

ESD CALIBRATOR SLEEK-140 - Operating Manual

The **ESD Sleek-140** is a compact, high-accuracy multifunction process calibrator designed for calibration, testing, and maintenance of industrial instrumentation systems. The unit incorporates high-resolution 16-bit ADC and DAC technology to provide precise signal generation and measurement capabilities.

The calibrator supports **0-20 mA current loops, millivolt (mV) signals, voltage (V) signals, and J, K, and R type thermocouples**, making it suitable for a wide range of process control and instrumentation applications.

Sleek-140 can operate in both **Source** and **Sink** modes, enabling users to simulate process signals, verify transmitter outputs, and calibrate field instruments with ease. The built-in configuration features allow users to define custom count and step values for faster and more efficient calibration procedures. ESD Sleek 140 is highly accurate Calibrator with 16-bit of ADC and DAC used. It can be used to Calibrate 0-20 mA Current Loop instruments, Thermocouple of J, K, R type, millivolts (mV) and Volts (V) instruments.

Key Features:

- High-accuracy 16-bit ADC and DAC architecture
- Source and Sink operation modes
- Current output and measurement: 0-20 mA
- Voltage output: 0-10 V
- Millivolt output: 0-60 mV
- Thermocouple simulation for J, K, and R types
- User-configurable count and step settings
- Password-protected configuration and calibration modes
- Bright LED display with simple keypad operation
- Built-in 24 VDC transmitter power supply
- Compact and rugged industrial design

Applications:

The Sleek-140 is suitable for:

- Process instrument calibration
- Temperature transmitter testing
- PLC and DCS I/O verification
- Current loop troubleshooting
- Thermocouple simulation and testing
- Maintenance and commissioning of industrial control systems
- Laboratory and field calibration activities

Modes of Operation:

1. Configuration Mode:

In this mode user can program the Count and Step. This help in equally distribute the max reading in equal steps. This feature helps in faster testing and Calibration procedures.

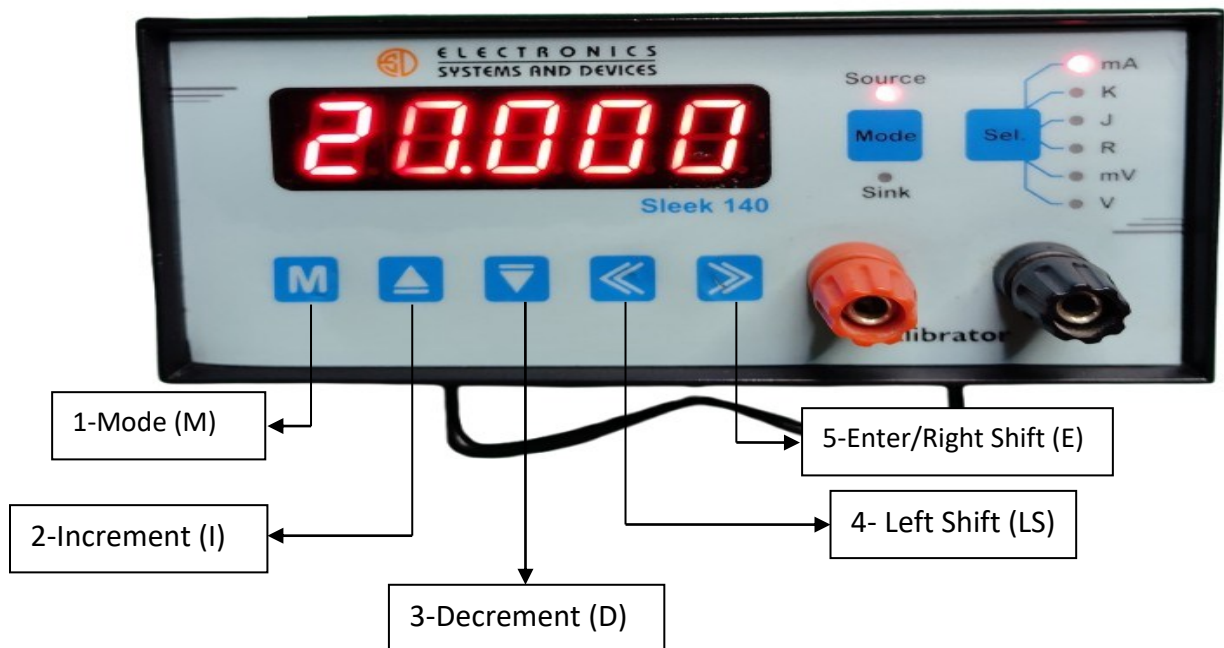
- 4-20 mA Cnt,
- 4-20 mA Step,
- K type thermocouple Cnt,
- K type thermocouple Step,
- J type thermocouple Step,
- J type thermocouple Cnt,
- R type thermocouple Step,
- R type thermocouple Cnt,
- mV type thermocouple Step,
- mV type thermocouple Cnt,
- V type thermocouple Step,
- V type thermocouple Cnt .

2. Calibration Mode:

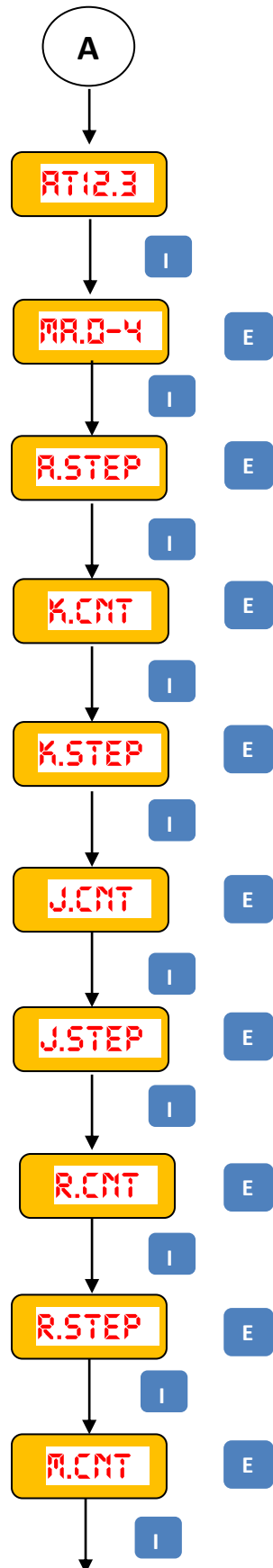
In this mode, user can calibrate the unit for specific Input Mode.

- C.iP.mA – 1.i.Zr.mA, 2.i.Sp.mA
- C.iP.Mv – 1.i.Zr.mV, 2.i.Sp.mV
- C.oP.mA – 1.o.Zr.mA, 2.o.Sp.mA
- C.oP.mV – 1.o.Zr.mV, 2.o.Sp.mV
- C.oP.Vo – 1.o.Zr.Vo, 2.o.Sp.Vo

3. Front Facia:



1.1 CONFIGURATION MODE



This mode is password protected.
Default password is 134.

This displays Ambient Temperature (AT)
in Degree C. **Hold for 1s.**

After pressing Enter key mA Cnt can be set
between range 0-4, it can change by using
increment and Decrement key.

After pressing Enter key mA Step can
be set between 0-100, it can change by
using increment and Decrement key.

Sets the maximum temperature count for K-
type thermocouple operation. K.Cnt can be set
between 0-1200.

Sets the required step size for K-type
thermocouple output. K.Step can be set
between 2-120.

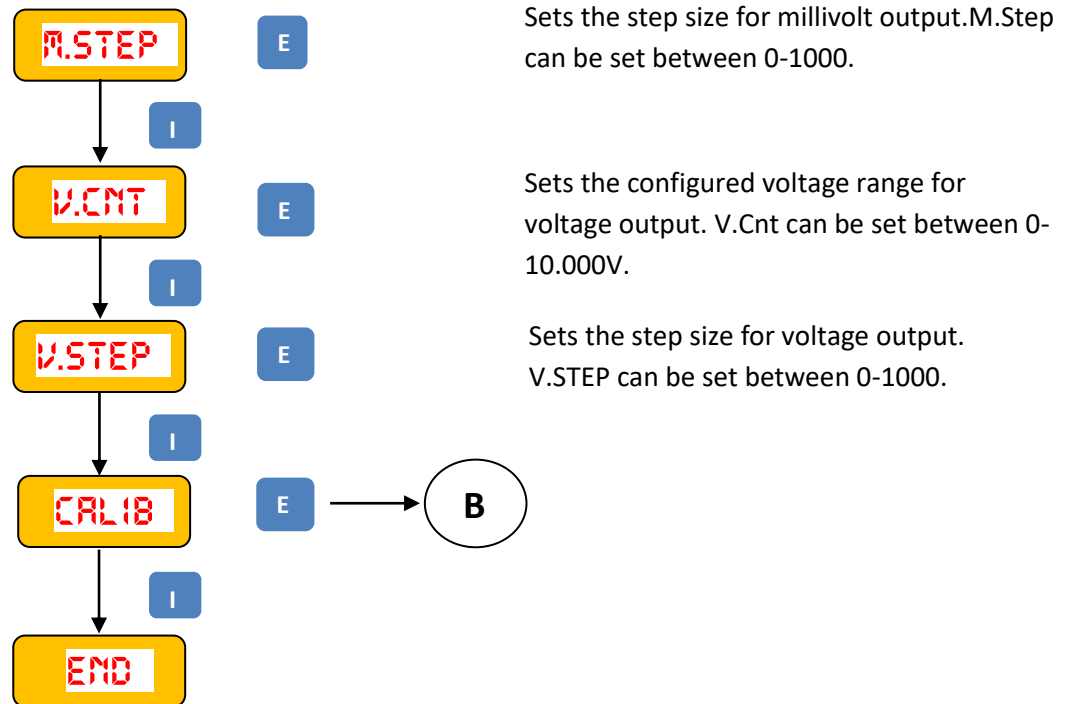
Sets the maximum temperature count for J-
type thermocouple operation. J.Cnt can be set
between 0-600.

Sets the required step size for J-type
thermocouple output. J.Step can be set
between 2-100.

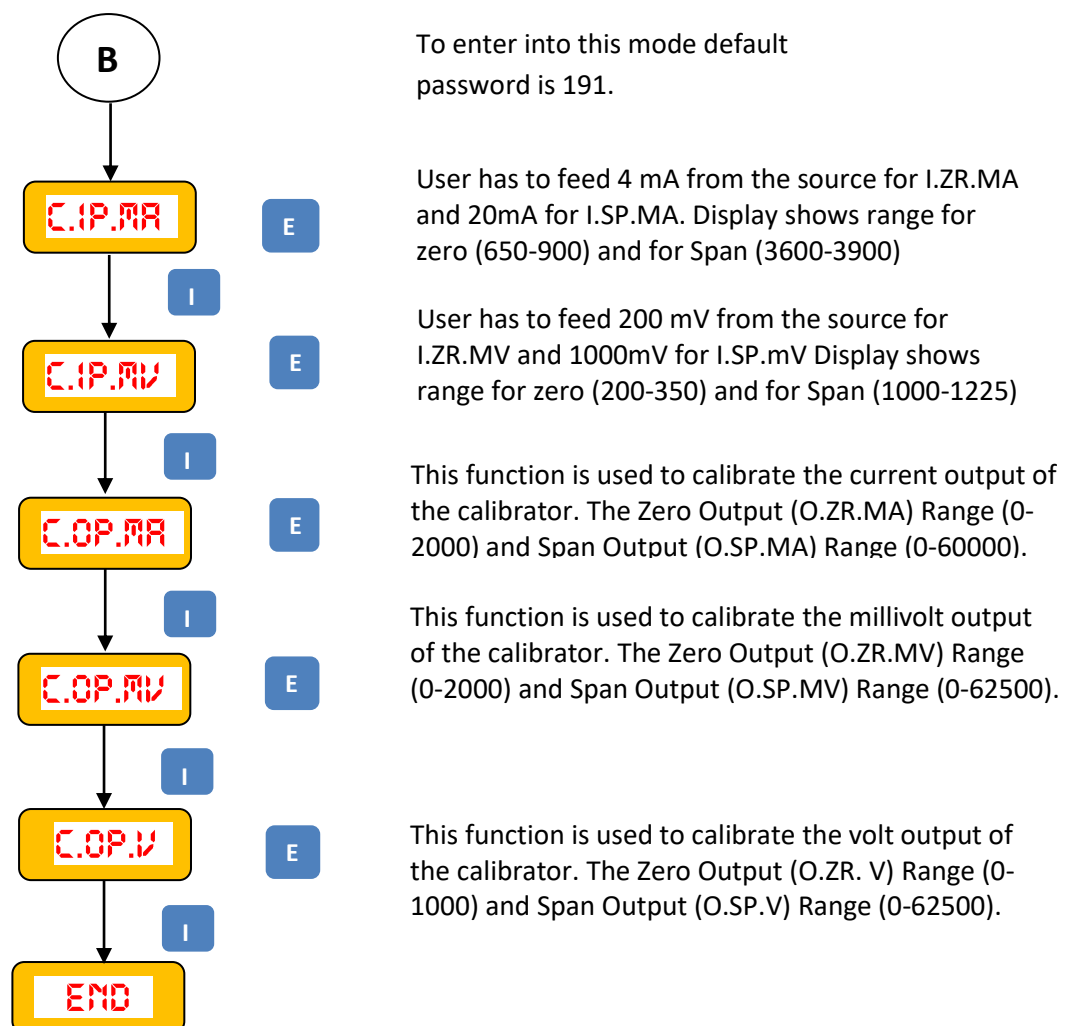
Sets the maximum temperature count for R-
type thermocouple operation. R.Cnt can be set
between 0-1700.

Sets the required step size for R-type
thermocouple output. R.Step can be set
between 2-176.

Sets the configured count for millivolt output. The
value can be adjusted according to the required
mV range 0-99.999.



2.1 CALIBRATION MODE



SPECIFICATIONS

GENERAL SPECIFICATIONS		SOURCE MODE / SINK MODE	
Model	SLEEK 140	1. Milli Ampere (mA)	
Display	5 digit 7 segment 12.5 mm RED LED	Range	0 - 20 mA
Programming	7 keys membrane keypad	Least count	1 micro ampere
Relative humidity	Less than 90 % non condensing	Accuracy	± 0.02 % of FS
Ambient temperature	0 to 55 °C	2. K type Thermocouple	
Amb. temp. comp.	Built in up to 55 °C	Range	0 - 1200 °C
Source & sink selection	Using selection mode	Least count	0.1 °C
LED indication	5 nos. of 3 mm LED for type selection and 2 nos. of 3 mm LED for mode selection	Accuracy	± 0.02 % of FS
Accuracy deviation due to		3. J type Thermocouple	
a) Temperature change	± 0.002 % / °C, ref. at 25 °C	Range	0 - 600 °C
b) Supply variation	± 0.001 % / V	Least count	0.1 °C
Power consumption	5 VA	Accuracy	± 0.05 % of FS
Transmitter supply	24 V DC @ 30 mA	4. R type Thermocouple	
Power supply	230 VAC, ±10 %, 50 Hz (other on demand)	Range	0 - 1700 °C
Front fascia	ABS plastic having size 144 × 72 mm	Least count	0.1 °C
Dimensions	138 × 68 mm, Depth : 140 mm	Accuracy	± 0.05 % of FS
Mounting	Table top	5. Millivolts (mV)	
Enclosure	Mild steel CRCA sheet with powder coating	Range	0 - 90 mV
Termination	Screwed type suitable for 2.5 mm wire	Least count	1 micro volt
Weight	800 grams approximately	Accuracy	± 0.01 % of FS
		6. Volts (V)	
		Range	0 - 10 V
		Least count	1 mV
		Accuracy	± 0.03 % of FS

4. Auto Mode:

- Mode key will select the Sink or Source type. Source key will select the type of Input to be selected. The required operating mode and signal type can be selected using the front-panel keys. The selected mode is indicated by the corresponding LED.
- Source:** In Source Mode, the calibrator **generates and supplies the selected calibration signal** to the connected instrument.
- Sink:** In Sink Mode, the calibrator **receives/sinks the selected current signal** from the connected loop or transmitter for calibration purposes.

5. Back Panel: Power 230 VAC as input. 24 VDC as Power Output for Transmitter.



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