Handy Calibrator

Multi-functional Hand-held Calibrator
- Highly accurate within 0.02% of the DC voltage range for source and measure
- Source and measurement can be performed simultaneously.
- Vertical body with large-screen display
- Loop power supply function (24 VDC at a load of max 22 mA)
  It is possible to measure current in the mA range while supplying power.
- Sink function
- Sweep functions that allow 3 types of continuous outputs:
  Step sweep function
  Linear sweep function
  Program sweep function

Yokogawa Test & Measurement Corporation
Multi-functional and high-precision calibrator that can be used to calibrate and test industrial process devices and various electronics equipment

Functions/Features

- **Vertical hand-held calibrator**
  Easy-to-hold vertical body is designed to make it intuitively easy to operate, as individual functions are accessed directly by pressing assigned keys.

  Using the main body case (model No. 93027) (sold separately), you can hang CA150 to your body or a handrail to keep it handy.

- **Simultaneous source and measurement for process devices**
  In conventional calibration applications, multiple devices such as a standard generator, dial resistor and multi-meter were required. Now with a single CA150 unit, it is possible to perform operation check at regular inspection and maintenance of thermocouples, RTDs and instruments, as well as maintenance and equipment diagnosis of process devices such as transmitters, thermostats and signal converters.

- **Loop power supply function**
  It is possible to measure generated current signals while supplying loop power 24 VDC from a two-wire type transmitter (up to 22 mADC).

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**Two-wire Type Transmitter Applications**

- **Two-wire type transmitter (measurement function) application**
  - **Loop check function**
    Measures mADC signals output while supplying transmitter power at 24 VDC.

  ![Two-wire type transmitter](image1)

  ![Converter](image2)

  ![4-20mA](image3)

- **Two-wire type transmitter (source function) application**
  - **Sink function**
    Receives current (Sink) from the power supply at voltages of up to 28 VDC and transmits mADC signals to the loop.

  ![Two-wire type transmitter](image4)

  ![Converter](image5)

  ![4-20mA](image6)

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**Memory Functions**

- **Setting memory**
  This function saves/load setting conditions.
  Up to 21 data items can be stored.
  Settings for (source/measurement) functions, ranges, generated values/measured values as well as setting mode conditions can be stored.

- **Data memory**
  This function saves source and measure values displayed.
  Up to 100 data items can be stored.
  Storage date/time, (source/measurement) functions, ranges and generated values/measured values can be stored.
  Stored data can be checked on the display of the main unit as well as via communication.

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**Convenient Functions Useful in Field Tests**

**Sweep Functions (Automatic Output Functions)**

- **Step sweep function**
  This function changes the output in a staircase (step) pattern at fixed intervals.

  ![Step sweep](image7)

- **Linear sweep function**
  This function increases (or decreases) the output linearly with respect to the generated value.

  ![Linear sweep](image8)

- **Program sweep function**
  This function outputs source setting values stored by the data memory function sequentially in the order they are stored in the memory.

  ![Program sweep](image9)
### Specifications

#### Source Unit

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>±(0.02% + 0.5°C)</td>
<td>(setting + measured values and data memory) within the accuracy range (source/measurement)</td>
</tr>
</tbody>
</table>

#### DC Voltage

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Resolution</th>
<th>Source Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>100mV</td>
<td>1μV</td>
<td>0 to 110.000mV</td>
<td>±(0.02% + 0.5μV)</td>
</tr>
<tr>
<td>1V</td>
<td>1μV</td>
<td>0 to 1.10000V</td>
<td>±(0.02% + 0.5μV)</td>
</tr>
<tr>
<td>10V</td>
<td>0.1μV</td>
<td>0 to 11.0000V</td>
<td>±(0.02% + 0.5μV)</td>
</tr>
<tr>
<td>30V</td>
<td>1μV</td>
<td>0 to 30.0000V</td>
<td>±(0.02% + 0.5μV)</td>
</tr>
</tbody>
</table>

#### DC Current

<table>
<thead>
<tr>
<th>Current</th>
<th>Resolution</th>
<th>Source Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>20μA</td>
<td>1μA</td>
<td>0 to 22.000μA</td>
<td>±(0.025% + 0.3μA)</td>
</tr>
<tr>
<td>20mA</td>
<td>1μA</td>
<td>0 to 22.000mA</td>
<td>±(0.025% + 0.6μA)</td>
</tr>
</tbody>
</table>

#### Thermocouple

<table>
<thead>
<tr>
<th>Type</th>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPT100</td>
<td>-200.0 to 850.0°C</td>
<td>±0.1% + 0.5°C</td>
</tr>
<tr>
<td>JPT100</td>
<td>-200.0 to 500.0°C</td>
<td>±0.1% + 0.5°C</td>
</tr>
<tr>
<td>PT100</td>
<td>0.1°C</td>
<td>±(0.02% + 0.3°C)</td>
</tr>
</tbody>
</table>

#### Frequency/Pulse

<table>
<thead>
<tr>
<th>Frequency/Pulse</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>100kHz</td>
<td>±(0.02% + 0.2°C)</td>
</tr>
<tr>
<td>1000Hz</td>
<td>±(0.02% + 0.1°C)</td>
</tr>
<tr>
<td>10kHz</td>
<td>±(0.02% + 0.1°C)</td>
</tr>
</tbody>
</table>

#### General Specifications

- **Specifications common to source and measurement**
  - Communication functions
    - Serial interface: RS232 D-Sub 9-pin connector
  - Memory functions
    - Data can be stored and loaded in setting memory (setting data) and data memory (source/measurement).
  - Items stored/loaded
    - Number of data items that can be stored: 21Set
  - Data storage time, (source/measurement) functions, ranges, and generated values/measured values: 100Set

- **Common source specifications**
  - Power supply: 6 AA size alkaline batteries
  - AC adapter (sold separately) or dedicated NHM battery (sold separately)
  - AC adapter specification: 100 to 240 Vac, 50/60 Hz, 0.9 A
  - Battery life: Continuous: 10 hours
  - Battery life: Simultaneous measurement and setting mode conditions: Approx. 5 hours
  - Auto power-off: Auto power-off function is canceled if battery replacement is performed.
  - Insulation resistance: Between input terminal and output terminal: 500 VDC, 50 MΩ or more
  - Withstand voltage: 350 VAC, 1 minute

- **Specifications common to source unit**
  - Source unit response time: Approx. 300 ms only ranges 1V, 10V, 50mV (excitation current 1mA) and RTD (excitation current 1mA) response time approx. 500ms.
  - Source unit voltage limit: Approx. 32 V
  - Source unit current limit: Approx. 25 mA
  - Output pulse polarity: Switchable: positive/negative
  - Output error (output range) function: Output = setting value (x) / n (steps) / m (steps)

- **Accessories**
  - Terminal adapter: 1
  - Fuse: 125 mA/250 V
  - Cable: approx. 5 m

- **Specifications common to measurement unit**
  - Maximum measurement unit input voltage range: 42 VDC
  - Maximum current: 120 mA
  - Current input protection fuse: 125 mA
  - Measurement display refresh rate: approx. 1 second

- **Specifications Loop Power Supply**
  - Single 24 VDC power supply input (maximum output range: 30 VDC)
  - Maximum load: 22 mA DC or less
  - The mA/DC signals are measured while power is being supplied with the loop check function.

- **Specifications**
  - Operating temperature/humidity range: 0 to 40°C, 20 to 80%RH (no condensation)
  - Storage temperature range: -20 to 60°C 90%RH or less (no condensation)
  - External dimensions: Approx. 251 x 124 x 70 mm
  - Weight: Approx. 1000 g (with Batteries)
  - Conforming Standards: EN61010-1, EN61010-2-030, EN61326-1, EN65001-1, EN61000-3-2, EN61000-3-3
**Model Name**

<table>
<thead>
<tr>
<th>Product name</th>
<th>Model name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handy Calibrator</td>
<td>CA150</td>
</tr>
</tbody>
</table>

With the main body case (model name: 93027) (sold separately) installed
Includes strap and accessory storage case

The main body case is designed to make it easy to hold with one hand.

**External Dimensions**

![Diagram of external dimensions](image)

**Supplied Accessories**

<table>
<thead>
<tr>
<th>Product name</th>
<th>Lead cable for source</th>
<th>Lead cable for measurement</th>
<th>Carrying case</th>
<th>Terminal adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Optional Accessories (sold separately)**

<table>
<thead>
<tr>
<th>Product name</th>
<th>AC adapter</th>
<th>RJ sensor</th>
<th>Accessory storage case</th>
<th>NiMH battery</th>
<th>Main body case</th>
<th>Lead cable for measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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**Optional Accessories (sold separately)**

<table>
<thead>
<tr>
<th>Model name</th>
<th>Lead cable for source</th>
<th>Lead cable for measurement</th>
<th>Carrying case</th>
<th>Terminal adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>98020</td>
<td>One set of 1 red and 2 black cables</td>
<td>One set of 1 red and 1 black cables</td>
<td>93026</td>
<td>99022</td>
</tr>
<tr>
<td>RD031</td>
<td>Length: Approx. 1.7 m</td>
<td>Length: Approx. 1.0 m</td>
<td>Lead cables for source/measurement, terminal adapter, 6 spare batteries, fuse, AC adapter and Instruction Manual can be stored.</td>
<td>Used for temperature measurement.</td>
</tr>
<tr>
<td>99022</td>
<td>One set of 1 red and 1 black cables</td>
<td>Length: Approx. 1.7 m</td>
<td>Lead cables for source/measurement, terminal adapter, 6 spare batteries, fuse, AC adapter and Instruction Manual can be stored.</td>
<td>Used for temperature measurement.</td>
</tr>
<tr>
<td>739874</td>
<td>B9108WA</td>
<td>B9108XA</td>
<td>94015</td>
<td>93027</td>
</tr>
<tr>
<td></td>
<td>For reference junction compensation</td>
<td>Lead cables, RJ sensor, etc. can be stored.</td>
<td>NiMH battery</td>
<td>Dedicated</td>
</tr>
</tbody>
</table>

**Supplied Accessories**

- **Model name**
  - 98020
  - 99022
  - 739874

**Remark**

- One set of 1 red and 2 black cables
- Length: Approx. 1.7 m
- One set of 1 red and 1 black cables
- Length: Approx. 1.0 m
- Lead cables for source/measurement, terminal adapter, 6 spare batteries, fuse, AC adapter and Instruction Manual can be stored.
- Used for temperature measurement.
- For reference junction compensation
- Lead cables, RJ sensor, etc. can be stored.
- NiMH battery
- Dedicated
- With strap and accessory storage case
- Alarm clip, CAT I, for control signal only (under 70V)
- One set of 1 red and 1 black cables
- Length: Approx. 1.7m

**Optional Accessories**

- **Model name**
  - 739874
  - 98020
  - 99022

**Remark**

- One set of 1 red and 2 black cables
- Length: Approx. 1.7 m
- One set of 1 red and 1 black cables
- Length: Approx. 1.0 m
- Lead cables for source/measurement, terminal adapter, 6 spare batteries, fuse, AC adapter and Instruction Manual can be stored.
- Used for temperature measurement.
- For reference junction compensation
- Lead cables, RJ sensor, etc. can be stored.
- NiMH battery
- Dedicated
- With strap and accessory storage case
- Alarm clip, CAT I, for control signal only (under 70V)
- One set of 1 red and 1 black cables
- Length: Approx. 1.7m

**NOTICE**

- Before using the product, read the instruction manual carefully to ensure proper and safe operation.

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