

5 Phase NanoDrive™ Step Driver

## INS50 Series

### Operation Manual

**NYDEN** USA

A subsidiary of **MYCOM**®, Inc.

## 1. Specifications

Driver Model	INS50-110	INS50-210
Input Voltage	AC100-120V±10% 50/60Hz	
Driver Type	Star Bipolar, Constant Current Chopper	
Phase Current	1.4 A	2.8 A
Resolution	Basic Step : 0.72° 1, 1/2, 1/2.5, 1/5, 1/8, 1/10, 1/20, 1/40, 1/50, 1/100, 1/125, 1/200, 1/250, 1/500, 1/1000 (Maximum 500,000 steps/revolution)	
Functions	Auto current down at standstill, Auto current cut, MONITOR and OVERHEAT indicators outputs, Resolution Selection	
Input Pulse	All opto-isolated. Resistance 390Ω Voltage L : 0~0.5V H : 4~5V CW (PULSE) 、 CCW (CW/CCW) 、 CO、 SEL	
Signal Output	MONITOR、 HEAT signal output. All opto-isolated. 25V 10mA	
Insulation Voltage	Between Voltage-in terminal and Case	1.0kV (60Hz)
	Between Voltage-in terminal and Signal Terminal	2.0kV (60Hz)
Insulation Resistance	100MΩ or higher with 500V under room temperature and humidity <ul style="list-style-type: none"> <li>▪ Between Voltage-in terminal and Case</li> <li>▪ Between Voltage-in terminal and Signal Terminal</li> </ul>	
Operating Temperature	0 ~ +40°C	
Operating Humidity	Below 80%	
Weight	1000 g	
Accessories	Operation Manual, Connectors (Part Number XHP-2 x1, SXH-001T-PO.6 x2)	
Recommended Motors	PF564-AC (BC) , PF566-AC (BC) , PF569-AC (BC) , PF596-AC (BC) , PF599-AC (BC) , PF5913-AC (BC)	PF569H-AC (BC) , PF596H-AC (BC) , PF599H-AC (BC) , PF5913H-AC (BC)

2. Part Number Identification and Default Settings

**INS50-110-566BC**

Series

Unit Number

**Combination of Driver and Motors**

INS50		
Unit Number	Motor Model	Driver Model
564AC (BC)	PF564-AC (BC)	INS50-110
566AC (BC)	PF566-AC (BC)	
569AC (BC)	PF569-AC (BC)	
596AC (BC)	PF596-AC (BC)	
599AC (BC)	PF599-AC (BC)	
5913AC (BC)	PF5913-AC (BC)	
569HAC (BC)	PF569H-AC (BC)	INS50-210
596HAC (BC)	PF596H-AC (BC)	
599HAC (BC)	PF599H-AC (BC)	
5913HAC (BC)	PF5913H-AC (BC)	

**INS50-110**

SERIES

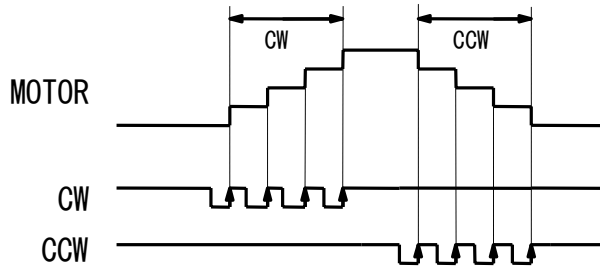
Signal Input Type: 0 : BiClock (Default)  
 Voltage: 1 : AC100V 2: AC200V  
 Phase Current: 1 : 1.4A 2: 2.8A

Driver Model	INS50-110	INS50-210
Phase Current	1.4 A	2.8 A
Auto Current Off	On	
Auto Current Cut	On	
Input Pulse Signal	2 Clocks	
Resolution	Full Step	

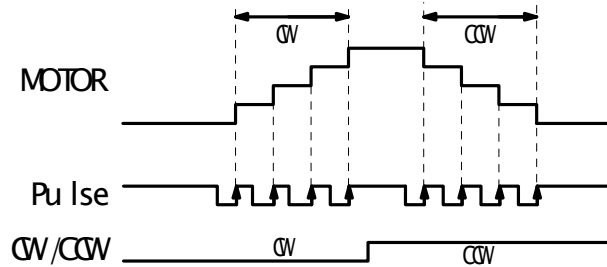
### 3. Pulse Waveform

#### 3.1 Pulse Signal Input

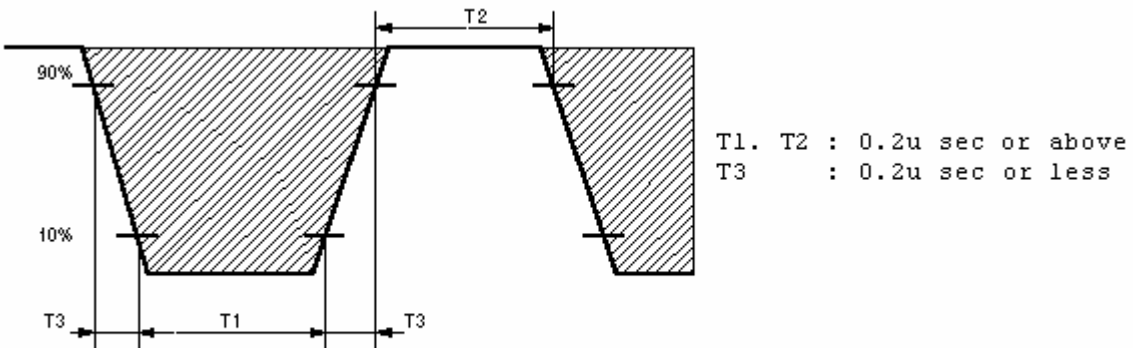
##### 2 Clock (Bi-Clock)



##### 1 Clock (Gate)

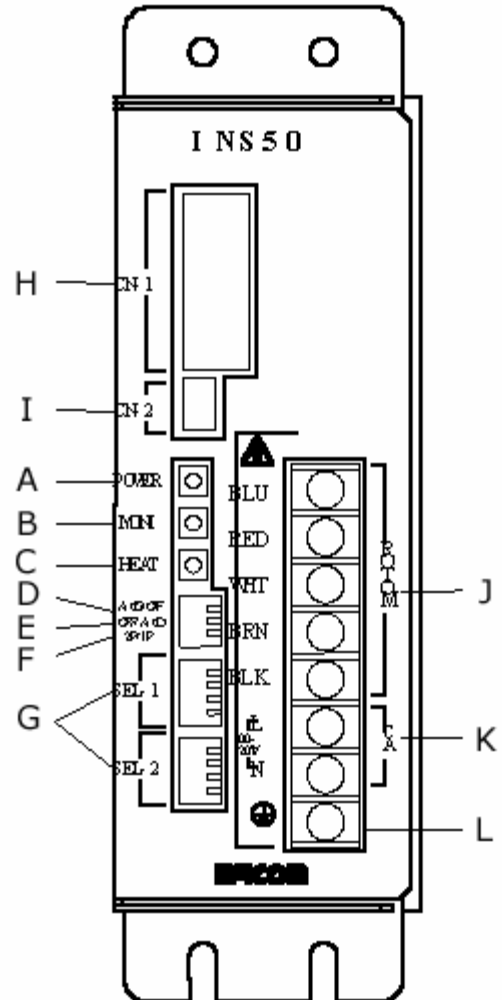


#### 3.2 Pulse Waveform Timing Diagram



## 4. Driver Functions

- A. Power LED  
On when AC Power is connected.
- B. Monitor LED  
On when pulses are generated.
- C. Heat LED  
On when driver is overheated.
- D. A. CO/OFF  
Automatic Current Off Function.
- E. OFF/A. CD  
Automatic Current Down Function On/Off Switch
- F. 1P/2P (Input Pulse Type Selector Switch)  
1P=1 Clock, 2P=2 Clock
- G. Nanostep Resolution Selection.
- H. Input Signals Connector
- I. Remote Control Nanostep Resolution Connector
- J. Motor lead terminals  
Color coded motor leads are connected to these Terminals. Note: No connections should be made while the driver power is ON.
- K. Power Supply Input Terminals
- L. Chassis Ground



### 4.1 Explanation

#### 4.1.1 Power LED

LED on when power is connected.

#### 4.1.2 Monitor LED (MON)

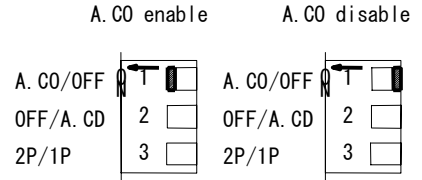
When output is generated LED will on. CN-1 MONI terminal will output a pulse signal.

#### 4.1.3 Overheat LED (HEAT)

When temperature is over +70°C, HEAT LED will on and output signal to CN-1 HEAT terminal.

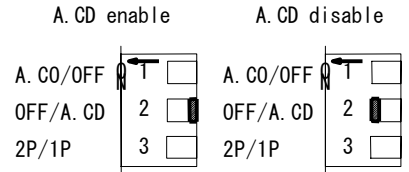
#### 4.1.4 Automatic Current Off (A.CO)

Auto current cutback feature when the motor is at standstill (idle) to reduce motor heat build up when not running.



#### 4.1.5 Automatic Current Down (A.CD)

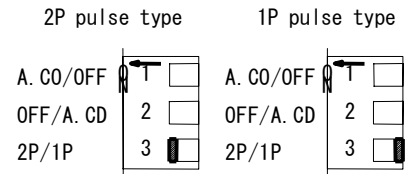
If the motor holding torque at stand still is not needed, the current will cut 50% off the running current. This will help to minimize motor heating. This function is activated 200mS after the motor stops.



#### 4.1.6 Input pulse type selector switch (2P/1P)

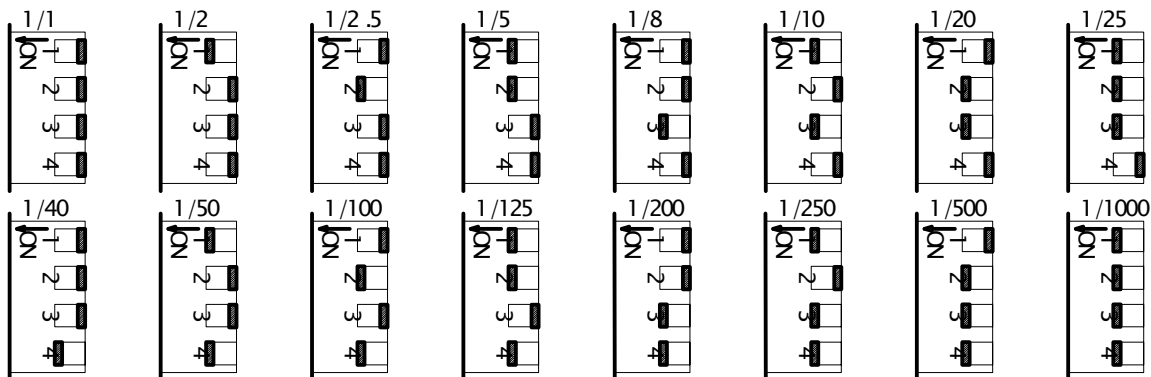
When set to 2P position, the driver will accept CW pulse train and CCW pulse train inputs.

When set to 1P position, the driver will accept Step & Direction inputs.



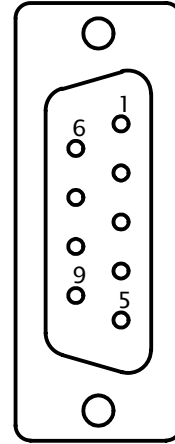
#### 4.1.7 Resolution Selector Switch

INS Series can store up to 2 different kinds of resolution. SEL-1 and SEL-2. Users can remote switch over using CN-2. There are total 16 different kinds of selection.



#### 4.1.8 Input Signals Connector (CN-1)

Pins definition			
1	CW+	6	CO-
2	CW-	7	MON I
3	CCW+	8	HEAT
4	CCW-	9	COM
5	CO+		



D type, 9 pin connector  
Part Number XM2D-0901

#### 4.1.9 Switch Between 2 Resolution Settings. (CN-2)

User can switch the resolution (Set by SEL-1 and SEL-2) using CN-2 connector.

High Level: SEL-2 resolution is selected and used.

Low Level or No Connection: SEL-1 resolution is selected and used.

Accessories:

Housing: XHP-2

Connector: SXH-001T-P0.6

Note 1: If both SEL-1 and SEL-2 in FULL STEP mode, switch function cannot be used.

Note 2: Stop the motor before switching the resolution, otherwise the motor will lose the position.

#### 4.1.10 Motor Lead Terminals

Follow the color code and connect the motor leads to the terminal.

#### 4.1.11 AC Power Connector

100V Type AC Driver. Use 100-120V 50/60Hz power source.

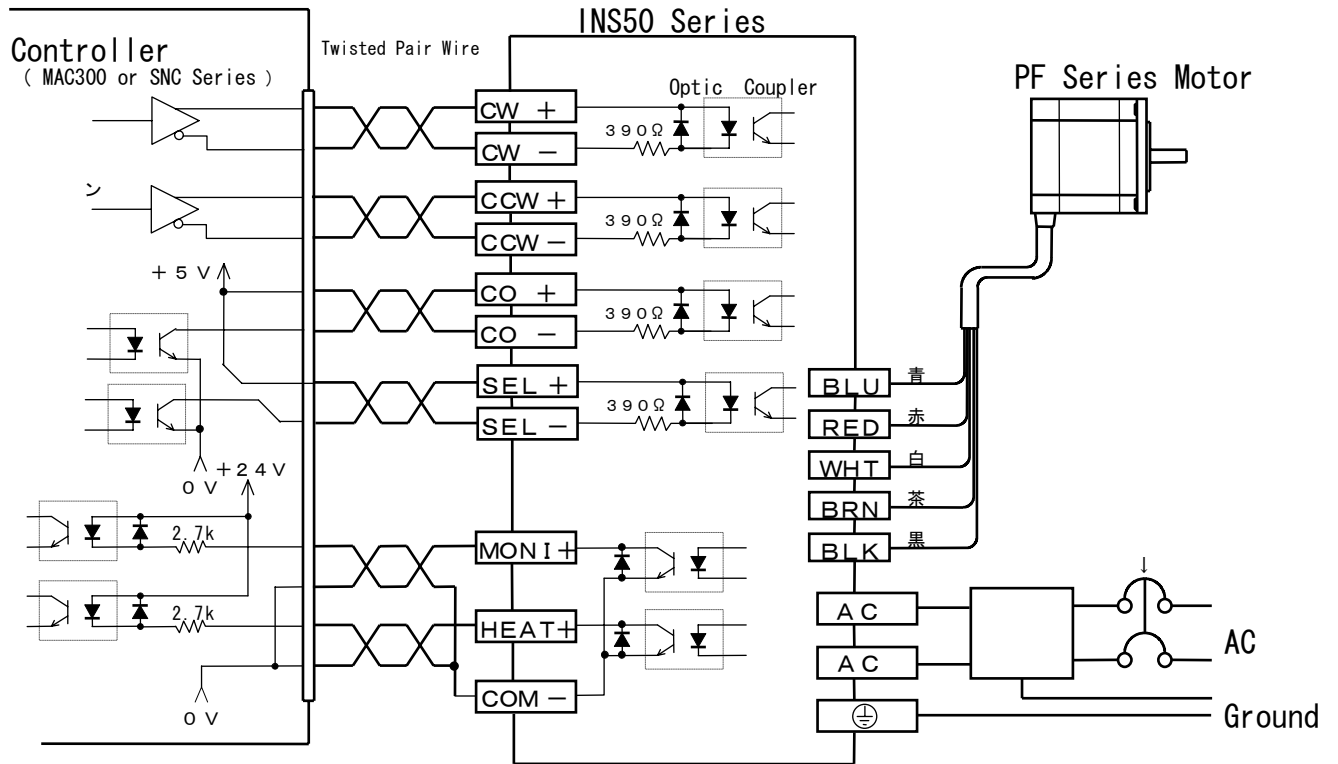
200V Type AC Driver. Use 200-220V 50/60Hz power source.

Power wire, AWG18 0.75mm<sup>2</sup> or above is recommended.

#### 4.1.12 Chassis Ground

For safety, it is recommended using AWG18 0.75mm<sup>2</sup> or above wire to connect the chassis.

## 5. Connection Example



## 6. Dimensions

