HIOKI

An Energy Saving Support Tool

POWER HiTESTER 3331, 3332

Power measuring instruments

CE

3332: Single-phase, 2-wire type that can accurately measure even standby power

3331: Single-phase, 3-wire and three-phase, 3-wire type for measuring power of large-scale equipment

Accurate evaluation of consumption power of electrical products

As efficient use of energy for household and office equipment becomes more and more essential, the new **POWER HiTESTER 3332** does the job by offering a wide range of power measurement from standby to normal usage. The **POWER HiTESTER 3331** is capable of evaluating 3-phase devices, such as industrial air conditioners and refrigerators, or single-phase, large-scale devices. Both power testers deliver high accuracy of ±0.2% (45 to 66Hz), direct input up to 50A, and a broad bandwidth from 1Hz (the **3331** from 10Hz) to 100kHz. System construction is made easy with these compact, lightweight and reasonably priced tools, which come equipped with an external interface as a standard feature. The **3331** and **3332** can be used as a measuring component for a wide range of purposes, from research and development to equipment evaluation.

ISO 9001 JMI-0216
ISO14001 JQA-E-90091

www.hioki.com
HIOKI company overview, new products, environmental considerations and other information are available on our website.

Measurement from minute single-phase power to large-scale 60 kW 3-phase equipment.

A single-phase power meter compatible with devices with intermittent oscillation in broadband starting from 1Hz.

The 3332 covers a wide range of power measurement from standby to usage

Model	3332	3331
Measurement line	1ø2W only	1ø2W to 3ø3W
U Range	15 to 600V (6 ranges)	150 to 600V (3 ranges)
I Range	1m to 50A (15 ranges)	500m to 50A (7ranges)
Frequency characteristics	1Hz to 100kHz	10Hz to 100kHz
Basic accuracy	±0.1%rdg.±0.1%f.s. (45 to 66Hz)	
Dimensions	Approx. 210W ×100H ×261D mm	

Voltage/Current can be viewed for each phase of the 3-phase line

The 3331 is compatible from single-phase to 3-phase devices

❑ Range Table

The values in the shaded areas show the common range for the **3331** and **3332**. Values in the ( ) show the range of the 3-phase, 3-wire mode and the single-phase, 3-wire mode (SUM display) of the **3331**.

U \ *I*	1.0000mA	2.0000mA	5.0000mA	10.000mA	20.000mA	50.000mA	100.00mA	200.00mA
15.000V	15.000 mW	30.000 mW	75.000 mW	150.00 mW	300.00 mW	750.00 mW	1.5000 W	3.0000 W
30.000V	30.000 mW	60.000 mW	150.00 mW	300.00 mW	600.00 mW	1.5000 W	3.0000 W	6.0000 W
60.000V	60.000 mW	120.00 mW	300.00 mW	600.00 mW	1.2000 W	3.0000 W	6.0000 W	12.000 W
150.00V	150.00 mW	300.00 mW	750.00 mW	1.5000 W	3.0000 W	7.5000 W	15.000 W	30.000 W
300.00V	300.00 mW	600.00 mW	1.5000 W	3.0000 W	6.0000 W	15.000 W	30.000 W	60.000 W
600.00V	600.00 mW	1.2000 W	3.0000 W	6.0000 W	12.000 W	30.000 W	60.000 W	120.00 W

U \ *I*	500.00mA	1.0000A	2.0000A	5.0000A	10.000A	20.000A	50.000A
15.000V	7.5000 W	15.000 W	30.000 W	75.000 W	150.00 W	300.00 W	750.00 W
30.000V	15.000 W	30.000 W	60.000 W	150.00 W	300.00 W	600.00 W	1.5000kW
60.000V	30.000 W	60.000 W	120.00 W	300.00 W	600.00 W	1.2000kW	3.0000kW
150.00V	75.000 (150.00) W	150.00 (300.00) W	300.00 (600.00) W	750.00 (1.5000 k) W	1.5000 (3.0000) kW	3.0000 (6.0000) kW	7.5000 (15.000) kW
300.00V	150.00 (300.00) W	300.00 (600.00) W	600.00 (1.2000 k) W	1.5000 (3.0000) kW	3.0000 (6.0000) kW	6.0000 (12.000) kW	15.000 (30.000) kW
600.00V	300.00 (600.00) W	600.00 (1.2000 k) W	1.2000 (2.4000) kW	3.0000 (6.0000) kW	6.0000 (12.000) kW	12.000 (24.000) kW	30.000 (60.000) kW

For apparent power and reactive power, the unit of watts in the above table is replaced by VA and var respectively.

Basic Performance of the 3331/3332

❏ Evaluation of electric equipment such as inverters

● High basic accuracy of ±0.2%

More precise measurement with a basic accuracy of ±0.1% rdg.±0.1% f.s. is also possible within the 45Hz to 66Hz frequency bandwidth.

● Responsitivity that follows transient power fluctuations

A achieve responses under 0.3 seconds for measurements of transient power fluctuations (Response speed set at FAST).

● Simultaneous integration of current and power at a 6-digit high-resolution state

A maximum of ±999999 (MWh or MAh) or up to a maximum of 10000 hours (416 days) of integration.

● Broadband feature compatible with frequency control devices

Wide range from 1Hz (the **3331** from 10Hz) to 100kHz is included for supporting measurement of inverters.

● 50A direct input

Measurement of large capacity equipment possible.

● Measuring the effective value of basic wave components only

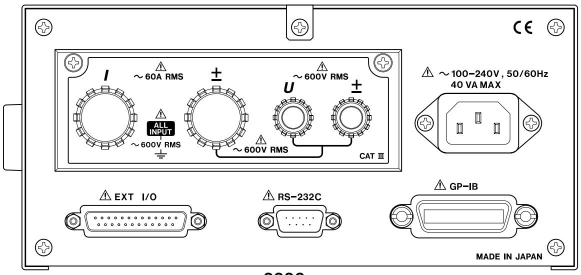
The average rectified effective value indicator method with a 500Hz low-pass filter can be selected.

● Current waveform peak measurement function

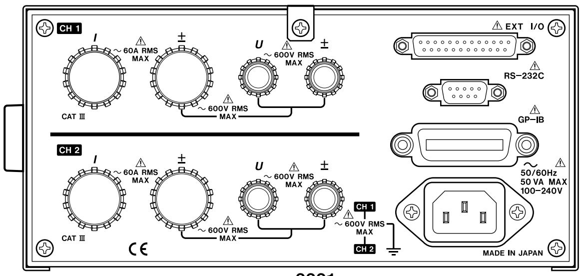
The current waveform wave peak value and the maximum effective value can be detected.

❏ Systems can be easily constructed

- **A compact design that fits a half-rack** (rack-mount models also available at special order)
- **GP-IB / RS-232C:** Data can be transferred to a printer or computer for efficient data management.
- **EXT.I/O (External input/output terminal):** External control of integration START/STOP, and analog/monitor/D/A output can be performed for voltage/current/power parameters.



3332



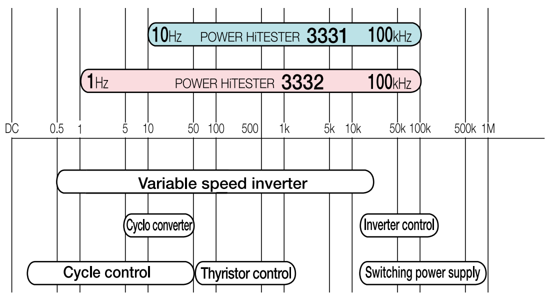
3331

Accuracy

(at 23°C±5°C (73°F±9°F), 80% rh sine wave input, power factor = 1, after 30 minutes warming-up time.) **3331**: 23°C±3°C (73°F±5.4°F)
(Period for which accuracy is guaranteed: 6 months)

Frequency	Voltage*1 / Current / Active power		
	Input current 20 A or less	20A to 30A	30A to 50A
1Hz to 2Hz*2*3	±12%f.s.	←	undefined
2Hz to 5Hz*2*3	±5%f.s.	←	undefined
5Hz to 10Hz*2*3	±1.5%f.s.	←	undefined
10Hz to 20Hz*2*4	±1.0%f.s.	←	undefined
20Hz to 30Hz*2*5	±0.5%f.s.	←	undefined
30Hz to 45Hz*2	±0.1%rdg.±0.2%f.s.	←	undefined
45Hz to 66Hz	±0.1%rdg.±0.1%f.s.	←	±0.2%f.s.
66Hz to 500Hz	±0.1%rdg.±0.2%f.s.	←	undefined
500Hz to 1kHz	±0.3%rdg.±0.2%f.s.*8	←	undefined
1kHz to 4kHz	±0.3%rdg.±0.2%f.s.*8	±2.0%f.s.	undefined
4kHz to 8kHz	±1.0%f.s.	±2.0%f.s.	undefined
8kHz to 10kHz*6	±1.0%f.s.	±2.0%f.s.	undefined
10kHz to 20kHz	±2.0%f.s.	undefined	undefined
20kHz to 50kHz	±5.0%f.s.	undefined	undefined
50kHz to 100kHz*7	±15.0%f.s.	undefined	undefined

*1 Voltage accuracy is the same as when current input is less than 20A.
*2 Measurement accuracy when response time is set to SLOW.
*3 Accuracy guaranteed for the **3332** only.
*4 Voltage/current accuracy for the **3331** is ±2.0% f.s.
*5 Voltage/current accuracy for the **3331** is ±1.0% f.s.
*6 Guaranteed accuracy for the **3331** is ±2.0% f.s.
*7 Current is defined for 10A and less.
*8 Voltage/current accuracy for the **3331** is ±0.2%rdg. ±0.3% f.s.



Basis of calculation

Calculations of the **3331** 3-phase, 3-wire mode are as follows in the table below. However, only SUM is displayed. Calculations for the **3332** follow the values for ch 1 in the table below.

ch	Active power (P)	Apparent power (S)	Reactive power (Q)	Power factor (λ)	Phase angle (ϕ)
1	P_1	$S_1=U_1\times I_1$	$Q_1=s_1\sqrt{(S_1^2-P_1^2)}$	$\lambda_1=s_1\|P_1/S_1\|$	$\phi_1=s_1\cos^{-1}\|\lambda_1\|$
2	P_2	$S_2=U_2\times I_2$	$Q_2=s_2\sqrt{(S_2^2-P_2^2)}$	$\lambda_2=s_2\|P_2/S_2\|$	$\phi_2=s_2\cos^{-1}\|\lambda_2\|$
SUM	$P_{SUM}=P_1+P_2$	$S_{SUM}=\frac{\sqrt{3}}{3}(S_1+S_2+S_3)$	$Q_{SUM}=Q_1+Q_2$	$\lambda_{SUM}=s\|P_{SUM}/S_{SUM}\|$	$\phi_{SUM}=s\cos^{-1}\|\lambda_{SUM}\|$

U, I, and P respectively indicate measured values of voltage, current, and active power. However, values are not rounded for display (error: ±1 dgt.).
s indicates phase polarity, and is -1 when the current phase leads voltage, and +1 when it lags voltage.

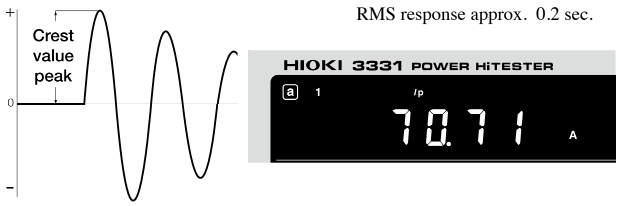
From minute standby power to rush current for motors

Applications that efficiently evaluate electrical equipment

❑ Common features of the 3331 and 3332

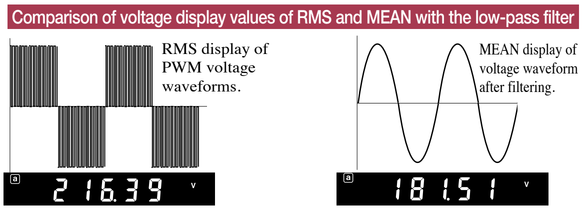
● Measurement of rush current during device start-up

Measurement of the current waveform wave peak is possible, and if the peak hold function is used, wave peak detection of the motor rush current waveform (Max. 90A) and the maximum value of the effective value can be done.



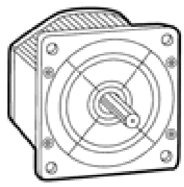
● Measurement of the RMS value for industrial frequency components.

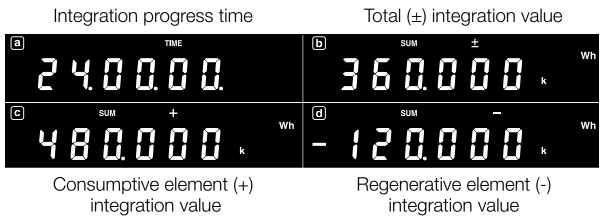
The average rectified effective value indicator method (MEAN) with 500Hz low-pass filter is employed to measure basic wave RMS values of PWM voltage form inverters.



● Understanding consumptive and regenerative conditions

Consumptive (+), regenerative (-), and total power integration values can be simultaneously measured on equipment that regenerate power.

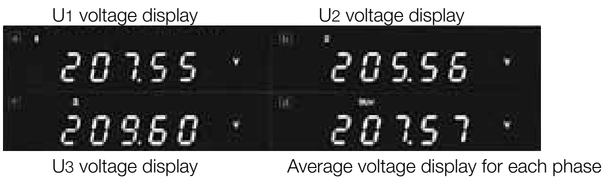




❑ Special Features of the 3331

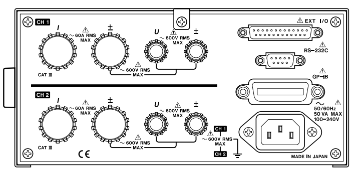
● 3-phase line imbalance can be checked

The third phase voltage and current that had not been measured for 2-power measurement systems (2 voltage/2 current) can be calculated by vector calculation and displayed.



● The 3331 can be used to measure single - phase power for 2 devices

Two devices with single-phase, 2-wire loads can be simultaneously measured, contributing to lower facilities cost.



Note) Ranges for each channel cannot be independently set.

❑ Special Features of the 3332

● Measurement of standby power under 1W

Current input 1W or less can be precisely measured (guaranteed accuracy range is from 7.5mW) by employing the CT method (input resistance under 2mΩ) for minimal instrument damage for current input, and with 150.000mW (150V-1mA range) in full scale as the highest sensitivity range for 100V devices. In addition, with guaranteed accuracy from 1Hz, the **3332**is also compatible with intermittent oscillating devices, such as videos.

● Precise calculations of minute standby power

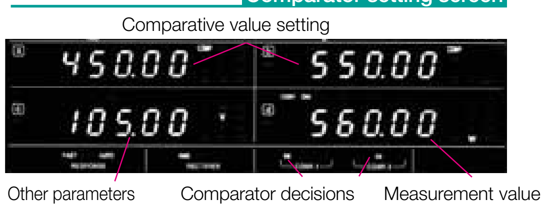
When the 150V/1.0000mA range is selected, integration from ±000.000mWh can be performed. Low numbers/units are automatically switched to a 6-digit display, allowing measurement in high resolution.

Integration display screen

● Comparative decision function that can be used on the production line

Two items can be chosen from among voltage, current, power (active, reactive, apparent), peak current, power factor, phase angle, frequency and integration value for simultaneous comparative decisions. In addition to Hi/In/Lo LED lamps, decision results are output to contact points. Up to 10 conditions can be stored, a powerful function to reduce repetitive steps on small output/multi-product lines.

Comparator setting screen



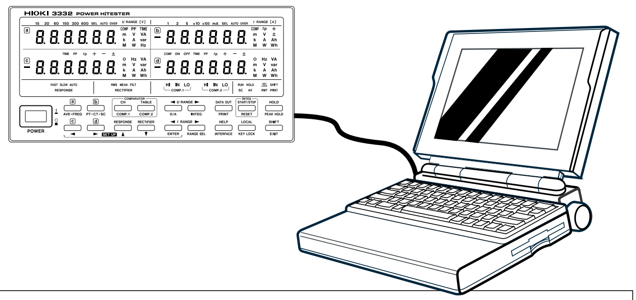
Application example using the GP-IB/RS-232C interface

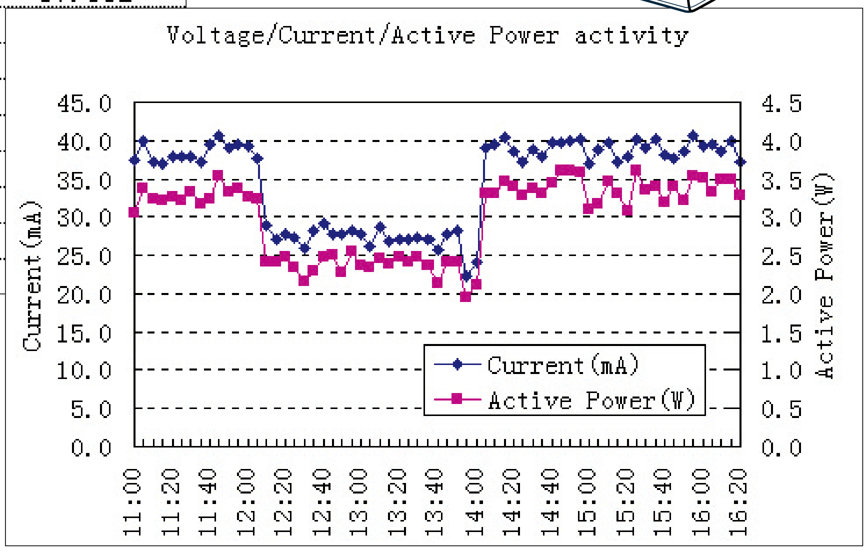
The **3331** and **3332** are equipped with the GP-IB and RS-232C interfaces as standard features, allowing complete control from a computer (except for turning the power supply ON/OFF). In addition, measurement data can be directly downloaded into commercially available spreadsheet software on a computer using application software, making the troublesome creation of test result charts easy, and supporting effective data management.

Example of chart calculation operation with EXCEL*

*EXCEL is a registered trademark of Microsoft Corporation.

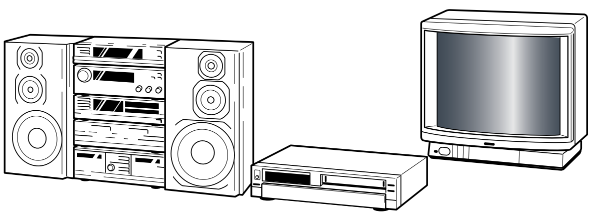
Time	Voltage(V)	Current(mA)
11:00	101.23	37.371
11:05	101.31	39.994
11:10	101.15	37.128
11:15	101.61	36.999
11:20	101.60	37.968
11:25	101.26	37.954
11:30	101.13	37.832
11:35	101.51	
11:40	101.46	
11:45	101.89	
11:50	101.92	
11:55	101.05	
12:00	102.02	
12:05	101.59	
12:10	101.51	





Keeping standby power of household electrical equipment in the range of 1W and below

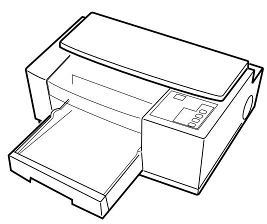
A plan for reducing contributions to global warming by raising the efficiency of electrical energy used by household and office equipment must take standby power into consideration. In the Japanese domestic market, precise measuring of minute standby power is needed, especially for manufacturers of audio/video devices, in order to follow a policy of keeping standby power under 1W.



Raising the efficiency of electrical energy consumption to meet the needs of the time

Energy Star Program

The 1995-10 International Energy Star Plan is a program developed between the United States and Japan with the goal of universally advancing energy efficient office products, such as copy machines, printers, and fax machines.



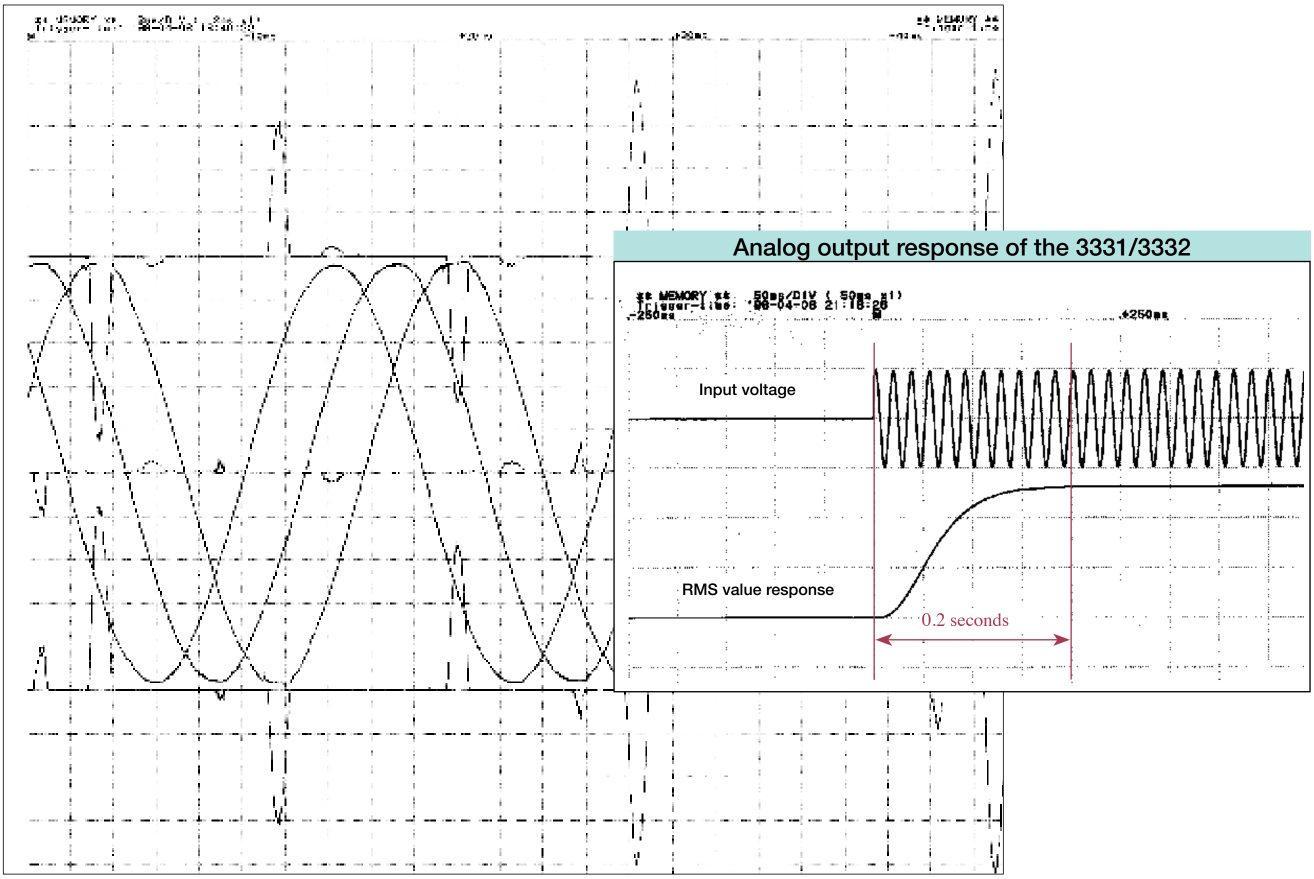
Phase difference between voltage and current/Correlation function with other parameters

Fluctuation state analyzed in clear waveforms.

❑ Application example of monitor, analog, and D/A output

The **3331** and **3332** are capable of simultaneous output of voltage and current waveforms as well as the active power level, and when connected to a **HIOKI MEMORY HiCORDER** or Hybrid Recorder, events ranging from long-term fluctuations to transient phenomena (only with **MEMORY HiCORDERs**) can be recorded. Select one other measurement item (apparent power/reactive power/power factor/integration power capacity/frequency, etc.) to output from the D/A to conveniently record long-term fluctuations.

3-phase voltage/current monitor output (for the 3331)



Analog output response of the 3331/3332

MEMORY HiCORDERs

To record monitor / analog / D/A output

Recording is made easy with the trigger function in the **MEMORY HiCORDER**, which records the rush current when a device is started, and with the recording mode, records fluctuations of power/integration values/frequency. Examination and analysis of correlation functions for each factor, including temperature, is another strong feature.

8870

Compact but powerful 2-channel recorder with 1MS/s sampling

MR8880-20

CAT III 600V Isolation across all 4 channels lets yor directly measure 480V lines safely

8860-50/8861-50

Recording to a A4-width printer up to a maximum of 16 channels (8 channels with the **8860-50**)

MR8847-01/02/03

Choose from 3 memory capacities:
64MW (**MR8847-01**)
265MW (**MR8847-02**)
512MW (**MR8847-03**)

Please refer to the separate MEMORY HiCORDER catalogs

❑ Basic specification

Measurement line : **3332**: single-phase, 2-wire
3331: single-phase, 3-wire; 3-phase, 3-wire; single-phase, 2-wire (channel ranges cannot be independently set)

Measurement item : Voltage, current, current peak, active power, apparent power, reactive power, power factor, phase angle, frequency, power integration, current integration

Display indication range : 0.1% to 130% of range (zero-suppressed for less than 0.1%) (**3332**; zero-suppressed for less than 0.2% of V range and 40μA)
3332: Voltage, current, power; Effective input range : 5% to 120% of measurement range (5% to 100% of 600V range only)
3331: Voltage, current, power; Effective input range : 1% to 120% of measurement range (1% to 100% of 600V range only)

Display : Digital display LED, displays 4 items
Display resolution : 99999 counts (other than integration), 999999 counts (integrated value)
Rectification method : Switchable between RMS (true root mean square value) and MEAN (average rectified RMS indication). With voltage only, cutoff frequency is 500 Hz.
Display update rate : Approx 5 times/sec
Analog response time : FAST (0.2 to 0.3 sec) or SLOW (1.6 to 2 sec) (**3332**; at SLOW 5 to 15 sec)
(Time to enter accuracy range upon sudden change from 0 to 90% or 100 to 10%)
Input resistance (50/60 Hz) : Voltage 2MΩ±10% Current Less than 2mΩ
Max. input voltage : Voltage 600 Vrms, 1100 V peak
Max. input current : Current 60 Arms, 90A peak
Max. rated voltage to earth : 600 Vrms, 50/60 Hz
Crest factor : Voltage (measurement range × 6) / Measured value or 1100 V / measured value, whichever is lower
Current (measurement range × 6) / Measured value or 90 A / measured value, whichever is lower
Analog output : Simultaneous output of voltage, current, active power DC±5V f.s.
Monitor output : Simultaneous output of voltage and current 1 Vrms f.s.
Scaling : PT/CT/SC ratio Set range 0.001 to 9999 (**3331**; PT/CT only)
Averaging : Moving average of sampling data is taken for display (1 (off), 8, 16, 32, 64 times) (**3332**; 1 to 300 times)
Comparator (3332 only) : 2 ch (with ON/OFF function)
Setting items : One item from among voltage/current/active, apparent, reactive power/power factor/phase angle/frequency/waveform peak/integration value selected for one channel, Hi and Lo level set.
Decisions : Decision and relay output (30V/0.5A) in Hi/In/Lo LED lamps. Relay Hold is possible from external control.

[Voltage/current/power measurement]

Measurement range : By 1-page range table

[Integration measurement]

Number of measurements : 5 times/sec
Measurement range : 0.00000 to 999999 MAh/MWh (integration time up to 10,000 hours)

[Power factor/phase angle measurement]

Measurement range : -1.0000 (lead) to 0.0000 to 1.0000 (lag)
-180°(lead) to 0.00° to 180.00° (lag)

[Frequency measurement]

Number of channels : 1 ch
Effective input range : **3332**; 1 Hz to 100 kHz, **3331**; 4 Hz to 50 kHz
Measurement range : Auto, 500 Hz, 100 kHz (**3331**; up to 50 kHz)

[Wave peak measurement]

Measurement items : Displays maximum absolute current value

[D/A output]

Number of channels : 1 ch (15 bit D/A converter, polarity + 11 bits)
Output resistance : 100Ω±5%
Output content : Voltage, current, active / apparent / reactive power, power factor, phase angle, wave peak, frequency and the integrated value for each channel or sum of the values
Output voltage : DC±5V/f.s.
Output update rate : 5 times/sec

[Interfaces]

GP-IB : Conforms to IEEE-488.1 1987, with reference to IEEE-488.2 1987
RS-232C : Start-stop synchronous, with baud rate of 1200 to 9600 bits/sec

[Other functions]

: External control, Display hold function, maximum value hold, current peak hold, data backup function, key lock function

❑ Measurement accuracy

(at **3331**: 23°C±3°C (73°F±5.4°F) / **3332**: 23°C±5°C (73°F±9°F), max 80% rh, with warm-up time of at least 30 minutes, sine wave input, power factor = 1, and in-phase voltage 0)
(Period for which accuracy is guaranteed: 6 months)

V, A, W : Per accuracy table on page 2
Apparent / reactive power : ±1 dgt. with respect to calculation from measured value (*U,I,P*) sum value is max. ±3dgt.
Integration : ±1 dgt. with respect to calculation from measured value (*I,P*)
Power factor : ±1 dgt. with respect to calculation from measured value (*U,I,P*)
Phase angle : ±1 dgt. with respect to calculation from measured value (*U,I,P*)
Frequency : ±0.1% rdg.±1dgt.
Wave peak : Measurement accuracy ±1% f.s.(current peak range)
Current peak range: Current range × 6

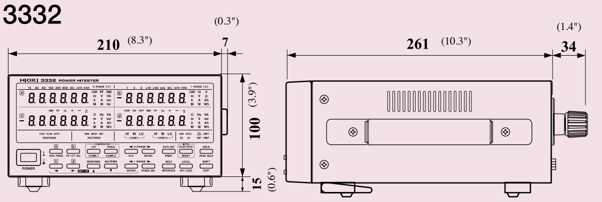
Thermal coefficient : **3332**; Less than ±0.02%f.s./°C, **3331**; Less than ±0.04%f.s./°C
Effect of max. rated voltage to earth in-phase voltage : Less than ±0.05%f.s. (AC 600 V rms, 50/60 Hz applied between all input terminals and ground)
Effect of power factor : Less than ±0.4%rdg. (at 45 to 66 Hz, power factor = 0.5)
Less than ±0.23%f.s. (at 45 to 66 Hz, power factor = 0)
Effect of external magnetic field : ±1.5%f.s. (at AC 400 A/m, in 50/60 Hz magnetic field)
Real time : ±100ppm±1 sec (at 0 to 40°C (32°F to 104°F))
D/A output : Measurement accuracy±0.2% f.s.
Analog output : Measurement accuracy±0.2% f.s. (below 45 Hz with SLOW setting)
Monitor output : Measurement accuracy±0.1% f.s.

❑ General specifications

Location for use : Indoors, altitude to 2000 m
Ambient use humidity : 0°C to 40°C (32°F to 104°F), max 80% rh (no condensation)
Ambient storage humidity : -10°C to 50°C (14°F to 122°F), max 80% rh (no condensation)
Insulation resistance : 100MΩ or greater at DC 500 V
Between voltage/current terminals and case, output terminals and external control terminals, voltage / current terminals and power supply, voltage terminals and current terminals, individual channels, and power supply and case
Withstand voltage (50/60 Hz, 1 minute) : AC 3.32 kV between voltage/current terminals and case, output terminals and external control terminals, and between individual channels
Certifications : Safety
EN61010-1
(Voltage and current input) Pollution factor, 2, overvoltage category III, Anticipated transient overvoltage 6000V
(Power supply) Pollution factor 2 Overvoltage category II, Anticipated transient overvoltage 2500V
EMC
EN61326, EN61000-3-2, EN61000-3-3
Power supply : AC100V to 240V 50/60 Hz (universal power supply)
Maximum rated power : 50VA max.
Dimensions and mass : **3332**; Approx 210 W × 100 H × 261 D mm, 2.7 kg
(Approx 8.3"(W)× 3.9" (H) × 10.3" (D), 95.3 oz.)
3331; Approx 210 W × 100 H × 261 D mm, 2.5 kg
(Approx 8.3"(W)× 3.9" (H)× 10.3" (D), 88.2 oz.)
(Not including projections such as terminals, feet, and handles)
Accessories : Power cord 1, Ext I/O male connector 1

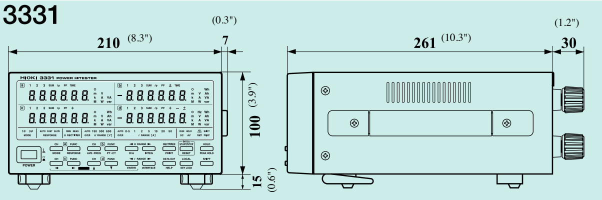
❑ Dimensional drawing

3332



mass: Approx 2.7 kg (95.3 oz.)

3331



mass: Approx 2.5 kg (88.2 oz.)

Orders also accepted for units equipped for rack mounting.
Please inquire for details.

❑Related products

Broad bandwidth from DC/0.5 Hz to 1 MHz

Power measurement tool that supports integrated evaluations of electrical devices

- In addition to basic measurement, it comes with more advanced measurement of motor power/efficiency/ harmonics /flicker (Some functions require separate options)
- Three types of input units can be chosen for application
- Simultaneous measurement of up to six lines

■ Basic specification

Measurement line : Single-phase, 2-wire; single-phase, 3-wire; 3-phase, 3-wire; 3-phase, 4-wire

Measurement item : [When used with **9600**, **9601**, **9602** (option)]
voltage, current, voltage and current waveform peak, active/reactive/apparent power, power factor, phase angle, frequency, current and power integration; load factor; efficiency
[When **9603** is used (option/above functions plus functions written below)]
voltage, torque, rotation count, frequency, motor output
[When **9605** is used (option/all functions above plus functions written below)]
harmonics, waveform, voltage fluctuation/flicker

Measurement range (when used with 9600) : voltage: 6/15/30/60/150/300/600/1000V
current: 200/500 mA/1/2/5/10/20/50A
power: 1.2 W to 150 kW (with measurement mode and voltage, current, range combination)
frequency: 50/500/5 k/50 k/2 MHz

W basic accuracy : ±0.1%rdg.±0.1%f.s. (45 to 66 Hz when **9600** is used)

Display update : 8 times/s

Frequency quality (by unit) : **9600**: broadband unit from DC/0.5 Hz to 1 MHz
9601: AC-only unit from 5 Hz to 100 kHz
9602: Clamp input-only unit from DC/0.5 Hz to 200 kHz

Functions : Waveform peak measurement, efficiency measurement, D/A output, external control, scaling, average, backup function, motor output (Pm) measurement (**9603** option), miscellaneous

Power supply : AC100/120/200/230V automatic switching, 50/60 Hz, 150 VA max.

Dimensions and Mass : 430 W ×150 H ×370 D mm; 13 kg
(Approx 17.0"(W)× 6.0" (H) × 14.6" (D), 459 oz.)

POWER HiTESTER 3193-10

Measurement cannot be done with the **3193-10** unit alone. Optional input units are necessary for measurement. For more details, please request the **3193-10** product catalog.

POWER HiTESTER 3331

(Single-phase, 3-wire and three-phase, 3-wire type)

POWER HiTESTER 3332

(Single-phase, 2-wire type)

Option

PRINTER	9442
AC ADAPTER (For printer, Japan)	9443-01
AC ADAPTER (For printer, EU)	9443-02
CONNECTOR CABLE (For printer)	9444
RECORDING PAPER (For printer, 10rolls)	1196
GP-IB CONNECTION CABLE (2m (79"))	9151-02

PRINTER 9442

Printing method : Thermal serial dot matrix
Paper width : 112 mm (4.5")
Printing speed : 52.5cps
Power supply : **AC ADAPTER 9443** or supplied nickel-hydride battery (capable of printing about 3000 lines on full charge from **9443**)
Dimensions and mass : Approx. 160W × 66.5H × 170D mm; 580 g
(Approx. 6.3"(W)× 2.7" (H) × 6.7" (D), 20.5 oz.)

Please request a **CONNECTOR CABLE 9444** for connecting to the **3331/3332** unit and the **AC ADAPTER 9443** when purchasing the **PRINTER 9442**.

CONNECTOR CABLE 9444

Cord length approx. 1.5r
(60

AC ADAPTER 9443

9443-02
(For the EU)

9443-01
(For Japan)

Note: Company names and Product names appearing in this catalog are trademarks or registered trademarks of various companies.

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All information correct as of Jun. 20, 2013. All specifications are subject to change without notice.

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