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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		Functions	
V2 (white stalker)	V5 (black stalker)	WASP WIRE COlor		
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

Sta	rt up:	🔛 VWStalker Programmer	
-	Run "VWstalker	Port : COM1 - Connect Disco	Data Received
-	Go to "Configuration"	Configuration Get Data Terminal	
	tab		
		Address:	
		Channel 1	Channel 2
		Sweep frequency range:	Sweep frequency range:
		Start (Hz):	Start (Hz):
		End (Hz):	End (Hz):
		Excitation voltage (V):	Excitation voltage (V):
			
			Refresh Default Save
		Exit	
Car			
Cor	Select the correct COM	VWStalker Programmer	
-	port assigned to the	Port : COM12 V Connect Disco	Data Received
	USB to serial adapter	Configuration Get Data Terminal	
-	Click "Connect"		
-	The status icon will turn	Address: 0 - ID: 13 GSIINT STKVWZ 0	01
	from red to green	Channel 1	Channel 2
-	The current settings of	Sweep frequency range:	Sweep frequency range:
	retrieved and displayed	Start (Hz): 400	Start (Hz): 400
	including:	End (Hz): 6000	End (Hz): 6000
	Address	Excitation voltage (V):	Excitation voltage (V):
	ID (read only)	5 🗸	5 🗸
	Sweep frequency		
	range for channels 1		Refresh Default Save
	 Excitation voltage for 	Exit	
	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 	WWStalker Programmer Port : COM12 Configuration Get Data Terminal Address: ID: 13 GSIINT STKVWZ 001 Channel 1 Channel 2 Sweep 4 Sweep 4 Sweep 400 Enx 6 9 Excitation voltage (V): 5 5 Refresh Default Save
 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 	WWStalker Programmer Port : COM12 Connect Disconnect Data Received Configuration Get Data Address: ID: 13 GSIINT STKVWZ 001 Channel 1 Channel 2 Sweep frequency range: Sweep frequency range: Stat (H2): 400 Sweep 1: 450-1125 Hz 00 End (H2): 6000 Sweep 3: 1400-3500 Hz 00 Sweep 4: 2300-6000 Hz V): 5 Sweep 4: 2300-6000 Hz Excitation voltage (V): Sweep 4: 2300-6000 Hz Sweep 5 Sweep 4: 2300-6000 Hz Sweep 5 Sweep 5



 Change excitation voltages: Select 5V or 12V as excitation voltage for each channel using the 	WStalker Programmer Port : COM12 Configuration Get Data Terminal	connect Data Received
dropdown list	Address: 0 V ID: 13 GSIINT STKVWZ Channel 1 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5 12 Ext	001 Channel 2 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5 Refresh Default Save
Save the new settings: - When the changes are made, click on "Save" to send the new settings to the VWstalker.	VWStalker Programmer Port : COM12 Configuration Get Data Terminal Address: I ID: 13 GSIINT STKVWZ (Channel 1 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5 Vite: Ext Ext Ext Ext	connect Data Received Dot Channel 2 Sweep frequency range: Start (Hz): End (Hz): 6000 End (Hz): Excitation voltage (V): 5 Refresh Default Save



Reload settings from VWstalker: - Click "Refresh" to reload the current settings from the VWstalker	VWStalker Programmer Pot: COM12 Configuration Get Data Terminal Address: ID: 13 GSIINT STKVWZ C Channel 1 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5 V	onnect Data Received D01 Data Received D01 Channel 2 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5 5
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".	Exit VWStalker Programmer Port : COM12 Configuration Get Data Terminal Address: I ID: 13 GSIINT STKVWZ (Channel 1 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5 V	Default Save connect Data Received D01 Data Received Channel 2 Sweep frequency range: Start (Hz): 400 End (Hz): 6000 Excitation voltage (V): 5
	Exit	Refresh Default Save



4.2 "Get Data" Tab

Start up:	WVStalker Programmer	
 Run "VWstalker Programmer.exe" Go to "Get Data" tab 	Port : COM12 - Connect Disconnect Configuration Get Data Terminal	Data Received
 Click "Connect" to connect the VWstalker if not already connected to the VWstalker 		~
	Start Stop Clear	
Get Data: - Click "Start" to start taking readings from the VW sensors connected	WStalker Programmer Port : COM12 Connect Disconnect Configuration Get Data Terminal	
to the VWstalker - New readings will be taken every 5 seconds and displayed in the format below: <u>TimeStamp,Adr,Hz1,DegC1,</u> <u>Hz2,DegC2</u>	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 09:40:35.0.0.43.0.43 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 09:40:45.0.0.43.0.43 2015-03-17 09:40:55.0.0.43.0.43	*
- When no sensors are connected, the Hz reading will be 0 and the temperature reading will be -43	Start Stop Clear	



Get Data:	😹 VWStalker Programmer	
 The screen shot on the right showed valid readings taken from 2 x 	Port : COM12 Connect Disconnect Configuration Get Data Terminal	Data Received
VW sensors	Consignation Circle Construction 2015-03-17 09:52:20,0.3065.279,17.71.2242.952,17.88 2015-03-17 09:52:30,0.3065.482,17.71.2242.898,17.88 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 09:52:40,0.3065,159,17.71.2243.123,17.88 2015-03-17 09:52:40,0.3065,020,17.74.2243.123,17.89 2015-03-17 09:52:50,0.3065,020,17.74.2243.123,17.89 2015-03-17 09:52:50,0.3065,020,17.74.2243.123,17.89 2015-03-17 09:52:50,0.3065,020,17.74.2243.123,17.89 2015-03-17 09:53:00,0.3065,020,17.74.2243.261,17.89 2015-03-17 09:53:00,0.3065,020,17.74.2243.022,17.89 2015-03-17 09:53:00,0.3065,088,17.73,2242.941,17.89 2015-03-17 09:53:00,0.3065,167,17.73,2243.022,17.91 Start Start Start	-
	<u></u>	
Stop Reading: - Click "Stop" to pause taking readings from the VW sensors	Port : COM12 Connect Disconnect Configuration Get Data Terminal	Data Received
	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 10:13:35.0.3065.044.18.28.2243.137.18.39 2015-03-17 10:13:40.0.3064.968.18.28.2242.728.18.39 2015-03-17 10:13:45.0.3064.905.18.28.2242.728.18.39 2015-03-17 10:13:55.0.3065.343.18.29.2242.881.8.39 2015-03-17 10:13:55.0.3065.343.18.29.2242.888.18.39 2015-03-17 10:14:00.0.3064.841.18.29.2242.888.18.39 2015-03-17 10:14:05.0.3064.841.18.29.2242.883.18.4 2015-03-17 10:14:05.0.3065.131.18.29.2242.833.18.4 2015-03-17 10:14:15.0.3065.131.18.29.2242.833.18.4 2015-03-17 10:14:15.0.3064.841.18.29.2242.833.18.4 2015-03-17 10:14:15.0.3064.841.18.29.2242.833.18.4 2015-03-17 10:14:15.0.3064.841.839.2242.833.18.4 2015-03-17 10:14:15.0.3064.841.839.2242.833.18.4 2015-03-17 10:14:20.0.3064.835.18.29.2242.833.18.4 2015-03-17 10:14:20.0.3064.835.18.29.2242.833.18.4 2015-03-17 10:14:20.0.3064.835.18.29.2242.833.18.4 2015-03-17 10:14:20.0.3064.835.18.29.2242.833.18.4	•
	Start Stop Clear	



Clear old readings:	WStalker Programmer	
- Click on "Clear" to	Port : COM12 - Connect Disconnect	Data Received
the display	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 10:13:25,0,3064,905,19,27,2323,965,18,4	^
	2015-03-17 10:13:30,0,3065,199,18,27,2242,936,16,4 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 10:14:00.0.3065.58b,18.28,2242.841,18.39 2015-03-17 10:14:05.0.3064.841,18.29,2242.988,18.4 2015-03-17 10:14:00.3064.9851.92,3242.988,18.4	
	2015-03-17 10:14:10,0,3064.303,16.25,2242.303,16.4 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 2242,98 18.4	
	2015-03-17 10:14:25,0,3064.893,18.29,2242.984,18.4	
	Start Stop Clear	
	Exit	

4.3 "Terminal" Tab

Start up:	VWStalker Programmer	
- Run "VWstalker	Port : COM12 V Connect Disconnect	Data Received
- Go to "Terminal" tab	Configuration Get Data Terminal	
- Click "Connect" to connect the VWstalker	if TX OM!	Send
not already connected to the VWstalker	0 000055 0+3064.881+18.46+2242.834+18.570 00055;; 0+3065.095+18.46+2242.679+18.560 00055 0+3065.020+18.46+2242.988+18.560 Clear	×
	Exit	



Send a SDI12 Command:	🛃 VWStalker Programmer	
- Type the command in	Port : COM12 - Connect Disconnect	Data Received
The TX DOX Click "Send" to send the	Configuration Get Data Terminal	
command to VWstalker		
- The responses from the	TX 0M!	Send
VWstalker will be	0 00055	*
alsplayed in the RX box	0+3064.881+18.46+2242.834+18.570	
given at the end of this	00055;; 0+3065.095+18.46+2242.679+18.560	
user guide	00055	
	0+3065.020+18.46+2242.988+18.560	
		~
	Clear	
	Exit	
Delete the contents of TX	VM/CA-II Deserves	\leftrightarrow $ \times$
Delete the contents of TX and RX boxes:	WStalker Programmer	
Delete the contents of TX and RX boxes: - Click on "Clear" to	Port : COM12 Connect Disconnect	Data Received
Delete the contents of TX and RX boxes: - Click on "Clear" to delete the command	Port : COM12 Connect Disconnect Configuration Get Data Terminal	
Delete the contents of TX and RX boxes: - Click on "Clear" to delete the command and responses in the TX and the RX boxes.	VWStalker Programmer Port : COM12 Configuration Get Data TX OM!	Data Received
 Delete the contents of TX and RX boxes: Click on "Clear" to delete the command and responses in the TX and the RX boxes. 	VWStalker Programmer Port : COM12 Connect Disconnect Configuration Get Data Terminal TX 0M! 0	Data Received
 Delete the contents of TX and RX boxes: Click on "Clear" to delete the command and responses in the TX and the RX boxes. 	WWStalker Programmer Port : COM12 Configuration Get Data TX 0 00055 0+3064_881+18_46+2242_834+18_570	Data Received
 Delete the contents of TX and RX boxes: Click on "Clear" to delete the command and responses in the TX and the RX boxes. 	VWStalker Programmer Port : COM12 Connect Disconnect Configuration Get Data Terminal TX OM! 0 0 00055 0+3064.881+18.46+2242.834+18.570 RX 00055;; 00055;;	Data Received
Delete the contents of TX and RX boxes: - Click on "Clear" to delete the command and responses in the TX and the RX boxes.	VWStalker Programmer Pot: COM12 Connect Disconnect Configuration Get Data Terminal TX OM! 0 00055 0+3064.881+18.46+2242.834+18.570 00055;;; 0+3065.095+18.46+2242.679+18.560 RX 0+3065.095+18.46+2242.679+18.560 00055	Data Received
Delete the contents of TX and RX boxes: - Click on "Clear" to delete the command and responses in the TX and the RX boxes.	VWStalker Programmer Port : COM12 Connect Disconnect Configuration Get Data Terminal TX OM! 0 00055 0+3064.881+18.46+2242.834+18.570 00055;; 0+3065.095+18.46+2242.679+18.560 00055 0+3065.020+18.46+2242.988+18.560	Data Received
Delete the contents of TX and RX boxes: - Click on "Clear" to delete the command and responses in the TX and the RX boxes.	VWStalker Programmer Port : COM12 Connect Disconnect Configuration Get Data Terminal TX OM! 0 000055 0+3064.881+18.46+2242.834+18.570 000055; 0+3065.095+18.46+2242.679+18.560 000055 0+3065.020+18.46+2242.988+18.560 0+3065.020+18.46+2242.988+18.560	Data Received
Delete the contents of TX and RX boxes: - Click on "Clear" to delete the command and responses in the TX and the RX boxes.	WStalker Programmer Port : COM12 Connect Disconnect Configuration Get Data Terminal TX OM! 0 000055 0+3064.881+18.46+2242.834+18.570 00055; 0+3065.095+18.46+2242.679+18.560 000055 0+3065.020+18.46+2242.988+18.560 Clear	Data Received
Delete the contents of TX and RX boxes: - Click on "Clear" to delete the command and responses in the TX and the RX boxes.	WStalker Programmer Port : COM12 Connect Disconnect Configuration Get Data Terminal TX OM! 0 0 00055 0+3064.881+18.46+2242.834+18.570 00055;; 0+3065.095+18.46+2242.679+18.560 00055 0+3065.020+18.46+2242.988+18.560 Clear	Data Received
Delete the contents of TX and RX boxes: - Click on "Clear" to delete the command and responses in the TX and the RX boxes.	WWStalker Programmer Port : COM12 Connect Disconnect Configuration Get Data Terminal TX OM! 0 000055 0+3064.881+18.46+2242.834+18.570 000055; 0+3065.095+18.46+2242.679+18.560 00055 0+3065.020+18.46+2242.988+18.560 Clear Ext Ext Ext	Data Received



5 VWstalker Wiring Information for Sensors

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



6 List of SDI12 Commands

Command	Response	Description
a!	a\r\n	Acknowledge active
al!	a13 GSIINT STKVWF001	Send ID
aAb!	b\r\n	Change address
		a = initial address
		b = new address
aM!	a0402\r\n instrument with	Start measurement: instruct an
aMC!	address returns 2 x VW	instrument to make measurement
	& 2 x Temp after 40	
	seconds	
aC!	a04017\r\n instrument	Start measurement: instruct an
aCC!	with address returns 17	instrument to make measurement
	values after 40 seconds	
aD0!	a+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	Set Sensor1 Excitation voltage
	or	d:
	aERROR\r\n	0- no excitation
		5 - 5 V
		12-12V
aXWRREG40004VALd!	aOK\r\n	Set Sensor2 Excitation voltage
	aerrorin	U- no exciting
		5 - 5 V
	20K\r\n	Set Sensor1 Sween frequency Emin in
aXWKKEG40005VALU!	or	
	aFRROR\r\n	d : frequency in Hz
aXWRREG40006\/ALdL	aOK\r\n	Set Sensor1 Sween frequency Emax in
	or	Hz
	aFRROR\r\n	d · frequency in Hz
aXWRREG40007VALd	aOK\r\n	Set Sensor2 Sweep frequency Emin in
	or	Hz
	aERROR\r\n	d : frequency in Hz
aXWRREG40008VALd!	aOK\r\n	Set Sensor2 Sweep frequency Fmax in
	or	Hz
	aERROR\r\n	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

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



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