
Important : Read these instructions before installing, operating or servicing this product.

Model : PT-200s Welding Positioner



Serial Number : 2210002 ~ Later

Revised Date : Oct. 25, 2022

UNITED PROARC CORPORATION

MENU

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WARNING

Operation and maintenance involve potential hazards. All operators and personnel should be alerted to possible hazards and precautions should be taken to prevent possible injury.

Electrical safety

Operator needs to take proper electrical insulation from work and electrical ground (PPE) to prevent electric shocks.

- * The equipment needs to be properly electrically grounded to prevent high frequency interference.
- * All power and ground cables PVC insulation need to be inspected periodically for any melting point. Replace the cable whenever necessary.
- * Turn off the equipment before maintenance/service.

Individual safety



* Gases/fumes from welding are hazardous. Good ventilation is important. Use air supplied personal protective equipment in confined space when conventional ventilation is not adequate



* Oil/grease in combination with oxygen may cause violent combustion. Keep cylinders, valves, couplings, regulators, hoses, and other apparatus oil free..

* Do not use oxygen as a substitute for compressed air.

Fire



* Fire can be started by welding sparks. Remove combustibles material from surrounding. Keep fire extinguisher nearby in case of fire.

Noise



* Process noise may cause permanent hearing loss. Wear proper PPE or ear plugs. Make sure others in the operation vicinity are protected from noise.

Protection goggle



* Welding arc radiation may cause permanent sight damage. Avoid direct eye contact or wear protection goggle.



ISO OERLIKON AG Schweisstechnik

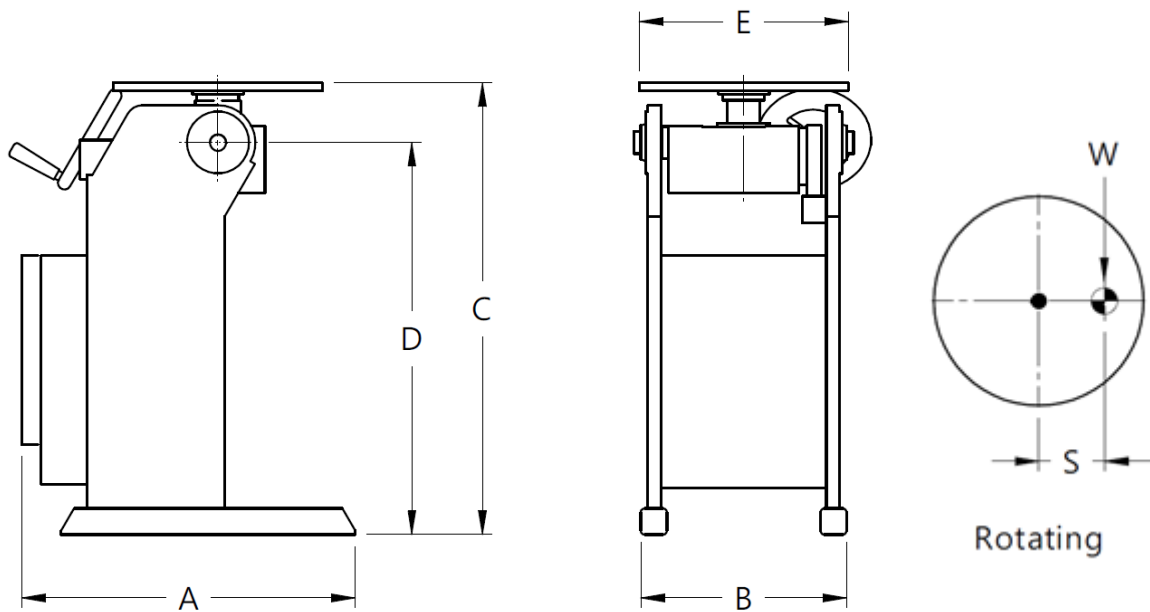
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1.1 SPECIFICATION

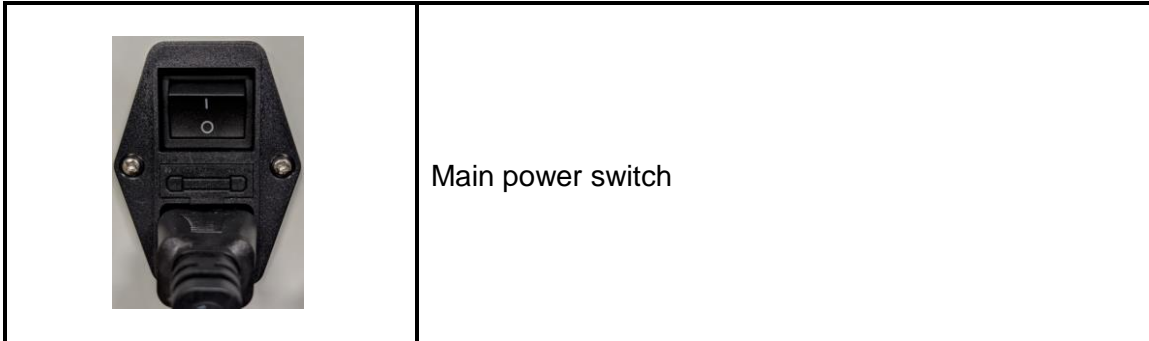
Model	Unit	PT- 200s
Power Input		1Ø 200~230VAC 50/60Hz
Capacity (Horizontal / Vertical)(W)	kg	200 / 130
Rated center of gravity(S)	mm	25
Rotation speed	rpm	0.01 ~ 16
Tilt range	deg.	0 ~ 120
Earthing	amp	300
Dimension (A x B x C)	mm	530 x 315 x 690
Center to floor (D)	mm	600
Table diameter (E)	mm	Ø320
Spindle thru hole	mm	22
Table slot bolt size		M10
Weight	kg	45

Dimensions



1.2 CONTROL BOX SPECIFICATION

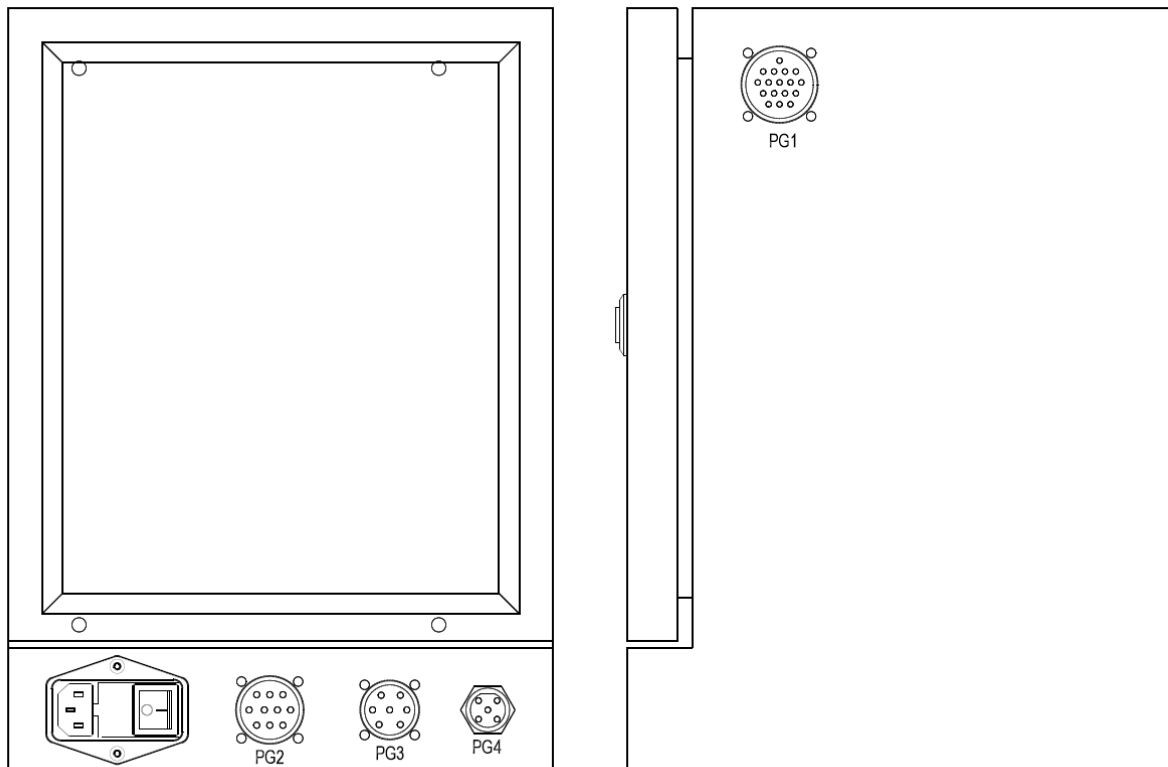
Control model	Unit	CB-500
Power requirement		1Ø 220V 50/60Hz 3A



1.3 CONNECTOR

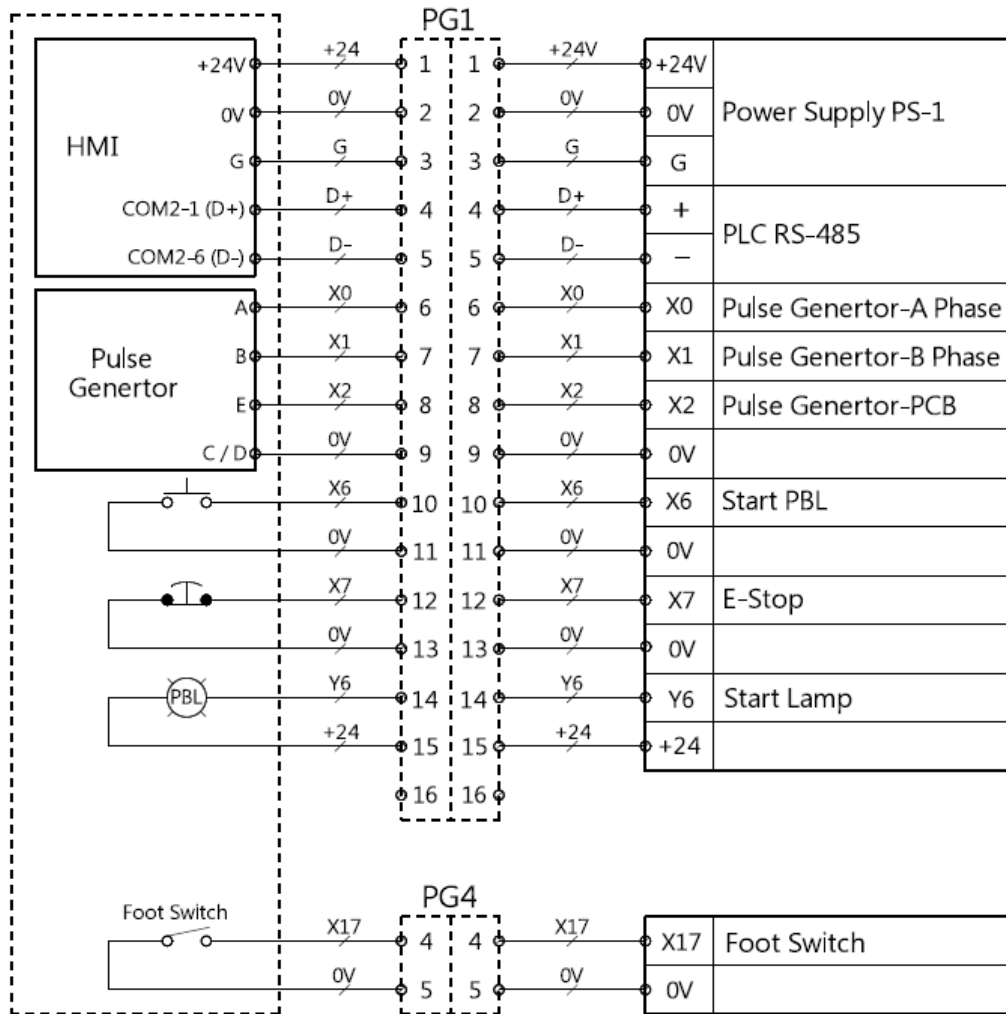
Control box connector :

PG1	HMI Box (16Pin)	PG3	Start output (7Pin)
PG2	Weld Machine (10Pin)	PG4	Foot switch (5Pin)



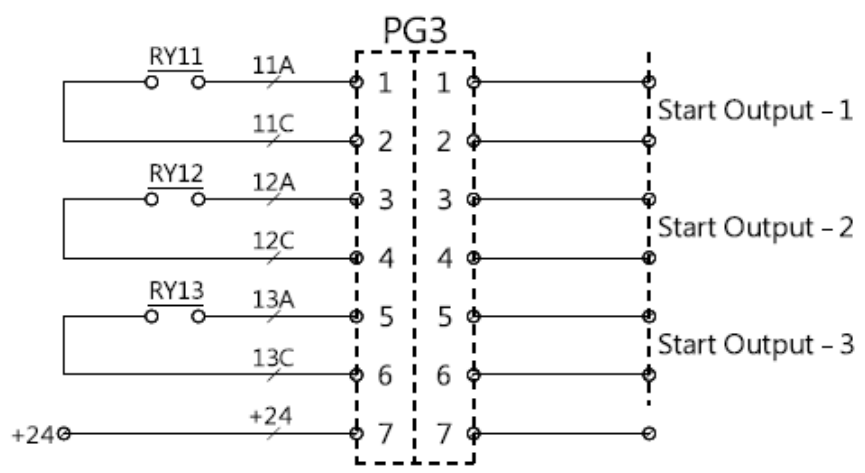
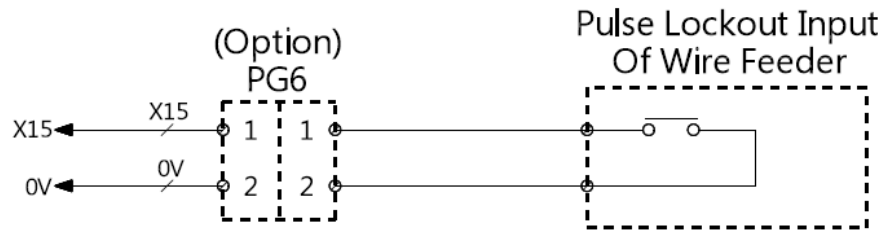
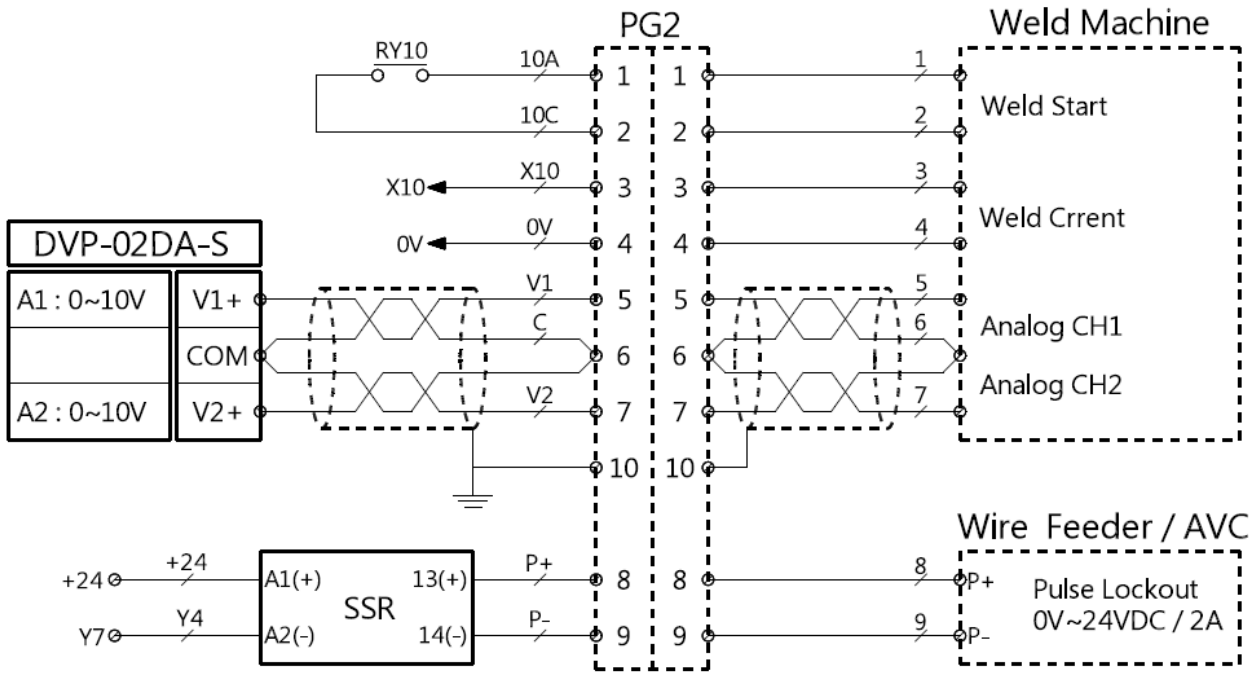
1.3 CONNECTOR

HMI & Food switch connection :

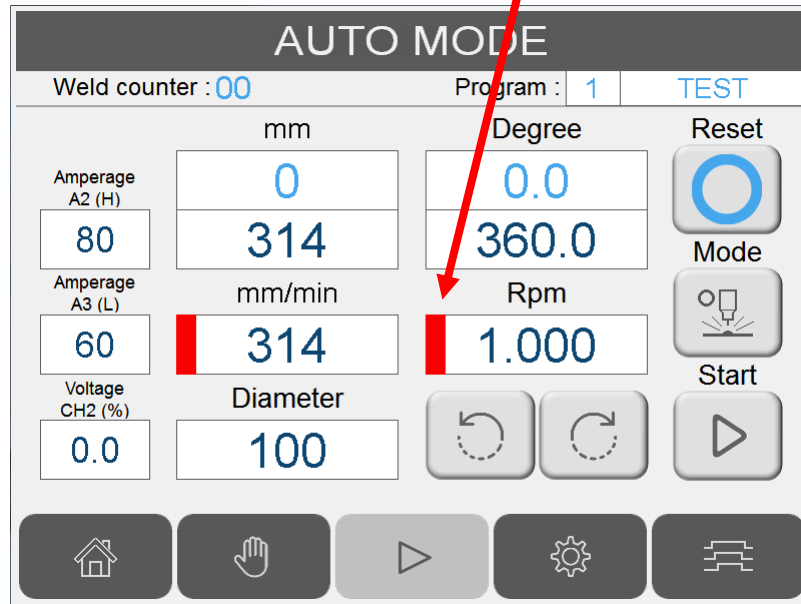
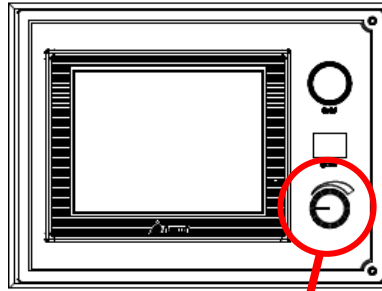





1.3 CONNECTOR

Welding equipment connection :








2.1 HMI OPERATION



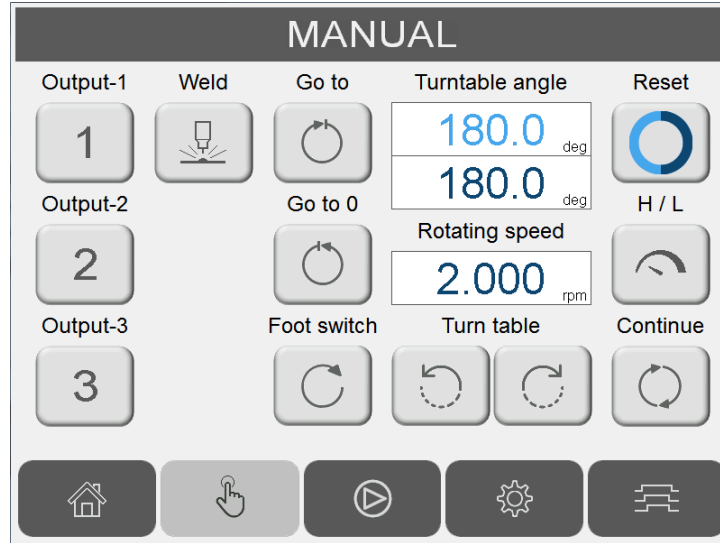
	<p>Emergency stop.</p>
	<p>Auto start / Auto stop.</p>
	<p>Pulse adjustment knob :</p> <ol style="list-style-type: none"> 1. Press the pulse adjustment knob to display red flashing cursor beside Rpm and mm/min. Rotate the knob to modify speed. 2. Press the pulse adjustment knob again to display red flashing cursor beside Amperage A2(H) & A3(L). Rotate the knob to modify both A2(H) & A3(L). 3. Press the pulse adjustment knob again to cancel red flashing cursor and disable online adjustment feature.

2.2 MAIN SCREEN



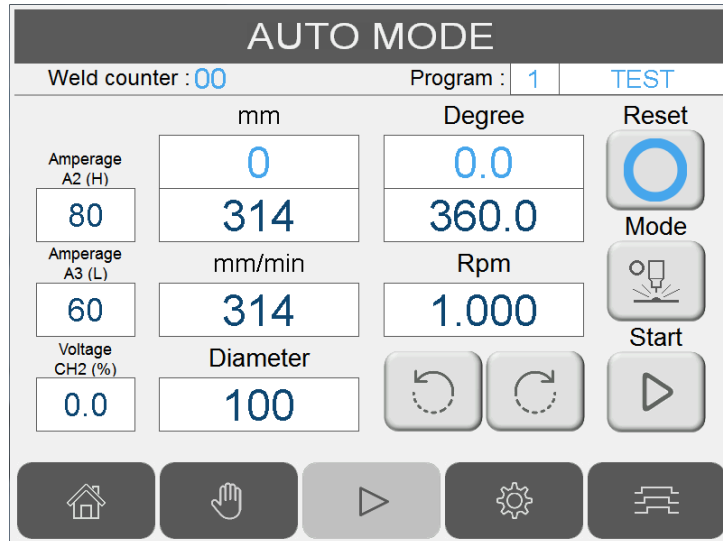
	Switch language Chinese / English.
	Switch to "Manual Mode" screen.
	Switch to "Auto Mode" screen User level 1 clearance is required. Default user level 1 clearance password : 123 Default user level 2 clearance password : 456 Refer to section 「2.11 Password」 to disable auto mode password protection.
	Switch to "Setting" screen.
	Switch to "System Info" screen.

2.3 MANUAL MODE



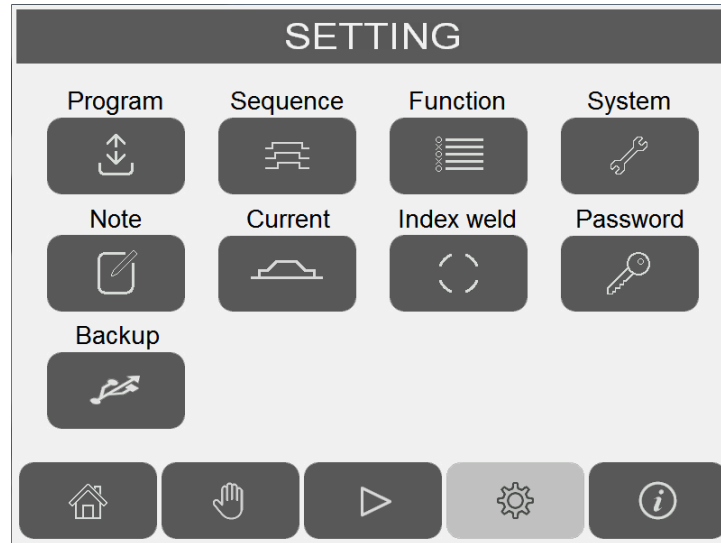
	Turn table current position: Blue field: current position. Red field: set position.		Foot switch. direction selection.
	Turn table rotation per round (RPM) setting.		Move to set position.
	Reset current position to 0.		Return to beginning position.
	Toggle between welding/high turn table speed.		Manual activate welder.
	Jog operation mode. 1. Hold/release the button to rotate. 2. Press to toggle rotation ON/OFF.		Force dry contact output ON/OFF.
	Turn table jog operation.		Switch to welding sequence screen.





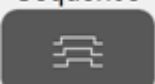




2.4 AUTO MODE



	Turn table current position according to angle & diameter: Blue field: current position. Red field: set position.		Turn table current position: Blue field: current position. Red field: set position.
	Turn table linear speed (mm/min) setting.		Turn table rotation per round (RPM) setting.
	Welding diameter.		Reset current position to 0
	Welding current (A). 0~100% = 0~10VDC If pulse mode is active, represents the peak (A2). (please refer to sec 2.8)		Simulation/Auto mode toggle. Welder ON is disable when Simulation mode is active.
	Second analog voltage output. 0~100% = 0~10VDC		Activate/stop auto welding sequence.
	Turn table jog operation.		Switch to welding sequence screen.

2.5 SETTING



<p>Program</p> 	Switch to Program screen.	<p>Index weld</p> 	Switch to Index Weld screen.
<p>Note</p> 	Switch to Program note screen.	<p>System</p> 	Switch to system setting screen. User level 1 clearance is required. Default user level 1 clearance password: 123 Default user level 2 clearance password: 456
<p>Sequence</p> 	Switch to Weld Sequence screen.	<p>Password</p> 	Switch to Password screen.
<p>Current</p> 	Switch to Weld Current screen.	<p>Backup</p> 	Switch to Program Backup screen.
<p>Function</p> 	Switch to Auto run function screen.		

2.6 PROGRAM SAVE/LOAD






The screenshot shows the 'PROGRAM' interface. At the top, there is a header 'PROGRAM'. Below it, there are two main sections. The first section has a 'NO.' field with the value '1' and a 'Program name' field with the value 'TEST'. To the left of the 'NO.' field is a 'Load' button with an arrow pointing left, and to the right of the 'Program name' field is a 'Save' button with an arrow pointing right. The second section is a table with 10 rows and 2 columns. The first row contains '1' and 'TEST'. The other rows are empty. To the right of the table are two buttons: one with a minus sign and one with a plus sign. At the bottom of the interface is a navigation bar with five icons: a home icon, a hand icon, a play icon, a gear icon, and a notepad icon.

<p>A screenshot showing the 'Load' button with an arrow pointing left towards the 'NO.' field, which contains the number '1'.</p>	<p>Enter the program number in No. field and press “Load” button to load the program’s welding parameter.</p>
<p>A screenshot showing the 'Save' button with an arrow pointing right towards the 'Program name' field, which contains the text 'TEST'. The 'NO.' field contains the number '1'.</p>	<p>Enter the program number and program name, the press “Save” to save the parameters.</p>
<p>A screenshot showing the table of parameter sets. The first row contains '1' and 'TEST'. To the right of the table are two buttons: one with a minus sign and one with a plus sign.</p>	<p>Press ▲ or ▼ button to scroll to next/previous sets of parameters.</p>
<p>A screenshot showing the notepad icon in the navigation bar.</p>	<p>Switch to Program note screen.</p>

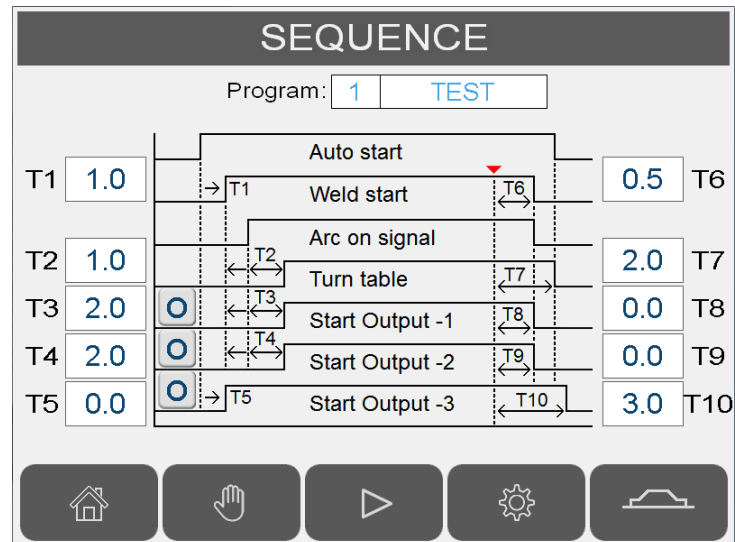
2.7 PROGRAM NOTE

Enter letter or number as program reminder. 10 letters for short field, 24 letters for long field.

1	TEST	NOTE
A = 100		1234567890
V = 70		
ABCDEFGHJKLMNOPQRSTUVWXYZ		
abcdefghijklmnopqrstuvw		

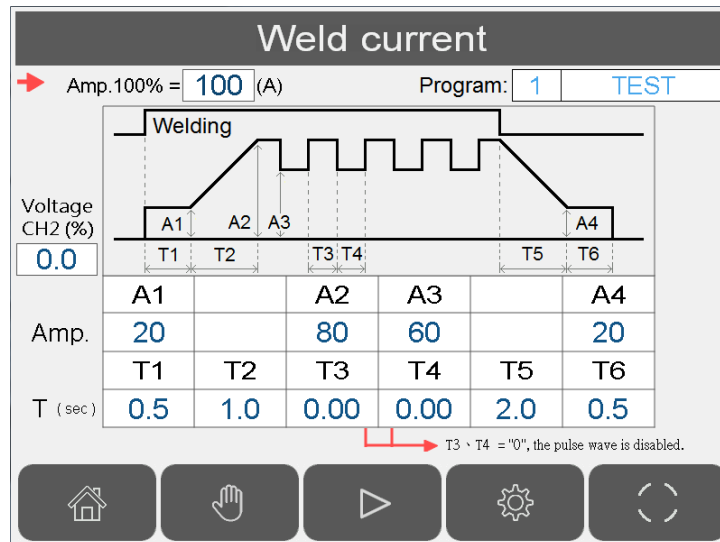


2.8 WELDING SEQUENCE SETTING



T1	Welder ON delay after auto start is activated.
T2	Turn table rotation delay after arc on signal is received.
T3	Dry contact output-1 ON delay after arc on signal is received.
T4	Dry contact output-2 ON delay after arc on signal is received.
T5	Dry contact output-3 ON delay after auto start is activated. Used for protective gas activation or pneumatic torch lifter.
T6	Welder OFF delay after turn table has reached target program position.
T7	Turn table stop delay after turn table has reached target program position.
T8	Dry contact output-1 OFF delay after turn table has reached target program position. Also switches off when both T6 and T7 timer are finished.
T9	Dry contact output-2 OFF delay after turn table has reached target program position. Also switches off when both T6 and T7 timer are finished.
T10	Dry contact output-3 OFF delay after turn table has reached target program position. Output-3 is not limited by T6 and T7 timer, can be set for longer delay action like welding protective gas or pneumatic torch lifter.

2.9 WELDING CURRENT SETTING

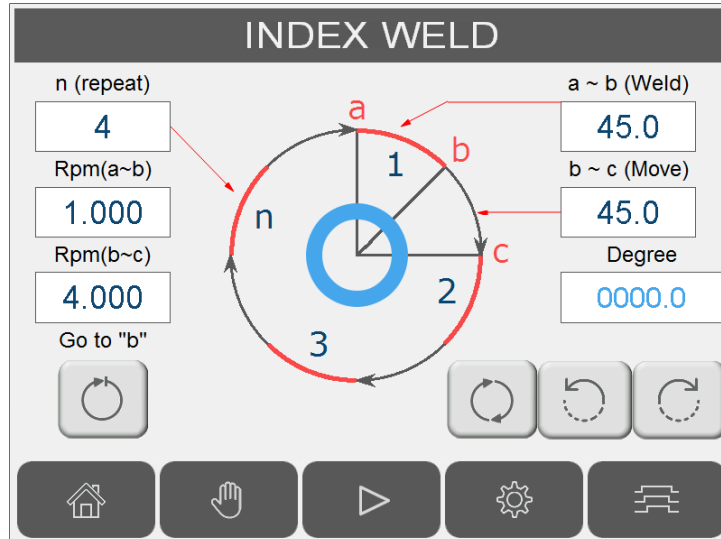




→ Amp.100% = 100 (A)		100% amperage value setting (analog output 1).
A1	Initial current (A)	Initial current level after arc ON signal is received.
A2	Peak current (A)	Main welding current. If pulse wave function is enabled, this value is the peak current value.
A3	Valley(low) current (A)	If pulse wave function is enabled, this value is the low current value. Can't set more than A2.
A4	Welding crater current (%)	Welding ending current.
T1	Initial current time (sec)	0~10 sec, initial arc stabilize time after arc ON signal is received.
T2	Rise current time (sec)	0~10 sec, rise time from initial current A1 to peak current A2
T3	Peak current time (sec)	0.01~10 sec, peak current duration before change to valley current.
T4	Valley current time (sec)	0.01~10 sec, valley current duration before change to peak current.
T5	Current fall time (sec)	0~10 sec, amount of time current drop from A2 to A4. The count starts after welder output is switched off. \
T6	Welding crater time (sec)	0~10 sec, amount of time for crater current.
CH2	Analog voltage (%)	Channel 2 analog voltage 0~100% = 0~10VDC.

Note 1 : If both T3 & T4 are set to 0, the wave pulse function is disabled.

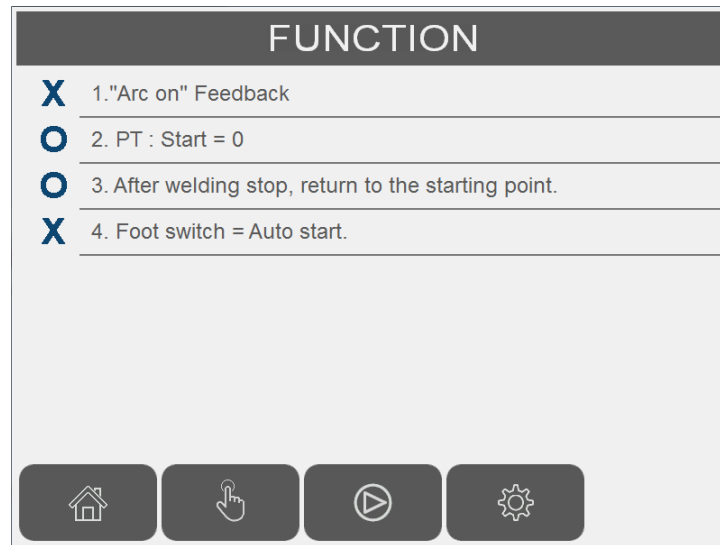
Caution : Even though pulse wave function's output voltage can reach a frequency of 50Hz, the welder may not be able to change current at this rate.

2.10 INDEX WELD SETTING



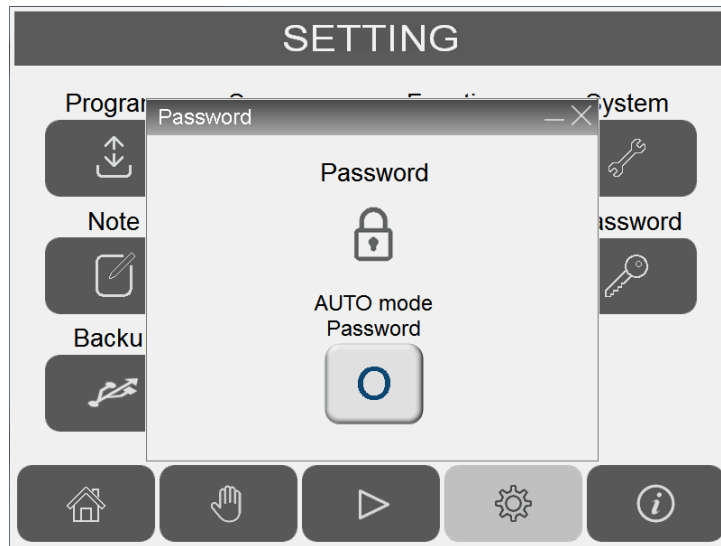
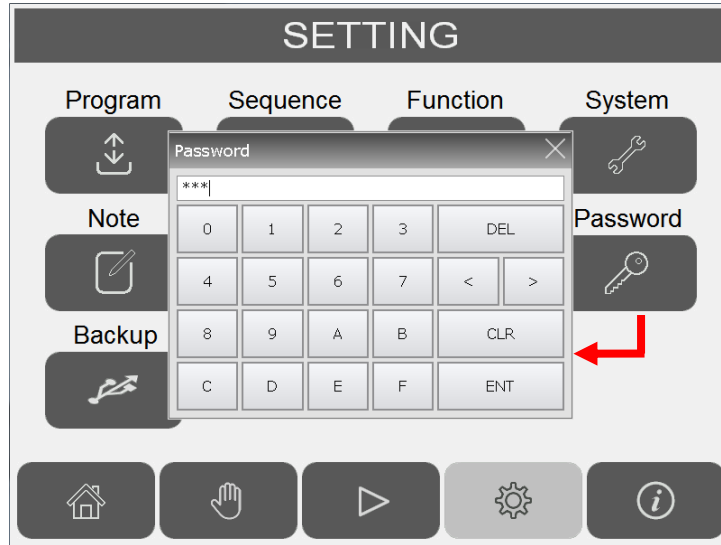
<p>n (repeat)</p> <input type="text" value="4"/>	<p>Set number of index welding.</p>
<p>Rpm(a~b) a ~ b (Weld)</p> <input type="text" value="1.000"/> <input type="text" value="45.0"/>	<p>a ~ b : Set index welding angle and speed.</p>
<p>Rpm(b~c) b ~ c (Move)</p> <input type="text" value="4.000"/> <input type="text" value="45.0"/>	<p>b ~ c : Set positioning angle and speed.</p>
	<p>Turn table jog operation.</p>
<p>Go to "b"</p> 	<p>Move to position "b" .</p>

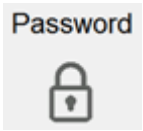
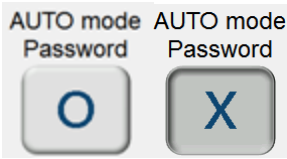
2.11 AUTORUN FUNCTION



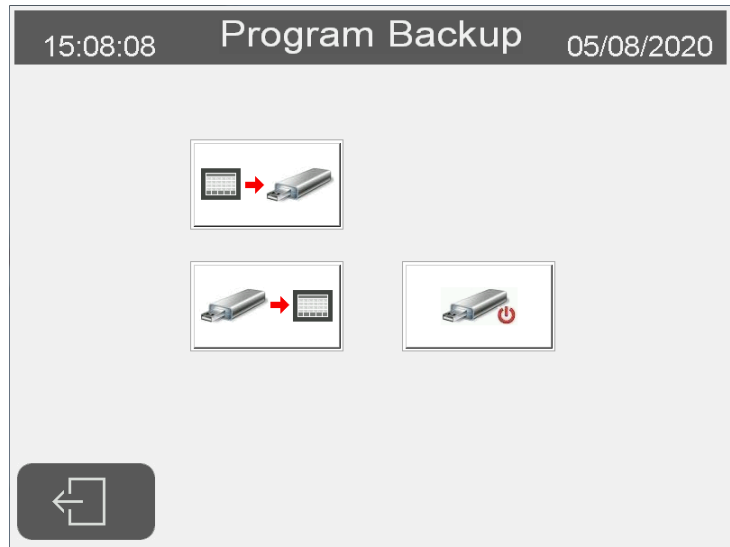
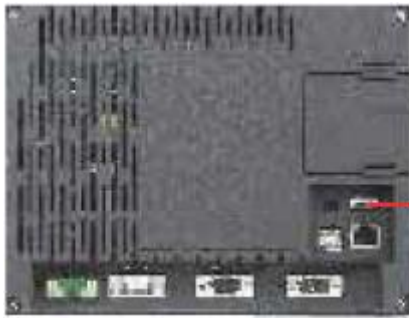
<p>X O</p>	<p>X : Disable feature. O : Enable feature.</p>
<p>1</p>	<p>X : Turn table doesn't wait Arc on feedback signal. Turn table start rotation T2 sec after welder on signal is active. O : Turn table waits for Arc on feedback signal. Turn table start rotation T2 sec after receiving arc on feedback.</p>
<p>2</p>	<p>Reset current position to 0 when auto start is activated.</p>
<p>3</p>	<p>Automatically return turn table to original position.</p>
<p>4</p>	<p>Foot switch = Auto start.</p>




2.12 PASSWORD SETTING



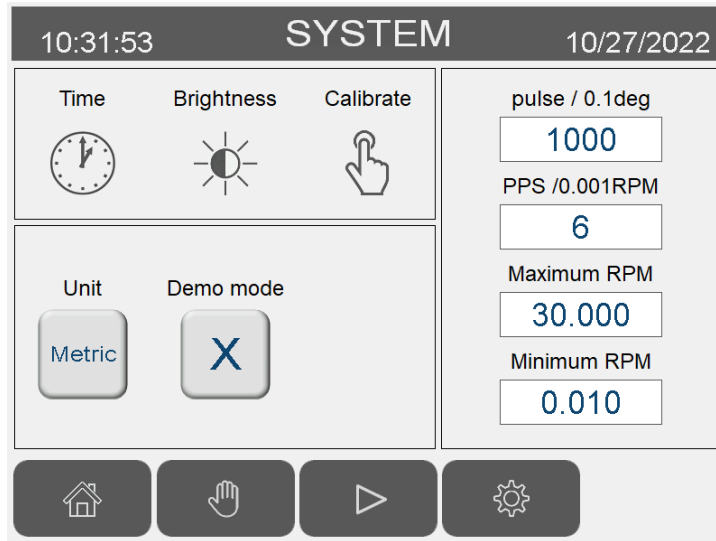
	<p>User level 2 clearance is required. Default user level 1 clearance password : 123 Default user level 2 clearance password : 456</p>
	<p>User level 1 clearance is required. Disable auto mode password protection.</p>



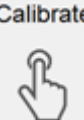
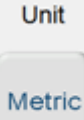
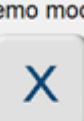
2.13 PROGRAM BACKUP



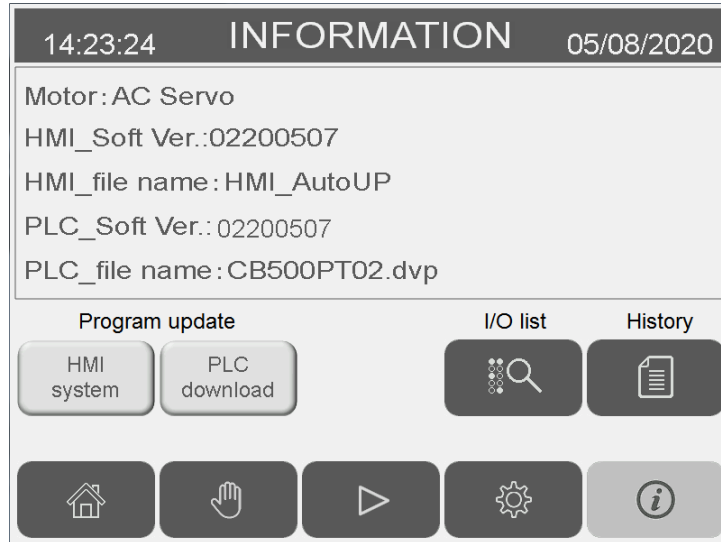
	<p>Export all 100 welding setting and store into USB (does not include program note).</p>
	<p>Import all 100 welding setting and store into system. USB (does not include program note).</p>
	<p>Stop USB function. Activate this function before extract USB.</p>



2.14 SYSTEM SETTING



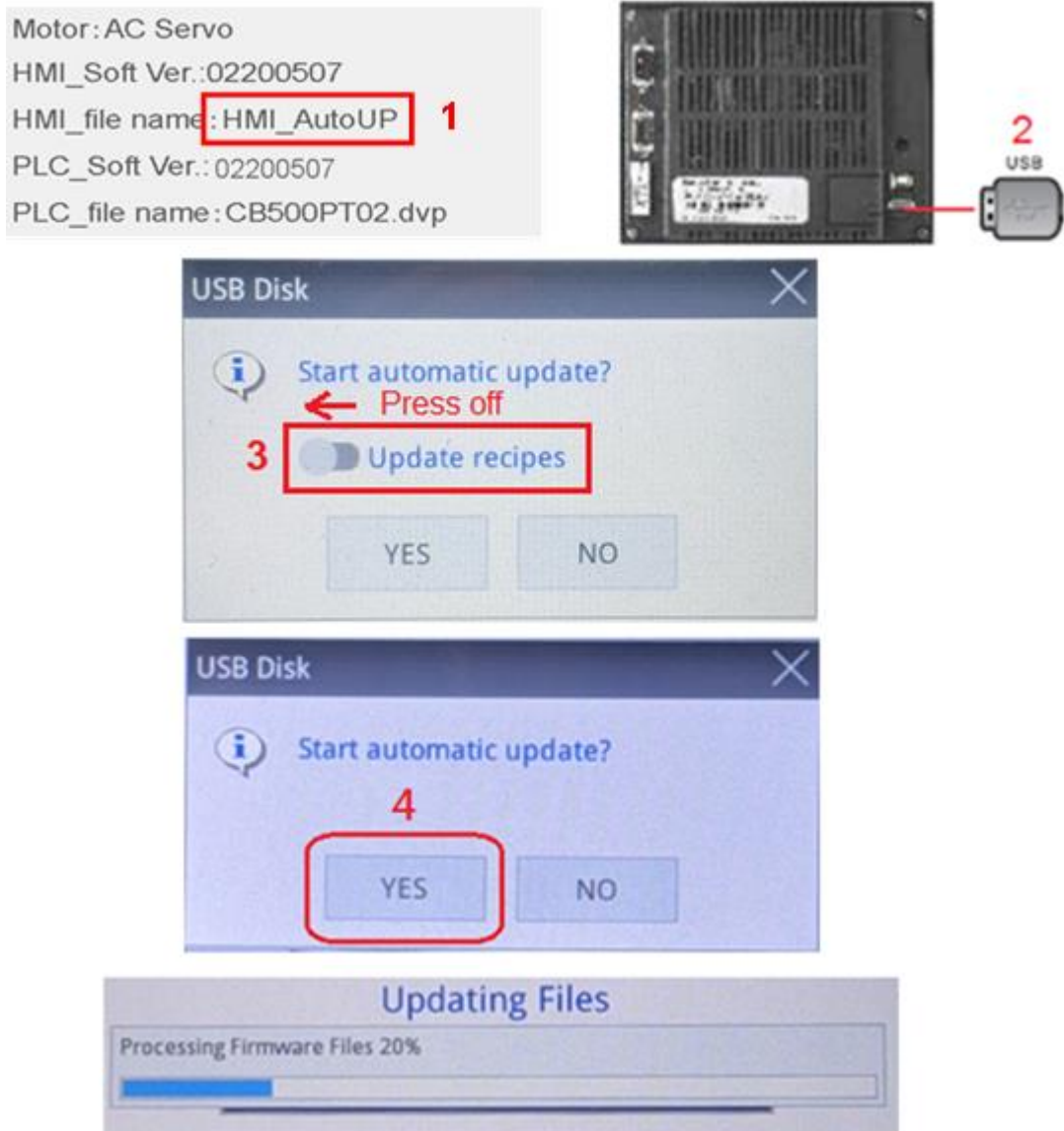
	Time adjustment.	<p>pulse / 0.1deg</p> <input type="text" value="1000"/>	Position setting.
	Backlight calibration function.	<p>PPS / 0.001RPM</p> <input type="text" value="6"/>	Speed setting.
	Touch screen calibration.	<p>Maximum RPM</p> <input type="text" value="30.000"/>	Maximum rotation speed limitation.
	Metric / inch unit setting.	<p>Minimum RPM</p> <input type="text" value="0.010"/>	Minimum rotation speed limitation.
	<p>Demo mode: When the demo mode is turned on, the automatic start can be repeated with a delay of 3 seconds after the automatic execution ends. Demo mode is automatically released after power off.</p>		

2.15 SYSTEM INFORMATION



<p>Motor: AC Servo HMI_Soft Ver.:02200507 HMI_file name: HMI_AutoUP PLC_Soft Ver.: 02200507 PLC_file name: CB500PT02.dvp</p>	<ol style="list-style-type: none"> 1. Motor type 2. HMI software version 3. HMI file name 4. PLC software version 5. PLC file name
<p style="text-align: center;">HMI system</p>	<p>HMI update function.</p>
<p style="text-align: center;">PLC download</p>	<p>PLC update function.</p>
<p style="text-align: center;">I/O list</p> 	<p>Switch to I/O monitor screen,</p>
<p style="text-align: center;">History</p> 	<p>Switch to Error History screen.</p>

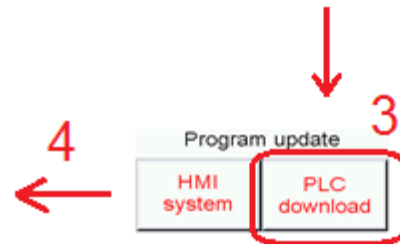
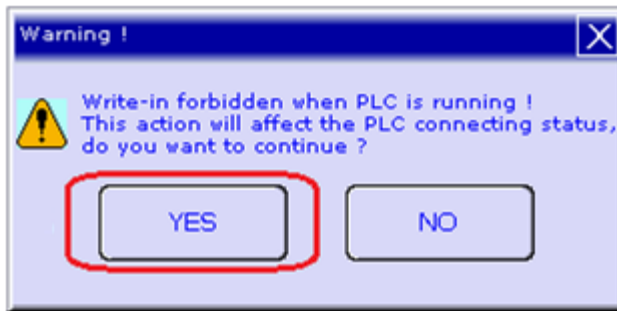
2.16 HMI UPDATE



1. Copy HMI update program (HMI_AutoUP) into USB disk (FAT32 format).
2. Insert the USB disk into USB port behind HMI display
Wait for a few second and system would automatically search for HMI AutoUP files
3. Upon Start automatic update prompt appears.
First close the update recipe
4. Select "Yes" to start the update.
5. Do not unplug USB during update. HMI would restart upon update completion.
6. After HMI reboot, the same update prompt would appear again. Select "NO" this time and unplug the USB to complete update procedure..

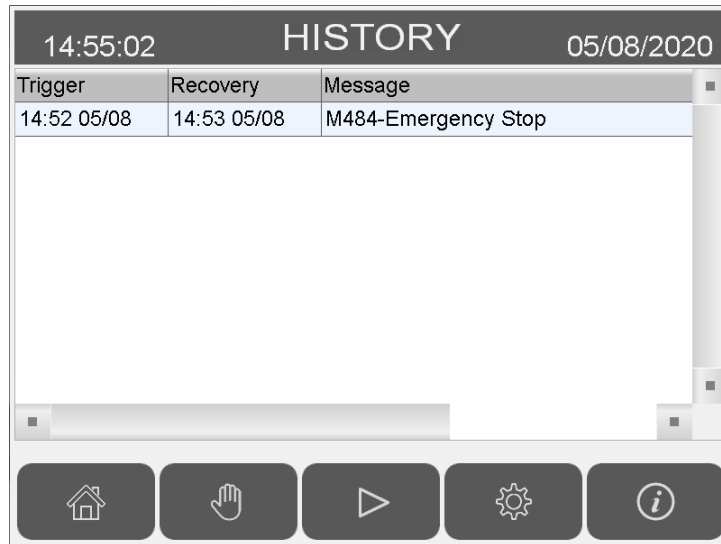
2.17 PLC UPDATE

Motor: AC Servo
HMI_Soft Ver.:02200507
HMI_file name:HMI_AutoUP
PLC_Soft Ver.: 02200507
PLC_file name: **CB500PT02.dvp** 1



1. Copy PLC update program(CB500PT01.dvp) into a USB disk (FAT32 format).
2. Insert the USB disk into USB port behind HMI display.
3. Press "PLC download" button, and a keypad is shown
4. Enter the password
5. Press "YES" in the following prompt to download the PLC program
6. Success or failure message is displayed afterward.

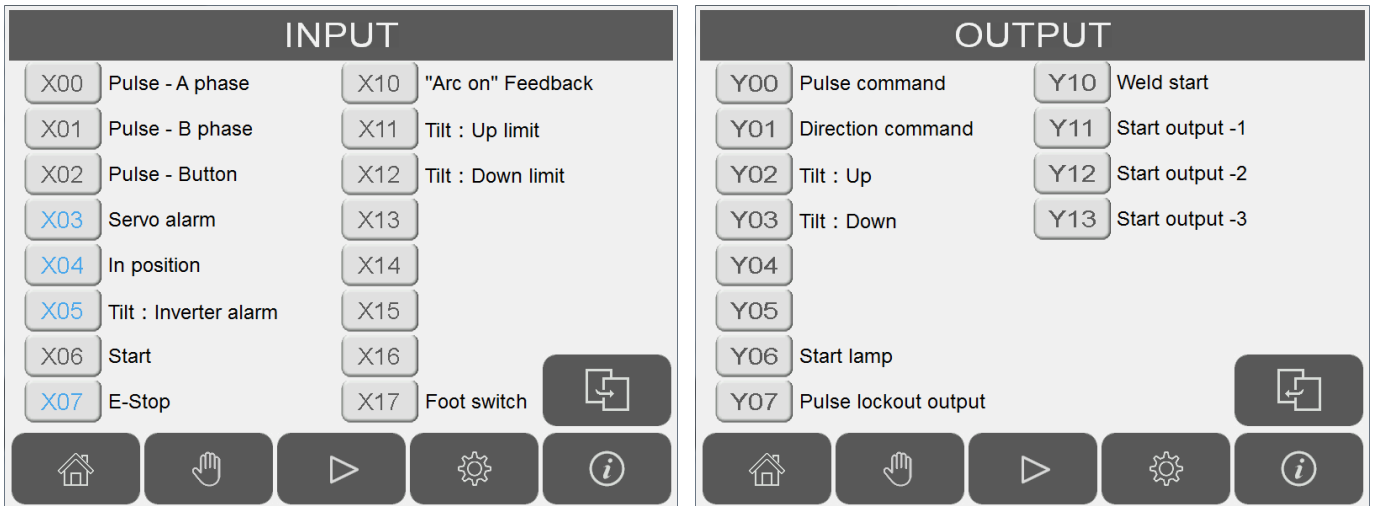
2.18 ALARM HISTORY



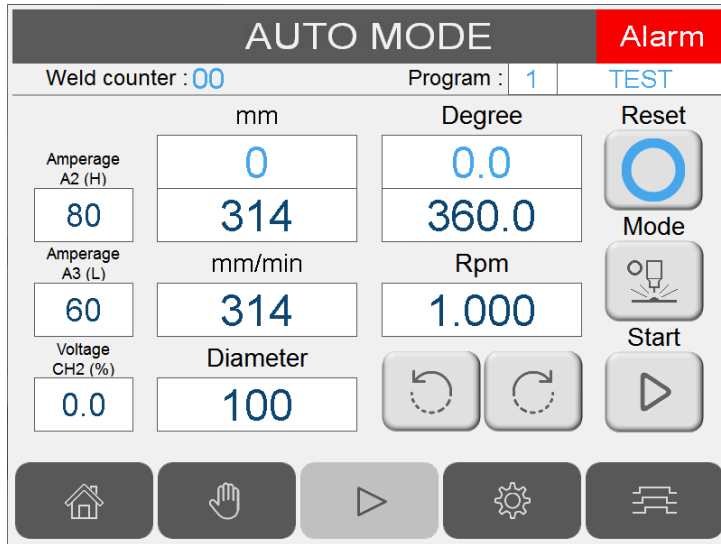
1. Alarm history record up to 1000 system error. The history can't be deleted.
2. Left most column 「O」 indicates the moment error appears, 「X」 indicates the moment error is reset.
3. Second/third column is the time and date of occurred error.
4. Forth column is the error content.

2.19 I/O MONITOR

System I/O status, For troubleshooting/installation purpose.



3.1 ERROR MESSAGE



1. Alarm window appears whenever a system error/problem has occurred.
2. Reset button :
Clear the system problem first before pressing reset button. Reset button only attempts to reset system error. If problem is still present while pressing the reset button, the window could reappear immediately after.
Servo error can only be reset by power off/on.
3. Closing the Alarm window without reset :
Pressing alarm window's "close" icon without reset disables the alarm window. A red square would appear in lower left corner indicating the error is still present. Pressing the red square would activate the alarm window again.

3.2 TROUBLESHOOTING

Error Code	Error Message	Description
M480	PLC Low Battery	<p>PLC battery voltage is too low, malfunctioned, or absent</p> <ol style="list-style-type: none"> 1. Check if PLC's battery LED indicator on front cover is flashing. 2. Check if PLC's battery is absent. <p>Solution: Replace/Add battery A.S.A.P.</p> <p>Note: The error message can't be disabled before the battery problem is fixed, but the system is still functional.</p> <p>Do not shut off power before the battery is replaced to prevent data loss.</p>
M481	PLC 24VDC Low	<p>Insufficient DC24V supply voltage.</p> <ol style="list-style-type: none"> 1. Measure and check the DC24V supply voltage. If insufficient, check circuitry/sensor for any short circuit. <p>Note: This message only appears as warning.</p>
M482	PLC Program Error	<p>PLC Program has error</p> <ol style="list-style-type: none"> 1. Reset the error. If the system can't be reset, shut the power down for 5 seconds and restart. 2. If error still persists, please contact the manufacturer. 3. Note: Usually caused by some calculation division by 0. Please check any parameter that's set as 0.
M484	Emergency Stop	<p>E. Stop activated.</p> <ol style="list-style-type: none"> 1. Reset Emergency Stop button. 2. Check PLC _ Input _ X07 circuitry.
M487	Servo motor alarm	<p>Turn table servo motor alarm</p> <ol style="list-style-type: none"> 1. Reset the error. 2. If error can't be reset, open the control box cover and check the servo error code on the amplifier LED display. Refer to the servo motor manual for any information. Usually caused by loosen connector or system collision. <p>If error can't be reset, power off for 10 second and power ON again. If error still persists, contact the manufacturer.</p>
M492	Arc on failure	<p>Arc ON signal time out.</p> <ol style="list-style-type: none"> 1. After torch ON signal is activated, the system would wait 5 second for Arc ON signal. If this signal is not received, the error is shown. 2. If the welder doesn't have Arc ON signal, go to system setup to disable this function. (Refer to section 2.15) 3. Inspect welder's Arc ON signal cable, or check PLC→Input→X10 circuitry 4. Check the torch, tungsten, and welding accessories.

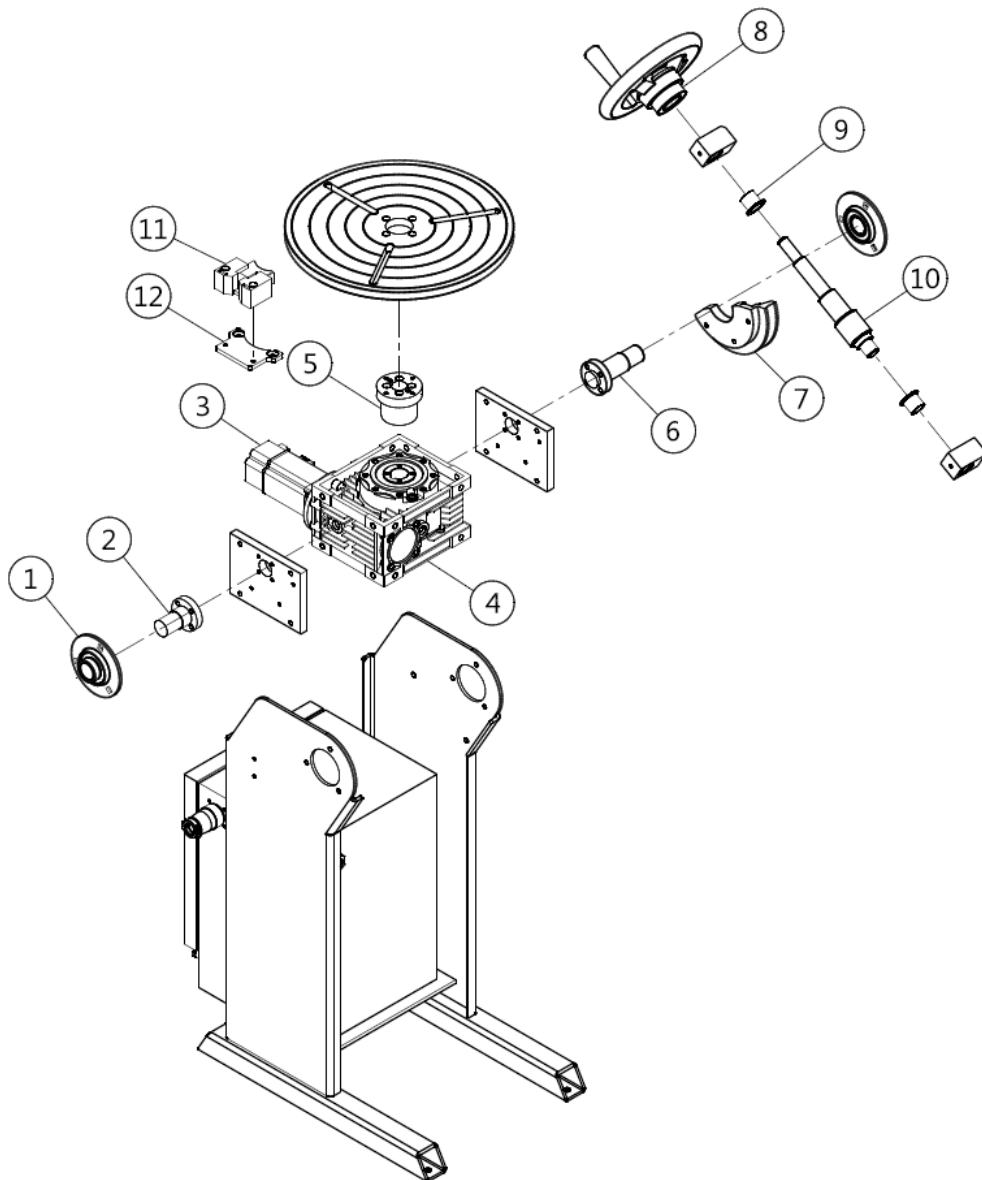
4.1 PT SERVO AMPLIFIER PARAMETERS

No.	Parameter	Setting
1	P1-00	0002
2	P1-01	0100
3	P1-44	192000
4	P1-45	360
5	P2-10	0101
6	P2-11	0100
7	P2-14	0100
8	P2-15	0100
9	P2-16	0100
10	P2-17	0100
11	P2-18	0101
12	P2-19	0105
13	P2-20	0109
14	P2-21	0007
15	P2-22	0103

5.1 PART LIST — MECHANISM

Item.	Part No.	Description	Q'ty.	Remark
1	0312-0501	Shaft	2	
2	5012-1150100-11	Shaft	1	
3	* 0364-0206	Servo Motor	1	
4	* 0353-0356	Worm reducer	1	
5	5114-12305104000-10	Reducer flange	1	
6	5012-1150100-20	Shaft	1	
7	5012-2360000-22	Tilting worm reducer	1	
8	3053-1002	Tilting hand wheel	1	
9	0331-2003	Self-lubricating bushing	2	
10	5012-2350000-20	Tilting worm shaft	1	
11	5010-2040010-20	Grounding brush w/ Case	1	
12	5010-2060000-10	Carbon brush fixed plate	1	

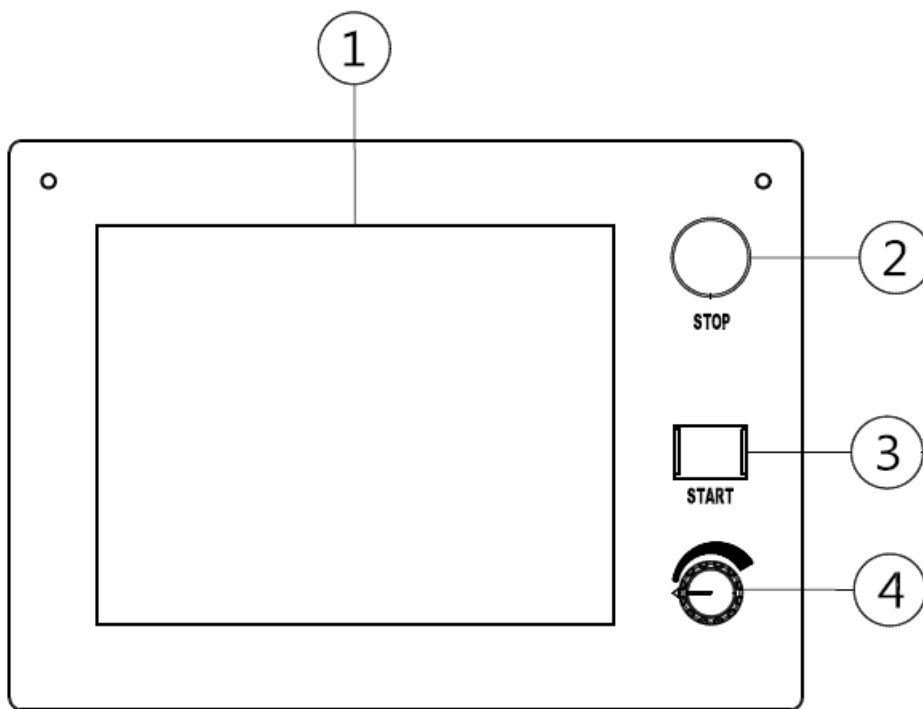
* Recommended spare parts



5.2 PAT LIST — HMI BOX

Item.	Part No.	Description	Q'ty.	Remark
1	* 2505-0022-01	HMI & Software	1	
2	3214-2009	E.S Push button	1	
3	3271-2005	Push button	1	
4	3216-0004	Knob	1	
	* 3169-1223	Rotational with switch encoder	1	

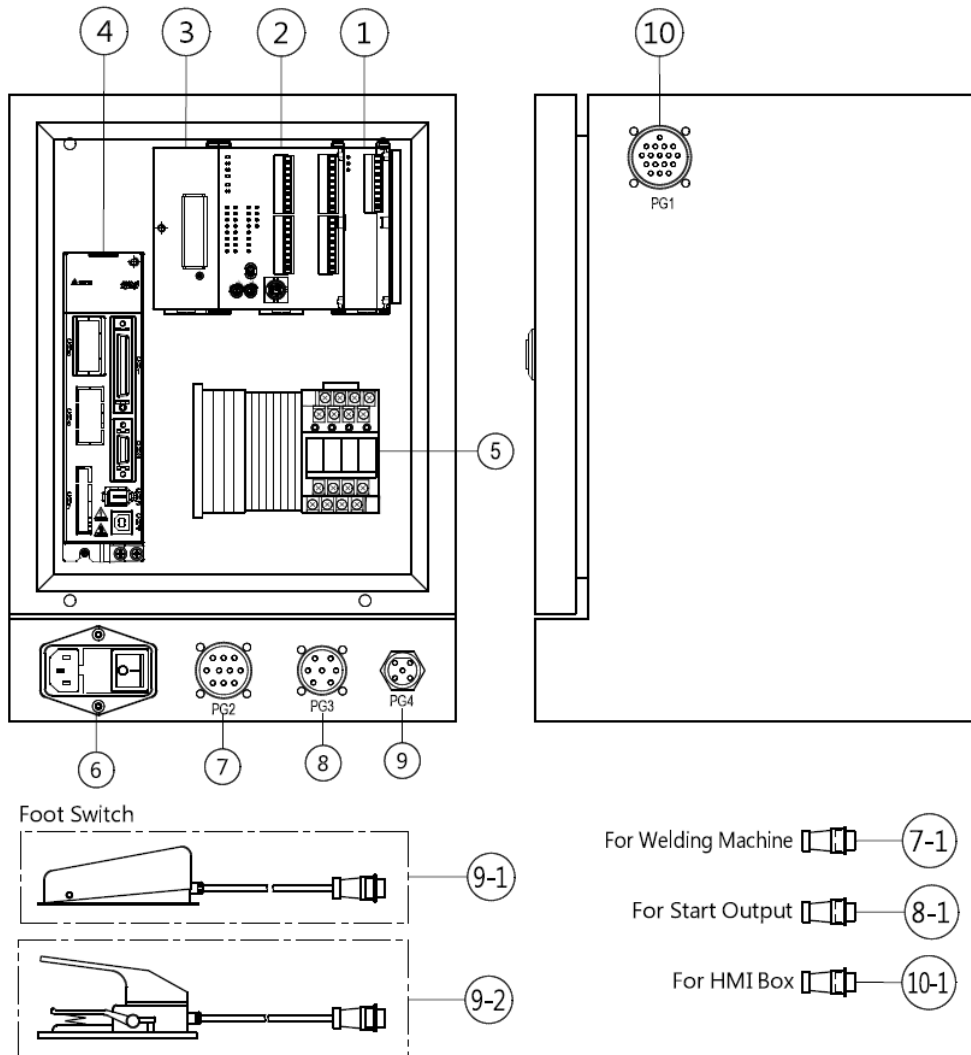
* Recommended spare parts



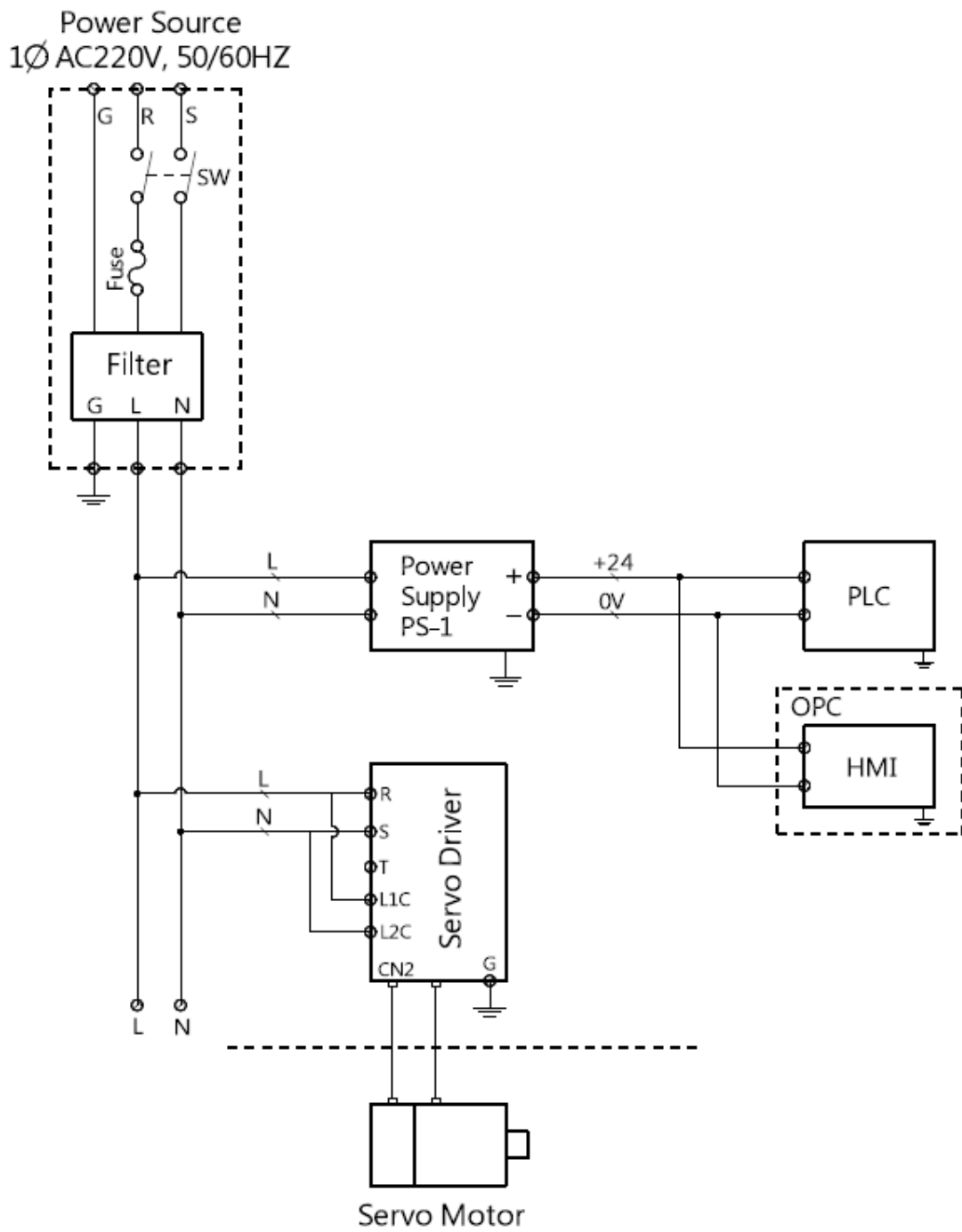
5.3 PART LIST — CONTROL BOX

Item	Part No.	Description	Q'ty.	Remark
1	3013-0006	Analog output module	1	
2	* 2505-0021-01	PLC & Software	1	
3	3017-0007	Power supply	1	
4	3031-2212	Servo amplifier	1	
5	* 3251-4207	Relay with terminal	1	
6	3331-2002	IEC Inlet filter	1	
7	3122-4004	Socket female (10Pin)	1	PG2
7-1	3121-6002	Plug male (10Pin)	1	PG2
8	3122-4003	Socket female (7Pin)	1	PG3
8-1	3121-4003	Plug male (7Pin)	1	PG3
9	3124-2006	Socket male (5Pin)	1	PG4
9-1	3242-1116	Foot switch	1	Standard
9-2	3242-1119	Foot switch	1	Option
10	3122-7001	Socket female (16Pin)	1	PG1
10-1	3121-7001	Plug male (16Pin)	1	PG1

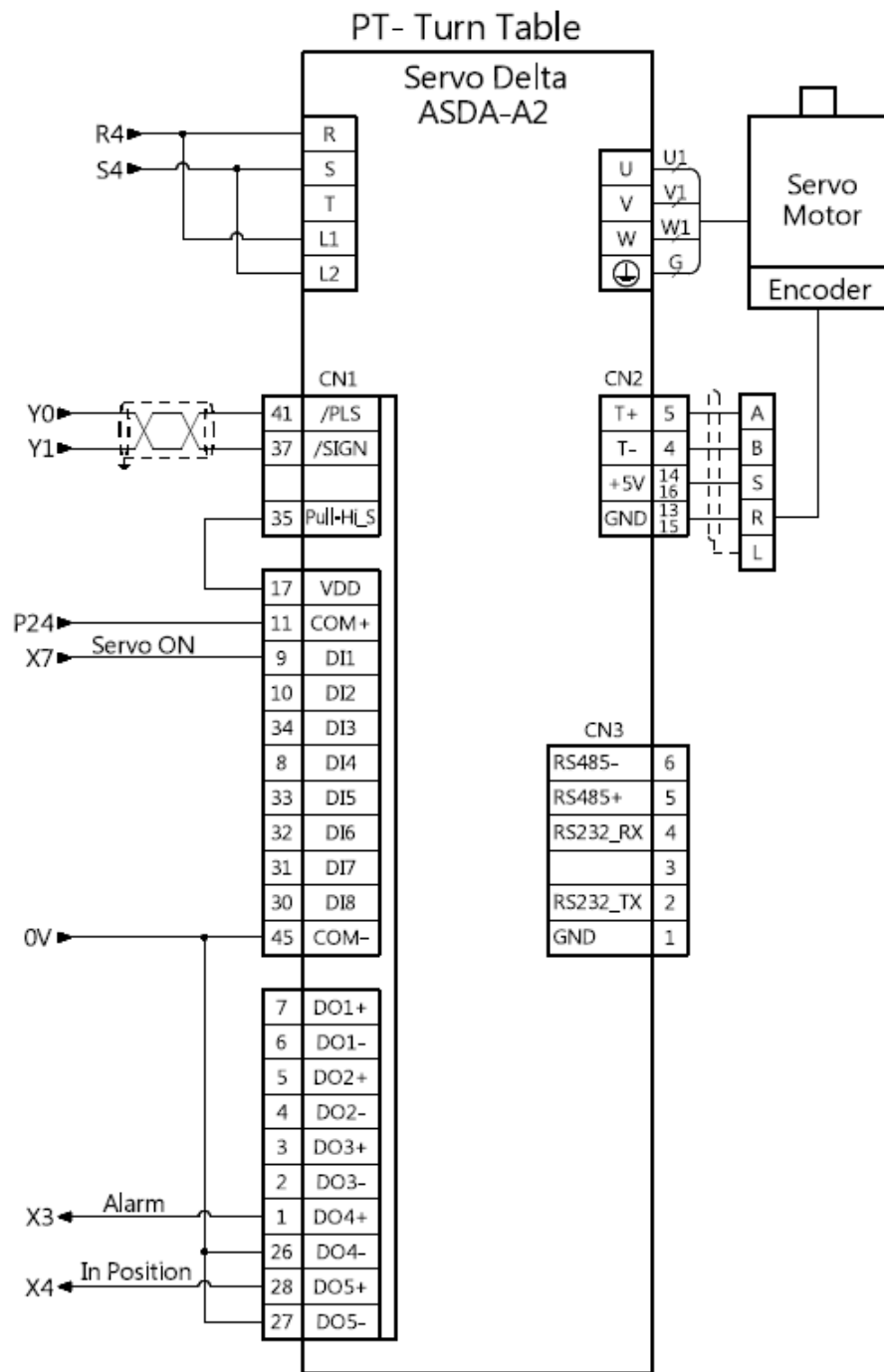
* Recommended spare parts.



6. CIRCUIT DIAGARM



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