

ELECTRONIC STANDARD CELL TYPE ESC 1

CROPICO LTD., Hampton Road,
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Telephone: 01-684 4025 and 4094
Cables: CROPICO-CROYDON
Telex: 945632 CROPICO G

There's no place for second best with this eagerly awaited replacement for the traditional standard cell

Vast experience in fulfilling user requirements world-wide in the precision measuring market has led, in recent years, to the development of the Cropico Electronic Standard Cell. This instrument exceeds the capabilities of the traditional cell with the following advantages:

- 1 Solid state electronics enable the instrument to be a really portable dc Voltage Standard.
- 2 Unaffected by mechanical shocks.
- 3 Battery Operation.
- 4 Quick warm up.
- 5 Short circuit proof.
- 6 Low noise.
- 7 Low temperature coefficient.
- 8 Maintenance free.
- 9 Low operating cost.



Typical applications:

- Quality Assurance.
- Standards Laboratories.
- All Electrical Calibration Facilities.
- Voltage Audits.

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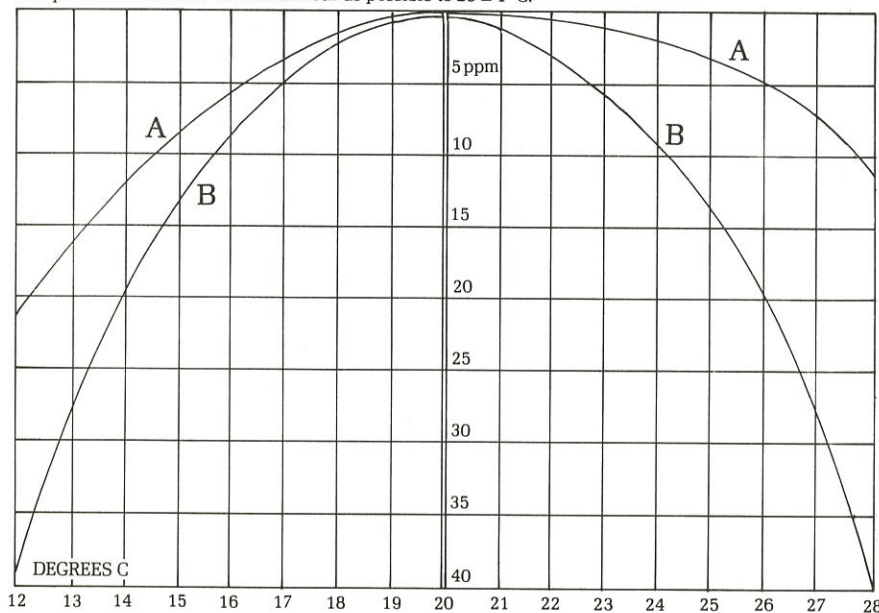
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Technical Data

| | |
|------------------------------|------------------------------------|
| Output Voltage Nominal | 1.00000 and 1.01861 |
| Stability Long Term | 2 ppm/annum |
| Operating Temperature | 5 ... 40°C |
| Warm Up Time | 15/20 minutes to be within 2 ppm. |
| Noise | 0.5 μ v peak to peak |
| Internal Resistance | 1 kilohm |
| Outputs Terminals | Solid copper, gold flashed heads |
| Battery Level Indicator | When lamp flashes change battery |
| Battery Current | 25 mA |
| Batteries | 18 x Ever Ready SP2 I.E.C. No. R20 |
| Case | Extruded Aluminium |
| Size | 290 x 145 x 275 mm |
| Weight | 6.8 kg |
| Weight and Size | 9.5 kg - 41 x 41 x 32 cms |
| Packed in a cardboard carton | |

Temperature Coefficient

The temperature coefficient is a parabolic curve peaking at $20 \pm 1.0^\circ\text{C}$. The units are adjusted to get the flat portion of the curve centred as near as possible to $20 \pm 1^\circ\text{C}$.



| °C | Change in Microvolts. | |
|----|-----------------------|-----------|
| | Curve "A" | Curve "B" |
| 17 | -2 | -5 |
| 18 | -1 | -2 |
| 19 | -0.2 | -0.3 |
| 20 | 0 | 0 |
| 21 | -0.3 | -0.5 |
| 22 | -0.8 | -2.0 |
| 23 | -2.0 | -5.0 |

Typical Characteristics

Any instrument may have a characteristic between "A" at best and "B" at worst. The characteristic associated with any instrument is invariant.

Note It is important to realise that the above figures are subject to a short term uncertainty in the reference of $\pm 0.2 \mu\text{V}$, and with the present state of the art, except for the National Standards Laboratories and a few other major laboratories the volt is known at best with an uncertainty of $\pm 1.5 \mu\text{V}$.

Description

This is a d.c. voltage reference source with nominal outputs of 1.00000 and 1.01861 volts with a stability of better than 2 ppm. Being battery operated and requiring only a short warm-up period to reach its full stability, this instrument is ideal for the transfer of reference voltage figures, from laboratory to laboratory, for audit checks and from laboratory to test station for the reference checks on high accuracy d.c. measuring systems etc.

It is designed to be robust and user-proof against short circuits, and unlike the conventional standard cell enclosures may be transported and used almost immediately without any loss of accuracy due to vibrations etc. This is a high technology device, the precision of which is obtained by a combination of much experience in the use and temperature compensation of Zener diodes. And the construction of precision wire wound resistors upon which the stability of the instrument depends.

This instrument is the result of 20 years experience in the manufacture and development of precision power supplies for potentiometers which has now reached the stage that they can be used as reference sources.

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STANDARD CELL**