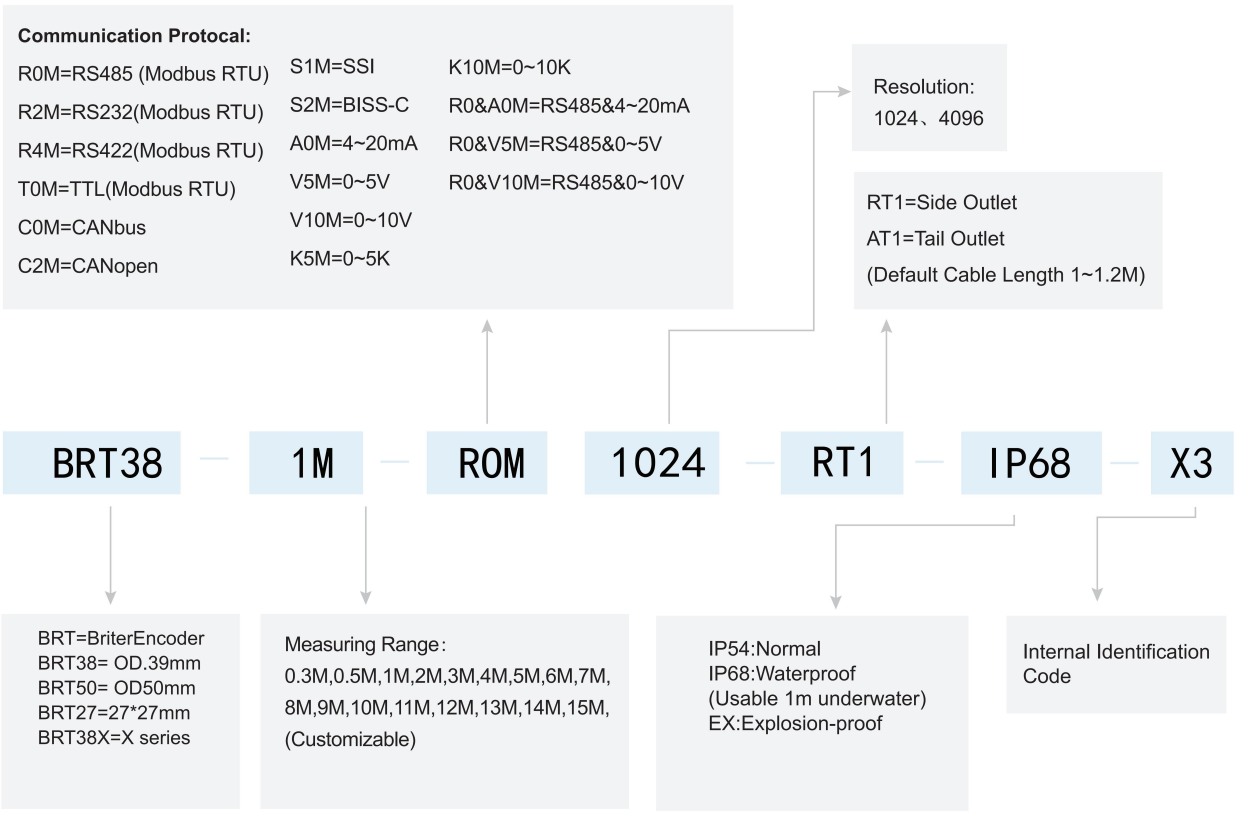
Briterencoder Linear Wire Displacement Sensor

Analog 0-5V&10V Output User Manual V202407

1. Product Model Description



Model description:

1.Structural form of the encoder: e.g., BRT38 indicates an outer diameter of 38mm.

2.Measuring range: e.g., 1M indicates a measuring stroke range of 0 - 1000mm.

3.Communication interface: e.g., R0M indicates an electrical interface of RS485 and the communication protocol is Modbus RTU.

4.Resolution: e.g., 1024 means that the internal encoder and the winding wheel feed back 1024 data when rotating one circle. For a 1 - meter stroke, referring to the corresponding table parameters, if the diameter of the internal winding wheel is 100mm, it means that the encoder feeds back 1024 data when moving 100mm. The minimum displacement resolution: 100mm / 1024 = 0.098mm. That is, the displacement resolution of 1024 is 0.098mm.

5.Inventory: Some randomly combined models may be out of stock. Please consult in advance to ensure that the selected model is available.

2. Wiring Definition and connection

Output 0-5V

Grey wire (optional)	0-5 negative	1.In a three-wire system, since the signal negative and the power negative are directly connected, this line is left unconnected. 2.In a four-wire system, this line must be connected to the negative of the 0-5V voltage loop (i.e., the signal negative).
Brown wire	0-5V positive	-
Black wire	0V (GND)	-
Red wire	Power Supply	DC 12-24V
Orange wire	Function line	SETH/ Direction
Yellow wire	Function line	SETL/ Reset

Output 0-10V

Grey wire (optional)	0-10V negative	1.In a three-wire system, since the signal negative and the power negative are directly connected, this line is left unconnected. 2.In a four-wire system, this line must be connected to the negative of the 0-10V voltage loop (i.e., the signal negative).
Brown wire	0-10V positive	-
Black wire	0V (GND)	-
Red wire	Power Supply	DC 12-24V
Orange wire	Function line	SETH/ Direction
Yellow wire	Function line	SETL/ Reset

3. Product Parameters

Service times	>5million times	Working temp.	-40~+85°C
Pull Tension	2~3N	Drawstring diameter	0.8mm
Max. Working Speed	1m/s	Pull rope material	steel wire, outer nylon coating
Protection Grade	IP54, IP68waterproof, Explosion proof	Cable Length	1-1.2meters
Working voltage	12~24V	Kernel refresh cycle	50uS
Electrical life	> 100000 h		

4. Function Line Setting Method

Set the minimum value:

When power on, use the yellow wire to touch the black wire (0V) for a short time (more than100ms) to set the current position to the minimum analog value;

Set the maximum value:

When power on, use the orange wire to touch the black wire (0V) for a short time (more than100ms) to set the current position to the maximum analog value;

Set the midpoint value:

When power on, use the yellow wire and the orange wire for to touch the black wire (0V) a short time (more than100ms) to set the current position to the midpoint analog value;

Restore the encoder to factory settings:

When the encoder is in power-off state, connect the yellow wire to the black wire (0V). Then power on and keep it on for 2 minutes (110~130 seconds) to reset the encoder.

Set the encoder's value direction

When the encoder is in a powered-off state, the orange wire contacts the black wire (0V). Then power on and keep it on for 2 minutes (110~130 seconds), the encoder can switch its direction of value.

5. How to calculate the displacement length

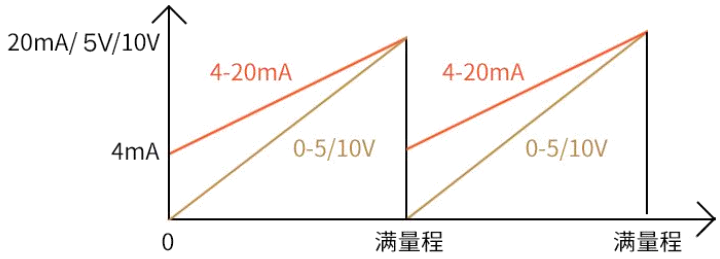
- **Output 0-5V:**

The displacement length=measuring range * voltage/5 (unit: mm)
E.g. If a single turn 0-5V sensor with the measuring range of 500mm is used and the voltage is 2.5V, then the displacement length=500* 2.5/5=250mm

- **Output 0-10V:**

The displacement length=measuring range * voltage/10 (unit: mm)
E.g. If a single turn 0-10V sensor with the measuring range of 500mm is used and the voltage is 2.5V, then the displacement length=500* 2.5/10=125mm

6. Schematic diagram of output signal



7. Precautions and warranty

●The displacement sensor of the pull rope is installed in a fixed position, and when the pull head is pulled out, it is strictly prohibited to let go and allow the pull rope to retract instantly.
● Movement needs to be kept unobstructed, and the cable should be pulled out vertically during installation.
● Non technical personnel are strictly prohibited from disassembling. If necessary, please disassemble and reassemble under the guidance of technical personnel;
● When installing the stainless steel ropes, attention should be paid to angle control. If necessary, pulleys can be added appropriately to change direction to ensure measurement accuracy and the service life of the steel rope, and to avoid friction between the wire and the outlet.
● Please confirm the power is turned off when wiring, and be aware that incorrect wiring may cause the encoder main board to burn out.
● The product is guaranteed for one year free of charge when used correctly.
● 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).

8. Indicator Lights Description

1. The status light displays are as follows:
1) Default indication status: "Blue -> Blue -> Blue -> Cyan -> Blue" 1s slow flash, indicating normal power supply to the encoder;

2) Other work status indications:
a. Setting minimum value status: Orange light flashes quickly at 0.5s intervals;
b. Setting maximum value status: Purple light flashes quickly at 0.5s intervals;

c. Setting midpoint value status: Orange light flashes quickly at 0.5s intervals;
d. Power-on reset status: Orange light flashes quickly at 0.5s intervals;
e. Setting direction status: Purple light flashes quickly at 0.5s intervals;

3) Red light indicates encoder failure.

9. Contact us and technology support

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WhatsApp

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Technical documentation

Detailed version of the instruction manual;
PC software;
2D drawings and 3D model files;
Additional Video Tutorials;

For more details, please visit our website: **www.briterencoder.com.**