

# Vector NDB Series

FEATURES ISSUE 5.6  
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## 500 W, 1,000 W and 2,000 W NDB Transmitter

### ATU Control (If ATU-HP or ATU-LP used)

Control available over a serial RS485 connection, 1,000 m (3,280 ft.) maximum.

Resistive Match Servo Inhibit

Inductive Tune Servo Inhibit

Increase/Decrease Resistive Match

Increase/Decrease Inductive Tune

### ATU Monitor (If ATU-HP or ATU-LP used)

Monitoring available over a serial RS485 connection, 1,000 m (3,280 ft.) maximum.

Antenna Current

Resistive Match Servo Inhibited

Inductive Tune Servo Inhibited

Resistive Match Limit

Inductive Tune Limit

Local/Remote

Set-up Mode

ATU Temperature

Fan Fail

### Monitor Failure Thresholds

Adjustable threshold normally set so that changeover can occur if:

- Carrier power reduces more than 3 dB
- Carrier power increases more than 2 dB
- Modulation level reduces more than 4 dB
- Incorrect identification code

In current feedback mode (if used with Nautel's ATU-HP, ATU-LP), the output power automatically adapts to ensure a constant antenna current.

As the output power level changes, the fault thresholds adjust to reflect the new output power level. Essentially, when in current feedback mode, the fault thresholds are referenced to the preset antenna current.

### Transmitter Local/Remote Control

#### Including but not limited to:

Control available using RS422 or RS232

Operating Side (A/B)

Transmitter Reset

Automatic Side Switchover Enable

Transmitter Power (On/Off)

Power Source (AC/DC)

Increase/Decrease RF Power

### Transmitter Local/Remote Monitor

#### Including but not limited to:

Monitoring available using RS422 or RS232

Keying (On/Off)

Modulation (On/Off)

Transmitter temperature

Operating Side Status

Main Side Selected

Power Source (AC/DC)

Interlock Open

Local / Remote

Press to Talk

Monitor Bypass

RF On Status

VSWR Alarm

Audio Limit

Low AC

Memory Battery

Changeover

Shutdown

Monitor Failure

Fault location to the lowest replaceable unit

### Metering

#### (Analog meter and digital display)

Forward Power, Reflected Power, Antenna Current, Modulation Percentage, DC Voltages, DC Current, VSWR, AC Voltage, Transmitter and ATU Temperature, PA Volts

### Keying

Microprocessor controlled for ease of programming. The keyer is capable of programming the following:

- Generation of 1, 2, 3, 4, 5, or 6 Morse letters or numbers (International)
- Generation of 1, 2, 3, or 4 Morse letters or numbers (Canada)
- Frame length of 4 to 20 seconds.
- Sequence repetition
- Standby codes

### Shipping

Export packed in wooden crate

All assemblies to remain in transmitter for shipment

ISTA Procedure 1B compliant

### Options

Dual Operation

144 V dc back-up operation for Vector 500 and Vector 1000

Battery charger

ATU-HP or ATU-LP

Extended warranty

CSA inspection

NDB site control/monitor

Modem

USB

NDB remote control application software

\*48 V dc back-up operation

*\*available only for Vector 500 transmitter output power limited to 250 W when operating on 48 V dc*

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## 500 W, 1,000 W and 2,000 W NDB Transmitter

### Modulation Level

Adjustable from 0% to 95%

### Continuous Carrier Power

500 W, 1,000 W and 2,000 W maximum - NON/A2A/A2A & A3E

All are adjustable from 10% to 100% of maximum

### Frequency Range

Single channel

Synthesized with 100 Hz steps

190 kHz to 535 kHz standard band

### Frequency Stability

± 0.0003% over full environmental range

### Emission Mode

NON (CW no modulation)

A2A (MCW double sideband keyed tone)

A2A & A3E (Simultaneous AM double sideband telephony and MCW double sideband keyed tone)

### Internal Keyed Tone Frequency

400 Hz or 1,020 Hz ± 5%

### External Audio Input Level

-20 dBm to +10 dBm across balanced 600 ohm load with audio limiter

### Audio Frequency Response

±2 dBm from 300 Hz to 3,000 Hz (A3E)

### RF Terminating Impedance

50 ohms unbalanced

## Maximum Reflected Power Threshold

Product	Peak Reflected Watts
Vector 500 NDB	30 W
Vector 1000 NDB	60 W
Vector 2000 NDB	120 W

*\* The above peak reflected watts causes stepped reduction in output power until reflected power is less than maximum peak reflected watt threshold*

Product	Peak Reflected Watts
Vector 500 NDB	80 W
Vector 1000 NDB	160 W
Vector 2000 NDB	320 W

*\* The above peak reflected watts causes instantaneous reduction in output power to 0 W.*

Changeover and shutdown are inhibited when reflected power thresholds have been exceeded.

### Harmonic Levels

Not exceeding -80 dB relative to carrier when used in conjunction with an ATU-HP into a standard antenna load.

Not exceeding -70 dB relative to carrier when used in conjunction with an ATU-LP into a standard antenna load.

### Hum and Noise

Not exceeding -50 dB relative to 1,020 Hz at a modulation level of 95%

### Audio Distortion

Less than 3% at 95% modulation

### MTBF Transmitter

Greater than or equal to 15,072 hours using MIL-HDBK 217E calculation methods

Field experience indicates MTBF in excess of 3,000,000 hours for Nautel NDBs.

### MTTR Transmitter

Less than or equal to ½ hour at PWB/module level

## Electromagnetic Compatibility

Designed for compliance with applicable standards

## ESD

Designed for compliance with applicable standards

## AC Efficiency

70% AC input to RF output

## Environmental Limits

Operating:

-10°C to +55°C

0% to 95% relative humidity

Storage:

-30°C to +70°C

0% to 95% relative humidity

Climate

Any including tropical

## Altitude

Up to 3,048 m (10,000 ft)

## Safety

Compliant with Nautel Internal Safety Audit.

Compliant with EN60215:1996 Safety Requirements for Radio Transmitting Equipment.

Designed with intent to comply with Safety Code 6 and/or IEEE C95.1-1999 when used with Nautel ATU-HP or Nautel ATU-LP.

## Compliances

Compliant with ICAO Annex 10 Volume 1 Part 1 Section 3.4

Compliant to Industry Canada RSS-117

Designed with intent to comply with R&TTE Directive 1999/5/EC.

ANATEL certified

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## Dimensions

(Includes side panels, rear door  
and output connector)

186.7 cm H x 58.4 cm W x 75.2 cm D  
(73.5 in. H x 23.0 in. W x 29.6 in. D)

## Weight (Unpacked)

Vector 500 121 kg (265 lbs)

## Weight (Packed)

Vector 500 168 kg (371 lbs)

## Power Requirements

Product	Power Requirements
Vector 500 NDB	single phase 170 V ac to 270 V ac, 50/60 Hz 1550 VA maximum, dc 144 V dc @ 6.9 A
Vector 1000 NDB	single phase 170 V ac to 270 V ac, 50/60 Hz 3100 VA maximum, dc 144 V dc @ 13.8 A
Vector 2000 NDB	single phase 170 V ac to 270 V ac, 50/60 Hz 6200 VA maximum

*\*dc input is reverse polarity protected and has low battery disconnect.*

## Cooling and Heat Flushing

(Forced Air pressure)

Product	Normal Operation cu. ft/min
Vector 500 NDB	110
Vector 1000 NDB	220
Vector 2000 NDB	440

*\* additional 55 cu. ft/min when operating from external 48 V dc and 110 cu. ft/min when operating from external 144 V dc.*

## Notes:

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

SPECIFICATIONS SUBJECT TO CHANGE  
WITHOUT NOTICE.