# 数字编码开关

# DP 系列

DP系列，是市场领先的数字编码开关，为广泛应用于工业领域而设计。

## 特 点

- 双层镀金滑动触点，可靠性高
- 环　　保：通过VA设计降低成本减少配件
  符合RoHS标准
- 步 距 角：13.85°，15°，20°，27.69°，30°
- 各类编码：真二进制，互补二进制，真灰色，互补灰色
  （抑制和/或校验电路包括在所有的安全编码中）。还可以使用特殊编码
- 可持续使用超过5万个使用寿命
- 防水型可供选用



## 技术规格

| 项目 | 额定值 | |
|---|---|---|
| 操作温度 | -20℃～+70℃(-4F～158F) | 保持机身不冻结 |
| 储藏温度 | -40℃～+70℃(-40F～158F) | |
| 转矩 | 0.1N～0.2N | |
| 端子强度 | 3N | |
| 面板螺母拧紧扭矩 | 2N·m | |
| 制动力矩 | 3N·m | |
| 振动耐久性 | 范围 10～55～10Hz/min | |
| | XYZ轴每个方向以1.5mm幅度振动2小时后，没有发现故障 | |
| 接触电阻 | ≦ 100mΩ | |

| | | | | |
|---|---|---|---|---|
| 绝缘电阻 | | DC250V/1min以上 | 端子对端子 | 500MΩ ≦ |
| | | DC500V/1min以上 | 端子对地线 | 500MΩ ≦ |
| 耐压 | | AC250V/1min | 端子对端子 | |
| | | AC1500V/1min | 端子对地 | |
| 负载电阻 | AC | 5V 0.5A/ 48V 0.05A | | |
| | DC | 5V 0.25A/ 25V 0.05A | | |
| 耐久性 | 旋转 | 50000转以上 | | |
| | 接触电阻 | ≦ 150mΩ | | |
| | 耐压 | DC250V/50mΩ ≦ (1min以上) | | |

## 质保

●运装之日起1年

## 订购时的型号确定

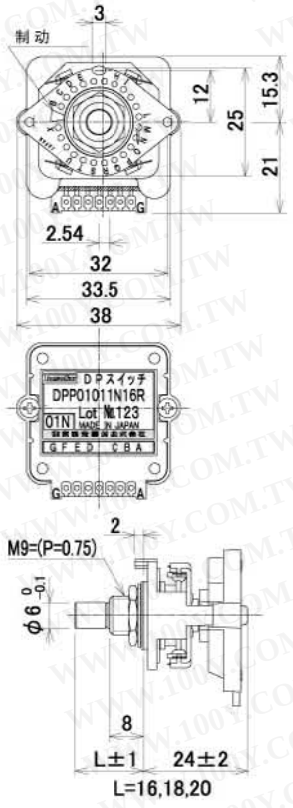
DP | P | 01 | 0 | 20 | J | 20 | R | CB

- DP — 开关种类
- P — P: 轴套/防水 (前面板)；N: 轴套/非防水
- 01 — 编码 No.
  - 01: 真二进制
  - 02: 互补二进制
  - 03: 真灰色
  - 04: 互补灰色
- 0 — 开始位置
- 20 — 结束停止位置
- J — 步距角
  - H 13.85°
  - J 15°
  - L 20°
  - S 27.69°
  - N 30°
- 20 — 轴长
  - 16: 16mm
  - 20: 20mm
- R — 轴形状
  - R: 圆形
- CB — 连接器
  - 空白:无连接器
  - C B: 连接器垂直连接至面板
  - C S: 连接器水平连接至面板

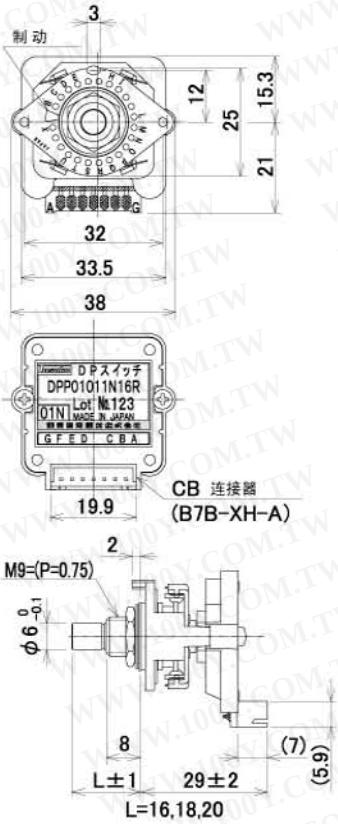
| | 步进 | 设置位置 |
|---|---|---|
| H | 13.85° | 0～25 |
| J | 15° | 0～23 |
| L | 20° | 0～17 |
| S | 27.69° | 0～12 |
| N | 30° | 0～11 |

## 尺 寸 (mm)

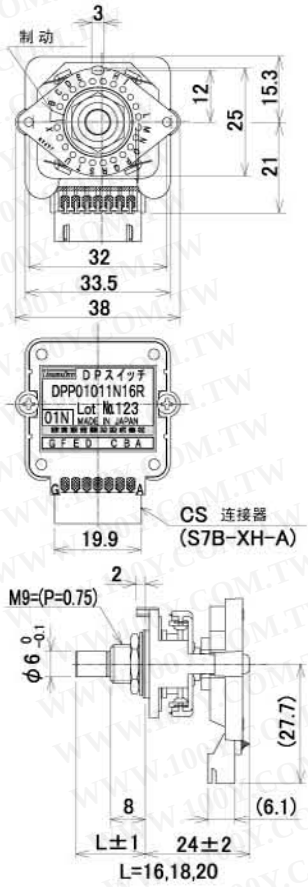
### DPN/DPP




### 有CB连接器的DPN/DPP

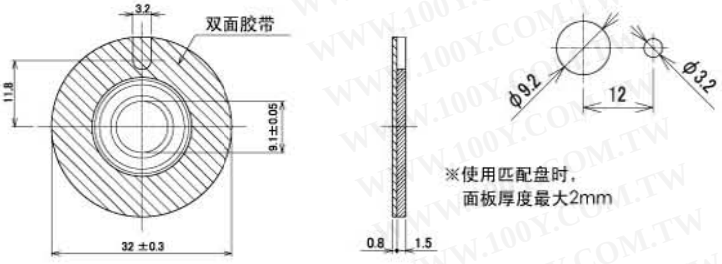



### 有CS连接器的DPN/DPP



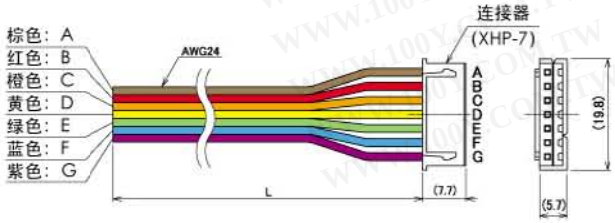

## DP附件

### 匹配盘（防水型）




### 配线

| P/N | L(cm) |
|---|---|
| A05 | 50 |
| A15 | 150 |
| A30 | 300 |




## 注意事项

●如何连接面板

1. 撕开双面胶带。
2. 将双面胶带贴至面板 (注意转换器方向)。
3. 使用M9螺母, 齿垫圈和垫圈，将面板和转换器拧紧固定。
4. M9 螺母拧紧扭矩最大为 2N.m。
5. 在清洁环境下使用双面胶带

请注意

1. 面板厚度应为2mm之内（使用转换器时）
2. 面板厚度应为4mm之内（不使用转换器）。

●安装孔尺寸

1. 面板孔径φ9.2（使用转换器）
2. 参照不使用转换器的左例

# Code and Truth Tables

## 1. Angle of throw(H):13.85° (26-position)

Code : 01 BCD Real Code(with inhibit)

| Terminal No. | Code Output | Switch Position 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| F | 2 | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | |
| B | 4 | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | |
| E | 8 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● |
| C | 16 | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

Dot(●) indicates terminal to common(D) connection.

## 2. Angle of throw(H):13.85° (26-position)

Code : 03 Gray Real Code(with parity)

| Terminal No. | Code Output | Switch Position 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● |
| F | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | |
| B | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● | ● | ● | ● | ● |
| E | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| C | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| G | Parity | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |

Dot(●) indicates terminal to common(D) connection.

## 3. Angle of throw(J):15° (24-position)

Code : 01 BCD Real Code(with inhibit)

| Terminal No. | Code Output | Switch Position 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| F | 2 | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● |
| B | 4 | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● |
| E | 8 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | |
| C | 16 | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

Dot(●) indicates terminal to common(D) connection.

## 4. Angle of throw(J):15° (24-position)

Code : 03 Gray Real Code(with parity)

| Terminal No. | Code Output | Switch Position 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | |
| F | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | |
| B | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● | ● | ● |
| E | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| C | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| G | Parity | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |

Dot(●) indicates terminal to common(D) connection.

## 5. Angle of throw(L):20° (18-position)

Code : 01 BCD Real Code(with inhibit)

| Terminal No. | Code Output | Switch Position 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| F | 2 | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | |
| B | 4 | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | |
| E | 8 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | |
| C | 16 | | | | | | | | | | | | | | | | | ● | ● |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

Dot(●) indicates terminal to common(D) connection.

## 6. Angle of throw(L):20° (18-position)

Code : 03 Gray Real Code(with parity)

| Terminal No. | Code Output | Switch Position 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● |
| F | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | |
| B | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| E | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| C | | | | | | | | | | | | | | | | | | ● | ● |
| G | Parity | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |

Dot(●) indicates terminal to common(D) connection.

## 7. Angle of throw(N):30° (12-position)

Code : 03 Gray Real Code(with parity)

| Terminal No. | Code Output | Switch Position 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | | ● | ● | | | ● | ● | | | ● | ● | |
| F | | | | ● | ● | ● | ● | | | | | ● | ● |
| B | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| E | | | | | | | | | | ● | ● | ● | ● |
| C | Parity | | ● | | ● | | ● | | ● | | ● | | ● |

Dot(●) indicates terminal to common(D) connection.

## 8. Angle of throw(N):30° (12-position)

Code : 01 BCD Real Code(with inhibit and parity)

| Terminal No. | Code Output | Switch Position 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | | ● | | ● | | ● | | ● | | ● | | ● |
| F | 2 | | | ● | ● | | | ● | ● | | | ● | ● |
| B | 4 | | | | | ● | ● | ● | ● | | | | |
| E | 8 | | | | | | | | | ● | ● | ● | ● |
| C | Parity | | ● | ● | | ● | | | ● | ● | | | ● |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

Dot(●) indicates terminal to common(D) connection.

## 9. Angle of throw(S):27.69° (13-position)

Code : 01 BCD Real Code(with inhibit and parity)

| Terminal No. | Code Output | Switch Position 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | | ● | | ● | | ● | | ● | | ● | | ● | |
| F | 2 | | | ● | ● | | | ● | ● | | | ● | ● | |
| B | 4 | | | | | ● | ● | ● | ● | | | | | ● |
| E | 8 | | | | | | | | | ● | ● | ● | ● | ● |
| C | Parity | | ● | ● | | ● | | | ● | ● | | | ● | |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

Dot(●) indicates terminal to common(D) connection.

## 10. Angle of throw(S):27.69° (13-position)

Code : 03 Gray Real Code(with parity)

| Terminal No. | Code Output | Switch Position 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | | ● | ● | | | ● | ● | | | ● | ● | | |
| F | | | | ● | ● | ● | ● | | | | | ● | ● | ● |
| B | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | |
| E | | | | | | | | | | ● | ● | ● | ● | ● |
| C | Parity | | ● | | ● | | ● | | ● | | ● | | ● | |

Dot(●) indicates terminal to common(D) connection.

| PRODUCT NAME | TYPE | CODE SWITCH |
|---|---|---|

# DP/DP5 series

Digital code switch

Tosoku

## IMAGE PHOTO

DP series

DP5 series

## Characteristics

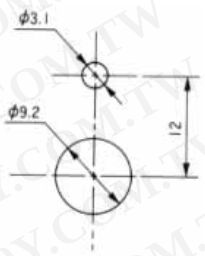
- **Sealed structure**
  The main body unit is tightly sealed through O-ring.
- **Panel waterproof**
  Panel can be protected from water through adapter plate and O-ring.
- **Minimum wire use**
  The digital code switch can largely reduce wires. It can be connected to a connector.
- **Easy change of setting value**
  The setting value can be easily adjusted after changing seif-tapping-screw.
- **Use of gold contact**
  The contact resistance can be kept very stable due to gold contact method.
- **Many variations**
  There are real binary code,complementary binary code,and gray code at each step angles:13.85˚, 15˚, 20˚, 27.69˚, and 30˚.
- **Protection against error signal**
  Inhibit terminals or parity terminals are equipped for code.
- **Long life time**
  The endurance is over 50,000 times. (No load condition)

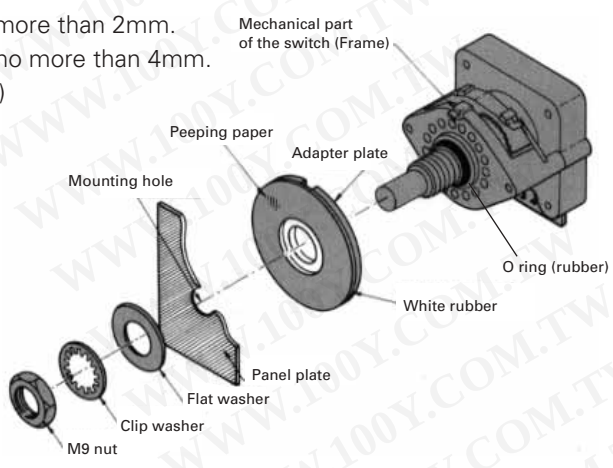
## DP Specification

| Item | | Condition | | Specification |
|---|---|---|---|---|
| Temperature range for use | | No freezing | | - 20˚C to +70˚C |
| Temperature range for storage | | No freezing | | - 40˚C to +70˚C |
| Mechanical Performance | 1. Rotating torque | | | 0.1~0.2N·m |
| | 2. Terminal strength | Charge static load at terminal end toward one direction. One time for one terminal. | | 3N |
| | 3. Nut tightening strength | | | 2N·m |
| | 4. Stopper strength | | | 3N·m |
| | 5. Vibration resistance | Sweep rate 10~55~10Hz/min<br>Vibration :1.5mm to xyz directions for 2h | | No problem for external looking and internal structure. |
| | 6. Waterproof | Waterproof for panel attachment (No axis rotation) | | Water depth 2m, Time 2h |
| Electrical Performance | 1. Contact resistance | DC5V 1A Voltage drop method | | Under 100mΩ<br>(initial value including conductor resistance) |
| | | 1kHz±200Hz Voltage: 20mV<br>Current: under50mA | | |
| | 2. Insulation resistance | DC250V after 1min. | Terminal to terminal | Over 500MΩ |
| | | DC500V after 1min. | Terminal to earth | Over 5,000MΩ |
| | 3. Withstand voltage | AC250V for 1min. | Terminal to terminal | No trouble |
| | | AC1500V for 1min. | Terminal to earth | |
| | 4. Rating | Resistance load | AC | 5V 0.5A / 50V 0.05A |
| | | | DC | 5V 0.25A / 25V 0.05A |
| Life time | 1.Rotational life | No load 50,000 times<br>angular velocity<br>1~1.2πrad/s | Rotating torque | +10%~-30% for initial value |
| | | | Contact resistance | Under 150mΩ |
| | | | Insulation resistance<br>DC250V after 1min. | Over 50MΩ |
| | | | Voltage resistance<br>AC250V for 1min. | No trouble |
| Weatherability | 1.Humidity resistance (Stationary state) | Temperature:<br>40±2˚C<br>Relative humidity:<br>90~95%<br>Time: 48h | Contact resistance | Under 100mΩ |
| | | | Insulation resistance<br>DC250V after 1min. | Over 100MΩ |
| | | | Voltage resistance<br>AC250V for 1min. | No trouble |
| | 2. Heat resistance | Temperature: 70±2˚C<br>Time: 16h | Rotating torque | 0.1~0.2N·m |
| | | | Contact resistance | Under 100mΩ |
| | 3. Cold resistance | Temperature: -20±3˚C<br>Time: 16h | Rotating torque | 0.1~0.2N·m |
| | | | Contact resistance | Under 100mΩ |

## Installation Instruction

1. Take the peeling paper off the adapter plate and unpeel the white rubber. (Two-sided adhesive tape)
2. Install the plate taking care to line up the U-shaped area with the mounting hole.
3. Fasten the adapter plate using the enclosed M9 bolt, M9 nut clip washer and flat washer .
4. Please Fasten the M9 nut to a toque of under 2N·m (18~20kgf·cm)
5. If dust, oil, etc, gets on to the back of panel the adhesive strength will be weakened.
6. When the adapter plate is being used, panel thickness shouid be no more than 2mm.
   When the adapter plate is not being used,panel thickness shouid be no more than 4mm.
7. Panel mounting hole dimensions. (When an adapter plate is not used)



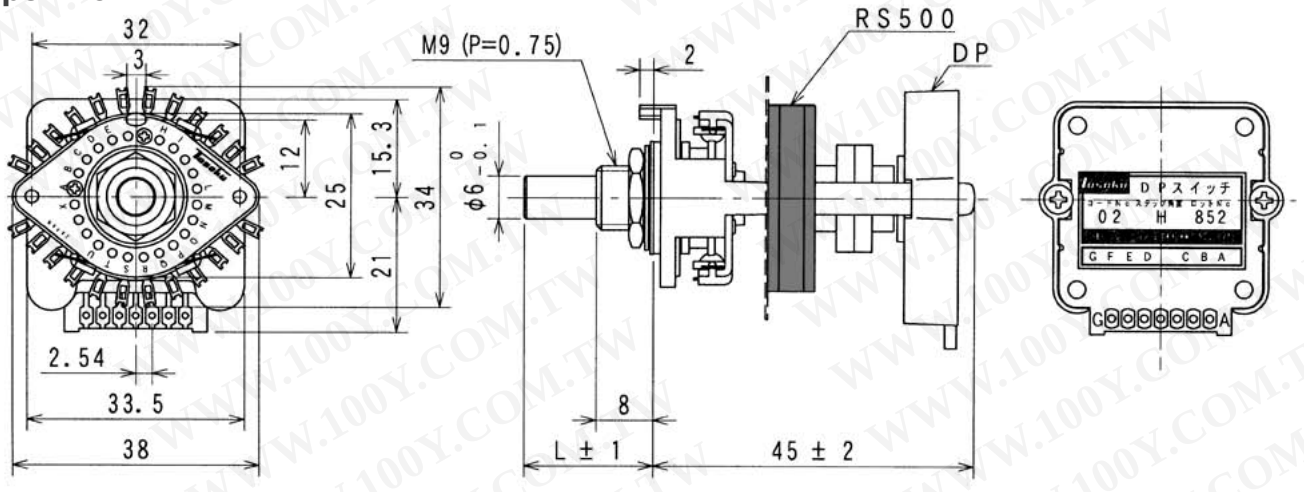



## RS500 Specification

| Item | | Condition | | | Specification |
|---|---|---|---|---|---|
| Temperature range for use | | No freezing | | | - 20˚C to +70˚C |
| Temperature range for storage | | No freezing | | | - 40˚C to +70˚C |
| Mechanical Performance | 1. Rotating torque | | | | 0.10~0.25N·m |
| | 2. Terminal strength | Charge static load at terminal end toward one direction. One time for one terminal. | | | 10N |
| | 3. Nut tightening strength | | | | 2N.m |
| | 4. Vibration resistance | Sweep rate 10~55~10Hz/min | | | No problem for external looking and internal structure. |
| | | Vibration :1.5mm to xyz directions for 2h | | | Cover electrical performance item 1 |
| | 5. Soldering heat resistance | In case that wafer material is phenol. | | | Temperature 350±10˚C<br>Times 3±1sec |
| | 6. Waterproof | Waterproof for panel attachment (No axis rotation) | | | Water depth 2m,Time 2h |
| Electrical Performance | 1. Contact resistance | DC5V 1A Voltage drop method<br>1KHz±200Hz Voltage:20mV Current,under50mA | | | Under 10mΩ<br>(initial value including conductor resistance) |
| | 2. Insulation resistance | DC500V after 1min. | Terminal to terminal | Phenol | Over 1,000MΩ |
| | | | Terminal to earth | Epoxy | Over 50,000MΩ |
| | 3. Withstand voltage | AC500V for 1min. | Terminal to terminal<br>Terminal to earth | | No trouble |
| | 4. Rating | Resistance load | | AC | 30V 1.5A<br>200V 0.2A |
| | | | | DC | 20V 1.5A<br>200V 0.1A |
| Life time | 1.Rotational life | No load 50,000 times<br>angular velocity<br>1~1.2πrad/s | Rotating torque | | +10%~-30% for initial value |
| | | | Contact resistance | | Under 20mΩ |
| | | | Insulation resistance<br>DC500V after 1min. | | Phenol Over 100MΩ<br>Epoxy Over 5,000MΩ |
| | | | Voltage resistance<br>AC500V for 1min. | | No trouble<br>Under 10mΩ |
| Weatherability | 1.Humidity resistance (Stationary state) | Temperature:<br>40±2˚C<br>Relative humidity:<br>90~95%<br>Time: 48h | Contact resistance | | Phenol Over 100MΩ |
| | | | Insulation resistance | | Epoxy Over 5,000MΩ |
| | | | Voltage resistance<br>AC500V for 1min. | | No trouble<br>0.10~0.25N·m |
| | 2. Heat resistance | Temperature: 70±2˚C<br>Time: 16h | Rotating torque | | Under 10mΩ |
| | | | Contact resistance | | 0.10~0.25N·m |
| | 3. Cold resistance | Temperature: -20±3˚C<br>Time: 16h | Rotating torque | | Under 10mΩ |
| | | | Contact resistance | | |

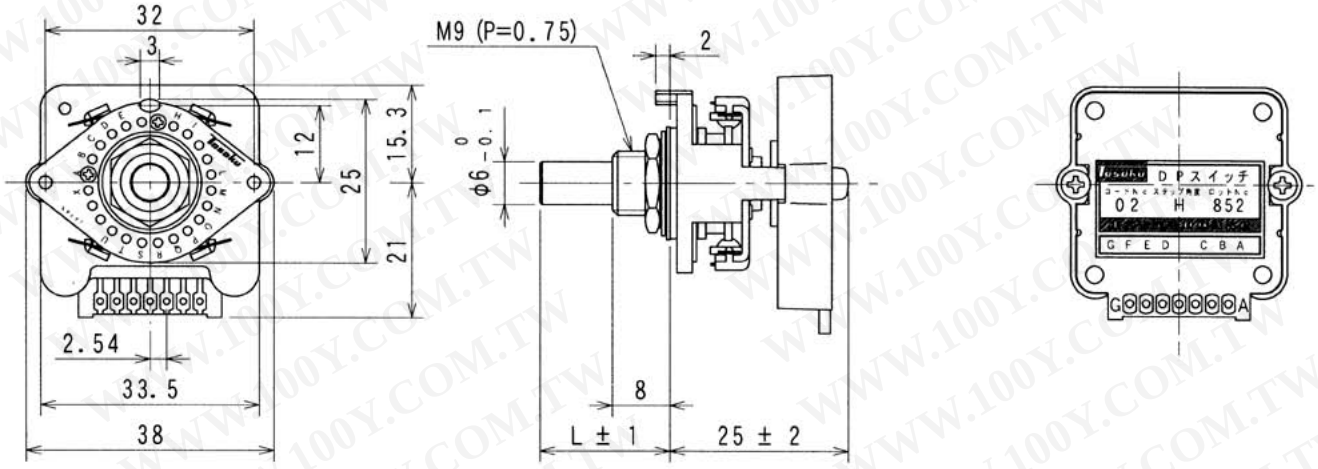
## Dimensions & Mounting

### Type DP5

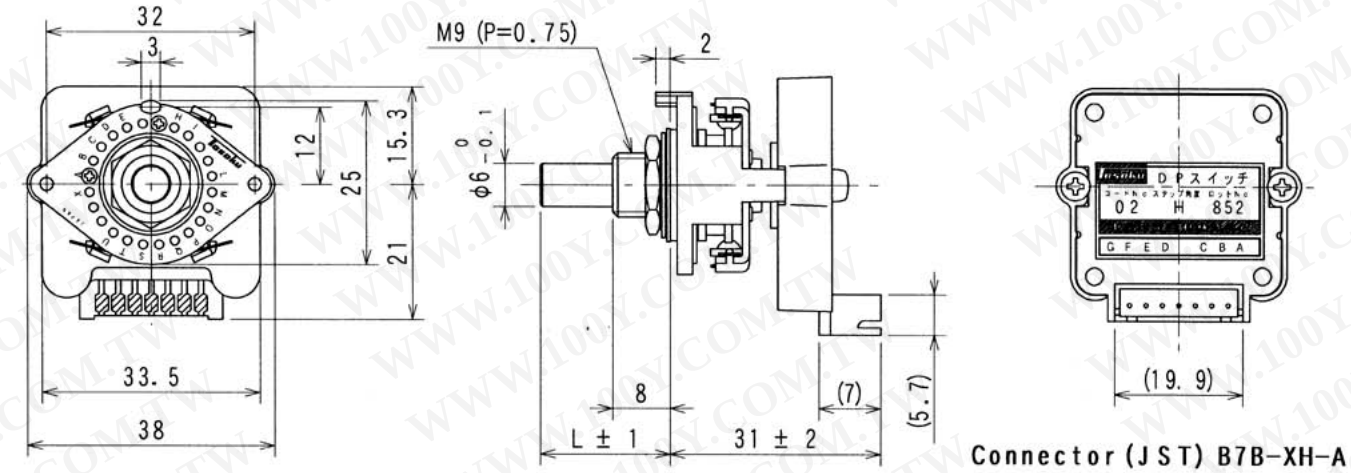


## Dimensions & Mounting

### No connector

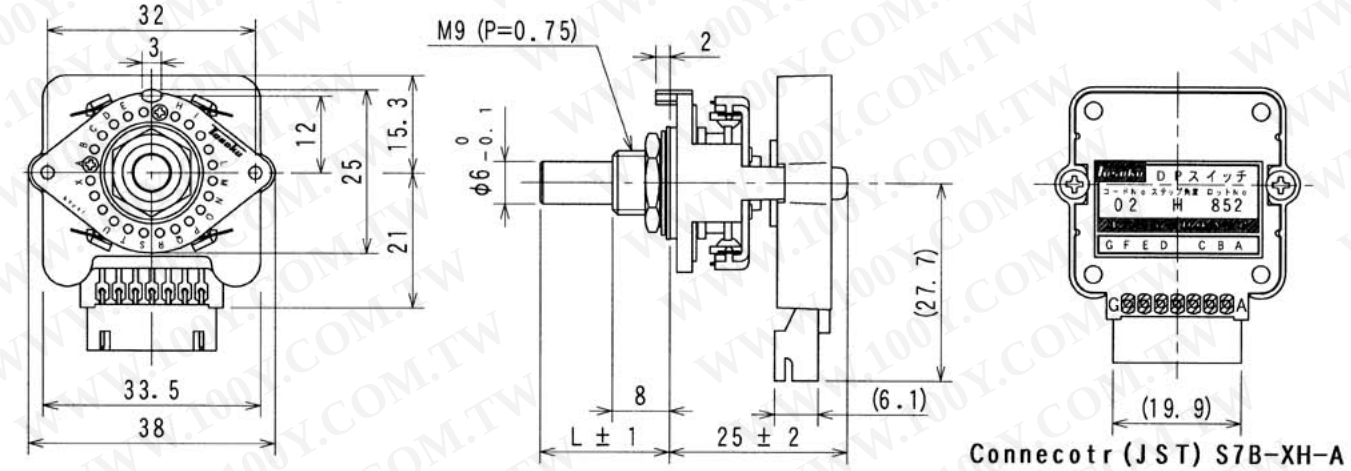



### With type CB Connector




Connector (JST) B7B-XH-A

### With type CS Connector




Connecotr (JST) S7B-XH-A

## Code Table　Changeover angle 13.85° (26 Position)

● : ON

Code No.01　Real Binary

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| F | 2 | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | |
| B | 4 | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | |
| E | 8 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● |
| C | 16 | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | | | | | | | | | | | | | | | |

Code No.02　Complementary Binary

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | |
| F | 2 | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● |
| B | 4 | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● |
| E | 8 | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | |
| C | 16 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | | |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | | | | | | | | | | | | | | | |

Code No.03　Real Gray

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● |
| F | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | |
| B | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● | ● | ● | ● | ● |
| E | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| C | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| G | Parity | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| D | Common | | | | | | | | | | | | | | | | | | | | | | | | | | |

## Code Table　Changeover angle 15° (24 Position)

● : ON

Code No.01　Real Binary

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| F | 2 | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● |
| B | 4 | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● |
| E | 8 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | |
| C | 16 | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | | | | | | | | | | | | | |

Code No.02　Complementary Binary

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | |
| F | 2 | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | |
| B | 4 | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | |
| E | 8 | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| C | 16 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | | | | | | | | | | | | | |

## Code Table Changeover angle 15° (24 Position)

Code No.03 Real Gray ● : ON

| Teminals | Bits No. | Setting values | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| A | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | |
| F | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | |
| B | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● | ● | ● |
| E | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| C | | | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| G | Parity | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| D | Common | | | | | | | | | | | | | | | | | | | | | | | | |

## Code Table Changeover angle 20° (18 Position)

Code No.01 Real Binary ● : ON

| Teminals | Bits No. | Setting values | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| A | 1 | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| F | 2 | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | |
| B | 4 | | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | |
| E | 8 | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | |
| C | 16 | | | | | | | | | | | | | | | | | ● | ● |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | | | | | | | |

Code No.02 Complementary Binary

| Teminals | Bits No. | Setting values | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| A | 1 | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | |
| F | 2 | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● |
| B | 4 | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | | ● | ● |
| E | 8 | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | | | ● | ● |
| C | 16 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | | | | | | | |

Code No.03 Real Gray

| Teminals | Bits No. | Setting values | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| A | | | ● | ● | | | ● | ● | | | ● | ● | | | ● | ● | | | ● |
| F | | | | ● | ● | ● | ● | | | | | ● | ● | ● | ● | | | | |
| B | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | |
| E | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| C | | | | | | | | | | | | | | | | | | ● | ● |
| G | Parity | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| D | Common | | | | | | | | | | | | | | | | | | |

## Code Table Changeover angle 27.69° (13 Position)

Code No.01 Real Binary ● : ON

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | | ● | | ● | | ● | | ● | | ● | | ● | |
| F | 2 | | | ● | ● | | | ● | ● | | | ● | ● | |
| B | 4 | | | | | ● | ● | ● | ● | | | | | ● |
| E | 8 | | | | | | | | | ● | ● | ● | ● | ● |
| C | Parity | | ● | ● | | ● | | | ● | ● | | | ● | |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | | |

Code No.02 Complementary Binary

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | ● | | ● | | ● | | ● | | ● | | ● | | ● |
| F | 2 | ● | ● | | | ● | ● | | | ● | ● | | | ● |
| B | 4 | ● | ● | ● | ● | | | | | ● | ● | ● | ● | |
| E | 8 | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| C | Parity | | ● | ● | | ● | | | ● | ● | | | ● | |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | | |

Code No.03 Real Gray

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | | ● | ● | | | ● | ● | | | ● | ● | | |
| F | | | | ● | ● | ● | ● | | | | | ● | ● | ● |
| B | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | |
| E | | | | | | | | | | ● | ● | ● | ● | ● |
| C | Parity | | ● | | ● | | ● | | ● | | ● | | ● | |
| G | | | | | | | | | | | | | | |
| D | Common | | | | | | | | | | | | | |

Code No.04 Complementary Gray

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | ● | | | ● | ● | | | ● | ● | | | ● | ● |
| F | | ● | ● | | | | | ● | ● | ● | ● | | | |
| B | | ● | ● | ● | ● | | | | | | | | | ● |
| E | | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| C | Parity | | ● | | ● | | ● | | ● | | ● | | ● | |
| G | | | | | | | | | | | | | | |
| D | Common | | | | | | | | | | | | | |

## Code Table Changeover angle 30° (12 Position)

Code No.01 Real Binary ● : ON

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | | ● | | ● | | ● | | ● | | ● | | ● |
| F | 2 | | | ● | ● | | | ● | ● | | | ● | ● |
| B | 4 | | | | | ● | ● | ● | ● | | | | |
| E | 8 | | | | | | | | | ● | ● | ● | ● |
| C | Parity | | ● | ● | | ● | | | ● | ● | | | ● |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | |

Code No.02 Complementary Binary

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | ● | | ● | | ● | | ● | | ● | | ● | |
| F | 2 | ● | ● | | | ● | ● | | | ● | ● | | |
| B | 4 | ● | ● | ● | ● | | | | | ● | ● | ● | ● |
| E | 8 | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| C | Parity | | ● | ● | | ● | | | ● | ● | | | ● |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | |

Code No.03 Real Gray

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | | ● | ● | | | ● | ● | | | ● | ● | |
| F | 2 | | | ● | ● | ● | ● | | | | | ● | ● |
| B | 4 | | | | | ● | ● | ● | ● | ● | ● | ● | ● |
| E | 8 | | | | | | | | | ● | ● | ● | ● |
| C | Parity | | ● | | ● | | ● | | ● | | ● | | ● |
| G | | | | | | | | | | | | | |
| D | Common | | | | | | | | | | | | |

Code No.04 Complementary Gray

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | ● | | | ● | ● | | | ● | ● | | | ● |
| F | 2 | ● | ● | | | | | ● | ● | ● | ● | | |
| B | 4 | ● | ● | ● | ● | | | | | | | | |
| E | 8 | ● | ● | ● | ● | ● | ● | ● | ● | | | | |
| C | Parity | | ● | | ● | | ● | | ● | | ● | | ● |
| G | | | | | | | | | | | | | |
| D | Common | | | | | | | | | | | | |

Code No.11

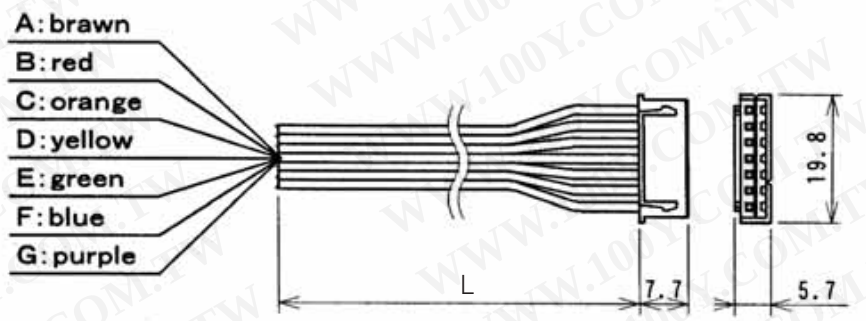
| Teminals | Bits No. | Setting values 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | ● | | ● | | ● | | ● | | ● | | ● | |
| F | 2 | | ● | ● | | | ● | ● | | | ● | ● | |
| B | 4 | | | | ● | ● | ● | ● | | | | | ● |
| E | 8 | | | | | | | | ● | ● | ● | ● | ● |
| C | Parity | ● | ● | | ● | | | ● | ● | | | ● | |
| G | Inhibit | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| D | Common | | | | | | | | | | | | |

Code No.51

| Teminals | Bits No. | Setting values 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | | ● | ● | | | ● | ● | | | | | | |
| F | | | | | | | | | ● | ● | ● | ● | |
| B | | | | | ● | ● | ● | ● | ● | ● | | | |
| E | | ● | | | | | ● | ● | ● | | | ● | |
| C | Common | | | | | | | | | | | | |
| G | | | | | | | | | | | | | |
| D | | | | | | | | | | | | | |

## With Connector Cord

| TYPE | L(cm) |
|---|---|
| A05 | 50 |
| A15 | 150 |
| A30 | 300 |




・cord STYLE2555,AWG24 ・connector XHP-7(JST) ・UL 94V-0

## Ordering Instructions

| DPP | 01 | 0 | 20 | J | 20 | R | CB |
|---|---|---|---|---|---|---|---|
| *1 | *2 | *3 | *4 | *5 | *6 | *7 | *8 |

***1 Series, Kinds of mounting**
DPP: Water proof
DPN: Tighten the central nut
DP5: Combination type (Water proof)

***2 Code No.**
01: Real Bainary
02: Complementary Bainary
03: Real Gray
04: Complementary Gray
11: Special item
51: Special item

***3 Start side position** *NOTE 1

***4 End side position**
*00 For continuous operation

***5 Step angle** *NOTE 2
H: 13.85˚
J: 15˚
L: 20˚
S: 27.69˚
N: 30˚

***6 Shaft length**
16: 16mm
20: 20mm

***7 Shaft type**
R: Round

***8 Connector**
No sigh: Without connector
CB: Panel tangently
CS: Parallel to the panel

*NOTE 1
When it is used in the full position, the operation becomes continuos.
However both the continuous and stopped type can used. at 27.69˚ and 30˚

*NOTE 2
Step angle and Set position

| | Step | Set position |
|---|---|---|
| H | 13.85˚ | 0~25 |
| J | 15˚ | 0~23 |
| L | 20˚ | 0~17 |
| S | 27.69˚ | 0~12 |
| N | 30˚ | 0~11 |

*NOTE 3
Setting change: When you change settings please, make sure the shaft is returned to the starting position.
Once this is confirmed,you may change the stopper screw.
If the rotating stopper is directly below the stopper screw hole, it may break.

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