

ORIENTAL MOTOR GENERAL CATALOG



NEW GENERATION STEPPING MOTOR AND DRIVER PACKAGE



- FeaturesB-44
- SpecificationsB-50
- Speed vs. Torque Characteristics.....B-52
- Dimensions.....B-53
- List of Motor and Driver CombinationsB-54
- Wiring Diagrams.....B-55
- Description of Input/Output Signals.....B-57

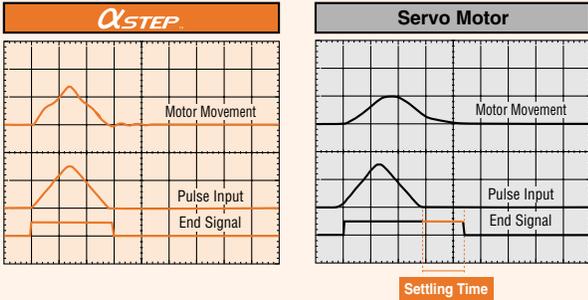
5 φ with AC Driver

5 φ with DC Driver

2 φ with Driver

High Response

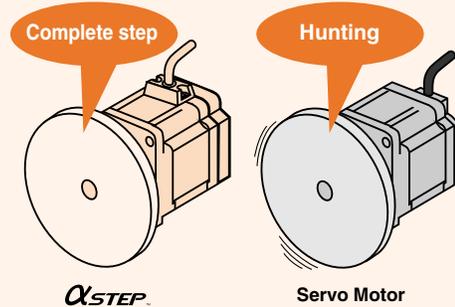
The same as conventional stepping motors, α STEP operates in synchronism with command pulses. This makes possible positioning with short strokes in a short time.



In servo motors, there is a delay between the input pulse signals and the motor movement due to the way positioning is continuously monitored. Therefore, they need time to settle to a stop after input signals stop. This is called settling time.

No Hunting

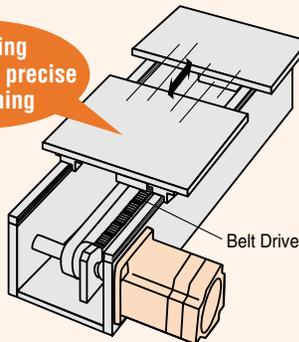
Since the α STEP is a stepping motor, it has no hunting problem such as you would find in a traditional servo motor. Therefore, when it stops, its position is completely stable and does not fluctuate.



No Parameter Setting

Gain tuning for servo motor is critical, troublesome and time-consuming. Since the α STEP operates like a stepping motor there are no parameter setting requirements. Low rigidity applications, such as belt and pulley, are the most suitable for α STEP

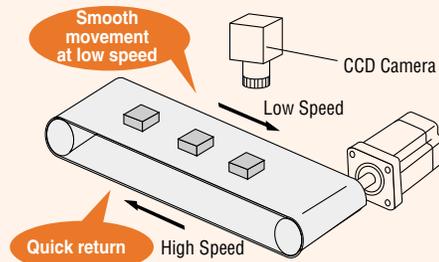
No tuning required for precise positioning



Low Vibration at Low Speed

The driver employs advanced technology that produces smoothness comparable to a microstepping driver. Therefore, its vibration level is incredibly low, even when operating in the low speed range.

α STEP provides resolution down to 0.036° per step without any damping mechanism or other mechanical device.

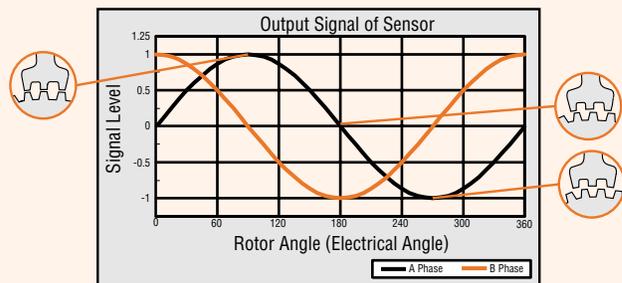


The newly developed sensor to detect rotor's position

The newly developed α STEP rotor position detection sensor uses the change in inductance caused by change in the distance between the stator teeth and the teeth on the sensor rotor to detect rotor position.

Features:

- This structure can be made small and thin, so the overall size of the motor can be reduced since it can be mounted internally.
- High resolution
- This structure does not use electronic parts, so it is not affected by heat or vibration.





A revolutionary, new motion control system that combines the best from stepping and servo technologies.

αSTEP has arrived, adding a new concept of closed loop control to the stepping motor!



AS Series
CE

ASC Series

■ PRODUCT LINE

AS Series Round Shaft Type

Page B-50

The **AS** series package combine single-phase 100-115VAC, 200-230VAC input box-type drivers and motors.

Two frame sizes are available: The **AS66A**□, 2.36 inch (60mm) square and the **AS98A**□, 3.35 inch (85mm) square.

Power Source	Package Model (Single Shaft)	Maximum Holding Torque	
		oz-in	N m
Single-Phase 100V-115V	AS66AA	166	1.2
Single-Phase 200V-230V	AS66AC	166	1.2
Single-Phase 100V-115V	AS98AA	277	2
Single-Phase 200V-230V	AS98AC	277	2

ASC Series Round Shaft Type

Page B-51

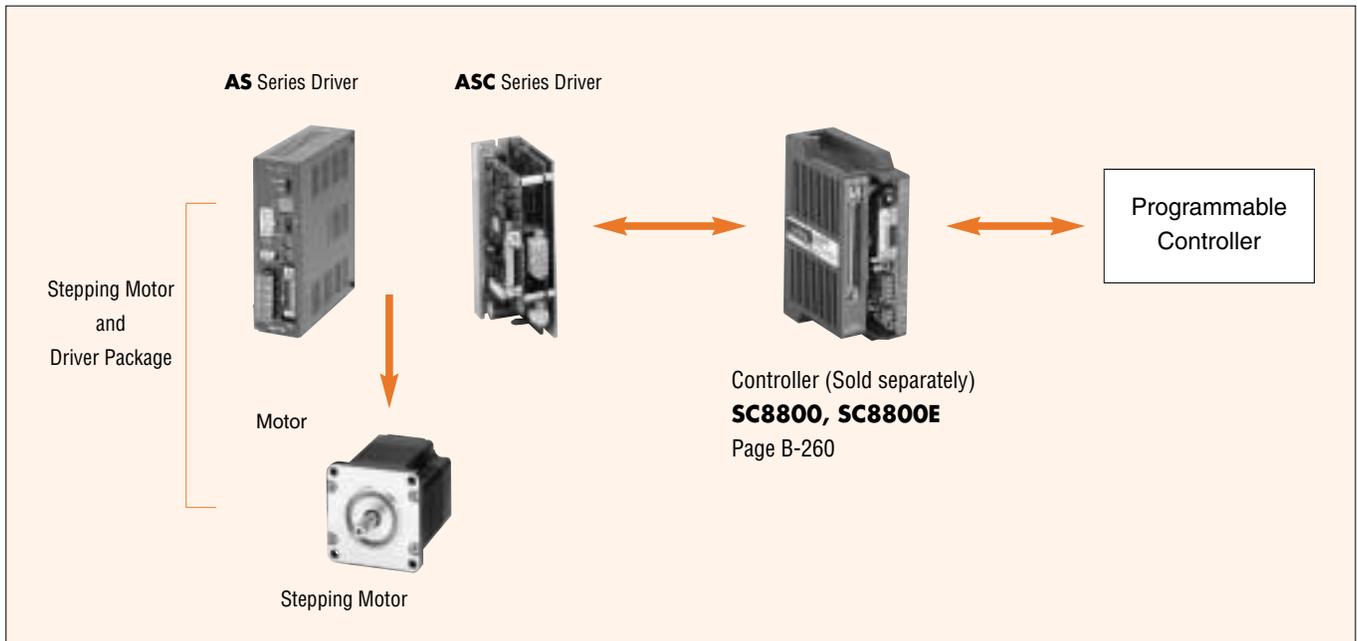
The **ASC** series package combine compact 24VDC input drivers and motors.

Two frame sizes are available: The **ASC46AK**, 1.65 inch (42mm) square and the **ASC66AK**, 2.36 inch (60mm) square.

Power Source	Package Model (Single Shaft)	Maximum Holding Torque	
		oz-in	N m
DC24V	ASC46AK	41.6	0.3
	ASC66AK	138	1

■ *α*STEP SYSTEM CONFIGURATION

The AS series package combine single-phase 100-115 V, 200-230 V input box-type drivers and motors.

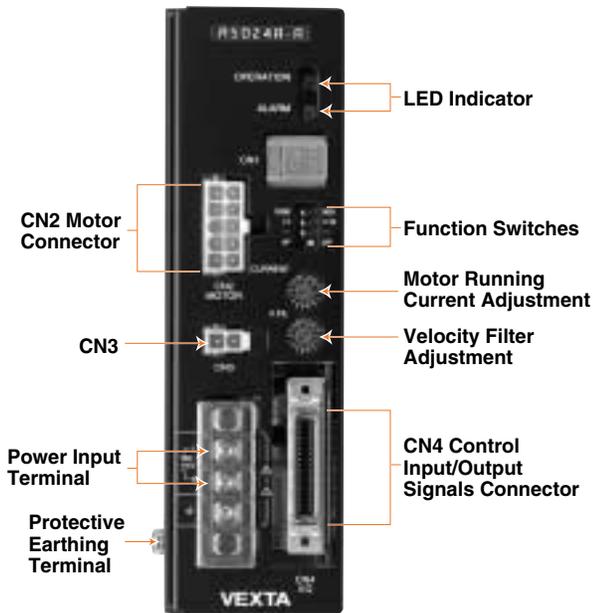


■ ACCESSORIES (Sold separately)



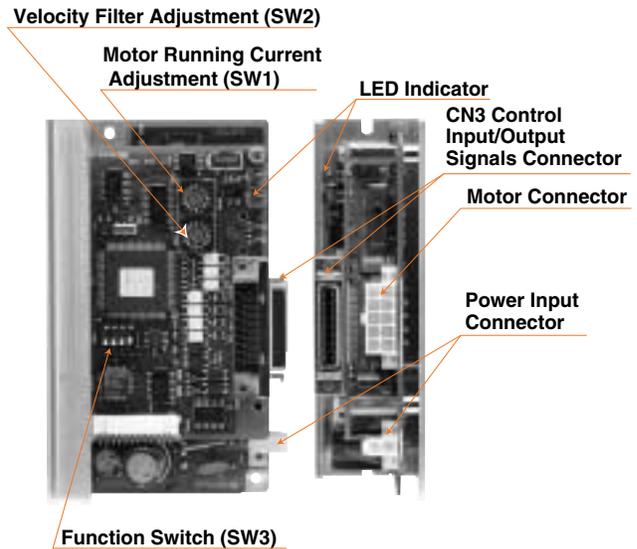
The α STEP of Dedicated Drivers. Filled With Functions in a compact body.

●AS Series



Common to **AS** series drivers.

●ASC Series



Common to **ASC** series drivers.

■ LED INDICATORS

α STEP has a wide variety of protection functions. The contents of the protective function can be determined from the flashing LEDs as in the table below.

●AS Series

Indications	Color	Functions	When activated
OPERATION	Green	Power Supply Indication	Lights when power is on.
ALARM	Red	Alarm Indication	Blinks when protection functions are activated.

●ASC Series

Indication	Color	Functions	When activated
LED1	Green	Power Supply Indication	Lights when power is on.
LED2	Red	Alarm Indication	Blinks when protection functions are activated.

●Alarm

Blink Count	Protection Function	When activated
1	Over Heat *	The temperature of the driver's internal heat sink rises to approximately 185°F (85°C)
2	Over Load	The motor is operated continuously over 5 seconds under a load exceeding the maximum torque.
3	Over Voltage	The primary voltage of the driver's inverter exceeds the permissible value.
4	Speed Error	The motor cannot accurately follow at the indicated pulse velocity.
5	Over Current *	An excessive current has flowed to the driver's inverter.
6	Over Speed	The motor shaft velocity exceeds 5000 r/min.
7	EEPROM Data Error	The EEPROM has a fault.
8	Sensor Error	The power source turns it on when the motor cable is not connected to the driver.
No Blink	System Error	The driver has fatal error.

*ASC Series doesn't have the over heat and the over current functions.

CONTROL INPUT/OUTPUT SIGNAL

(For details on the pin number for each input/output signal, see Pages B-57 to B-60.)

CW, CCW Pulse Signal Input [CW (PLS), CCW (DIR)]

This supports the two-pulse input technique, which uses forward pulses (CW) and reverse pulses (CCW), and the one-pulse input technique which uses pulse signals (PLS) and rotation direction signals (DIR). Switch between the one-pulse input technique and the two-pulse input technique with this DIP switch. (The unit is shipped with the DIP switch set to two-pulse input.)

All Windings OFF Signal Input (C.OFF)

This is the signal to remove all current from the motor windings. This signal is active when the photocoupler is on. When the current off signal is input, the driver deviation counter is reset.

Resolution Select Signal Input ($\times 10$)

If this signal is input when 1000 pulses/revolution or 500 pulses/revolution is selected for the function switching resolution setting, the resolution is multiplied by 10.

Alarm Clear Signal Input (ACL)

If this signal is input when a protective function has been triggered, the alarm state is cleared. However, this signal can not end an EEPROM data error, system error, or overcurrent protection. (The **ASC** series does not have the overcurrent protection function.) In these cases, eliminate the cause of the problem, check that everything is safe, then cut off the power and switch it on again.

A-Phase, B-Phase Pulse Signal Output (ASG1/BSG1, ASG2/BSG2)

These outputs are used to monitor the motor position by simulating an encoder output. The number of pulses output for one rotation of the motor shaft is the same as the resolution switch setting for when the power is switched on.

AS Series: Open collector output and line driver output available

ASC Series: Transistor output available

Positioning Completion Signal Output (END)

At the end of positioning, this signal is output with the level (photocoupler On).

Alarm Signal Output (ALARM)

When a protective function is triggered, the photocoupler is switched Off. When overload or overcurrent or other abnormality is detected, at the same time that the alarm is output, the driver (ALARM) LED display is lit up and the motor stops naturally.

Excitation Timing Signal Output (TIM)

This signal is output 50 times per rotation of the motor shaft.

AS Series: Open collector output and line driver output available

ASC Series: Transistor output available

SETTING OF THE FUNCTION SWITCHES

Resolution Select Switch

When set to the "1000" side, 1000 pulses are output per one rotation of the motor shaft (0.36°/step); when set to the "500" side, 500 pulses are output per one rotation of the motor shaft (0.72°/step). Either of these resolutions can be set to 10x with the x1/x10 switch.

"1000" " $\times 1$ " 1000 Pulses (0.36°/step)

"1000" " $\times 10$ " 10000 Pulses (0.036°/step)

"500" " $\times 1$ " 500 Pulses (0.72°/step)

"500" " $\times 10$ " 5000 Pulses (0.072°/step)

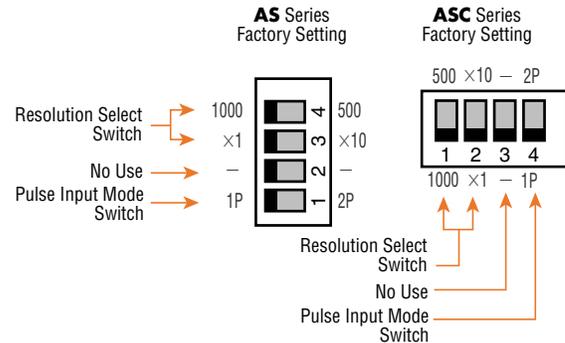
Note: Always turn the power off before switching resolution, and turn it ON again after you have made the change. If the step angle switch is set to " $\times 10$ ", it cannot control the step angle select by the input terminal. It is always " $\times 10$ ".

Pulse Input Mode Switch

The settings of this switch are compatible with the following two pulse input modes: "2P" for the 2-pulse input mode, "1P" for the 1-pulse input mode.

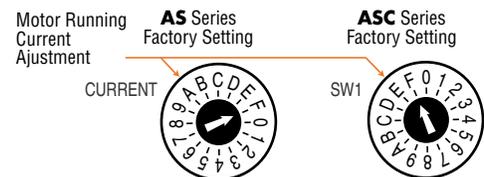
Note: Always turn the power OFF before switching pulse input mode, and turn it ON again after you have made the change.

Function Switches (The black areas represent the switch lugs.)



USE OF THE MOTOR RUNNING CURRENT ADJUSTMENT

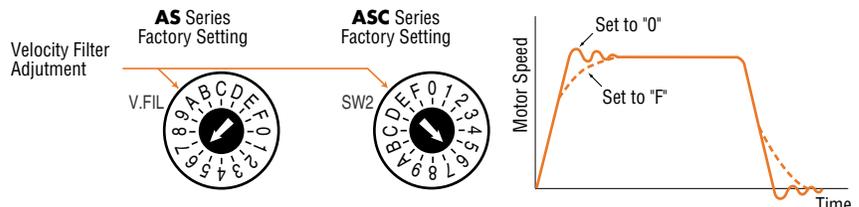
The motor running current is factory set to the motor's rated current. (Current setting switch is set to "F".) The motor running current can be lowered to suppress temperature rise in the motor/driver, or lower operating current in order to allow a margin for motor torque.



USE OF THE VELOCITY FILTER ADJUSTMENT

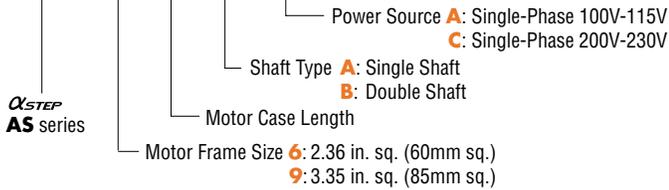
This switch is used to make adjustments when a smooth start-stop or smooth motion as low speed is required.

As the settings get closer to "F", starts and stops become smoother but the timelag between the motor shaft moving and the pulse input increase.



■ PRODUCT NUMBER CODE

AS 6 6 A A



■ SPECIFICATIONS AS SERIES



Package Model	Single Shaft	AS66AA	AS98AA	AS66AC	AS98AC	
Maximum Holding Torque	oz-in / N · m	166 / 1.2	277 / 2	166 / 1.2	277 / 2	
Rotor Inertia	oz-in ² / kg · m ²	2.22 / 405×10 ⁻⁷	7.66 / 1400×10 ⁻⁷	2.22 / 405×10 ⁻⁷	7.66 / 1400×10 ⁻⁷	
Step Angle Accuracy arc minute (degree)		±5 (0.08°)				
Resolution		0.36°/pulse (1000P/R) 0.72°/pulse (500P/R)		0.036°/pulse (10000P/R) 0.072°/pulse (5000P/R)		
Power Input		Single-Phase 100V-115V -15%~ +10% 50/60Hz		Single-Phase 200V-230V -15%~ +10% 50/60Hz		
Input Current	A	5	6	3	3.5	
Insulation Class		Class B [266°F (130°C)]				
Speed and Position Control Command		Pulse Train Input				
Maximum Input Pulse Frequency		250kHz				
Input Signal Circuit		Photocoupler Input (optically isolated), Equivalent Input Impedance: 220 Ω, Input Current 7~20mA (Pulse Signal, Rotation Direction Signal, All Windings Off Signal, Alarm Clear Signal, Resolution Select Signal)				
Output Signal Circuit		Photocoupler, Open-Collector Output, External use condition: 30 V DC maximum, 15mA maximum (Positioning Completion Signal, Alarm Signal, Excitation Timing Signal, ASG•BSG Signal) Line Driver Output: Equivalent of 26C31 (Timing Signal, ASG•BSG Signal)				
Functions		Alarm signal is output and the motor stops naturally when the following protection function are activated Overheat, Over load, Over voltage, Speed error, Over current, Over speed, EEPROM data error, Sensor error, System error				
Weight	Motor	lb (kg)	1.88 (0.85)	3.97 (1.8)	1.88 (0.85)	3.97 (1.8)
	Driver	lb (kg)	1.77 (0.8)			

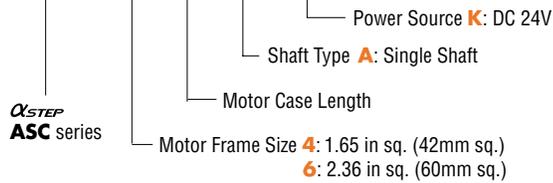
- Maximum holding torque refers to the holding torque at motor standstill when the rated current is supplied to the motor (5 phase excitation). Use this value to compare motor torque performance. When using the motor with the included driver, the driver's "Automatic Current Cutback" function at motor standstill reduces maximum holding torque by approximately 50%.
- The power source input current value represents the maximum current. (The input current varies according to the pulse frequency.)

■ GENERAL SPECIFICATIONS

Equipment Component	Motor	Driver
Insulation Resistance	100MΩ minimum when measured by a DC500V megger between the motor coils and casing.	100MΩ minimum when measured by a DC500V megger between the following places: ● Frame – Power Supply Terminal ● I/O – Power Supply Terminal
Dielectric Strength	Sufficient to withstand 1.5kV (1.0kV for AS66 type), 50Hz applied between the motor coils and casing for one minute.	Sufficient to withstand the following for one minute: ● Frame – Power Supply Terminal 100V-115V Input 1.25kV, 60Hz 200V-230V Input 1.5kV, 60Hz ● I/O – Power Supply Terminal 100V-115V Input 2.3kV, 60Hz 200V-230V Input 3.0kV, 60Hz
Operating Environment	Ambient Temperature	+32°F +122°F (0°C ~ +50°C), nonfreezing
	Humidity	85% or less, noncondensing
	Atmosphere	No corrosive gases, dust, water or oil.

■ PRODUCT NUMBER CODE

ASC 6 6 A K



■ SPECIFICATIONS ASC SERIES

Package Model	Single Shaft	ASC46AK	ASC66AK
Maximum Holding Torque	oz-in / N · m	41.6 / 0.3	138 / 1
Rotor Inertia	oz-in ² / kg · m ²	0.38 / 68 × 10 ⁻⁷	2.22 / 405 × 10 ⁻⁷
Step Angle Accuracy arc minute (degree)		±5 (0.08°)	
Resolution		0.36°/pulse (1000P/R) 0.72°/pulse (500P/R)	0.036°/pulse (10000P/R) 0.072°/pulse (5000P/R)
Power Input		DC 24V ±10%	
Input Current	A	1.7	3.7
Insulation Class		Class B [266°F (130°C)]	
Speed and Position Control Command		Pulse Train Input	
Maximum Input Pulse Frequency		250kHz	
Input Signal Circuit		Photocoupler Input (optically isolated), Equivalent Input Impedance: 220 Ω, Input Current 7~20mA (Pulse Signal, Rotation Direction Signal, All Windings Off signal, Alarm Clear Signal, Resolution Select Signal)	
Output Signal Circuit		Photocoupler, Open-Collector Output, External use condition: 30 V DC maximum, 15mA maximum (Positioning Completion Signal, Alarm Signal, Excitation Timing Signal) Transistor, Open-Collector Output, External use condition: 30 V DC maximum, 15mA maximum (ASG•BSG Signal)	
Functions		Alarm signal is output and the motor stops naturally when the following protection function are activated Over load, Over voltage, Speed error, Over speed, EEPROM data error, Sensor error, System error	
Weight	Motor	lb (kg)	1.1 (0.5)
	Driver	lb (kg)	0.56 (0.25)

- Maximum holding torque refers to the holding torque at motor standstill when the rated current is supplied to the motor (5 phase excitation). Use this value to compare motor torque performance. When using the motor with the included driver, the driver's "Automatic Current Cutback" function at motor standstill reduces maximum holding torque by approximately 50%.
- The power source input current value represents the maximum current. (The input current varies according to the pulse frequency.)

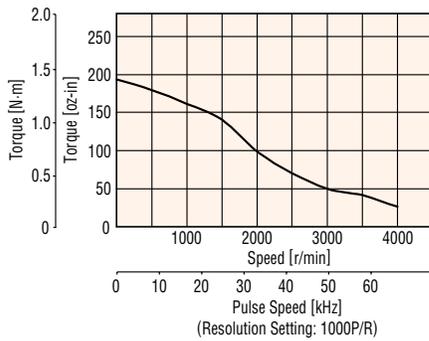
■ GENERAL SPECIFICATIONS

Equipment Component	Motor	Driver
Insulation Resistance	100MΩ minimum when measured by a DC500V megger between the motor coils and casing.	100MΩ minimum when measured by a DC500V megger between the radiating plate and power supply terminal.
Dielectric Strength	Sufficient to withstand 0.5kV, 50Hz applied between the motor coils and casing for one minute.	Sufficient to withstand 1.0kV, 60Hz applied between the radiating plate and power supply terminal for one minute.
Operating Environment	Ambient Temperature	+32°F ~ +122°F (0°C ~ +50°C), nonfreezing
	Humidity	85% or less, noncondensing
	Atmosphere	No corrosive gases, dust, water or oil.

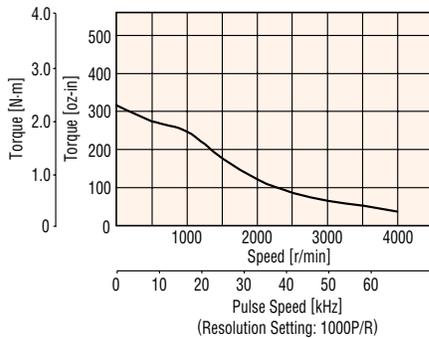
■ SPEED vs. TORQUE CHARACTERISTICS

● AS Series

AS66AA AS66AC

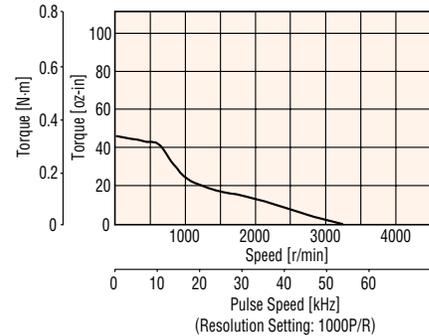


AS98AA AS98AC

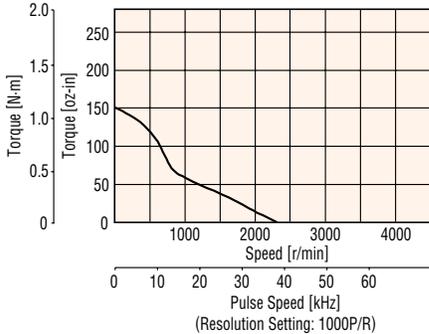


● ASC Series

ASC46AK



ASC66AK



Note:

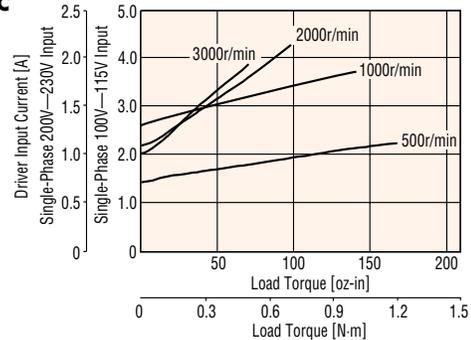
- Pay attention to heat dissipation from motor and driver. In particular, remember that the motor will produce a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 212°F(100°C).
- When using the motor with the dedicated driver, the driver's "Automatic Current Cutback" function at motor standstill reduces maximum holding torque by approximately 50%.

■ LOAD TORQUE vs. DRIVER INPUT CURRENT CHARACTERISTICS

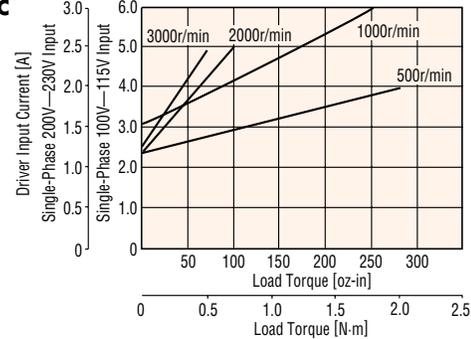
This is the relationship between the load torque and driver input current at each speed when the motor is actually operated. From this characteristic, the current capacity required when used for multiple axes can be estimated.

● AS Series

AS66AA AS66AC

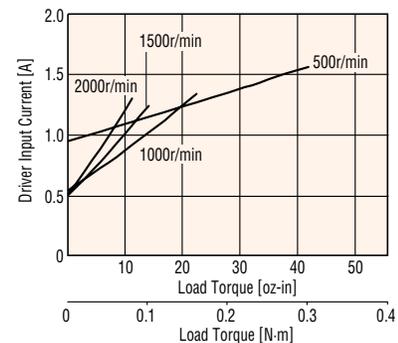


AS98AA AS98AC

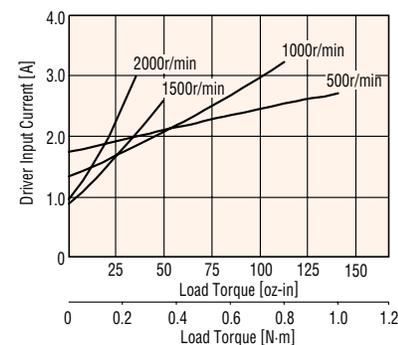


● ASC Series

ASC46AK



ASC66AK

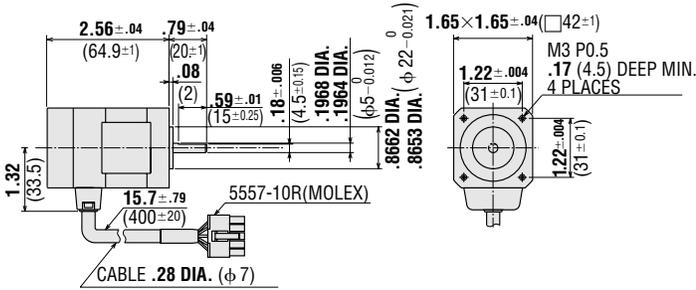


■ DIMENSIONS Scale 1/4, unit = inch (mm)

● Motor

ASC46AK (Single shaft)

Motor Model: ASM46AK Weight 1.1 lb. (Mass 0.5kg)



AS66AA (Single shaft)

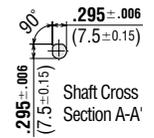
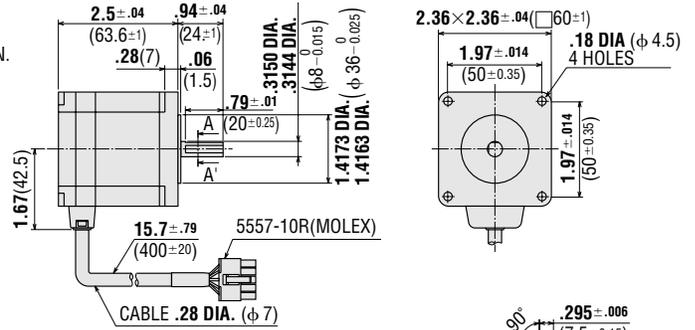
Motor Model: ASM66AA Weight 1.88 lb. (Mass 0.85kg)

AS66AC (Single shaft)

Motor Model: ASM66AC Weight 1.88 lb. (Mass 0.85kg)

ASC66AK (Single shaft)

Motor Model: ASM66AK Weight 1.88 lb. (Mass 0.85kg)

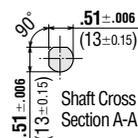
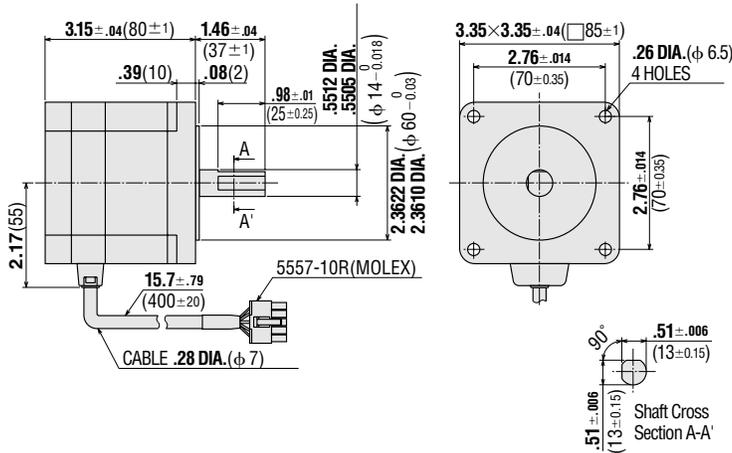


AS98AA (Single shaft)

Motor Model: ASM98AA Weight 3.97 lb. (Mass 1.8kg)

AS98AC (Single shaft)

Motor Model: ASM98AC Weight 3.97 lb. (Mass 1.8kg)

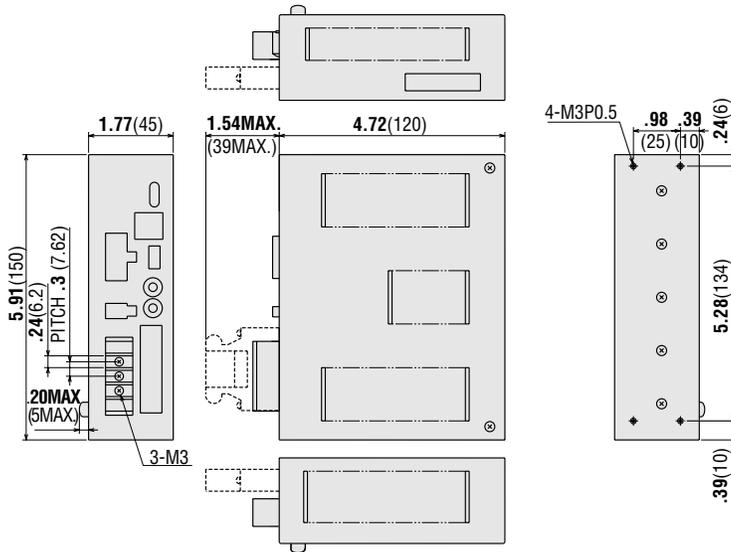


See page B-36 for information on motor installation.

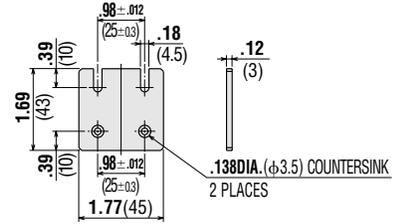
■ **DIMENSIONS** Scale 1/4, unit = inch (mm)

● **Driver**

For **AS66AA** Driver Model: ASD24A-A
 For **AS66AC** Driver Model: ASD12A-C
 For **AS98AA** Driver Model: ASD30A-A
 For **AS98AC** Driver Model: ASD16A-C
 Weight 1.77 lb. (Mass 0.8kg)

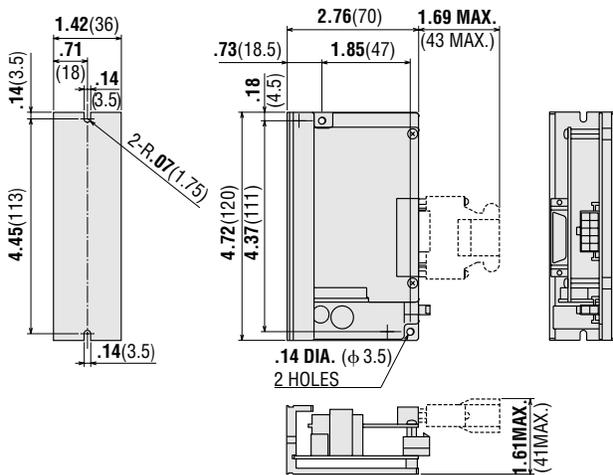


● **Mounting Tab (included)**



● **I/O Connector (included)**
 Connector: 54306-3611 (MOLEX)
 Connector Cover: 54331-1361 (MOLEX)

For **ASC46AK** Driver Model: ASD18A-K
 For **ASC66AK** Driver Model: ASD36A-K
 Weight 0.56 lb. (Mass 0.25kg)



● **I/O Connector (included)**
 Connector: 54306-3611 (MOLEX)
 Connector Cover: 54331-1361 (MOLEX)

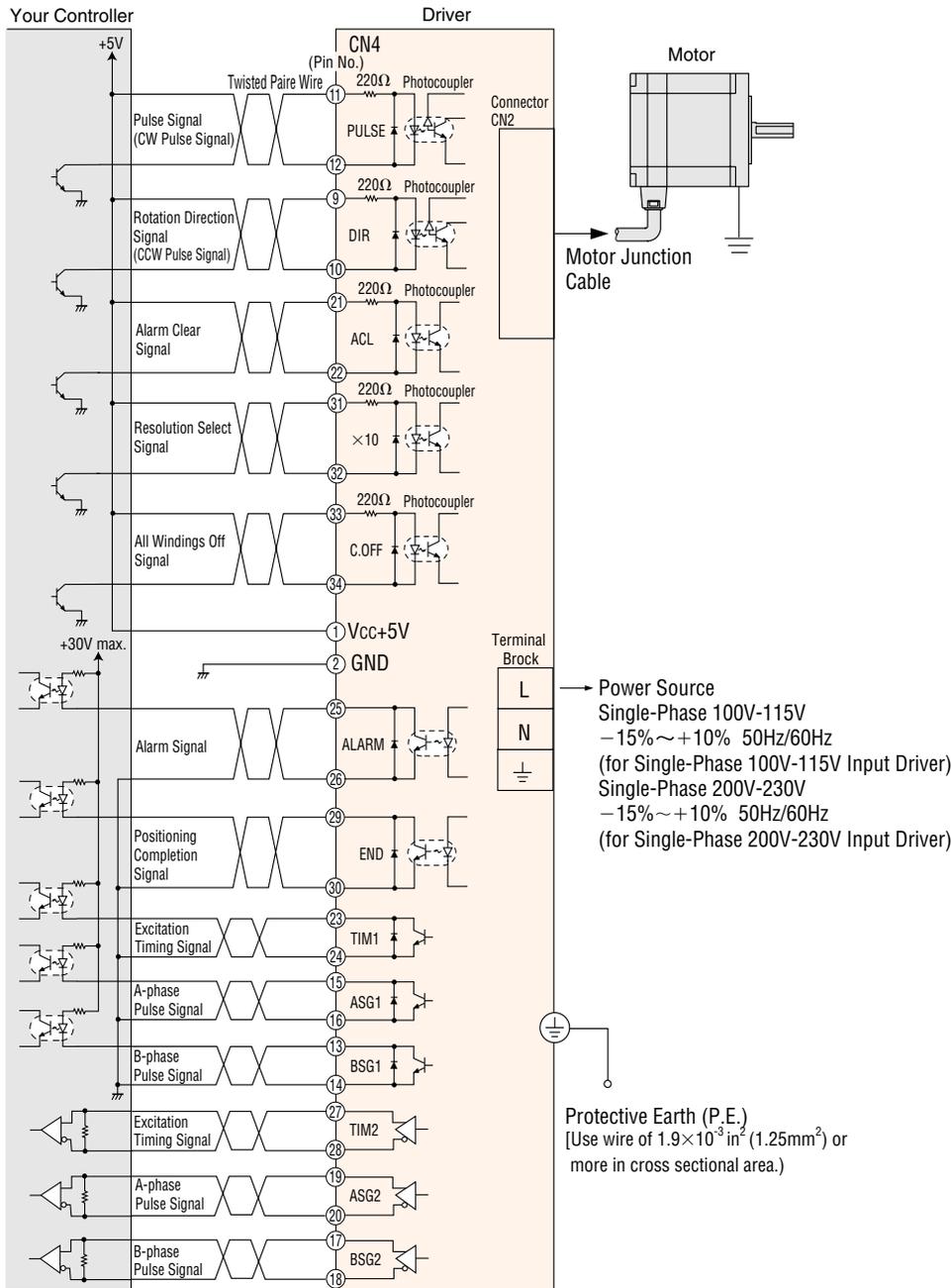
See page B-38 for information on driver installation.

■ **LIST OF MOTOR AND DRIVER COMBINATIONS**

Series	Power Source	Package Model	Motor Model	Driver Model
AS Series	Single-Phase 100V-115V	AS66AA	ASM66AA	ASD24A-A
		AS98AA	ASM98AA	ASD30A-A
	Single-Phase 200V-230V	AS66AC	ASM66AC	ASD12A-C
		AS98AC	ASM98AC	ASD16A-C
ASC Series	24V DC	ASC46AK	ASM46AK	ASD18A-K
		ASC66AK	ASM66AK	ASD36A-K

■ WIRING DIAGRAMS

● AS Series



Note:

- Use a multi-core, twisted-pair shielded wire [with core diameter of at least $1.2 \times 10^{-4} \text{ in}^2$ (0.08mm²)] for the control input/output signal line (CN4), and keep wiring as short as possible [within 6.6feet (2m)].
- For the wiring between the motor and driver, use the extension cable.
- Use a three-core cable for the power supply line [with a conductor cross-sectional area of at least $1.95 \times 10^{-3} \text{ in}^2$ (1.25mm²)].
- Keep the control input/output signal line at least 1feet (30cm) away from power lines (e.g. lines carrying large current, such as AC lines and motor lines). Also, do not run these lines through the same ducts or pipes as power lines.
- The customer must furnish the cables for power supply lines and control input/output signal lines.
- The driver must be properly grounded. The driver's protective earth terminal should be grounded common ground point, using a cable of AWG16 [$1.95 \times 10^{-3} \text{ in}^2$ (1.25mm²)].
- When the Timing Signal or Pulse Signal is used, 5VDC and 24VDC power supply is necessary. Use either a 5VDC or a 24VDC power supply. Connect the power supply to the appropriate terminal.

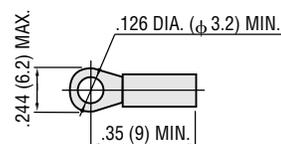
⚠ Caution

The driver incorporates double-pole/neutral fusing for the power input. If the driver POWER LED is off, it is possible that only the neutral fuse is tripped. High voltage supplied on the hot side may cause electric shock. Turn the power off immediately.

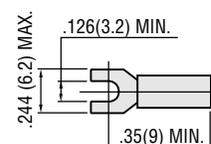
* The TIM1/ASG1/BSG1 have the ground common for current sync output. See Page B-59 and B-60 for the wiring.

● Recommended crimp terminals

Round terminals with insulation

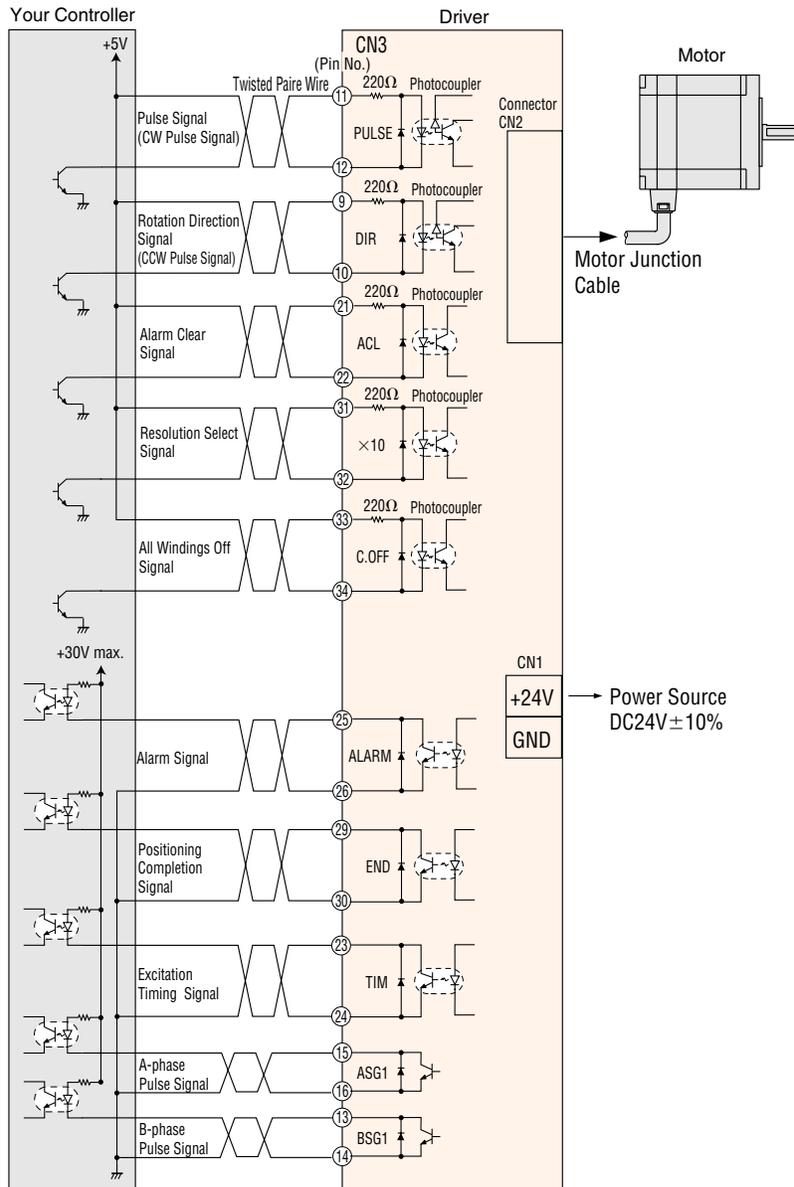


U-Shape terminals with insulation



* Crimp terminals are not provided with the Package. They must be furnished separately.

● ASC Series



Note:

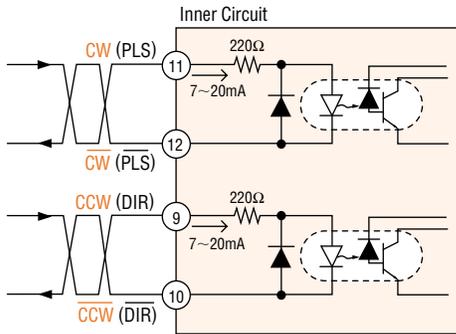
- Use a multi-core, twisted-pair shielded wire [with core diameter of at least 1.2×10^{-4} in² (0.08mm²)] for the control input/output signal line (CN3), and keep wiring as short as possible [within 6.6 feet (2m)].
- For the wiring between the motor and driver, use the extension cable.
- The range of wire for the power connector (CN1) is AWG18~24. Use wire AWG20 [7.8×10^{-4} in² (0.5 mm²)] or thicker for the power line.
- Keep the control input/output signal line at least 1 feet (30cm) away from power lines (e.g. lines carrying large current, such as AC lines and motor lines). Also, do not run these lines through the same ducts or pipes as power lines.
- The cables for power supply lines and control input/output signal lines are not included.
- Always use the accessory connector to connect the power connector.
- To mount the pin, be sure to use the specified crimping tool made by Molex 55026-5000 (for UL1007) or 55027-5000 (for UL1015).

DESCRIPTION OF INPUT/OUTPUT SIGNALS

1. Pulse Input

(Common to AS and ASC series)

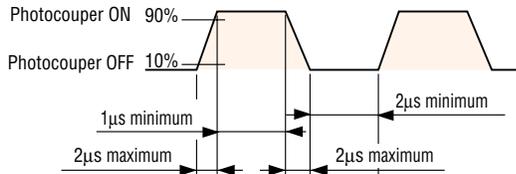
Input circuit



The characters indicate signals under the 2-pulse input mode, while the characters in parenthesis indicate signals when in the 1-pulse input mode.

Note: The external resistance is not needed when V₀ is 5V. When the voltage exceeds 5V, connect the external resistance R to keep input current at 20mA or less.

Pulse Waveform Characteristics



For pulse signals, input pulse waveforms like those in the figure above.

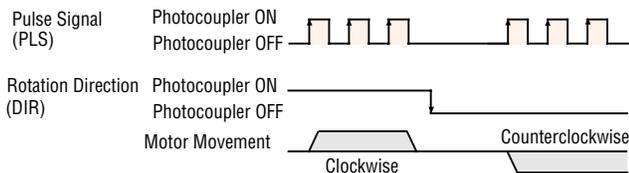
Pulse Input Mode

1-pulse input mode

The 1-pulse input mode uses "Pulse" (PLS) and "Rotation Direction" (DIR) signals. Forward rotation is selected by inputting DIR signals at high level (with the input photocoupler off), reverse rotation by inputting at low level (with input photocoupler on).

"Rotation Direction" signals HIGH: Forward, LOW: Reverse

1 Pulse Input Mode

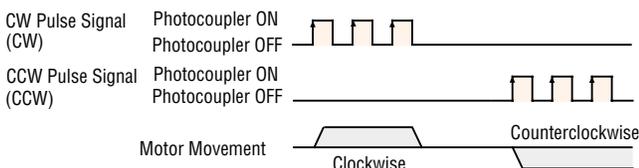


2-pulse input mode

The 2-pulse input mode is used for "CW" and "CCW" pulses. When "CW" pulses are input, the motor's output shaft rotates clockwise when the motor is viewed facing the shaft; when "CCW" pulses are input, the shaft rotates counterclockwise.

Note: The factory setting is 2-pulse input.

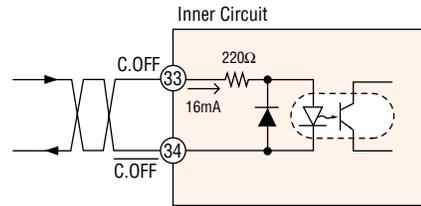
2 Pulse Input Mode



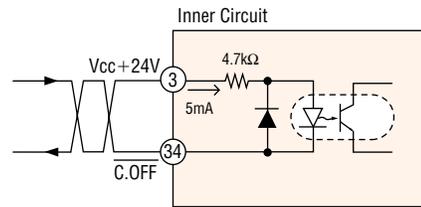
2. C. OFF (All Winding Off Signal) Input

(Common to AS and ASC series)

Input circuit



When using DC5V



When using DC24V

The controller power source offers a choice of 5V or 24V. Inputting the "All Windings Off" (C.OFF) signal puts the motor in a non-excitation (free) state. It is functioning when the photocoupler is ON.

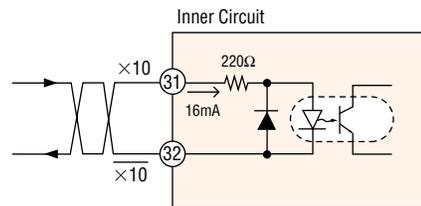
It is used when turning the motor shaft externally or when positioning manually. When adjusting operating positions and other parts of the system, do not switch to current off. Let the motor run while these adjustments are made. This signal clears the deviation counter.



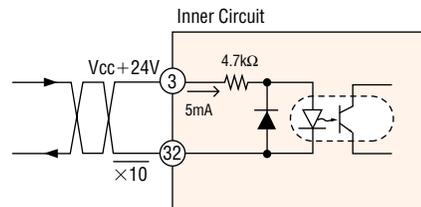
3. ×10 (Resolution Select) Input

(Common to AS and ASC series)

Input circuit



When using DC5V



When using DC24V

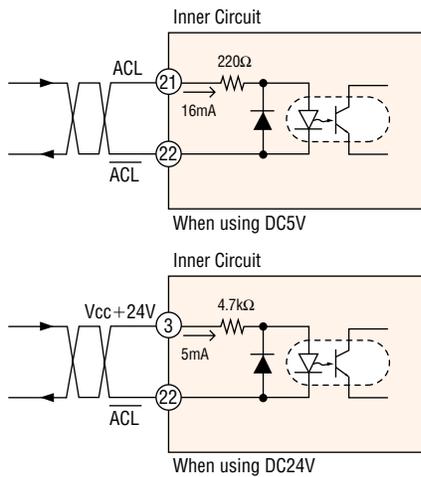
The controller power source offers a choice 5V or 24V. During input of this signal, the magnification of the resolution is × 10. It is only valid when the resolution select switch set to × 1.

Note: When the resolution select switch set to × 10, the "Resolution Select" Input is ignored. In this case, the "Resolution Select" Input is always equal to ON.

4. ACL (Alarm Clear) Input

(Common to AS and ASC series)

Input circuit



The controller power source offers a choice 5V or 24V. This signal is used when a protection circuit has been activated, for canceling the alarm without turning off power to the driver.

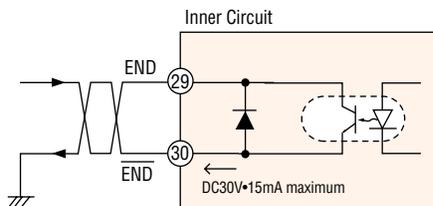
Note: The following alarm cannot be released. Consult your nearest Oriental Motor office.

- Over Current
- EEPROM Data Error
- System Error

5. END (Positioning Completion) Output

(Common to AS and ASC series)

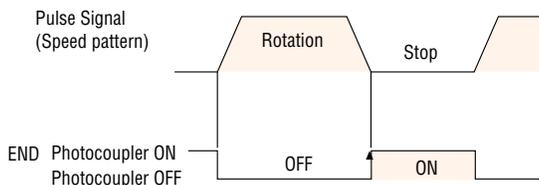
Output circuit



Circuits for use with 30V, 15mA maximum.

This signal is output at the photocopier is ON when positioning is completed.

This signal is output when the rotor position is less than $\pm 1.8^\circ$ degree from the command position when the pulse input frequency less than 500 Hz.

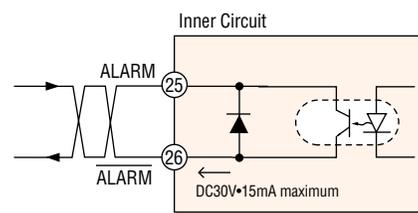


Note: The END signal flashes during operation with a pulse input frequency of 500 Hz or less.

6. ALARM (Alarm) Output

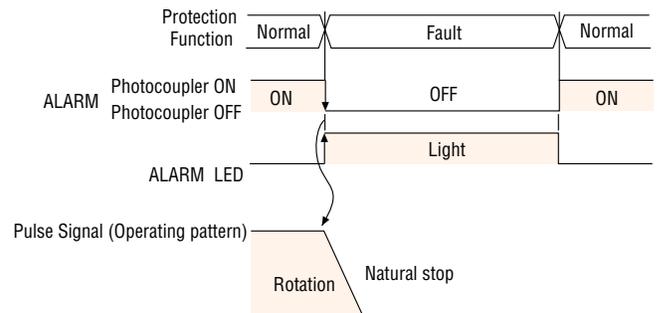
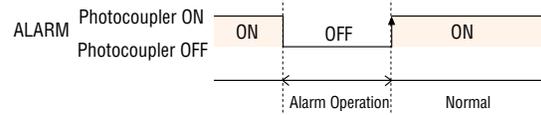
(Common to AS and ASC series)

Output circuit



Circuits for use with 30V, 15mA maximum.

This signal indicates that one of the driver's protection circuits has been activated. When an abnormality such as an overload or over current is detected, the alarm signal is output, the ALARM indicator lights, and the motor stops (non-excitation state). To cancel the alarm, first resolve the cause and check for safety, and then input a Alarm-clear (ACL) or turn power on again. Once power has been turned off, wait at least 3 seconds before turning it on again.

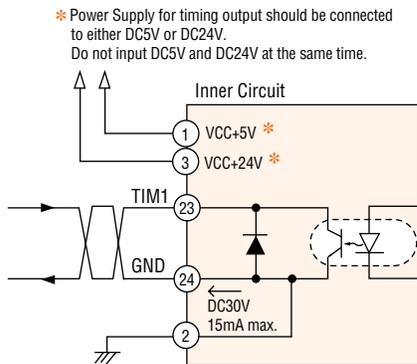


Note: Since alarm output uses positive logic, other outputs use negative logic.

7. TIM (Excitation Timing) Output

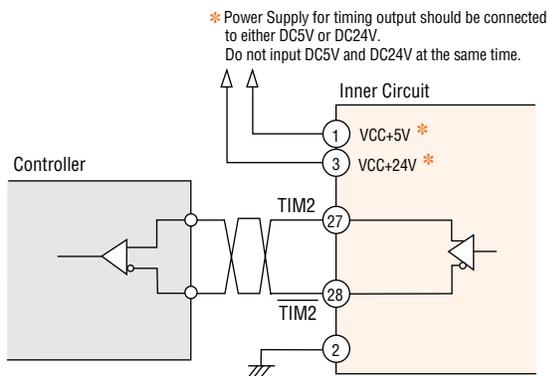
AS Series

- Output circuit
- Open Collector Output (Current Source Type)



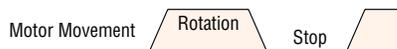
Circuits for use with 30V, 15mA maximum.

Line Driver Output



When the "Excitation Timing" signal is output, the photocoupler turns ON (For the line driver output which is TIM2, the output signal is High). This signal is used to detect the home position with greater precision.

The number of pulses of this signal are 50 pulses per 1 revolution.

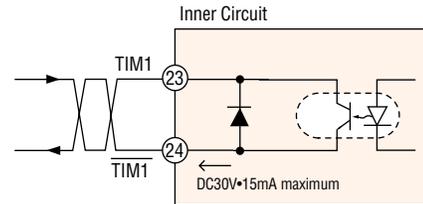


Note:

- A precise timing signal cannot be obtained when the speed of the pulse input frequency is over 500Hz.
- When the Timing Signal Output is used, DC5V or DC24V power supply is necessary.

ASC Series

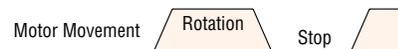
Output circuit



Circuits for use with 30V, 15mA maximum.

When the "Excitation Timing" signal is output, the photocoupler turns ON. This signal is used to detect the home position with greater precision.

The number of pulses of this signal are 50 pulses per 1 revolution.

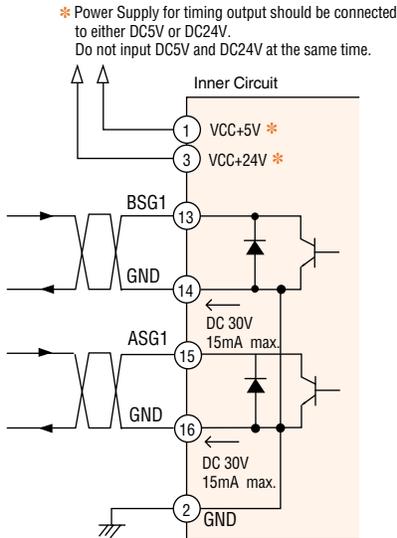


Note: A precise timing signal cannot be obtained when the speed of the pulse input frequency is over 500Hz.

8. ASG1/BSG1, ASG2/BSG2 (Quadrature) Output

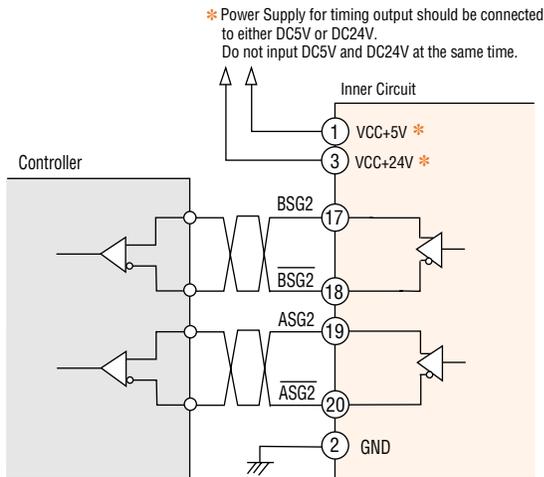
AS Series

- Output circuit
- Open Collector Output (Current Source Type)



Circuits for use with 30V, 15mA maximum.

● Line Driver Output

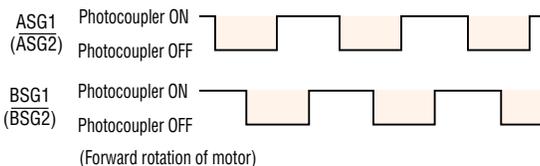


These signals are used when monitoring the motor motion. The same pulse numbers as the setting resolution are output for each motor revolution.

Note:

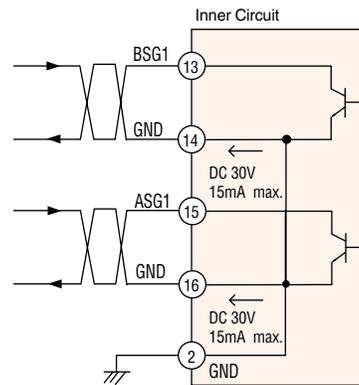
- When the "Excitation Timing" signal output is used, DC5V or DC24V power supply is necessary.
- These signals are only for position verification when the motor is stopping. There is 1ms (Max) timelag between real rotor motion and the output signals.

■ Pulse Waveform Characteristics



ASC Series

- Output circuit
- Open Collector Output



Circuits for use with 30V, 15mA maximum. These signals are used when monitoring the motor motion. The same pulse numbers as the setting resolution are output for each motor revolution.

Note: These signals are only for position verification when the motor is stopping. There is 1ms (Max) timelag between real rotor motion and the output signals.

■ Pulse Waveform Characteristics

