

## Commonly Asked Questions

- 1. Suppose a customer wants to change the direction of rotation in a EDB or EDC drive. How does he do this?**

This type of amplifier provides a reverse run reference in which the direction of rotation can be reversed by a switch on the drive. In the forward run reference (CCW viewed from drive end), phase A lags phase B. In the reverse reference, phase A leads phase B.



- 2. What if the customer wants to change the coordinates for motor rotation?**

This function could be achieved by revised the parameter Pn006.

Rotation Direction Selection

[0] Forward rotation is defined as counterclockwise rotation when viewed from the drive end.

(Standard setting)

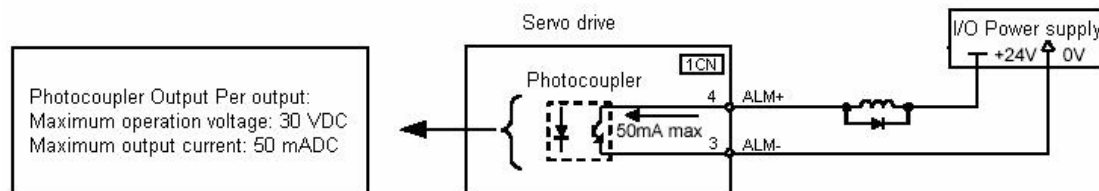
[1] Forward rotation is defined as clockwise rotation when viewed from the drive end. (Reverse rotation mode)

- 3. If reduction gear employed in a system is not strong enough, the customer is forced to make a limitation of torque in the drive so that the system does not break down. What parameter need to be changed in order to do this?**

The internal normal torque limit is 300%. It can be changed by parameter Pn026 and Pn027 for both EDB series and EDC series.

## 4. Alarm code

Suppose a customer wants to monitor alarm signals in his host controller. What design procedures need to be considered?



Signal	Status	Output voltage	Description
ALM	ON	1CN-4: "L"level	Normal state
	OFF	1CN-4: "H"Level	Alarm state

Please notice the alarm is off and output is at high level when an alarm signal is detected.

## 5. What is alarm Traceback?

The traceback function could display up to ten alarms that have occurred. When a new alarm is generated, the first alarm in original ten-alarm sequence will be eliminated.

- 1). Press MODE to select assistant function mode
- 2). Press INC or DEC to select function number of alarm historical record.

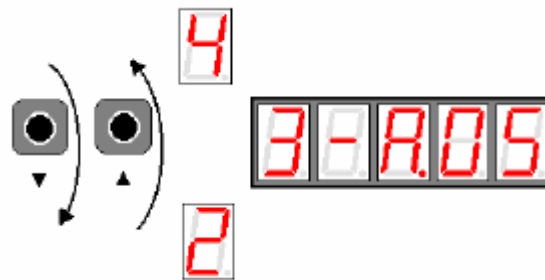


- 3). Press Enter to display the latest alarm code.

Alarm number    Alarm code



- 4). Press DEC or INC to display other recent occurred alarm code.



5). Press ENTER to return to function number display.



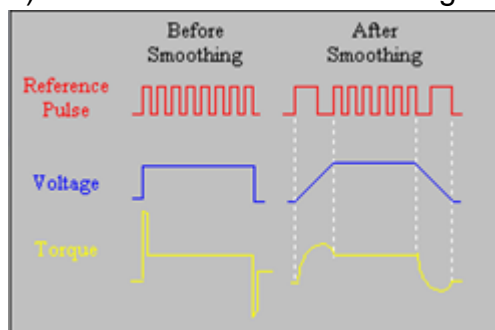
If the user wants to clear all the record, just hold ENTER for one second, then all the historical data will be deleted.



**6. When the electronic gear ratio is too large, there will be vibrations/oscillations in the motor. To correct this, we could change the parameter Pn024 and Pn017. This is called smoothing function.**

The smoothing function could be applied in the cases as below ...

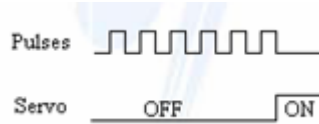
- 1). When the host controller (Which outputs the references) cannot perform acceleration and deceleration.
- 2) When reference pulse frequency is too low.
- 3) When reference electronic gear ratio is too high(more than 10 times)



The smoothing function does not change the travel distance (number of pulses)

## 7. Position error at servo off

Consider the scenario pictured below with a EDB servo drive. The main power of the servo drive is turned off. A reference pulse from the controller is still coming in to the servo drive. The motor power is applied. How to correct it?

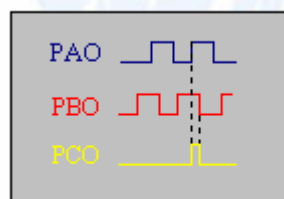


We could apply parameter Pn005 to determine whether to clear the position error pulse after servo is off.

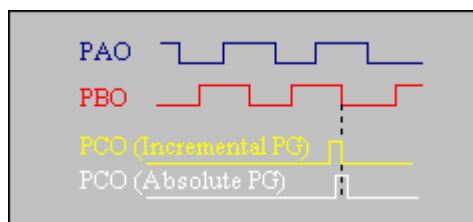
What is PG dividing ratio and how to set the PG dividing ratio?

Output pulse frequency from PAO and PBO could be changed by setting the PG dividing ratio. PG dividing ratio could be set by Parameter of Pn021 for EDB series and Pn010 for EDC series.

If we use "divide by 10" function on the following set of signals from encoder,



The output is shown below ...



The width of PCO is not expanded like that of PAO and PBO because its occurrence instead of its width matters. Its position is at the edge of PBO where both PBO and PAO are high. It's used for positioning.

## 8. Regeneration resistor

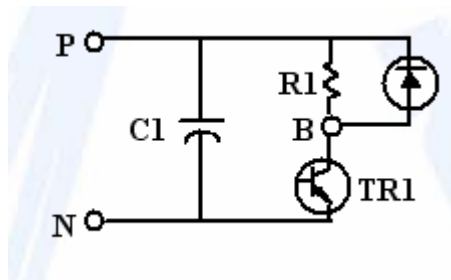
Regeneration has 2 main functions ...

- 1) To dissipate the energy of the moving load's inertia.
- 2) To discharge the main capacitor very quickly.

When a servo drive and motor combination are used at rated speed and with

maximum allowed load inertia, the amplifier will consume all energy generated by the stopping load without damage to the system. If the drive is used above rated speed or with a load that exceeds the maximum allowed inertia, some external generation may be required.

External regeneration is necessary when larger components are necessary in the regenerative circuit. Sometimes, the voltage of C1 or R1 is not large enough for a particular application. In this case, an external capacitor or resistor is required to supplement the internal component(s).



When we need to add an external regeneration resistor for EDB series, we need to remove the connection between B2 and B3 and connect a resistor between B1 and B2.

The way to calculate the external resistor ...

Energy generated by motor:

$$E_n = 0.5 J M [(2 \pi N / 60)^2]$$

Energy consumed by capacitor:

$$E_c = 0.5 C (V_k^2 - V_r^2)$$

Energy consumed by the winding of motor.

$$E_m = 3 [J M N (2 \pi I_r / 60 T_r)]^2 (R_a / t_d)$$

Energy consumed by load

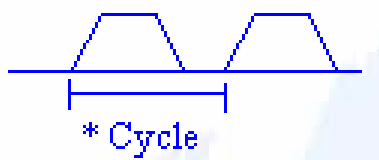
$$E_L = 0.5 T_L (2 \pi N t_d / 60)$$

Because the sum of all kinds of energy should be 0, we could calculate the energy that the resistor needs to consume:

$$E_r = E_n - E_c - E_m - E_L$$

Hence we could calculate the power of regeneration resistor:

$$W_r = E_r / \text{Cycle}$$



### 9. Jog mode

The following is steps in JOG mode

1. Press MODE to select assistant mode.
2. Press INC or DEC to select Function number of JOG mode.



3. Press ENTER to enter JOG mode.



4. Press MODE to enter Servo ON (motor ON) status.



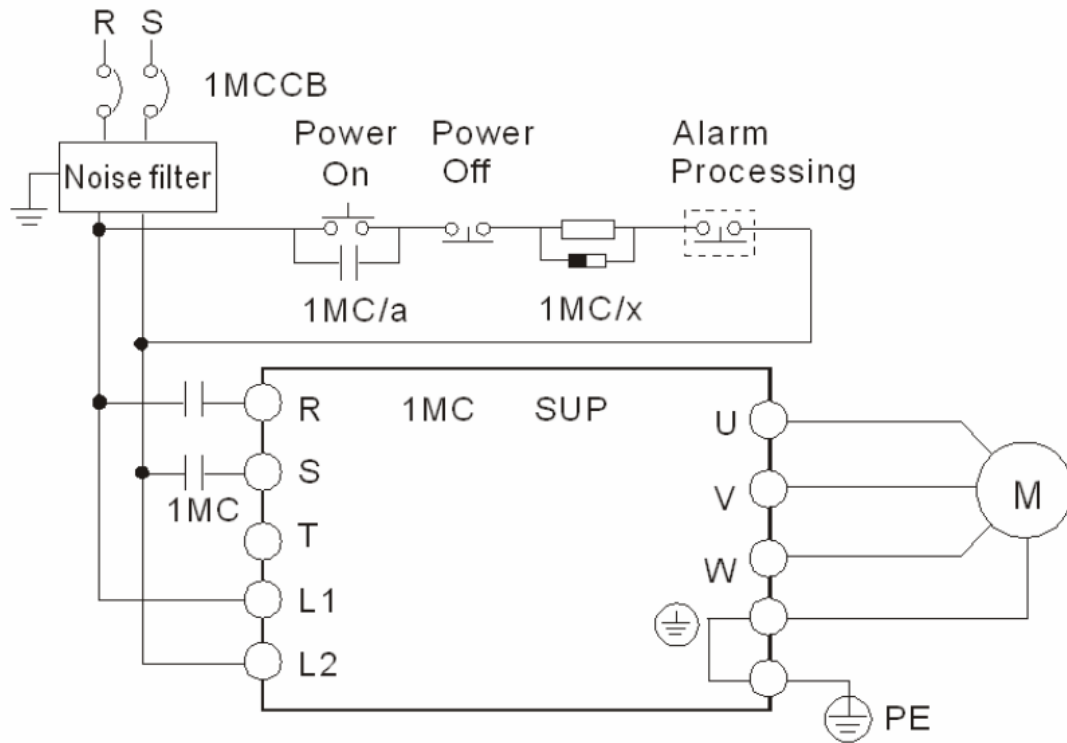
5. Press MODE to switch between servo ON and Servo OFF. If motor running is required, servo must be ON.
6. Press INC or DEC (motor runs when press the keys).
7. Press ENTER to return to function number display.(Servo is OFF)



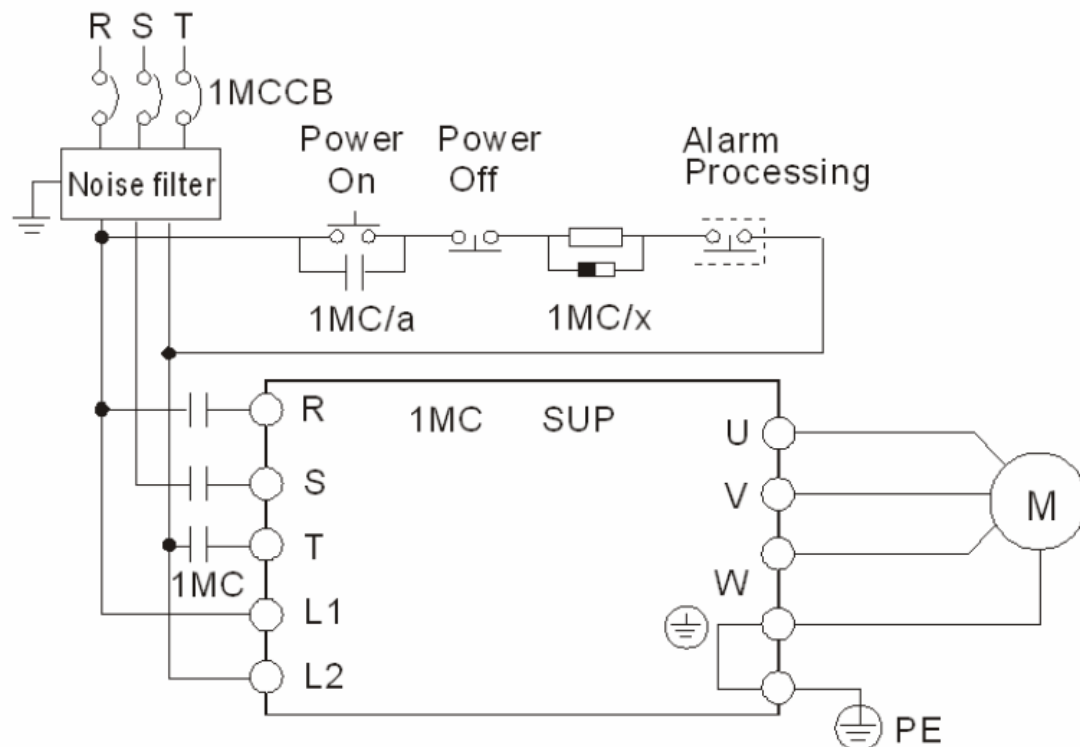
### 10. Power supply notice

Please notice that power supply for EDB&EDC drive is 200VAC phase to phase. Before power on, please confirm if the power supply matches the requirement.

## For single phase



## For three phase power supply



**Note:** EDB series are also available with single phase power supply for motor power range from 750w to 1.5KW. Please short terminal L1,L3&L2C as one phase and L2, L1C as another phase. Short terminal B1 & B2 is prohibited. For power more than 1.5KW, it is not recommended to use single phase power supply.