

# HIOKI

## CLAMP ON POWER METER

### 3164 DC CLAMP ON POWER HI TESTER

# 3164

## Now, DC power accurately quantified using clamp-on sensor.

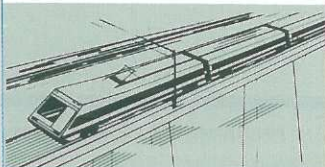
- Measurement Functions  
DC and AC Power,  
Voltage, and Current



#### Applications

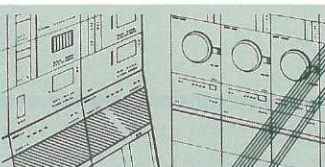
Areas where DC power lines are in use.

Electrochemistry, welding, electrical smelting furnaces, electrical plating, semiconductors, power control, electric railways, power distribution, cranes, etc.



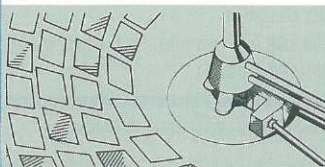
Communications

General communications, communications as related to power distribution, power sources for computers, etc.



Areas where batteries are used as power sources.

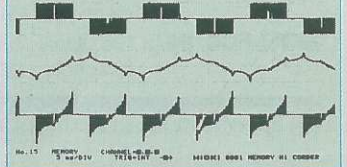
Battery manufacturers, automotive electrical components, battery-powered automobiles, special power source manufacturers, home generators, wind-chargers, solar generators, emergency power sources.



Special AC power sources

Special power sources using inverters, thyristors, or other switching devices in their construction.

Inverter Waveform

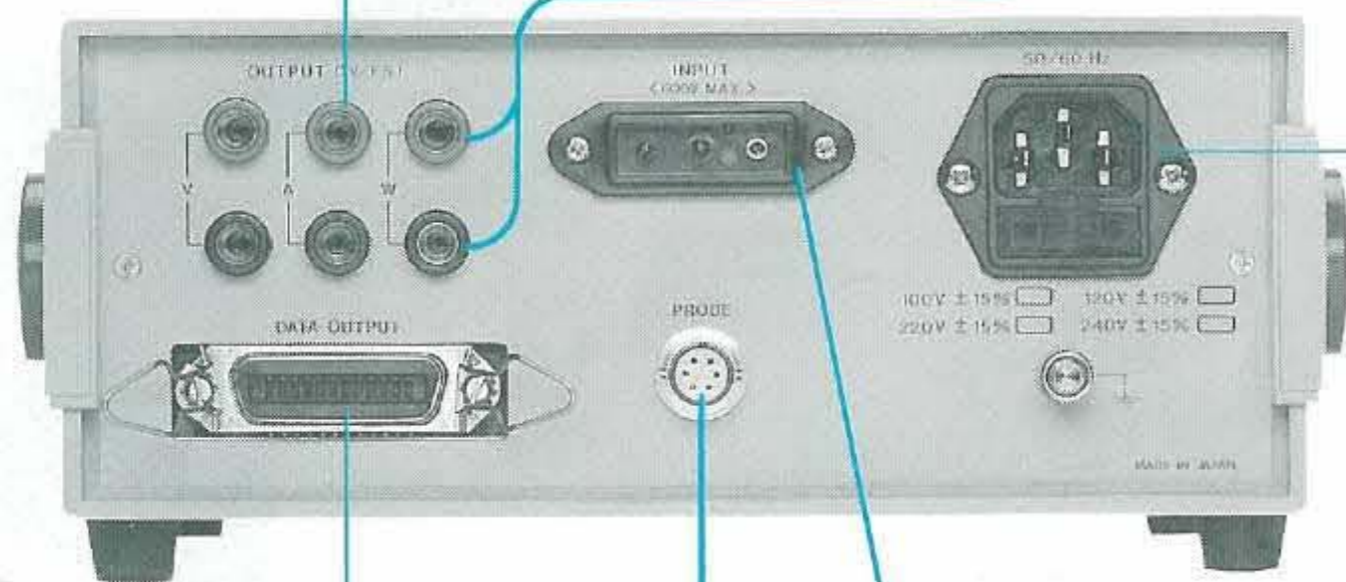
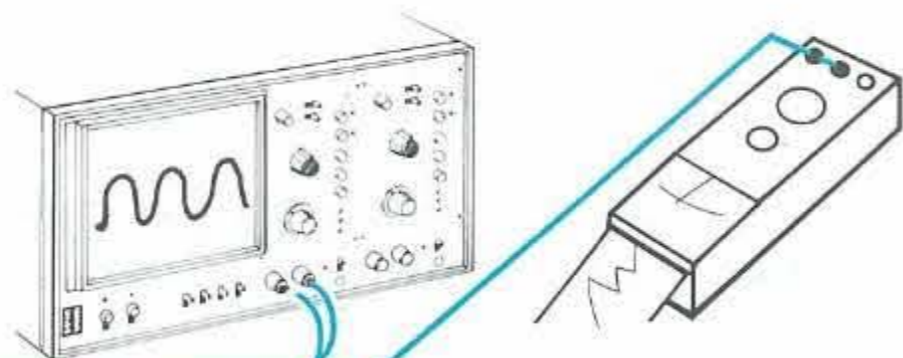


The 3164 DC Clamp-on Power Hi Tester uses a special clamp-on sensor developed by Hioki specifically for power measurements of DC power in current-carrying lines. Whereas DC power measurements alone have been heretofore considered difficult from a technological standpoint, this unique sensor not only covers DC power, but AC power, current, and voltage as well --all in an easy clamp-on operation.

Additional flexibility is provided by such functions as interchangeable sensors (for extended measurement range), true root-mean-square, parameter output capability. Being suited for both AC and DC measurements, plus the ability to handle distorted waveforms produced by inverters, SCRs, etc, the 3164 will thus be the ideal instrument for the user having diversified requirements.

#### Output Terminals

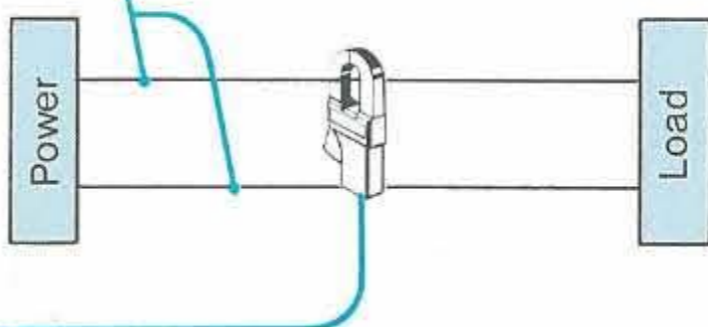
Three channels produce simultaneous output of power, voltage and current. The output terminals function in the RECORD OUT mode for AC mode setting, and in the MONITOR OUT mode for DC mode setting.



AC Power Receptacle

#### Data Output Connector

Serves to output information on function, range, decimal point, analog output, BCD data on measurement value, etc.



### DC Power Measurement Capability

Can also measure AC power, current, and voltage.

### Extended Measurement range

Two interchangeable sensors make extending the measurement range as simple as changing the sensor.

### AC and DC Accuracy both Outstanding

The use of Hall elements, and a specially designed magnetic circuit gives the clamp-on sensor excellent characteristics with regards to linearity, frequency response, internal phase-angle, and conductor positioning within the core. All of these factors of course produce accurate readings.



9002-01

### Analog Output Capability

Voltage (V), current (A), and power (W) values are output simultaneously through rear panel output terminals. Use of a switching device allows either the RECORD OUT mode (for output to a recorder), or the MONITOR OUT mode (for use in waveform monitoring) to be selected.

### True RMS Indication

All measurements are indicated as their true root-mean-square value. This means that even distorted waveform phenomena will be accurately quantified.

### Safety Features

The instrument is completely insulated from the circuit under test. Also, due to the special design of the clamp-on sensor, heat generation is held to a minimum, making unattended long-term measurements possible.

## Specifications

Display: 3 1/2-digit LED display, with mode, function, and overrange annunciators.  
Measurement Functions: AC and DC voltage, current, and power (AC indicated as a true RMS value.)

Measurement Range:

	9001-01 sensor	9002-01 sensor
Voltage	50/500V	50/500V
Current	20/200A	20/2000A
Power	2/20/200kW	20/200/1000kW

(Power ranges determined by multiplying voltage by the current ranges.)

Accuracy:

AC voltage,  $\pm 1\%$  rdg.  $\pm 1$  dgt.  
AC current,  $\pm 1\%$  rdg.  $\pm 4$  dgt.  
AC power,  $\pm 1\%$  rdg.  $\pm 6$  dgt.  
(Specified for  $23^\circ\text{C} \pm 5^\circ\text{C}$ , DC and 50/60Hz, powerfactor of 1.) (Using 9002-01, AC current accuracy specified for up 1500A.)

Frequency Response:

Voltage;  $\pm 0.5\%$  or better at DC and 20Hz~4kHz.  
Current;  $\pm 2.0\%$  or better at DC and 20Hz~1kHz.  
Power;  $\pm 2.0\%$  or better at DC and 20Hz~1kHz, PF=1

Power-Factor Induced Error: Less than  $\pm 1\%$  at PF=1 (50/60Hz)

Temperature Characteristics:  $\pm 1.5\%$  or better,  $0\sim 40^\circ\text{C}$ .

Error Induced By Conductor Positioning:

Less than  $\pm 1\%$  at any position within the clamp jaws.

Error Induced By External Fields:

9001-01 sensor, equivalent to less than 0.2A.  
9002-01 sensor, equivalent to less than 0.4A.  
(Specified for field strength of 400 A/m.)

Crest Factor: In power measurements, less than the peak values listed below.

Voltage: Lo range, 120V; Hi range, 750V  
Current: 9001-01 Lo range, 80A; Hi range, 500A  
9002-01 Lo range, 800A; Hi range, 2000A

Allowable Circuit Voltage: 750V peak value.

Output Terminals (Analog): 2V output for 2000-count display. (Three channels (A,V,W) output simultaneously, switchable to MONITOR or RECORD output)

Digital control: CMOS level, Hi=5V, Lo=0V. (BCD, decimal point, function, range)

Power Source: AC 100, 120, 220, 240V, specified at order; power consumption approx. 4W.

Dimensions/Weight:

3164 unit, 85H $\times$ 250W $\times$ 220D(mm)/2.2kg (approx)  
9001-01, 175H $\times$ 85W $\times$ 40D, 30mm jaws/600g (approx)  
9002-01, 180H $\times$ 90W $\times$ 40D, 46mm jaws/650g (approx)

Accessories Provided: Voltage cable, 1;  
Line cord, 1; Midzet fuse (0.3A), 1;  
Carrying case, 1;

### Optional Accessories

9001-01 Clamp-on sensor  
9002-01 Clamp-on sensor

### Ordering Information

3164-01 with 9001-01  
3164-02 with 9002-01  
3164-03 with 9001-01 + 9002-01

Standard Packing (Double carton box)

	Sets	N.W.kg	G.W.kg	M <sup>3</sup>
3164-01,-02	3	13	15	0.10m <sup>3</sup>
3164-03	3	15	17	0.10m <sup>3</sup>

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