

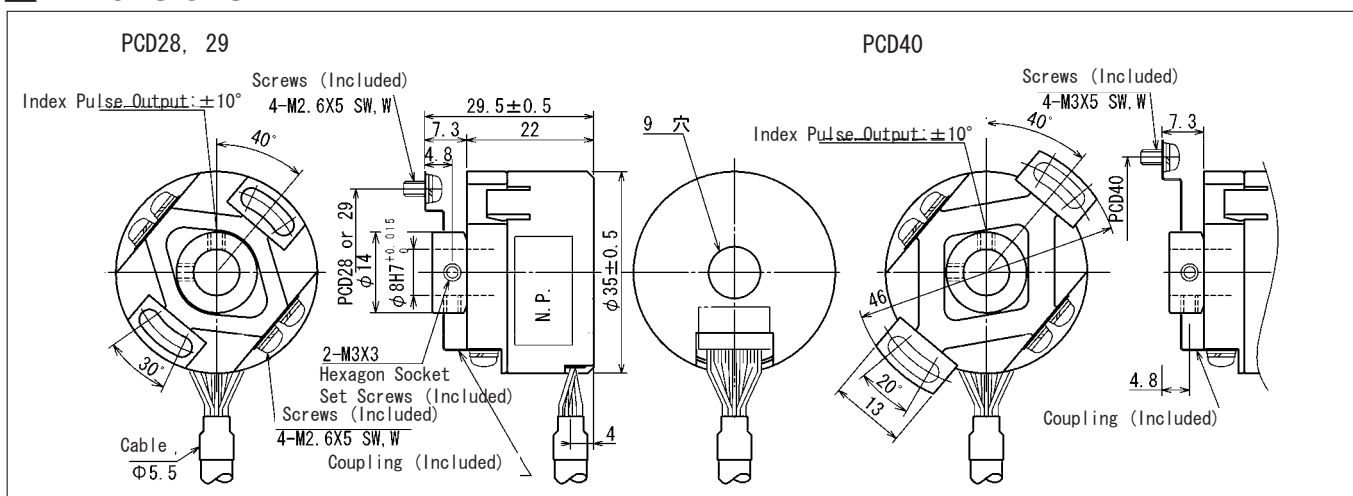
# IRT3 Series



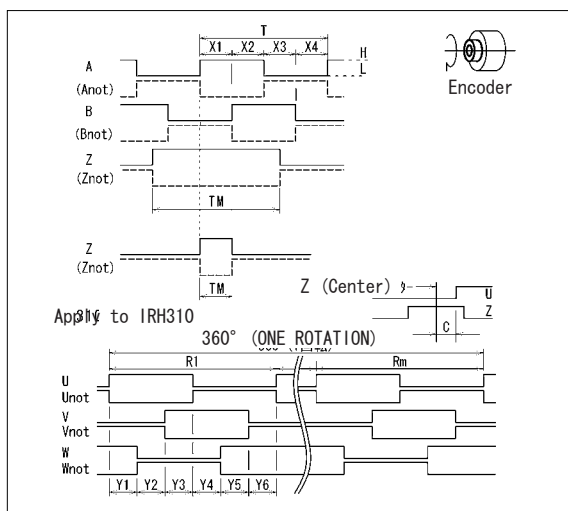
●Outer Diameter 35mm ●Length 29.5mm ●Shaft Diameter 8.0mm

Model Name **IRT3X0** — **XXXX** — **XXX**  
 Model Output Pulse (P/R) Function Number

## Dimensions



## Output Signals



## Square-wave Accuracy

|  |  |  |
|--|--|--|
| ~2500P/R   | 3000P/R  | 3001~6000P/R (: ×2)  |
| $X2+X3=0.5T \pm 0.1T$  | $X1+X2=0.5T \pm 0.1T$  | $X1+X2=0.5P \pm 0.15P$   |
| $Xn \geq 0.15T$ (n=1,2,3,4)  | $X2+X3=0.5T \pm 0.1T$  | $X2+X3=0.5P \pm 0.15P$   |
| $TM=1.0T \pm 0.5T$   | $Xn \geq 0.15T$ (n=1,2,3,4)                                      | $Xn \geq 0.1P$ (n=1,2,3,4)                                       |
| Position relationship of A&B channels and Z channel are not specified. | $TM=0.25T \pm 0.1T$ (=X1)  | $TM=0.25P \pm 0.15P$ (=X1)                                       |
|  | Position relationship of A&B channels and Z channel are as left. | Position relationship of A&B channels and Z channel are as left. |
|  |  | $P=1.0T \pm 0.1T$  |

$Yn=Rm^\circ / 6 \pm 2^\circ$  (n=1,2,3,4,5,6) (Mechanical Angle)

$C \leq \pm 2^\circ$  (Mechanical Angle)

## Signal Accuracy

|  |  |  |
|--|--|--|
| ~2500P/R                               | 3000P/R                                | 3001~6000P/R (: ×2)                    |
| Accumulative Angle Error : $\leq 0.2T$ | Accumulative Angle Error : $\leq 0.3T$ | Accumulative Angle Error : $\leq 0.4T$ |
| Pitch Error $\square$ : $\pm 0.01T$    | Pitch Error $\square$ : $\pm 0.01T$    | Pitch Error $\square$ : $\pm 0.1T$     |
| Adjacent Pitch Error : $\pm 0.005T$    | Adjacent Pitch Error : $\pm 0.005T$    |  |

\* $T=360^\circ / NI$  (NI:P/R)

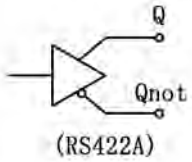
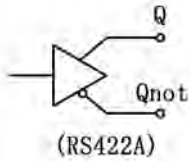
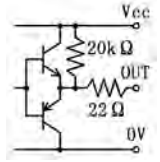
\* $Rm=360^\circ / Ncs \pm 2^\circ$  (Ncs: CS signal P/R) (Mechanical Angle)

## Wire Connection

| Color  | White | Black | Red | Pink | Olive | Blue | Yellow | Orange | Beige | Brown | Green | Grey | Light Blue | Violet |
|--------|-------|-------|-----|------|-------|------|--------|--------|-------|-------|-------|------|------------|--------|
| IRT310 | +5V   | 0V    | A   | Anot | B     | Bnot | Z      | Znot   | U     | Unot  | V     | Vnot | W          | Wnot   |
| IRT320 | +5V   | 0V    | A   | Anot | B     | Bnot | Z      | Znot   |       |       |       |      |            |        |
| IRT360 | +Vcc  | 0V    | A   | 0V   | B     | 0V   | Z      | 0V     |       |       |       |      |            |        |

※Shield=FG

## Electrical Specifications

| Item/Model                      | IRT310  | IRT320  | IRT360  |
|---------------------------------|---|---|---|
| Output Pulse(CS)                | 500(2), 1000(4),<br>2000(4), 2500(4)  | 500, 600, 1000, 1024, 1800, 2000, 2048, 2500,<br>3000, 4096, 5000, 6000           |   |
| Supply Voltage (Vcc)            | 5V±0.5V   | 5V±0.5V   | 10.8V~26.4V   |
| Supply Current (No load)        | ≤70mA   | ≤70mA   | ≤70mA   |
| Output Type                     | Line Driver   | Line Driver   | Complementary   |
| Output Circuit                  |  |  |  |
| Output Voltage                  | H   | ≥2.4V   | ≥Vcc-4.0V   |
|                                 | L   | ≤0.5V   | ≤2.0V   |
| Output Current                  | ±10mA   | ±10mA   | ≤40mA   |
| Max. Applied Voltage            | —   | —   | —   |
| Min. Load Resistance            | —   | —   | 500Ω  |
| Rise Time                       | ≤100ns  | ≤100ns  | 500ns (Typ.)  |
| Fall Time                       | ≤100ns  | ≤100ns  | 100ns (Typ.)  |
| Response Frequency              | 0~300kHz  | 0~300kHz  | 0~200kHz  |
| Bypass Capacitor(0V-FG)         | 0.22μF  | 0.22μF  | 0.22μF  |
| Bypass Capacitor (Vcc-FG)       | 0.22μF  | 0.22μF  | 0.22μF  |
| Determinate Time of ABZ signals | Output signal is not stable in 30ms after the power is on.                        |   |   |

IRT3 Series

## Mechanical Specifications

|                            |                      |                    |   |
|----------------------------|----------------------|--------------------|---|
| Mech. Perm. Speed          | 6000                 | min <sup>-1</sup>  |   |
| Starting Torque            | ≤0.005               | N·m                | at 25°C   |
| Moment of Inertia          | 0.5×10 <sup>-6</sup> | kg·m <sup>2</sup>  |   |
| Mounting<br>Shaft<br>Spec. | Axial End Play       | 0.15               | mm  |
|                            | Shaft Runout         | 0.03               | mm (T.I.R.)   |
|                            | Perpendicularity     | 0.1                | mm R15mm  |
| Max. Accel. Speed          | 40000                | rad/s <sup>2</sup> |   |
| Cable Length               | 1000                 | mm                 | Wire Thickness 0.1mm <sup>2</sup> , Diameter 5.5mm, Twist Pair Shield Cable |
| Mass                       | Approx. 0.06         | kg                 | Without Cable   |

## Environmental Specifications

|                       |         |                  |   |
|-----------------------|---------|------------------|---|
| Operating Temperature | -20~+85 | °C               | Without Dewfall                                   |
| Storage Temperature   | -20~+85 | °C               | Without Dewfall                                   |
| Vibration *1          | 100     | m/s <sup>2</sup> | 25~2000Hz, X·Y·Z Each Direction 2h                |
| Shock *1              | 1000    | m/s <sup>2</sup> | 6ms, Half Sin Pulse, X·Y·Z Each Direction 2 Times |
| Protection Grade      | IP00    | Equivalent       | With Plastic Cover                                |

\*1 Test Conditions

Notes Specifications subject to change without notice.  
Coupling to be shipped separately.  
Please specify the size of PCD.

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