BRITER
布瑞特科技

Product Catalog

(V2.3)

ABSOLUTE ENCODER | PULL ROPE DISPLACEMENT SENSOR

Shenzhen Briter Technology CO,. LTD

CONTENT

ABOUT US

Shenzhen Briter Technology is a high-end sensor and controller R & D and manufacturing enterprise committed to mastering the core technology.

Our company has 10 years of R&D experience, has mature technology accumulation, has a number of patents, is the domestic encoder brand leader. Our products have been successfully applied to various industries and fields, such as CNC machine tools, medical equipment, servo turntables, metallurgical machinery, textile machinery, coal machinery and other industrial automation industries, aviation, aerospace, automotive, laboratory, robot and other fields, product performance and quality is excellent.

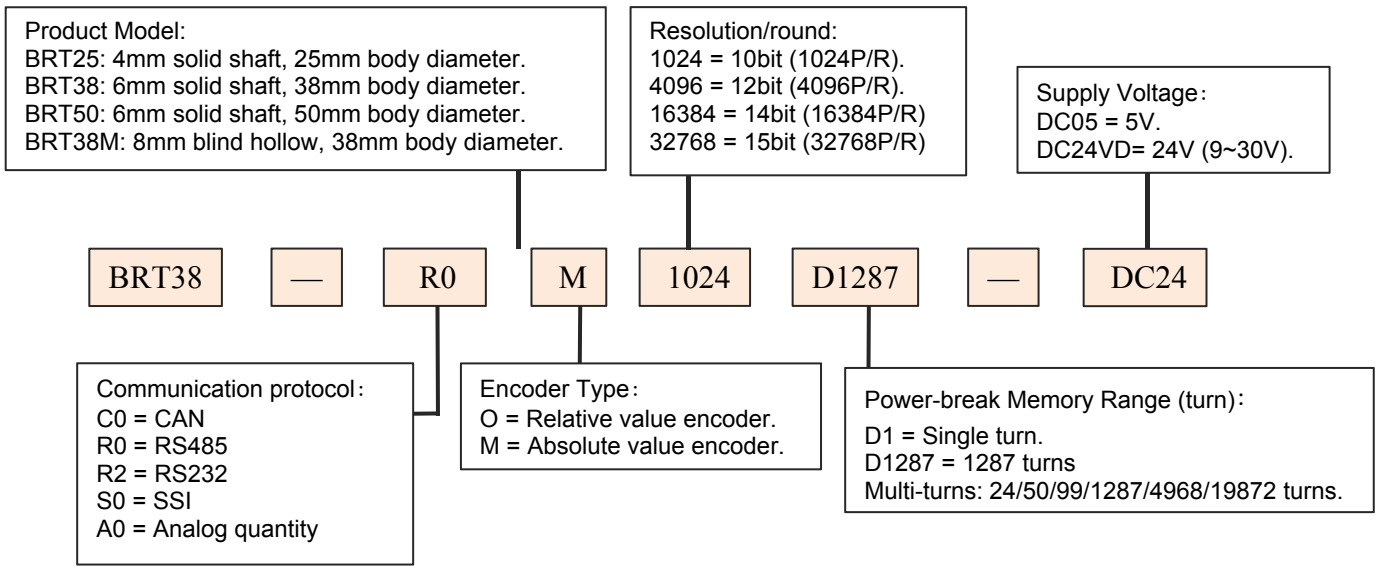
Our company has mature production lines and sufficient production and supply capacity. The purpose of the company is that product quality comes first, and it is recognized by the industry with integrity, strength and product quality.

Company Qualification

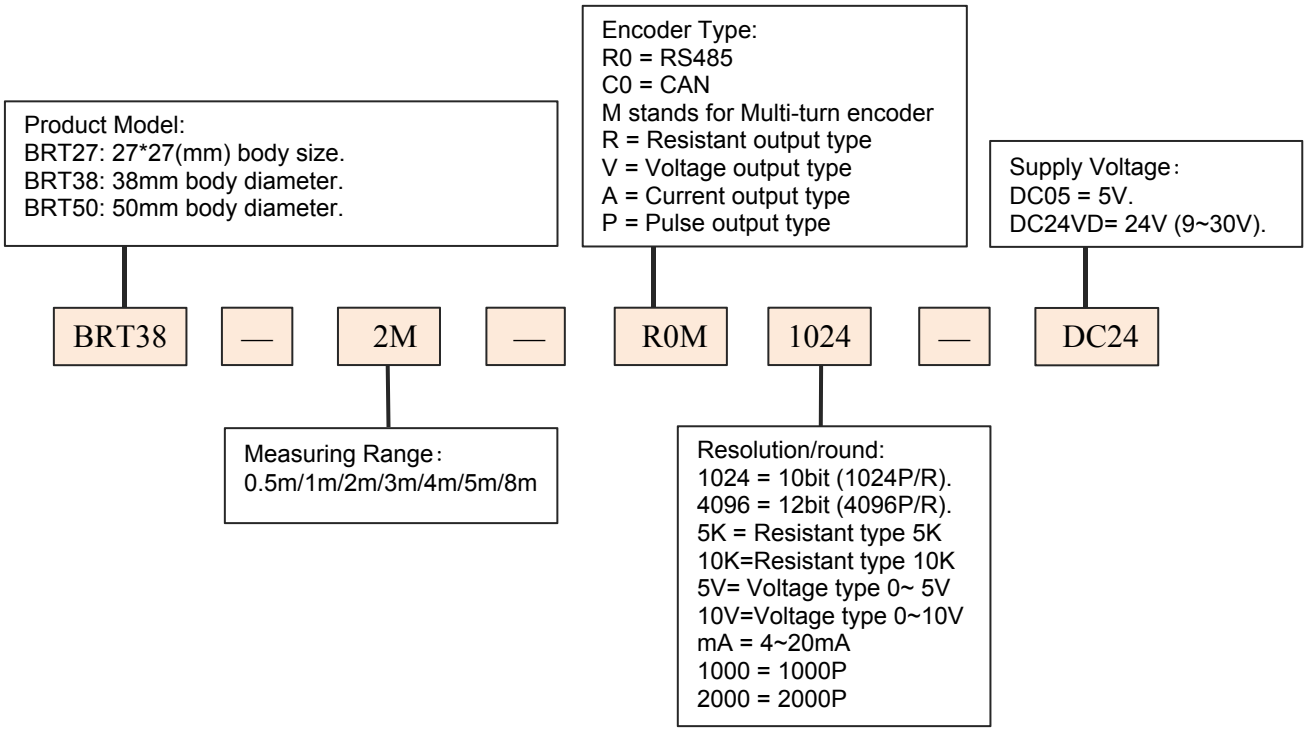
Model Description

The product types of this catalog are BRT series RS485/CAN/SSI/ 0-5V/ 0-10V/ 4-20mA single-turn and RS485/CAN multi-turn absolute encoders; BRT series pull rope displacement sensors, RS485/CAN digital signal output type, pulse signal output, 5KΩ/ 10KΩ resistance output type, 5V/ 10V Voltage output type and 4~20mA Current output type.

Absolute Encoder Model Description

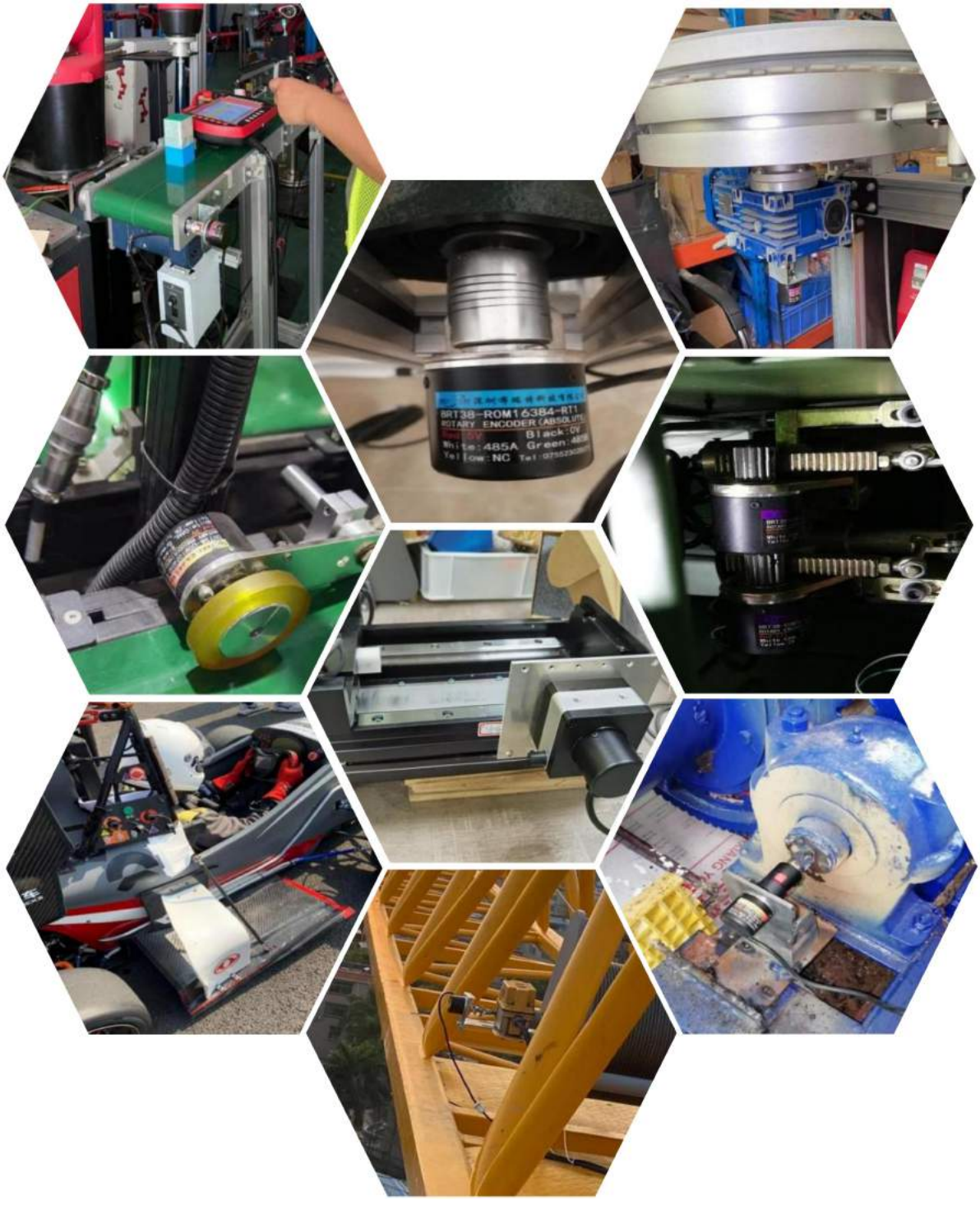


Pull Rope Displacement Sensor Model Description



Customer Application Feedback

Absolute rotary encoders are widely used in tower cranes, mining cranes, construction lifts, machine tools, 3D printers, automatic assembly lines, industrial robots, printing machinery, packaging machinery, logistics machinery, mobile advertising screen slides and other equipment height, stroke, angle and speed reliable/ accurate measurement.



一、Single-turn Absolute Encoder （RS485/CAN/SSI/ 5V/ 10V/ 4-20mA）

1.1 Product Advantages

● RS485, CAN, SSI digital communication signal output, 5V/ 10V Voltage output and 4-20mA Current output, outputs absolute position value.

● RS485 and RS232 Adopt standard Modbus-RTU communication protocol, support Kingview, Intouch, FIX, synall and other popular software, and can realize data communication with equipment and systems of international famous brands such as AB, Siemens, Schneider, GE etc.

● CAN interface has real-time two-way communication capability, and CAN interface rotary encoder is compatible with CAN2.0 electrical specification. The user can set the ID address, zero point, data transmission mode and other parameters of the encoder through the command, which is the friendliest intelligent rotary encoder at present.

● If the power always keeps on, the single-turn encoder can be used as an electronic multi-turn encoder (but this function does not have the power-off memory feature), the total turns can be counted up to one million turns or more. Now that it has the measuring speed function, which is easy for users to calculate. When it is used as a single turn absolute encoder, any position within the measuring range is unique, even if there is interference or movement after power break, the position information will not be lost.

● The resolution of the single-turn absolute encoder is 10bit (1024P/R), 12bit(4096P/R), 14bit(16384P/R) and 15bit(32768P/R). A resolution of 0.01 degree can be achieved within the range.

● All parameters can be set through the communication of the computer, and the zero can be set at any position, so when installing the encoder, the equipment can stay at any position, the connecting shaft can be fixed without considering the rotation position of the encoder, and can be automatically corrected by a zeroing operation at the external lead or through RS485/ CAN/ SSI communication.

● The existing protection grade of encoder is IP54, IP67 and IP68. The IP67 and IP68 protection grade encoders had passed the waterproof reliability testing, which can be safely used outdoors.

1.2 Basic Product Parameters of Single-turn Absolute Encoder

1.2.1 Basic Product Parameters of Single-turn Absolute Encoder （Standard Type）

1.2.1.1 digital communication signal output.

Model	BRT**–R0M				BRT**–C0M			BRT**–S0M		
Communication protocol	RS485 （Modbus RTU）				CANbus			SSI		
Shaft type	solid shaft	solid shaft	solid shaft	blind hollow	solid shaft	solid shaft	blind hollow	solid shaft	solid shaft	blind hollow
Shaft diameter	4mm	6mm	8mm	8mm	6mm	8mm	8mm	6mm	8mm	8mm
Body diameter	25mm	38mm	50mm	38mm	38mm	50mm	38mm	38mm	50mm	38mm
Resolution	1024P/R(10bit), 4096P/R(12bit), 16384P/R(14bit), 32768P/R(15bit)							1024P/R(10bit), 4096P/R(12bit)		
Supply Voltage	DC5V， DC24V（9~30V）							DC5V		
Baud rate	9600~115200 (default 9600)				50K–1000K (default 500K)			—		
Encoder ID	1~127 (default 1)				1~255 (default 1)			—		
Output type	Tail	From Side								

1.2.1.2 Analog signal output.

Model	BRT**–V0M			BRT**–A0M		
Analog	0–5V			4–20mA		
Shaft type	solid shaft	Solid shaft	blind hollow	solid shaft	solid shaft	blind hollow
Shaft diameter	6mm	8mm	8mm	6mm	8mm	8mm
Body diameter	38mm	50mm	38mm	38mm	50mm	38mm
Resolution	4096P/R(12bit)					
Supply Voltage	DC12V–24V					
Output type	From Side					

1.2.2 Basic Product Parameters of Single-turn Absolute Encoder （IP67 Protection Grade）

Model	BRT**–R0M		BRT**–C0M		BRT**–S0M	
Communication protocol	RS485 （Modbus RTU）		CANbus		SSI	
Shaft type	solid shaft	solid shaft	solid shaft	solid shaft	solid shaft	solid shaft
Shaft diameter	6mm	8mm	6mm	8mm	6mm	8mm
Body diameter	40mm	50mm	40mm	50mm	40mm	50mm
Resolution	1024P/R(10bit)，4096P/R(12bit)，16384P/R（14bit），32768P/R(15bit)				1024P/R(10bit)，4096P/R(12bit)	
Supply Voltage	DC5V， DC24V（9~30V）				DC5V	
Baud rate	9600~115200 (default9600)		50K–1000K (default500K)		—	
Encoder ID	1~127 (default1)		1~255 (default1)		—	
Output type	From Tail	From Side	From Tail	From Side	From Tail	From Side

1.2.3 Basic Product Parameters of Single-turn Absolute Encoder （IP68 Protection Grade）

Model	BRT**–R0M	BRT**–C0M	BRT**–S0M
Communication protocol	RS485 （Modbus RTU）	CANbus	SSI
Shaft type	Solid Shaft		
Shaft diameter	6mm		
Body diameter	27*27*29（mm）		
Resolution	1024P/R(10bit), 4096P/R(12bit), 16384P/R(14bit), 32768P/R(15bit)		1024P/R(10bit)，4096P/R(12bit)
Supply Voltage	DC5V， DC24V（9~30V）		DC5V
Baud rate	9600~115200 (default 9600)	50K–1000K (default 500K)	—
Encoder ID	1~127 (default 1)	1~255 (default 1)	—
Output type	From Side		

1.3 Wiring Connection

Communicate Protocol	RS485	RS232	CAN	SSI	Voltage Output	Current output
Red wire	Power Supply					
Black wire	GND					
Green wire	485B	TX	CANH	CLK	0-5V/ 0-10V	4-20 mA
White wire	485A	RX	CANL	DO	/	/
Yellow wire	Z0	Z0	Z0	CS	/	/

1. Please pay attention to the voltage value (5V, 24V) on the encoder label before power on. Make sure to supply power accordingly.
2. Set zero position: connect yellow wire to ground (black wire) more than 100mS.
3. Please do not connect the yellow wire to anywhere during working except when it is needs to be set zero position.
4. Restore the factory setting function: after power off, connect the yellow wire to ground (the black wire). Power on again, hold for 2 minutes, it can be reset after 2 minutes, power off, remove the yellow wire.

1.4 Single-turn Absolute Encoder Electrical Characteristics

Electrical Parameters			
Working Current	50mA	Linearity	0.1%
Kernel refresh cycle	50uS	Electrical life	> 100000 h
Mechanical parameters			
Shell/ flange material（Standard Type）		Zinc-nickel coated steel/ Aerospace aluminum	
Shaft material（Standard Type）		Stainless steel	
Shell/ flange material（IP67/ IP68 Type）		Stainless iron	
Shaft material（IP67/ IP68 Type）		Stainless steel	
Bearing material		Bearing steel	
Maximum load of the Shaft		Axial 20 N, Radial 80 N	
Maximum mechanical speed		1000RPM	
Starting torque (Standard type, IP68 type)		0.006Nm	
Starting torque (IP67 type)		0.6Nm	
Weight		⩽200 g（include 1.2meter shielded wire）	
Environment Parameters			
Operating temperature		-20 ～ + 85°C	
Storage temperature		-20 ～ + 85 °C	
Humidity		98 % (No condensation)	
Standard Type Waterproof Level		Shell: IP54； Shaft， Bearing: IP65	
High Protection Grade		IP67/ IP68 protection for the entire body	

二、Multi-turn Absolute Encoder（RS485/CAN）

2.1 Product Advantages

● RS485, CAN digital communication signal output, digital output absolute position value.

● RS485 interface adopt standard Modbus-RTU communication protocol, support Kingview, Intouch, FIX, synall and other popular software, and can realize data communication with equipment and systems of international famous brands such as AB, Siemens, Schneider, GE etc.

● CAN interface has real-time two-way communication capability, and CAN interface rotary encoder is compatible with CAN2.0 electrical specification. The user can set the ID address, zero point, data transmission mode and other parameters of the encoder through the command, which is the friendliest intelligent rotary encoder at present.

● Full-scale true multi-turn encoder composed of precision reduction gears, no battery needed, power-break memory; any position within the range is unique, even if there is interference or movement after power break, the number of turns will not be lost .

● The resolution of an multi-turn encoder is 10bit(1024P/R) or 12bit(4096P/R). and the number of turns (Memorable range) are 24turns, 50turns, 99turns, 150turns, 1287turns, 4968turns, 19872turns. A resolution of 0.08 degrees can be achieved within the range. The number of turns refers to the range of power break memory, when exceeding the range, the memory starts from the beginning.

● All parameters can be set through the communication of the computer, and the zero position can be set at any position, so when installing the encoder, the equipment can stay at any position, the connecting shaft can be fixed without considering the rotation position of the encoder, and can be automatically corrected by a zeroing operation at the external lead or through RS485/ CAN communication.

● The existing waterproof grade of encoder is IP54, IP67 and IP68. The IP67 and IP68 protection grade encoders had passed the waterproof reliability testing, which can be safely used outdoors.

2.2 Basic Product Parameters of Multi-turn Absolute Encoder

2.2.1 Basic Product Parameters of Multi-turn Absolute Encoder （Standard Type）

Model	BRT**–R0M			BRT**–C0M		
Communication protocol	RS485 （Modbus RTU）			CANbus		
Shaft type	solid shaft	solid shaft	blind hollow	solid shaft	solid shaft	blind hollow
Shaft diameter	6mm	8mm	8mm	6mm	8mm	8mm
Body diameter	38mm	50mm	38mm	38mm	50mm	38mm
Memorable Range	Multi–turn: 24turns, 50turns, 99turns, 150turns, 1287turns, 4968turns, 19872turns					
Resolution	1024P/R(10bit), 4096P/R(12bit)					
Supply Voltage	DC 5V， DC 24V（9~30V）					
Baud rate	9600~115200 (default 9600)			50K–1000K (default 500K)		
Encoder ID	1~127 (default 1)			1~255 (default 1)		
Output type	From Side					

2.2.2 Basic Product Parameters of Multi-turn Absolute Encoder （IP67 Protection Grade）

Model	BRT**–R0M		BRT**–C0M	
Communication protocol	RS485 （Modbus RTU）		CANbus	
Shaft type	solid shaft	solid shaft	solid shaft	solid shaft
Shaft diameter	6mm	8mm	6mm	8mm
Body diameter	40mm	50mm	40mm	50mm
Memorable Range	Multi–turn: 24turns, 50turns, 99turns, 150turns, 1287turns, 4968turns, 19872turns			
Resolution	1024P/R(10bit), 4096P/R(12bit)			
Supply Voltage	DC 5V， DC 24V（9~30V）			
Baud rate	9600~115200 (default 9600)		50K–1000K (default 500K)	
Encoder ID	1~127 (default 1)		1~255 (default 1)	
Output type	From Tail	From Side	From Tail	From Side

2.2.3 Basic Product Parameters of Multi-turn Absolute Encoder （P68 Protection Grade）

Model	BRT**–R0M	BRT**–C0M
Communication protocol	RS485 （Modbus RTU）	CANbus
Shaft type	Solid shaft	
Shaft diameter	6mm	
Body diameter	27*27*29（mm）	
Memorable Range	Multi–turn: 24turns, 50turns, 100turns, 528turns, 1056turns	
Resolution	1024P/R(10bit), 4096P/R(12bit)	
Supply Voltage	DC 5V， DC 24V（9~30V）	
Baud rate	9600~115200 (default 9600)	50K–1000K (default 500K)
Encoder ID	1~127 (default 1)	1~255 (default 1)
Output type	From Side	

2.3 Wiring Connection

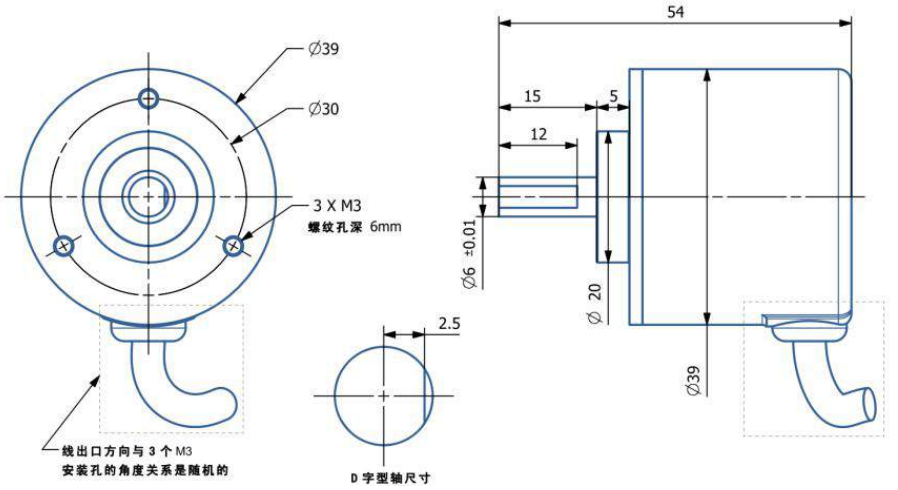
Communicate Protocol	RS485	CAN
Red wire	Power Supply	Power Supply
Black wire	GND	GND
Yellow wire	Z0	Z0
Green wire	485B	CANH
White wire	485A	CANL

1. Please pay attention to the voltage value (5V, 24V) on the encoder label before power on. Make sure to supply power accordingly.
2. Set zero position: connect yellow wire to ground (black wire) more than 100mS.
3. Please do not connect the yellow wire to anywhere during working except when it is needs to be set zero position.
4. Restore the factory setting function: after power off, connect the yellow wire to ground (the black wire). Power on again, hold for 2 minutes, it can be reset after 2 minutes, power off, remove the yellow wire.

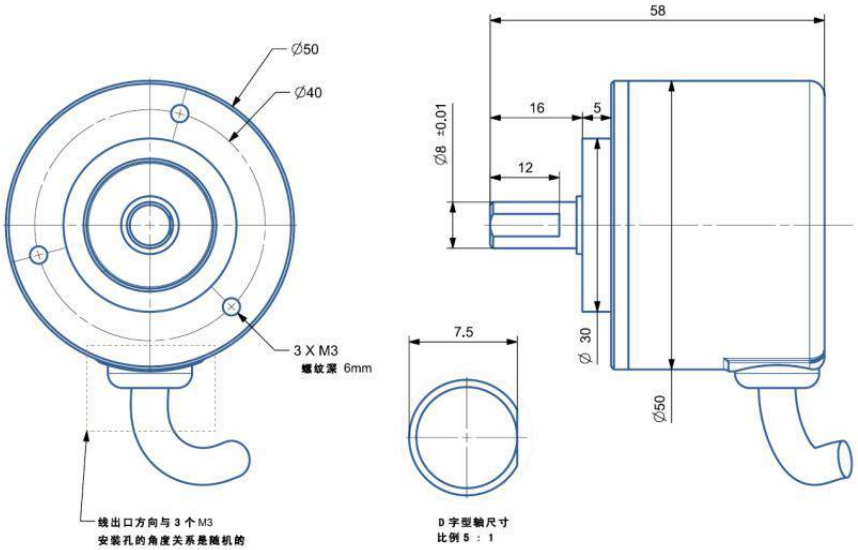
2.4 Multi-turn Encoder Electrical Characteristics

Electrical Parameters			
Working Current	100mA	Linearity	0.1%
Kernel refresh cycle	50uS	Electrical life	> 100000 h
Mechanical parameters			
Shell/ flange material（Standard Type）		Zinc-nickel coated steel/ Aerospace aluminum	
Shaft material（Standard Type）		Stainless steel	
Shell/ flange material（IP67/ IP68 Type）		Stainless iron	
Shaft material（IP67/ IP68 Type）		Stainless steel	
Bearing material		Bearing steel	
Maximum load of the Shaft		Axial 20 N, Radial 80 N	
Maximum mechanical speed		1000RPM	
Starting torque		0.006Nm	
Starting torque (IP67 type)		0.6Nm	
Weight		⩽200 g（include 1.2meter shielded wire）	
Environment Parameters			
Operating temperature		-20 ～ + 85°C	
Storage temperature		-20 ～ + 85 °C	
Humidity		98 % (No condensation)	
Standard Type Waterproof Level		Shell: IP54； Shaft， Bearing: IP65	
High Protection Grade		IP67/ IP68 protection for the entire body	

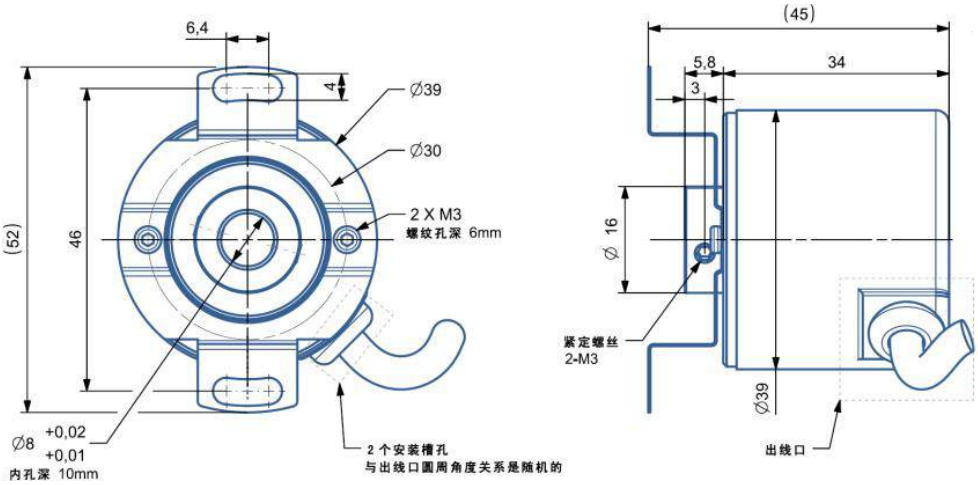
三、Absolute Encoder Mechanical Drawing



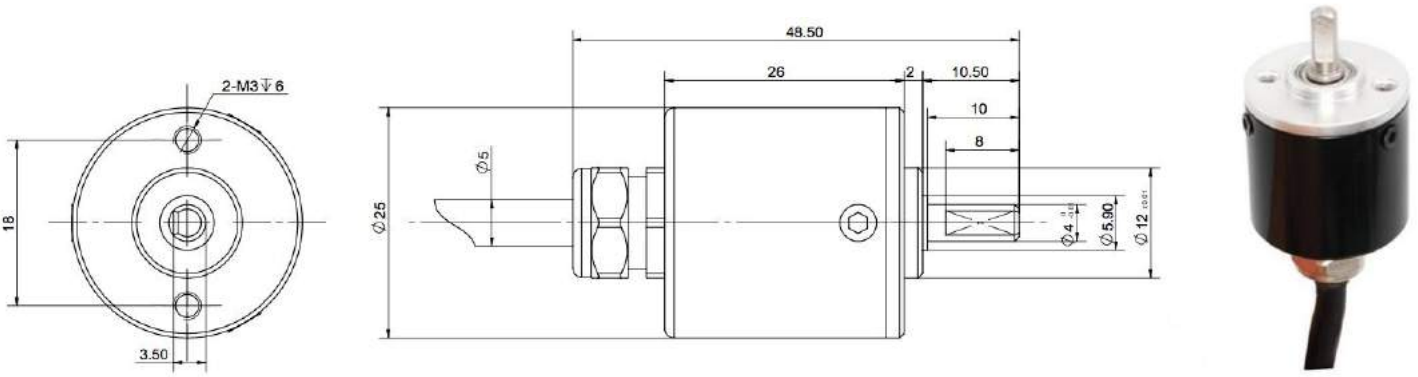
Shaft type: 6mm solid shaft （Standard Type）



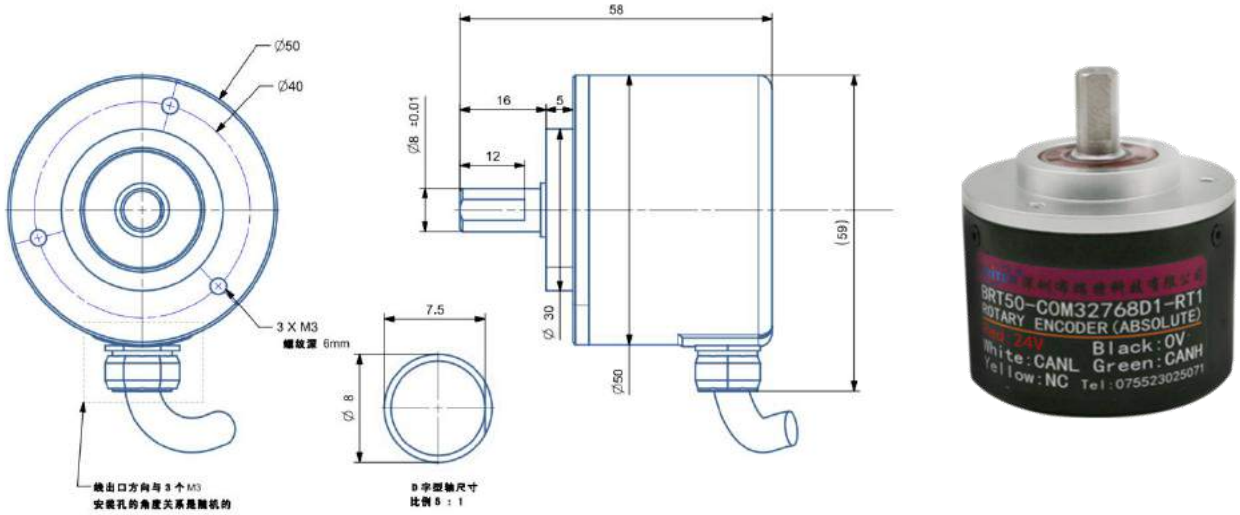
Shaft type: 8mm solid shaft（Standard Type）



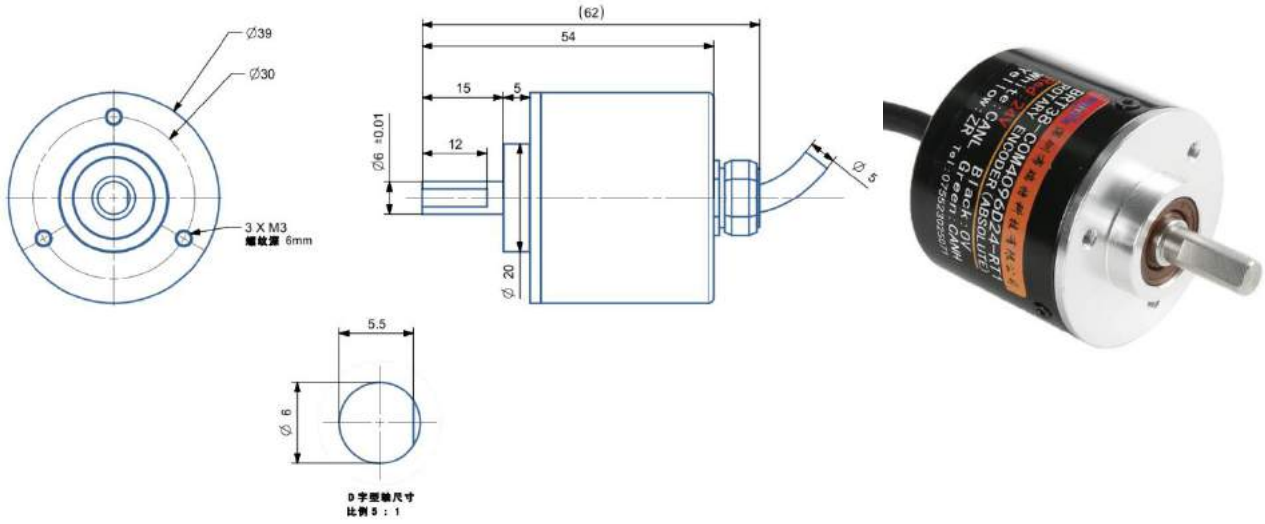
Shaft type: 8mm blind hollow （Standard Type）



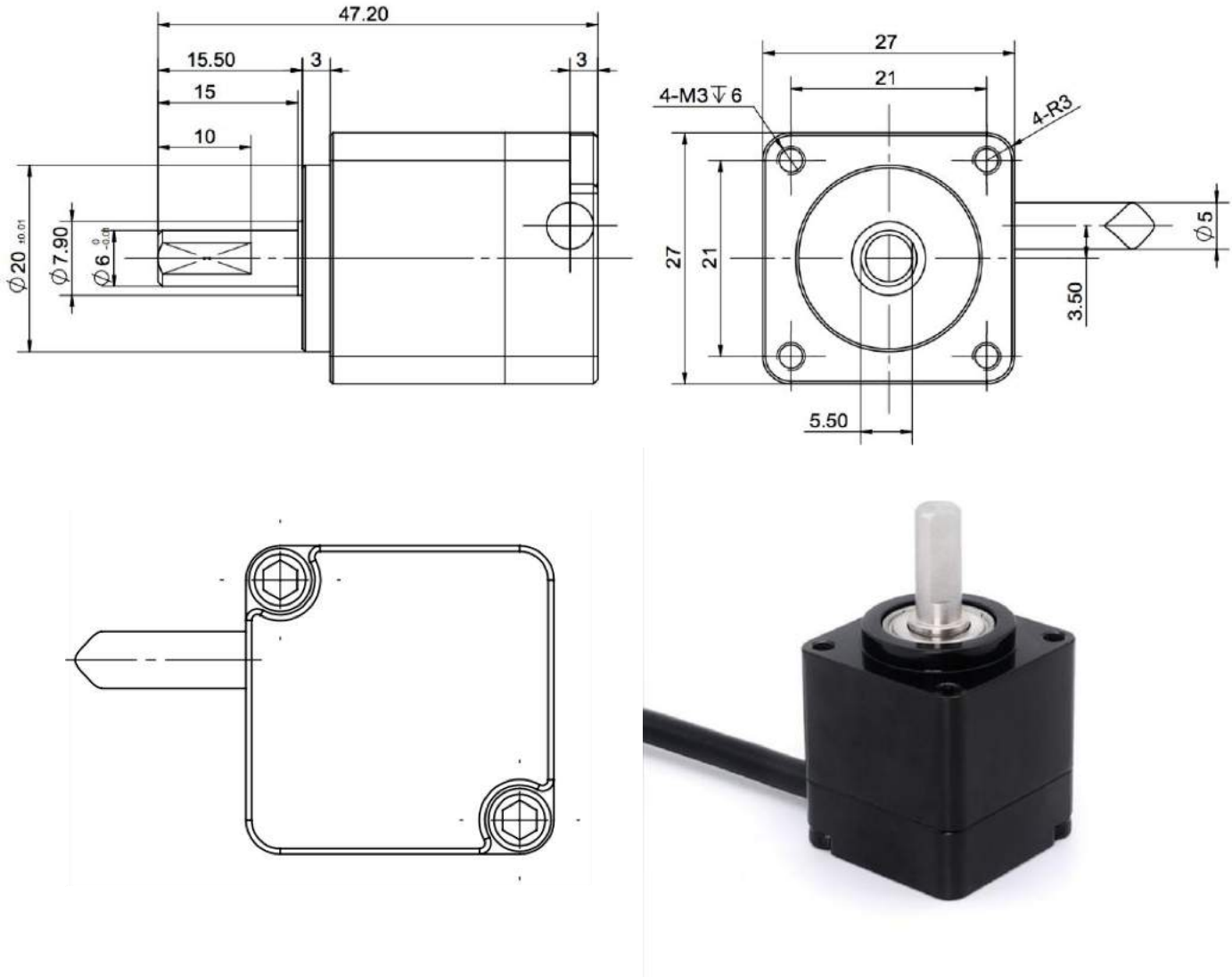
Shaft type: 4mm solid shaft（Standard Type）



Shaft type: 8mm solid shaft（IP67 Protection Grade）



Shaft type: 6mm solid shaft（IP67 Protection Grade）



Shaft type: 6mm solid shaft（IP68 Protection Grade）

Precautions for Installation and Use.

- The encoder is a precision instrument. Please handle it with care and use it carefully, especially for the encoder shaft, please do not knock, hit or pull hard.
- Flexible connectors or elastic supports should be used for the connection between the encoder and the machine, and the rigid damage caused by the non-concentricity of the rigid connection should be avoided.
- Although the encoder itself will not lose the number of turns in the interference environment, it will cause interference to the data in the transmission process, so when there is a motor in the system or a strong electromagnetic interference environment, the encoder power supply should use an isolated power supply and external extension It is best to use double-shielded cables and other measures for the communication line.
- The outer shell of the encoder shell and shielded cable should be well grounded to prevent damage to the encoder circuit due to lightning strikes or high-voltage static electricity!
- Except for the above zero-setting (yellow wire) allows grounding, any other signal wires of the encoder are forbidden to be short-circuited with each other. After power-on, avoid accidentally touching the signal wires, otherwise it may cause permanent damage to the circuit!

四、 Linear Displacement Sensors

4.1 Product Features and Application

● Multiple Interface: RS485 digital signal, CAN digital signal, incremental pulse output, Resistance output type 5KΩ/ 10KΩ, Voltage output type 5V/10V, and Current output type 4-20mA.

● Compact structure, linear measurement of stroke length, small installation space, convenient installation and maintenance.

● Metal shell, dust-proof, vibration-proof, sturdy and durable.

● Grooving and wiring, the stroke of each lap is the same, and the measuring stroke is 0~5 meters.

● 49 strands of imported soft stainless steel rope, corrosion resistant, economical and practical, cost-effective.

● The number of runs can reach 5 million, the linear accuracy is ±0.1%, and the repeatability accuracy is ±0.01%.

● The protection level can reach IP68, and you can rest assured to use it outdoors.

● Typical applications: crane hoist testing, automatic warehousing testing, testing machine testing, all kinds of guide way systems, hydraulic cylinder systems, telescopic systems, pressure machinery, various production lines, textile machinery, packaging machinery, printing machinery, heavy industry machinery and other position measurement control and automatic control.

4.2 Pull Rope Displacement Sensor Parameters

Measuring Range	500mm	1000mm	2000mm	3000mm	4000mm	5000mm
Main Body Size	49*49*40	49*49*40	63*63*40	79*79*40	95*95*40	95*95*40
Inner Wheel	100mm	100mm	150mm	200mm	250mm	250mm

*The inner wheel of IP68 mini pull rope displacement sensor is 60mm.

Output type	Absolute digital signal RS458 (Modbus RTU) / CAN					
Linear precision	±0.1%					
Resolution 10bit (1024P/R)	0.098mm	0.098mm	0.146mm	0.195mm	0.244mm	0.244mm
Resolution 12bit (4096P/R)	0.024mm	0.024mm	0.037mm	0.049mm	0.061mm	0.061mm

Output type	Pulse output Type (A/B or A/B/Z phase)					
Linear precision	±0.05%					
Pulse 1000P/R	0.1mm	0.1mm	0.15mm	0.2mm	0.25mm	0.25mm
Pulse 2000P/R	0.05mm	0.05mm	0.075mm	0.1mm	0.125mm	0.125mm

Output type	Resistance type 5KΩ/ 10KΩ, Voltage output type5V/ 10V, Current output type 4~20mA.
Linear precision	±0.15%

Service times	>5million times
Power	2W
Pull Tension	3N
Max. Working Speed	1m/s
Pull wire diameter	0.8mm

Pull wire material	49 strands of imported steel wire,
Housing material	Aluminum alloy, surface anti-static
Cable Length	1.2meters (selectable)
Protection Grade	IP54/IP65; IP68
Operation temp.	-20~+85°C

How to calculate the length?

When you are using the pull rope displacement sensor, the encoder value feedback by the displacement before and after the pull rope is the position value information, assuming that it is X1 and X2; if the inner wheel circumference of the sensor you purchased is C and the resolution is P, then calculate the length L. The formula is L = (X2-X1) * C / P.

For example, the pull rope displacement sensor you buy has a range of 2000mm and a resolution of 1024. The circumference of the inner wheel is 150mm. The calculated length is L = (X2-X1) * 150/1024.

4.3 Pull Rope Displacement Sensor Selection Table

Selection table for Absolute Signal Type		
Output type	RS485 (Modbus RTU)	CAN
Resolution	10bit (1024P/R) ,12bit (4096P/R)	
Supply Voltage	DC 5V, DC24V (9~30V)	

Selection table for Pulse Type			
Output type	NPN Open collector output	PNP Open collector output	Voltage output
Supply	DC5~24V	DC12~24V	DC5~12V
Resolution	1000P/R, 2000P/R		
Phase	Between output A and output B 90±45°		
Model	E6B2-CWZ6C	E6B2-CWZ5B	E6B2-CWZ3E

4.4 Pull Rope Displacement Sensor Wiring Connection

Absolute Digital Signal Output Type		
Interface	RS485	CAN
Red wire	Power Supply	
Black wire	GND	
Yellow wire	Z0	Z0
Green wire	485B	CANH
White wire	485A	CANL

Pulse Output Type	
E6B2 Series rotary encoder	
Brown wire	Power supply (+Vcc)
Black wire	A Phase
Blue wire	0V (COMMON)
White wire	B Phase
Orange wire	Z Phase

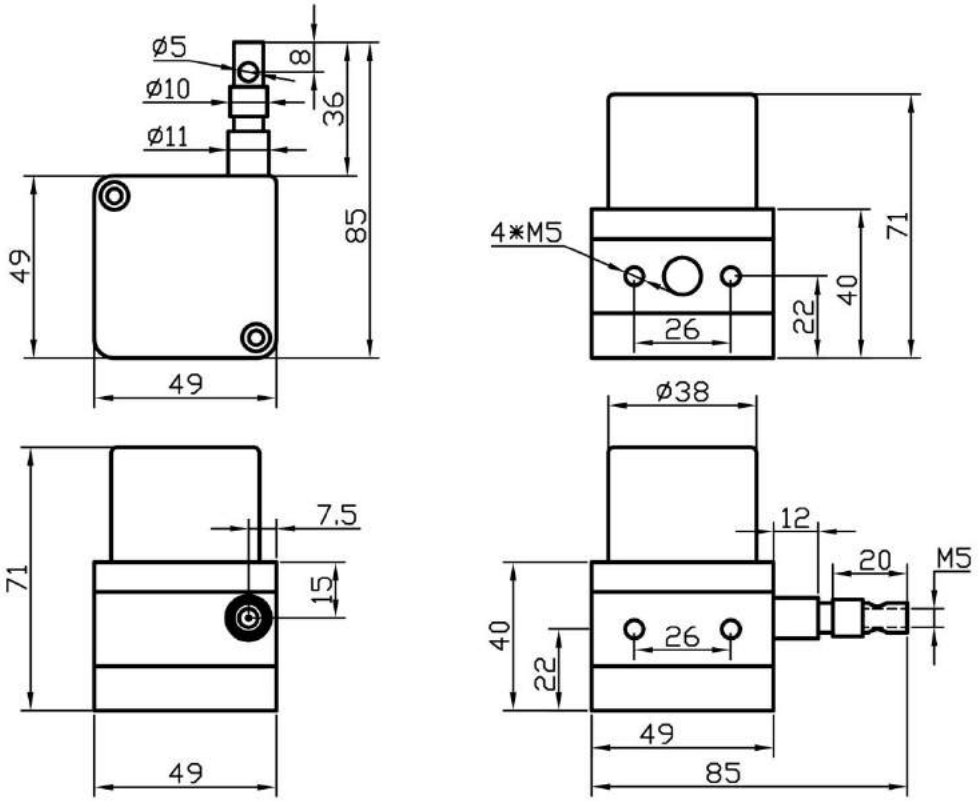
Resistance Output Type (5K/ 10K)


Voltage Output Type (5V/ 10V)	
Red wire	DC 12-24V
Black wire	0V
Green wire	Output

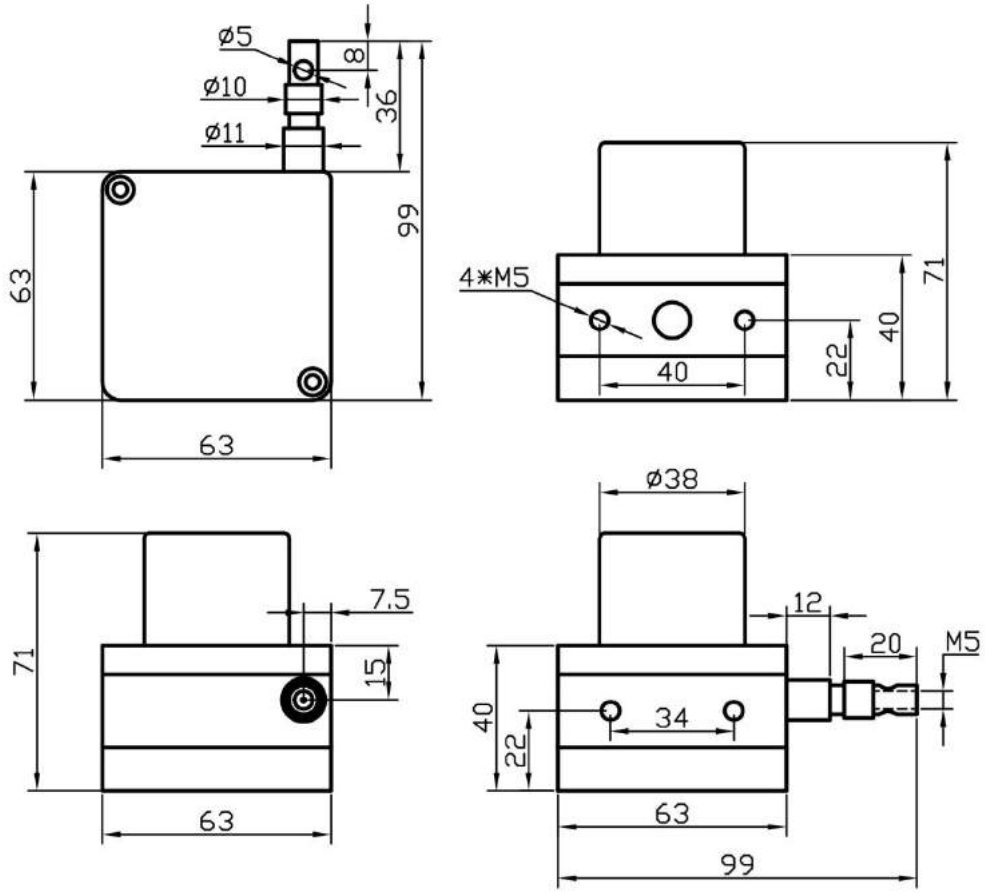
Current Output type (4-20mA)	
Red wire	DC12-24V
Green Wire	Output

4.5 Mechanical Drawing

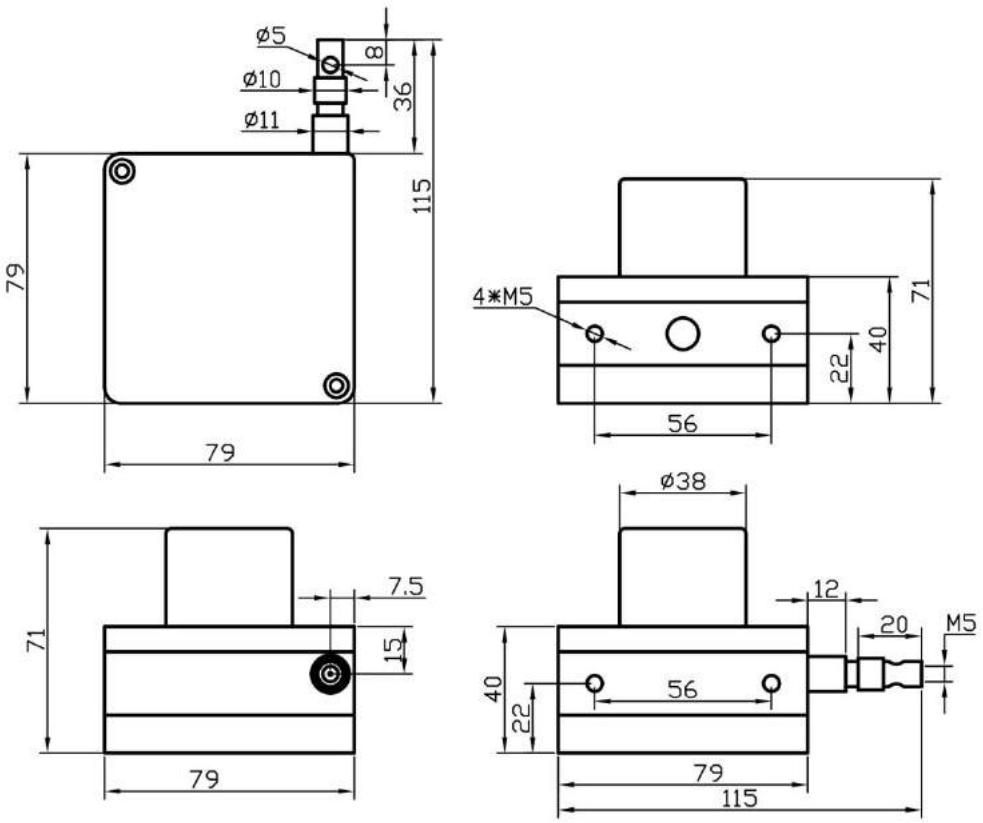
4.5.1 Absolute Signal Output Type (Standard Type)



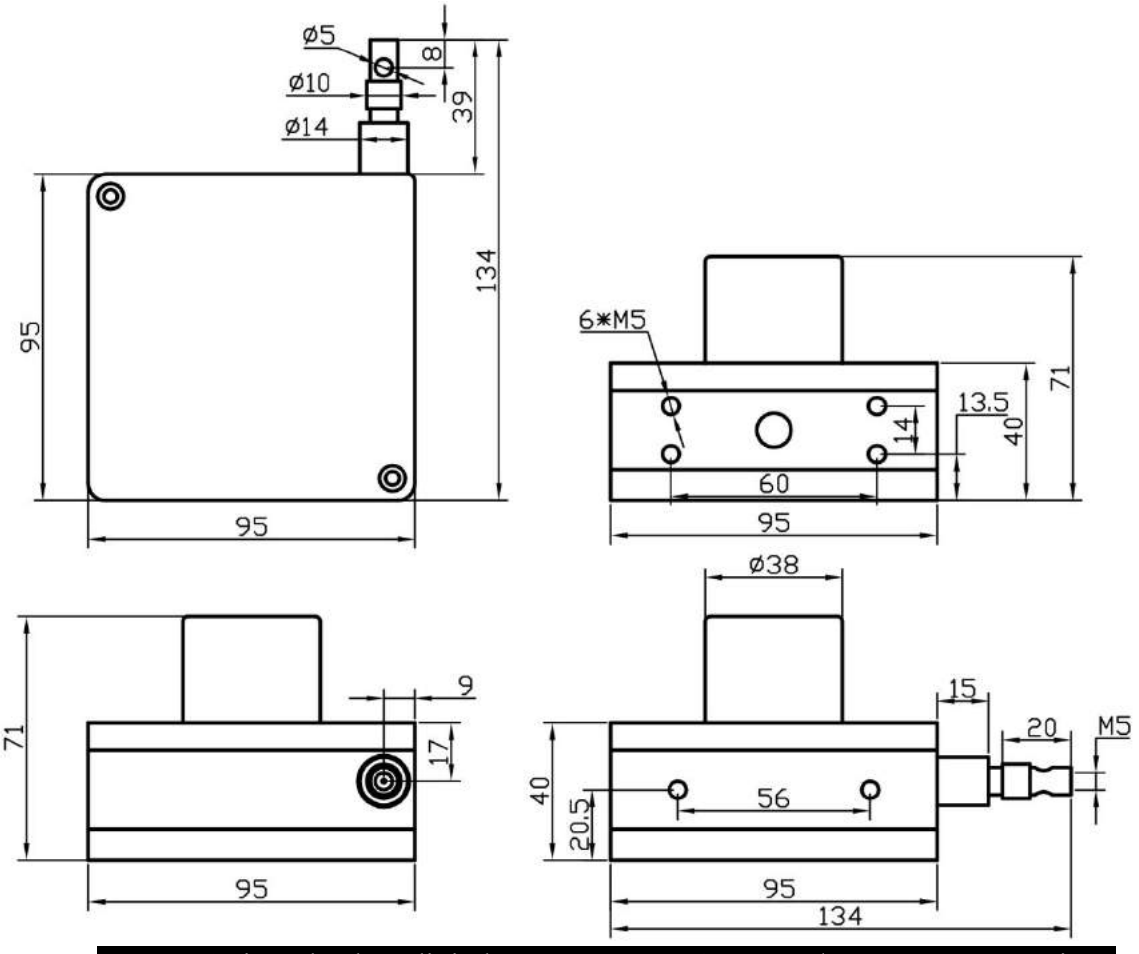
BRT Series Absolute digital output type. 0~500mm / 0~1000mm Drawing



BRT Series Absolute digital output type. 0~2000mm Drawing

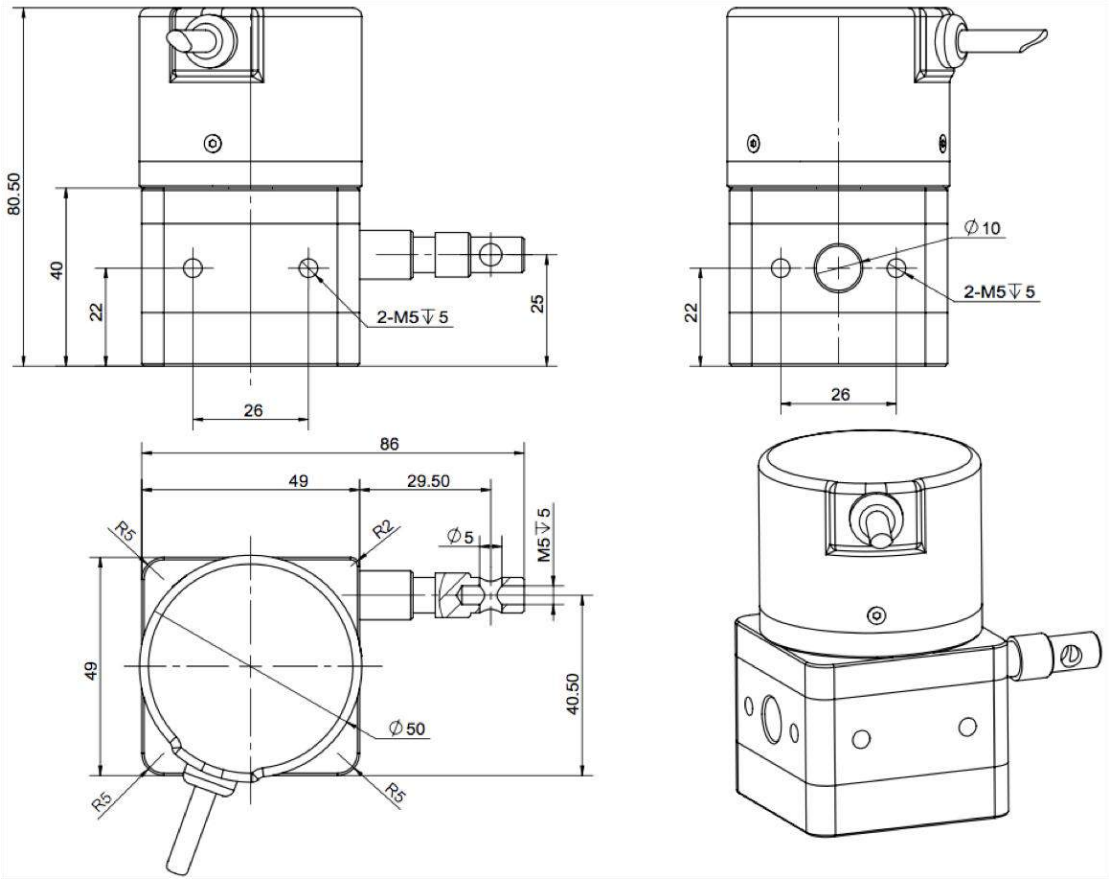


BRT Series Absolute digital output type. 0~3000mm Drawing

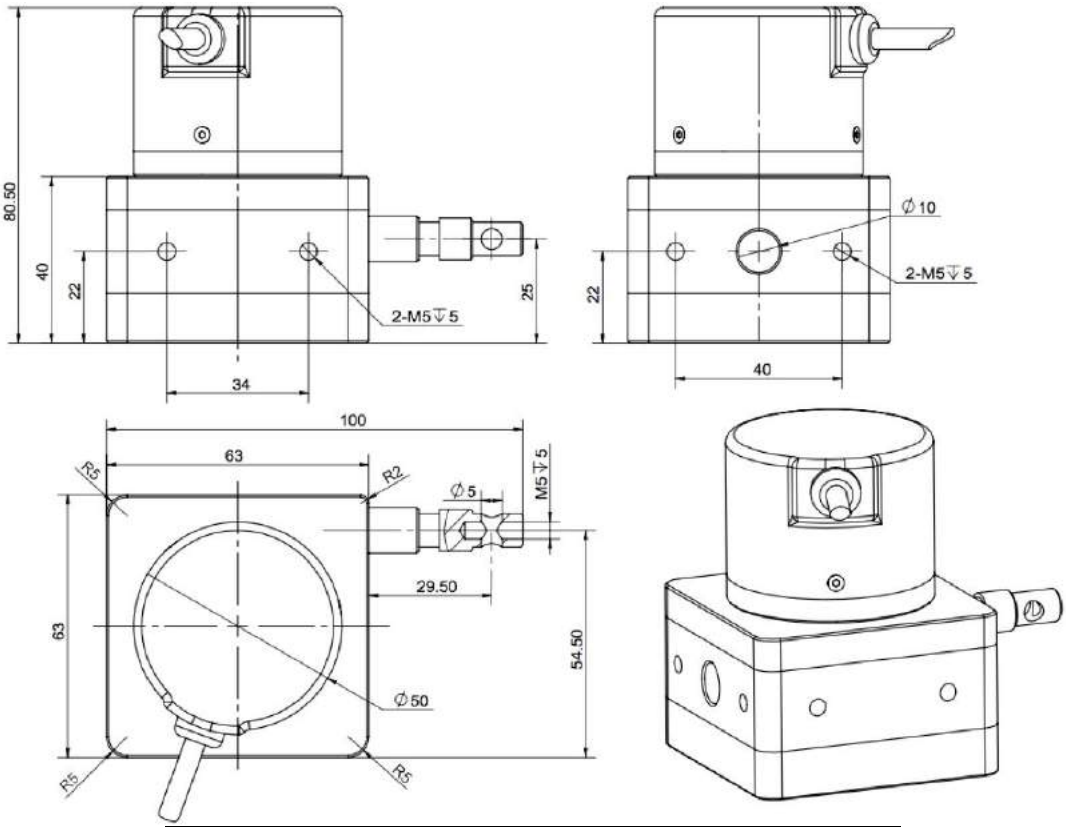


BRT Series Absolute digital output type. 0~4000mm / 0~5000mm Drawing

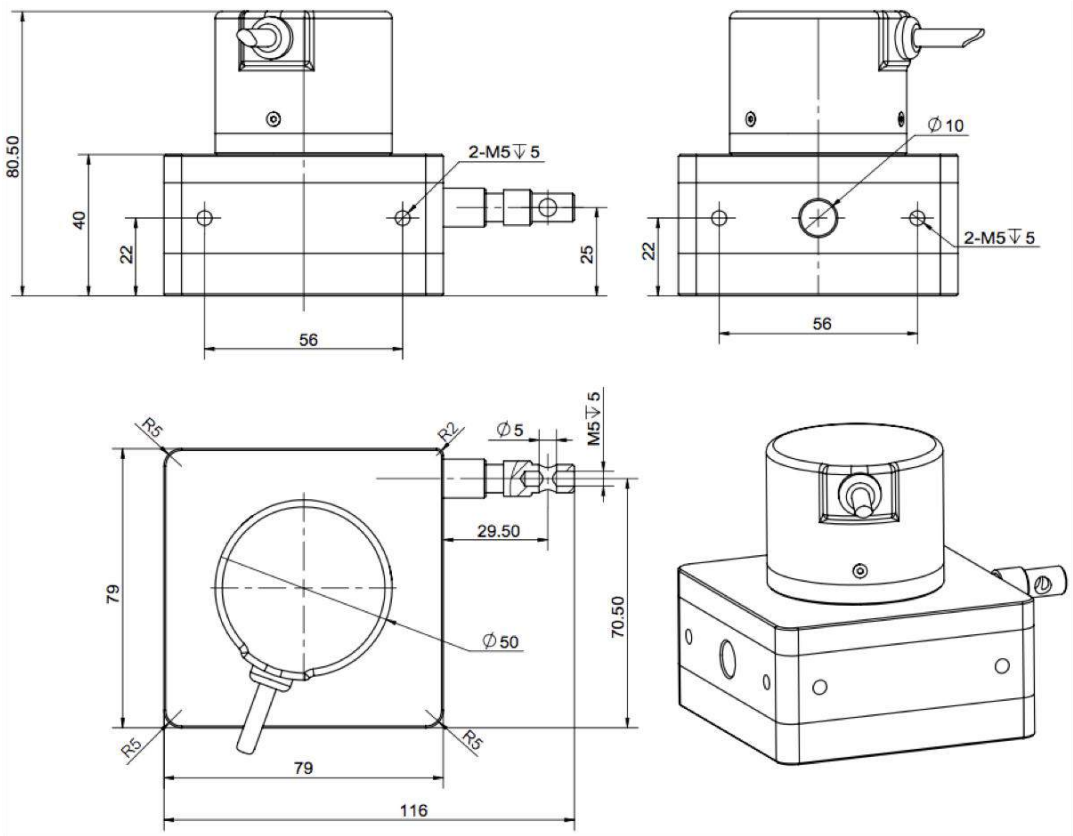
4.5.2 Analog Output Type



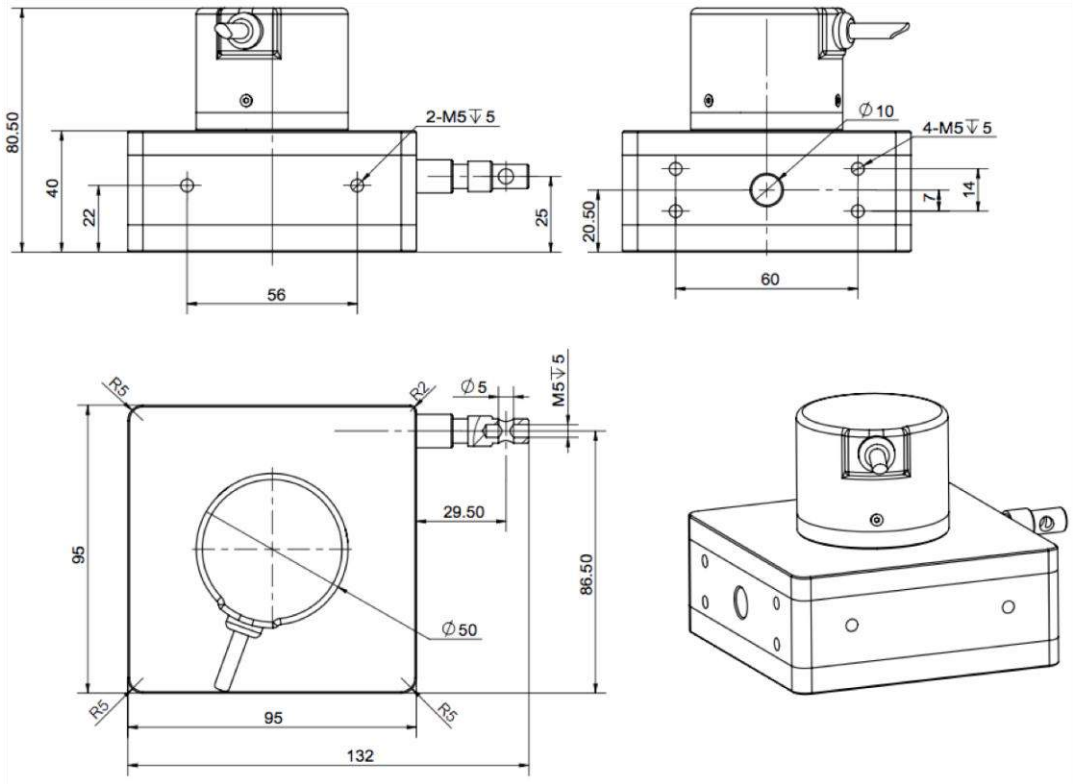
BRT Series Analog output type. 0~500mm / 0~1000mm Drawing



BRT Series Analog output type. 0~2000mm Drawing

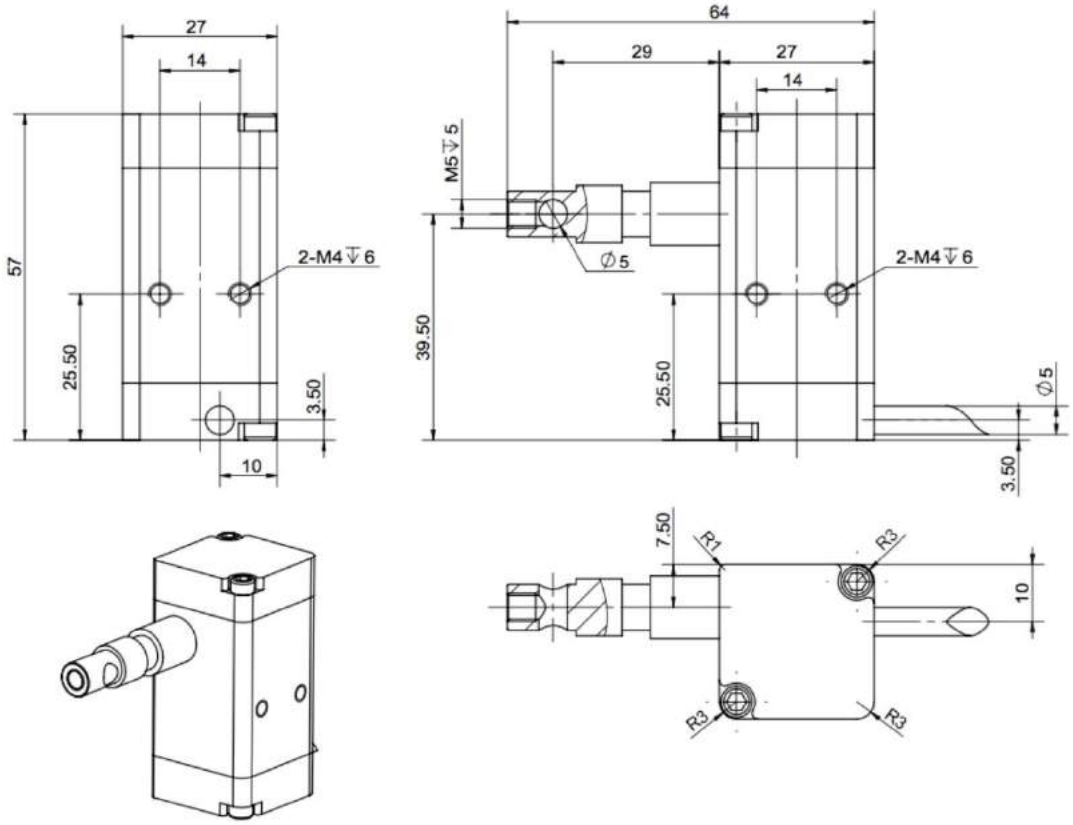


BRT Series Analog output type. 0~3000mm Drawing



BRT Series Analog output type. 0~4000mm/ 0~5000mm Drawing

4.5.3 IP68 Protection Grade Absolute Digital Signal Output Type.



4.6 Precautions for Safe Use

● The pull wire displacement sensor is installed in a fixed position, and when the pull head is pulled out, it is strictly forbidden to release the hand and let the cable retract instantly; the end of the rope is on the moving object, and the movement should be kept barrier-free, and the cable should be pulled out vertically during installation.

● Disassembly is strictly prohibited by non-technical personnel. if necessary, please disassemble and reinstall under the guidance of technicians.

● When installing the stainless steel rope, the angle control should be paid attention to. If necessary, the pulley can be appropriately increased to change the direction, so as to ensure the measurement accuracy and the service life of the cable, and prevent the line from rubbing against the outlet.

● In the process of use, excessive dust impurities should be reduced as far as possible, which can easily lead to the failure of the plastic coating of steel cable or the failure of operation.

● Please confirm the wiring when the power is off, and note that the wrong wiring may cause the encoder mainboard to burn out.

五、 Product Warranty and Disclaimer

- 1. The product is guaranteed for one year free of charge when used correctly.
- 2. When exceed the warranty period, or the product is damaged due to improper use, the product can be sent back to the original factory for repair (only raw material cost is required when repair).

六、Contact Us

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