

Turbo-S2 DBS Satellite Meter Module QUICK START REFERENCE GUIDE

Before Use

- 1) While the XR-3 is powered off, slide the TS2 module down into XR-3 base unit until it clicks, and then tighten thumb screws finger-tight.



- 2) Attach shoulder strap carabiner clips to XR-3's rubber shock guard top loops.
- 3) Fully charge the meter's battery while meter is powered off. Indicator on screen will show 100% when battery is fully charged.
- 4) Load the latest available software into the XR-3, using the FlashUpdate program on a PC. For the latest available software versions and instructions, refer to our website, www.appliedin.com.
- 5) Ensure all rubber port cover plugs are securely closed on bottom of XR-3 before using meter outdoors.
- 6) Press ON/OFF button to power the meter on.

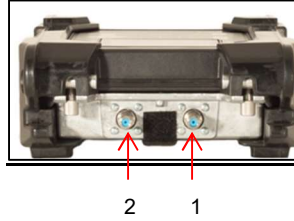
System Setup

- 1) Press the SYST soft key (located near top left corner of the LCD).
- 2) Select the region that corresponds with your general geographical location.
- 3) Select the service, system, LNB model, and switch type for your application.
- 4) Select DONE or press EXIT soft key to return to the main run screen.
- 5) Press the AZ/EL soft key (located near bottom left corner of the LCD).
- 6) Enter your postal code or Latitude and Longitude and then press ENTER to obtain the rough settings for the dish.

Antenna Alignment

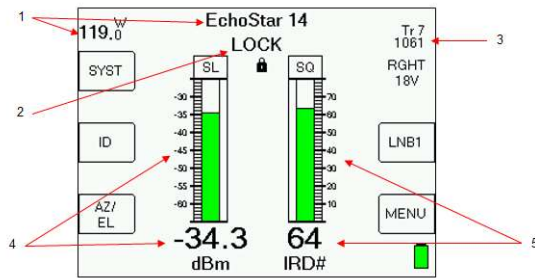
- 1) Connect coax cable from the LNB's output port to ODU / LNB input port on the Turbo-S2 module.
- 2) Press the LNB soft key (located near middle right area of LCD) to apply power to the LNB.
- 3) Adjust the antenna reflector azimuth (left or right) and elevation (up or down) to obtain maximum signal level (left bar graph), signal quality (right bar graph), and LOCK status.
- 4) Press the ID soft-key (located near middle left side of LCD screen) to verify that you're aligned to the correct satellite. "ID VERIFIED" means you are pointed correctly.
- 5) If installing a multi-LNB system, press the LNB soft key multiple times to control the switch and toggle to the different LNBs.

Connections



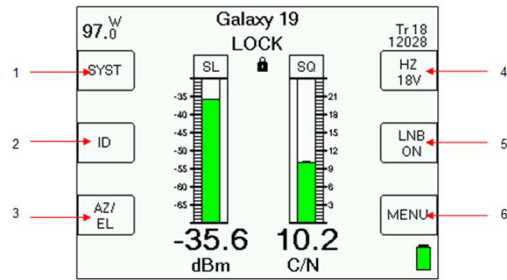
- 1) ODU / LNB - connects to the LNB (or receiver side of a multi-switch)
- 2) IDU / IRD - connects to the IRD (receiver or modem) – NOT REQUIRED

Run Screen



- 1) Selected satellite
 - a) Change satellite with left and right arrow keys for single LNB systems (or with the LNB soft key when connected to multi-LNB systems, see Multi-LNB Systems on next page)
 - b) Satellite name is on the top line
 - c) Orbital position is shown at upper left
- 2) Lock status
 - a) Search – when searching for a matching signal
 - b) LOCK – when signal lock is obtained, this indicates you MIGHT be pointed at the selected satellite, but you must use the ID soft key to confirm the satellite
- 3) Transponder information (upper right)
 - a) Change transponders with the up and down arrow keys
 - b) Transponder label
 - c) Frequency (L-band or downlink)
 - d) Polarity (RGHT, LEFT, HZ or VT)
 - e) Voltage provided to LNB (13, 18, 21, or 29 volts)
- 4) Signal Level
 - a) Left bar graph (with peak hold center line)
 - b) Numeric value in dBm, dBmV, or dB μ V
 - c) Scale: -75 to -15 dBm (-26 to +34 dBmV) or (+34 to +94 dB μ V)
- 5) Signal Quality
 - a) Right bar graph (with peak hold center line)
 - b) Numeric value as IRD equivalent or C/N, Eb/No, or Es/No in dB
 - c) Scale: 0 to 20 dB C/N

Soft Keys



- 1) SYST - transfers to the System Setup Screen
- 2) ID - starts satellite identification verification function
- 3) AZ/EL - transfers to the Azimuth and Elevation Lookup Screen
- 4) Polarity - displays or selects polarity and LNB voltage (on single LNB setups)
- 5) LNB - turns LNB power on or off (displays present state) and selects switch ports
- 6) MENU - transfers to the Main Menu Screen

Multi-LNB Systems

When the selected LNB system supports multiple LNBs or multi-head LNBs via the switch setting, the LNB ON/OFF button also controls the switch setting. Upon pressing the LNB power soft-key, the meter sends a switch command to toggle to the next feed horn and the satellite is automatically changed to the one normally used for that port.

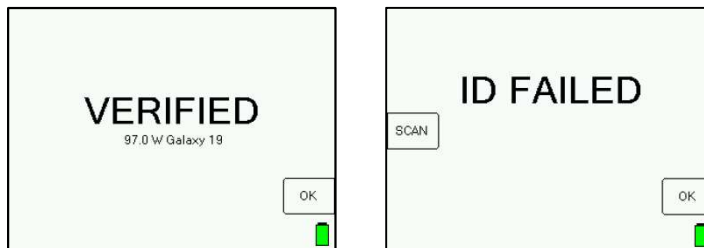
Satellite Identification

Satellites are identified by obtaining locks on one or more transponders. To obtain a lock, the frequency, signal type and symbol rate of the transponder must be known to the instrument. These combinations vary enough between the satellites that they can be used to identify the satellite. Unfortunately, one transponder is not always enough; there may be another satellite using the same combination.

ID Verification

Unlike other meters, the XR-3 has the ability to check one or more transponders looking for a match on a combination that is unique to each satellite. This is what we call the "ID Verification" feature. It is initiated when you press the ID soft-key (middle left side of LCD screen) on the Run Screen.

When you change satellites with the left/right arrow keys (or with the LNB power soft-key if you're connected to a multi-LNBF system), the default transponder shown will be one of the transponders used in ID Verification. Once you get a lock and peak the dish on this transponder, press the ID soft-key and the unit will check any other transponders needed to confirm the identification and display either "VERIFIED" or "ID FAILED".



Satellite Scan

If you have peaked up the signal level (displayed on left bar graph) on a satellite, but either don't see the signal quality and LOCK, or get an "ID FAILED" message when performing the ID Verification, the XR-3 can try to determine which satellite you are pointed at by performing the ID Verification on different satellites sequentially. This is called the "Satellite Scan" feature.

To run a Satellite Scan, press the ID soft key to verify the selected satellite. If VERIFIED, there is no reason to run the Satellite Scan. If that fails, there will be a "SCAN" button on the "ID FAILED" Error Screen, press that and the scan begins. The scan will start from the selected satellite, presumably the one you are looking for, and look to the east and west one satellite at a time until a positive ID is found or the horizon is reached, or you abort the scan.

Azimuth / Elevation Lookup

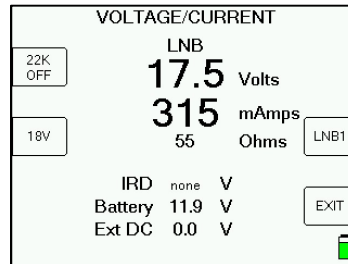
The meter can look up the azimuth, elevation, and polarization offset for different satellites based on the US Zip Code, Canadian Postal Code, or by entering the Latitude and Longitude. The azimuth is given in true north (Azimuth) and in magnetic north (Magnetic) degrees. You should follow the Magnetic field value when using a compass to point the satellite dish. You may change the selected satellite using the left and right arrow keys.

- 1) For the United States, Puerto Rico, and US Virgin Islands the 'USA ZipCode' database should be loaded using the FlashUpdate program
- 2) For Canada, the 'Canadian Postal Code' database should be loaded
- 3) For outside of North America the 'No Postal Code' database should be loaded using the FlashUpdate program

Voltage / Current

The V/I or Voltage / Current Screen displays:

- 1) LNB – voltage output supplied to LNB
- 2) mAmps - current draw of LNB
- 3) IRD - the voltage output of modem or satellite receiver if connected to meter's IRD / IDU port (29V max)
- 4) Battery - meter's internal battery voltage (Full is approximately 12.6 volts and empty is approximately 11.1 volts).
- 5) Ext DC – amount of voltage being supplied to instrument by external AC to DC switching power supply connected to DC charge port on bottom panel of instrument.

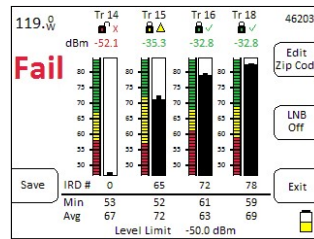


- 6) Soft Keys:
- a. 22K - Turns the 22 kHz tone on or off
 - b. Voltage - Changes LNB voltage (13V, 18V, 21V for DIRECTV SWiM LNBS, or 29V)
 - c. LNB - Turns LNB power on or off and selects switch ports
 - d. EXIT - Returns to the Main Menu Screen

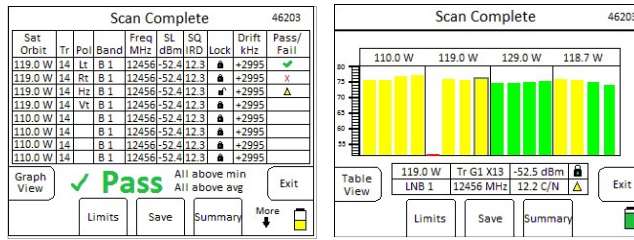
Limit Scan

When loaded with the Turbo-S2 module, the XR-3 includes a Limit Scan feature that performs a quick scan of up to 4 transponders per satellite, checks the values against pre-determined limits, and provides a pass/fail indication. Use this test to quickly verify your installation against recommended level and quality values.

- 1) Collect Test Data
- a. Perform your satellite dish alignment as usual. When the system is fully peaked, use one of two Limit Scan options from the Proof of Performance Menu to perform the Scan and collect the data.
 - i. Limit Scan (Single Satellite View) – uses the presently selected LNB port and collects data for that LNB only. The data is constantly being updated in real time. Defaults to Single Sat Graph View, shown below. User can press LNB soft key to toggle between related satellites if a multi LNB system has been selected in the System Setup Menu.



- ii. Limit Scan (Multiple Satellite View) – steps through all related LNB positions and collects data once. Defaults to Table View.



- The meter will scan through the limit transponders on each related satellite, collecting the measurement data. You can press STOP to abort the scan, otherwise, wait until the scan completes.
 - When the scan completes, you can exit to discard the data or save the data in the meter.
- 2) Install PC Software
- a. The MeterMaid program is required to transfer the data from the instrument to the PC and to print reports. To download MeterMaid, visit our website, click on 'Service and Support', then click on 'Software Updates', then click on 'XR-3 Modular Test Instrument'.

Visit our website to view or print application notes or the full operation manual.



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