OPERATION MANUAL

RD-8480E

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

MODEL：PT–200s
WELDING POSITIONER

Serial Number：202103005 ~ Later

Revised Date：Apr. 07, 2021

UNITED PROARC CORPORATION

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MENU

WARNING Read and understand the entire manual regarding the rules for users' safety before installing, operating, or servicing the equipment.

WARNING A procedure, when not properly followed, may cause injury to the operator or others in the operating area.

Equipment Identification	The identification number (specification or part number), model, and serial number of this unit usually appear on a nameplate attached to the control panel; record these numbers for future reference.
Receipt of Equipment	When you receive the equipment, check it against the shipping documents. Make sure it is complete and inspect the equipment for possible damage during shipping. If there is any damage, notify the carrier immediately to file a claim. Move the equipment to the installation site before uncrating the unit. Use care to avoid damaging the equipment when using bars, hammers, etc. to uncrate the unit.

WARNING Falling machine due to lifting device failure may cause death or injury.

- Lifting device may fail when overloaded.
- Avoid sudden jerks, drops or swinging.
- Check lifting device components visually for loose spot and signs of metal fatigue.
- Before changing any hardware, check grade and size of bolts, and replace with bolts of equal or higher size and grade.

Protection

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

Machine：

* The system's non-fuse breaker is compatible with its maximum power and main voltage.
* The connection, single-phase or three-phase, is possible on a stand compatible with the plug of its cable link.
* To prevent accidental electrical shock, do not leave the ground cable disconnected when the system's power is connected to local power network.

Maintenance

Work place：

* Be very careful to avoid contact between metal part of phase conductor and the neutral of electric network.
* Electrical messes of different electrical machine and apparatus are connected between themselves and with the terminal of earth neutral wire.

Personal

Interventions：

* Before control and repair, see that the apparatus is switch off and electrically insulated.
* Connection with fixed installation cable is impossible.
* Switch off by fixed connection is multi-polar (phase and neutral).
* It's on "STOP" and connection is impossible.
  Some apparatus are provided with starting circuit HT HF (with a plate). Never enter into the corresponding switch cupboard.
* Only qualified persons are authorized for intervention concerning electrical installation.

* Check regularly the equipment's power cords, switch, extension cords's electrical insulation and connection and make sure they are in good state
* Maintenance and repairing of cable insulation are important to prevent injury.
* Do request trained personnel for system repair and replacement of defective accessories.
* Check regularly all electrical connections for any sign of overheating.
* Avoid touching metal area with bear hands..
* Wear safety clothes, gloves, apron, safety shoes and glasses for protection against welding burns, welding radiation and slag.

LIMITED WARRANTY

UNITED PROARC CORPORATION warrants all new equipment to be free from defects in material and workmanship, provided that the equipment is installed and operated according to instructions stated in this manual.

UNITED PROARC's obligation under this warranty policy is expressly limited to the replace or repair, at its option, of the defected part only. ProArc's option to repair or replacement of a defected part under this warranty shall be based on FOB Taiwan basis.

The warranty period begins on the date of sale to the original-purchase user of the equipment.

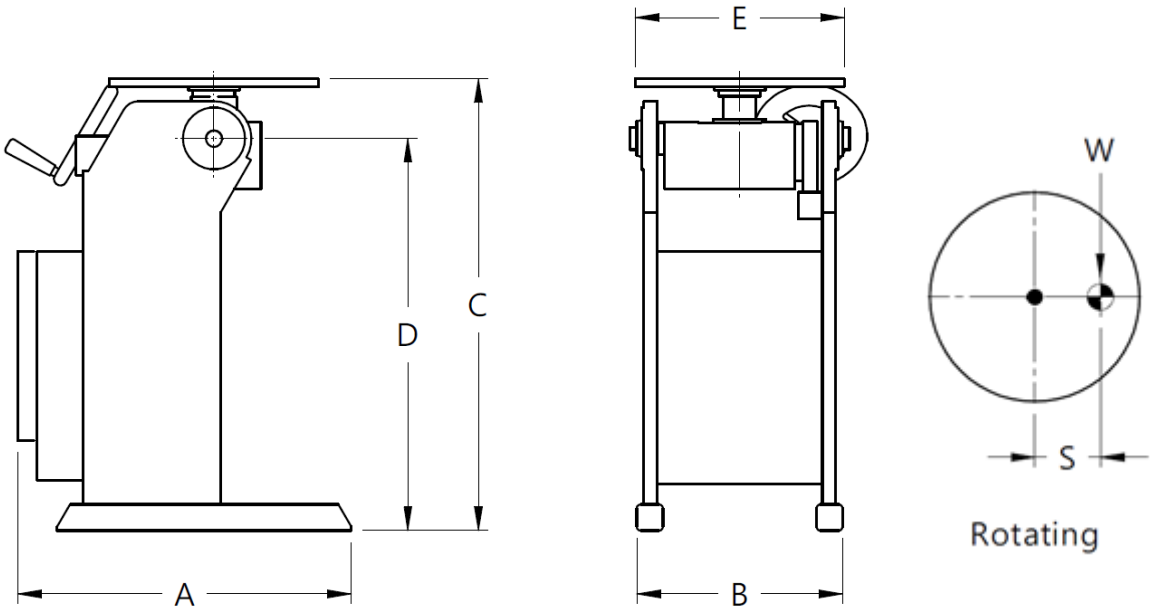
UNITED PROARC CORPORATION shall not be liable for any loss or consequential damage or express accruing directly or indirectly from the use of equipment covered by this warranty.

This warranty supersedes all previous ProArc warranties and is exclusive with no other guarantees or warranties expressed or implied.

This warranty excludes the consumable parts that are used in normal operation.

1.1 SPECIFICATION

MODEL	Unit	*PT- 200s*
Power Input	~	1 Phase 220V 50/60Hz
Capacity (Horizontal / Vertical)(W)	kg	200 / 130
Rated center of gravity(S)	mm	25
Rotation speed	rpm	0.01 ~ 30
Tilt range	deg.	0 ~ 120
Earthing	amp	300
Overall length (A)	mm	530
Overall width (B)	mm	315
Overall height (C)	mm	690
Center to floor (D)	mm	600
Table diameter (E)	mm	320
Spindle thru hole	mm	22
Table slot bolt size		M10
Weight	Kg	45



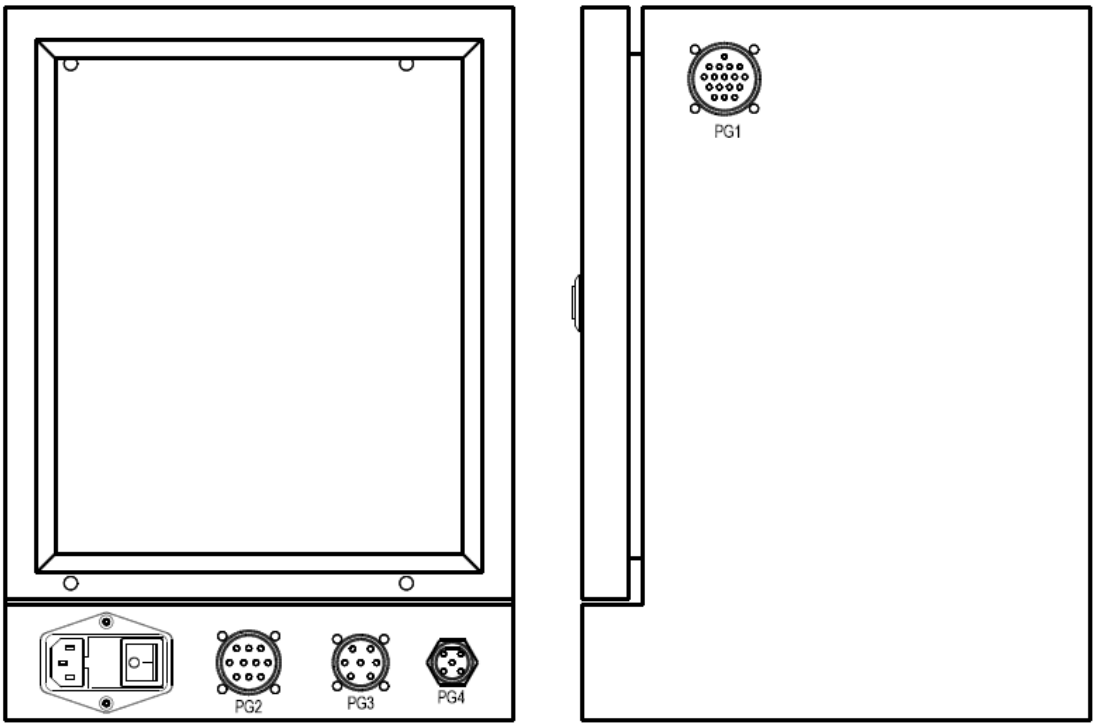
1.2 CONTROL BOX SPECIFICATION

Control Model	Unit	CB-500
Power Requirement		1 Phase 220V 50/60Hz 3A

	Main power switch

1.3 CONNECTOR

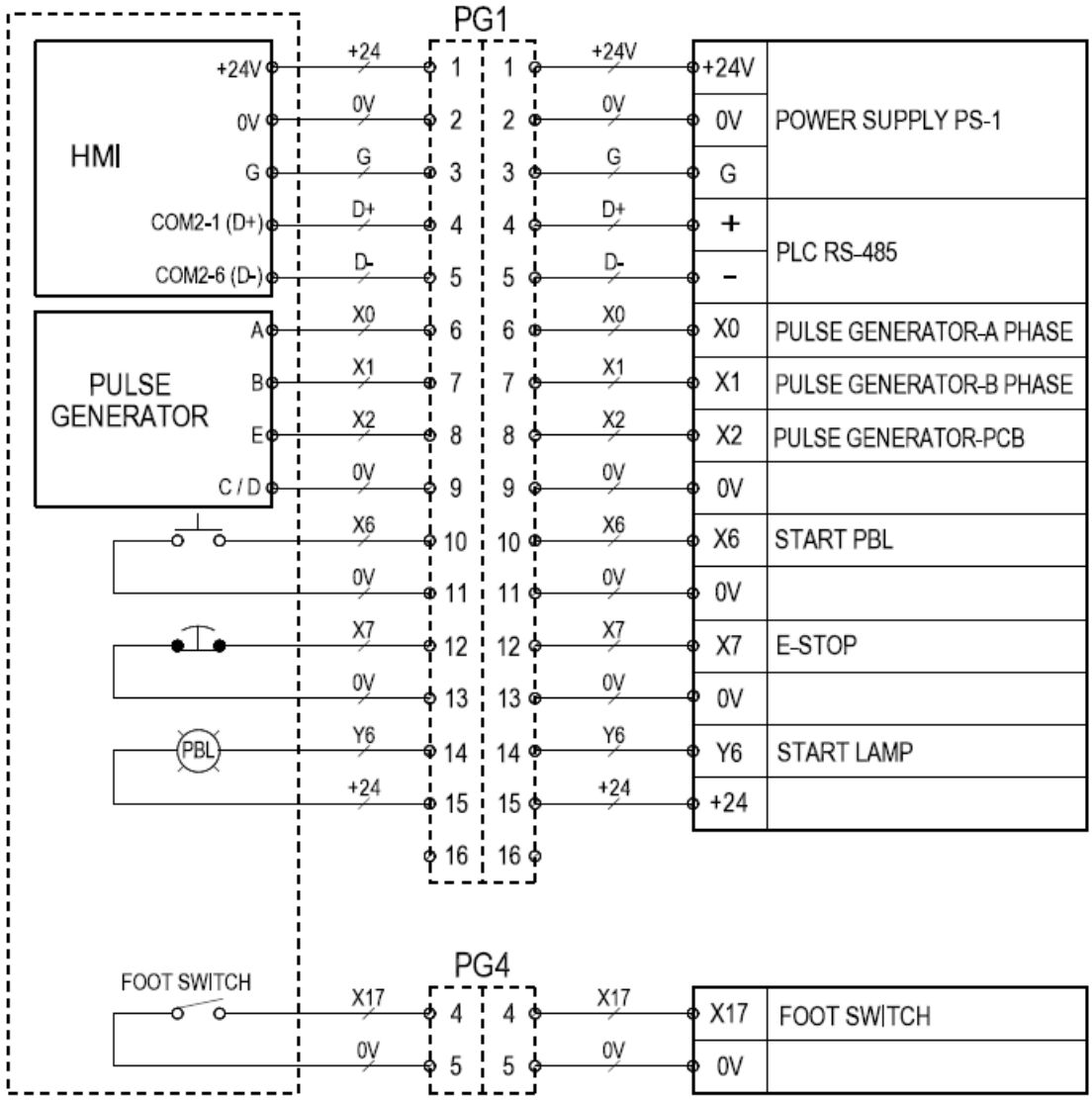
Control box connector：



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

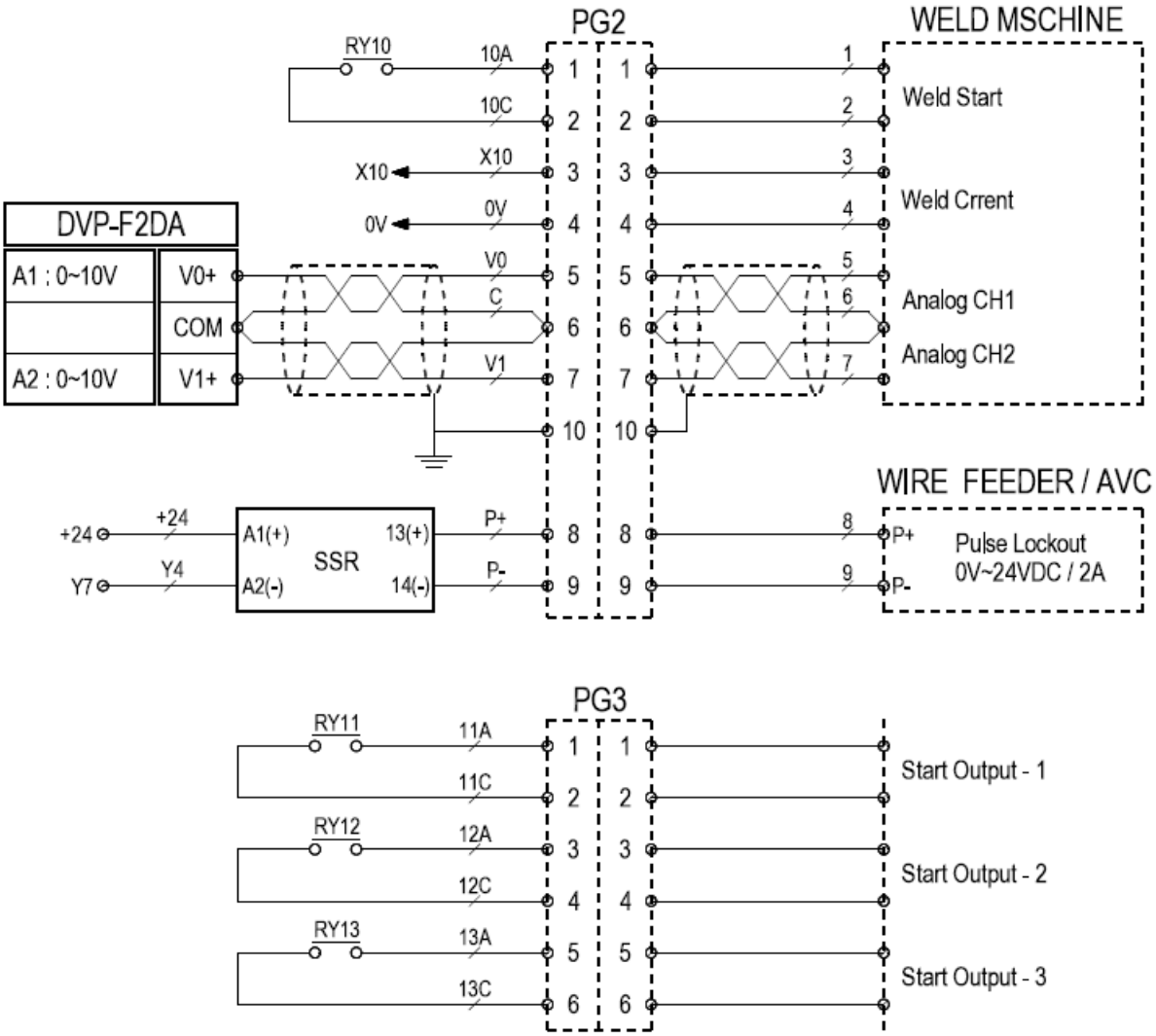
1.3 CONNECTOR

HMI & Food switch connection：

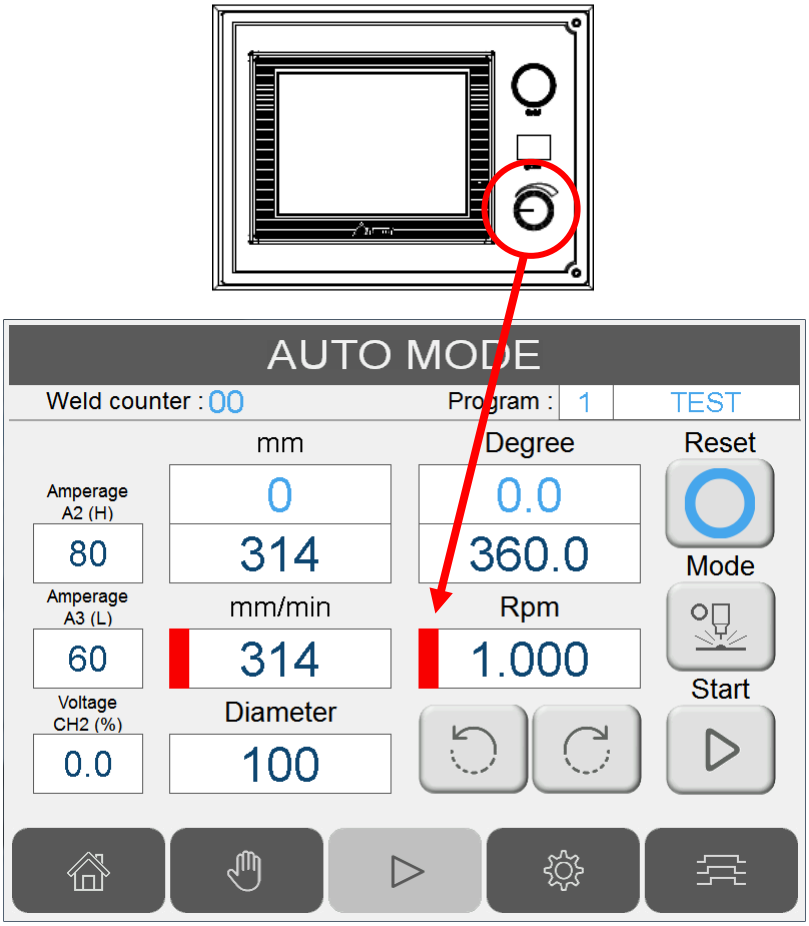


1.3 CONNECTOR

Welding equipment connection：



2.1 HMI OPERATION

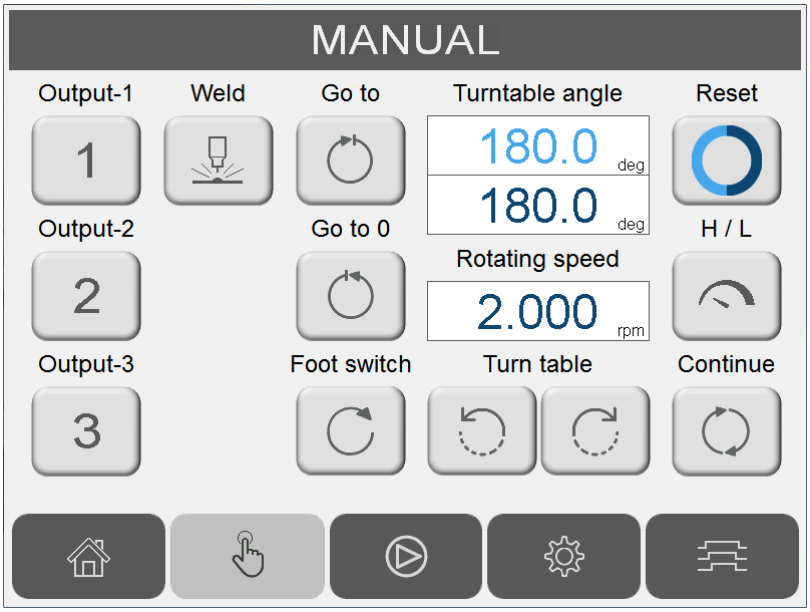


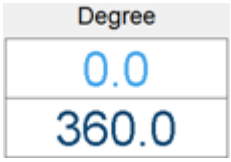
	Emergency stop.
	Auto start / Auto stop.
	Pulse adjustment knob： 1. Press the pulse adjustment knob to display red flashing cursor beside Rpm and mm/min. Rotate the knob to modify speed. 2. Press the pulse adjustment knob again to display red flashing cursor beside Amperage A2(H) & A3(L). Rotate the 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

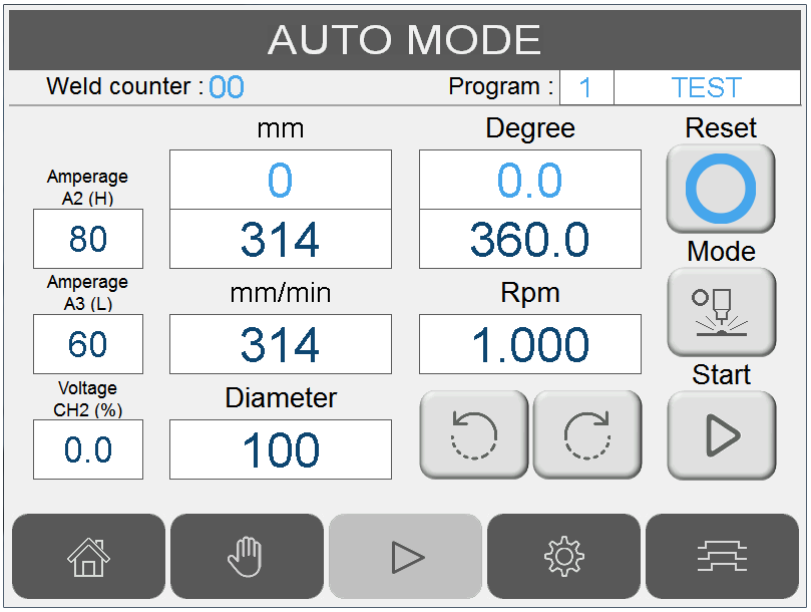
	Switch language Chinese / English.
	Switch to "Manual Mode" screen.
	Switch to "Auto Mode" screen User level 1 clearance is required. Default user level 1 clearance password：123 Default user level 2 clearance password：456 Refer to section 「2.11 Password」 to disable auto mode password protection.
	Switch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

2.3 MANUAL MODE



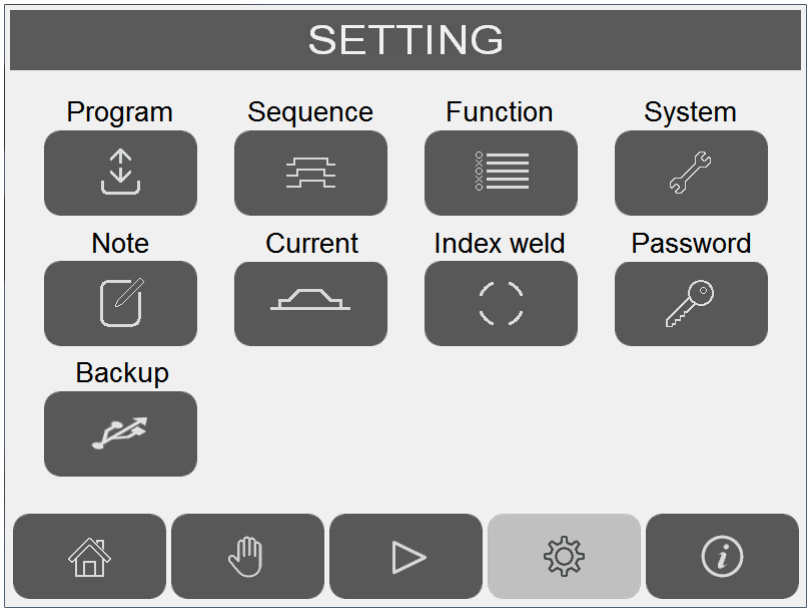
	Turn table current position: Blue field: current position. Red field: set position.		Foot switch. direction selection.
	Turn table rotation per round (RPM) setting.		Move to set position.
	Reset current position to 0.		Return to beginning position.
	Toggle between welding/high turn table speed.		Manual 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



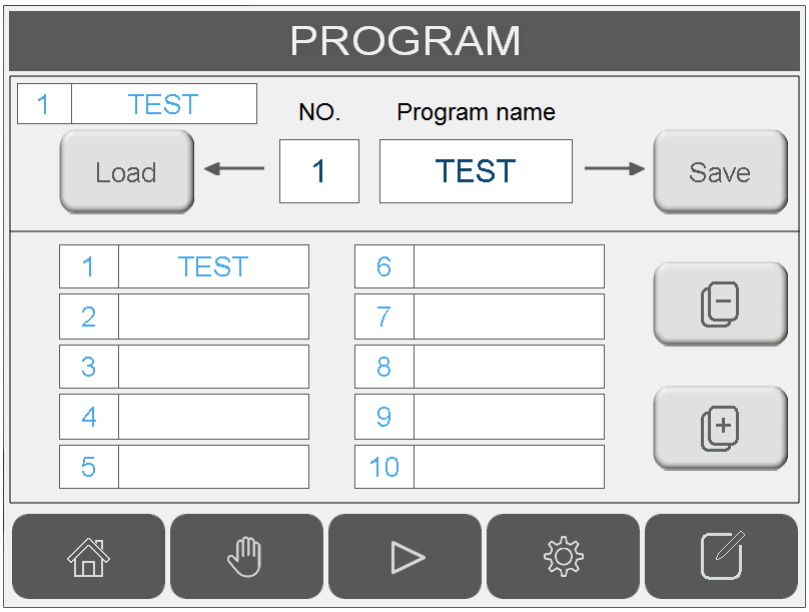
mm 0 314	Turn table current position according to angle & diameter: Blue field: current position. Red field: set position.	Degree 0.0 360.0	Turn table current position: Blue field: current position. Red field: set position.
mm/min 314	Turn table linear speed (mm/min) setting.	Rpm 1.000	Turn table rotation per round (RPM) setting.
Diameter 100	Welding diameter.	Reset	Reset current position to 0
Amperage A2 (H) 80 Amperage A3 (L) 60	Welding current (A). 0~100% = 0~10VDC If pulse mode is active, represents the peak (A2). (please refer to sec 2.8)	Mode	Simulation/Auto mode toggle. Welder ON is disable when Simulation mode is active.
Voltage CH2 (%) 0.0	Second analog voltage output. 0~100% = 0~10VDC	Start	Activate/stop auto welding sequence.
	Turn table jog operation.		Switch to welding sequence screen.

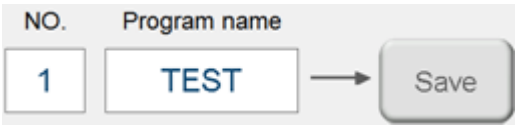
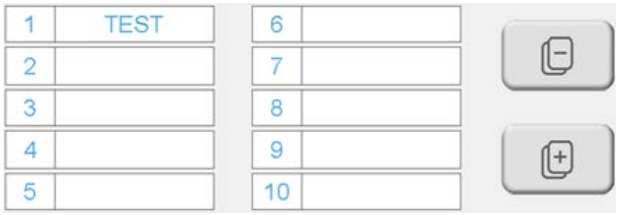
2.5 SETTING



Program	Switch to Program screen.	Index weld	Switch to Index Weld screen.
Note	Switch to Program note screen.	System	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
Sequence	Switch to Weld Sequence screen.	Password	Switch to Password screen.
Current	Switch to Weld Current screen.	Backup	Switch to Program Backup screen.
Function	Switch to Autorun function screen.		

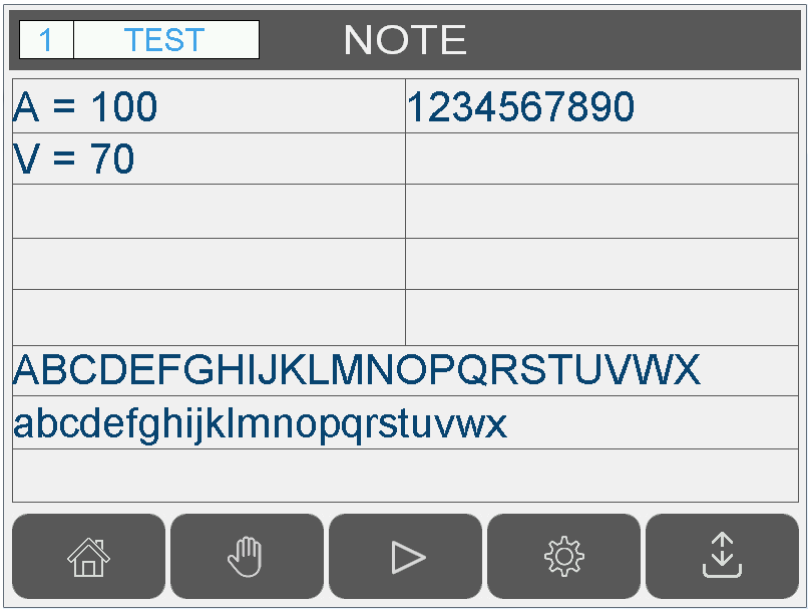
2.6 PROGRAM SAVE/LOAD



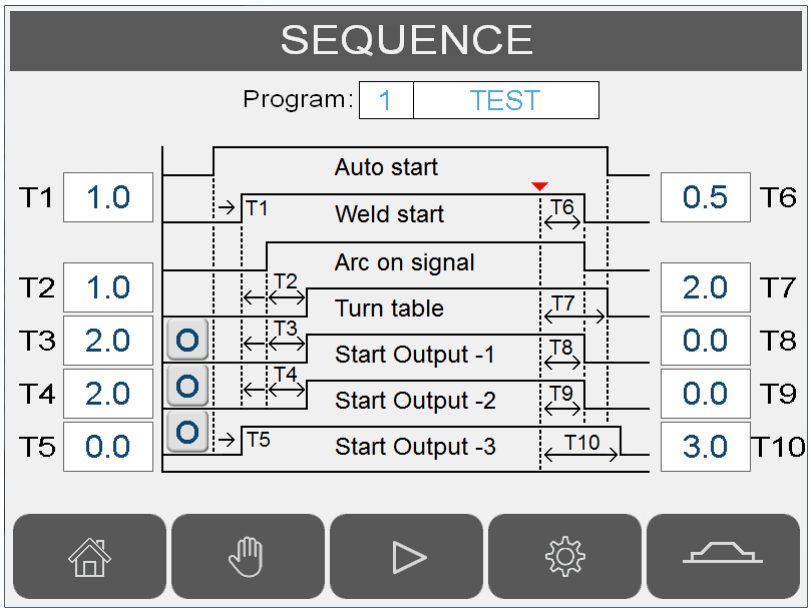
	Enter the program number in No. field and press “Load” button to load the program’s welding parameter.
	Enter the program number and program name, the press “Save” to save the parameters.
	Press ▲ or ▼ button to scroll to next/previous sets of parameters.
	Switch to Program note screen.

2.7 PROGRAM NOTE

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

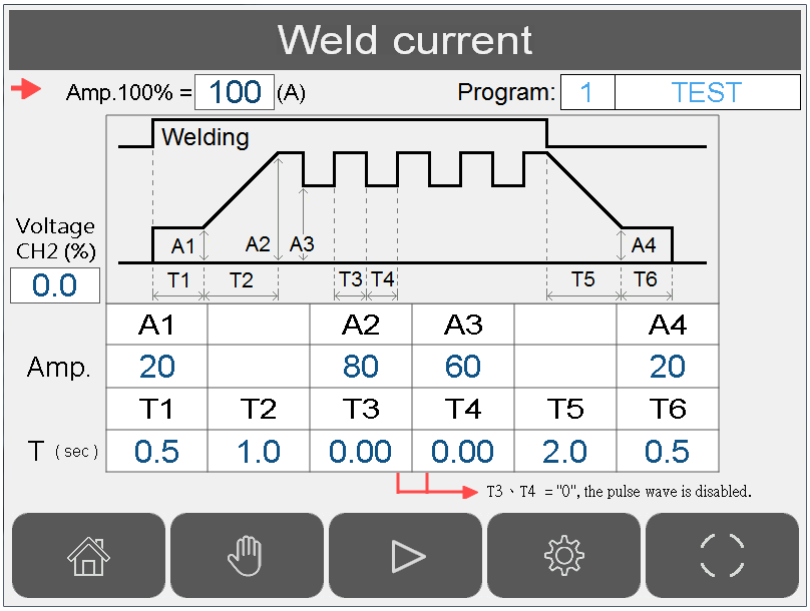


2.8 WELDING SEQUENCE SETTING



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

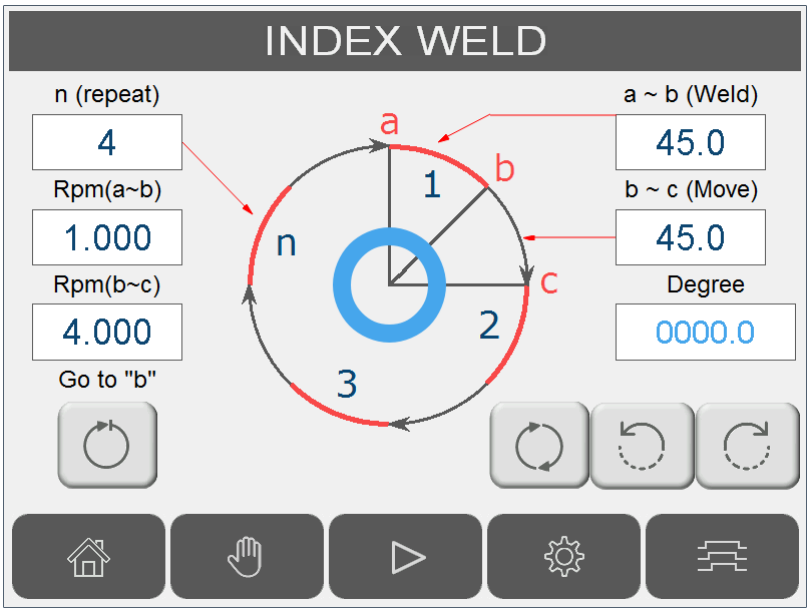


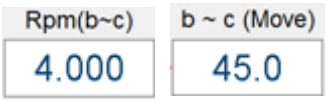
Amp.100% = 100 (A)		100% amperage value setting (analog output 1).
A1	Initial current (A)	Initial current level after arc ON signal is received.
A2	Peak current (A)	Main welding current. If pulse wave function is enabled, this value is the peak current value.
A3	Valley(low) current(A)	If pulse wave function 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.

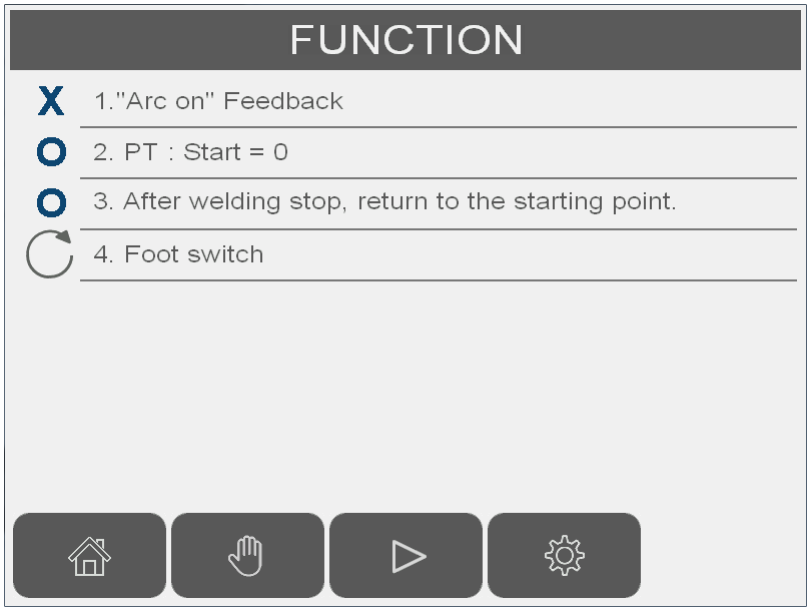
Caution: Even though pulse wave function's output voltage can reach a frequency of 50Hz, the welder may not be able to change current at this rate.

2.10 INDEX WELD SETTING



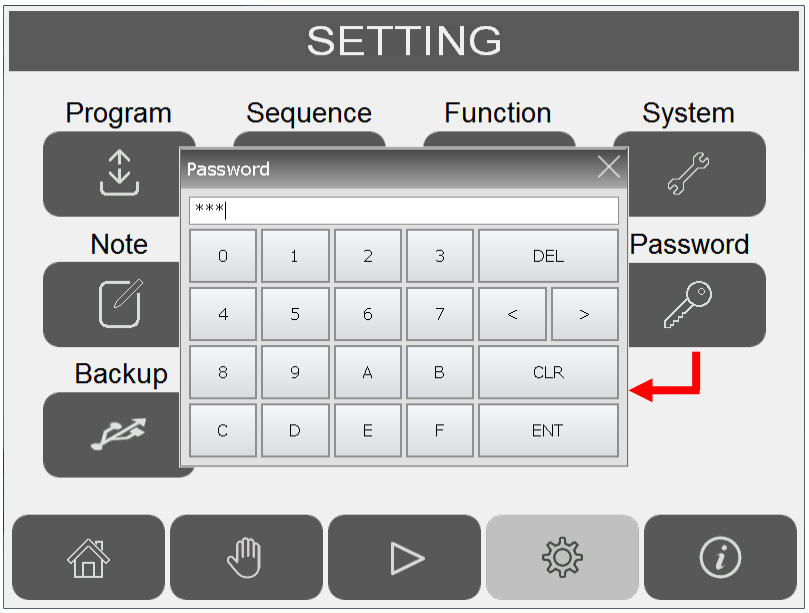
	Set number of index welding.
	a ~ b：Set index welding angle and speed.
	b ~ c：Set positioning angle and speed.
	Turn table jog operation.
	Move to position “b”.

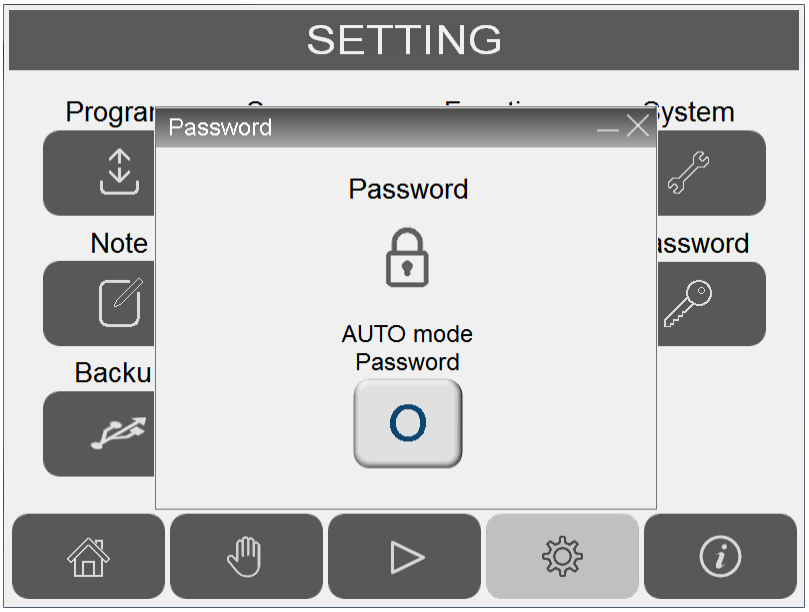
2.11 AUTORUN FUNCTION



X O	X：Disable feature. O：Enable feature.
1	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.
2	Reset current position to 0 when auto start is activated.
3	Automatically return turn table to original position.
4	Foot switch function: Rotate CW, rotate CCW, Auto Start.

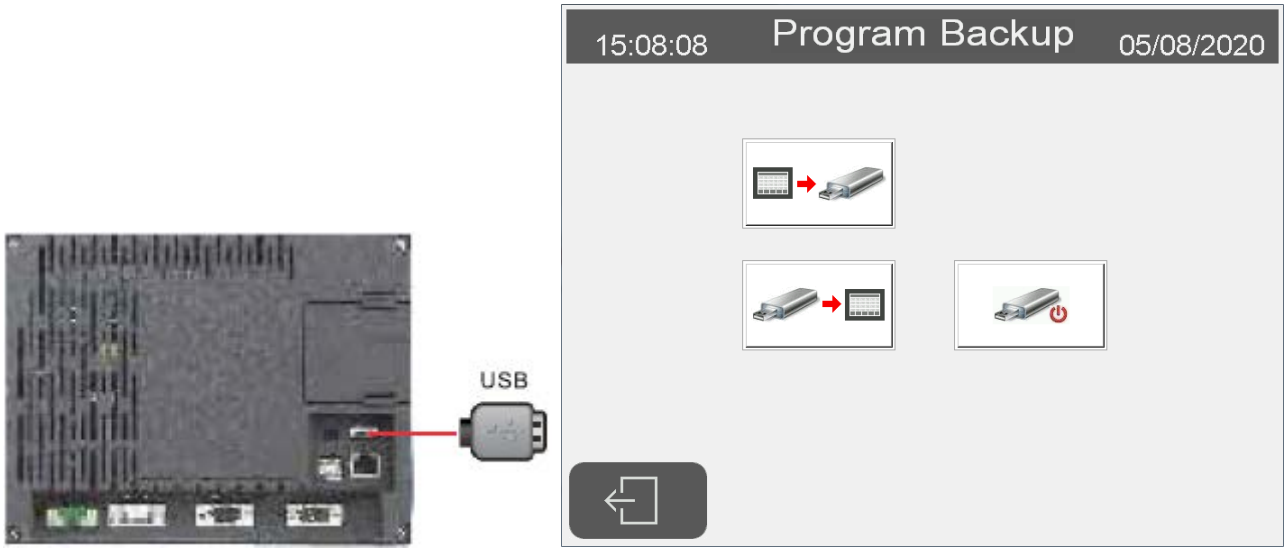
2.12 PASSWORD SETTING





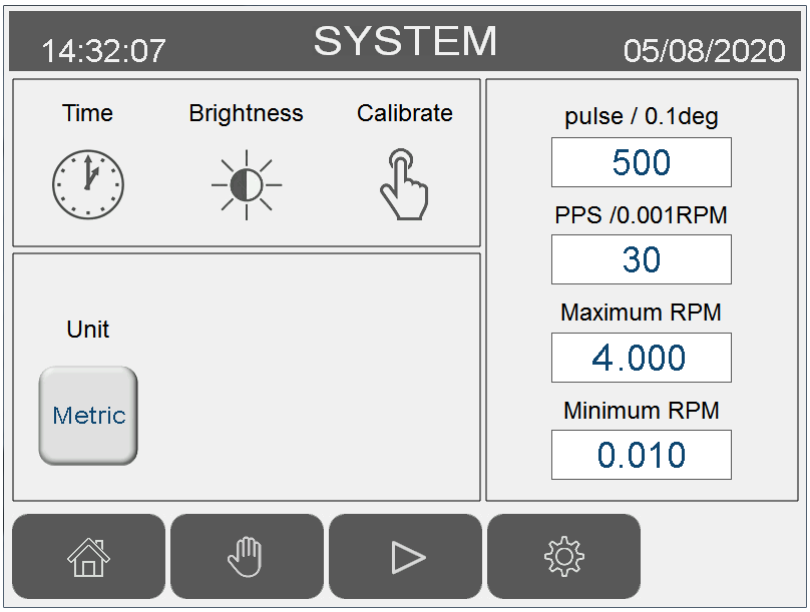
Password	User level 2 clearance is required. Default user level 1 clearance password：123 Default user level 2 clearance password：456
AUTO mode Password O AUTO mode Password X	User level 1 clearance is required. Disable auto mode password protection.

2.13 PROGRAM BACKUP



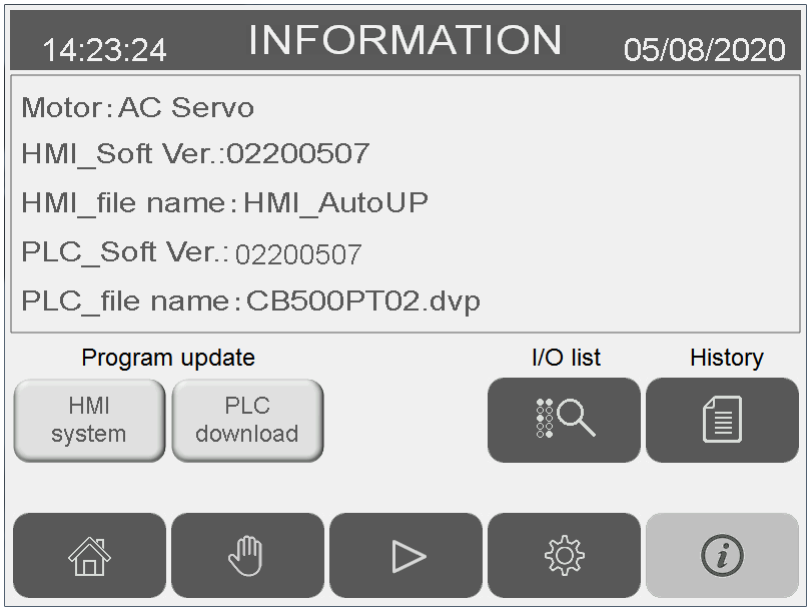
	Export all 100 welding setting and store into USB (does not include program note).
	Import all 100 welding setting and store into system. USB (does not include program note).
	Stop USB function. Activate this function before extract USB.

2.14 SYSTEM SETTING



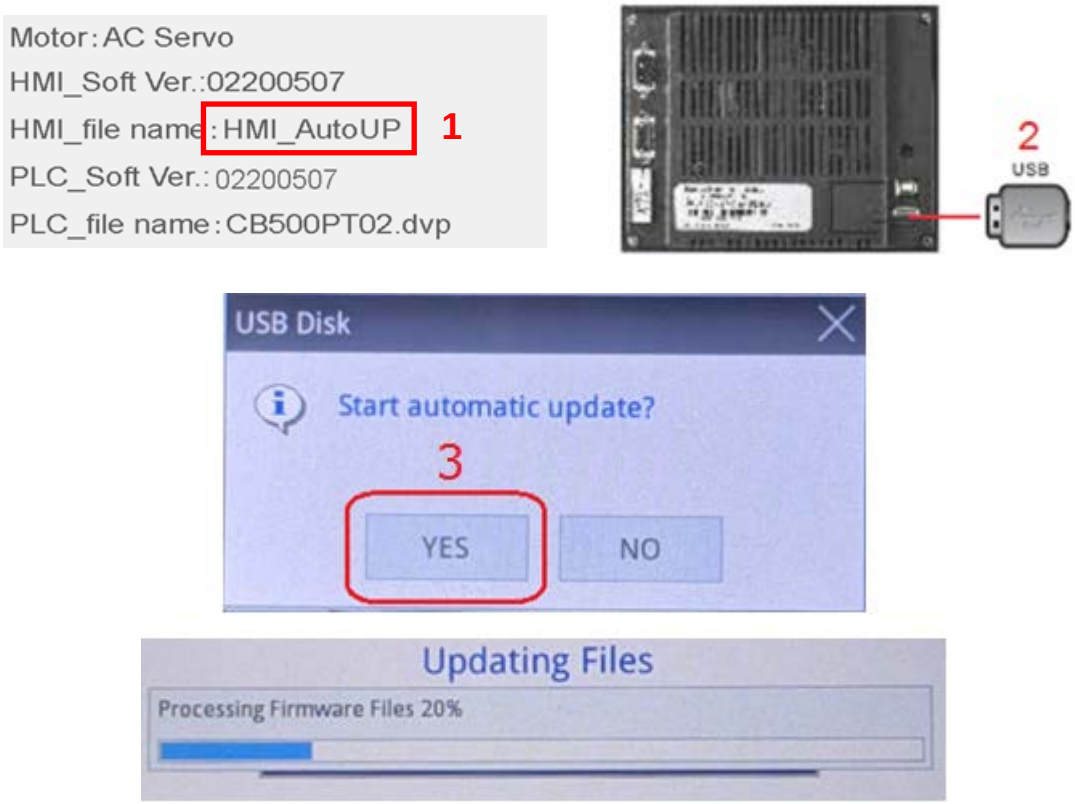
Time	Time adjustment.	pulse / 0.1deg 500	Position setting.
Brightness	Backlight calibration function.	PPS /0.001RPM 30	Speed setting.
Calibrate	Touch screen calibration.	Maximum RPM 4.000	Maximum rotation speed limitation.
Unit Metric	Metric / inch unit setting.	Minimum RPM 0.010	Minimum rotation speed limitation.

2.15 SYSTEM INFORMATION



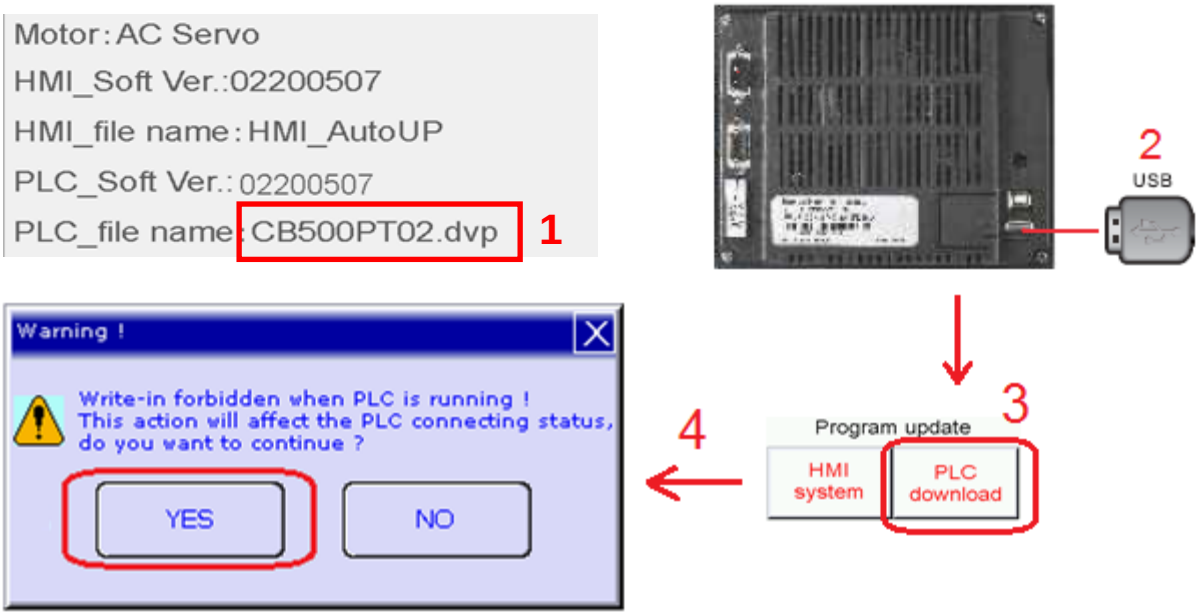
Motor:AC Servo HMI_Soft Ver.:02200507 HMI_file name:HMI_AutoUP PLC_Soft Ver.:02200507 PLC_file name:CB500PT02.dvp	1. Motor type 2. HMI software version 3. HMI file name 4. PLC software version 5. PLC file name
HMI system	HMI update function.
PLC download	PLC update function.
I/O list	Switch to I/O monitor screen,
History	Switch to Error History screen.

2.16 HMI UPDATE



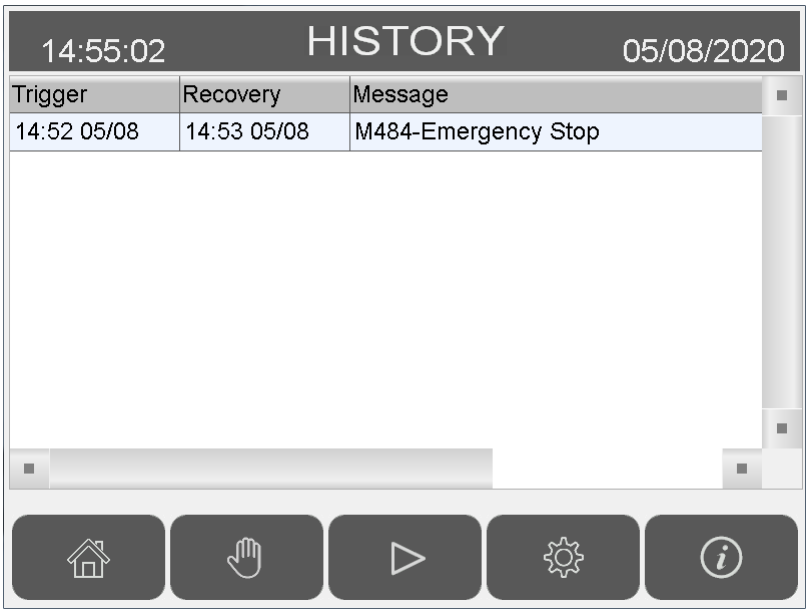
1. Copy HMI update program (HMI_AutoUP) into USB disk (FAT32 format).
2. Insert the USB disk into USB port behind HMI display
3. Wait for a few second and system would automatically search for HMI AutoUP files
4. Upon Start automatic updata prompt appeared? Select “Yes” to start update
5. Do not unplug 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



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.

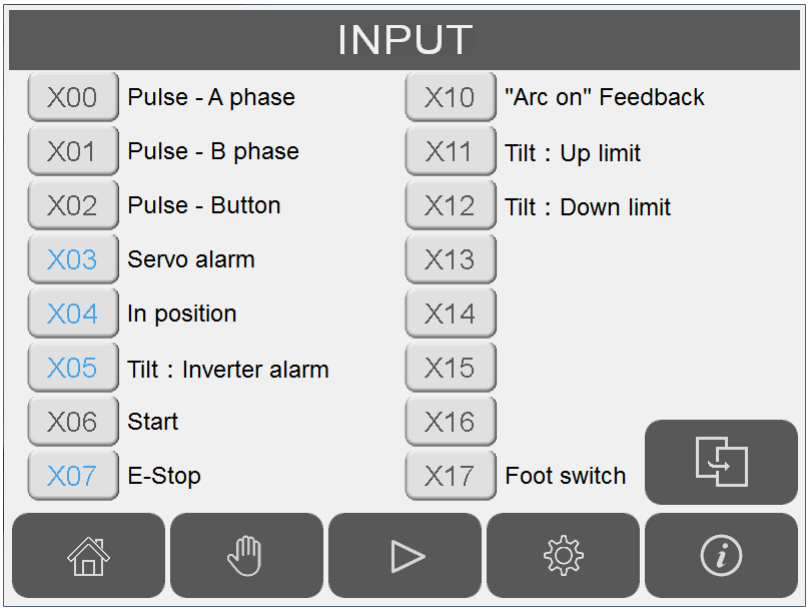
2.18 ALARM HISTORY

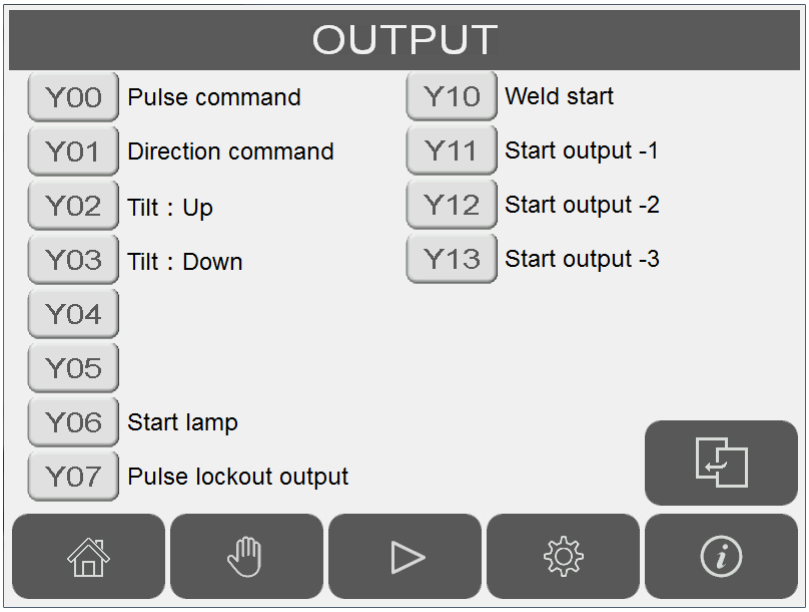


1. Alarm history record up to 1000 system error. The history can't be deleted.
2. Left most column「O」indicates the moment error appears,「X」indicates the moment error is reset.
3. Second/third column is the time and date of occurred error.
4. Forth column is the error content.

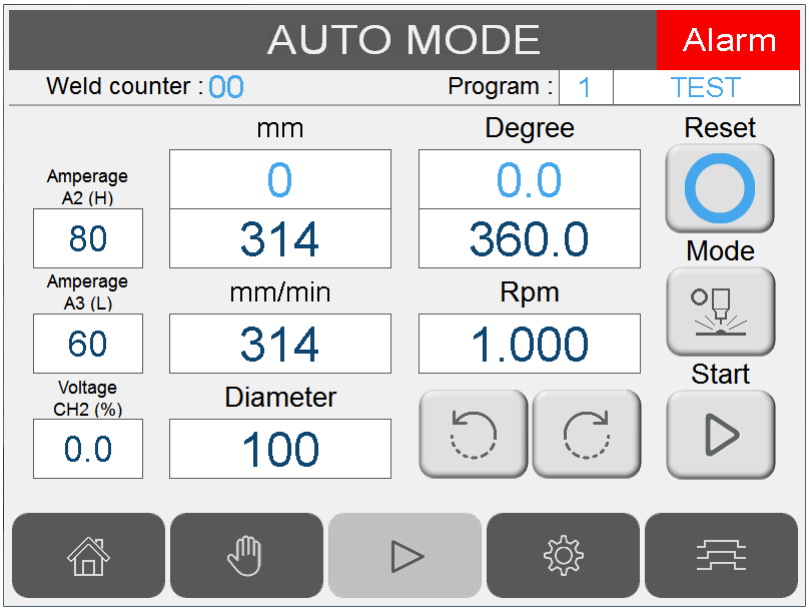
2.19 I/O MONITOR

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	PLC battery voltage is too low, malfunctioned, or absent 1. Check if PLC's battery LED indicator on front cover is flashing. 2. Check if PLC's battery is absent. Solution: Replace/Add battery A.S.A.P. Note: The error message can't be disabled before the battery problem is fixed, but the system is still functional. Do not shut off power before the battery is replaced to prevent data loss.
M481	PLC 24VDC Low	Insufficient DC24V supply voltage. 1. Measure and check the DC24V supply voltage. If insufficient, check circuitry/sensor for any short circuit. Note: This message only appears as warning.
M482	PLC Program Error	PLC Program has error 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	E. Stop activated. 1. Reset Emergency Stop button. 2. Check PLC _ Input _ X07 circuitry.
M487	Servo motor alarm	Turn table servo motor alarm 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. If error can't be reset, power off for 10 second and power ON again. If error still persists, contact the manufacturer.
M492	Arc on failure	Arc ON signal time out. 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.

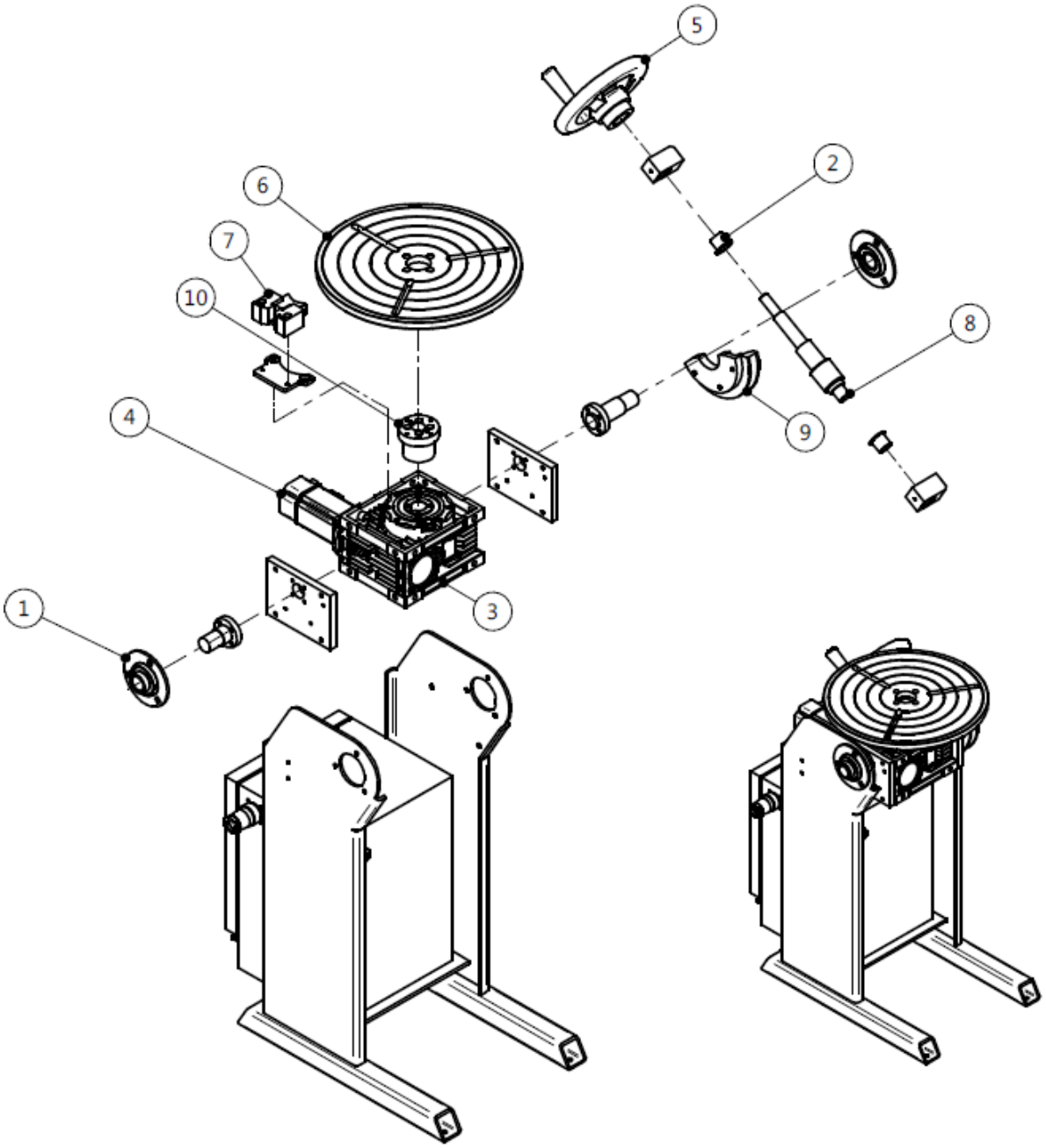
4.1 PT SERVO AMPLIFIER PARAMETERS

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 — PT-200s (MECHANISM)

Item.		Part No.	Description	Q'ty.	Remark
1		0312-0501	Shaft	2	
2		0331-2003	Self-lubricating bushing	2	
3	*	0353-0356	Worm reducer	1	
4	*	0364-0206	Servo Motor	1	
5		3053-1002	Tilting hand wheel	1	
6		5010-1010100-10	Faceplate	1	
7		5010-2040010-20	Grounding brush w/ conducting seat	1	
8		5012-2350000-20	Tilting worm shaft	1	
9		5012-2360000-22	Tilting worm reducer	1	
10		5114-12305104000-10	Reducer flange	1	

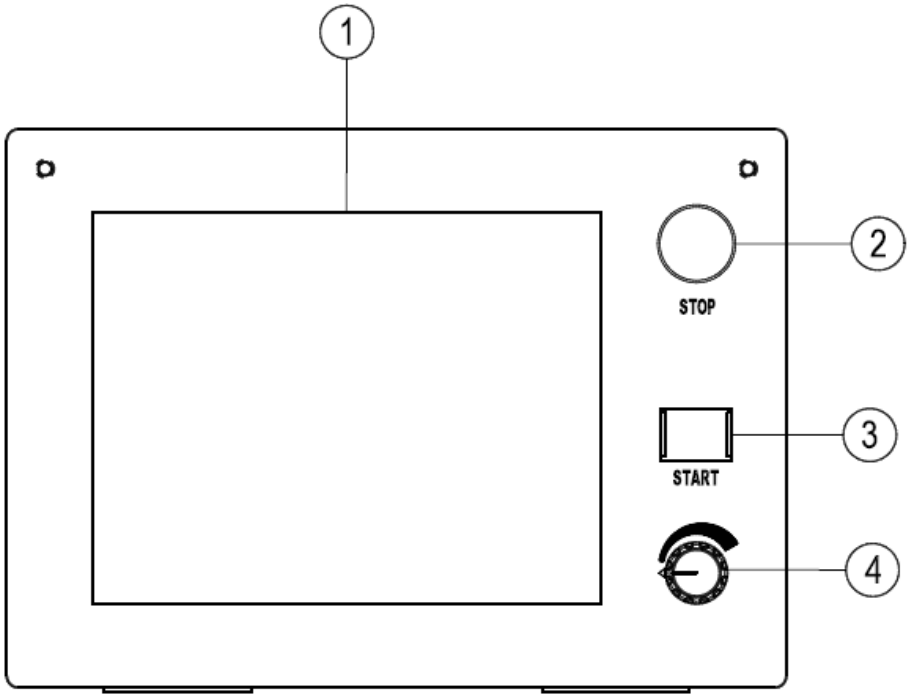
* Recommended spare parts



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	

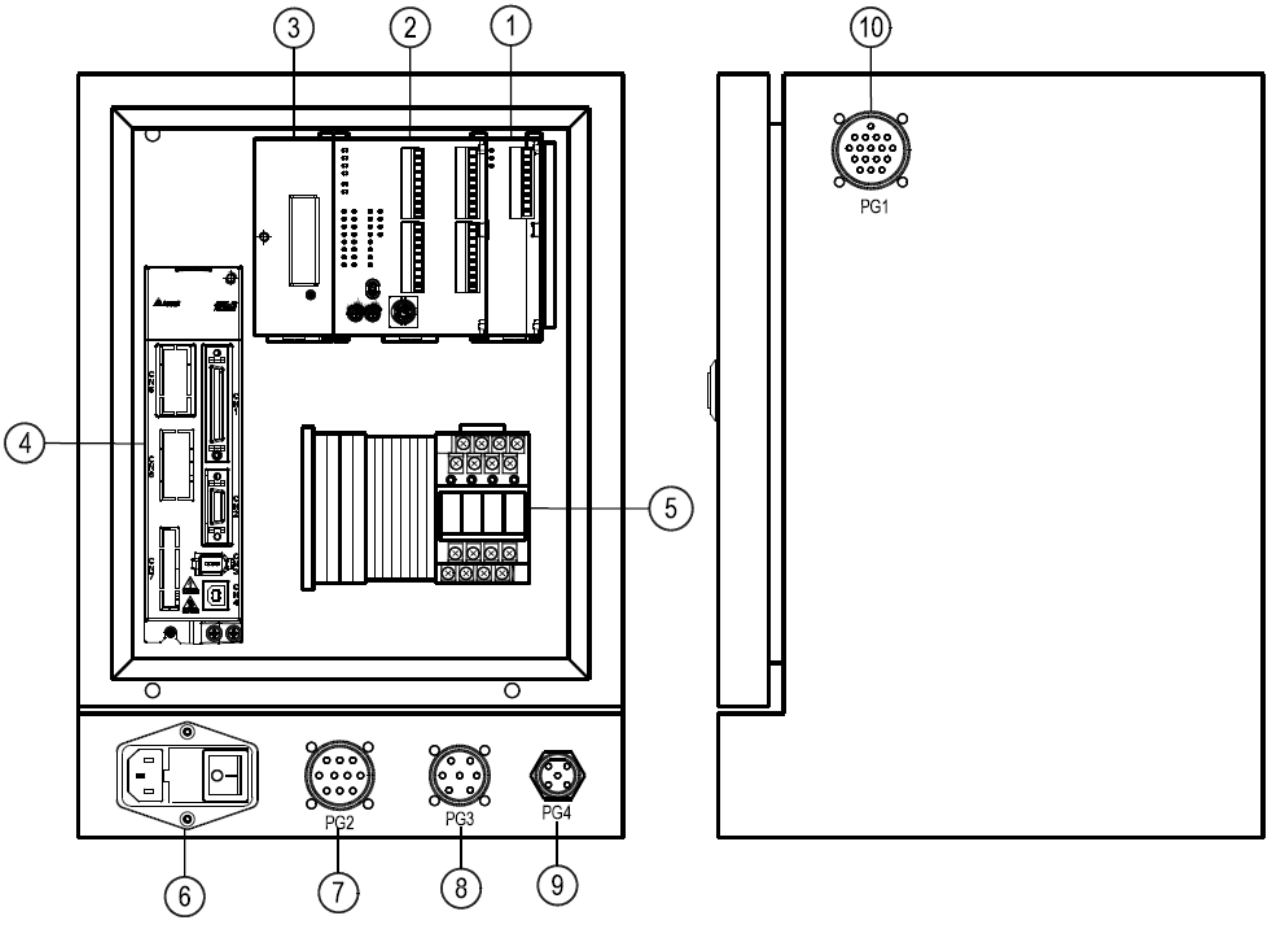
＊ Recommended spare parts



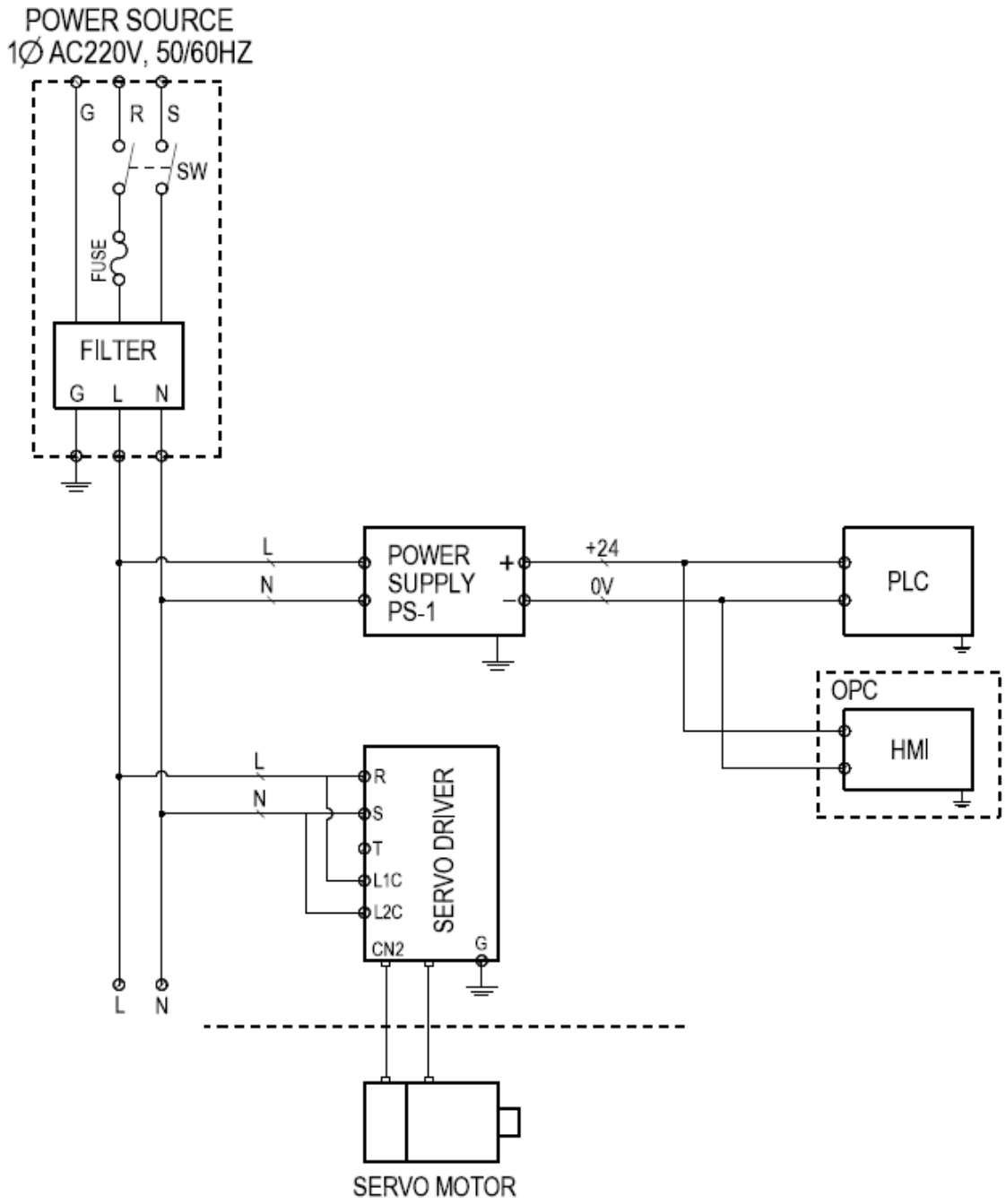
5.3 PART LIST – CONTROL BOX (INTERNAL)

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	3121-6002	Plug male (10Pin)	1	
	3122-4004	Socket female (10Pin)	1	
8	3121-4003	Plug male (7Pin)	1	PG3
	3122-4003	Socket female (7Pin)	1	PG3
9	3123-2006	Plug female (5Pin)	1	PG4
	3124-2006	Socket male (5Pin)	1	PG4
10	3121-7001	Plug male (16Pin)	1	PG1
	3122-7001	Socket female (16Pin)	1	PG1

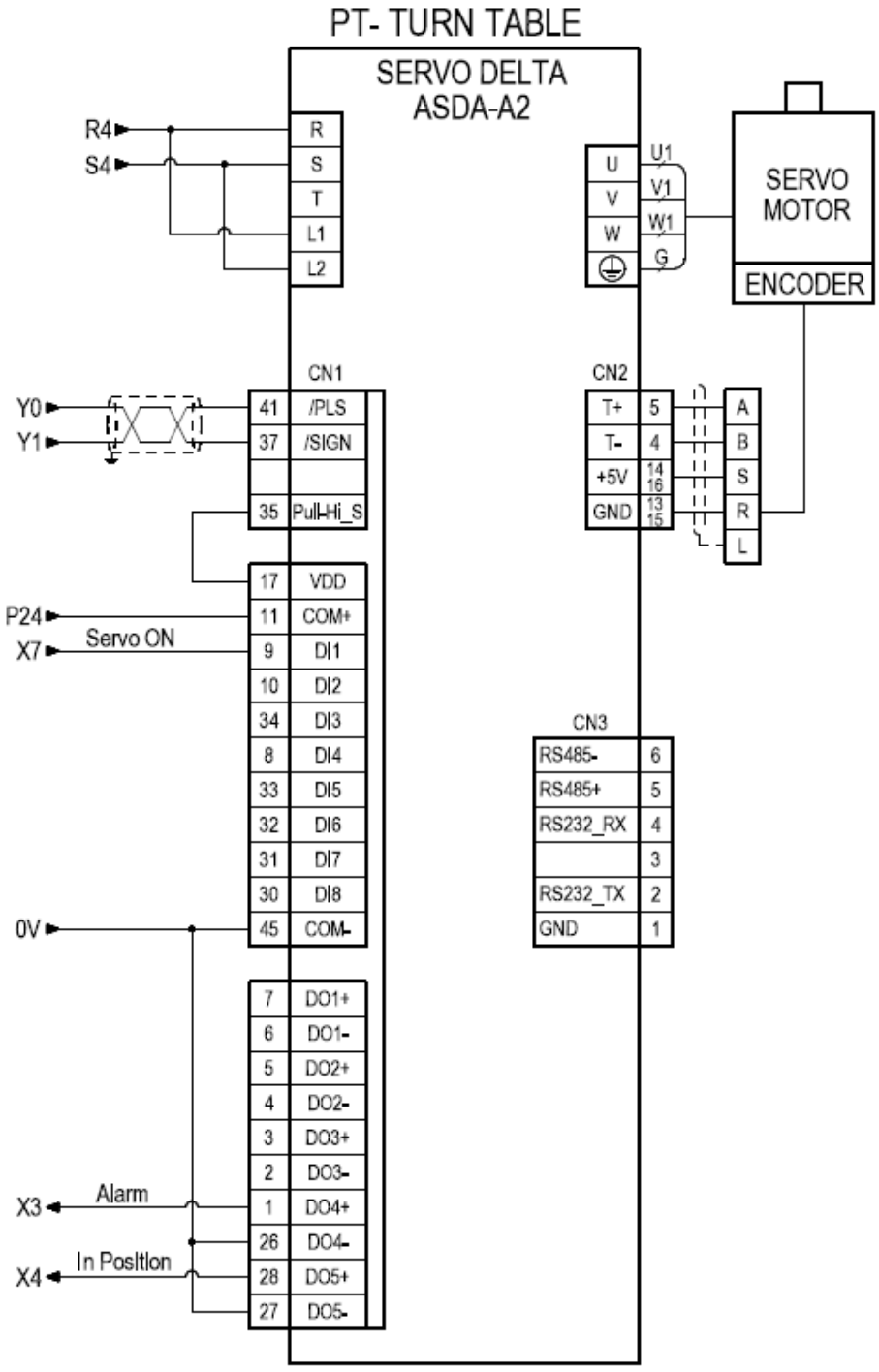
＊ Recommended spare parts.



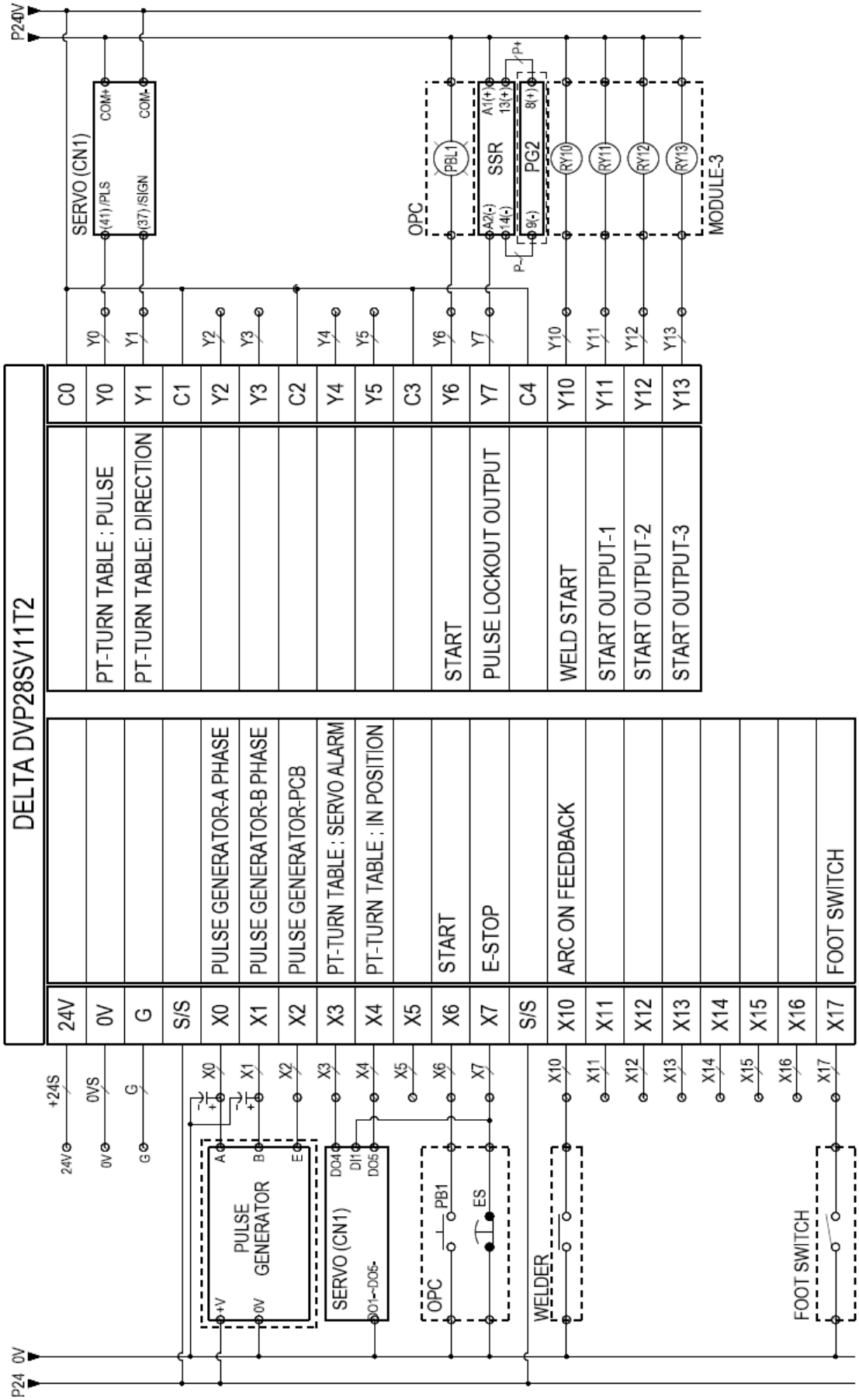
6. CIRCUIT


POWER SOURCE
1∅ AC220V, 50/60HZ
G
R
S
SW
FUSE
FILTER
G L N
L
N
POWER SUPPLY PS-1
+
−
+24
0V
PLC
OPC
HMI
L
N
R
S
T
L1C
L2C
CN2
G
SERVO DRIVER
L
N
SERVO MOTOR

6. CIRCUIT


PT- TURN TABLE
SERVO DELTA
ASDA-A2
R4
S4
R
S
T
L1
L2
U
V
W
U1
V1
W1
G
SERVO
MOTOR
ENCODER
CN1
CN2
Y0
Y1
41 /PLS
37 /SIGN
35 Pull-Hi_S
T+ 5
T- 4
+5V 14 16
GND 13 15
A
B
S
R
L
17 VDD
P24
11 COM+
X7
Servo ON
9 DI1
10 DI2
34 DI3
8 DI4
33 DI5
32 DI6
31 DI7
30 DI8
0V
45 COM-
CN3
RS485- 6
RS485+ 5
RS232_RX 4
3
RS232_TX 2
GND 1
7 DO1+
6 DO1-
5 DO2+
4 DO2-
3 DO3+
2 DO3-
X3
Alarm
1 DO4+
26 DO4-
X4
In Position
28 DO5+
27 DO5-

6. CIRCUIT


DELTA DVP28SV11T2
24V
0V
G
S/S
X0
X1
X2
X3
X4
X5
X6
X7
S/S
X10
X11
X12
X13
X14
X15
X16
X17
PULSE GENERATOR-A PHASE
PULSE GENERATOR-B PHASE
PULSE GENERATOR-PCB
PT-TURN TABLE ; SERVO ALARM
PT-TURN TABLE ; IN POSITION
START
E-STOP
ARC ON FEEDBACK
FOOT SWITCH
C0
Y0
Y1
C1
Y2
Y3
C2
Y4
Y5
C3
Y6
Y7
C4
Y10
Y11
Y12
Y13
PT-TURN TABLE ; PULSE
PT-TURN TABLE; DIRECTION
START
PULSE LOCKOUT OUTPUT
WELD START
START OUTPUT-1
START OUTPUT-2
START OUTPUT-3
P24V
P24 0V
+24S
0VS
G
24V
0V
G
SERVO (CN1)
(41) /PLS
(37) /SIGN
COM+
COM-
PULSE GENERATOR
+V
0V
A
B
E
SERVO (CN1)
DO4
DI10
DO5
DO1~DO5-
OPC
PB1
ES
WELDER
FOOT SWITCH
OPC
PBL1
SSR
A1(+)
13(+)
A2(-)
14(-)
PG2
8(+)
9(-)
P+
P-
RY10
RY11
RY12
RY13
MODULE-3