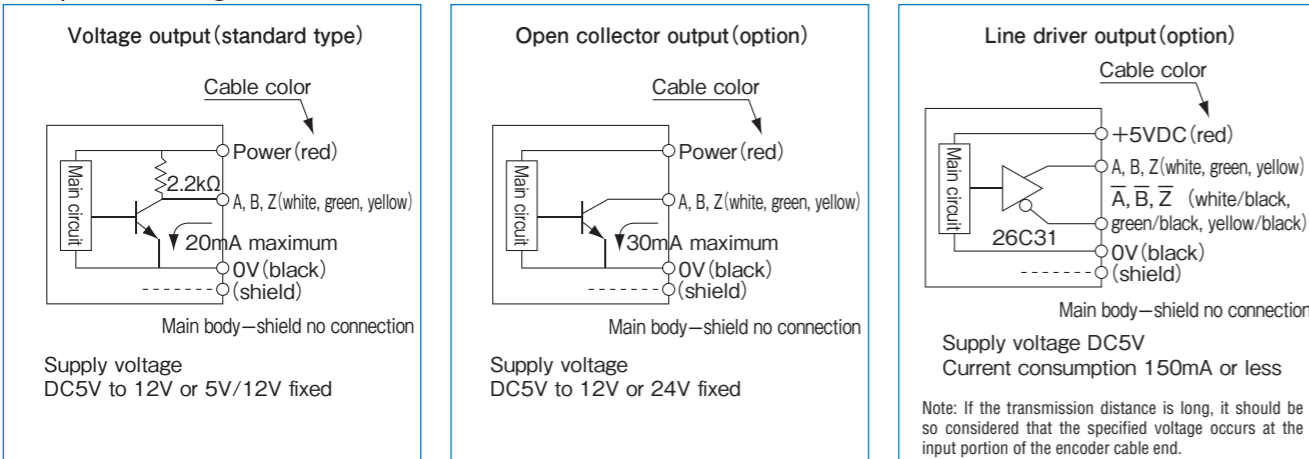


# Technical data

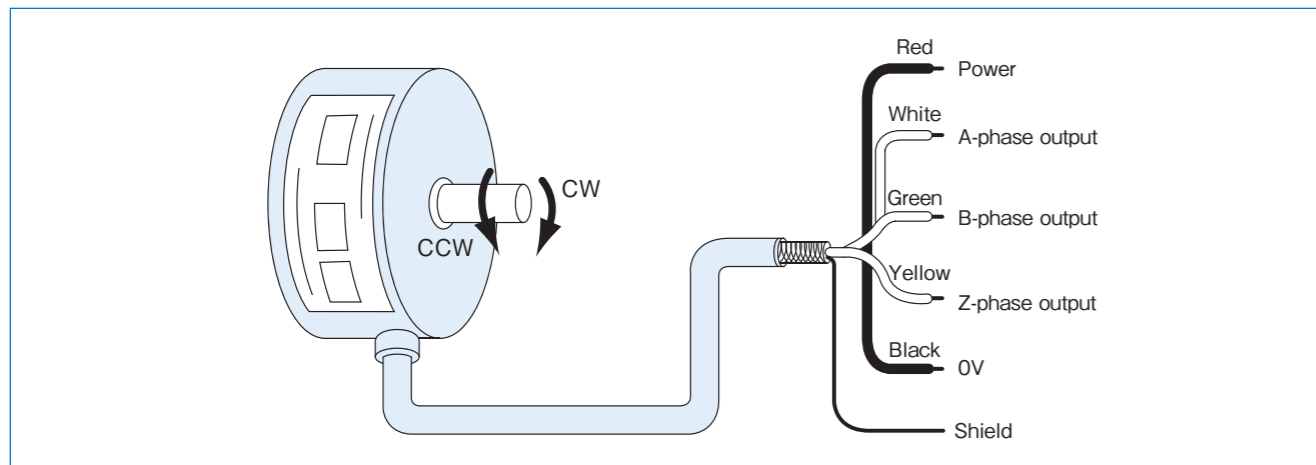
## Incremental encoder

- Widely available from low pulse to high resolution pulse. A desired division pulse number is easily available because of internal manufacturing.
- Outside diameters are available in series from ultra-small type to large type and selection should be made in accordance with the fitting shaft and division pulse number.
- All products are of thin type, and especially the hole type is an encoder best suited for fitting.
- Investigation is possible under optimum conditions such as noise resistance and reduction in current consumption depending on the purpose of use.

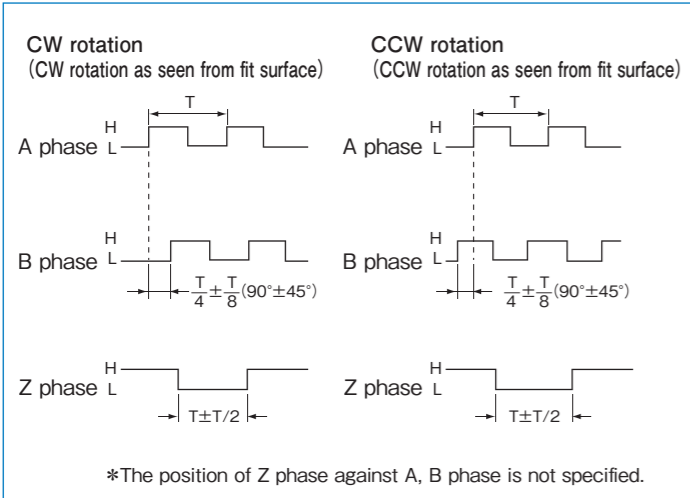
### Output circuit diagram



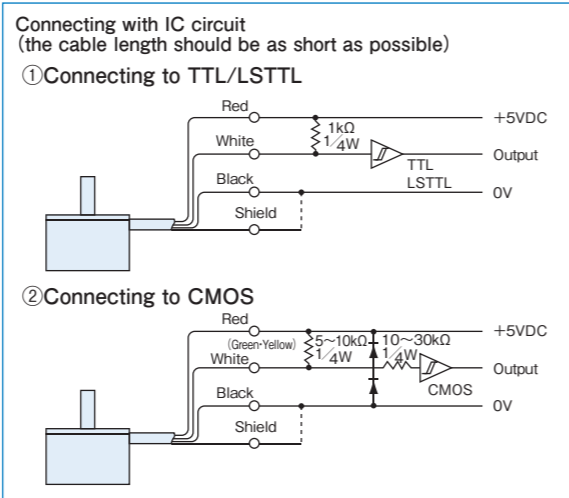
A capacitor (0.1μF) is connected between 0V and FG (frame ground).



### Output waveform



### Connecting example

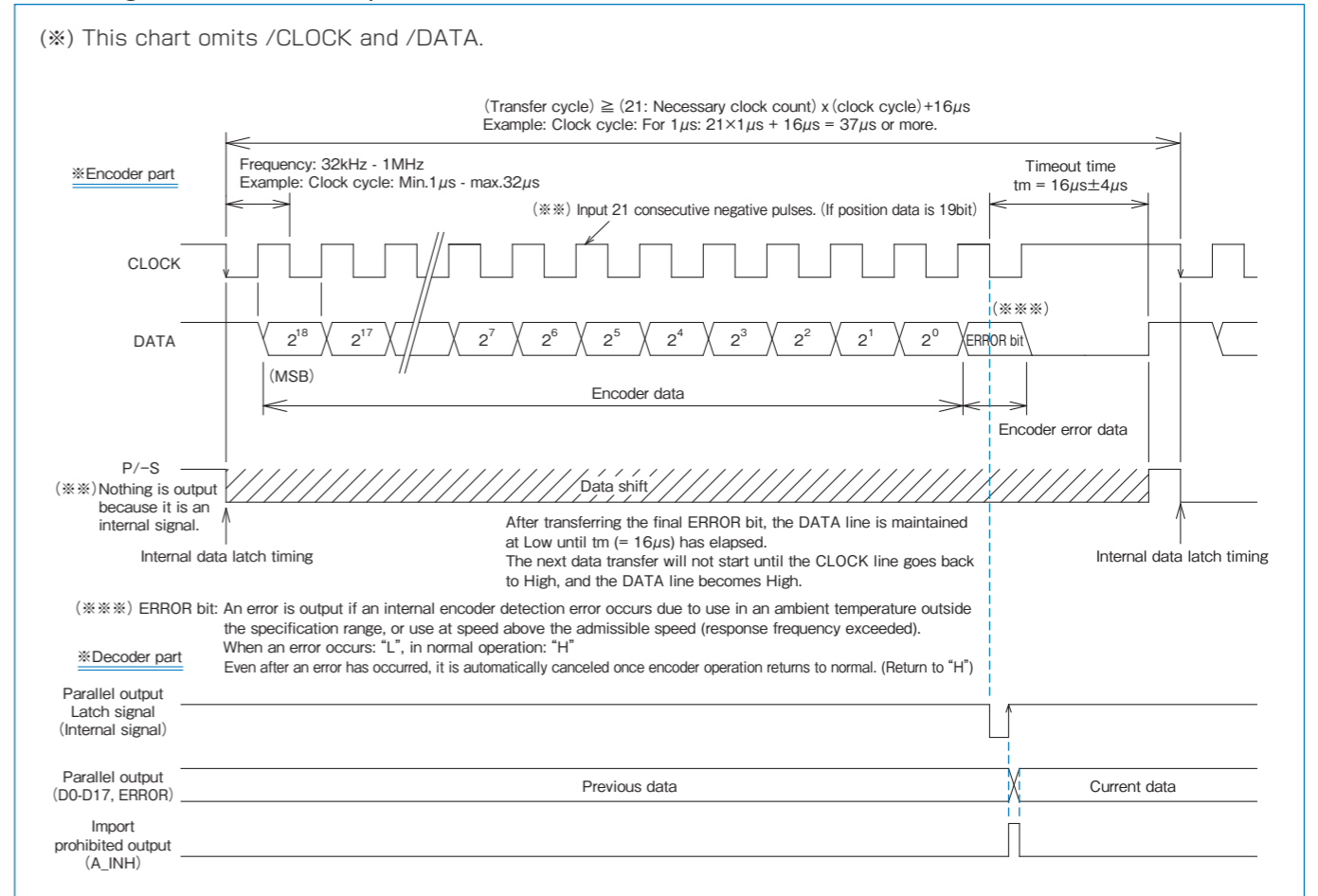


## Absolute encoder

### Timing Chart for Serial Communications

Refer to the timing chart below for serial communications (SSI format) used by our absolute encoders.

### I/O timing chart ※For 19bit output data



### If an optional decoder circuit board is used

### Connection ※If 19bit (524,288)

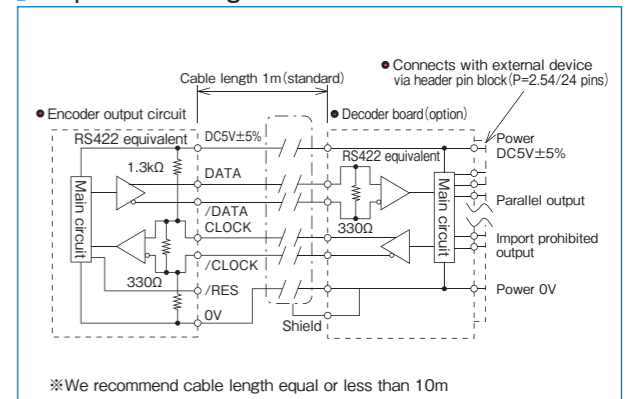
Decoder board TH No. (24pin)			
TH No.	Parallel output / Power	TH No.	Parallel output / Power
1	DC5V±5%	13	Output 2 <sup>8</sup> (D8)
2	0V (COMMON)	14	Output 2 <sup>7</sup> (D7)
3	Output 2 <sup>18</sup> (D18)	15	Output 2 <sup>6</sup> (D6)
4	Output 2 <sup>17</sup> (D17)	16	Output 2 <sup>5</sup> (D5)
5	Output 2 <sup>16</sup> (D16)	17	Output 2 <sup>4</sup> (D4)
6	Output 2 <sup>15</sup> (D15)	18	Output 2 <sup>3</sup> (D3)
7	Output 2 <sup>14</sup> (D14)	19	Output 2 <sup>2</sup> (D2)
8	Output 2 <sup>13</sup> (D13)	20	Output 2 <sup>1</sup> (D1)
9	Output 2 <sup>12</sup> (D12)	21	Output 2 <sup>0</sup> (D0)
10	Output 2 <sup>11</sup> (D11)	22	ERROR bit
11	Output 2 <sup>10</sup> (D10)	23	Import prohibited output (A_INH)
12	Output 2 <sup>9</sup> (D9)	24	N.C.

Decoder board TH No. (8pin)		
TH No.	Cable color	Encoder connection
1	Red	DC5V±5%
2, 4	Black	0V (COMMON)
3		N.C.
5	White	DATA
6	White/Black	/DATA
7	Green	CLOCK
8	Green/Black	/CLOCK

※2: 3pin is N.C.  
※3: Reset can be enabled for the yellow line with /RESET (reset input "L", connected to 0V). Input power supply: 1mA or less  
※ "Open" or "5V" in normal use

- ※1: When resolution is 18bit, connect the top bit to TH No.3, then fill in other wiring in sequence. (Example) When using 18bit: Connect Output 2<sup>17</sup>(D17) to TH No.3, 2<sup>16</sup>(D16) to TH No.4, ... output 2<sup>0</sup>(D0) to TH No.20, and ERROR bit to TH No.21. TH No.22 and 24 are N.C.
- ※2: The maximum parallel output from this decoder circuit board is 20 bits (including the ERROR bit). Note that it is not possible to output parallel data of 21 bits or more.

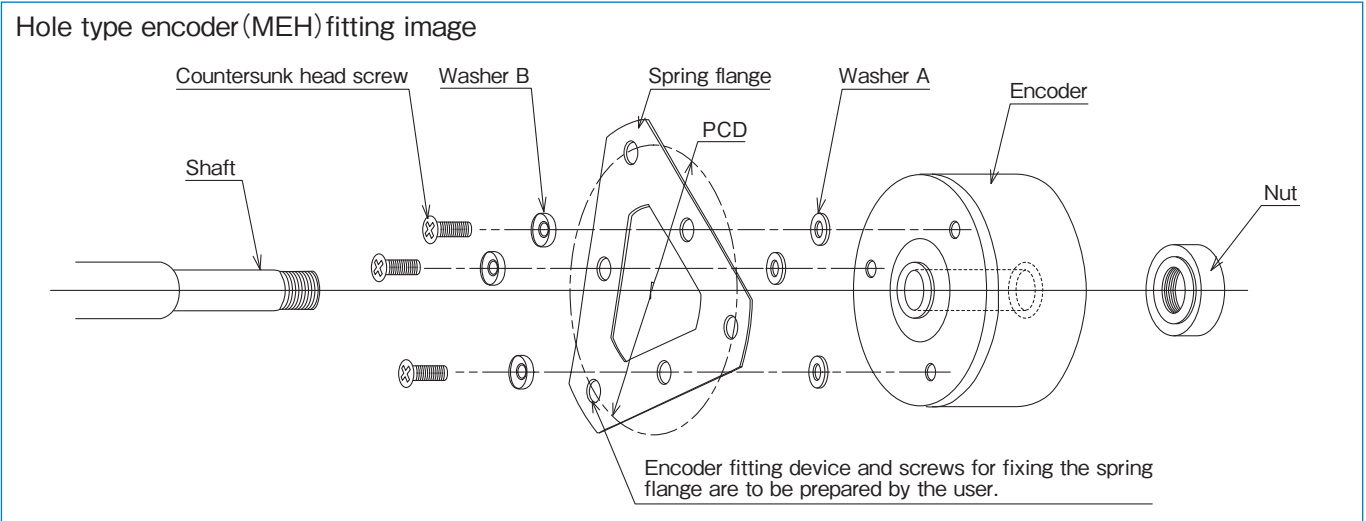
### Output circuit diagram



# ▼ Hall type encoder (MEH/MAH) Mounting method

Spring flange MEH-20, 30, 50, 60, 85, 130 (material: SUS304-CSPH)

Hole type encoder (MEH) fitting image

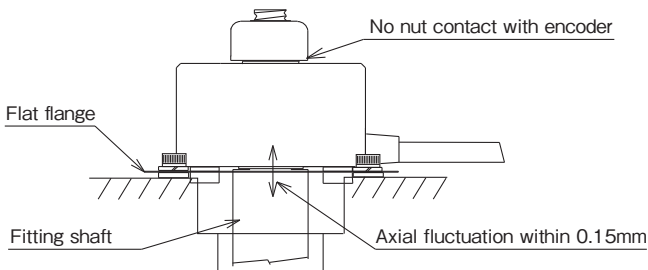


For the spring flange, see Setting Option (P84).

## Precautions in assembling the hole-type encoder

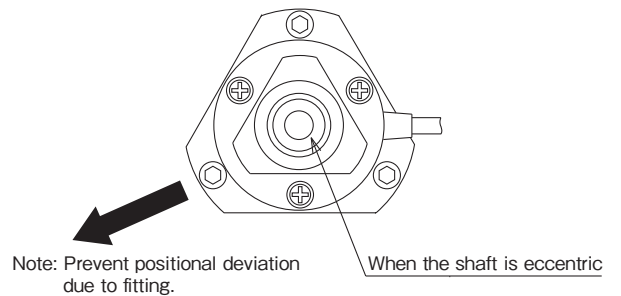
### Effect on encoder of thrust load

Absorption of axial fluctuation of flat flange is within 0.15mm



### Effect on encoder of radial load

Basically it is difficult to absorb the radial load because of the flat plate. Radial eccentricity should be less than 20 micron.



When radial fluctuation is large, consider the method shown below.

(For special spring flange, see P85)

