

# NRB4 & NLA/2 NDB Precision Monitor Alarm Receiver

FEATURES/SPECIFICATIONS Issue 3.0

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## Features

- Local and remote audio monitoring
- Calibrated carrier level meter
- High stability
- Crystal filter selectivity providing superior unwanted signal rejection
- A2A or H2A reception



NRB4 Single Channel Precision Monitor Receiver



NLA/2 Active Ferrite Loop Antenna

## Introduction

Nautel's NRB4 Monitor Receiver is a precision off-air monitoring receiver covering all approved NDB frequencies. It is compliant with applicable FAA and ICAO requirements for the monitoring of low frequency NDBs. The NRB4 replaces the popular Nautel models FAA9893 and NRB3.

### New Features

The NRB4 offers many new features such as extended frequency coverage of 190 kHz to 650 kHz, plus optional 1.6 MHz to 1.8 MHz, and the use of a direct digital synthesizer (DDS), eliminating the need to buy a frequency dependent crystal. This DDS is the very latest in frequency generation technology and provides extremely clean, noise free performance with excellent frequency stability.

### Selectivity

The NRB4 has excellent selectivity defined by a stable IF crystal filter which provides more than 50 dB rejection 6 kHz away from the normal operating frequency, making the NRB4 much better in situations where there is interference in adjacent channels. A crystal filter version of the NRB4 is available as an option for monitoring compatible sideband signals.

### Alarms

Adjustable thresholds and time delays enable the NRB4 to provide alarms in the event of reduction in carrier power, reduction in modulation depth, loss of keying, or changeover on a dual beacon. Alarm indications are visual LEDs and external contact closures for remote signaling. An internal speaker and an external audio connection provide for NDB audio monitoring.

### Alignment and Test

Installation, alignment and check out procedures may be conducted without additional equipment. A test button simulates a 3 dB signal reduction for testing receiver and alarms.

### Nautel's NLA/2 Loop Antenna

Nautel's NLA/2 active ferrite loop antenna is used in conjunction with the NRB4. A versatile mounting bracket makes it easy to install on flat surfaces or on a 2.5 inch diameter, vertical pipe. Tuning is accomplished with easily adjustable links. The NLA/2 replaces the popular Nautel Model NLA/1.



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## NRB4 Specifications

### Frequency Range

190 kHz to 650 kHz  
Optional 1600 kHz to 1800 kHz

### Frequency Control

Direct Digital Synthesizer

### Frequency Stability

$\pm 0.0003\%$  or better over the full environmental range

### Intermediate Frequency

4.4 MHz

### Type of Reception

- A2A: Amplitude Modulated Double Sideband
- H2A: Amplitude Modulated Single Sideband

### Input Impedance

50 ohms (type "N" connector)

### Sensitivity

Better than 10 dB minimum signal to noise ratio for a 5.0  $\mu\text{V}$  30% modulated signal

### Useable Signal Range

5  $\mu\text{V}$  to 100 mV

### RF Bandwidth

20 kHz

### Selectivity

Crystal Filter controlled:

- A2A: Bandwidth  $\pm 2$  kHz minimum at 3 dB. Attenuation at 6 kHz, 50 dB minimum.
- H2A: Bandwidth 1.5 kHz minimum at 1.5 dB. Attenuation at 6 kHz, 60 dB minimum.

### Spurious Responses

Not exceeding -60 dB for any 5 mV out of band input signal

### Image Rejection

Not less than 70 dB

### Intermodulation

Not exceeding -50 dB for two 5 mV signals within the RF passband

### Audio Output

Direct Digital Synthesizer

- 0.5 W into a panel mounted speaker
- 10 mW into balanced 600 ohm line

### Carrier Alarm Threshold/Delay

3 dB or greater reduction in carrier signal level for more than 15 seconds  $\pm 5$  seconds

### Modulation Alarm Threshold/Delay

- A2A: 3 dB or greater reduction in modulation level after adjustable delay of 0.6 to 60.0 seconds
- H2A: 3 dB or greater reduction in modulation level after adjustable delay of 0.2 to 3.0 seconds

### Environmental Limits

- 0°C to 55°C
- 0% to 95% relative humidity

### Power Requirements

102 V ac to 132 V ac or 204 V ac to 264 V ac, 48.7 Hz to 61.5 Hz, 30 VA maximum, or optional 24 V dc to 28V dc at 400 mA maximum

### Dimensions

13 cm H x 48 cm W x 24 cm D  
(5.25" H x 19" W x 9.5" D)

### Weight

3.6 kg (8 lbs)

*Specifications defined in a laboratory environment with high grade source and demodulation equipment. Standard factory measurement does not include all listed items.*

## NLA/2 Specifications

### Tuning

Adjustable links

### Frequency Range

190 kHz to 650 kHz  
Optional 1600 kHz to 1800 kHz

### Effective Height

0.2 m

### Useable Signal Range

50  $\mu\text{V}/\text{m}$  to 2.5  $\mu\text{V}/\text{m}$  (in conjunction with NRB)

### Output Impedance

50 ohms (type "N" connector)

### Pattern

Figure-of-eight (allows notching out of high level interfering signals)

### Power Requirements

+12 V dc at 50 mA phantom fed on RF cable from NRB4

### Environmental Limits

- -50°C to +55°C
- 0% to 100% relative humidity

### Mounting, Bracket

Provided for mounting on a flat vertical surface or a vertical 6.4 cm (2.5 in.) diameter pipe

### Dimensions (with bracket)

9 cm H x 30 cm W x 25 cm D  
(3.5" H x 12" W x 10" D)

