

Chapter 5

Handling and Operating

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5.1 Check Point before Operation

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Improper handling of the drive may lead to unexpected accident or damage. The following are important points in operating the drive

5.1.1 Check Wiring

- (1) Check if the input power is right voltage (AC200[V])
- (2) Check if the connection (U,V,W GND) of drive and motor is O.K
- (3) Check if control signal is correctly connected to 24[V]
- (4) Check of the regenerative resistor is a correct model for the capacity and connection is O.K
- (5) Check if wiring cable is not bent severely or it is under pressure
- (6) Check if the GND and shield is O.K

5.1.2 Check wiring of operating signal (CN1)

Make sure that the wiring and contact state of operating signal is as below.

Pin NO.	Pin name	Contact state	Pin No.	Pin name	Contact state
30	SVON	OFF	32	CWLIM	ON
34	PCLEAR	OFF	31	CCWLIM	ON
33	ALMRST	OFF			

Note) Signal name can be different by operation mode.

5.1.3 Check operating Environment

Check if there is no metal powder or moisture.

5.1.4 Check machinery state

- (1) Check if there is no problem on coupling of motor
- (2) Check of there is no slackness or breakaway at joint bolt.
- (3) Check of there is no obstacle on operation region.

5.1.5 Check menu variables

- (1) Check if setting motor ID[PE-201] is OK
- (2) Check if setting encoder [PE-204] is OK
- (3) Check if control gain is set to proper value

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5.2 Major function of Handy loader

- Handy loader consists of main menu and sub menu. Main menu is divided 3 different Groups(Monitoring of operation status, Editing all the data for operation and Test /Manipulating operation).

Please refer to Handy Loader manual for the detailed information.

Main menu	Sub menu	LCD display window
Monitor (MONI)	1. Monitor current speed	Motor Speed
	2. Monitor Servo motor position	Position
	3. Monitor load ratio	Load Ratio[%]
	4. Monitor DC Volt and I/O contacts	DC Volt
	5. Monitor current servo state	Current State
	6. Monitor Alarm history	Alarm Hist
Editing (DATA)	Edit variables, control variables, I/O variables, I/O contacts variables and position operation variables.	Display as Code and Name that are written in the Servo Drive manual
Operation (OPER)	1. Alarm reset	Alarm Reset
	2. Alarm history clear	Alarm H Clear
	3. Speed jog run	Speed Jog Run
	4. Continuous Test run	Auto Test Run
	5. Origin run	Origin Run
	6. Auto gain tuning	Gain Tuning
	7. Saving menu parameter(UpLoad)	Menu UpLoad
	8. Download menu parameter (DownLoad)	Menu DownLoad
	9. Current offset compensation	Curr Offset
	10. Menu initialization	Menu Initial

5.2.1 Handling and Operating

① Alarm Reset

- Executes alarm reset function. When the function is successfully executed, "OK" sign is displayed on LCD screen as the executed result and it becomes a normal condition.

② Alarm History Clear

- Eliminates all the alarm history that is happened in the past. : When the function is successfully executed, "OK" sign is displayed on LCD screen as the executed result.

③ Speed Jog Operation

- Indicates current command speed and current operation speed. Test-operation is performed by left-right direction button manipulation.

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④ Continuous Test operation

- Continuous test operation function of VK Series. Servo is continuously operated by the operation speed([PE-612]~[PE-615]) and operation time([PE-616]~[PE-619]).

⑤ Origin Operation

- Executes Encoder Z phase position operation and Origin operation function.

⑥ Automatic Gain Tuning

- Automatically tunes Inertia ratio by repeating operation/stop or forward/reverse operation.
- Inertia ratio is automatically increased from the minimum value to the maximum value. The speed and position of servo can be adjusted by up/down/left/right button.

⑦ Menu Parameter Saving (UpLoad)

- Read out the parameter values saved in servo drive and save them in the memory of Handy Loader.

⑧ Menu Parameter Download (DownLoad)

- Save the parameter values that are already saved in Handy loader in the memory of Servo drive.

⑨ Current Offset Compensation Function

- Compensates the offset of current sensor inside servo drive. This offset value is already adjusted before the shipment. So, Customers are requested not to adjust it .

⑩ Menu Initialization

- Data of Menu variables that have been set up so far are to be changed to the Initial value of when the product was shipped out. But, System menu data doesn't change.

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5.2.2 Menu display when using Hand Loader

		MENU		Unit	Ini	Description	App Mode
Handy Loader		CODE	NAME	Min	Max		
M O N I T O R (F1)	1	Pd-002		r/min	0.0	Indicate current speed.	PS
			Current Speed	-9999.9	9999.9		
		Pd-003		r/min	0.0	Indicate current command speed.	S
			Command Speed	-9999.9	9999.9		
	2	Pd-004		-	0	Indicate cumulative value of position command Pulse that are input from external device.	P
			Current Pulse	-99999	99999		
		Pd-005		-	0	Indicate feedback pulse when controlling Position.	PS
			Feedback Pulse	-99999	99999		
	3	Pd-010		[%]	0	Indicate current load ratio compared to rated	PS
			Current Load	-99999	99999		
		Pd-012		[%]	0	Indicates instantaneous max, load ratio power.	PS
			Maximum Load	-99999	99999		
	4	Pd-013		Volt	0.0	Indicates DC Link voltage of current main power.	PS
			DC Link Voltage	0.0	999.9		
	Pd-016		-	-	Indicates I/O status that is perceived last(It :ON, B contact : OFF)	PS	
		I/O State	-	-			
5	Pd-001		-	-	Indicates current operation status.	PS	
		Current State	-	-			
6	PA-101 ~120		-	-	Indicates Alam statue that is happened before.	PS	
		AlarmHistory	-	-			
DATA (F2)	-	PE-201 ~PE-720	-	-	-	Parameter adit and input. (Sames Menu 4-3)	PS
O P E R A T O R (F3)	1			-	-	Reset current alarm.	PS
			Alarm Reset	-	-		
	2			-	-	Clear alarm history.	PS
			Alarm His Clear	-	-		
	3			-	-	Indicates current command speed and current operation speed. Test-operation is performed by left-right direction button manipulation.	PS
Speed Jog Run			-	-			
4			-	-	Continuous operation by speed and time that are set on menu.(Press[ENT] for end.)	PS	
		Auto Test Run	-	-			
5			-	-	Press [ENT] key, then motor rotate as forward Direction, and search for Z pharse of encoder for stop.	PS	
			Origin Run	-	-		

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		MENU		Unit	Ini	Description	APP Mode
Handy Loader	CODE	NAME	Min	Max			
O P E R A T O R	6	Auto gain tuning	-	2.0	Sets automatic tuning operation of load inertia (Procedure) ①Sets the range with[Enter] key. ②When press [Up/Down] key, then can adjust speed of100->300 ->500[r/min] each 200[r/min]. ③When press [Left/Right] key, then can adjust run distance. ④Press [Enter] key, then auto tuning result is saved at [PE-301],[PE-307],[PE-309].	PS	
		Gain Tune Run	1	50			
(F3)	7		-	-	Read out the parameter values saved in servo drive and save them in the memory of Servo drive. Indicate the Software Version.	PS	
		Menu UpLoad	-	-			
		Software Version	-	-			
	8		-	-	Save the parameter values that are already saved in Handy loader in the memory of Servo drive.	PS	
		Menu DownLoad	-	-			
	9		-	-	Compensates current offset of Hall-CT. In case of downloading servo soft, surely turn power ON/OFF 3~5 timers, after that press[UP] key and save current offset value.	PS	
		Current Offset	-	-			
	10		-	-	Press [Enter] key, then data of menu are changed to initial value automatically. But, system menu data of [PE-201]~[PE-220] is not changed. (It will be applied when the Power is supplied again.)	PS	
		Menu Data Initial	-	-			

※ F1 : Selecting Monitoring function and sub menu group move button.

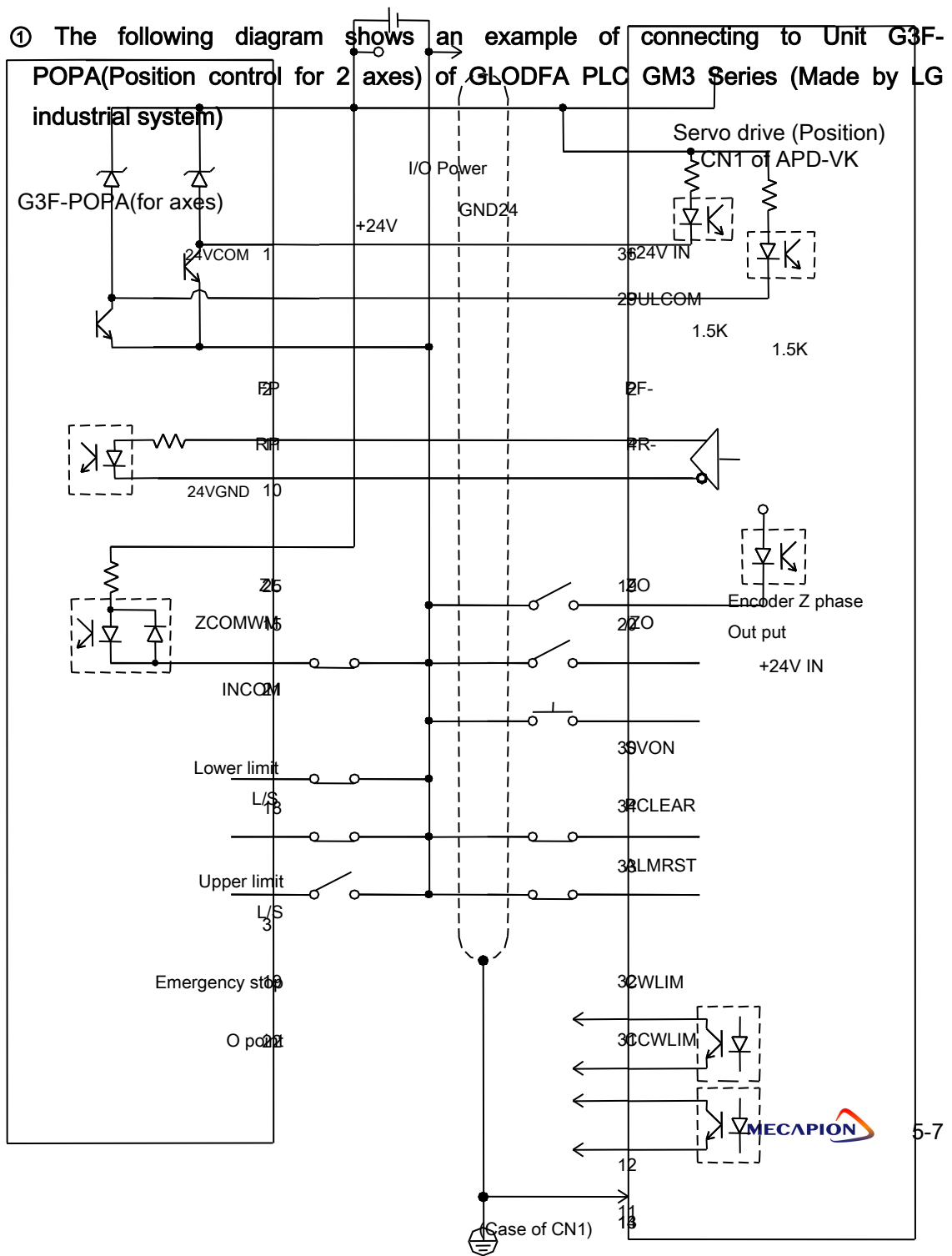
※ F2 : Selecting Parameter edit function and TOP(Main) move button.

※ F3 : Selecting run function and sub menu group move button.

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5.3 Example of connecting to upper controller

① The following diagram shows an example of connecting to Unit G3F-POPA(Position control for 2 axes) of GLODFA PLC GM3 Series (Made by LG industrial system)



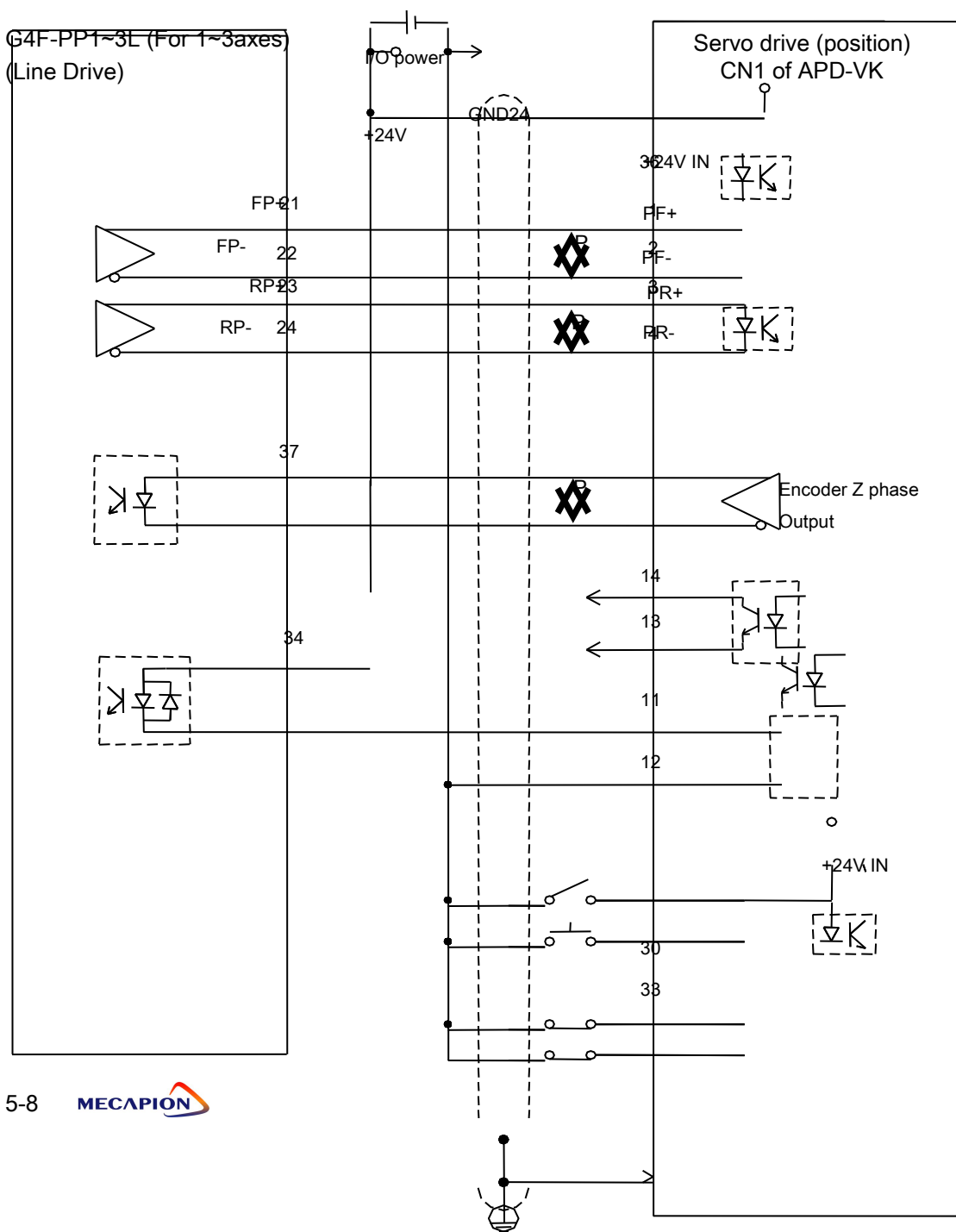
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ALM+
 ALM-
 INPOS+
 INPOS-

Note) Emergency stop signal No.19 should
 be used in only one case of X-axis or Y-axis

F.G

② The following diagram shows an example of connecting to Unit G4F-PP1~3L (Position control for 1~3 axes) of GLOFA PLC GM4 (Made by LG industrial system)



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SVON

ALMRST

32WLIM

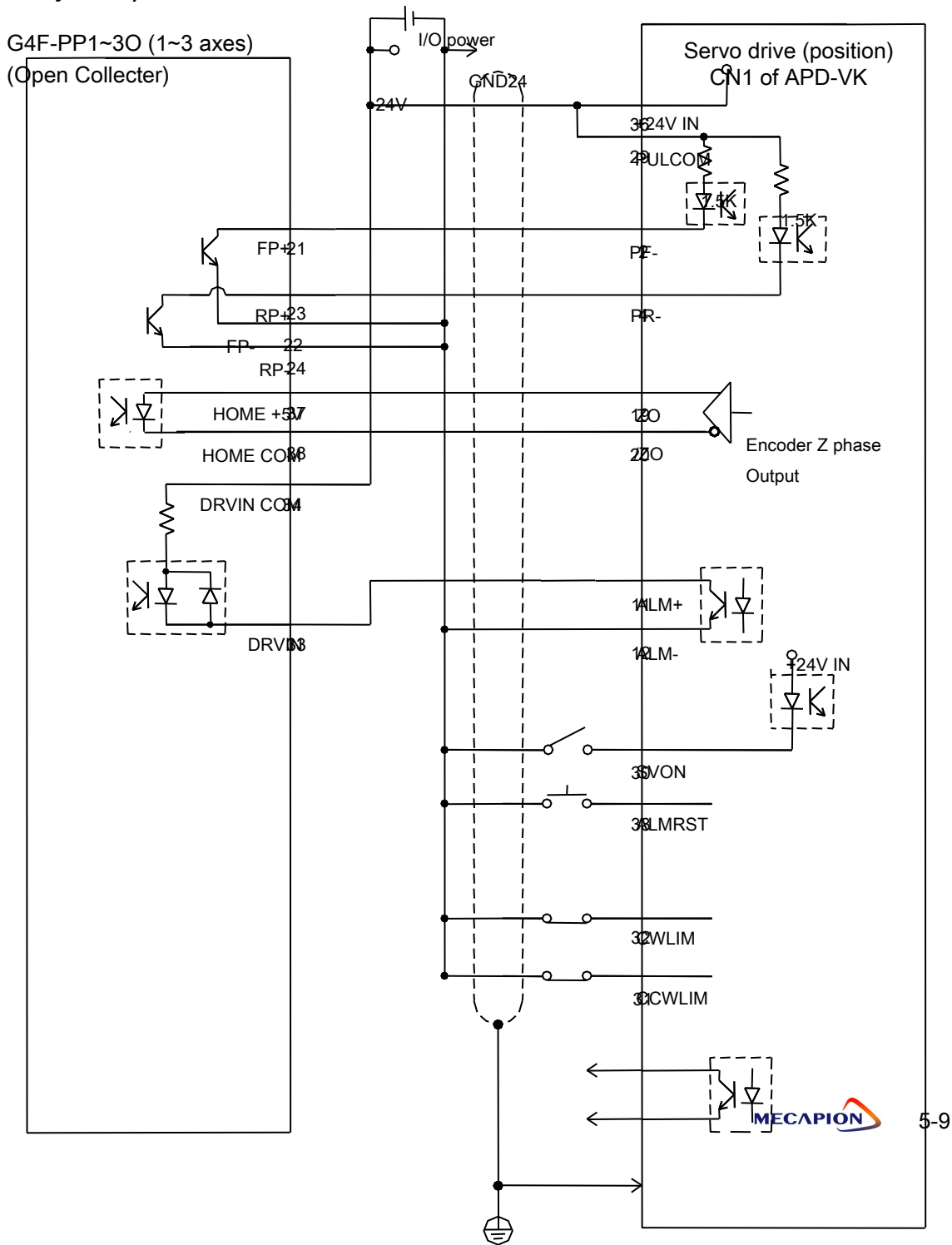
33CWLIM

Note) † P indicates twisted pair wires.

(Case of CN1)

F.G

- ③ The following diagram shoes an example of connecting to Unit G4F-PP1~3O (Position control for 1~3 axes) of GLOFA PLC GM4 Series (Made by LG industrial systems)



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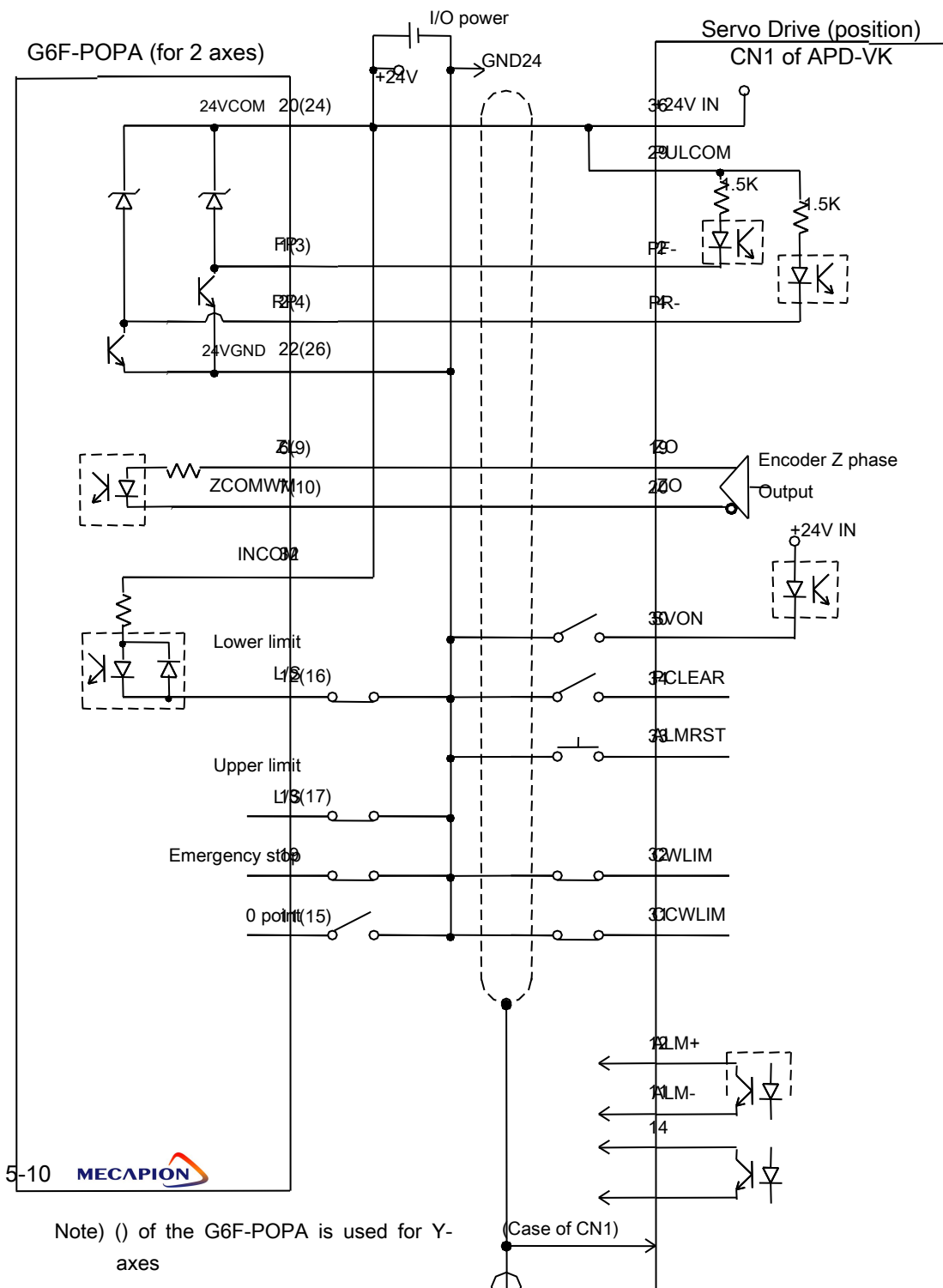
INPOS+

INPOS-

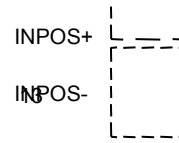
(Case of CN1)

F.G

④ The following diagram shoes an example of connecting to Unit G6F-POPA (Position Control for 2axes) GOFA PLC GM6 Series (Made by LG Industrial System)

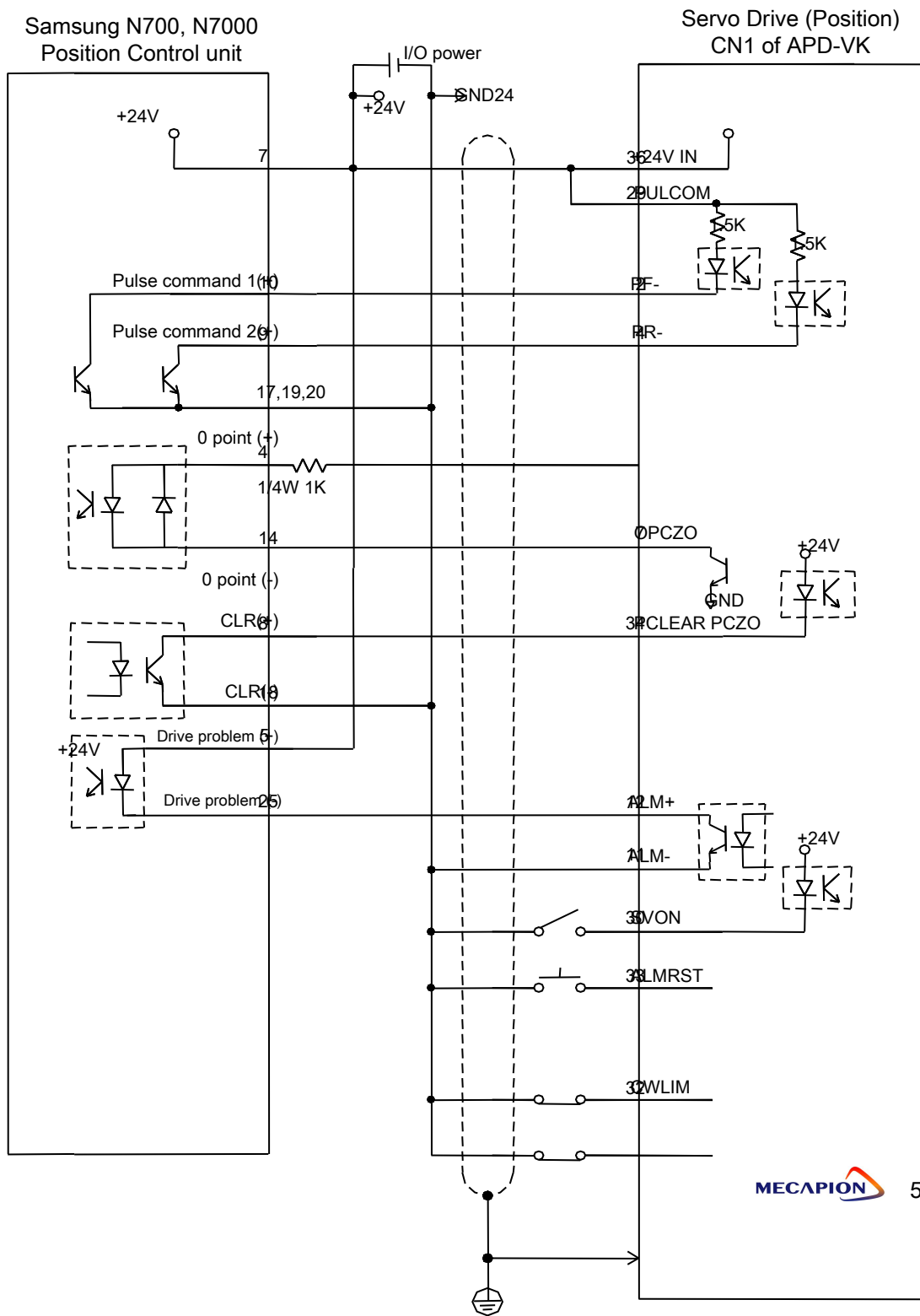


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F.G

⑤ The following diagram shoes an example of connecting to Unit for PLC N700, N7000 Position Control (Made by SAMSUNG)



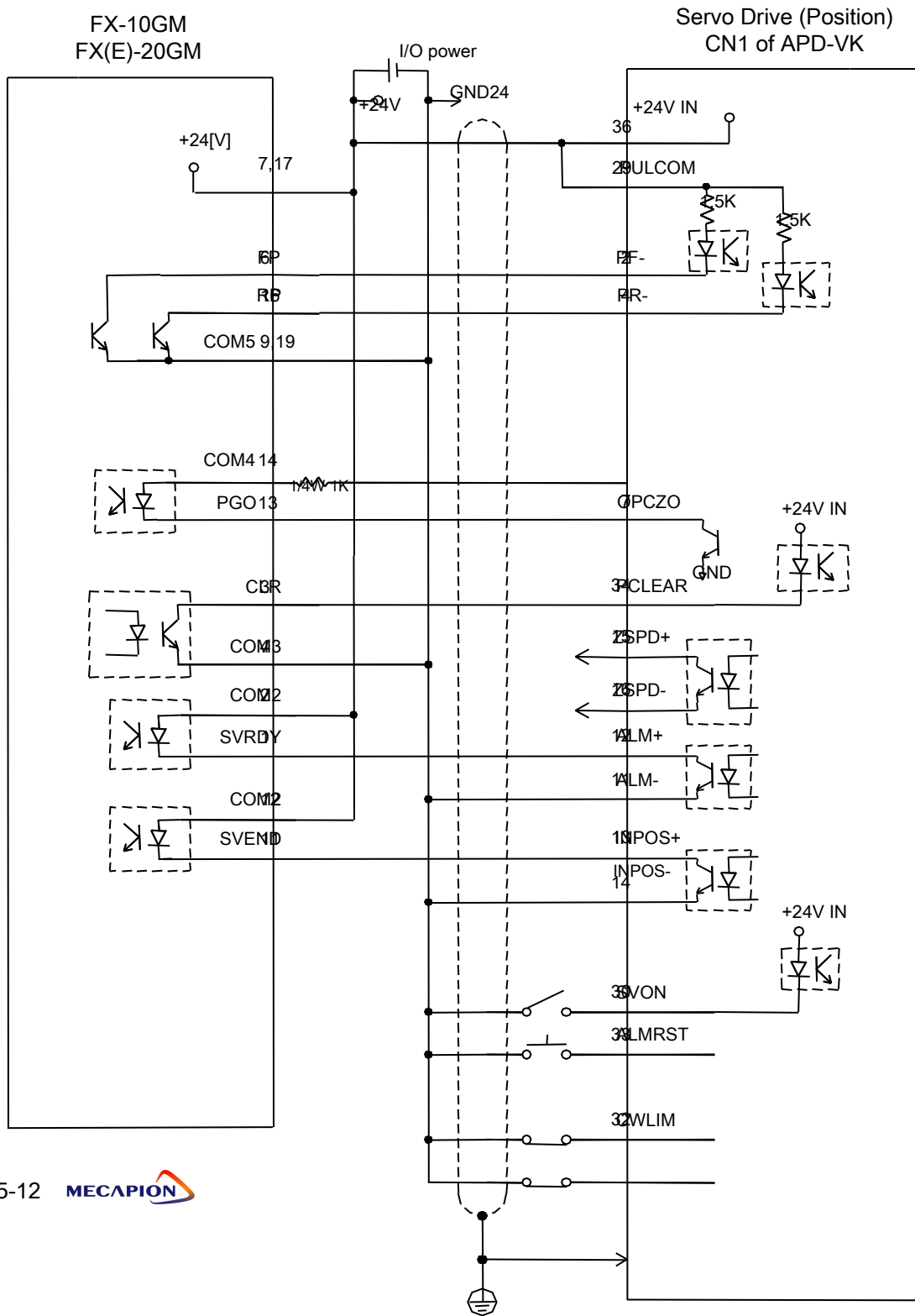
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33CWLIM

(Case of CN1)

F.G

⑥ The following diagram shoes an example of connecting to Unit FX-10GM, FX(E)-20GM Position Control Made by MITSUBISHI

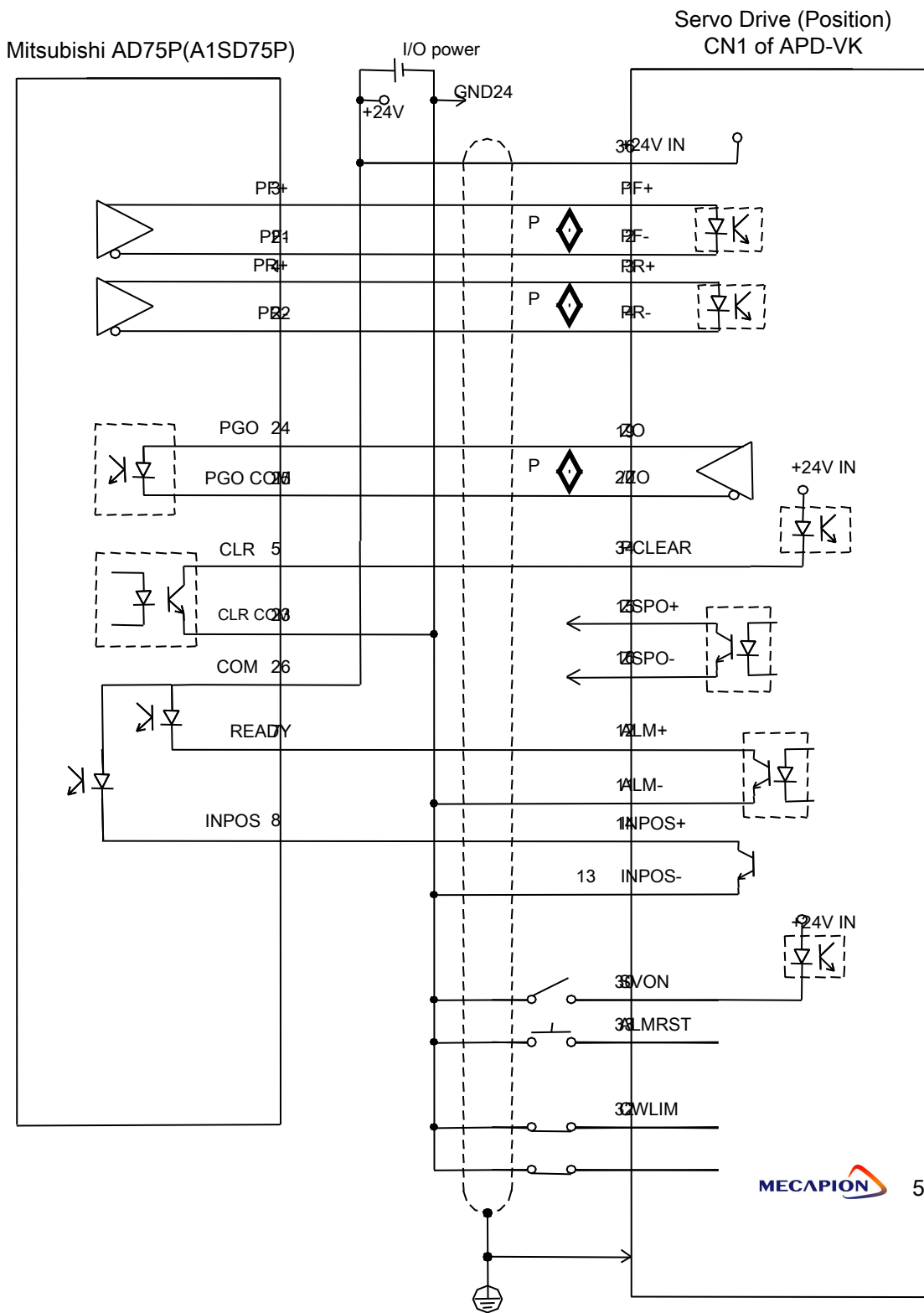


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33CWLIM

(Case of CN1)
F.G

⑦ The following diagram shoes an example of connecting to Unit AD75P(A1SD75P) Positioning Unit Made by MMMITSUBISHI



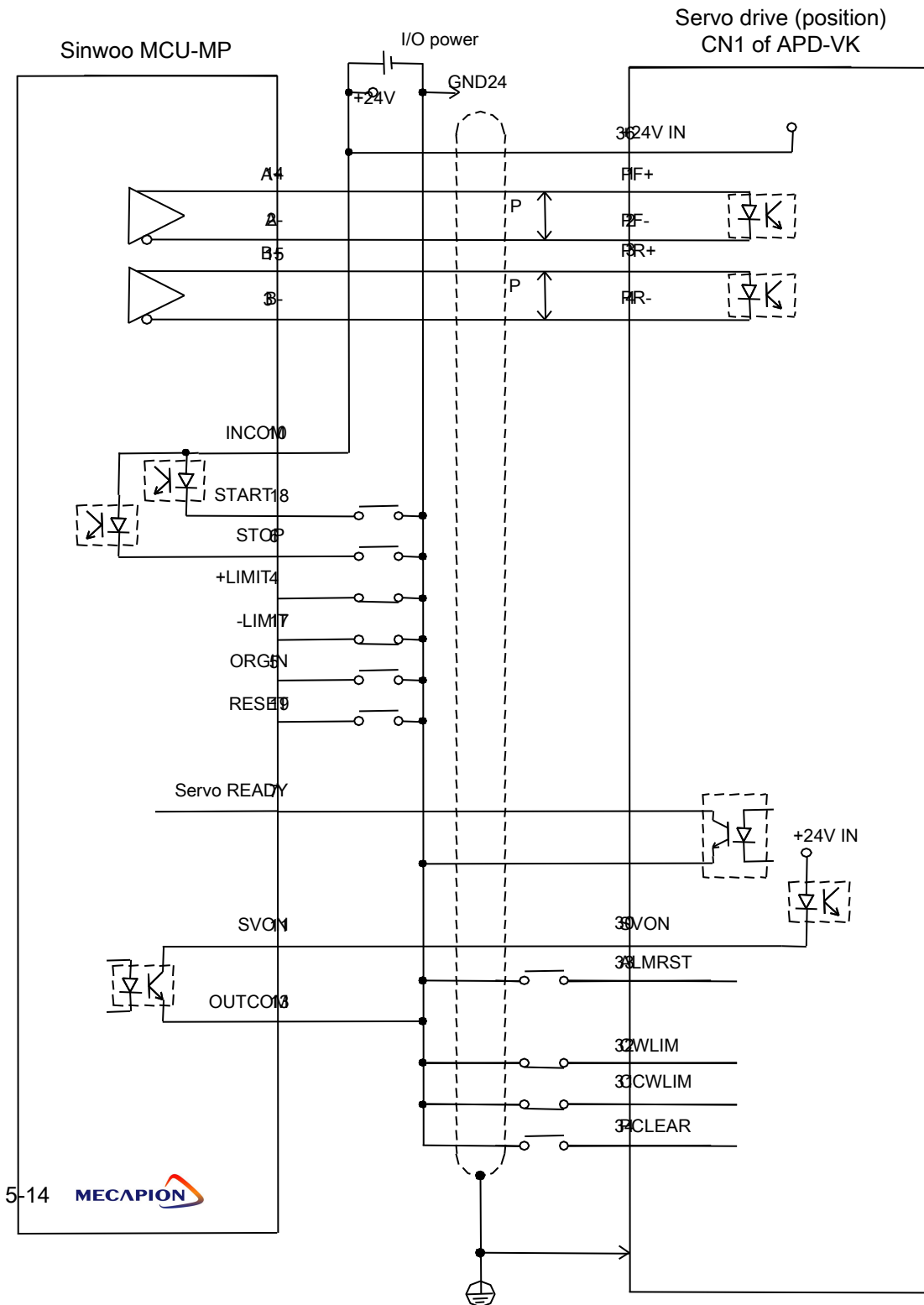
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31CWLIM

Note1) ↓ P indicates twisted pair wires.

(Case of CN1)
F.G

⑧ The following diagram shoes an example of connecting to Unit MCU-MP Motion Unit Made by SINWOO

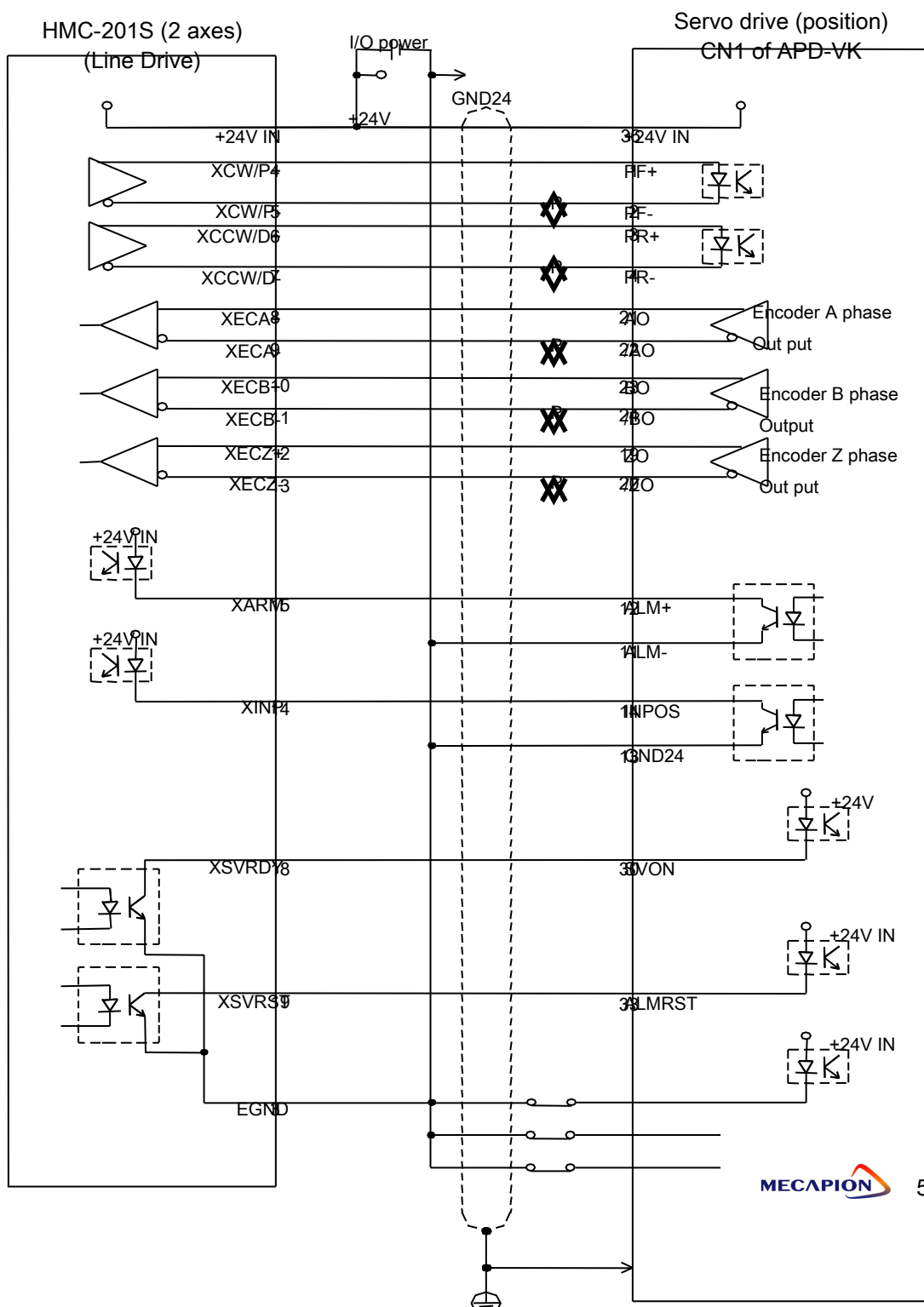


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(Case of CN1)

F.G

- ⑨ The following diagram shoes an example of connecting to 2 AXIS Motion controller HMC-201S Made by HANMI



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32WLIM

33CWLIM

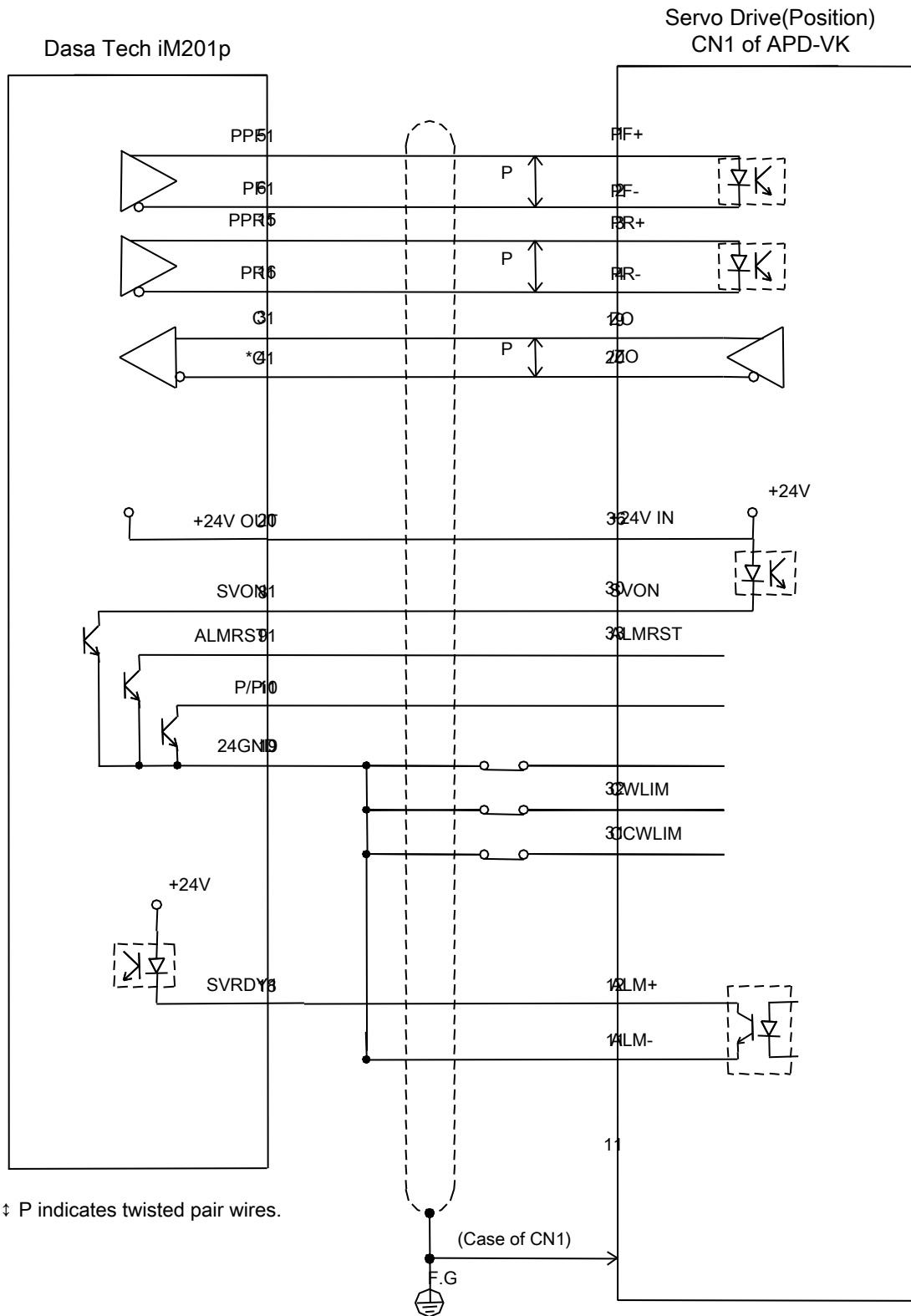
Note1) † P indicates twisted pair wires

(Case of CN1)

F.G

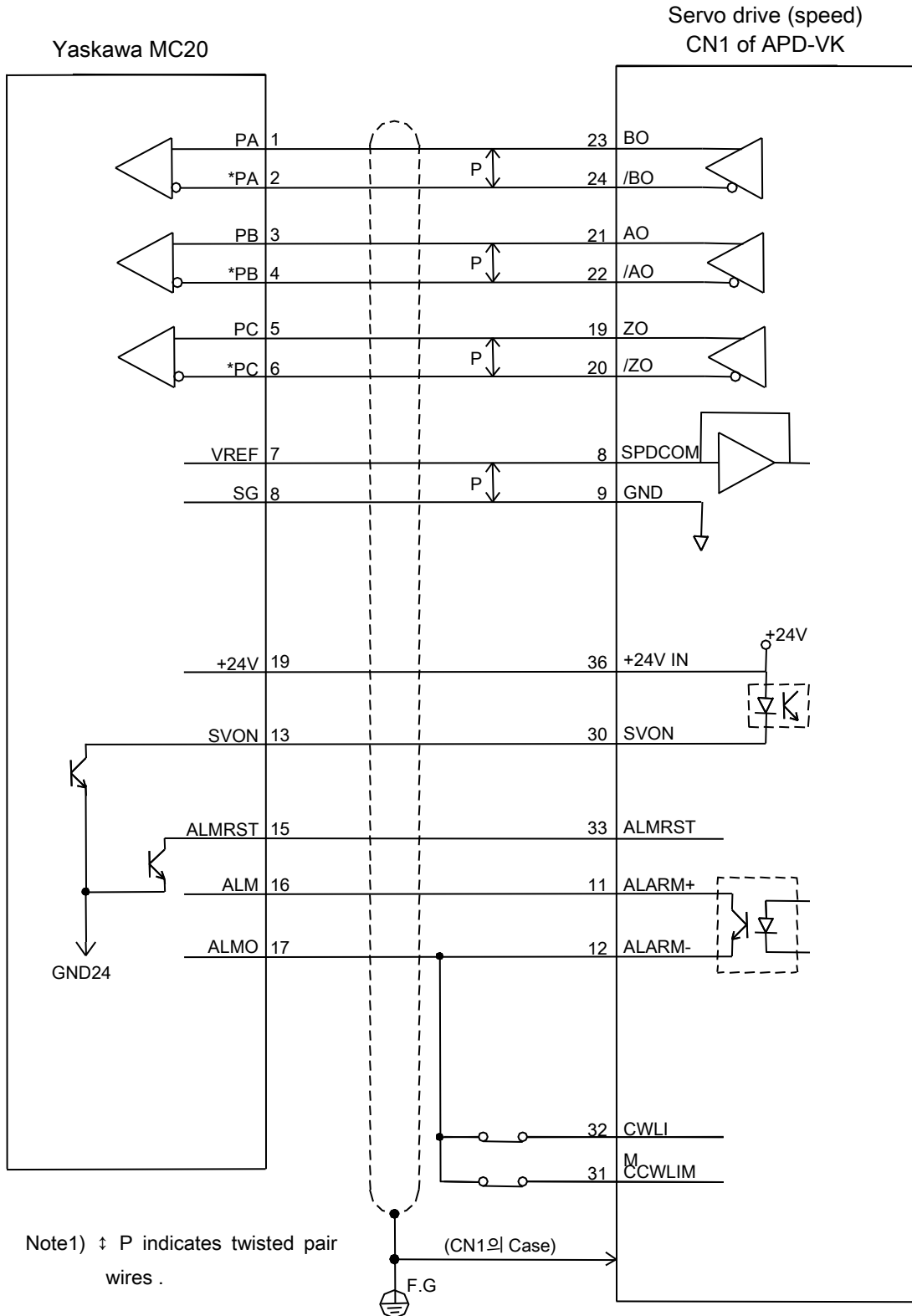
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- ⑩ The following diagram shoes an example of connecting Unit iM201P Motion Controller Made by DASA TECH



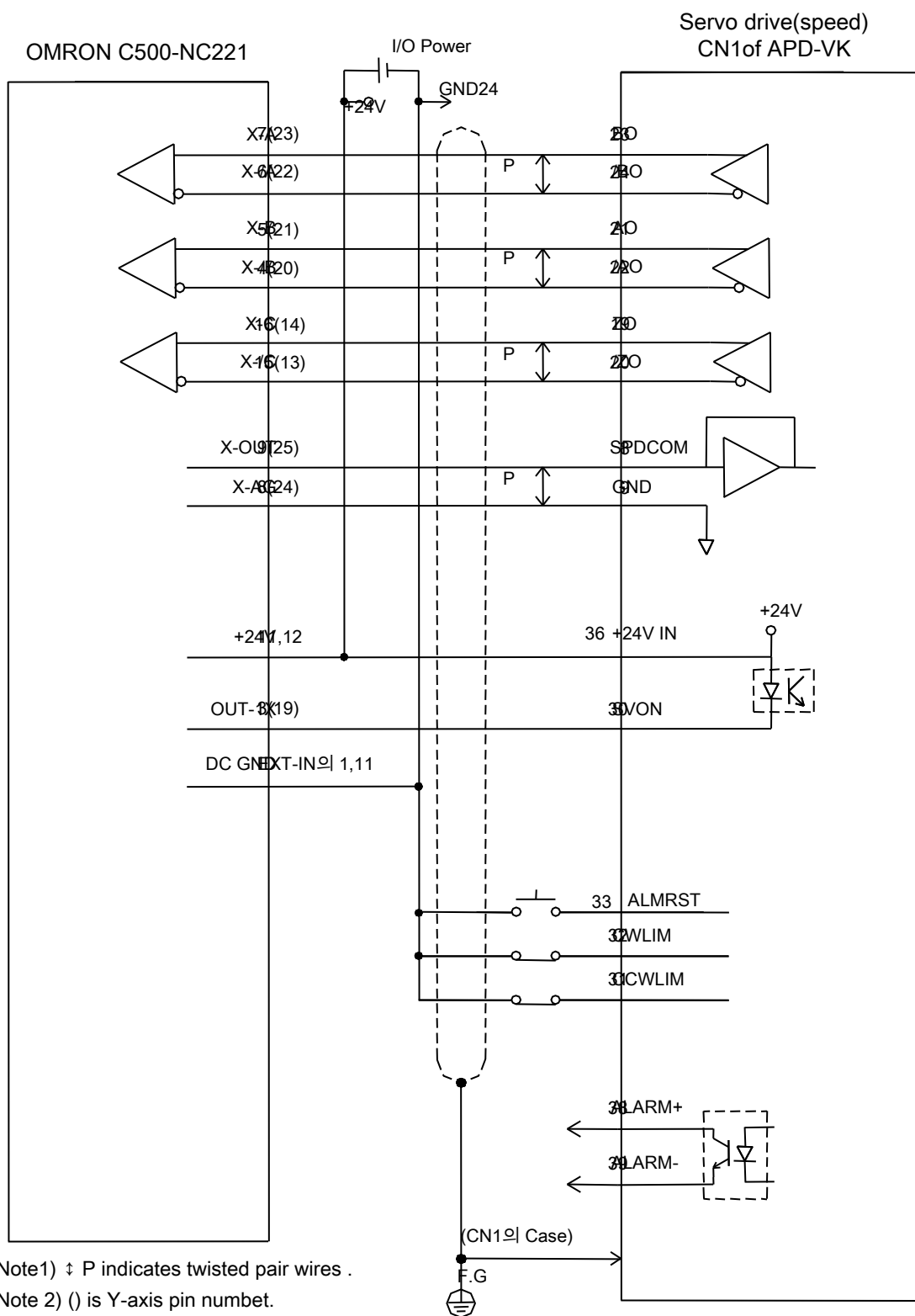
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- ⑩ The following diagram shoes an example of connecting to Unit MC20 GL series
Made by YASKAWA



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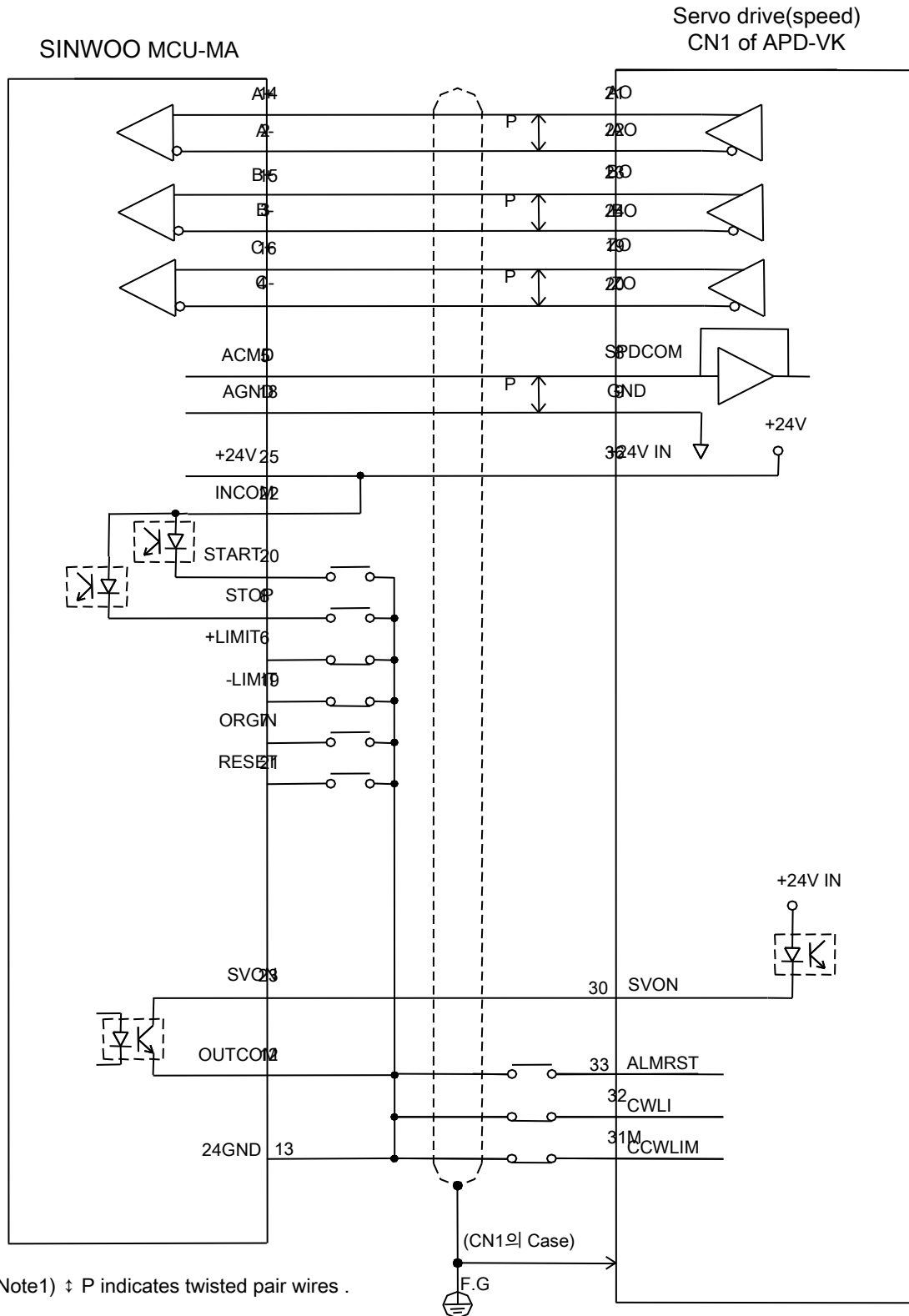
② The following diagram shoes an example of connecting to Unit C500-NC221 position Made by OMRON.



Note1) † P indicates twisted pair wires .
 Note 2) () is Y-axis pin numbet.

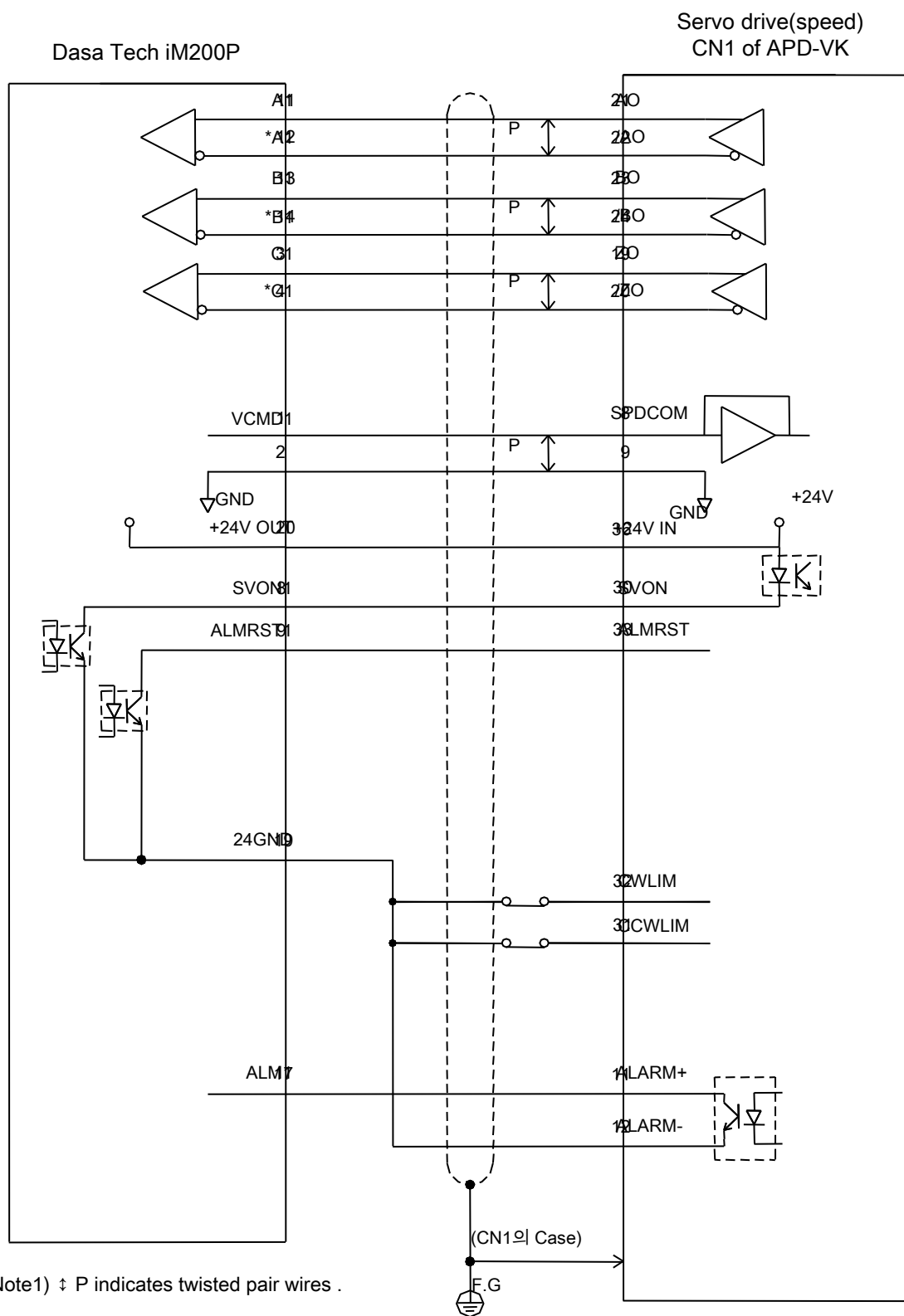
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⑬ The following diagram shows an example of connecting to Unit MCU-MA Motion Unit
 Made by SINWOO



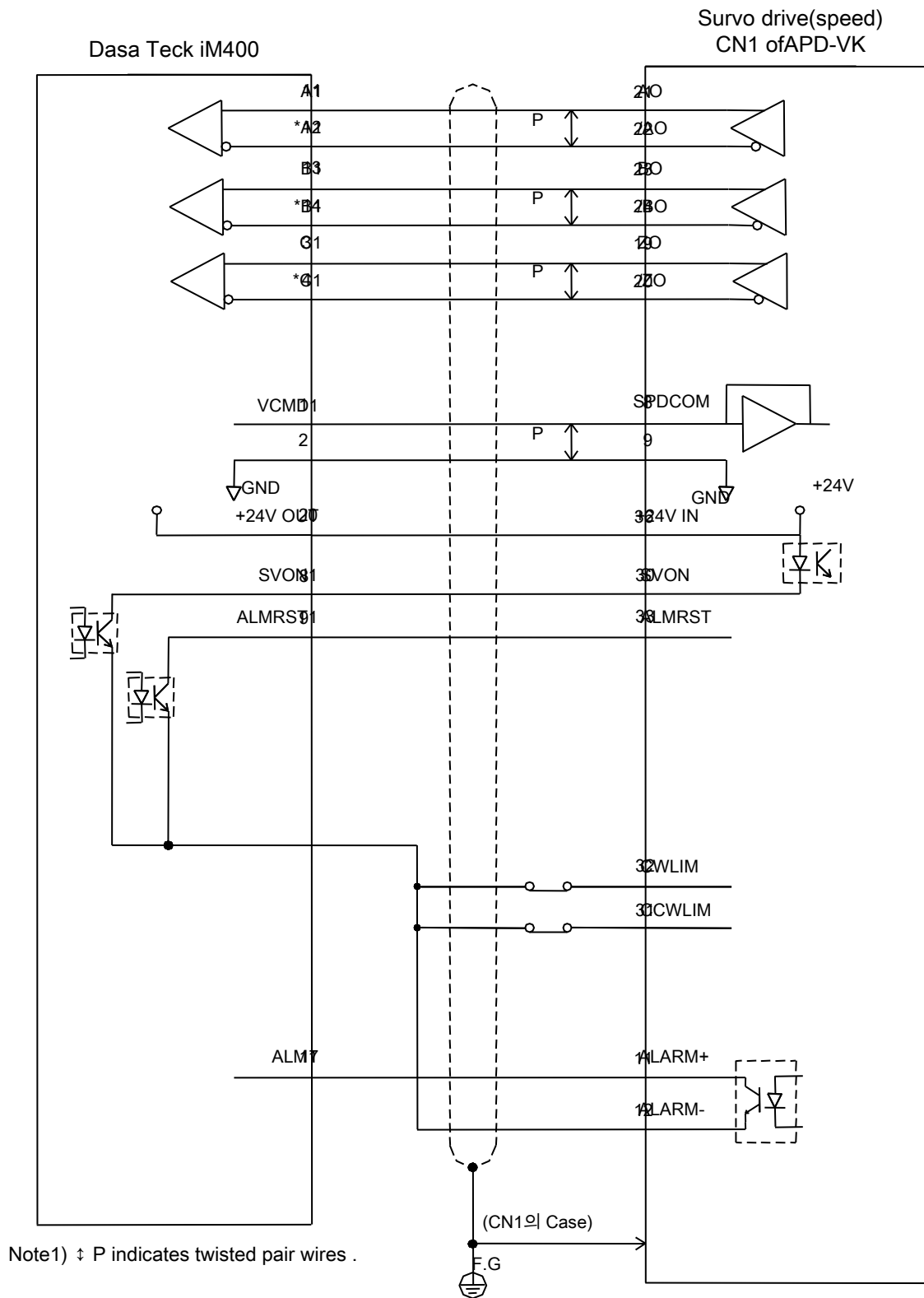
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⑭ The following diagram shoes an example of connecting Unit iM200P Motion Controller Made by DASA TECH



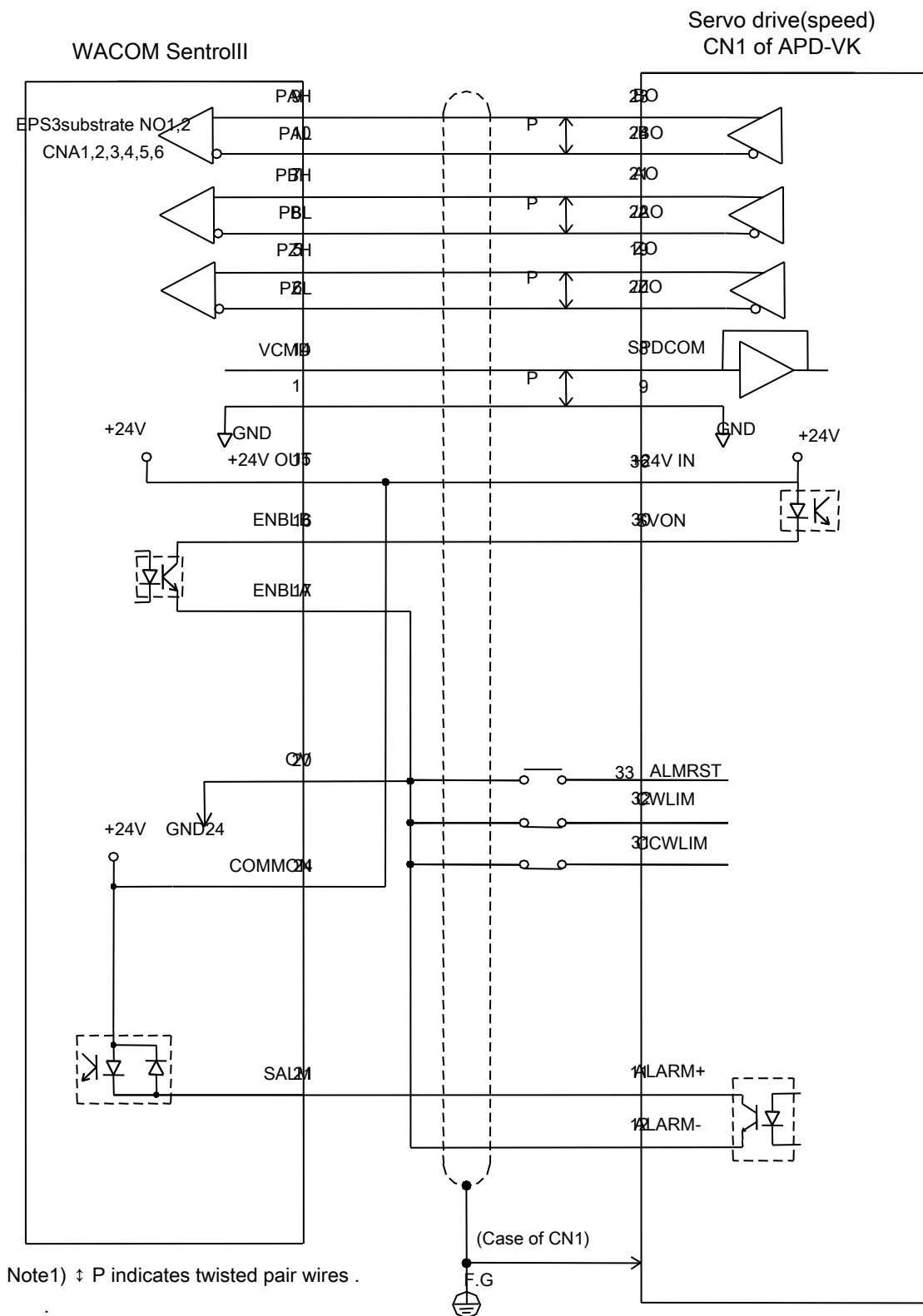
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⑤ The following diagram shoes an example of connecting Unit iM400P Motion Controller Made by DASA TECH



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The following diagram shoes an example of connecting Unit CNC Sentrol II Made by WACOM.



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The following diagram shoes an example of connecting Unit CNC(HX series) Made by TERBOTEK.

