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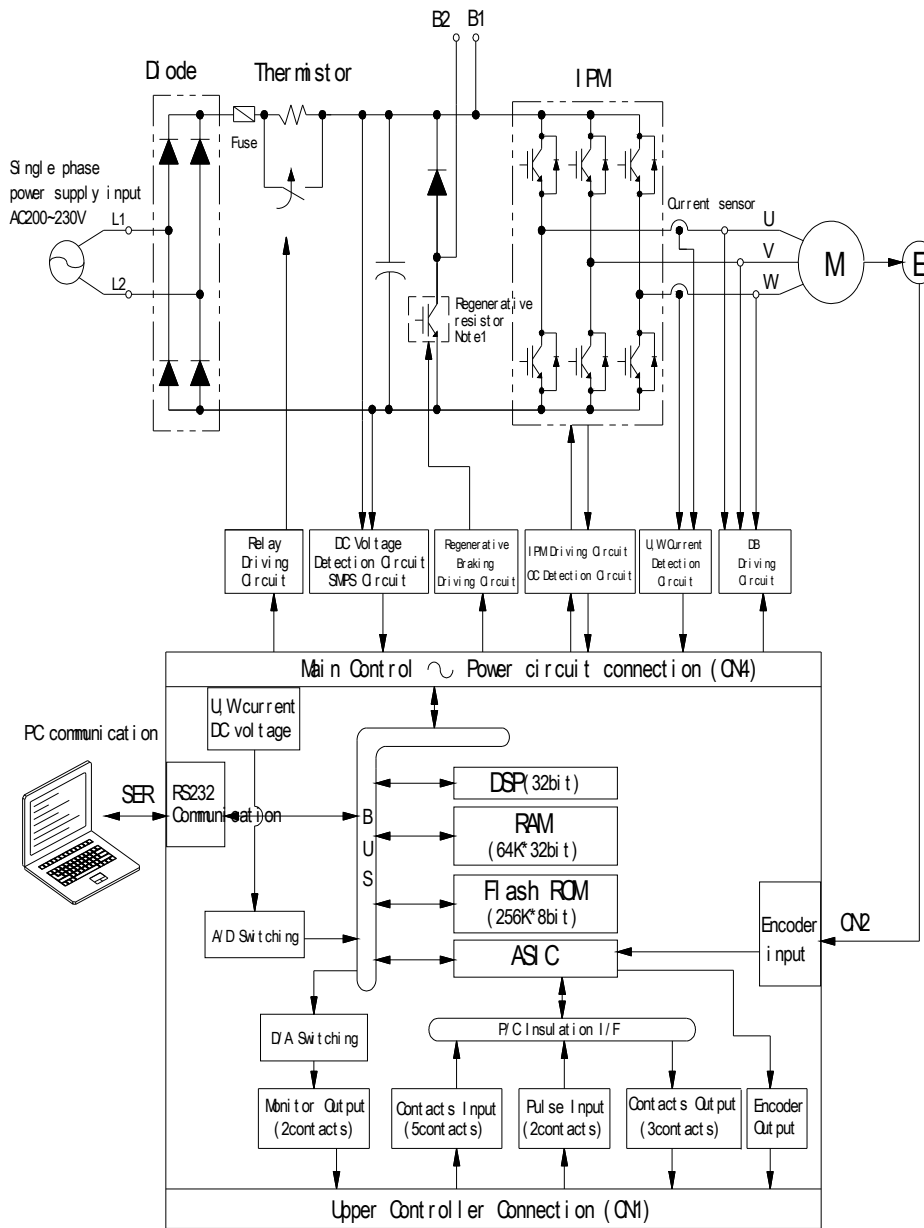
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3.1 Internal Block Diagram

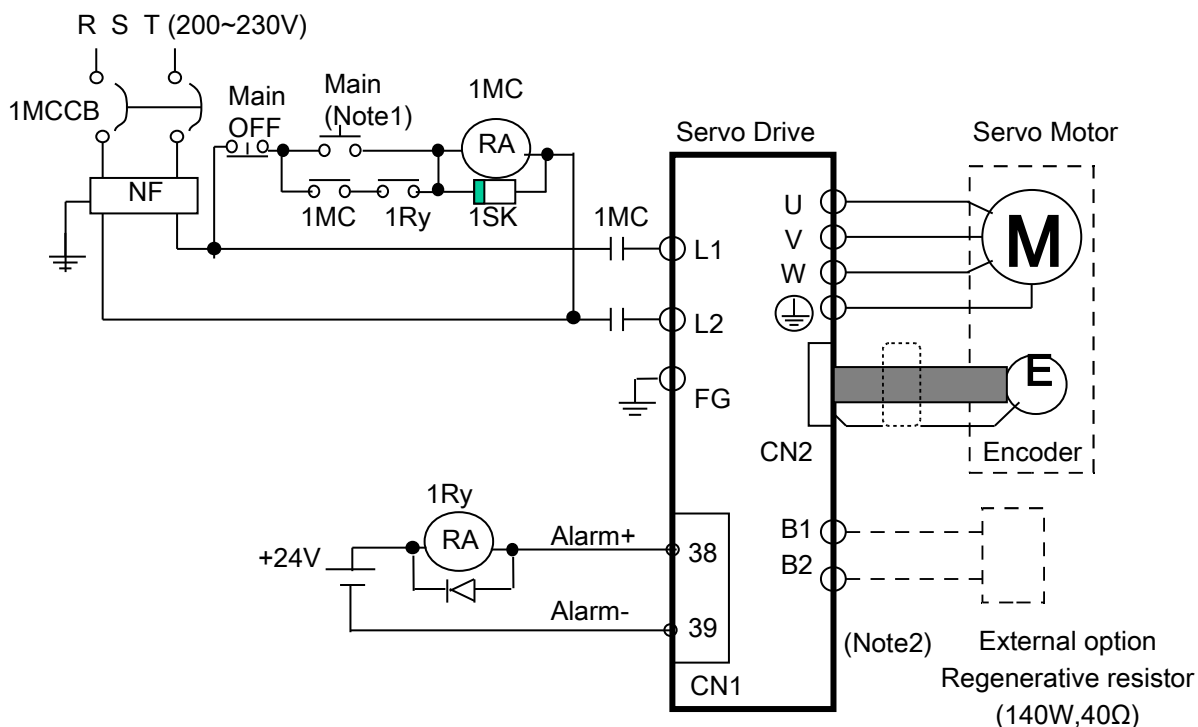


(Note 1) Regenerative resistor is installed in ONLY APD-VK04, VK08 Type

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3.2 Power Board Wiring

3.2.1 Wiring



(Note1) : It takes approximately 1~2 seconds before alarm signal is activated after power is connected. Press main power on switch for at least 2 seconds or longer.

(Note 2) : Standard regenerative resistor (30[W], 50[Ω]) is installed in APD-VK04~08 type. (but, there are no regenerative circuits, and regenerative resistors in APD-VKR5~02 Type)

In case that regenerative capacity is large due to frequent acceleration / deceleration, apply external regenerative resistor to (B1-B2). At this time, Make sure that the optional Brake resistor should be 140[W], 40[Ω].

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3.2.2 Power circuit parts specification

Model	VKR5N	VK01N	VK02N	VK04N	VK08N
MCCB	ABS336M (8A)				
Noise Filter	NFZ410SG				
MC	GMC-9(11A) or equivalent				
Cable	AWG16(1.25SQ)				
Drive power input terminal	1-178128-3(Case), 175218(Pin) made by of AMP Co.				
Regenerative resistor input terminal	1-178128-2(Case), 175218(Pin) made by AMP Co.				
Motor power input terminal	1-178128-4(Case), 175218(Pin) made by AMP Co.				
Regenerative resistor	-			30[W] 50[ohm] installed	

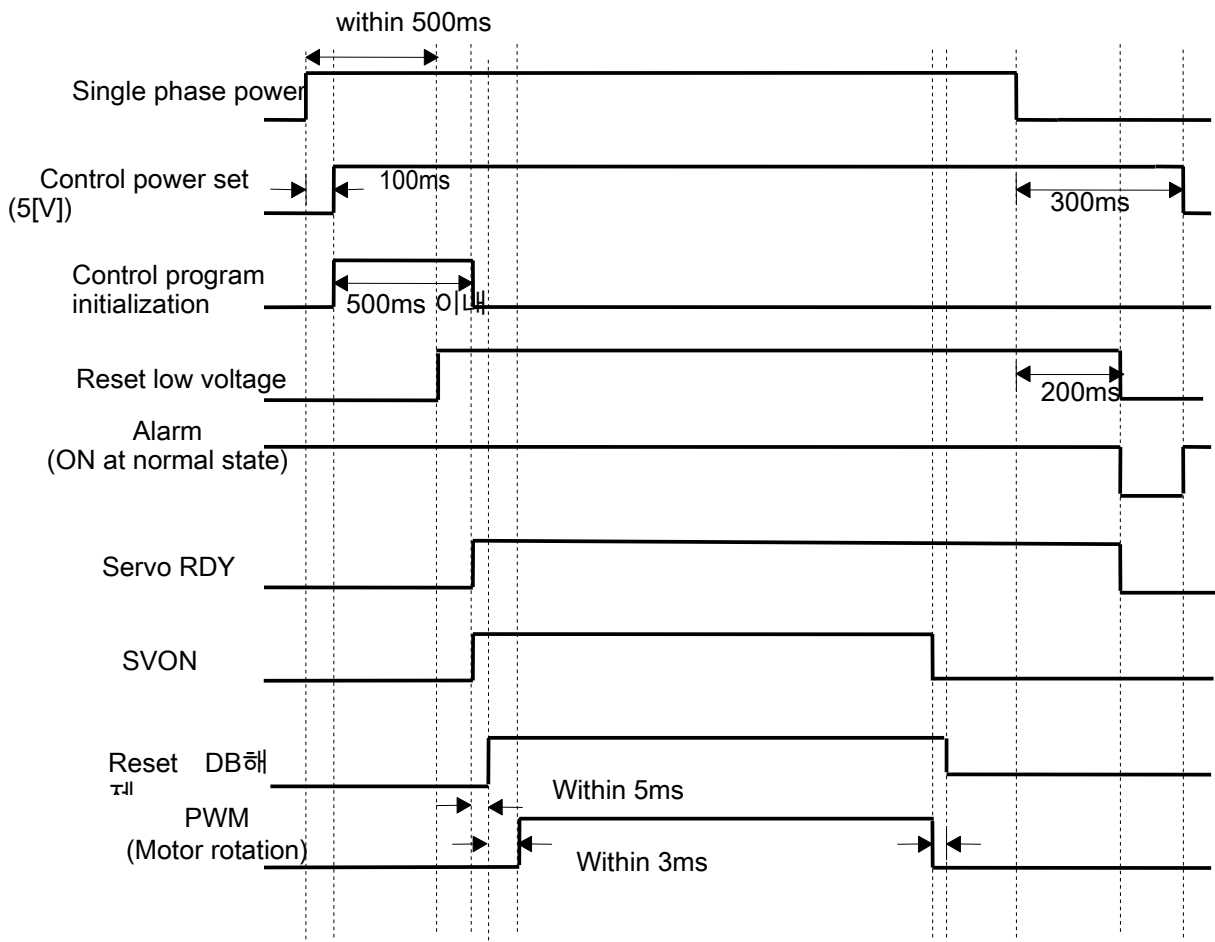
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3.3 Timing Diagram

3.3.1 Timing diagram at Power supplied

When single phase power is connected to L1,L2 terminal, the power is provided for main circuit and control circuit.


Servo becomes READY after maximum 500[msec] that are required to initialize the drive system inside, and when the servo drive signal is turned ON, operation starts 30[msec] later.



3.3.2 Timing diagram at Alarm occurred

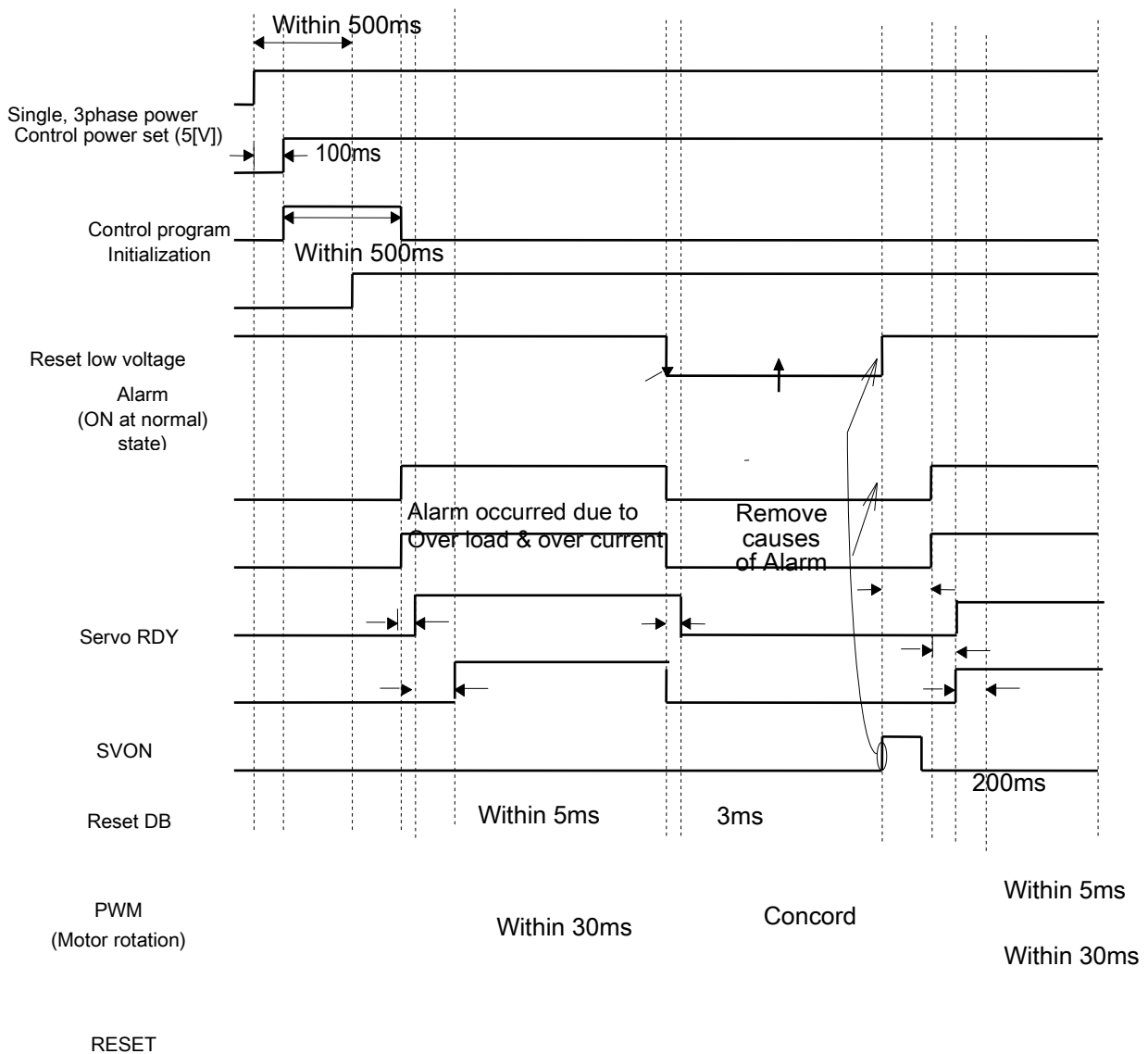
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If Alarm occurred in the drive system, PWM is shut off and the motor stops.



CAUTION

Check and remove causes of Alarm and turn OFF the servo motor operating command(SVON) before resetting Alarm.



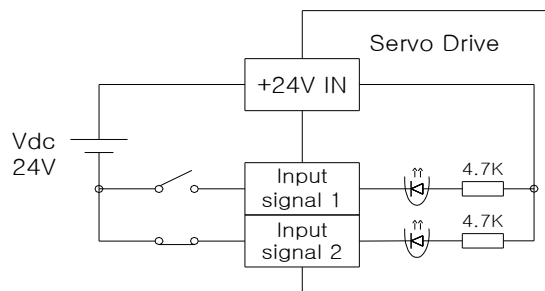
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3.4 Wiring of Control Signal

3.4.1 Input Contact Signal



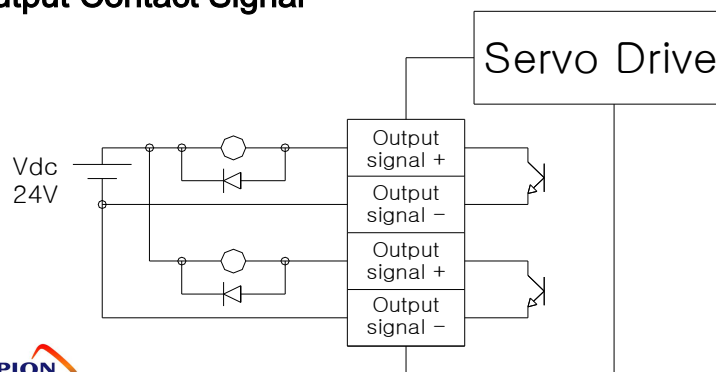
The input contacts are classified into A contact and B contact depending on the contact characteristics and can be reset by our PC Communication program. And Special caution is required because each contacts can automatically be OFF in case of shutting OFF power supply



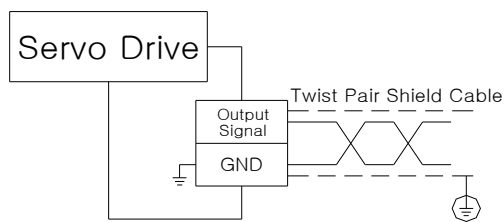
The output contact internally uses transistor switch. Take precaution because over voltage or over current may cause damage to the system

- Using rated power : DC24[V]±10%, 150[mA]

3.4.2 Output Contact Signal



3.4.3 Analog Monitor I/O Signal

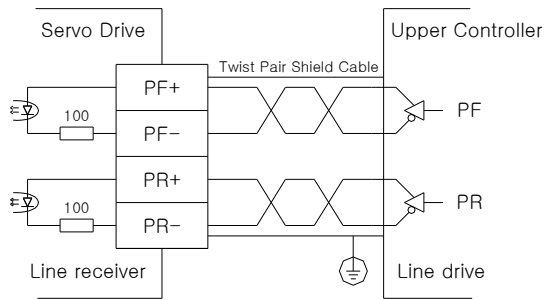


- 1 GND terminal must be 0[V] of the control power supply
- 2 Output signal voltage of Monitor1(No. 25), Monitor2(No. 26) is $\pm 5[V]$.
- 3 **Input signal command voltage is used within +15[v]
and input impedance is 10[k Ω].**

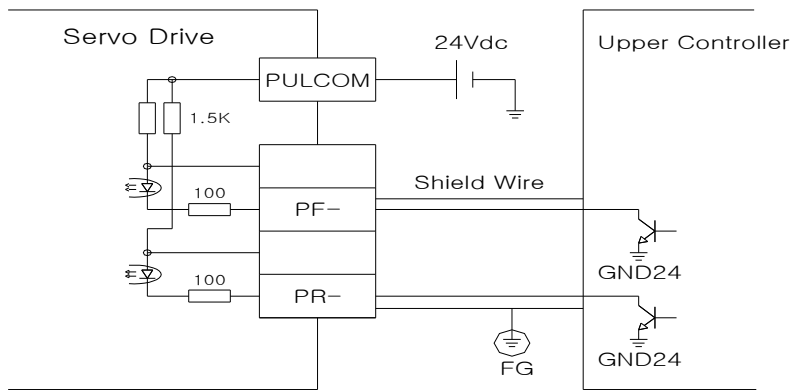
3.4.4 Pulse Input Signal

- (1) Line driver(5[V]) Pulse input

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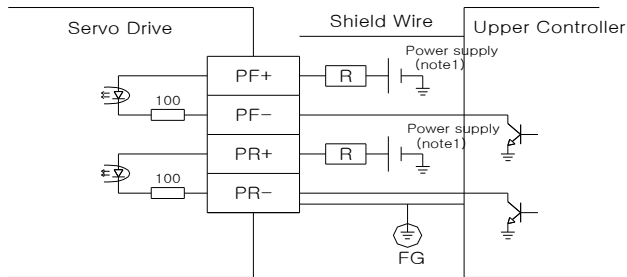


(2) Open collector(24[V]) Pulse input



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(3) 12[V] or 5[V] NPN Open Collector pulse command

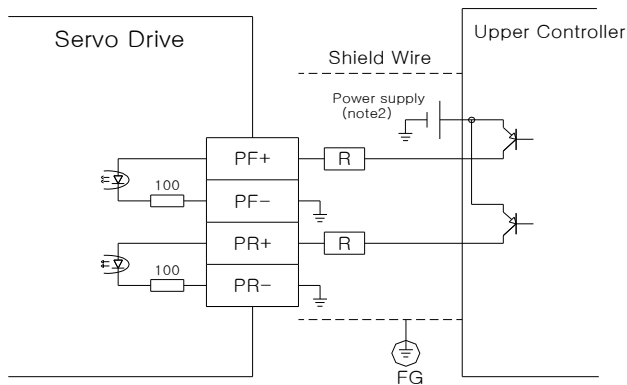


(Note 1) In case of using power supply 12[V] : Resistor R=560~680 [ohm]

In case of using power supply 5[V] : Resistor

R=100~150 [ohm]

(4) PNP Open Collector type pulse command



(Note 2) In case of using power supply 24[V] : Resistor R=1.5 [Kilo ohm]

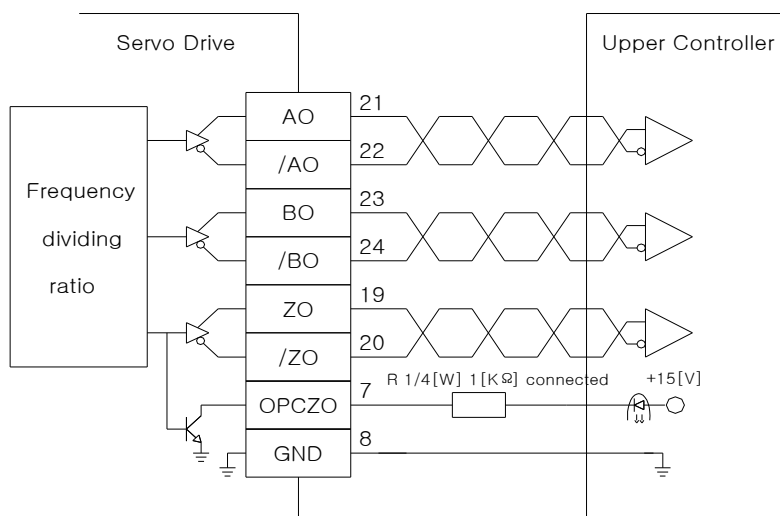
In case of using power supply 12[V] : Resistor R=560~680 [ohm]

In case of using power supply 5[V] : Resistor R=100~150 [ohm]

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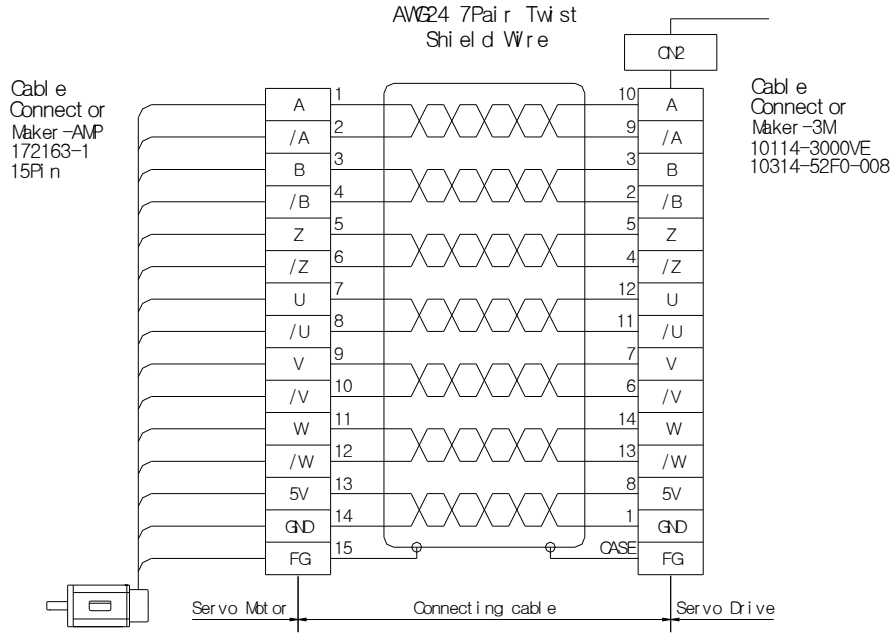
3.4.5 Encoder output signal

The encoder signal is produced based on 0[V](GND) of control power supply. Connect 0[V] terminal of the circuit which receives this signal from the upper control system to the 'GND' terminal of CN1. Encoder signal is produced in line driver system after the AC servo motor encoder signal received from CN2 is divided according to the frequency dividing ratio set by the menu [PE-510](Pulse Out Rate). Or in case of Z phase, there is also open collector output.

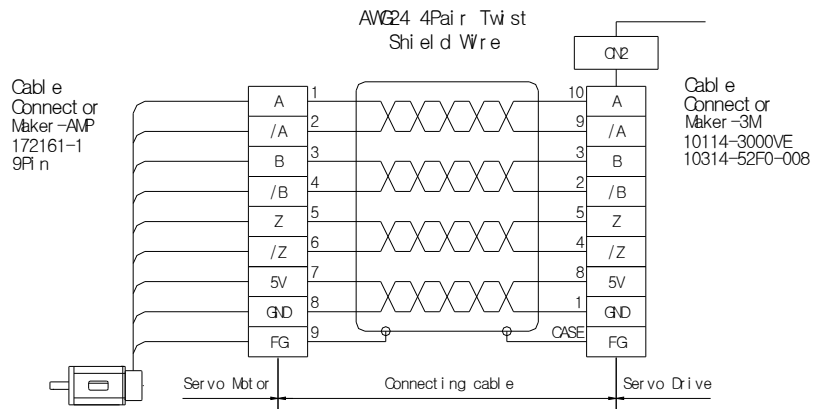


3.5 Incremental Encoder Signal(CN2) Wiring

3.5.1 15 lines Parallel Type Encoder



3.5.2 9 Lines Parallel Type Encoder

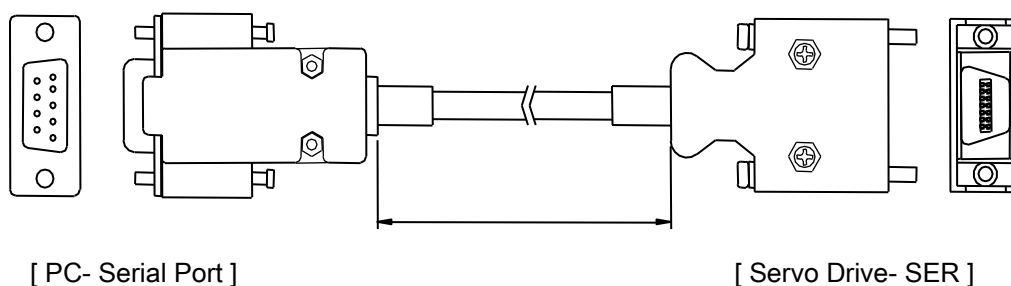


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3.6 Communication(Optional) Signal Wiring

3.6.1 PC Communication(For RS232C)

This cable is for only PC-communication option cable to set servo drive menu by serial communicating of servo drive and PC.



Content	PC-Serial Port	Servo Drive-CN3
Connector name	HDEB-9S	10114-3000VE
Case name	3600-09-G-L	10314-52A0-008
Wiring	NO.2(RXD)	NO.6(TXD)
	NO.3(TXD)	NO.5(RXD)
	NO.5(GND)	NO.11, NO.12(GND)
	×	Case(Shield)
Cable length	1,2,3,5[m]	

In Windows98, Serial Port(COM1) setting is as below.

(Setting > Control panel > System > Device manager > Port >

Communication port(COM1) > Port setting)

Bps : 9600[bps] or 57600 [bps] (set it as the same speed in the menu

[PE-202])

Data bit : 8

Parity : none

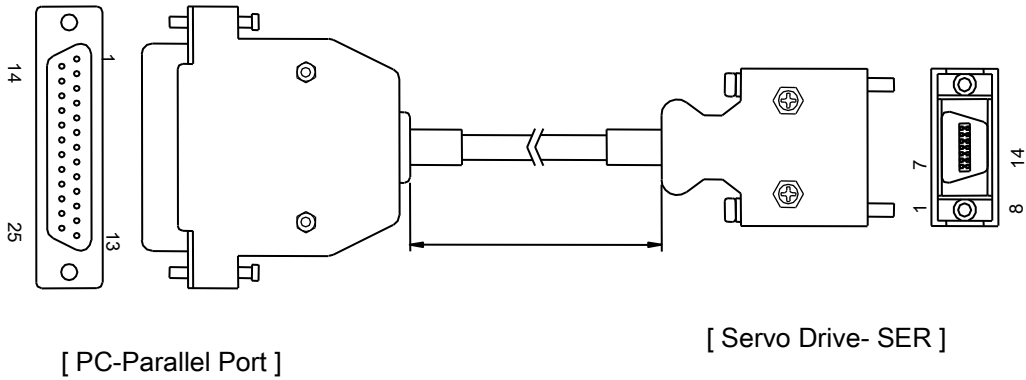
Stop bit : 1

Flow control : Xon/Xoff

3.6.2 Communication for Servo only (For O/S Download)

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This cable is for only servo communication cable to upgrade O/S(Operating Software) by parallel communication of servo drive and PC



Contents	PC-Parallel Port	Servo Drive-SER
Connector name	HDBB-25P	10114-3000VE
Case name	3600-25-G-L	10314-52A0-008
Wiring	NO.15(ERROR)	NO.1(DXO)
	NO.8(DATA6)	NO.2(FSRX)
	NO.7(DATA5)	NO.3(CLKRX)
	NO.9(DATA7)	NO.4(CLK)
	NO.16(INIT)	NO.8(RESET)
	NO.18(GND)	NO.9(INT2/3)
	NO.6(DATA4)	NO.10(DRO)
	NO.20(GND)	NO.11(GND)
	×	Case(Shield)
Cable length	1, 2, 3, 5[m]	

In Windows98, Parallel Port(LPT1) setting is as below.

(Setting > Control panel > System > Device manager > Port > Print port(LPT1) > resource)

Range of I/O : 0378 ~ 037B

Request interrupt : 07