VG03-ITR

Internal Testing Range

I. Introduction

The VG03 ITR (Internal Testing Range) software uses multiple VG03 units, daisy chained as a network to capture high-speed pulses from external sensors.

Your VelociGraph might have features not described in this documentation. If your VelociGraph is marked as a custom order, please be sure to see any additional documentation included with the unit after reading through this manual.

The VelociGraph VG03 captures high-speed pulses from external sensor (typically an ADC iBeam Sensor, or other light-screen sensor), calculates the time between those pulses and, if configured to do so, the speed of the projectile that passes though the sensors. Data is available via the RS485 serial port built into the device using a custom protocol.

II. Connections

For connection set-up, please refer to VG03_OperationManual

III. VG03 ITR Software Interface

The following is the VG03ITR software interface.

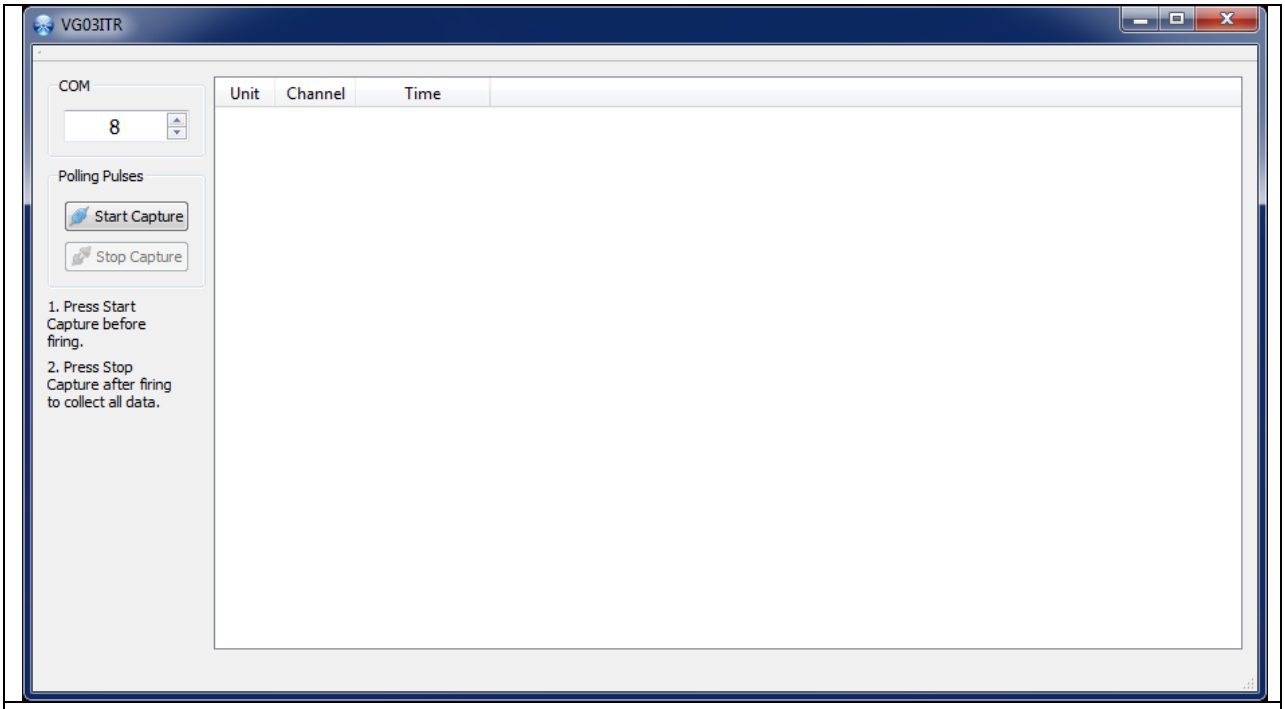


Figure 3.1 - Software Interface

- **Basic Use.**

  Be sure to select the correct COM number before pressing “Start Capture”. Failure to do so, figure 3.2 will appear.

  Note: *To check which COM number the computer is using to communicate, please refer to VG03_OperationManual Section VIII.*

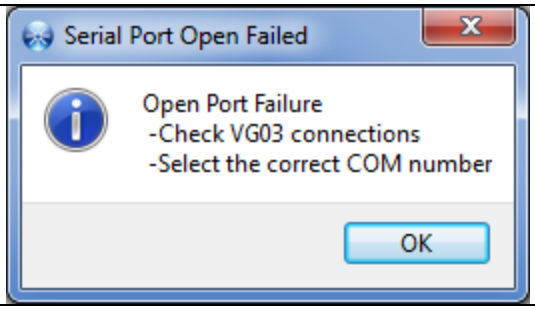


Figure-3.2 Serial Port Open Failed

Start Capture will open the serial port and establish communication with the VG03 unit(s). Pressing this button will also sync all VG03 unit(s). The Status Bar will indicate when the program is ready to capture data. This will take a few seconds since the program will seek out all VelociGraph units. The program will be ready to capture data until the “Stop Capture” button is clicked.

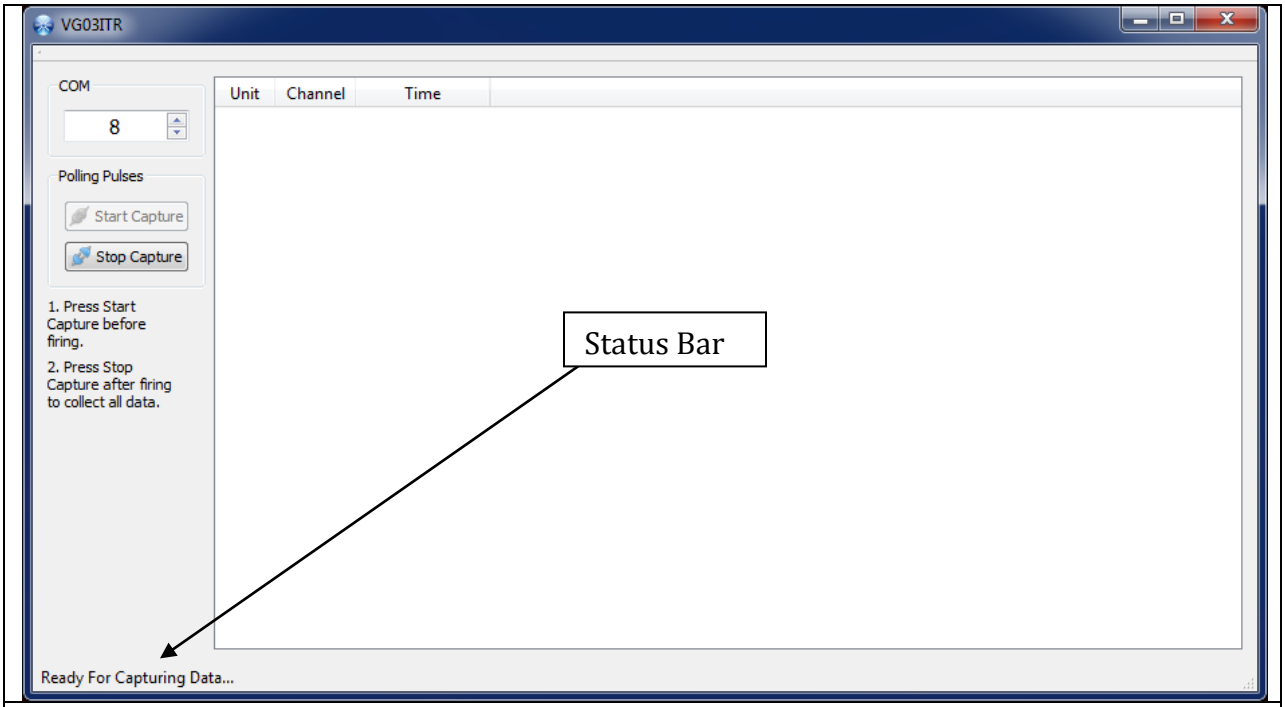


Figure 3.3 - Ready for capturing pulses.

Stop Capture When clicked, the program will request pulses from the VG03 unit(s) and display them on the table before the program closes the serial port and breaks communication with the VG03 unit(s). Figure 3.4 is an example of captured pulses.

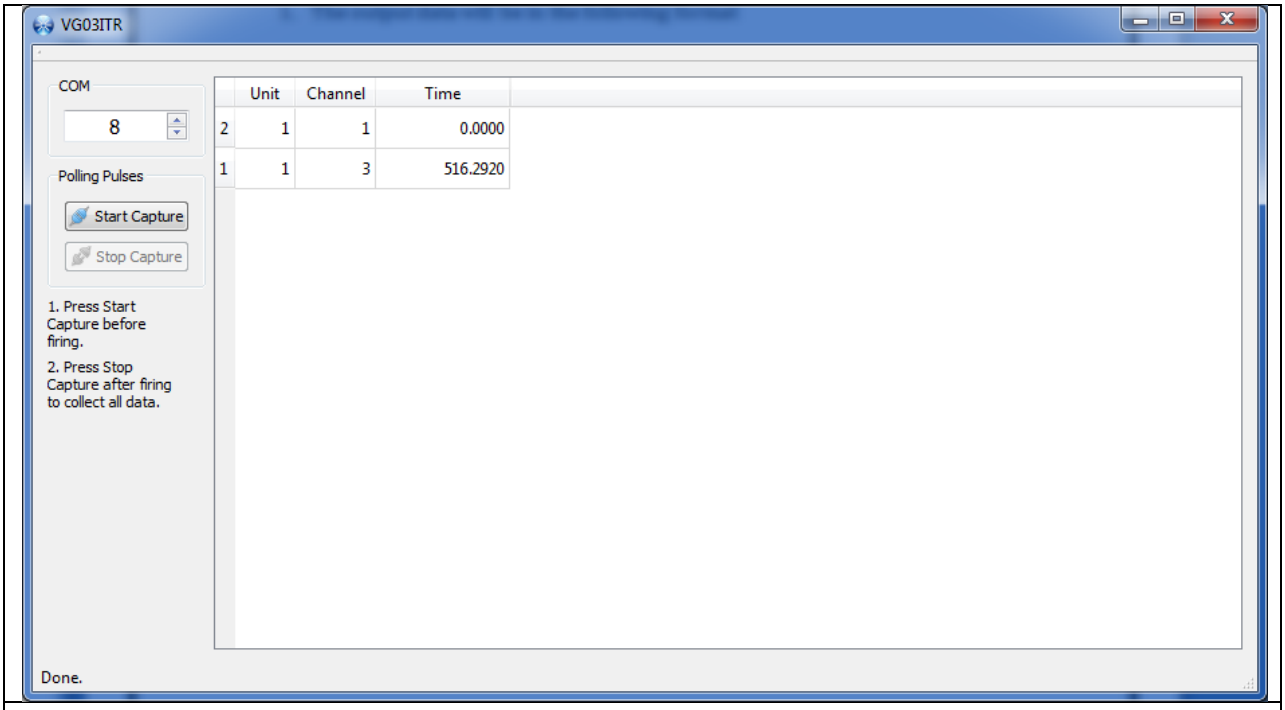


Figure 3.4 - Done Capturing Data

- **Formatted data.**

The data will be in the following format

address . channel# : time

address indicates the address of the VelociGraph from which this pulse came from.
channel# indicates which sensor was triggered.
time indicates the time of when this pulse was triggered.

Example from *Figure 3.4 Done Capturing Data* – First Pulse

01.3:516.2920

01 This means VG03 with address 01 captured this pulse.
03 This pulse was triggered by sensor 1
516.2920 This is the time of the pulse. The units of time are in seconds.
The pulses will be displayed on the screen until the close of the program or until the *Start Capture* button is clicked again. The pulses will appear in ascending order by time

in microseconds. The first pulse time will always be zero and the remaining times will be the difference between the first pulse time and the ith pulse time.

- **Capturing data via the TCP Server.**

1. The data is simultaneously broadcast through a TCP port. The broadcast text can be seen using a Telnet connection with local-host IP address **127.0.0.1**, and port number **10130**.

   The intention is for third-party software to collect data from the ITR program via this TCP port.

   The following example shows how the current on-screen text string is broadcast through a TCP port.

   If using Foxterm software, make the following changes as seen in *Figure 3.4 Telnet Connections.*

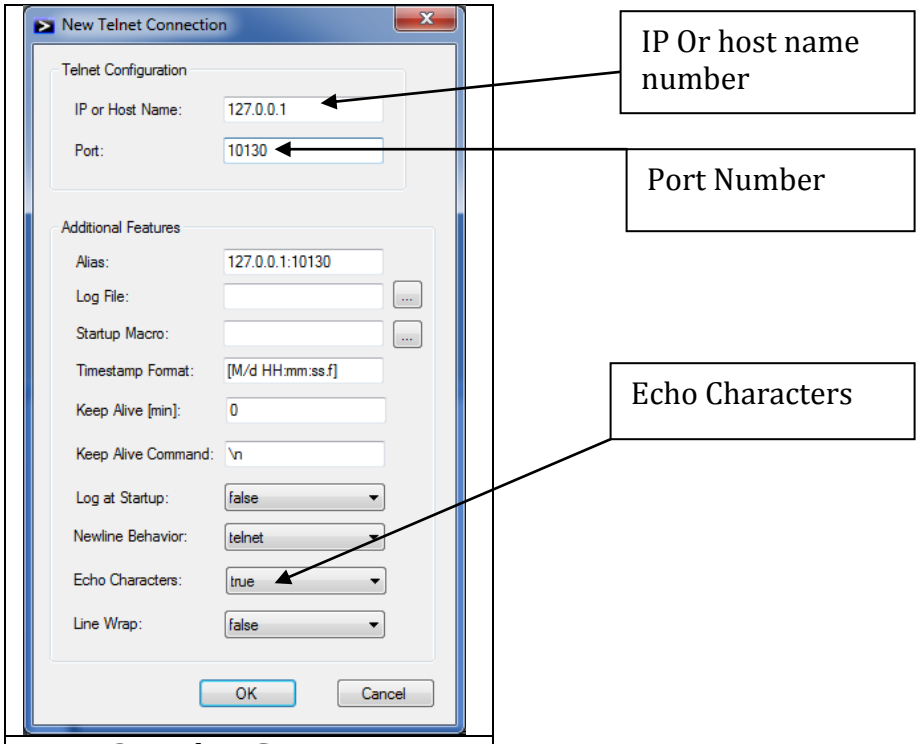
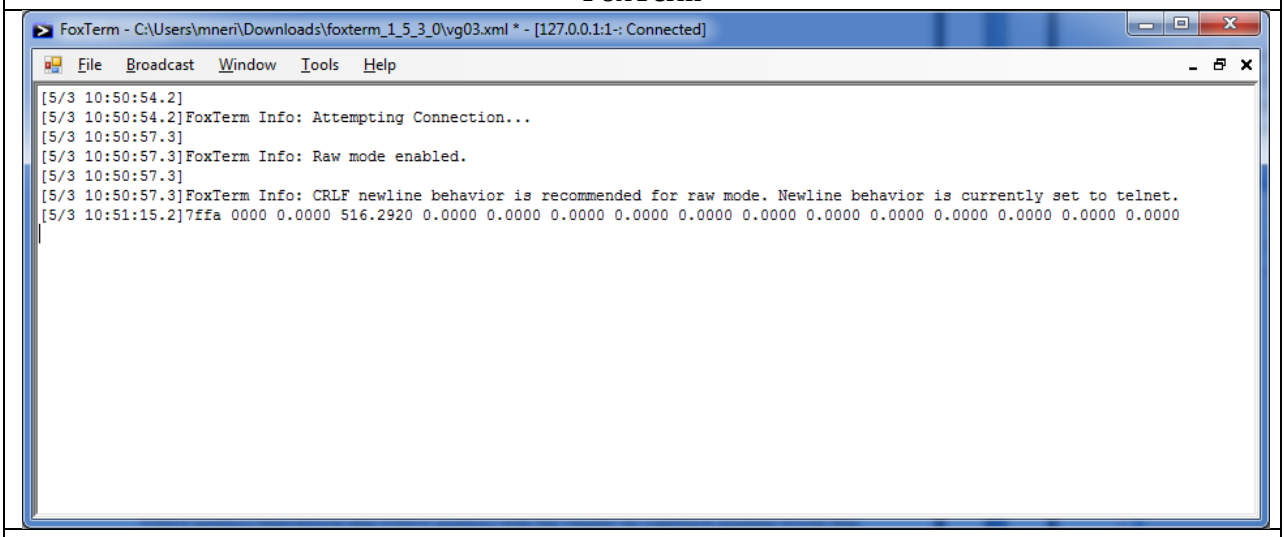


Figure-3.4 Telnet Connection
Click **OK** once the proper changes have been made.

Every new set of pulses will be displayed on a new line.

FoxTerm



VG03-ITR Software Interface

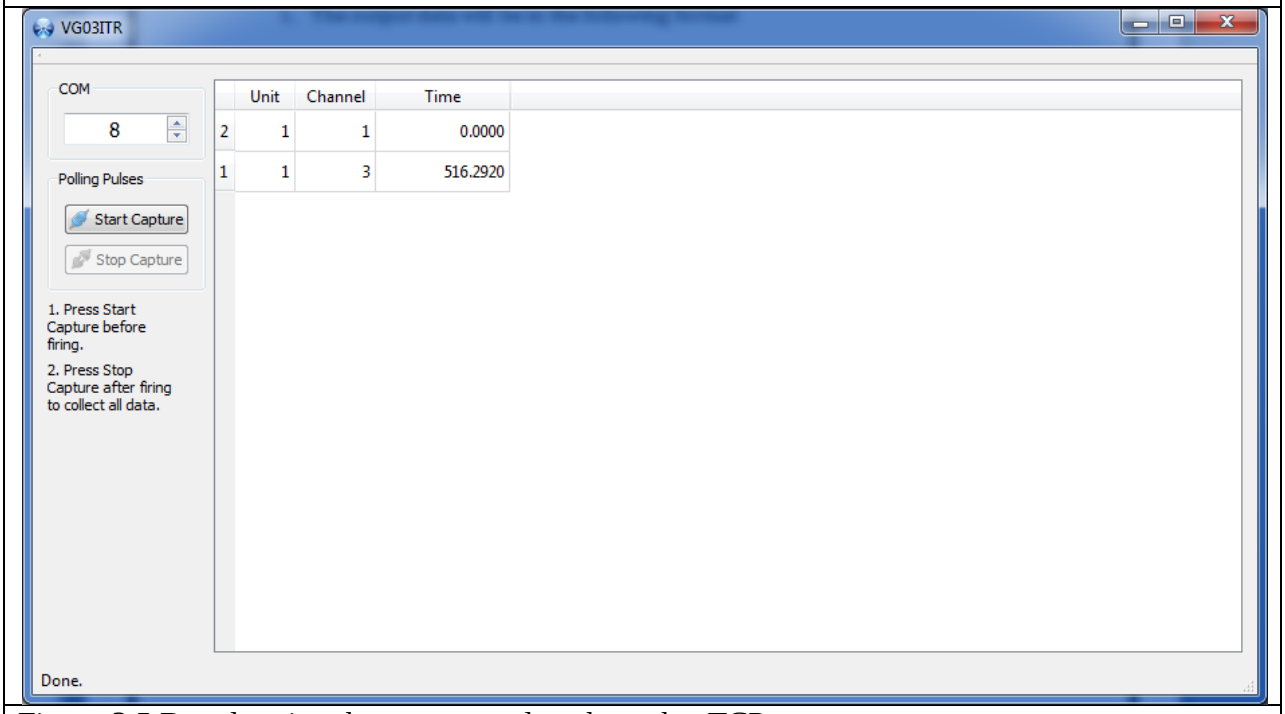


Figure-3.5 Broadcasting the on-screen data through a TCP port.

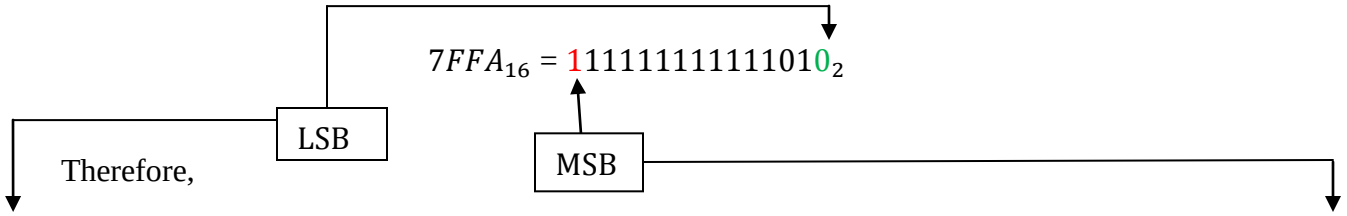
- **Interpreting data via the TCP Server.**

The first diagnostic field contains missed pulses. It is a hexadecimal number which, when expanded to Boolean, will detail which input(s) were missed. The least significant bit (LSB) is input 1, MSB is input 16. In practice, input 1 will never be missed because if there is no input 1 then there is no test. Input 16 will never be missed because there is no Input 16.

In the example above,

7ffa 0000 0.0000 516.2920 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

7FFA is a hexadecimal number which, when converted to binary will tell which inputs were missed.



Therefore,

Input	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	0000	0.0000	516.2920	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1

IV. Troubleshooting Guide

1. Is the power switch on?
2. Verify that the sensor receivers and any light sources are receiving power.
3. Verify that the cable connections to the receivers and emitters are good. To check the wiring, switch the cables on the receivers.
4. Be sure that there is nothing interfering with the sensor view. If there is anything between the emitter and receiver, the sensors will not see the projectile. Sometimes dust or debris will block the emitter.
5. If you believe that the data output by the VelociGraph is erroneous, check all distances and confirm that you have configured the VG03 correctly.
6. The VelociGraph is not typically sensitive to electrical noise. However, high-speed sensors *are*. Check for external sources of noise to explain additional pulses.
7. Verify that any other program(s) using COM communication are closed. Disconnect and re-connect the programming cable (i.e. USB cable) from the computer, not the VelociGraph unit. Verify the COM number (see **Section VIII**).
8. Proper deadtime needs to be set for proper velocity readings. This depends on the type of machine being used with the VelociGraph unit.

For further assistance, you may contact our technical support department in the following ways:

1. Call (630) 783-1150 Mon-Fri 8:00am to 4:30pm Central Standard Time (CST)
2. Email: support@automatedesign.com