



TM

ADVANCED TELEMETRICS

DIGITAL TANK GAUGE SYSTEM
MODEL 1000S

CONFIGURING TOTALFLOW 6400 SERIES

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Configuring the Totalflow 6400 Series RTU:

Communications Application

Master Request Block Editor

Display Application

Monitor Application

For use with:

Advanced Telmetrics Model 1000S Digital Tank Gauges

Revision 1.1.0

March 2013

1. Install PCCU32 Software and follow prompts. Visit ABB.com for information regarding PCCU software. This guide was created using PCCU version 7.28.
2. Totalflow unit must contain RS485 Comm chip to communicate with 485 devices. This guide was created with this chip in COM:2 slot on Totalflow board.

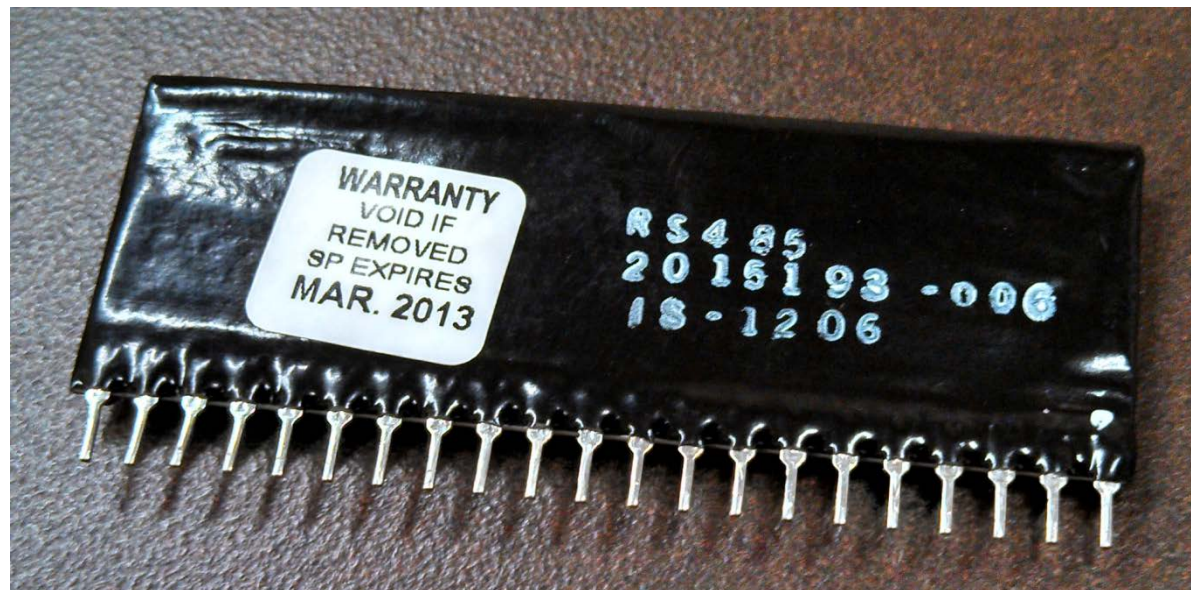


Figure 1 485 COMM CHIP

3. Plug 485 COMM CHIP into Totalflow board in available COM port. This guide was created with the 485 COMM CHIP occupying the slot for COM:2 on the board.

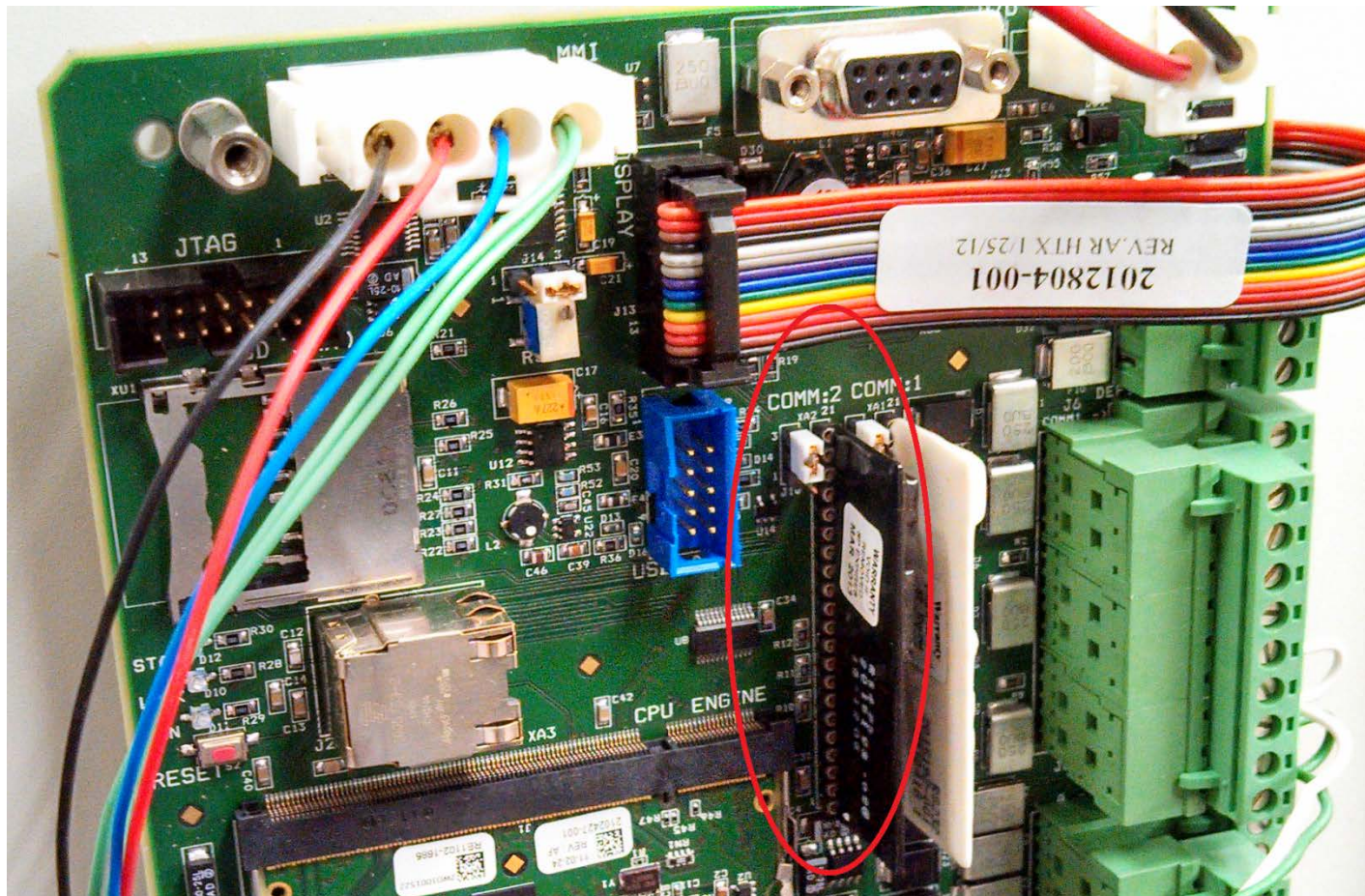


Figure 2 485 COMM CHIP in COM:2 slot

4. Connect RS485 lines from Advanced Telematics Digital Tank Gauges into TX/RX terminals on COM:2 terminal block. Jumper the TX+ and TX- as well as RX+ and RX- as shown:

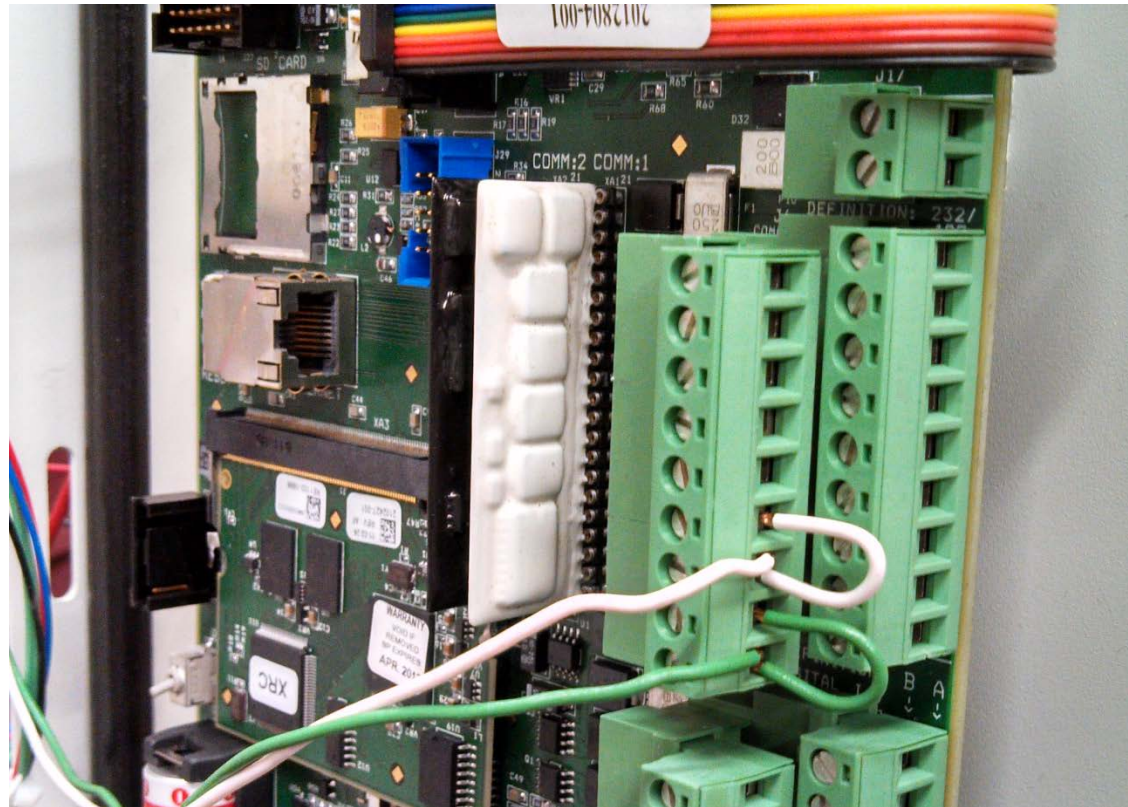


Figure 3 RS485 Lines in Terminal Block

5. Use the following diagram for other wiring configurations, as necessary.

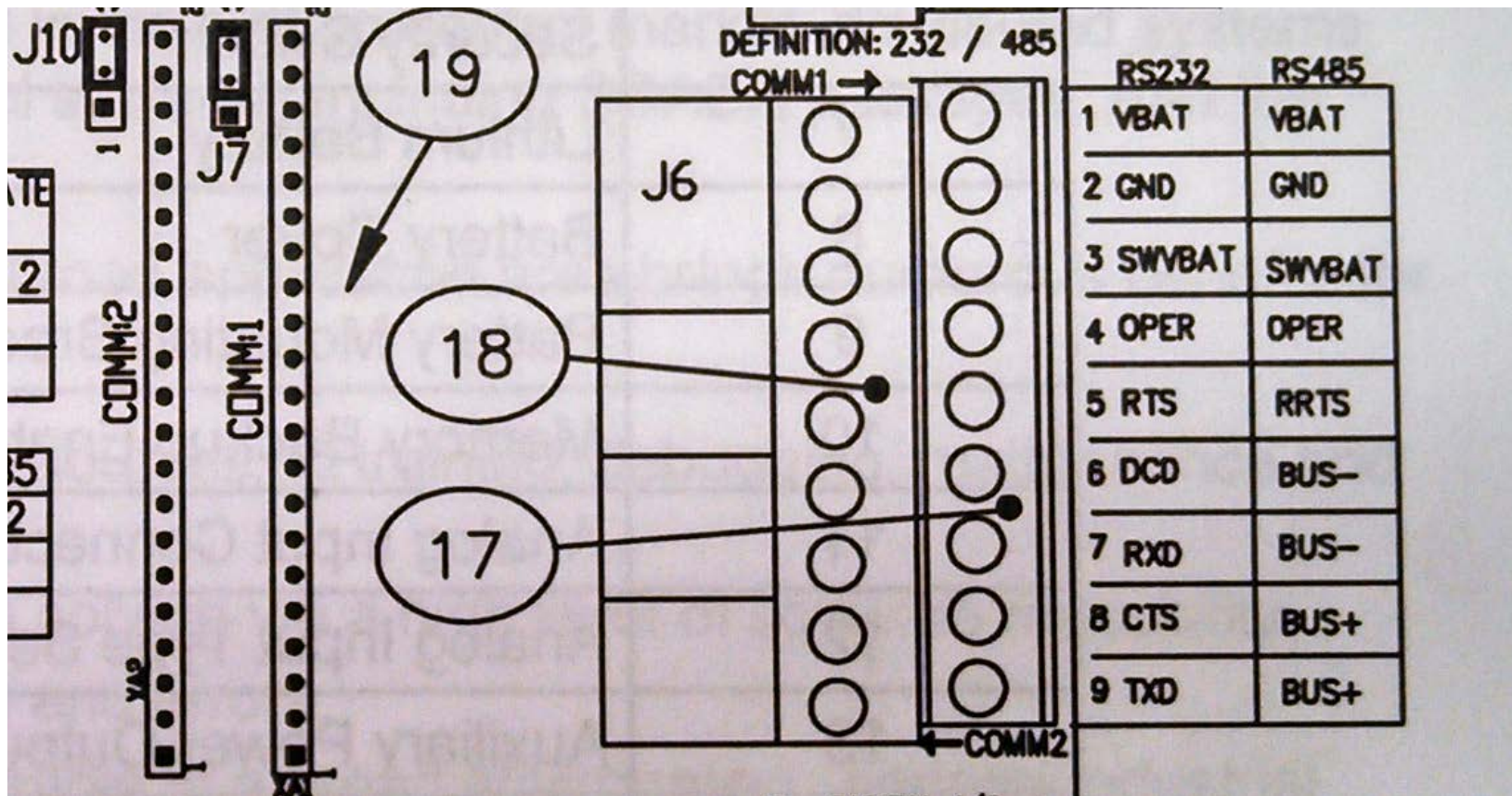


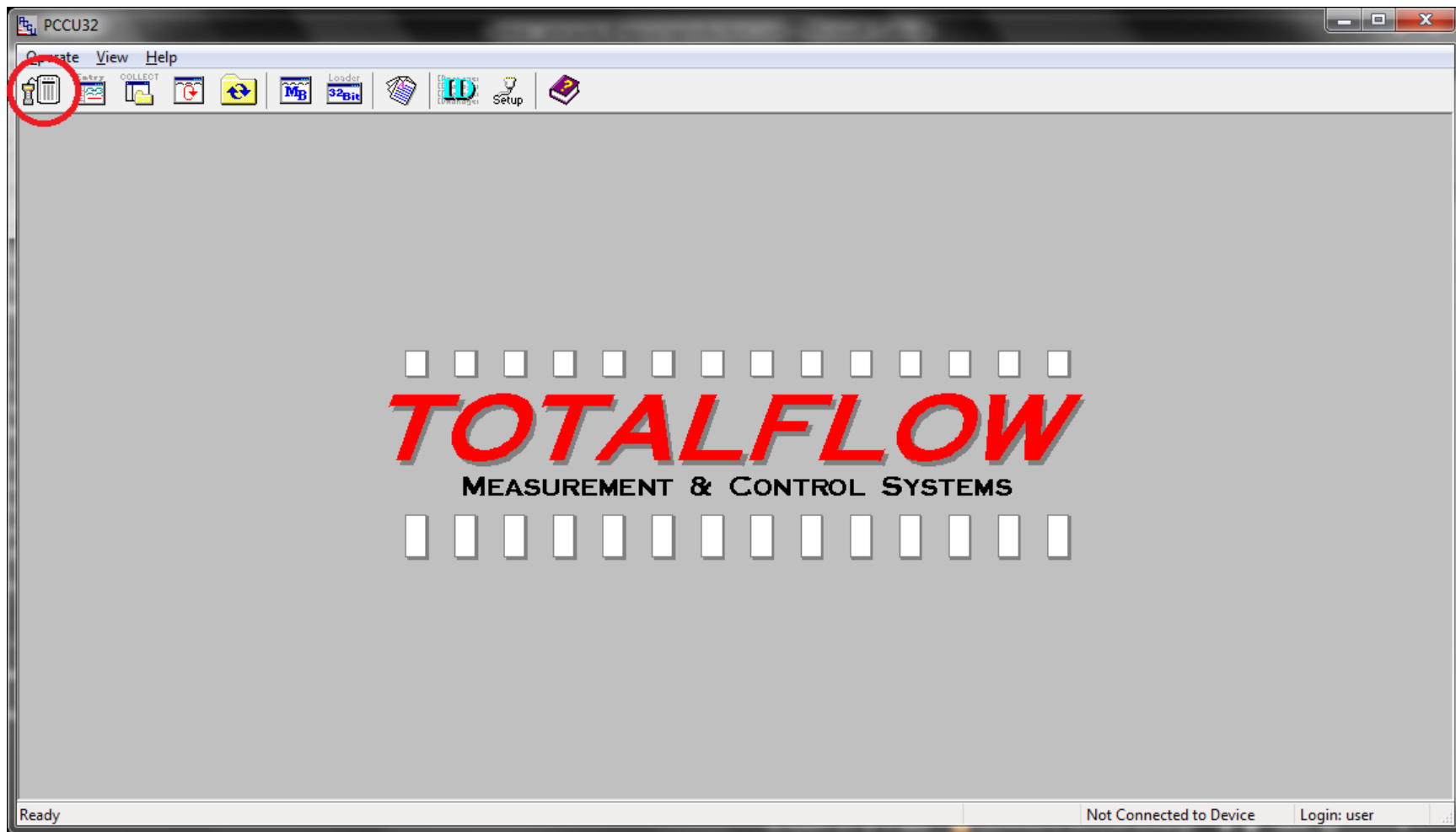
Figure 4 Wiring Diagram

6. Connect Totalflow Unit to 12VDC. Connect computer with PCCU to Totalflow unit using serial cable. This guide was created using the cable pictured. (P/N 2015240-002 REV AM 03/29/06 MTI).

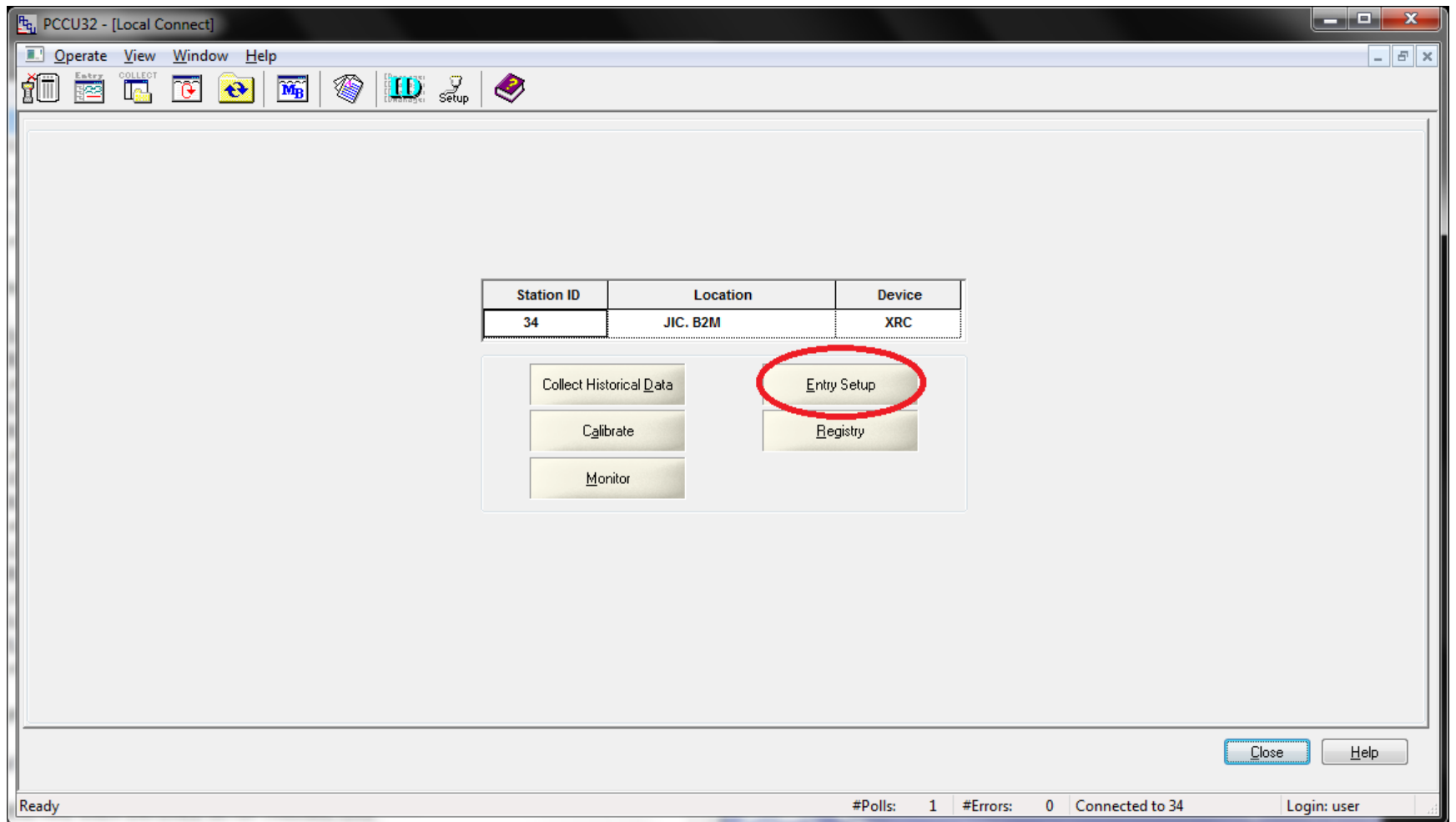


Figure 5 Serial Cable

7. Start-up the PCCU32 Software. Connect to Device by clicking on the top left-hand corner icon.



8. Click Entry Setup.



9. Click on Totalflow device name.

The screenshot shows the PCCU32 software interface. On the left, a tree view shows the device hierarchy, with '34' highlighted under 'Flow Measurement'. The main window displays the configuration for device 34, including a diagram of the device and its associated sensors. The device is an ABB Xic TOTALFLOW flowmeter. The interface shows various parameters and their current values:

- Battery: 13.38 VDC
- Charger: 0.00 VDC
- Volume Flow Rate: 0 MCF/Day
- Today's Volume: 0 MCF
- Yesterday's Volume: 0 MCF
- Accumulated Volume: 0 MCF
- Last Calc Period Volume: 0 SCF
- Energy Rate: 0 MMBTU/Day
- Today's Energy: 0 MMBTU
- Yesterday's Energy: 0 MMBTU
- Diff. Pressure: 0 InH2O
- Static Pressure: 14.73 PSIA
- Temperature: 60 Deg F

At the bottom of the main window, there are buttons for 'Re-read', 'Monitor', 'Close', 'Help', and 'X Help'. The status bar at the bottom of the window shows '#Polls: 7', '#Errors: 0', 'Connected to 34', and 'Login: user'.

10. Click Applications tab.

The screenshot displays the PCCU32 - [Entry] software interface. The main window is titled "Station Setup" and has several tabs: "Applications" (highlighted with a red circle), "App Licensing", "Resources", "System Log", "Security Log", and "Registry". The "Applications" tab is active, showing a table with the following data:

	Description	Value
0.0.4	Station ID	34
0.0.5	Location	JIC, B2M
0.9.0	Date/Time	03/14/2013 10:17:59
0.9.0	Set Device with PCCU Date/Time	No
	--- Security ---	
0.0.6	Security Code Level 1	
0.0.7	Security Code Level 2	
0.7.3	Security Switch Status	Off
	--- Sleep Mode ---	
0.10.2	Remote Comm Cutoff Voltage	11.90
0.10.3	Sleep Mode Entry Voltage	10.90
0.8.8	Sleep Mode Hold-off Time (sec)	120
0.9.11	Wake Up Time	03:00:00
0.7.14	Wake Up Time Mode	Time from Start of Sleep
	--- Lithium Battery Status ---	
0.7.10	Lithium Battery Status	Low Voltage or Not Connected
	--- Backup ---	
0.21.0	Update Cold Start Configuration	No Operation

At the bottom of the window, there are buttons for "Re-read", "Monitor", "Print", "Screen Save", "Send", "Close", "Help", and "X Help". The status bar at the bottom shows "#Polls: 10", "#Errors: 0", "Connected to 34", and "Login: user".

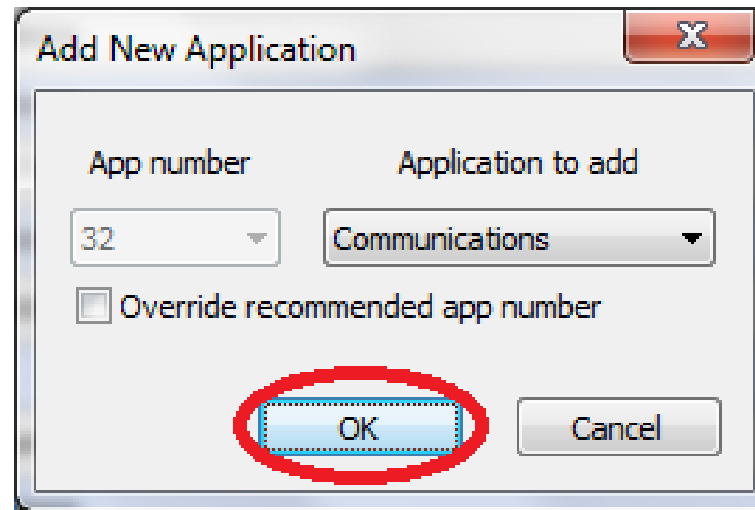
11. Click Add App.

The screenshot shows the PCCU32 - [Entry] software interface. The left sidebar displays a tree view of system components, including Communications, SD, Well1, I/O Interface, Flow Measurement, Display, Holding Registers, and Operations-1. The main window is titled 'PCCU32 - [Entry]' and has a menu bar with 'Operate', 'View', 'Window', and 'Help'. Below the menu bar is a toolbar with various icons. The main content area is divided into tabs: 'Station Setup', 'Applications', 'App Licensing', 'Resources', 'System Log', 'Security Log', and 'Registry'. The 'Applications' tab is active, displaying a table with the following data:

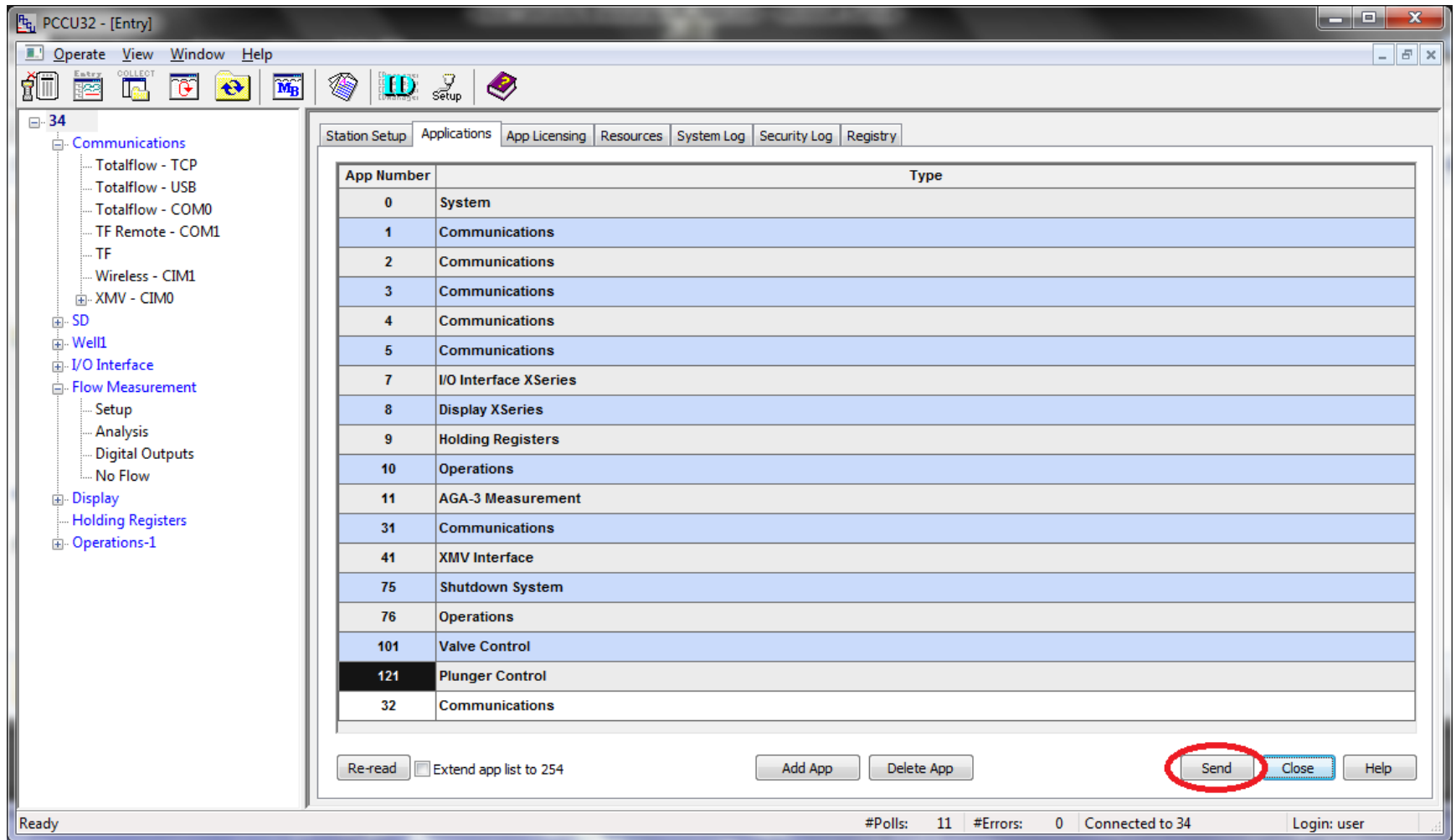
App Number	Type
0	System
1	Communications
2	Communications
3	Communications
4	Communications
5	Communications
7	I/O Interface XSeries
8	Display XSeries
9	Holding Registers
10	Operations
11	AGA-3 Measurement
31	Communications
41	XMV Interface
75	Shutdown System
76	Operations
101	Valve Control
121	Plunger Control

At the bottom of the 'Applications' tab, there are several buttons: 'Re-read', a checkbox labeled 'Extend app list to 254', a red-circled 'Add App' button, a 'Delete App' button, 'Send', 'Close', and 'Help'. The status bar at the bottom of the window shows 'Ready', '#Polls: 36', '#Errors: 0', 'Connected to 34', and 'Login: user'.

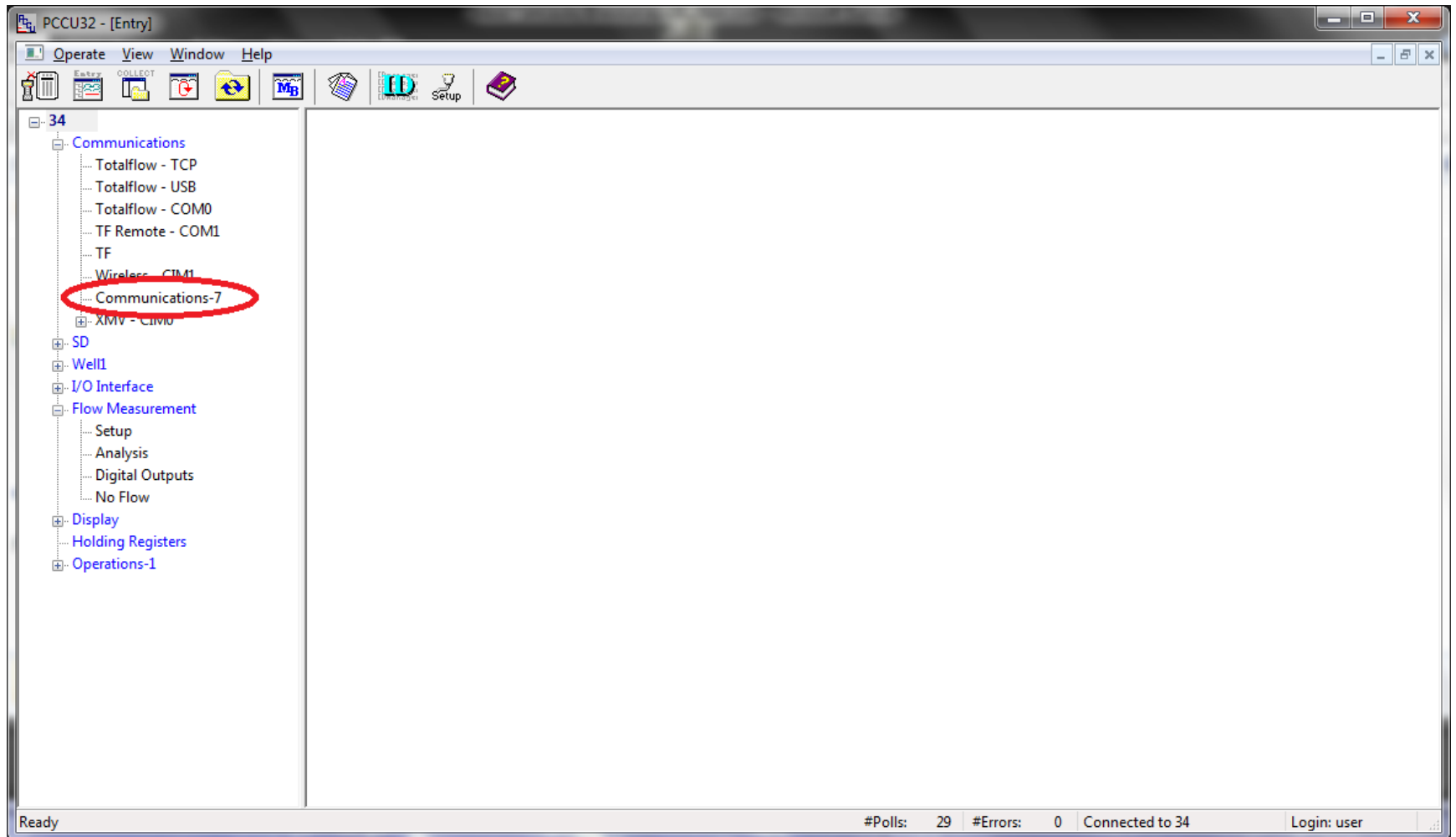
12. Select a Communications App and click OK. Allow device to set automatic app number.



13. Click Send to deliver new Communications app to device.



14. Go to new Communications App.



15. Click on the Protocol row under Value and select Modbus Host (RTU) from the dropdown menu. Then click Send.

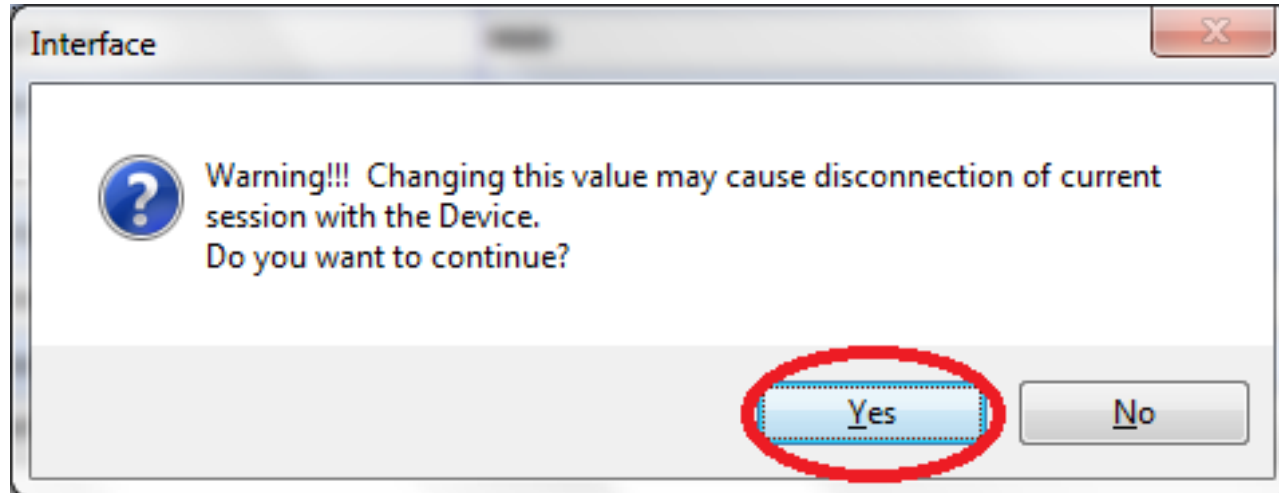
The screenshot shows the PCCU32 software interface. The main window is titled "PCCU32 - [Entry]". The left sidebar shows a tree view of the device configuration, with "Communications-7" selected. The main area displays the "Setup" dialog box, which contains a table of configuration parameters. The "Protocol" field is set to "Modbus Host (RTU)", which is circled in red. The "Send" button at the bottom right of the dialog is also circled in red.

	Description	Value
0.4.33	Port Name	Communications-7
32.3.3	Port	None
32.0.6	Protocol	Modbus Host (RTU)
32.0.22	Port Type	OnBoard Serial
32.0.2	Baud Rate	9600
32.0.3	Data Bits	8
32.0.5	Stop Bits	1
32.0.4	Parity	None
32.1.3	Timeout (milliseconds)	0
32.1.10	Response Delay (milliseconds)	0
32.0.1	Interface	Rs232

Buttons: Re-read, Monitor, Print, Screen Save, Send, Close, Help, X Help

Status bar: Ready, #Polls: 95, #Errors: 0, Connected to 34, Login: user

16. If warning appears, click OK. Reconnect if necessary.



17. Click on Modbus Host under Communications and change the values for Port Name, Port, and Register Format to match the screenshot below. Note that “COM2:” is used because the 485 card and 485 lines are in the COM2: positions. Next, click Send.

The screenshot shows the PCCU32 software interface. On the left, a tree view shows the 'Modbus Host (RTU)' configuration selected under 'Communications'. The main window displays the 'Setup' tab with a table of configuration parameters. The 'Send' button at the bottom right is circled in red.

	Description	Value
0.4.33	Port Name	Modbus Host (RTU) Advanced Telemetry
32.3.3	Port	None COM2:
32.0.6	Protocol	Modbus Host (RTU)
32.0.22	Port Type	OnBoard Serial
32.0.2	Baud Rate	9600
32.0.12	Register Format	32 Bit Totaflow 16 Bit Word Swapped

Buttons: Re-read, Monitor, Print, Screen Sgve, **Send**, Close, Help, XHelp

Status bar: Ready, #Polls: 114, #Errors: 0, Connected to 34, Login: user

18. Click Re-read to update Port Name on Device Tree.

The screenshot shows the PCCU32 software interface. On the left is a tree view with 'Modbus Host (RTU)' selected. The main area displays a configuration table with the following data:

	Description	Value
0.4.33	Port Name	Advanced Telemetrics
32.3.3	Port	COM2:
32.0.6	Protocol	Modbus Host (RTU)
32.0.22	Port Type	OnBoard Serial
32.0.2	Baud Rate	9600
32.0.12	Register Format	16 Bit Modicon

At the bottom of the window, the 'Re-read' button is circled in red. Other buttons include 'Monitor', 'Print', 'Screen Save', 'Send', 'Close', 'Help', and 'X Help'. The status bar at the bottom shows '#Polls: 123 #Errors: 0 Connected to 34 Login: user'.

19. Click the Advanced Tab.

The screenshot shows the PCCU32 software interface. On the left is a tree view with 'Advanced Telemetrics' selected. The main window has tabs for 'Setup', 'Advanced', 'Request Blocks', and 'Statistics'. The 'Advanced' tab is active and contains a table with the following data:

	Description	Value
0.4.33	Port Name	Advanced Telemetrics
32.3.3	Port	COM2:
32.0.6	Protocol	Modbus Host (RTU)
32.0.22	Port Type	OnBoard Serial
32.0.2	Baud Rate	9600
32.0.12	Register Format	16 Bit Modicon

At the bottom of the window, there are buttons for 'Re-read', 'Monitor', 'Print', 'Screen Save', 'Send', 'Close', 'Help', and 'X Help'. The status bar at the bottom shows '#Polls: 407 #Errors: 0 Connected to 34 Login: user'.

20. Change parameters to match screen-shot below. Adjust Response Delay, Timeout, and Retries as needed to suit application. Click Send.

The screenshot shows the PCCU32 - [Entry] software interface. The left sidebar displays a tree view with 'Advanced Telemetry' selected. The main window shows the 'Setup' tab with a table of parameters. The 'Send' button at the bottom right is circled in red.

	Description	Value
32.0.1	Interface	Rs232 Rs485
32.0.3	Data Bits	8
32.0.4	Parity	None
32.0.5	Stop Bits	1
32.1.10	Response Delay (milliseconds)	0 50 (milliseconds)
32.1.1	Xmit Key Delay (milliseconds)	0
32.1.2	Unkey Delay (milliseconds)	0
32.1.3	Timeout(milliseconds)	1000
32.0.13	Retries	0 1
32.0.15	Switched V-Batt/Operate	Enable Disable

Buttons: Re-read, Monitor, Print, Screen Save, **Send**, Close, Help, X Help

Status bar: #Polls: 69 #Errors: 0 Connected to 34 Login: user

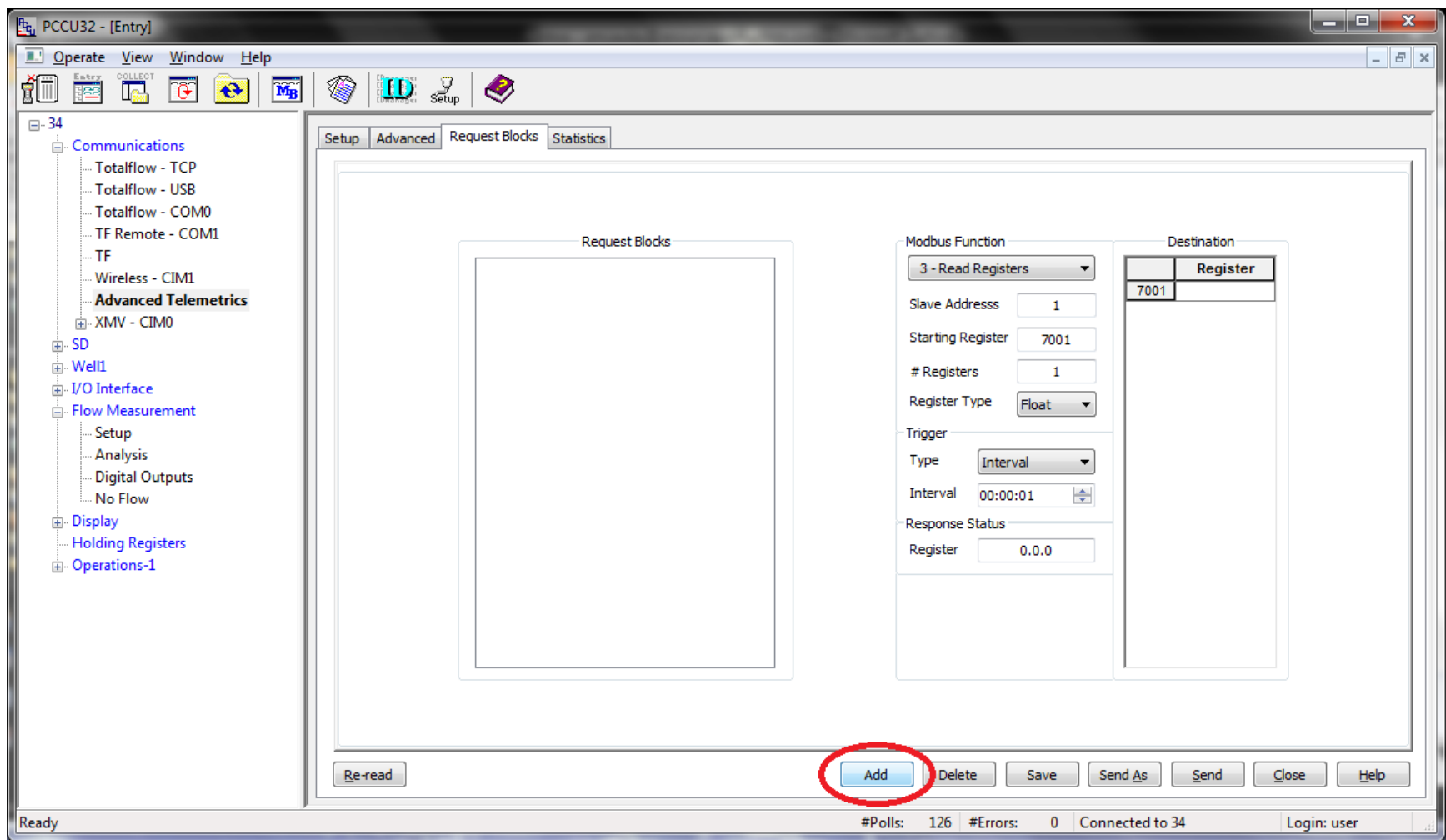
21. Click on the Request Blocks tab.

The screenshot displays the PCCU32 - [Entry] software interface. The window title is "PCCU32 - [Entry]". The menu bar includes "Operate", "View", "Window", and "Help". The toolbar contains icons for "Entry", "COLLECT", "Mg", "ID", "Setup", and a book icon. The left sidebar shows a tree view with the following items: "34", "Communications", "Totalflow - TCP", "Totalflow - USB", "Totalflow - COM0", "TF Remote - COM1", "TF", "Wireless - CIM1", "Advanced Telemetrics", "XMV - CIM0", "SD", "Well1", "I/O Interface", "Flow Measurement", "Setup", "Analysis", "Digital Outputs", "No Flow", "Display", "Holding Registers", and "Operations-1". The main area has four tabs: "Setup", "Advance", "Request Blocks", and "Statistics". The "Request Blocks" tab is selected and circled in red. It contains a table with the following data:

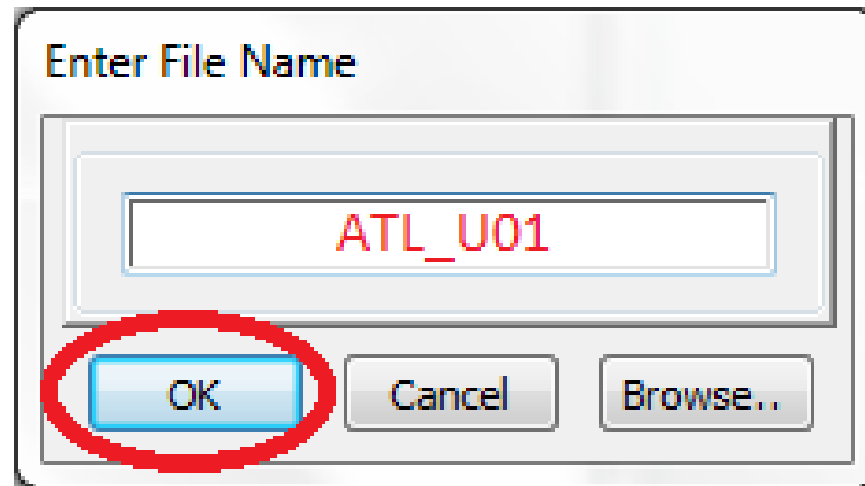
	Description	Value
32.0.1	Interface	Rs485
32.0.3	Data Bits	8
32.0.4	Parity	None
32.0.5	Stop Bits	1
32.1.10	Response Delay (milliseconds)	50
32.1.1	Xmit Key Delay (milliseconds)	0
32.1.2	Unkey Delay (milliseconds)	0
32.1.3	Timeout(milliseconds)	1000
32.0.13	Retries	1
32.0.15	Switched V-Batt/Operate	Disable

At the bottom of the window, there are buttons for "Re-read", "Monitor", "Print", "Screen Save", "Send", "Close", "Help", and "X Help". The status bar at the bottom shows "Ready", "#Polls: 227", "#Errors: 0", "Connected to 34", and "Login: user".

22. Click Add to create new Request Block. The request block will represent one Tank Gauge with a unique ID and a register list to bring in data.



23. Name the first Register Block. Click OK.

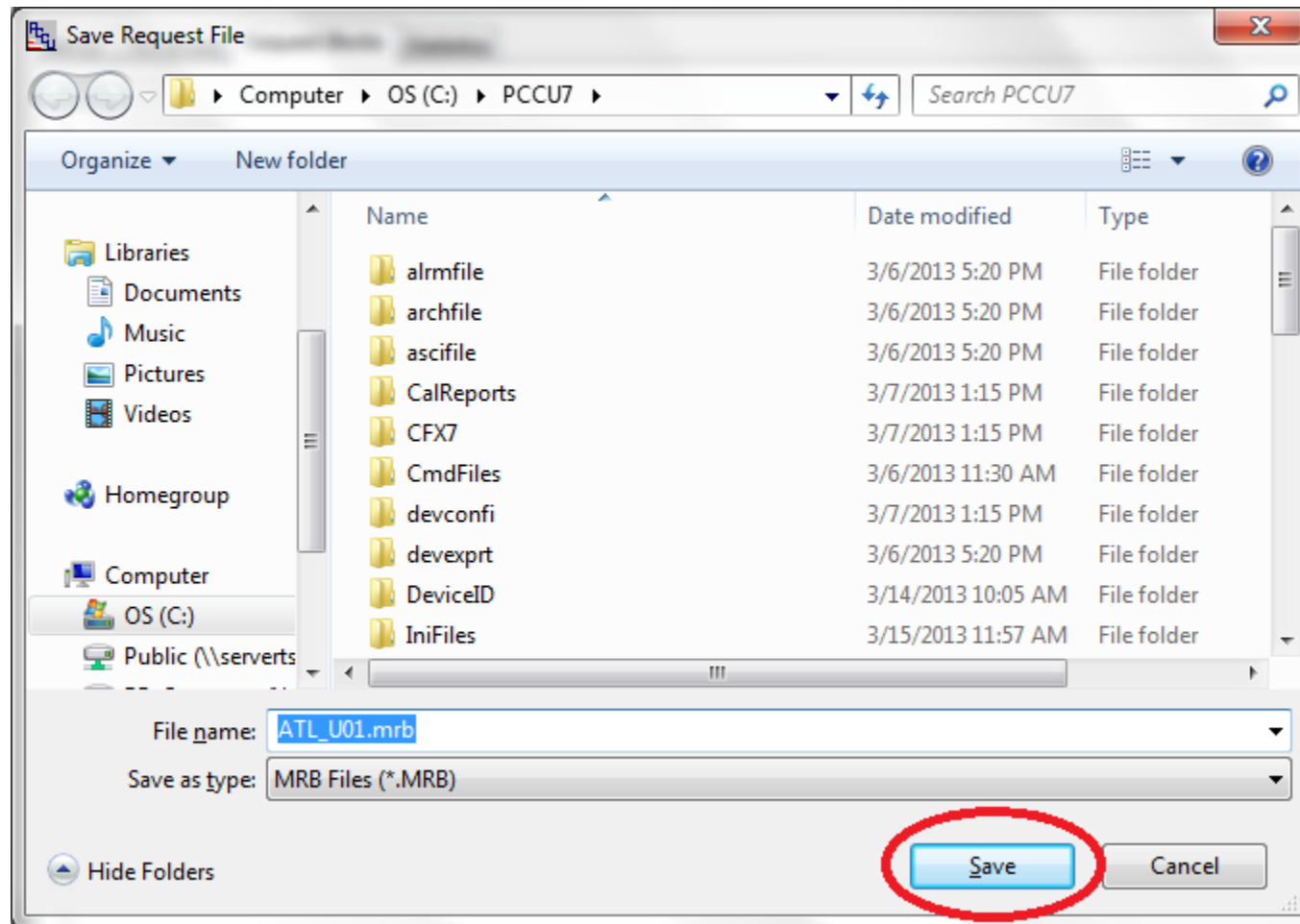


24. Enter the parameters circled to configure the register block to read from Tank Gauge Unit 01. Use Appendix A for register information. You can adjust the Slave ID to match the unit number of the Tank Gauge to be polled. Click Save.

The screenshot shows the PCCU32 software interface. On the left is a tree view with categories like Communications, SD, Well1, I/O Interface, Flow Measurement, Display, and Operations-1. The main window has tabs for Setup, Advanced, Request Blocks, and Statistics. The 'Request Blocks' tab is active, showing a list of blocks with 'ATL_U01.mrb' selected. To the right of the list is a configuration panel for the selected block, which is circled in red. This panel includes a 'Modbus Function' dropdown set to '3 - Read Registers', a 'Slave Address' field with '1', a 'Starting Register' field with '1', a '# Registers' field with '8', a 'Register Type' dropdown set to 'Float', a 'Trigger' section with 'Type' set to 'Interval' and 'Interval' set to '00:00:01', and a 'Response Status' section with 'Register' set to '9.0.200'. To the right of these fields is a 'Destination' table with 8 rows and 2 columns: 'Register' and a numerical value. The 'Save' button at the bottom of the configuration panel is also circled in red. The status bar at the bottom shows '#Polls: 396', '#Errors: 0', 'Connected to 34', and 'Login: user'.

Register	Value
1	9.0.0
2	9.0.1
3	9.0.2
4	9.0.3
5	9.0.4
6	9.0.5
7	9.0.6
8	9.0.7

25. Save the Master Request Block file in the default directory. This config file can be used in the future for other sites.



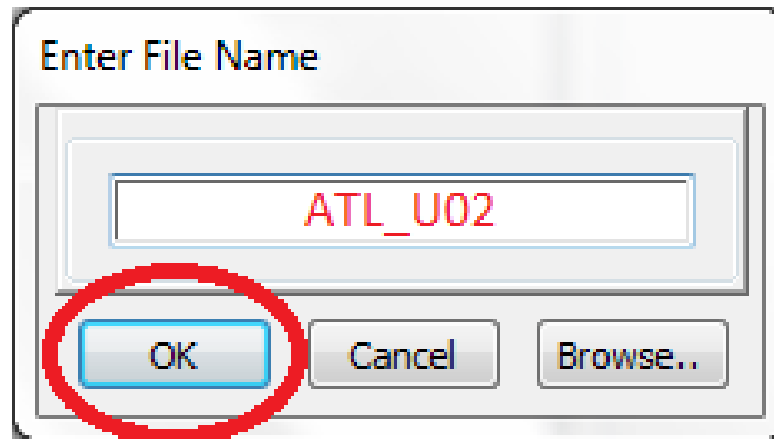
26. Click Add to add new MRB for Tank Gauge with ID of Unit 02.

The screenshot shows the PCCU32 software interface. On the left is a tree view with categories like Communications, SD, Well1, I/O Interface, Flow Measurement, Display, Holding Registers, and Operations-1. The main area has tabs for Setup, Advanced, Request Blocks, and Statistics. The Request Blocks tab is active, showing a list with 'ATL_U01.mrb'. To the right are configuration fields for Modbus Function (3 - Read Registers), Slave Address (1), Starting Register (1), # Registers (8), Register Type (Float), Trigger Type (Interval), Interval (00:00:01), and Response Status (Register 9.0.200). A 'Destination' table is also present.

	Register
1	9.0.0
2	9.0.1
3	9.0.2
4	9.0.3
5	9.0.4
6	9.0.5
7	9.0.6
8	9.0.7

At the bottom of the window, the 'Add' button is circled in red. The status bar at the bottom shows: Ready, #Polls: 36, #Errors: 0, Connected to 34, Login: user.

27. Enter Name for MRB file.

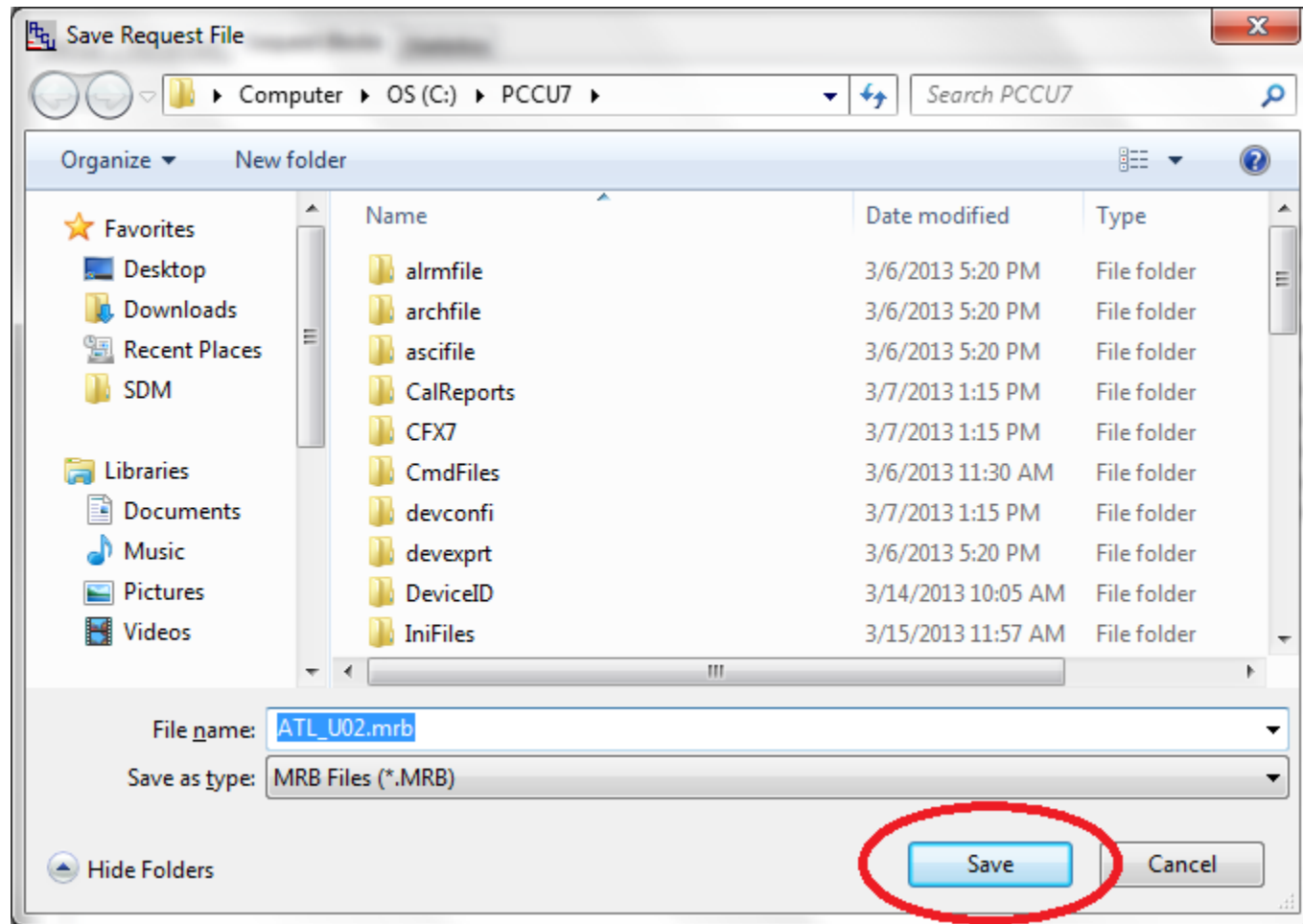


28. Enter the parameters circled to configure the register block to read from Tank Gauge Unit 02. Adjust the Slave ID to match the unit number of the Tank Gauge to be polled. Notice register numbers continue sequentially from ATL_U01.MRB file. Click Save.

The screenshot shows the PCCU32 software interface. On the left is a tree view with categories like Communications, SD, Well1, I/O Interface, Flow Measurement, Display, Holding Registers, and Operations-1. The main window has tabs for Setup, Advanced, Request Blocks, and Statistics. The 'Request Blocks' tab is active, showing a list with 'ATL_U01.mrb' and 'ATL_U02.mrb'. To the right is a configuration panel for a selected block, circled in red. It includes fields for Modbus Function (3 - Read Registers), Slave Address (2), Starting Register (1), # Registers (8), and Register Type (Float). A 'Destination' table is also present. At the bottom, the 'Save' button is circled in red. The status bar at the bottom shows '#Polls: 20', '#Errors: 0', 'Connected to 34', and 'Login: user'.

Register	Value
1	9.0.8
2	9.0.9
3	9.0.10
4	9.0.11
5	9.0.12
6	9.0.13
7	9.0.14
8	9.0.15

29. Save the Master Request Block file in the default directory. This config file can be used in the future for other sites.



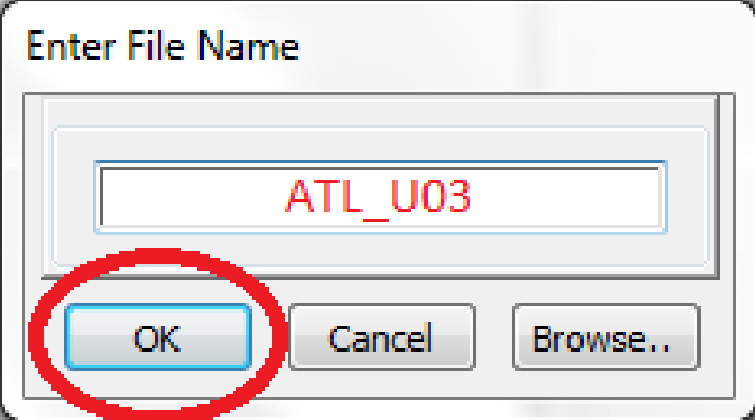
30. Click Add to add new MRB for Tank Gauge with ID of Unit 02.

The screenshot shows the PCCU32 software interface. On the left is a tree view with categories like Communications, SD, Well1, I/O Interface, Flow Measurement, Display, Holding Registers, and Operations-1. The main window has tabs for Setup, Advanced, Request Blocks, and Statistics. The Request Blocks tab is active, showing a list of request blocks: ATL_U01.mrb and ATL_U02.mrb. To the right of the list are configuration fields for Modbus Function (3 - Read Registers), Slave Address (2), Starting Register (1), # Registers (8), Register Type (Float), Trigger Type (Interval), Interval (00:00:01), and Response Status Register (9.0.201). On the far right is a Destination table:

	Register
1	9.0.8
2	9.0.9
3	9.0.10
4	9.0.11
5	9.0.12
6	9.0.13
7	9.0.14
8	9.0.15

At the bottom of the window, there are buttons for Re-read, Add, Delete, Save, Send As, Send, Close, and Help. The 'Add' button is circled in red. The status bar at the bottom shows #Polls: 44, #Errors: 0, Connected to 34, and Login: user.

31. Enter Name for MRB file.



The image shows a dialog box titled "Enter File Name". It contains a text input field with the text "ATL_U03" written in red. Below the text field are three buttons: "OK", "Cancel", and "Browse..". The "OK" button is circled in red.

32. Enter the parameters circled to configure the register block to read from Tank Gauge Unit 02. Adjust the Slave ID to match the unit number of the Tank Gauge to be polled. Notice register numbers continue sequentially from ATL_U01.MRB file. Click Save.

The screenshot shows the PCCU32 software interface. On the left is a tree view with categories like Communications, SD, Well1, I/O Interface, Flow Measurement, Display, Holding Registers, and Operations-1. The main window has tabs for Setup, Advanced, Request Blocks, and Statistics. The 'Request Blocks' tab is active, showing a list of request blocks: ATL_U01.mrb, ATL_U02.mrb, and ATL_U03.mrb. The configuration panel for the selected block is circled in red. It includes the following fields:

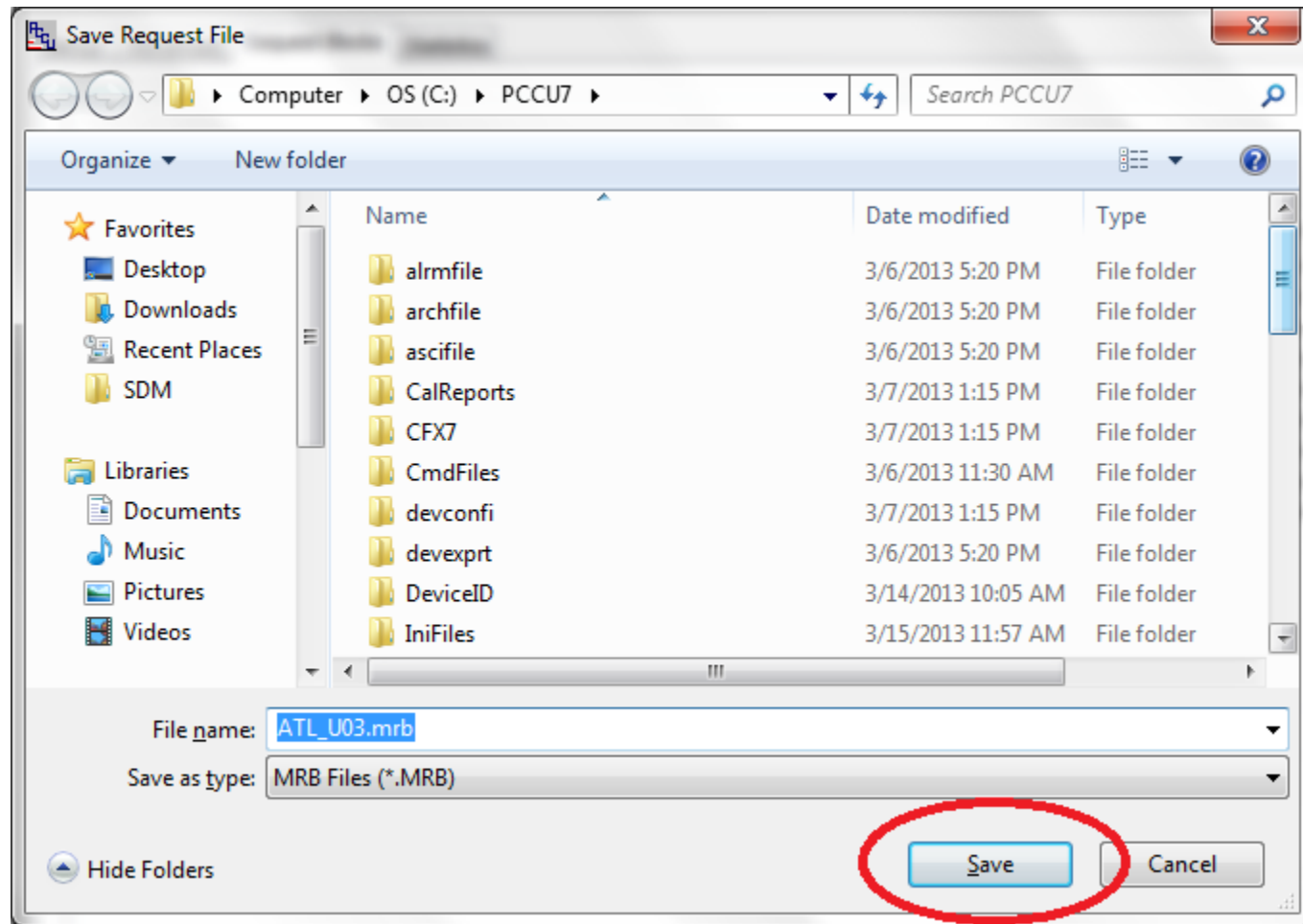
- Modbus Function: 3 - Read Registers
- Slave Address: 3
- Starting Register: 1
- # Registers: 8
- Register Type: Float
- Trigger Type: Interval
- Interval: 00:00:01
- Response Status Register: 9.0.202

To the right of the configuration panel is a 'Destination' table:

Register	Value
1	9.0.16
2	9.0.17
3	9.0.18
4	9.0.19
5	9.0.20
6	9.0.21
7	9.0.22
8	9.0.23

At the bottom of the configuration panel, the 'Save' button is circled in red. The status bar at the bottom shows '#Polls: 44 #Errors: 0 Connected to 34 Login: user'.

33. Save the Master Request Block file in the default directory. This config file can be used in the future for other sites.



34. Click Send to deliver all the Request Block data to the Totalflow Device. (Even if you've clicked Send after adding each MRB, this will prevent having to re-enter data).

The screenshot shows the PCCU32 software interface with the 'Request Blocks' configuration window open. The window has tabs for 'Setup', 'Advanced', 'Request Blocks', and 'Statistics'. The 'Request Blocks' tab is active, showing a list of request blocks: ATL_U01.mrb, ATL_U02.mrb, and ATL_U03.mrb. The 'Modbus Function' is set to '3 - Read Registers', 'Slave Address' is 3, 'Starting Register' is 1, and '# Registers' is 8. The 'Register Type' is set to 'Float'. The 'Trigger' is set to 'Interval' with an interval of '00:00:01'. The 'Response Status' is set to '9.0.202'. The 'Destination' table shows the following data:

Register	Value
1	9.0.16
2	9.0.17
3	9.0.18
4	9.0.19
5	9.0.20
6	9.0.21
7	9.0.22
8	9.0.23

The 'Send' button is circled in red. The status bar at the bottom shows '#Polls: 59', '#Errors: 0', 'Connected to 34', and 'Login: user'.

35. Click on the + for the Display App to open the tree. Then click the Display app itself.
- *Note: Here, the guide continues along the configuration process. Make sure to enter a new MRB file for every Tank Gauge on site that needs to be polled. See notes below:

The screenshot shows the PCCU32 software interface. The left-hand tree view shows the 'Display' app selected and circled in red. The main window displays the configuration for a Request Block. The 'Request Blocks' list contains three entries: ATL_U01.mrb, ATL_U02.mrb, and ATL_U03.mrb. A red note is overlaid on the list, stating: "Note: This guide uses 3 hardwired gauges intended to serve as an example. See Appendix A for a register list when adding additional tank gauge request blocks." Another red note is overlaid on the configuration area, stating: "Note 2: Registers 7 and 8 are reserved for high-level switch status in the WIRELESS application. Registers 7 and 8 will be ignored in later steps of this guide." The 'Modbus Function' is set to '3 - Read Registers'. The 'Slave Address' is 3, 'Starting Register' is 1, and '# Registers' is 8. The 'Register Type' is 'Float'. The 'Trigger' is set to 'Interval' with an interval of '00:00:01'. The 'Response Status' is '9.0.202'. The 'Destination' table lists registers 1 through 8 with their corresponding addresses: 1 (9.0.16), 2 (9.0.17), 3 (9.0.18), 4 (9.0.19), 5 (9.0.20), 6 (9.0.21), 7 (9.0.22), and 8 (9.0.23). The status bar at the bottom shows '#Polls: 44', '#Errors: 0', 'Connected to 34', and 'Login: user'.

Register	Address
1	9.0.16
2	9.0.17
3	9.0.18
4	9.0.19
5	9.0.20
6	9.0.21
7	9.0.22
8	9.0.23

36. Whatever the existing value for display groups, add one more to use for Advanced Telemetry Gauges. (If value is 9, make it 10, if it was 10, make it 11, etc).

The screenshot shows the PCCU32 - [Entry] software interface. The left sidebar displays a tree view of system components, with 'Display' selected. The main window is titled 'Setup' and has tabs for 'Annunciators', 'Displays', 'Plots', and 'Groups'. The 'Groups' tab is active, showing a table with the following data:

	Description	Value
8.0.0	Number of Display Groups	9 10 - (Add 1 to whatever number of groups to add a display for ATL)
8.5.0	Scroll Lock Timeout	00:05:00

At the bottom of the window, there are several buttons: 'Re-read', 'Monitor', 'Print', 'Screen Save', 'Send', 'Close', 'Help', and 'X Help'. The 'Send' button is circled in red. The status bar at the bottom shows '#Polls: 78', '#Errors: 0', 'Connected to 34', and 'Login: user'.

37. Select newly created display group, name the group, and enter number of displays. For 3 hardwired gauges, we need 9 displays to show Product, Interface, and Temp for each. Hardwired gauges get 3 displays EACH. Wireless gauges will get 4 displays EACH. Click Send.

The screenshot shows the PCCU32 software interface. The left-hand tree view has 'Display Group 10' selected and circled in red. The main window displays the 'Group Setup' dialog box with the following table:

	Description	Value
8.1.0	Group File Name	Grp00010.dg
8.1.4	Group Description	Display Group 10 ATL DISPLAY
8.0.1	Number of Displays	2 Enter total parameters to display. (eg. prod01, h2o01, temp01, prod02... etc) *
8.2.15	Include in Scroll List	Yes
8.2.15	Allow Keypad Entry	Yes

Below the table, there is explanatory text:

This example will show 3 hardwired gauges, so the display value entered was 9 (3 parameters * 3 gauges).

Common parameters for hard-wired gauges are Product Level, Interface Level, Temperature. Make sure to add enough displays for each parameter for each gauge (3 parameters PER GAUGE to be displayed on the screen).

Common parameters for wireless gauges are Product Level, Interface Level, Temperature, and Switch Status. In the case of wireless gauges, add 1 more display for each gauge on site (4 parameters per gauge to be displayed on the Totalflow screen).

At the bottom of the dialog box, the 'Send' button is circled in red. Other buttons include 'Re-read', 'Monitor', 'Print', 'Screen Sav', 'Close', 'Help', and 'X Help'. The status bar at the bottom shows '#Polls: 107 #Errors: 0 Connected to 34 Login: user'.

38. Open the new Display Group tree by clicking the + sign. Click the first display item and change the parameters as specified below. Verify that "Include in Scroll List" says "Yes". Click Send, and Re-read to see change in display tree. Use Appendix A for additional info.

The screenshot shows the PCCU32 software interface. On the left, a tree view shows the 'Display' folder expanded, with 'ATL DISPLAY' selected and its 'DATE/TIME' sub-item highlighted. A red circle labeled '1.' is around this selection. The main window displays the 'Item Setup' dialog box for the selected item. A large red circle labeled '2.' encompasses the table in the dialog box. The table has two columns: 'Description' and 'Value'. The 'Include in Scroll List' parameter is set to 'Yes'. At the bottom of the dialog box, the 'Re-read' button is circled in red with a '4.' and the 'Send' button is circled in red with a '3.'. The status bar at the bottom shows '#Polls: 150 #Errors: 0 Connected to 34 Login: user'.

	Description	Value
8.1.1	Name of Display Item	DATE/TIME U01 Product
8.4.0	Register	0.0.3 9.0.0
8.2.0	Display Interval (Seconds)	5
8.1.2	Units	Inches
8.2	X Location For Name	0
8.2.2	Y Location For Name	0
8.2.3	X Location For Units	10
8.2.4	Y Location For Units	1
8.2.5	X Location For Data	0
8.2.6	Y Location For Data	1
8.1.3	Data Format	17.17 9.3
8.3.0	Data Scale Factor	0
8.3.1	Data High Limit	0
8.3.2	Data Low Limit	0
8.4.2	Enumeration Array	0.0.0
8.2.14	Include in Scroll List	Yes
8.2.14	Allow Keypad Entry	Yes
8.2.14	Validate Keypad Entry	No
8.0.7	Reset factory default	No

39. Click the next Spare Display. Enter parameters circled in 2. Click Send, and Re-read to update display tree.

The screenshot shows the PCCU32 software interface. On the left is a tree view with 'Spare' under 'U01 Product' circled in red (1). The main window is the 'Item Setup' dialog box, which contains a table with the following data:

	Description	Spare	Value
8.1.1	Name of Display Item	U01 Interface	
8.4.0	Register	0.0.4	9.0.1
8.2.0	Display Interval (Seconds)	0	5
8.1.2	Units		Inches
8.2.1	X Location For Name	0	
8.2.2	Y Location For Name	0	
8.2.3	X Location For Units	10	
8.2.4	Y Location For Units	1	
8.2.5	X Location For Data	0	
8.2.6	Y Location For Data	1	
8.1.3	Data Format	9.3	
8.3.0	Data Scale Factor	0	
8.3.1	Data High Limit	0	
8.3.2	Data Low Limit	0	
8.4.2	Enumeration Array	0.0.0	
8.2.14	Include in Scroll List	Yes	
8.2.14	Allow Keypad Entry	Yes	
8.2.14	Validate Keypad Entry	No	

At the bottom of the dialog box, the 'Re-read' button is circled in red (4), and the 'Send' button is circled in red (3). A large red circle (2) encompasses the table content.

Ready #Polls: 166 #Errors: 0 Connected to 34 Login: user

41. Click the next Spare Display. Enter parameters circled in 2. Click Send, and Re-read to update display tree. Notice that each for each gauge, we display the first 3 registers from the request block. U01 reads 9.0.0, 9.0.1, and 9.0.2. U02 reads 9.0.8, 9.0.9, 9.0.10... ETC.

2.

Description	Spare	Value
8.1.1 Name of Display Item	U02 Product	
8.4.0 Register	9.0.8	
8.2.0 Display Interval (Seconds)	5	
8.1.2 Units	Inches	
8.2.1 Location For Name	0	
8.2.2 Y Location For Name	0	
8.2.3 X Location For Units	10	
8.2.4 Y Location For Units	1	
8.2.5 X Location For Data	0	
8.2.6 Y Location For Data	1	
8.1.3 Data Format	9.3	
8.3.0 Data Scale Factor	0	
8.3.1 Data High Limit	0	
8.3.2 Data Low Limit	0	
8.4.2 Enumeration Array	0.0.0	
8.2.14 Include in Scroll List	Yes	
8.2.14 Allow Keypad Entry	Yes	
8.2.14 Validate Keypad Entry	No	
8.0.7 Default format default		

4.

3.

Note: Begin with the first register on U02's request block.

Ready #Polls: 248 #Errors: 0 Connected to 34 Login: user

43. Click the next Spare Display. Enter parameters circled in 2. Click Send, and Re-read to update display tree.

The screenshot shows the PCCU32 - [Entry] software interface. The left pane displays a tree view of the system configuration, with the 'Spare' item under 'ATL DISPLAY' selected and circled in red. The main pane shows the 'Item Setup' dialog box for the selected item. The dialog box contains a table with the following data:

ID	Description	Value
8.1.1	Name of Display Item	Spare U02 TEMP
8.4.0	Register	0.0.4 9.0.10
8.2.0	Display Interval (Seconds)	0 5
8.1.2	Units	Deg. F
8.2.1	Location For Name	0
8.2.2	Y Location For Name	0
8.2.3	X Location For Units	10
8.2.4	Y Location For Units	1
8.2.5	X Location For Data	0
8.2.6	Y Location For Data	1
8.1.3	Data Format	9.3
8.3.0	Data Scale Factor	0
8.3.1	Data High Limit	0
8.3.2	Data Low Limit	0
8.4.2	Enumeration Array	0.0.0
8.2.14	Include in Scroll List	Yes
8.2.14	Allow Keypad Entry	Yes
8.2.14	Validate Keypad Entry	No

The 'Re-read' button and the 'Send' button are circled in red. The status bar at the bottom shows '#Polls: 260 #Errors: 0 Connected to 34 Login: user'.

44. Click the next Spare Display. Enter parameters circled in 2. Click Send, and Re-read to update display tree.

The screenshot shows the PCCU32 software interface. On the left is a tree view with 'Spare' circled in red and labeled '1.'. The main window displays the 'Item Setup' table with a red circle labeled '2.' around the data rows. The table has columns for 'Description' and 'Value'. The 'Value' column contains values like 'U03 Product', '9.0.16', '5', and 'Inches'. A red arrow points from the text 'Note again, using first register from U03 request block' to the 'U03 Product' value. At the bottom, the 'Re-read' button is circled in red and labeled '4.', and the 'Send' button is circled in red and labeled '3.'. The status bar at the bottom shows '#Polls: 271 #Errors: 0 Connected to 34 Login: user'.

	Description	Value
8.1.1	Name of Display Item	Spare U03 Product
8.4.0	Register	0.0.4 9.0.16
8.2.1	Display Interval (Seconds)	0 5
8.2.2	Units	Inches
8.2.1	X Location For Name	0
8.2.2	Y Location For Name	0
8.2.3	X Location For Units	10
8.2.4	Y Location For Units	1
8.2.5	X Location For Data	0
8.2.6	Y Location For Data	1
8.3.3	Data Format	9.3
8.3.0	Data Scale Factor	0
8.3.1	Data High Limit	0
8.3.2	Data Low Limit	0
8.4.2	Enumeration Array	0.0.0
8.2.14	Include in Scroll List	Yes
8.2.14	Allow Keypad Entry	Yes
8.2.14	Validate Keypad Entry	Yes
8.0.7	Reset factory default	No

45. Click the next Spare Display. Enter parameters circled in 2. Click Send, and Re-read to update display tree.

The screenshot shows the PCCU32 software interface. On the left, a tree view shows the 'Spare' option under the 'Display' section, circled in red with a '1.' next to it. The main window displays the 'Item Setup' dialog box, which contains a table of parameters. A large red circle highlights the table, with a '2.' next to it. The table has columns for 'Description', 'Spare', and 'Value'. The parameters are as follows:

Description	Spare	Value
8.1.1 Name of Display Item	U03 Interface	
8.4.1 Register	0.0.4	9.0.17
8.2.0 Display Interval (Seconds)	0	5
8.1.2 Units		Inches
8.2.1 X Location For Name	0	
8.2.2 Y Location For Name	0	
8.2.3 X Location For Units	10	
8.2.4 Y Location For Units	1	
8.2.5 X Location For Data	0	
8.2.6 Y Location For Data	1	
8.1.3 Data Format	9.3	
8.3.0 Data Scale Factor	0	
8.3.1 Data High Limit	0	
8.3.2 Data Low Limit	0	
8.4.2 Enumeration Array	0.0.0	
8.2.14 Include in Scroll List	Yes	
8.2.14 Allow Keypad Entry	Yes	
8.2.14 Validate Keypad Entry	No	

At the bottom of the dialog box, the 'Re-read' button is circled in red with a '4.' next to it, and the 'Send' button is circled in red with a '3.' next to it. The status bar at the bottom shows '#Polls: 278 #Errors: 0 Connected to 34 Login: user'.

46. Click the next Spare Display. Enter parameters circled in 2. Click Send, and Re-read to update display tree. Display tree should contain all values desired.

The screenshot shows the PCCU32 software interface. On the left is a tree view with the 'Spare' item selected and circled in red (1). The main window displays the 'Item Setup' dialog box with a table of parameters. A large red circle (2) highlights the table. At the bottom of the dialog, the 'Re-read' button is circled in red (4) and the 'Send' button is circled in red (3). The status bar at the bottom shows '#Polls: 285 #Errors: 0 Connected to 34 Login: user'.

	Description	Spare	Value
8.1.1	Name of Display Item	U03 Temp	
8.4.0	Register	0.0.4	9.0.18
8.2.0	Display Interval (Seconds)	0	5
8.1.2	Units		Deg. F
8.2.1	X Location For Name	0	
8.2.2	Y Location For Name	0	
8.2.3	X Location For Units	10	
8.2.4	Y Location For Units	1	
8.2.5	X Location For Data	0	
8.2.6	Y Location For Data	1	
8.3.3	Data Format	9.3	
8.3.3	Data Scale Factor	0	
8.3.1	Data High Limit	0	
8.3.2	Data Low Limit	0	
8.4.2	Enumeration Array	0.0.0	
8.2.14	Include in Scroll List	Yes	
8.2.14	Allow Keypad Entry	Yes	
8.2.14	Validate Keypad Entry	No	
8.0.7	Reset factory default	No	

47. Click the Monitor button to open the Monitor window.

***Note: If there is no Monitor button present, disconnect from device and enter Monitor through main menu.**

The screenshot shows the PCCU32 software interface. The main window title is "PCCU32 - [Entry]". The menu bar includes "Operate", "View", "Window", and "Help". The toolbar contains several icons, with the "Monitor" icon (a monitor with a play button) circled in red. The left sidebar shows a tree view of the device structure, with "U03 Temp" selected under the "Display" section. The main area displays the "Item Setup" window, which contains a table of configuration parameters for the selected item.

	Description	Value
8.1.1	Name of Display Item	U03 Temp
8.4.0	Register	9.0.18
8.2.0	Display Interval (Seconds)	5
8.1.2	Units	Deg. F
8.2.1	X Location For Name	0
8.2.2	Y Location For Name	0
8.2.3	X Location For Units	10
8.2.4	Y Location For Units	1
8.2.5	X Location For Data	0
8.2.6	Y Location For Data	1
8.1.3	Data Format	9.3
8.3.0	Data Scale Factor	0
8.3.1	Data High Limit	0
8.3.2	Data Low Limit	0
8.4.2	Enumeration Array	0.0.0
8.2.14	Include in Scroll List	Yes
8.2.14	Allow Keypad Entry	Yes
8.2.14	Validate Keypad Entry	No

At the bottom of the Item Setup window, there are buttons for "Re-read", "Monitor", "Print", "Screen Save", "Send", "Close", "Help", and "X Help". The status bar at the bottom of the main window shows "#Polls: 37", "#Errors: 0", "Connected to 34", and "Login: user".

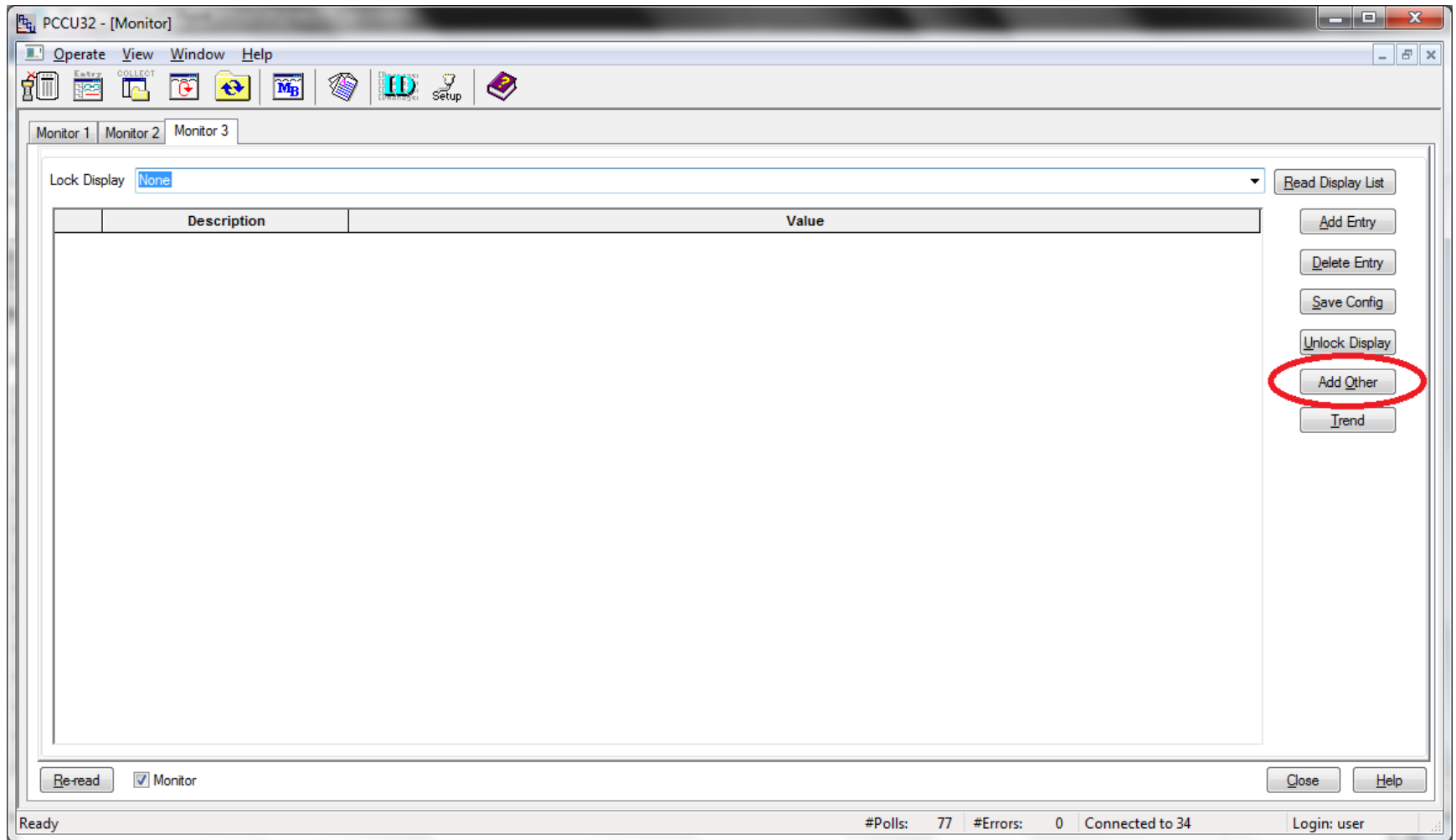
48. Select an unused monitor tab to become an ATL Monitor. The monitor allows us to view multiple values in real time. In this case, we will monitor all the data coming in off of the Advanced Telemetry Tank Gauges.

The screenshot shows the 'PCCU32 - [Monitor]' application window. The 'Monitor 3' tab is selected and circled in red. A red annotation reads: '*Note: Select any unused monitor tab (also, monitor is optional, but useful)'. The main display area contains a table with the following data:

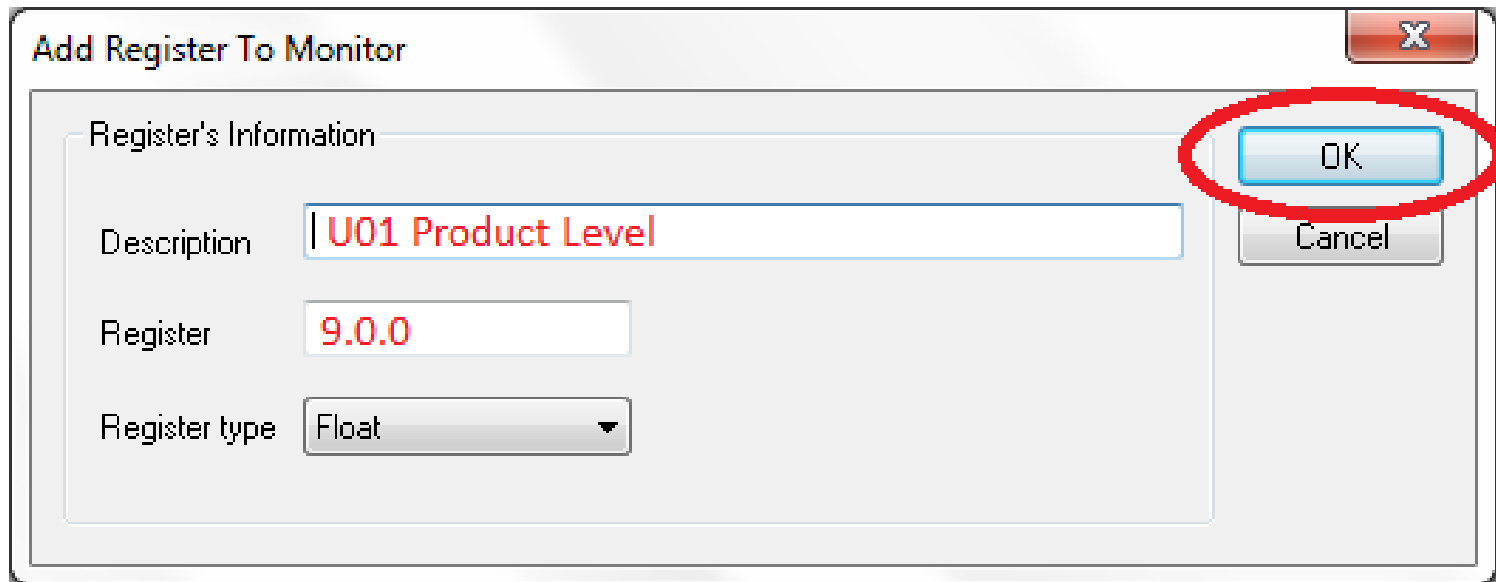
	Description	Value
0.0.3	Date/Time	03/18/13 18:11:54
0.10.0	Processor Usage (%)	8.20
0.9.1	Available Memory	3477504
0.9.2	Available Disk Space	5768716

Additional interface elements include a 'Lock Display' dropdown set to 'None', a 'Read Display List' button, and a vertical stack of buttons: 'Add Entry', 'Delete Entry', 'Save Config', 'Unlock Display', 'Add Other', and 'Trend'. At the bottom, there is a 'Re-read' button, a checked 'Monitor' checkbox, and 'Close' and 'Help' buttons. The status bar at the bottom shows '#Polls: 41 #Errors: 0 Connected to 34 Login: user'.

49. Click the “Add Other” button to create an entry.



50. Enter a name for the register you wish to view and the register itself. The values used here will be the exact values from the Display application process.



Add Register To Monitor [X]

Register's Information

Description: U01 Product Level

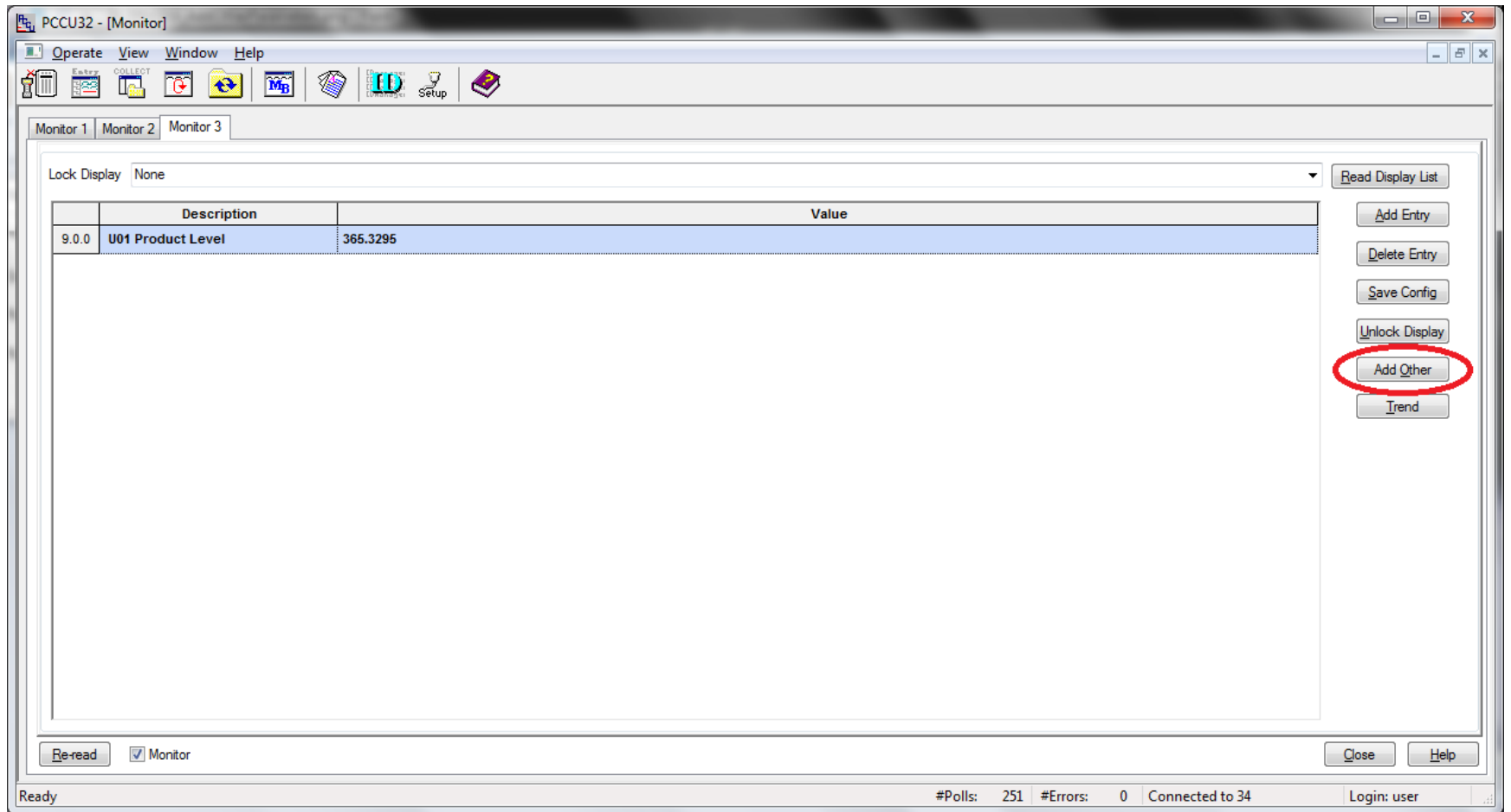
Register: 9.0.0

Register type: Float

OK

Cancel

51. Click the Add Other button and add another Monitor Entry.



52. Use the "Add Other" button and the finished Monitor example below to bring each desired value onto the Monitor screen. Ignore the Comm Status entries for until an updated guide is provided. Click Save Config to preserve these entries.

The screenshot shows the PCCU32 - [Monitor] application window. The interface includes a menu bar (Operate, View, Window, Help), a toolbar with icons for Entry, Collect, Mfg, and Setup, and three tabs for Monitor 1, Monitor 2, and Monitor 3. A 'Lock Display' dropdown is set to 'None', and a 'Read Display List' button is present. The main area contains a table with columns 'Description' and 'Value'. The table lists various monitoring points for three units (U01, U02, U03), including Product, Interface, Temp, Switch, and CommStatus. Red annotations highlight specific rows and the 'Add Other' button. A red arrow points from the 'Add Other' button to the 'U01_Temp' row. Another red arrow points from the 'U01_Temp' row to the 'Add Other' button. A third red arrow points from the 'U01_Switch' row to the 'Add Other' button. A fourth red arrow points from the 'U01_Switch' row to the 'U01_Switch' row. A fifth red arrow points from the 'U01_Switch' row to the 'U01_Switch' row. A sixth red arrow points from the 'U01_Switch' row to the 'U01_Switch' row. A seventh red arrow points from the 'U01_Switch' row to the 'U01_Switch' row. A note at the bottom right explains that Comm Status will not currently report missing tank data.

	Description	Value	
9.0.0	U01_Product	146.7674	
9.0.1	U01_Interface	127.5495	
9.0.2	U01_Temp	66.04	
9.0.3	U01_Switch	0	Switch status for WIRELESS only.
9.0.200	U01_CommStatus	0 *	
9.0.8	U02_Product	355.3326	
9.0.9	U02_Interface	232.5809	
9.0.10	U02_Temp	66.79143	
9.0.11	U02_Switch	0	Switch status for WIRELESS only.
9.0.201	U02_CommStatus	0 *	
9.0.16	U03_Product	21.52952	
9.0.17	U03_Interface	4.468147	
9.0.18	U03_Temp	66.2	
9.0.19	U03_Switch	0	Switch status for WIRELESS only.
9.0.202	U03_CommStatus	0 *	

*Note:
Comm Status will not currently report missing tank data. The registers for each value hold whatever last value recieved, despite lack of comm. We are working with ABB on a way to get the Totalflow device to recognize that data is missing. An updated guide with a fix will be issued when the issue is fixed.

- 53.** Verify that Totalflow display is cycling through all desired parameters. Ensure that high-level discrete circuits from the gauges are tied into an ESD. The Totalflow should now be reading and displaying all desired values from the Advanced Telemetry Tank Gauges.

For questions or concerns regarding ABB functionality, contact ABB at (918) 338 – 4600 and ask for Technical Support.

For questions regarding Advanced Telemetry Digital Tank Gauge functionality, contact the factory at (505) 330-2256 and ask for Sam or send an email to smcaulay@resourceproduction.com.

APPENDIX A:

REQUEST BLOCK GUIDE:

HARD- WIRED	REGISTER LIST:	WIRE- LESS
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*Use any Unit IDs desired, the following are only an example.

U01*	9.0.0	U01*	U05	9.0.25	U04	U09	9.0.49	U07
	9.0.1			9.0.26			9.0.50	
	9.0.2			9.0.27			9.0.51	
	9.0.3			9.0.28			9.0.52	
	9.0.4			9.0.29			9.0.53	
U02*	9.0.6	U02*	U06	9.0.31	U05	U10	9.0.54	U08
	9.0.7			9.0.32			9.0.55	
	9.0.8			9.0.33			9.0.56	
	9.0.9			9.0.34			9.0.57	
	9.0.10			9.0.35			9.0.58	
U03	9.0.12	U03	U07	9.0.36	U06	U11	9.0.59	U09
	9.0.13			9.0.37			9.0.60	
	9.0.14			9.0.38			9.0.61	
	9.0.15			9.0.39			9.0.62	
	9.0.16			9.0.40			9.0.63	
U04	9.0.17	U08	U08	9.0.41	U12	U12	9.0.64	U09
	9.0.18			9.0.42			9.0.65	
	9.0.19			9.0.43			9.0.66	
	9.0.20			9.0.44			9.0.67	
	9.0.21			9.0.45			9.0.68	
	9.0.22			9.0.46			9.0.69	
	9.0.23			9.0.47			9.0.70	
	9.0.48	9.0.71						
		9.0.72						

U13	9.0.73	U10	U17	9.0.97	U13	U21	9.0.121	U16
	9.0.74			9.0.98			9.0.122	
	9.0.75			9.0.99			9.0.123	
	9.0.76			9.0.100			9.0.124	
	9.0.77			9.0.101			9.0.125	
U14	9.0.78	U11	U18	9.0.102	U14	U22	9.0.126	U17
	9.0.79			9.0.103			9.0.127	
	9.0.80			9.0.104			9.0.128	
	9.0.81			9.0.105			9.0.129	
	9.0.82			9.0.106			9.0.130	
U15	9.0.83	U12	U19	9.0.107	U15	U23	9.0.131	U18
	9.0.84			9.0.108			9.0.132	
	9.0.85			9.0.109			9.0.133	
	9.0.86			9.0.110			9.0.134	
	9.0.87			9.0.111			9.0.135	
U16	9.0.88	U20	U20	9.0.112	U24	U24	9.0.136	U18
	9.0.89			9.0.113			9.0.137	
	9.0.90			9.0.114			9.0.138	
	9.0.91			9.0.115			9.0.139	
	9.0.92			9.0.116			9.0.140	
	9.0.93			9.0.117			9.0.141	
	9.0.94			9.0.118			9.0.142	
	9.0.95			9.0.119			9.0.143	
	9.0.96			9.0.120			9.0.144	

APPENDIX A - 2:

MONITOR/DISPLAY GUIDE:

HARD- WIRED	REGISTER LIST:	WIRE- LESS
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PROD	9.0.0	PROD	9.0.25	PROD	9.0.49	PROD	9.0.73
WATER	9.0.1	WATER	9.0.26	WATER	9.0.50	WATER	9.0.74
TEMP	9.0.2	TEMP	9.0.27	TEMP	9.0.51	TEMP	9.0.75
U01	9.0.3	SW 1	9.0.28	SW 1	9.0.52	SW 1	9.0.76
	9.0.4	U01	9.0.29	U04	9.0.53	U07	
	9.0.5		9.0.30		9.0.54		
9.0.6	9.0.31		9.0.55				
PROD	9.0.7	PROD	9.0.32	PROD	9.0.56	PROD	9.0.80
WATER	9.0.8	WATER	9.0.33	WATER	9.0.57	WATER	9.0.81
TEMP	9.0.9	TEMP	9.0.34	TEMP	9.0.58	TEMP	9.0.82
U02	9.0.10	SW 1	9.0.35	SW 1	9.0.59	SW 1	9.0.83
	9.0.11	U02	9.0.36	U05	9.0.60	U08	
	9.0.12		9.0.37		9.0.61		
9.0.13	9.0.38		9.0.62				
PROD	9.0.14	PROD	9.0.39	PROD	9.0.63	PROD	9.0.84
WATER	9.0.15	WATER	9.0.40	WATER	9.0.64	WATER	9.0.85
TEMP	9.0.16	TEMP	9.0.41	TEMP	9.0.65	TEMP	9.0.86
U03	9.0.17	SW 1	9.0.42	SW 1	9.0.66	SW 1	9.0.87
	9.0.18	U03	9.0.43	U06	9.0.67	U09	
	9.0.19		9.0.44		9.0.68		
9.0.20	9.0.45		9.0.69				
PROD	9.0.21	PROD	9.0.46	PROD	9.0.70	PROD	9.0.91
WATER	9.0.22	WATER	9.0.47	WATER	9.0.71	WATER	9.0.92
TEMP	9.0.23	TEMP	9.0.48	TEMP	9.0.72	TEMP	9.0.93

PROD	9.0.73	PROD	9.0.97	PROD	9.0.121	PROD	9.0.145
WATER	9.0.74	WATER	9.0.98	WATER	9.0.122	WATER	9.0.146
TEMP	9.0.75	TEMP	9.0.99	TEMP	9.0.123	TEMP	9.0.147
U13	9.0.76	SW 1	9.0.100	SW 1	9.0.124	SW 1	9.0.148
	9.0.77	U10	9.0.101	U13	9.0.125	U16	
	9.0.78		9.0.102		9.0.126		
9.0.79	9.0.103		9.0.127				
PROD	9.0.80	PROD	9.0.104	PROD	9.0.128	PROD	9.0.152
WATER	9.0.81	WATER	9.0.105	WATER	9.0.129	WATER	9.0.153
TEMP	9.0.82	TEMP	9.0.106	TEMP	9.0.130	TEMP	9.0.154
U14	9.0.83	SW 1	9.0.107	SW 1	9.0.131	SW 1	9.0.155
	9.0.84	U11	9.0.108	U14	9.0.132	U17	
	9.0.85		9.0.109		9.0.133		
9.0.86	9.0.110		9.0.134				
PROD	9.0.87	PROD	9.0.111	PROD	9.0.135	PROD	9.0.156
WATER	9.0.88	WATER	9.0.112	WATER	9.0.136	WATER	9.0.157
TEMP	9.0.89	TEMP	9.0.113	TEMP	9.0.137	TEMP	9.0.158
U15	9.0.90	SW 1	9.0.114	SW 1	9.0.138	SW 1	9.0.159
	9.0.91	U12	9.0.115	U15	9.0.139	U18	
	9.0.92		9.0.116		9.0.140		
9.0.93	9.0.117		9.0.141				
PROD	9.0.94	PROD	9.0.118	PROD	9.0.142	PROD	9.0.160
WATER	9.0.95	WATER	9.0.119	WATER	9.0.143	WATER	9.0.161
TEMP	9.0.96	TEMP	9.0.120	TEMP	9.0.144	TEMP	9.0.162