

LNC-5800D

Fieldbus Controller

Hardware Maintenance Manual

VERSION: V1.1

20161028

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1 Product introduction

1.1 Specifications summary

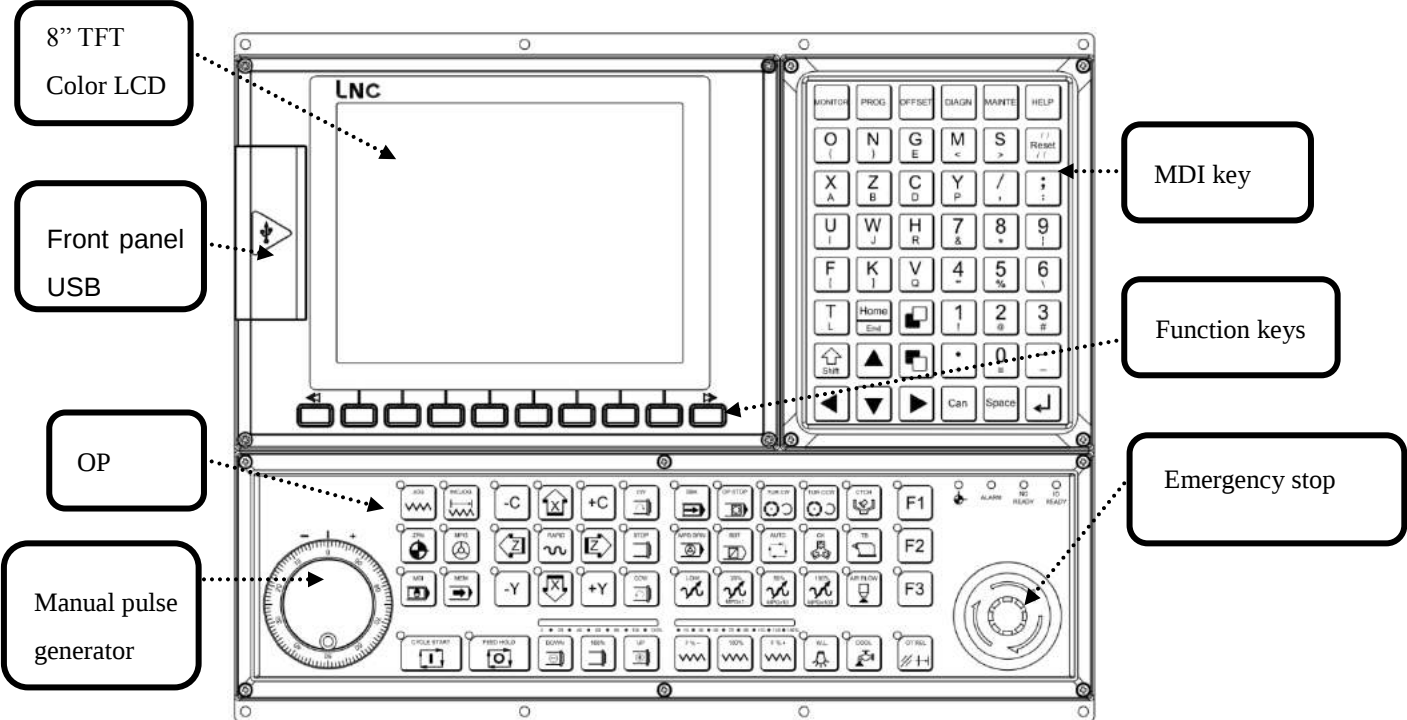
Hardware Specifications:

Item	Specifications description		
	5800D1	5800D2	5800D3
Display	8" Color TFT LCD		
Front panel interface	USB (TYPE A) 1ch		
	10/100Mbps Ethernet 1ch		
Operating panel	MDI		
	Standard OP or Option OP(e.g. OP3360A2)		
	10 Function keys		
PC Interface	COM1: RS232		
	COM2: RS422/485		
	VGA		
	PS2		
	USB (TYPE A)		
	10/100Mbps Ethernet		
Pulse/encoder axes	2ch		
	MPG(1encoder + DI : 8 points)1 set		
Communication network	MII	RTEX	EtherCAT
Expansion I/O	SIO 1ch		
	CIO 1ch		
Analog output	16bit ($\pm 10V$)2 ch		
LOCAL INPUT	3 points		
Power requirements	AC power 110V~240V/1.3A		
	DC power E24V/4A		

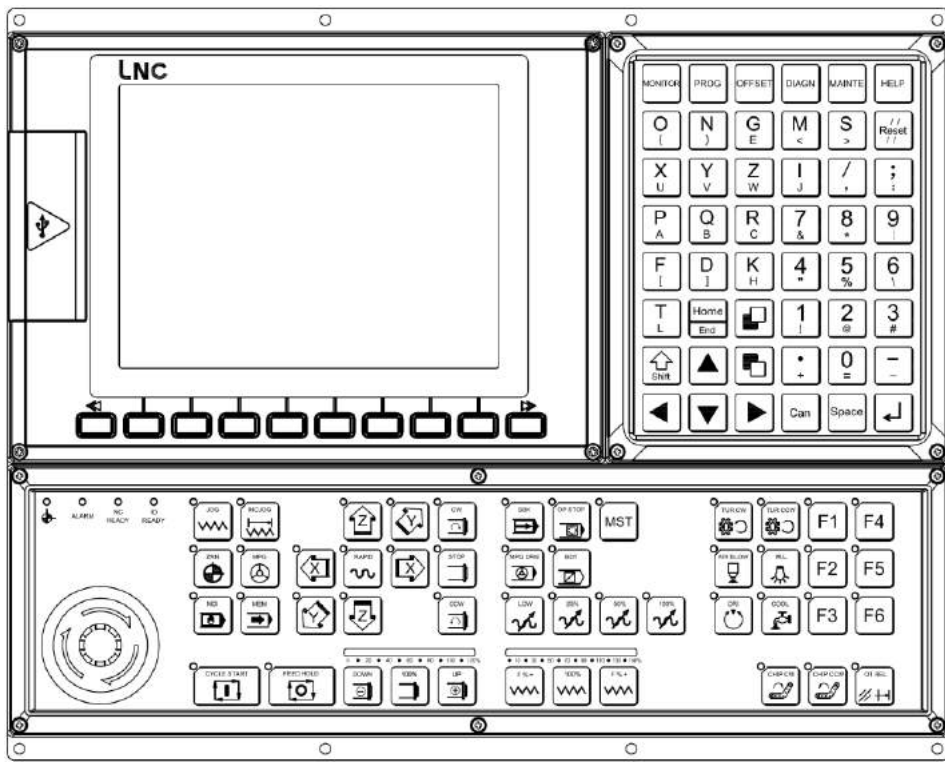
Environmental Conditions

Item	Conditions
Storage temperature	-20~80°C(free from freezing)
Storage humidity	Not greater than 90%RH (free from condensation)
Ambient temperature	-5~50°C(free from freezing)
Ambient humidity	Not greater than 90%RH (free from condensation)

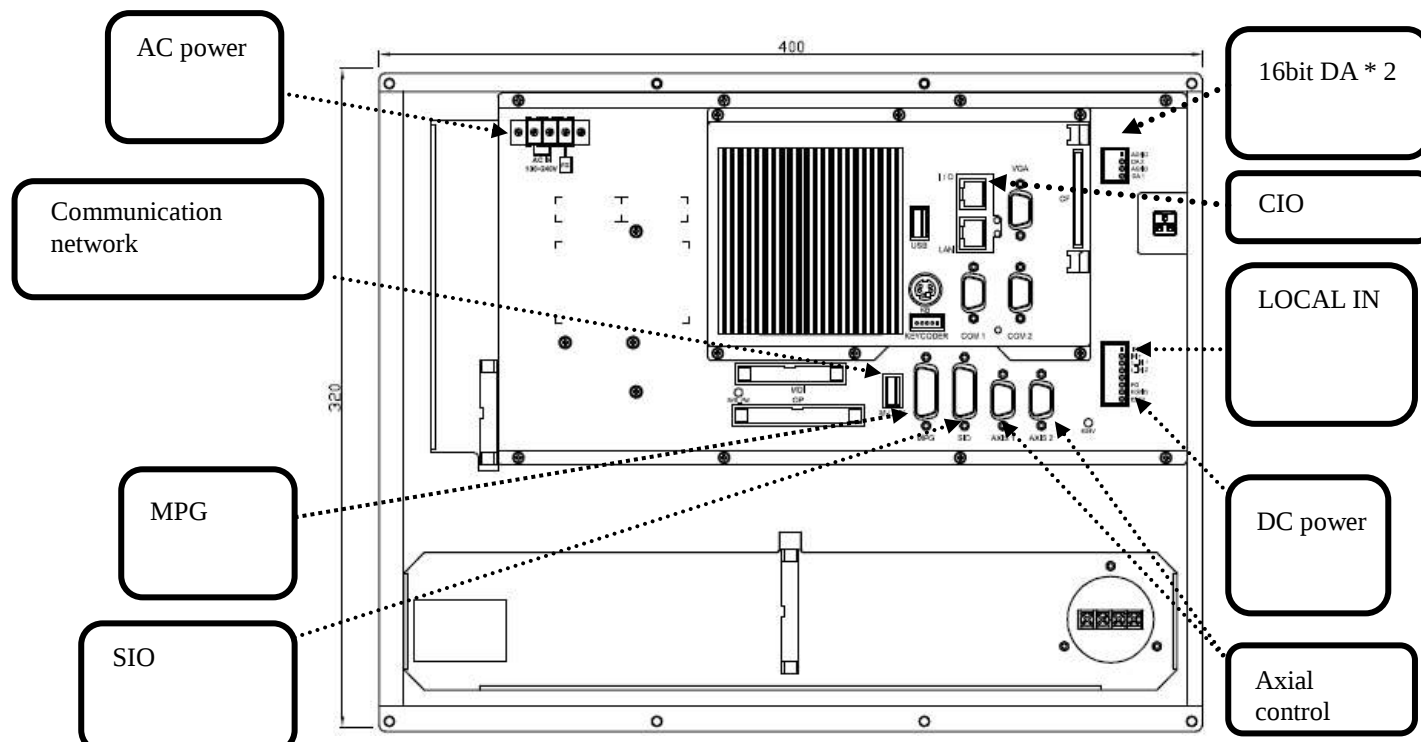
1.2 Controller Overview



Lathe version front side

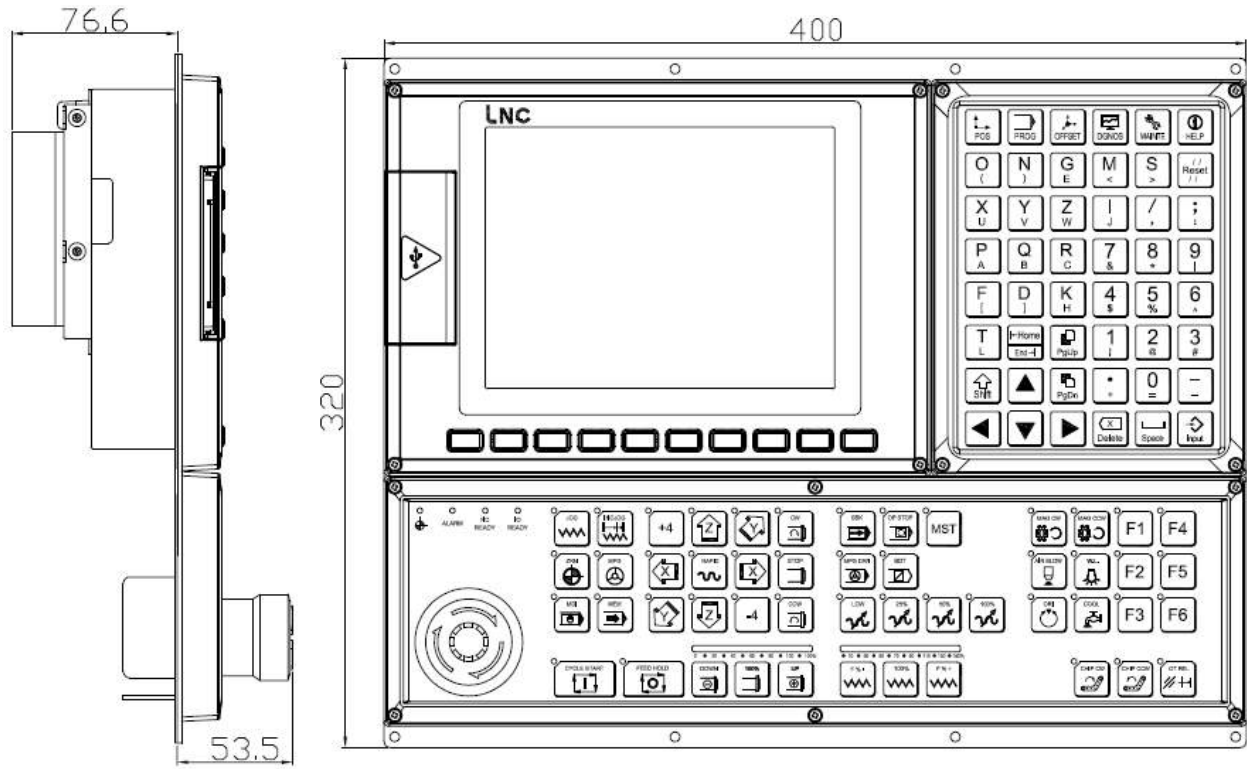


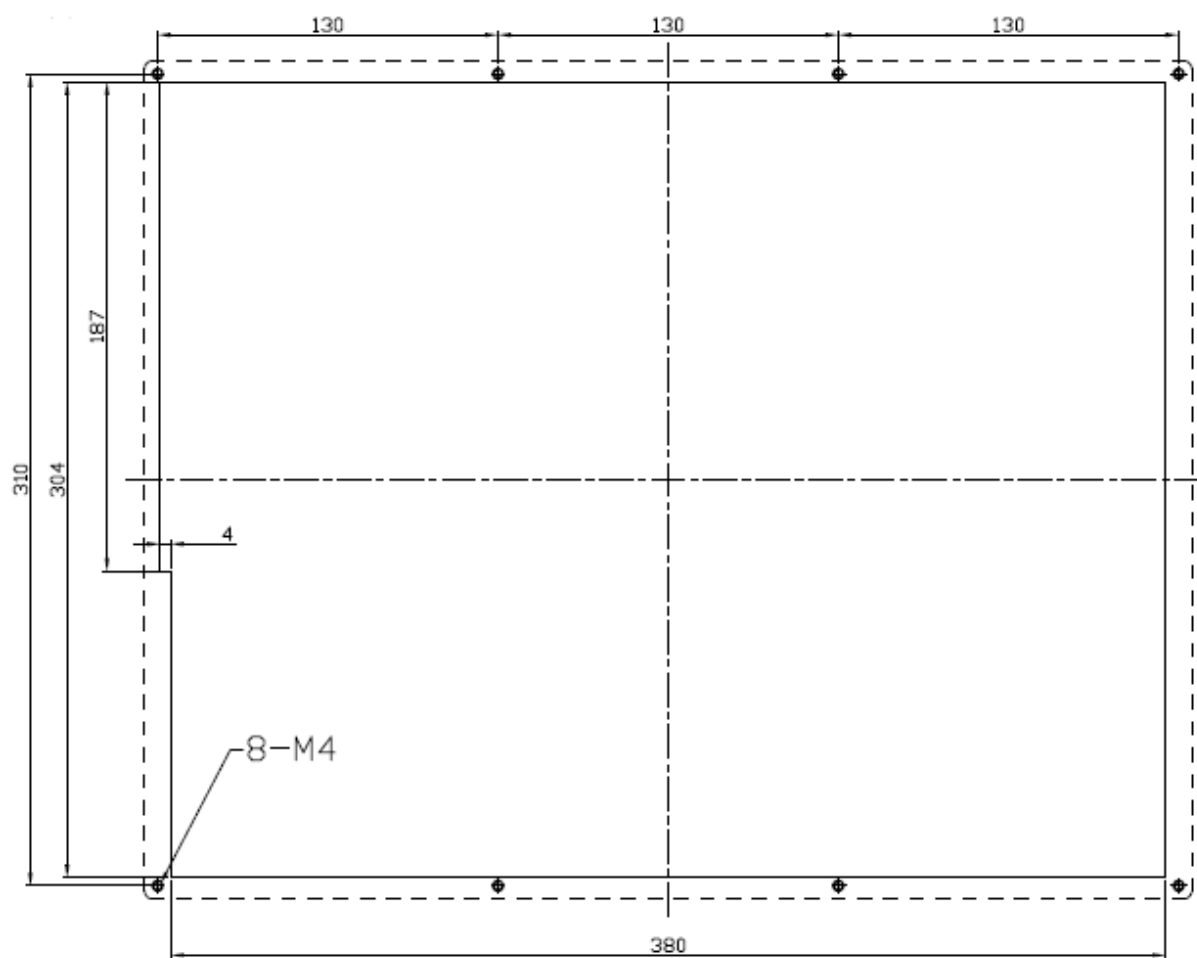
Milling version front side



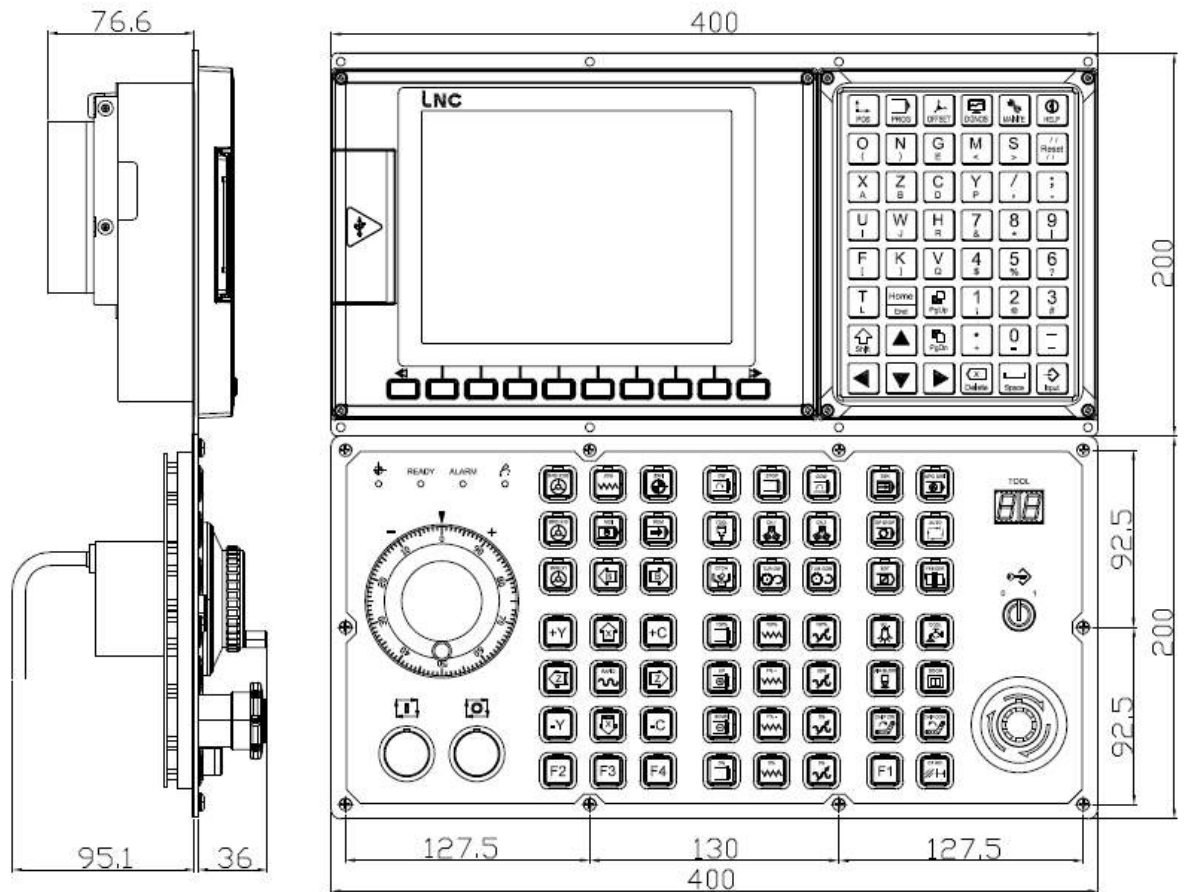
Lathe version rear side

Dimensions and Panel cut dimension drawings

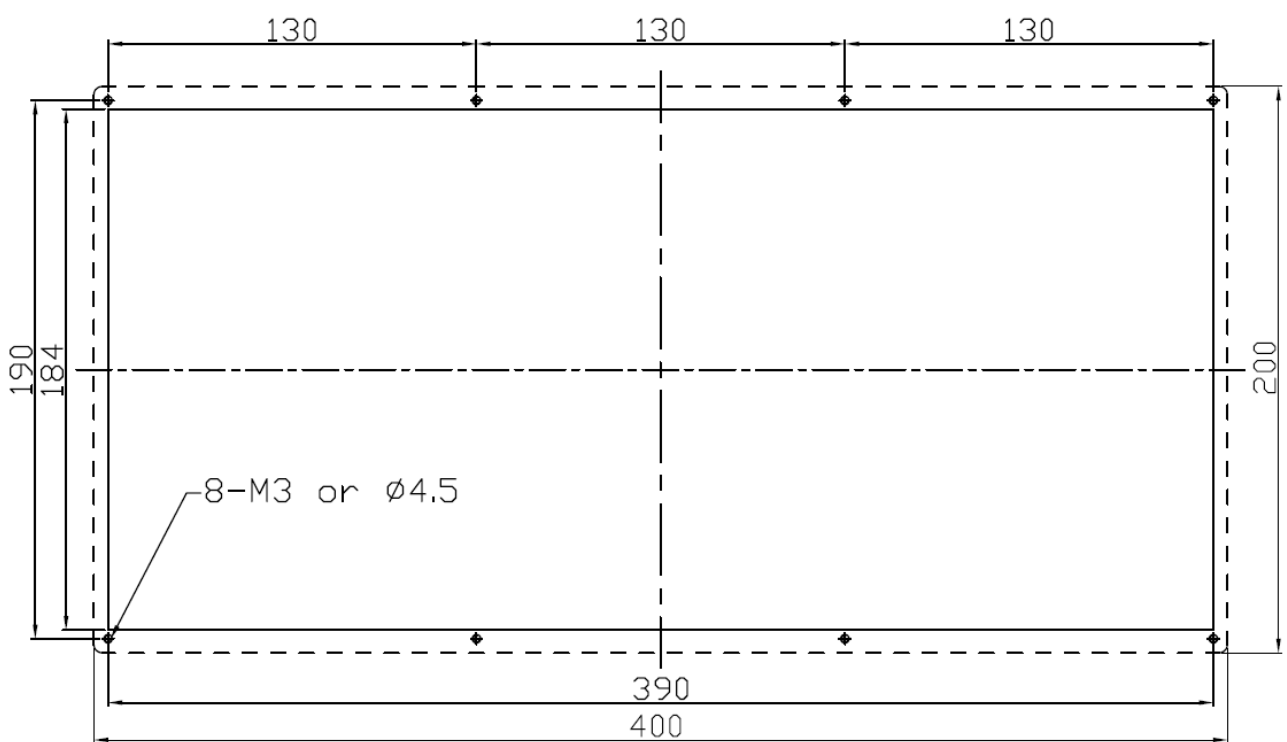




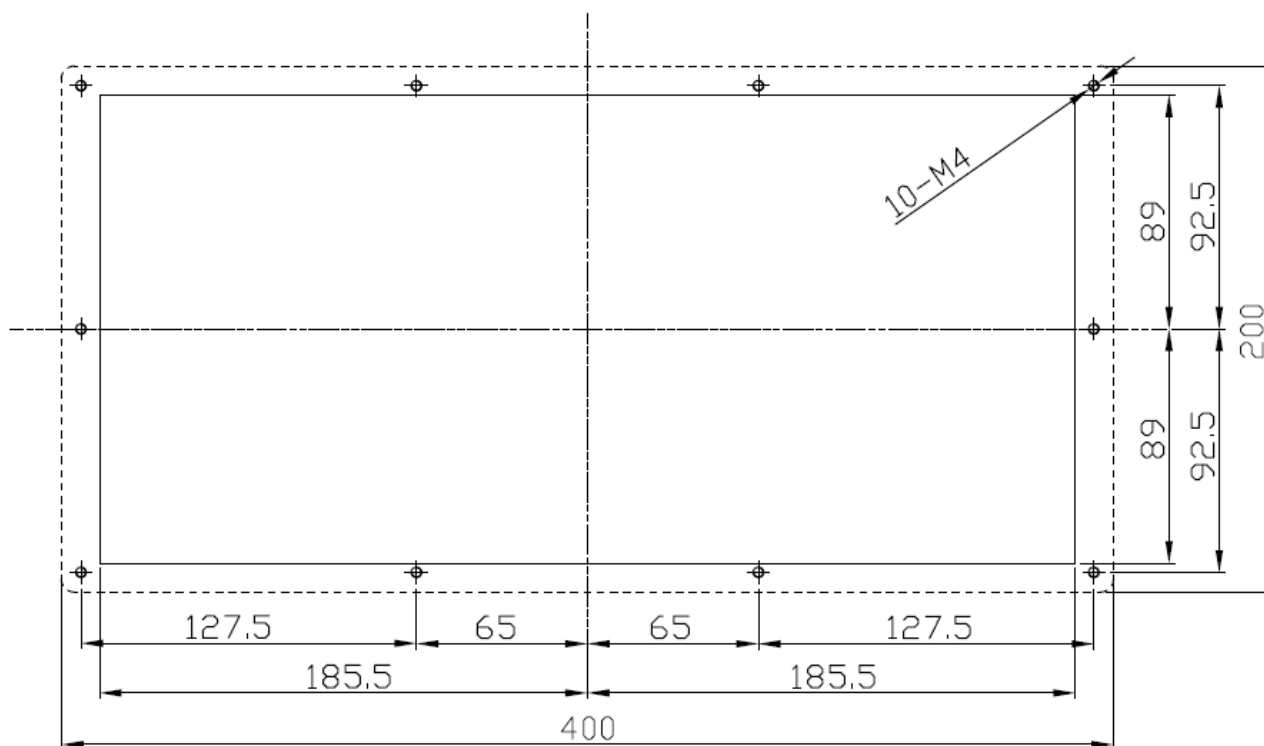
Standard OP Type



Option OP Type

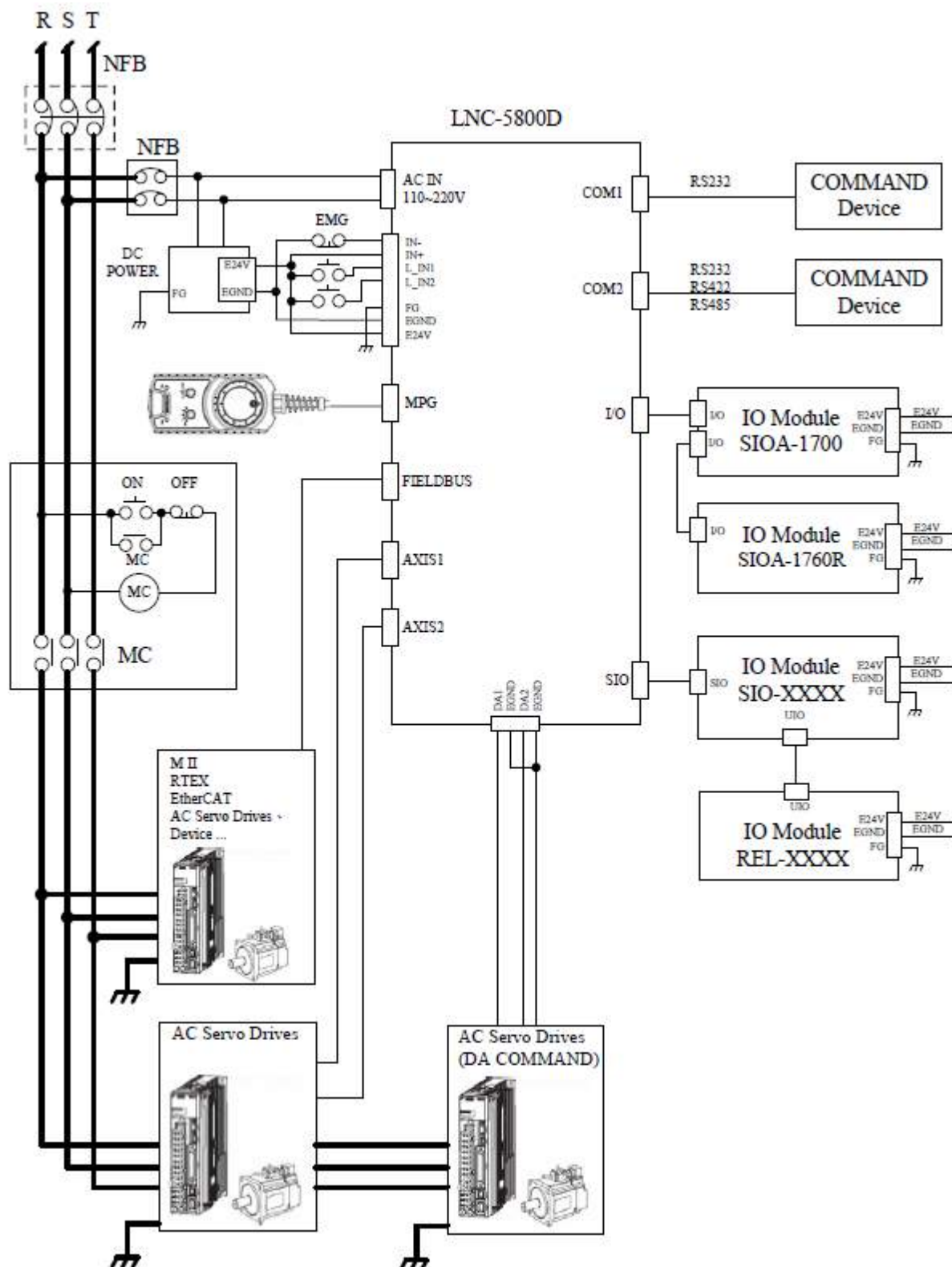


Option OP Type(Controller Unit)



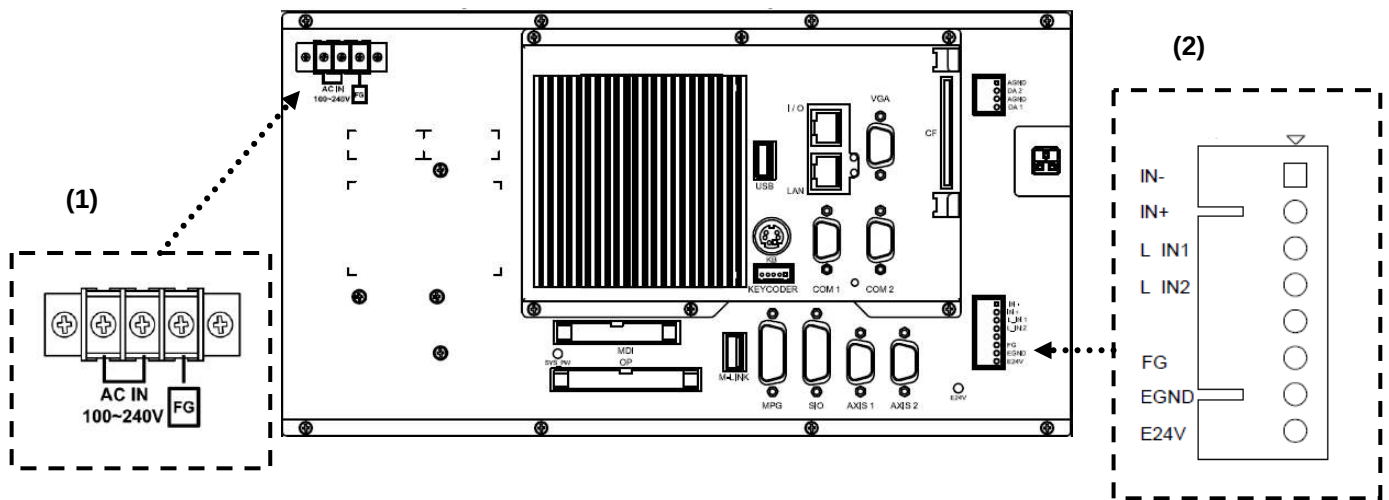
Option OP Type(OP3360A2 Unit)

1.3 Overall system diagram

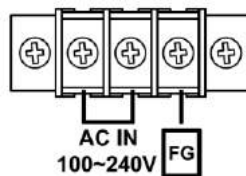


1.4 Description of controller connectors

1.4.1 Input power



(1) System power (ACIN)



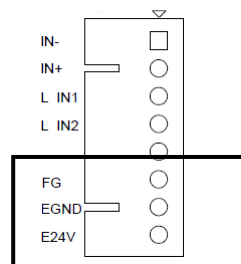
Specifications of power

Item	Standard	NOTE
Voltage	AC 100~240V	
Rated current	1.3A	

FG should be connected to Power supply FG (Power grounding) terminal

(2) External E24V power (DCIN)

- ◎ Description: E24V is for driver interface and external IO.



Specifications of power

Item	Standard	NOTE
Voltage	DC24V $\pm$ 2%	
Ripple(max)	150mV(P-P)	
Rated current	4A or more	
Protection	Overload/ Over voltage/ Short circuit	

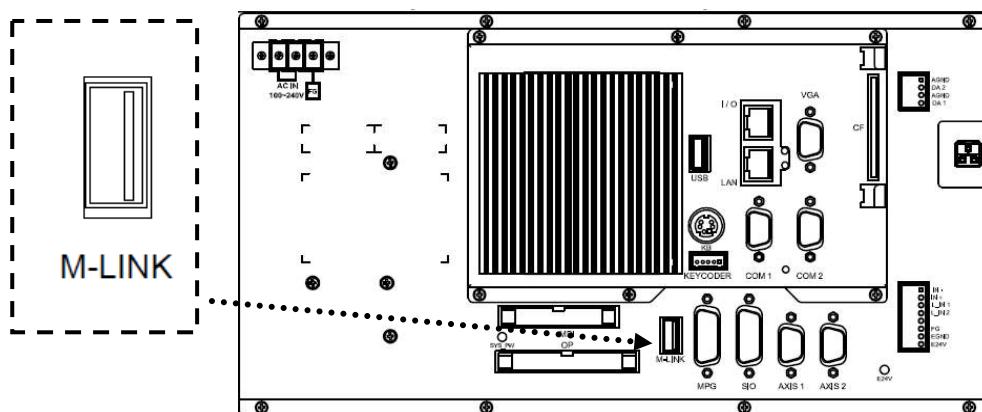
FG should be connected to Power supply FG (Power grounding) terminal



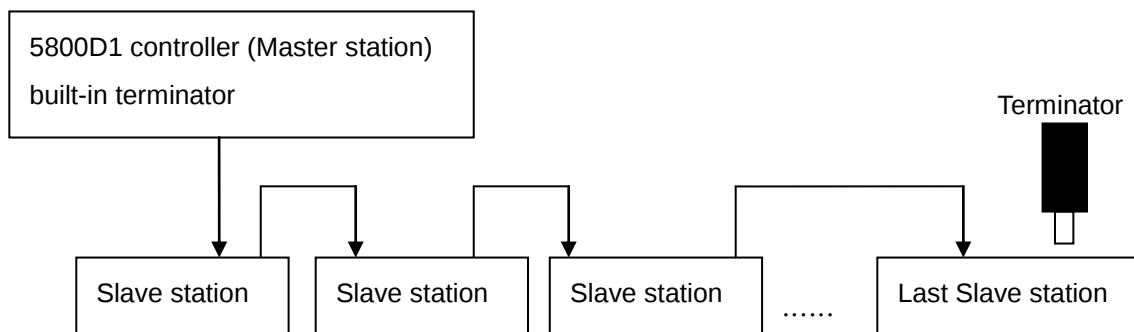
- Suggested to use the power supply with the model number selected by LNC; otherwise it is not guaranteed to meet relevant requirements.

1.4.2 Communication network

1.4.2.1 5800D1 MECHATROLINK-II :

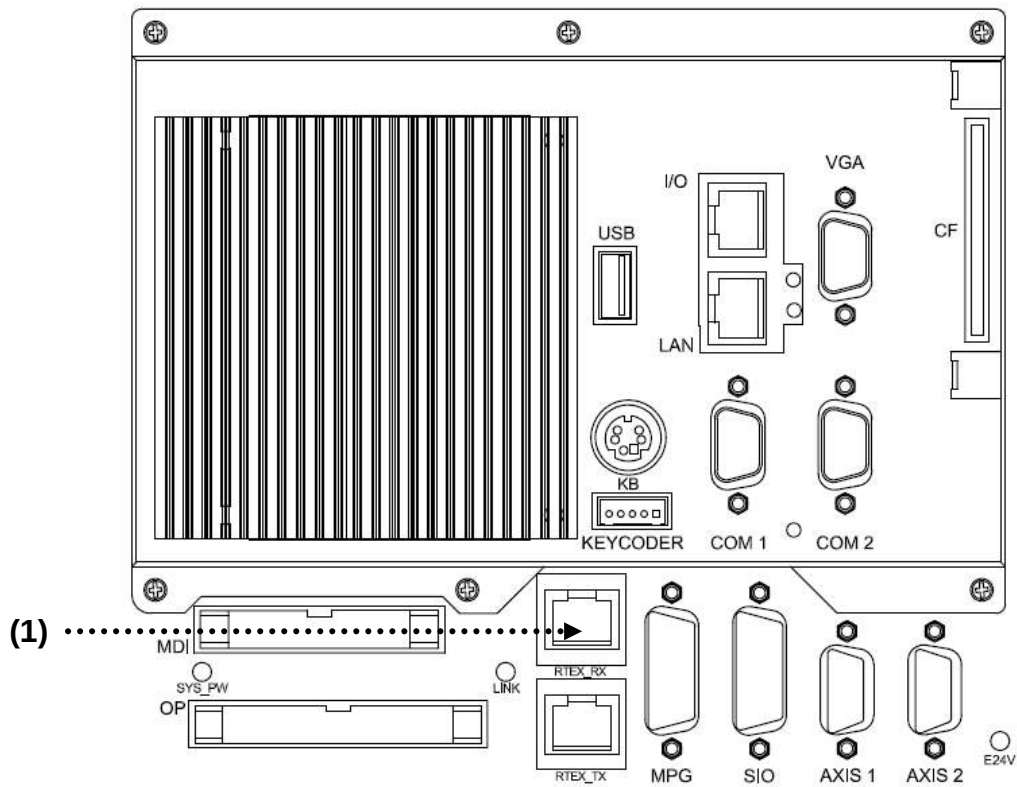


- Description: Connected to MECHATROLINK-II Devices
- Wiring example as below

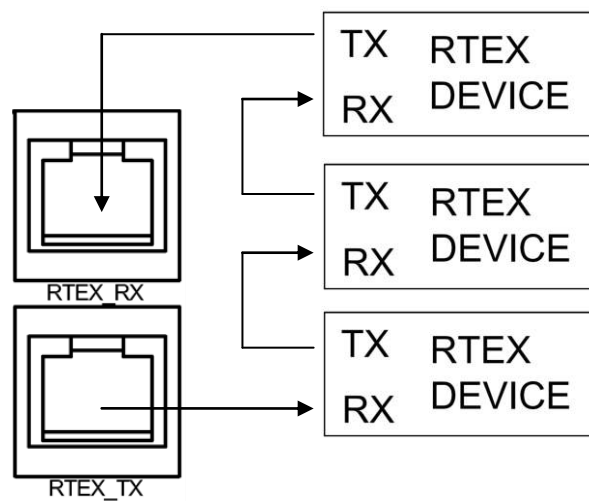


- Terminator are needed at the ends of the network.
- Don't lay signal wires in the same duct or bundle with power lines.

1.4.2.2 5800D2 RTEX :



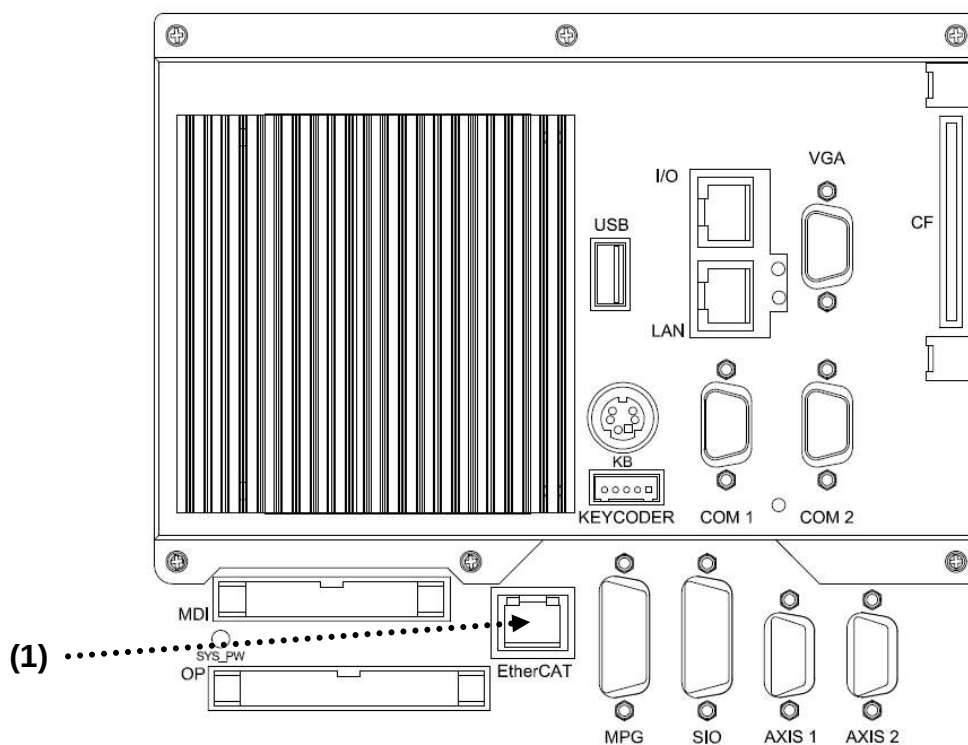
- ◎ Description: Connected to RTEX Devices
- ◎ Wiring example as below (Ring topology)



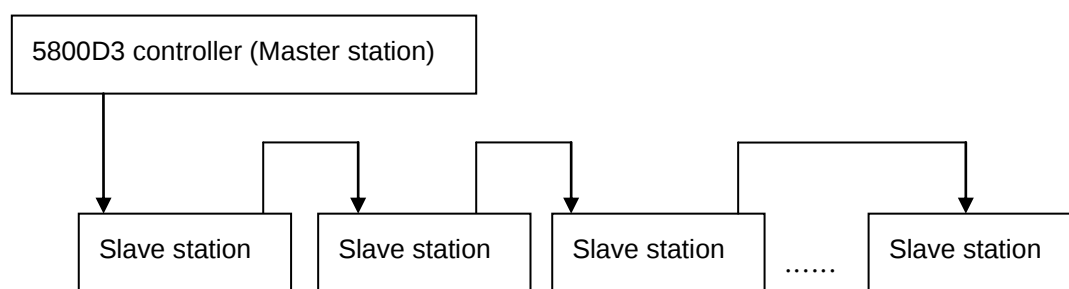


- STP(Shielded Twisted Pair cable) TIA/EIA-568B CAT 5e cable must be used to prevent noise.
- Don't lay signal wires in the same duct or bundle with power lines.

1.4.2.3 5800D3 EtherCAT

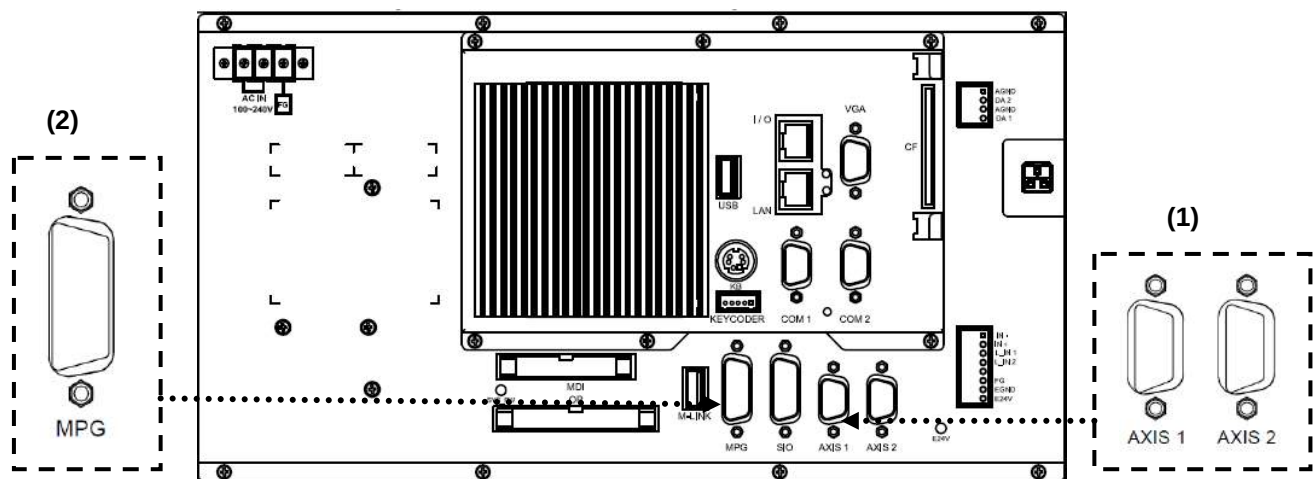


- Description: Connected to EtherCAT Devices
- Wiring example as below



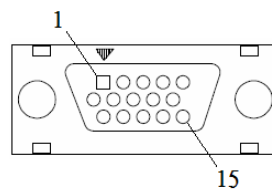
- STP(Shielded Twisted Pair cable) TIA/EIA-568B CAT 5e cable must be used to prevent noise.
- Don't lay signal wires in the same duct or bundle with power lines

1.4.3 Axis control connector



(1) Axis control connector

- Description: Axial control connected to AC SERVO DRIVER
- Connector description: D_SUB 15PIN(Male) connector pin definition as shown below



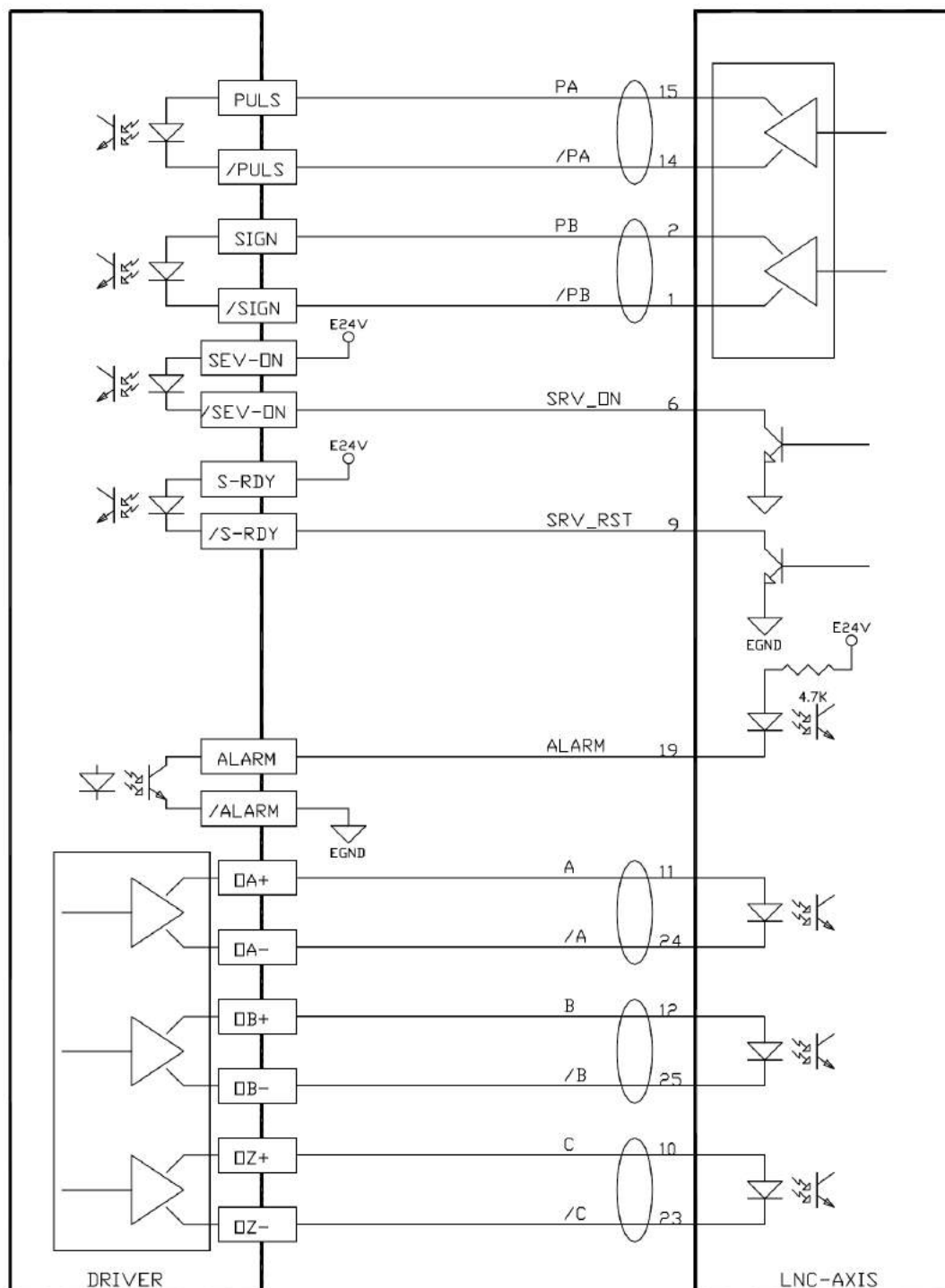
PIN	Definition	Description	Type	PIN	Definition	Description	Type
1	/PA	Pulse output /A	O	9	ENCB	Encoder B	I
2	/PB	Pulse output/B	O	10	ENCC	Encoder C	I
3	ENC/A	Encoder /A	I	11	ALARM	Servo alarm	DI
4	ENC/B	Encoder/B	I	12	SRV_ON	ServoON	DO
5	ENC/C	Encoder/C	I	13	SRV_RST	Servo reset	DO
6	PA	Pulse output A	O	14	EGND	E5V/E24V power ground	-
7	PB	Pulse output B	O	15	E5V	E5V for encoder	O
8	ENCA	EncoderA	I	-	-	-	-

(1) Pulse output and encoder are both differential signals.

DO	SRV_ON	Servo reset
Type	SINK	
Maximum rating	30V 50mA	

DI	ALARM
Type	SINK
OFF→ON level	14.9V
OFF→ON delay time	44us
ON→OFF level	15.1V

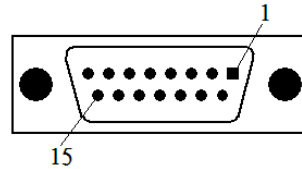
ON→OFF delay time	22us
Input impedance	4.7K Ω
Input current	DC24V 5mA



- Pulse out , encoder input signals must use shielded twisted-pair type cable to reduce noise interference; ALNC can provide standard wires for selection
- Separate these wiring min. 30 cm from the main circuit wires and don't lay signal wires in the same duct or bundle with them.

(2) MPG connector

- ◎ Description: Connecting multi-purpose MPG, contains encoder and 8DI signals.
- ◎ Connector description: D_SUB 15PIN (Female) pin definition as shown below:

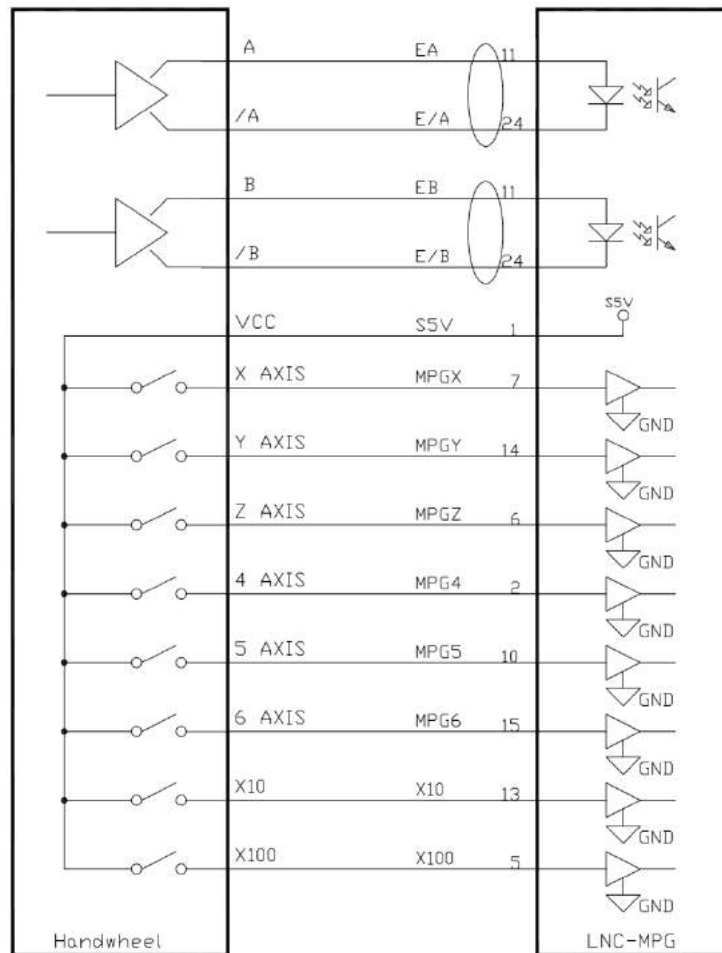


PIN	Definition	Description	Type	PIN	Definition	Description	Type
1	S5V	DI and MPG power	DCOUT	9	GND	S5V ground	-
2	MPG4	MPG 4	DI	10	MPG5	MPG 5	DI
3	ENC /B	Encoder /B	I	11	ENC B	Encoder B	I
4	ENC /A	Encoder /A	I	12	ENC A	Encoder A	I
5	MPG X100	MPG*100	DI	13	MPG X10	MPG*10	DI
6	MPG Z	MPG Z	DI	14	MPG Y	MPG Y	DI
7	MPG X	MPG X	DI	15	MPG6	MPG 6	DI
8	S5V	DI and MPG power	DCOUT	-	-	-	-

◎ Specifications description:

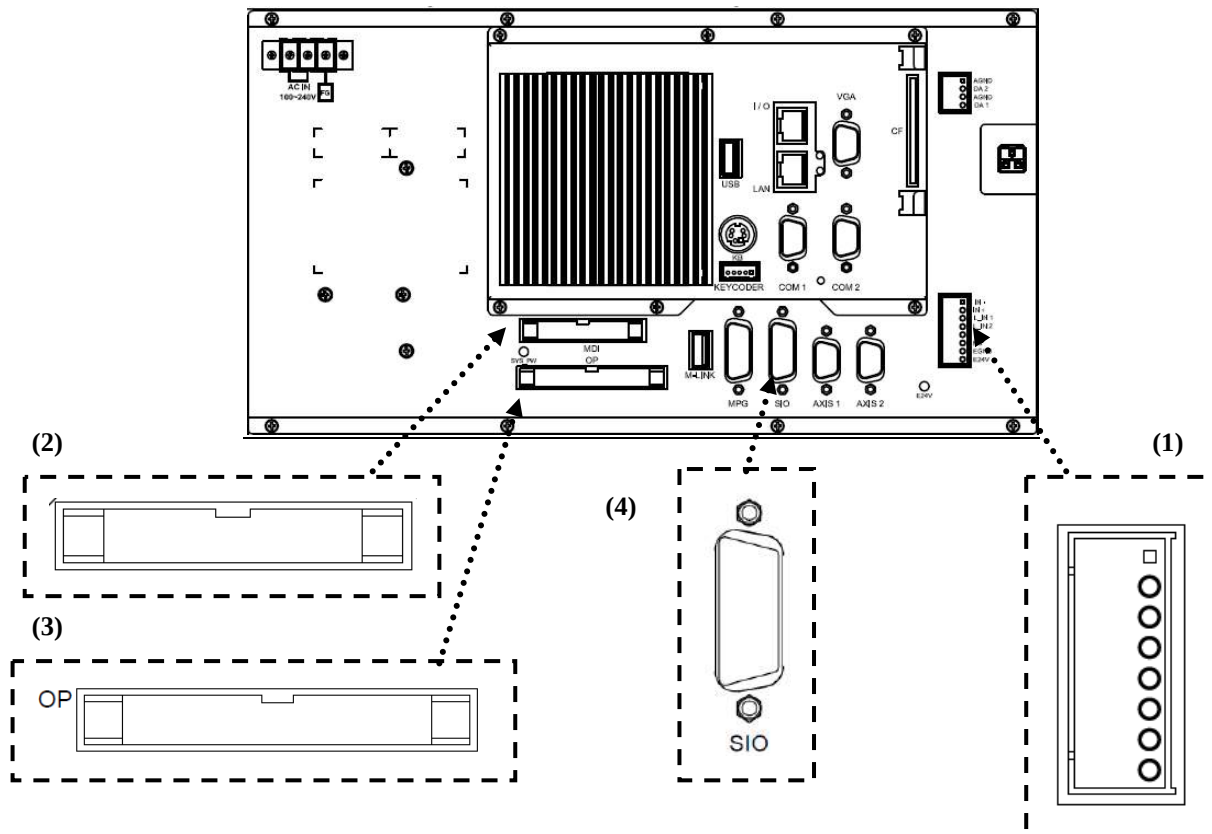
- (1) The encoder differential signals.
- (2) S5V provides 0.5A rated current

DI	MPGX、Y、Z、4、5、6/X10、X100
Type	SOURCE
OFF→ON level	1.8V
OFF→ON delay time	32us
ON→OFF level	1.3V
ON→OFF delay time	216us
Input impedance	1.2KΩ
Input current	DC5V 3mA



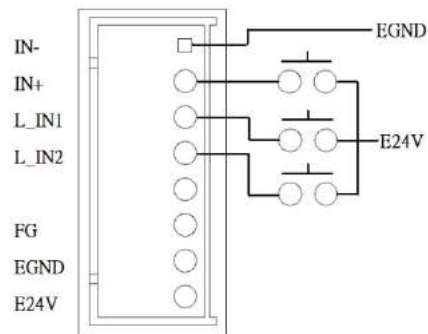
- All of MPG signals are DC5V, do not connect larger voltage on it .

1.4.4 I/O connector



(1) LOCAL INPUT (IN $\pm$, LIN1 and LIN2) connector

- ③ Description: 3 DI points for tool setting or other equipment.



DI	IN $\pm$	L_IN1、2
Type	Source	Source
OFF→ON level	11V	9.1V
OFF→ON delay time	44us	44us
ON→OFF level	8.9V	8.9V
ON→OFF delay time	22us	24us
Input impedance	8.2K Ω	8.2K Ω
Input current	DC24V 3mA	DC24V 3mA



- DI must be in the E24V and EGND power system, otherwise there will be abnormal .

(2) MDI connector

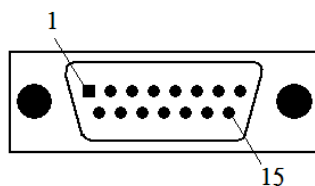
- ⊙ Description: Connection to MDI unit.
- ⊙ Connector description: 2.54mm 26PIN box header connector.

(3) OP connector

- ⊙ Description: Connection to OP unit. Provide 5V level DI : 80 points DO : 80 points.
- ⊙ Connector description: 2.54mm 34PIN box header connector.

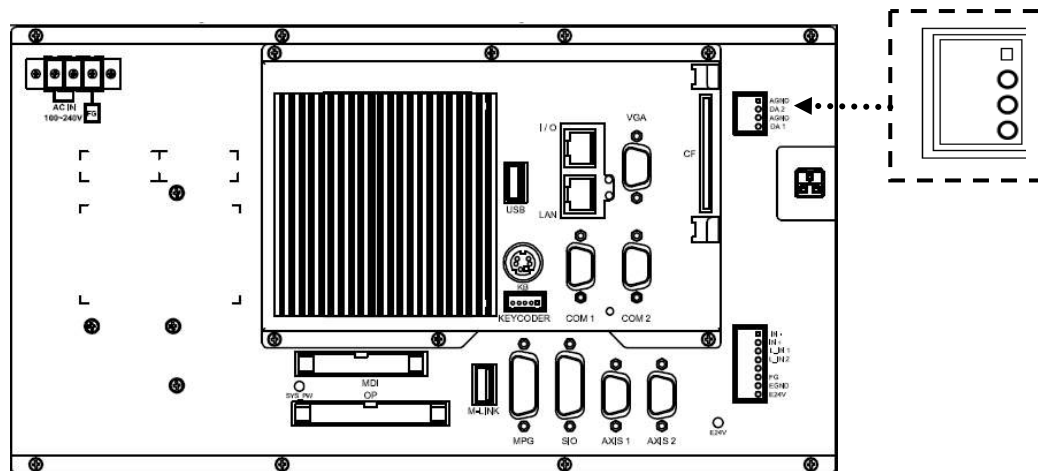
(4) SIO connector

- ⊙ Description: Connection to SIO unit.
- ⊙ Connector description: D_SUB 15PIN (Male) connector

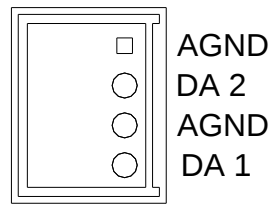


- Must use shielded twisted-pair type cable to reduce noise interference; ALNC can provide standard wires for selection.
- Separate these wiring min. 30 cm from the main circuit wires and don't lay signal wires in the same duct or bundle with them.

1.4.5 Analog output



Analog output connector

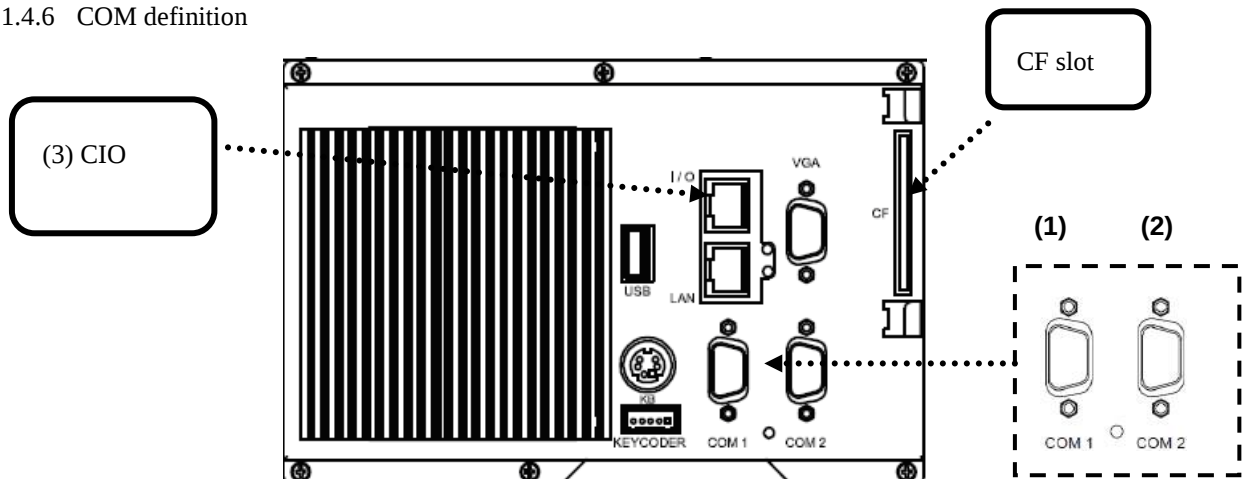


AO	DA1 · DA2
Resolution	16bits
Output Voltage	±10V



- Don't lay signal wires in the same duct or bundle with power lines

1.4.6 COM definition



(1) COM1 connector (RS232)

PIN	Definition	Description
1	DCD	Data Carrier Detect
2	RD	Receive Data
3	TD	Transmit Data
4	DTR	Data Terminal Ready
5	SG	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	RI	Ring Indicator

(2) COM2 connector (RS422/485 by parameter setting)

PIN	Definition	Description
1	-	-
2	RD	Receive Data
3	TD	Transmit Data
4	-	-
5	SG	Signal Ground
6	TXD-	Differential TX-
7	TXD+	Differential TX+
8	RXD+	Differential RX+
9	RXD-	Differential RX-

(3) CIO connector

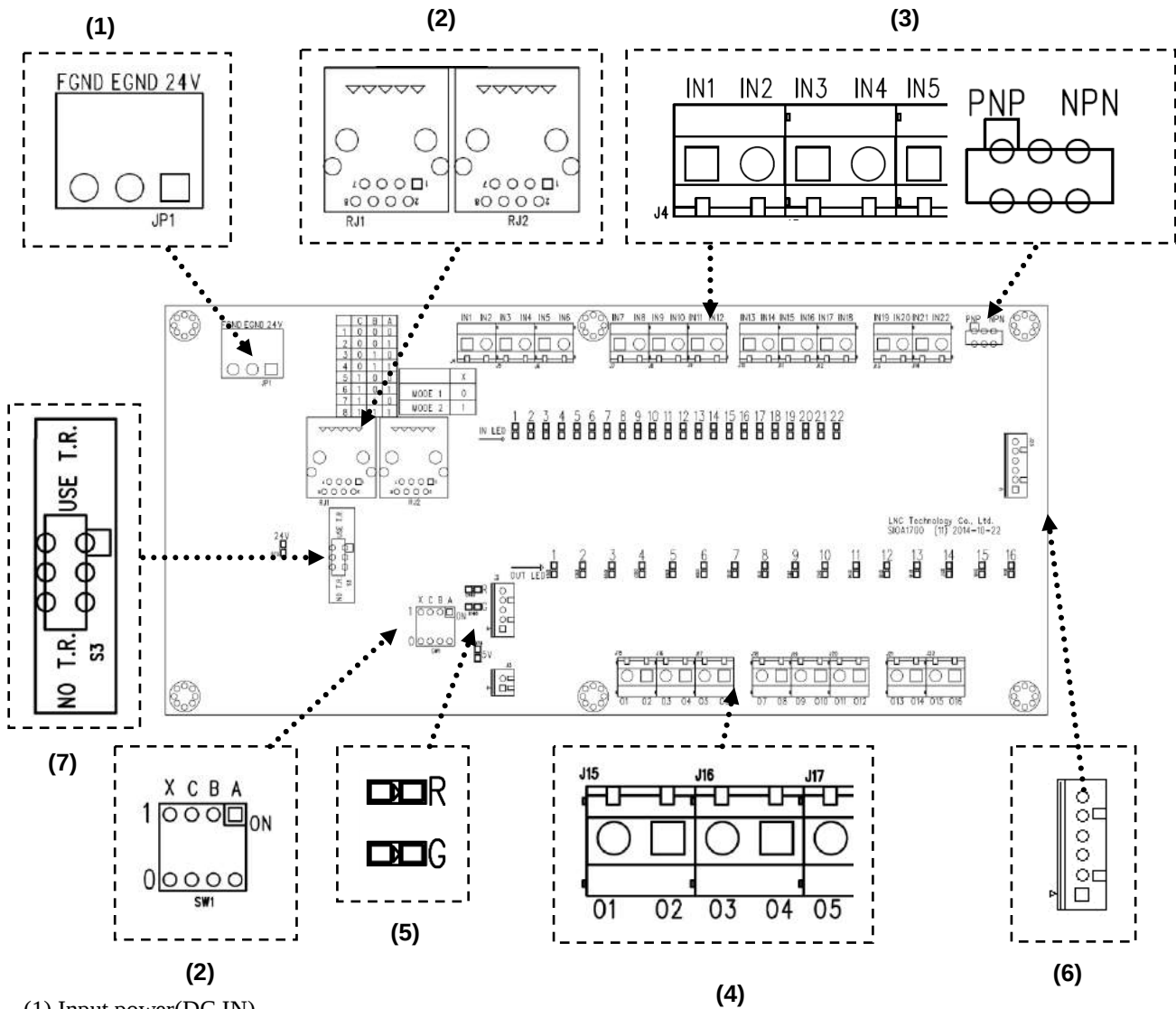
- ③ Description: Connection toSIOAunit.
- ③ Connector description: RJ45 connector



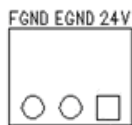
- STP(Shielded Twisted Pair cable) CAT5e cable must be used to prevent noise.
- Don't lay communication cable in the same duct or bundle with power lines.

2 Expansion IO

2.1 SIOA1700



(1) Input power(DC IN)



Specifications of power

Item	Standard	NOTE
Voltage	DC24V±2%	
Ripple(max)	150mV(P-P)	
Rated current	1A (for control circuit) & add device loading	
Protection	Overload/ Over voltage/ Short circuit	



- The correct wiring must be confirmed before power transmission. Do not connect AC power to FG or 24V; otherwise it will burn out the board.

(2) IO station switch

◎ Description:(A 、B 、C) Expansion IO board station number setting

◎ Output mode setting (X): When communication fail

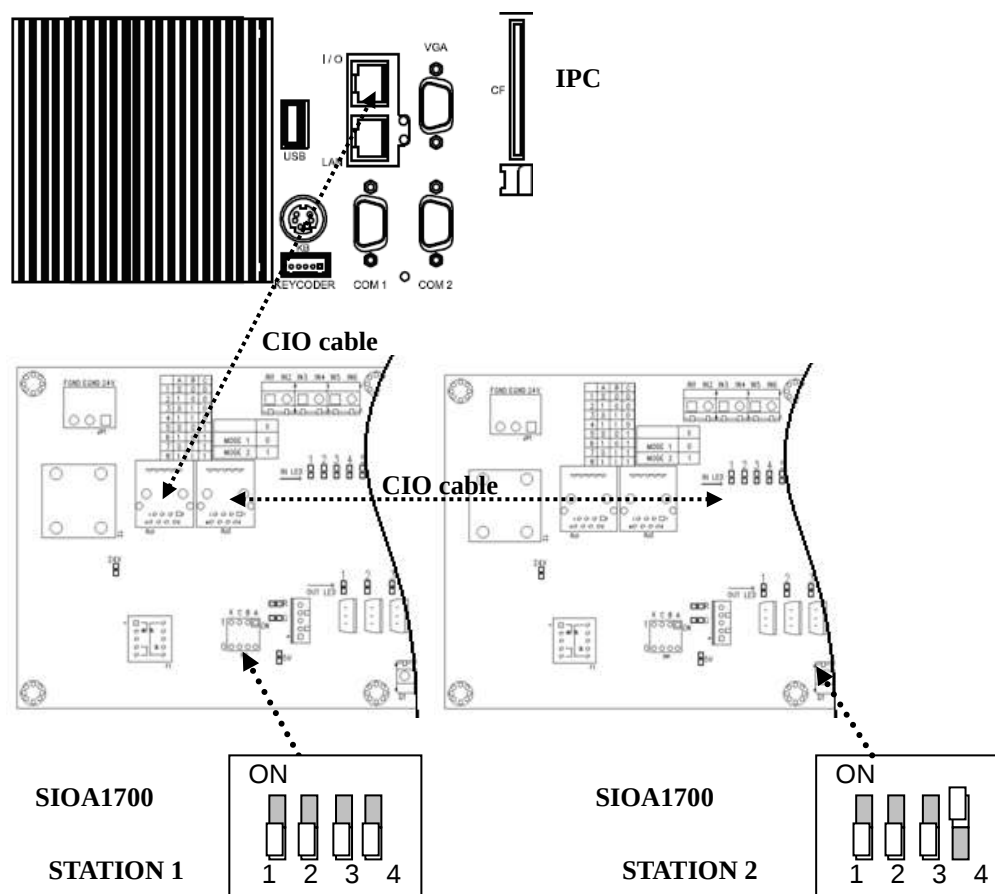
Mode1 (switch to 0): All output points hold at the latest status.

Mode2 (switch to 1): All output points return to zero.

◎ Station number setting (A B C): Maximum 8 stations.

Definition	Station setting		
	A	B	C
Station 1	0	0	0
Station 2	0	0	1
Station 3	0	1	0
Station 4	0	1	1
Station 5	1	0	0
Station 6	1	0	1
Station 7	1	1	0
Station 8	1	1	1

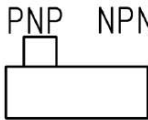
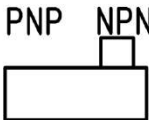
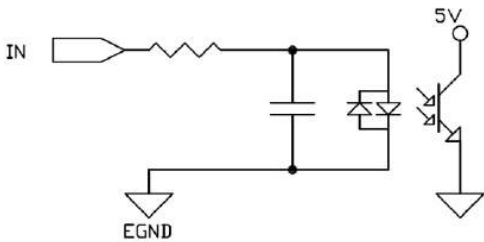
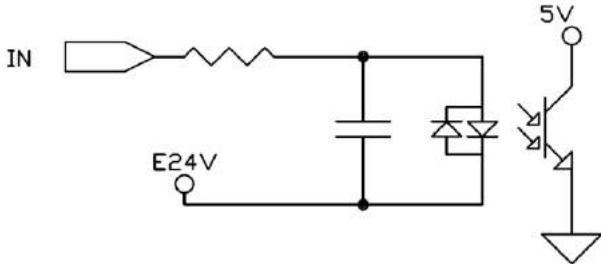
◎ Below is an example for connects with two SIOA1700 Units:



- CIO cable STP(Shielded Twisted Pair cable) CAT 5e cable must be used to prevent noise.

(3) Digital Input (DI) and mode switch

⦿ Description: Provide 22 DI (with LED indicators) and mode setting.

Setting	PNP mode	NPN mode
Slide switch		
DI Circuits		



- In order to prevent the destruction of electronic components, please turn off E24V power when setting DI mode.

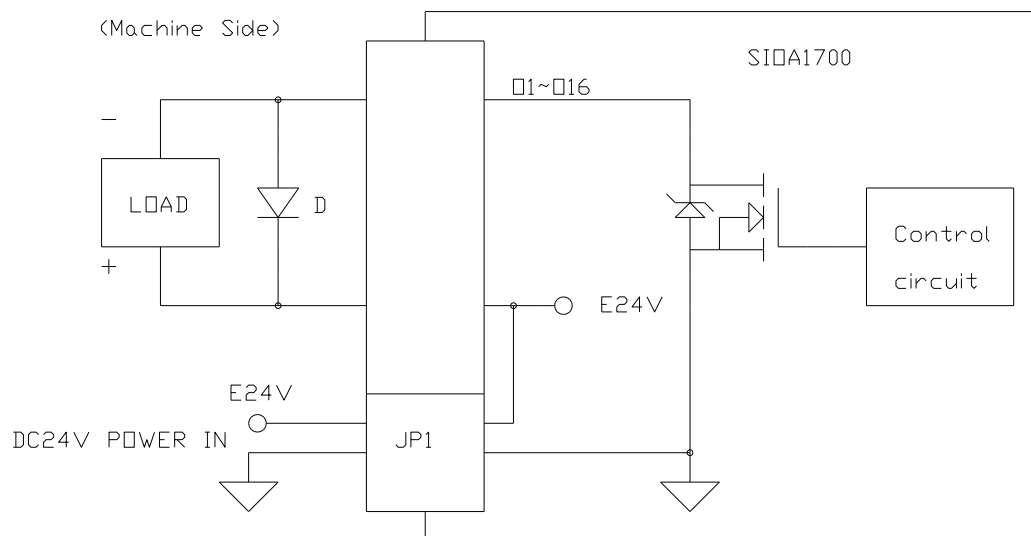
(4) Digital Output (DO)

⦿ Description: 16 DO with LED indicators.

⦿ Output specifications:

Parameter	Values
Output Current	Max. 1.5A/Point
Output Type	Sink Type
Response Time	$\leq 2.58\text{ms}$ (depends on communication speed)

© Wiring example:



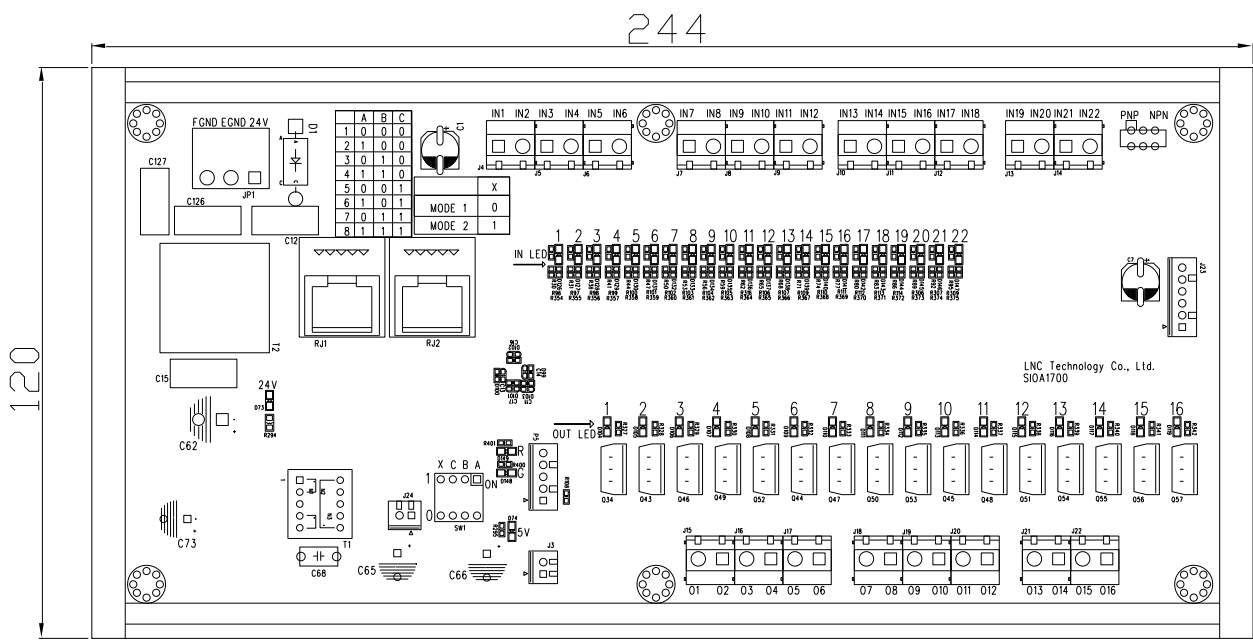
- Always place a D diode(e.g. 1N4001 diode or equivalent) in parallel to load when driving an inductive load such as a relay.
- Always place a protection resistor in series to load when driving a capacitive load such as a lamp.

(5) Status LEDs :

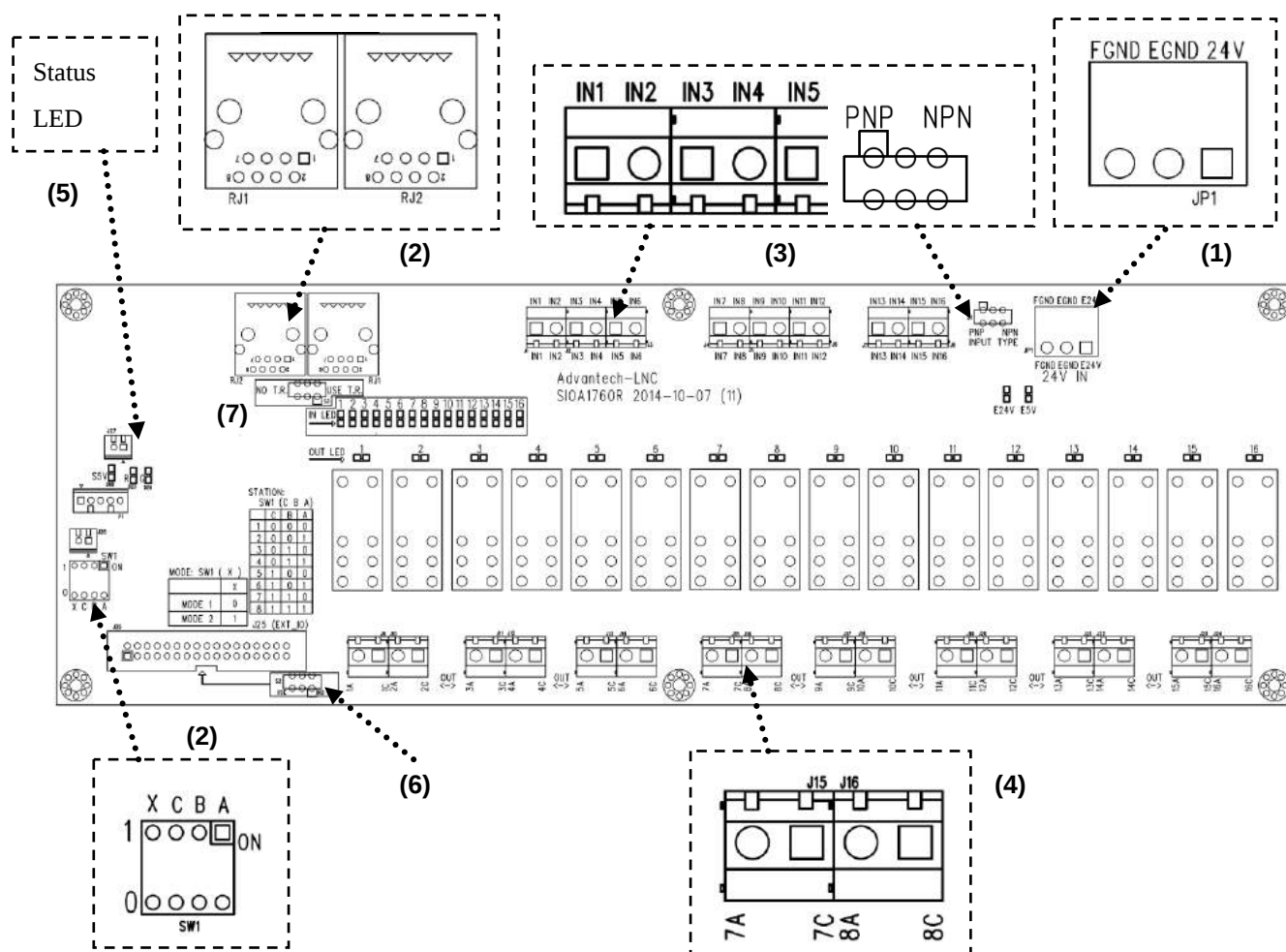
© Description: Communication status .

Location	Definition	Description
D148	Link	Color : Green Power ON Status : LED Turns On Receive CIO Command : LED Blinking
D149	Working	Color : Red Power ON Status : LED Turns Off Receive CIO Command assigned to this Unit : LED Blinking

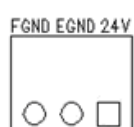
Dimensions(with PCB Carrier)



2.2 SIOA1760R



(1) Input power (DC IN)



Specifications of power

Item	Standard	NOTE
Voltage	DC24V±2%	
Ripple(max)	150mV(P-P)	
Rated current	1A (for control circuit) & devices loading	
Protection	Overload / Over voltage / Short circuit	



- The correct wiring must be confirmed before power transmission. Do not connect AC power to FG or 24V; otherwise it will burn out the board.

(2)IO station switch

- ◎ Description: (A 、B 、C) Expansion IO board station number setting
- ◎ Output mode setting (X): When communication fail

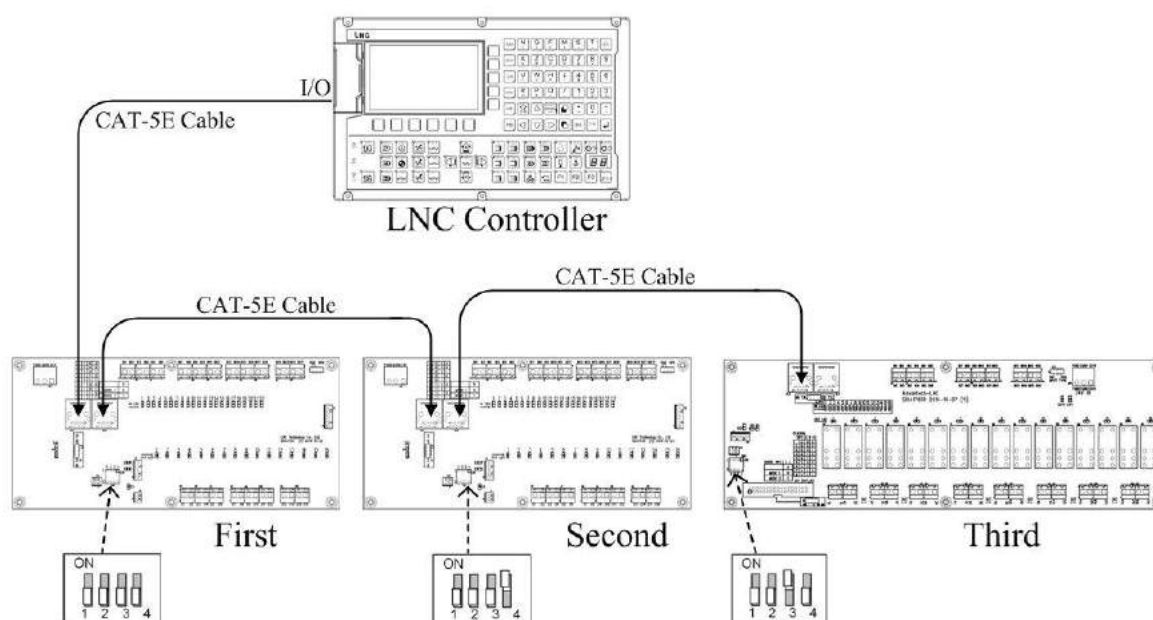
Mode1 (switch to 0): All output points hold at the latest status.

Mode2 (switch to 1): All output points return to zero.

- ◎ Station number setting (A B C): Maximum 8 stations.

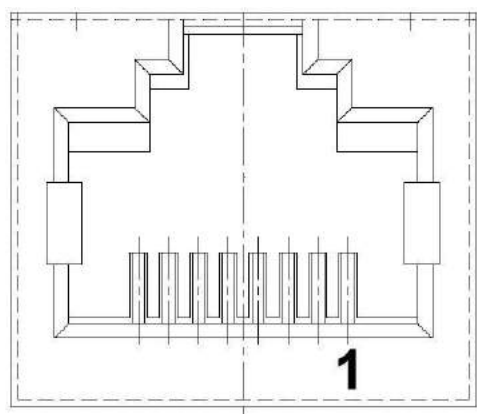
Definition	Station setting		
	A	B	C
Station 1	0	0	0
Station 2	0	0	1
Station 3	0	1	0
Station 4	0	1	1
Station 5	1	0	0
Station 6	1	0	1
Station 7	1	1	0
Station 8	1	1	1

- ◎ Below is an example for connects with two SIOA1700 & SIOA1760R:



- CIO cable STP(Shielded Twisted Pair cable) CAT 5e cable must be used to prevent noise.
- Don't lay communication cable in the same duct or bundle with power lines.

CIO connector (RJ-45)



PIN	Definition
1	RX+
2	RX-
3	TX+
4	-
5	-
6	TX-
7	-
8	-

(3) Digital Input (DI) and mode switch

◎ Description: Provide 22 DI (with LED indicators) and mode setting.

Setting	PNP mode	NPN mode
Slide switch		
DI Circuits		

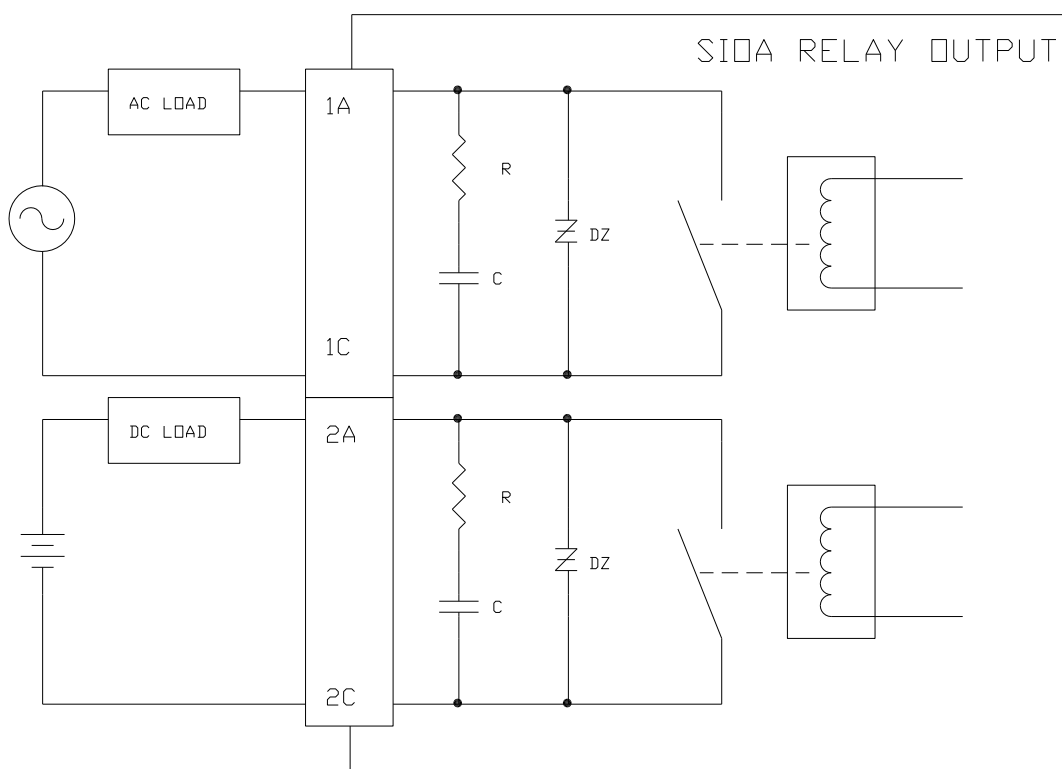
IN		
Type	Source	Sink
OFF→ON level	6.3V	15.7V
OFF→ON delay time	29 uS	29 uS
ON→OFF level	6.2V	15.8V
ON→OFF delay time	29 uS	29 uS
Input impedance	4.7KΩ	4.7KΩ
Input current	DC24V 3mA	DC24V 3mA



- In order to prevent the destruction of electronic components, please turn off E24V power when setting DI mode.

(4) Digital Output (DO)

- ◎ Description: 16 DO with LED indicators.
- ◎ Output specifications:
16 RELAY OUT, 6A/250V



(5) Status LEDs :

- ◎ Description: Communication status .

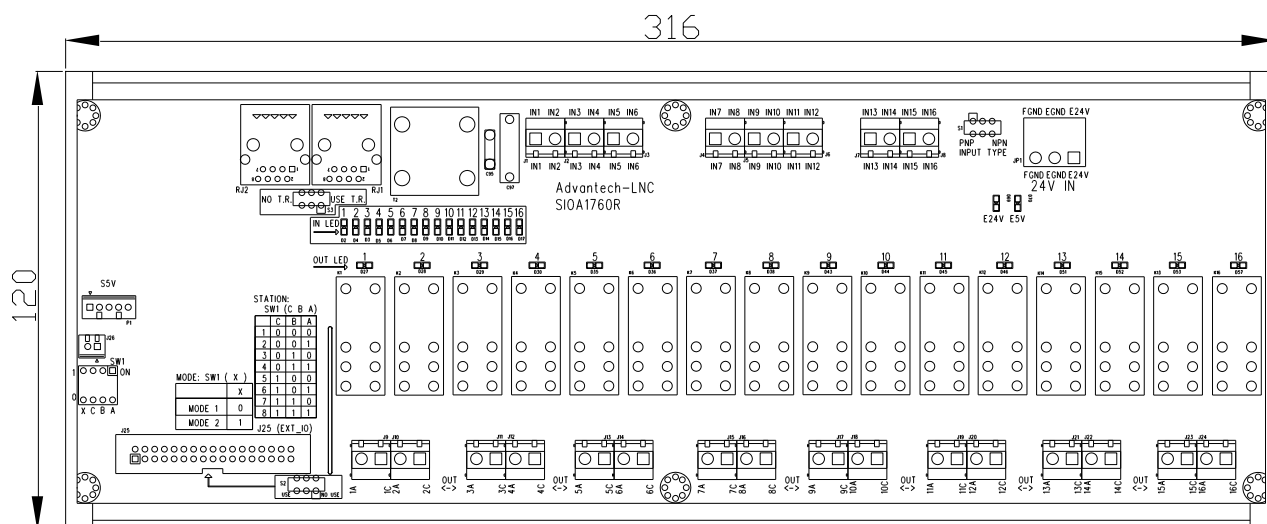
Location	Definition	Description
D24	Link	Color : Green Power ON Status : LED Turns On Receive CIO Command : LED Blinking
D23	Working	Color : Red Power ON Status : LED Turns Off Receive CIO Command assigned to this Unit : LED Blinking

(6) Please switching 「NO USE」

(7) Terminating resistor :

Only last station Switching to 「USE T.R.」.

Dimensions (with PCB Carrier)



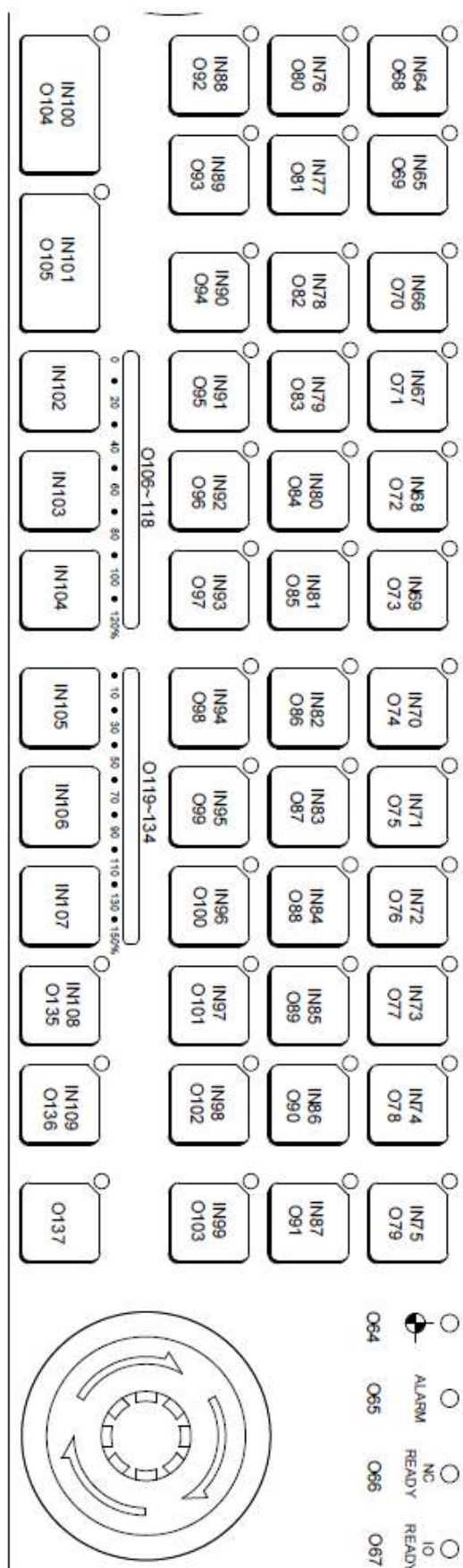
3 I/O Mapping

Internal I/O			
I point		O point	
Title	Serial No.	Title	Serial No.
L_IN1	20000	Servo_Reset	20003
L_IN2	20001		
±IN	20002		
MPG Axis_X	20006		
MPG Axis_Y	20007	Servo_ON_SP1(AXIS1)	20020
MPG Axis_Z	20008	Servo_ON_SP2(AXIS2)	20021
MPG Axis_4	20009		
MPG Axis_5	20010		
MPG Axis_6	20011		
MPG Rate_x10	20012		
MPG Rate_x100	20013		
Servo_Alarm_SP1(AXIS 1)	20014		
Servo_Alarm_SP2(AXIS 2)	20015		
Initial key (the red key on the back of mainframe)	20033		
Digital PCC3320/PCC3370=1	20063		

Lathe Machine OP panel (OP-2133)			
I point		O point	
Name of key	Serial No.	Name of indicator	Serial No.
CYCLE_START	20100	CYCLE_START	20104
FEED_HOLD	20101	FEED_HOLD	20105
↓X	20091	↓X	20095
↑X	20067	↑X	20071
Y+	20092	Y+	20096
Y—	20090	Y—	20094
→Z	20080	→Z	20084
←Z	20078	←Z	20082
C+	20068	C+	20072
C—	20066	C—	20070
MPG_DRN (handwheel simulation)	20082	MPG_DRN (handwheel simulation)	20086
SBK(single block execution)	20070	SBK(single block execution)	20074
BDT(optional skip)	20083	BDT(optional skip)	20087

OP_STOP(optional stop)	20071	OP_STOP(optional stop)	20075
Spindle CW(clockwise)	20069	Spindle CW(clockwise)	20073
Spindle STOP	20081	Spindle STOP	20085
Spindle CCW (counterclockwise)	20093	Spindle CCW (counterclockwise)	20097
COOL (cutting cooling water)	20109	COOL (cutting cooling water)	20136
W.L.(Working light)	20108	W.L.(Working light)	20135
CK(clamp)	20085	CK(clamp)	20089
AIR_BLOW(air blowing)	20098	AIR_BLOW(air blowing)	20102
TUR_CW(turret clockwise)	20072	TUR_CW(turret clockwise)	20076
TUR_CCW (turret counterclockwise)	20073	TUR_CCW (turret counterclockwise)	20077
CTCH(catcher)	20074	CTCH(catcher)	20078
AUTO (automatic)	20084	AUTO (automatic)	20088
F1	20075	F1	20079
F2	20087	F2	20091
F3	20099	F3	20103
TB(tail stock)	20086	TB(tail stock)	20090
MEM(automatic mode)	20089	MEM(automatic mode)	20093
MDI(manual mode)	20088	MDI(manual mode)	20092
INC JOG (increase jog mode)	20065	INC JOG (increase jog mode)	20069
JOG(jog mode)	20064	JOG(jog mode)	20068
MPG(handwheel mode)	20077	MPG(handwheel mode)	20081
ZRN(zero point mode)	20076	ZRN(zero point mode)	20080
Feed rate F%+(feed +)	20107		
Feed rate 100%	20106		
Feed rate F%-(feed -)	20105		
Spindle speed UP (rotational speed +)	20104		
Spindle speed 100%	20103		
Spindle speed DOWN (rotational speed -)	20102		
Rapid LOW	20094	Rapid LOW	20098
Rapid 25%/MPGx1	20095	Rapid 25%/MPGx1	20099
Rapid 50%/MPGx10	20096	Rapid 50%/MPGx10	20100
Rapid 100%/MPGx100	20097	Rapid 100%/MPGx100	20101
RAPID (rapid selection mode)	20079	RAPID (rapid selection mode)	20083
		IO_READY(IO is normal)	20067
		Zero(zero complete)	20064
		NC_READY(system is normal)	20066

		ALARM(alarm)	20065
OT_REL	20143	OT_REL	20137
		(Spindle speed (0%))	20106
		(Spindle speed (10%))	20107
		(Spindle speed (20%))	20108
		(Spindle speed (30%))	20109
		(Spindle speed (40%))	20110
		(Spindle speed (50%))	20111
		(Spindle speed (60%))	20112
		(Spindle speed (70%))	20113
		(Spindle speed (80%))	20114
		(Spindle speed (90%))	20115
		(Spindle speed (100%))	20116
		(Spindle speed (110%))	20117
		(Spindle speed (120%))	20118
		(Feed rate (0%))	20119
		(Feed rate (10%))	20120
		(Feed rate (20%))	20121
		(Feed rate (30%))	20122
		(Feed rate (40%))	20123
		(Feed rate (50%))	20124
		(Feed rate (60%))	20125
		(Feed rate (70%))	20126
		(Feed rate (80%))	20127
		(Feed rate (90%))	20128
		(Feed rate (100%))	20129
		(Feed rate (110%))	20130
		(Feed rate (120%))	20131
		(Feed rate (130%))	20132
		(Feed rate (140%))	20133
		(Feed rate (150%))	20134

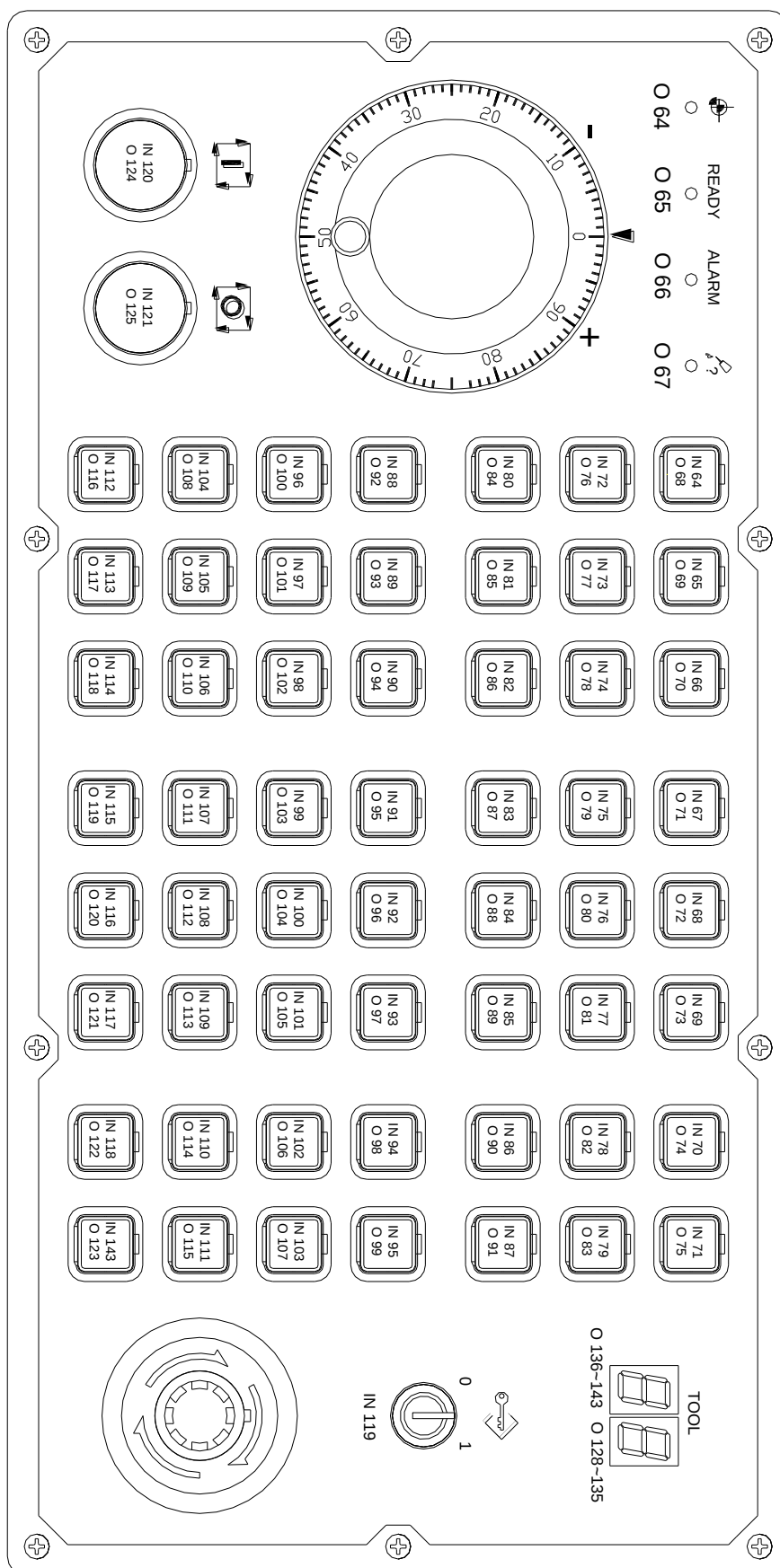


Note : OP unit hardware DI/DO allocated as in the figure above.

Lathe Machine OP panel (OP-3360A2)			
I point		O point	
Name of key	Serial No.	Name of indicator	Serial No.
CYCLE_START	20121	CYCLE_START	20125
FEED_HOLD	20120	FEED_HOLD	20124
↓X	20105	↓X	20109
↑X	20089	↑X	20093
Y+	20088	Y+	20092
Y—	20104	Y—	20108
→Z	20098	→Z	20102
←Z	20096	←Z	20100
←B	20081	←B	20085
→B	20082	→B	20086
C+	20090	C+	20094
C—	20106	C—	20110
MPG_DRN (handwheel simulation)	20071	MPG_DRN (handwheel simulation)	20075
SBK(single block execution)	20070	SBK(single block execution)	20074
BDT(optional skip)	20086	BDT(optional skip)	20090
OP_STOP(optional stop)	20078	OP_STOP(optional stop)	20082
Spindle CW(clockwise)	20067	Spindle CW(clockwise)	20071
SpindleSTOP	20068	Spindle STOP	20072
SpindleCCW(counterclockwise)	20069	Spindle CCW(counterclockwise)	20073
Power Tool 2	20075	Power Tool 2	20079
Power Tool 3	20077	Power Tool 3	20081
FEEDER	20087	FEEDER	20091
COOL(cutting cooling water)	20095	COOL	20099
W.L.(Working light)	20094	W.L.	20098
CK(clamp)	20076	CK(clamp)	20080
AIR_BLOW(air blowing)	20102	AIR_BLOW(air blowing)	20106
DOOR	20103	DOOR	20107
TUR_CW(turret clockwise)	20084	TUR_CW(turret clockwise)	20088
TUR_CCW (turret counterclockwise)	20085	TUR_CCW (turret counterclockwise)	20089
CHIP CW	20110	CHIP CW	20114
CHIP CCW	20111	CHIP CCW	20115
CTCH(catcher)	20083	CTCH(catcher)	20087
AUTO(automatic)	20079	AUTO(automatic)	20083
F1	20118	F1	20122
F2	20112	F2	20116

F3	20113	F3	20117
F4	20114	F4	20118
MEM(automatic mode)	20074	MEM(automatic mode)	20078
MDI(manual mode)	20073	MDI(manual mode)	20077
JOG(jog mode)	20065	JOG(jog mode)	20069
ZRN(zero point mode)	20066	ZRN(zero point mode)	20070
Feed rate F%+(feed +)	20100	Feed rate F%+(feed +)	20104
Feed rate 100%	20092	Feed rate 100%	20096
Feed rate F%-(feed -)	20108	Feed rate F%-(feed -)	20112
Spindle speed UP (rotational speed +)	20099	Spindle speed UP (rotational speed +)	20103
Spindle speed 100%	20091	Spindle speed 100%	20095
Spindle speed DOWN (rotational speed -)	20107	Spindle speed DOWN (rotational speed -)	20111
Rapid rate 0%	20117	Rapid rate 0%	20121
Rapid rate 5%	20109	Rapid rate 5%	20113
Rapid rate 25%	20101	Rapid rate 25%	20105
Rapid rate 100%	20093	Rapid rate 100%	20097
RAPID (rapid selection mode)	20097	RAPID (rapid selection mode)	20101
Feed rate 0%	20116	Feed rate 0%	20120
Spindle speed 0%	20115	Spindle speed 0%	20119
MPGx1	20080	MPGx1	20084
MPGx10	20072	MPGx10	20076
MPGx100	20064	MPGx100	20068
Key	20119		
		Zero (Zero complete)	20064
		NC_READY(system is normal)	20065
		Oil (Oil not supply)	20067
		ALARM(alarm)	20066
		LED 	20136
		LED 	20137
		LED 	20138
		LED 	20139
		LED 	20140
		LED 	20141
		LED 	20142

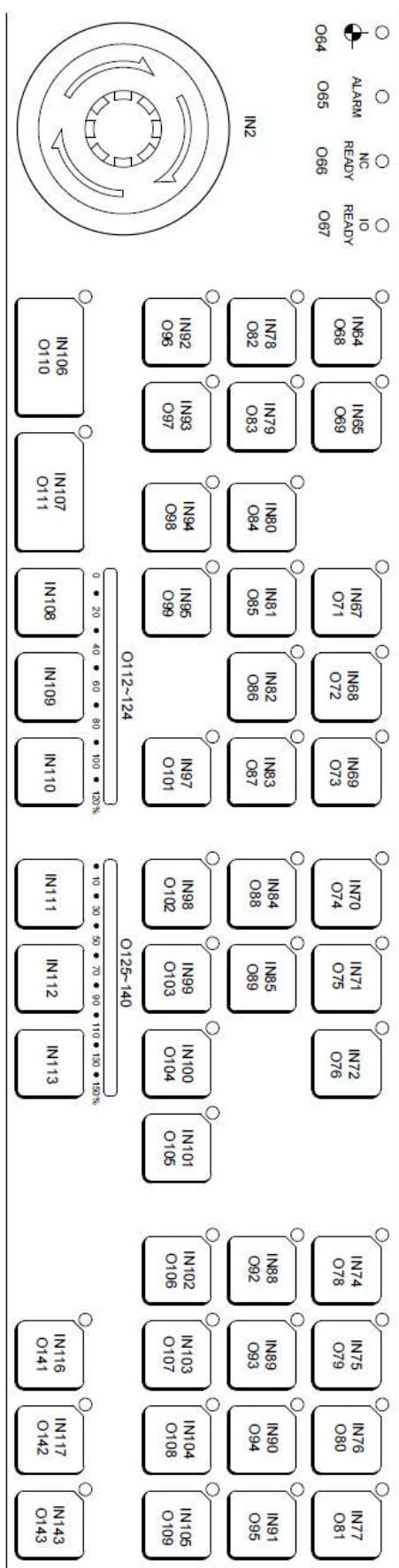
		LED 	20143
		LED 	20128
		LED 	20129
		LED 	20130
		LED 	20131
		LED 	20132
		LED 	20133
		LED 	20134
		LED 	20135
OT_REL	20143	OT_REL	20123



Note : OP unit hardware DI/DO allocated as in the figure above.

Milling Machine OP panel (OP-2132)			
I point		O point	
Name of key	Serial No.	Name of indicator	Serial No.
MEM (automatic mode)	20093	MEM (automatic mode)	20097
MDI (manual mode)	20092	MDI (manual mode)	20096
MPG (handwheel mode)	20079	MPG (handwheel mode)	20083
ZRN (zero point mode)	20078	ZRN (zero point mode)	20082
JOG (jog mode)	20064	JOG (jog mode)	20068
INCJOG (increase jog mode)	20065	INCJOG (increase jog mode)	20069
+4	20066	+4	20070
←X	20080	←X	20084
↙Y	20094	↙Y	20098
↑Z	20067	↑Z	20071
RAPID (rapid selection mode)	20081	RAPID (rapid selection mode)	20085
↓Z	20095	↓Z	20099
↗Y	20068	↗Y	20072
→X	20082	→X	20086
-4	20096	-4	20100
CW (clockwise)	20069	CW (clockwise)	20073
STOP (stop)	20083	STOP (stop)	20087
CCW (counterclockwise)	20097	CCW (counterclockwise)	20101
DOWN	20108	Spindle Override 0~120%	20112~20124
100%	20109		
UP	20110		
Feed -	20111	Feedrate Override 0~150%	20125~20140
Feed 100%	20112		
Feed +	20113		
SBK	20070	SBK	20074
OP STOP	20071	OP STOP	20075
MST	20072	MST	20076
MPG DRN	20084	MPG DRN	20088
BDT optional skip	20085	BDT optional skip	20089
Rapid Traverse LOW	20098	Rapid Traverse LOW	20102
Rapid Traverse 25%	20099	Rapid Traverse 25%	20103
Rapid Traverse 50%	20100	Rapid Traverse 50%	20104
Rapid Traverse 100%	20101	Rapid Traverse 100%	20105
MAG CW	20074	MAG CW	20078

MAG CCW	20075	MAG CCW	20079
AIR BLOW	20088	AIR BLOW	20092
Working light	20089	Working light	20093
SPINDLE ORIENTATION	20102	SPINDLE ORIENTATION	20106
COOL	20103	COOL	20107
F1	20076	F1	20080
F2	20090	F2	20094
F3	20104	F3	20108
F4	20077	F4	20081
F5	20091	F5	20095
F6	20105	F6	20109
Debris expelling clockwise	20116	Debris expelling clockwise	20141
Debris expelling counterclockwise	20117	Debris expelling counterclockwise	20142
Over travel release (Only M5800D Efficient)	20143	Over travel release	20143
CYCLE STAR	20106	CYCLE STAR	20110
FEED HOLD	20107	FEED HOLD	20111
EMG STOP	20142		
		Home(home)	20064
		ALARM (alarm)	20065
		NC_READY(system is normal)	20066
		IO_READY (IO is normal)	20067



Note : OP unit hardware DI/DO allocated as in the figure above.

External I/O Planning (SIOA1700 the first station)			
I point		O point	
Title	Serial No.	Title	Serial No.
IN1	50000	O1	50000
IN2	50001	O2	50001
IN3	50002	O3	50002
IN4	50003	O4	50003
IN5	50004	O5	50004
IN6	50005	O6	50005
IN7	50006	O7	50006
IN8	50007	O8	50007
IN9	50008	O9	50008
IN10	50009	O10	50009
IN11	50010	O11	50010
IN12	50011	O12	50011
IN13	50012	O13	50012
IN14	50013	O14	50013
IN15	50014	O15	50014
IN16	50015	O16	50015
IN17	50016	(REL1805 expansion relay board)	50016
IN18	50017	(REL1805 expansion relay board)	50017
IN19	50018	(REL1805 expansion relay board)	50018
IN20	50019	(REL1805 expansion relay board)	50019
IN21	50020	(REL1805 expansion relay board)	50020
IN22	50021		

External I/O Planning (SIOA1760R the first station)			
I point		O point	
Title	Serial No.	Title	Serial No.
IN1	50000	O1	50000
IN2	50001	O2	50001
IN3	50002	O3	50002
IN4	50003	O4	50003
IN5	50004	O5	50004
IN6	50005	O6	50005
IN7	50006	O7	50006
IN8	50007	O8	50007
IN9	50008	O9	50008
IN10	50009	O10	50009

IN11	50010	O11	50010
IN12	50011	O12	50011
IN13	50012	O13	50012
IN14	50013	O14	50013
IN15	50014	O15	50014
IN16	50015	O16	50015

External I/O Planning (REL1760 the first station)

I point		O point	
Title	Serial No.	Title	Serial No.
IN1	50016	O1	50016
IN2	50017	O2	50017
IN3	50018	O3	50018
IN4	50019	O4	50019
IN5	50020	O5	50020
IN6	50021	O6	50021
IN7	50022	O7	50022
IN8	50023	O8	50023
IN9	50024	O9	50024
IN10	50025	O10	50025
IN11	50026	O11	50026
IN12	50027	O12	50027
IN13	50028	O13	50028
IN14	50029	O14	50029
IN15	50030	O15	50030
IN16	50031	O16	50031

External I/O Planning (SIOA1760R the second station)

I point		O point	
Title	Serial No.	Title	Serial No.
IN1	50100	O1	50100
IN2	50101	O2	50101
IN3	50102	O3	50102
IN4	50103	O4	50103
IN5	50104	O5	50104
IN6	50105	O6	50105
IN7	50106	O7	50106
IN8	50107	O8	50107

IN9	50108	O9	50108
IN10	50109	O10	50109
IN11	50110	O11	50110
IN12	50111	O12	50111
IN13	50112	O13	50112
IN14	50113	O14	50113
IN15	50114	O15	50114
IN16	50115	O16	50115

External I/O Planning (REL1760 the second station)			
I point		O point	
Title	Serial No.	Title	Serial No.
IN1	50116	O1	50116
IN2	50117	O2	50117
IN3	50118	O3	50118
IN4	50119	O4	50119
IN5	50120	O5	50120
IN6	50121	O6	50121
IN7	50122	O7	50122
IN8	50123	O8	50123
IN9	50124	O9	50124
IN10	50125	O10	50125
IN11	50126	O11	50126
IN12	50127	O12	50127
IN13	50128	O13	50128
IN14	50129	O14	50129
IN15	50130	O15	50130
IN16	50131	O16	50131