



Acutrac[®] ***III+***

(Plus)

***Ka/Ku Band Satellite Signal Meter
with DiSEqC Command***

User Manual



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The ACUTRAC III + wide-band meter is manufactured in Sweden by Emitter 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, water damage 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
Emitter AB, Stockholm, Sweden at www.emitor.se or, +46 (0)8 775 00 01

Additional information may be found at: www.acutrac.tv.

SPECIFICATIONS:

<u>Input Frequencies (3)</u>	Ku: 950 - 1450MHz Ka Lo: 250 - 750MHz Ka Hi: 1650 - 2150MHz
<u>Input Level:</u>	40-100 dBuV
<u>Output Level:</u>	600mA (with a fully charged battery)
<u>Through Loss:</u>	5 dB
<u>Short Circuit Protection:</u>	Automatic fuses on all inputs
<u>Indications:</u>	Voltage, current, 22kHz (on/off), DiSEqC 1.0 and 1.1, 13/18v
<u>Inputs:</u>	(2) Field-replaceable ports (Standard F-81 barrel connectors) * To LNB * To Satellite Receiver (for optional in-line/Loop Through)
<u>Signal Strength Measurement:</u>	LCD Thermometer-type scales - non-specific numerical reference in tenths
<u>Power Source:</u>	Internal-(8) AA rechargeable NiMH cells with a 1200mAH capacity rating (can use standard non-rechargeable AA alkaline batteries for short term use.) "Loop-through" mode for powering by I.R.D.
<u>Power Consumption:</u>	35 mA without speaker (beeper) 50 mA with speaker operating (beeper)
<u>Chargers:</u>	AC wall transformer included (12vDC 500mA) DC auto charging cord included (12vDC center-pin positive)

The ACUTRAC III + has a data port located on the top of the meter for future use and will allow the ACUTRAC III + to remain flexible with developments by giving the user simple access to firmware or software upgrades. To expose the data port, remove the outer case covering. The data port is located on the top of the meter (the opposite end from the DC charging port/F-connection end.)

The ACUTRAC III was developed primarily for the installation of the DirecTV 5-LNB dish assembly and is capable of reception of both the Ka Band and Ku Band signals from DTV's 5 satellites at the 99, 101,103, 110, and 119 West orbital locations. It has been tested & approved for use by DTV. The ACUTRAC III + adds the ability to also use with LNB's which are switched by DiSEqC commands, such as the Dish Pro Plus, which is found on the Dish 1000.2.

Parameters are pre-set and are accessed through one button with 4 mode options of the settings dictated in the AU9 Installation Guide.

As more satellites actively begin transmitting in the Ka Band widths, the ACUTRAC III + will become increasingly more dynamic in functions.

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.

To remove the meter, push the cover off the top of the meter first. To reinsert the meter, insert the bottom (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.



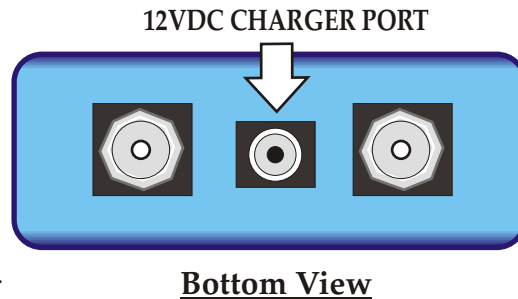
CHARGING THE BATTERIES:

Plug the AC wall charger into a common household outlet before connecting the charger plug in the meter's DC charger port (see diagram below 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 "Charging Battery".

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).



CHARGING STATUS

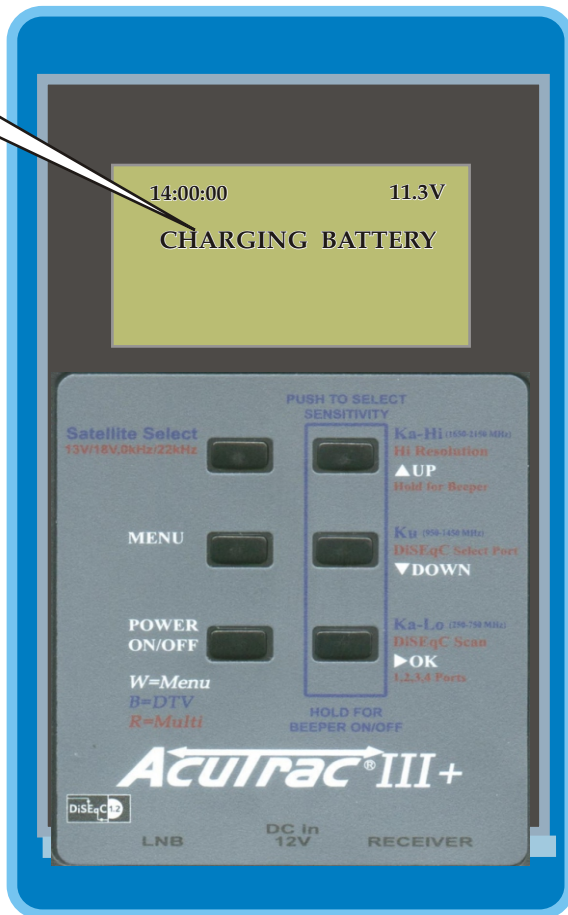
**Note: To maximize the capacity and life of the batteries, it may take up to 3 complete cycles of charging/discharging to bring the battery up to it's full stated capacity.

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 batteries be done! Not only is this unsafe, it will void all warranty coverage of this meter!

When using AA Alkaline batteries, insert them into the tray compartment as indicated by the battery diagram in each individual cell holder. Do not attempt to recharge alkaline batteries!



“MENU” OPTIONS:

The MENU button text is highlighted in white. All white arrows and text on the faceplate indicate which function the buttons control when in the ‘menu’ screen.

Power the meter On, then press the MENU button. The screen below will appear:

▶ LCD backlight ON/OFF
Attenuate ON/OFF
Setup
DTV mode
Multi mode

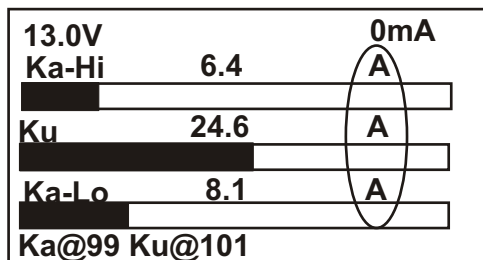
Turns backlight on

LCD backlight ON/OFF
▶ Attenuate ON/OFF
Setup
DTV mode
Multi mode

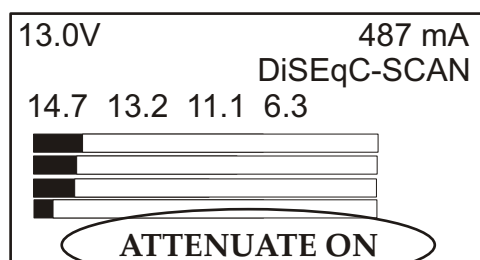
To ‘attenuate’ or reduce the signal.

In DTV mode an ‘A’ appears above each bar to indicate ‘Attenuate’ is ON.
In Multi mode the words “ATTENUATE ON” appear at bottom of screen.

DTV Mode



Multi mode:



LCD backlight ON/OFF
Attenuate ON/OFF
▶ Setup
DTV mode
Multi mode

▶ LCD Contrast

Auto Power Off

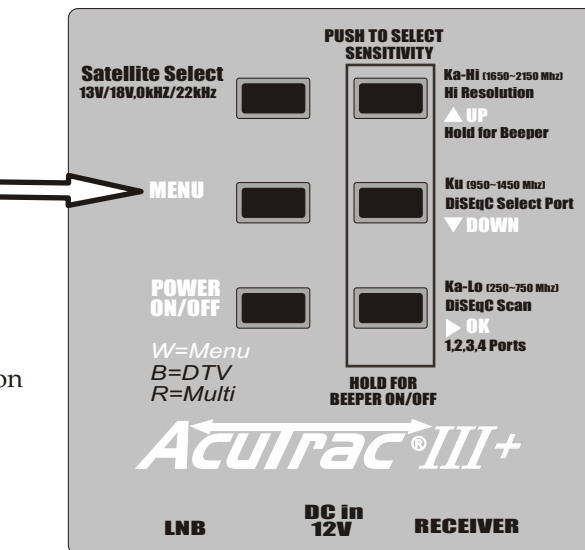
To set display contrast

To set timer on meter

LCD backlight ON/OFF
Attenuate ON/OFF
Setup
▶ DTV mode
Multi mode

To use meter on DTV alignments

To use DiSEqC commands (DishNetWork)

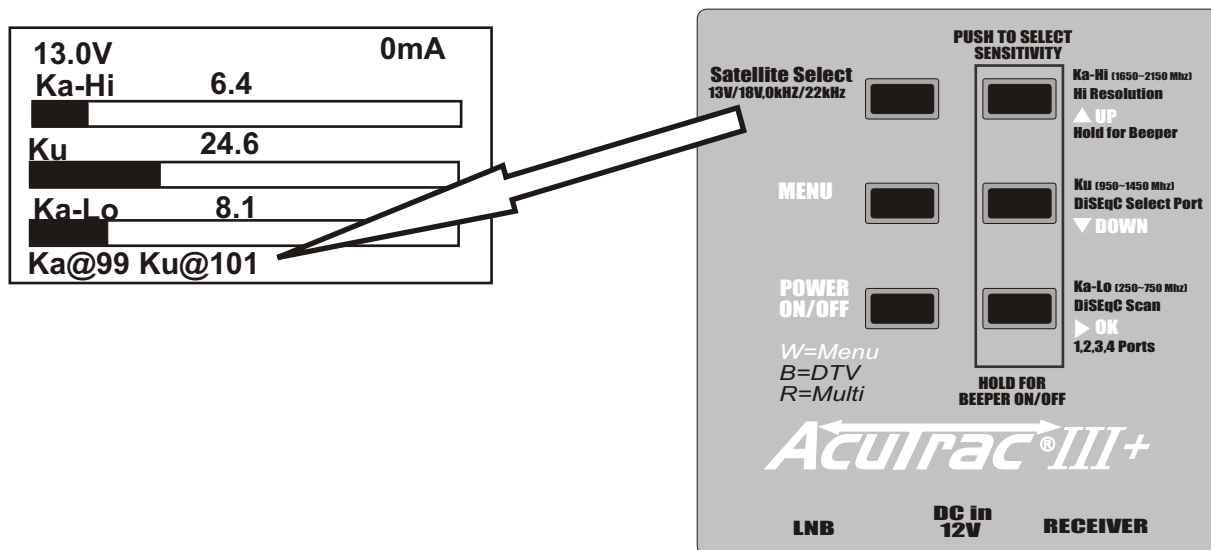


CONTROLS AND FEATURES: DTV Mode

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).

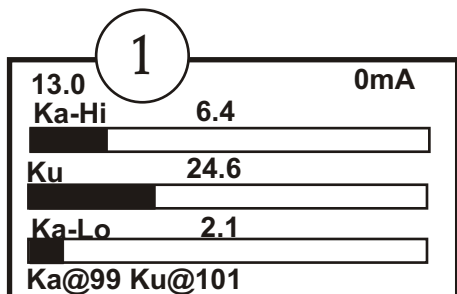
The default satellites are the Ka (Hi) 99 West and Ku 101 West.

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).

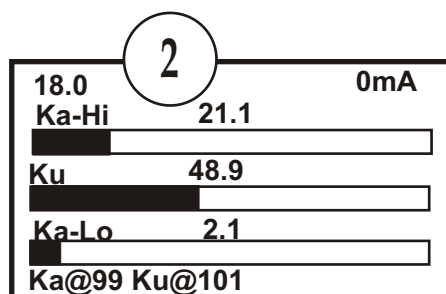


“SATELLITE SELECT” BUTTON OPTIONS:

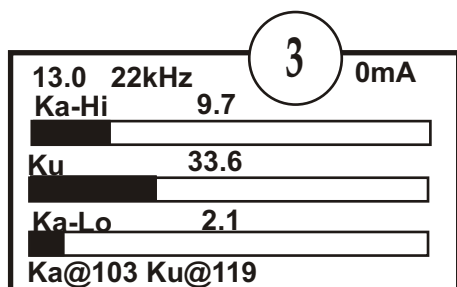
PRESS THE “SATELLITE SELECT” BUTTON ONCE FOR EACH OF THE FOLLOWING:



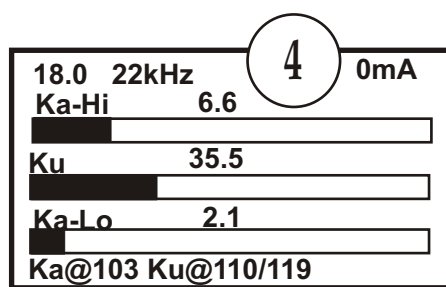
Ka-Hi 99 WEST - Ku 101 WEST (RHCP)



Ka Hi 99 West - Ku 101 West (LHCP)

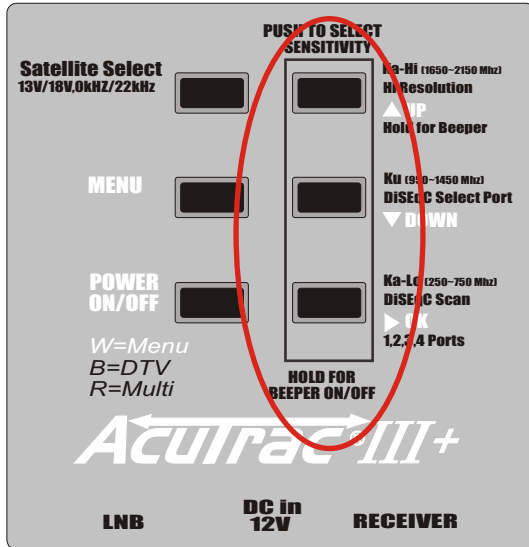


Ka-Hi 103 West - Ku 119 West (RHCP)



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

“SENSITIVITY” MODE/“BEEPER ON/OFF”: DTV Mode

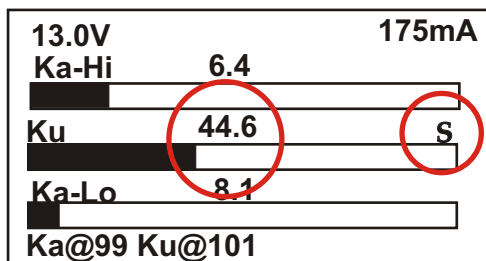


The blue-text indicates functions controlled by the buttons within the blue outline (each button controls the corresponding bandwidth indicated to the right of the box).

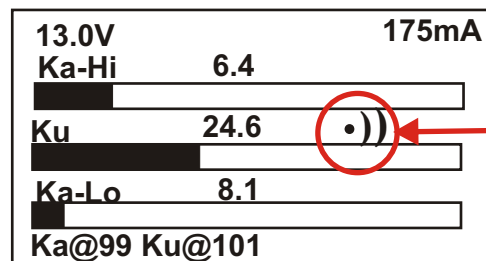
Press the button beside the bandwidth you want to “zoom in” on (bar becomes more dynamic, in relation to it’s displayed signal strength movements).

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).*

CONTROLS AND FEATURES: Multi Mode

Multi Mode allows the user to look at a single LNB or to look at up to 4 LNBs at the same time. It is ideal for use with the DishNetWork multi-lnb systems, ie: Dish 1000.2.

NOTE - Because DishNetWork has different manufacturers of the Dish 1000.2 LNB, it is recommended that you connect the Acutrac III + to Port 1 of the LNB. Also, because the LNB can drop the stacked mode when you first power up the meter (in Multi Mode), the initial reading will be low until you enter a selection (Diseqc command.) After that initial selection, all readings will be accurate.

DiSEqC Select Port

To look at each LNB individually

Starts on LNB1 = (119 Satellite)
 Press 1 X LNB2 = (110 Satellite)
 Press 2 X LNB3 = (129 Satellite)
 Press 3 X LNB4 = (Optional Satellite)

13.0V 487 mA

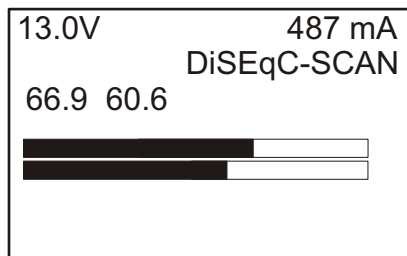
LNB1 66.4

13.0V 487 mA

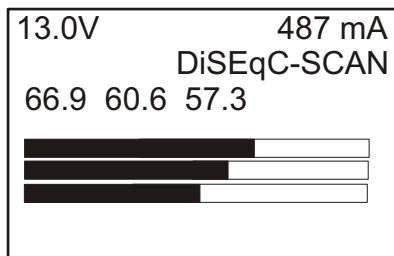
LNB2 60.3

DiSEqC Scan

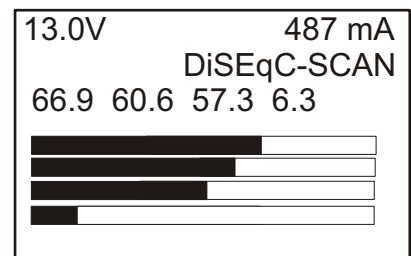
To Scan up to 4 LNBs at one time



Press DiSEqC Scan 1 X
 For 2 lnb (119/110)



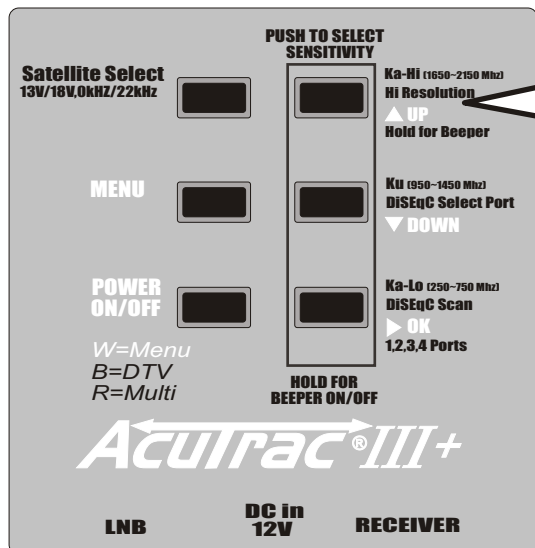
Press DiSEqC Scan 2 X
 For 3 lnb (119/110/129)



Press DiSEqC Scan 3X
 For 4 lnb (119/110/129)
 (And optional lnb)

“ZOOM (Sensitivity) MODE/”BEEPER ON/OFF”: Multi Mode

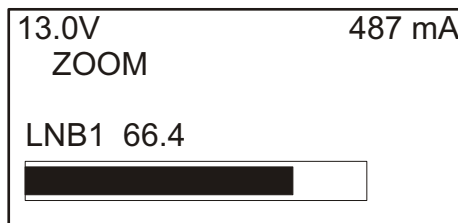
The ‘ZOOM’ (Sensitivity) feature makes the signal readings more dynamic, allowing for a more precise alignment by increasing the effect of movement on the dish. The Beeper function allows the installer to tune the dish by following the pitch of an audible tone



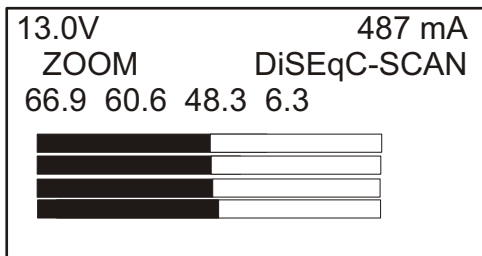
The Zoom and the Beeper functions are both accessed through the same button.

‘Hi-Resolution’ and ‘Hold for Beeper’ are labeled in red.

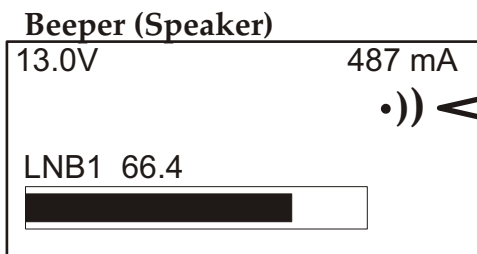
Press the button once for the Zoom feature. The word “ZOOM” will appear at the top of the display, below the voltage:



If you are in DiSeqC Scan mode when you press ZOOM, all lnb's will go into ZOOM mode.



Press the button again and ZOOM will disappear and you will no longer be in the ZOOM mode.



Press and Hold the button for the Beeper function. The ‘speaker’ icon will appear on the top right of the display, below the mA reading. Press and hold the button again to turn off the beeper

NOTE - the speaker function will only work in the single LNB display, it will not work in the DiSeqC Scan mode.

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 or Au9. 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 110^o/119^o Ku LNB to the bracket and Main LNB.



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

1. On the AT9, 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 be 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".

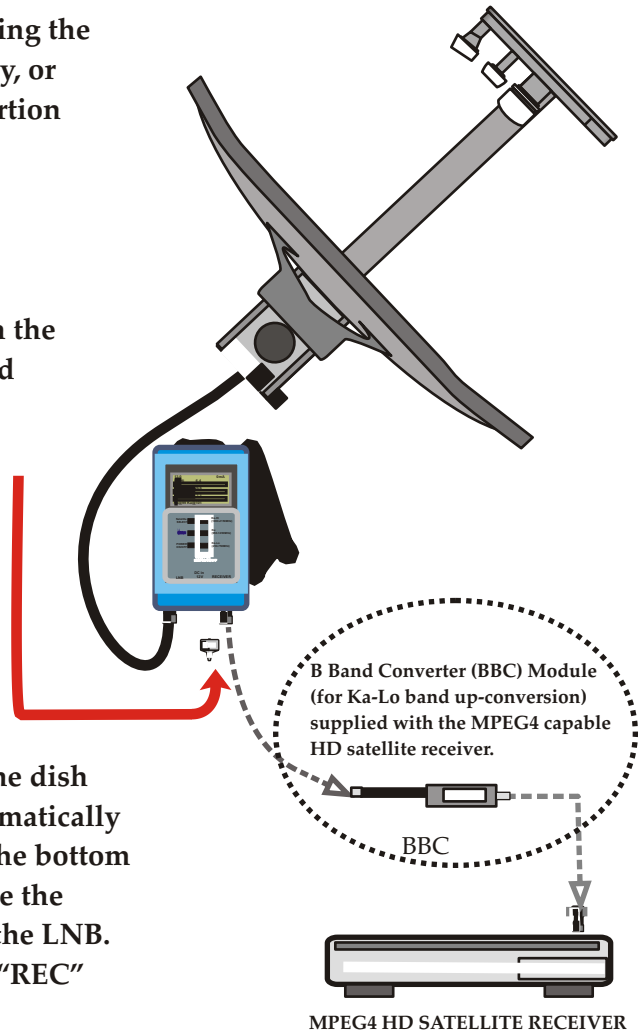
CONNECTION OPTIONS:

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.).

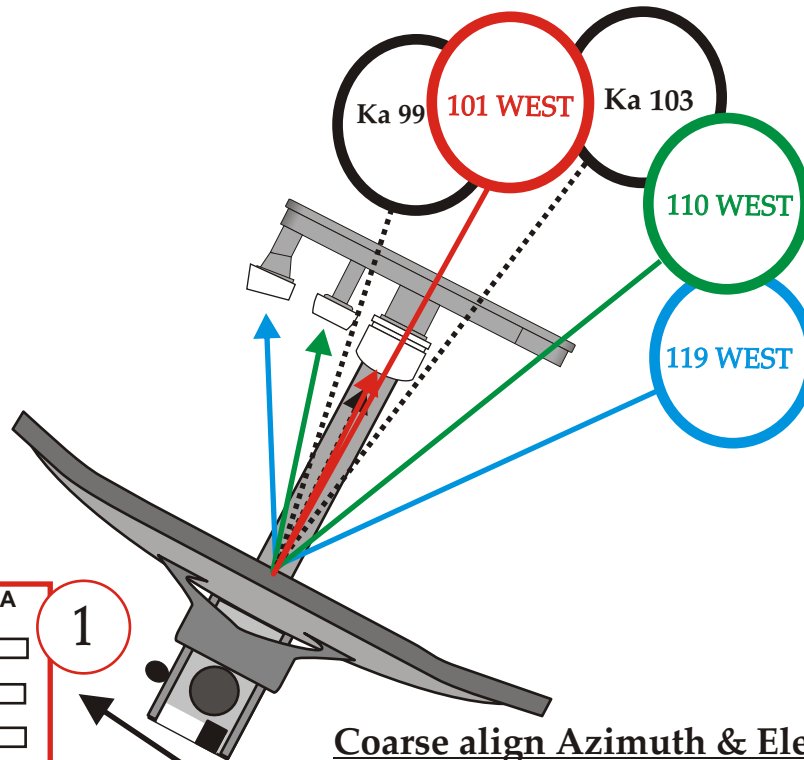
NOTE: In order to prevent interference from the Ka-Band signals, you **MUST** use the included 75 ohm terminator (or equivalent) if you are powering the meter with it's internal power source (batteries).

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" on the bottom of the display and "REC" at the top to indicate the I.R.D. Is supplying power and commands to the LNB. NOTE - When in Multi mode, only the word "REC" will be displayed.

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



INITIAL ALIGNMENT OF THE DTV AT9 or AU9 (SLIMLINE):



Coarse align Azimuth & Elevation

13.0		0mA
Ka-Hi	6.4	
Ku	24.6	
Ka-Lo	2.1	
Ka@99 Ku@101		

1

18.0		0mA
Ka-Hi	21.1	
Ku	48.9	
Ka-Lo	2.1	
Ka@99 Ku@101		

2

13.0	22kHz	0mA
Ka-Hi	9.7	
Ku	33.6	
Ka-Lo	2.1	
Ka@103 Ku@119		

3

18.0	22kHz	0mA
Ka-Hi	6.6	
Ku	35.5	
Ka-Lo	2.1	
Ka@103 Ku@110/119		

4

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 currently scheduled for the ACUTRAC III +. The data port has been provided to facilitate an upgrade, if ever required.

OUTLINE OF STACKED PLAN FOR SIGNALS FROM THE AT9 or AU9 (Slimline):

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 signal 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