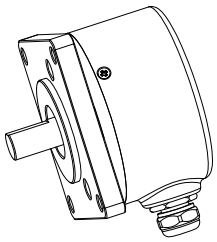
# S50F

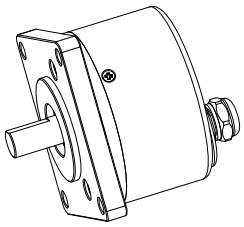
## Specifications 1/6

### Incremental Type (Solid shaft,flange)

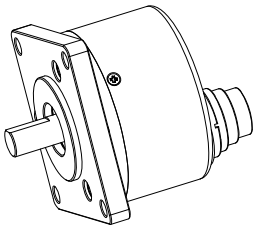
- Feature: easy to install with flange,optional various output mode,long service life,etc
- Application: textile industry、packing machinery、production line,etc,for automation control
- External dimensions: external diameter ⌀50mm,thickness 35.7mm,diameter of shaft 8mm(D type)
- Resolution: up to 23040P/R
- Supply voltage: DC5V; DC8-30V
- Protection: IP50; IP65
- Cable length: 1000mm
- Weight: about 220g



S50F-T



S50F-Q



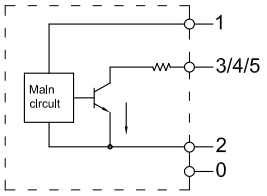
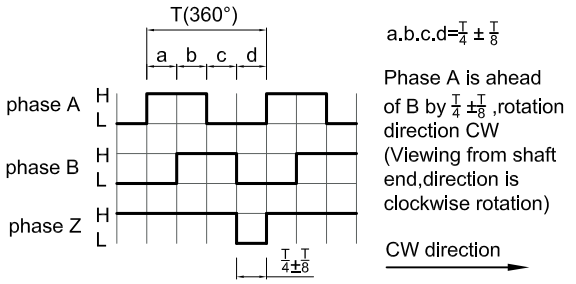
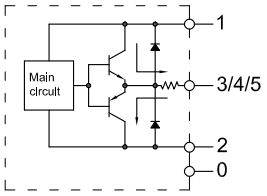
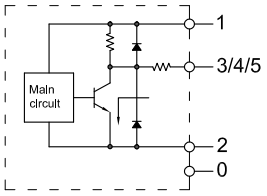
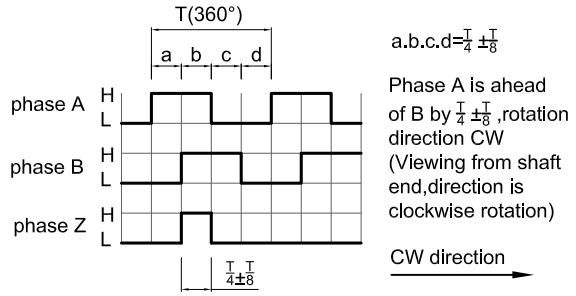
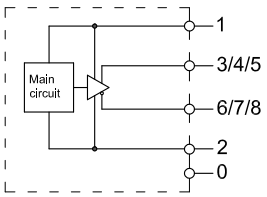
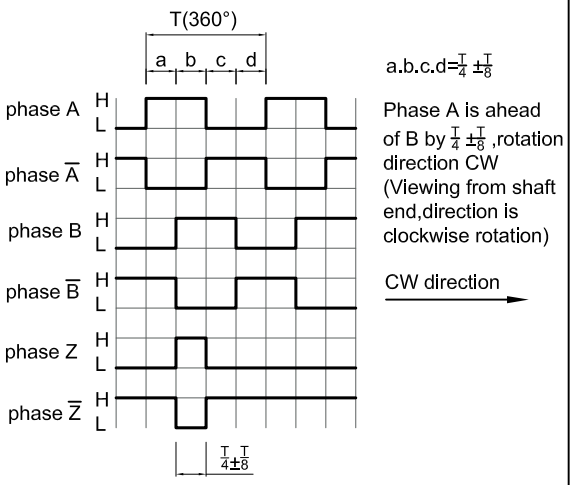
S50F-D

### Model Guide

- Model form (filled required parameters in the box as following)
- Must choose supply voltage: DC5V; DC8-30V
- If need coupling, please purchase additionally (Please refer to accessory at specifications 5/5 )

| S50F– | T | 6 | C | 1024 | |
|---|---|---|---|---|---|
| Product model series | T=Radial cable<br>Q=Axial cable<br>D=Axial socket | Output phase<br>1=A<br>2=A+B<br>3=A+B+Z<br>4=A+$\overline{A}$+B+$\overline{B}$<br>6=A+$\overline{A}$+B+$\overline{B}$+Z+$\overline{Z}$ | Output type<br>N=OC<br>V=Voltage<br>F=Push-pull<br>C=TTL(DC5V)<br>E=HTL(DC8-30V) | Pulse per revolution (P/R)<br>9; 20;<br>30; 50;<br>60; 100;<br>200; 240;<br>250; 256;<br>300; 360;<br>450; 500;<br>512; 600;<br>720; 800;<br>900; 1000;<br>1024; 1200;<br>1250; 1440;<br>1500; 2000;<br>2048; 2500;<br>2880; 3000;<br>3600; 4000;<br>4096; 4500;<br>5000; 5760;<br>6000; 7200;<br>8192; 9000;<br>10000; 11520;<br>12000; 14400;<br>16384; 18000;<br>20000; 23040 | Special requirement<br>Blank=cable length 1m; IP50<br>Special cable length =C+number<br>Special protection IP65=D |

## ■ Output Mode

<table>
<tr><th>Output type</th><th>Output circuit</th><th>Output wave form</th><th>Connection</th></tr>
<tr><td>OC</td><td rowspan="2"> 
</td><td rowspan="2"> 
</td><td rowspan="3">0=GND<br>1=red=DC5V;<br>DC8-30V<br>2=black=OV<br>3=white=A<br>4=green=B<br>5=yellow=Z</td></tr>
<tr><td>Push-Pull</td><td> 
</td></tr>
<tr><td>Voltage</td><td> 
</td><td> 
</td></tr>
<tr><td>TTL<br><br>HTL</td><td> 
</td><td> 
</td><td>0=shielding=GND<br>1=red=DC5V;<br>DC8-30V<br>2=black=OV<br>3=white=A<br>4=green=B<br>5=yellow=Z<br>6=white/black=Ā<br>7=green/black=B̄<br>8=yellow/black=Z̄</td></tr>
</table>

## ■ Electrical Characteristics

| Parameter / Output type / Item | | | OC | Voltage | Push-pull | TTL | HTL |
|---|---|---|---|---|---|---|---|
| Supply voltage | | | DC+5V±5%; DC8V-30V±5% | | | DC+5V±5% | DC8-30V±5% |
| Consumption current | | | 100mA Max | | | | |
| Allowable ripple | | | ≤3%rms | | | | |
| Top response frequency | | | 100KHz | | | 200KHz | 300KHz |
| Output capacity | Output current | Input | ≤30mA | Load resistance 2.2K | ≤30mA | ≤±20mA | ≤±50mA |
| | | Output | — | | ≤10mA | | |
| | Output voltage | "H" | — | — | ≥[(Supply voltage)-2.5V] | ≥2.5V | ≥Vcc-3 VDC |
| | | "L" | ≤0.4V | ≤0.7V(less than 20mA) | ≤0.4V(30mA) | ≤0.5V | ≤ 1V VDC |
| | Load voltage | | ≤DC30V | — | | — | |
| Rise & Fall time | | | Less than 2us(cable length：2m) | | | Less than 1us (Cable length：2m) | ≤100ns |
| Insulation strength | | | AC500V 60s | | | | |
| Insulation resistance | | | 10MΩ | | | | |
| Mark to space ratio | | | 45% to 55% | | | | |
| Phase shift between A & B | | | 90°±10° ( frequency in low speed ) | | | | |
| | | | 90°±20° ( frequency in high speed ) | | | | |
| Origin motion | | | Low level available | High level available | Low level available | — | |
| GND | | | not connect to encoder | | | | |

## ■ Mechanical Characteristics

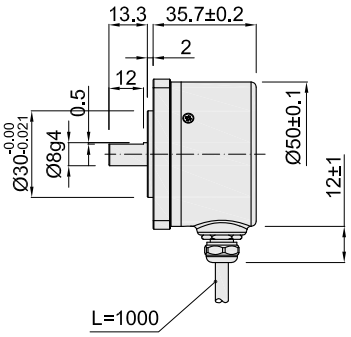
| | |
|---|---|
| Shaft | Ø8mm D type(stainless steel) |
| Starting torque | Less than $5\times10^{-3}$ N·m |
| Inertia moment | Less than $3\times10^{-6}$ kg·m² |
| Shaft load | Radial 40N; Axial 20N |
| Slew speed | ≤5000 rpm; IP65≤3000 rpm |
| Bearing Life | $1.5X10^{9}$ revs at rated load(100000hrs at 2500RPM) |
| Shell | Aluminium alloy |
| Weight | about 220g |

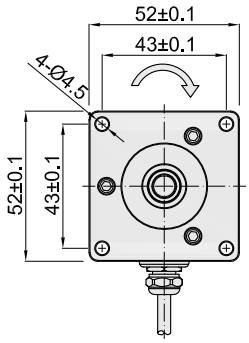
## ■ Environmental Specifications

| | |
|---|---|
| Environmental temperature | Operating:—20～+80°C(repeatable winding cable: -10°C); Storage:—25～+85°C |
| Environmental humidity | Operating and storage: 35～85%RH(noncondensing) |
| Vibration(endure) | Amplitude 0.75mm,5~55Hz,2h for X,Y,Z direction individually |
| Shock(endure) | 490m/s² 11ms three times for X,Y,Z direction individually |
| Protection | IP50; IP65 |

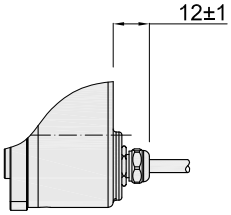
## Basic Dimensions

- S50F-T

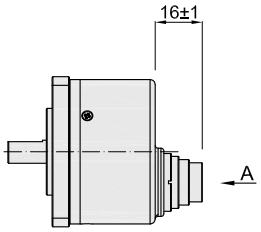


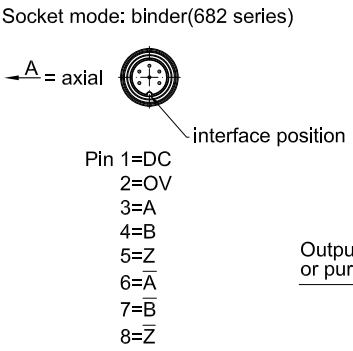



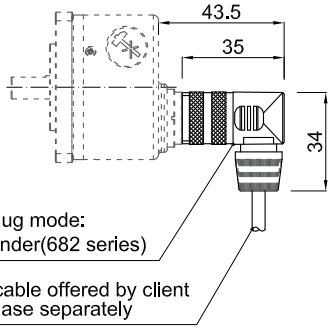

- S50F-Q



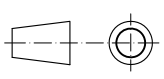

- S50F-D

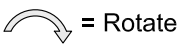


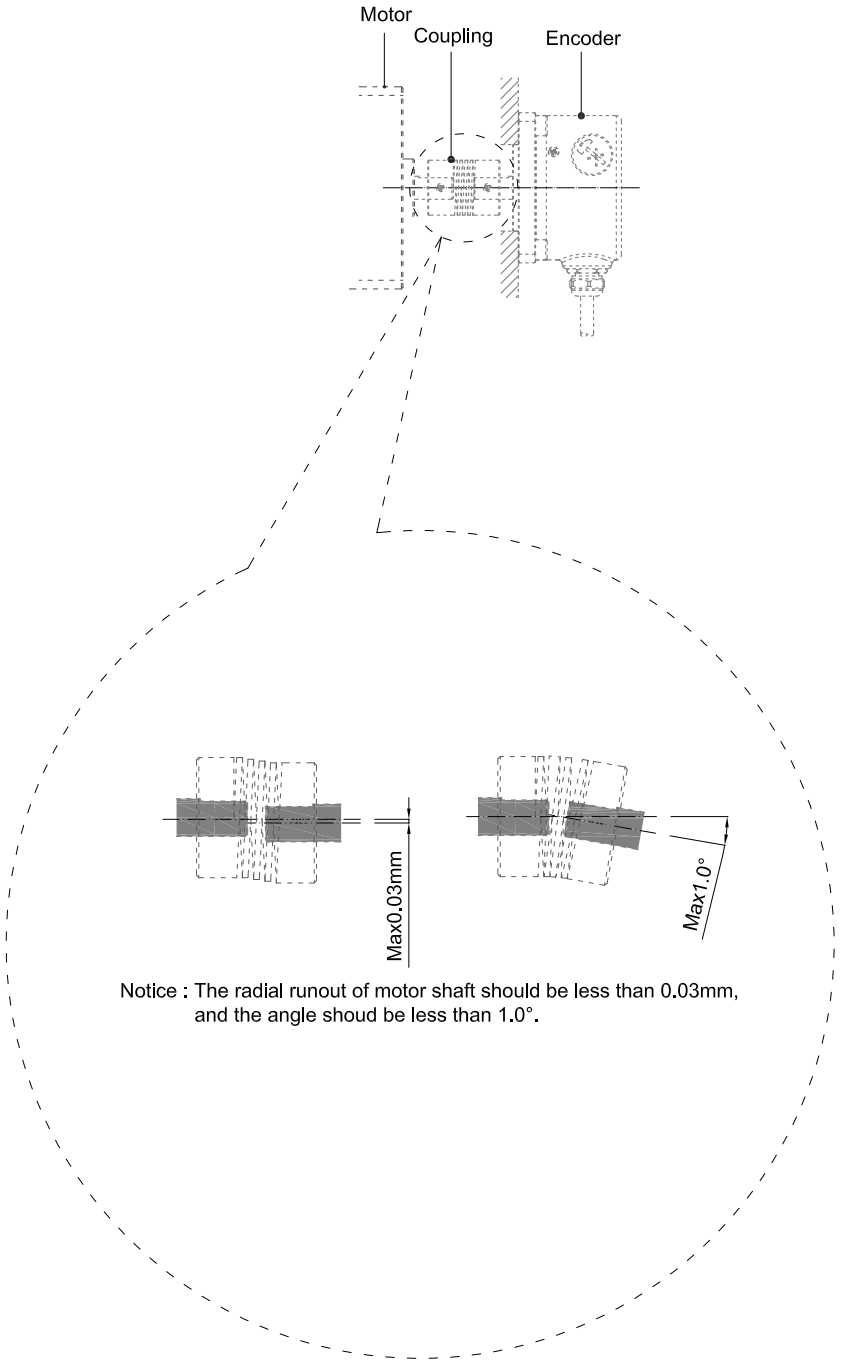




Unit: mm





## Assembling requirement




Notice : The radial runout of motor shaft should be less than 0.03mm,
and the angle shoud be less than 1.0°.

### About vibration

Vibration act on encoder always cause wrong pulse ,
so we should pay attention to working place.
More pulse per revolution ,
narrower groovy spacing of grating ,
more effect to encoder by vibration,
when rev is low or stop ,
vibration act on shaft or main body would cause grating vibrating ,
so encoder might make wrong pulse.

# S50F

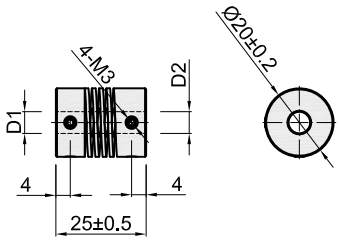
## Specifications 6/6

■ Accessory(Need purchase additionally)

● Coupling

H series spring coupling
(general accuracy, or choose M series for higher accuracy)

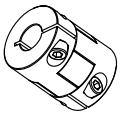
6H8 No:8700022
8H8 No:8700023
8H10 No:8700007

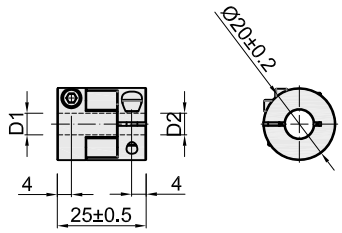



| Model | D1 | D2 |
|---|---|---|
| 6H8 | $Ø6^{+0.03}_{+0.01}$ | $Ø8^{+0.03}_{+0.01}$ |
| 8H8 | $Ø8^{+0.03}_{+0.01}$ | |
| 8H10 | | $Ø10^{+0.03}_{+0.01}$ |
| material: aluminium alloy | | |

M series oldham coupling

6M8 No:8700038
8M8 No:8700039
8M10 No:8700040






| Model | D1 | D2 |
|---|---|---|
| 6M8 | $Ø6^{+0.03}_{+0.01}$ | $Ø8^{+0.03}_{+0.01}$ |
| 8M8 | $Ø8^{+0.03}_{+0.01}$ | |
| 8M10 | | $Ø10^{+0.03}_{+0.01}$ |
| material: aluminium alloy | | |

Unit: mm