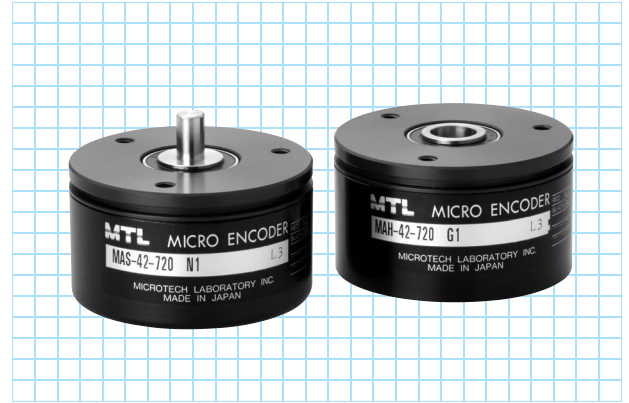


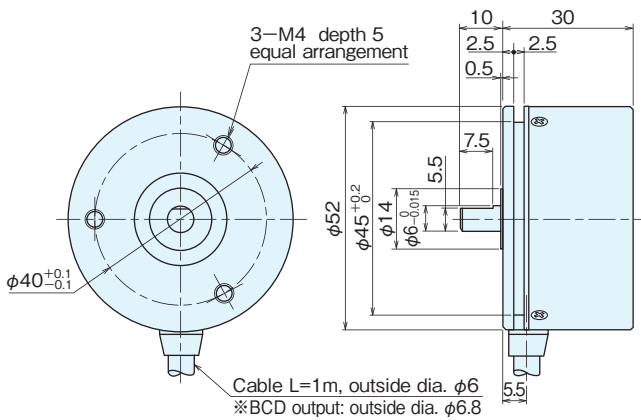
# MA-42 series

[Absolute]

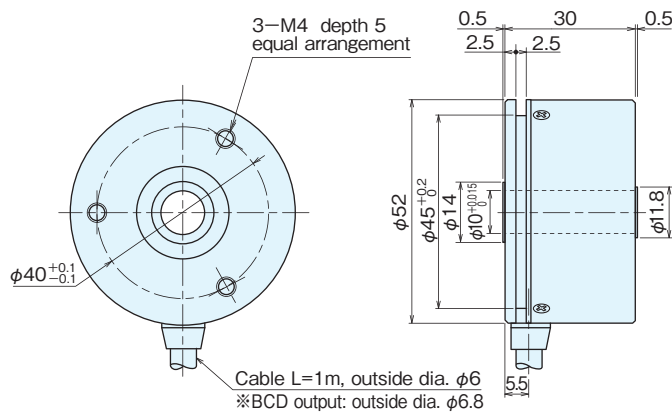


## Outside dimensions

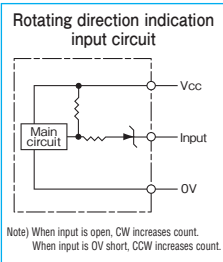
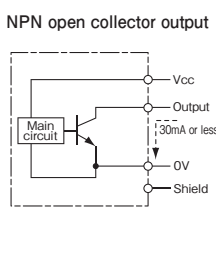
### MAS-42



### MAH-42



## I/O circuit diagram



## Specifications

| Type name                            |  | MA□-42-□□□□                        |  |                         |                |
|--------------------------------------|--|------------------------------------|--|-------------------------|----------------|
| Item                                 |  | Shaft shape                        | Pulse number                                       | Output code             | Supply voltage |
|                                      |  | ●S=single shaft<br>●H=hollow shaft | ●G=gray code<br>●N=pure binary code<br>●B=BCD code | ●1=DC5V<br>●5=DC12V~24V |                |
| Supply voltage                       | 1:DC5V±5%<br>5:DC12V-10%~24V+15%   |                                    |  |                         |                |
| Current consumption                  | 100mA or less (under no load)  |                                    |  |                         |                |
| Output code                          | G: gray code<br>N: pure binary code  |                                    | B: BCD code  |                         |                |
| Logic                                | Negative logic (H=0, L=1)  |                                    |  |                         |                |
| Resolution                           | 256 512 1,024 4,096<br>360 720 2,048   |                                    | 1,000<br>3,600                                     |                         |                |
| Output circuit                       | NPN open collector   |                                    |  |                         |                |
| Output capacity                      | Sink current each bit 30mA,<br>Residual voltage:0.4V or less (Sink current: at 30mA)                     |                                    |  |                         |                |
| Allowable load of shaft (electrical) | Radial   | 19.6N (2kgf)                       |  |                         |                |
|                                      | Thrust   | 9.8N (1kgf)                        |  |                         |                |
| Maximum revolutions (mechanical)     | 6,000r/min   |                                    |  |                         |                |
| Maximum response frequency           | 10kHz  |                                    |  |                         |                |
| Working temperature/humidity         | -10°C~70°C / RH95% or less no dewing   |                                    |  |                         |                |
| Storage temperature                  | -25°C~85°C   |                                    |  |                         |                |
| Vibration resistance                 | Durability 55Hz, double amplitude 1.5mm<br>2 hours each in X, Y, and Z directions                        |                                    |  |                         |                |
| Impact resistance                    | Durability 500m/s <sup>2</sup> (about 50G)<br>3 times each in X, Y, and Z directions                     |                                    |  |                         |                |
| Cable                                | Outside diameter (G, N: φ6, 16 cores/B: φ6.8, 19 cores)<br>vinyl wire Insulated shield cable (length 1m) |                                    |  |                         |                |
| Mass                                 | 300g or less (excluding cable)   |                                    |  |                         |                |

## Connection

| Cable color  | Type            | Output signal                       |                 |                      |
|--------------|-----------------|-------------------------------------|-----------------|----------------------|
|              |                 | MA42-G                              | MA42-N          | MA42-B               |
| Brown        | 2 <sup>0</sup>  | 2 <sup>0</sup>                      | 2 <sup>0</sup>  | 2 <sup>0</sup>       |
| Brown/black  | 2 <sup>1</sup>  | 2 <sup>1</sup>                      | 2 <sup>1</sup>  | 2 <sup>1</sup>       |
| Orange       | 2 <sup>2</sup>  | 2 <sup>2</sup>                      | 2 <sup>2</sup>  | 2 <sup>2</sup>       |
| Orange/black | 2 <sup>3</sup>  | 2 <sup>3</sup>                      | 2 <sup>3</sup>  | 2 <sup>3</sup>       |
| Yellow       | 2 <sup>4</sup>  | 2 <sup>4</sup>                      | 2 <sup>4</sup>  | 2 <sup>0</sup> ×10   |
| Yellow/black | 2 <sup>5</sup>  | 2 <sup>5</sup>                      | 2 <sup>5</sup>  | 2 <sup>1</sup> ×10   |
| Green        | 2 <sup>6</sup>  | 2 <sup>6</sup>                      | 2 <sup>6</sup>  | 2 <sup>2</sup> ×10   |
| Green/black  | 2 <sup>7</sup>  | 2 <sup>7</sup>                      | 2 <sup>7</sup>  | 2 <sup>3</sup> ×10   |
| Blue         | 2 <sup>8</sup>  | 2 <sup>8</sup>                      | 2 <sup>8</sup>  | 2 <sup>0</sup> ×100  |
| Blue/black   | 2 <sup>9</sup>  | 2 <sup>9</sup>                      | 2 <sup>9</sup>  | 2 <sup>1</sup> ×100  |
| Purple       | 2 <sup>10</sup> | 2 <sup>10</sup>                     | 2 <sup>10</sup> | 2 <sup>2</sup> ×100  |
| Purple/black | 2 <sup>11</sup> | 2 <sup>11</sup>                     | 2 <sup>11</sup> | 2 <sup>3</sup> ×100  |
| Gray         | —               | —                                   | —               | 2 <sup>0</sup> ×1000 |
| Gray/black   | —               | —                                   | —               | 2 <sup>1</sup> ×1000 |
| White        | —               | —                                   | —               | Not connected        |
| White/black  | —               | —                                   | —               | Not connected        |
| Red/black    | Not connected   | Rotating direction indication input |                 |                      |
| Red          | Supply power    |                                     |                 |                      |
| Black        | 0V (COMMON)     |                                     |                 |                      |
| Black        | 0V (COMMON)     |                                     |                 |                      |

Note: The shield is in the encoder and not connected. A capacitor (0.1mF) is connected between 0V and FG.

## Resolution and code No.

| Resolution | Code No. | Resolution | Code No. |
|------------|----------|------------|----------|
| 256        | 0~255    | 1,024      | 0~1,023  |
| 360        | 76~435   | 2,048      | 0~2,047  |
| 512        | 0~511    | 3,600      | 0~3,599  |
| 720        | 152~871  | 4,096      | 0~4,095  |
| 1,000      | 0~999    |            |          |