AcuTrac III

Ka/Ku Band Satellite Signal Meter

USER MANUAL

PERFECT VISION SATELLITE ACCESSORIES

CONTENTS:

The ACUTRAC III wide-band meter is manufactured in Sweden by Emitor AB and distributed exclusively by Perfect 10 Satellite Distributing.
Perfect 10 Satellite Distributing honors the manufacturer's warranty period of one year from the date of the original purchase and reserves the right to, at our discretion, service, repair, or exchange products which are defective as a result of any defect in the manufacturing process, or workmanship. This warranty does not extend to product damaged as a result of abuse, neglect, or mishandling. Proof of purchase (with imprinted date of sale and serial # from said unit) are required to obtain a return authorization from the returns department at Perfect 10 Satellite.

Please check all contents upon receipt, for damaged, or missing product and report to your point of sale.

Questions or comments concerning returned product, technical information, or the use of this product may be directed to:

Perfect 10 Satellite Distributing at www.perfect-10.tv or, 800 205 8620 (M-F 8am - 5pm, CST)
or
Emitor AB, Stockholm, Sweden at www.emitor.se or, +46 (0)8 775 00 01

SPECIFICATIONS:

Input Frequencies: (3)

Ka Hi - 1650-2150MHz
Ku - 950-1450MHz
Ka Lo - 250 - 750MHz

Inputs: (2) Field-replaceable ports (Standard F-81 barrel connectors)
* To LNB
* To Satellite Receiver (for optional in-line/Loop Through)
(one 75 ohm terminator)

Method of signal strength measurement:

LCD Thermometer-type scales - non-specific numerical reference in "tenths" are to be maximized for the highest possible reading of the analog carrier wave.

Power Source: Internal-(8) AA rechargeable NiMH cells with a 1200mAH capacity rating (will accept standard Alkaline batteries for powering on (Non rechargeable) for short term use.
The Acutrac III may be connected in-line between the dish and receiver for the optional "Loop-through" mode, with the satellite receiver supplying power to the LNB through the meter.

Chargers: AC wall transformer included (12VDC 500mA), as well as the DC auto charging cord (12VDC center-pin positive).

The Acutrac III has a data port located on the top-end of the meter for future use in receiving upgrades.

To expose the Data Port, remove the outer case covering. The Data Port is located on the opposite end of the Acutrac III from the DC charging port/F-connection end.

The Acutrac III was developed primarily for the installation of the DirecTV AT9 5-LNB dish assembly which utilizes the reception of Ku Band and Ka Band signals from DirecTV's 5 satellites at the 99, 101,103, 110, and 119 West orbital locations.

Parameters are pre-set and are accessed through one button with 4 mode options of the settings dictated in the AT9 Installation Guide. The Acutrac III has been tested and approved for use with the AT9 by DTV.

The Acutrac III was designed to be an affordable, compact satellite signal meter that is capable of reception of both the Ka Band signals and the Ku Band signals The incorporated data port on the meter will allow the Acutrac III to remain flexible with future expansion and developments by giving the user simple access to firmware, or software upgrades.

As more satellites actively begin transmitting in the Ka Band widths, the Acutrac III will become increasingly more dynamic in functions. At the time this manual was written, only the Ku Band and Ka Band (Hi) scales will be used.

The ACUTRAC III meter is supplied with 8 “AA” NiMH rechargeable cells and an AC transformer charger, as well as a DC car charger.
A 75 ohm terminator is included for meter-only alignment applications. The terminator comes already attached to the meter’s “Receiver” port. The F connectors are field-replaceable and should be replaced with F-81 barrel connectors (hi frequency).
The ACUTRAC III is protected by a neoprene rubber outer case, with adjustable carrying strap, and is easily removed (see below) for access to the battery compartment.

Remove and re-insert the meter into the rubber case cover “input side first” (see illustration to right).

After removal from the protective case covering, you may access the battery compartment door on the back of the meter. (See illustration below).

NOTE - The Acutrac III meter does not have a battery strength indicator. If the meter will not power on or fails to stay powered on, you may need to charge the batteries.

CHARGING THE BATTERIES:

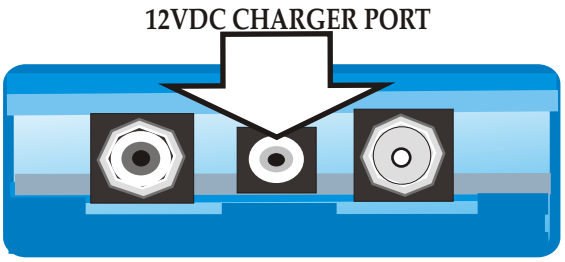
Remove the outer case, then access the battery compartment on the back of the meter. Insert the "AA" rechargeable cells into the tray compartments as indicated by the battery diagram in each individual cell holder.

Next, plug the AC wall charger into a common household outlet before connecting the charger plug in the meter's DC charger port (see diagram lower-right, for location of port).

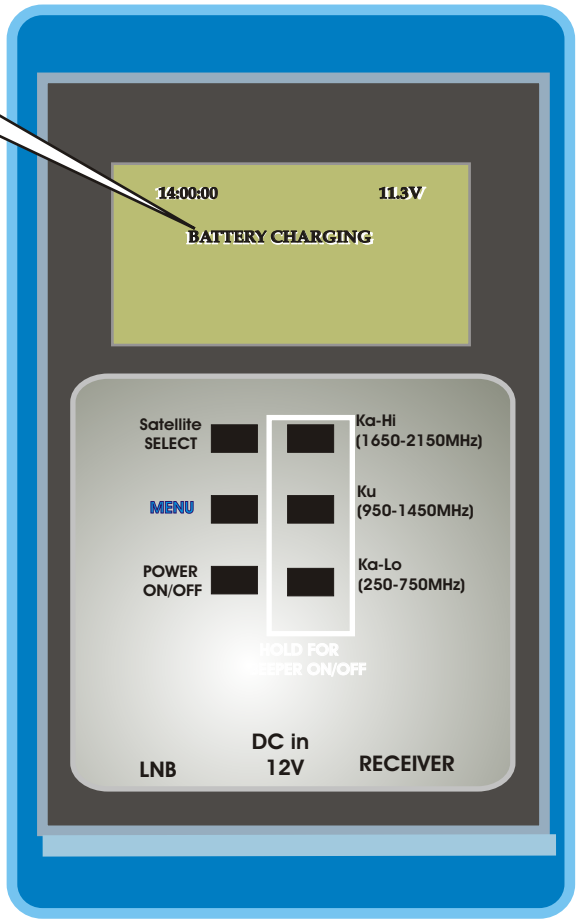
The meter should display the start up screen momentarily, before displaying the charging screen.

The charging screen will appear as the count down timer begins the count down from 14 hours. The voltage reading of the combined AA battery cells will be displayed in the upper right-hand corner of the screen and the charging status displayed in the center with text reading "Battery Charging".

The 14 hour timer will stop it's countdown when the cells are fully charged and the charging status text will read "Battery Charged" (with the voltage of the cells displayed in the upper right-hand corner).



BOTTOM VIEW



The ACUTRAC III will not power On when in the charging mode.

**Note: To maximize the capacity and life of the cells may take up to 3 complete cycles of charging/discharging in order to fully level the cells.

ALKALINE CELL USE

While the ACUTRAC III will operate if AA Alkaline cells are substituted, it is recommended that they only be used for short periods when the recharging of the NiMH cells is not possible.

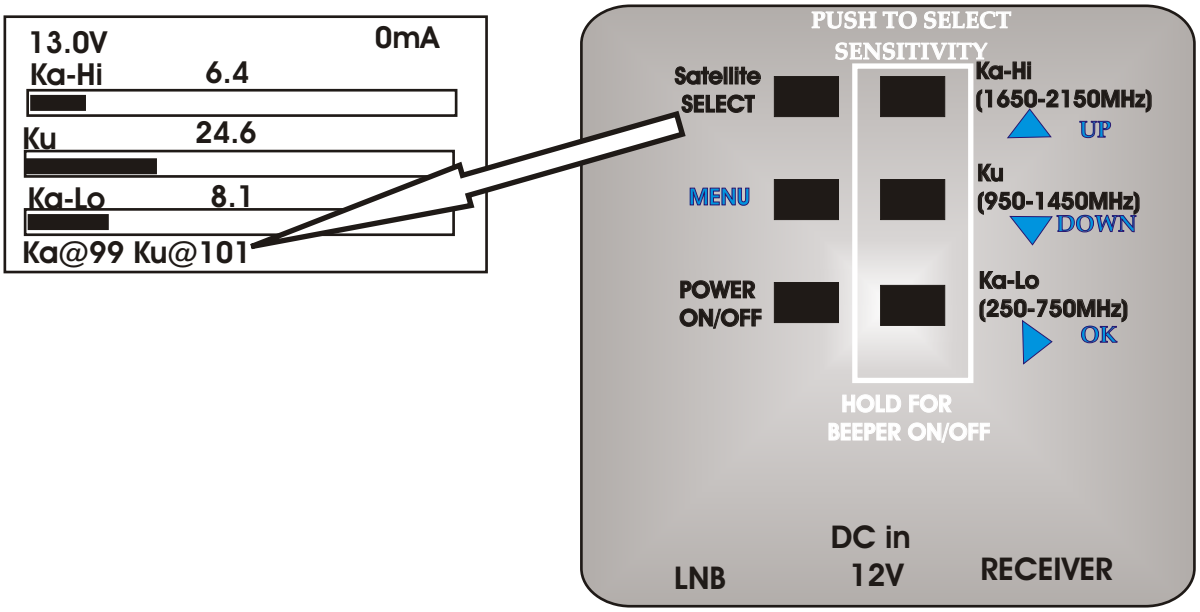
UNDER NO CIRCUMSTANCES SHOULD CHARGING OF ALKALINE CELLS BE DONE! NOT ONLY IS THIS UNSAFE; IT WILL VOID ALL WARRANTY COVERAGE OF THE METER!

CONTROLS AND FEATURES:

To change the satellite signals to be measured and displayed on the meter; press the Satellite SELECT button. The satellite name and orbital slot are displayed at the bottom of the LCD screen (see diagram below).

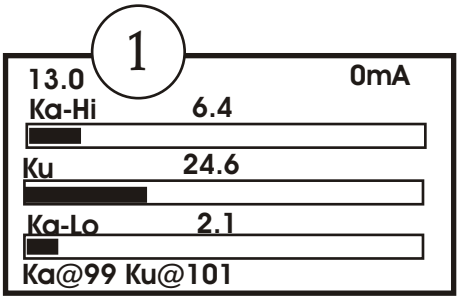
The default satellites are the Ka (Hi) 99 West and Ku 101 West.

See "SATELLITE SELECT" BUTTON options below for the current 4 combinations of signals available for display. (Ka Lo signal settings and options will be available as they become active).

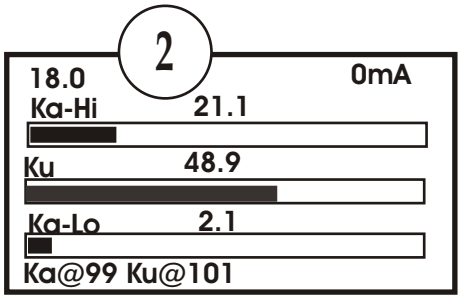


"SATELLITE SELECT" BUTTON OPTIONS:

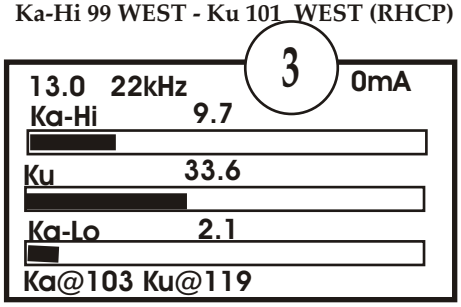
PRESS THE "**SATELLITE SELECT**" BUTTON ONCE FOR EACH OF THE FOLLOWING:



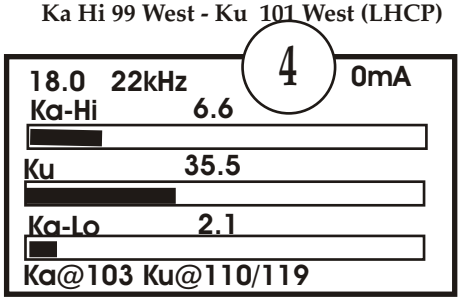
Ka-Hi 99 WEST - Ku 101 WEST (RHCP)



Ka Hi 99 West - Ku 101 West (LHCP)

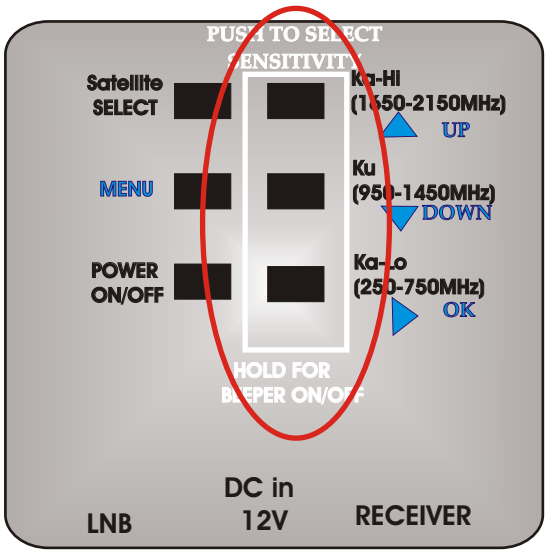


Ka-Hi 103 West - Ku 119 West (RHCP)



Ka Hi 103 West - Ku 110/119 West (LHCP)

"SENSITIVITY" MODE/"BEEPER ON/OFF":

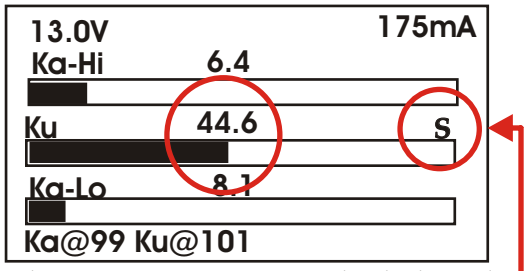


The white-text indicates functions controlled by the buttons within the white outline (each button controls the corresponding band width indicated to the right of the box).

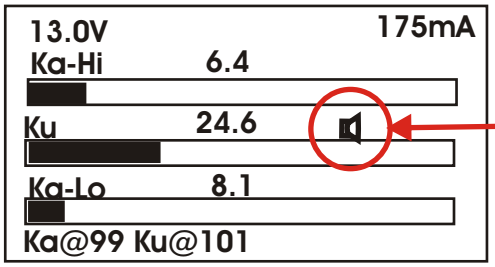
Press the button beside the band width you want to "zoom in" on (bar becomes more dynamic, in relation to it's displayed signal strength movements).

When the "SENSITIVITY" function is On a "S" will appear on the signal bar to indicate which band width now appears to more freely move.

The Acutrac III is supplied with a 75 ohm terminator connected to the "Receiver" port. This terminator should be used, unless the meter is in-line between the I.R.D. and the dish, to prevent interference as a result of terrestrial signal reception on the Ka band.



Selecting "Sensitivity" on an individual signal will zoom in on the bar, making movement more prominent to the user ("S" will appear).



Press and Hold the button on an individual signal to activate the audio buzzer for that signal (speaker icon will appear on the signal bar).

Signal levels are displayed as a numerical reference only; they do not represent actual dB levels, nor are representative of the signal levels indicated on the satellite receiver's tuner!

BEEPER FUNCTION/AUDIO TONE "ON/OFF":

To activate the "BEEPER" audio tone, for monitoring signal strength changes by audible tone pitch changes; press and hold the button in the second column, beside the signal you wish to monitor.

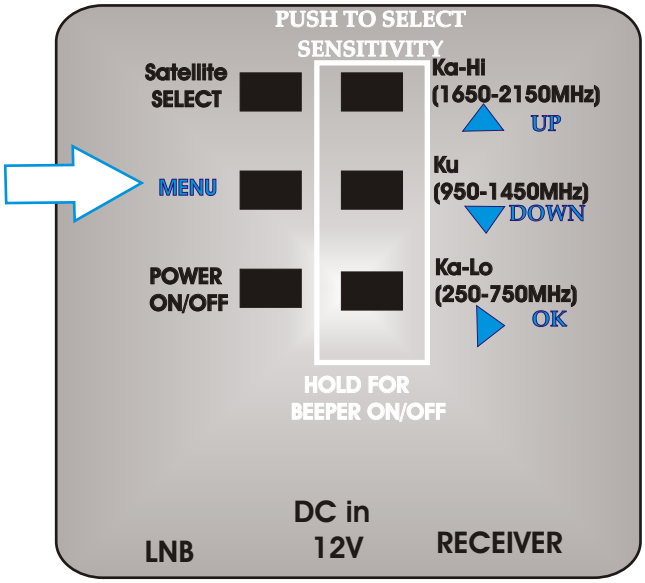
An icon of a loud speaker will appear on the respective signal bar and the buzzer will give you an indication, through a rise and fall of pitch change, of how strong the signal is currently being received by the LNB.

See the diagram above for an illustration of the two symbols (examples of both are shown on the Ku band signal). ***The numerical readings in the illustrations do not represent actual levels. The signal level readings on any given installation are to used as a reference (e.g.: the higher numbers will indicate stronger signal reception.).***

"MENU" OPTIONS:

The MENU button highlighted in blue and the blue arrows/text on the right side of the faceplate, indicate which function the 3 keys control when in the Menu screen.

Power the meter On, then press the MENU button. The screen below will appear.
Use the ▼ button to move the curser to "SET UP", then press the ▶ (OK) button to select.



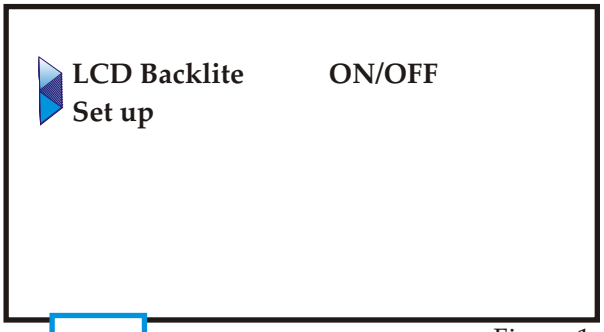


Figure 1

SET UP

LCD SCREEN DISPLAY OPTIONS WHILE IN "SET UP" MODE:

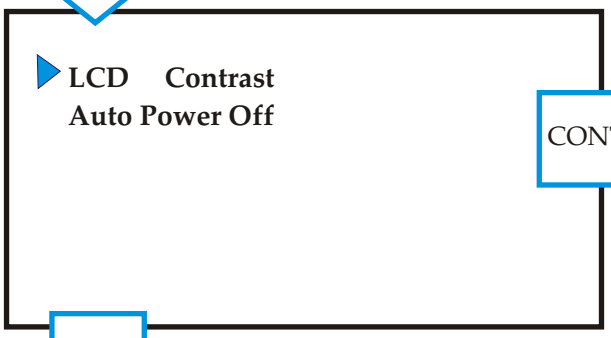


Figure 2

CONTRAST

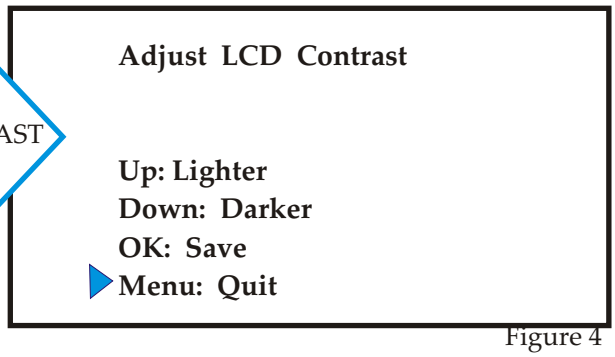


Figure 4

AUTO POWER OFF

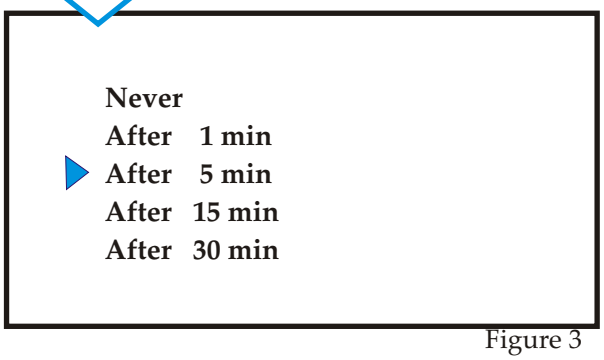


Figure 3

POWER ON:

Note concerning the initial powering On: The ACUTRAC III is shipped with the default setting on the "Auto Power Off" feature to "1 minute". You will need to access the Auto Power Off options by going to "Menu", then "Set up", then "Auto Power Off Timer"before the meter will remain On for a period of one minute, or longer.

To power the meter On, press the lower-left button labeled "POWER ON/OFF". The ACUTRAC III will display a start-up screen briefly, then go directly to the RF signal strength scales.

To find your serial number and version number, simply continue holding down the "ON/OFF" button, freezing the initial display screen for as long as the button is held. (See illustration below).

When the ACUTRAC III is connected in-line, between the LNB and the satellite receiver, it will power On automatically (Loop-through mode).

In "Loop-through" mode, the "Satellite Select" options are not available and the meter will only display the parameters set by the satellite receiver.

CONNECTING THE LNB:

Using a jumper coax of RG-6 solid-copper center conductor cable, connect one end to one port of the main LNB assembly on the AT9. Route the cabling through the feed arm and Antenna Back Assembly. ***Then, mount this LNB to the feed arm first.***

Follow the AT9 Installation Guide for assembly and connection of the 110⁰/119⁰ Ku LNB to the bracket and Main LNB.

The photo above illustrates 2 precautions that should be observed at the time of connection:

1. **The LNB sub-assemblies must be connected to each other before the meter is powered "On" or damage to the LNBs is possible, resulting in failure that may not be covered under the dish manufacturer's warranty!**

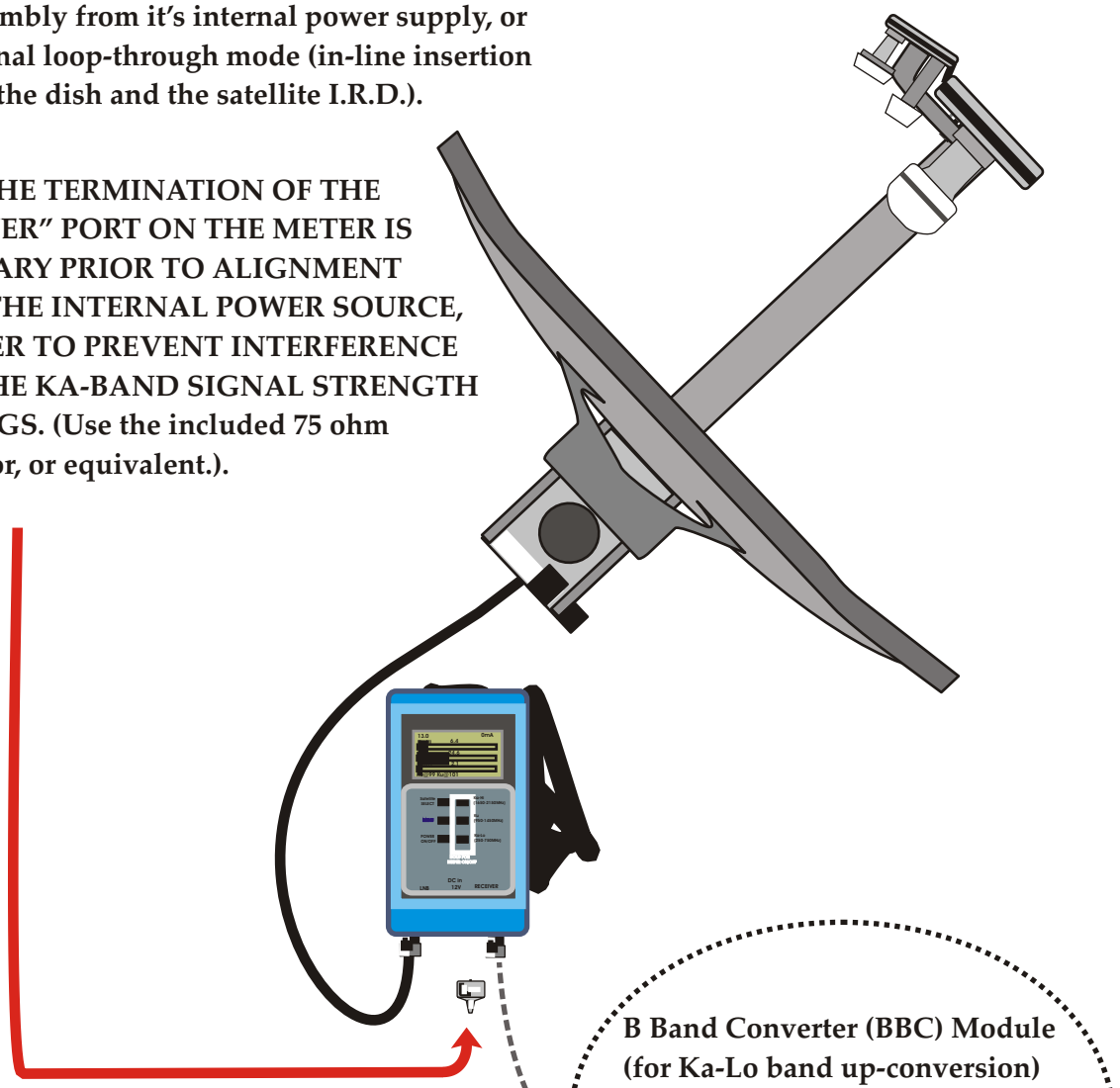
2. **The terminator (included with the meter) must connected to the meter's out to receiver port in order to obtain an accurate signal level reading/and display from the LNB assembly. This is especially critical when measuring the signal received from the Ka transmissions.**

For the optional "Loop-through" mode, connect coax from the satellite receiver's "In from Satellite"port to the meter's right port marked "Receiver".

CONNECTION OPTIONS:

The Acutrac III has the option of powering the LNB assembly from it's internal power supply, or the optional loop-through mode (in-line insertion between the dish and the satellite I.R.D.).

NOTE: THE TERMINATION OF THE "RECEIVER" PORT ON THE METER IS NECESSARY PRIOR TO ALIGNMENT USING THE INTERNAL POWER SOURCE, IN ORDER TO PREVENT INTERFERENCE WITH THE KA-BAND SIGNAL STRENGTH READINGS. (Use the included 75 ohm terminator, or equivalent.).



B Band Converter (BBC) Module (for Ka-Lo band up-conversion) supplied with the MPEG4 capable HD satellite receiver.

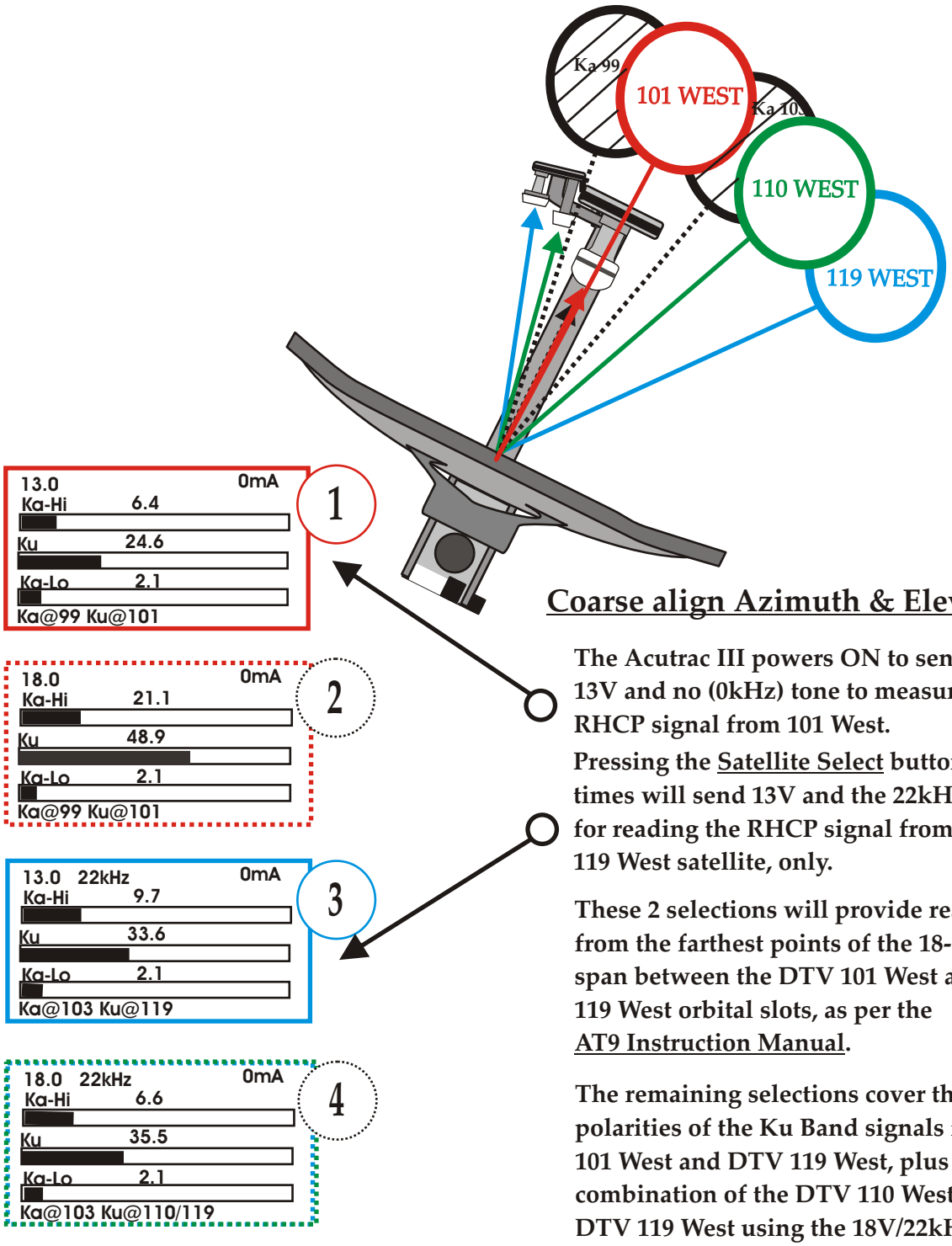
BBC

When the meter is inserted in-line between the dish and satellite receiver; it will power "On' automatically with the text display of "Loop-Through" to indicate the I.R.D. Is supplying power and commands to the LNB.

Parameters such as the polarity are now set with the receiver and the Satellite SELECT function is disabled.

MPEG4 HD SATELLITE RECEIVER

INITIAL ALIGNMENT OF THE DTV AT9:



Coarse align Azimuth & Elevation

The Acutrac III powers ON to send 13V and no (0kHz) tone to measure the RHCP signal from 101 West.

Pressing the Satellite Select button 2 times will send 13V and the 22kHz tone for reading the RHCP signal from the 119 West satellite, only.

These 2 selections will provide readings from the farthest points of the 18-degree span between the DTV 101 West and DTV 119 West orbital slots, as per the AT9 Instruction Manual.

The remaining selections cover the alternate polarities of the Ku Band signals from DTV 101 West and DTV 119 West, plus the additional combination of the DTV 110 West with the DTV 119 West using the 18V/22kHz parameters.

Data Port and upgrading

The ACUTRAC III is equipped with a data port located on the top end of the meter, which is accessed by removing the meter from the neoprene protective case.
No upgrades are scheduled for the Acutrac III, and upon reassignment of the Ka Lo band width; the Acutrac III is ready to go. The data port has been provided to facilitate an upgrade, if ever required.

OUTLINE OF STACKED PLAN FOR SIGNAL RECEPTION FROM THE AT9:

DTV 101 WEST:
RHCP - Circular-polarized right-hand rotation signal. The Right-hand rotation is controlled by the voltage of 13.0V sent to the LNB. Right-hand polarized , or 13V signals, result in the display of ODD numbered transponders on the receiver if you are checking the siganl strength under the 101 West satellite's transponder test.
LHCP - Circular-polarized left-hand rotation signal. The Left-hand rotation is controlled by the voltage of 18.0V sent to the LNB. Left-hand polarized, or 18V signals result in the display of EVEN numbered transponders on the receiver if you are checking the signal strength under the 101 West satellite's transponder test.

DTV 119 WEST:
To differentiate the DTV 119 West (and 110 WEST) signal from the DTV 101 WEST signal, an inaudible tone at 22kHz is sent to the LNB, by the receiver in order for the switch to route the assigned voltage to the appropriate LNB(s).
If the RHCP, or 13V, is selected and the 22kHz tone accompanies the 13V; the switching component in the AT9 Main LNB will direct the request to the 119 WEST LNB for the ODD transponders on the 119 WEST satellite, if checking for reception on the receiver.

DTV 119 WEST and DTV 110 WEST:
To include the reception of signals from the DTV 110 WEST LNB, another differentiating factor must be added; "frequency range". The DTV 119 WEST and DTV 110 WEST are combined on route of the signal path by "stacking" the DTV 110 WEST transponders at a lower frequency range than the DTV 119 WEST. Since the DTV 110 WEST transponders are only the EVEN numbered (8, 10, 12), they will be polarized as a LHCP, and when stacked in the lower frequency range of 950 - 1150MHz, the signal will easily be transmitted along with the EVEN numbered, 18V, LHCP signal from the DTV 119 WEST signal that's between 1250 - 1450MHz.

Ka Lo @ 99 WEST and 103 WEST:
RHCP/250 - 750MHz **LHCP/250 - 750MHz**

Ka Hi @ 99 WEST and 103 WEST:
RHCP/1650 - 2150MHz **LHCP/1650 - 2150MHz**