LCR Meter series that achieves high-speed, high-precision stable measurements

- Maximum speed: 2 ms
- Basic accuracy: 0.08%

For use in laboratories, for use on production lines

NF Corporation

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Note: The contents of the catalog are as of January 2020.
- Product specifications are subject to change without notice.
- Before purchase, contact us to confirm the final specifications, price and delivery date.
LCR meter

1 mHz to 100 kHz

**ZM2371** and **ZM2372** cover a frequency range of 1 mHz to 100 kHz, while **ZM2376** covers frequencies from 1 mHz to 5.5 MHz. The resolution can be set to 5 digits or 6 digits, making it possible to perform measurements at frequencies as low as 1 mHz. The accuracy is within ±3% of full-scale value. The measurement speed is high, allowing measurements in as little as 0.1 s.

1 mHz to 5.5 MHz

**ZM2376** continues to offer 6-digit readouts, while **ZM2372** only provides 5-digit readouts. The measurement speed for **ZM2376** is faster, allowing measurements in as little as 0.1 s.

**Lineup & Comparison sheet of specifications**

<table>
<thead>
<tr>
<th>Specifications &amp; Function</th>
<th>ZM2371</th>
<th>ZM2372</th>
<th>ZM2376</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement frequency</td>
<td>1mHz to 100kHz</td>
<td>1mHz to 6.5MHz</td>
<td>1mHz to 5.5MHz</td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>±0.05%</td>
<td>±0.05%</td>
<td>±0.05%</td>
</tr>
<tr>
<td>Measurement signal level</td>
<td>0 to ±2.5 V</td>
<td>0 to ±2.5 V</td>
<td>0 to ±2.5 V</td>
</tr>
<tr>
<td>Internal DC bias</td>
<td>0 to ±2V</td>
<td>0 to ±2V</td>
<td>0 to ±2V</td>
</tr>
<tr>
<td>Measurement time</td>
<td>1mHz</td>
<td>1mHz</td>
<td>1mHz</td>
</tr>
<tr>
<td>Maximum speed: Zns</td>
<td>Maximum speed: Zns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant voltage and Constant current mode (AC/DC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact check</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lineup check</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Comparator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-measurement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handler Interfaces</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Enhanced features for production lines!**

**Contact check function**

**ZM2372** 4 terminal contact check

In order to prevent measurement and selection errors due to poor contact between the measurement tip and components, **ZM2372** provides a contact check function at four terminals to determine defects. This eliminates the need for a dedicated plug-in contact check function.

**ZM2376** Contact check and low capacitance check

Detects abnormal capacitance, abnormal voltage and current, and detects contact failures with 10 additional points.

**Triggered synchronous drive**

This function can be used to drive a sample for a period of time with contact and without contact. When performing measurements of large-capacity capacitors, it is possible to reduce the damage caused by the contact by removing the sample for a period of time. For samples with high resistance characteristics, when measurements are performed in a short period of time, the measured values may vary depending on the measurement cycle. By using the triggered synchronous drive, the relationship between the time of the drive signal applied to each sample and the acquired signal is constant. This suppresses deviations of the measured values and makes it possible to significantly reduce the measurement time.

**Comparator**

A maximum of 14 primary parameters can be classified in bins, and the measurement results can be sorted by 20 sets of upper and lower limits that have been set by secondary parameters. Sorting is possible by measured value deviation (absolute or relative) or deviation values and can be output to the handler interface. This function can be used to sort and compare results.

**Multi-measurement**

**ZM2376** Multi-measurement is a function used for overall acceptance judgments by performing up to 32 steps for each sample. Multiple measurements can be performed in a single measurement configuration. Measurement results can be output to the handler interface. Using the comparator results with the remote control interface, it is also possible to determine the upper and lower limits for each of the 14 parameters (primary and secondary parameters).

**Contact check function**

Checks whether there is continuity along the set lines (contact check).

Determines whether there is a defect in the contact by determining the continuity.

A terminal contact check (ZM2372)

When measuring a component, a preset value can be set and the deviation and the deviation % of the measured value compared with the preset value displayed. This can be useful for making acceptance judgments against standard component tolerance values as well as for temperature characteristic tests.
Interfaces
Equipped with various standard interfaces for remote control, integration into production lines and automatic inspection systems without any additional options.

<table>
<thead>
<tr>
<th>Interface</th>
<th>ZM3371</th>
<th>ZM3372</th>
<th>ZM3376</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>RS-232</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>GPIB</td>
<td>–</td>
<td>○</td>
<td>– (optional)</td>
</tr>
<tr>
<td>LAN</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

ZM3376 rear panel

Other features
- Connection function (Open circuit, short circuit, load connection, cable-length correction)
- Setting and correction value memory (32 sets, switchable to be saved in nonvolatile memory)
- Monitor display (voltage and current) + Discharge protection + Sample program (O.K., V.R.NT) included
- LabVIEW driver included (ZM3371 and ZM3372)
- 111 instrument drivers included (LabVIEW drivers automatically generated on the LabVIEW system) (ZM3376)

Application software (Included as standard accessories)
Software capable of setting various measurement conditions and accepting and displaying measurement data is included. Measurement data can be acquired in CSV file format, making it convenient to process very large amounts of data for research and development. In addition, measurement of impedance frequency characteristics is supported by means of frequency sweep measurement.

Main operation screen

For integrating into component production lines and automatic testing devices.
With measurements at a maximum speed of 2 ms and with small deviation, correction functions to suppress the influence of the cable connecting to the sample, comparison and correction check functions, as well as handler interface functions, this LCR meter supports a variety of test lines.

For high-speed impedance measurements of lithium-ion batteries.
The internal DC bias voltage of ZM3376 can be set to +5 V, enabling electromotive force of more than 5 V to be measured in the form of a direct current (single-cell). In addition, since measurements can be performed at a low frequency of 1 mHz, a detailed assessment of the internal impedance of the battery is possible.
**Test fixture test leads**

A variety of measurement fixtures are available for various applications.

- **General purpose components**
  - Test leads provide 4-terminal measurements. Accurate measurement is possible to low impedance. Kevlar clip leads enable one clip to be used for two electrically isolated opposing electrodes.

- **Lead components**
  - Lead terminal combination with a lead shield suitable for high-impedance measurements.

- **Chip components**
  - Test fixture for measuring surface-mount components with a 4-terminal connection. Since a cable is not used, stray capacitance and residual impedance are small, making accurate measurements easy and short connection.

- **Ordering information**

<table>
<thead>
<tr>
<th>Part Code</th>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZM2371</td>
<td>LCR meter</td>
<td>ZM2371A 110/120 kHz</td>
</tr>
<tr>
<td>ZM2372</td>
<td>LCR meter</td>
<td>ZM2372A 120/120 kHz</td>
</tr>
<tr>
<td>ZM2376</td>
<td>LCR meter</td>
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