the phase line sequence to ensure that the electric actuator is in the correct rotation direction.



# VTM Series Electric Actuator

## 2.2 LCD

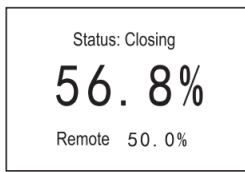
There is a 128\*64 LCD on the actuator control panel. It is divided into Area I, Area II and Area III according to its layout. The area I is the valve position display area, which displays the current valve position in real-time in the form of percentage. Area II will display the current control mode. Zone III is the operation status and alarm information (see the following alarm information for the specific display content). When entering the setting mode menu, the LCD will uniformly use zone I, zone II and zone III.

After the actuator control board is powered on, it will first perform a self-test on the command, program area, data area, and a/d conversion function. If the self-test is normal, the LCD will work normally and the contents of the alarm area will be cleared. If the self-inspection finds any abnormality, the alarm area will always display the fault information of this item, and the control system will not accept any operation and wait for fault treatment.

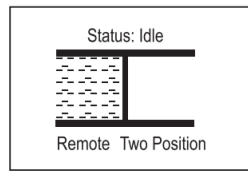
After the actuator control board is powered on, Area I displays the current valve position as a percentage. When the valve is in the fully open or fully closed position, it will be displayed graphically (see the following figure). When the analog control signal is displayed in the lower right corner of area II, the LCD will display the control signal sent by the upper computer in the form of a percentage. Similarly, when the switching value control mode is used, the LCD will display the control mode of the selected switching value (inching, two positions, two positions open valve, two positions close valve). The current working state of the actuator control board will be displayed in the lower left corner of area II (remote, stop, on-site).



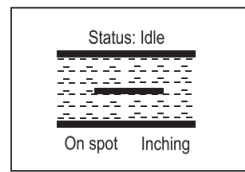
LCD



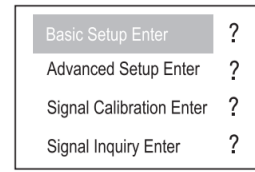
Valve Open Degree



Close Position Arriving



Open Position Arriving

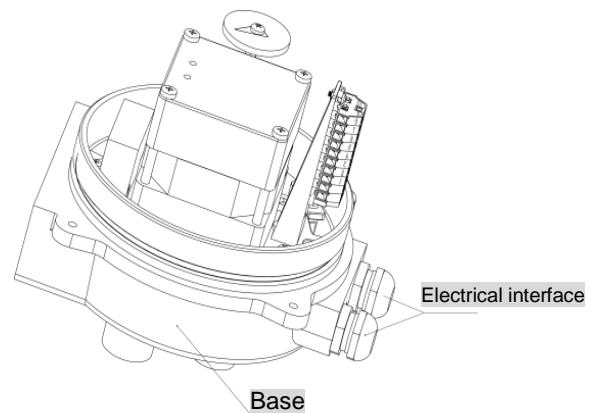
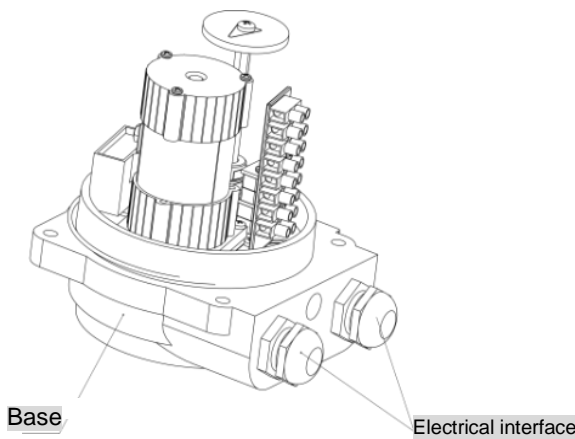


Main Menu Display

## 3.VTM Electric Actuator On/Off Type

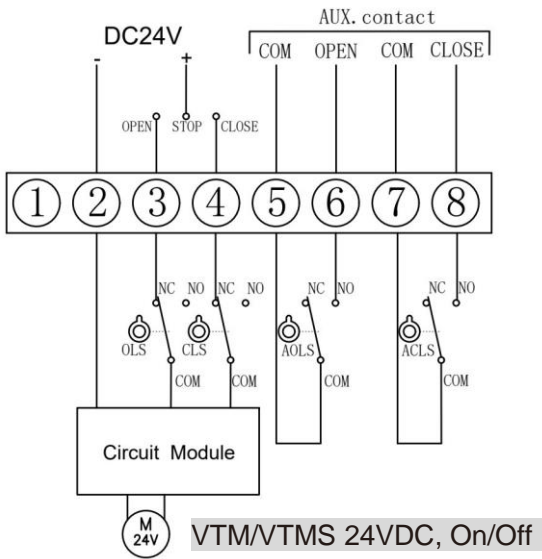
With external switch control, there will be a port feedback electrical signal when the valve is fully open or closed.

This product is fast, reliable, and stable. It can be widely used in fire control, program-controlled ignition system, heavy oil and crude oil transportation control in the petroleum industry, viscous media containing particles

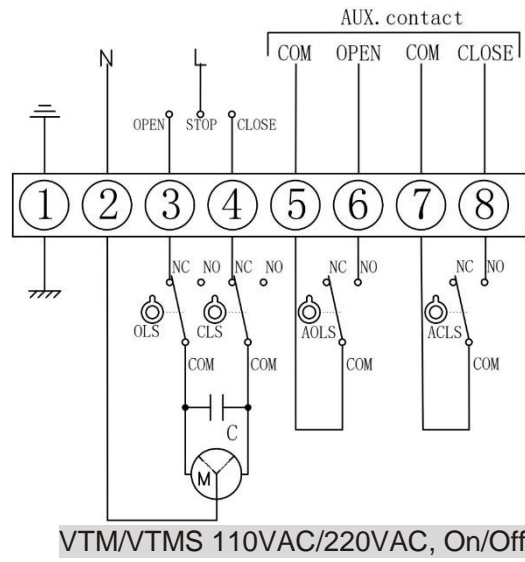


# VTM Series Electric Actuator Wiring Diagram

## VTM On/Off Type Wiring Diagram

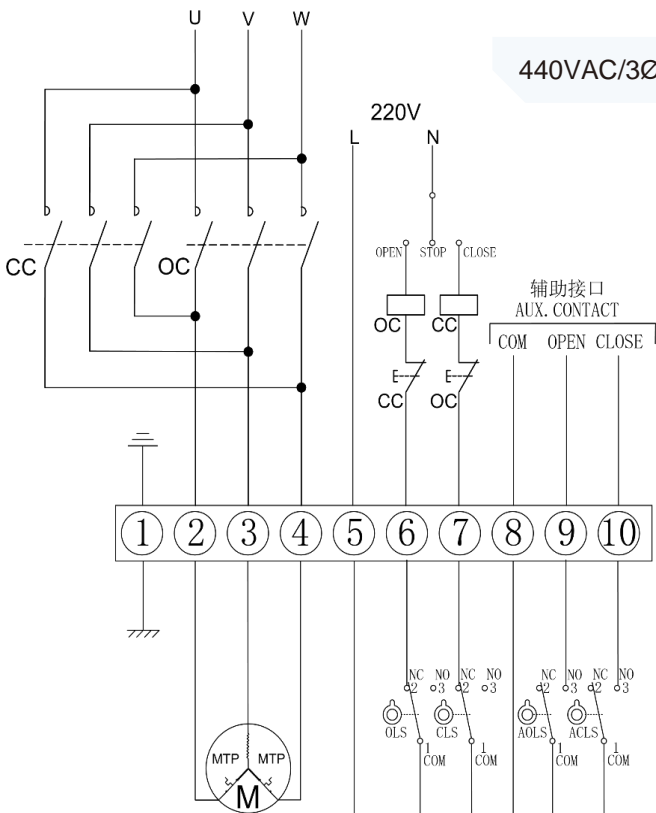


- ② - ③: open control
- ② - ④: close control
- ⑤ - ⑥: full-open switch output
- ⑦ - ⑧: full-close switch output



- ①: GND
- ② - ③: open control
- ② - ④: close control
- ⑤ - ⑥: full-open switch output
- ⑦ - ⑧: full-close switch output

## VTM Three-Phase Power Supply Wiring Diagram



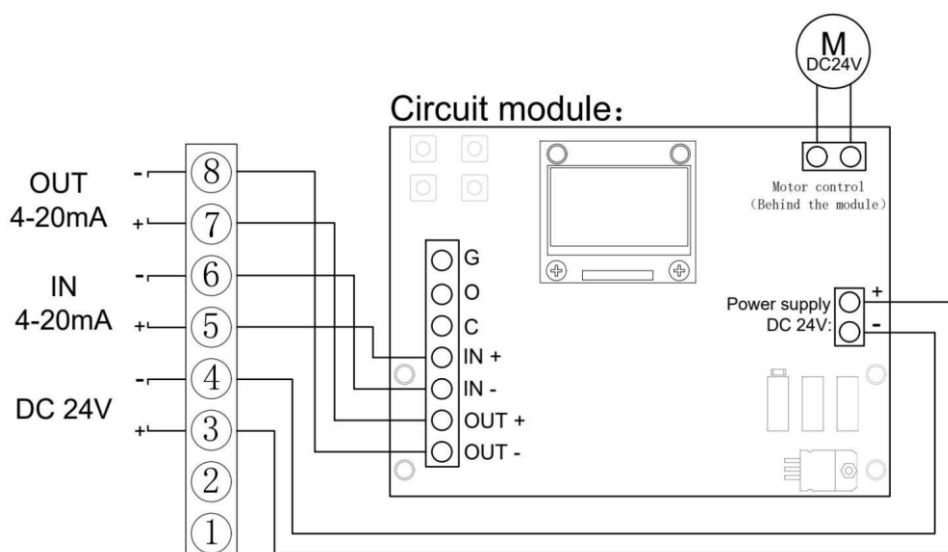
- ① : GND
- ② - ③ - ④: power supply for 440VAC/3Ø
- ⑤ - ⑥: open control (220VAC)
- ⑤ - ⑦: close control (220VAC)
- ⑧ - ⑨: full-open switch output
- ⑧ - ⑩: full-close switch output

OC: contactor (open)  
CC: contactor (close)



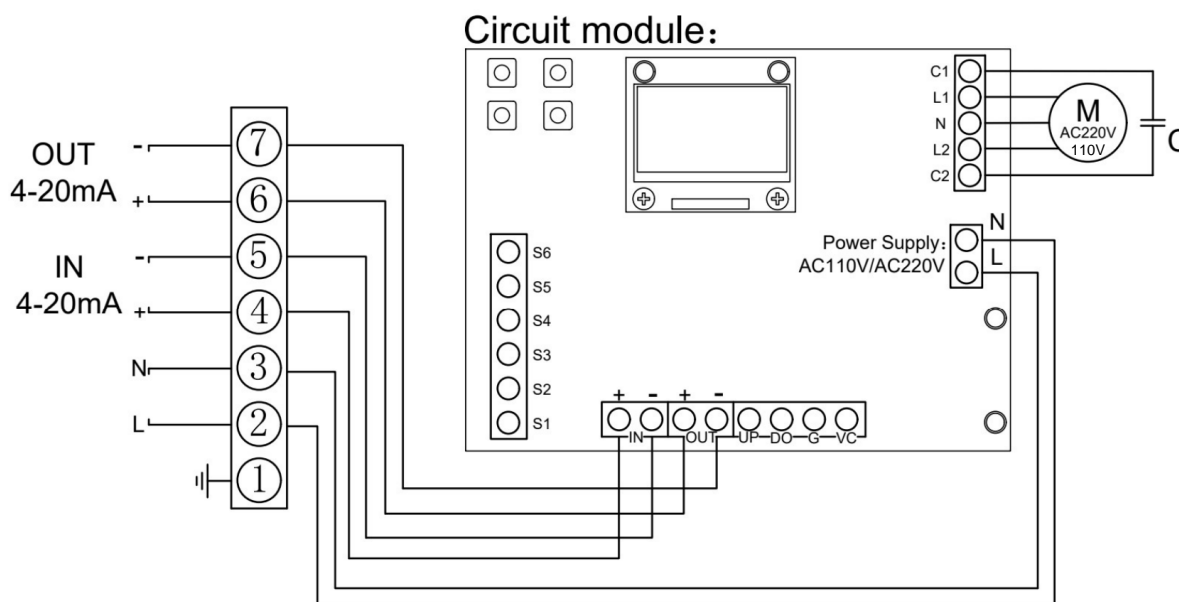
# VTM Series Electric Actuator Wiring Diagram

## VTM Modulating Wiring Diagram(24VDC)



- ③ - ④: power supply(24VDC)
- ⑤ - ⑥: 4~20mA input signal
- ⑦ - ⑧: 4~20mA output signal

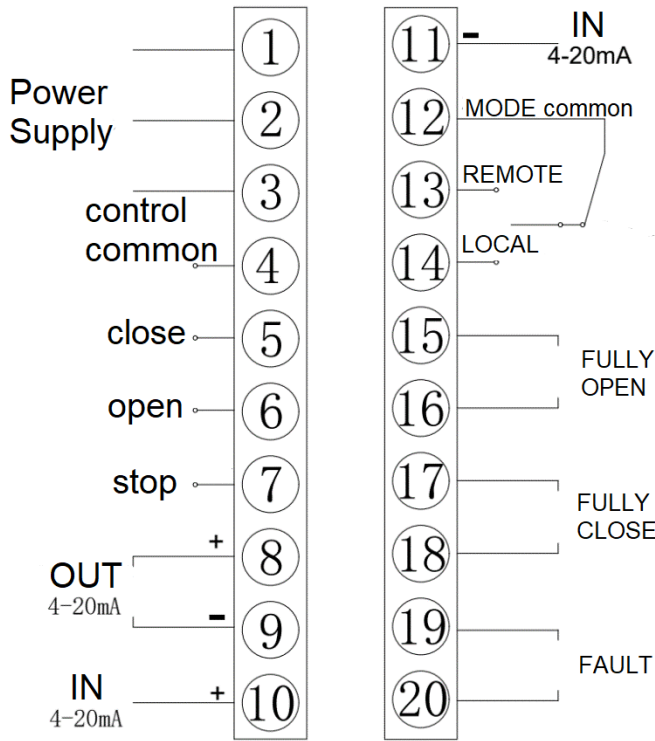
## VTM Modulating Wiring Diagram (220/110VAC)



- ①: GND
- ②-③: power supply (220/110VAC)
- ④-⑤: 4~20mA input signal
- ⑥-⑦: 4~20mA output signal

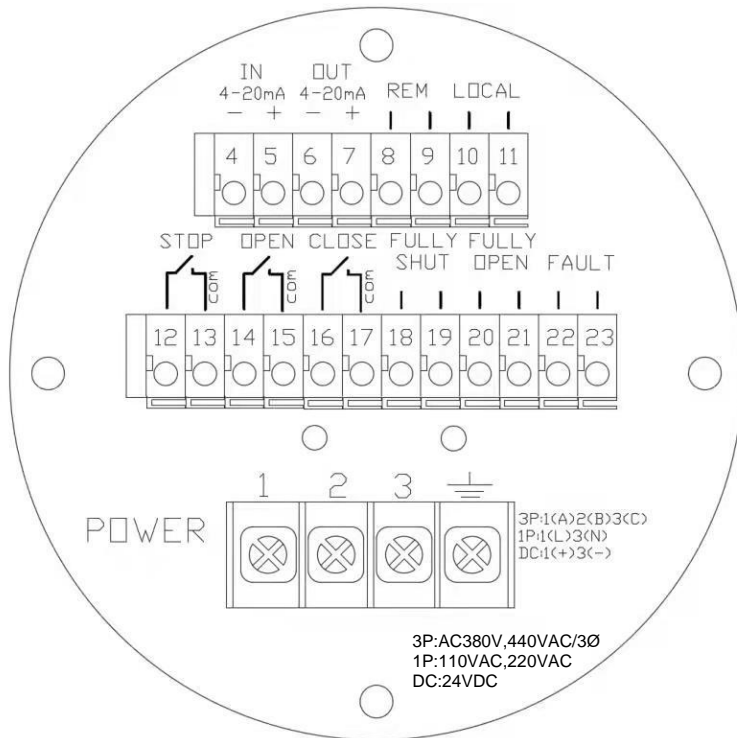
# VTM Series Electric Actuator

## VTMS/VTMH Intelligent Types Wiring Diagram



- ①-②-③: Power supply
- Control power 440VAC/3Ø:  
① (A). ② (B). ③ (C).
- Control power 120VAC/220VAC:  
① (L). ② (N).
- Control power 24VDC:  
① (+). ② (-).
- ④-⑤ close control
- ④-⑥ open control
- ④-⑦ stop
- ⑧ positive (+) of output signal
- ⑨ negative (-) of output signal
- ⑩ positive (+) of input signal
- ⑪ negative (-) of input signal
- ⑮-⑯ full open switch output
- ⑰-⑱ full close switch output
- ⑲-⑳ fault switch output

## VTM Intelligent Types Wiring Diagram



- ①-②-③: Power supply
- Control power 440VAC/3Ø:  
① (A). ② (B). ③ (C). Control power
- 110VAC/220VAC:  
① (L). ② (N).
- Control power 24VDC:  
① (+). ② (-).
- ④ negative (-) of input signal
- ⑤ positive (+) of input signal
- ⑥ negative (-) of output signal
- ⑦ positive (+) of output signal
- ⑫-⑬ stop
- ⑭-⑮ open control
- ⑯-⑰ close control
- ⑱-⑲ full close switch output
- ⑳-㉑ full open switch output
- ㉒-㉓ fault switch output



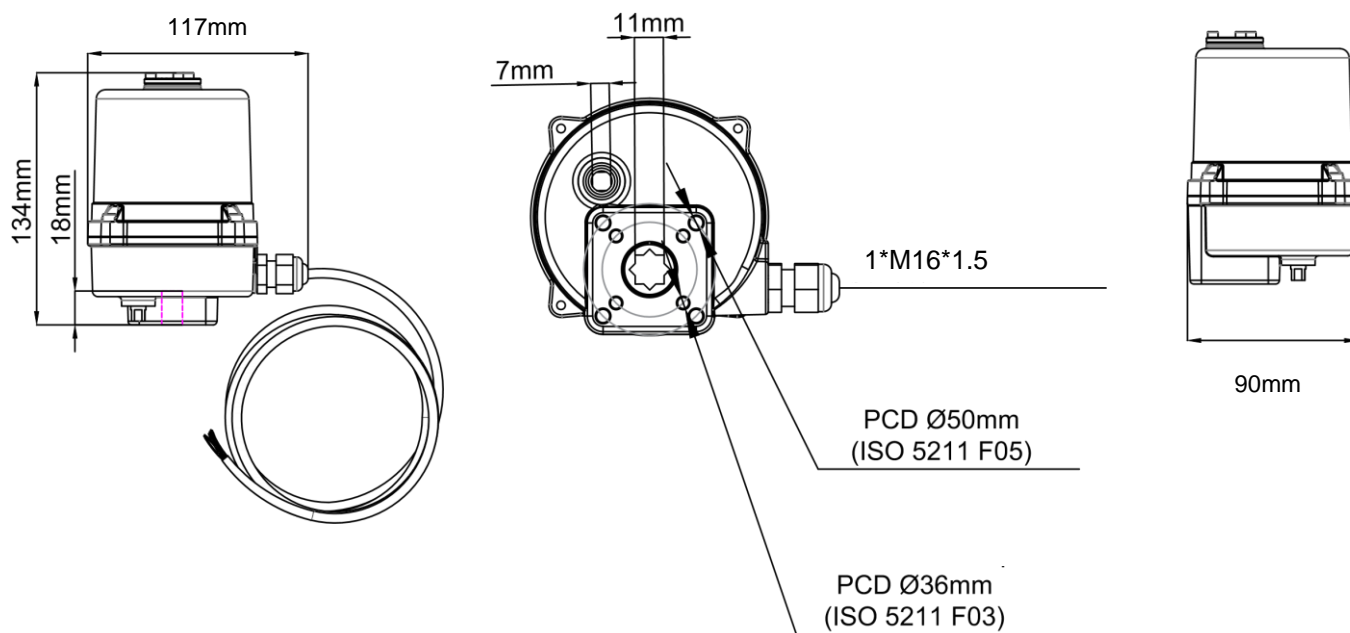
# Technical Parameters of Electric Actuator

## VTM Type Specifications

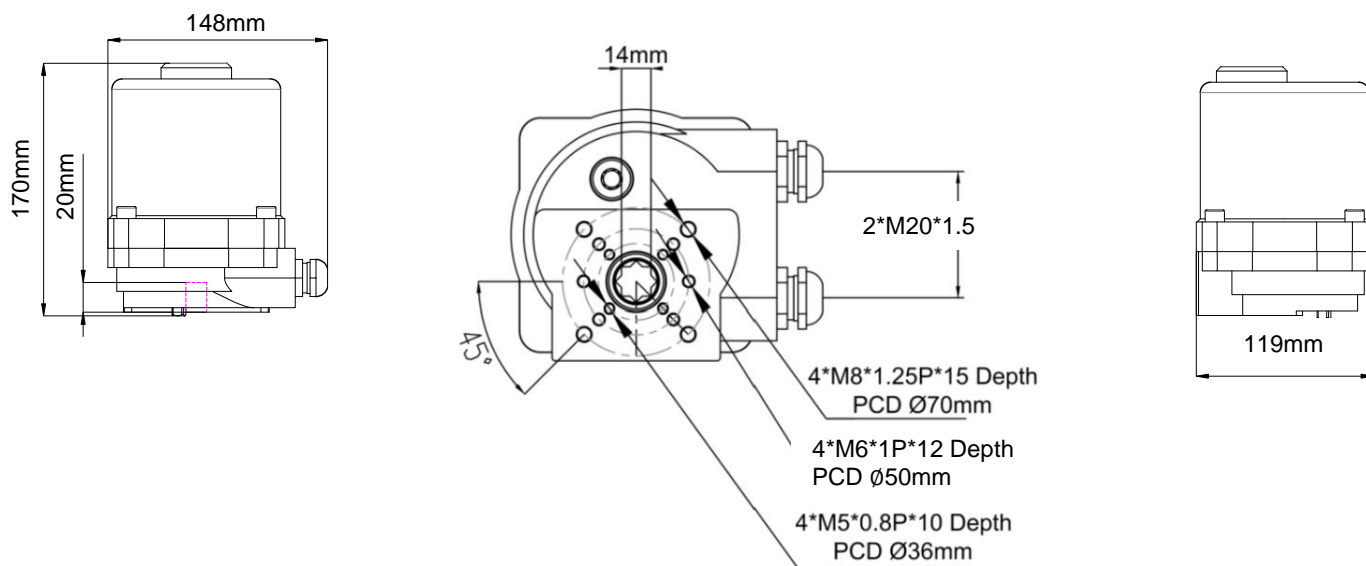
Model No.	Torque	Switch Time	Motor Power	Square	ISO Mounting Base	Rated current (A)				Weight	Interface	Manual Device
	Nm.	Sec/90°	W	mm		24VDC	110VAC	220VAC	440VAC/3Ø	KG		
VTM0S	20	10	8	11	F03/05	0.2	/	/	/	1.2	M16*1.5	Spanner
VTM1S	35	12	10	14	F03/05/07	1.2	0.4	0.3	/	2.8	M20*1.5	
VTM2S	100	8	40	17	F05/07	3	0.65	0.33	0.21	8	M20*1.5	
	200	8	60	17	F05/07	4.2	0.89	0.45	0.21	8	M20*1.5	
VTM3S	350	8	90	17/22	F07/10	6.8	1.7	0.8	0.7	13	M20*1.5	
	500	8	120	17/22	F07/10	8.5	2	1.1	0.7	13	M20*1.5	
VTM1H	50	10	18	14	F03/05/07	1.6	0.8	0.4	/	3.2	M20*1.5	Push hand Wheel Operation
	70	15	18	14	F03/05/07	1.6	0.8	0.4	/	3.2	M20*1.5	
VTM2H	100	8	40	17	F05/07	3.5	0.73	0.33	0.21	11	M20*1.5	
	200	8	60	17	F05/07	4.2	0.84	0.45	0.21	11	M20*1.5	
VTM2	100	20	20	17	F05/07/10	2.2	0.8	0.6	0.26	12	M20*1.5	Clutchless Hand Wheel
	200	30	20	17	F05/07/10	2.3	0.8	0.6	0.26	12	M20*1.5	
VTM3	300	20	40	17/22	F07/10	3	1.6	0.85	0.47	14	G3/4	
	400	30	60	17/22	F07/10	3.6	1.9	0.9	0.47	14	G3/4	
VTM4	500	40	90	22/27	F10/12-F14	8.5	1.8	0.95	0.54	22	G3/4	
	800	48	90	22/27	F10/12-F14	8.5	1.8	0.95	0.54	22	G3/4	
	1000	48	120	22/27	F10/12-F14	10.5	2	1.1	0.55	22	G3/4	
VTM5	1500	35	200	36	F12/14/16	/	4.8	2.8	1.1	50	G3/4	
	2300	48	200	36	F12/14/16	/	4.8	2.8	1.1	50	G3/4	
VTM5+G	4000	81	200	36	F14/16	/	4.8	2.8	1.5	81.9	G3/4	
	5000	94	200	36	F14/16	/	4.8	2.8	1.5	81.9	G3/4	

# VTMS Series Electric Actuator Dimensions

## VTM0S Dimensions (mm)

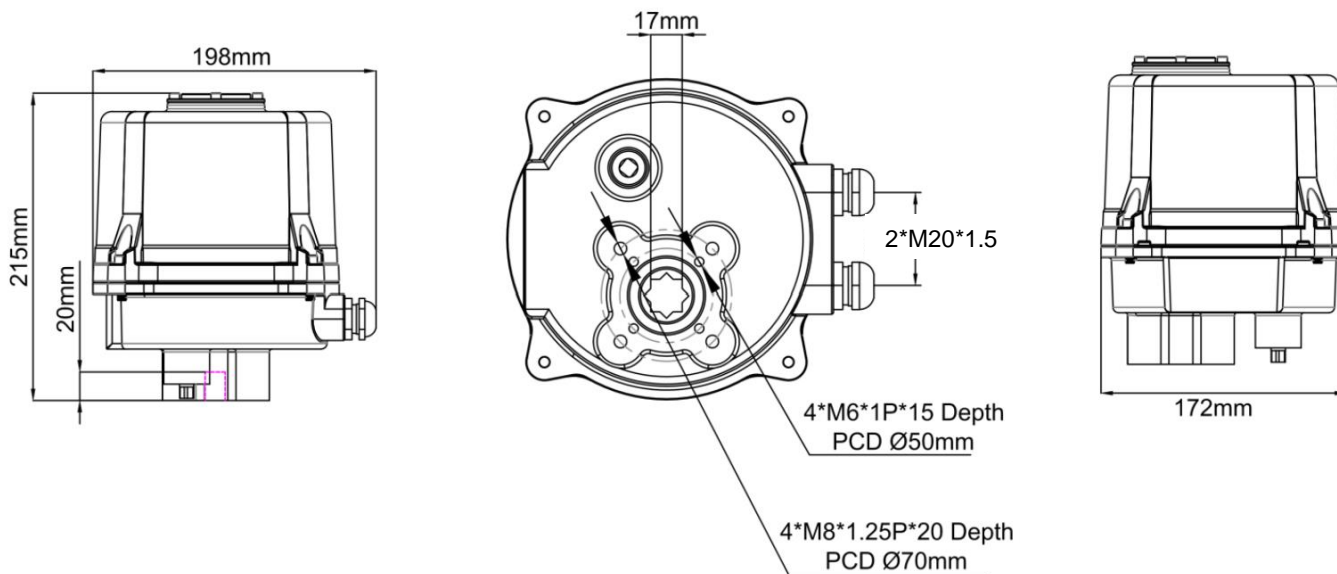


## VTM1S Dimensions (mm)

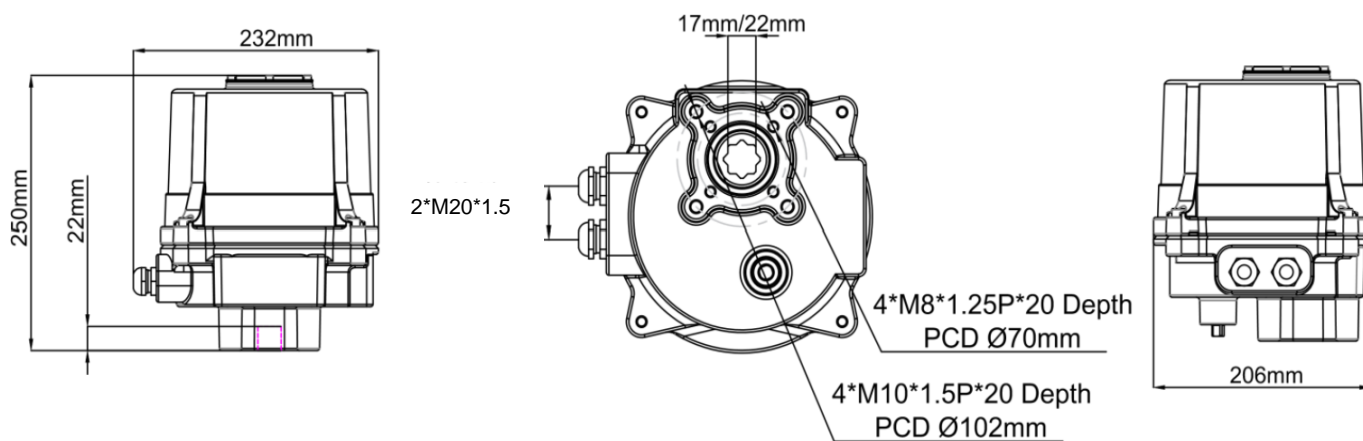


# VTMS Series Electric Actuator Dimensions

## VTM2S Dimensions (mm)

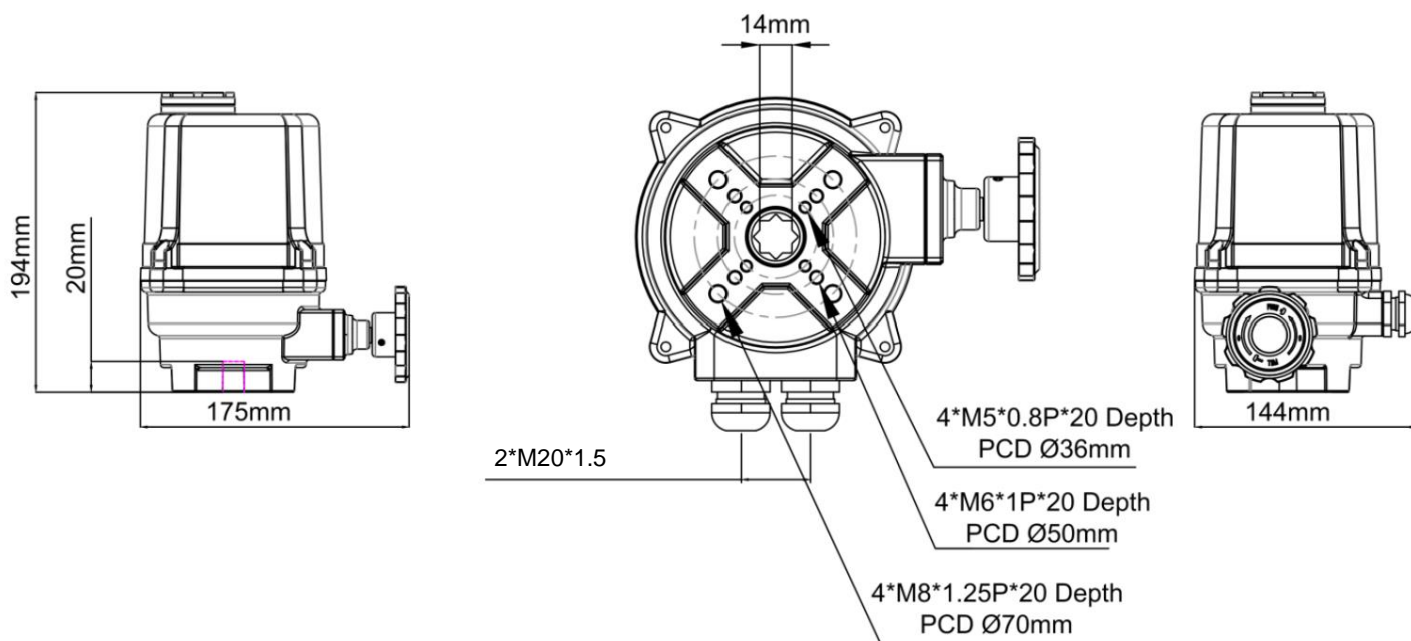


## VTM3S Dimensions (mm)

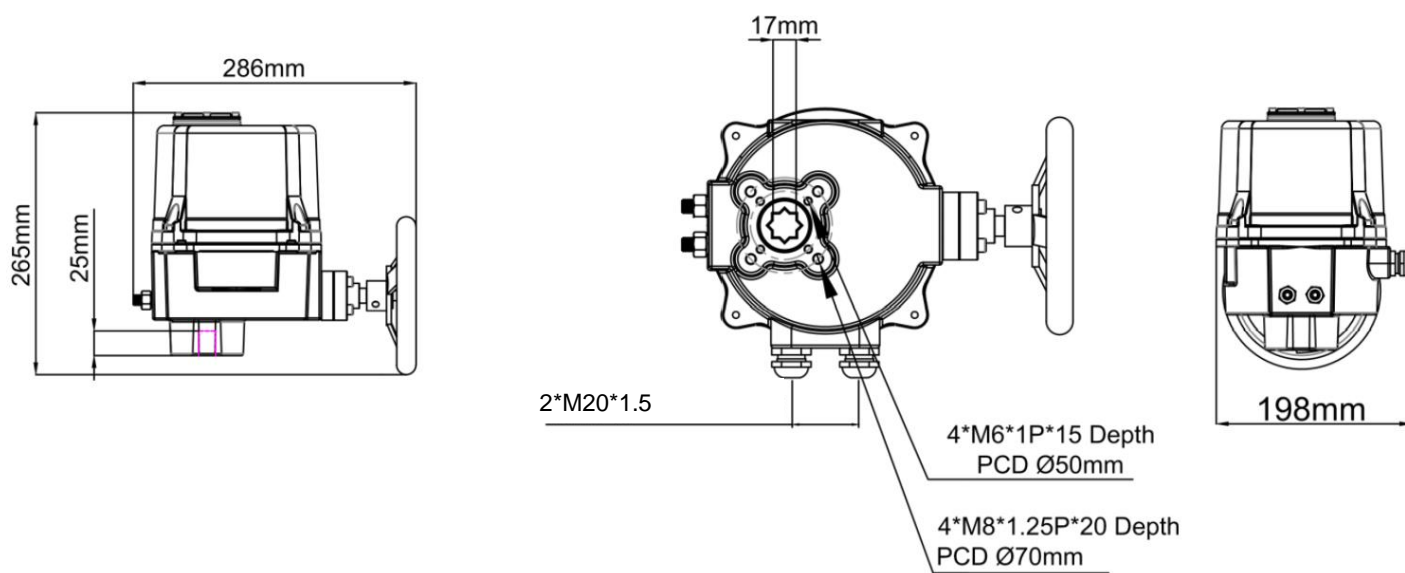


# VTMH Series Electric Actuator Dimensions

## VTM1H Series Electric Actuator Dimensions (mm)

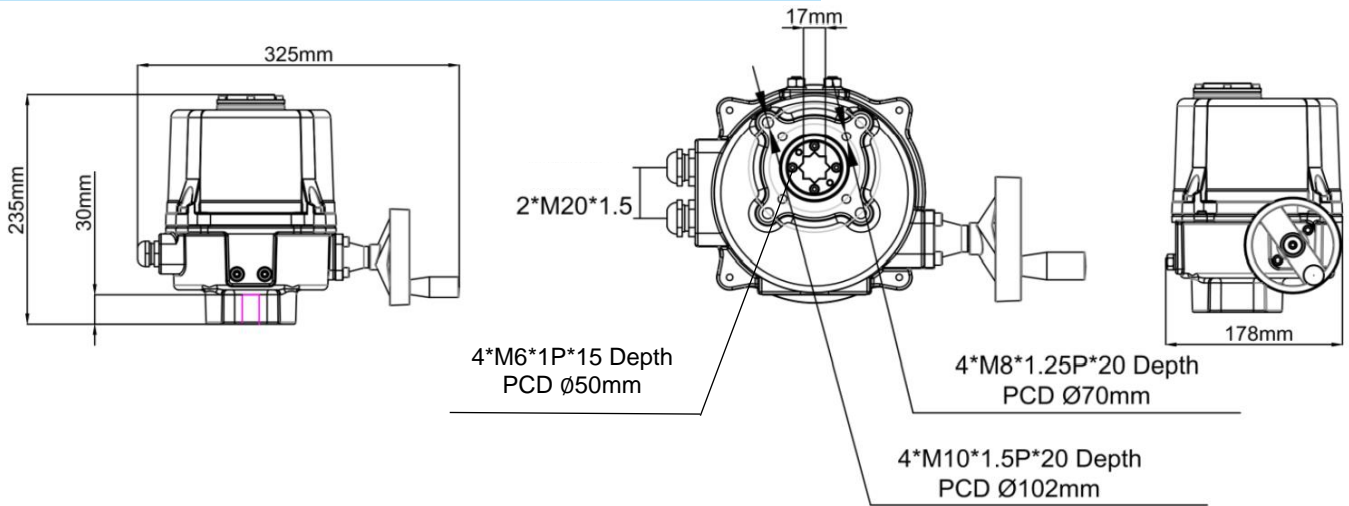


## VTM2H Series Electric Actuator Dimensions (mm)

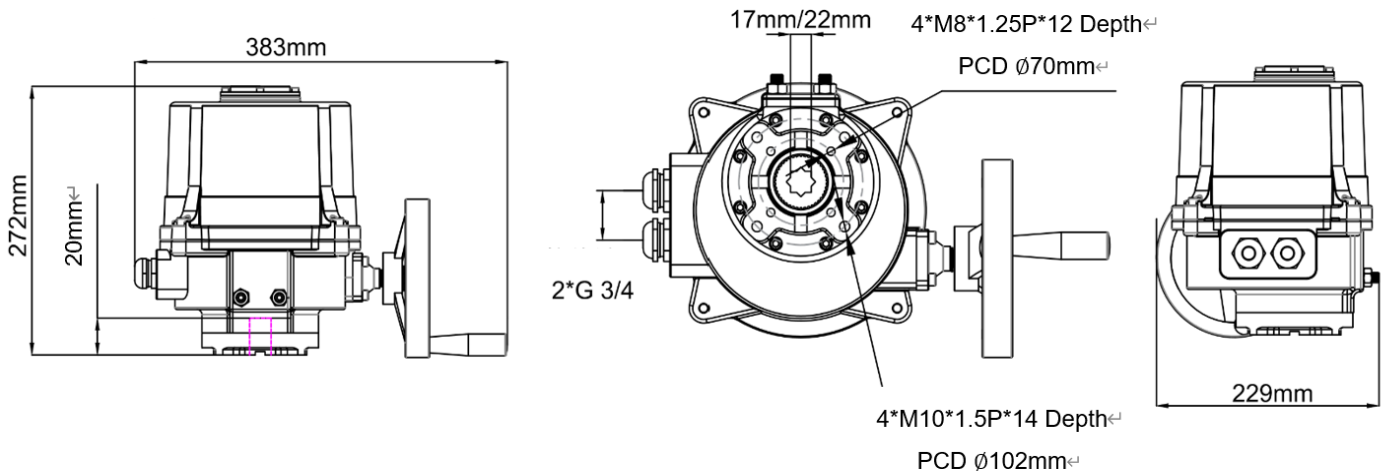


# VTM Series Electric Actuator Dimensions

## VTM2 Series Electric Actuator Dimensions (mm)

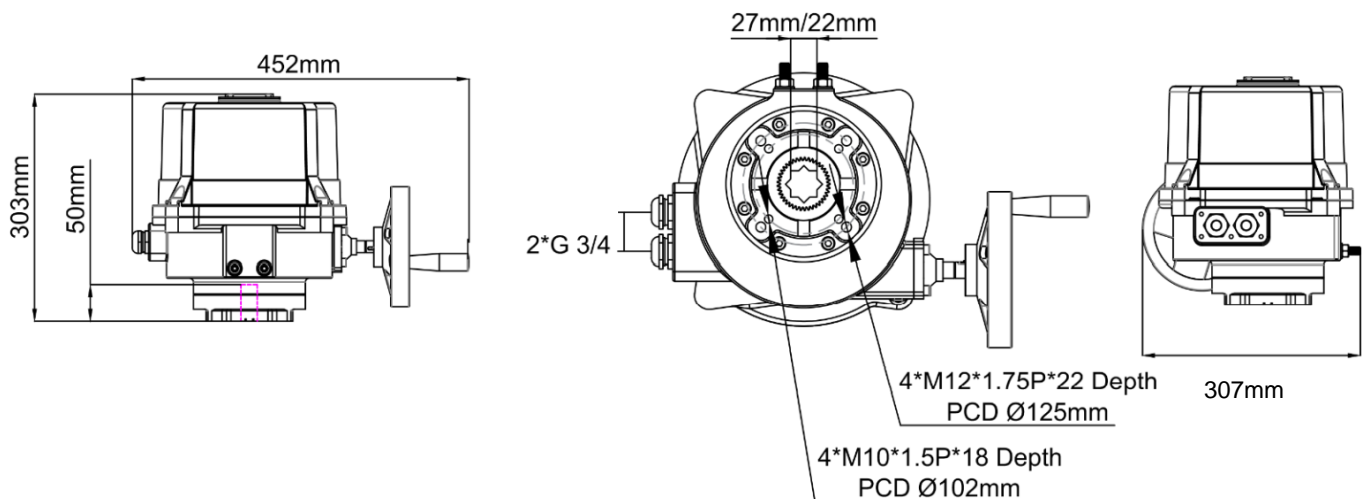


## VTM3 Series Electric Actuator Dimensions (mm)



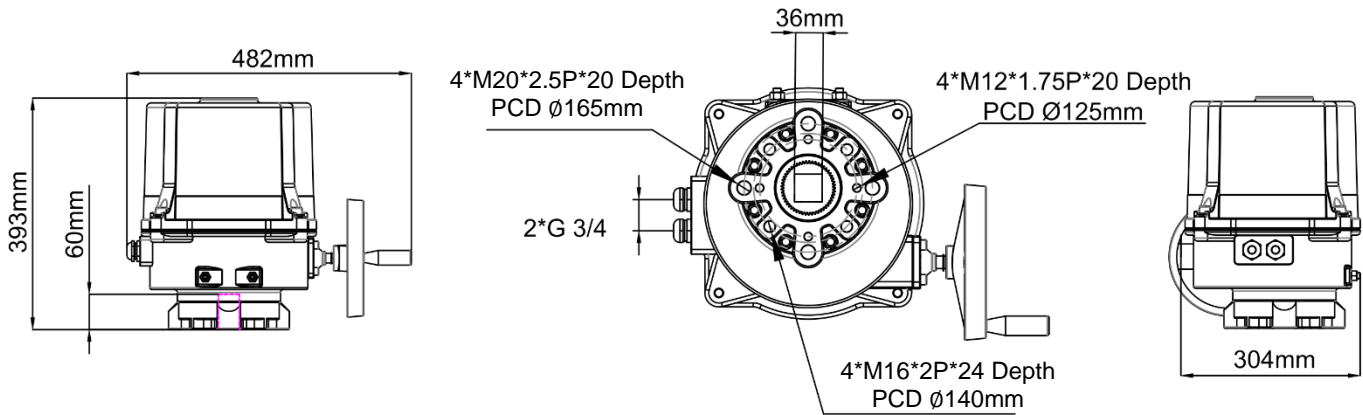
## VTM4 Series Electric Actuator Dimensions F10-F12 (mm)

\*F14 is also available.

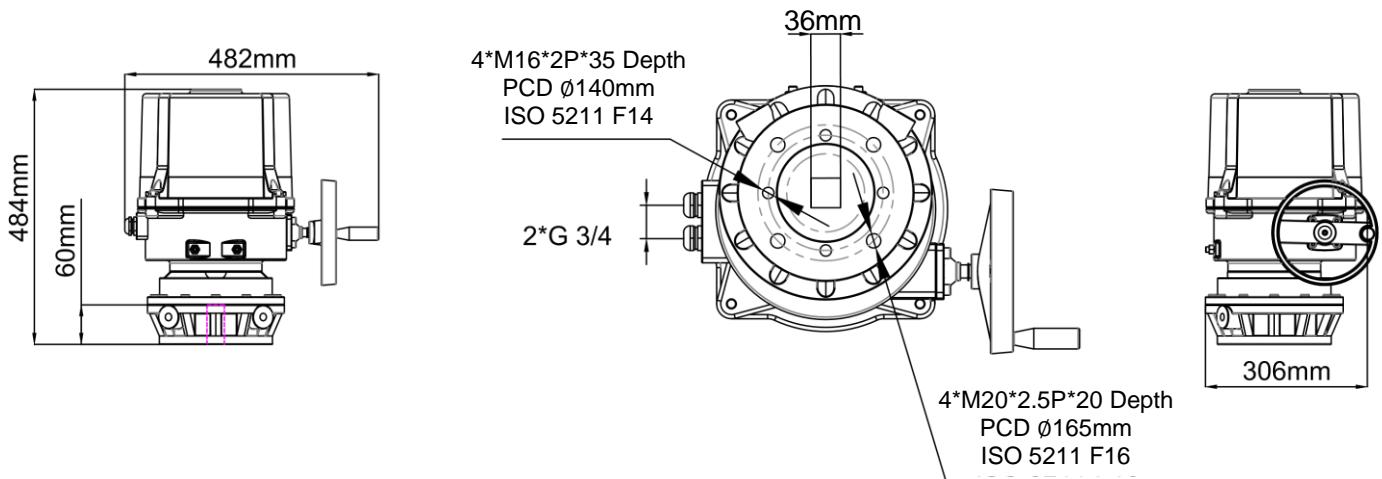


# VTM Series Electric Actuator Dimensions

## VTM5 Series Electric Actuator Dimensions (mm)



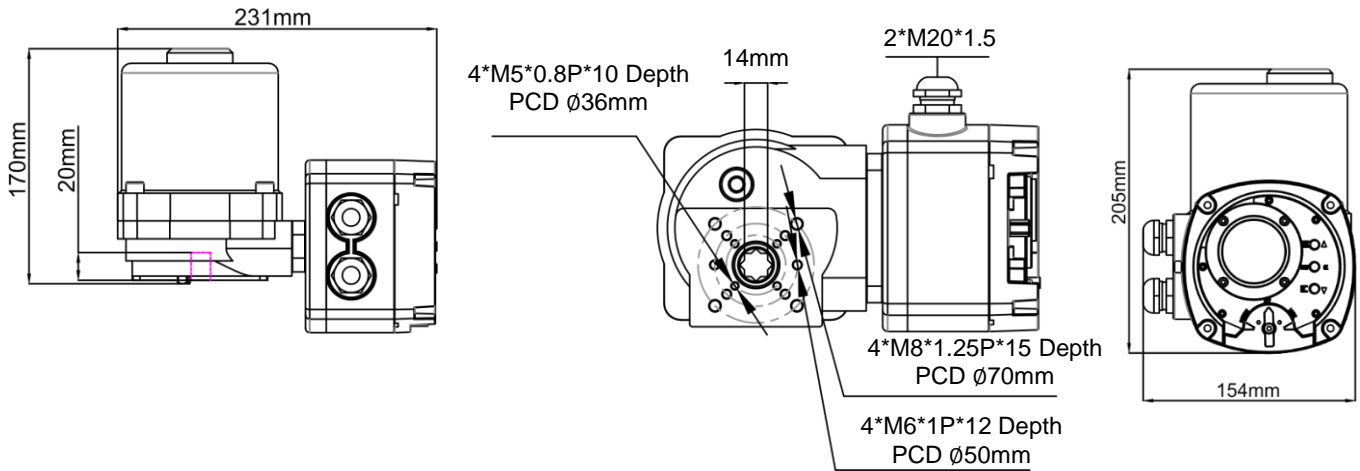
## VTM5+G Series Electric Actuator Dimensions (mm)



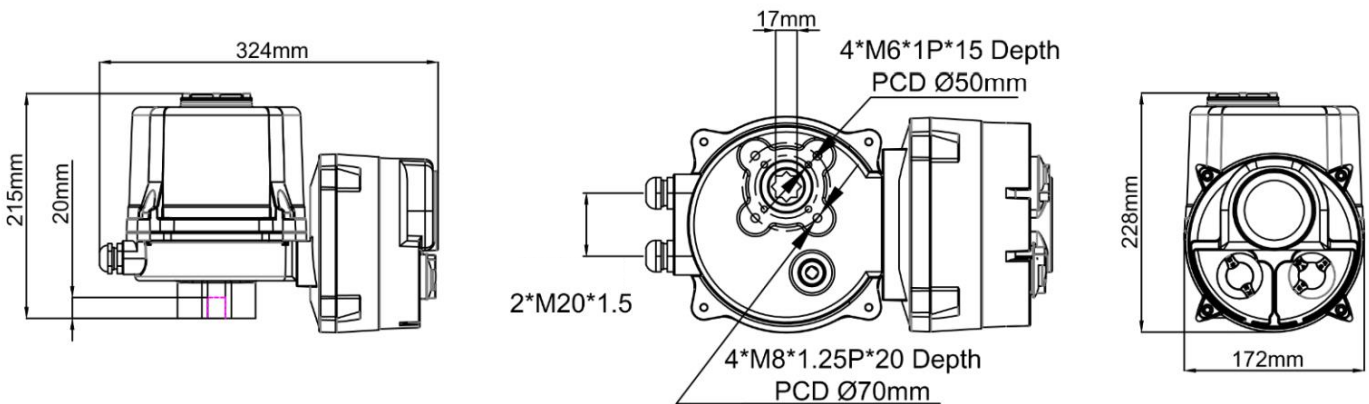


# VTMS Intelligent Integration Dimensions

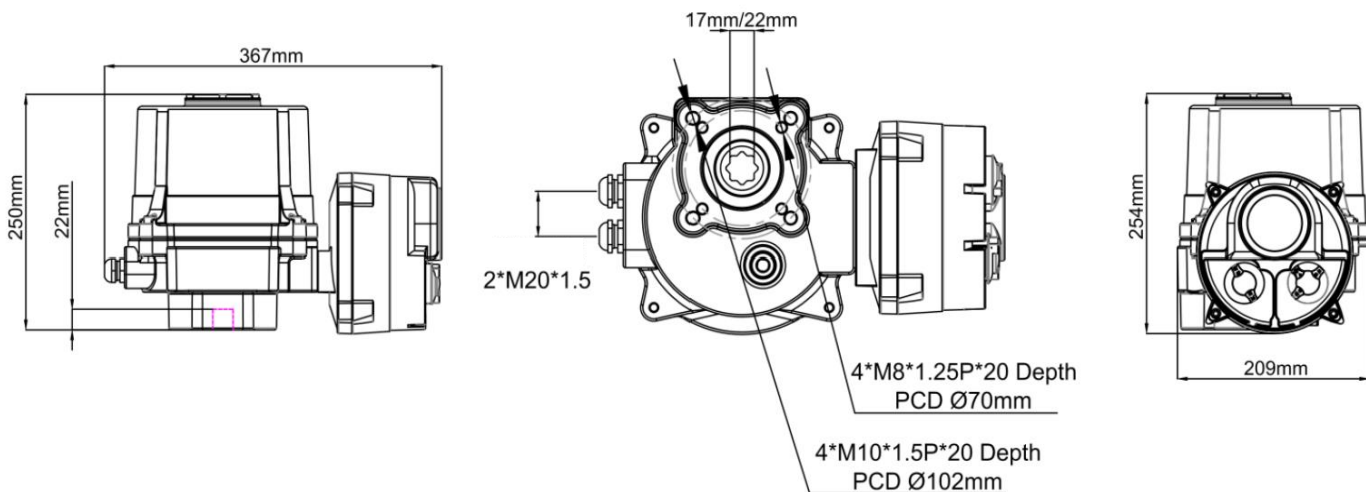
## VTM1S Intelligent Integration Dimensions (mm)



## VTM2S Intelligent Integration Dimensions (mm)

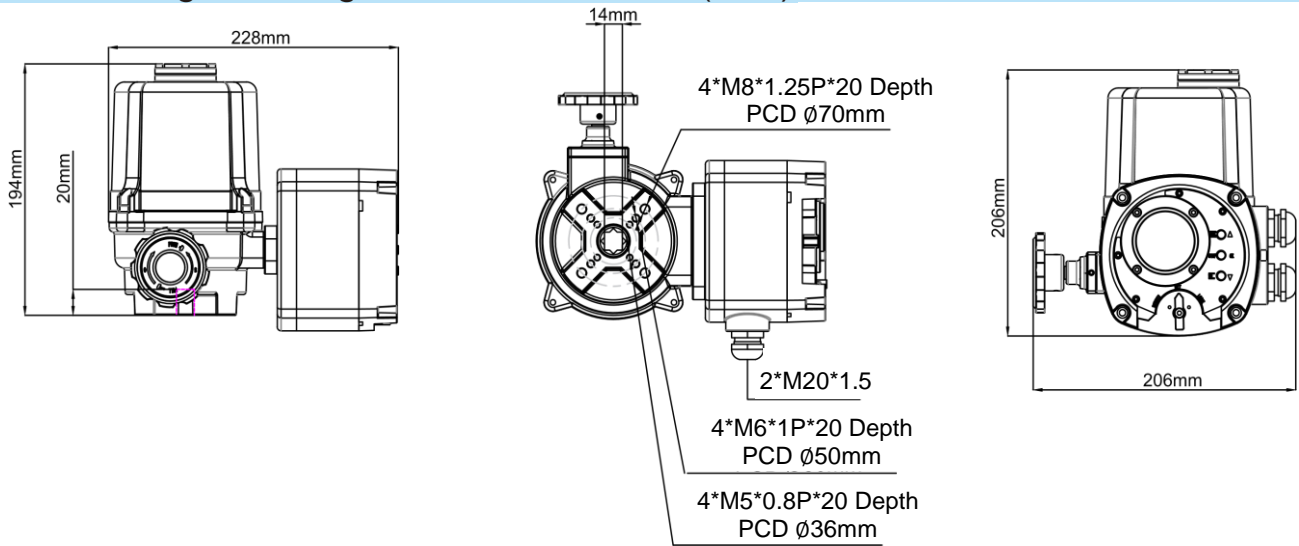


## VTM3S Intelligent Integration Dimensions (mm)

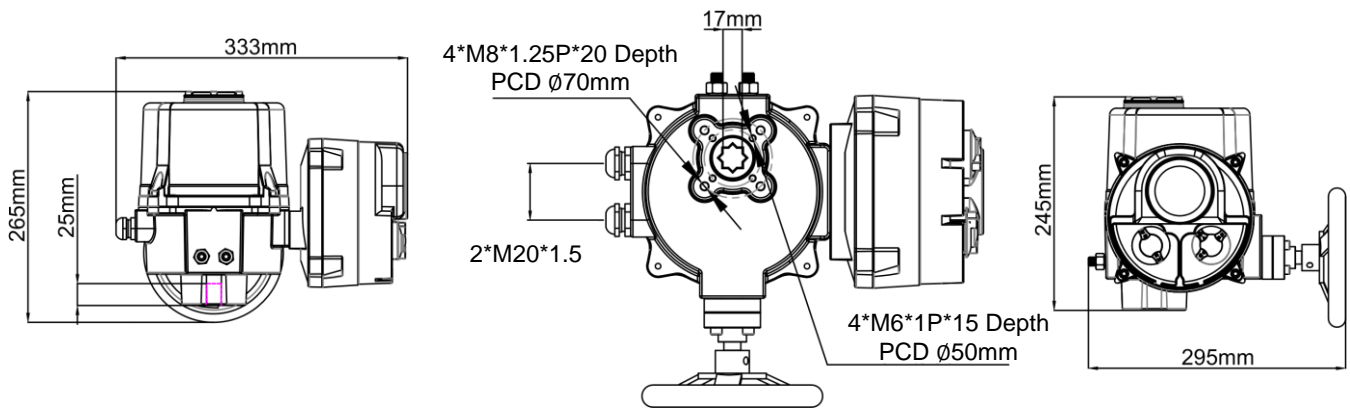


# VTMH/VTM Intelligent Integration Dimensions

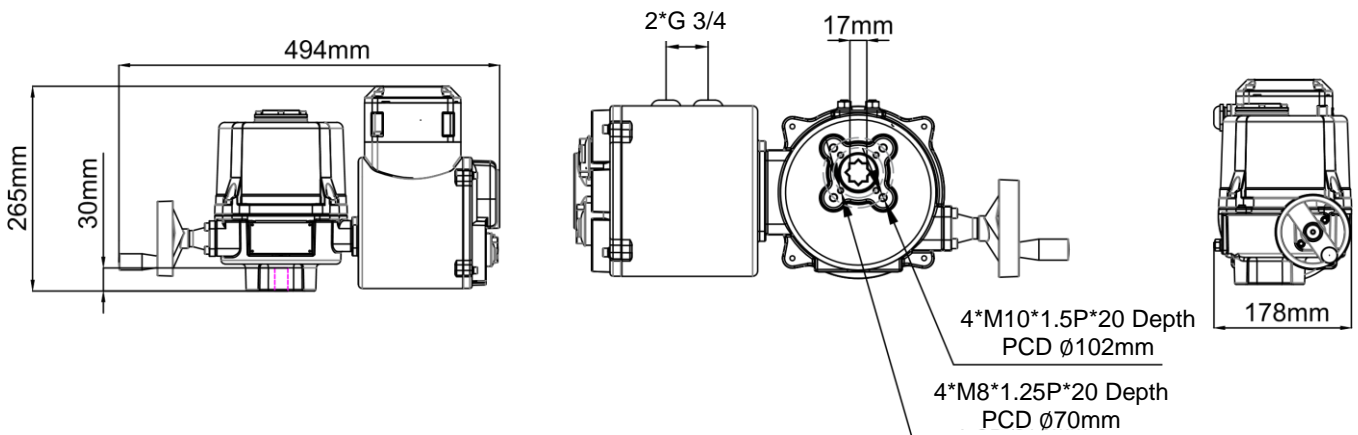
## VTM1H Intelligent Integration Dimensions (mm)



## VTM2H Intelligent Integration Dimensions (mm)

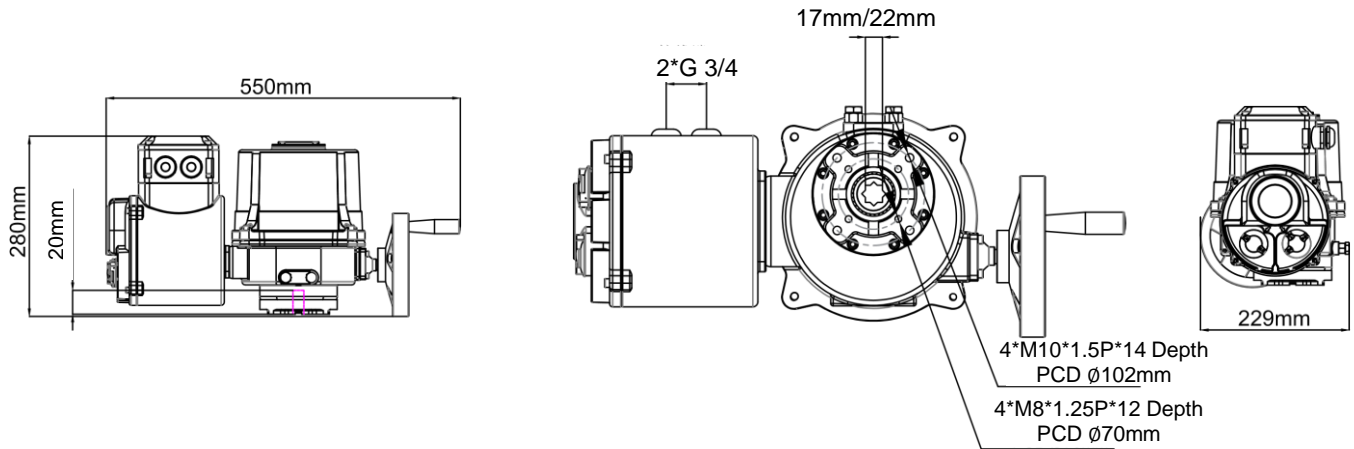


## VTM2 Intelligent Integration Dimensions (mm)

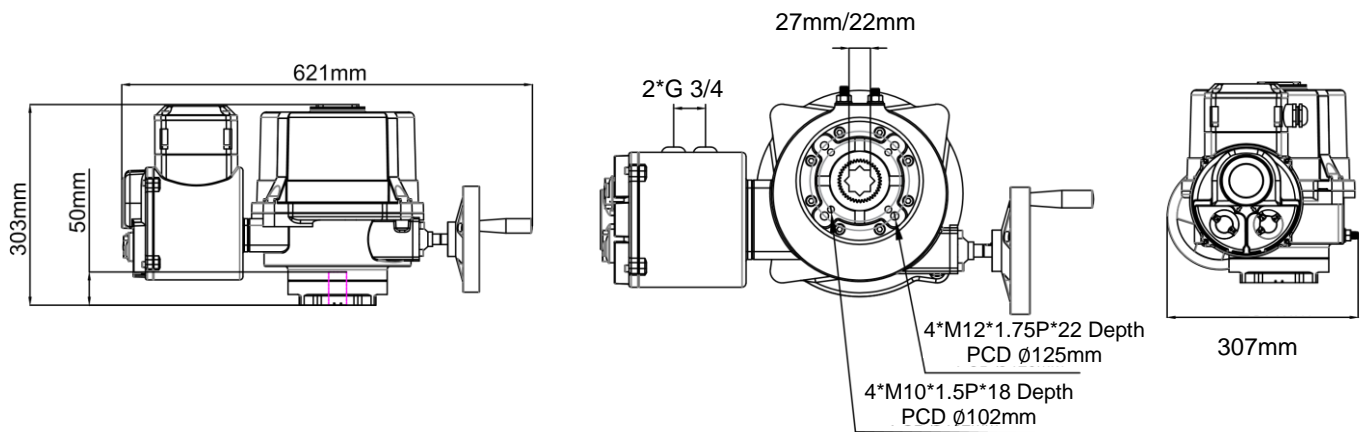


# VTM Intelligent Integration Dimensions

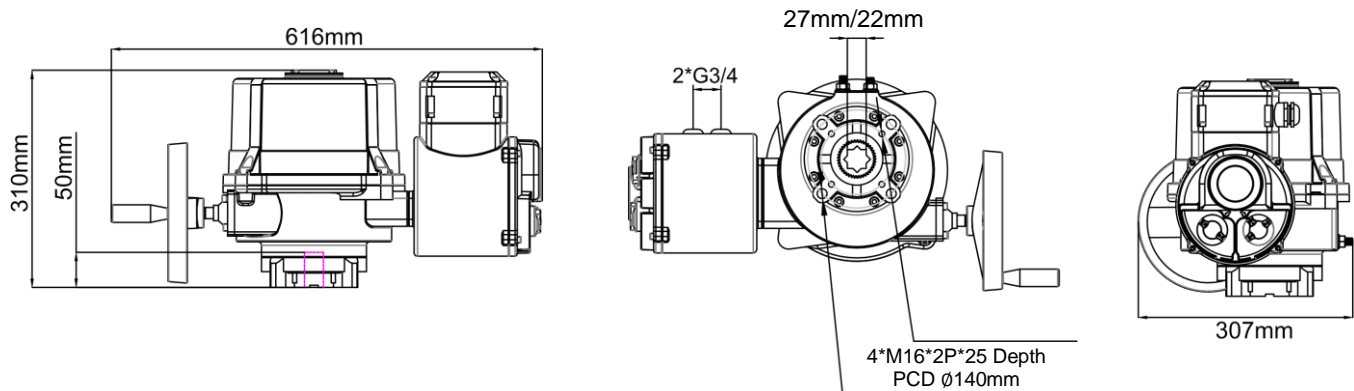
## VTM3 Intelligent Integration Dimensions (mm)



## VTM4 Intelligent Integration Dimensions F10-F12 (mm)

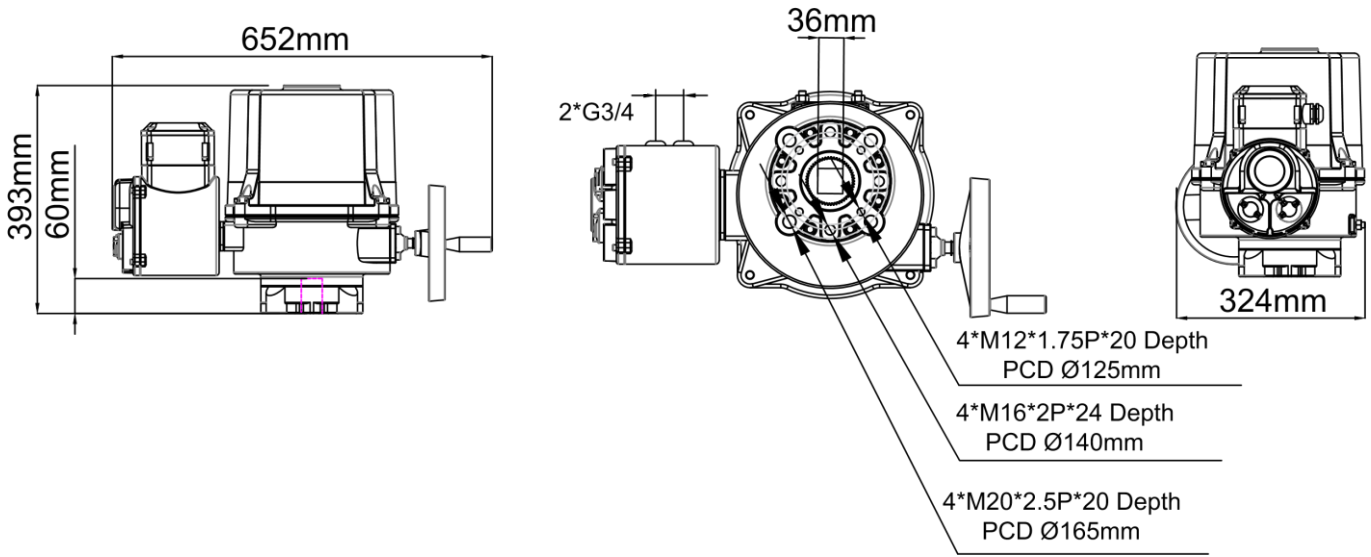


## VTM4 Intelligent Integration Dimensions F14 (mm)

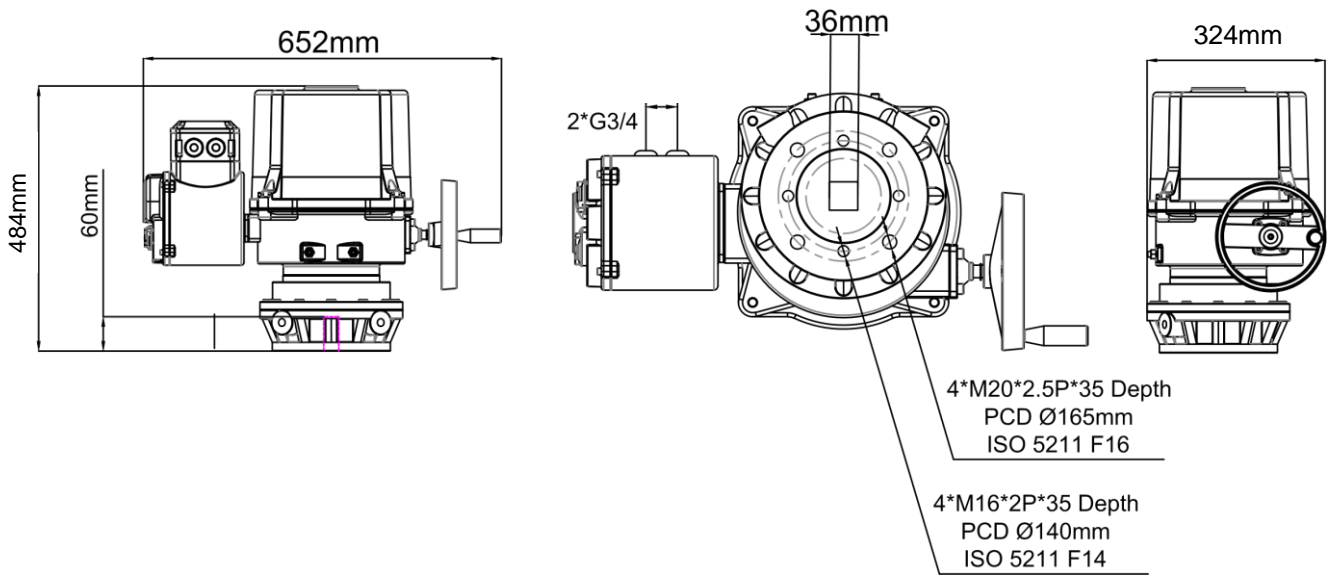


# VTM Intelligent Integration Dimensions

## VTM5 Intelligent Integration Dimensions (mm)



## VTM5+G Intelligent Integration Dimensions (mm)





Modulating Type Selection									
VTM	T	K			V			B	
	N.m	M1	M2	M3	D	E	F	Options	
VTM0S	20	•	—	—	—	—	•	And Special requirements such as color customization	
VTM1S	35	•	•	•	—	—	•		
VTM2S	100	•	•	•	•	•	•		
	200	•	•	•	•	•	•		
VTM3S	350	•	•	•	•	•	•		
	500	•	•	•	•	•	•		
VTM1H	50	•	•	•	—	—	•		X
	70	•	•	•	—	—	•		A
VTM2H	100	•	•	•	•	•	•		B
	200	•	•	•	•	•	•		
VTM2	100	•	•	•	•	•	•		
	200	•	•	•	•	•	•		
VTM3	300	•	•	•	•	•	•		
	400	•	•	•	•	•	•		
	500	•	•	•	•	•	•		
VTM4	800	•	•	•	•	•	•		
	1000	•	•	•	•	•	•		
	1500	•	•	•	•	•	•		
VTM5	2300	•	•	•	•	•	•		
	4000	•	•	•	•	•	•		
VTM5+G	4000	•	•	•	•	•	•		
	5000	•	•	•	•	•	•		

ICM Type Selection								
VTM	T	K	V				B	
	N.m	ICM	D	E	F	I	Options	
VTM0S	20	—	—	—	—	—	And Special requirements such as color customization	
VTM1S	35	•	—	—	•	—		
VTM2S	100	•	•	•	•	•		
	200	•	•	•	•	•		
VTM3S	350	•	•	•	•	•		
	500	•	•	•	•	•		
VTM1H	50	•	—	—	•	—		X
	70	•	—	—	•	—		A
VTM2H	100	•	•	•	•	•		B
	200	•	•	•	•	•		
VTM2	100	•	•	•	•	•		
	200	•	•	•	•	•		
VTM3	300	•	•	•	•	•		
	400	•	•	•	•	•		
	500	•	•	•	•	•		
VTM4	800	•	•	•	•	•		
	1000	•	•	•	•	•		
	1500	•	•	•	•	•		
VTM5	2300	•	•	•	•	•		
	4000	•	•	•	•	•		
VTM5+G	4000	•	•	•	•	•		
	5000	•	•	•	•	•		

\*Available: • Not available: -

\*Information above is for reference only, please consult our customer service for details.

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