

# HIOKI

PHASE DETECTOR  
VOLTAGE DETECTOR Series



## PHASE • VOLTAGE DETECTORS



## DIGITAL PHASE DETECTOR PD3259-50

**CE**  
Product warranty for 3 years  
Accuracy guaranteed for 1 year



Without metal contact

Hands free Z5020 (Option)

WIRELESS ADAPTER Z3210 (Option)

With Z3210

Bluetooth

GENNECT Cross

Model PD3259-90 includes Z3210 as a set

Order code **PD3259-50**

Order code **PD3259-90**

Order code **Z3210**

**Accessories**

- CARRYING CASE C0203

Dimensions:  
W135 mm (5.31 in) x H265 mm (10.43 in) x D65 mm (2.56 in)

- LR6 alkaline battery x4
- Color clips (White x2, red x2, blue x2, yellow x2)
- Spiral tubes (black x1)
- Instruction manual

**Options**

- MAGNETIC STRAP Z5020

**C0203** **Color clip** **Z5020**

Attach to enable Bluetooth® wireless technology



**CAT IV 600 V**

Soil, residue, or moisture on the insulated wires may result in lower voltage and power values than their true values. Use a dry cloth to remove before measuring.

|                        |   |  |
|------------------------|---|--|
| Measurement parameters | Detection functions   | Phase detection, open phase, prediction of ground phase (Three-phase line)               |
|                        | Three-phase AC voltage (line-to-line voltage and voltage to ground) | 90.0 V to 520.0 V AC (Three-phase line) accuracy: $\pm 2.0\%$ rdg $\pm 8$ dgt            |
|                        | Frequency   | 45 Hz to 66 Hz Accuracy: $\pm 0.5\%$ rdg $\pm 1$ dgt                                     |
|                        | Measurement targets   | Covered cables, metal portions*1<br>Finished outer diameter 6 to 30 mm (0.24 to 1.18 in) |
| Other                  | Operating temperature   | -25°C to 65°C, 80% RH or less (non-condensating)   |
|                        | Storage temperature   | -25°C to 65°C, 80% RH or less (non-condensating)   |
|                        | Dustproof and waterproof  | IP54 (device body only)  |
|                        | Standards   | EN61010 (Safety), EN61326 Class A (EMC)  |
|                        | Power supply  | LR6 alkaline battery x4  |
|                        | Continuous operating time   | 5 hours (Without Z3210)  |
| Other                  | Dimensions (W x H x D)  | 84 x 146 x 46 mm (3.31 x 5.75 x 1.81 in)<br>Cable length 50 cm (1.64 ft)                 |
|                        | Weight  | 590 g (20.8 oz)  |

\*1 Shielded cables not supported

## PHASE DETECTOR PD3129, PD3129-10

**CE** **CS**  
Product warranty for 3 years  
Accuracy guaranteed for 1 year



$\phi 2.4$  mm (0.09 in) to  $\phi 17$  mm (0.67 in)

PD3129: Thin Conductors

$\phi 7$  mm (0.28 in) to  $\phi 40$  mm (1.57 in)

PD3129-10: Thick Conductors

- Accessories**
- CARRYING CASE
  - Strap
  - LR6 alkaline battery x 2
  - Spiral tube
  - Instruction manual

Order code **PD3129**

Order code **PD3129-10**



PD3129 **CAT IV 600 V**

PD3129-10 **CAT IV 600 V, CAT III 1000 V**

|                            |                           |   |
|----------------------------|---------------------------|---|
| Measurement parameters     | Detection functions       | Phase detection (positive and negative)   |
|                            | Voltage range             | PD3129: 70 to 600 V AC (continuous sine wave)<br>PD3129-10: 70 to 1000 V AC (continuous sine wave)                                  |
|                            | Frequency range           | 45 Hz to 66 Hz  |
|                            | Measurement targets       | PD3129: 2.4 mm (0.09 in) to 17 mm (0.67 in) of insulated wiring<br>PD3129-10: 7 mm (0.28 in) to 40 mm (1.57 in) of insulated wiring |
| Phase-detection indication | Positive                  | 4 LEDs lit in clockwise order and the buzzer sounds intermittently, green arrow lights up   |
|                            | Negative                  | 4 LEDs lit in counterclockwise order and the buzzer sounds continuously   |
| Other                      | Functions                 | Live line check, Battery check function   |
|                            | Operating temperature     | 0°C to 40°C, 80% RH or less (non-condensating)  |
|                            | Storage temperature       | -20°C to 60°C, 80% RH or less (non-condensating)  |
|                            | Standards                 | EN61010 (Safety), EN61326 (EMC)   |
|                            | Power supply              | LR6 alkaline battery x 2  |
|                            | Continuous operating time | 200 hours   |
| Other                      | Dimensions (W x H x D)    | 70 x 75 x 30 mm (2.76 x 2.95 x 1.18 in)<br>Cable length 70 cm (2.30 ft)   |
|                            | Weight                    | PD3129: 200 g (7.1 oz), PD3129-10: 240 g (8.5 oz)   |

## VOLTAGE DETECTOR 3481-20

**CE**  
Product warranty for 3 years  
Accuracy guaranteed for 1 year



with LED light

Red for voltage detection

**Accessories**

- LR44 button alkaline battery x3
- Instruction manual

Order code **3481-20**

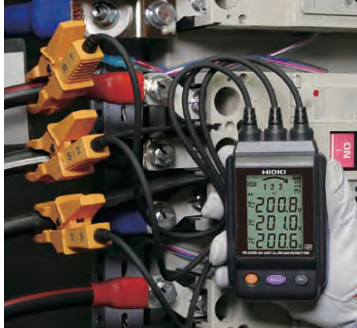


**CAT IV 600 V**

|                        |                                    |   |
|------------------------|------------------------------------|---|
| Measurement parameters | Operating voltage range            | 40 to 600 V AC (50Hz/60Hz)                                    |
|                        | Maximum sensitivity variable range | 40 to 80 V AC (50Hz/60Hz)                                     |
| Other                  | Pilot light                        | Red LED lights up and the buzzer sounds when the wire is live |
|                        | Operating temperature              | 0°C to 40°C, 80% RH or less (non-condensating)                |
|                        | Storage temperature                | -20°C to 60°C, 80% RH or less (non-condensating)              |
|                        | Standards                          | EN61010 (Safety), EN61326 (EMC)                               |
|                        | Power supply                       | LR44 button alkaline battery x 3                              |
|                        | Continuous operating time          | 5 hours   |
| Other                  | Dimensions (W x H x D)             | 20 x 126 x 15 mm (0.79 x 4.96 x 0.59 in)                      |
|                        | Weight                             | 30 g (1.1 oz)   |

## Function introduction DIGITAL PHASE DETECTOR PD3259-50

covered cables, and your 3-phase power line inspection is complete.



1 phase sequence

2 Missing phase prediction

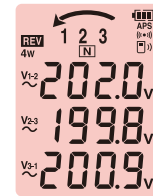
If the instrument predicts that one wire of the 3-phase circuit is missing, the icon for the phase predicted to be missing will not be displayed.

3 Ground phase prediction

If the "1" phase is grounded, the display will indicate "N" underneath "1".

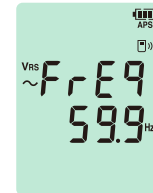
4 3-phase line voltage measurement

5 Frequency measurement



Negative phase sequence display

- Red backlight
- with continuous tone



Measuring Frequency

## Using Bluetooth® communication with the Z3210



WIRELESS ADAPTER Z3210 (Option)



Attach to enable Bluetooth® wireless technology

Transport to the Excel® file



Open an Excel® file and select a cell. The measured value being held on the instrument's display will be transferred to the computer and entered into the selected cell.

Transport to GENNECT Cross



GENNECT Cross, a free app designed specifically for use with Hioki measuring instruments, lets you check and manage measurement results and create reports. The software provides a range of functionality that helps manage data in the field, including photographing measurement sites, placing measurement results on photographs, and saving hand written memos.

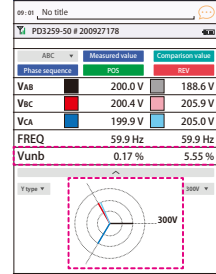
PDF Reports

CSV Measurement data

JPG Image data

New function in GENNECT Cross  
You can check the

unbalance rate vector diagram



## Function introduction PHASE DETECTOR PD3129, PD3129-10

No-metal-contact design for the ultimate in safety,  
Easy-to-read arrow indicator.



Arrow: Green LED  
Buzzer: Intermittent sound



Positive phase sequence display



Negative phase sequence display

- Arrow: Not lit up
- Buzzer: Continuous sound



Magnets for a more efficient workflow



200 hours of use with two AA batteries,  
Battery check function,  
Auto power off

## Function introduction VOLTAGE DETECTOR 3480, 3481

Non-contact voltage detector lets you verify the hot-line state of AC voltage through the wire or cable covering.



Continuity check with your eyes and ears

No need for lights (3481 Only)



Sensitivity adjustment function









Maximum sensitivity variable range 40 V to 80 V AC

Compact design that fits in a pocket

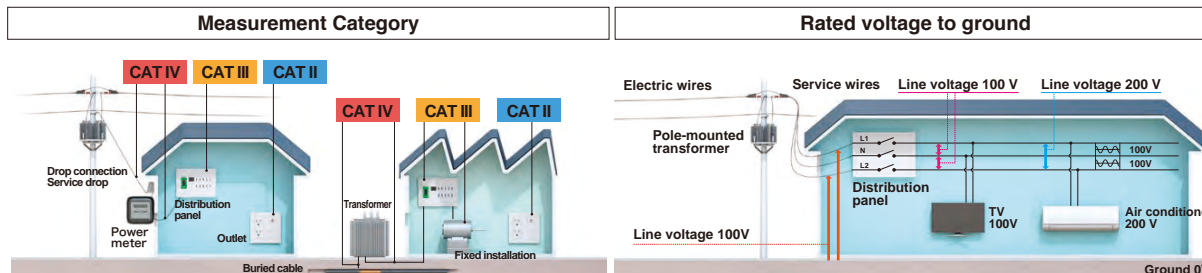


Handy clip with gap for strap.

|   |  |   |  |
|---|--|---|--|
|  | <b>Safety standard categories</b>  |  | <b>Auto power OFF</b><br>Automatically turns off after a certain time                                |
|  | <b>Drop proof</b><br>Robust design capable of withstanding a drop from a height of 1 m onto concrete |  | <b>Display hold</b>  |
|  | <b>Backlight</b>   |  | <b>True RMS</b><br>True RMS measurement for accurate measurement of even distorted current waveforms |

### Measurement Category • Anticipated Transient Overvoltage

Under safety standards (EN61010 Series, JIS C 1010 Series), measurement is classified into Categories II to IV according to the measurement point's rated voltage to ground, current capacity (size of current that flows in a short-circuit fault), etc., and the transient overvoltage that occurs at the measurement point.



**CAT II :** Measurement at a point from the power plug to the equipment's power circuits, where equipment is directly connected to an outlet.

**CAT III :** Measurement at a point on the power distribution cabling or power supply circuits, or at a point from the distribution panel to a distribution terminal behind an outlet, where equipment (for example a fixed installation) takes electricity directly from a distribution panel.

**CAT IV :** Measurement at a point on a service drop to a building, or on the line from the drop connection to the power meter or distribution panel.

### Anticipated Transient Overvoltage

| Rated voltage to ground | Transient overvoltage |         |         |
|-------------------------|-----------------------|---------|---------|
|                         | CAT II                | CAT III | CAT IV  |
| 300 V                   | 2500 V                | 4000 V  | 6000 V  |
| 600 V                   | 4000 V                | 6000 V  | 8000 V  |
| 1000 V                  | 6000 V                | 8000 V  | 12000 V |

Power lines in factories and similar facilities will at times include transient overvoltage (impulse voltage) that is around 10 times the power source voltage. The transient overvoltage of the measurement points must be predicted in advance, and the instrument will need a safety design that will enable it to withstand such overvoltage.

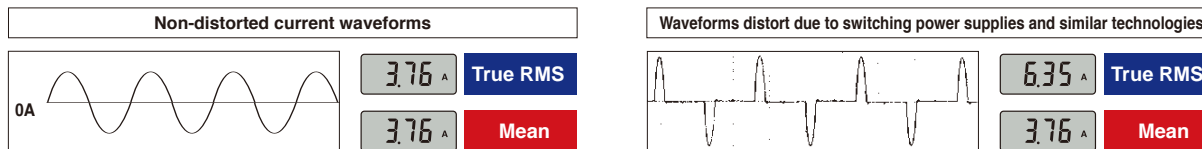
| Marks                |                         |
|----------------------|-------------------------|
| <b>CAT IV</b>        | <b>600V</b>             |
| Measurement Category | Rated voltage to ground |

Assuming 600 V for the measurement point's voltage to ground, a Category IV location could potentially include transient overvoltage of 8000 V. Hence, CAT IV measurement instruments are designed to withstand transient overvoltage of 8000 V. CAT III measurement instruments can only withstand up to 6000 V, so if 8000 V transient overvoltage enters, it will cause insulation breakdown that could result in electric shock.

Never measure a measurement point with a higher category number than the category indicated on the measuring instrument. Doing so could lead to a serious accident such as electric shock.

### Rectification Methods: True RMS and Mean

A measuring instrument uses one of two rectification methods, "True RMS" or "Mean". Using mean rectification assumes that the signal is based on a sine wave without distortions in order to calculate the value. Distorted waveforms cannot be measured accurately using this method. As the performance of equipment increases, so do distorted waveforms. In order to accurately measure in these situations, using the True RMS method is necessary.



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