TEK300 - Direct Current Calibrator

The TEK 300 current calibrator is able to sink or source a current up to 20mA. It is intended for process control instrumentation and general purpose signal injection applications. A monitor mode facility is also incorporated into the design, whereby the current (0-20mA) in the process loop can be monitored and read directly from the digital display. The device is also fully protected against inadvertent misuse.

SWITCH OPERATION

Monitor

Looks at the current in the process loop, only when switch 2 is in the MON/SET position. This mode actually measures the current. The adjust control is not operative when the unit is in this mode.

If in monitor mode and switch 2 is accidentally switched to either load or source, the error light is activated. **Note: the digital display is out of circuit if switch 2 is in either source or load position.**

When in the monitor mode switch 2 selects either source or load functions, the current loop to which the monitor is connected to is an open circuit.

On

In this mode, the unit can either be used as a current load or current source depending on the position of switch 2.

When switch 2 is in the MON/SET position, the actual value of the current to be sourced, or sunk can be set. The setting is set by the adjust knob and the actual value read from the digital display.

When set to source (e.g. 10mA), an external supply, **correctly polarised**, is fed into the current calibrator. The set current (e.g. 10mA) will then be drawn from the external supply.

Off

The circuit (Current Calibrator) is off.

N.B. In load mode i.e. apply external source, the maximum applied voltage should be no greater than 50V DC. Under no conditions apply an AC source.

OPERATING INSTRUCTIONS

1. Ensure switch 1 is in the OFF position and switch 2 is in the MON/SET position.

2. Ensure that the output terminals have nothing connected to them.

3. Turn switch 1 to ON position and check that the battery indicator (Green LED) is on and the error indicator (Red LED) is off. If the battery indicator is off, switch the current calibrator off, i.e. turn switch 1 to OFF position. Replace the old batteries with new ones and repeat steps 1 to 3.

4. To check that the adjust knob and display is working, turn the adjust knob anti-clockwise to its furthest point. The digital display will read 0.00mA. Now turn the adjust knob clockwise to its furthest point. The display will read 1mA. Turn the adjust knob until the display reads 19.99mA, on completion reset the display to read 0.0mA.

N.B. When the display shows 1.mA, it is actually indicating that the current calibrator is ready to either sink or source 20mA (+0.1%).

5. Using the current calibrator as a current monitor, steps 1 to 4 must first be carried out. Switch off the current calibrator. Ensure that switch 2 is in the MON/SET position. Connect the current calibrator to the process loop to be monitored via its output terminals, ensuring that the correct polarity is observed. Turn switch 1 to MON position. The value of the current flowing through the process loop can now be read directly from the display.

N.B. The actual applied voltage to the current calibrator should not exceed 50V DC. Under no conditions should an AC signal be applied.

The current calibrator also has a quick blow fuse (50mA), connected to its internal circuitry in order to protect the digital display.

6. Using the current calibrator as a current source, steps 1 to 4 must first be carried out. Switch off the current calibrator and turn switch 2 to the MON/SET position. Turn switch 1 to ON. Using the knob, set the value of the current to be sourced i.e. read rom the display. Connect the current calibrator into the required circuit/process loop, via the output terminals and ensuring that correct polarity is observed. Turn switch 2 to source.

If the impedance of the circuit/process loop is in compliance with the current calibrator then the current calibrator will now act as a current source, providing the desired (preset) current. If the impedance of the circuit/process loop is too large i.e. does not comply with the current calibrator then the error indicator will light and the current calibrator should be switched off.

N.B. When switch 1 is in the ON position and switch 2 is in the source position and the current calibrator is connected into the circuit/process loop, then the value of the current to be sources can be simply altered by varying the adjust knob. Again, the error indicator will light if the impedance of the process loop does not comply with the current calibrator.

7. Using the current calibrator as a current load, steps 1 to 4 must be carried out first. Switch off the current calibrator and turn switch 2 to MON/SET. Turn from the process loop i.e. read this value from the display.

Connect the current calibrator into the required circuit/process loop via its output terminals and ensuring that the correct polarity is observed. Turn switch 2 to load. If the impedance of the circuit/process loop is in compliance (preset) current from the circuit/process loop. If the impedance of the circuit/process loop does not comply with the current calibrator should be switched off.

N.B. When switch 1 is in the ON position and switch 2 is in the load position and the current calibrator is connected into the circuit/process loop then the value of the current to be sunk from the circuit/process loop can simply be altered by varying the adjust knob. Again, the error indicator will light if the impedance of the circuit/process loop does not comply with the current calibrator.

Note that in load mode i.e. when applying an external source to the current calibrator, the maximum applied voltage to the current calibrator should not exceed 50V DC.

UNDER NO CIRCUMSTANCES APPLY AN AC SOURCE TO THE CURRENT CALIBRATOR.

8. When the current calibrator is not being used, ensure that switch 1 is in the OFF position and that switch 2 is in the MON/SET position. Also ensure that the output terminals are not connected to anything. If the current calibrator is not being used for any long periods of time then the batteries should be removed from it. The current calibrator should be stored in a dry place and should not be exposed to direct sunlight for long periods of time.

Battery Condition and Error Indicator

If, during normal use, the 'BATTERY CONDITION' indicator becomes extinguished, it informs the user that the battery capacity is spent and fresh batteries should be fitted.

If a switch on or during normal use, the error indicator becomes illuminated, this tells the user that a fault condition exists (i.e. incorrect connection o fhte circuit/process loop to the unit, incorrect mode of operation, inappropriate current output level to the circuit/process loop, etc.) and this should be cleared before using the unit further.

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