

# Process Calibrators (HandyCal 3850N)



The Process Calibrator (HandyCal 3850N) series is a micro-controller based portable, battery-operated, precision instrument designed for sourcing and measuring Ohm, mA and mV signals. A 4½ digit LCD provides excellent resolution with high contrast ratio. It is designed to calibrate process instruments and retain its precision and repeatability over long periods in worst environmental conditions. An exceptionally stable voltage/current source provides continuously variable precision output signals with two ten-turn potentiometers.



## Features

- ☛ Sources & measures one or two of Ohms, mA, mV
- ☛ High precision, accuracy, reliability & longevity
- ☛ 4½ digit (8mm) LCD for high resolution
- ☛ Compact in size and built for toughest environments
- ☛ Unique self-check facility ensures reliable operations
- ☛ Powered by AC/DC adapter or 9V Ni-Mh battery

## Applications

- ☛ Simulates transmitter (with 24V<sub>DC</sub> loop power)
- ☛ Simulates & measures T/Cs (mV mode) using temp tables
- ☛ Simulates & measures RTDs (Ohms mode) using temp tables
- ☛ Works current regulator or source
- ☛ Calibrates various temperature and process indicators
- ☛ Suitable for mass calibration during plant shutdowns

| Model                | Code | Function, Range & Resolution               |            |               |
|----------------------|------|--|------------|---------------|
|                      |      | Resistance                                 | DC Current | DC milliVolts |
|                      |      | 0-2000 Ω                                   | 0 to 20 mA | 0 to 200 mV   |
|                      |      | 0.1 Ω                                      | 1 μA       | 10 μV         |
| 38500                | D    |  |            | ☑             |
| 38501                |      | ☑  |            |               |
| 38502                |      |  | ☑          |               |
| 38503                |      |  | ☑          | ☑             |
| 38504                |      | ☑  |            | ☑             |
| 38509 <sup>[1]</sup> |      |  |            | ☑             |
| Any one of the above | G    | User specified requirements <sup>[2]</sup> |            |               |


[1] The current i/p may be measured from 0-20mA, but o/p is fixed at 4/8/12/13/16/20mA.

[2] Contact us with your specific requirements.

## Technical Specifications $22 \leq T_A \leq 32^\circ\text{C}$ ; $V_S = V_{\text{LOBAT}}$ ; 1yr of calibration validity unless otherwise noted

|                        |   |  |                 |                  |
|------------------------|---|--|-----------------|------------------|
| Display Specifications | Display   | 4½ digit (8mm) 7-segment LCD with high contrast ratio                                |                 |                  |
|                        | Function  | $\Omega$   | mA              | mV               |
|                        | Resolution  | 0.1 $\Omega$   | 1 $\mu\text{A}$ | 10 $\mu\text{V}$ |
|                        | Accuracy  | $\pm 0.02\% \text{ rdg} \pm 0.01\% \text{ FS} \pm 2 \text{ dgt}$                     |                 |                  |
|                        | Self-check  | 17777 $\pm 2$ digits   |                 |                  |
| Input Impedance        | Voltage   | > 1M $\Omega$  |                 |                  |
|                        | Current   | 1 or 10 $\Omega$ depending on range  |                 |                  |
|                        | Resistance  | Bridge current of 0.1 to 1 mA depending on range                                     |                 |                  |
| Output Impedance       | Voltage   | < 0.05 $\Omega$  |                 |                  |
|                        | Current   | > 1M $\Omega$  |                 |                  |
| Source Capability      | Voltage   | Up to 250mV into 250 $\Omega$  |                 |                  |
|                        | Current   | Up to 20mA into 250 $\Omega$ (or 800 $\Omega$ with loop power of 24V <sub>DC</sub> ) |                 |                  |
|                        | Resistance  | Up to the maximum specified range  |                 |                  |
| Battery                | Type  | 9V Ni-Mh battery with longer life for field use                                      |                 |                  |
|                        | Life  | 10 - 12 Hrs. @ 12 mA output current  |                 |                  |
|                        | Status  | Displays battery status using "Low Battery"  |                 |                  |
| Mains Operation        | Power jack for AC/DC adapter/charger (230V <sub>AC</sub> , 50Hz to 9V <sub>DC</sub> , 200mA)        |  |                 |                  |
| Input Protection       | I/O terminals are protected up to 24 V <sub>DC</sub> for $\Omega$ /mV and 48 V <sub>DC</sub> for mA |  |                 |                  |
| Storage Temperature    | 0 to 70°C w/o batteries   |  |                 |                  |
| Humidity               | Less than 90% Rh (Non-condensing)   |  |                 |                  |
| Operating Temperature  | 5 to 55°C   |  |                 |                  |
| Zero Drift             | < 1dgt per 10°C outside the range of $22 \leq T_A \leq 32^\circ\text{C}$                            |  |                 |                  |
| Span Drift             | < 0.0015% of rdg per °C   |  |                 |                  |
| Enclosure Dimension    | 75(W) x 150(H) x 55(D) mm   |  |                 |                  |
| Enclosure Finish       | Powder coated   |  |                 |                  |
| Weight                 | 600g w/o batteries  |  |                 |                  |

## Standard Accessories

|               |          |  |   |
|---------------|----------|--|---|
| Accessories   | Included | BS-5(4mm) probes, crocodile clips, DP2, SP3, screw driver, leather case, AC/DC adapter                                   |  |
|               | Optional | 6 AA sized Ni-Mh batteries, external battery charger(s), wooden case   |   |
| Documentation | Included | Warranty certificate <sup>[1]</sup> , Calibration certificate <sup>[2]</sup> , User manual, RTD & T/C temperature tables |   |
|               | Optional | NABL Calibration certificate   |   |

## Ordering Information

|           |  |
|-----------|--|
| Model No. | Code   |
| 38503     | X (As specified in the table)  |
| Example   | Specify 38503D to order the mV/mA calibrator using 4½ digit LCD with high contrast ratio for ranges of 20mA and 200mV. |

[1] Valid for 2 years against mfg defects.

[2] Traceable to NABL, India.

[3] Some accessories in the picture are optional.