Definition of Status Lights

BRT encoder and displacement sensor

No：BRT-B-06-00

To better understand the operational status of encoders and displacement sensors, we have upgraded our products to include rear status lights. These lights offer detailed indicators, enhancing user convenience and providing intuitive operational insights. This upgrade allows users to better monitor and understand the device's operational status. We are committed to delivering high-quality products and services that meet and exceed customer expectations. For specific definitions of the status lights, please refer to the document we have provided.

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Product Series: RS485/CAN/RS232/TTL/RS422 Encoders and Sensors

1. The status lights display as follows.

1) The default state consists of 5 flashing statuses in the following sequence: “Blue -> Blue -> Blue -> Cyan -> Blue” with a slow flash every 1 second, indicating normal power supply to the encoder.

2) Other operational status indications

a. Query encoder data status: Green light flashing quickly every 0.5 seconds.
b. Setting the zero point for the yellow line: Orange light flashing quickly every 0.5 seconds.
c. Power-on reset status for the yellow line: Purple light flashing quickly every 0.5 seconds.
d. Encoder data automatic return status: Pause for 1 second, slow flash, interval of 0.5 seconds fast flash, blinking 5 times, defined with reference to the first item.
e. The red light indicates encoder malfunction.

3) When the encoder’s ID and baud rate are changed, the colors of the flashing lights will correspondingly change. Here is the color reference table for the status lights and their meanings:

Table 1 Color and Numerical Definition Relationship

Color	Blue	Cyan	Orange	Purple	Green	Red
Numerical Value	0	1	2	3	4	5

Table 2 RS485/RS232/TTL/RS422 Baud Rate and Numerical Definition Relationship

Baud Rate	9600	19200	38400	57600	115200
Numerical Value	0	1	2	3	4

Table 3: CANbus Baud Rate and Numerical Definition Relationship

Baud Rate	500K	1M	250K	200K	100K
Numerical Value	0	1	2	3	4

(1) Upon power-on in normal operation:

a. There is a 4-second pause followed by 5 slow flashes with a 1-second interval.

b. The colors of the first 4 flashes form a quaternary (base-4) data that corresponds to the encoder ID number.

c. The color of the last flash defines the baud rate.

(2) For example: Orange -> Cyan -> Purple -> Orange -> Blue. Referring to Table 1 and Table 2, we can determine the corresponding numbers: 21320. The last digit is 0, according to Table 2, which corresponds to a baud rate of 9600. The first four digits form the quaternary number 2132, which converts to decimal ID: 2 * 4^3 + 1 * 4^2 + 3 * 4^1 + 2 * 4^0 = 158 (Encoder ID).

Table 4: Status LED Blinking Definitions and Examples

		Section 1 Encoder ID				Section 2 Baud Rate	
LED Status	OFF	ON	ON	ON	ON	ON	OFF
Hold Time	4s	1s	1s	1s	1s	1s	4s
Status Color	-	orange	blue-green	purple	orange	blue	-
Number	-	2	1	3	2	0	-
Status Analysis	-	2*4^3+ 1*4^2 + 3*4^1 + 2*4^0 ＝ 158				Baud rate is 9600	-
Status Meaning	-	Encoder ID				Baud Rate	-

Product Series: 4-20mA/0-5V/0-10V Analog Encoders and Displacement Sensors

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.

Product Series: SSI-Biss Encoders and Displacement Sensors

一、The status light displays are as follows:

1. Default indication status: Status light flashing (flashing color varies by model), indicating normal power supply to the encoder;

2. Other work status indications:

(1) - SSI reading encoder data status: Green light flashes quickly at 0.5s intervals;

(2) - Biss reading encoder data status: Cyan light flashes quickly at 0.5s intervals;

(3) - Yellow wire power-on reset, yellow wire zero-point setting status: Orange light flashes quickly at 0.5s intervals;

(4) - Orange wire power-on direction switch, orange wire midpoint setting status: Purple light flashes quickly at 0.5s intervals;

(5) - Normal working status upon power-on: Stop 4s, flash slowly 3 times at 1s intervals, stop 2s, flash slowly 3 times at 1s intervals, stop 2s, flash slowly 3 times at 1s intervals, where the combination of three flashes forms a quaternary number that can be converted into the corresponding multi-turn number and single-turn accuracy digits of the encoder, the last flash color defines the output mode, 0 for SSI, 1 for Biss.

Table 5: Color and Numerical Value Definitions

Color	Blue	Cyan	Orange	Purple	Green	Red
Value	0	1	2	3	4	5

Table 6: Output Mode and Numerical Value Definitions

Output format	SSI	Biss
value	0	1

For example: Interval 4S -> Blue -> Purple -> Orange -> Interval 2S -> Cyan -> Blue -> Blue -> Interval 2S -> Blue

Refer to Tables 5 and 6 to get the corresponding values: 032-100-0, the last digit 0 indicates SSI communication.

Table 7: Status Light Blinking Definitions and Examples

		Segment 1 | Multi-turn Digits				Segment 2 | Single-turn Resolution				Segment 3 | Output Mode
LED Status	OFF	ON	ON	ON	OFF	ON	ON	ON	OFF	ON
Hold Time	4s	1s	1s	1s	2s	1s	1s	1s	2s	1s
Status Example	-	Blue	Purple	Orange	-	Cyan	Blue	Blue	-	Blue
Corresponding Number	-	0	3	2	-	1	0	0	-	0
Status Analysis	-	$0*4^2 + 3*4^1 + 2*4^0 = 14$				$1*4^2 + 0*4^1 + 0*4^0 = 16$				SSI
Status Meaning	-	Multi-turn 14 bits				Single-turn 16 bits				SSI

Product Series: CANopen Encoders and Displacement Sensors

Status LED Display as Follows:

1. Default Indicator Status: “Green” flashes quickly for 0.5s, indicating normal communication of the encoder.