

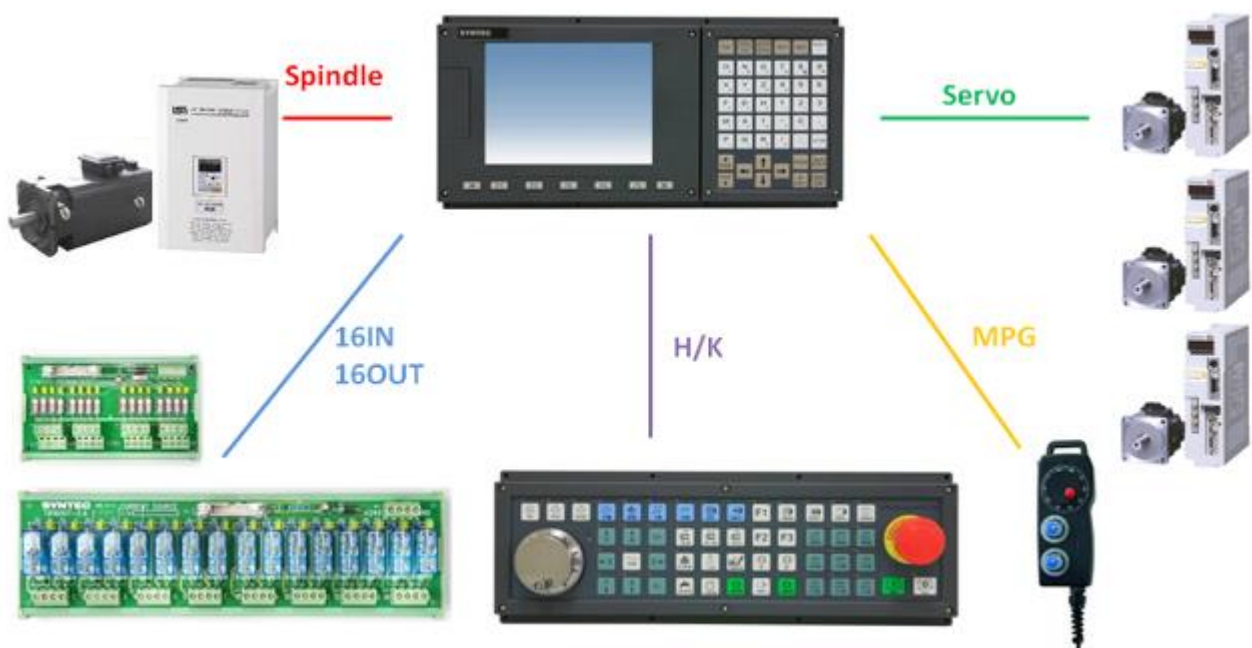
Description:

The Syntec 6A Series Controllers are based on embedded systems architectures and are equipped with 8-inch LCD displays and universal text key panels. The systems come with integrated servo axes, spindles, and hand wheels. USB ports are also available on the front panel. This series provides high stability, ease of use, and high reliability at a low price.

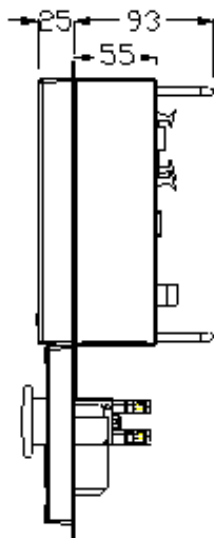
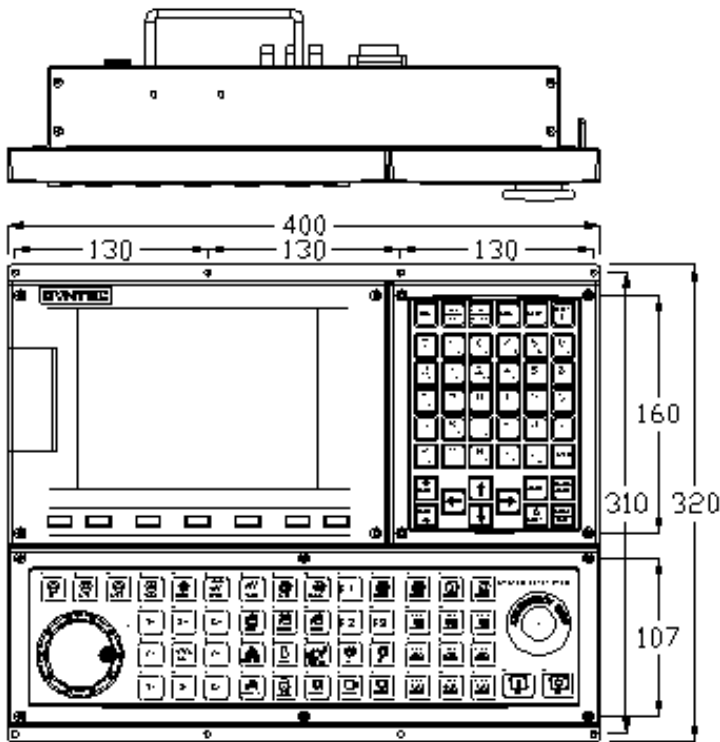
General Specifications:

- 3-axis servo positioning and control
- Universal text key panel
- 1 spindle DA (+/-10V), including one Encoder
- Dedicated matrix scan port on the operation panel
- 1 dedicated hand wheel axis, including 7 IN signals
- 2 USB ports are provided on the front panel, supporting hot swapping
- 16 Direct Input points
- Adapter (100~240V AC 50/60Hz) included
- 16 Direct Output points
- Operating ambient temperature 55°C

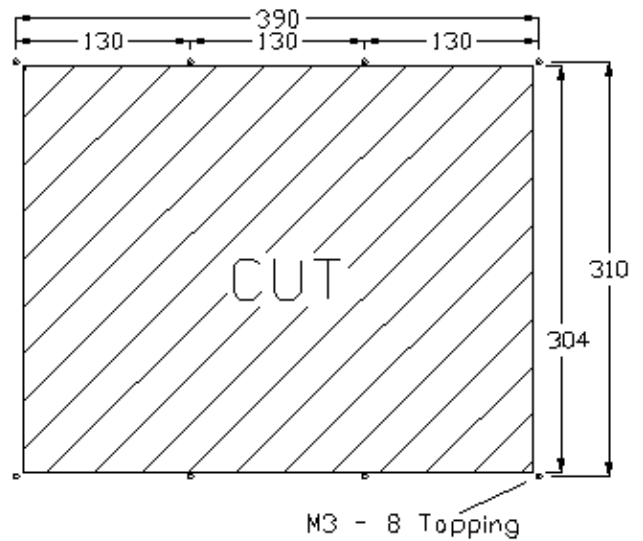
System Roadmap:



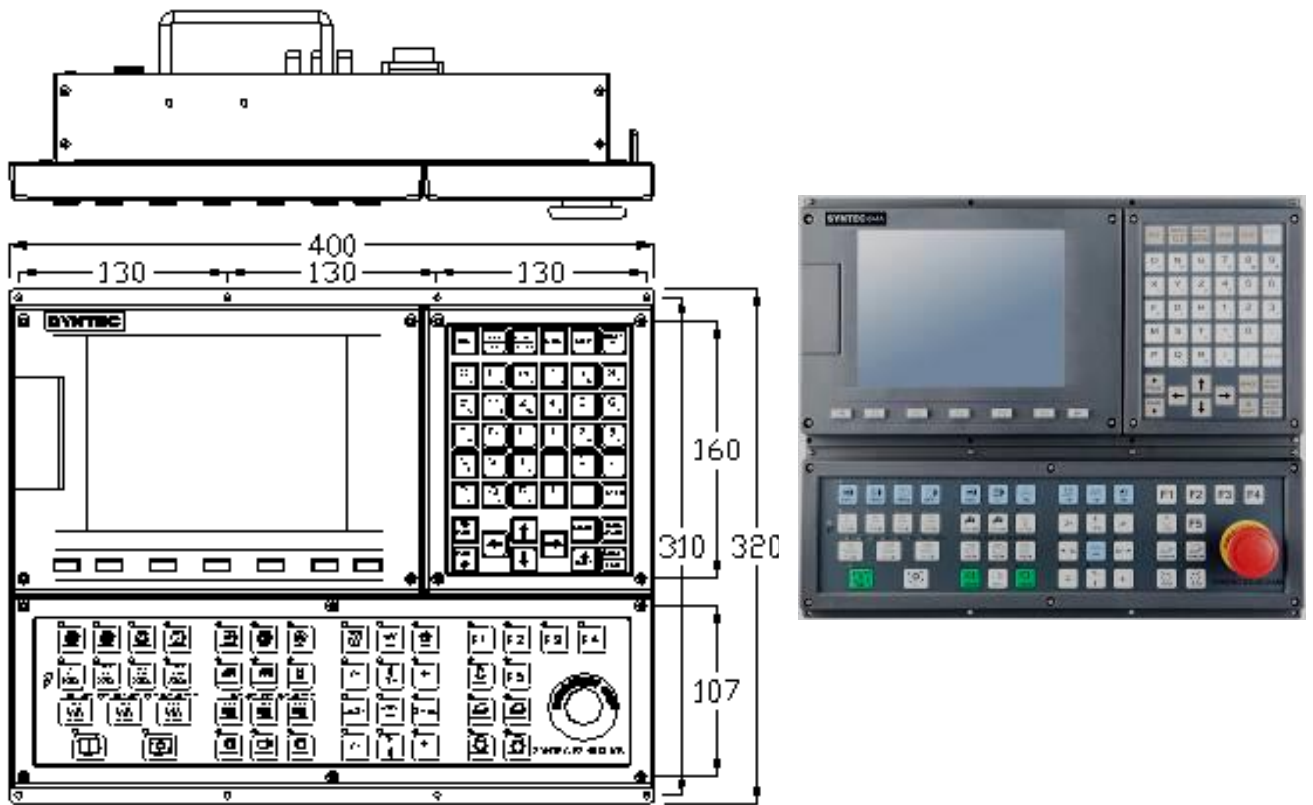
Mechanical Specifications:



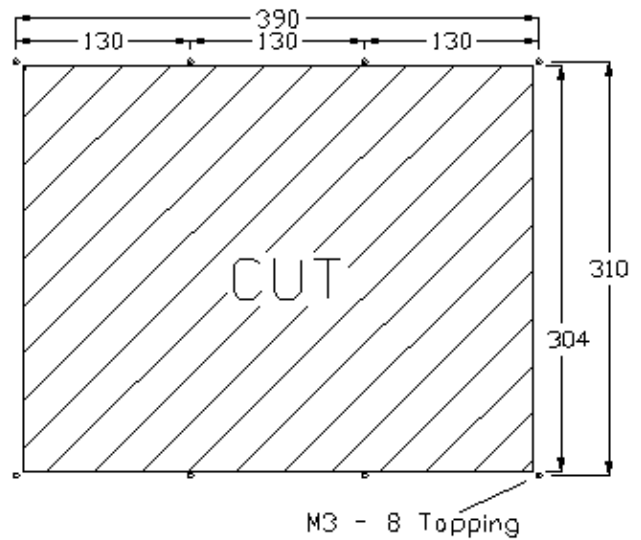
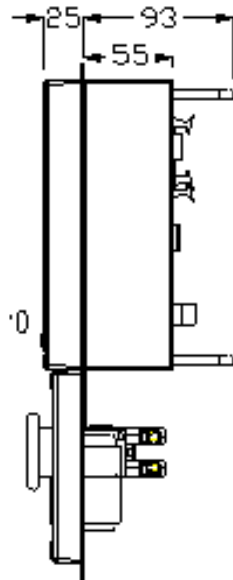
◆ Installation Hole Size Specifications (units: mm)



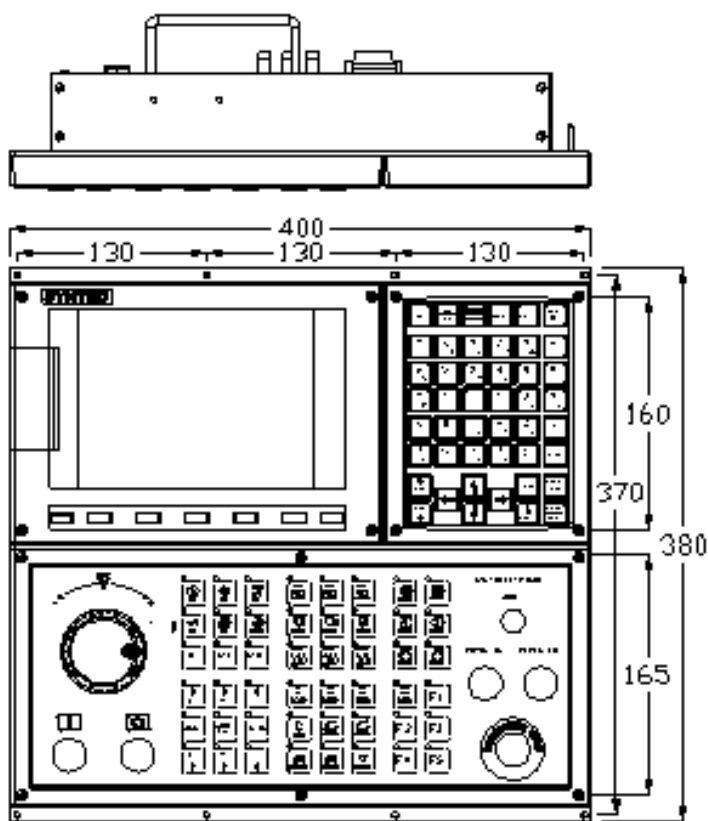
6A-4012-T2 Structural Dimensions Diagram



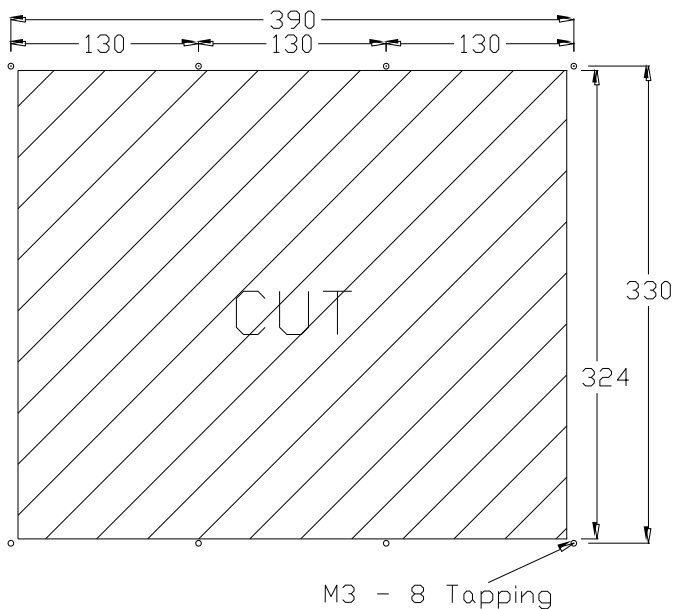
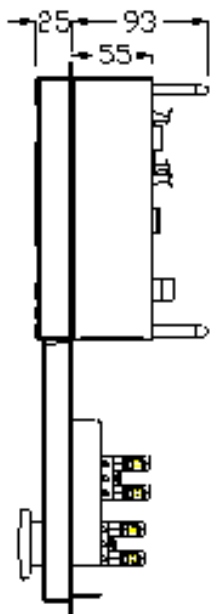
◆ Installation Hole Size Specifications (units: mm)



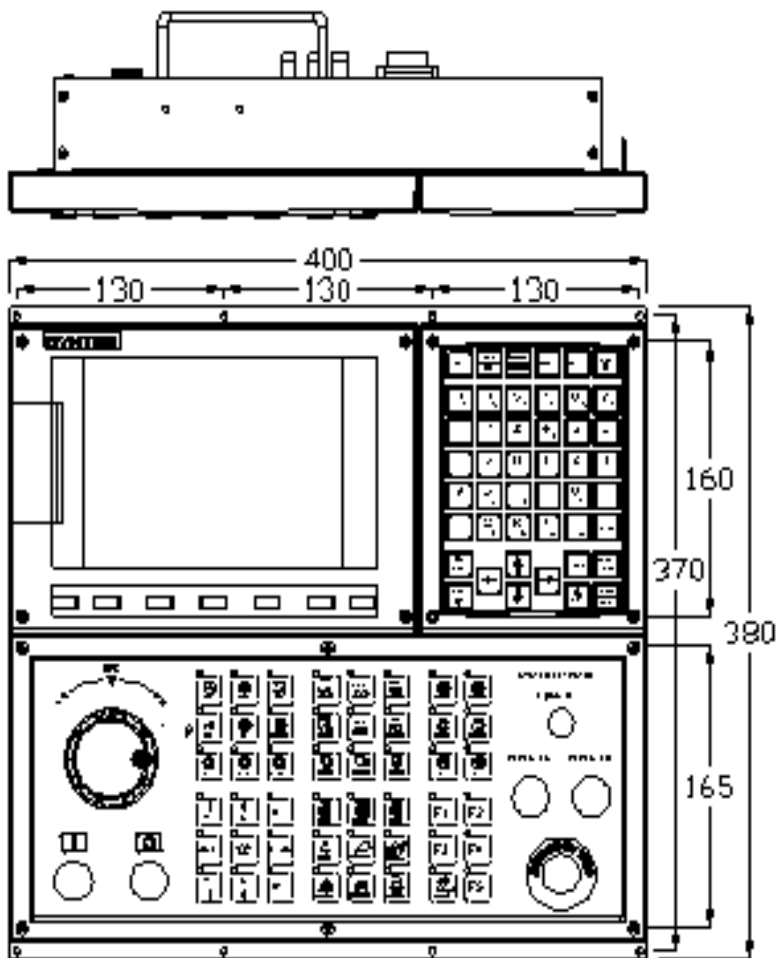
6A-4012-M Structural Dimensions Diagram



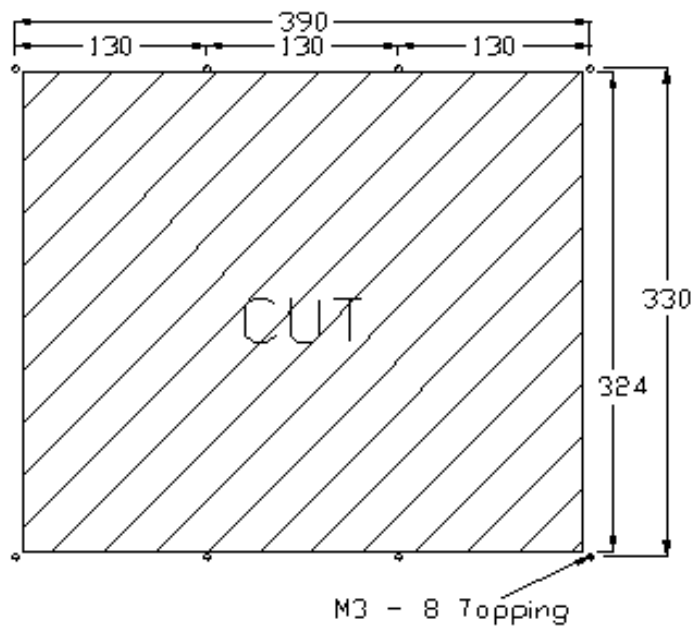
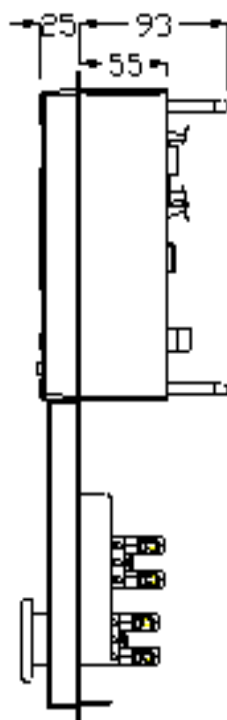
◆ Installation Hole Size Specifications (units: mm)



6A-4018-M2 Structural Dimensions Diagram



◆ Installation Hole Size Specifications (units: mm)

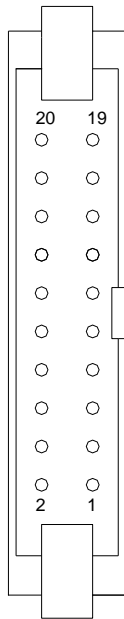


6A-4018-T3 Structural Dimensions Diagram

Connector Pindefine :

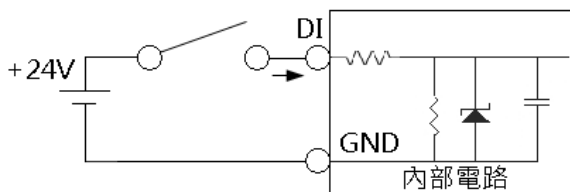
External Input Interface (X1) :

The controller itself provides a total of 16 I digital input signals to use with the MLC. Direct connections can be made to various types of test and sensor devices (such as proximity switches, micro switches, etc..) for use with the TB16IN, thereby simplifying wiring.



Pin	Signal	Pin	Signal
01	--	02	--
03	GND	04	GND
05	Input 7	06	Input 15
07	Input 6	08	Input 14
09	Input 5	10	Input 13
11	Input 4	12	Input 12
13	Input 3	14	Input 11
15	Input 2	16	Input 10
17	Input 1	18	Input 9
19	Input 0	20	Input 8

- This is a Source input. (Commonly known as: positive common +COM)



Internal circuit

● We also provide input terminal block modules (TB16-IN) with finished wires, which you are welcome to take advantage of.

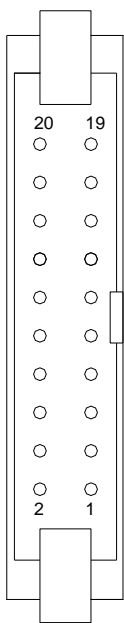
- If you do not wish to use TB16-IN, you can also connect your own wires.
- Standard wire lengths: 1.8M 3.5M 5.5M 8M.
- Input terminal block module (TB16-IN) support information:

Terminal block	Wiring
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module	specifications
TB16IN-PHO	Supports SOURCE and SINK
TB16IN	Supports SOURCE

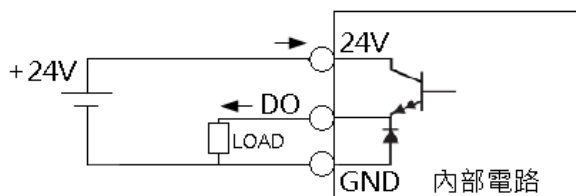
External Output Interface (Y1) :

Direct connections can be made to various driving switches (such as electromagnetic contactors, relays, etc.) for use with TB16OUT, thereby simplifying wiring.



Pin	Signal	Pin	Signal
01	24V	02	24V
03	GND	04	GND
05	Output 7	06	Output 15
07	Output 6	08	Output 14
09	Output 5	10	Output 13
11	Output 4	12	Output 12
13	Output 3	14	Output 11
15	Output 2	16	Output 10
17	Output 1	18	Output 9
19	Output 0	20	Output 8

● This is a Source input. (Commonly known as: positive common +COM); each Output has its own independent short-circuit protection. When the short-circuit protection is triggered, the external load is cut off. The operational current allowed for each output point is 150 mA; please do not exceed this limit.



Internal circuit

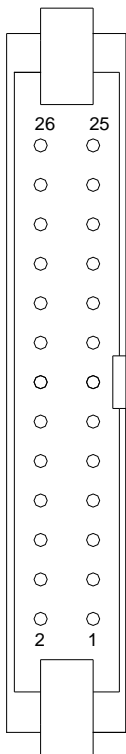
● We also provide input terminal block modules (the TB16-OUT Series) with finished

wires, which you are welcome to take advantage of.

- If you do not wish to use TB16-OUT, you can also connect your own wires.
- Standard wire lengths: 1.8M 3.5M 5.5M 8M.
- Output terminal block module (TB16-OUT) support information:

Terminal block module	Wiring specifications
TB16OUT-R8	8 DC/AC relay outputs.
TB16OUT-R8T8	16 outputs, including 8 DC transistor outputs and 8 DC/AC Relay outputs. ⚠ The maximum allowed output for each transistor is 24V/2A; it must be confirmed before usage that loads will not exceed these limits.
TB16OUT-T16	⚠ The maximum allowed DC output for the 16 transistors is 24V/2A.

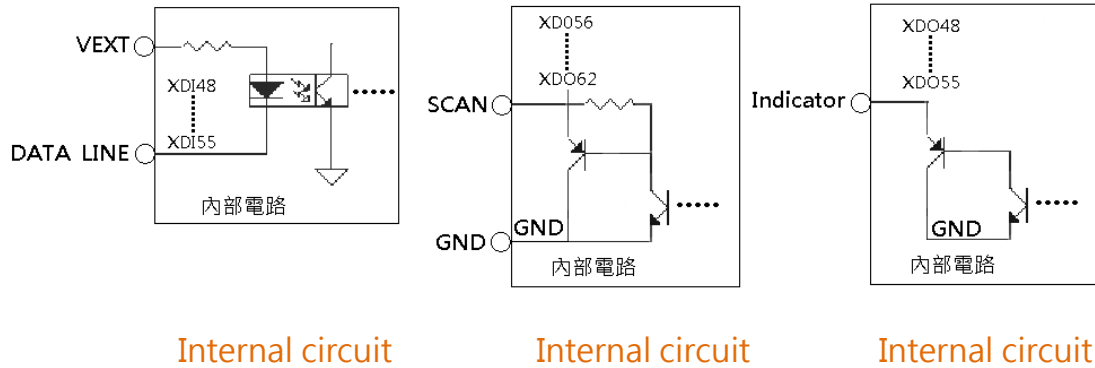
Operation Panel Matrix Scan Interface (H/K):



Pin	Signal	Pin	Signal
01	XDO 48	02	XDO 49
03	XDO 50	04	XDO 51
05	XDO 52	06	XDO 53
07	XDO 54	08	XDO 55
09	XDO 56	10	XDO 57
11	XDO 58	12	XDO 59
13	XDO 60	14	XDO 61
15	XDO 62	16	GND
17	VEXT	18	XDI 48
19	XDI 49	20	XDI 50
21	XDI 51	22	XDI 52
23	XDI 53	24	XDI 54
25	XDI 55	26	--

- In terms of application, the matrix scan interface circuit is divided into the Data

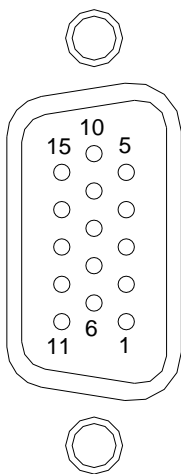
line, Scan, and Indicator portions, as shown in the three blocks in the interface circuit below:



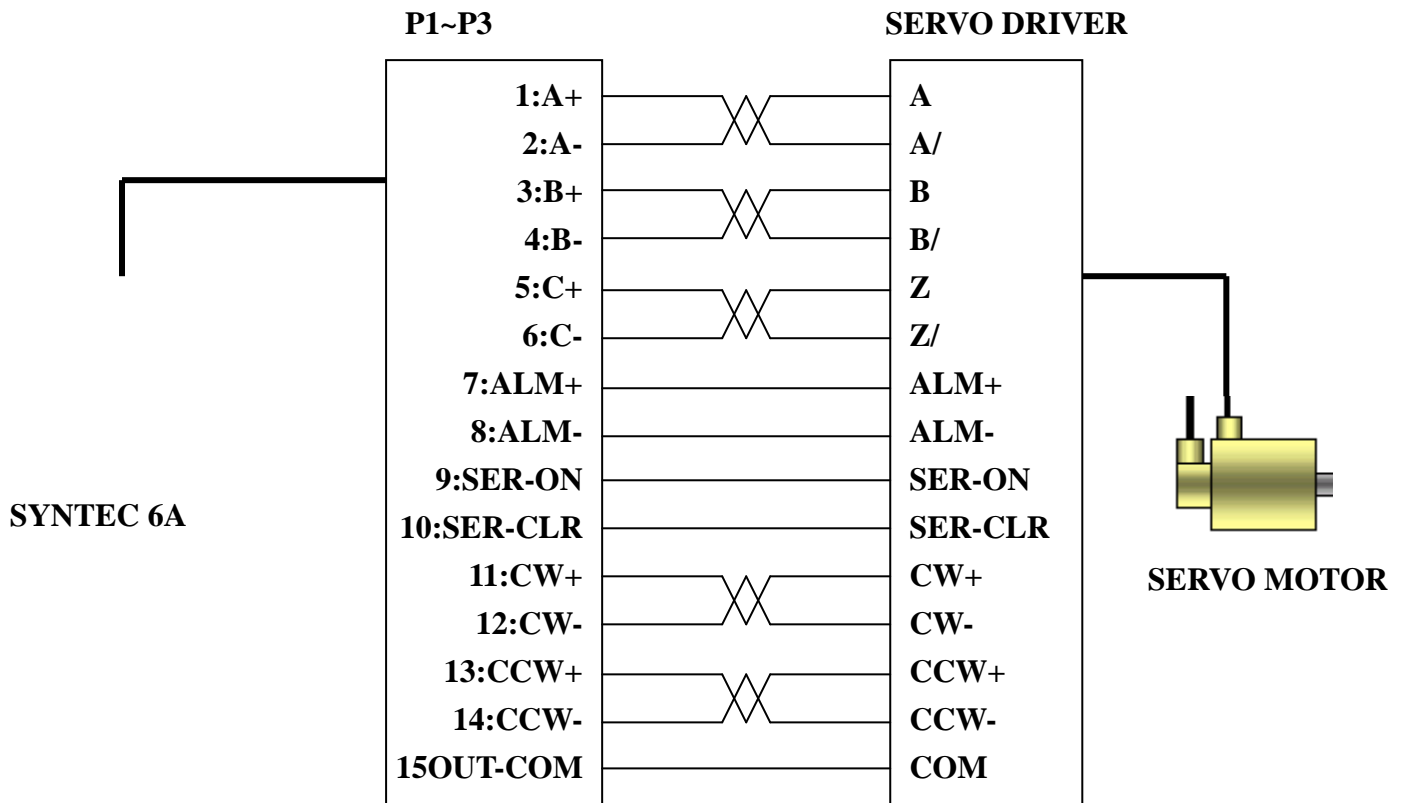
● Please note that the VEXT and GND power source wirings can only withstand voltages within the 5VDC ±10% range. We recommend using the 5V European-standard terminal provided by the controller itself for wiring.

⚠ Please do not connect the 24VDC from the machine to the HardKey European-standard power source terminal.


Servo Control Interface (P1~P3):



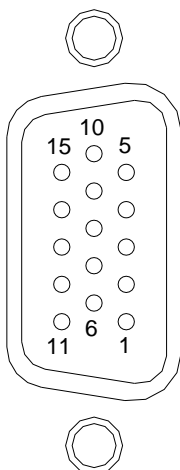
Pin	Signal	Pin	Signal	Pin	Signal
1	A+	6	Z-	11	CW+
2	A-	7	ALM+(+24V)	12	CW-
3	B+	8	ALM-(GND)	13	CCW+
4	B-	9	SERVO-ON	14	CCW-
5	Z+	10	SERVO-CLR	15	OUT_COM



Servo axis P-COMMAND wiring schematic diagram:

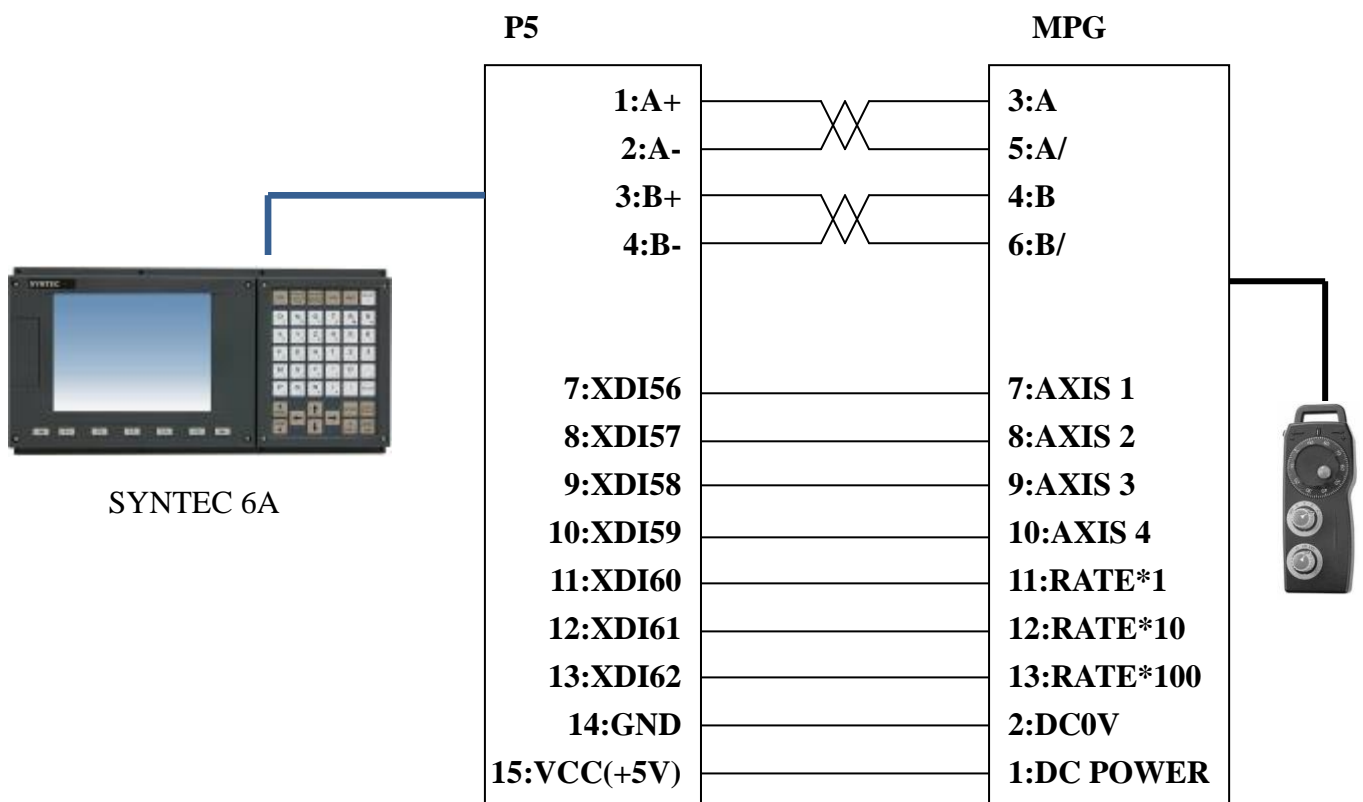
 We recommended that you check that the ALM+ and ALM- signal wires are properly connected before operating the machine.

Dedicated Hand Wheel Interface (MPG):

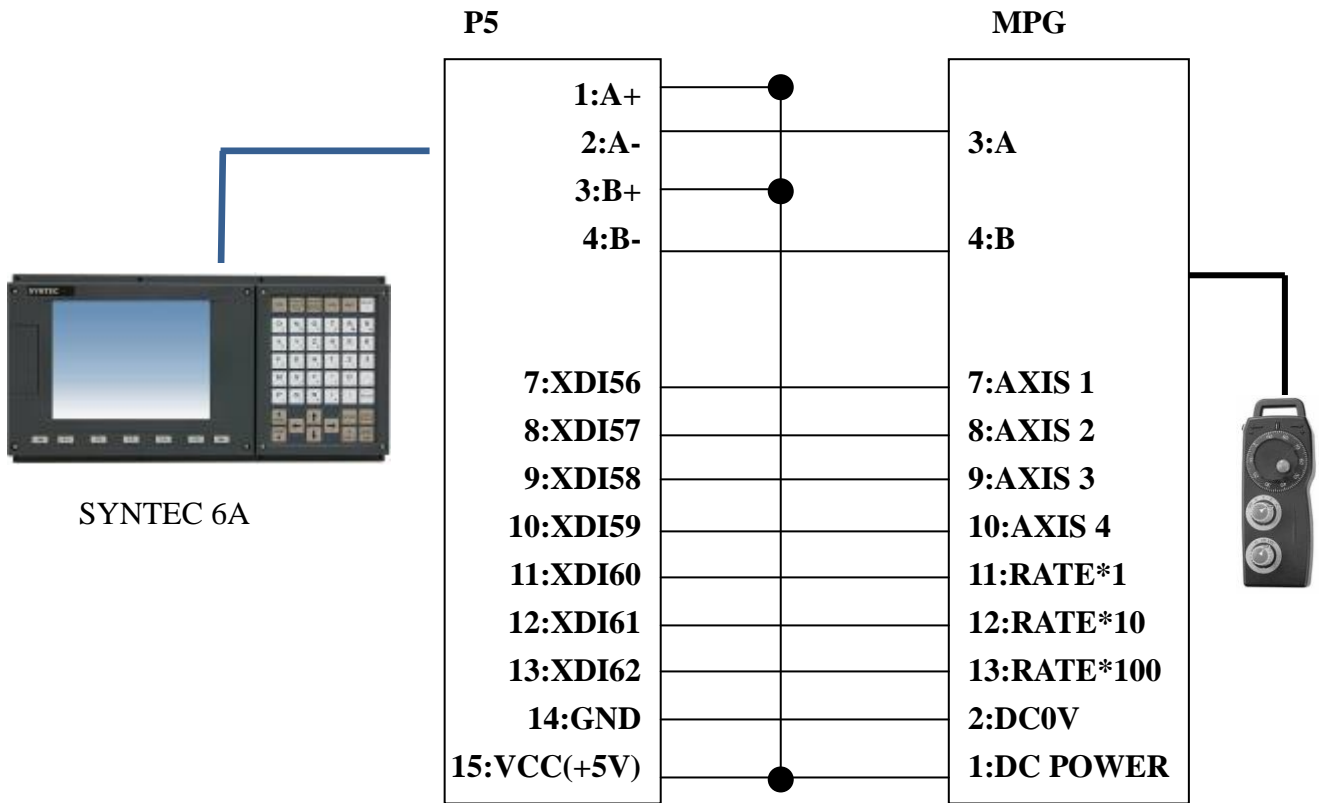



Pin	Signal	Pin	Signal	Pin	Signal
1	MPG_A+	6	MPG_Z-	11	IN60
2	MPG_A-	7	IN56	12	IN61
3	MPG_B+	8	IN57	13	IN62
4	MPG_B-	9	IN58	14	GND
5	MPG_Z+	10	IN59	15	VCC(+5V)

Line driver MPG hand wheel wiring schematic diagram (Future Life EHDW-(E~F)SERIES)

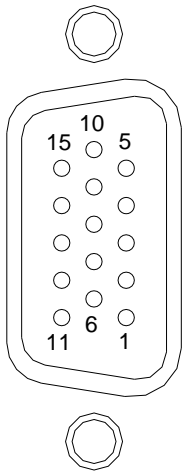


Open collector MPG Hand Wheel Wiring Schematic Diagram (Future Life EHDW-B(A~C)SERIES)



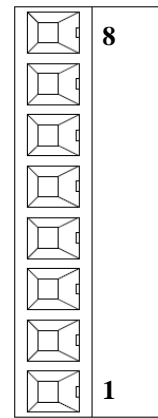
 The MPG port on the controller can withstand a maximum loading of 5V/250mA from the hand wheel; please do not use for other purposes.

Spindle Interface + Encoder (SP)



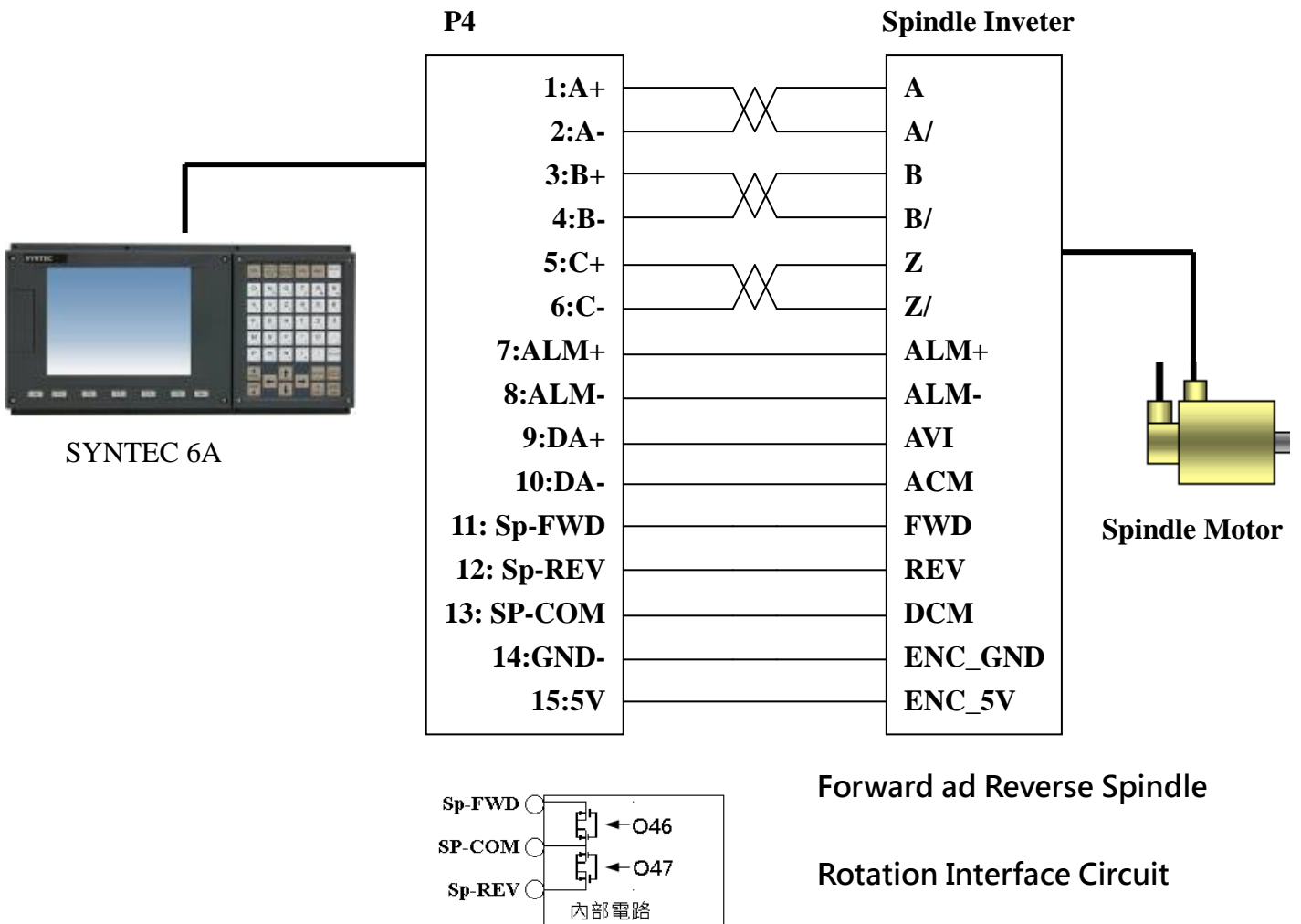
Pin	Signal	Pin	Signal
1	A+	9	DA+
2	A-	10	DA-
3	B+	11	SP_FWD (O46)
4	B-	12	SP_REV (O47)
5	C+	13	SP_COM
6	C-	14	GND
7	ALM+	15	5V
8	ALM-		

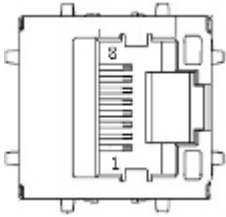
Spindle Commands (Spindle)



Pin	Signal
1	SP_FWD (O46)
2	SP_REV (O47)
3	SP_COM
4	--
5	ALM+
6	ALM-
7	DA+
8	DA-

Spindle Wiring Schematic Diagram



ETHERNET Port

The 6A Series controllers are equipped with a 10/100 BASE network communications port, allowing you to access data files stored remotely.