

Absolute Rotary Encoder CAS38—RS422 User Manual



- * Using "magnetic detection method", with excellent shock and vibration characteristics.
- * Self-contained communication protocol for easy parameter setting.
- * The single turn resolution can reach up to 4096 (12 bits) ,the Maximum turns is 4096.
- *Multi-purpose and multi-function, measure Angle by single-turn or multi-turns encoders, and length measurement by multi-turns encoders.
- * Wide operating voltage, low current consumption
- * Clamping flange or synchro flange, the international standard shape structure
- *External resetting line to set the default location, easy installation, no need to find ZERO.

Specifications:

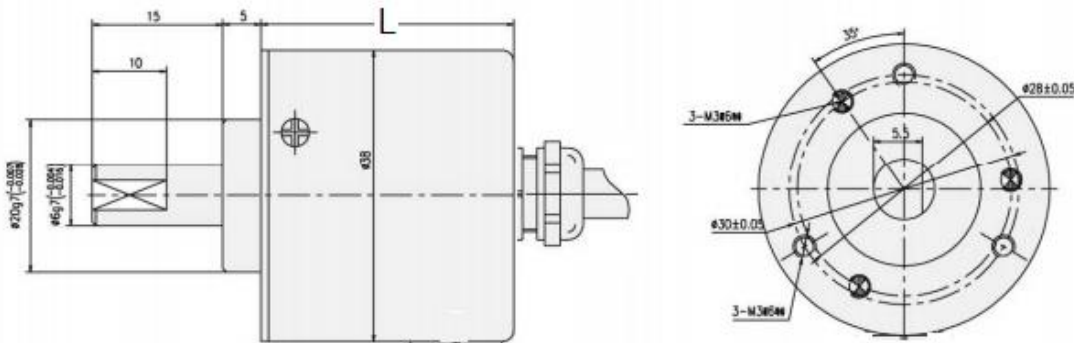
Operating voltage	10 ... 30Vdc polarity protection (recommended 24Vdc power supply)
Current consumption	< 100mA(24V Power supply) < 190mA(12V Power supply)
Output signal	RS422, can setting the length and angle measuring signal data.
Output load capacity	≤400ohm, about 200-250ohm
Signal transmission	Two pairs of RS422, 100 meters (125KHz and recommend special cables, more distance please consult factory)
Single-turn Resolution	65536
Repeatability	Repeatability ± 2BIT (actual accuracy relate to precision of installation and the shaft concentricity)
Working temperature	-25 ~ 70 °C
Storage temperature	-40 ~ 100 °C
Protection class	Shell IP67, IP65 shaft
Vibration and shock	10g, 10 ~ 2000Hz; 100g, 6ms
Allowed speed	2400 rev / min
Connection cable	1 m shielded cable radial side (rest form can be ordered)
Shape characteristics	Metal shell, sealed double bearing

Output Interface: (Refer to product manual)

Wire	Signal
Brown	10...30Vdc
White	0V GND
Green	RS422 RXD+
Yellow	RS422 RXD-
Pink	RS422 T/R+
Black	RS422 T/R-
Gray	External Reset wire
Blue	Programming permitted wire

Dimensions (Unit: mm)

a. Clamping & synchro



RS422 protocol description:

Baud rate: **4800bps, 9600bps, 19200bps, 38400bps, 115200bps**

Frame format: **8-bit data , stop bit 1, no check, no control flow.**

The parameter of encoders is set by software instruction.

When the encoder is in active mode, That is the encoder automatically sends data to the host. Data length is 16 hexadecimal ASCII code format is: XAB> ± DATA ↵, as follow:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	address	>	±	DATA											↵

Wherein,

"X" is the leading letters,">" is delimiters, "±" is the sign bit; "DATA" is the data, ASCII format, 10, from 0 to 9 constitute the range of -9,999,999,999 ~ +9,999,999,999. "↵" is carriage return (0D).

When the encoder is in passive mode, That is quiz mode. Host send inquiry instruction to the encoder, the instruction is four hexadecimal ASCII code format is: D + AB ↵.

"AB" is encoder address, range is 0~99.

1. Read data:

Host send: D + Address +0 D

Encoder return: X + address +> + sign + DATA+0 D

Example: Host sends 44 30 31 0D

Encoder return: 58 30 31 3E 2B 30 30 30 30 30 30 31 32 33 0D

2. Read parameters: (When blue wire connected high, is available)

Host sends: D +00 + A +0 D

Encoder return: X + address + a + direction + baud rate+ working condition + working mode +0 D

Example: Host sends: 44 00 41 0D

Encoder return: 58 30 31 61 06 03 11 09 0D

(Encoder address 01, clockwise to increase data value, baud rate 19200, reciprocating mode, passive mode)

3. Set Address: (When blue wire connected high, is available)

Host sends: D + address + B + new address +0 D

Encoder return: X + address + b + new address +0 D

Example: Host sends: 44 30 30 42 30 31 0D

Encoder return: 58 30 30 62 30 31 0D

(Modify the encoder address 00 to 01)

4. Setting direction: (When blue wire connected high, is available)

Host sends: D + address + C + new direction +0 D

Encoder return: X + address + c + +0 D new direction

Example: Host sends: 44 30 31 43 07 0D

Encoder return: 58 30 31 63 07 0D

(The CW to CCW)

5. Set the baud rate: (When blue wire connected high, is available)

Host sends: D + address + E + new baud +0 D

Encoder return: X + address + e + new baud +0 D

Example: Host sends: 44 30 31 45 03 0D

Encoder return: 58 30 31 65 03 0D

(Baud rate to 19200)

6. Set each circle Resolution: (When blue wire connected high, is available)

Host sends: D + Address + F + Resolution +0 D

Encoder return: X + address + f + resolution +0 D

Example: Host sends: 44 30 31 46 30 30 33 36 30 30 0D

Encoder return: 58 30 31 66 30 30 33 36 30 30 0D

(Set the resolution to 3600)

7. Set Passive Mode: (When blue wire connected high, is available)

Host sends: D + address + I + mode +0 D

Encoder return: X + address + i + mode +0 D

Example: Host sends: 44 30 31 49 09 0D

Encoder return: 58 30 31 69 09 0D

(Set to quiz mode)

Data sheet

ASCII Code	Data	ASCII Code	Data
01	4800bps baud rate	07	Output data decreasing when shaft turn clockwise
02	9600bps baud rate	08	Passive mode
03	19200bps baud rate	09	Active mode
04	38400bps baud rate		
05	115200bps baud rate		
06	Output data increasing when shaft turn clockwise		

Blue wire(Programming permitted wire): When setting the encoder, the blue wire need be connected with brown wire and connect to +VCC, the White wire connect with 0V GND. This moment, the encoder baud rate is fixed at 19200bps; When the encoder is normal working, suggest connecting the blue wire with the white wire with 0V GND.

RS422 communication considerations:

1. Communication speed and transmission distance is a contradiction. The higher the rate, the transmission distance is shorter, but more stable, and vice versa.

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2. External reset line (gray wire) used to reset the encoder current position to presetting value. When using, the gray wire should be connected to high level (24V). But after the completion of the operation, it's better to connect gray wire to power ground to avoid interference.
3. In the strong external electromagnetic interference, RS422 connection is best to use double-shielded cable.
4. When multiple encoders connect host, because the encoders have no parity, it is suggested that when the PC programming in time to distinguish between the various encoder data returned.
5. When the system has a motor, encoder power supply should be isolated from other.