VWstalker Programmer
User Guide

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1 Introduction

- The VWstalker is a VW to SDI12 interface designed to work with WASP-VW to take readings from the vibrating wire sensors using the zero-crossing method.

- The VWstalker Programmer comprises of the hardware and software tools that allow the users to view and change the following settings of each VWstalker:

    - ✓ Address of the VWstalker
    - ✓ Sweeping frequencies
    - ✓ Excitation voltages

- The VWstalker can also be used to take VW sensor readings for trouble shooting purposes.

2 Components of the VWstalker Programmer

2.1 VWstalker Programmer hardware

- One "Programmer"

- One AC power supply with output of 12 VDC (nominal)

- One USB to serial adapter

2.2 VWstalker Programmer Software

- The custom software - "VWstalker Programmer.exe"

- The software is Windows based and requires .NET Framework 3.5 to run (available for free download from microsoft.com.

3 Connecting the VWstalker Programmer
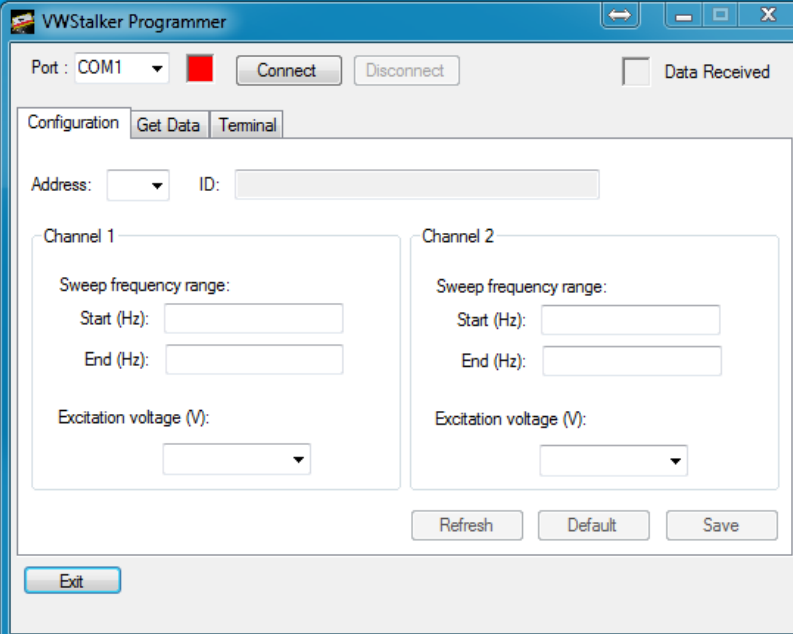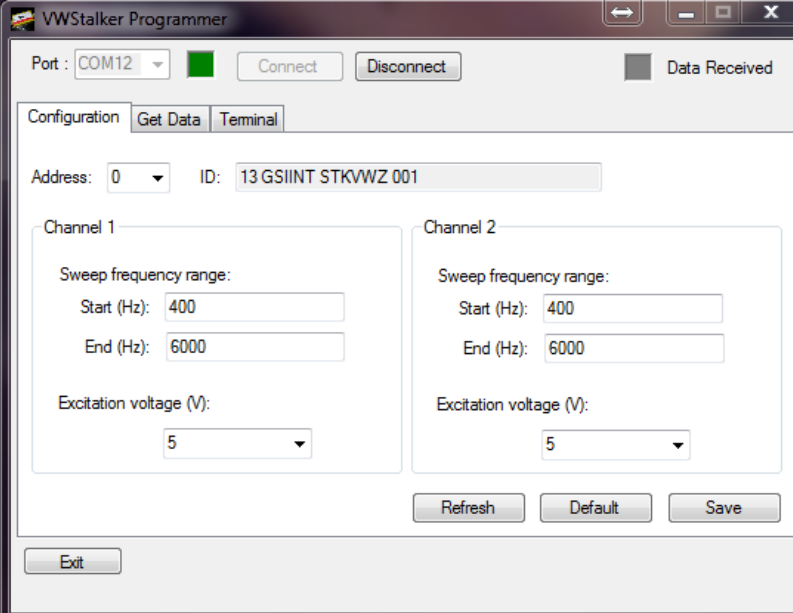
- Connecting VWstalker to Programmer

VWstalker "Logger" Cable Wire Color		WASP Wire Color	Functions
V2 (white stalker)	V5 (black stalker)		
BROWN	RED + WHITE	RED	POWER
WHITE	GREEN	GREEN	GND
GREEN	BLACK	BLUE	DATA

- Plug the USB end of the USB to serial adapter into a USB port on the PC. Check the "Device Manager" to find out the number of the COM port assigned to the USB to serial adapter.

- Connect up to 2 x VW sensors to the VWstalker (wiring information is given at the end of this user guide)

- Plug the AC power adapter into a AC power socket

4 Using the VWstalker Programmer

4.1 "Configuration" Tab

Start up: - Run "VWstalker Programmer.exe" - Go to "Configuration" tab	

Connect to the VWstalker
- Select the correct COM port assigned to the USB to serial adapter
- Click "Connect"
- The status icon will turn from red to green
- The current settings of the VWstalker will be retrieved and displayed, including:
  • Address
  • ID (read only)
  • Sweep frequency range for channels 1 and 2
  • Excitation voltage for channels 1 and 2	

Change the VWstalker's address: - Select a new address from the dropdown list between 0 and 9 - The VWstalker Programmer can work with only one VWstalker at a time	
Change sweep frequencies: - Click on the start and end frequencies for each channel and edit as necessary - Alternately, right click on the start and end frequencies for each channel and select from 4 pre-defined sweeping ranges	
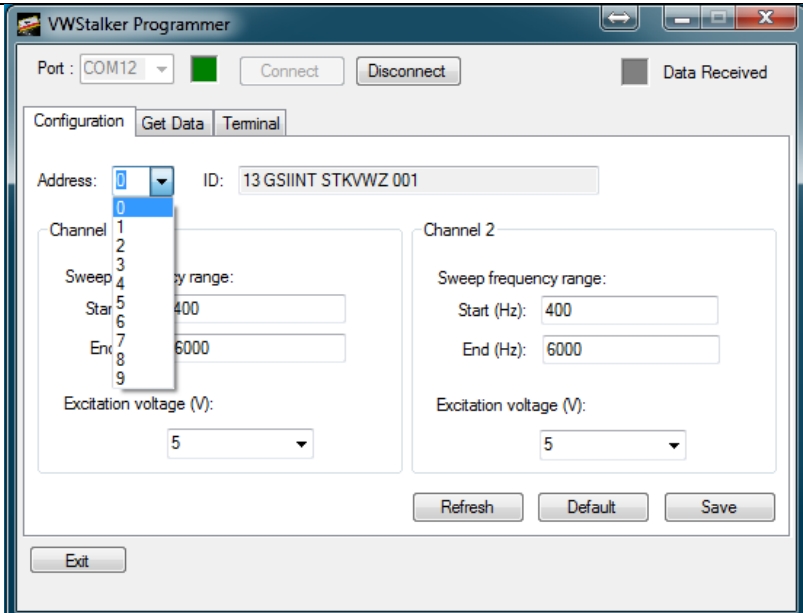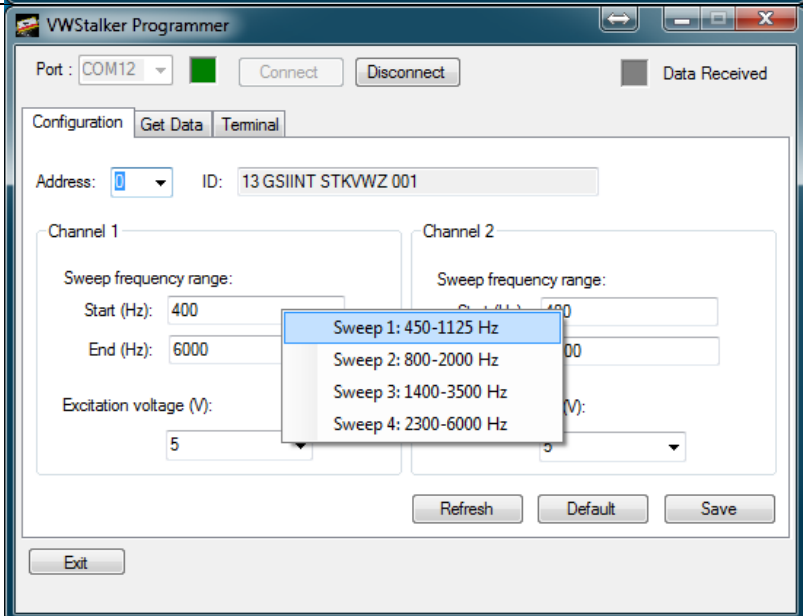
Change excitation voltages: - Select 5V or 12V as excitation voltage for each channel using the dropdown list	
Save the new settings: - When the changes are made, click on "Save" to send the new settings to the VWstalker.	
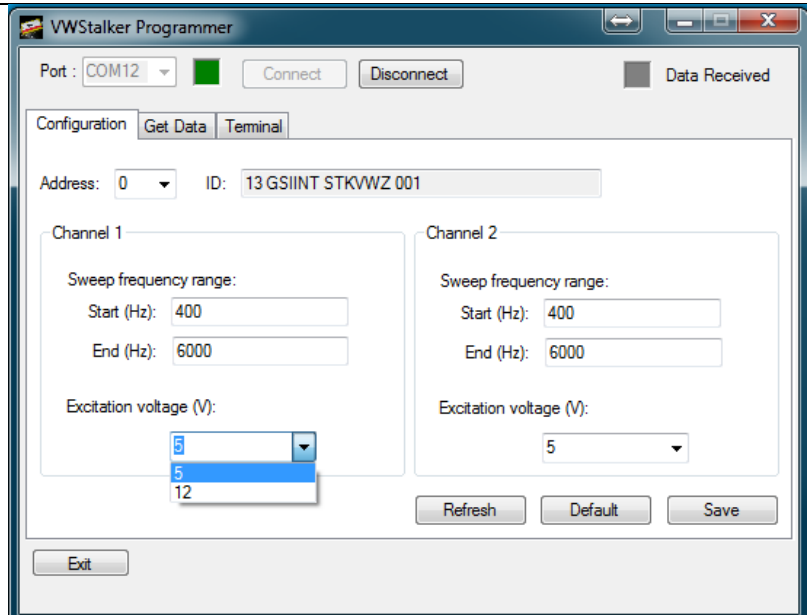
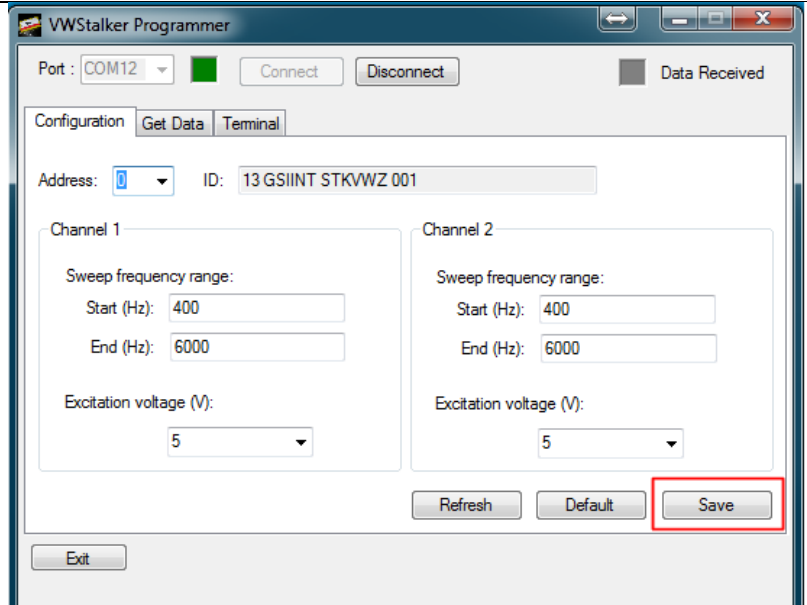|	
Reload settings from VWstalker: - Click "Refresh" to reload the current settings from the VWstalker	**VWStalker Programmer** Port : COM12 ▼ ■ [Connect] [Disconnect] ☐ Data Received [Configuration] [Get Data] [Terminal] Address: 0 ▼ ID: 13 GSIINT STKVWZ 001 Channel 1 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5 ▼ Channel 2 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5 ▼ [Refresh] [Default] [Save] [Exit]
Default settings: - Click "Default" to populate the display with default settings. The default settings can then be sent to the VWstalker by clicking on "Save".	**VWStalker Programmer** Port : COM12 ▼ ■ [Connect] [Disconnect] ☐ Data Received [Configuration] [Get Data] [Terminal] Address: 0 ▼ ID: 13 GSIINT STKVWZ 001 Channel 1 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5 ▼ Channel 2 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5 ▼ [Refresh] [Default] [Save] [Exit]
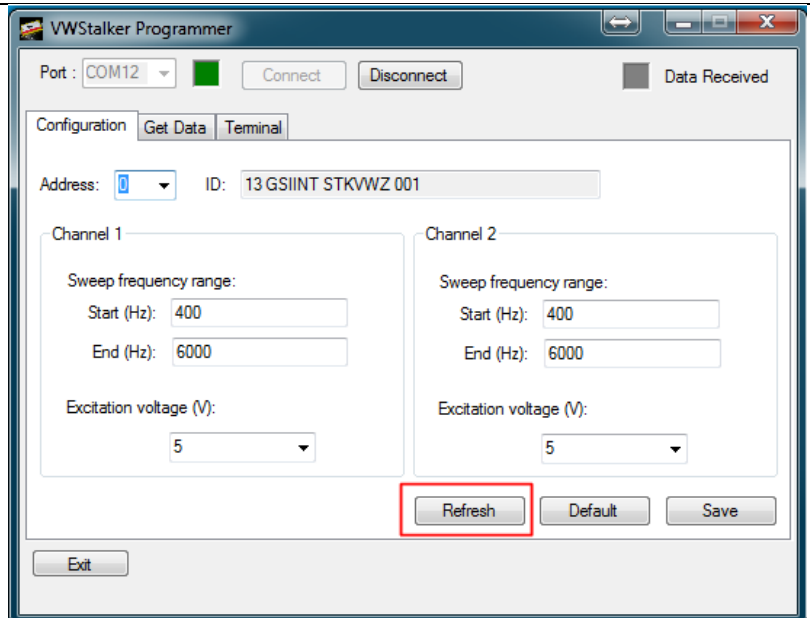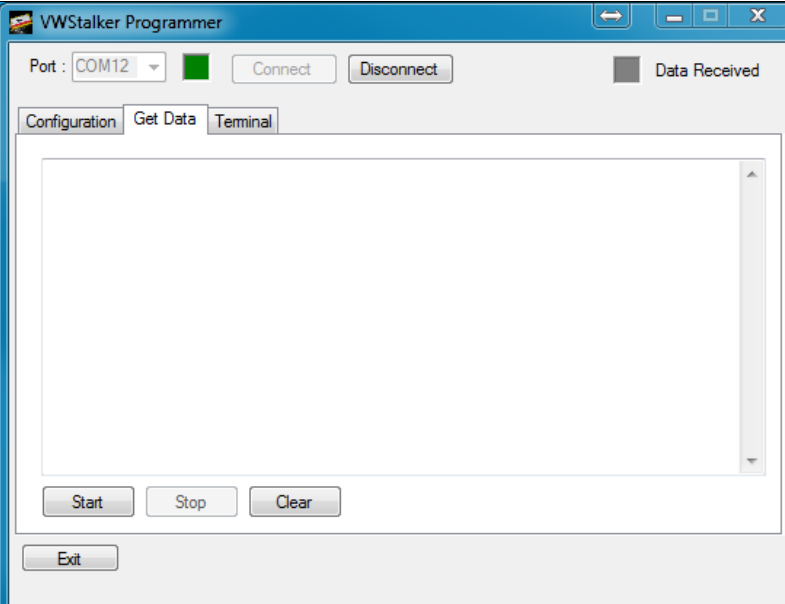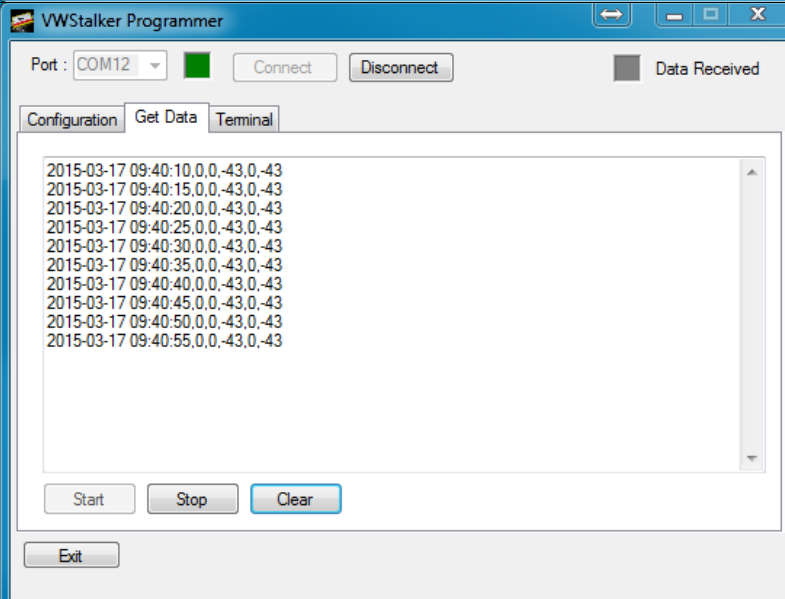
4.2 "Get Data" Tab

Start up:	
- Run "VWstalker Programmer.exe" - Go to "Get Data" tab - Click "Connect" to connect the VWstalker if not already connected to the VWstalker	**VWStalker Programmer** Port : COM12 ▾ 🟩 Connect Disconnect Data Received Configuration **Get Data** Terminal Start Stop Clear Exit
Get Data: - Click "Start" to start taking readings from the VW sensors connected to the VWstalker - New readings will be taken every 5 seconds and displayed in the format below: *TimeStamp,Adr,Hz1,DegC1, Hz2,DegC2* - When no sensors are connected, the Hz reading will be 0 and the temperature reading will be -43	**VWStalker Programmer** Port : COM12 ▾ 🟩 Connect Disconnect Data Received Configuration **Get Data** Terminal 2015-03-17 09:40:10,0,0,-43,0,-43 2015-03-17 09:40:15,0,0,-43,0,-43 2015-03-17 09:40:20,0,0,-43,0,-43 2015-03-17 09:40:25,0,0,-43,0,-43 2015-03-17 09:40:30,0,0,-43,0,-43 2015-03-17 09:40:35,0,0,-43,0,-43 2015-03-17 09:40:40,0,0,-43,0,-43 2015-03-17 09:40:45,0,0,-43,0,-43 2015-03-17 09:40:50,0,0,-43,0,-43 2015-03-17 09:40:55,0,0,-43,0,-43 Start Stop Clear Exit

Get Data: - The screen shot on the right showed valid readings taken from 2 x VW sensors	**VWStalker Programmer** Port : COM12 ▼ ■ [Connect] [Disconnect] ■ Data Received [Configuration] [Get Data] [Terminal] 2015-03-17 09:52:20,0,3065.279,17.71,2242.952,17.88 2015-03-17 09:52:25,0,3065.171,17.71,2242.898,17.88 2015-03-17 09:52:30,0,3065.482,17.71,2243.261,17.88 2015-03-17 09:52:35,0,3065.418,17.72,2242.865,17.89 2015-03-17 09:52:40,0,3064.996,17.72,2243.118,17.89 2015-03-17 09:52:45,0,3065.159,17.71,2243.123,17.88 2015-03-17 09:52:50,0,3065.044,17.74,2242.762,17.87 2015-03-17 09:52:55,0,3065.203,17.74,2243.355,17.89 2015-03-17 09:53:00,0,3065.088,17.73,2242.941,17.89 2015-03-17 09:53:05,0,3065.167,17.73,2243.022,17.91 [Start] [Stop] [Clear] [Exit]
Stop Reading: - Click "Stop" to pause taking readings from the VW sensors	**VWStalker Programmer** Port : COM12 ▼ ■ [Connect] [Disconnect] ■ Data Received [Configuration] [Get Data] [Terminal] 2015-03-17 10:13:10,0,3064.693,18.26,2242.879,18.39 2015-03-17 10:13:20,0,3065.107,18.27,2242.815,18.39 2015-03-17 10:13:25,0,3064.805,18.27,2242.956,18.4 2015-03-17 10:13:30,0,3065.199,18.27,2242.971,18.4 2015-03-17 10:13:35,0,3065.044,18.28,2243.137,18.39 2015-03-17 10:13:40,0,3064.968,18.28,2242.85,18.4 2015-03-17 10:13:45,0,3064.905,18.28,2242.728,18.39 2015-03-17 10:13:50,0,3064.729,18.28,2242.794,18.4 2015-03-17 10:13:55,0,3065.343,18.29,2242.888,18.39 2015-03-17 10:14:00,0,3065.585,18.28,2242.841,18.39 2015-03-17 10:14:05,0,3064.841,18.29,2242.988,18.4 2015-03-17 10:14:10,0,3064.885,18.29,2242.583,18.4 2015-03-17 10:14:15,0,3065.131,18.29,2242.783,18.4 2015-03-17 10:14:20,0,3064.936,18.3,2242.89,18.4 2015-03-17 10:14:25,0,3064.893,18.29,2242.984,18.4 [Start] [Stop] [Clear] [Exit]

Clear old readings:
-   Click on "Clear" to delete old readings from the display
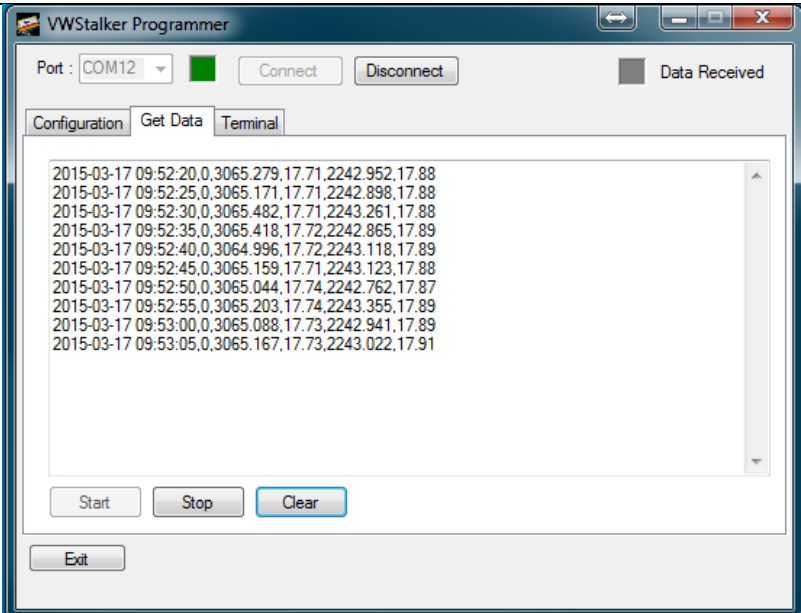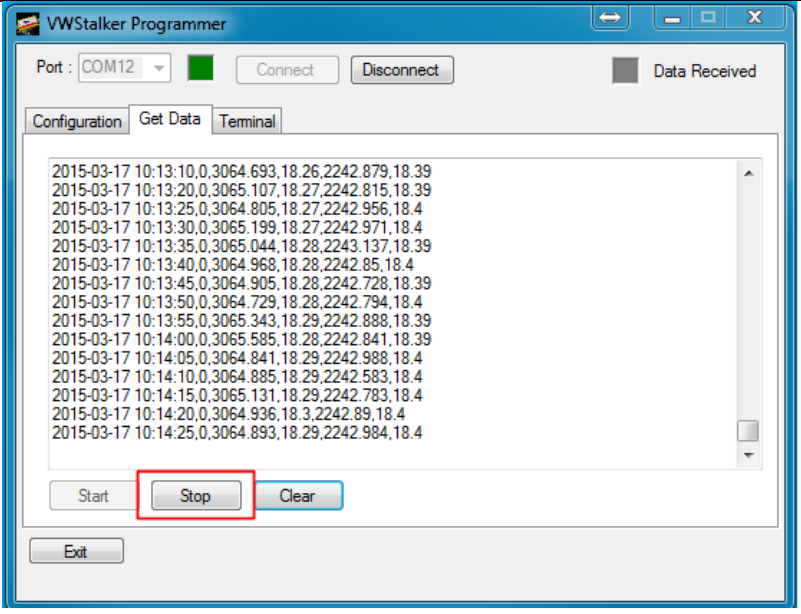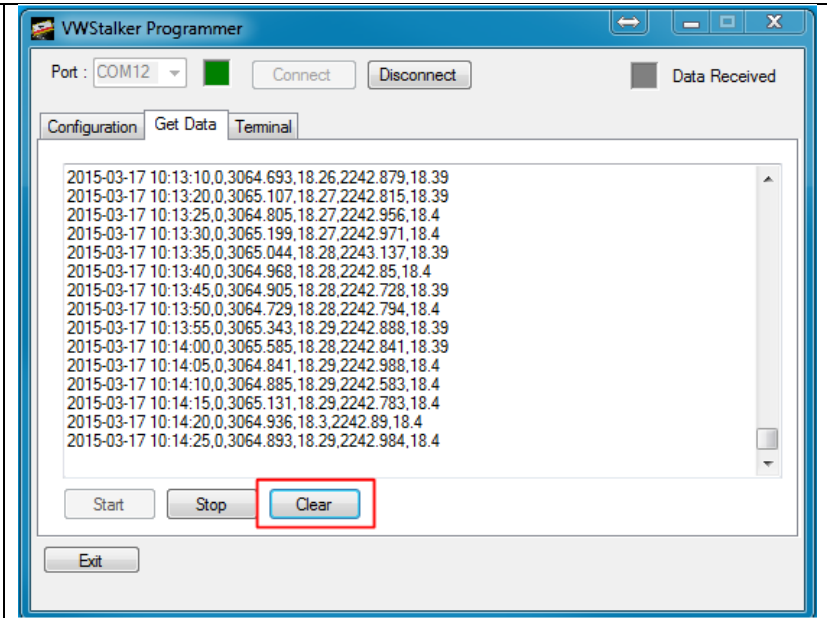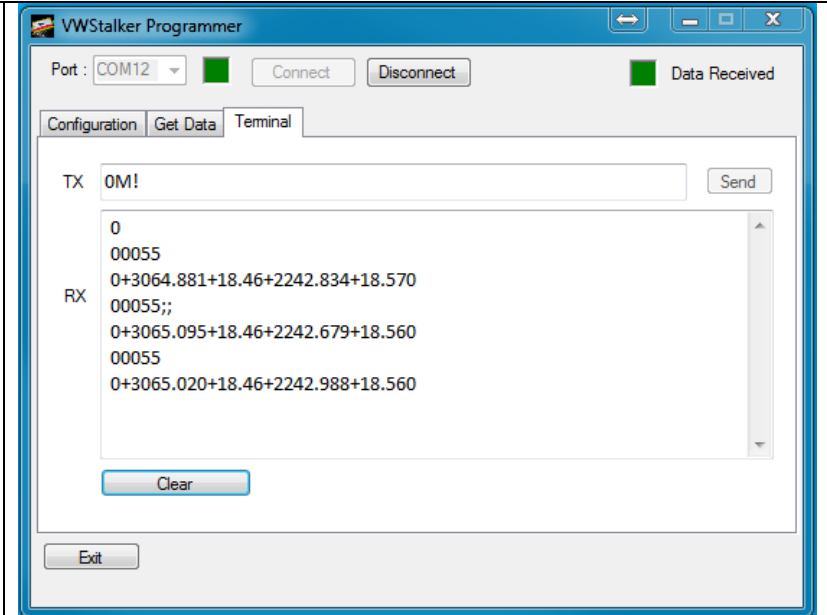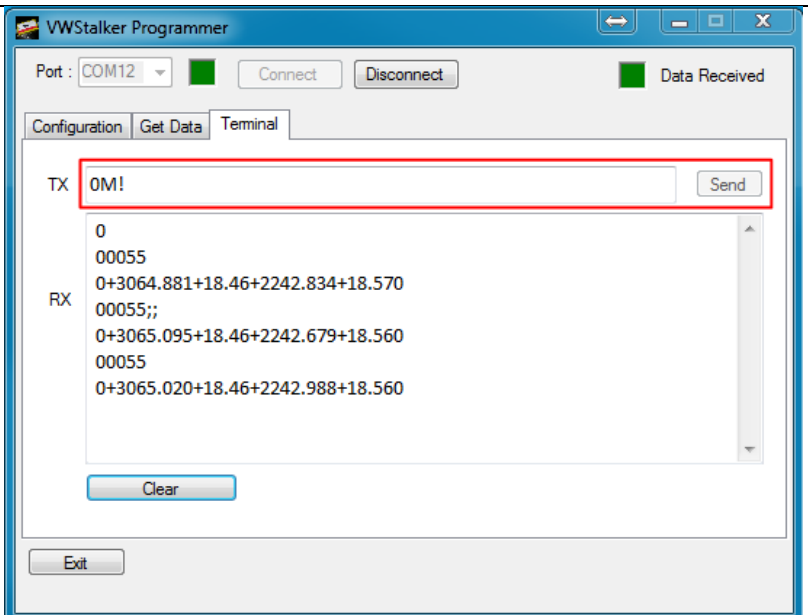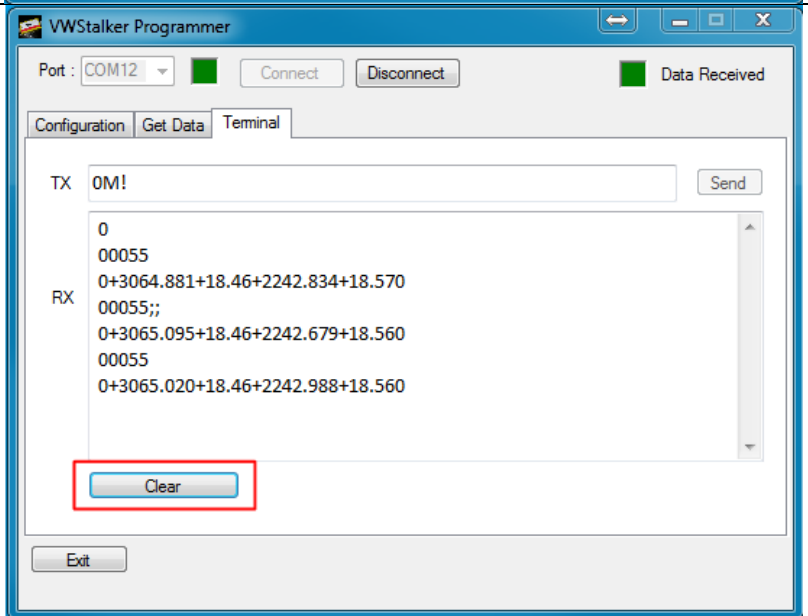

4.3 "Terminal" Tab

Start up:
-   Run "VWstalker Programmer.exe"
-   Go to "Terminal" tab
-   Click "Connect" to connect the VWstalker if not already connected to the VWstalker

Send a SDI12 Command: - Type the command in the TX box - Click "Send" to send the command to VWstalker - The responses from the VWstalker will be displayed in the RX box - A list of commands is given at the end of this user guide	
Delete the contents of TX and RX boxes: - Click on "Clear" to delete the command and responses in the TX and the RX boxes.	

5 VWstalker Wiring Information for Sensors

Channel	Sensors	VWstalker Wire Color
1	Vibrating Wire	BROWN
	GND	WHITE
	3K Thermistor	YELLOW
	GND	GREEN
2	Vibrating Wire	ROSE
	GND	GREY
	3K Thermistor	RED
	GND	BLUE
Notes: - All GND are connected to Housing Ground - Proper grounding of VWstalker housing is recommended to improve reading quality - VWstalker only works with 3K thermistors		

6 List of SDI12 Commands

'a' = address, can be replaced with '?' as an universal address.

Command	Response	Description
a!	a\r\n	Acknowledge active
aI!	a13 GSIINT STKVWF001	Send ID
aAb!	b\r\n	Change address a = initial address b = new address
aM! aMC!	a0402\r\n instrument with address returns 2 x VW & 2 x Temp after 40 seconds	Start measurement: instruct an instrument to make measurement
aC! aCC!	a04017\r\n instrument with address returns 17 values after 40 seconds	Start measurement: instruct an instrument to make measurement
aD0!	a+x.x+x.x+x.x+x.x\r\n	4 values: Val1,Temp1,Val2,Temp2 Val1, Val2: frequency in Hz result calculated by zero-crossing method
aD1	a+x.x \r\n	PCB temperature, in C
aXWRREG40003VALd!	aOK\r\n or aERROR\r\n	Set Sensor1 Excitation voltage d : 0- no excitation 5 – 5 V 12- 12V
aXWRREG40004VALd!	aOK\r\n or aERROR\r\n	Set Sensor2 Excitation voltage d : 0- no exciting 5 – 5 V 12- 12V
aXWRREG40005VALd!	aOK\r\n or aERROR\r\n	Set Sensor1 Sweep frequency Fmin in Hz d : frequency in Hz
aXWRREG40006VALd!	aOK\r\n or aERROR\r\n	Set Sensor1 Sweep frequency Fmax in Hz d : frequency in Hz
aXWRREG40007VALd!	aOK\r\n or aERROR\r\n	Set Sensor2 Sweep frequency Fmin in Hz d : frequency in Hz
aXWRREG40008VALd!	aOK\r\n or aERROR\r\n	Set Sensor2 Sweep frequency Fmax in Hz d : frequency in Hz
aXRDREG40003!	ad\n\r	Read Sensor1 Excitation voltage, in V d : voltage
aXRDREG40004!	ad\n\r	Read Sensor2 Excitation voltage, in V d : voltage

aXRDREG40005!	ad\n\r	Read Sensor1 Sweep frequency Fmin in Hz d : frequency in Hz
aXRDREG40006!	ad\n\r	Read Sensor1 Sweep frequency Fmax in Hz d : frequency in Hz
aXRDREG40007!	ad\n\r	Read Sensor2 Sweep frequency Fmin in Hz d : frequency in Hz
aXRDREG40008!	ad\n\r	read Sensor2 Sweep frequency Fmax in Hz d : frequency in Hz