TITLE: Instruction for Inspection and Testing of `FRONT PANEL CONTROL DISPLAY PCB ASSEMBLY', In Model: MAESTRO 1200/CHAMP 1200 (PA79/521/C)

1.0 SCOPE :

1.1 Applicable for testing of control PCB Assy. in Model: MAESTRO 1200 /CHAMP 1200 (PA79/521/C)

2.0 DETAILS OF THE INSTRUCTION :

2.1 Inspection / Measuring / Test Equipment. :

2.1.1 Digital Multimeter, Trimmer

2.1.2 Record the test results (OK / NOT OK) in the test report as the testing progress. (REF: INSP4498/I4/R1).

Note*

Important- The following testing should be started only after programming. For Programming the PCBs only connect the respective power supply connectors (Refer below Table) from TEST JIG. After programming, short circuit (permanently solder) the jumpers JP1, JP2, JP3, JP4 of PCB2 and JP1 of PCB1. Also short circuit JP5 (JP5.1 & JP5.2) and JP6 (JP6.1 & JP6.2) of PCB2.

Sr. No.	Abbreviation	Power Supply Connector
1	PCB1	CN7
2	PCB2	CN5
3	PCB3	CN2

Sr. No.	Abbreviation	Description
1	PCB1	Power source Display control PCB (PA79/521/C)
1	PCB2	Main head controller PCB (PA79/531/A)
2	PCB3	Wire feeder PCB (PA79/532/B)

***Kindly note: Short circuit must be performed from front side i.e opposite to the side of LCD or 7-segment display.**

2.2 **ELECTRICAL TEST:**

NO LOAD TEST:

2.2.1 Connect the testing PCB (PCB1)(PA79/521/C) as per given TEST JIG wiring diagram (CK79/907).

2.2.2 Confirm feedback current and voltage POT on TEST JIG (Left-hand-side) should be at Minimum position before switch 'ON' the power supply.

2.2.3 Switch 'ON' TEST JIG power supply.

2.2.4 After MAINS ON, 'LED5' must be 'ON' on PCB1 (Green color).

2.2.5 During power on momentarily all LED's as well as 7 Segment display's will on.
2.2.6 The 7 Segment display's will show 'Ador Weld' for a small time.

2.2.7 **MMA FUNCTION TESTING:**

NOTE: If PCB1 is not in MMA MODE then change the position of toggle switch (downward) MMA/SAW on TEST JIG to select the MMA mode (LED2 will be ON & LED3 will be OFF on PCB1) on PCB1. Both CC/CV and REF LEDs will glow on TEST JIG.

2.2.7.1 **STEP 2: FEEDBACK CURRENT CALIBRATION**

1) Put the SHUNT/HALL SENSOR toggle switch on TEST JIG in SHUNT position (downward direction).
2) Check the voltage at the respective banana terminal above the feedback Current POT. It should vary from 0-75mv for MIN-MAX Current POT settings.
3) Set the feedback Current POT at maximum position (75mV) on TEST JIG. LHS Display of PCB1 will show feedback current. (75mv = 1200A)
4) Feedback current on display can calibrate by using POT 'VR2' of PCB1.

2.2.7.2 **STEP 3: FEEDBACK VOLTAGE CALIBRATION**

1) Put the VOLT/ISOLATOR toggle switch on TEST JIG in VOLT position (upward direction).
2) Check the voltage at the respective banana terminal above the feedback Voltage POT. It should vary from 0-20V for MIN-MAX Voltage POT. settings.
3) Set the feedback voltage at maximum position (20V) dc on TEST JIG. Display should show feedback voltage 20V on RHS display.
4) Feedback voltage on display can calibrate by using POT 'VR1' of PCB1.

2.2.7.3 **STEP 4: REFERNCE VOLTAGE CALIBRATION**

1) First of all welding mode should be OFF i.e put the feedback current POT. in MIN position and voltage POT. at MIN position.
2) Set the welding current 600A by rotating Encoder on PCB1 and check the reference voltage in between points CN5.1 and CN5.7 of PCB1 . It should be 2.3V and if not set by varying POT. P1 on PCB1.
3) While testing the encoder (by rotating from 100A to 1200A) on PCB1, the brightness of the REF led on TEST JIG will vary.

2.2.7.4 **STEP 5: FUNCTIONALTY TESTING:**

Sr. No	Function	Action	Message on Display of PCB1
1	Set current	Rotate Encoder on PCB from MIN. to MAX position.	RHS display on PCB1 shows current from 100A to 1200A.
2	Actual Current.	Vary the feedback current POT from MIN to MAX	RHS display on PCB1 shows welding current from

		position (0-75mv).	0-1200A.
3	Actual Voltage	Vary the feedback voltage POT from MIN to MAX position (0-20V)/(0-12V). (0-20V)-Toggle switch on TEST JIG on VOLT posn (0-12V)- Toggle switch on TEST JIG on ISOLATOR posn.	LHS display on PCB1 shows welding voltage from (0-20V)/(0-12V).
4	Under Voltage Error	Press the UV switch on TEST JIG.	Display shows Err-001 and LED1 wil glow on PCB1. Again place the switch in original position (downward).
5	Over Voltage error	Press the OV switch on TEST JIG.	Display shows Err-002 and LED1 wil glow on PCB1. Again place the switch in original position (downward).
6	Thermal Error	Press the TH switch on TEST JIG.	Display shows Err-003 and LED1 wil glow on PCB1. Again place the switch in original position (downward).
7	MMA/SAW selection	Toggle the MMA/SAW switch on TEST JIG.	In MMA mode LD2 will be ON & LD3 will be OFF. In SAW mode LD2 will be OFF & LD3 will be ON. Put the toggle switch again in MMA mode on TEST JIG.
7	CC/CV signal	Chek the voltage between CN5.2 & CN5.7 (GND) of PCB1.	5VDC (±2% supply tolerance allowed)
8	Arc on signal	Chek the voltage between CN5.8 & CN5.7 (GND) of PCB1.	0VDC
9	Shutdown Signal	Chek the voltage between CN5.3 & CN5.7 (GND) of PCB1.	0VDC
13	Remote control communication Interface	Connect the Remote assy. at CN1 connector of PCB1.	LED4 will ON & welding current on RHS display will vary from 50-1200 A on PCB1 as per POT position on remote PCB.

2.2.8 **SAW FUNCTION TESTING:**

NOTE: Set the display PCB1 in SAW mode by changing the position of toggle switch on TEST JIG to SAW position (Upward direction). (LED3 will be ON & LED2 will be OFF on PCB1). Also connect WH-15 head (PA79/531/A), main head controller

PCB. First of all check for the +5V supply in between testpoints on PCB2 and +15/-15 V supply in between respective test points.

2.2.8.1 **STEP 1: FUNCTIONALTY TESTING**:

Note*: Welding is ON/OFF can be achieved by pressing the respective switch (SW1/SW2) on the PCB2.

Sr. No	Function	Action	Message on Display
1	Set current	Set the welding current on head display controller PCB2. *Kindly note the variation of set current depends on the wire diameter, which can be selected by rotating the ENP1 encoder on PCB2.	Same welding current must get displayed on PCB1.
2	Set Voltage	Set the welding voltage on head display controller PCB2.	Same welding voltage must get displayed on PCB1.
3	CC/CV signal	Chek the voltage between CN5.2 & CN5.7 (GND) of PCB1.	0VDC
4	Arc on signal (Welding is OFF)	Chek the voltage between CN5.8 & CN5.7 (GND) of PCB1.	0VDC
5	Shut down Signal (Welding is OFF)	Chek the voltage between CN5.3 & CN5.7 (GND) of PCB1.	5VDC (±2% supply tolerance allowed)
7	Arc on signal (Welding is ON)	Chek the voltage between CN5.8 & CN5.7 (GND) of PCB1.	5VDC (±2% supply tolerance allowed) ARCON led will glow on TEST JIG.
8	Shut down Signal (Welding is ON)	Chek the voltage between CN5.3 & CN5.7 (GND) of PCB1.	0VDC
9	Encoder switch (Welding is ON)	Initiate the weld start command from welding Head control PCB2 by pressing the respective switch(SW1) LD5 will glow green & continuously press the Encoder Switch on PCB1 for 5 sec.	In PCB1 LED4 will be on & RHS display will showing counts from 0.1-1.6 for indication of Voltage offset calibration mode during welding. Again press the encoder switch to exit the mode resulting into LED4 is OFF.
10	Functionality Testing during	When WELD ON command will be given	The both display on PCB1 and PCB2 will update

	Welding	from PCB2, Rotate the feedback current as well as voltage POT on TEST JIG.	accordingly. Everytime they should match eachother. Rotate the feedback voltage Pot. so as to get 20V at the banana terminal of TEST JIG. To calibrate the display according to the feedback voltage rotate VR1 pot. on PCB2, so that it will show 20V on RHS display of PCB2. After this testings are over, make WELD OFF by manually pressing switch SW2 on PCB2.
11	Communication Error	Remove the connection from connector CN8 of PCB2.	Display of PCB1 will show ERR-006 after 15 sec.

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