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Personal & Area Monitors

Nardalert XT RF Personal Monitor



US Patents 6,154,178 5,600,307 5,168,265
International Patent Pending

narda
Safety Test Solutions
an L3 communications company

- 100 kHz to 100 GHz
- Shaped Frequency Response Matched to Your Standard
- Data Logger Records Continuously – more than 30,000 data points
- Five High-Intensity LED Level Indicators
- Tri-Sensor Handles All Types of Fields
- Two Adjustable Audio Alarms
- Adjustable Vibrator Alarm
- Long Battery Life
- Patented Design



DESCRIPTION

The new Nardalert XT family of RF personal monitors is designed to satisfy the needs of virtually all individuals who use an RF personal monitor.

- Models are available that closely conform to all major worldwide standards.
- The adjustable alarm feature allows one alarm to be set at a level equal to the upper tier of two-tier standards, such as "Occupational" or "Controlled" limits, while the second alarm can be set to the lower tier, such as the "Action" or "General Population" limits.
- The ultra-broadband sensors cover almost the entire usable RF spectrum in a single monitor.
- The unique tri-sensor design handles every possible signal format, from complex multi-signal communication environments to military platforms with both communications and radar signals.
- The five flashing high-intensity LED level indicators can be seen while wearing the monitor, even outdoors in the sun.
- There are four different ways to wear the monitor – pocket clip, belt clip, soft case with belt clip (optional) and soft case for climber's harness (optional).
- The audio alarm has two distinct sounds that are associated with the two different alarm thresholds. Both alarm thresholds can be adjusted using the optional Interface Kit.

- The user can select an audio alarm, a vibrator alarm, both audio and vibrator, or an optional remote vibrator. The remote vibrator can be used in areas with high ambient noise when the user is wearing heavy clothing that would prevent the detection of the internal vibrator.
- The data logger is always on. The logging interval can be adjusted using the optional Interface Kit. At the default setting, the average field strength is logged every five seconds with the data logger retaining more than 40 hours of information before it starts to write over the oldest data.
- Either one or both of the two LEDs that indicate the lowest levels (10% of Standard and 20% of Standard) can be deactivated using the optional Interface Kit for applications where it is desirable to indicate only higher field strengths.



The pocket clip supplied with the monitor allows you to wear the monitor inside your shirt pocket while maintaining the top of the monitor near the top of the pocket, regardless of pocket size. This allows you to view the LED level-indicators.



The belt clip supplied with the monitor snaps on the monitor case in place of the pocket clip. It has a strong spring and retaining hook that makes an accidental detachment from your belt unlikely.

APPLICATIONS

Nardalert XTs are usable over their entire rated frequency range when worn on the body as an RF personal monitor. The patented sensor design detects the electric field over an extremely broad frequency band regardless of signal format or polarization.

- The low frequency sensor is a low impedance, surface-area sensor designed to detect the radial fields that are characteristic of low-frequency communications systems. The compensated diode detector yields accurate results even in highly complex, multi-signal environments.
- The diode-dipole design complements the low frequency sensor in the UHF region by detecting vertically polarized fields. The combination of the two sensors detects all polarizations.
- The microwave band sensor uses thermocouple detectors. Thermocouple arrays function primarily as dipole antennas up to about 10 GHz. At higher frequencies, the sensor increasingly functions in the traveling-wave mode of detection. This enhances the sensor's sensitivity and allows it to function accurately up to 100 GHz and beyond. Thermocouple detectors are always true RMS detectors and yield accurate results even with extremely narrow radar pulses.

The 8861 Series is specifically designed for use in strong ELF fields, such as where wireless antennas are mounted on towers that carry high voltage 50/60 Hz utility power. The 8860 and 8862 Series Nardalert XT models are not designed for this environment and false alarms may occur.

The 8864 Series is specifically designed to be worn on the outside of RF protective suits since monitors do not function properly when worn underneath these suits. RF protective suits generally provide a minimum of 10 dB (10:1) protection. The 8864 Series monitors sound an alarm at high field levels to warn the wearer that they are in an area where the RF protective suits may not be sufficient protection.

There are four series of Nardalert XT RF monitors. Within each series, the specifications are essentially identical except for the sensor "shaping." Each specific standard or guidance requires some differences in the sensor design and calibration. The four Nardalert XT series are:



Soft cases are recommended for use by climbers and in severe weather: (l. to rt.) climber-harness case; case front; belt-clip case

8860 Series: This is the full-featured, Nardalert XT series that includes all the user-adjustable parameters plus the ability to log more than 30,000 data points automatically whenever the monitor is turned on. The data-logger feature can be used to analyze personnel exposures in order to improve operations. Or it can be used much in the way a Flight Data Recorder is used on board an aircraft – the logged data can be reviewed whenever there is a need to determine what levels an individual has been exposed to.

8861 Series: The 8861 Series is designed for applications where the user will be in close proximity to strong ELF fields, such as from 50/60 Hz power lines. These monitors are very similar to the standard, full-featured series except that the inside of the housing has a special conductive coating that blocks the ELF signals. The low frequency range of these monitors is reduced due to the coating.

8862 Series: This series is identical to the full-featured 8860 Series except that these monitors do not include the data-logging capability.

8864 Series: This series is identical to the full-featured 8860 Series with one exception: these high power monitors function at field levels five times higher than all other model series.

MODEL SELECTION GUIDE

STANDARD / GUIDANCE	NARDALERT XT MODELS			
	8860 SERIES	8861 SERIES	8862 SERIES	8864 SERIES
ACGIH	B8860	B8861	B8862	—
AS/NZ 2772.1 (1998, draft) Occupational	D8860	D8861	D8862	D8864
Canada Safety Code 6 99-EHD-237 RF / Microwave Worker	C8860	C8861	C8862	—
DIN VDE 0848, Part 2, October 1991 Area 1 Occupational	D8860	D8861	D8862	D8864
ENV 50166-2 Occupational	D8860	D8861	D8862	D8864
FCC 1997 Occupational / Controlled	A8860	A8861	A8862	A8864
ICNIRP 1998 Occupational	D8860	D8861	D8862	D8864
IEEE C95.1-2005 Controlled	B8860	B8861	B8862	—
Japan RCR-38 Controlled	A8860	A8861	A8862	A8864
NATO STANAG 2345	B8860	B8861	B8862	—



Model 8865 Interface Kit

The Model 8865 Interface Kit, although not required, allows Nardalert XT users to perform two important functions:

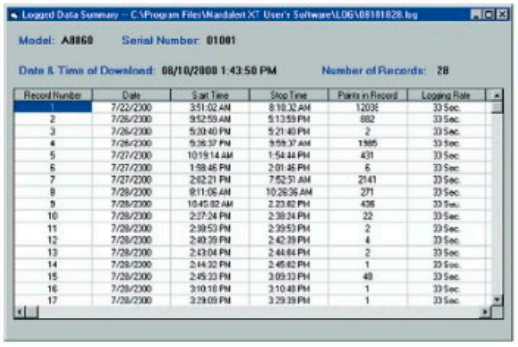
- Adjust several monitor parameters such as alarm threshold settings and data logging rate
- Download and analyze logged data

The Nardalert XT is ready to use upon receipt. If you want to take advantage of these additional features all you need is one Interface Kit per location. For example, if your New York office has 30 Nardalert XTs, all you need is one Interface Kit. Of course, if you also have monitors in another city, then you will probably want a kit for every city.

The Model 8865 Interface Kit is comprised of:

- A small electronic module that connects the Nardalert XT to any Windows™ compatible personal computer
- The Nardalert XT User's Software (CD)
- A cable to connect the module and the monitor
- A cable to connect the module and the PC
- A plastic storage box

The User's Software is very easy to use. Although a complete manual is included on the CD and is available from the help menu, few users ever need to refer to the manual. A "tool tip" appears for every control and window when you pause the cursor near the control. Anyone familiar with Windows programs has seen the words "Cut" or "Paste" appear in other programs.

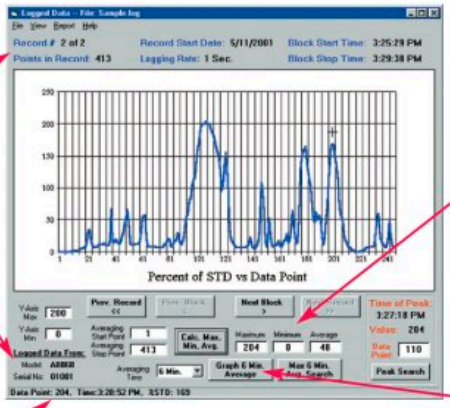


A new record is created every time the monitor is turned on. This screen makes it easy to find any record.

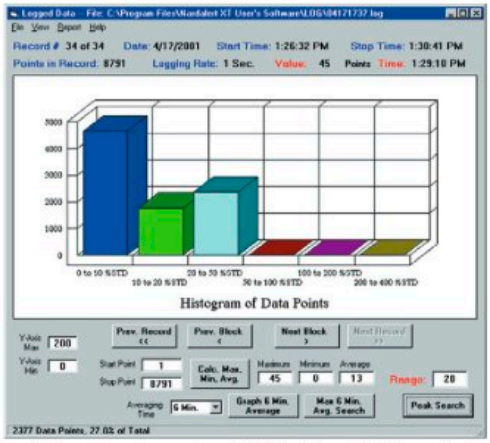
Data

Logged data is downloaded. Once it is downloaded you can:

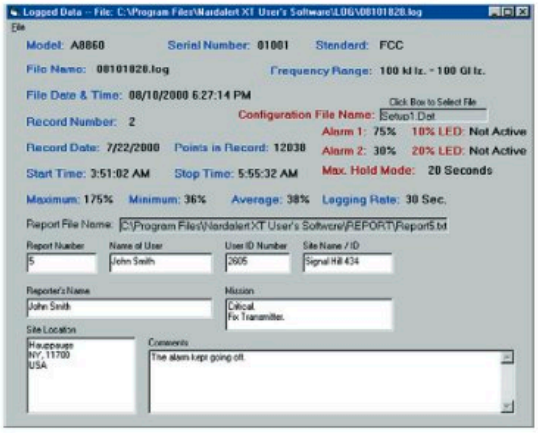
- Analyze it on screen with a variety of tools. For example, even though the data is collected in terms of five-second average exposure (default setting), the User's Software allows you to smooth the data and average it over longer periods of time
- Create reports
- Export the data to other programs such as word processors, spreadsheets, or data bases



Data Reports



The histogram shows the distribution of data points.



Configure a report to print directly or for export to a word processor.

Monitor Settings

The User's Software allows you to change seven parameters to tailor the Nardalert XT's operation:

Parameter	Default	Options
Alarm 1 Threshold	50% of Standard[a]	10% to 100%
Alarm 2 Threshold	200% of Standard[a]	20% to 200%
10% LED[a]	Active	Inactive
20% LED[a]	Active	Inactive
Logging Rate	Every five seconds[b]	1 second to 6 minutes
Maximum Hold	Off	Highest One-Second Average; Highest Average (10 seconds to 6 minutes)[c]
Time & Date	Greenwich Mean Time (GMT)	Local Time & Date

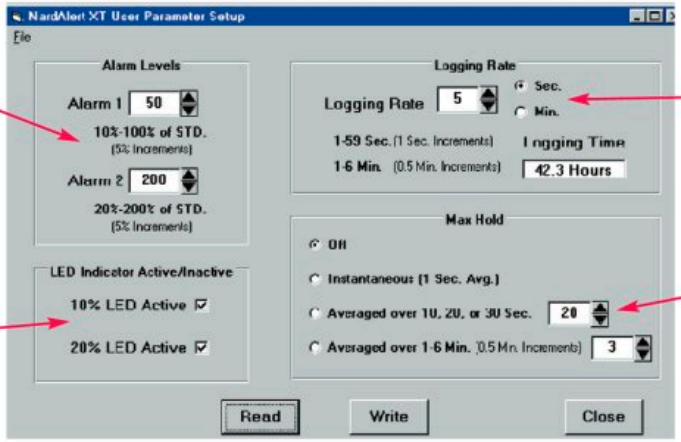
a Values for 8864 Series are five times higher

b Averaged over the interval

c The maximum hold feature indicates the highest exposure since the monitor was turned on. It can be based on either a one-second average or a longer averaging period ranging from ten seconds to six minutes.

Change one or both alarms to fit your needs

Turn one or two LED Indicators off so that low field levels are not indicated



Change the logging rate to get either more data points or a longer logging time

The monitor can be set to indicate the highest peak field or the highest average field

The User Parameter setup screen makes it easy to set the monitor to meet your needs.

SPECIFICATIONS

Series	8860	8861	8862	8864
Frequency Range	100 kHz to 100 GHz	10 MHz to 100 GHz	100 kHz to 100 GHz	100 kHz to 100 GHz 30 MHz to 100 GHz (C8864 & D8864)
Alarm Accuracy[a] (Frequency Sensitivity and Polarization Uncertainty	+6.0 / -3.0 dB (100 kHz to 2.3 GHz) +4.5 / -2.5 dB (2.3 to 30 GHz) +2.5 / -6.0 (30 to 50 GHz) +2.5 / 6.0 dB (50 to 100 GHz, Typical)			
Sensors (All E-field)	Low-band surface area detector, diode / Mid-band dipole, diode /High-band thermocouple			
Alarm Indicators **LEDs** **Audio Alarm 1** **Audio Alarm 2** **Vibrator, Internal and Remote[b]**	Five High Intensity Flashing, 2 Yellow, 3 Red Steady Tone Variable Tone Continuous			
Alarm Threshold[c] **Alarm 1, Default Setting** **Range of Adjustment[d]** **Alarm 2, Default Setting** **Range of Adjustment[d]** **Vibrator, Internal and Remote[b]**	50% of Standard 10% to 100% of Standard in increments of 5% 200% of Standard 20% to 200% of Standard in increments of 5% Same Threshold as Alarm 1			250% of Standard 50% to 500% of Std. in inc. of 5% 1000% of Standard 100% to 1000% of Std. in inc. of 5% Same Threshold as Alarm 1
LED Indicators	10%, 20%, 50%, 100% and 200% of Standard			50%, 100%, 250%, 500% and 1000% of Standard
CW Overload	3000% of Standard or Guidance			
Peak Overload	32 dB above Standard or Guidance			
Memory[e] **Number of Data Points** **Logging Interval, Default** **Range[c]** **Logging Time @ rate of 12/min**	31,263 5 sec. 1-60 sec. in 1 sec. inc. 1.5-6.0 min. in 0.5 min. inc. 42.3 hrs		—	31,263 5 sec. 1-60 sec. in 1 sec. inc. 1.5-6.0 min. in 0.5 min. inc. 42.3 hrs
Maximum Hold Modes[d]	Off, Instantaneous (1 sec. avg.), Averaged up to 6 Minutes			
ELF Immunity	6,000 V/m	100,000 V/m	6,000 V/m	6,000 V/m
Battery Type / Life (approx.)	1 x AA Alkaline / 1500 hrs. with LEDs and Alarms OFF			
Temperature Operating **Non-operating**	-10°C to +55°C -20°C to +55°C			
Humidity	0 to 95%, non-condensing			
Weight (including battery)	157 g. / 5.5 oz.			
Size	10.5 cm H x 7.6 cm W x 3.5 cm D / 4.12" H x 3.0" W x 1.37" D			
Color	Gray			
Accessories Supplied	Pocket Clip, Belt Clip, Plastic Storage Box, Battery, User's Guide			
Optional Accessories	Interface Kit, Soft Case with Belt Clip (P/N 21847600), Soft Case for Climber's Harness (P/N 21847700), Remote Vibrator (P/N 11110100)			

Notes:

a Accuracy specified as the mean of the radial and vertical orientations (10 to 1600 MHz) and mean of the vertical and horizontal orientations (1600 MHz to 50 GHz)

b Remote vibrator, P/N 11110100, is available as an option. It operates from its own battery.

c Percent of Standard percentages are in terms of equivalent plane-wave power density relative to the Standard or Guidance.

d The Interface Kit is required to make adjustments to the monitor settings and/or to download logged data.

e 8862 Series monitors do not include memory.

narda Safety Test Solutions
an L3 communications company

USA
435 Moreland Road
Hauppauge, NY 11788
Tel +1 631 231-1700
Fax +1 631 231-1711
E-Mail NardaSTS@L-3COM.com
www.narda-sts.us

GERMANY
Sandwiesenstrasse 7
D-72793 Pfullingen
Tel +49 (0) 7121-97 32-777
Fax +49 (0) 7121-97 32-790
E-Mail support@narda-sts.de
www.narda-sts.de

ITALY
Via Leonardo da Vinci, 21/23
20090 Segrate (MI) ITALY
Tel +39 02 26952421
Fax +39 02 26952406
E-Mail support@narda-sts.it
www.narda-sts.it

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