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HARDWARE REFERENCE MANUAL

CEM-Clipper +(Plus)

(Turbo PMAC2-Eth-Lite – 8Axes)



2015.1

Rev. 0.25

(Preliminary)

Delta Tau Korea Co., Ltd.

Manual Revision History

- November 2008 - First edition written

- December 2008 – Added additional 2-axis I/F Board

- March 2009 – Yaskawa Sigma – Series absolute encoder I/F Option added

- March 2009 – Added AxisLink Master For Clipper Option

- June 2009 – Fixed typo (related to Ixx24 variable setting)

- October 2009 – Yaskawa Sigma – Series Absolute Encoder Reference Drawing Attached

- August 2010 – I10 parameter changes

- March 2011 – Added IP Config. Dip Switch content (applied to products shipped in April 2011 – see content)

(IP is set to not be changed at the time of shipment.)

- July 2011 – Added ADC (Option 12) related configuration parameters

- December 2011 – Added information regarding ACC-51SK Connector

- October 2012 – Changes to J8 (JTHW)

- December 2014 – Changes regarding ENCODER LOSS

- January 2015 – Connector name changed

CEM-CLIPPER+(Pluss) is a high-speed motion controller developed based on our economical controller, Cliiper. It uses an aluminum case with excellent appearance and heat transfer, and provides a convenient interface for servo amplifier and IO wiring.

It can be used for various applications because it provides various advanced functions using Turbo PMAC2 Firmware. In particular, it can be used economically for high-speed, high-precision motion control by using 18Bit True Dual/Single DAC (Option).

Key Features

1. High Speed Controller using 80Mhz Motorola DPS563xx (Standalone available)
2. Provides the same functionality as the expensive Turbo PMAC2 using Turbo PMAC2 Firmware
3. 8-axis analog (+/-10V) output servo (torque and speed mode) control and stepping motor control possible
4. Additional 2-channel pulse output or encoder input possible (optional)
   (When used for stepping motor control, HOME and +/-LIM functions are not automatically provided.)
   (Useful for laser devices and other cases where Programmable Pulse output is required.
5. The signals required for connection to the servo amplifier are processed with a single Dsub connector, making wiring easy.
6. The limit and origin switch interfaces are handled in the same way as “UMAC” for convenient connection.
7. It has the same IO configuration as the general PMAC. You can configure small and large IO by using GENI16 (for high speed)/Tiny32 (serial input/output) externally.
8. Interfacing with a touch panel is possible using RS232 communication.
9. High-speed communication with the host PC is possible using Eth.10Base-T (Eth.100Base-T).
10. 2ch. 12Bit ADC (built-in) and 2/4ch. High-precision 16Bit ADC (external) are available for analog data collection and feedback control. (Optional)
11. It can be economically used in all applications where the number of control axes is 8+2 channels or less. It can be expanded up to 2048 points using 12 JTHW ports.

*** Input power:** **DC5V(9A),**(8-channel configuration, with a typical load of encoders)

+ /-12V (1A), +24V (1A or less, for Flag)

*** . Power settings and Cable size**

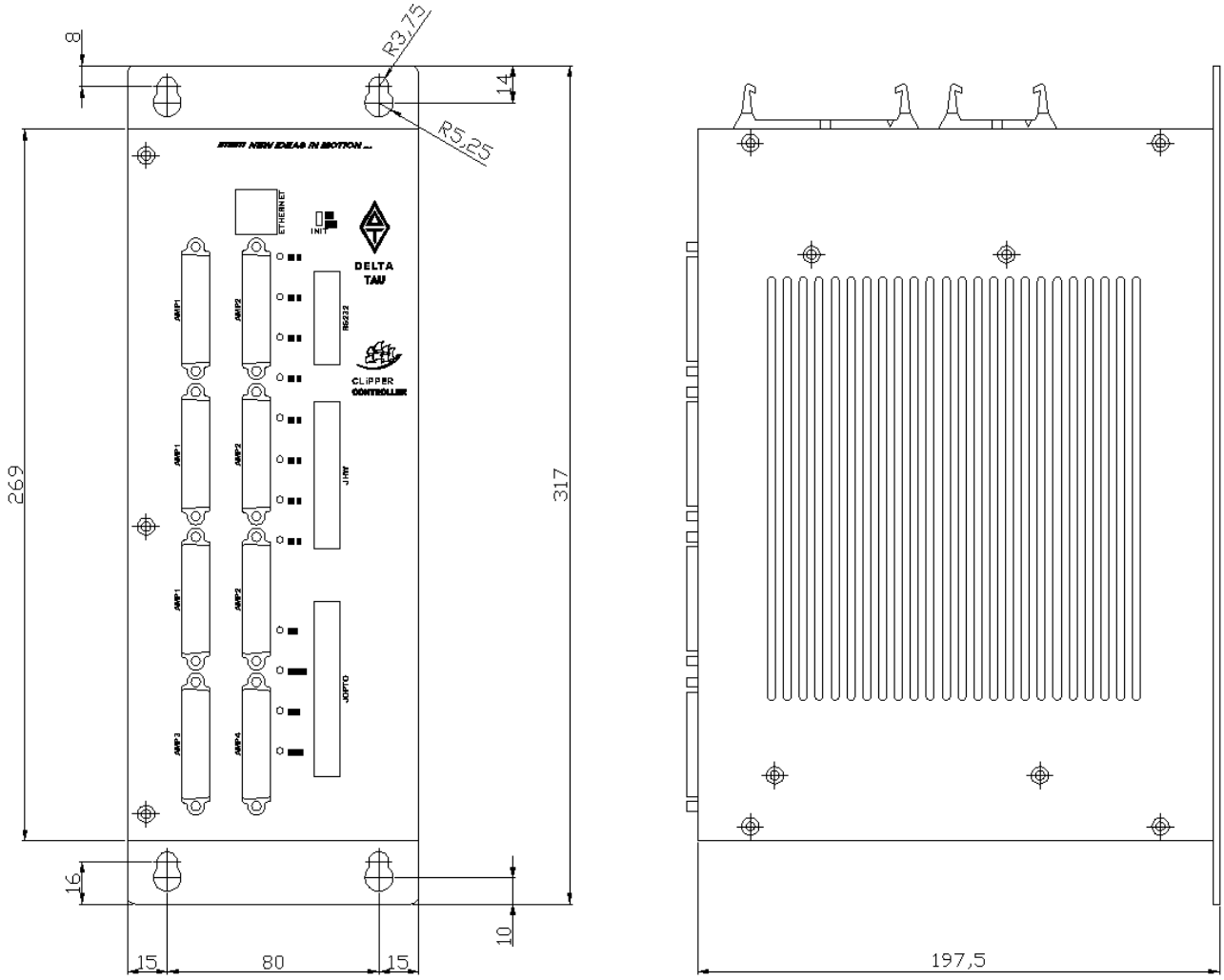
- > +5VDC is +5.2VDC to +5.3VDC at P/S output terminal (within 1m length from P/S to Clipper)

+4.9VDC to +5.1VDC at Clipper input

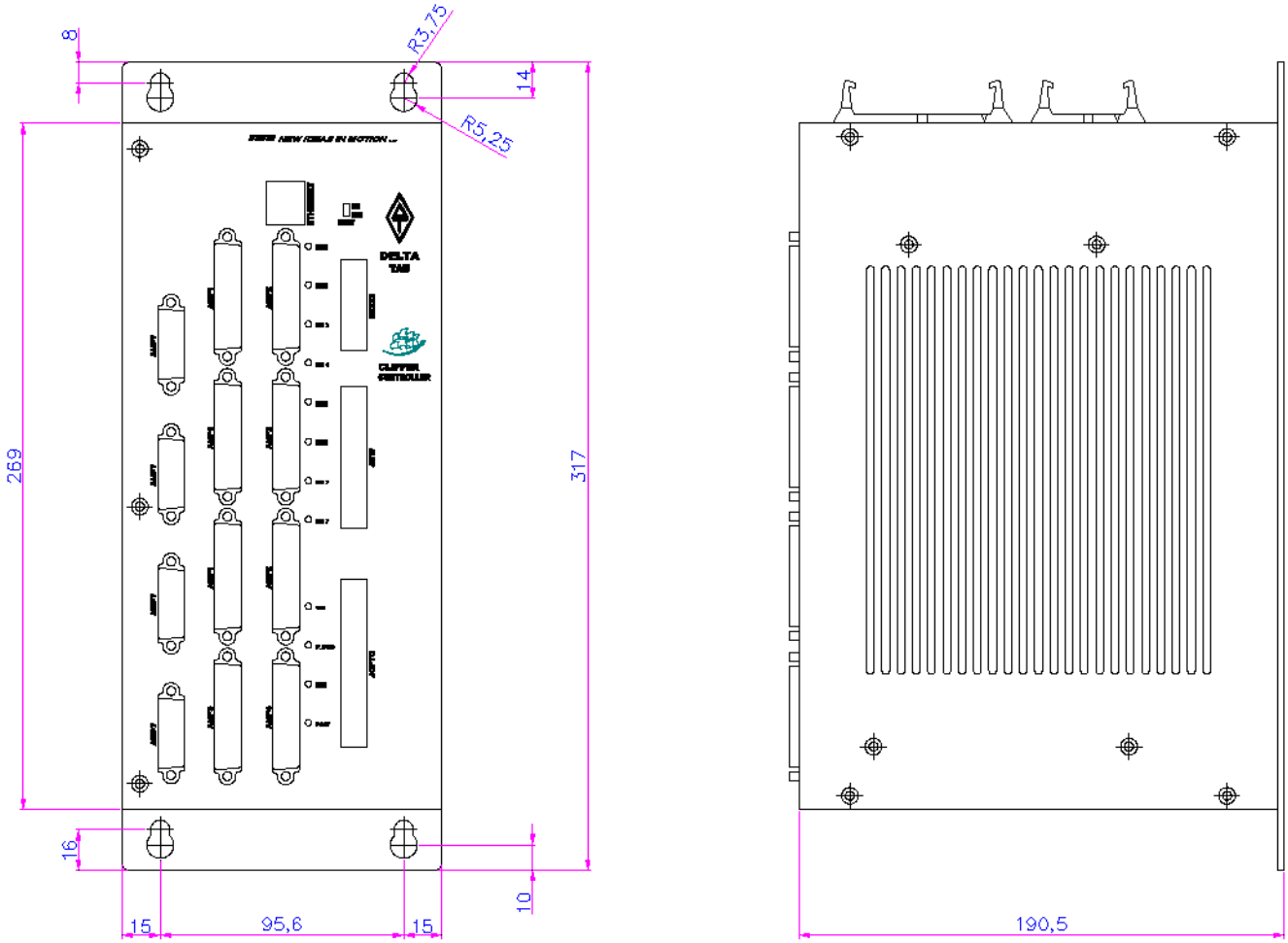
- > Please use power cable of at least AWG #16 or higher.

*** Dimension: 110 x 317 x 198 mm (W * H * D)**

CEM-CLIPPER 8-axis Layout and Installation Dimension

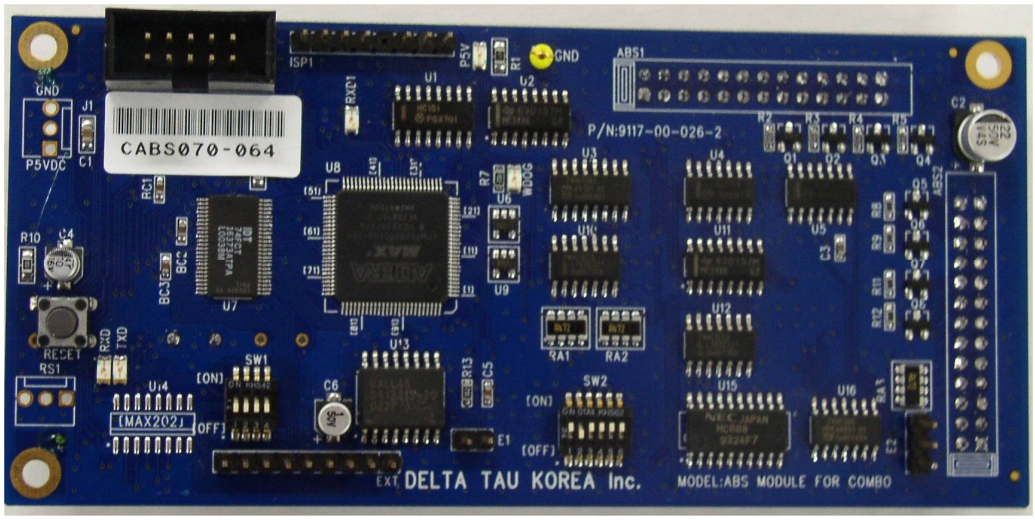


CEM-CLIPPER 8-axis Layout and Installation Dimension (when selecting ACC-51SK)



-ABS Option (4-axis basic) – Yaskawa – Sigma Series Absolute Encoder I/F Board

(Your option will be installed inside the Clipper when you order.)

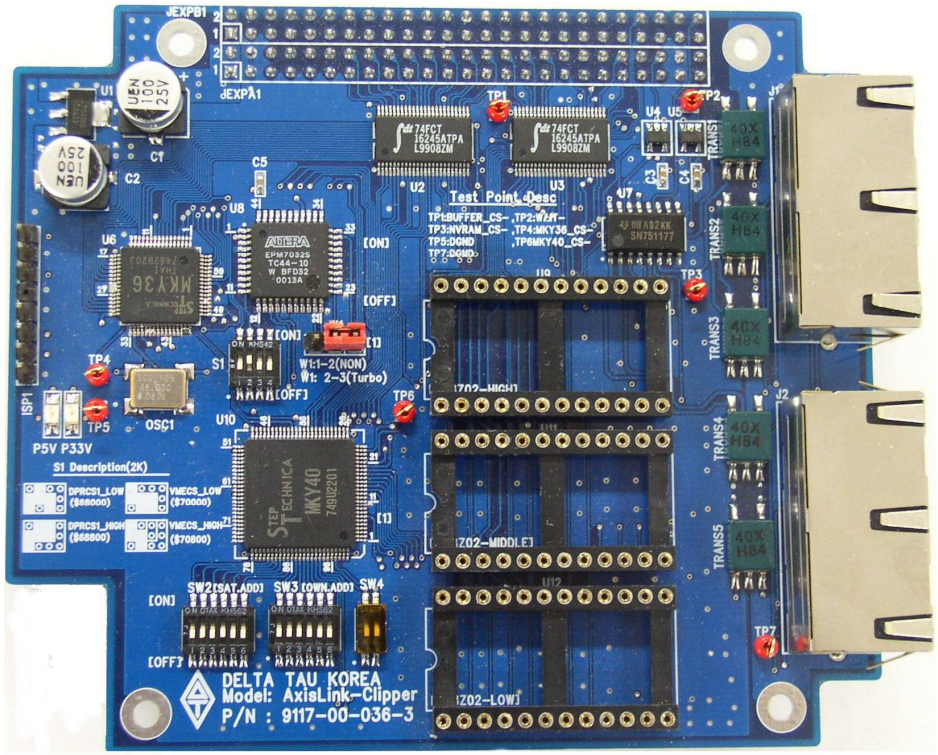


-AxisLink - M Option (You must select one of 1 or 2. (Opt1/2 can be selected simultaneously)

(Your option will be installed inside the Clipper when you order.)

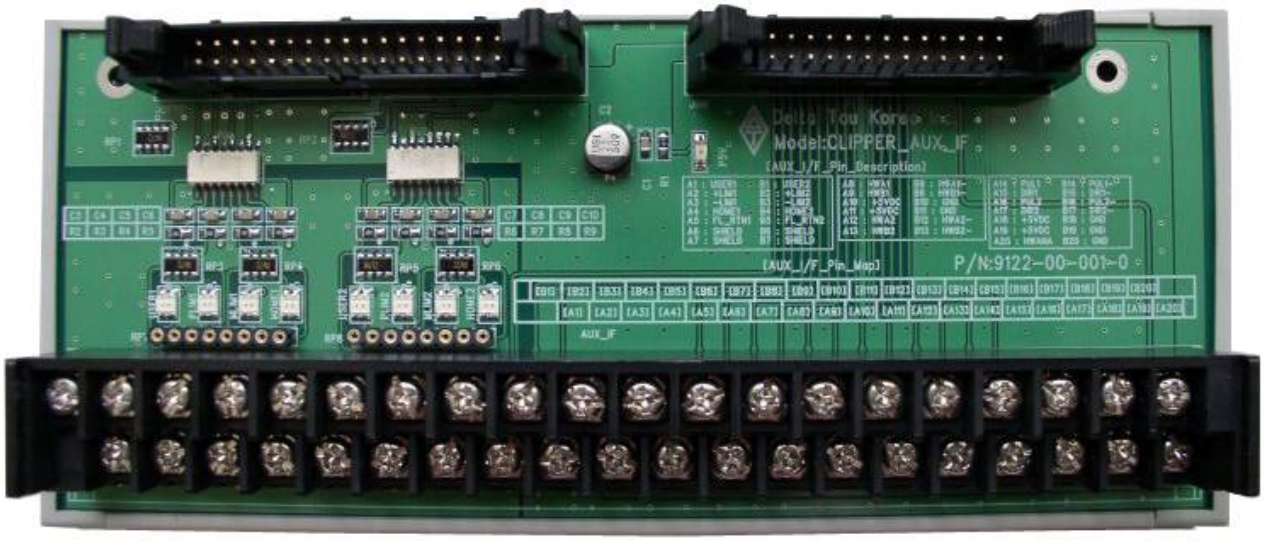
Axis-Link Opt-1 (Remote I/O)

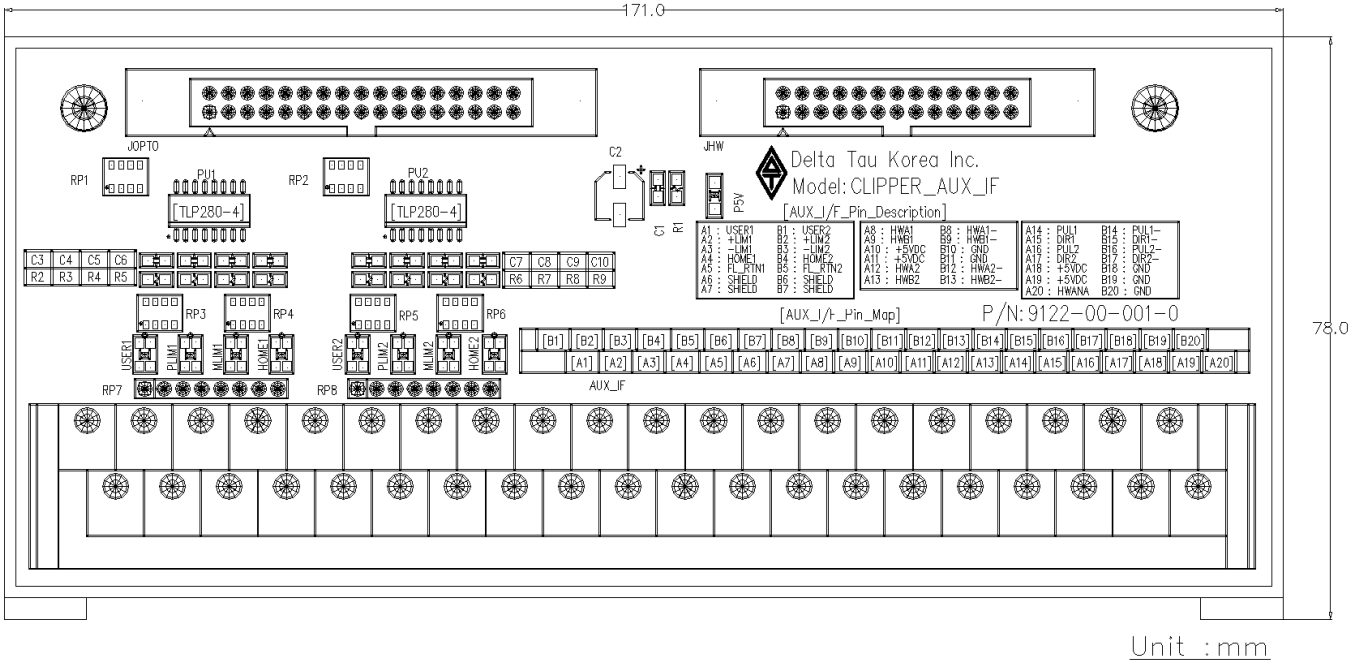
Axis-Link Opt-2 (Memory Share)



-**AUX I/F (additional 2-axis) terminal board (Clipper - AUX): Mounted with rail mount.**

(When using this option, Clipper's JOPTO Port cannot be used.)





Detailed pinout is provided in this manual CEM – AUX Please refer to the Terminal Pin Description section.

Connector Description (Overview)

1.**FLAG**:This is a terminal block for connecting limit and origin switches for axes 1 to 8. It can be used as a general-purpose input for USER1 to 4 pins.

2.**EQU_AD:**This is a connector for 2-channel built-in 12-bit ADC input, 2-channel pulse output or encoder input, using Position Compare output for each channel. Whether to use pulse output or encoder input is set by hardware at the time of shipment. The two functions cannot be used at the same time.

3.**L_PWR/IO_PWR**:This is a terminal block that outputs the system DC power. However, the 24V power is input externally to use the servo-on signal and amplifier error signal.

4.**AMP1~8**:This is a Mini IDC connector that connects the signals connected to the servo amplifier.

5.**JRS232**:Serial Port Connector

6.**JTHW**:Multiplexer Port Connector

7.**JOPT**:I/O Port Connector

8.**JHW**:HandWheel Port Connector

JUMPER SETTING

* * Important information related to the stable operation of the board. It is essential to understand it.

JUMPER	Description	DEFAULT	Note
ADAC1+ ~ 8+ ADAC1- ~8-	Select DAC Output 2-3: Filtered DAC 1-2: True DAC	Depending on the option, upon shipment **It is set.**	**Must be +/- Pair** **Set up**

JUMPER	Description	DEFAULT	Note
DAC1B ~ 4B+ DAC1B- ~4B-	Select Dual DAC Output * . Close : Dual True DAC * . Open :Single True DAC	Depending on the option, upon shipment **It is set.**	**Must be +/- Pair** **Set up**

JUMPER	Description	DEFAULT	Note
HUn/HVn/HWn/HPn (Applies to axes 1-4 only)	Step Output/Hall Sensor Input selection 1-2: Stepper 2-3:Hall Sensor Input	1-2 : Stepper	**n stands for axis number** **(n:1 ~4)**

INIT Switch: Board factory reset Slide Switch

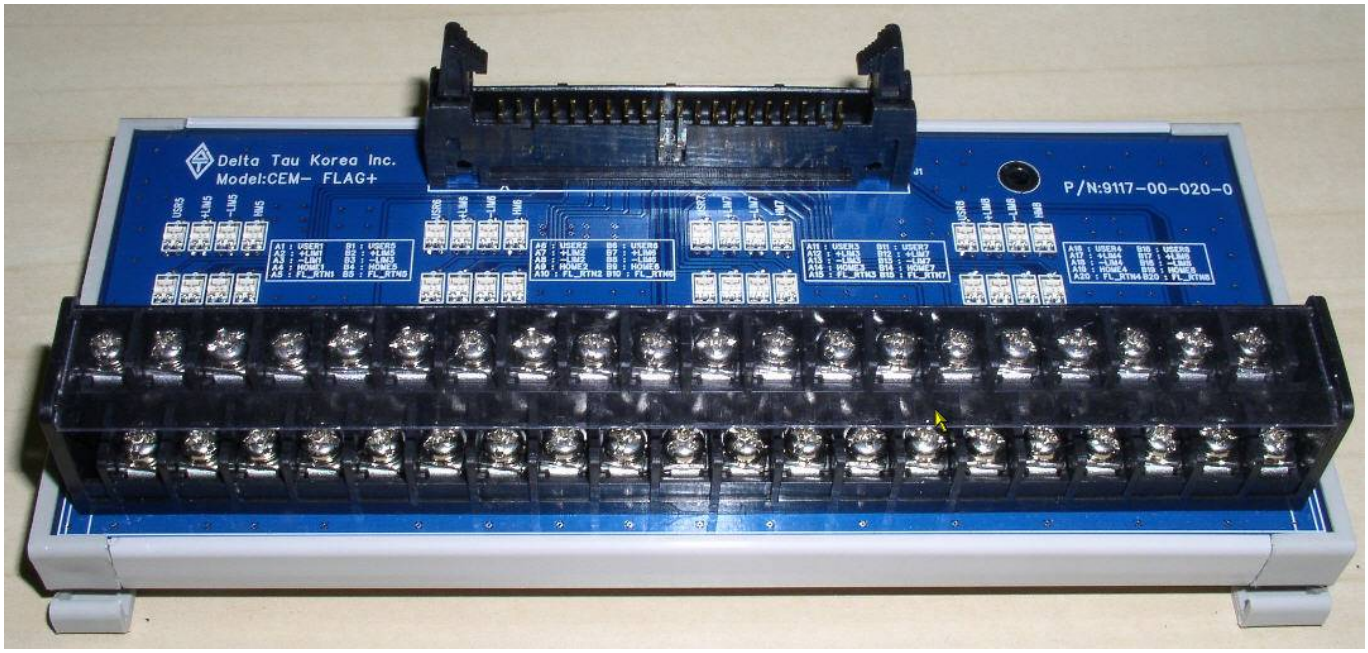
- ***It must be in the OFF position during normal operation.***

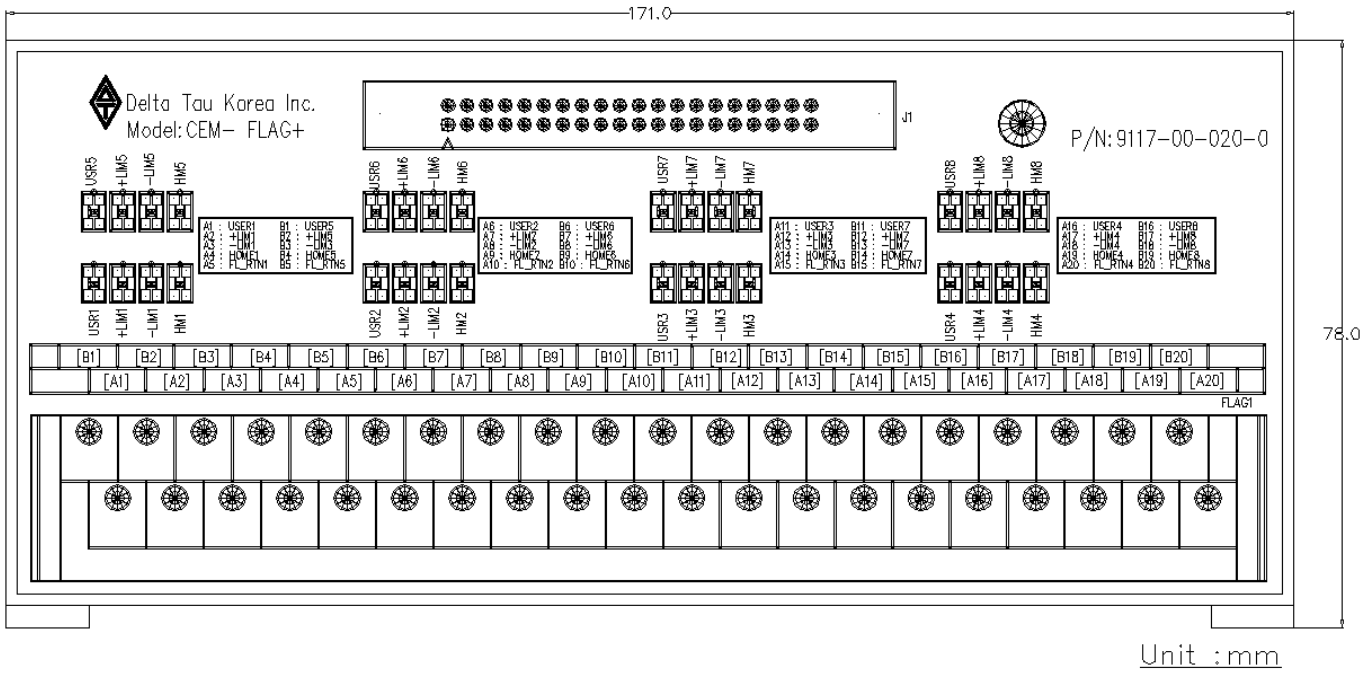
Terminal Block Description

FLAG(40 Pin IDC Connector)

;You can use the CEM-Flag+ Board as an optional specification for convenient I/F.)

-Flag (limit, home switch) connection terminal board (CEM-Flag): Mounted with rail mount.





Axis 1 to 4

Pin	Symbol	Function	Description	Note
A1(1)	USER1	Input	General Capture Flag	Sinking or sourcing
A2(3)	PLIM1	Input	Positive Limit Flag	Sinking or sourcing
A3(5)	MLIM1	Input	Negative Limit Flag	Sinking or sourcing
A4(7)	HOME1	Input	Home Flag	Sinking or sourcing
A5(9)	FLRT1	Input	Return For All Flags 1	+ V (12 to 24V) or 0V
A6(11)	USER2	Input	General Capture Flag	Sinking or sourcing
A7(13)	PLIM2	Input	Positive Limit Flag	Sinking or sourcing
A8(15)	MLIM2	Input	Negative Limit Flag	Sinking or sourcing
A9(17)	HOME2	Input	Home Flag	Sinking or sourcing
A10(19)	FLRT2	Input	Return For All Flags 2	+ V (12 to 24V) or 0V
A11(21)	USER3	Input	General Capture Flag	Sinking or sourcing
A12(23)	PLIM3	Input	Positive Limit Flag	Sinking or sourcing
A13(25)	MLIM3	Input	Negative Limit Flag	Sinking or sourcing
A14(27)	HOME3	Input	Home Flag	Sinking or sourcing
A15(29)	FLRT3	Input	Return For All Flags 3	+ V (12 to 24V) or 0V
A16(31)	USER4	Input	General Capture Flag	Sinking or sourcing
A17(33)	PLIM4	Input	Positive Limit Flag	Sinking or sourcing
A18(350	MLIM4	Input	Negative Limit Flag	Sinking or sourcing
A19(37)	HOME4	Input	Home Flag	Sinking or sourcing
A20(39)	FLRT4	Input	Return For All Flags 4	+ V (12 to 24V) or 0V

☞*To be Contiue*

5th to 8th axis

B1(2)	USER5	Input	General Capture Flag	Sinking or sourcing
B2(4)	PLIM5	Input	Positive Limit Flag	Sinking or sourcing
B3(6)	MLIM5	Input	Negative Limit Flag	Sinking or sourcing
B4(8)	HOME5	Input	Home Flag	Sinking or sourcing
B5(10)	FLRT5	Input	Return For All Flags 5	+ V (12 to 24V) or 0V
B6(12)	USER6	Input	General Capture Flag	Sinking or sourcing
B7(14)	PLIM6	Input	Positive Limit Flag	Sinking or sourcing
B8(16)	MLIM6	Input	Negative Limit Flag	Sinking or sourcing
B9(18)	HOME6	Input	Home Flag	Sinking or sourcing
B10(20)	FLRT6	Input	Return For All Flags 6	+ V (12 to 24V) or 0V
B11(22)	USER7	Input	General Capture Flag	Sinking or sourcing
B12(24)	PLIM7	Input	Positive Limit Flag	Sinking or sourcing
B13(26)	MLIM7	Input	Negative Limit Flag	Sinking or sourcing
B14(28)	HOME7	Input	Home Flag	Sinking or sourcing
B15(30)	FLRT7	Input	Return For All Flags 7	+ V (12 to 24V) or 0V
B16(32)	USER8	Input	General Capture Flag	Sinking or sourcing
B17(34)	PLIM8	Input	Positive Limit Flag	Sinking or sourcing
B18(36)	MLIM8	Input	Negative Limit Flag	Sinking or sourcing
B19(38)	HOME8	Input	Home Flag	Sinking or sourcing
B20(40)	FLRT8	Input	Return For All Flags 8	+ V (12 to 24V) or 0V

EQU (former name: JEQU_AD (20 pin IDC Connector)

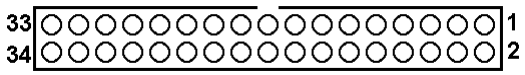
;For convenient I/F, you can use the EQU I/F Board as an optional specification.)

Pin	Symbol	Function	Description	Note
A1(1)	EQU1	Output	Encoder Comp-Equal 1	
B1(2)	EQU5	Output	Encoder Comp-Equal 5	
A2(3)	EQU2	Output	Encoder Comp-Equal 2	
B2(4)	EQU6	Output	Encoder Comp-Equal 6	
A3(5)	EQU3	Output	Encoder Comp-Equal 3	
B3(6)	EQU7	Output	Encoder Comp-Equal 7	
A4(7)	EQU4	Output	Encoder Comp-Equal 4	
B4(8)	EQU8	Output	Encoder Comp-Equal 8	
A5(9)	+ 5VDC	Output		
B5(10)	+ 5VDC	Output		
A6(11)	+ 5VDC	Output		
B6(12)	+ 5VDC	Output		
A7(13)	DGND	Output		
B7(14)	DGND	Output		
A8(15)	DGND	Output		
B8(16)	DGND	Output		
A9(17)	ADCIN1	Input	Analog Input 1	Option-12 required
B9(18)	ADCIN3	Input	Analog Input 3	Option-12 required
A10(19)	ADCIN2	Input	Analog Input 2	Option-12 required
B10(20)	ADCIN4	Input	Analog Input 4	Option-12 required

- **Please refer to Page 34 for ADC related parameter settings.**

JOPTO(34Pin IDC Connector)

J9 (JOPT): I/O Port Connector
(34-Pin Connector)



Front View

Pin#	Symbol	Function	Description	Notes
A1(1)	MI8	Input	Machine Input 8	Direction selectable
B1(2)	GND	Common	PMAC Common	
A2(3)	MI7	Input	Machine Input 7	Direction selectable
B2(4)	GND	Common	PMAC Common	
A3(5)	MI6	Input	Machine Input 6	Direction selectable
B3(6)	GND	Common	PMAC Common	
A4(7)	MI5	Input	Machine Input 5	Direction selectable
B4(8)	GND	Common	PMAC Common	
A5(9)	MI4	Input	Machine Input 4	Direction selectable
B5(10)	GND	Common	PMAC Common	
A6(11)	MI3	Input	Machine Input 3	Direction selectable
B6(12)	GND	Common	PMAC Common	
A7(13)	MI2	Input	Machine Input 2	Direction selectable
B7(14)	GND	Common	PMAC Common	
A8(15)	MI1	Input	Machine Input 1	Direction selectable
B8(16)	GND	Common	PMAC Common	
A9(17)	MO8	Output	Machine Output 8	Direction selectable
B9(18)	GND	Common	PMAC Common	
A10(19)	MO7	Output	Machine Output 7	Direction selectable
B10(20)	GND	Common	PMAC Common	
A11(21)	MO6	Output	Machine Output 6	Direction selectable
B11(22)	GND	Common	PMAC Common	
A12(23)	MO5	Output	Machine Output 5	Direction selectable
B12(24)	GND	Common	PMAC Common	
A13(25)	MO4	Output	Machine Output 4	Direction selectable
B13(26)	GND	Common	PMAC Common	
A14(27)	MO3	Output	Machine Output 3	Direction selectable
B14(28)	GND	Common	PMAC Common	
A15(29)	MO2	Output	Machine Output 2	Direction selectable
B15(30)	GND	Common	PMAC Common	
A16(31)	MO1	Output	Machine Output 1	Direction selectable
B16(32)	GND	Common	PMAC Common	
A17(33)	+ 5	Output	+ 5 Power I/O	
B17(34)	GND	Common	PMAC Common	

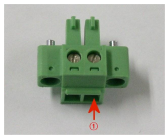
JTHW(Multiplexter Port-26Pin IDC Connector)

J8 (JTHW): Multiplexer Port Connector (26-Pin Connector)				
Pin#	**Symbol**	**Function**	**Description**	Notes
A1(1)	GND	Common	PMAC Common	
B1(14)	GND	Common	PMAC Common	
A2(2)	DAT0	Input	Data-0 Input	Data input from multiplexed accessory
B2(15)	SEL0	Output	Select-0 Output	Multiplexer select output
A3(3)	DAT1	Input	Data -1 Input	Data input from multiplexed accessory
B3(16)	SEL1	Output	Select -1 Output	Multiplexer select output
A4(4)	DAT2	Input	Data -2 Input	Data input from multiplexed accessory
B4(17)	SEL2	Output	Select -2 Output	Multiplexer select output
A5(5)	DAT3	Input	Data -3 Input	Data input from multiplexed accessory
B5(18)	SEL3	Output	Select -3 Output	Multiplexer select output
A6(6)	DAT4	Input	Data -4 Input	Data input from multiplexed accessory
B6(19)	SEL4	Output	Select -4 Output	Multiplexer select output
A7(7)	DAT5	Input	Data -5 Input	Data input from multiplexed accessory
B7(20)	SEL5	Output	Select -5 Output	Multiplexer select output
A8(8)	DAT6	Input	Data -6 Input	Data input from multiplexed accessory
B8(21)	SEL6	Output	Select -6 Output	Multiplexer select output
A9(9)	DAT7	Input	Data -7 Input	Data input from multiplexed accessory
B9(22)	SEL7	Output	Select -7 Output	Multiplexer select output
A10(10)	NC	NC	No Connection	
B10(23)	GND	Common	PMAC Common	
A11(11)	NC	NC	No Connection	
B11(24)	GND	Common	PMAC Common	
A12(12)	NC	NC	No Connection	
B12(25)	GND	Common	PMAC Common	
A13(13)	+ 5V	Output	+ 5VDC Supply	Power supply out
B13(26)	INIT-	Input	PMAC Reset	Low is Reset

L_PWR(4 PIN TERMINAL B'LK)

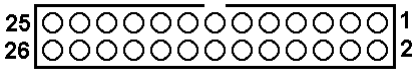
Pin	Symbol	Function	Description	Note
1	M12V	Input	- 12V SUPPLY	 (The red part is Pin 1)
2	P12V	Input	+ 12V SUPPLY	
3	P5V	Input	+ 5V SUPPLY	
4	DGND	Input	Ground	

EXT_IO(2 PIN TERMINAL B'LK)

Pin	Symbol	Function	Description	Note
1	P24V	Input	+ 24V Supply	 (The red part is Pin 1)
2	P24G	Input	+ 24V Ground	

HandWheel/PD (formerly JHW (26PIN IDC CONNECTOR)

J10 (JHW) Handwheel Encoder Connector



Pin#	Symbol	Function	Description
A1(1)	GND	Common	Reference voltage
B1(2)	+ 5V	Output	Supply voltage
A2(3)	HWA1+	Input	HW1 channel A+
B2(4)	HWA1-	Input	HW1 channel A-
A3(5)	HWB1+	Input	HW1 channel B+
B3(6)	HWB1-	Input	HW1 channel B-
A4(7)	HWA2+	Input	HW2 channel A+
B4(8)	HWA2-	Input	HW2 channel A-
A5(9)	HWB2+	Input	HW2 channel B+
B5(10)	HWB2-	Input	HW2 channel B-
A6(11)	PUL1+	Output	PULSE1+ output
B6(12)	PUL1-	Output	PULSE1- output
A7(13)	DIR1+	Output	DIRECTION1+ output
B7(14)	DIR1-	Output	DIRECTION1- output
A8(15)	PUL2+	Output	PULSE2+ output
B8(16)	PUL2-	Output	PULSE2- output
A9(17)	DIR2+	Output	DIRECTION2+ output
B9(18)	DIR2-	Output	DIRECTION2- output
A10(19)	NC		
B10(20)	NC		
A11(21)	NC		
B11(22)	NC		
A12(23)	HWANA+	Output	OPT12 Filtered PWM DAC+
B12(24)	HWANA-	Output	OPT12 Filtered PWM DAC-
A13(25)	GND	Common	Reference voltage
B13(26)	+ 5V	Output	Supply voltage

When reading the handwheel, the address is

The first Channel is X:$78411,0,24,S

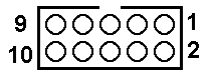
Mxx -> X:$78411,0,24,S

The second channel is X:$78419,0,24,S

Mxx -> It becomes X:$78419,0,24,S.

RS-232C

JRS232 Serial Port Connector(10-Pin Connector)



Front View

Pin#	Symbol	Function	Description	Notes
A1(1)	PHASE	Output	Phasing Clock	
B1(2)	DTR	Bidirect	Data Terminal Ready	Tied to "DSR"
A2(3)	TXD/	Input	Receive Data	Host transmit data
B2(4)	CTS	Input	Clear to Send	Host ready bit
A3(5)	RXD/	Output	Send Data	Host receive data
B3(6)	RTS	Output	Request to Send	PMAC ready bit
A4(7)	DSR	Bidirect	Data Set Ready	Tied to "DTR"
B4(8)	SERVO	Output	Servo Clock	
A5(9)	GND	Common	Digital Common	
B5(10)	+ 5V	Output	+ 5Vdc Supply	Power supply out

AMP1 (PCB_Side : DSUB 25Pin Female ,Cable_Side DSUB 25pin Male)

Pin	Symbol	Function	Description	Note
1	CHA1	Input	ENCODER A CH.POSITIVE	
2	CHB1	Input	ENCODER B CH.POSITIVE	
3	CHC1	Input	ENCODER C CH.POSITIVE	
4	DAC1A	Output	ANA.OUT POS.1	+ /-10V TO DGND
5	**DAC1B**	**Output**		**Available depending on option**
6	AE1	Output	AMP1 – ENABLE	
7	AFAULT1-	Input	AMP1-FAULT	Low is true.
8	DIR1+/CHU1	Output/Input	Direction Output+/Hall U1 Input	Default - Direction+
9	PUL1+/CHW1	Output/Input	Pulse Output +/Hall W1 Input	Default –Pulse+
10	+ 5VDC	Output		
11	SEN1/AE1_NC	Output	Yaskawa absolute encoder request signal	Default –SEN1
12	**+ 12VDC**	**Output**		
13	P24V	Output	+ 24V SUPPLY For AMP.	
14	CHA1/	Input	ENCODER A CH.NEGATIVE	
15	CHB1/	Input	ENCODER B CH.NEGATIVE	
16	CHC1/	Input	ENCODER C CH.NEGATIVE	
17	/DAC1A	Output	ANA.OUT NEG.1	+ /-10V TO DGND
18	**/DAC1B**	**Output**		**Available depending on option**
19	AE1_COM	Output	AMP1 ENABLE COMMON	
20	AFAULT1+	Input		
21	DIR1 - /CHV1	Output/Input	Direction Output - /Hall V1 Input	Default – Direction-
22	PUL1 -/+5VDC	Output/Input	Pulse Output -/Power for Hall 1	Default –Pulse-
23	DGND	Output		
24	- 12VDC	Output		
25	P24G	Output		

AMP2 (PCB_Side : DSUB 25Pin Female ,Cable_Side DSUB 25pin Male)

Pin	Symbol	Function	Description	Note
1	CHA2	Input	ENCODER A CH.POSITIVE	
2	CHB2	Input	ENCODER B CH.POSITIVE	
3	CHC2	Input	ENCODER C CH.POSITIVE	
4	DAC2A	Output	ANA.OUT POS.2	+ /-10V TO DGND
5	**DAC2B**	**Output**		**Available depending on option**
6	AE2	Output	AMP2 – ENABLE	
7	AFAULT2-	Input	AMP2-FAULT	Low is true.
8	DIR2+/CHU2	Output/Input	Direction Output+/Hall U2 Input	Default - Direction+
9	PUL2+/CHW2	Output/Input	Pulse Output +/Hall W2 Input	Default –Pulse+
10	+ 5VDC	Output		
11	SEN2/AE2_NC	Output	Yaskawa absolute encoder request signal	Default –SEN2
12	**+ 12VDC**	**Output**		
13	P24V	Output	+ 24V SUPPLY For AMP.	
14	CHA2/	Input	ENCODER A CH.NEGATIVE	
15	CHB2/	Input	ENCODER B CH.NEGATIVE	
16	CHC2/	Input	ENCODER C CH.NEGATIVE	
17	/DAC2A	Output	ANA.OUT NEG.2	+ /-10V TO DGND
18	**/DAC2B**	**Output**		**Available depending on option**
19	AE2_COM	Output	AMP2 ENABLE COMMON	
20	AFAULT2+	Input		
21	DIR2 - /CHV2	Output/Input	Direction Output - /Hall V2 Input	Default – Direction-
22	PUL2 -/+5VDC	Output/Input	Pulse Output -/Power for Hall 2	Default –Pulse-
23	DGND	Output		
24	- 12VDC	Output		
25	P24G	Output		

AMP3 (PCB_Side : DSUB 25Pin Female ,Cable_Side DSUB 25pin Male)

Pin	Symbol	Function	Description	Note
1	CHA3	Input	ENCODER A CH.POSITIVE	
2	CHB3	Input	ENCODER B CH.POSITIVE	
3	CHC3	Input	ENCODER C CH.POSITIVE	
4	DAC3A	Output	ANA.OUT POS.3	+ /-10V TO DGND
5	**DAC3B**	**Output**		**Available depending on option**
6	AE3	Output	AMP3 – ENABLE	
7	AFAULT3-	Input	AMP3-FAULT	Low is true.
8	DIR3+/CHU3	Output/Input	Direction Output+/Hall U3 Input	Default - Direction+
9	PUL3+/CHW3	Output/Input	Pulse Output +/Hall W3 Input	Default –Pulse+
10	+ 5VDC	Output		
11	SEN3/AE3_NC	Output	Yaskawa absolute encoder request signal	Default –SEN3
12	**+ 12VDC**	**Output**		
13	P24V	Output	+ 24V SUPPLY For AMP.	
14	CHA3/	Input	ENCODER A CH.NEGATIVE	
15	CHB3/	Input	ENCODER B CH.NEGATIVE	
16	CHC3/	Input	ENCODER C CH.NEGATIVE	
17	/DAC3A	Output	ANA.OUT NEG.3	+ /-10V TO DGND
18	**/DAC3B**	**Output**		**Available depending on option**
19	AE3_COM	Output	AMP3 ENABLE COMMON	
20	AFAULT3+	Input		
21	DIR3 - /CHV3	Output/Input	Direction Output - /Hall V3 Input	Default – Direction-
22	PUL3 -/+5VDC	Output/Input	Pulse Output -/Power for Hall 3	Default –Pulse-
23	DGND	Output		
24	- 12VDC	Output		
25	P24G	Output		

AMP4 (PCB_Side : DSUB 25Pin Female ,Cable_Side DSUB 25pin Male)

Pin	Symbol	Function	Description	Note
1	CHA4	Input	ENCODER A CH.POSITIVE	
2	CHB4	Input	ENCODER B CH.POSITIVE	
3	CHC4	Input	ENCODER C CH.POSITIVE	
4	DAC4A	Output	ANA.OUT POS.4	+ /-10V TO DGND
5	**DAC4B**	**Output**		**Available depending on option**
6	AE4	Output	AMP4 – ENABLE	
7	AFAULT4-	Input	AMP4-FAULT	Low is true.
8	DIR4+/CHU4	Output/Input	Direction Output+/Hall U4 Input	Default - Direction+
9	PUL4+/CHW4	Output/Input	Pulse Output +/Hall W4 Input	Default –Pulse+
10	+ 5VDC	Output		
11	SEN4/AE4_NC	Output	Yaskawa absolute encoder request signal	Default –SEN4
12	**+ 12VDC**	**Output**		
13	P24V	Output	+ 24V SUPPLY For AMP.	
14	CHA4/	Input	ENCODER A CH.NEGATIVE	
15	CHB4/	Input	ENCODER B CH.NEGATIVE	
16	CHC4/	Input	ENCODER C CH.NEGATIVE	
17	/DAC4A	Output	ANA.OUT NEG.4	+ /-10V TO DGND
18	**/DAC4B**	**Output**		**Available depending on option**
19	AE4_COM	Output	AMP4 ENABLE COMMON	
20	AFAULT4+	Input		
21	DIR4 - /CHV4	Output/Input	Direction Output - /Hall V4 Input	Default – Direction-
22	PUL4 -/+5VDC	Output/Input	Pulse Output -/Power for Hall 4	Default –Pulse-
23	DGND	Output		
24	- 12VDC	Output		
25	P24G	Output		

AMP5 (PCB_Side : DSUB 25Pin Female ,Cable_Side DSUB 25pin Male)

Pin	Symbol	Function	Description	Note
1	CHA5	Input	ENCODER A CH.POSITIVE	
2	CHB5	Input	ENCODER B CH.POSITIVE	
3	CHC5	Input	ENCODER C CH.POSITIVE	
4	DAC5	Output	ANA.OUT POS.5	+ /-10V TO DGND
5	NC			
6	AE5	Output	AMP5 – ENABLE	
7	AFAULT5-	Input	AMP5-FAULT	Low is true.
8	DIR5+	Output	Direction Output	
9	PUL5+	Output	Pulse Output	
10	+ 5VDC	Output		
11	SEN5/AE5_NC	Output	Yaskawa absolute encoder request signal	Default –SEN5
12	**+ 12VDC**	**Output**		
13	P24V	Output	+ 24V SUPPLY For AMP.	
14	CHA5/	Input	ENCODER A CH.NEGATIVE	
15	CHB5/	Input	ENCODER B CH.NEGATIVE	
16	CHC5/	Input	ENCODER C CH.NEGATIVE	
17	/DAC5	Output	ANA.OUT NEG.5	+ /-10V TO DGND
18	NC			
19	AE5_COM	Output	AMP5 ENABLE COMMON	
20	AFAULT5+	Input		
21	DIR5 -	Output	Direction Output -	
22	PUL5 -	Output	Pulse Output -	
23	DGND	Output		
24	- 12VDC	Output		
25	P24G	Output		

AMP6 (PCB_Side : DSUB 25Pin Female ,Cable_Side DSUB 25pin Male)

Pin	Symbol	Function	Description	Note
1	CHA6	Input	ENCODER A CH.POSITIVE	
2	CHB6	Input	ENCODER B CH.POSITIVE	
3	CHC6	Input	ENCODER C CH.POSITIVE	
4	DAC6	Output	ANA.OUT POS.6	+ /-10V TO DGND
5	NC			
6	AE6	Output	AMP4 – ENABLE	
7	AFAULT6-	Input	AMP4-FAULT	Low is true.
8	DIR6+	Output	Direction Output+	
9	PUL6+	Output	Pulse Output +	
10	+ 5VDC	Output		
11	SEN6/AE6_NC	Output	Yaskawa absolute encoder request signal	Default –SEN6
12	**+ 12VDC**	**Output**		
13	P24V	Output	+ 24V SUPPLY For AMP.	
14	CHA6/	Input	ENCODER A CH.NEGATIVE	
15	CHB6/	Input	ENCODER B CH.NEGATIVE	
16	CHC6/	Input	ENCODER C CH.NEGATIVE	
17	/DAC6	Output	ANA.OUT NEG.6	+ /-10V TO DGND
18	NC			
19	AE6_COM	Output	AMP6 ENABLE COMMON	
20	AFAULT6+	Input		
21	DIR6 -	Output	Direction Output -	
22	PUL6 -	Output	Pulse Output -	
23	DGND	Output		
24	- 12VDC	Output		
25	P24G	Output		

AMP7 (PCB_Side : DSUB 25Pin Female ,Cable_Side DSUB 25pin Male)

Pin	Symbol	Function	Description	Note
1	CHA7	Input	ENCODER A CH.POSITIVE	
2	CHB7	Input	ENCODER B CH.POSITIVE	
3	CHC7	Input	ENCODER C CH.POSITIVE	
4	DAC7	Output	ANA.OUT POS.7	+ /-10V TO DGND
5	NC			
6	AE7	Output	AMP7 – ENABLE	
7	AFAULT7-	Input	AMP7-FAULT	Low is true.
8	DIR7+	Output/Input	Direction Output+	
9	PUL7+	Output/Input	Pulse Output +	
10	+ 5VDC	Output		
11	SEN7/AE7_NC	Output	Yaskawa absolute encoder request signal	Default –SEN7
12	**+ 12VDC**	**Output**		
13	P24V	Output	+ 24V SUPPLY For AMP.	
14	CHA7/	Input	ENCODER A CH.NEGATIVE	
15	CHB7/	Input	ENCODER B CH.NEGATIVE	
16	CHC7/	Input	ENCODER C CH.NEGATIVE	
17	/DAC7	Output	ANA.OUT NEG.7	+ /-10V TO DGND
18	NC			
19	AE7_COM	Output	AMP7 ENABLE COMMON	
20	AFAULT7+	Input		
21	DIR7 -	Output	Direction Output -	
22	PUL7 -	Output	Pulse Output -	
23	DGND	Output		
24	- 12VDC	Output		
25	P24G	Output		

AMP8 (PCB_Side : DSUB 25Pin Female ,Cable_Side DSUB 25pin Male)

Pin	Symbol	Function	Description	Note
1	CHA8	Input	ENCODER A CH.POSITIVE	
2	CHB8	Input	ENCODER B CH.POSITIVE	
3	CHC8	Input	ENCODER C CH.POSITIVE	
4	DAC8	Output	ANA.OUT POS.8	+ /-10V TO DGND
5	NC			
6	AE8	Output	AMP8 – ENABLE	
7	AFAULT8-	Input	AMP8-FAULT	Low is true.
8	DIR8+	Output	Direction Output+	
9	PUL8+	Output	Pulse Output +	
10	+ 5VDC	Output		
11	SEN8/AE8_NC	Output	Yaskawa absolute encoder request signal	Default –SEN8
12	**+ 12VDC**	**Output**		
13	P24V	Output	+ 24V SUPPLY For AMP.	
14	CHA8/	Input	ENCODER A CH.NEGATIVE	
15	CHB8/	Input	ENCODER B CH.NEGATIVE	
16	CHC8/	Input	ENCODER C CH.NEGATIVE	
17	/DAC8	Output	ANA.OUT NEG.8	+ /-10V TO DGND
18	NC			
19	AE8_COM	Output	AMP4 ENABLE COMMON	
20	AFAULT8+	Input		
21	DIR8 -	Output	Direction Output -	
22	PUL8 -	Output	Pulse Output -	
23	DGND	Output		
24	- 12VDC	Output		
25	P24G	Output		

AENC1(PCB_Side: DSUB 15Pin Female ,Cable_Side DSUB 15pin Male-ACC -51SK OPTION selected)

Pin	Symbol	Function	Description	Note
1	NC		Not in use	
2	NC		Not in use	
3	NC		Not in use	
4	DGND	Output	Digital Ground	
5	ENC_PWR	Output	Encoder Power	+ 5VDC
6	INDEX1+	Input	Index+ Input	Analog or TTL Levels
7	COS1+	Analog Input	Cosine+ Input	
8	SIN1+	Analog Input	Sinusoidal+ Input	
9	VREF1	2.5V Output	AD Reference Output	
10	NC		Not in use	
11	NC		Not in use	
12	DGND	Output	Digital Ground	
13	INDEX1-	Input	Index- Input	Analog or TTL Levels
14	COS1-	Analog Input	Cosine- Input	
15	SIN1-	Analog Input	Sinusoidal- Input+	

AENC2 (PCB_Side: DSUB 15Pin Female ,Cable_Side DSUB 15pin Male-ACC -51SK OPTION selected)

Pin	Symbol	Function	Description	Note
1	NC		Not in use	
2	NC		Not in use	
3	NC		Not in use	
4	DGND	Output	Digital Ground	
5	ENC_PWR	Output	Encoder Power	+ 5VDC
6	INDEX2+	Input	Index+ Input	Analog or TTL Levels
7	COS2+	Analog Input	Cosine+ Input	
8	SIN2+	Analog Input	Sinusoidal+ Input	
9	VREF2	2.5V Output	AD Reference Output	
10	NC		Not in use	
11	NC		Not in use	
12	DGND	Output	Digital Ground	
13	INDEX2-	Input	Index- Input	Analog or TTL Levels
14	COS2-	Analog Input	Cosine- Input	
15	SIN2-	Analog Input	Sinusoidal- Input+	

AENC3 (PCB_Side: DSUB 15Pin Female , Cable_Side DSUB 15pin Male-ACC -51SK OPTION selected)

Pin	Symbol	Function	Description	Note
1	NC		Not in use	
2	NC		Not in use	
3	NC		Not in use	
4	DGND	Output	Digital Ground	
5	ENC_PWR	Output	Encoder Power	+ 5VDC
6	INDEX3+	Input	Index+ Input	Analog or TTL Levels
7	COS3+	Analog Input	Cosine+ Input	
8	SIN3+	Analog Input	Sinusoidal+ Input	
9	VREF3	2.5V Output	AD Reference Output	
10	NC		Not in use	
11	NC		Not in use	
12	DGND	Output	Digital Ground	
13	INDEX3-	Input	Index- Input	Analog or TTL Levels
14	COS3-	Analog Input	Cosine- Input	
15	SIN3-	Analog Input	Sinusoidal- Input+	

AENC4 (PCB_Side: DSUB 15Pin Female , Cable_Side DSUB 15pin Male-ACC -51SK OPTION selected)

Pin	Symbol	Function	Description	Note
1	NC		Not in use	
2	NC		Not in use	
3	NC		Not in use	
4	DGND	Output	Digital Ground	
5	ENC_PWR	Output	Encoder Power	+ 5VDC
6	INDEX4+	Input	Index+ Input	Analog or TTL Levels
7	COS4+	Analog Input	Cosine+ Input	
8	SIN4+	Analog Input	Sinusoidal+ Input	
9	VREF4	2.5V Output	AD Reference Output	
10	NC		Not in use	
11	NC		Not in use	
12	DGND	Output	Digital Ground	
13	INDEX4-	Input	Index- Input	Analog or TTL Levels
14	COS4-	Analog Input	Cosine- Input	
15	SIN4-	Analog Input	Sinusoidal- Input+	

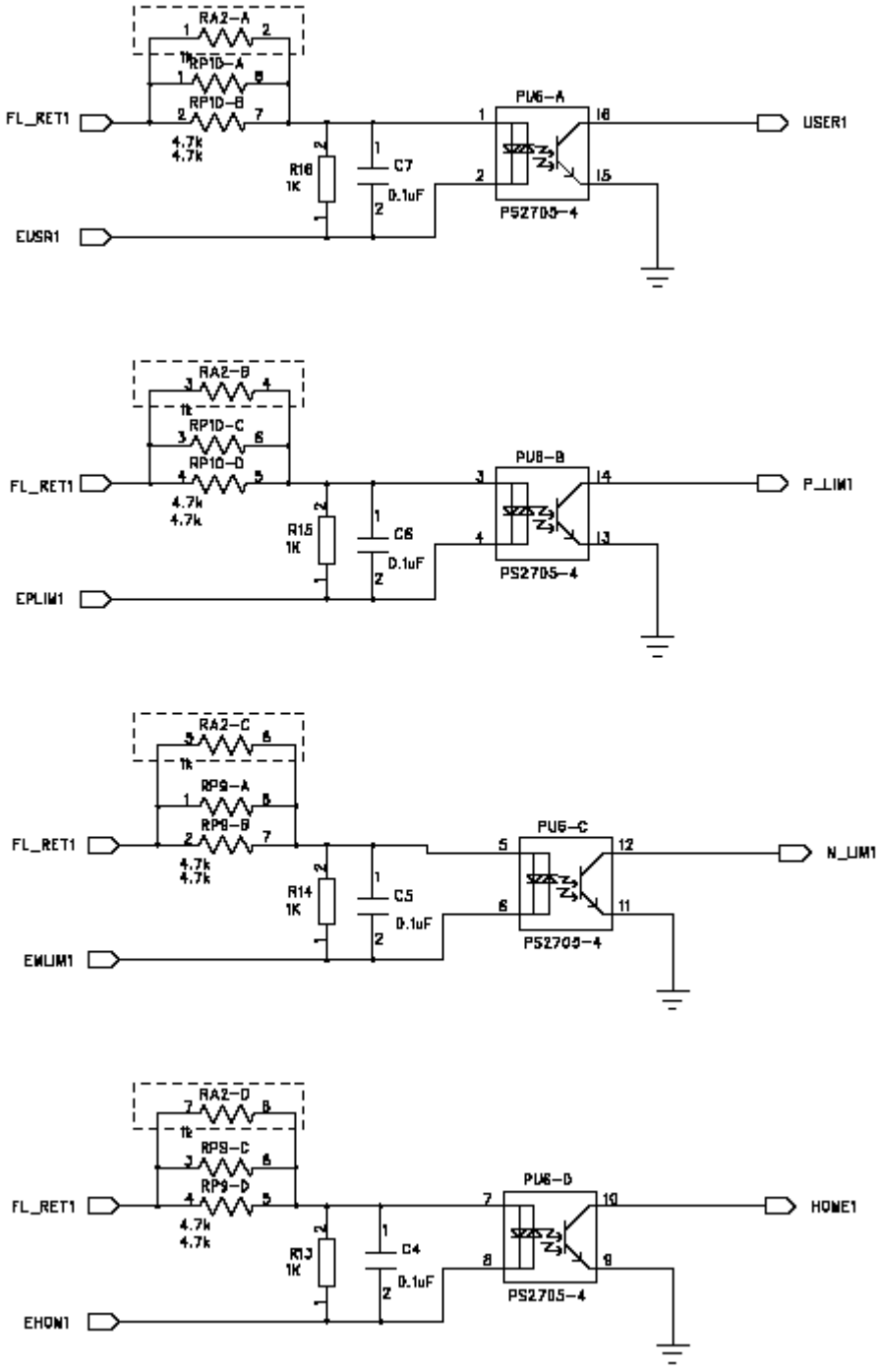
Aux I/F Board Terminal Block

Pin	Symbol	Function	Description	Note
A1	USER1	Input	General Capture Flag	Sinking or sourcing
A2	PLIM1	Input	Positive Limit Flag	Sinking or sourcing
A3	MLIM1	Input	Negative Limit Flag	Sinking or sourcing
A4	HOME1	Input	Home Flag	Sinking or sourcing
A5	FLRTN1	Input	Return For All Flags 1 (Must be finalized)	+ V (12 to 24V) or 0V
A6	SHIELD			
A7	SHEILD			
A8	HWA1	Input	Encoder Input A+ Channel 1	
A9	HWB1	Input	Encoder Input B+ Channel 1	
A10	+ 5VDC	Output		
A11	+ 5VDC	Output		
A12	HWA2	Input	Encoder Input A+ Channel 2	
A13	HWB2	Input	Encoder Input B+ Channel 2	
A14	PUL1	Output	Pulse1 Output +	
A15	DIR1	Output	Direction1 Output+	
A16	PUL2	Output	Pulse2 Output +	
A17	DIR2	Output	Direction2 Output+	
A18	+ 5VDC	Output		
A19	+ 5VDC	Output		
A20	HWANA	Input		
B1	USER2	Input	General Capture Flag	Sinking or sourcing
B2	PLIM2	Input	Positive Limit Flag	Sinking or sourcing
B3	MLIM2	Input	Negative Limit Flag	Sinking or sourcing
B4	HOME2	Input	Home Flag	Sinking or sourcing
B5	FLRTN2	Input	Return For All Flags 2 (Must Finalize)	+ V (12 to 24V) or 0V
B6	SHIELD			
B7	SHEILD			
B8	HWA1-	Input	Encoder Input A- Channel 1	
B9	HWB1-	Input	Encoder Input B- Channel 1	
B10	GND	Output		
B11	GND	Output		
B12	HWA2-	Input	Encoder Input A- Channel 2	
B13	HWB2-	Input	Encoder Input B- Channel 2	
B14	PUL1-	Output	Pulse1 Output -	
B15	DIR1-	Output	Direction1 Output-	
B16	PUL2-	Output	Pulse2 Output -	
B17	DIR2-	Output	Direction2 Output-	

☞*To be Contiue*

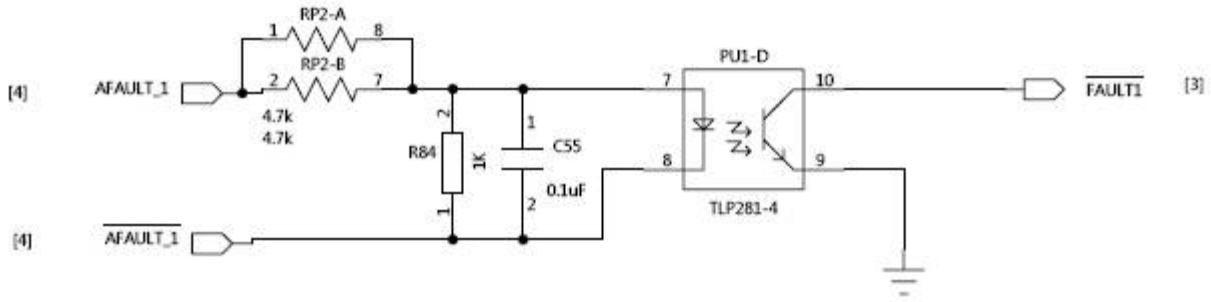
B18	**GND**	**Output**		
B19	**GND**	**Output**		
B20	**GND**	**Output**		

Input Circuit (USER, + Limit , - Limit , Home)

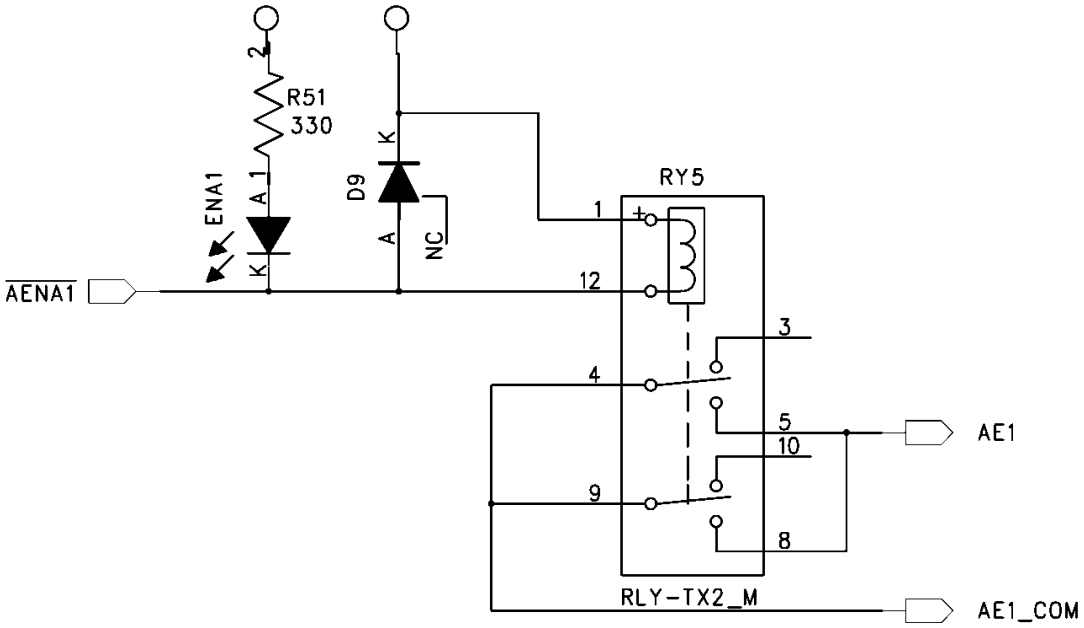


Limit Switch will use Normal Close Type Switch

Input Circuit (AMP Falut configuration example)

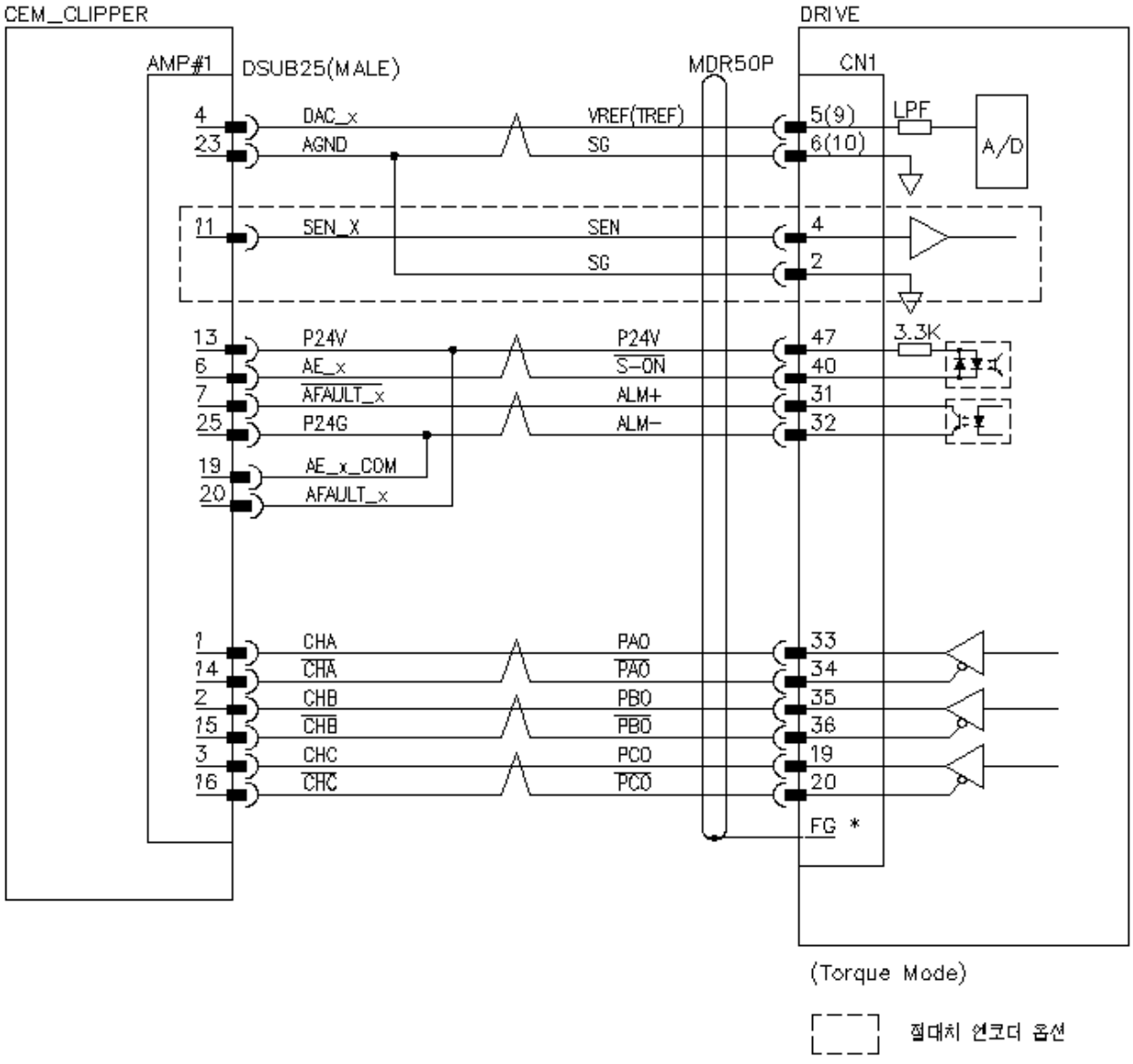


AMP Enable Circuit



SERVO DRIVE Wiring Example)

Yaskawa® Drive



CEM –Clipper 8-axis Single-DAC Option Setting Parameter

Setting the 5th axis Command Address

-I502 = $78003

Setting the 6th axis Command Address

-I602 = $7800B

Setting the 7th axis Command Address

-I702 = $78013

Setting the 8th axis Command Address

-I802 = $7801B

For normal operation, the above parameters must be set correctly.

CEM – Parameter setting when controlling Clipper Stepping Motor

//Channel Activated

I100 = 1
I200 = 1
I300 = 1
I400 = 1
I500 = 1
I600 = 1
I700 = 1
I800 = 1

//Channel Encoder Setting

I7010 = 8
I7020 = 8
I7030 = 8
I7040 = 8
I7110 = 8
I7120 = 8
I7130 = 8

```
I7140 = 8

//Channel Mode Select

I7016 = 3
I7026 = 3
I7036 = 3
I7046 = 3
I7116 = 3
I7126 = 3
I7136 = 3
I7146 = 3

//Command Output Init.

I102 =*
I202 =*
I302 =*
I402 =*
I502 =*
I602 =*
I702 =*
I802 =*

//Command Output Setting for Stepper

I102 = I102 + 2
I202 = I202 + 2
I302 = I302 + 2
I402 = I402 + 2
I502 = I502 + 2
I602 = I602 + 2
I702 = I702 + 2
I802 = I802 + 2


//PID Gain Setting

I130 = 700
i131 = 0
I132 = 15050
I133 = 0
I134 = 0
I135 = 0
```

I230 = 700
i231 = 0
I232 = 15050
I233 = 0
I234 = 0
I235 = 0

I330 = 700
i331 = 0
I332 = 15050
I333 = 0
I334 = 0
I335 = 0

I430 = 700
i431 = 0
I432 = 15050
I433 = 0
I434 = 0
I435 = 0

I530 = 700
I531 = 0
I532 = 15050
I533 = 0
I534 = 0
I535 = 0

I630 = 700
I631 = 0
I632 = 15050
I633 = 0
I634 = 0
I635 = 0

I730 = 700
I731 = 0
I732 = 15050
I733 = 0

I734 = 0

I735 = 0

I830 = 700

I831 = 0

I832 = 15050

I833 = 0

I834 = 0

I835 = 0

// Number of Commutation Cycle (Internal Computational Reason)

I170 = 0

I270 = 0

I370 = 0

I470 = 0

I570 = 0

I670 = 0

I770 = 0

I870 = 0

This is a setting parameter when using ADC Address.

I7103 = 1746 ;Set ADC clock frequency at 4.9152 MHz

I7106 = $1FFFFF ;Clock strobe set for bipolar inputs

M905->Y:$78105,12,12,S ;ADCIN_3

M1005->Y:$7810D,12,12,S ;ADCIN_4

I7003 = 1746 ;Set ADC clock frequency at 4.9152 MHz

I7006 = $1FFFFF ;Clock strobe set for bipolar inputs

M105->Y:$78005,12,12,S ;ADCIN_1

M205->Y:$7800D,12,12,S ;ADCIN_2

IP Address Change Switch Setting (after April 2011)

How to change the existing CLIPPER RACK IP ADDRESS



E8 JUMPER

Change the IP address by installing a USB/EtherNet CPU write protect jumper.

Remove E8 JUMPER after changing IP address.

If you do not remove the E8 JUMPER after the IP change is complete, external noise or shock may occur.

When this happens, there is a possibility that it will affect USB/EtherNet communication.

How to change the CLIPPER RACK TYPE IP ADDRESS



4AXIS **8AXIS**

CLIPPER 4XIS

Change the 6th switch of SW1 to ON ('ON' when pushed down).

If Ethernet communication works well after changing the IP address, change the switch to OFF.

If the switch is not turned off after the IP change is complete, external noise or shock may occur.

There is a possibility that it may affect USB/EtherNet communication (same for 8AXIS)

CLIPPER 8XIS

Change the 10th switch of SW1 to ON ('ON' when pushed down).

If Ethernet communication works well after changing the IP address, change the switch to OFF.

★ Currently applied to CLIPPER 4AXIS TYPE2,3 and CLIPPER 8AXIS TYPE2,3.

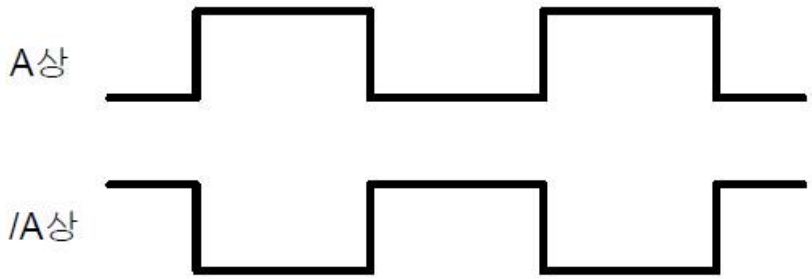
CLIPPER TYPE 1 and some CLIPPERs It has not been applied to the model yet.

I would like to inform you.

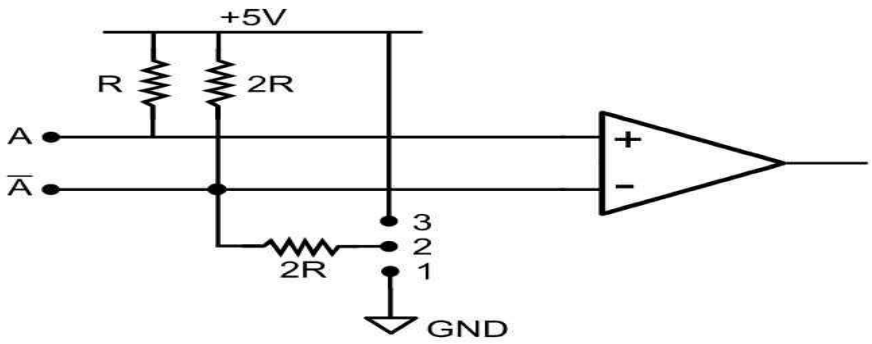
ENCODER LOSS DETECTION

Encoder Loss Detectionoutline

Encoder loss detectionWhen using the function
Differential line drive typeEncoderOnly available when in useSingle-endedof the wayEncoderWhen using Encoder loss detectionThe function is not available.
EncoderEach of the inputsAaward, /AEnter the topXOR(exclusive-or)to check the status. EncoderIf the connection status is normal, the states of the two input phases are always opposite.XOR gate The output is always1Maintains.



<차동 라인드라이브 입력 방식>



<PMAC Encoder Input Circuit>

CLIPPER 8AXIS ENCODER LOSS DETECTION



Clipper 8axisofSW1 Switchof1Burn~8BurnOFFsituation (DefaultIf the status isUSERUsed as input.
Clipper 8axisofSW1 Switchof1Burn~8BurnONIf the status is (down) Encoder Loss DetectionUsed as a function.

Things to noteUSERWhile using input at the same timeEncoder Loss DetectionThe function is not available.

CLIPPER ENCODER LOSS DETECTION ADDRESS

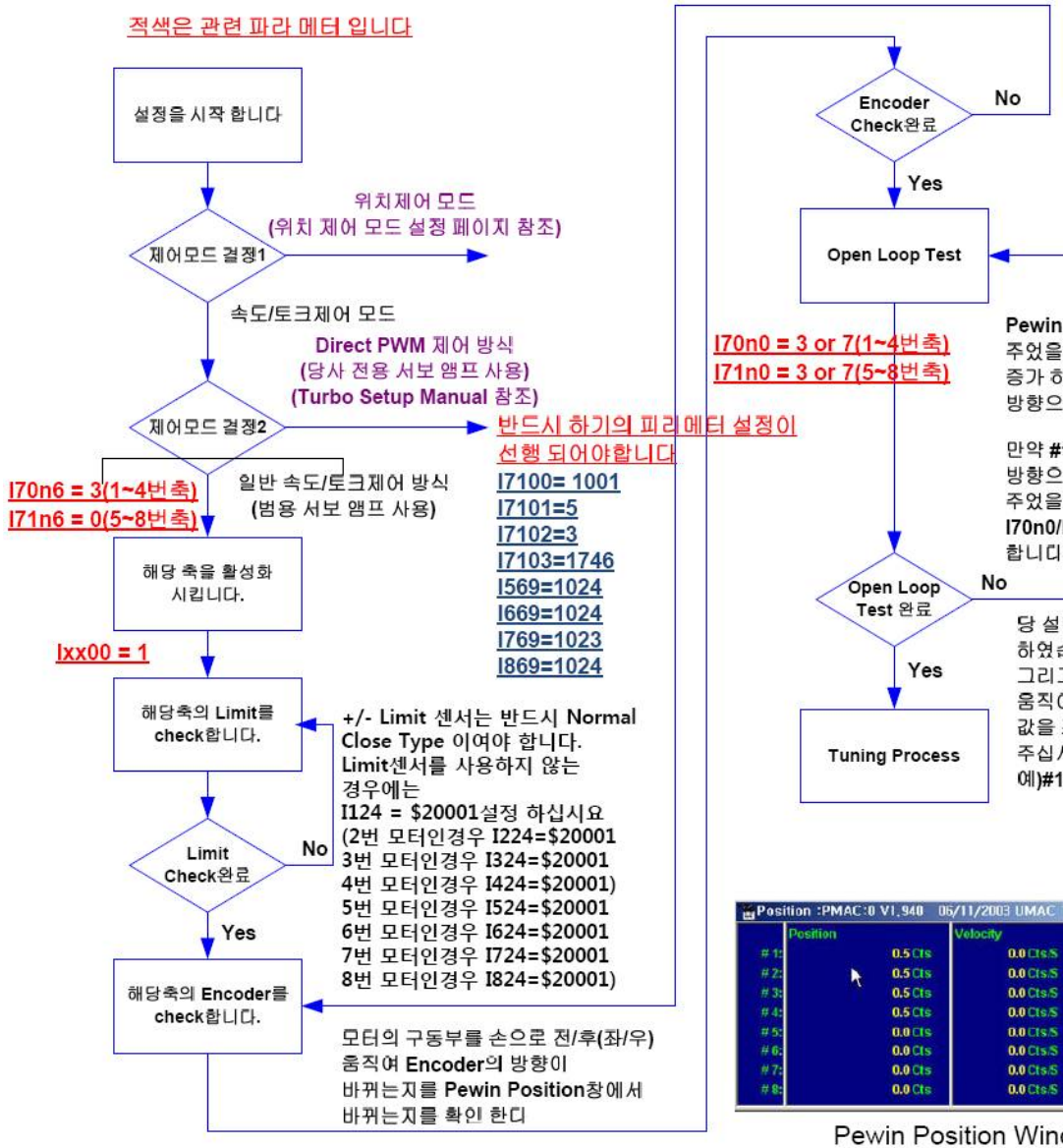
1BulgeEncoder Loss Detection Address => X:$78000,19
Suggested M-variablesofM115->X:$78000,19 :USER1 flag input statusofaddressCorresponds to.
Likewise2~3The axis of expansionM215,M315,M415, M515,M615,M715, M815ofaddressSame as . 2 BulgeEncoder Loss Detection Address => X:$78008,19 3BulgeEncoder Loss Detection Address => X:$78010,19 4BulgeEncoder Loss Detection Address => X:$78018,19 5BulgeEncoder Loss Detection Address => X:$78100,19 6BulgeEncoder Loss Detection Address => X:$78108,19 7BulgeEncoder Loss Detection Address => X:$78110,19 8BulgeEncoder Loss Detection Address => X:$78118,19

The value in normal state is '1'AndEncoderIdeal City '0'It will be changed to .

CEM -Clipper 8Axes True Dual DAC Option시 축 구성 Sequence(Motor 제어 변수)

(당 Option은 1~4 번축은 18Bit True Dual DAC,5~8번축은 PWM Filtered DAC 사용시 입니다.

적색은 관련 파라 메터 입니다



♫ Tip ♫

1. 실제 서보 앰프가 Fault 상태가 아닌 데 Pewin상에서 Fault 인 경우 Ix24의 23째 Bit를 1로 설정 하십시요.
예) I124 =$1을 I124= $800001으로 변경

2. 모터 진행 방향과 실제 기계 방향이 반대이면 Drive 상에서 회전 방향을 변경하거나 CEM-Clipper 의 AMP 출력의 DACxA신호를 #DACxA 신호로 변경 하십시요.

" 구동부와 모터가 결합된 상태에서는 Open loop test를 금지해 주십시요. 반드시 모터를 기구와 분리 후에 실시하시기 바랍니다

Open Loop Test시 해당 모터가 폭주 할 수도 있으니 주의를 요합니다. 장비 구동부 쪽에 사람이나 다른 물건을 두지 마십시요. Open Loop 명령을 주실때는 키보드 상의 CTRL Key와 K Key를 동시에 즉시 누를 수 있도록 해 주십시요.

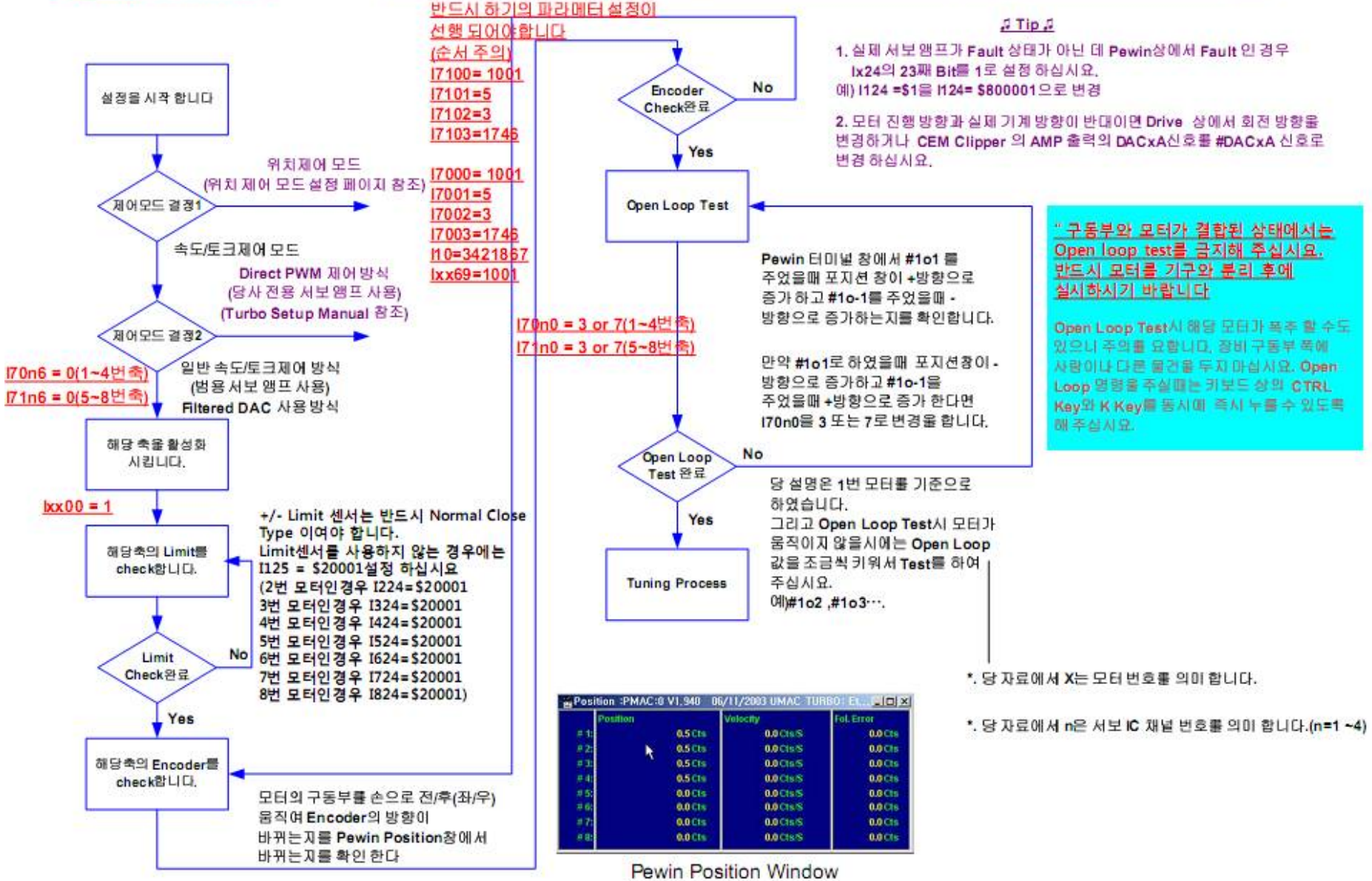
Pewin Position Window

*. 당 자료에서 X는 모터 번호를 의미 합니다.

*. 당 자료에서 n은 서보 IC 채널 번호를 의미 합니다.(n=1 ~

CEM-Clipper 8Axes Non-True DAC Option시 축 구성 Sequence(Motor 제어 변수)

적색은 관련 파라 메터 입니다



♫ Tip ♫

1. 실제 서보앰프가 Fault 상태가 아닌 데 Pewin상에서 Fault 인 경우 Ix24의 23째 Bit를 1로 설정 하십시요.
예) I124 =$1을 I124= $800001으로 변경

2. 모터 진행 방향과 실제 기계 방향이 반대이면 Drive 상에서 회전 방향을 변경하거나 CEM Clipper 의 AMP 출력의 DACxA신호를 #DACxA 신호로 변경 하십시요.

" 구동부와 모터가 결합된 상태에서는 Open loop test를 금지해 주십시요. 반드시 모터를 기구와 분리 후에 실시하시기 바랍니다

Open Loop Test시 해당 모터가 폭주 할 수도 있으니 주의를 요합니다. 장비 구동부 쪽에 사람이나 다른 물건을 두지 마십시요. Open Loop 명령을 주실때는 키보드 상의 CTRL Key와 K Key를 동시에 즉시 누를 수 있도록 해 주십시요.

*. 당 자료에서 X는 모터 번호를 의미 합니다.

*. 당 자료에서 n은 서보 IC 채널 번호를 의미 합니다.(n=1 ~4)

Pewin Position Window

CEM -Clipper 8Axes True Single DAC Option시 축 구성 Sequence(Motor 제어 변수)

적색은 관련 파라 메터 입니다

설정을 시작 합니다

제어모드 결정1 — 위치제어 모드 (위치 제어 모드 설정 페이지 참조)

속도/토크제어 모드

제어모드 결정2 — Direct PWM 제어 방식 (당사 전용 서보 앰프 사용) (Turbo Setup Manual 참조)

일반 속도/토크제어 방식 (범용 서보 앰프 사용)

I70n6 = 3(1~4번축)
I71n6 = 3(5~8번축)

5 ~ 8번축 Command Address를 아래와 같이변경 합니다(1~4번축은 설정 불필요)

*.I502 = $78003
*.I602 = $7800B
*.I702 = $78013
*.I802 = $7801B

해당 축을 활성화 시킵니다.

Ixx00 = 1

해당축의 Limit를 check합니다.

+/- Limit 센서는 반드시 Normal Close Type 이여야 합니다.
Limit센서를 사용하지 않는 경우에는
I124 = $20001설정 하십시요
(2번 모터인경우 I224=$20001
3번 모터인경우 I324=$20001
4번 모터인경우 I424=$20001)
5번 모터인경우 I524=$20001
6번 모터인경우 I624=$20001
7번 모터인경우 I724=$20001
8번 모터인경우 I824=$20001)

Limit Check완료 — No

Yes

해당축의 Encoder를 check합니다.

모터의 구동부를 손으로 전/후(좌/우) 움직여 Encoder의 방향이 바뀌는지를 Pewin Position창에서 바뀌는지를 확인 한다

Encoder Check완료 — No

Yes

Open Loop Test

I70n0 = 3 or 7(1~4번축)
I71n0 = 3 or 7(5~8번축)

Pewin 터미널 창에서 #1o1 를 주었을때 포지션 창이 +방향으로 증가 하고 #1o-1를 주었을때 - 방향으로 증가하는지를 확인합니다.

만약 #1o1로 하였을때 포지션창이 - 방향으로 증가하고 #1o-1을 주었을때 +방향으로 증가 한다면 I70n0/I71n0을 3 또는 7로 변경을 합니다.

Open Loop Test 완료 — No

Yes

Tuning Process

당 설명은 1번 모터를 기준으로 하였습니다.
그리고 Open Loop Test시 모터가 움직이지 않을시에는 Open Loop 값을 조금씩 키워서 Test를 하여 주십시요.
예)#1o2 ,#1o3….

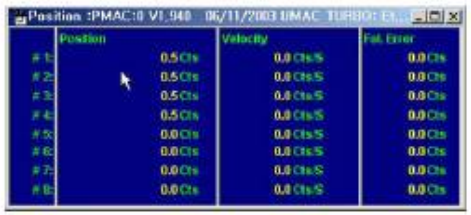
♫ Tip ♫

1. 실제 서보 앰프가 Fault 상태가 아닌 데 Pewin상에서 Fault 인 경우 Ix24의 23째 Bit를 1로 설정 하십시요.
예) I124 =$1을 I124= $800001으로 변경

2. 모터 진행 방향과 실제 기계 방향이 반대이면 Drive 상에서 회전 방향을 변경하거나 CEM-Clipper 의 AMP 출력의 DACxA신호를 #DACxA 신호로 변경 하십시요.

" 구동부와 모터가 결합된 상태에서는 Open loop test를 금지해 주십시요. 반드시 모터를 기구와 분리 후에 실시하시기 바랍니다

Open Loop Test시 해당 모터가 폭주 할 수도 있으니 주의를 요합니다. 장비 구동부 쪽에 사람이나 다른 물건을 두지 마십시요. Open Loop 명령을 주실때는 키보드 상의 CTRL Key와 K Key를 동시에 즉시 누를 수 있도록 해 주십시요.



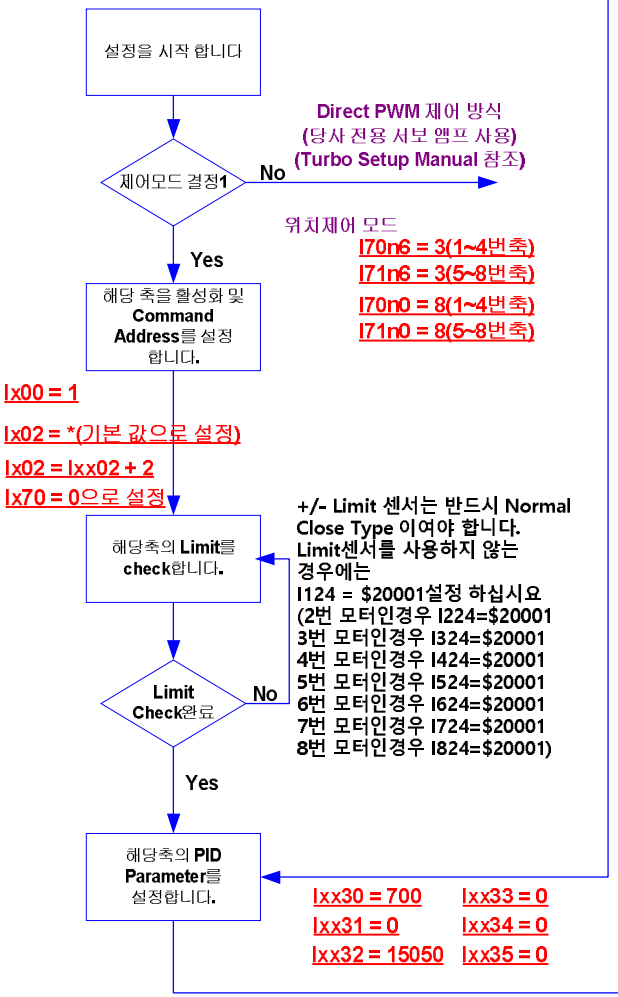
Pewin Position Window

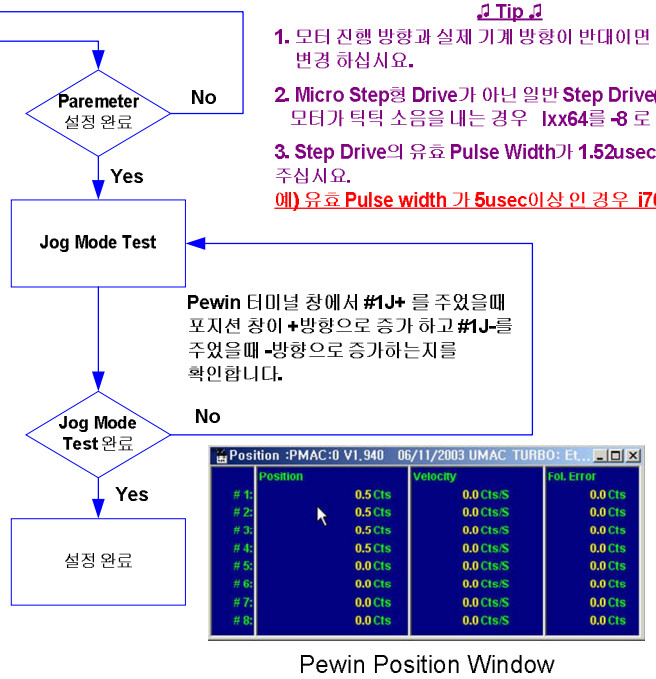
*. 당 자료에서 x는 모터 번호를 의미 합니다.

*. 당 자료에서 n은 서보 IC 채널 번호를 의미 합니다.(n=1 ~4)

CEM-Clipper 8AxesStepper 설정 Sequence(Motor 제어 변수)

적색(밑줄)은 관련 파라 메터 입니다





Pewin Position Window

♫ Tip ♫

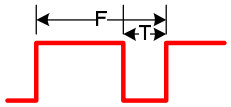
1. 모터 진행 방향과 실제 기계 방향이 반대이면 I70n8/I71n8을 0 에서 1로 변경 하십시요.
2. Micro Step형 Drive가 아닌 일반 Step Drive(0.72° / 1 Pulse) 사용시에 모터가 틱틱 소음을 내는 경우 Ixx64를 -8 로 변경 하십시요.
3. Step Drive의 유효 Pulse Width가 1.52usec보다 큰 경우 I7004 를 변경하여 주십시요.
   예) 유효 Pulse width 가 5usec이상 인 경우 I7004를 50 으로 설정합니다.

*. 당 자료에서 X는 모터 번호를 의미 합니다.

*. 당 자료에서 n은 서보 IC 채널 번호를 의미 합니다.(n=1 ~4)

*. Step Drive의 Command 방식은 반드시 1 Pulse (Pulse/Direction) 방식으로 변경 하십시요.

*. Default 기본 파형



F(주파수) : 280 KHz(max)
T(Duty Time): 1.52usec

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