

## First Strike Meter FS1 digital satellite Finder

Firstly a big thank you to DMS International for producing what must be the missing link in satellite meters. Until now there was huge void in the range of cost effective satellite signal meters.

There was nothing between the \$40 Squawker and the Trimax SM2200 and the Trimax SM2500. Both these units feature a real time picture monitor as standard. The SM2500 also provided a spectrum analyzer facility as well



The First Strike FS1 Digital Satellite finder fills the void with an affordable solution in the shape of the FS 1. The FS1 is protected by a sturdy shock proof rubberized casing. These casings have been standard with multi meters for years and have saved more than one meter from disaster when dropped.

### The SF1 comes with the following Accessories:

**1: AC to DC mains charger.**

**2: Car charger.**

**3: F connector adapter**

**4: USB cable**

**5: Adjustable lanyard suitable to hand around ones neck.**

(The eye lets which attach the lanyard to the meter case are substantial and wont pull out or slip.)

The FS1 will suit the avid enthusiast and the more technical installers. It reacts very rapidly to signal changes and is very easy to use making searching for satellites a whole new experience. The LED display is very easy to read and

easier to set up. It comes with a USB lead so that the software can be updated via your PC.

### Setting up.

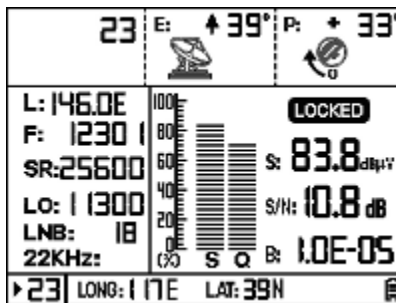
The first parameters to be loaded are your Longitude and Latitude. For New Zealand it is Long: 174 / Lat: 36S you must enter N for north of the equator or S for south of the equator.

The reason for this is that when you load the satellites orbital slot the meter will give you an **Azimuth bearing** an **Elevation angle** and also **Polarization offset**.

*In my case I loaded Optus D1 at 160 E which produced the following readings:*

- 1: Azimuth the arrow faced the approximate position of 160 E
- 2: Elevation 45 degrees - that's close enough.
- 3 The polarization angle for horizontal polarization 18 V

### The Display



The top three displays consist of **Azimuth / Elevation and Polarization**.

The model I have has a circle and arrow pointing to where the satellite is located  
Below these indicators are:

#### **(LEFT HAND SIDE)**

**L:** This is for the satellite longitude 146.

**F:** Transponder Frequency 12301

S/R symbol Rate 22600

**LO** LNBF local oscillator frequency can be user selected.

However for universal LNBF's covering lo and hi band the 22k switch needs to be selected when the hi band 10.600 is selected.

**LNB** Horiz / Vert polarization 13/18V

22 KHz on /off

#### **The bottom display features from left to right**

1: The Transponder number in my case No 1 is Optus D1 12456. No 2 Optus 12483

2: Longitude / Latitude. Speaker on /off battery indicator.

### **Main Window: (RIGHT HAND SIDE)**

**LOCK:** This display only activates in once the receiver threshold is exceeded

**S / Q:** Signal and quality bar graph indicators

**S** = Signal indicator in dBuv

**S/N** =Signal to Noise in dB

**B:** = Bit Error Rate (only activates once the receiver threshold is exceeded)

### **Loading the frequencies**

Although the meter comes with preloaded satellite parameters, I choose to manually load the frequencies I use the most.

These are:

**Optus D1 12456 / 22500 & 12483 /22500**

**Optus C1 12407 / 30000**

**Optus D3 12744 / 22500**

**Asia Sat 4 3960 /27500**

### **Using the meter**

Once these parameters were loaded it was time to actually use the meter. The input cable screwed onto the right hand side input F connector and the power button depressed. .The LCD display produced all the information in the top and left hand display area.

By pressing any number, the right hand side activates and the meter is primed ready for action.

The first noticeable items missing are the **LOCKED** and the **BIT ERROR** display. These do not illuminate until such times as the receiver threshold has been exceeded. Once the receiver threshold has been exceeded (Based on the FEC) same as your satellite receiver the **LOCK** display is active and the **Bit Error Rate** also shows a reading.

**Both of these pictures were taken on a 1.8m 35cm dish mated with GenCen 0.3Db LNBF**



**Optus D1 12456 Locked  
Locked**



**Optus D1 12483**

**Optus D1 12456 /12483 / 22500 Location 160 degrees East  
Signal Strength 79% Signal quality 82%  
Signal strength 78.9 dBuv  
S/N 12.6dB / 12.1dB  
BER 1.0E-05**

Once the signal is connected, the meter will detect LNBF noise and display a signal level indicating that the LNBF is operating. Set the dish to the correct elevation, and slowly move the dish to where the satellite should be located. As the signal increases the Audio tone gets louder and sharper. When the signal reaches the receiver threshold point the Signal locks and the bit error rate is also displayed. At this time the audio signal should be a steady high pitched tone.

From here it is a very simple exercise to peak the dish to gain optimum performance.

To make cross pole adjustments, simply peak the signal for maximum and then adjust over by rotating the LNBF and then slowly come back to the maximum position. You can do this also for Vertical and horizontal if both polarities are active so that a null position between them is obtained.

I tried this several times with different LNBF's during the tests I carried out on several different dish sizes. I can report that every time when checked with a Spectrum Analyzer the Cross pole null was perfectly adjusted.

### **Conclusion**

During our testing it was very apparent that this meter is very user friendly. It has a lot more in the way of features than I have outlined .It has a default channel plan as well as a user channel plan which can be copied to the channel plan if required.

The meter can be powered by connecting the receiver lead directly to the output terminal if required - similar to how a Squawker is connected to use the receiver power LNBF power output. As the meter requires an input of 13.5 volts it does not matter which polarization your STB is locked on to.

Looking through the specifications, it is very interesting to note the RF input values range from 30 dBuv which = -77dBm to 105dBuv. Most modern day STB's work on RF input level ranging from -25 Dbm which = 82 dBuv so you can see that this unit is very sensitive indeed which is a big plus for locating weak signals.

The back light function is also a very handy addition. This can be used in low light conditions as well as in direct sunlight. This is where a lot of LCD displays suffer due to glare on the display face.

Finally the use of the lanyard makes carrying this meter a very easy exercise as it can be strung around ones neck allowing the use of both hands if one has to climb ladders.

I must congratulate DMS International with launching a piece of KIT that will serve both the enthusiast and the installer. This is no mean feat as the cost of this meter is very competitive. Other meters on the market today do not have as many features or are as easy to use as the **FIRST STRIKE FS1**



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## **Specifications of the First Strike FS1 Satellite Finder Meter**

- Input Frequency Range: 950~2150MHz
- Signal field intensity range: 30dBuV-105dBuV
- Measurement Unit: dBmV; dB $\mu$ V; dBm
- Measurement Accuracy:  $\pm 1.5$ dB
- Input Resistance: 75 ohm
- Symbol Rate: 2Msps-45Msps
- Connector: F type
- Measurement type: signal strength; bit error rate; S/N
- QPSK switch: automatic identification
- 22K control: supported
- Audio-output: Speaker
- Display: Code segment wide-temperature LCD
- Memory content: 300 reserved locations for global satellite channels; 100 user-defined channels
- LNB Power Supply: 13V, 18V, <500mA
- Interface mode: USB
- Adapter power supply: AC100V~240V
- C input: DC12~23V
- Output port voltage: DC12-23V
- Battery working time: about 2.5 hours continuously after full charge, varying from LNB with different power consumption.
- Charging time: 4 to 6 hours.
- Working Temperature: 0°C~40°C
- Storage Temperature: -10°C~50°C
- Exterior size: 142x82x35 (mm)
- Weight: 0.42Kg
- Gross weight: 0.9 Kg.