

# Tech Note 130312-1: Communication with WET Labs Transmissometers Using a Terminal Window Program and Changing the Clean Water Value

## **Terminal Program**

Use a terminal window program to interface between WET Labs products and a PC when not using ECOView or other host program provided by WET Labs. The terminal window allows access to all functions of the sensor and the ability to view live data output. The instructions below are for downloading and setting up TeraTerm Pro, but the communication setup and protocols will be the same for other terminal window programs.

Download the program (free): <u>http://www.ayera.com/teraterm/download.cfm</u>

Follow the instructions on the website:



Complete the information required to allow the download.



Select "Save As."



#### Select a folder to save the ZIP file in.

ize * Extract all files X Co	oske tera term pro 3.1.3			+ 🚰 Search - Mo	***					😸 Sign In 🔌	10 v.
	Contraction and the states						-	_	_		
vorites		en	a								
Desktop							Search   S	ite Map 🚦	Privacy		
Downloads		TECHNOLUG		- Mark Harden							
Necent Places				* Web Hosting	Software Developmen	it #Resellers #Tera	Term Pro V	reb = C	sitatt U		
nie		2011					Custor	ier Care	Center		
Documents							Please I	gin below:	1000		
Music							enter .		00		
Pictures			-								
Videos	TeraTerm Pro	Thank Y	You f	or Downloading TeraTerr	n Pro Web 3.1.3!						
mouter	Descriptional Money	The file shi the file this	hould be	e sent to your browser within a fe	v seconds. If you are una file directly.	ble to download					
.ocal Disk (Ci)	Since As		,,						×		
DATA (D:)											
Jataðak (ft)	Computer >	Local Disk (C:)	I D TE	Wh >		<ul> <li>Searce</li> </ul>	n 12MP	_	Q		
ite Server (G:)	Organize - New folder							8 <b>=</b> -			
ReleaseS (R)	* (		-	Name	Date	Туре	Size	Tags			
Particles (\\vecklipt_\Solidworks Data) (V:) Parking (M)	Pavornes Decktop			B 00700	1/06/0011 9-45 AM	Ella fadalar					
VALUETDate (VVALUETDC) (V)	Bowtloads			BUINS ONT MECHANICAL	5/18/2011 11:16 AM	File folder					
Officeint Pro 17500 (10.10.10.211) (7)	Secent Places			clamp sh 11	4/11/2011 5:05 PM	File folder					
				K180504005 Stig-Wahlstrom	3/3/2011 4:07 PM	File folder					
itwork	🕽 Libraries		6	k180942008_Stig-Wahlstrom	3/3/2011 2:55 PM	File folder					
	Documents			📙 L180844_Stig-Wahlstrom	3/3/2011 4:09 PM	File folder					
	👌 Music			😹 New Hull Mockup	2/8/2011 9:06 AM	File folder			-		
	Pictures			🕌 RemOcean Al	5/20/2011 1:01 PM	File folder					
	Mideos 🖬		ш.	User Library-TOGGLE CLAMP	4/11/2011 5:14 PM	File folder					
				WDS-DEFAULT	4/11/2011 4:09 PM	File folder					
	Computer			BOSS	5/20/2011 1:08 PM	Compressed (zipp	85,091	8			
	DATA (D)			BUSS-Life	5/20/2011 1:03 PM	Compressed (zipp	/3,395 /	8 '0			
	DataBak (E)			RemOreen A1	5/20/2011 7:55 AM	Compressed (ripp.)	73,032 (	18			
	File Server (G:)		+ e			compression (opposition		-			
	Channel Transit										
	Fieldine distance	d followed Park	Mar.						-		
	Save as type: Compress	ed (zipped) Fok	lder						•		
	Hide Folders					s	ne	Cancel			
	L								- 2		
		_	_				_	_	_		



Once saved, right-click the ZIP file and select "Extract All."

-			-		-
anize 🕶 🎇 Open 💌 E-mail Burn Ne	w folder				
Favorites	Name	Date	Type	Size	Tags
n Desktop	🕌 90709сору	1/26/2011 8:45 AM	File folder		
🐞 Downloads	BLUVIS_PMT_MECHANICAL	5/18/2011 11:16 AM	File folder		
St. Recent Places	🎉 clamp_sh_11	4/11/2011 5:05 PM	File folder		
	K180504005_Stig-Wahlstrom	3/3/2011 4:07 PM	File folder		
🙀 Libraries	K180942008_Stig-Wahlstrom	3/3/2011 2:55 PM	File folder		
Documents	🕌 L180644_Stig-Wahlstrom	3/3/2011 4:09 PM	File folder		
Music	New Hull Mockup	2/8/2011 9:05 AM	File folder		
Fictures	RemOcean A1	5/20/2011 1:01 PM	File folder		
H Videos	User Library-TOGGLE CLAMP	4/11/2011 5:14 PM	File folder		
	WDS-DEFAULT	4/11/2011 4:09 PM	File folder		
Computer	470NitroStrainData	12/14/2010 3:35 PM	JPEG image	63 KB	
See Local Disk (Ci)	470NitroStrainData-1	12/14/2010 3:33 PM	JPEG image	143 KB	
DATA (D:)	1 805S	5/20/2011 1:08 PM	Compressed (zipp	85,091 KB	
DataBak (h)	BUSS-Lite	5/20/2011 1:03 PM	Compressed (2pp	73,593 KB	
me sever (o)	BUSS-Mana	5/20/2011 1:05 PM	Compressed (zipp	47,918 KB	
Keleases (RI)	24 cdomscalefactorchange	9/21/2010 8:24 AM	Adobe Acrobat D	233 KB	
PartLibs (\\VAULTPC\Solidworks Data) (V:)	Diamond_D_Custom_Leather_0	4/21/2011 10:20 AM	Adobe Acrobat D	6,428 KB	
Sector (w:)	Honeywell Model_S	1/20/2010 11:12 AM	Adobe Acrobat D	290 KB	
Official Rep (2500 (10.10.10.211) (7)	DeerOccurrent TI	3/20/2011 11:24 AM	IDEG immune	135 VD	
Conception Conception (C)	RemOrana A1	5/00/2005 7.55 AM	Commission (view	72 023 1/0	
Network	RemOcean Pl	5/20/2011 7/28 AM	Compressed (app	75,000 KB	
	Table	5/3/2011 8:09 AM	XMI Document	0 KB	
	ttpro3		Compressed (ripp	952 KB	
	Open				
	Open in new window		1		
	Extract All				
	TortoireSVN				
			1		
	Scan with Microsoft :	ecurity Essentials	1		
	Open with		1		
	Restore previous vers	ons			
	Send to	•			
	Cut				
	Copy				
			1		
	Create shortcut		1		
	Dente		1		
	Rename				

Select the location to store the extracted the files.

Extract Compressed (Zipped) Folders	×
Select a Destination and Extract Files Files will be extracted to this <u>f</u> older:	
C:\TEMP\ttpro313	B <u>r</u> owse
☑ S <u>h</u> ow extracted files when complete	
	Extract Cancel



🔾 🔁 🕨 🕨 Computer 🔸 Local Disk (C:) 🕨 TEMP 🕨 ttp	ro313	✓ 4 Search ttpro313	Q
Organize ▼ Include in library ▼ Share with ▼ Bu	rn New folder	8≡ ▼	
★ Favorites	Name		
Marktop	error		
Downloads	ibmkeyb.cnf		
🖳 Recent Places	keyboard.CNF		
	# keycode		
📷 Libraries	keycode		
Documents	nt98keyb.cnf		
J Music	pc98keyb.cnf		
Pictures	readmefirst		
😸 Videos	result		
	status		
📜 Computer	teraterm		
🏭 Local Disk (C:)	teraterm_3-1-3_licence_agreem	Select a file to preview.	
👝 DATA (D:)	🔞 ttermp		
👝 DataBak (F:)	📕 ttermpro		
🚽 File Server (G:)	🚳 ttpcmn.dll		
坖 Release\$ (R:)	🚳 ttpdlg.dll		
PartLibs (\\VAULTPC\Solidworks Data) (V:)	🚳 ttpdlg_old.dll		
坖 Backup (W:)	🚳 ttpfile.dll		
😪 VAULTData (\\VAULTPC) (Y:)	🕮 ttpmacro		
😪 Officejet Pro L7500 (10.10.10.211) (Z:)	📋 ttpmacro		
	🚳 ttpset.dll		
🗣 Network	🚳 ttptek.dll		
	🚳 ttxhttps.dll		
	S ttxsecure.dll		
	* Þ		
24 items			

### Set up the Terminal Program

- 1. Select "ttermpro" to start the application.
- 2. If using Windows Vista or a newer operating system, a warning message may appear. Select "Run."



3. Select the "Serial" button and then select the COM port the sensor is plugged into. Select "OK."





4.	Select the	📕 Tera Term	n Web 3.1 - COM1 VT		
	"Setup" tab and	File Edit	Setup Web Control Window H	elp	
	drag the mouse		Terminal		<u> </u>
	to select "Serial		Window		
	nort "		Font		
	pon		Serial port		
			SSH2		
			SSH2 Authentication		
			TCP/IP		
			General		
			Save setup		
			Restore setup		
			Load key map		
			Recurring Command		-

- 5. Change the baud rate to 19200.
- Set the other parameters as given in the User's Guide—
   Data: 8 bit

Parity: none Stop: 1 bit Flow Control: none

set at once. Click "OK."

 Set the "msec/char" and "msec/line" text boxes to 2 and 50 respectively. These settings allow the sensor time to react to commands before another command is sent to it. Without these delays, errors in command settings are possible if many are

Tera Term: Serial port setu	up X				
Port:	СОМЗ - ОК				
<u>B</u> aud rate:	19200 -				
<u>D</u> ata:	8 bit 🔹 Cancel				
P <u>a</u> rity:	none 🔹				
<u>S</u> top:	1 bit ▼ <u>H</u> elp				
<u>Flow</u> control:	none 🔻				
Transmit delay 2 msec <u>/c</u> har 50 msec <u>/l</u> ine					

8. To turn "echo" on, select the Setup tab, then click on "Terminal..."

📕 Tera Ter	m Web 3.1 - COM1 VT	
File Edit	Setup Web Control Window H	elp
•	Terminal	A
	Window	
	Font	
	Keyboard	
	Serial port	
	SSH2	
	SSH2 Authentication	
	TCP/IP	
	General	
	Save setup	
	Restore setup	
	Load key map	
	Recurring Command	-



9. Select the "Local echo"	Tera Term: Terminal setup	J
check box. Click "OK."	Image: Terminal size       New-line       OK         80       X       24       Image: Receive: CR       OK         Image: Term size       Image: Receive: CR       Image: CR       Cancel         Image: Auto window resize       Image: Terminal ID:       VT100       Image: Local echo         Image: Terminal ID:       VT100       Image: Local echo       Help         Answerback:       Image: Auto switch (VT <->TEK)	

10. Save the setup: select the Setup tab, then click on "Save setup..."

📕 Tera Ter	m Web 3.1 - COM1 VT	
File Edit	Setup Web Control Window H	elp
	Terminal	
	Window	
	Font	
	Keyboard	
	Serial port	
	SSH2	
	SSH2 Authentication	
	TCP/IP	
	General	
	Save setup	
	Restore setup	
	Load key map	
	Recurring Command	-

11. Enter a new name or overwrite the default configuration. Select "Save" when completed.

🛄 Tera Term: Save setup					×
Computer + Local Disk (C	C:) → TEMP → ttpro313		👻 🍫 Search :	ttpro313	٩
Organize 🔻 New folder				8==	• 0
▲ ★ Favorites	^ Name	Date modified	Туре	Size	
E Desktop Downloads Recent Places	🐑 teraterm	6/3/2011 3:49 PM	Configuration sett	7 KB	
<ul> <li>✓ Contraction</li> <li>✓ Documents</li> <li>✓ Music</li> <li>✓ Pictures</li> </ul>	E				
<ul> <li>▷ ■ Videos</li> <li>▲ ► Computer</li> <li>▷ ▲ Local Disk (C:)</li> <li>▷ ⇒ DATA (D:)</li> <li>▷ ⇒ DatBak (F:)</li> <li>▷ ➡ DatBak (F:)</li> </ul>					
File <u>n</u> ame: teraterm Save as <u>type</u> : setup files (*.ini)	•				•
🔿 Hide Folders			Help Sav	e C.	ancel



## Setting Up the Sensor

1. Have a terminal window program running.

🔚 Tera Term - CO	OM1 VT								
File Edit Setup C	ontrol Win	dow Help						-	
REMTEST-0001	445	3.950E+02	3490	3.440E+03	1513	1.463E+03	519	12.78	
PENTEST-0001	440	3.7001-02	3470	3.440E+03	1514	1.464E+03	519	12.80	
RENTEST-0001	447	3 9705+02	3492	3.4400+03	1512	1.462E+03	519	12.78	
REMTEST-0001	444	3 9405+02	2490	3.1162-03	1513	1.463E+03	519	12.80	
REMTEST-0001	446	3 960E+02	3407	3.437E+03	1513	1.463E+03	519	12.80	
REMTEST-0001	447	3 970E+02	2490	2 4205-02	1512	1.4622+03	519	12.80	
REMTEST-0001	446	3 960E+02	3493	3 4425+02	1516	1.462E+03	519	12.78	
REMTEST-0001	446	3 960E+02	3492	3 4425+03	1514	1.4046+03	519	12.78	
REMTEST-0001	446	3.960E+02	3490	3 4405+03	1513	1.4032+03	519	12.80	
REMTEST-0001	445	3 950F+02	3492	3 4425+02	1512	1.4026-03	519	12.80	
REMTEST-0001	445	3.950E+02	3490	3 440F+03	1513	1 461 5403	519	12.78	
REMTEST-0001	446	3 960F+02	3491	3 441 8+03	1514	1 4645+03	517	12.78	
REMTEST-0001	447	3.970E+02	3492	3 442F+03	1512	1 4625+02	517	12.00	
REMTEST-0001	443	3.930E+02	3488	3 438F+03	1512	1 4625+03	517	12.70	
REMTEST-0001	444	3.940E+02	3491	3 441 E+03	1514	1 4645+03	517	12.00	
REMTEST-0001	446	3.960E+02	3492	3 4425+03	1514	1 4645+03	517	12.00	
REMTEST-0001	445	3-950E+02	3490	3 4405+03	1512	1 4625+82	517	12.70	
REMTEST-0001	446	3.960E+02	3491	3 441 F+03	1512	1 462E+03	519	12.00	
REMTEST-0001	444	3.940E+02	3490	3 440F+03	1510	1 460E+03	519	12.00	
REMTEST-0001	446	3.960E+02	3490	3.440F+03	1513	1 463F+03	519	12 78	
REMTEST-0001	446	3.960E+02	3491	3 441 F+03	1513	1 463F+03	519	12 80	
REMTEST-0001	444	3.940E+02	3489	3.439F+03	1512	1 4625+03	519	12 78	
REMTEST-0001	445	3.950E+02	3489	3.439E+03	1512	1 4625+03	519	12 80	
REMTEST-0001	443	3.930E+02	3491	3 441 F+03	1513	1 4635+03	519	12.80	
REMTEST-0001	446	3.960E+02	3489	3-439E+03	1512	1.462E+03	519	12.80	
REMTEST-0001	446	3.960E+02	3490	3.440E+03	1513	1.463E+03	519	12.80	
REMTEST-0001	446	3.960E+02	3492	3.442E+03	1513	1.463E+03	519	12.80	120
REMTEST-0001	445	3.950E+02	3492	3.442E+03	1514	1-464E+03	519	12.80	

2. Plug the DB-9 connector on the test cable into the host PC's serial port.

Note that serial input locations will vary between computer manufacturers.





1. Turn on the power supply and make sure it is set to 12V–15V before the test cable is connected.



- 2. Turn off the power supply.
- 3. Connect the power supply to the test cable.
- 4. Connect the sensor to the test cable.

#### **Connector Pin-outs**

Pin	Function	MCBH-6-MP
1	Ground	, 1
2	RS-232 (RX)	$6 \sqrt{2}$
3	Reserved	
4	V in	
5	RS-232 (TX)	
6	Analog out	5 3
		4/

Pin	Function	Molex (OEM)
1	NC	
2	V+	
3	TX	
4	RX	
5	Reserved	There are a second and the second
6	Ground	

Pin	Function	Diagram			
1	TX ECO FLbbCD				
2	NC				
3	TX OCR-504				
4	NC				
5	TX C-Rover				
6	NC				
7	NC				
8	NC	9 10 11 12			
9	V+ ECO FLbbCD				
10	V+ OCR-504				
11	V+ C-Rover				
12	GND				



#### Change the Clean Water Value

- 1. Turn on the power supply
- 2. Type !!!!! to stop the sensor from taking measurements, or to wake the sensor. It will display its menu.

📕 Tera Term - CO	M3 VT	340, 1		-			
<u>File Edit Setup</u>	C <u>o</u> ntrol <u>W</u>	indow <u>H</u> elp	<b>)</b>				
CRU7-047 Ser CRU7-047 Ser CRU7-047 Ser CRU7-047 Ser CRU7-047 Ser CRU7-047 Ser CRU7-047 Ser CRU7-047 Ser CRU7-047 Ser CRU7-047 Ser CRU7-047	12053 12053 12052 12052 12052 12052 12052 12052 12052 12052 12052 12052 12052 12052 12052 12052 12051 12051 12051 12051 12051 12051 12051 12051 12054 4.14	15585 15588 15588 15584 15584 15584 15584 15584 15584 15584 15584 15584 15584 15584 15583 15583 15583 15583 15583 15583 15583	15979 15979 15980 15980 15980 15980 15980 15980 15980 15980 15981 15981 15981 15981 15981 15981 15981 15981 15981 15981 15981 15981	$\begin{array}{c} -\theta.126\\ -\theta.126\\ -\theta.127\\ -\theta.126\\ -\theta.126\\ -\theta.120\end{array}$	527 527 527 527 527 527 5227 5227 5226 5227 5226 5226		▲ 

3. Type "\$par" then press "Enter" to show the parameters window.

📕 Tera Term - C	OM3 VT	34	-			
<u>File Edit Setu</u>	p C <u>o</u> ntrol <u>W</u>	indow <u>H</u> e	lp			
CRU7-047 CRU7-047 CRU7-047 CRU7-047 CRU7-047 CRU7-047 CRU7-047 CRU7-047	12051 12051 12051 12052 12051 12052 12052 12054	15583 15584 15584 15583 15583 15583 15583 15583	15981 15981 15981 15979 15981 15979 15952	-0.127 -0.127 -0.127 -0.126 -0.127 -0.127 -0.126 -0.120	527 526 526 526 526 526 526	*
Ser CRU7-047 Ver BAM CSTA Ave 30 Pkt 0	R 4.14					
01n 7 01f 18 02n 9 02f 20 so2 0 rv2 0						
sv2 119 sat 1700 ref 1239 ihm 0 iom 0 nma 30	Ø 3					
scs 0.94 sco 0.05 pth 25.0 cln 1548	43 44 0 2					

- 4. Type "\$cln=" "your value" then press "Enter" to change the stored value and observe its change.
- 5. Type "\$sto" then press "Enter" to save the change into the sensor's internal memory.
- 6. Turn the power supply off, then on.
- 7. When the command prompt is showing, type !!!!! to stop the sensor from taking measurements or to wake it. It will display its menu.
- 8. Type "\$par" then press "Enter" to observe that the change has been correctly saved for the new clean water (cln) value.