

# **Reference Specifications**

No: 01100050

#### INCREMENTAL Ver. 1. 0 Page

#### 1. S65 Incremental Optical Encoder (Solid shaft)

#### 1.1 Introduction:

S65 is a solid shaft housing design, various of electrical interfaces and resolutions available, four mounting flanges and collar sizes, highest protection grade IP65, compact product structure, high safety, suitable for high intensity mechanical movement fields.

#### 1.2 Feature:

- Encoder external diameter Ø61mm、thickness 56-60mm、 diameter of shaft of Ø8mm v Ø10mm available;
- · Four sizes of mounting flanges available;
- · Adopt non-contact photoelectric principle;
- · Resolution up to 48000PPR;
- Reverse polarity protection,
- · Short circuit protection

#### 1.3 Application:

Motor, elevator, textile, packaging, CNC and other automation control fields.

- Radial cable (Standard length 1M)
- Radial socket (M18/M28 male socket)

1.5 Protection: IP65 (Max)

1.6 Weight:

S65-A(About 350g); S65-B(About 370g); S65-C(About 450g); S65-D(About 370g)

# S65-A S65-B

S65-C

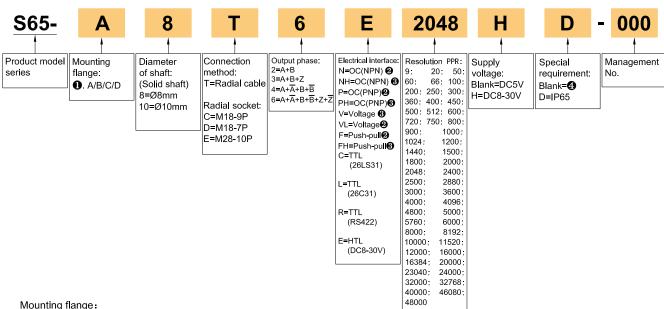
S65-D





#### 2. Model Selection Guide

Model composition(select parameters)



#### Mounting flange:

1. A=Clamping flange, collar Ø36mm, 4-M4 PCDØ48mm; B=Clamping flange, collar Ø50mm, 4-M3 PCDØ62mm; C=Clamping flange, collar Ø50mm, 4-M4 PCDØ60mm; D=Square flange,  $\Box$ 52.5mmX52.5mm(4-Ø5.3).

Zero level signal:

- 2. Z signal is low level active.
- 3. Z signal is high level active.

Special requirement:

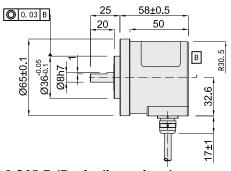
4. None indicated for IP50 and cable length 1m, if need to change the length C+number, max 100m(indicated by C100). For the specific length of use, pls refer to page 3 of the provision of output circuit.

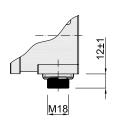
## S65 INCREMENTAL

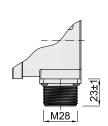
## Ver. 1. 0 Page 2/8

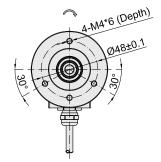
## 3. Basic Dimensions

#### 3.1 S65-A (Basic dimensions)

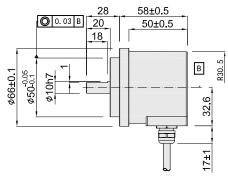


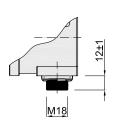


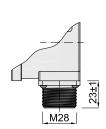


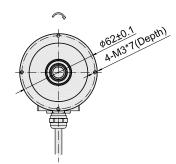


## 3.2 S65-B (Basic dimensions)

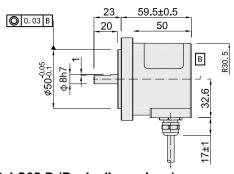


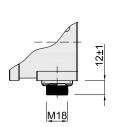


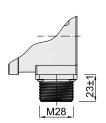


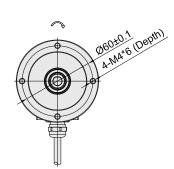


## 3.3 S65-C (Basic dimensions)

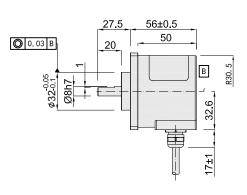


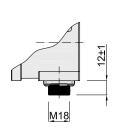


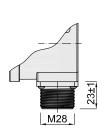


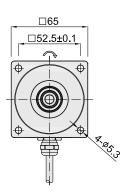


### 3.4 S65-D (Basic dimensions)





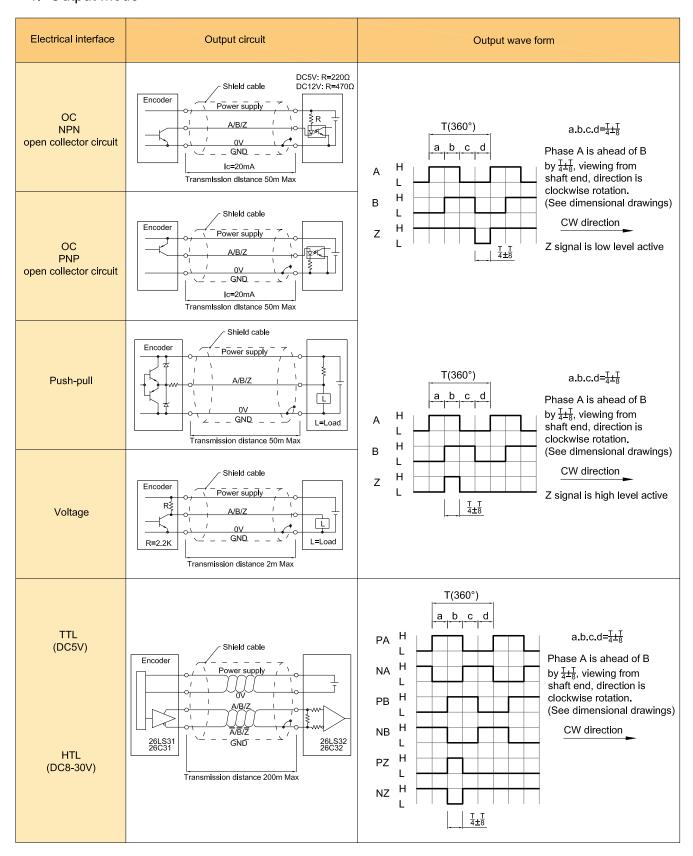




Unit: mm







# S65 INCREMENTAL

# Ver. 1. 0 Page 4/8

## 5. Electrical Parameters

Parameter Output type		-	ОС	Voltage	Push-pull	TTL	HTL		
Supply voltage			DC+5V±5% & DC8V-30V±5%			DC+5V±5%	DC8-30V±5%		
Consumption current			100mA Max			120mA Max			
Allowable ripple		ple	≤3%rms						
Top response frequency			100KHz			300KHz	500KHz		
	current	Input	≤30mA	Load resistance	≤30mA	- ≤±20mA	≤±50mA		
acity		Output	_	2.2K	≤10mA	- ≤±2UMA			
cap	Output voltage	"H"	_	_	≥[ (Supply voltage) -2,5Vl	≥2.5V	≥Vcc-3 VDC		
Output capacity		"L"	≤0.4V	≤0.7V(less than 20mA)	≤0.4V(30mA)	≤0.5V	≤ 1V VDC		
0	Load voltage		≤DC30V	_		_			
Ris	Rise & Fall time		Less than 2us(cable length: 2m)		Less than 1us (Cable length: 2m)				
Insu	lation str	ength	AC500V 60s						
Insu	Insulation resistance		10ΜΩ						
Mar	Mark to space ratio		45% to 55%						
Rev	Reverse polarity protection		V						
	Short-circuit protection		- ~0						
Pha	Phase shift		90°±10° ( frequency in low speed)						
between A & B		В	90°±20° ( frequency in high speed)						
GND			Not connect to encoder						

① Short-circuit to another channel or GND(PNP is effective for Up) , permitted for max.30s.

# S65 INCREMENTAL

Ver. 1. 0 Page 5/8

# 6. Mechanical Specifications

Diameter of shaft	Ø8mm & Ø10mm (D type, stainless steel material)			
Starting torque	Less than 5×10 <sup>-3</sup> N⋅m			
Inertia moment	Less than 3×10 <sup>-6</sup> kg·m²			
Shaft load	Radial 40N; Axial 20N			
Slew speed	≤6000 rpm(IP50); ≤4000 rpm(IP65)			
Bearing Life	1.5X10 <sup>9</sup> revs at rated load(100000hrs at 2500RPM)			
Shell	Aluminium alloy			
Weight	S65-A( About 350g); S65-B(About 370g); S65-C(About 450g); S65-D(About 370g)			

## 7. Environmental Parameters

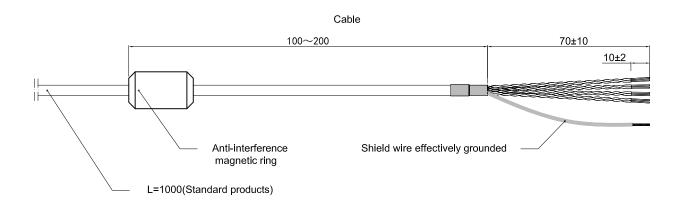
Environmental temperature	Operating: -20~+90°C(repeatable winding cable: -10°C); Storage: -25~+95°C		
Environmental humidity	Operating and storage: $35{\sim}85\%$ RH(noncondensing)		
Vibration(Endurance)	Amplitude 0.75mm,5~55Hz,2h for X,Y,Z direction individually		
Shock(Endurance)	490m/s² 11ms three times for X,Y,Z direction individually		
Protection	IP50 & IP65		

# S65 INCREMENTAL

Ver. 1. 0 Page 6/8

# 8. Wiring Table

Socket pin definition (M18 9-pin male socket)	Socket pin definition (M18 7-pin male socket)	Socket pin definition (M28 10-pin male socket)	Wire colors (cable connection)	Signal	Explanation	Differential twisted pair	
1	1	J	Red	Up	Power positive	7000	
2	2	I	Black	Un	Power negative		
3	3	А	White	А	Signal wire	7000	
6	-	В	White/BK	Ā	Signal wire		
4	4	С	Green	В	Signal wire	7000	
7	-	D	Green/BK	B	Signal wire		
5	5	E	Yellow	Z	Signal wire	7000	
8	-	F	Yellow/BK	Z	Signal wire		
9	6	G	-	-			
-	7	Н	-	-			
GND	No encoder body connected						



Unit: mm

# S65 INCREMENTAL

# Ver. 1. 0 Page 7/8

## 9. Recommended Accessories

Coupler	Dimensions	D1	D2	Model	Order No.
Spring coupling: H series	Ø20±0.2	Ø6 <sup>G8</sup>	Ø8 <sup>G8</sup>	6H8	08700022
		Ø8 <sup>G8</sup>	Ø8 <sup>G8</sup>	8H8	08700023
	4   4   4   25±0.5	Ø8 <sup>G8</sup>	Ø10 <sup>G8</sup>	8H10	08700007
Cross type: M series	25±0.5 Ø20±0.2	Ø6 <sup>G8</sup>	Ø8 <sup>G8</sup>	6M8	08700038
	4 4	Ø8 <sup>G8</sup>	Ø8 <sup>G8</sup>	8M8	08700039
	Main body material: aluminum alloy	Ø8 <sup>G8</sup>	Ø10 <sup>G8</sup>	8M10	08700040
Diaphragm type: W series	35±0.5 Ø26±0.2	Ø6 <sup>G8</sup>	Ø8 <sup>G8</sup>	6W8	08700042
		Ø8 <sup>G8</sup>	Ø8 <sup>G8</sup>	8W8	08700043
	4   4   4   Main body material: aluminum alloy	Ø8 <sup>G8</sup>	Ø10 <sup>G8</sup>	8W10	08700044

Unit: mm



# S65 INCREMENTAL

Ver. 1. 0 Page 8/8

#### 10 Caution

#### 10.1 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.

#### 10.2 Caution for wiring

- Use the encoder under the specified supply voltage. Please note that the supply voltage range may drop due to the wiring length.
- · Do not put the encoder wiring and other power lines through the same duct, and do not use them by bundling in parallel.
- Please use twisted pair wires for the signal and power wires of encoder.
- Please do not apply excessive force to the cable of encoder, or it will may be damaged.

