

HIOKI

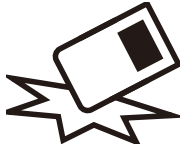
INSULATION TESTER Series



INSULATION TESTERS

Digital

DROP PROOF



Built tough to withstand a 1-meter drop onto a concrete floor



5 ranges

Rated output voltage (DC)
Effective maximum indicated value

- 50 V / 100 MΩ
- 125 V / 250 MΩ
- 250 V / 500 MΩ
- 500 V / 2000 MΩ
- 1000 V / 4000 MΩ

Manage measurement data using Bluetooth® communication



WIRELESS ADAPTER Z3210 (Option)
Attach to enable Bluetooth® wireless technology



Learn More

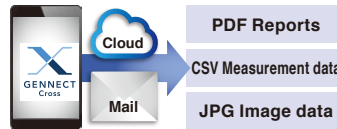
Transport to the Excel® file



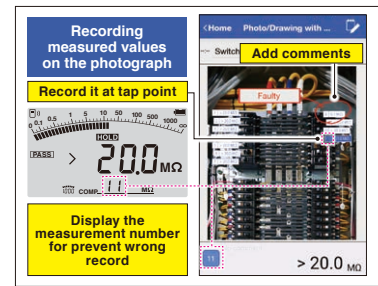
| Location | Circuit no. | Ref. value | Measurement place | Value(MΩ) |
|-----------------------|-------------|------------|-------------------|-----------|
| Mok Circuit Breaker A | L-A | 6.1MΩ | | |
| | S-E | 101 M Ohm | | |
| | S-F | 101 M Ohm | | |
| | T-E | 101 M Ohm | | |
| | S-T | 85.4 M Ohm | | |
| | T-F | 99.9 M Ohm | | |

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.

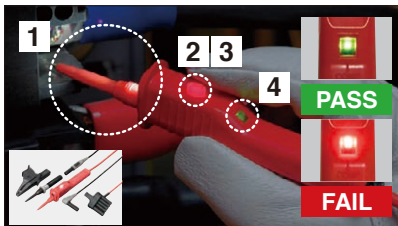
Transport to GENNECT Cross



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 handwritten memos.



Significantly improve testing speed using test lead with remote switch



- 1 LED light shines a spotlight on the target
- 2 Red light warns of live voltage detection
- 3 Measurement start switch
- 4 Identify pass/fail decisions with red or green light

TEST LEAD SET WITH REMOTE SWITCH L9788-11 (Option)
*Standard with the IR4056-21, Not CE Marked

Identify PASS / FAIL using light and sound



Compare measured values to pre-set reference values to generate a pass or fail decision with the Comparator function.

Convenient for inspections

Low resistance measurement¹

Perform EV and HEV continuity checks as well as resistance measurement of protective conductors in facility electrical equipment as defined by IEC 60364.

AC/DC voltage measurement

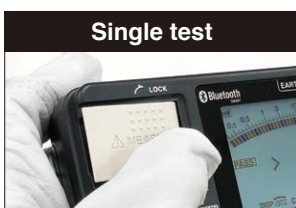
Automatically detect AC or DC for testing. Use as a tester thanks to DC voltage measurement functionality.

PV Ω dedicated function²

Measurement is not affected even when the PV system is online.

1. Excludes IR4053 2. IR4053 Only

One-touch Start and Stop



Measurement voltage is applied while MEASURE key is pressed

Continuous test



Lift and lock the MEASURE key to apply a continuous stream of voltage

Prevent Accidental High Voltage Generation

Flashing light



Under [500V], [1000V], or [PVΩ] settings, the RELEASE button will blink. Press to unlock the release of high voltages as an extra safety measure.

Release lock





Product warranty for 3 years
Accuracy guaranteed for 1 year

Lineup - Digital

| Measurement type | Low voltage (less than 1000 V) | | | | High voltage (less than 5000 V) | |
|--|---|-----------------|--|---|---|----------|
| | Standard | High-speed | EV | PV | | Standard |
| Model | IR4056-20 IR4056-21 | IR4057-50 | IR4059 | IR4053-10 | IR5051 | IR5050 |
| Appearance | | | | | | |
| Number of ranges | 5 | | | | 5 | |
| Testing voltage (DC) / Effective maximum indicated value | 50 V /100 MΩ 125 V /250 MΩ 250 V /500 MΩ 500 V /2000 MΩ 1000 V /4000 MΩ | | | | 250 V /500 GΩ 500 V /1.00 TΩ 1000 V /2.00 TΩ 2500 V /5.00 TΩ 5000 V /10.00 TΩ | |
| PV Ω measurement | N / A | | 500 V / 2000 MΩ 1000 V / 4000 MΩ | | 500 V /100 GΩ 1000 V /100 GΩ 1500 V /100 GΩ | N / A |
| Leakage current measurement | N / A | | | | 0.00 nA to 2.00 mA | |
| DC voltage measurement | 600 V | | 1000 V | | 2000 V | |
| AC voltage measurement | 600 V | | | | 1000 V | |
| Low resistance measurement | ✓ | | N / A | | N / A | |
| Displaying 1-min. values | N / A | ✓ | | N / A | N / A | |
| Comparator decision response time | ✓ 0.8 second | ✓ 0.3 second | | ✓ 0.8 second (PV : 4 second) | N / A | |
| AUTO power save | ✓ | | | | ✓ | |
| Bluetooth® communication | N / A | ✓ (With Z3210) | | N / A | ✓ (With Z3210) | |
| Resistance gauge | N / A | ✓ | | N / A | ✓ | |
| Backlight | ✓ | | | | ✓ | |
| Safety standard category | CAT III 600 V | | | | CAT IV 1000 V CAT III 2000 V | |
| CE | ✓ ¹ | | | | ✓ | |
| Dustproof and waterproof | IP40 ² | | | | IP40 ^{2,3} , IP65 ⁴ | |
| Drop proof | ✓ | | | | N / A | |
| Power supply | LR03 (AAA) alkaline battery × 4 HR6 (AA) NiMH rechargeable battery x4 | | | | LR6 (AA) alkaline battery × 8 HR6 (AA) NiMH rechargeable battery x8 | |
| Dimensions (W × H × D) | 159 × 177 × 53 mm 6.26 × 6.97 × 2.09 in. | | 160 × 98 × 46 mm 6.30 × 3.86 × 1.81 in. | 159 × 177 × 53 mm 6.26 × 6.97 × 2.09 in. | 195 × 254 × 89 mm 7.68 × 10 × 3.50 in. | |
| Weight | 600 g (21.2 oz) | 640 g (22.6 oz) | 536 g (18.9 oz) | 600 g (21.2 oz) | 1.7 kg (59.97 oz) | |

1 : IR4056-21 excluded 2 : Terminal not included 3 : With protector attached 4 : CARRYING CASE C0212

INSULATION TESTER IR4056-20, IR4056-21

CE * IR4056-20 only
 Product warranty for 3 years
 Accuracy guaranteed for 1 year



With
 • TEST LEAD L9787
 • Neck strap
 • LR6 alkaline battery x4
 • Instruction manual

IR4056-20



With
 • TEST LEAD SET WITH REMOTE SWITCH L9788-11
 • Neck strap
 • LR6 alkaline battery x4
 • Instruction manual

IR4056-21 Not CE marked



5 ranges

Comparator decision response time : 0.8 s

CAT III 600 V

INSULATION TESTER IR4057-50, IR4059

CE * IR4057-50 only
 Product warranty for 3 years
 Accuracy guaranteed for 1 year



IR4057-50



IR4059



L4930



L4938



WIRELESS ADAPTER Z3210 (Option)

Attach to enable Bluetooth® wireless technology

With Z3210



Please see www.hioki.com for list of supported regions.



5 ranges

Comparator decision response time : 0.3 s

Digital bar graph

CAT III 600 V

Included accessories

- CONNECTION CABLE L4930
- ALLIGATOR CLIP SET L4935
- TEST PIN SET L4938
- TEST LEAD SET WITH REMOTE SWITCH (RED) L9788-10 (IR4059 only)
- PROTECTOR Z5042 (IR4059 only)
- Neck strap
- LR6 alkaline battery x4
- Instruction manual

INSULATION TESTER (For Photovoltaic Generation Systems) IR4053-10

CE
 Product warranty for 3 years
 Accuracy guaranteed for 1 year



With
 • TEST LEAD L9787
 • Neck strap
 • LR6 alkaline battery x4
 • Instruction manual

IR4053-10



5 ranges

Comparator decision response time : 0.8 s

Comparator decision response time (PV) : 4 s

CAT III 600 V

| Model | IR4056-20 | IR4056-21 | IR4057-50 | IR4059 | IR4053 | Basic accuracy | | | | | | |
|----------------------------|-----------------------|-----------|-----------|--------|--------|--|--|---------------|---------------------------------|---------------|---------------|------------------|
| | | | | | | Testing voltage (DC) | 50 V | 125 V | 250 V | 500 V | 1000 V | - |
| Measurement parameters | Insulation resistance | ✓ | ✓ | ✓ | ✓ | Effective maximum indicated value (MΩ) | 100 | 250 | 500 | 2000 | 4000 | - |
| | | | | | | 1st effective measuring range (MΩ) | 0.200 to 10.00 | 0.200 to 25.0 | 0.200 to 50.0 | 0.200 to 500 | 0.200 to 1000 | ±2% rdg. ±2 dgt. |
| | | | | | | 2nd effective measuring range (MΩ) | 10.1 to 100.0 | 25.1 to 250 | 50.1 to 500 | 501 to 2000 | 1010 to 4000 | ±5% rdg. |
| | PV Ω measurement | N/A | N/A | N/A | ✓ | ✓ | Testing voltage (DC) | 500 V | | 1000 V | | - |
| | | | | | | | Effective maximum indicated value (MΩ) | 2000 | | 4000 | | - |
| | | | | | | | 1st effective measuring range (MΩ) | 0.200 to 500 | | 0.200 to 1000 | | ±4% rdg. |
| DC Voltage | N/A | N/A | N/A | N/A | N/A | 2nd effective measuring range (MΩ) | 501 to 2000 | | 1010 to 4000 | | ±8% rdg. | |
| | | | | | | 4.200 V/42.00 V/420.0 V/1000 V | 4.200 V/42.00 V/420.0 V/600 V | | ±1.3% rdg. ±4 dgt. ¹ | | | |
| AC Voltage | ✓ | ✓ | ✓ | ✓ | ✓ | 420.0 V ² /600 V | | | ±2.3% rdg. ±8 dgt. ¹ | | | |
| Low resistance measurement | ✓ | ✓ | ✓ | ✓ | ✓ | 10.00 Ω/100.0 Ω/1000 Ω | | | ±3% rdg. ±2 dgt. | | | |

| | | | |
|--------|--|--|-----------------------------|
| Other | Operating temperature | IR4056-20, IR4056-21, IR4057-50, IR4059: -25°C to 65°C, 90% RH or less (non-condensating) IR4053: 0°C to 50°C, 90% RH or less (non-condensating) | Order code IR4056-20 |
| | Storage temperature | IR4056-20, IR4056-21, IR4057-50, IR4059: -25°C to 65°C, 90% RH or less (non-condensating) IR4053: -10 °C to 50°C, 90% RH or less (non-condensating) | Order code IR4056-21 |
| | Dustproof and waterproof | IP40 (Terminal excluded) | Order code IR4057-50 |
| | Standards | EN61326 (EMC), EN61557-1/-2/-4/-10 | Order code IR4057-90 |
| | Power supply | LR6 alkaline battery x4 | Order code IR4059 |
| | Continuous operating time | 20 hours | Order code IR4053-10 |
| | Dimensions (W x H x D) | IR4056-20, IR4056-21, IR4057-50, IR4053-10: 159 x 177 x 53 mm (6.26 x 6.97 x 2.09 inch) IR4059: 160 x 98 x 46 mm (6.30 x 3.86 x 1.81 inch) | Order code Z3210 |
| Weight | IR4056-20, IR4056-21, IR4053: 600 g (21.2 oz) IR4059: 536 (18.9 oz) IR4057-50: 640 g (22.6 oz) | Model IR4057-90 includes Z3210 as a set | |

1. Ranges in excess of 600 V/1000 V are outside the accuracy guarantee
 2. Minimum indicated value: 30.0 V
 3. Subclause 4.3 of Part 4 (interchanging of test leads) is not applicable when L9788-10 is used



HIGH VOLTAGE INSULATION TESTER IR5050, IR5051

Product warranty for 3 years
Accuracy guaranteed for 1 year



IR5050

IR5051
IR5051-90
(Include Z3210 as a set)



| | | | | |
|------------------------|--|---|--|--|
| Measurement parameters | Testing voltage (DC) : measuring range | 250 V | 0.00 MΩ to 500 GΩ | |
| | | 500 V | 0.00 MΩ to 1.00 TΩ | |
| | | 1000 V | 0.00 MΩ to 2.00 TΩ | |
| | | 2500 V | 0.00 MΩ to 5.00 TΩ | |
| | | 5000 V | 0.00 MΩ to 10.00 TΩ | |
| | Insulation resistance | Rated current | 1 mA to 1.2 mA | |
| | | Short-circuit current | 2 mA or less | |
| | | Accuracy | ±5% rdg. ±5 dgt., ±20% rdg. | |
| | | Induced noise removal | 3 mA max. | |
| | | Leakage current | 10 nA/ 100 nA/ 1000 nA/ 10 μA/ 100 μA/ 1 mA Guaranteed accuracy range: 1.00 nA to 3.00 mA Accuracy: ±3% rdg. ±3 dgt. | |
| | DC voltage | ±10 V to ±2000 V Accuracy: ±3% rdg. ±3 dgt. | | |
| | AC voltage | 30 V to 1000 V Accuracy: ±3% rdg. ±3 dgt. | | |
| | Capacitance | 100 nF/ 1000 nF/ 10 μF Guaranteed accuracy range: 10.0 nF to 25.0 μF Accuracy: ±10% rdg. ±5 nF | | |
| | PV insulation resistance (IR5051 only) | 500 V | 0.00 MΩ to 100 GΩ | |
| | | 1000 V | 0.00 MΩ to 100 GΩ | |
| | | 1500 V | 0.00 MΩ to 100 GΩ | |
| | Operating temperature and humidity range | -20°C to 40°C, less than 80% RH (no condensation) 40°C to 45°C, less than 60% RH (no condensation) 45°C to 50°C, less than 50% RH (no condensation) | | |
| | Storage temperature and humidity range | -25°C to 65°C, less than 80% RH (no condensation) | | |
| | Dustproof/waterproof | IP40 ¹ , IP65 (CARRYING CASE C0212) | | |
| Other | Standards | EN IEC61010 (safety), EN61326 (EMC), IEC61557-1, -2 (insulation resistance tester) | | |
| | Power supply | • LR6 (AA) alkaline battery x8: • Approx. 5 hours without Z3210 installed • Approx. 4 hours with Z3210 installed and using wireless communication | | |
| | Continuous operating time | • HR6 (AA) nickel-metal hydride (NiMH) rechargeable battery x8 | | |
| | Dimensions (W x H x D) | 195mm (7.68 in.) x 254 mm (10 in.) x 89 mm (3.50 in.) | | |
| | Weight | 1.7 kg (59.97 oz.) | | |

5 ranges

For PV systems

CAT IV 1000 V, CAT III 2000 V

Order code **IR5050**

Order code **IR5051**

Order code **IR5051-90**

Included accessories



- TEST LEAD L9850-01 (Red), -02 (Black), -03 (Blue), 3 m (9.84 ft.)
- ALLIGATOR CLIP L9851-01 (Red), -02 (Black), -03 (Blue)
- CARRYING CASE C0212
- LR6 alkaline battery x8
- Instruction manual
- TEST PIN SET L9852 (IR5051 and IR5051-90 only)
- WIRELESS ADAPTER Z3210 (IR5051-90 only)

L9850, L9851

1. With protector attached, excluding terminals

Accurate, easy-to-use insulation resistance meter

CAT III 2000 V
CAT IV 1000 V

Start:
Press and hold for 1 sec.



Complete:
Auto-discharge



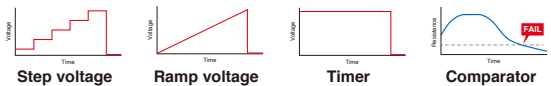
Never miss a change in measurement.

During measurement:
Simultaneous display of test voltage, insulation resistance and leakage current

After measurement:
Insulation indexes (PI, DAR, DD) and capacitance can be displayed.

Failures caused by the application of a high voltage can be prevented.

Keep the applied voltage as low as possible



Precision stability in high voltage insulation testing



Shielded wire minimizes measurement variability.

GUARD terminal minimizes the effects of leakage current flowing through the insulation's surface.

- **Filter function**
- **Inductive noise rejection function** (up to 3 mA)
- **Minuscule current measurement technology**

Wireless communication for even greater convenience



(The optional Wireless Adapter Z3210 is required.)

Measure insulation resistance while the solar PV system continues to generate

IR5051
Up to 2000V

IR4053
Up to 600V

PV insulation resistance measurement function

In the past, it was impossible to measure a PV system's insulation resistance while the system was operating because the measurement current and generated current would mix together. Consequently, it was necessary to make such measurements at night, when the system being measured was not generating electricity. The PV insulation resistance measurement function can measure PV systems while they're operating during daylight hours, without being affected by the generated current.

Analog Meters

DROP PROOF



Built tough to withstand a 1-meter drop onto a concrete floor



Single range
IR4016-20
IR4017-20
IR4018-20

3 range
3490

See better in the dark



Bright LED

Significantly improve testing speed using test lead with remote switch



L9788-11 (Option)

- Start and stop the test at the touch of a button
- Illuminate the test location with a bright white LED
- Work safely knowing that when the RED is lit, live wires, high voltage or electrical discharge is present

Check for Live Circuits



The LIVE CIRCUIT LED will light up in red whenever the voltage exceeds 20 V AC between the LINE and EARTH terminals, and when at least 20 V DC is still remaining during the auto discharge.

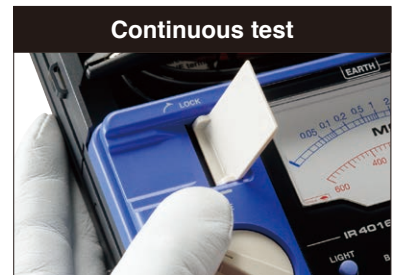
One-touch Start and Stop

Single test



Measurement voltage is applied while MEASURE key is pressed

Continuous test



Lift and lock the MEASURE key to apply a continuous stream of voltage

Flip the Cover

Quick and easy storage without disconnecting the leads




Check the Battery Status





Product warranty for 3 years
Accuracy guaranteed for 1 year

Lineup - Analog Meters

| | | 1 Range | | 3 Ranges | |
|---|--|--|--------------------------------------|-----------------|------|
| | | IR4016 -20 | IR4017 -20 | IR4018 -20 | 3490 |
| Measurement parameters |  | Testing voltage (DC) | 500 V | | |
| | | Effective maximum indicated value | 100 MΩ | | |
| | | 1st effective measuring range | 0.1 MΩ to 50 MΩ | | |
| | 2nd effective measuring range | 0.01 MΩ to 0.1 MΩ or less 50 MΩ or more to 100 MΩ | | | |
| |  | Testing voltage (DC) | 500 V | | |
| | | Effective maximum indicated value | 1000 MΩ | | |
| | | 1st effective measuring range | 1 MΩ to 500 MΩ | | |
| | 2st effective measuring range | 0.5 MΩ to 1 MΩ or less 500 MΩ or more to 1000 MΩ | | | |
| |  | Testing voltage (DC) | 1000 V | | |
| | | Effective maximum indicated value | 2000 MΩ | | |
| 1st effective measuring range | | 2 MΩ to 1000 MΩ | | | |
| 2nd effective measuring range | 1 MΩ to 2 MΩ or less 1000 MΩ or more to 2000 MΩ | | | | |
|  | Testing voltage (DC) | 250 V | 500 V | 1000 V | |
| | Effective maximum indicated value | 100 MΩ | | 4000 MΩ | |
| | 1st effective measuring range | 0.05 MΩ to 50 MΩ | | 2 MΩ to 1000 MΩ | |
| 2nd effective measuring range | 0.01 MΩ to 0.05 MΩ or less 50 MΩ to 100 MΩ | | 0.5 MΩ to 2 MΩ 1000 MΩ to 4000 MΩ | | |
| Accuracy (Insulation) | ±2% of scale length (1st effective measuring range) ±2% of scale length (2nd effective measuring range) | | | | |
| AC Voltage | 0 to 600 V | | | | |

| Other | |
|---------------------------|--|
| Operating temperature | 0°C to 40°C, 90% RH or less (non-condensating) |
| Storage temperature | -10°C to 50°C, 90% RH or less (non-condensating) |
| Dustproof and waterproof | IP40 (Excludes measuring terminals) |
| Drop proof | YES |
| Backlight | YES |
| Safety standard category | CAT III 600 V |
| Standards | EN61010 (Safety), EN61326 (EMC) |
| Power supply | LR6 alkaline battery x4 |
| Continuous operating time | 20 hours |
| Dimensions (W × H × D) | IR4016, IR4017, IR4018: 162 × 182 × 57 mm (6.38 × 7.17 × 2.24 in) 3490: 162 × 167 × 52 mm (6.38 × 6.57 × 2.05 in) |
| Weight | IR4016, IR4017, IR4018: 820 g (28.9 oz), 3490: 840 g (29.6 oz) |

Accessories



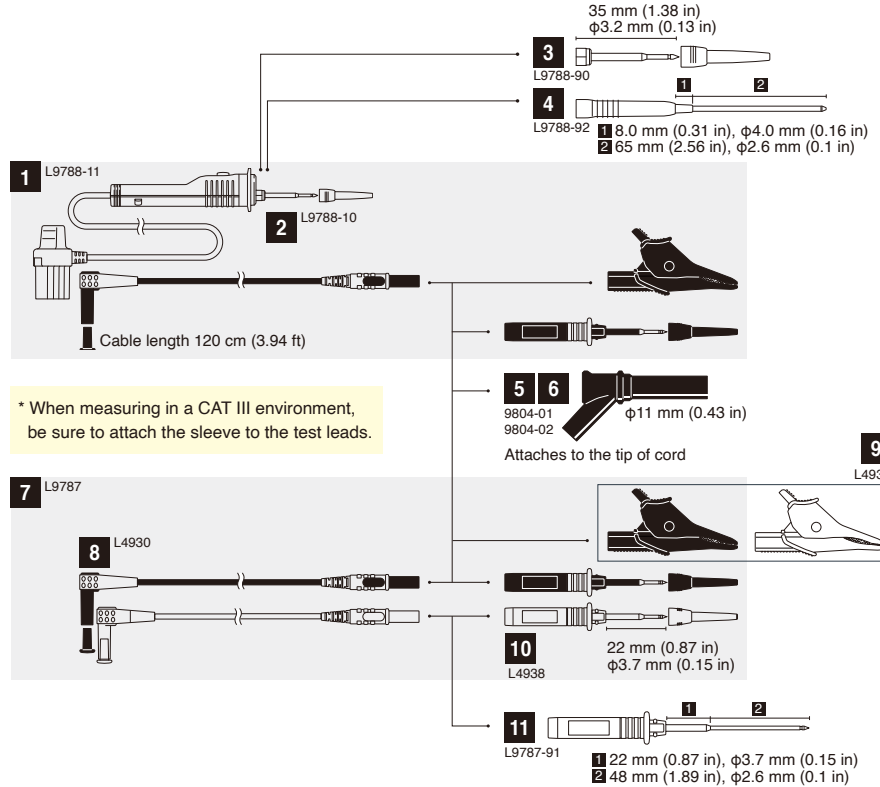
L9787

- TEST LEAD L9787 (1.2 m)
- Neck strap
- LR6 alkaline battery x4
- Instruction manual

| | |
|------------|------------------|
| Order code | IR4016-20 |
| Order code | IR4017-20 |
| Order code | IR4018-20 |
| Order code | 3490 |

Options

| |
|---|
| IR4016-20, IR4017-20, IR4018-20, IR4056-20, IR4056-21, IR4057-50, IR4057-90, IR4053-10, IR4059, 3490 |
| 1 TEST LEAD SET WITH REMOTE SWITCH L9788-11 |
| 2 TEST LEAD WITH REMOTE SWITCH (RED) L9788-10 |
| 3 TIP PIN L9788-90 |
| 4 BREAKER PIN L9788-92 |
| 5 MAGNETIC ADAPTER 9804-01 |
| 6 MAGNETIC ADAPTER 9804-02 |
| 7 TEST LEAD L9787 |
| 8 CONNECTION CABLE SET L4930 |
| 9 ALLIGATOR CLIP SET L4935 |
| 10 TEST PIN SET L4938 |
| 11 BREAKER PIN L9787-91 |
| 12 WIRELESS ADAPTER Z3210 (For IR4057-50, IR4059) |
| 13 PROTECTOR Z5042 (For IR4059) |
| 14 CARRYING CASE C0213 (EV MAINTENANCE MANUAL INCLUDED) |



| | |
|--|-------------------------|
| IR5050, IR5051 | |
| 1 TEST LEAD L9850 -01 | Red, 3 m (9.84 ft.) |
| 2 TEST LEAD L9850 -02 | Black, 3 m (9.84 ft.) |
| 3 TEST LEAD L9850 -03 | Blue, 3 m (9.84 ft.) |
| 4 TEST LEAD L9850 -11 | Red, 10 m (32.81 ft.) |
| 5 TEST LEAD L9850 -12 | Black, 10 m (32.81 ft.) |
| 6 TEST LEAD L9850 -13 | Blue, 10 m (32.81 ft.) |
| 7 ALLIGATOR CLIP L9851 -01 | Red |
| 8 ALLIGATOR CLIP L9851 -02 | Black |
| 9 ALLIGATOR CLIP L9851 -03 | Blue |
| 10 TEST PIN SET L9852 | Red and black |
| 11 CARRYING CASE C0212 | |
| 12 WIRELESS ADAPTER Z3210 | |
| 13 COMMUNICATION PACKAGE DT4900-01 USB | |



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