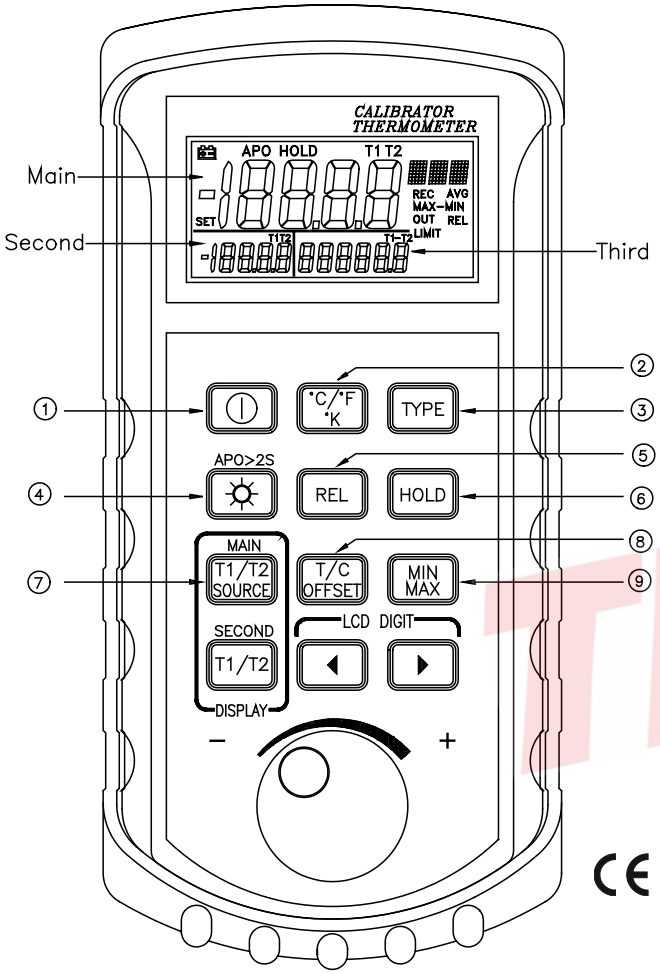
OPERATOR'S MANUAL
TECPEL CL 326A
DIGITAL THERMOMETER



INTRODUCTION

This instrument is a 4 1/2 digit, compact-sized portable digital calibrator thermometer designed to use external K/J/T/E/R/S/N/L/U/ B/C type thermocouples as temperature sensor. The thermometer features a dual thermocouple input, an adjustable T/C offset. The thermocouples types comply with the(N.I.S.T. Monograph 175 Revised to ITS 90 standard).

WARNING

To avoid electrical shock, do not use this instrument when working voltages at the measurement surface over 24V AC or DC.

WARNING

To avoid damage or burns, do not make temperature measurement in microwave ovens.

CAUTION

Repeated sharp flexing can break the thermocouple leads. To prolong lead life, avoid sharp bends in the leads, especially near the connector.

SAFETY INFORMATION

It is recommended that you read the safety and operation instructions before using the thermometer.

GENERAL SPECIFICATIONS

Displays:

There are three displays Main Second and Third. The Main and Second display panels are 4 1/2 digit liquid crystal display (LCD) with maximum reading of 19999, The main is used for displaying the value of T1, T2 or output setting. The second displays T1 or T2 readings and the third T1-T2 and groups settings.

Battery:

Standard 9V battery (NEDA 1604, IEC 6F22 006P). Battery life is about 17.5 hours when used with a carbon zinc battery.

Low battery indication:

The "[±]" is displayed when the battery voltage drops below the operating level.

Dimensions: 192mm(H) x 91mm(W) x 52.5mm(D).

Weight: 318g.

Accessories:

Two type "K" thermocouple bead wires. Two type "K" thermocouple calibration bead wires. Maximum insulation temperature 260°C (500°F). Wire accuracy ±2.2°C or ±0.75% of reading (whichever is greater) from 0°C to 800°C.
A 9 volts battery.
An instruction manual.

ENVIRONMENTAL

Ambient Operating Ranges:

0°C to 50°C (32°F to 122°F) <80% R.H.

Storage Temperature:

-20°C to 60°C (-4°F to 140°F) <70% R.H.

Input Connector:

Accepts standard miniature thermocouple connectors (flat blades spaced 7.9mm, center to center).

SPECIFICATIONS

ELECTRICAL

Temperature Scale:

Celsius or Fahrenheit user-selectable.

Measurement Range:

K-TYPE(0.1°) -200°C to 1372°C or -328°F to 2501°F
J-TYPE(0.1°) -210°C to 1200°C or -346°F to 2192°F
T-TYPE(0.1°) -250°C to 400°C or -418°F to 752°F
E-TYPE(0.1°) -250°C to 1000°C or -418°F to1832°F
R-TYPE(1°) 0°C to 1767°C or 32°F to 3212°F
S-TYPE(1°) 0°C to 1767°C or 32°F to 3212°F
N-TYPE(0.1°) -200°C to 1300°C or -328°F to 2372°F
L-TYPE(0.1°) -200°C to 900°C or -328°F to 1652°F
U-TYPE(0.1°) -200°C to 600°C or -328°F to 1112°F
B-TYPE(1°) 600°C to 1820°C or 1112°F to 3308°F
C-TYPE(1°) 0°C to 2316°C or 32°F to 4200°F

Based on the ITS-90 temperature standard.
According to temperature standard ITS-90.

Accuracy:

K/J/T/E/L/U-TYPE

±(0.05% rdg + 0.5°C) -50°C to 1372°C
±(0.05% rdg + 1.0°C) -50°C to -250°C
±(0.05% rdg + 1.0°F) -58°F to 2501°F
±(0.05% rdg + 2.0°F) -58°F to -346°F

N-TYPE

±(0.05% rdg + 1.0°C) -50°C to 0°C

±(0.05% rdg + 0.5°C) 0°C to 1300°C

±(0.05% rdg + 2.0°F) -58°F to 32°F

±(0.05% rdg + 1.0°F) 32°F to 2372°F

R/S/B/C-TYPE

±(0.05% rdg + 2°C) 0°C to 1767°C

±(0.05% rdg + 4°F) 32°F to 3212°F

Thermocouple Simulate Range

Resolution: 0.1° (1° for R/S/B/C-TYPE)

Accuracy: ±(0.3°C + 10uV)

Accuracy: Specified for operating temperatures over the range of 18°C to 28°C(64°F to 82°F), for 1 year, not including thermocouple error.

mV Range

Range: -25.00mV to 75.00mV

Resolution: 10uV

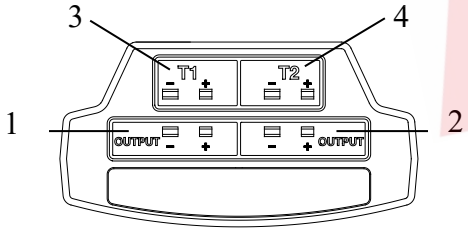
Accuracy: ±(0.025% + 1 digit)

Temperature Coefficient:

0.1 times the applicable accuracy specification per °C from 0°C to 18 and 28°C to 50°C (32°F to 64°F and 82°F to 122°F).

Top Side:

1. Output 1 Sockets of thermocouples.
2. Output 2 Sockets of thermocouples.
3. Sockets of thermocouples T1.
4. Sockets of thermocouples T2.



OPERATING INSTRUCTIONS

1. Power Button "⏻"

The "⏻" button turns the thermometer on or off. When entering REC mode, the power off function is disabled.

2. Button "°C/°F/°K"

Press the °C/°F/°K button to cycle through temperature scale, °C, °F and °K.

3. Type Selection (thermocouples)

Press the "type" button and the selected symbol will blink which means in the setting mode.

Press " ▸ " button to make right shifts to cycle through K→J→T →E→R→S→N→L→U→B→ C→mV.

Press " ◂ " button to make left shifts to cycle through K→mV→C →B→U→L→N→S→R→E→ T→J.

Press the "type" button again to choose the selected thermocouple.

4. Backlight "☼" button

Pressing the button less than two seconds to turn on and pressing the button again less than two seconds to turn off the backlight in the LCD. It will turn off after thirty minutes without operation.

Auto power off

It is in the APO mode when the meter is turned on and will turn off the meter without operation for fifteen minutes. Pressing the "☼" button over two seconds to cancel the function. And pressing the "☼" button again to activate the APO function.

5. "REL" button

The relative value function can be used for comparing the saved reference value with other measurements. Press the "REL" button less than to store the current measurement as the reference value, and press the "REL" over two seconds to disable the function.

6. "HOLD" button

When HOLD mode is selected, the thermometer holds the present readings and stops all further measurements. To activate the data hold mode, press the HOLD button, and "HOLD" is displayed on the LCD. Pressing the HOLD button again cancels the function, and the instrument will automatically resume measurements. When the Hold key is activated, it will stop functions of the other entire key except Power and Backlight.

7. "T1/T2 SOURCE" buttton

Pressing T1/T2 SOURCE to cycle through T1, T2 and SOURCE. In the main display the blinking digit is the one to be adjusted, you can push the " ◂ ▸ " button to make right or left shifts to the desired position. When incrementing to the utmost range of the selected thermocouples, the LIMIT will show on the display.

SOURCE is to provide the output parameter settings. There are ten individual temperature setting points in group 0, which can be set at your desired output point. Use " ◂ ▸ " to shift the desired digit to be adjusted and rotate the knob to increase or decrease the values you want to set. Press the T/C OFFSET to save the settings.

8. "OFFSET" button(Thermocouple offset adjust)

When the main display input is T1 or T2, and socket thermocouple is connected. Press T/C OFFSET less than two seconds the SET annouciator will appear on the right side of display and enter the offset adjustment mode. And the blinking digit is the one to be adjusted. Rotate the knob to the right increasing the values, to the left side decreasing the values. The maximum range of the knob is ±5 centigrade. When turning to the utmost range, it will appear LIMIT symbol on the left side of the display and means that there is no further incrementing of the offset. Press the T/C OFFSET over two seconds to save the settings.

9. "MIN/MAX" button

Press MIN/MAX button to enter the MIN/MAX recording mode and REC shows on the display. The beeper emits a tone when a new minimum or maximum measurement is recorded. Press the MIN/MAX button again to rotate through the current readings:

MAX: The highest measurement recorded.

MIN: The lowest measurement recorded.

MAX-MIN: The difference of the highest and the lowest measurement.

AVG: The average values of the measurements.

Press MIN/MAX button over two seconds to exit the function.

10. Knob usages in the settings

In the TYPE mode, it is used for thermocouples selection to make right or left shifts to choose selectors. In the SOURCE mode, it is used to increase or decrease the values of the output function.

11. PWM Group

Group 0 set

In the OUT mode, press T/C OFFSET over two seconds to set. LCD display Set CLEAr press T1/T2 SOURCE button to clear data, display SEt 0-0. In the main display the blinking digit is the one to be adjusted, you can push the " ◂ ▸ " button to make right or left shifts to the desired position. Rotary knob to increase or decrease the values. Press T1/T2 SOURCE to save the one step setting. 515 can set 10 step. Press T/C OFFSET exit group set mode.

Group out

In the OUT mode, press T/C OFFSET less than two seconds. Rotary knob to select step. Press T/C OFFSET exit group out mode.

WARNING

To avoid possible electrical shock, disconnect the thermocouple connectors from the thermometer before removing the cover.

Maintenance:

Battery Replacement

Power is supplied by a 9 volt "transistor" battery. (NEDA 1604, IEC 6F22). The " ▭ " appears on the LCD display when replacement is needed. To replace the battery, remove the two screws from the back of the meter and lift off the battery cover. Remove the battery from battery contacts.

Cleaning

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

Periodically wipe the meter with soft and mild cloth. Do not use abrasive or solutions to clean the meter.