

# User manual The AR200

### Amendment List

| Amendment No. | Date           | Initials | CN Number(s) applicable and Remarks |
|---------------|----------------|----------|-------------------------------------|
| Rev 3         | 22 August 2002 | E.O.     | Rev 3 for FCC documentation         |

### ERRORS AND OMISSIONS

The usefulness of this publication depends upon its accuracy. Whilst every endeavour has been made to eliminate errors, some may exist, it is therefore requested that any errors or omissions noted be advised as follows.

Please quote:

- (a) Title of publication
- (b) Ref No and issue No.
- (c) Last amendment No received
- (d) Page and/or Fig No In error

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# **1 PRODUCT DESCRIPTION**

The Advantra Model AR200 is a Telemetry module. This product is to be compatible with the so-called 2.6 requirements of the ReFLEX™ specifications.

The module has two connections. One connection is the antenna port, the other connection is the data port / power supply. The host device will talk to the module over this data port and will instruct to execute some commands.

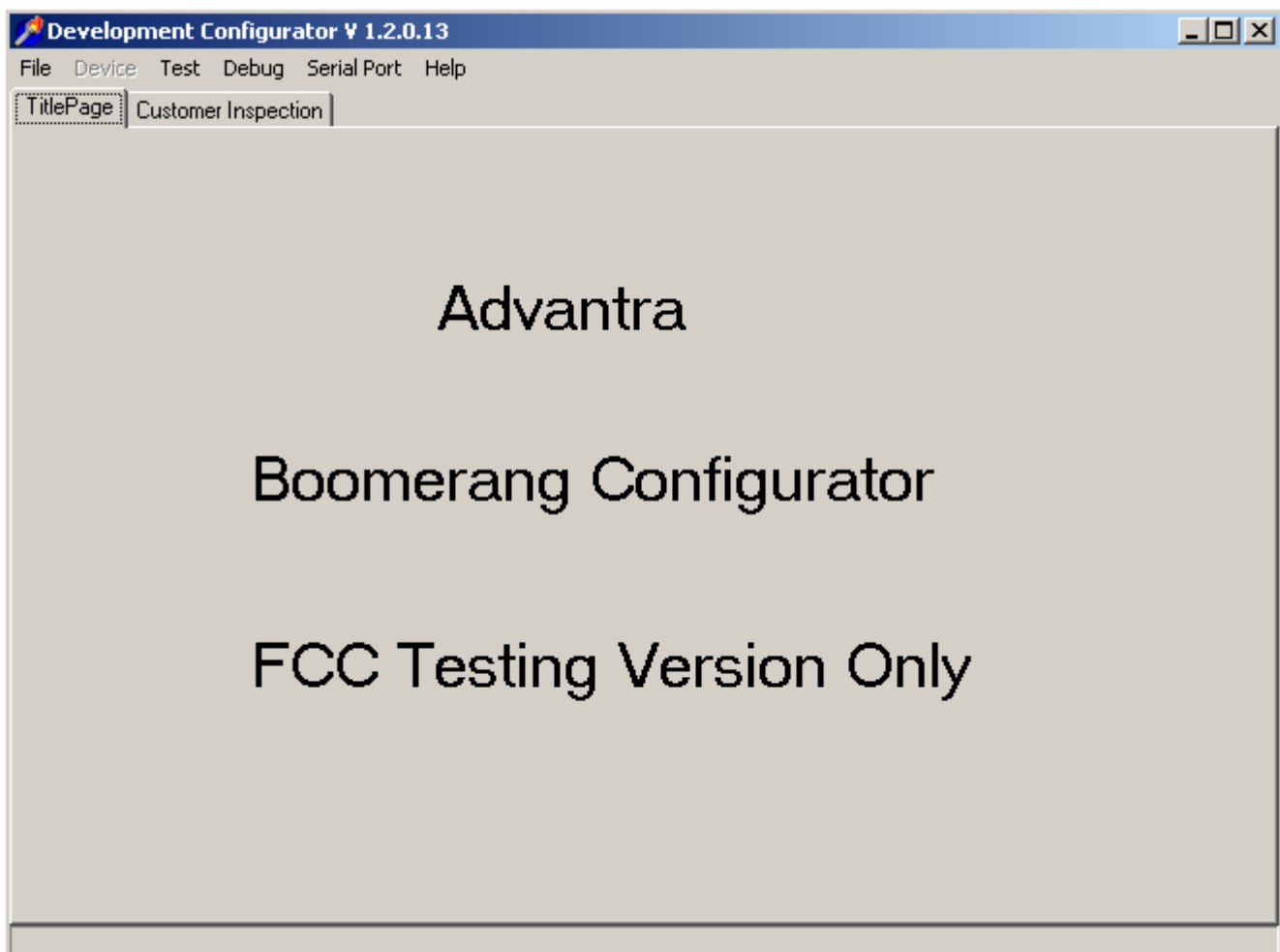
To use the device on a ReFLEX™ network, the device must be configured and this also happens over this data port. To be able to configure the device, a specific windows application exists. More explanations on that windows application 'Configurator' can be found in the sections below.

## **2 DEVICE CONFIGURATOR**

When starting up the software 'Configurator' a screen will pop up with a menu bar and two tab sheets. The menu bar has 6 possibilities: File, Device, Test, Debug, Serial Port and Help. The two-tab sheets are Title Page and Customer inspection. In this section all possibilities with this menu's and tab sheets will be explained. Before operation is possible, check item 2.4 Menu item 'Device'.

### **2.1 Tab sheet 'Title Page'**

Depending on who is using the device, a specific configurator exists. There are configurators for development, network providers, service, repair and FCC. The functionality of the device doesn't change but the number of options available is different. (Example, a customer is not allowed to change the ReFLEX address, no one out of development is allowed to change passwords, ...). On the tab sheet 'Title Page' info on the type of configurator is given.



## 2.2 Tab sheet 'Customer' inspection'

The screenshot shows the 'Development Configurator V 1.2.0.13' window with the 'Customer Inspection' tab selected. The interface contains the following elements:

- Product ID**: A text input field.
- Build ID**: A text input field.
- Frequency (Hz)**: A text input field containing the value '0'.
- Checksum 0**: A text input field containing the value '0'.
- Checksum 1**: A text input field containing the value '0'.
- Personal Address**: A text input field containing the value '0'.
- Sales Variation Code**: A text input field.
- Customer Reference**: A text input field.
- Read**: A button located to the right of the Customer Reference field.

In the tab sheet 'customer inspection' following items can be found.

- Product ID
- Build ID
- Frequency (Hz)
- Checksum0 & Checksum1
- Electronic Serial Number
- Personal Address
- Customer Reference
- Read-button

### 2.2.1 Product ID

The Product ID is a four-character ASCII string identifying the product:  
This data is "Retrieve" only which means it cannot be reprogrammed.

### 2.2.2 Build ID

The Build ID is a three character ASCII string identifying the software builds in the range: 001 to 999. This data is “Retrieve” only which means it cannot be reprogrammed.

### 2.2.3 Frequency (Hz)

This is the first frequency in the Global Scan List. This means this is the first frequency the Device will try to find the network.

### 2.2.4 Checksum0 & Checksum1

| Item       | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Checksum 0 | <p>This is a four digit hexadecimal number indicating the Fletcher checksum of the ReFLEX Addresses index 1 to index 31 inclusive, and their associated options.</p> <p>The checksum is formed from the data for each Address as shown in the Add Address command, excluding the index value. The complete set of data for each address is added to the checksum before moving to the next index. The checksum excludes the Personal Address.</p> <p>This command is “Retrieve” only.</p>                                                                                                                                                              |
| Checksum 1 | <p>This is a four digit hexadecimal number indicating the Fletcher checksum of the ReFLEX Configuration Data.</p> <p>The checksum excludes the following items of ReFLEX Configuration Data:<br/>Personal Address and associated options (address index 0);<br/>Information Service Addresses and associated options (address indexes 1 to 31);<br/>Reference Oscillator DAC structure values;<br/>Transmit Power Amp Ramp values;<br/>VCO Modulation values;<br/>VCO Offset;<br/>Reference Oscillator Modulation values;<br/>Reference Offset;<br/>Reference Oscillator Mod Factors;<br/>VCO Mod Factors.</p> <p>This command is “Retrieve” only.</p> |

### 2.2.5 Electronic Serial number

|                          |                                |            |                                |            |                                |
|--------------------------|--------------------------------|------------|--------------------------------|------------|--------------------------------|
| Build ID                 | <input type="text"/>           | Checksum 0 | <input type="text" value="0"/> | Checksum 1 | <input type="text" value="0"/> |
| Electronic Serial Number | <input type="text"/>           |            |                                |            |                                |
| Personal Address         | <input type="text" value="0"/> |            |                                |            |                                |

The Electronic Serial Number is a unique identifier for the Device and contains Product Identification data required for products and their primary packs, OEM's, and any other merchandise to enable identification and trace ability.

This data is "Retrieve" only which means it cannot be reprogrammed.

SSSSS      A five character ASCII string used to create an unique Sequential Serial Number

00000 – ZZZZZ = range of values

Except for the letters I, L, O, S, Z, which are not allowed to avoid confusion with the number 0,1,2 and 5.

### 2.2.6 Personal Address

This is a Two-Way address, which can be used to send and receive messages.

### 2.2.7 Customer reference

This is a unique customer identifier.

It is a two-character ASCII string identifying the customer. Any two characters in the range A to Z can be used. The following are reserved:  
AD = Advantra.

### 2.2.8 Read button

Pushing this button reads the information of this tab sheet out of the Device.

## 2.3 Menu item 'File'

Data of a device can be stored under this menu. Data can also be picked up through 'open' and selecting the wanted file with extension '.adv'.

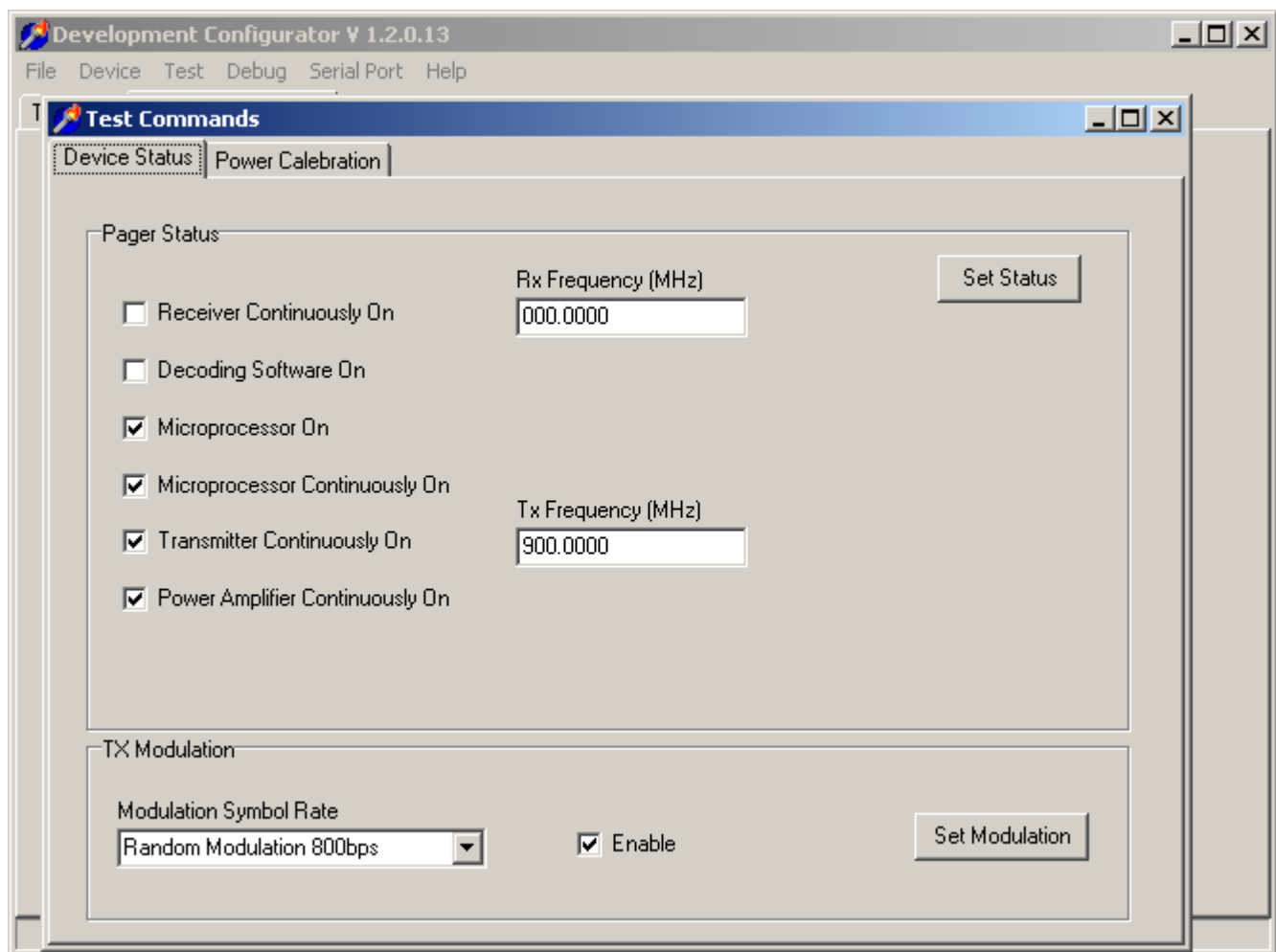
## 2.4 Menu item 'Device'

Starting the software with no device connected, the word 'Device' in the menu bar will have another colour that the other items in the menu bar. Once the device is well connected through a hardware interface to the correct COM port, the word 'Device' will become the same colour as the other items in the menu bar.

## 2.5 Menu item 'Test'

### 2.5.1 Test / Device status

Select from the Test Commands window, [Device Status] folder.



#### 2.5.1.1 Receiver Continuously On

Select [Receiver Continuously On] followed by [Set Status]. This will permanently enable control signal IFE, which in turn enables the transceiver power supplies VRF. It is assumed that receiver tests on the device will be done with the receiver in this test mode.

Note: Test Commands in [Device Status] folder are automatically reset when the power supply is removed or the product is warm started in the Test Command folder.

#### 2.5.1.2 Decoding Software On

Select [Decoding Software On] followed by [Set Status]. This action turns on the decoding software. Since this item is necessary on when receiver tests are done, this item is automatically on when 'receiver continuously on' is chosen.

#### 2.5.1.3 Microprocessor On

Select [Microprocessor On] followed by [Set Status]. Microprocessor on is used in cases where current savings are required. Cause the micro controller goes sleeping between certain actions. This function is the basic of all actions so this should always be turned on.

#### 2.5.1.4 Microprocessor continuously on

Select [Microprocessor continuously On] followed by [Set Status]. The micro controller is constantly on.

#### 2.5.1.5 Transmitter continuously on

Select [Transmitter continuously On] followed by [Set Status]. The transmitter is turned on but the power amplifier is still disabled. This will enable the transmitter power supply functions, which supply the TX Buffer.

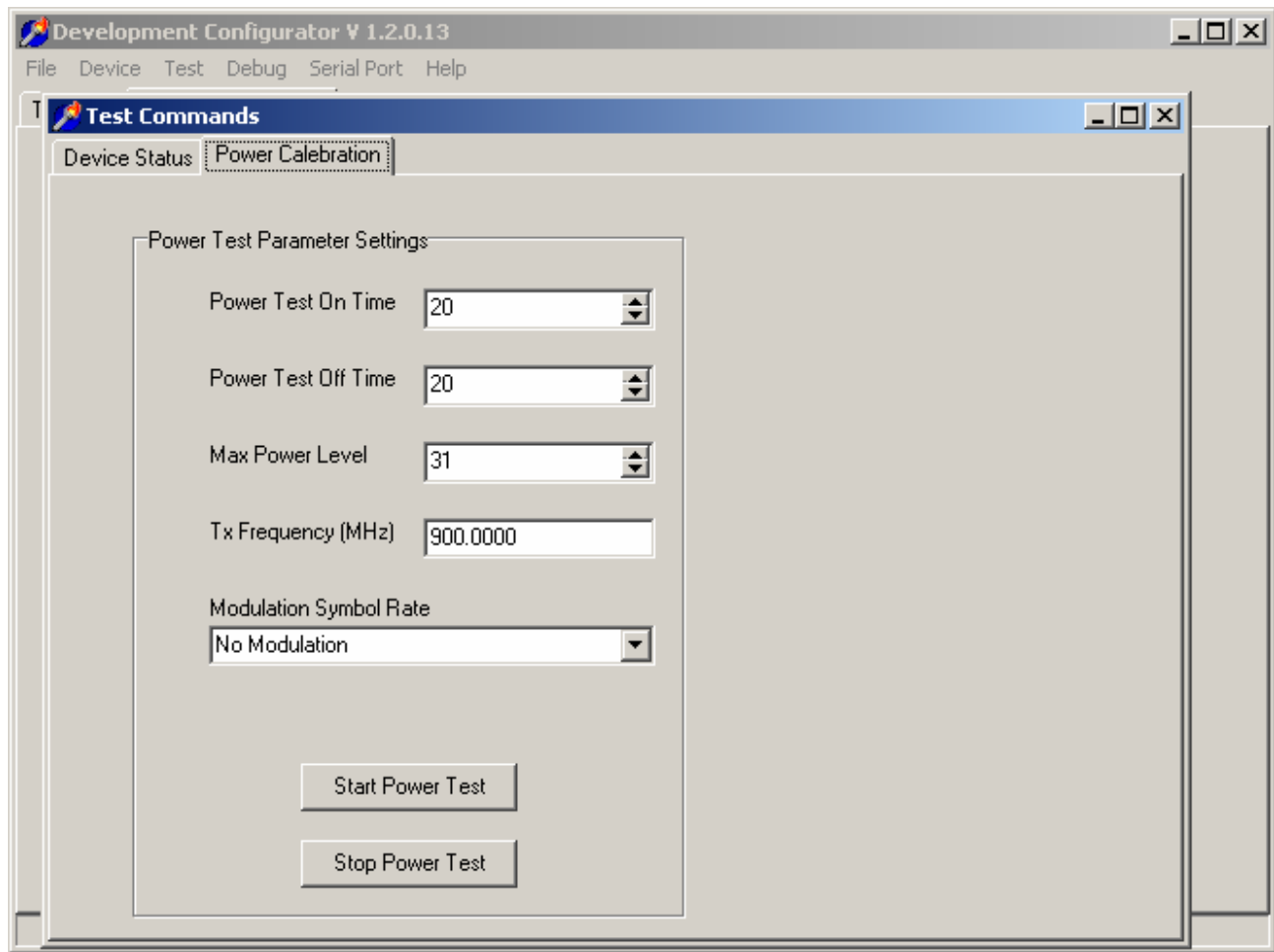
#### 2.5.1.6 Power Amplifier continuously on

Select [Power Amplifier continuously On] followed by [Set Status]. This functions turns on the power amplifier. Together with this action the transmitter is also turned on.

#### 2.5.1.7 TX Modulation

When the transmitter and/or power amplifier is on, a certain type of modulation can be chosen. By example random modulation 800 bps, random modulation 6400 bps, ... Select [Modulation Symbol Rate] followed by [Set Modulation] and the modulation will start.

## 2.5.2 Test / Power calibration



In this menu, specific power tests can be performed. The On/Off time can be chosen, the maximum power level and also the wanted frequency to transmit on. Also a modulation symbol rate can be chosen. With the [Start Power Test] and [Stop Power Test] the power amplifier is turned on and off.

## 2.6 Menu item 'Debug'

Under this item the traffic from and to the device can be checked.

## 2.7 Menu item 'Serial port'

Under this item as 'COM' port must be chosen, depending on which port the interface is connected to.

## 2.8 Menu item 'Help'

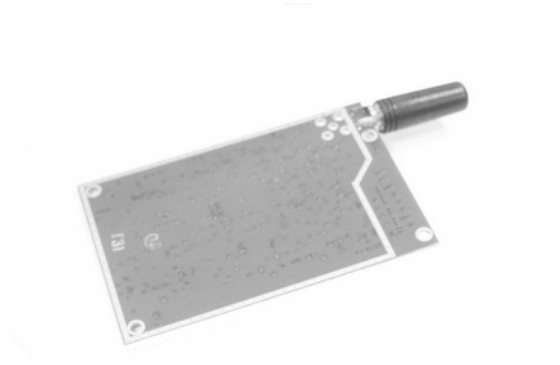
Under this item there is a Help-file, which is actually this user manual.

### **3.0 Antenna connection and RF safety**

An antenna has to be connected to the SMA connector which is the RF output of the device. Suitable antennas are these with a gain around 0dBi and VSWR better than 2:1.

The frequency band of the antenna should be 896 -942MHz.

Suitable antenna is Mobile Mark type PSTG0-925HS. This is a helical antenna with 0dBi gain and 870MHz-960MHz frequency band. The antenna has a SMA connection.



For RF safety reason 20cm must be maintained between the transmitter radiating structure and the body of the user or nearby person.

**Power density AR200**

