

EQUIPMENT REQUIRED

Quantity	Part Number	Description
1	TE82818	TCM II Final Test Station
1	65474-002LF	2 pin jumper

REFERENCE DOCUMENTATION

Document #	Description
WAT046538	GENERIC Electrical Safety procedure
810000218	PERF SPEC, PCB, PCMTCM
WAT038001	PERF SPEC, TCM

DEFINITIONS AND ABBREVIATIONS

Term	Definition
TCM	Temperature Control Module
USL	Upper Spec Limit
LSL	Lower Spec Limit
CHM	Column Heater Module
UUT	Unit Under Test
RTD	Resistance Temperature Detector
PSC	Production Support Check

TEST SPECIFICATIONS AND TRACEABILITY MATRIX

Test #	Test Specification & Condition	Acceptance criteria	Reference
1	Hi - Pot / Ground Continuity	PASS	WAT046538 Electrical Safety Test Procedure
2	Keypad	All key presses indicated on LCD	Production Support Check (PSC)
3	LCD	All pixels switch on/off	Production Support Check (PSC)
4	Temperature Accuracy (verify RTD input for each input channel CHM 1, CHM 2, & CHM 3)	LSL = 101 °C USL = 103 °C	210000218 Sec 2.6.3 Temperature Channels *See Note 1
5	Temperature Variation (verify maximum deviation between all RTD input channels CHM 1, CHM 2 & CHM 3)	≤ 0.5 °C	Production Support Check (PSC) **see Note 2
6	Heater Verification (verify heater output control of each channel CHM 1, CHM 2, & CHM 3)	Heater outputs switch on/off	210000218 Sec 2.6.9 Heater/Pump Driver

7	Over Temperature Alarm (verify software alarm when temperature is above the set temperature)	Alarm received	WAT038001 sec 6.2.5
8	Under Temperature Alarm (verify software alarm when temperature is below the set temperature)	Alarm received	WAT038001 sec 6.2.5
9	IEEE 488	Communication established	210000218 sec 2.3.1 IEEE-488 register 210000218 sec 2.6.2 IEEE-488
10	Set System Defaults	System defaults set	Production Support Check (PSC)

NOTES:

***NOTE 1** Tests the ability of the UUT to accurately read external RTD inputs. The precision resistors used for this test simulates 102°C.

****NOTE 2** To assure proper manufacture, the variation between the external RTD inputs is verified to be less than or equal to 0.5°C.

1. TESTER SETUP

- 1.1. PC "POWER" must be OFF.
- 1.2. Tester TE82818 "POWER" must be OFF.
- 1.3. Connect 50 pin ribbon cable between PC and rear of tester.
- 1.4. Plug serial cable into "COM 1" on PC.
- 1.5. Plug crossover Ethernet cable into top port on PC.
- 1.6. Plug IEEE cable into 488.2 port on PC.
- 1.7. Plug tester into 120/240 volt AC outlet.
- 1.8. Power up the PC and let it initialize.
- 1.9. On desktop, double click on "TCM II TEST TE82818" icon.
- 1.10. Verify that the Test Software number on the cover of this procedure matches that of the Test Software revision displayed on Main Menu page of test program.

NOTE: If the PC or test program needs to be restarted, be sure to disconnect any unit being tested and to switch TE82818 power OFF.

2. GROUND CONTINUITY \ HI-POT

- 2.1. Complete Electrical Safety Test per procedure document no.: WAT046538.

3. TEST SETUP

- 3.1. Attach one 2 pin jumper across pins 15 & 16 of J10 (software jumpers) located closest to bottom of board.
- 3.2. Connect RS232 serial cable into rear of unit.
- 3.3. Connect EtherNet cable into rear of unit.
- 3.4. Connect IEEE 488 cable into rear of unit.
- 3.5. Plug CHM cables 1, 2, & 3 from tester into corresponding connectors on rear of unit.
- 3.6. Plug unit to be tested into UUT POWER outlet on front of tester.
- 3.7. Switch unit power on.

4. FIRMWARE DOWNLOAD

- 4.1. From the desktop, double click on the LOADER icon.
- 4.2. In the firmware Loader Dialog, select the "Scan" box then click on the "Next" button.
- 4.3. Loader will show the Ethernet port on instrument available.
- 4.4. Select Ethernet download by clicking on it then click the "OK" button.
- 4.5. Select firmware file for TCM II, then click OK.
- 4.6. Click on the "Next" button to start downloading the software.
- 4.7. Click on the "Finish" button when the download completes.
- 4.8. Cycle instrument power.

5. SET INSTRUMENT SERIAL NUMBER

- 5.1. From the desktop, double click on the LOADER icon.
- 5.2. In the firmware Loader Dialog, select the "Scan" box then click the "Next" button.
- 5.3. Loader will show the Ethernet port on instrument available.
- 5.4. Right click on instrument and select "Set Serial Number".
- 5.5. Enter the UUT serial number then click "OK".
- 5.6. Once serial number is displayed, "CANCEL" out of loader program.

6. TEST

- 6.1. From the main menu select the desired test mode. You will be prompted for operator and unit information. Enter this by keyboard or barcode scanner.

AUTOTEST. Tests will run consecutively until all are completed, regardless of whether they pass or fail. Upon the completion of each individual test, the tester will momentarily display test status and results. Testing may be stopped and the main menu will be displayed, along with test status. You can "Continue Testing Unit" or "Remove Unit From Tester".

MANUAL TEST. You must select each test to run from a menu. Test Status is updated after each test is finished. If a test fails, an error message is displayed and you will have an option of printing a hard copy of that test. "RETURN" to main menu when done.

FIRMWARE DOWNLOAD. Use to download firm to instrument.

7. END OF TEST

Every time a unit completes all of it's tests and is removed from the test station, an INSTRUMENT FINAL TEST RECORD containing test results will be printed out. The unit must pass all tests before the Instrument Result field of the I.F.T.R. indicates PASS. The Operator must sign and date all I.F.T.R.s, then place them in the instruments folder.

- 7.1. Switch U.U.T. power off before disconnecting from tester.
- 7.2. Remove 2 pin Jumper.