## **Willard Information Document**

v. 2014.281 JL, PM

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- Pg. 6 Instructions on how to load an XML configuration into a Q330 so that it can be loaded on to Clie Handheld controllers for programming Q330 instruments at field sites.
- Section 3: Emergency Service of a Station with Willard
- Pg. 9 Instructions on how to use Willard for servicing a station when a Clie Handheld controller is unavailable or not working. These can be printed separately and used as a station service sheet.

### Section 1: General Willard Instructions for a Mac Laptop

### Connecting with Willard to a Q330

Willard is a custom piece of software used to interface with and configure a Quanterra Q330 DAS. When running Willard on a Mac, a Windows OS emulator must be running. On the PASSCAL field laptops WINE is setup for that purpose. The software is typically located in the folder: Applications -> Quanterra -> Willard



or also on the Dock.

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Willard will run without a live connection to a Q330, but in order to do anything useful it must be connected.

Typically, to connect a computer to a Q330 a USB to serial adapter (like a Keyspan) is used along with a standard Q330 serial console cable.





The Q330 must also be powered up.

With the powered Q330 connected to a computer via the serial/USB ports, open the Willard application. It will come up with a prompt for a station. Select the Console Registration button.

○ ○ ○ X Willard Setup & Control	
⊆ommands Information Status Configuration Help	
CAL Status Phase Clock	👖 Exit
Status       Choose Station         Console Registration       Dr. select a station from the list below:         ID       Description         1/16/2014 4       Register         ID       Close         ? Help       Manager         1/16/2014 4       Close	0 0 0

This will let you pick the interface. The Keyspan USB to serial adapter will usually default to COM1 however, the Keyspan could be mounted anywhere up to COM31.

Look in the Applications Folder for the Keyspan Serial Assistant and open the program with the Keyspan connected to a powered Q330.



Select the COM port from the list on the Console Registration window that was indicated in the Keyspan Serial Assistant and click OK.

Commands Information Status Co	Willard Setup & Control		
CAL Status 🏾 Phase	○ ○ ○ X Console		👖 Exit
To To To To To Du Tr 1/16/2014 4:25:28 PM:FIR filter DECT 1/16/2014 4:25:28 PM:FIR filter ULP3 1/16/2014 4:25:28 PM:FIR filter ULP3	Willard Interface COM 1 - Willard Serial Interface Options IV RTS Flow Control CTS Flow Control Infrared High-Speed (Q330S+ only)	> Errors Received Bps	0 0 0

The first thing Willard will do with a new connection is ask if it should create a station directory. There is usually no reason to do this for a typical PASSCAL experiment. The station directory is used for keeping track of the station on a telemetered network.

Dataless S	itation							
Station Inf	formation							
ID 4993	Directory Z:\\4	993						
Station Description								
Remote IF	P Addresses							
Serial 1	10.1.1.2	Remote IP Addresses may not						
Serial 2	192.168.0.40	be the same as the addresses programmed into the Q330 due						
Ethernet	192.103.105.31	to Network Address Translation						
There is n	o directory for this Q330, <sup>v</sup>	Would you like to create a station						
directory so you can access the unit remotely?								
	Yes S No							

With a successful connection the main Willard window will show basic status information and offer various menus to send commands to the sensor(s), configure the Q330, etc.

🐺 Willard Q330 Setup &	Control - Station 4993 (1	0.1.1.2)					
Commands Information §	atatus Configuration Help						
CAL Status 🔲 Phase	Oμs Clock 100%			Exit			
	Status						
	Total Packets	55	Checksum Errors	0			
	Cmd Timeouts	0	1/0 Errors	0			
CALL NO.	Out of Window	0	Average Received Bps	172			
	2014-01-17 18:27:58.0	000000					
2014-01-17 11:25:39:Fixed \	/alues Received			<b>▲</b>			
2014-01-17 11:25:40:Thread	Names Received			_			
2014-01-17 11:25:40:Manut	acturer's Data Received, Prop	erty Lag=	4993				
2014-01-17 11:20:40:6100ai	Programming Received						
2014-01-17 11:25:41:Diata Port 1 Programming Received							
2014-01-17 11:25:41:Data Port 3 Programming Received							
2014-01-17 11:25:41:Data Port 4 Programming Received							
2014-01-17 11:25:41:GPS Receiver ID Received							
2014-01-17 11:25:41:Msg Fr	om 192.168.0.7:ant: 2014017	18:26:27.	.025: rudics_test: ZZ_UPPA:	dopen 46771 L1 📃 🚬			

Status

The current mass positions can be viewed with the Miscellaneous Analog menu option. Channels 1-3 are for the mass positions of Sensor A and Channels 4-6 are for Sensor B. Most PASSCAL Q330 DASes record only channels 1-3. If a sensor is not connected, the corresponding 3 channels will default to 20. The values reported are decivolts; so for example a value of 14 means 1.4volts on that channel.

WPOO - Config - Miscel	laneous Analog 📃 👂	<			
Boom Positions		٦			
Channel 1 2	Channel 4 <mark>20</mark>				
Channel 2 1	Channel 5 <mark>20  </mark>				
Channel 3 -1	Channel 6 <mark>20  </mark>				
Analog Positive Supply: 5.42V					
Input Volta	ge: 13.65V				
System Temperatu	ire: 18C				
Main Curre	nt: 78ma				
Main Power: 1.06W					
Antenna Current: 12ma					
Sensor R Temperature: 14C					
Calibrator Timeouts: 1					
	Close				

The QuickView screen gives a real time plot of the channel voltages.



The plot is auto-scaling and with a sensor connected, the signal from a stomp test will be visible as a simple operational test of the sensor and Q330.

Willard will automatically disconnect after a period of inactivity.

8	The Q330 has de-registered you as a client because of inactivity or because the Q330 has rebooted. You must Register to continue, or Exit

However, with the QuickView window open Willard will stay connected indefinitely and may unintentionally block other remote connections.

The status of the GPS connection and satellite lock are visible with the GPS Status and GPS Satellite menu items.

×

1993 - Config - GPS Satellites being Tracked									
Number	Elevation	Azimuth	SNR		1				
3	21	305	37						
6	37	286	32			•.		•	
14	34	2	34						
15	27	45	33						
18	65	9	35						
21	67	103	35						
22	53	295	33						
24	25	95	29	-	1				
				Çlose				 	

4	1993 - Config - GP5 Status
	GPS Time: 18:27:36
	GPS Date: 17/01/2014
	Fix Type: 3-D
	Height: 1441.3M
	Latitude: 3404.4230N
	Longitude: 10655.1367W
	Run Time: 19341min
	Sat. Used: 9
	In View: 12
	Checksum: 0
	Last Mark: 2014-01-17 18:27:35
	Format
	Raw O Decimal O Deg. Min. Sec.

## Information

The Hardware and Software menu is used for looking up the long serial number of the Q330.

The Memory menu can be used for determining if the Q330 has either 8MB or 32MB memory. If the Q330 is programmed for PASSCAL typical stand alone operation, all of the memory allocation will be on Data 4 Packet Memory.

0	0991 Hardware and Software					
	Q330 Serial Number: 0100000A27A7705B					
	AMB Serial Number: 0100000A1BAED0AE					
	Sensor A Serial Number: 000000000000000					
	Sensor B Serial Number: 000000000000000					
	QAPCHP1 Serial Number: 3431323					
	QAPCHP2 Serial Number: 0					
	KMI Property Tag: <u>991</u>					
	System Software Version: 1.145					
	Slave Processor Version: 1.10					
	Calibrator Type: QCAL330					
	Calibrator Version: 1.6					
	Auxiliary Board Type:					
	Auxiliary Board Version:					
	Clock Type: Motorola M12					
	PLD Version: 4.6					
l	0991 Memory Information					

Int. D

Ext. D

Data Data Data Data

Elash Momoru Size: 2097152	Memory Modules					
Flash Memory Size: 2077152	Module Name Rev		Overla	ay Module CRC		
Int. Data Memory Size: 49152	Q330core	125.0		94394AD0		
Int. Data Memory Used: 42419	Q330_1st	125.0	004	FA17CAD8	_	
Ext. Data Memory Size: 262144	Q330_auth	125.0	302	34D21DE0		
Ext. Data Memory Used: 69228	Q330_cal	125.0	102	2F1C8D58	-	
Data 1 Packet Memory: 0	ructures	3				
Data 2 Packet Memory: 0	Structure Name		St	atus		
Data 3 Packet Memory: 0	Operating Limits		OI	ĸ		
Data 4 Packet Memory: 8388432	Manufacturer's Area OK					
EEPROM Block Size: 64	Authentication OK				-	
EEPROM Block Size: 64	Authentication		0	K	<b>_</b>	

Commands

×

The Pulse Sensor Control menu is used to send commands the sensor(s) like lock/unlock and recenter. Use the slider to set the duration of the pulse sent from the Q330 to the sensor.

Pulse Sensor Control	
Control Line(s) to Pulse	
Sensor A Centering Sensor A Lock Sensor A Unlock Sensor A Calibrate	
Duration in Seconds 3.00	
Apply	🗙 Cancel

# Configuration

Some sensor types are active-high and others are active-low for lock, unlock, and center commands. These are configured with the Sensor Control Configuration menu.

These settings should be adjusted and applied BEFORE
connecting a sensor. Also, the sensor configuration
should be saved to the EEPROM so that if the Q330
loses power it will reboot with the correct
configuration. From the Command menu select System
and GPS control, then check the Reboot Q330 and Save
to EEPROM boxes and click Apply.

4993 Sensor Control Configuration	n X
Sensor A GENEN 1-A Sensor A Centering C 0V	Sensor B GENEN 1-B Idle SV © 0V
GENEN 2-A Sensor A Lock SV O 0V	GENEN 2-B Idle C 5V C 0V
GENEN 3-A Sensor A Unlock SV OV	GENEN 3-B Idle SV © 0V
CALEN-A Sensor A Calibrate SV OV	CALEN-B Idle C 5V © 0V
STS-2 Gur-Hi Gur-Lo None	STS-2 Gur-Hi Gur-Lo None
Apply	X Cancel
EP01 System and GPS Control         Control         GPS         Resync Q330         ✓ Reboot Q330         ✓ Save to EEPROM	ver On ver Off dstart
Apply X	Lancel

## Section 2: Loading XML Configuration Programs to a Q330

These instructions are specifically for stand-alone stations where all of the data are going to the Baler on data port 4. It is only necessary to use this procedure if you do not have a "clone" of the configuration on a Clie. Upon completion of this procedure the Q330 will be using the new configuration to acquire data, and a clone of the configuration can be uploaded to a Clie for programming other Q330 stations.

An existing PASSCAL approved XML configuration file must exist on the .

	□ Q330XML_parameters	
FAVORITES	Name A Date Modified	Size
	BloodFalls_200.1sps.L22.20130830v1.xml Aug 30, 2013 8:38	PM 98 KB
An my rites	CDCAT-PA-3T-50.1.SPS.8MB-NEW.xml Mar 7, 2013 11:24 Mar 7, 2013 11:	PM 105 KB
Dropbox	CDCAT-PA-STS2-50 1 SPS 8MB-NEW xml Mar 7, 2013 11:06 I	PM 105 KB
💾 Documents	LHASA-PA-3T-100.1SPS.8MB.V1.xml Sep 10, 2013 10:39	AM 100 KB
🎓 pmiller	LHASA-PA-STS2-100.1.SPS.8MB.V1.xml Sep 10, 2013 10:39	AM 100 KB
Deskton	🕒 marianas.xml Jan 31, 2012 8:19 A	M 52 KB
Desktop	PRIDE.v1.config.xml Apr 2, 2012 3:31 PM	4 103 KB
Applications		

Select Configuration -> Configuration Cloning and select Load from File. Browse to the XML configuration file to be used, select it and click Open.

🐺 Willard Q330 Setup & Control - Station 0991 (10.1.1.2)	
Commands Information Status Configuration Help	and the second s
CAL Status 🌅 Phase 🔤 🛄 Oµs 🛛 Clock 🔤 0%	IL Exit
Status Total Packets 119 Checksun Cmd Timeouts 0 I/O Errors Out of Window 0 Average P 2014-01-29 14:21:39:Interface Programming Received 2014-01-29 14:21:40:Thread Names Received 2014-01-20 14:01:40:10 Part Packing Descripted Table 2014-01-2014-2014-2014-2014-2014-2014-20	h Errors 0 0 Received Bps 80
2014-01-29 14:21:40:Manufacturer's Data Received, Property Lag=991 2014-01-29 14:21:40:Fixed Values Received	Open Q330 Configuration FIle
2014-01-29 14:21:40:Global Programming Received 201	Look in: 🔄 Polenet 🗹 🚮 🖆 🚈
201 0991 Configuration Cloning 201 Save to File 201 Configuration Base Tag	MCMService_2008Photos ServiceSheets ShippingLists
DP1 Token Set	TESTING
DP2 Token Set	POLENET_Guralp_U8,xml
DP3 Token Set	
DP4 Token Set	
Include DialOut Password	File name:     POLENET_Guralp_08.xml     Qpen       Files of type:     Q330 XML Files     ✓
Close	

After the file has finished loading, all of the fields in the Configuration Load window will be empty. Select Copy from File for DPs, Interface and Global. This will copy the specified names and values from the file. The station names should now indicate the generic configuration. Select Apply.

330 Confi	gurat	ion Load									
DP Specific Interfaces Globals Announcements Edit & Load Section Selection and CRC's											
DPs Copy from Q330 Copy from File Set Stations to TAG ID and Networks to: 🔀 Set											
Clear All	Net	Station	Web	Port	Net Port	DSS Port	Tok	en Set Nam	e		
DP1	YX -	STA	6553	5	0	0	LHA	\SA-3T			
DP2	YX	STA	6553	5	0	0	LHA	SA-3T			
DP3	YΧ	CMG3T	80		0	0	LHA	SA-3T			
DP4	YX	TEMP	80		0	0	100	SPS-1SPS-8	MB-3T		
Interface Copy from Q330 Copy from File											
Clear All	IP A	ddress	Ba	aler IP	/POC	Baler Alt/Diall	n	POC Port	ISP Phone Number	ISP User Name	ISP Password
Serial 1	10.1	.1.2	10	).1.1.1	4	0.0.0.0		0			
Serial 2	10.2	.2.2	10	).2.2.1	4	192.168.33.1	4	0			
Ethernet	192.	103.105.31	I 19	92.168	.33.14	0.0.0.0		0			
Global Copy from Q330 Copy from File											
Base Port Web Port User Tag Configuration Base Tag											
5330 80 0 LHASA3T20130822-v1											
Apply X Cancel											

After the configuration is loaded in the Q330 and the Cloning Complete window comes up, select Re-boot Now.

## Cloning Complete

Structures written to Q330. The Q330 must have these structures written to EEPROM and be re-booted. If you are done with the configuration you can re-boot now or wait until all configuration changes are complete.

Re-boot Now

Continue Configuration

**Verify that the configuration has been loaded** When the Q330 has finished rebooting, Reregister Willard and select Configuration -> DP Token Editor.

Select Data Port 3 and verify that the **Token Set** has the project name included and that **Station** name corresponds to the correct sensor type configuration and then select Cancel.

Select Data Port	×	
Data Port	C 4	
🖌 Select		
0991 - DP3 - Recording	Setup	×I
Token Set LHASA-3T		
Network XX Static	on CMG3T 🛛 🗖 Non-Compliant DP	
Web Port 80	FIR Filters	
Netserv Port 0	IIR Filters     The Detector Definitions	
Dataserv Port 0	- Control Detectors	
Clock Logging		
Msg, Timing & Cfg		
Comm Events		1
Data Subscription	Add Edit Delete Cut	
🖌 Apply	🗙 Cancel	

Exit from Willard

Clones to Clies can now be made from the Q330.

# Section 3: Emergency Service of a Station with Willard

Servicing a station with Willard is not recommended by PASSCAL, however if the handheld controller is misplaced (or broken) and there is an available laptop with USB to serial adapter along with a standard Q330 serial console cable at the site it can be used.

### **Service Sheet**

STATION SERVICE: DATE (mm/dd/yy)	ST	ATION NAME	
<b>Q330B147 Key to symbols: &gt;</b> Menu items:	* Values:	! Commands:	Check:
Personnel		]	Local time
Site conditions			
*Q330 Serial Number	*Power Box S	Serial Number	
*Old Baler Serial Number *Nev	w Baler Serial Nu	mber	
Q330 Operations with a laptop running Willard	(see Section 1 of	the Willard Docum	ent)
1. Status->Miscellaneous Analog:			
*Main Current: **Input Voltage	e:	(>12.5 full sun, >11.	<u>5 no sun)</u>
**If Power is Low,	follow instructio	ns at the end "IF POV	WER IS BAD"; otherwise continue.
*Antenna Current: *System Te	emperature:		
*Boom Pos: 1: 2: 3:	(within +/-15	for CMG-3T, i.e. with	thin +/-1.5 volts, +/- 20 for STS-2)
If the Boom Positions are out, recenter se	nsor: Commands	s->Sensor Control: S	Slide Duration in Seconds bar:
	10sec (CMC	G-3T) or 2sec (STS-2	2) !Apply
2. Status->General Status *Time of Last Boot: _ Boots:		*Total number	of
*Time of last Last Re-Sync:		*Total Number	of ReSyncs
3. Information->Hardware and Software: *Syst	em Software Vers	sion:	
4. Main Screen: *Phase: *(	Clock:		
5. Status->GPS Status (select the Decimal radio but	utton at the bottor	n of the window)	
*GPS Time: *GPS	Date:	(given in DD	/MM/YYYY)
*Height: *Latitude:	*Lo	ongitude:	
*Last Mark: If clock h	has not locked wit	thin 4 hours try to fix	before proceeding
6. Configuration->DP Token Editor-> Data Port	<b>3</b> !Select *Stat	ion	(SENSOR TYPE )
->DP Token Editor->Data Port 4 !Select	t *Station name		(STATION NAME)
7. Status ->QuickView !Stomp test: ch 1: □ OK	$C ch 2: \Box OK$	ch 3: $\Box$ OK	
8 Status ->Data Port Status (look at Data Port 4) 3	*Packet buffer us	ed (Increasing) YE	S NO
9 Commands ->Baler Control click Ethernet rad	lio button	Turn On Baler	
If baler does not respond use the A	ATTN button on t	he baler to dump to t	ne baler.
If the baler times out BEFORE fir	hishing then REPI	EAT	
10. Status ->Data Port Status (look at Data Port 4)	*Packet Buffer	: Decreases to zero?	YES NO (if not repeat step 7)
*Packets sent			
11. Commands ->Baler Control click Ethernet ra	dio button	!Turn Off Baler	
Wait for slow g	reen blink = Idle $\overline{a}$	and no lights under E	thernet Active or Link
Remove Ba	aler and label it	-	
Replace wi	th new Baler		
12. Status ->Data Port Status (look at Data Port 4)	*Packet buffer u *Packet Buffe	sed (Increasing) YI	ES NO
13. Commands ->Baler Control click Ethernet ra	idio button	!Turn On Baler	
(Baler should tu	rn on Do NC	T use ATTN button!	)
`			•

14. Status ->Data Port Status (look at Data Port 4)	*Packet Buffer :: Decreases to zero	:: YES NO
	*Dealasta asut	****

\*Packets sent NOTE: If the O330 does not transfer data to the Baler try clearing the Baler "association" by holding in the baler Attention button in until the light turns solid red (~5 sec). Release the button and then, after the light begins to flash green, press the Attention button once to shut down the Baler. Repeat the process once more and then try to transfer data to the Baler. (OR use EzBaler with the laptop connected to the Baler.) 15. Status->Miscellaneous Analog: \*Main Current: \_\_\_\_\_\_ \*\*Input Volts: \_\_\_\_\_\_ (>12.5 full sun, >11.5 no sun) **\*\*If Power is Low**, follow instructions at the end "IF POWER IS BAD"; otherwise continue. \*Ant. Current: \_\_\_\_\_ \*Temp: \_\_\_\_\_ Boom Pos: 1: \_\_\_\_\_ 2: \_\_\_\_ 3: \_\_\_\_ (within +/-15 for CMG-3T, i.e. within +/-1.5 volts, +/- 20 for STS-2)) If the Boom Positions are out, recenter sensor: Commands->Sensor Control: Slide Duration in Seconds bar: 10sec (CMG-3T) or 2sec (STS-2) !Apply

ReSyncs

#### 15. Information->Hardware and Software: \*System Software Version:

16. Status ->GPS Statu	is *GPS Time:	*GPS Date:	(given in DD/MM/YYYY)
*Height:	*Latitude:	*Longitude:	
*Last Mark:			

### **IF POWER IS BAD**

POWER: Check power ONLY IF the station has Power Problems

NOTE: The following tests should be performed with the solar panels in full sun. Check solar panel is clean and pointed in the correct direction.

- 1. Disconnect the solar panel.
- 2. Test output of the batteries (12.5 13 Volts DC) Voltage:
- WARNING: DO NOT test the current of the battery
- 3. Record Vs from the power box's display (should be same as above) Voltage:
- 4. Test the solar panel output (~2A, 18 Volts DC) Voltage:
- 5. Connect the solar panels to power box

6. Record Vs (battery voltage) \_\_\_\_\_ Vpn (solar panel voltage) \_\_\_\_\_ Apv (solar panel current) \_\_\_\_\_ from the power box's display (Vs should be higher now)

#### **Download SOH from Baler (at station site)**

\*Station name \*Baler tag ID **EZBaler** – Offload State of Health data only (See Baler Download Doc)

\*StartTime/Date\_\_\_\_\_\*EndTime/Date\_\_\_\_\_\*DataSize\_\_\_\_\_

\*Size\_\_\_\_\_ SOH check complete? \*SOH file name

**OPEEK** - Evaluate State of Heath information and correct any problems seen if possible (see QPEEK doc.)

PQL – Evaluate 1 sps data stream (LHZ, LHN, LHE) and correct any problems seen if possible (see PQL doc.)