PMC6

User Manual

Version: 20200703

Table of Content

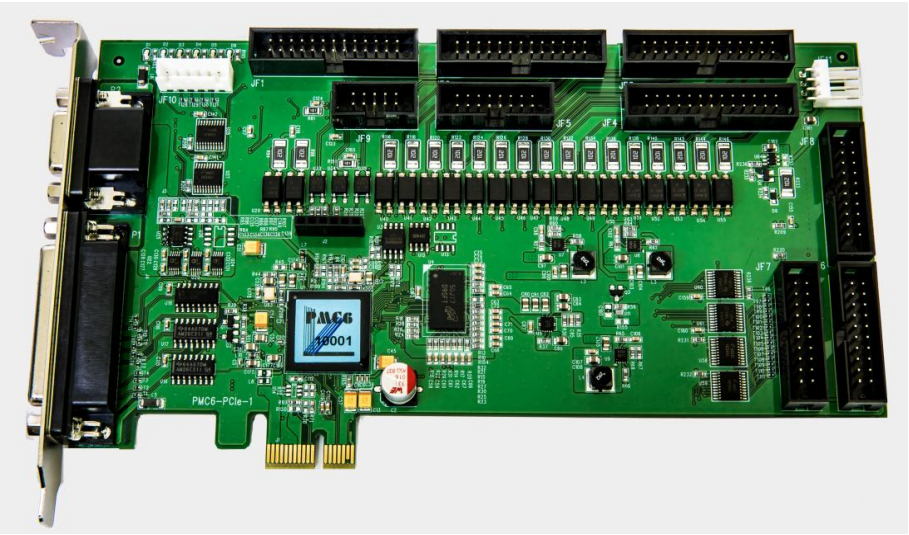
1. Introduction

PMC6 is a high performance PCIe interface card designed for Laser Marking System. Support common used brands of 16’18’20-bits high resolution ScanHead, and is compatible to multiple communication protocol. It reserves plenty of I/O capacity for flexible connecting with automatic equipment or lasers requiring additional I/O. PMC6 features complete stepper and servo motor control function, and can control four axes simultaneously. Besides, it provides variety kinds of extending port for multiple types of connection requirements.

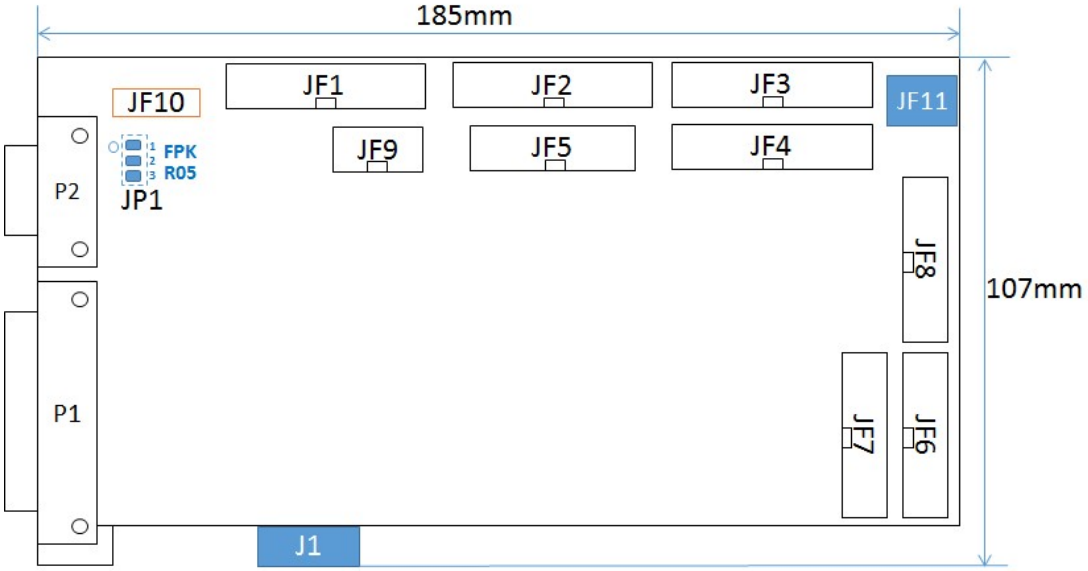
1-1 Specification

- Support common used brands of 16’18’20-bits high resolution ScanHead.
- Support output up to 3 axes digital scanner signal * 2.
- Build-in DSP. No occupation of PC CPU resource.
- Scanner digital signal refresh rate: 10 us/times.
- FPK, PPK, R05 first pulse suppression.
- Two 16-bits analog control signals.
- 3-way encoder inputs.
- PWM maximum output frequency is 10MHz, minimum pulse width is 0.05μs.
- 4-way digital step/servo motor control signals at the same time, the maximum output frequency is 10MHz.
- General 16-bits digital outputs, 16 bit digital inputs.
- Specific 16-bits laser control digital outputs.
- Support for Windows XP / 2000 / Vista / Windows 7 / 8 / 8.1/ Windows 10.

1-2 Appearance



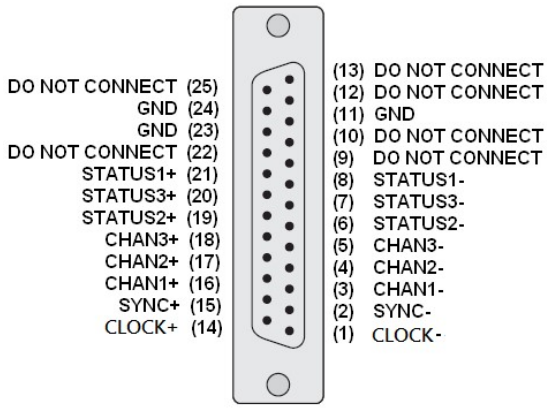
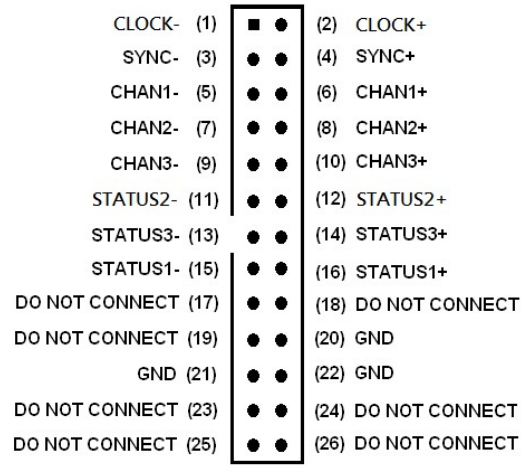
1-3 Layout



名稱	用途	說明	
P1	SCANHEAD1	SCANHEAD 1 Connector. (D-SUB 25-Pin Female) Default: XY2-100 16-bits，adaptable to :Raylase XY2-100-E 18-bits、CTI XY2-100 20-bits、Canon 20-bits、Canon 64-bits.	
P2	LASER_CONNECTOR	Laser control and analog output port (D-SUB 15-Pin female connector)	
JF1	SCANHEAD2	SCANHEAD 1 Connector, independent to P1. (26Pin box connector) Default:XY2-100 16-bits，adaptable to :Raylase XY2-100-E 18-bits、CTI XY2-100 20-bits、Canon 20-bits、Canon 64-bits.	
JF2	LASER_EXTENSION	Extension laser control and 16-bit digital output port (26-Pin box header connector)	
JF3	MOTOR_X_Y	XY Table port (26-Pin box header connector)	
JF4	MOTOR_Z_R	Z-axis and rotary port (26-Pin box header connector)	
JF5	ENCODER	XY encoder port (16-Pin box header connector)	
JF6	INTPUT	16-bits digital input port (20-Pin box header connector)	
JF7	EXTENSION	Extension 16-bits digital output port (20-Pin box header connector)	
JF8	OUTPUT	16-bits digital output port (20-Pin box header connector)	
JF9	ENCODER	Z encoder port (10-Pin box header connector)	
JF10	LED Signal Out	D2~D5 LED Signal Output.	
JF11	Power In	**This is necessary. Otherwise there is no signal output.**	
JP1(BOT)	FPK / R05	1、2 Close : FPK	2、3 Close : R05

2. Pin Assignment

2-1 ScanHead Control

P1(ScanHead 1)：D-SUB 25F	JF1(ScanHead 2)：26Pin Box
	

Descriptions	Signal Type	Remark
CLOCK	Differential Output	V_{OH} : +5V、Iomax : 25mA
SYNC	Differential Output	V_{OH} : +5V、Iomax : 25mA
CHAN1	Differential Output	V_{OH} : +5V、Iomax : 25mA
CHAN2	Differential Output	V_{OH} : +5V、Iomax : 25mA
CHAN3	Differential Output	V_{OH} : +5V、Iomax : 25mA
STATUS2	Differential Input	$+2V < V_{IH} < +5V$
STATUS3	Differential Input	$+2V < V_{IH} < +5V$
STATUS1	Differential Input	$+2V < V_{IH} < +5V$
GND	PC Power 0V	

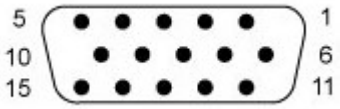
Note1：JF1 connect with 25 to 26convertor has the same interface with P1 port.

Note2：V_{OH}：High Level Output Voltage (No Resistive load)

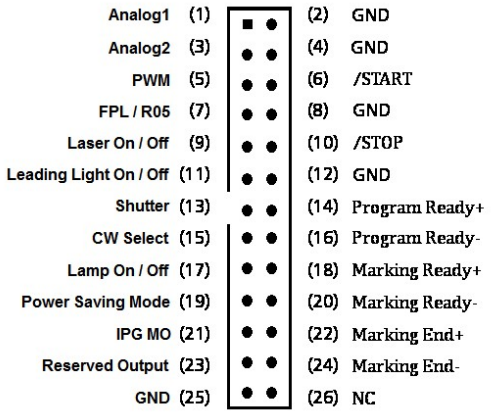
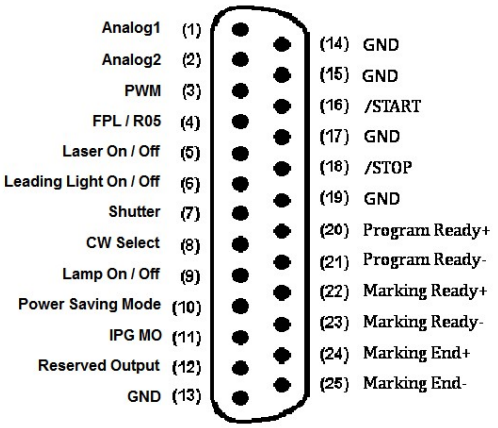
Iomax : Maximum Output Current

V_{IH}：High Level Input Voltage.

2-2 Laser Control

P2：HD-SUB 15F			
			
Pin	**Descriptions**	**Signal Type**	**Remark**
1	Analog Out1	0V ~ 11V Output	Default 0V ~ +10V (HWConfig Setting)
2	Analog Out2	0V ~ 11V Output	Default 0V ~ +10V (HWConfig Setting)
3	Analog GND	Analog GND	Isolated
4	PWM	TTL Output	V_{OH} : +5V、Iomax : 25mA
5	FPK or R05	TTL Output or Analog 0V ~ 5V	Jumper JP1 select FPK or R05 mode. Default is FPK.(JP1 Setting)
6	Laser On/Off	TTL Output	V_{OH} : +5V、Iomax : 25mA
7	Leading Light On/Off	TTL Output	V_{OH} : +5V、Iomax : 25mA
8	Shutter	TTL Output	V_{OH} : +5V、Iomax : 25mA
9	CW select	TTL Output	V_{OH} : +5V、Iomax : 25mA
10	Lamp On/Off	TTL Output	V_{OH} : +5V、Iomax : 25mA
11	Start power saving mode	TTL Output	V_{OH} : +5V、Iomax : 25mA
12	/START	Dry Contact or Optical coupling Input	Default Dry Contact (HWConfig Setting)
13	/STOP	Dry Contact or Optical coupling Input	Default Dry Contact (HWConfig Setting)
14	Vout_5V	PC Power +5V Output	
15	Digit GND	PC Power 0V	

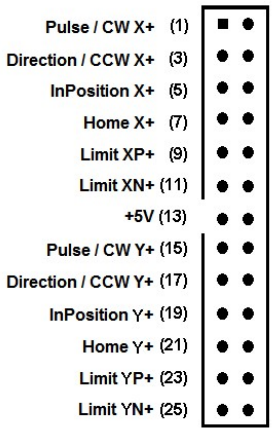
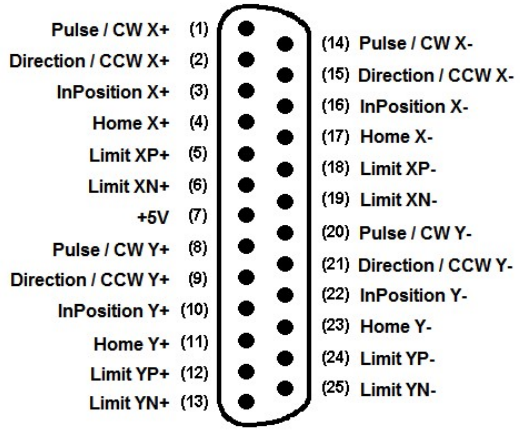
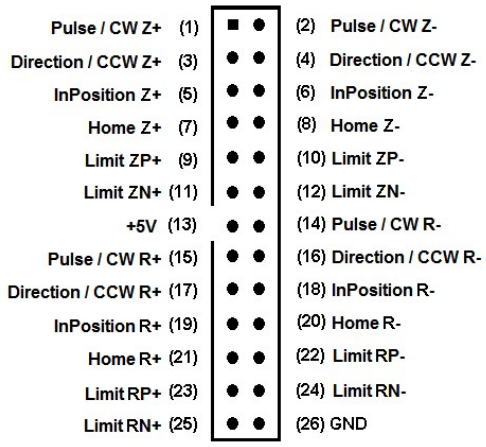
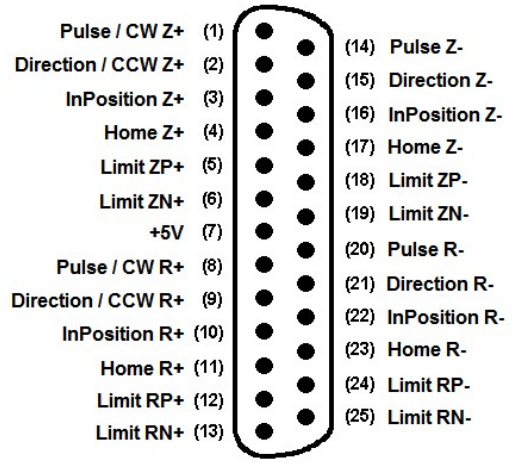
Note：V_{OH}：High Level Output Voltage (No Resistive load)
Iomax : Maximum Output Current
V_{IH}：High Level Input Voltage.

JF2 : 26Pin Box	26 to 25 Line：D-SUB 25F
	

Descriptions	Signal Type	Remark
Analog1	0V ~ +11V Output	Default 0V ~ +10V (HWConfig Setting)
Analog2	0V ~ +11V Output	Default 0V ~ +10V (HWConfig Setting)
PWM	TTL Output	V_{OH} : +5V、Iomax : 30mA
FPK or R05	TTL Output or Analog 0V ~ 5V	Jumper JP1 select FPK or R05 mode. Default is FPK.(JP1 Setting)
Laser On/Off	TTL Output	V_{OH} : +5V、Iomax : 25mA
Leading Light On/Off	TTL Output	V_{OH} : +5V、Iomax : 25mA
Shutter	TTL Output	V_{OH} : +5V、Iomax : 25mA
CW select	TTL Output	V_{OH} : +5V、Iomax : 25mA
Lamp On/Off	TTL Output	V_{OH} : +5V、Iomax : 25mA
Start power saving mode	TTL Output	V_{OH} : +5V、Iomax : 25mA
IPG MO	TTL Output	V_{OH} : +5V、Iomax : 25mA
Reserved	TTL Output	V_{OH} : +5V、Iomax : 25mA
/START	Dry Contact or Optical coupling Input	Default Dry Contact (HWConfig Setting)
/STOP	Dry Contact or Optical coupling Input	Default Dry Contact (HWConfig Setting)
Program Ready	Optical coupling Output	Icmax：100mA
Marking Ready	Optical coupling Output	Icmax：100mA
Marking End	Optical coupling Output	Icmax：100mA
GND	PC Power 0V	

Note：V_{OH}：High Level Output Voltage (No Resistive load)
Iomax : Maximum Output Current
Icmax：Maximum Collector Current.

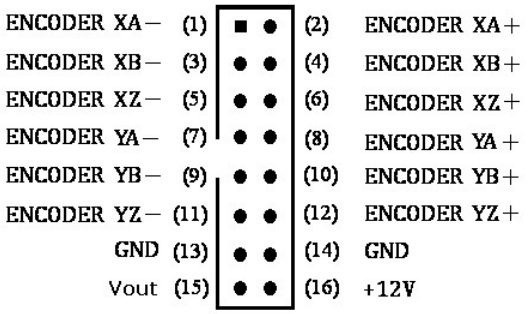
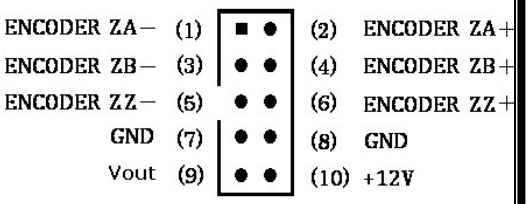
2-3 Motor Servo Control

JF3 : 26Pin Box	26 to 25 Line：D-SUB 25F
	
JF4 : 26Pin Box	**26 to 25 Line：D-SUB 25F**
	

Descriptions	Signal Type	Remark
Pulse / CW	Differential Output	V_{OH} : +5V、Iomax : 25mA (HWConfig Setting)
Direction / CCW	Differential Output	V_{OH} : +5V、Iomax : 25mA (HWConfig Setting)
InPosition	Optical coupling Input	V_{Imax}：+24V
Home	Optical coupling Input	V_{Imax}：+24V
Limit+	Optical coupling Input	V_{Imax}：+24V
Limit-	Optical coupling Input	V_{Imax}：+24V
Vout_5V	PC Power +5V Output	
GND	GND	

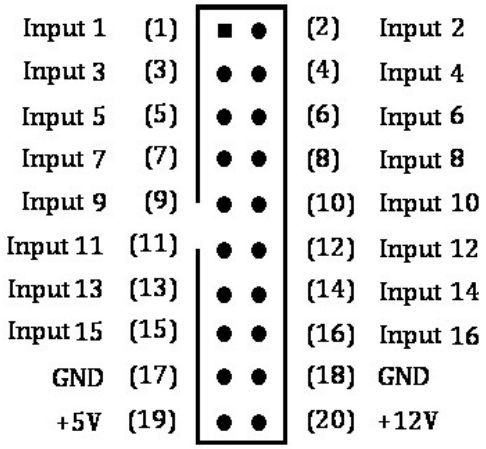
Note：V_{OH}：High Level Output Voltage (No Resistive load)
Iomax : Maximum Output Current
V_{Imax}：Maximum Iutput Voltage

2-4 Others Control

JF5 : 16Pin Box	JF9 : 10Pin Box
	

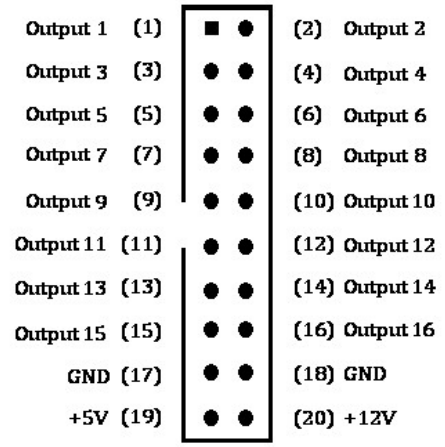
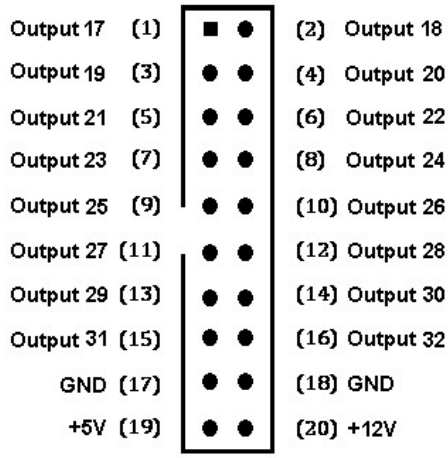
Descriptions	Signal Type	Remark
Encoder A、B、Z(Index)	Differential Input	+2V < V_{IH} < +5V、V_{IL} < +0.8V
Vout_5V	PC Power +5V Output	
Vout_12V	PC Power +12V Output	
GND	PC Power 0V	

Note：V_{IH}：High Level Input Voltage
V_{IL} : Low Level Input Voltage

JF6：20Pin Box


Descriptions	Signal Type	Remark
Input 1 ~ 16	TTL Input	+2V < V_{IH} < +5V、V_{IL} < +0.8V
+5V	PC Power +5V Output	
+12V	PC Power +12V Output	
GND	PC Power 0V	

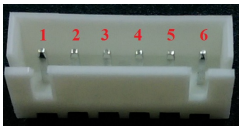
Note：V_{IH}：High Level Input Voltage
V_{IL} : Low Level Input Voltage

JF8 : 20Pin Box	JF7 : 20Pin Box
	

Descriptions	Signal Type	Remark
Output 1 ~ 32	TTL Output	V_{OH} : 5V、Iomax : 25mA
Vout_5V	PC Power +5V Output	
Vout_12V	PC Power +12V Output	
GND	PC Power 0V	

Note：V_{OH}：High Level Output Voltage (No Resistive load)
Iomax : Maximum Output Current

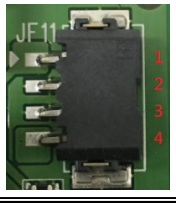
JF10：20Pin Box



Pin	Descriptions	Signal Type	Remark
1	GND	PC Power 0V	
2 ~ 5	D2 ~ D5	TTL Output	V_{OH} : 5V、Iomax : 25mA
6	GND	PC Power 0V	

Note：(Appendix2 : LED Status)

JF11：Wafer 4Pin



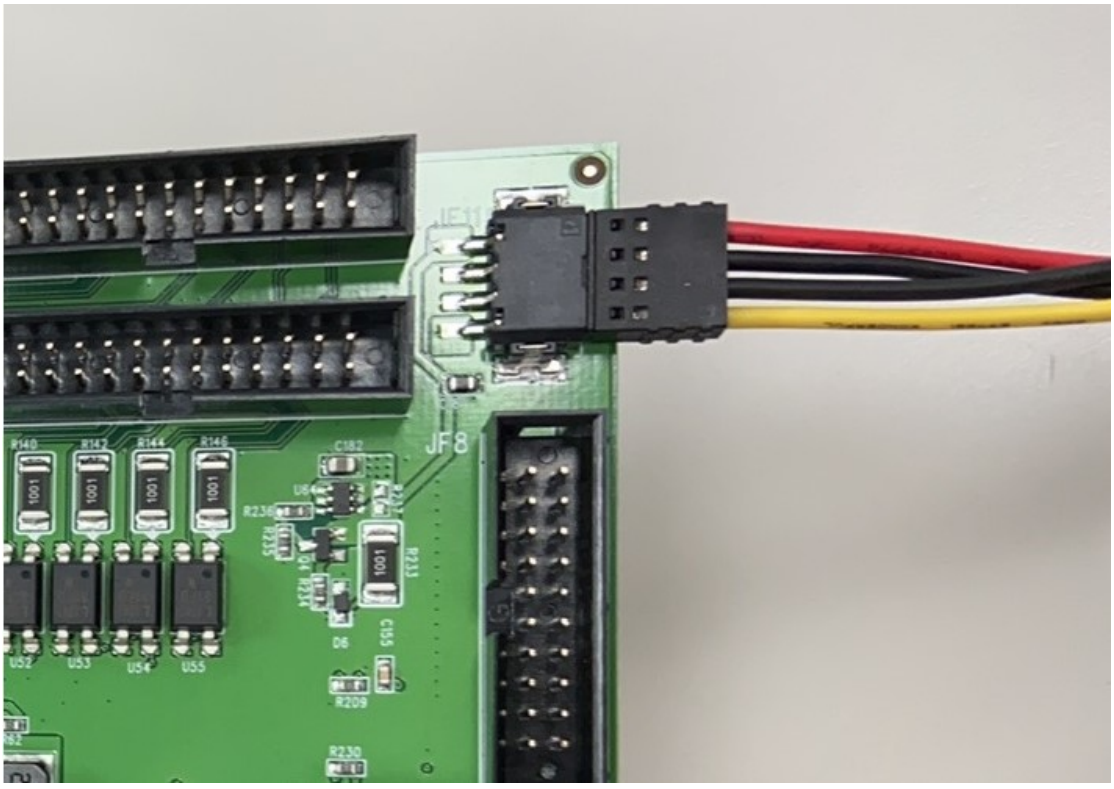
Pin	Descriptions
1	Input +5V
4	Input +12V
2、3	0V

3. Installation and Cable Connection

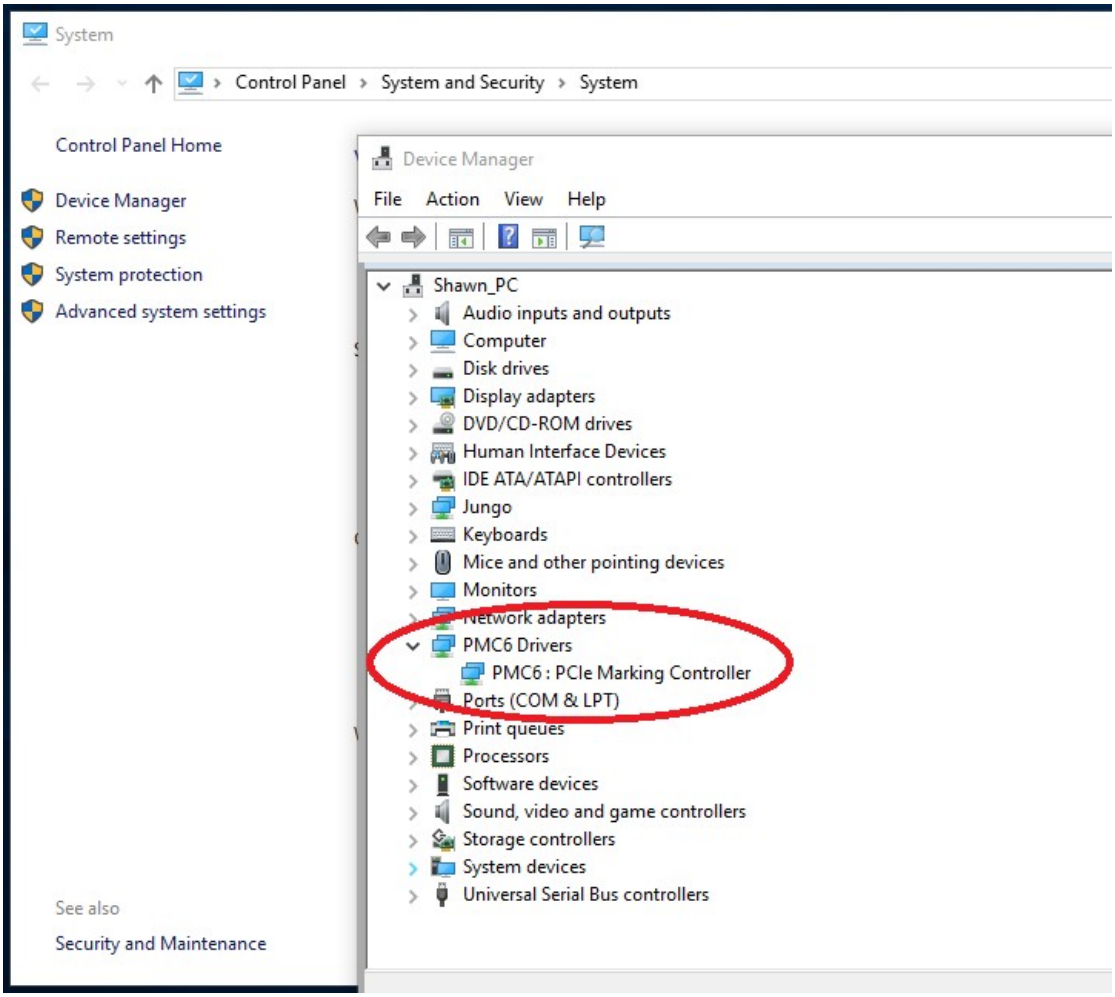
3-1 PMC6 Installation

Before install PMC6 board to computer, must make sure PC power has been cut off. It is safer to cut off PC power supply by turnning switch to OFF, or remove power cable temporarily. After confirm there is no power on motherboard, then insert PMC6 into suitable PCIe slot (All of PCIe 1X, 4X, 8X, 16X are compatible), and wire J11 extension power port from an usable USB3.0 port, then start up the computer.

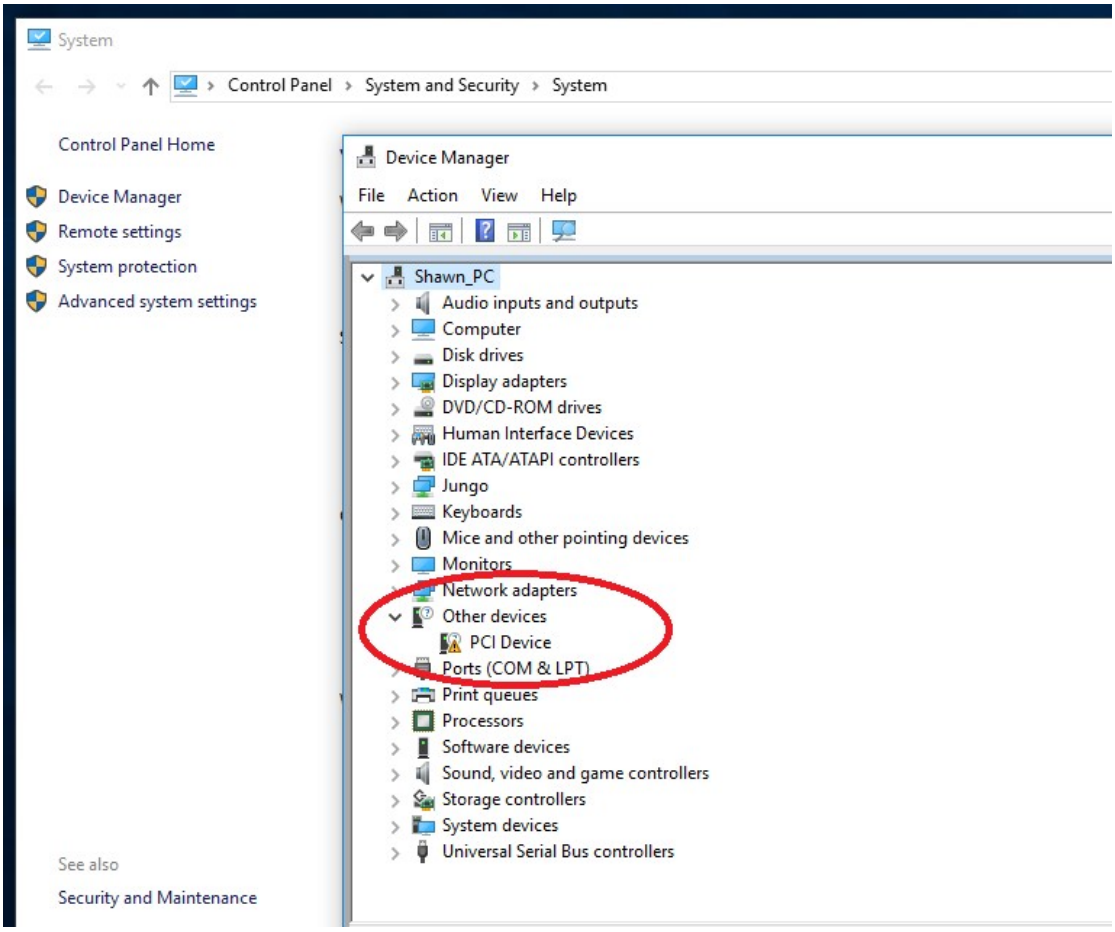
P.S.: If lack of wiring JF11, although marking software can execute normally, there is no signal output from port, and user will get “Stop signal is activated” message when marking dialog is opened.



- If PMC6 is installed normal, as the picture below, the device “PMC6 Drivers” will appear within WINDOWS Device Manager.



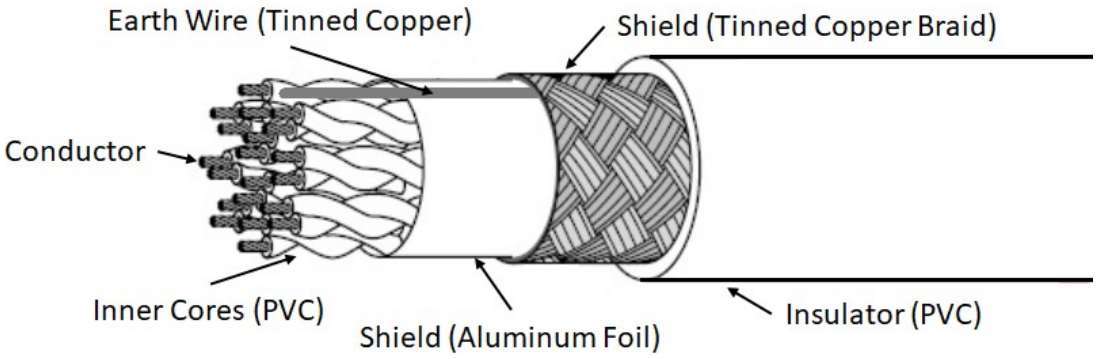
- If PMC6 is installed abnormal, as the picture below, PMC6 will be shown as “Other devices”. In this case, user has to execute C:\Program Files (x86)\Marking Mate\Drivers\PMC6\Setup.exe to install proper driver.



3-2 Cable

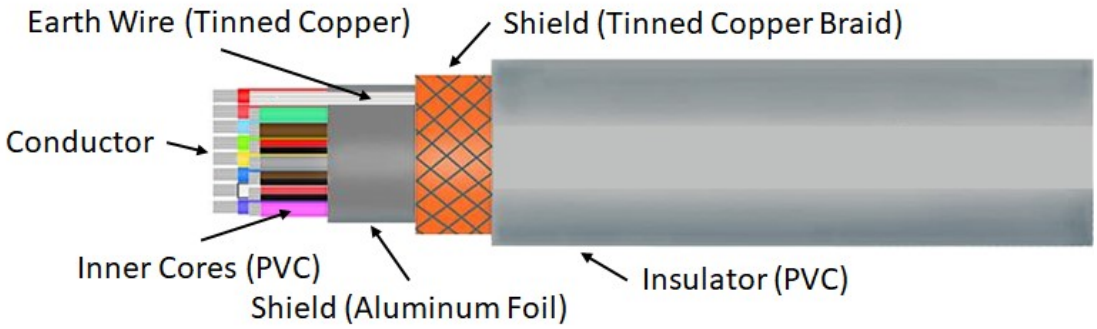
3-2-1 Differential

The differential signal should use a shielded twisted pair cable to wire. Positive signal and Negative signal should use the same pair.



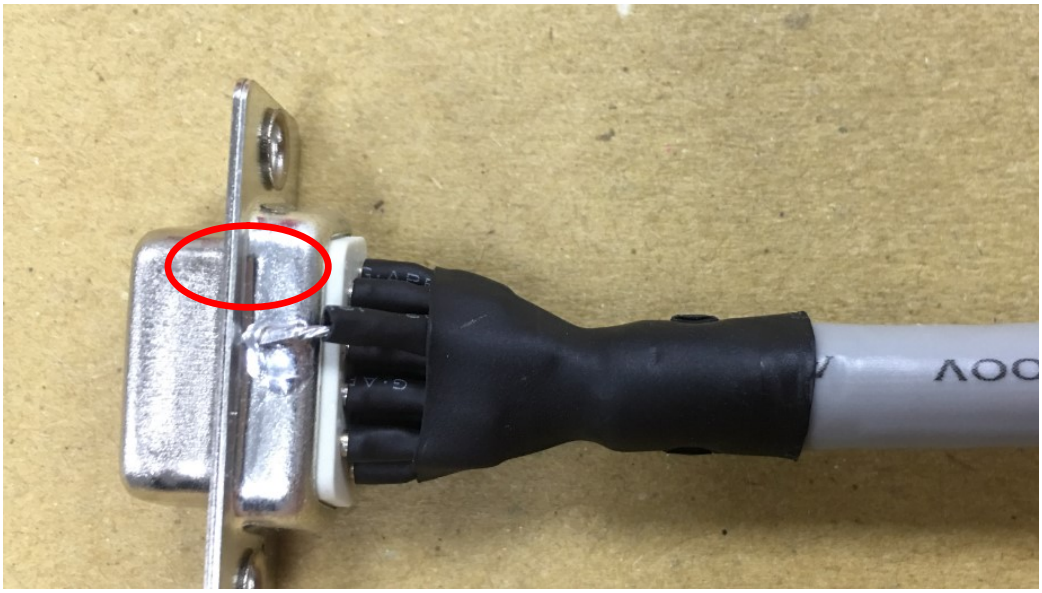
3-2-2 Others

The cable should choose a shielded wire, and there should be tinned copper braid between insulator and inner cores.

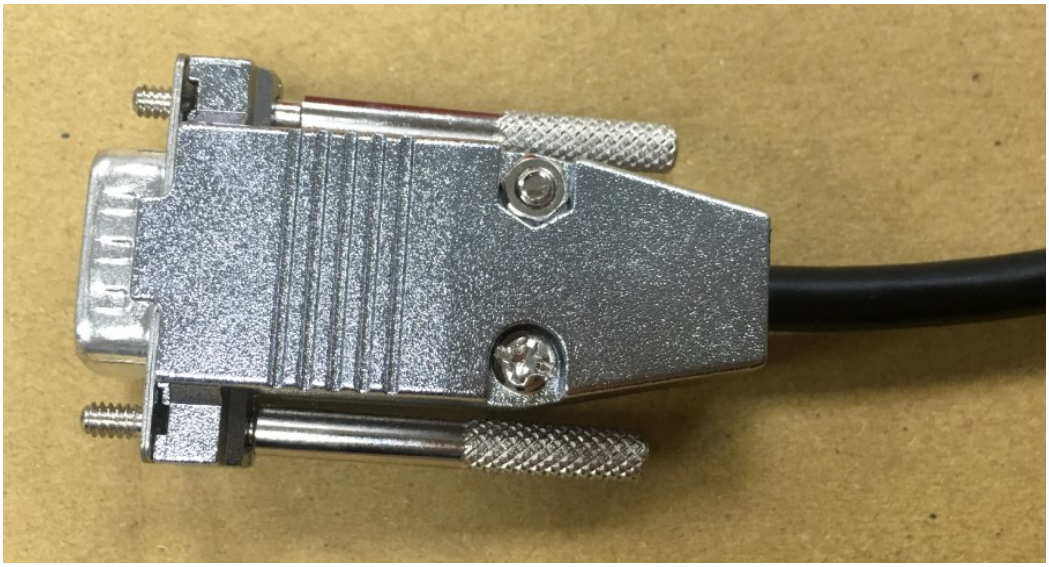


3-3 D-SUB welding

While welding D-SUB connector, should take care the protection of core, and the earth GND wiring.



The cover of D-SUB is recommended in metal material.

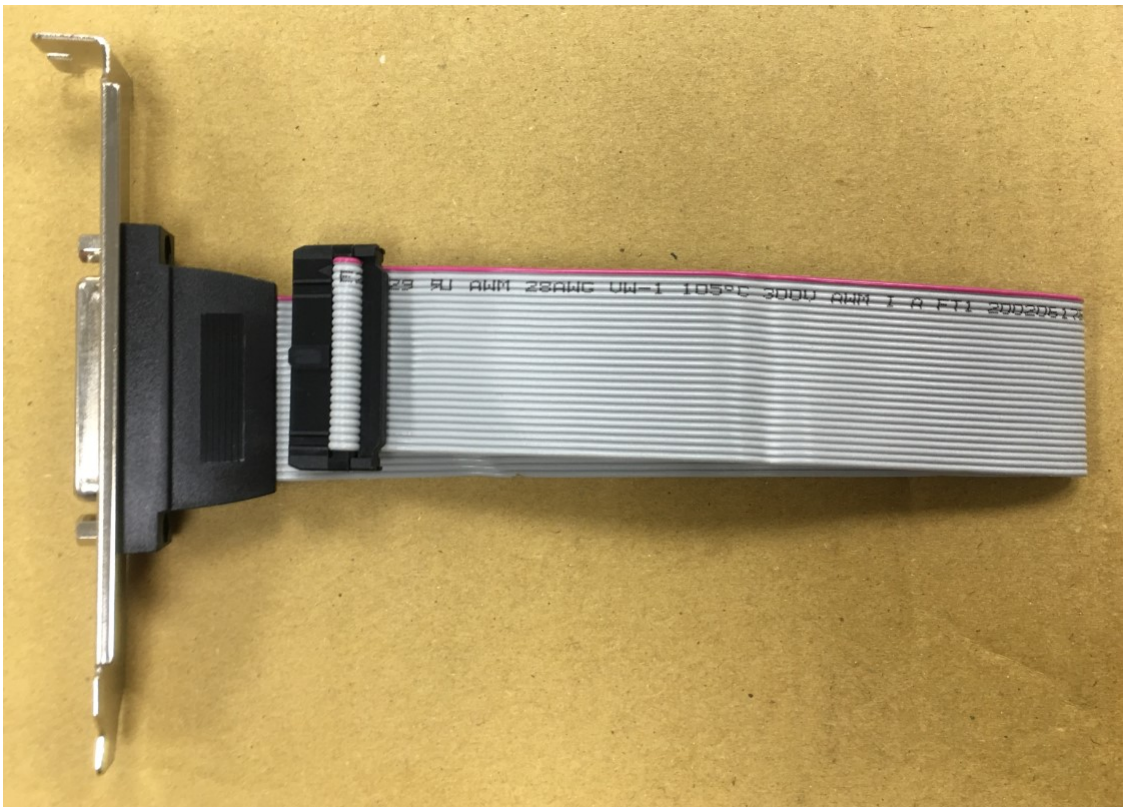


3-4 Adaptor cable

For JF1~JF9 connector could use dual row box header inter-wire to D-SUB connector by a ribbon cable. The D-SUB connector should be fixed on the rear PC case panel by a screw.

Note:

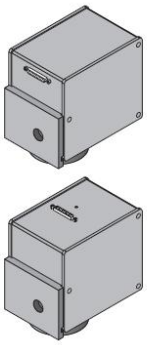
- Do not extend the ribbon cable to exceed outside the PC case. This will cause receiving the noise signal easily.

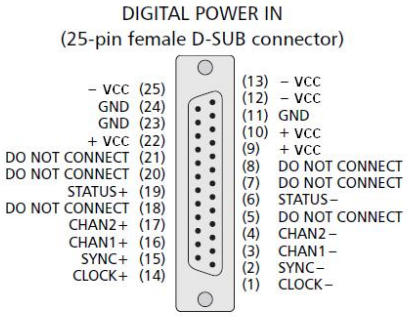


3-5 Scanner Cable Connection

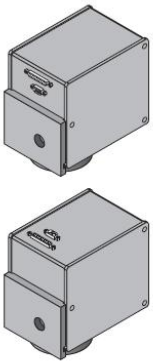
3-5-1 XY2-100 16Bit Scanner

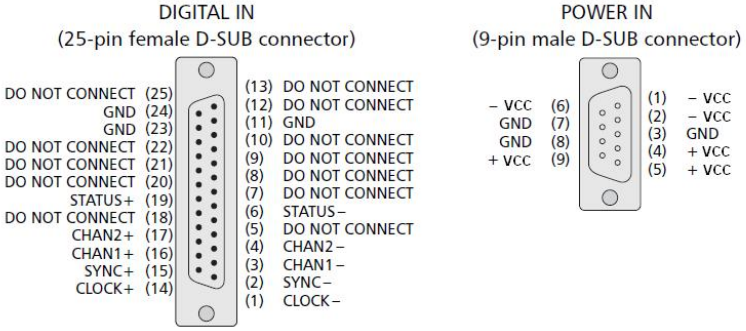
- Type 1 XY2-100 16Bit：With one D-SUB 25Pin





- Type 2 XY2-100 16Bit：With D-SUB 25Pin and D-SUB 9Pin



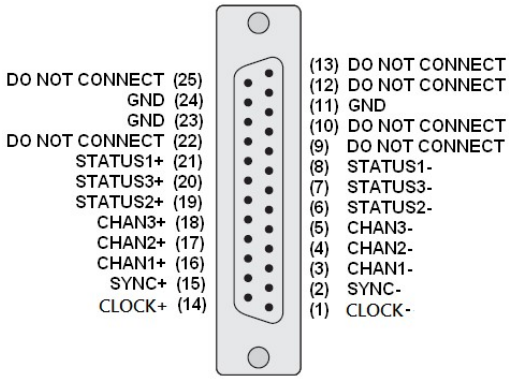


Notice:

- PMC6 P1 is corresponding to digital ScanHead D-SUB25Pin. User could easily connect them by 25-pin pin to pin cable; however, if using type 1 ScanHead, user has to wire to power source from the cable.
- For the power source: User has to wire all pins of them, which means has to wire 3 pins of the +VCC, 3 pins of the–VCC, and 3 pins of the GND. Only wire to 1 pin of +VCC, 1 pin of–VCC, or 1 pin of GND is forbidden.
- Power GND should short to PMC6 GND.
- Max cable length is 5M. Cable should cover with shield and isolated.

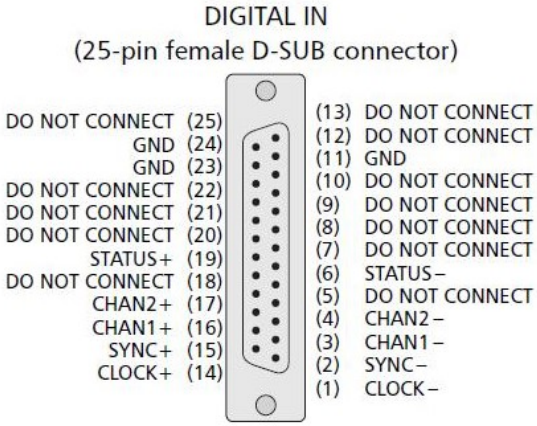
3-5-2 Raylase XY2-100-E 18Bit Scanner

Wire is similar to XY2-100 16Bit scanner, except add additional 2 Status signal.



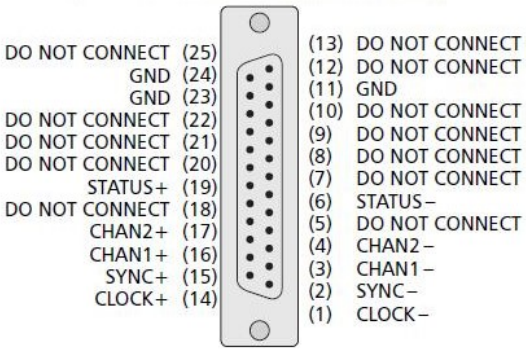
3-5-3 CTI XY2-100 20Bit Scanner

Wire is same to XY2-100 16Bit scanner.



3-5-4 CANON 20Bit / 64Bit Scanner

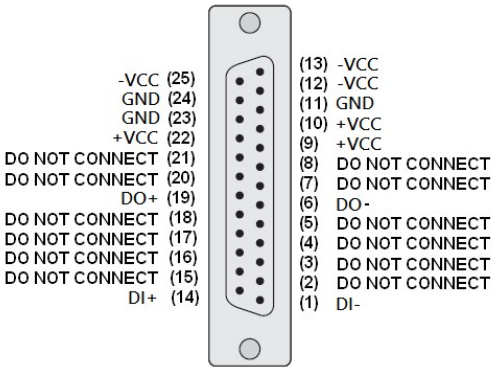
Wire is same to XY2-100 16Bit scanner.



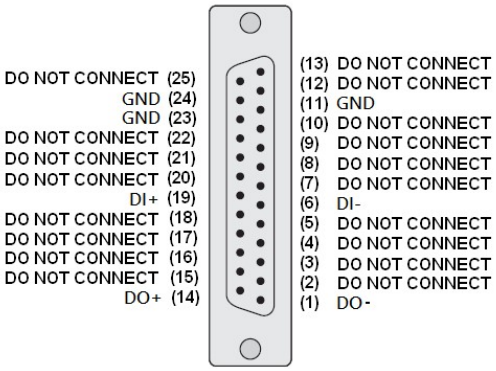
Notice :

- 20Bit Scanner setting：Parameter ID = 67 (20) 、Parameter ID = 68 (0)
- 64Bit Scanner setting：Parameter ID = 65 (5)、Parameter ID = 66 (5)、Parameter ID = 67 (20)、Parameter ID = 68 (0)

3-5-5 ME-Link Scanner

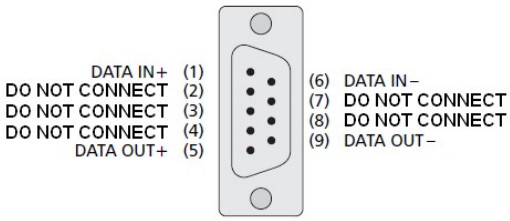


(Scanner)

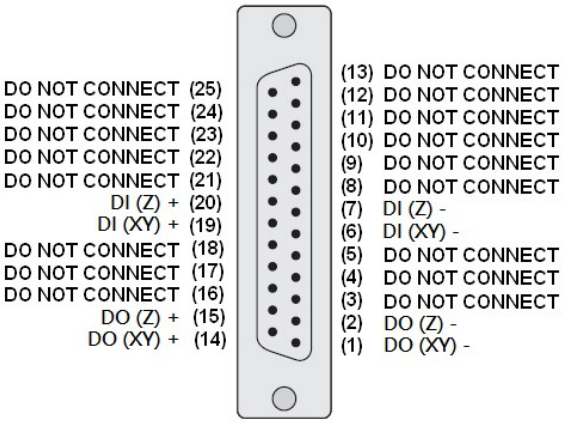


(PMC6)

3-5-6 SL2-100 20Bit Scanner



(Scanner)



(PMC6)

SL2-100 D-SUB 9F		PMC6 P1 D-SUB 25F	
Description	**Pin**	**Description**	**Pin**
DATA IN+	1	DO (XY) + / DO (Z) +	14 / 15
DATA IN-	6	DO (XY) - / DO (Z) -	1 / 2
DATA OUT+	5	DI (XY) + / DI (Z) +	19 / 20
DATA OUT-	9	DI (XY) - / DI (Z) -	6 / 7

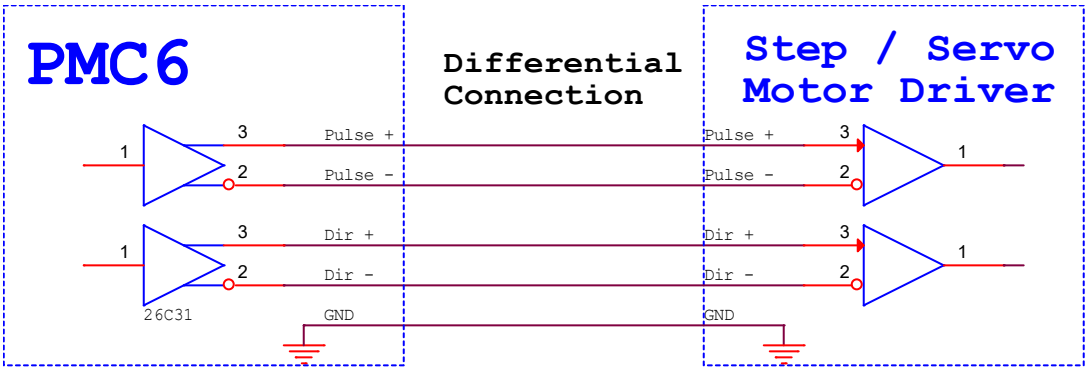
Notice :

- Scanner GNDshould not short to PMC6 GND. Otherwise scanner will keep stasis.

3-6 Stepper / Servo Motor Servo Cable Connection

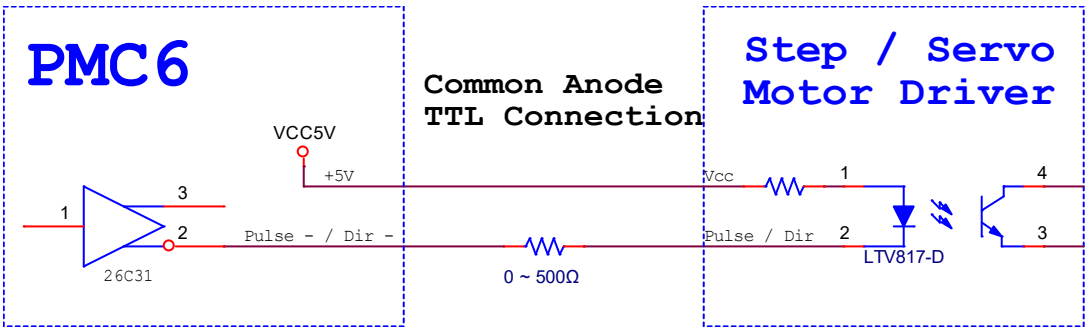
According to the Differential types of Motor Driver, there are three ways of connection between Motor Driver and PMC6's JF3 and JF4 connectors.

3-6-1 Differential Signal

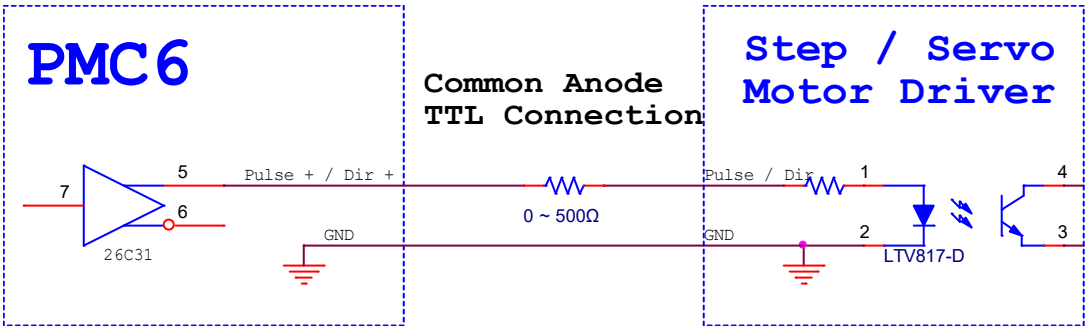


Note : Motor Servo GND should short to PMC6 GND.

3-6-2 Common Anode

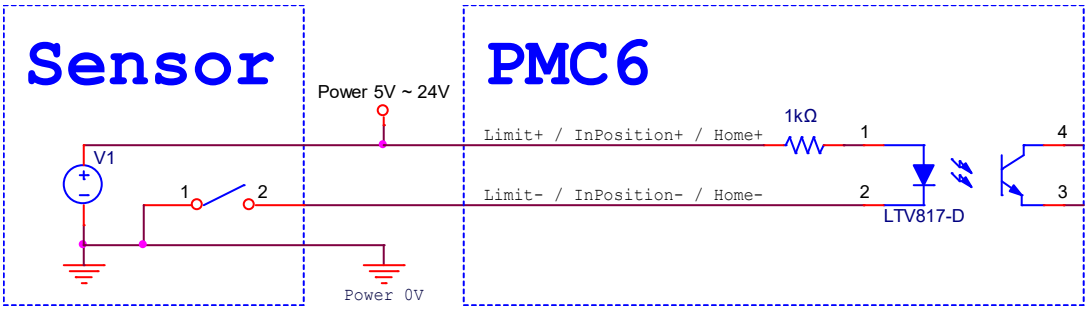


3-6-3 Common Cathode

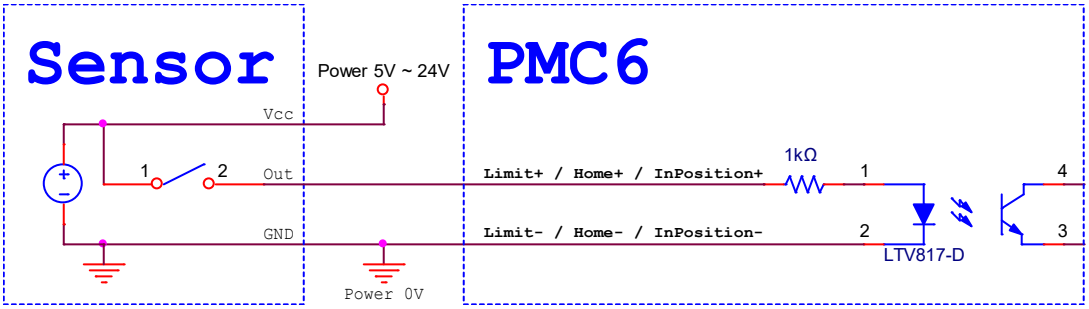


3-7 Sensor Connection

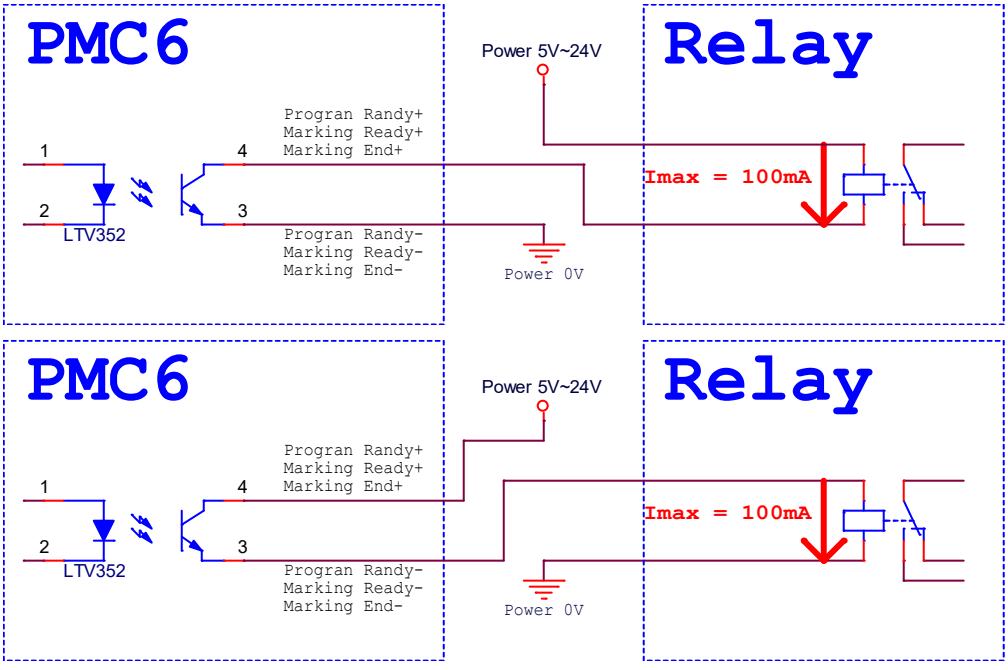
3-7-1 Common Cathode Sensor (NPN)



3-7-2 Common Anode Sensor (PNP)

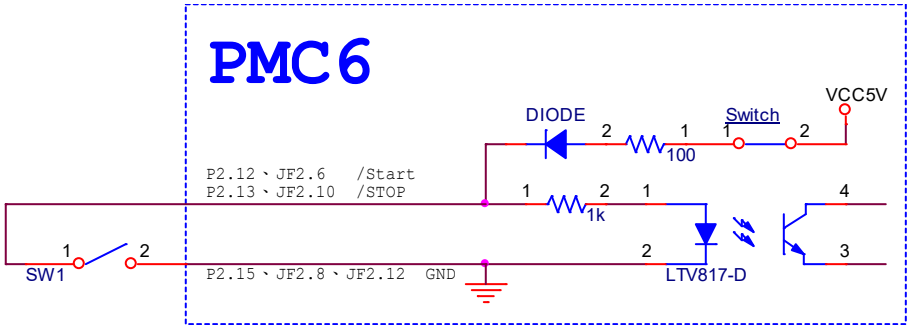


3-8 Optical coupler Connection



3-9 START and STOP Connection

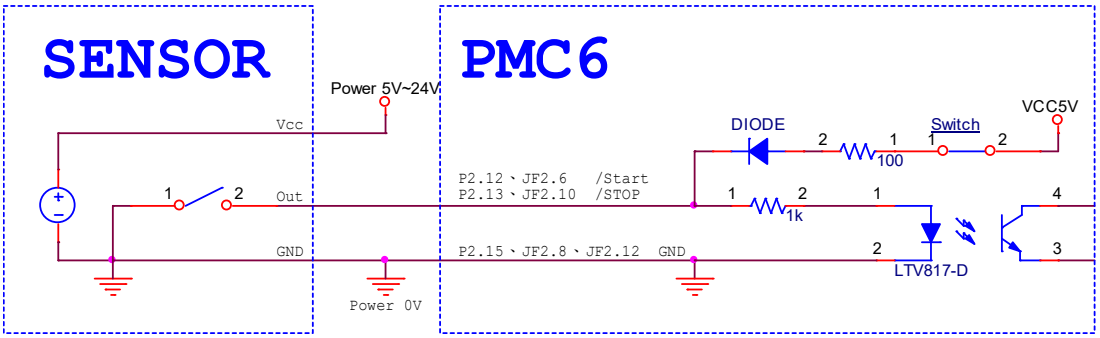
3-9-1 Button



Note： Please set Common Cathode, Please refer to 3-11 HWConfig Setting Description.

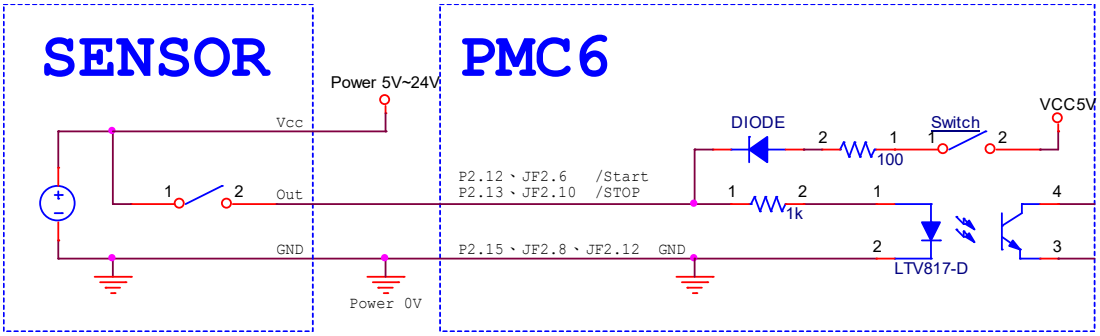
3-9-2 Sensor

- Common Cathode (NPN)



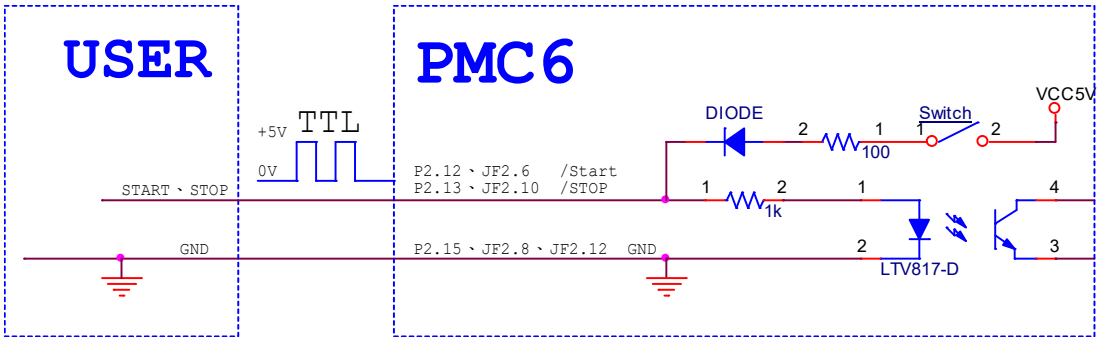
Note： Please set Common Cathode, Please refer to 3-11 HWConfig Setting Description.

- Common Anode (PNP)



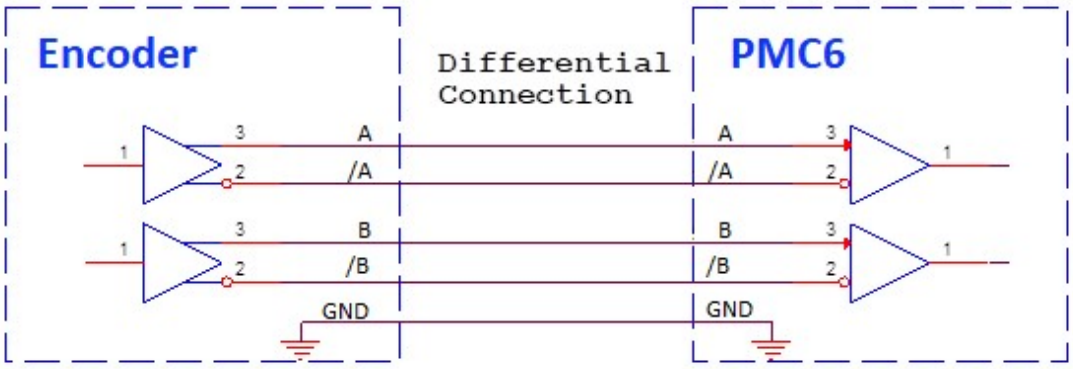
Note： Please set Common Anode, Please refer to 3-11 HWConfig Setting Description.

3-9-3 TTL Signal



Note： Please set Common Anode，Please refer to 3-11 HWConfig Setting Description.

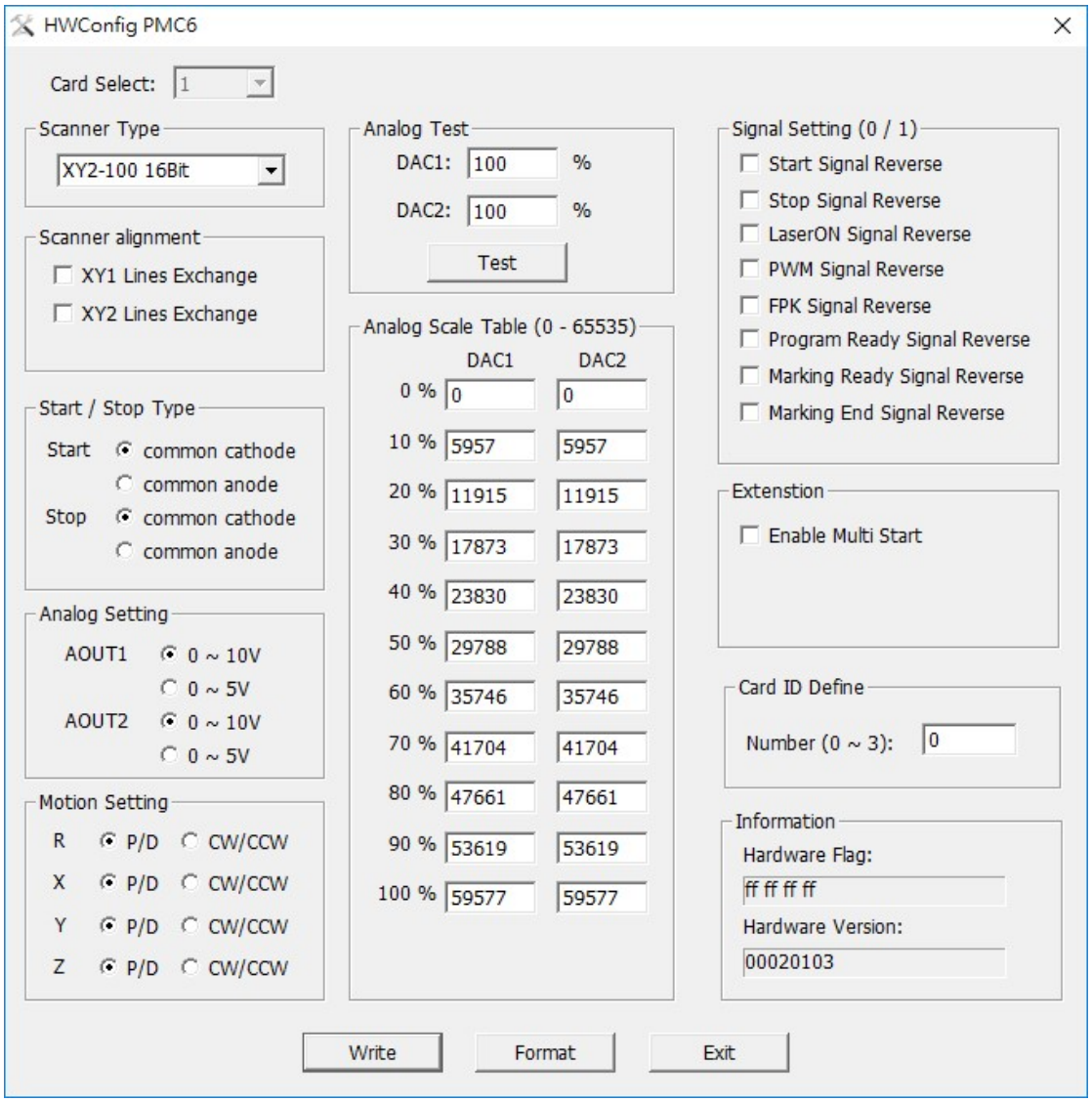
3-10 Encoder Signal



Note : Encoder GND should short to PMC6 GND.

3-11 HWConfig Setting Description

File Address：C:\Program Files\Marking Mate\Drivers\PMC6\HWConfig.exe



3-11-1 Scanner Type

Set P1、JF1 Scanner Type

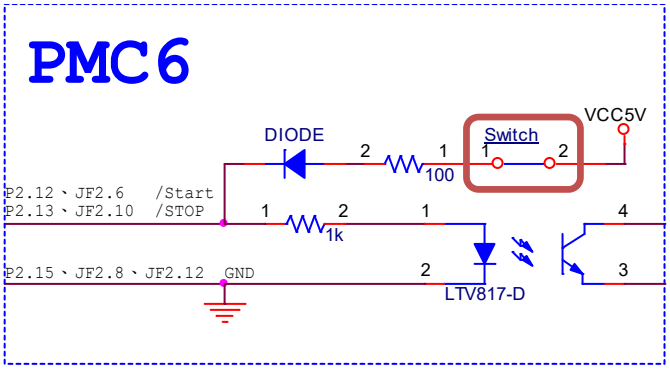
- **XY2-100 16Bit** ： Typical digital signal for most of scanner on market.
- **Raylase XY2-100-E 18Bit** ：Raylase SS-III Communication specifications.
- **CTI XY2-100 20Bit** ：CTI XY2-100 Protocol 20Bit Communication specifications.
- **Canon 20Bit** ： Canon scanner setting : Parameter ID = 67 (20)、Parameter ID = 68 (0)
- **Canon 64Bit** ： Canon scanner setting : Parameter ID = 65 (5)、Parameter ID = 66 (5)、Parameter ID = 67 (20)、Parameter ID = 68 (0).
- **ME-Link**：Need to unlock the function.
- **SL2-100 20Bit**：Need to unlock the function.

3-11-2 Scanner alignment

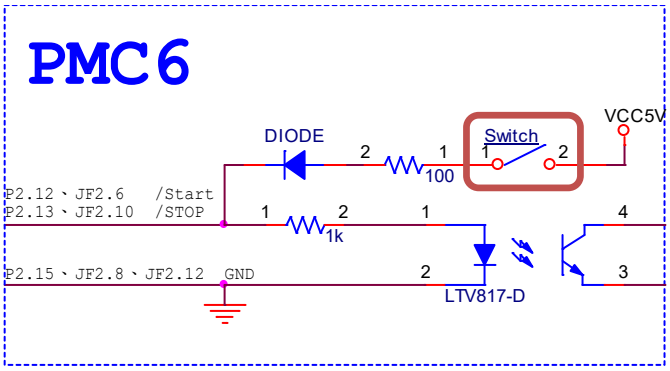
Exchanging X and Y line will affect correction file.

3-11-3 Start / Stop Type

- **Common Anode**：Figure Switch Close, /Start、/Stop Active Low.



- **Commoun Cathode**：Figure Switch Open, Start、Stop Active High.



3-11-4 Extenstion

- **Enable Multi Start**：While in automation mode, multiple starting marking signal trigger is allowed.

3-11-5 Motion Setting

- **Pulse Direction / CW CCW**：Select Motion output Pulse/Dir or CW/CCW.

3-11-6 DAC Setting

Select DAC1& DAC2 as 0~5V or 0~10V.

3-11-7 DAC Scale Table

Fine tune Analog1 and Analog2 output voltage.(0 ~ 65535 ≒ 0V ~ 11V)

#When press Format, the value will be set as default.

3-11-8 DAC Test

Make test Analog1 and Analog2 easier when adjust Analog Scale Table. When pressing Test, Analog1 and Analog2 will change to corresponding voltage.

3-11-9 Signal Setting

Enable Active Low.

3-11-10 Card ID Define

Setting card ID (For multi-card use).

3-11-11 Information

PMC6 related information.

3-11-12 Button

- **Write :** Click to reply any setting change.
- **Format :** Return every setting to default.
- **Exit :** Exit HWConfig.

4. SPI Laser Settings

4-1 Program Settings

If you want to use MarkingMate software to control SPI Laser, you have two ways to make it.

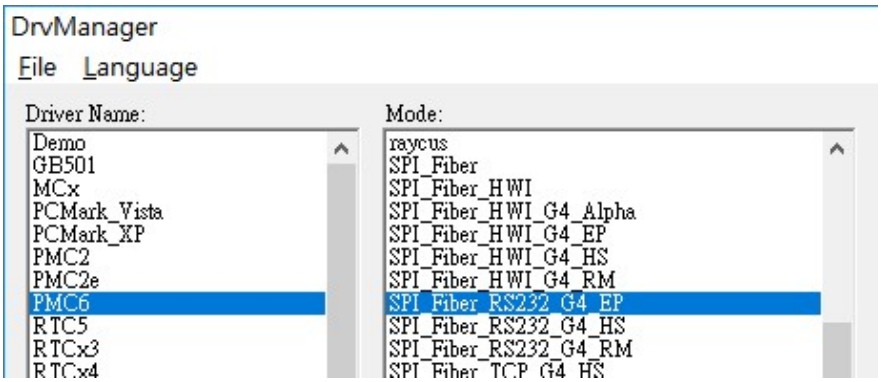
4-1-1 Software control interface

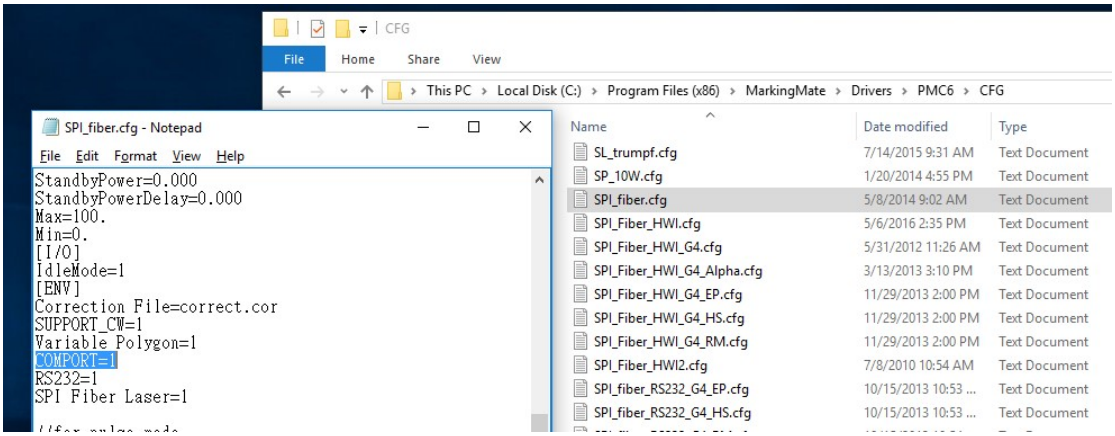
We recommend user to use software control mode to control SPI fiber laser by PMC6. By this mode user only have to connect to laser Break Out Board(BOB) by RS-232 cable and Gate signal.

The RS-232 port located on BOB which is needed to connect to COM port located on PC. If there is no such a COM port on PC, user could use a “USB to COM port convertor” to help.
#Wiring please refer to (4-2 Pin Assignment).

After wiring is completed, user have to set cfg file to SPI_Fiberg by \markingmate\DM.exe and edit “COMPORT = (the current COM port you are using)” within SPI_Fiber.cfg by any text editor.

Please refer to the following picture and cfg list:



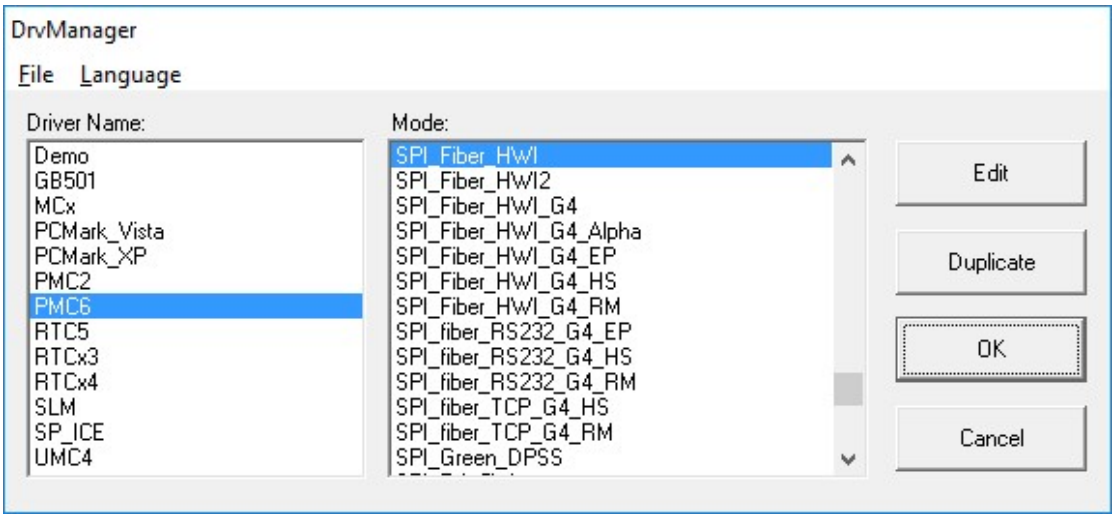


4-1-2 Hardware control interface

If user has to pursue highest performance for laser control, definitely have to use hardware control mode. Please refer to the following (4-2 Pin Assignment) for wiring.

After wiring is completed, user have to set cfg file to SPI_Fiber_HWI.cfg or other suitable cfg by \markingmate\DM.exe.

Please refer to the following picture and cfg list:



4-2 Pin Assignment

4-2-1 Software control interface (RS232)

When you choose the driver of “SPI_Fiber.cfg”, the pin assignments of PMC6 and SPI G3 Laser are as below :

PMC6 - P2：HD-SUB 15F		SPI G3 / G4 (SCSI 68-pin)			SPI break-out board	
Pin	Descriptions	Signal name		Pin	Board description	Pin
6	Laser On/Off	G3	Laser Emission Gate	5	USER_LASER_OUT_EN_H	J7 Pin1
		G4	Laser_emission_gate_h			
15	GND	G3	Laser emission gate low input	39	USER_LASER_OUT_EN_L	J7 Pin2
		G4	**Laser_emission_gate_l**			

PC-RS232 Port：D-SUB 9M		SPI G3 / G4 (SCSI 68-pin)		SPI break-out board	
Pin	Descriptions	Signal name	Pin	Board description	Pin
2	RX	RS-232_TX	25	User RX RS232	J3 Pin2
3	TX	RS-232_RX	26	User TX RS232	J3 Pin3
5	GND	Ground RS	59、60	0V RS232	J3 Pin5

4-2-2 Hardware control interface (HWI)

When you choose the driver of "SPI_Fiber_HWI", the pin assignments of PMC6 and SPI G3 laser will be as below:

PMC6 - JF2 : 26Pin Box		SPI G3 / G4 (SCSI 68Pin)			SPI break-out board	
Pin	**Descriptions**	**Signal name**		**Pin**	**Board description**	**Pin**
1	Analog Out1	G3	Power amplifier active-state current set point	65	USER_PWR_MOD_IN	J6 Pin7
		G4	Al_1 – ext power control			
3	Analog Out2	G3	Power-amplifier simmer current set point	64	USER_PWR_BIAS_IN	J6 Pin6
		G4	Al_2 – ext simmer control			
5	PWM	G3	External Pulse Trigger	13	USER_EXT_TRIG_H	J7 Pin7
		G4	Pulse_trigger_h			
9	Laser On/Off	G3	Laser Emission Gate	5	USER_LASER_OUT_EN_H	J7 Pin1
		G4	Laser_emission_gate_h			
2、4、25	GND	G3	GND_AN	28、29、30、31、32、33	0V_Analogue	J6 Pin1
		G4	GND_A			
		G3	Unused	27		
		G4	GND_A			
		G3	External Pulse Trigger low input	47	USER_EXT_TRIG_L	J7 Pin8
		G4	Pulse_trigger_ext_l			
		G3	Laser emission gate low input	39	USER_LASER_OUT_EN_L	J7 Pin2
		G4	Laser_emission_gate_l			

PMC6 - JF7 : 20Pin Box		SPI G3 / G4 (SCSI 68Pin)			SPI break-out board	
Pin	**Descriptions**	**Signal name**		**Pin**	**Board description**	**Pin**
6	Output 22	G3	Pulsed / CW Mode select	21	USER_PULSE_N_CW_H	J7 Pin11
		G4	Laser_Pulse_CW_h			
7	Output 23	G3	Globle Enable	7	USER_GLOBAL_EN_H	J7 Pin5
		G4	Laser_enable_h			
8	Output 24	G3	Alignment laser enable	6	USER_PT_LASER_EN_H	J7 Pin3
		G4	Pilot_laser_enable_h			
9	Output 25	G3	State Select: bit 0	17	USER_CFG_0	J2 Pin1
		G4	DI_0			
10	Output 26	G3	State Select: bit 1	18	USER_CFG_1	J2 Pin2
		G4	DI_1			
11	Output 27	G3	State Select: bit 2	19	USER_CFG_2	J2 Pin3
		G4	DI_2			
12	Output 28	G3	State Select: bit 3	20	USER_CFG_3	J2 Pin4
		G4	DI_3			
13	Output 29	G3	State Select: bit 4	51	USER_CFG_4	J2 Pin5
		G4	DI_4			
14	Output 30	G3	State Select: bit 5	52	USER_CFG_5	J2 Pin6
		G4	DI_5			
17、18	GND	G3	Pulsed / CW Mode select low	55	USER_PULSE_N_CW_L	J7 Pin12
		G4	Laser_Pulse_CW_l			
		G3	Global enable low input	41	USER_GLOBAL_EN_L	J7 Pin6
		G4	Laser_enable_l			
		G3	Alignment laser enable low input	40	USER_PT_LASER_EN_L	J7 Pin4
		G4	Pilot_laser_enable_l			
		G3	GND_ISOD	36、37、42、43、44、45、46、48、50、56、	0V_ISO_D	J11 Pin1
		G4	GND_D			
		G3	0V Supply for fast output opto-couplers	58		
		G4	GND_D			
		G3	GND_RS	59、60		
		G4	GND			

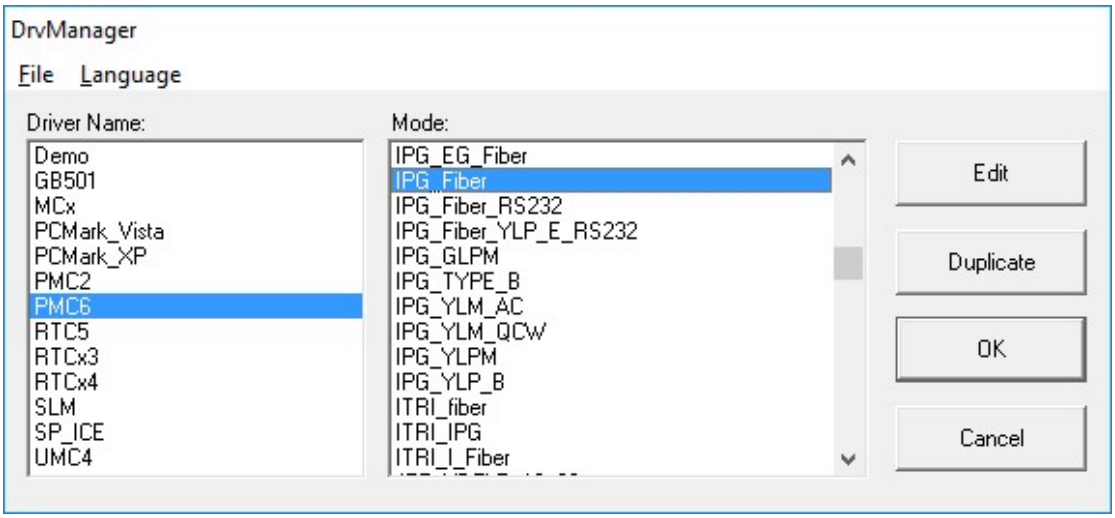
PMC6 - JF6：20Pin Box		SPI G3 / G4 (SCSI 68Pin)			SPI break-out board	
Pin	**Descriptions**	**Signal name**		**Pin**	**Board description**	**Pin**
9	Input 9	G3	Seed laser fire indicator	3	User_seed_fire	J11 Pin2
		G4	Monitor			
10	Input 10	G3	Pre-amplifier current fault	9	User_pre_amp_over_cur_n	J11 Pin5
		G4	Alarm			
11	Input 11	G3	Base plate temperature fault	8	User_base_temp_fault_n	J11 Pin4
		G4	Laser_temperature			
12	Input 12	G3	Beam collimator fault	11	User_bdo_fault_n	J11 Pin7
		G4	Beam_delivery			
13	Input 13	G3	Power-amplifier current fault	10	User_drv_pwr_mon_n	J11 Pin10
		G4	System_fault			
14	Input 14	G3	Reserved fault indicator	12	User_seed_temp_fault_n	J11 Pin3
		G4	Laser_deactivated			
15	Input 15	G3	Power Supply Fault	16	User_pwr_amp_over_cur_n	J11 Pin6
		G4	Laser_emission_warning			
16	Input 16	G3	Laser Ready (no fault)	14	User_laser_ready	J11 Pin9
		G4	Laser_is_on			
17、18	GND	G3	Unused	34	0V_ISO_D	J11 Pin1
		G4	GND			

5. IPG Laser Settings

5-1 Program Settings (Also apply for Raycus and JPT Laser)

If you want to use MarkingMate software to control IPG Laser, you have to do the right program settings first, please follow the below steps.

Execute the program DM.exe under the directory of C:\Program Files\MarkingMate, a dialogue box will be displayed as below. Choose the PMC6 of Driver Name and choose the suitable cfg according to the following table, and then click “OK” button.



5-2 Pin Assignment

PMC6 - JF2 : 26Pin Box		IPG：D-SUB 25Pin	
Pin	**Descriptions**	**Signal name**	**Pin**
5	PWM Output	Pulse Repetition Rate Input	20
9	Laser On/off	Laser Modulation Input	19
11	Leading Light On/Off	[Note 1]Guide Light On/Off	22
21	MO	[Note 2] MO On/Off	18

PMC6 - JF7 : 20Pin Box		IPG：D-SUB 25Pin	
Pin	**Descriptions**	**Signal name**	**Pin**
3	Output 19	[Note 1] Guide Light On/Off	22
4	Output 20	[Note 2] MO On/Off	18
5	Output 21	D0	1
6	Output 22	D1	2
7	Output 23	D2	3
8	Output 24	D3	4
9	Output 25	D4	5
10	Output 26	D5	6
11	Output 27	D6	7
12	Output 28	D7	8
13	Output 29	Latch	9
17、18	GND	Ground	10, 14
19	+5V	EMStop	[Note 3]17, 23

Note 1：You can select either JF2 pin 11 or JF7 pin 4 to connect with.

Note 2：You can select either JF2 pin 6 or JF7 pin 3 to connect with.

Note 3：In IPG EG Type Pin 17 should open to +5V.

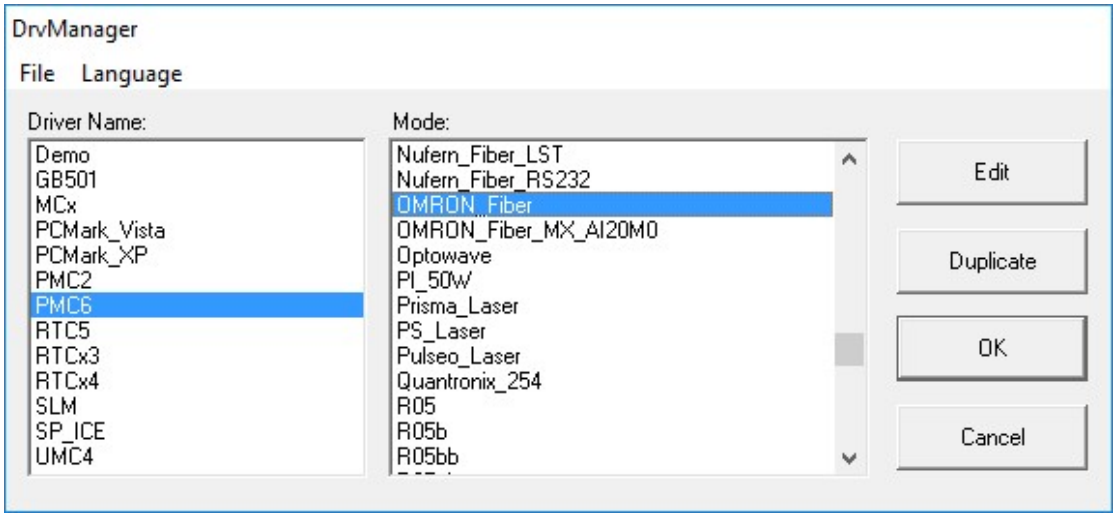
PMC6 - JF6：20Pin Box		IPG：D-SUB 25Pin	
Pin	**Descriptions**	**Signal name**	**Pin**
11	Input 11	Refer to IPG Manual	12
12	Input 12	Refer to IPG Manual	16
13	Input 13	Refer to IPG Manual	21
14	Input 14	Refer to IPG Manual	11

6. OMRON Laser Settings

6-1 Program Settings

If you want to use MarkingMate software to control IPG Laser, you have to do the right program settings first, please follow the below steps.

Execute the program DM.exe under the directory of C:\Program Files\MarkingMate, a dialogue box will be displayed as below. Choose the PMC6 of Driver Name and choose the suitable cfg according to the following table, and then click “OK” button.



6-2 Pin Assignment

When you choose the driver of “OMRON_Fiber”, the pin assignments of PMC6 and OMRON laser will be as below :

PMC6-P2：HD-SUB 15M		OMRON I/O Port：D-SUB 15M	
Pin	**Descriptions**	**Pin**	**Descriptions**
6	LASER ON	5	LASER ON H
15	GND	6	LASER ON L
10	LAMP	7	LD ON H
15	GND	8	LD ON L

Note：OMRON RS-232 Serial Port has to connect to RS-232 Port on PC.

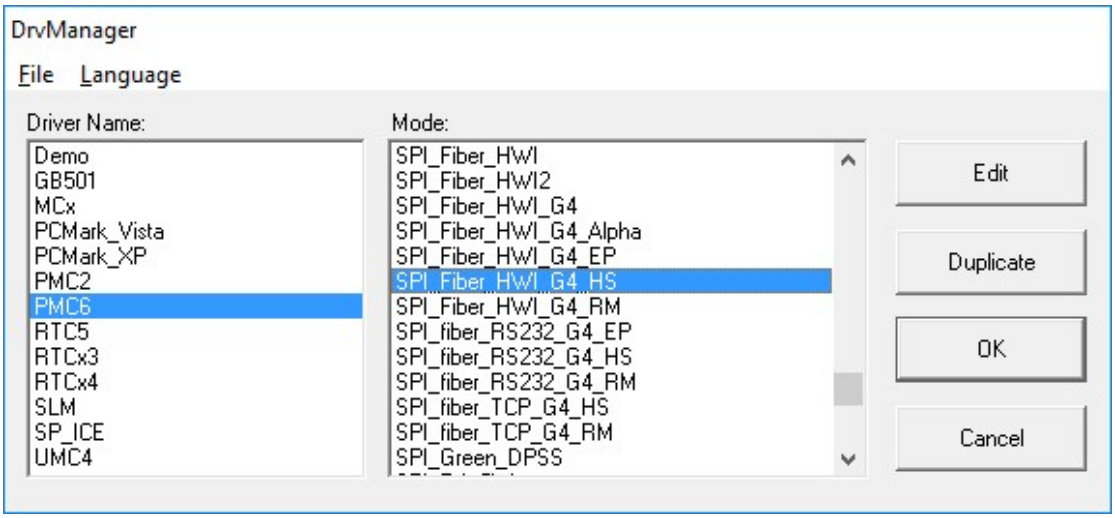
7 Using RS-232

7-1 What is RS-232

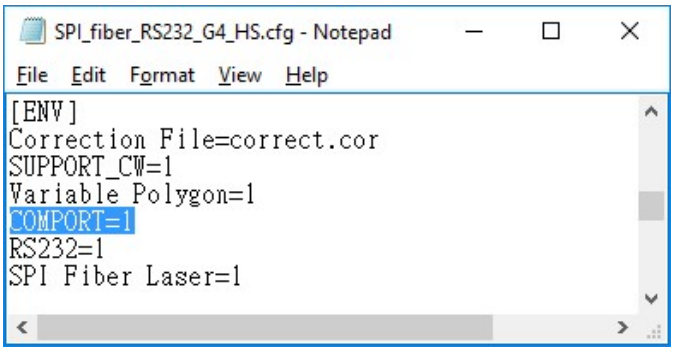
RS-232 is a kind of serial port. Common type of RS-232 connector is 9 pin D-Sub.
Some kinds of laser types needed to control by RS-232 port for tuning laser parameter, such as power percentage, frequency…etc.

7-2 Setting to use RS-232 to control laser

Take SPI G4 HS laser controlled by RS-232 as example. After user has executed \MarkingMate\DM.exe , chosen PMC6 at Driver Name column, and picked SPI_fiber_RS232_G4_HS.cfg at Mode column, to apply the setting by clicking OK. The location of cfg file is \MarkingMate\Drivers\PMC6\cfg\. Refer to the following picture :

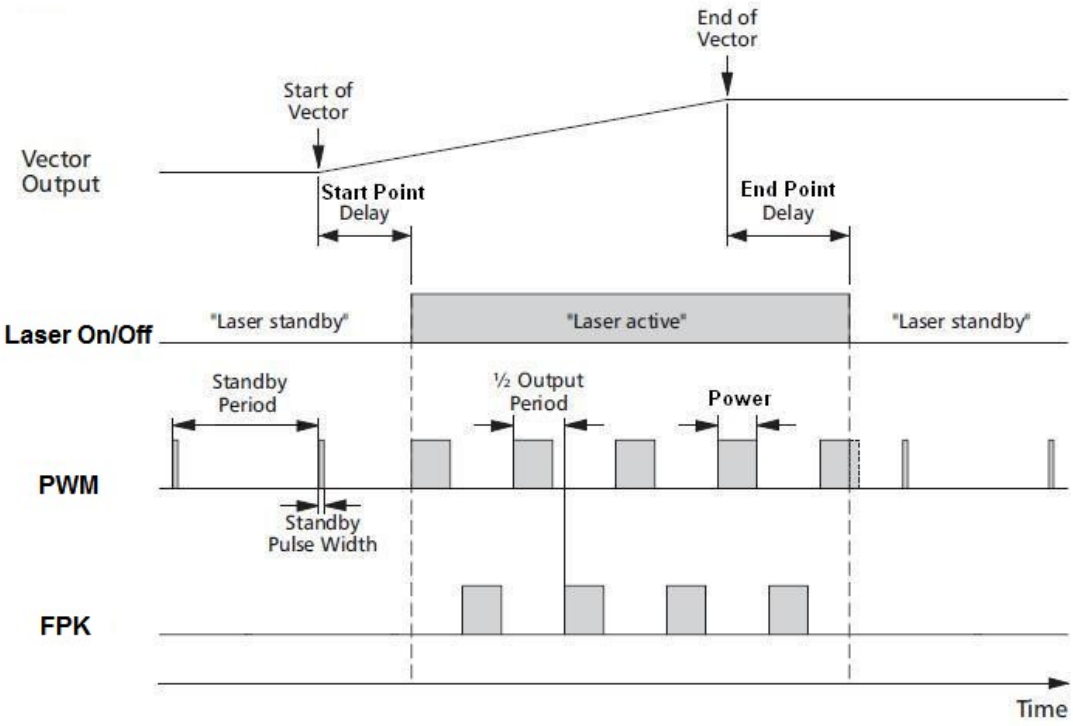


Open the given file by favorite text editor. There should be two instructions under [ENV] sector, such as RS232=1 and COMPORT=XXX. RS232=1 means control laser by RS-232. XXX within COMPORT=XXX means the using Com Port number. Default value is 1 which means using COM port 1 to control laser. Manually change this value to assign other port if necessary.

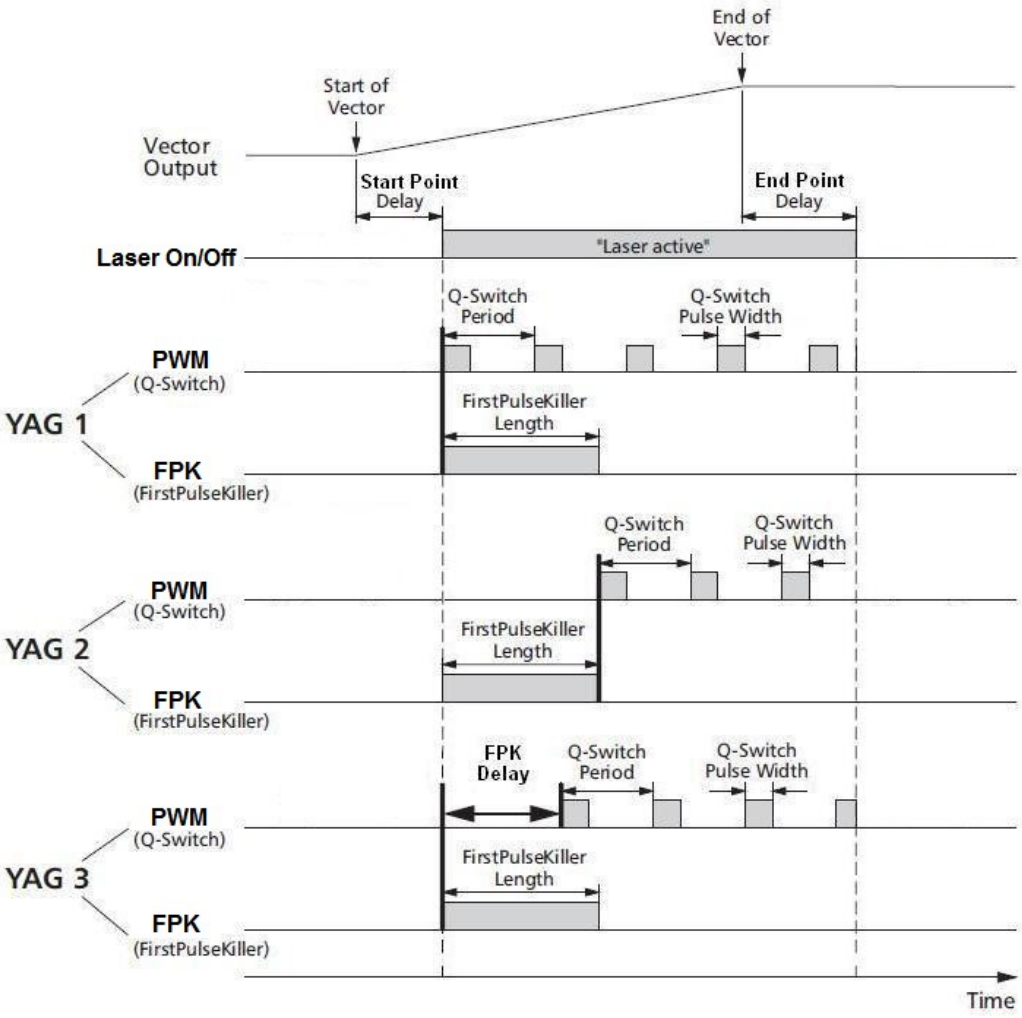


Appendix1 : Various Laser Setting Modes

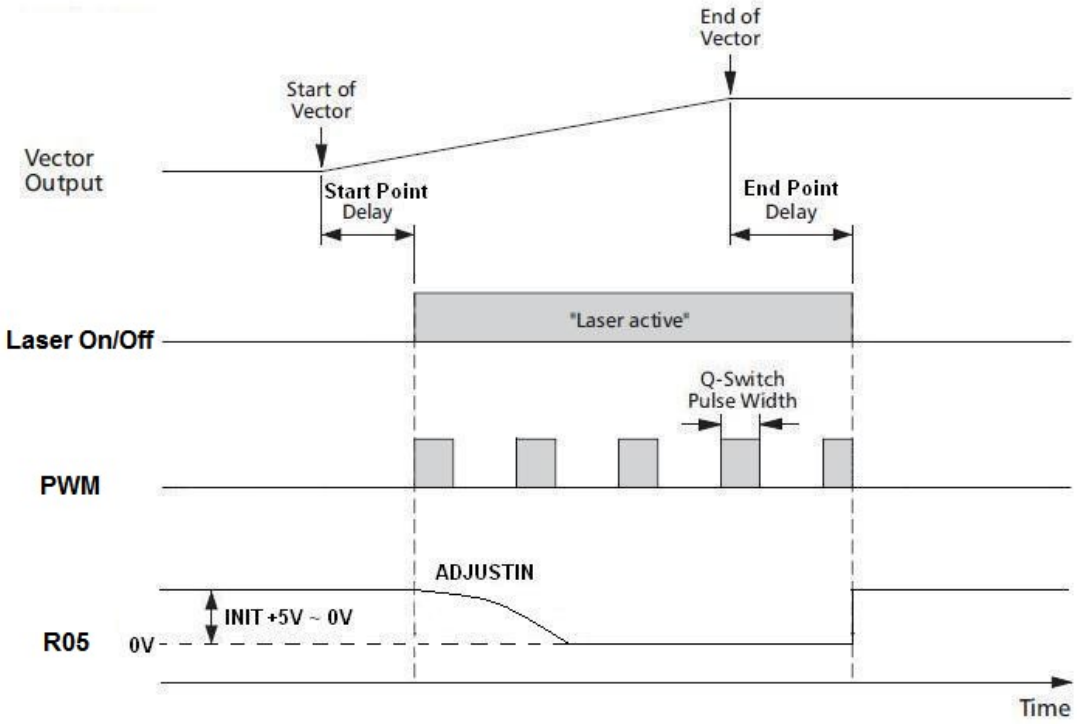
TYPE 1：CO2 Mode



TYPE 2：YAG 1-3 Mode



TYPE 3：R05 Mode



Appendix2 : LED Status

D1: Boot success is bright, boot fail is dark. **(Note 1)**

D9:Power status. Power level normal is bright.

D2 ~ D5: STATUS

Status	Descript	Note
D2D3 and D4D5 flickering	Boot success but not execute software	Normal
D2 flickering, others darkness	Software opened	Normal
Flickering at the same time	Boot error and enter backup session.	Failure**(Note2)**
Keep bright or darkness	Boot error.	Failure**(Note3)**
Shimmer	JF11(4 pin) power supply error	Failure**(Note4)**

Note1: If D1 is darkness, please contact the product supplier for help.

Note2: Please confirm if device manager has found the control card. If yes, please execute HWUpdate.exe to update. If no, please reboot PC without cutting off power and check again if it is found.

Note3:Please shut down PC first then boot again to confirm if the card goes to normal. If not, please contact the product supplier for help.

Note4:Check if JF11 power supply is normal.