

# IMS500 Series Driver

## 5 Phase Compact Step DC Type Driver Units

- Small Size and Economical Unit
- A compact package matching most existing motors
- 24Vdc Supply Input
- Opto-isolated inputs and outputs
- Auto-current down feature
- Half Step/Full Step setting selection



### 1. Specifications

Model	IMS 500 - 020	IMS 500 -120
Drive Methods	Star Bi-polar ; constant current chopper driver	
Power Requirement	DC 24V±10%	
Power Consumption	36W max.	72W max.
Output Current	0.75 Amp per phase	1.4 Amp per phase
Resolution	Basic Step : 0.72° ( Full Step : 0.72° , ½ Half Step : 0.36° )	
Function	Auto-current down at standstill, Motor Output Current OFF input	
Input Signals	CW (PULSE) , CCW (CW/CCW) , CO All Opto Isolated Input resistance : 220 Ω Voltage H : 4~5V L : 0~0.5V	
CW / CCW (preferred pulse type)	<p>In Bi-Clock mode Clockwise direction pulses applied to the CW input. Counter clockwise direction pulses applied to the CCW input. Rising edge of input pulse starts to move.</p> <p>Timing chart of Bi-Clock signal</p>	
Pulse / Direction	<p>In Pulse / Direction mode Stepping pulses applied to the Pulse input. Direction logic signal applied to the CW/CCW input. Rising edge of input starts to move.</p> <p>Timing chart of Pulse/Direction signal</p> <p>[L] Level : CW [H] Level : CCW</p>	
Dielectric Strength	<p>No abnormality detected after the application of the below voltage among each terminal for one minute in normal temperature and humidity :</p> <p>Power input terminal – PE terminal : 1.5KV (60Hz) Power input terminal – Signal I/O terminal : 3.0KV (60Hz)</p>	

Insulation Resistance	100M ohms or higher with DC500V applied in normal temperature and humidity. • Between Voltage- input terminal Case • Between Voltage- input terminal and signal terminal
Operating Environment	Temperature : 0 ~ +40°C No freezing Humidity : less than 80% No condensation
Storage Environment	Temperature : -10 ~ +60°C No freezing Humidity : less than 80% No condensation
Operating Height	Less than 1,000m from sea level
Atmosphere	In the room without corrosive gas, inflammable gas or dust, without splashing water or oil.
Accessories	JAE Connectors : IL-2S-S3L-N * 1, IL-6S-S3L-N * 1, IL-5S-S3L-N * 1, IL-C2-10000 * 13
Weight	75 g

## 2. Applicable Motor Range

Type	Motor Size (mm)	Motor Model	Max. Holding Torque (kgcm)	Rotor Inertia (gcm <sup>2</sup> )	Basic Step Angle***	Phase Current (Amps)	Motor Weight (kg)
HI-TORQUE	28	PEE 533 A (B)	0.33	9	0.72°	0.75	0.1
		PEE 535 A (B)	0.6	18	0.72°	0.75	0.17
	42	PF 543 AC (BC)	1.3	35	0.72°	0.75	0.25
		PF 544 AC (BC)	1.8	54	0.72°	0.75	0.3
		PF 545 AC (BC)	2.4	68	0.72°	0.75	0.4
	60	PCE 5641 AC (BC)	4.2	175	0.72°	1.4	0.6
		PCE 5661 AC (BC)	8.3	280	0.72°	1.4	0.8
		PCE 5691 AC (BC)	16.6	560	0.72°	1.4	1.3
	85	PCE 5961 AC (BC)	21	1400	0.72°	1.4	1.7
		PCE 5991 AC (BC)	41	2700	0.72°	1.4	2.8
PCE 59131 AC (BC)		63	4000	0.72°	1.4	3.8	
*Brake Type	60	PCE 5641 ACM	4.2	320	0.72°	1.4	0.9
		PCE 5661 ACM	8.3	425	0.72°	1.4	1.1
		PCE 5691 ACM	16.6	705	0.72°	1.4	1.6
	85	PCE 5961 ACM	21	2200	0.72°	1.4	2.4
		PCE 5991 ACM	41	3500	0.72°	1.4	3.5
		PCE 59131 ACM	63	4800	0.72°	1.4	4.5

Note : Motor model ending with A or AC - single shaft Motor model ending with B or BC - double shaft

\*\*\* refer to resolution selection table for step angle setting

### Motor Electrical Specifications

Dielectric Strength	No abnormality detected after the application of 0.5KV at 50 Hz between motor windings and frame for duration of one minute		
Insulation Resistance	100 Mohms or better with 500V potential applied between motor windings and frame at normal ambient temperature and humidity		
Insulation Class	Class B	Operating Environment Temperature	0°C ~ + 50°C

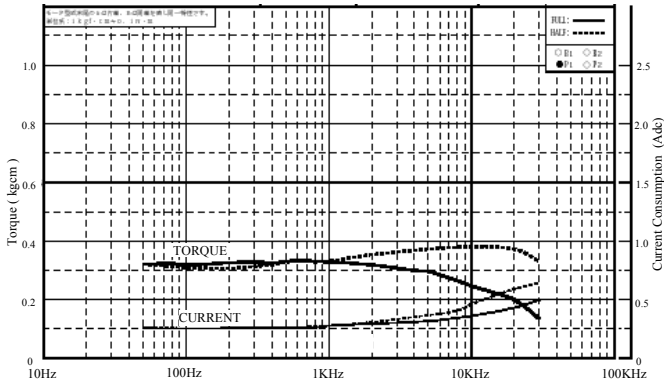
### Motor Mechanical Specifications

Shaft Radial Play	0.025 mm (max) at load 0.5 Kg
Shaft Axial Play	0.075mm (max) at load 1 Kg
Step Angle Accuracy	± 3 min

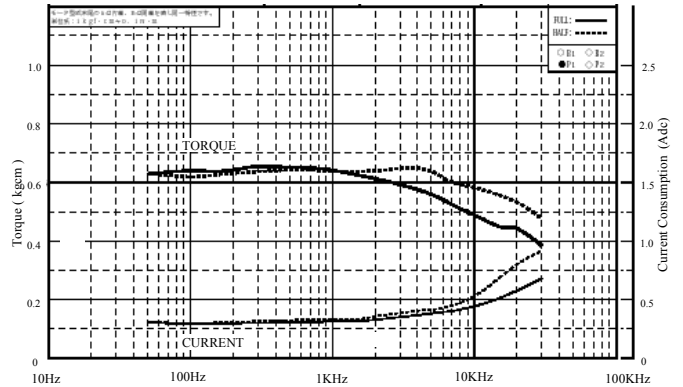
### 3. Performance Characteristics



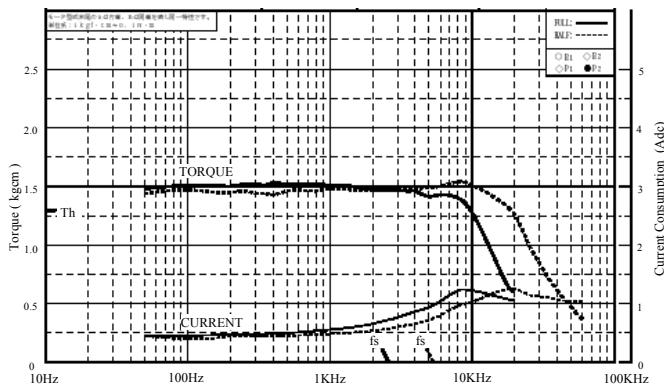
IMS500-020 + PEE 533B



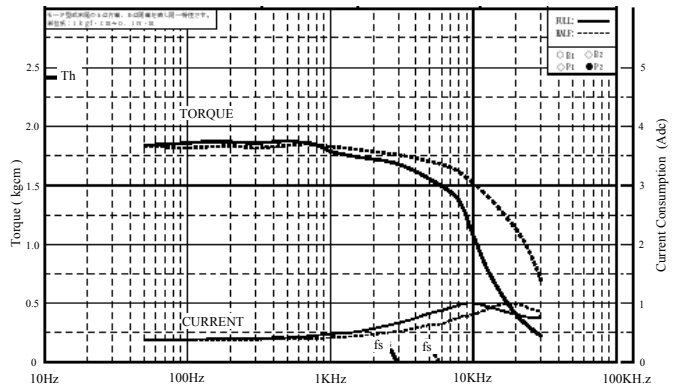
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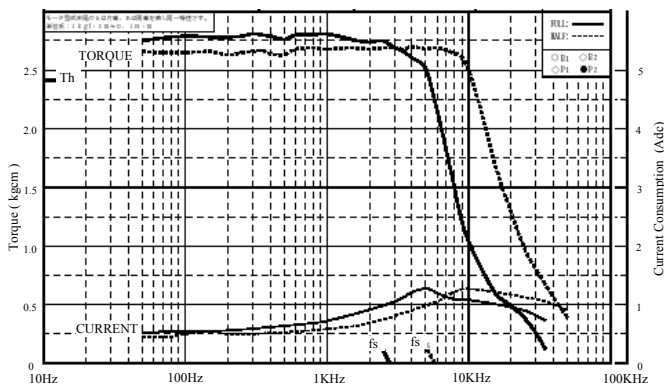
IMS500-020 + PF 543BC



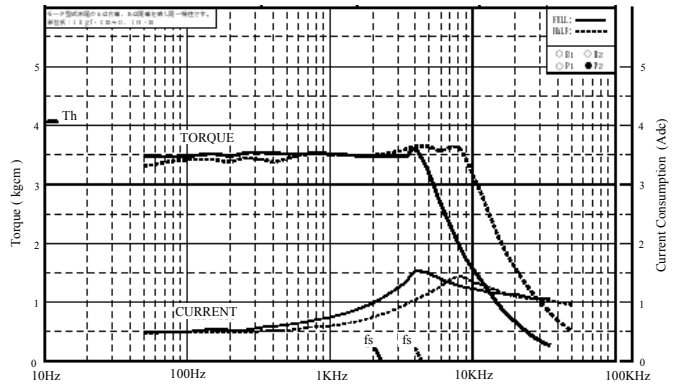
IMS500-020 + PF 544BC



IMS500-020 + PF 545BC



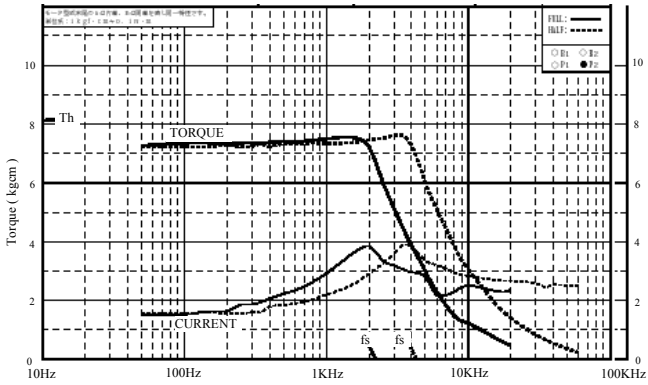
IMS500-120 + PCE 5641BC



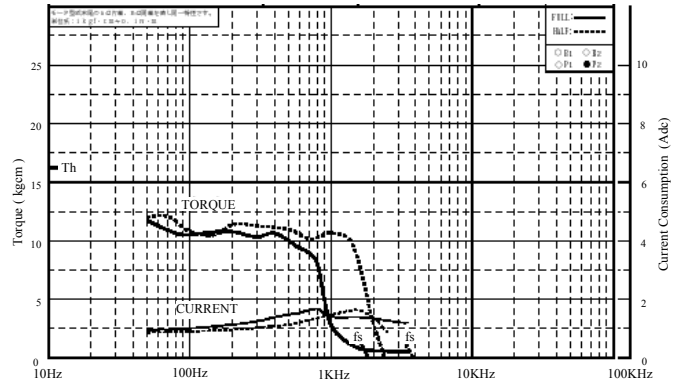
### 3. Performance Characteristics



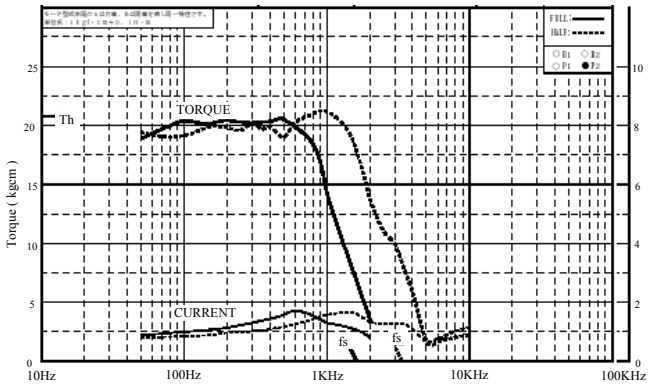
IMS500-120 + PCE 5661BC



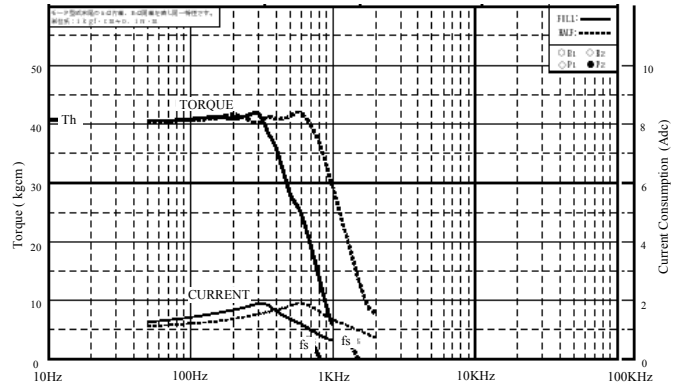
IMS500-120 + PCE 5691BC



IMS500-120 + PCE 5961BC



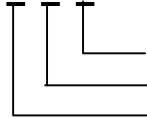
IMS500-120 + PCE 5991BC



### 4. Part Number Identification & Default Setting

**IMS 500 - 1 2 0**

Series Name



- Clock Signal Input Type : 0:BiClock (Default) , 1:Gate/Dir
- Supply Input Voltage : 2:DC24V
- Phase Current Setting : 0: 0.75A , 1:1.4A

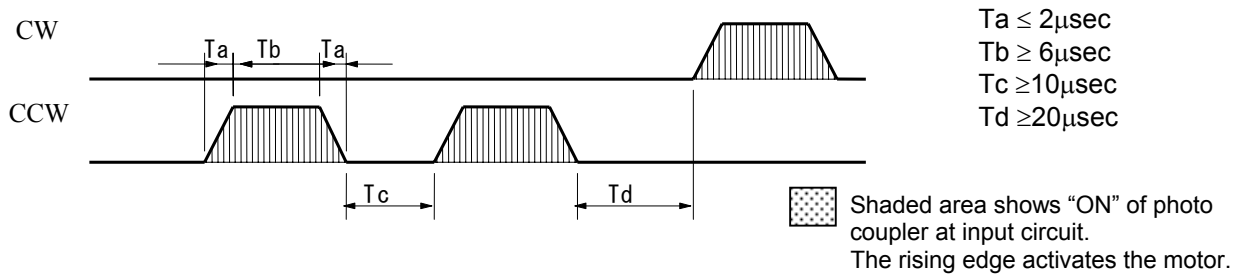
#### Factory Default Setting :

Driver Model	IMS 500-020	IMS 500-120
Phase Current	0.75A	1.4A
Auto Current Down ( A.CD )	Enabled	
Input Pulse Signal	Bi-Clock mode ( 2P setting )	
Resolution	Half Step	

## 5. Signal Input Waveform

**MYCOM**

### 5-1. Input Signal Waveform

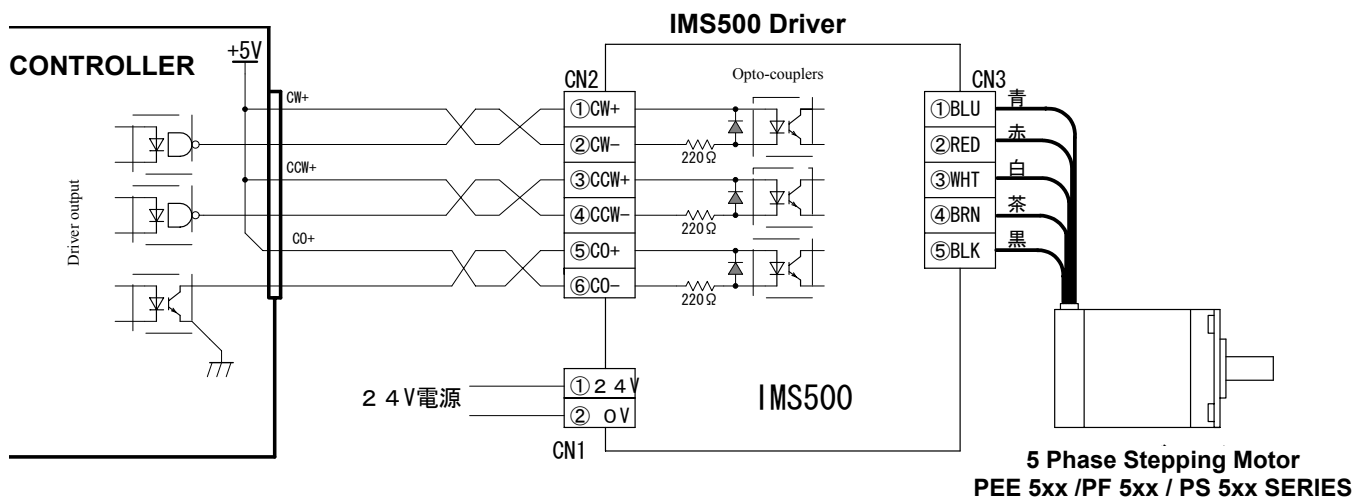


## 6. Automatic Current Down

This driver is equipped with the auto-current down function where the motor current is reduced at stand still status. This reduces the motor heat build up when not running.

The factory setting is at 50% of the motor running current set at C.ADJ. The function is activated 0.1 sec after the motor stops. ie. pulse input changes from H to L.

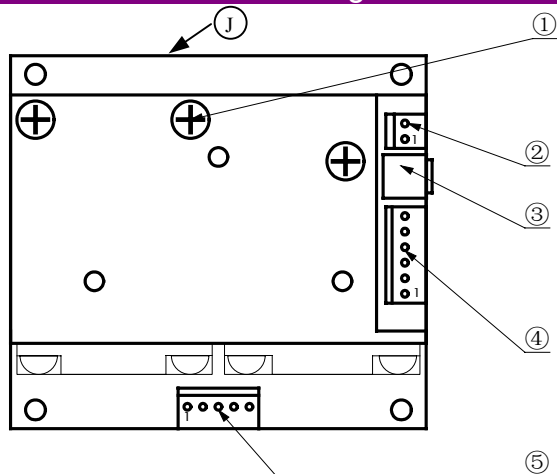
## 7. Connection Diagram



\*(If controller outputs are DC24V, a resistor of value  $R = 1.2\text{k}\Omega$  1/2W is to be connected in series to the signals.  
Not necessary if the outputs are DC5V.)

## 8. Functions & Settings

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① **Frame Ground (FG)**  
Connect to system ground point. Use AWG18 (0.75mm<sup>2</sup>) or larger leads for connection.

② **24Vdc Power Input Connector (CN-1)**  
Connect 24V power supply to this connector to power up the driver unit. Use AWG22 (0.5mm<sup>2</sup>) or larger leads for connection.

Connector pin assignment	
1	+24Vdc
2	0V

③ **Motor current adjustment (VR1 : C.Adj)**  
Each driver is pre-adjusted for the applicable motor included with a package. This adjustment **SHOULD NOT BE CHANGED** unless a lower current level setting is absolutely needed in order to reduce motor torque and motor/drive heat generation.

⑤ **Motor Lead Connector (CN-3)**  
Connect motor leads to the connector as follows :-

Connector pin assignment			
1	BLU	4	BRN
2	RED	5	BLK
3	WHT		

④ **Jumper setting**  
**CUP : Auto current Down**  
(Short – Valid [Default], Open – Invalid)  
**PM : Pulse Mode Select**

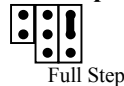


2 clock setting (CW/CCW)



1 clock setting (Gate/Dir)

**F/H : Step Angle select**



Full Step

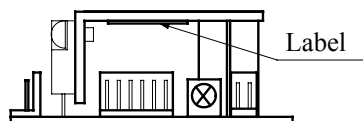
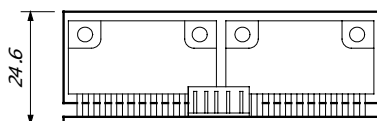
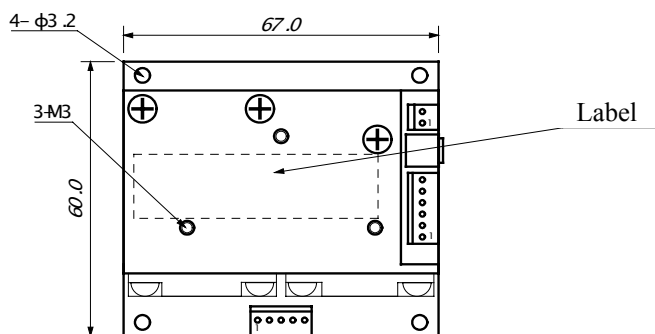


Half Step

④ **Signal I/O connector (CN-2)**

Pin	Driver Signal	Description
1	CW+ (Pulse)	CW pulse input terminal This opto-isolated terminal accepts CW pulse train from an indexer
2	CW-	
3	CCW+ (CW /CCW)	CCW pulse input terminal This opto-isolated terminal accepts CCW pulse train from an indexer
4	CCW-	
5	CO+	Motor current shutoff input signal (CO) The driver's output current can be turned off by this
6	CO-	

## 9. External Dimensions



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