ShotTrack® III VoD Introduction

S hotTrack III VoD (Velocity of Detonation) monitor has been developed based on ten years of supply and operation with the original ShotTrack.

The unit is housed in a tough 1200 Pelican Case and measures 270 x 246 x 123 mm. *(outside dimensions)*

The unit has an internal Multi Cell-Lithium ION battery pack that has > 4-hour continuous operation from a charge.

General Specifications

- ➤ Sample Rates   = Selectable 6 (default) , 12, 24 and 48 microseconds
- ➤ Unit display   = Meters (default) , Feet or Nanoseconds
- ➤ Max Cable length   = 610 meters
- ➤ Samples stored   = 512,000 (1 Mbyte per shot)
- ➤ Data Storage   = Internal Flash (4 GByte)
- ➤ Size   = 27 cm x 24.6 cm x 12.3 cm
- ➤ Weight   = 1900 grams
- ➤ Battery   = LION internal 7.6 volt battery
- ➤ Charger   = Internal intelligent LION charger

Data Format

Data is stored as a pair of standard files. The shot data and info is stored on an internal Flash drive.

Cable lengths

- Maximum cable length = 610 meters. This is the recommended maximum cable length. It is possible with some cables to get above this length. If a longer length is used then the sample rate must be changed to 12 us.

- Minimum cable length before shot = 150 meters. This is the minimum length the unit checks for before allowing the unit to be SET. A no cable message is displayed if the cable is shorter than this length. Records down to 80 meters. This allows for minimum of 70 meters of usable cable for a shot.

Controls and Indicators

The ShotTrack® VoD monitor controls and indicators are straightforward and easy to use.

On Off	Press button turns power on and off.
Display	Shows the current cable length, current sample rate, time, battery voltage and GPS status
Set buttons	The left push button is used to set the unit for VoD monitoring.
Status Led	The Status LED illuminates **Green** when there is a valid cable connected and **Red** if no valid cable detected. When Set the LED is **Orange**.
Charging Led	The Charging LED illuminates **Green** when unit is being charged and turns off when charging is complete.
Battery charger socket	Is mounted above on/off switch This is a standard DC PWR type socket. The middle connector is +ve and the outer is Ground. A 12 volt 1 Amp plug pack is needed for the internal LION battery charger. This will take about 8 hours to fully charge from a depleted battery.
USB Socket	The USB Type mini B socket is used for communications Via Windows HID interface and connects to a PC as a Hard Drive. To activate the unit simply plug the USB cable into the socket and connect to a PC.
Cable Connector	The coaxial cable connector is situated at the rear of the unit

Start-up

VoD Monitor Start-up

There are a number of steps during start-up.

Unit number, Software and Hardware versions display. This displays the software and hardware version and revision numbers. This is displayed for 5 seconds.

ST 0016
S V2R5 H V5R3
BAT = 7.4 Volts
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The next display is the change sample rate defaults, enter calibration setup routine or change display units

PRESS SET TO
CAL OR CHANGE SR
CAL = 8.016
SR = 6.000 e-6

If the **SET** button is pressed then the sample rate rotates to CALIBRATE and then the next sample rate value and finally the display units used. When a period of three seconds elapses with no further input the displayed setting are selected.

If the CALIBRATE function is selected then the unit enters the cable calibrate function.

If no button is pressed then after three seconds the default rate of 6.00 us is selected. This is good for all cable lengths from 80 to 610 meters. The other sample rates should only be used for timing measurements or when there is long delay > 3 seconds between the first measured hole and the last.

To change default display units cycle around until the required units are displayed. The choices are: Meters, Feet or Nanoseconds. These settings will remain until either they are reset or the battery is disconnected.

Operation

After the start up routines are completed and a suitable cable is connected (Valid cable time displayed) the unit is ready to use. The display shows the current cable length, sample rate time, GPS status and Battery Voltage.

Run screen.   With cable connected   before cable connected

LEN 304.9 m   No cable
SR 6.00 us   SR 6.00
Fri 16:10:52   Fri 16:10:52
NO GPS BAT 7.4   NO GPS BAT 7.4

If GPS has valid signal

GPS OK BAT 7.4

The unit is now ready to be set for monitoring; this involves simply pressing the SET button.

The display changes to:

SET
SR 6.00 us
Fri 16:10:52
GPS OK BAT 7.4

The Led glows **Orange**

The unit then waits for a trigger. The trigger threshold is pre-set to a 2.5 meter reduction in length.

After trigger the data is stored to two separate locations.

1. Internal Flash serial device

This is just the current data and settings and overwrites any previous shots. It is intended as a backup in case the Flash drive data gets corrupted or accidently erased. It is available for download from ShotTrack for Windows.

2. Internal Flash drive.

The data on the Flash drive is stored as two files; a header file stxxx.hed and a data file stxxx.raw. These are the files that are used to download the data using the ShotTrack for Windows software. The file numbers are incremented; up to 999 shots can be stored. This Flash Drive can be erased, formatted etc. in the same way as a normal USB drive. *(xxx = three digit number)*

The CPU switches off all the external power supplies and enters sleep mode.

The unit uses 0.5 Amps in use and < 0.05 milliamps in sleep mode.

CABLE CALIBRATION

If CALIBRATE has been chosen the unit will display if a cable is connected

> CHECK CABLE REEL
> IS 305 METERS
> PRESS SET
> TO CONTINUE

Or if no cable is connected:

> No cable
> CONNECT 305
> METER REEL

Once a 305 meters cable reel is connected press SET, the display changes to

> CABLE RTN TIME
> 2444.9 ns *
> PRESS SET
> TO CONTINUE

Pressing SET will calculate the cable calibration factor and display.

> CAL FACTOR
> 8.016 *
> PRESS SET
> TO CONTINUE

Note: numbers taken from Digitek Quad Shield RG6

The calibration factor will automatically be set for this unit and if required this value can be loaded into ShotTrack for Windows for future use with this cable. Generally the cable produced now is of so good quality that this is only needed to be done once for each new cable type used.

If a 305 Meter reel is not available then the same procedure should be used until the cable return time is displayed. This value should be written down and 25 meters of cable cut from the reel. The new return time written down and the OFF Button pressed to get out of the function.

Then this formula should be used to calculate a calibration factor which must be entered into the unit using ShotTrack for Windows.

Calibration factor = First reading – Second reading / 25

Procedure

All that is required to start a USB action is to plug a cable into the USB socket on the unit and on a PC. (The unit must not be switched on)

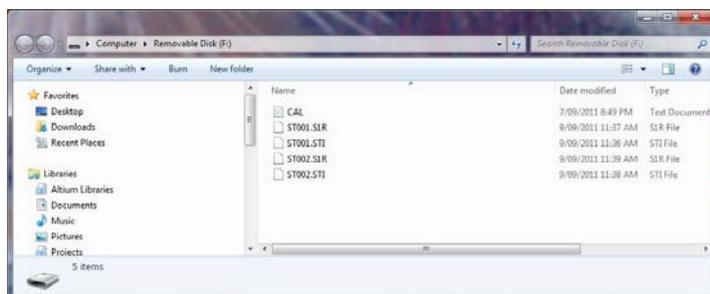If needed the PC will load the necessary drivers to operate the unit.

On plug in the unit will beep 4 times and the display will show:

USB CONNECTED

The PC will prompt for an action

If you click on Open folder you will see something like this.

As with any disk drive you can cut, copy move and delete any of the files on the drive. The CAL text file is what the calibration factor for the unit is set to. If you erase this file then the system will re-write it with a default of 7.950. It is suggested that this file is not altered directly and that calibration factor changes are made using the calibrate function of the unit or in the ShotTrack For Windows program.

These files are the RAW data and con not be directly read from the software. The download command must be used from the ShotTrack for Windows software.

When the USB cable is removed the unit will return to sleep mode.

Errors

CARD ERROR

If on start-up the screen flashes this display:

CARD ERROR
INTERNAL
SAVE
ONLY

Then the internal SD Card has failed. This will in all probability be that the card has become displaced in the card socket on the underneath of the PCB or the file structure has become damaged when connected to a PC. The unit will still operate and save on its backup internal flash. This can be directly downloaded using ShotTrack for Windows. Only the last shot is saved in this mode so if multiple shots are to be done then the data must be downloaded after each shot.

Possible fix   Remove and reseat SD Card. Plug into PC and re-format Card.

USB drive not recognised

Some new USB-3 ports do not recognise the internal USB-2 device.

Possible fix   Use a USB-2 hub in between the USB-3 port and the ShotTrack unit. For example YellowStone 4 Port USB Hub available from JB Hi-Fi.