



HIOKI

2004

3144-20 NOISE SEARCH TESTER

Optical and Network Measurement Instruments



Using non-contact voltage sensor to search for noise invasion path
and frequency range while still in operating state

Identify noise in communication and power lines



ISO14001
JQA-E-90091

**CALRIGHT
INSTRUMENTS**

The Right Source For Your Test & Measurement Needs

2232 Verus Street Suite D San Diego CA 92154 USA

Toll Free: 866.363.6634 Tel: 619.429.4545 Fax: 619.374.7012

Email: sales@calright.com <http://www.calright.com>

Simply clamp to identify the noise

Noise travels along communication wires and power lines using different paths, and problems with signal error and incorrect operation of machines caused by noise have been on the rise. By applying just the 9741 Clamp On Voltage Sensor you can use the 3144-20 to decipher the frequency range and invasion path of the noise.

Use the logging function for long-term monitoring, and transfer the recorded data to a PC via the USB interface for graphic display and printer output.

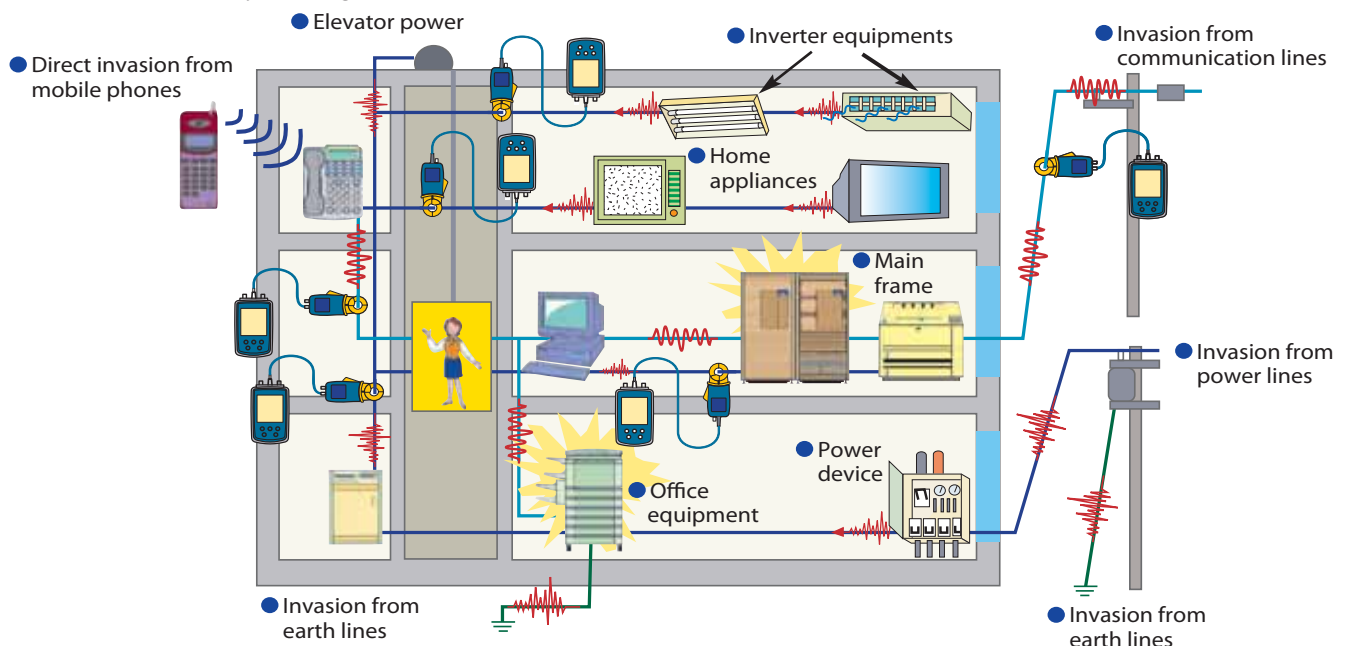


Features

- **Non-contact type voltage sensor**
Noise can be determined without disturbance to the telecommunication, control or the other operation of equipment to be checked, because the noise can be measured without touching any conductor of the cable.
- **Frequency range measurement between 500 Hz and 30 MHz**
The 3144-20 covers a wide range of frequencies, from power line noise to CB radio.
- **Display of level meter using a large LCD**
Detected noise can be separated according to the frequency range, and then displayed on the level meter.
- **Peak hold function**
Display the peak value and measurement time of each frequency range.
- **Long-term monitoring by using the logging function**
Record a maximum of 64,000 logs of measurement data and time.
- **USB interface**
The built-in USB interface, together with the supplied PC software application, enables you to transfer data to a PC for time-series data display and printer output.
- **Audible monitoring function**
Detected noise can be converted to audible range for output to earphone, which helps to identify the exact type of signal.
- **Two power supplies: Battery or AC Adapter**
Offering both portability for on-site measurement as well as reliability for long-term monitoring.
- **Handy design**
Compact and lightweight feel of a traditional tester but with all the advanced technologies necessary to measure noise.

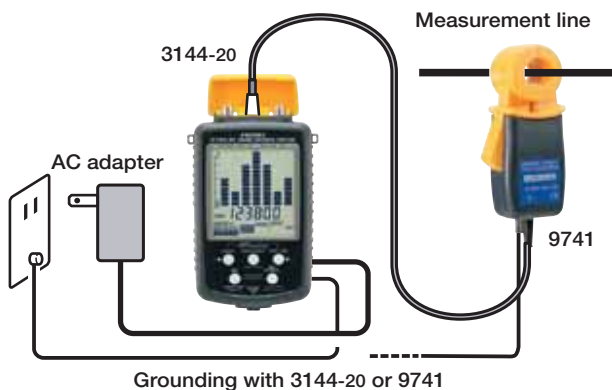
Invasion of Noise into Power and Communication Lines

- **Sources of noises** : power lines, electric railway, inverter machines, CB radio transmitter.
- **Invasion paths** : telecommunication lines, power lines, earth lines, or directly entering a device
- **Transport paths** : via communication lines, power lines, etc.



On-site monitoring and PC analysis of recorded data

On-site Analysis Monitoring function



The 3144-20 separates noise in the 500 Hz to 30 MHz range into 7 ranges for measurement, and then displays the measurement voltage of each frequency range on the level meter.

Measurement can start by simply attaching the 9741 Clamp-on Voltage Sensor to the measurement line. Noise level can be easily monitored in the live line state without the need to peel off the insulation of the line. In addition, external signals (output from an antenna or near magnetic field probe) other than that from the 9741 can be input from the BNC terminal. Like the 9741, their level at each frequency range can be checked and recorded.

Record in Internal Memory Logging function

Measurement data and time are saved to the internal memory at the specified recording interval. The 3144-20 can also be installed for long-term monitoring and set up for one of two recording modes:

Automatic stop mode

In this mode, recording stops as soon as the internal memory becomes full. Use this mode if you wish to keep all recording data during the measurement period.

Overwrite recording mode

In this mode, data can be recorded continuously by overwriting the oldest data - ideal for those needing to check data as soon as trouble occurs.

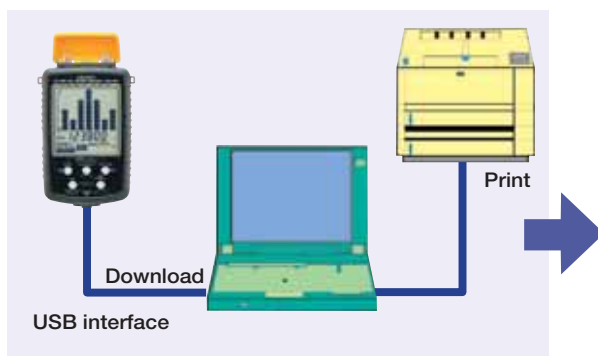
With the peak hold function, you can display the peak value of each frequency range as well as the time of the detection.

Recording time of internal memory

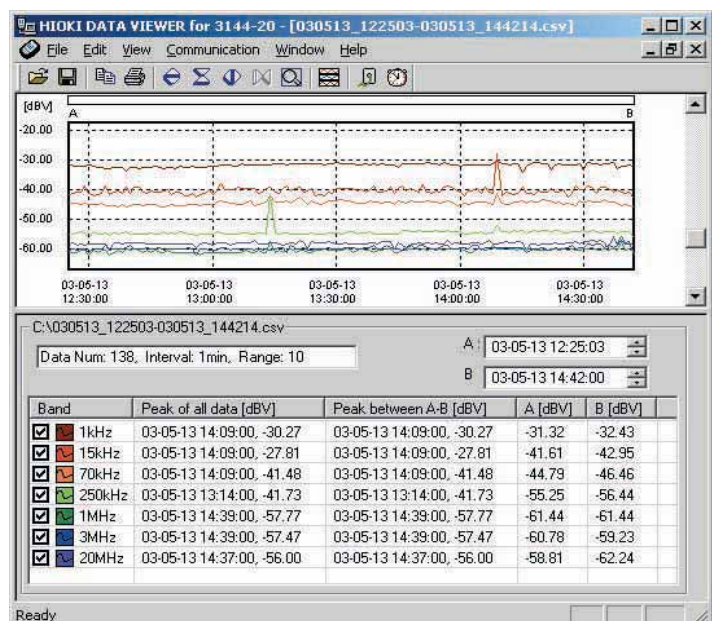
	Automatic stop mode	Overwrite recording mode (CONT)
Recording interval	Maximum recording time	Minimum guaranteed recording time
1 sec	17.7 hours	15.5 hours
2 sec	1.4 days	1.2 days
5 sec	3.7 days	3.2 days
10 sec	7.4 days	6.4 days
20 sec	14.8 days	12.9 days
30 sec	22.2 days	19.4 days
1 min	1.4 months	1.2 months
2 min	2.8 months	2.5 months
5 min	7.1 months	6.2 months
10 min	1.1 years	1.0 years
20 min	2.3 years	2.0 years
30 min	3.5 years	3.1 years
60 min	7.1 years	6.2 years

Analyze recorded data on a PC with bundled software application

The supplied PC software application enables high-speed transfer of recording data from the 3144-20 to a PC. You can then display the data in graphs to check the noise variation as well as the time of its occurrence. Save the screens as BMP files, print or use the easy-to-read information in generating complete reports.



Software application screen



3144-20 Specifications

<General specifications>

Input unit configuration	: 9741 dedicated input terminal, BNC input terminal (9741 takes priority)
Input impedance	: 9741 dedicated input 50 Ω \pm 10 % (100 kHz) BNC input 50 Ω \pm 10 % (100 kHz), 1 M Ω \pm 10 %/120 pF \pm 30 pF (100 kHz capacity) (Manual switching)
Maximum input voltage	: 5 V PEAK
Frequency range band	: 500 Hz to 30 MHz, separated into 7 ranges (-3 dB range) 500 Hz to 3 kHz (1 kHz range) 7.5 kHz to 22.5 kHz (15 kHz range) 35 kHz to 105 kHz (70 kHz range) 125 kHz to 375 kHz (250 kHz range) 0.5 MHz to 1.5 MHz (1 MHz range) 1.5 MHz to 4.5 MHz (3 MHz range) 10 MHz to 30 MHz (20 MHz range) (BNC input 50 Ω termination)
Measurement range	: \times 1 range 0 dBV (1 V) f.s. Measurement range (0 dBV to -30 dBV) \times 10 range -20 dBV (0.1 V) f.s. Measurement range (-20 dBV to -50 dBV)
Detection method	: RMS value conversion
Detection precision	: 500Hz to 1 MHz or less \pm 1.5 dBV 1 MHz to 30 MHz \pm 2.0 dBV (BNC input 50 Ω termination)
<Measurement function>	
Monitoring function	: Display of measurement voltage level of each frequency range in levels on LCD (2.5 dBV/SEG equivalent)
Logging function	: Measurement data and time saved to internal memory according to specified recording interval
Internal memory	: 8 blocks (1 block containing maximum 8,000 data logs)
Recording data log	: Maximum 64,000 data logs (8 blocks \times 8,000 data logs)
Number of measurements	: 1 to 8 measurements (depending on number of blocks used in each measurement)
Recording mode	: Automatic stop mode : Measurement stops when internal memory is full. Maximum 64,000 data logs Overwrite recording mode (CONT) : Once internal memory becomes full, oldest data is overwritten so that measurement can continue, with minimum guaranteed 56,000 data logs.
Memory backup	: Available. Backup battery is used when power is OFF. Service life of backup battery is approximately 5 years (reference value).
Recording interval	: 1/2/5/10/20/30 seconds 1/2/5/10/20/30/60 minutes
Data deletion	: All data is deleted at the same time.
Data display function	: Display of measurement time and recording data of each frequency range as recorded by the logging function. Scrolling along time-axis direction possible. Display of various settings (measurement range, recording interval, and recording mode) during logging. Display of peak value of each frequency range by peak hold function.
Peak hold function	: Display of peak value and detection time of each frequency range in monitoring, logging, and data display function. (In data display function, only peak value is displayed.)



3144-20 accessory set

Output function

Waveform monitoring	: Output of input signal coming from 9741 dedicated input or BNC input
Range band	: 500 Hz to 30 MHz (-3dB) (50 Ω termination)
Output resistance	: 50 Ω \pm 10 % (1 kHz)
Input-output ratio	: 2:1 (50 Ω termination)
Output precision	: \pm 5 %rdg, \pm 10 mV (50 Ω termination)
Maximum open voltage	: \pm 4.5 V
Audible range monitoring	: Output of detection signal envelope (adjustment volume available) Monitoring with supplied earphone possible

<Communication function>

Communication content	: Transfer of recording data from 3144-20 internal memory to PCh
Interface	: USB Ver.1.1

<Other specifications>

Power	: AA-size alkaline batteries (LR6) \times 6, DC9 V 500mA (9445-02 or 9445-03 AC adapter, rated power voltage AC 100 V to 240 V, 50/60 Hz, maximum rated current 250 mA)
Continuous usage time	: Approximately 5 hours (reference value based on use of battery and monitoring function at ambient temperature of 23 °C)
Operating temperature and humidity	: 0 to 40 °C, 80 % rh or less (no condensation)
Battery service life warning	: Display of battery mark when power voltage is approximately 6.5 V
Time setting	: Year, month, day, hour, minute, and second. Input by key
Applicable standard	: Safety : EN61010-1: 2001, measurement category I, degree of pollution 2, forecasted excessive voltage 330 V EMC : EN61326:1997+A1:1998+A2:2001 (When using the 9445-03 AC adapter), EN61000-3-2:2000, EN61000-3-3:1995+A1:2001
Dimensions and mass	: 98 \pm 2 (W) \times 179 \pm 2 (H) \times 46 \pm 1 (D) mm, 430 g \pm 50 g (excluding batteries)
Guaranteed precision period	: 1 year
Functions of supplied software application	: Data list display, data download, time-series data waveform display, display of peak value and peak detection time, enlargement and reduction functions, paste to clipboard, data saving, save to BMP, printing
Accessories	: 9741 Clamp-on Voltage Sensor, carrying case, PC application software CD-R, AA-size alkaline batteries (LR6) \times 6, USB cable, strap, 9445-02 AC adapter(UL) or 9445-03 AC adapter(CEE) , earphone

9741 Specifications

Sensor configuration	: Electrostatic coupling non-contact voltage sensor
Frequency range	: 600 Hz to 30 MHz (-3 dB range)
Sensor output	: Voltage output
Output impedance	: 50 Ω \pm 10 % (1 kHz)
Measurable conductor diameter	: ϕ 20 mm
Maximum rated voltage to earth	: AC 200 V
Cord length	: Approximately 1 m
Power voltage	: \pm 5 V (supplied via connection to 3144)
Operating temperature and humidity	: 0 to 40 °C, 80 % rh or less (no condensation)
Applicable standard	: Safety : EN61010-1: 2001, measurement category III, degree of pollution 2, forecasted excessive voltage 4000 V EMC : EN61326:1997+A1:1998+A2:2001
Dimensions and mass	: 62 \pm 1 (W) \times 158 \pm 2 (H) \times 40 \pm 1 (D) mm, 260 g \pm 30 g
Guaranteed precision period	: 1 year

The 3144-20 Noise Search Tester is a commercialized product based on technologies of the Nippon Telegraph and Telephone East Corporation Technology Center.

DISTRIBUTED BY

CALRIGHT INSTRUMENTS

The Right Source For Your Test & Measurement Needs

2232 Verus Street Suite D San Diego CA 92154 USA
Toll Free: 866.363.6634 Tel: 619.429.4545 Fax: 619.374.7012
Email: sales@calright.com <http://www.calright.com>