

8864 Series

Nardalert **XT** **HIGH POWER**

User's Guide Supplement

WARNING

This monitor should only be used after you have read and understood it's operation and consulted with your company's safety officer. High level, electro-magnetic fields may be hazardous to your health. This monitor cannot protect you from all electromagnetic hazards that you could encounter. **An alarm at 200% of the applicable exposure standard means you should leave the area immediately if you are not wearing protective clothing, or 1000% if you are wearing protective clothing.**

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Chapter 1

INTRODUCTION

About Your Nardalert XT

The Nardalert XT is a small, battery-operated RF personal monitor. The 8864 Series of the Nardalert XT is also referred to as the "High Power" series.

This supplement to the *Nardalert XT User's Guide* provides information on the specific features of the high power series that differ from other series of the Nardalert XT and the special cautions and operating instructions that must be followed when working in high RF field levels. Refer to the standard *Nardalert XT User's Guide* for all other information regarding the Nardalert XT RF Personal Monitors.

Equipment Supplied

Your Nardalert XT is supplied with:

- ◆ Monitor
- ◆ Batteries, AA Alkaline (includes one spare)
- ◆ Pocket Clip P/N 11085700
- ◆ Belt Clip P/N 21843600
- ◆ Plastic Storage Box P/N 11088800
- ◆ User's Guide P/N 42994900
- ◆ User's Guide Supplement P/N 43005800

Chapter 2

UNDERSTANDING YOUR NARDALERT XT

General Description

The basic Nardalert XT RF Personal Monitor is comprised of a sophisticated ultra-broadband, three-section RF sensor and a microprocessor-based control circuit housed in a compact plastic housing.

The 8864 Series of the Nardalert XT is also referred to as the "High Power" series. The major difference between the High Power 8864 Series and the standard 8860 Series Nardalert XT is related to the range of field levels that are detected and the alarm levels. The 8864 High Power Series monitors have five high intensity LEDs that illuminate at field levels of 50%, 100%, 250%, 500%, and 1000% of standard. In contrast, the LEDs on the standard Nardalert XT monitors, Series 8860, 8861, and 8862, illuminate at field levels of 10%, 20%, 50%, 100%, and 200% of standard.

The Nardalert XT high power series monitors are designed for use with RF protective garments or suits. The 8864 series monitors are worn on the outside of the RF protective suit. These 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 provide sufficient protection.

Specifications

Series	8864
Frequency Range	100 kHz to 100 GHz
Alarm Accuracy (Frequency Sensitivity & Polarization Uncertainty)	+6.0 / -3.0 dB ^a (100 kHz to 2 GHz) +4.5 / - 2.5 dB (2 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 Vibrator, Remote^b	Five High Intensity Flashing: 2 Yellow, 3 Red Steady Tone Variable Tone Continuous Continuous
Alarm Threshold^c Alarm 1, Default Setting Range of Adjustment^d Alarm 2, Default Setting Range of Adjustment^d Vibrator, Internal Vibrator, Remote^b	250% of Std. 50% to 500% of Std. in Inc. of 5% 1000% of Std. 100% to 1000% of Std. in Inc. of 5% Same Threshold as Alarm 1 Same Threshold as Alarm 1
LED Indicators	50%, 100%, 250%, 500% and 1000% of Std.
CW Overload	3000% of Standard or Guidance
Peak Overload	3000% of Standard or Guidance
Memory Number of Data Points Logging Interval, Default Range Logging Time @ 12/min	31,263 5 sec. 1-60 sec. in 1 sec. increments 1.5-6.0 min in 0.5 min. increments 42.3 hrs

Specifications (continued)

Series	8864
Maximum Hold Modes^d	Off, Instantaneous, Averaged up to 6 Minutes
ELF Immunity	6,000 V/m
Battery Type Life	1 x AA Alkaline 1000 hrs. with LEDs and Alarms OFF
Temp. Operating Non-operating	-10°C to +55°C -20°C to +55°C
Humidity	0 to 95%, non-condensing
Weight (inc. 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, User's Guide Supplement
Optional Accessories	Interface Kit (Model 8865), Soft Case with Belt Clip (P/N 21847600), Soft Case for Climber's Harness (P/N 21847700), Remote Vibrator ^b , and Earphone

NOTES:

- a Vertical and Radial field response between 700 and 1200 MHz may be an additional ± 2 dB error.
- 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.

Model Selection Guide

STANDARD / GUIDANCE	MODEL
AS/NZ 2772.1 (1998, draft) Occupational	D8864
DIN VDE 0848, Part 2, October 1991 Area 1 Occupational	D8864
Canada Safety Code 6 99-EHD-237 RF / Microwave Workers	C8864
FCC 1997 Occupational / Controlled	A8864
ICNIRP 1998 Occupational	D8864
Japan RCR-38 Controlled	A8864
ÖNORM S 1120, 1992 Occupational	D8864

Chapter 3

USING YOUR NARDALERT XT

Getting Started



WARNING

The Nardalert XT High Power RF personal monitors are set to alarm at high levels. The monitors should not be used without an RF protective suit unless the alarm thresholds have been changed to lower values. Wear the monitor on the outside of an RF protective suit.

The default alarm threshold settings are:

Alarm Function	Description	Level
Alarm 1	Steady audio tone and/or vibrator	250%
Alarm 2	Variable audio tone	1000%

If you plan to use an 8864 Series monitor without using an RF protective suit, the monitor's alarm threshold should be changed to lower levels. The default settings for all other series Nardalert XT monitors are 50% and 200% of standard. Threshold levels can be changed using a Model 8865 Interface Kit. The interface kit includes User's Software that is installed on your personal computer.

Alarm Thresholds

The thresholds for Alarm 1 and Alarm 2 can be adjusted over the following ranges

Alarm 1	50% to 500% of Standard in increments of 5%
Alarm 2	100% to 1000% of Standard in increments of 5%

If desired, the Nardalert XT can be adjusted for a single alarm threshold. Simply adjust the two alarms to the same level. The audio alarm will be the variable tone of Alarm 2.

Alarm 2 cannot be set to a lower threshold than Alarm 1.

Checking the Alarm Threshold

It is very important to verify the alarm threshold settings if you plan to use the monitor without an RF protective suit.

The alarm threshold settings can be determined in two ways:

1. Using the Model 8865 Interface Kit and User's Software
2. By observing the monitor during its turn-on sequence. This technique is very easy but, depending on the monitor's settings, the indications may be only approximate.
3. The green LED and one of the five level-indicator LEDs flashes to indicate battery level.

To check basic functions plus the alarm threshold settings...

1. Turn the high power Nardalert XT on.
2. Observe the audible, vibratory, and visual indicators in sequence.
3. Check that the vibrator functions properly.
4. Check battery level by observing which indicator LED flashes in combination with the Green LED. If it is the 50% LED, then the battery is down to about 20% of capacity. Similarly, if the 100% LED flashes with the Green LED, then the battery capacity is close to full. The other three LEDs indicate approximate battery capacity of 40%, 60%, and 80%.
5. Observe which LED or LEDs flash when the steady tone (Alarm 1) goes off. If only one LED flashes, then the Alarm 1 threshold setting is the same as the LED. For example, if the monitor is set to the default setting, the steady tone of Alarm 1 will sound and the 250% LED will flash indicating that Alarm 1 is set to 250% of Standard. If two LEDs flash while the steady tone of Alarm 1 sounds, the alarm threshold setting is somewhere between the levels indicated by the two LEDs. For example, if the 100% and 250% LEDs flash, the Alarm 1 threshold is set to a level anywhere from 105% to 245% of Standard. The User's Software and Interface kit are required to determine the exact alarm threshold.
6. Observe which LED or LEDs flash when the variable tone (Alarm 2) goes off. If only one LED flashes, then the Alarm 2 threshold setting is the same as the LED. For example, if the monitor

is set to the default setting, the variable tone of Alarm 2 will sound and the 1000% LED will flash indicating that Alarm 2 is set to 1000% of Standard. If two LEDs flash while the variable tone of Alarm 2 sounds, the alarm threshold setting is somewhere between the levels indicated by the two LEDs. For example, if the 500% and 1000% LEDs flash, the Alarm 2 threshold is set to a level anywhere from 505% to 995% of Standard. The User's Software and Interface kit are required to determine the exact alarm threshold.

Wearing the Nardalert XT

The Nardalert XT should be worn on the torso of your body facing forward. Chest level is the preferred location, but belt level is also acceptable. If you are climbing a tower, it is highly recommended that you wear the monitor high on your torso. This is because you may be climbing into very high fields and the field intensity can vary significantly over a few feet. Make sure the monitor is not facing your body and cannot turn while in use. For example, do not attach the monitor by a simple retaining line; although a retaining line can be useful as a backup method to prevent dropping the monitor should it become detached from your body. The optional climber's harness case is recommended for tower climbing applications.

◆◆◆ Note ◆◆◆

The monitor cannot detect RF fields through the body, except under some low frequency conditions when not wearing an RF protective suit.

Other Features and Applications Notes

Refer to the *Nardalert XT User's Guide* for general information that is applicable to all Nardalert XT models, including the high power 8864 series.

Warranty

Narda Safety Test Solutions (Narda STS) warrants Nardalert XT Personal Monitors to be free from any defect in material and workmanship for a period of two years from date of shipment to, and return by, the original purchaser. All warranty returns, however, must first be authorized by a factory office representative.

The limit of liability under this warranty shall be to repair or replace any product, or part thereof, which proves to be defective after inspection by Narda STS. This warranty shall not apply to any Narda STS product that has been disassembled, modified, physically or electrically damaged or any product that has been subjected to conditions exceeding the applicable specifications or ratings.

Narda STS shall not be liable for any direct or consequential injury, loss or damage incurred through the use, or the inability to use, any Narda STS product.

Narda STS reserves the right to make design changes to any Narda STS product without incurring any obligation to make the same changes to previously purchased units.

This warranty is the full extent of obligation and liability assumed by Narda STS with respect to any and all Narda STS products. Narda STS neither makes, nor authorizes any person to make, any other guarantee or warranty concerning Narda STS products.

About Narda Safety Test Solutions

Narda Safety Test Solutions is the new name for the world leader in non-ionizing radiation safety equipment. In February 2000, Narda – an L-3 Communications Company – acquired the Safety Test Solutions business from Wavetek Wandel & Goltermann. To give more focus to the RF safety business and to separate it from Narda's other business in components and networks, a new division was formed – Narda Safety Test Solutions. It combines the complementary product lines and expertise of these two businesses. The company holds more than 95% of the patents in the field. Products are available to accurately measure electromagnetic fields from a few Hertz to over 100 GHz plus static magnetic fields. RF personal monitors cover 100 kHz to 100 GHz and area monitors detect energy from 300 kHz to 100 GHz.



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