Network Base Station

BA0031-A

User Manual

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FCC Warning

FCC Warning
Modifications not expressly approved by the manufacturer could void the user authority to operate the equipment under FCC Rules.

To comply with FCC RF Exposure requirements, the antenna(s) used for this transmitter must be fixed-mounted on outdoor permanent structures with a separation distance of at least 2 meters from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Installation of BA0031 NTR:

Installation of Model BA0031 and associated antennae (internal and external) must be performed by trained professionals only.

The following antennae (or equivalent) should be used for the various BA0031 models.

BA0031-I:	Antenna Model – Internal Patch (Sensus Drawing Number 7300574), (4dBi)
BA0031-E:	Amphenol Antel BCD-8243 (5.15dBi Omni)
BA0031-R:	Amphenol Antel BCD-87066 (8.15dBi Omni)

General

This document describes the installation of the *Network Base Station* (NBS) / *Network Repeater* (NTR).

The device has 3 different models:

- ***BA0031-I*** – Two-way device with internal antenna. Works as NBS or NTR.
- ***BA0031-E*** – Two-way device with connector for external antenna. Works with Antel's BCD-8243, 3dBd omni antenna (ONLY). Works as NBS or NTR.
- ***BA0031-R*** – Receive only device with connector for external antenna. Antenna type is not restricted. Works as 'receive only' NBS. Does not support NTR mode.

Installation

Installation Steps

1. Install the supplied 'LabVIEW' Run-Time engine and the configuration program 'Base II v1.12' in your PC by following the procedure described in Software Package Installation.
2. Disassemble the device top cover.
3. Insert the Ethernet backbone communication cable (not supplied, used in Base Station mode only) and the output cord of the 115VAC to 9VAC transformer (supplied) via the cable entries and connect them.
4. Plug the transformer to 115VAC source.
5. Use the serial communication cable (supplied) to connect available COM port on your PC to the device Console Port (RJ45 connector).
6. Configure the device by following the procedure described in Device Configuration
7. Disconnect the serial communication cable and assemble the top cover.
8. Mount the device and connect to external antenna if applicable.

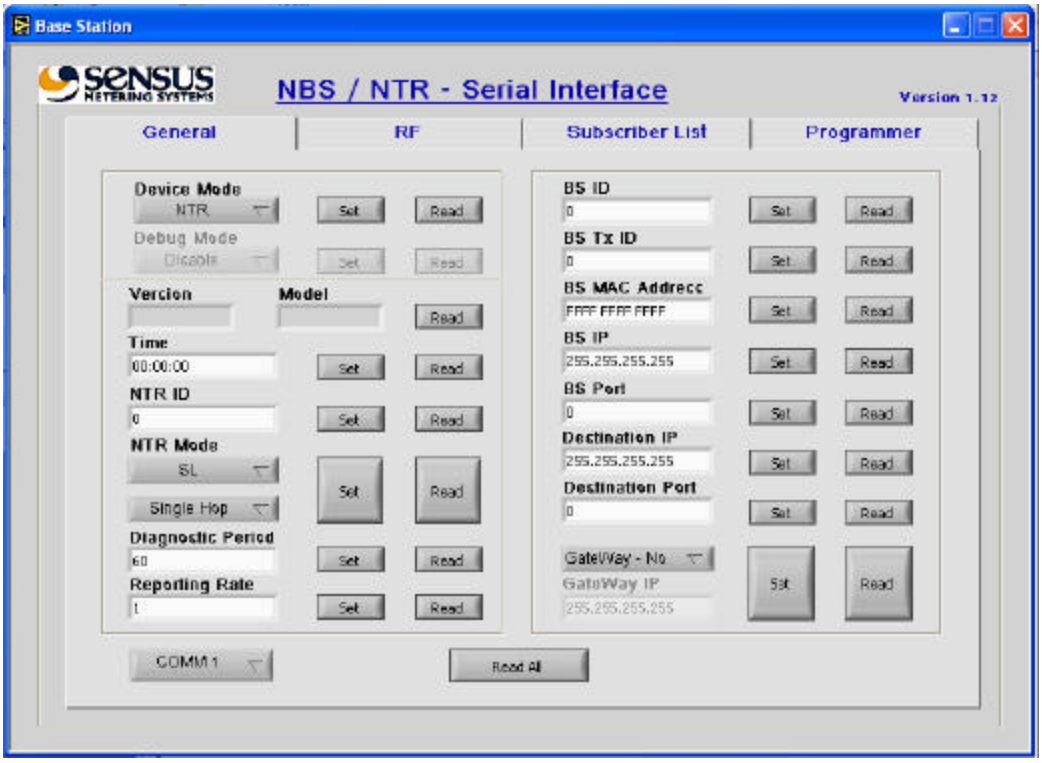
Software Package Installation

1. Insert the supplied CD-ROM. Open the folder 'LabVIEW Run-Time' and double click on 'lvrteinstall.exe'. Next, follow the instructions of the installation program.
2. Create new folder on your PC and copy the file 'Base II v1.12.exe' from the supplied CD-ROM to the new folder.
3. Double click the file to run the program 'Base II v1.12'.

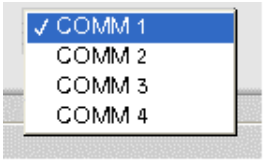
Device Configuration

Device Mode Setting

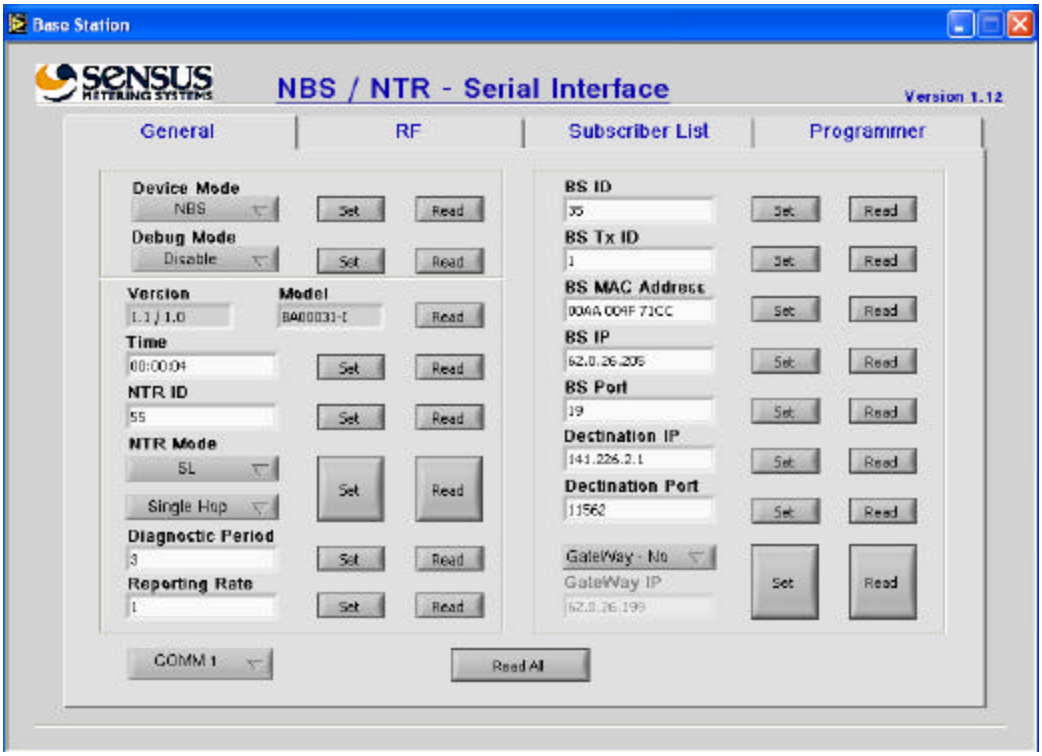
1. Run the ‘Base II v1.12’ program.
2. Select ‘General’ tab.



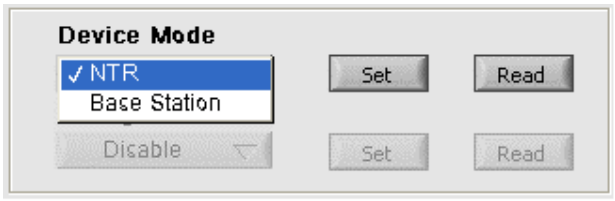
3. Set to proper PC COMM port.



4. Press ‘Read All’. Verify the device model (BA0031-I, E or R) and version.



5. Set ‘Device Mode’ to ‘NTR’ (BA0031-I & BA0031-E models) or ‘NBS’ (all models). Set ‘Debug Mode’ to ‘Disable’.



Device Mode – NTR (BA0031-I & BA0031-E models)

1. Set the 'NTR ID' – The device uses this ID when transmits diagnostics and report messages. The ID range is 1 to 16,777,215.

2. Set the 'NTR Mode'. In 'ReTx All' mode the device retransmits every message it receives. In 'SL' mode the device retransmits received messages that were initiated by subscribers listed in the Subscriber List (SL). When working in 'SL' mode the device either retransmits the received messages as it receives them ('Single Hop' mode) or replaces the 'Type' of the received message with 'ReTx Type' taken from the stored Subscriber List ('Chain' mode).

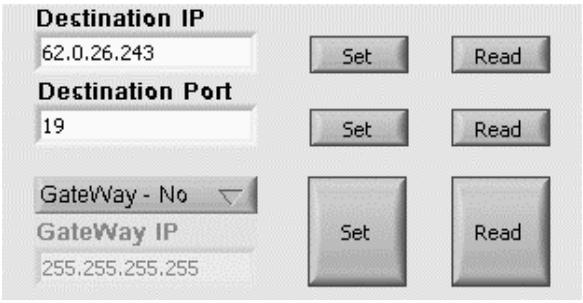
3. Set the 'Diagnostic Period' and 'Reporting Rate'. Once every 'Diagnostic Period', in minutes, the device is generating diagnostics message summarizing the reception and transmission activity in last 'Diagnostic Period' minutes. After the transmission of the diagnostics message the device transmits number of Subscriber List report messages according with the number set in the 'Reporting Rate' field. In every report message the device reports the contents of two lines from the Subscriber List. And so, if, for example, the Subscriber List contains 100 lines (100 subscribers) it takes 50 report messages to send the whole list.

Device Mode – NBS (all models)

1. Set 'BS ID' and 'BS Tx ID'. The device uses the 'BS ID' for identification when sending or receiving messages in the backbone communication link. The range of 'BS ID' is 1 to 65,635. The device uses the 'BS Tx ID' when transmitting air messages. The range of the 'BS Tx ID' is 1 to 16,777, 215.

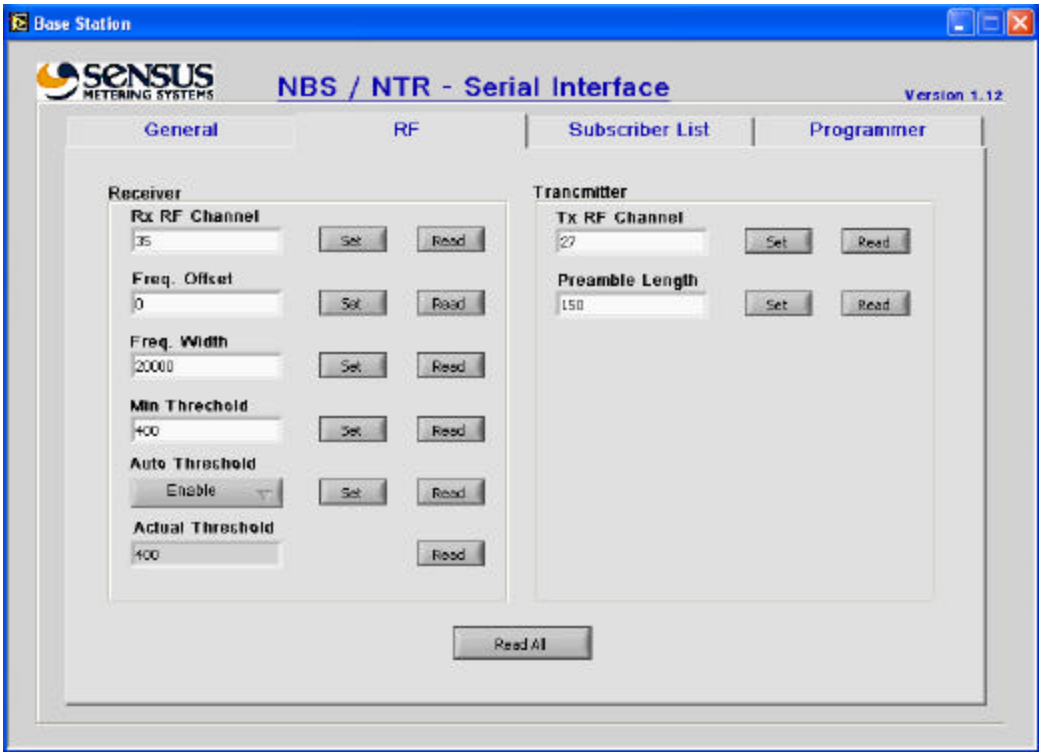
2. Set the device IP parameters. Set 'BS IP' and 'BS Port' address. The 'BS MAC Address' is configured in the factory.

3. Set the destination IP address. If necessary set a gateway address also.



RF Parameters Setting

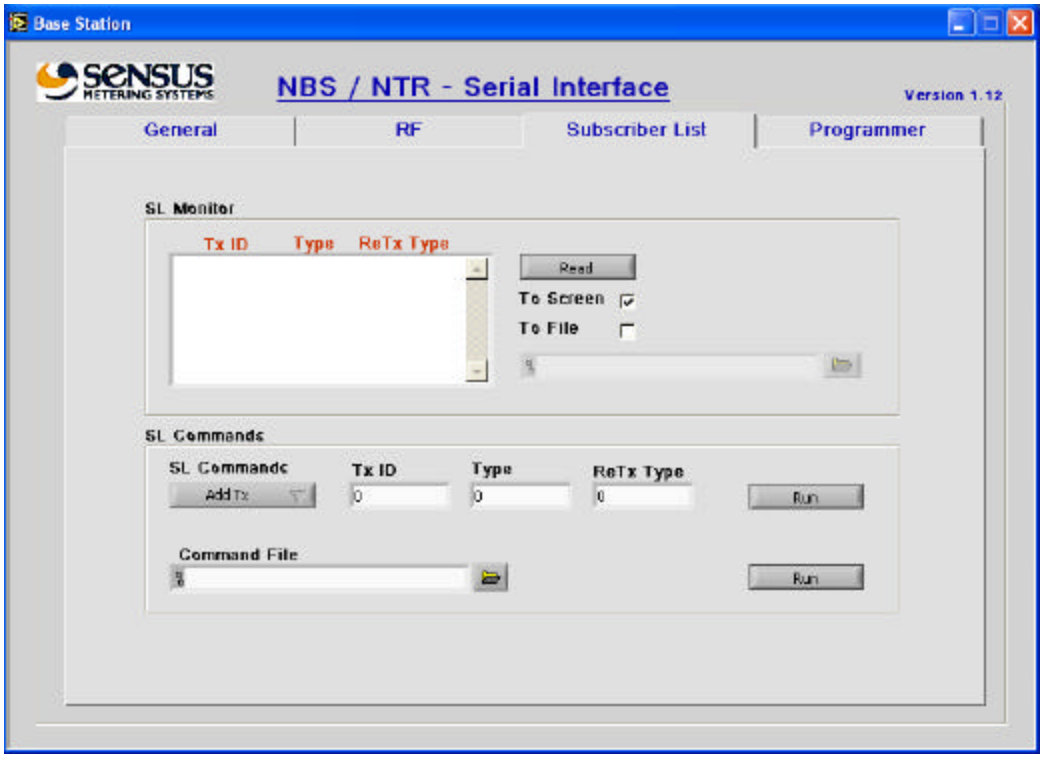
1. Select 'RF' tab.



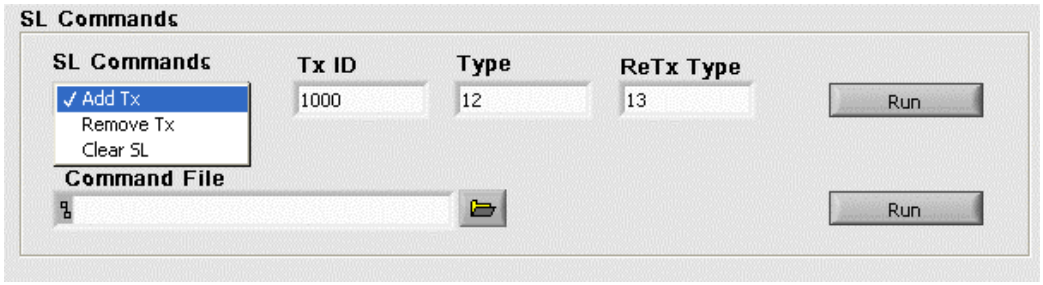
2. Set 'Rx RF Channel' and 'Tx RF Channel' (BA0031-I & BA0031-E models). The Channel range is 5 (904.6MHz) to 57 (925.4MHz). The channel spacing is 0.4MHz.
3. The rest of the parameters are configured in the factory to:
   - Freq. Offset – 0
   - Freq. Width – 20000
   - Min Threshold – 300
   - Auto Threshold – Enable
   - Preamble Length – 150.
4. When 'Auto Threshold' is enabled, the threshold is reset to the 'Min Threshold' value once every hour. The device increases automatically the threshold if the false alarm rate is high. The current value can be read in the 'Actual Threshold' field.

Subscriber List Setting (NTR mode, BA0031-I & BA0031-E models)

1. Select the 'Subscriber List' tab



2. The stored Subscriber List can be read from the device to the screen, file or both.
3. You can add or remove subscriber from the list or clear the whole list. These commands can also be generated from a command file.



4. Command file examples:
   - Command file's text line 'ADD 400 1 2', adds subscriber 400 with message type 1 and retransmit type 2 to the subscriber list.
   - Command file's text line 'REMOVE 400 1', removes subscriber 400 with message type 1 from the subscriber list.
   - Command file text line 'CLEAR' clears the subscriber list.