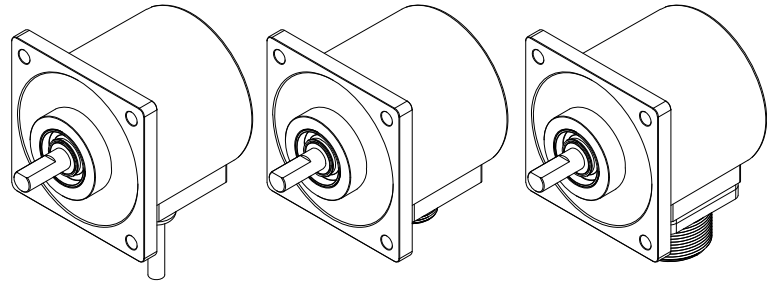


# S65F

## Specifications 1/5

### Incremental Type (Solid shaft)

- Feature: flange fixture, sturdy and durable, optional various output mode, etc
- Application: numerical control machine, textile industry, packing machinery, etc. for automation control
- External dimensions: flange 65mm\*65mm, thickness 56mm, diameter of shaft 8mm (D type)
- Resolution: up to 23040P/R
- Supply voltage: DC5V; DC8-30V
- Protection: IP50; IP65
- Cable length: 1000mm
- Weight: about 370g



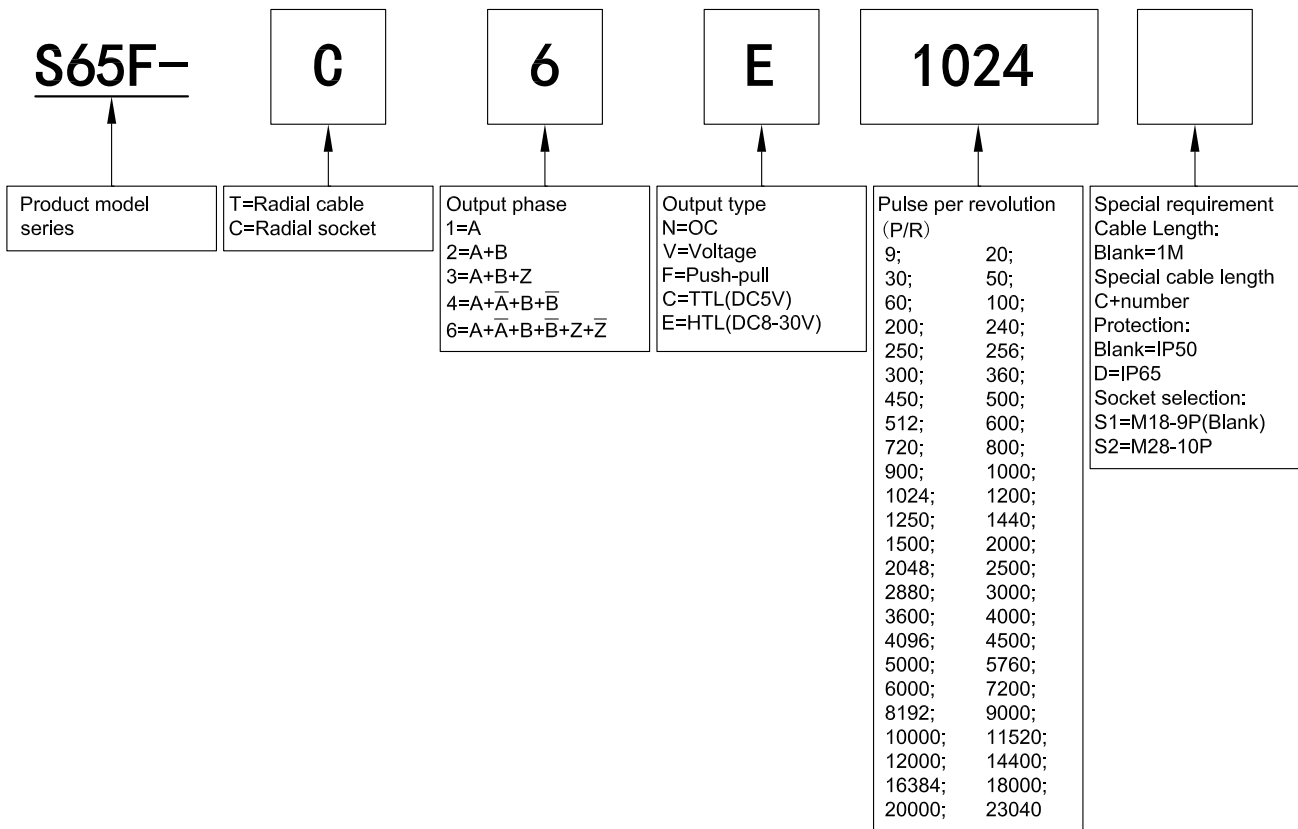
S65F-T

S65F-C  
(M18-9P)

S65F-C  
(M28-10P)

### 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)



# S65F

## Specifications 2/5

### Output Mode

| Output type | Output circuit | Output wave form  | Connection   |
|-------------|----------------|---|--|
| OC          |                | <p> <math>a.b.c.d = \frac{T}{4} \pm \frac{T}{8}</math><br/>                     Phase A is ahead of B by <math>\frac{T}{4} \pm \frac{T}{8}</math>, rotation direction CW (Viewing from shaft end, direction is clockwise rotation)<br/>                     CW direction →                 </p> | 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  |
| Push-Pull   |                | <p> <math>a.b.c.d = \frac{T}{4} \pm \frac{T}{8}</math><br/>                     Phase A is ahead of B by <math>\frac{T}{4} \pm \frac{T}{8}</math>, rotation direction CW (Viewing from shaft end, direction is clockwise rotation)<br/>                     CW direction →                 </p> |  |
| Voltage     |                | <p> <math>a.b.c.d = \frac{T}{4} \pm \frac{T}{8}</math><br/>                     Phase A is ahead of B by <math>\frac{T}{4} \pm \frac{T}{8}</math>, rotation direction CW (Viewing from shaft end, direction is clockwise rotation)<br/>                     CW direction →                 </p> |  |
| TTL         |                | <p> <math>a.b.c.d = \frac{T}{4} \pm \frac{T}{8}</math><br/>                     Phase A is ahead of B by <math>\frac{T}{4} \pm \frac{T}{8}</math>, rotation direction CW (Viewing from shaft end, direction is clockwise rotation)<br/>                     CW direction →                 </p> | 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= $\bar{A}$<br>7=green/black= $\bar{B}$<br>8=yellow/black= $\bar{Z}$ |
| HTL         |                |   |  |

## ■ Electrical Characteristics

| Parameter<br>Item         | Output<br>type | 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 |            | ≥V <sub>CC</sub> -3 V <sub>DC</sub> |  |  |
|                           |                | "L"                                 | ≤0.4V |                      | ≤0.7V(less than 20mA) |                     | ≤0.4V(30mA)              |                                     | ≤0.5V |            | ≤1V V <sub>DC</sub>                 |  |  |
|                           | Load voltage   | ≤DC30V                              |       | —                    |                       |                     |                          | —                                   |       |            |                                     |  |  |
| Rise & Fall time          |                | Less than 2us(cable length: 2m)     |       |                      |                       |                     |                          | Less than 1us<br>(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 $5 \times 10^{-3}$ N·m                           |
| Inertia moment  | Less than $3 \times 10^{-6}$ kg·m <sup>2</sup>             |
| Shaft load      | Radial 30N; Axial 20N                                      |
| Slew speed      | ≤5000 rpm; IP65≤3000 rpm                                   |
| Bearing Life    | $1.5 \times 10^9$ revs at rated load(100000hrs at 2500RPM) |
| Shell           | Die cast aluminum  |
| Weight          | about 370g   |

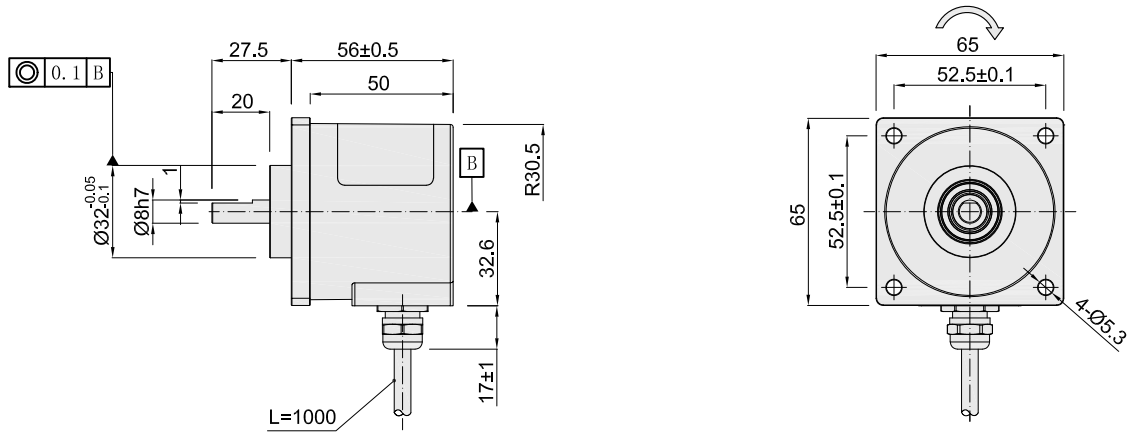
## ■ Environmental Specifications

|                           |   |
|---------------------------|---|
| 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/s <sup>2</sup> 11ms three times for X,Y,Z direction individually     |
| Protection                | IP50; IP65  |

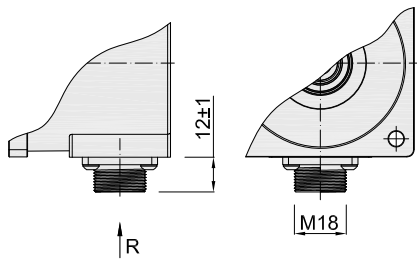
# S65F Specifications 4/5

Basic Dimensions

- S65F-C



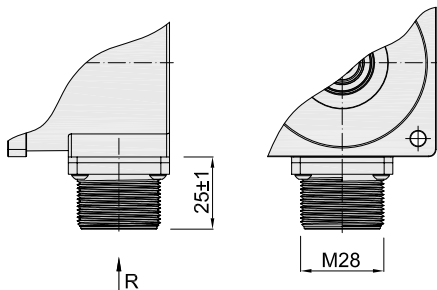
- S65F-C(Socket M18-9P)



| S1-Pin Assignments |   | Connector (WS-16K9TQ) |        |
|--------------------|---|-----------------------|--------|
| <br>WS-16J9Z       | 1 | DC                    | <br>62 |
|                    | 2 | OV                    |        |
|                    | 3 | A                     |        |
|                    | 4 | B                     |        |
|                    | 5 | Z                     |        |
|                    | 6 | $\bar{A}$             |        |
|                    | 7 | $\bar{B}$             |        |
|                    | 8 | $\bar{Z}$             |        |
|                    | 9 | -                     |        |

Output cable offered by client or purchase separately

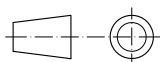
- S65F-C(Socket M28-10P)



| S2-Pin Assignments |   | Connector (MS3106A-18-16) |           |
|--------------------|---|---------------------------|-----------|
| <br>MS3102A-18-1P  | A | A                         | <br>66 40 |
|                    | B | $\bar{A}$                 |           |
|                    | C | B                         |           |
|                    | D | $\bar{B}$                 |           |
|                    | E | Z                         |           |
|                    | F | $\bar{Z}$                 |           |
|                    | G | -                         |           |
|                    | H | -                         |           |
|                    | I | OV                        |           |
|                    | J | DC                        |           |

Output cable offered by client or purchase separately

Unit: mm



↑R = Radial socket

= Rotate direction of signal output shaft

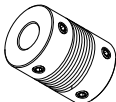
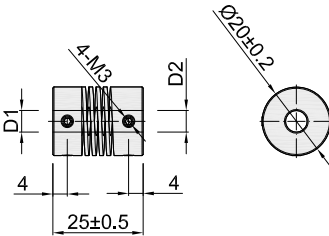
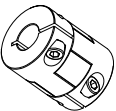
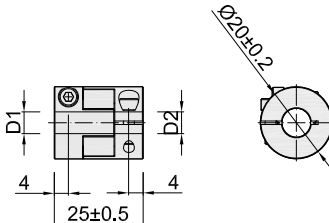
# S65F Specifications 5/5

## Assembling requirement

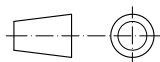


Notice : coaxiality between shaft of encoder and power shaft must be less than 0.03mm, and gradient must be less than 1.0°.

## Accessory(Need purchase additionally)

|   |   |  |       |                             |                              |
|---|---|--|-------|-----------------------------|------------------------------|
| H series spring coupling<br>(general accuracy, or choose M series for higher accuracy)<br>6H8 No:8700022<br>8H8 No:8700023<br>8H10 No:8700007 |  |   | Model | D1                          | D2                           |
|   |   |  | 6H8   | $\text{Ø}6^{+0.03}_{+0.01}$ | $\text{Ø}8^{+0.03}_{+0.01}$  |
|   |   |  | 8H8   | $\text{Ø}8^{+0.03}_{+0.01}$ |                              |
|   |   |  | 8H10  |                             | $\text{Ø}10^{+0.03}_{+0.01}$ |
| material: aluminium alloy   |   |  |       |                             |                              |
| M series oldham coupling<br>6M8 No:8700038<br>8M8 No:8700039<br>8M10 No:8700040   |  |  | Model | D1                          | D2                           |
|   |   |  | 6M8   | $\text{Ø}6^{+0.03}_{+0.01}$ | $\text{Ø}8^{+0.03}_{+0.01}$  |
|   |   |  | 8M8   | $\text{Ø}8^{+0.03}_{+0.01}$ |                              |
|   |   |  | 8M10  |                             | $\text{Ø}10^{+0.03}_{+0.01}$ |
| material: aluminium alloy   |   |  |       |                             |                              |

Unit: mm



### 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.