



Stork Thermocouple Process Calibrator
Stock No 41511

Operating Manual

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Specifications VA710 Thermocouple Process Calibrator

General Specifications

Max Voltage applied between any connection and earth or between any two connections	30 Volts
Storage Temperature	-40 to +60 Deg C
Operating Temperature	0 to +50 Deg C
Relative Humidity	95% up to 30C, 75% up to 40C, 45% up to 50C
Shock	2g, 5Hz to 500Hz 1 meter drop test
Power Requirements	6 x AAA 1.5V Battery
Size	205 x 98 x 46mm
Weight	472g (including battery)

Ranges

Millivolt	-10 to 75mV
Type J	-200 to 1200 Deg C ; -328 to 2192 Deg F
Type K	-200 to 1370 Deg C ; -328 to 2498 Deg F
Type T	-200 to 400 Deg C ; -328 to 752 Deg F
Type E	-200 to 950 Deg C ; -328 to 1742 Deg F
Type R	-20 to 1750 Deg C ; -4 to 3182 Deg F
Type S	-20 to 1750 Deg C ; -4 to 3182 Deg F
Type B	600 to 1800 Deg C ; 1112 to 3272 Deg F
Type N	-250 to 1300 Deg C ; -418 to 2372 Deg F

Accuracy

Temperature Coefficient	±0.02%/°C from 0 - 18 Deg C and 28 - 50 Deg C		
	Resolution	Accuracy	Ref Junc.Error
Millivolts	0.01mV	± (0.025%+2counts)	
Type J	0.1°C/°F	± (0.3°C +10uV)	±0.3°C
Type K	0.1°C/°F	± (0.3°C +10uV)	±0.3°C
Type T	0.1°C/°F	± (0.3°C +10uV)	±0.3°C
Type E	0.1°C/°F	± (0.3°C +10uV)	±0.3°C
Type R	1°C/°F	± (1°C +10uV)	±0.3°C
Type S	1°C/°F	± (1°C +10uV)	±0.3°C
Type B	1°C/°F	± (1°C +10uV)	±0.3°C
Type N	0.1°C/°F	± (0.3°C +10uV)	±0.3°C

Note : All specifications are stated for an ambient temperature of 18 - 28 Deg C for other ambient temperatures to obtain accuracy apply Temperature Coefficient as stated

Introduction

The VA710 Thermocouple Process Calibrator is an accurate measurement and source hand held instrument which can be used to calibrate the majority of thermocouple instrumentation.

It can measure or simulate 8 different thermocouple types and millivolts.

The instrument comes with 2 pcs Miniature Type K thermocouple plugs, 6 x AAA 1.5V batteries, a user's manual and a calibration certificate.

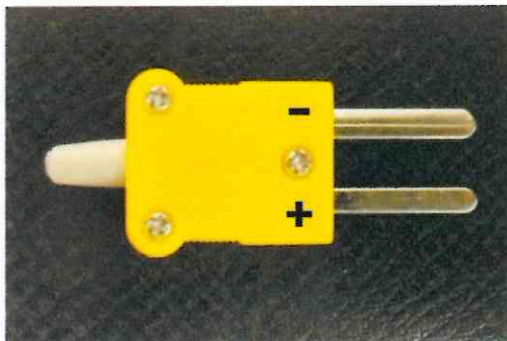
Preparation for Use

Batteries

Before use remove the rear battery cover and insert the 6 off AAA 1.5V batteries taking note of polarity.

Test Lead

Before you can start measuring or simulating a thermocouple you need to assemble a test lead. As the vast majority of heat treatment equipment is Type K the instrument comes supplied with two miniature Type K thermocouple plugs.



The test cable should be made using either Type K extension cable (KX) or Type K compensating cable (KCB). It is very important when assembling the cable to ensure that the polarity of the plugs and cable are correct otherwise false readings will be obtained. On

thermocouple plugs the larger of the two pins is the negative connection.

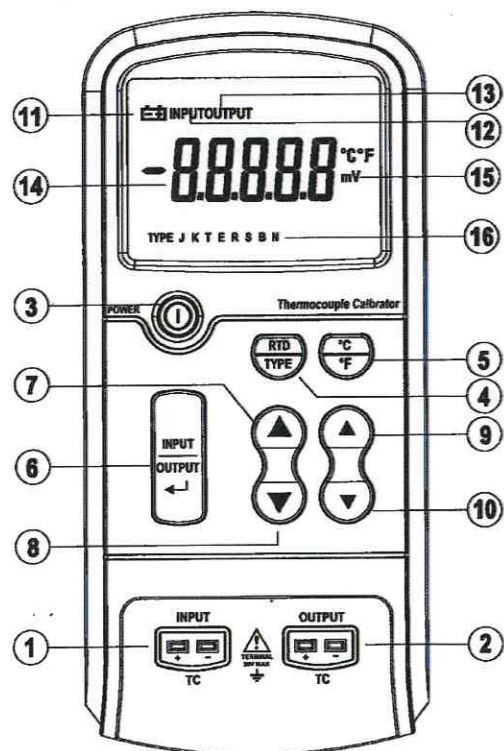
Thermocouple extension cables and compensating cables for Type K are generally available as two colour codes

1) IEC – Green Sheath and White and Green cores the White core being positive.

2) British standard – Red Sheath with either Blue & Brown cores or Blue & White cores, in both cases the Blue is negative.

The connector at the other end of your test lead would need to be whatever connector is suitable for the instrument you are testing.

Instrument Front Panel



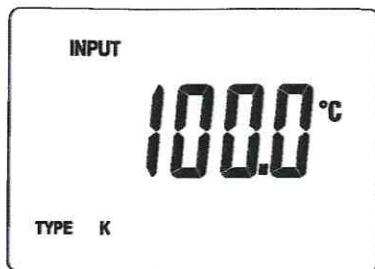
- 1) Input Socket for Measuring
- 2) Output Socket for Simulation
- 3) Power button
- 4) Selector button for T/C type
- 5) °C or °F selector button
- 6) Input or Output selector button
- 7) Fast Increase button
- 8) Fast Decrease button
- 9) Slow Increase button

- 10) Slow Decrease button
- 11) Low Battery indicator
- 12) Input indicator
- 13) Output indicator
- 14) Measured or Simulated Value
- 15) Unit of measurement indicator
- 16) Mode Indicator

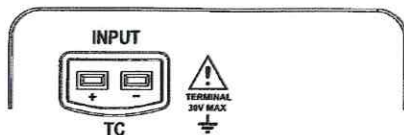
Operating Instructions

Thermocouple or Millivolt Measurement

- 1/ Press the power button (3) to turn on the calibrator.
- 2/ Press the Input or Output selector button (6) to select INPUT as shown on the Input Indicator (12).
- 3/ Press the selector button for T/C type (4) until the type of input required is shown on the Mode Indicator (16).



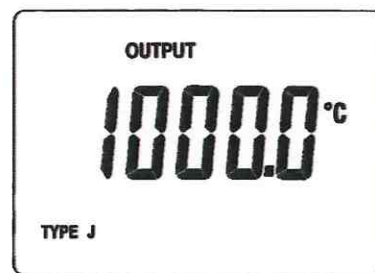
- 4/ Plug the test lead into the Input Socket (1) and connect to the source that you wish to measure.



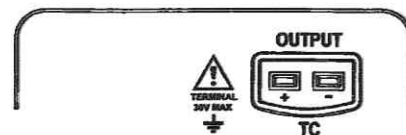
- 5/ The reading value is shown on the Measured Value display (14).

Thermocouple or Millivolt Output / Simulator

- 1/ Press the power button (3) to turn on the calibrator.
- 2/ Press the Input or Output selector button (6) to select OUTPUT as shown on the Output Indicator (13).
- 3/ Press the selector button for T/C type (4) until the type of input required is shown on the Mode Indicator (16).



- 4/ Plug the test lead into the Output Socket (2) and the other end into the instrument you wish to test / calibrate.



- 5/ To change the value being output press the Fast Increase or Fast Decrease buttons (7) or (8) until the Simulated Value on the display (14) is close to that required.
- 6/ To exactly set the value being output press the Slow Increase or Decrease button (9) or (10) until the exact Simulated value on the display (14) is shown.

Maintenance

Cleaning

Periodically wipe the case with a damp cloth and detergent; do not use abrasives or solvents.

Calibration

It is recommended that the calibrator is checked every 12 months to ensure that it performs according to its specifications.

Replacing the Battery

Change the battery when the Low Battery Indicator (11) shows on the display. Ensure that the calibrator is turned off and disconnected before changing the battery.

Calibration of Chart Recorders

The main function that Thermocouple simulators are used for in the Heat Treatment industry is for the checking / calibration of chart recorders.

Before checking the calibration it is recommended that the recorder is switched on for approx 30 mins to allow it to reach normal operating temperature.

It is recommended that the recorder calibration is then checked at at least 3 points :- 1) Low Scale e.g. 100 Deg C
2) Mid Scale e.g. 500 Deg C and 3)
High Scale e.g. 900 Deg C.

If it is determined that the chart recorder then needs calibrating the individual calibration procedure for that recorder should be followed as detailed in the recorder manual.
