

IOTA-VTI

Quick start guide

Basics

Comprehensive instructions for using your **IOTA-VTI** may be found in the Operations Manual at www.videotimers.com, but to start right now just do the following three things:

- Connect **Video Out** to a display of your choice, and turn on that display.
- Supply power to the **IOTA-VTI**. The red **Power** light will turn on.
- Connect a video source to **Video In**. The green **Camera** light turns on.

The sequence of these steps is not important; if you turn on power first, you will miss the initial startup screen, but pressing the **Reset** button will cause a restart, so you will be able to see the startup screen then.

*IOTA-VTI
front panel*



*IOTA-VTI
back panel*



Power sources

Power may be supplied in either of two ways:

- from the USB port of a computer, or
- using a 12-volt d.c. source.

If USB is to be the power source, the cable must have a USB Standard-A plug at the computer end and a USB Standard-B plug at the *IOTA-VTI*. If 12-volts d.c. is to be used, the cable must have a 5.5 x 2.1-mm coaxial power plug, with center pin positive.

Position/Time displays

Either of two display modes is accessed by moving the **Position/Time** switch. It will usually be preferable to start with the **Position** display, because that shows the status of the GPS system. A minimum of 4 satellites must be acquired before precision time will be reported. The **Time** position will be used most of the time, but only field count will be displayed until a GPS fix is obtained. After a fix is obtained, the **Time** display becomes

hh:mm:ss dddd eeee fffffff

where

hh is the UTC hour

mm is the UTC minute

ss is the UTC second

dddd and **eeee** are fractional seconds after **ss**;

ffffff is the number of video fields since power-on or reset.

dddd and **eeee** mark the end times of the two video fields that make up the current video frame. The units of **dddd** and **eeee** are hundreds of microseconds (decimilliseconds). If your analysis uses the resolution of video frames (two adjacent video fields), the earlier of the two decimillisecond values shown will be the time at the middle of the frame.

GPS fix

The time required to obtain a first fix will range from 30 seconds to a few minutes. Longer times are to be expected if your **IOTA-VTI** has been moved a long way since it was last used, if it has not had a fix for a long time, or if the sky exposure is poor. The internal EM406A GPS is quite sensitive, and may even perform fine indoors, but its preferred environment is outdoors. It is recommended that you first use **IOTA-VTI** where the GPS has a good view of the sky.

Date and position

Date and geographic position are shown only in the **Position** mode, so you will always want to record at least a few seconds of that before and after each recording of the **Time** display.

1pps

The yellow **1pps** light in the middle of the front panel will blink at the start of each UTC second when precision time is available.

External video source

A video input is not required for the **IOTA-VTI** to operate correctly, so your video source can be the last part of your system connected – but you don't want to forget it. The green **Camera** LED on the front panel will light when an external video source is present.

TV Safe/Full Screen

The **TV Safe/Full Screen** switch lets you choose the position of the time display line, and only by experimenting will you see which works better for you. After changing the position of this switch it is necessary to press the **Reset** switch for the change to take effect. *That will also reset the field count to zero.*

PAL/NTSC

IOTA-VTI treats the PAL and NTSC formats differently; your unit will have been delivered set for the format you requested. If at any time you need to change the format used, it will be necessary to remove the cover, change the position of the **PAL/NTSC** DIP switch, and replace the cover.

Integer seconds error

A word of caution about GPS-derived time. The time indicated by any GPS-derived timing system, including **IOTA-VTI**, may be in error by one or more integer seconds when it first obtains a fix, because recent leap seconds may not have been remembered. The memory retention times for the various GPS range from hours to months, and are in general unknown. Be assured that a time error will not be present after 15 minutes of continuous **IOTA-VTI** operation, because an updated almanac will have been downloaded. If, at the end of an almanac update, the previous times were found to have been in error, this will be displayed on the **Time** screen, with instructions on how to correct the previous times. In addition, before the almanac is updated, **IOTA-VTI** alerts users to the possibility of an integer seconds error by placing an hourglass symbol near the left end of the **Time** display. If the hourglass symbol is absent, you can be confident that the indicated time is correct. In summary,

- the indicated time is probably correct even if the hourglass is present;
- you will know that it is correct if the hourglass is absent.

See the Operations Manual for more information. It is highly recommended that your **IOTA-VTI** be powered-up at least 15 minutes before its precision time information is needed, perhaps while driving to an observing location. Note that the **IOTA-VTI** need not have devices connected to the **Input** or **Output** jacks for the **IOTA-VTI** to achieve a GPS fix and update its almanac.

www.videotimers.com

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