

# Transforming Motor Winding Testing

200 MHz speed High-speed sampling

12-bit resolution High-precision waveform detection

**NEW** Quantification of response waveforms

Test rotor assembly status.

Detect single-turn faults.

\*Depends on measurement conditions.

Improve quality by capturing accumulated turn fault data as feedback for upstream processes.



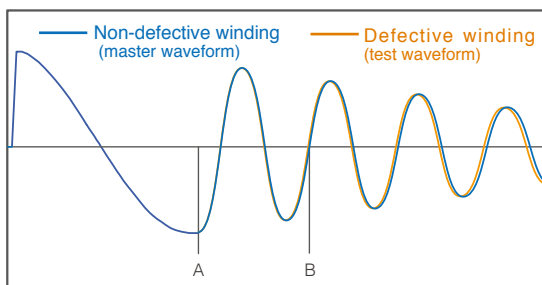
# Improve

test quality through quantification

### Conventional approach

Area comparison based on waveforms

Area comparison for single-turn fault



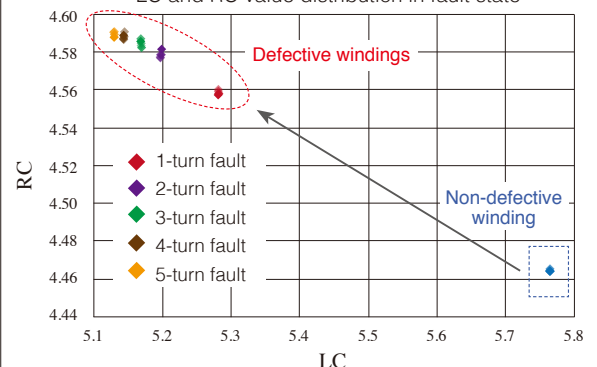
Pass/fail judgments are difficult when area differences do not exceed several percentage points.

Pass/fail judgments are made by calculating the difference in area between the master waveform and the test waveform for the interval specified by the A and B cursors.

### New approach

Quantification of response waveforms

LC and RC value distribution in fault state



Since the distribution of values differs...

...judgment criteria can be clarified based on quantitative data.  
...quantitative test results can be analyzed statistically.



# Is it actually possible to test for partial discharges?

## **NEW** DISCHARGE DETECTION UPGRADE ST9000 (optional upgrade for the ST4030)

Identify defective insulation between motor windings (pseudo-shorts) by detecting minuscule partial discharges that are obscured by noise.

### High-precision waveform detection

200 MHz, 12-bit sampling

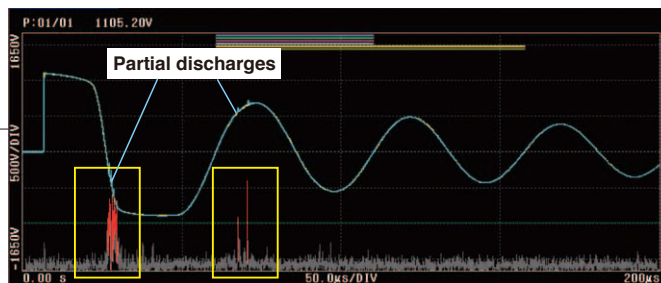
### Isolation of noise components

Proprietary HIOKI filter

### Easy discharge detection

No need for peripheral equipment (discharge detection antenna, etc.)

Extract subtle fluctuations in response voltage waveforms caused by minuscule discharges by isolating them from noise with a proprietary HIOKI filter.



Filtering lets you extract only the high-frequency discharge component.

**Pass/fail judgment**

## Specifications (Accuracy guaranteed for 1 year, Post-adjustment accuracy guaranteed for 1 year)

|  |  |
|--|--|
| Applied voltage                          | 100 V to 3300 V (resolution set in 10 V steps)   |
| Testable inductance range                | 10 $\mu$ H to 100 mH   |
| Sampling speed                           | 200 MHz / 100 MHz / 50 MHz / 20 MHz / 10 MHz   |
| Sampling resolution                      | 12 bit   |
| Voltage detection accuracy               | DC accuracy: $\pm$ 5% of setting, AC band: 100 kHz, $\pm$ 1 dB   |
| Number of samples                        | 1001 to 8001 points (set in 1000 point steps)  |
| Judgment modes                           | LC value and RC value (characteristic quantity), area comparison, differential area comparison, flutter detection, second derivative detection<br>Option: Discharge detection (detection of partial discharges using voltage waveform filtering) |
| Number of test condition tables          | 255 (test condition settings, detection condition settings, master waveforms)  |
| Test duration                            | Approx. 60 ms (reference value when tester is configured for 3000 V, 1 pulse, detection off)   |
| Display                                  | Touch screen display: 8.4-inch SVGA color TFT LCD (800 $\times$ 600 dots)<br>Touch panel   |
| External interfaces                      | Standard equipment: EXT. I/O, USB host (memory stick), USB device (for communications), LAN<br>Options: RS-232C (Z3001), GP-IB (Z3000)   |
| Dimensions and mass                      | Approx. 215 mm (8.46 in) W $\times$ 200 mm (7.87 in) H $\times$ 348 mm (13.7 in) D, Approx. 6.7 kg (236.3 oz)  |
| Operating temperature and humidity range | 0°C to 40°C (32°F to 104°F), 80% RH or less (no condensation)  |
| Power supply                             | AC100 V to 240V, 50 Hz/60 Hz   |
| Accessories                              | Power cord, Instruction manual, application disc, operating precautions  |



### Model: IMPULSE WINDING TESTER ST4030

Model No. (Order Code)  
ST4030

### Additional function options

#### DISCHARGE DETECTION UPGRADE ST9000

The Discharge Detection Upgrade ST9000 is a factory option for the Impulse Winding Tester ST4030. Please specify at the time of order.

### Options

CLIP TYPE LEAD L2250  
(Cables length: 1.5 m)



RS-232C INTERFACE Z3001  
GP-IB INTERFACE Z3000  
GP-IB CONNECTOR CABLE 9151-02 (Cable length: 2 m)  
RS-232C CABLE 9637 (Cable length: 1.8 m)

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**HIOKI**  
HIOKI E. E. CORPORATION

HEADQUARTERS  
81 Koizumi  
Ueda, Nagano 386-1192 Japan  
www.hioki.com

HIOKI USA CORPORATION  
TEL +1-609-409-9109 FAX +1-609-409-9108  
hioki@hiokiusa.com / www.hiokiusa.com

HIOKI (Shanghai) SALES & TRADING CO., LTD.  
TEL +86-21-6391-0090/0092 FAX +86-21-6391-0360  
info@hioki.com.cn / www.hioki.com.cn

HIOKI SINGAPORE PTE. LTD.  
TEL +65-6634-7677 FAX +65-6634-7477  
info-sg@hioki.com.sg / www.hioki.com.sg

HIOKI KOREA CO., LTD.  
TEL +82-2-2183-8847 FAX +82-2-2183-3360  
info-kr@hioki.co.jp / www.hiokikorea.com

HIOKI EUROPE GmbH  
TEL +49-6173-31856-0 FAX +49-6173-31856-25  
hioki@hioki.eu / www.hioki.com

HIOKI TAIWAN CO., LTD.  
TEL +886-3-3467160 FAX +886-3-3467162  
info-tw@hioki.com.tw / www.hioki.com

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