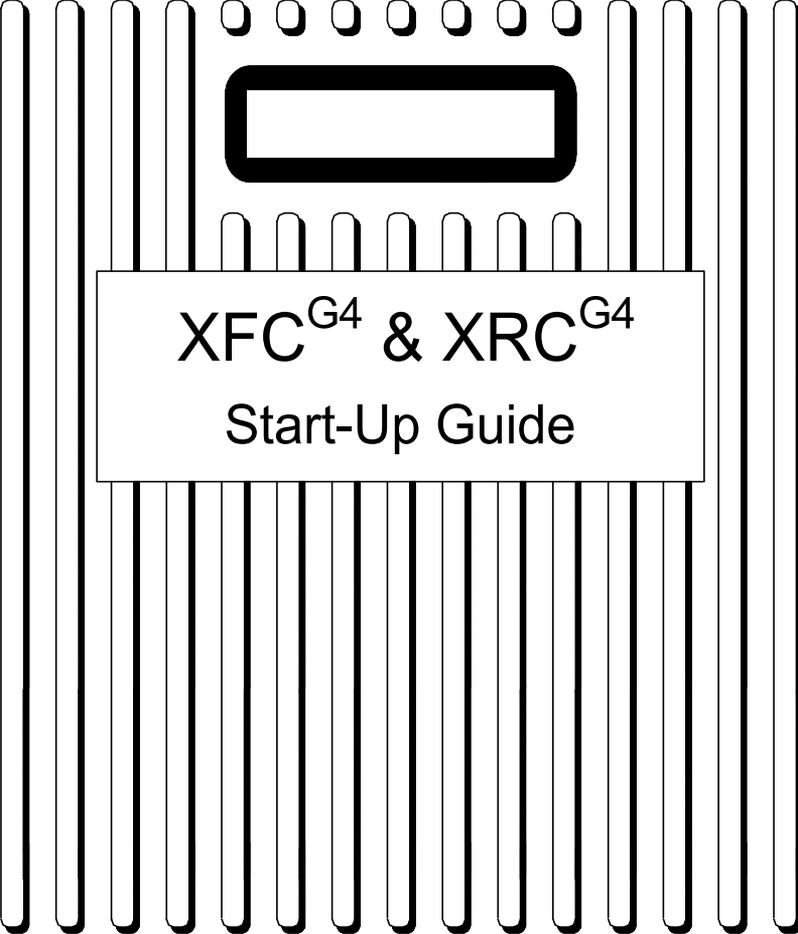


The ABB logo is rendered in a bold, red, sans-serif font. Each letter is composed of four quadrants, with a white cross-like shape in the center of each letter.

XSERIES^{G4}

The background of the page is a stylized representation of an ABB X-Series G4 terminal block. It features a central rectangular display area, a row of eight screw terminals above it, and a row of sixteen screw terminals below it. The entire assembly is flanked by vertical bars representing the terminal housing.

XFC^{G4} & XRC^{G4}

Start-Up Guide

TOTALFLOW[®]

MEASUREMENT & CONTROL SYSTEMS

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Introduction

The following start-up guide is designed to assist the user in the start up of the XFC^{G4} (flow computer) or XRC^{G4} (remote controller) series. The start-up guide, however, is primarily intended for gas orifice applications. Using this guide in conjunction with other drawings and documentation that accompany the user’s order should result in a smooth installation. If there are additional questions that are not answered by this guide or other provided documentation, the user needs to call their local Totalflow representative or call the number listed on the back page of this guide.

If the user is familiar with the XSeries products, the XFC^{G4} will install in a similar fashion. While the components on the circuit boards are different, the pin outs, jumpers and connector placements are identical.

Installation and Start-Up Sequence

HINT: The following steps represent the recommended start-up sequence. As a result, some of the steps do not go into great detail either because detail is not needed or because more information is available later in the guide. As such, the user is encouraged to scan through the start-up guide before beginning the installation.

Step 1 Physical Mounting and Piping

- 1A** Unpack the equipment, and inspect for damage and missing or incorrect components. The user will then need to ascertain where to mount the unit.

- 1B** Install the bracing for the unit (pipe saddle, direct mount or pipe driven in the ground). Attach the U-bolts to the 2" pipe using silicone spray or Teflon tape to prevent galling (see Figure 1).

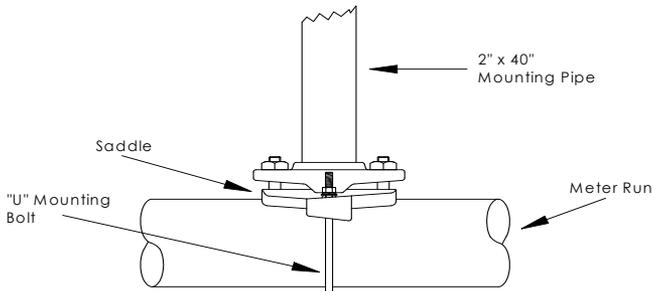


Figure 1. Saddle Mount

- 1C** Position the enclosure on the 2" mounting pipe, and secure in place with two U-bolts, flat washers, lock washers and two 9/16" bolts (see Figure 2).

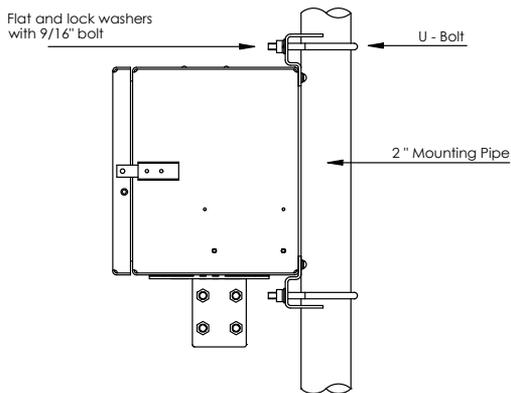


Figure 2. Pipe Mounts

- 1D** Mount the manifold to the bottom of the unit. The right port of the unit is normally high pressure (upstream side). Check the XIMV model number to verify that it is designed for flow from left to right (4 CYC) or right to left (4 AYC). The user can look on the transducer for (H or +) for high side and (L or -) for low side. For direct mount manifolds, the direction is very important. See Figure 3 for a typical manifold configuration.
- 1E** Connect the stainless steel tubing from the manifold to the orifice tap valves. With the manifold equalized to avoid damaging the transducer, apply pressure to the manifold, and check for leaks. For the best measurement, use large bore,

short, equal length gauge lines with a downward slope to the taps (at least 1" per foot).

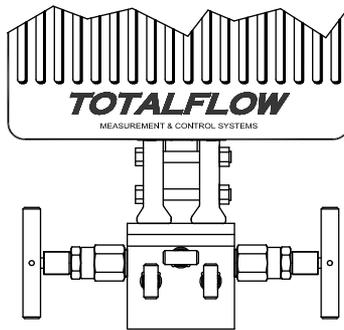


Figure 3. Typical Manifold Mount

Step 2 Installing and Wiring RTD and Probe

The RTD measures flowing gas temperature. Procedures presented in this section enable the user to install the RTD into the meter run and wire leads to the main electronics board. This procedure is for the XFC^{G4}; the XRC^{G4} does not have RTD inputs.

Totalflow Supplied Materials

- RTD Probe with 10' of cable. Optional lengths: 15', 25', 30', 40' and 50'.
- One (1) Thermowell with 3/4" NPT threads. Optional threads are 1/2" and 1".
- Nylon tie wraps

Customer Materials Supplied

- Customer must specify or provide Thermowell "U" length.
- Teflon tape

- 2A** Install the Thermowell into the meter run. Using snap ring pliers, adjust the probe length so that it is spring loaded against the bottom of the Thermowell (See Figure 4).

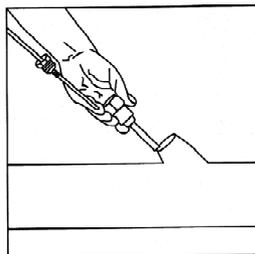


Figure 4. Typical RTD Installation

- 2B** Remove one of the hole plugs, and install the cord connector. Remove the nut, sealing ring and rubber grommet from the

cord connector. Slide the nut, sealing ring and grommet over the RTD cable. Insert the cable through the body of the cord connector. Allow enough cable to extend into the unit for connecting wires to the RTD termination block. Secure the cable with the grommet, sealing ring and nut.

NOTE: The charging source and power should be removed from the unit before performing any field wiring.

- 2C** Connect the RTD probe to the XFC^{G4+}'s RTD connector as follows. Before making connections to the terminal block, remove spade lugs, if attached, and trim the wire ends back ¼". Remove the J7 terminal block from the XSeries^{G4} main electronic board. Loosen the terminal block securing screws, insert the wire and then retighten (see Figure 5). Reinstall the terminal block with the wires attached.



Figure 5. RTD Terminal Block Wiring

Step 3 Battery Installation

- 3A** To extend the life of a battery pack, fully charge the battery prior to installation. A system using solar panels may not fully charge the battery. Also, a fast charge, which the solar panel cannot provide, improves the life of the battery (See Tip below).

- 3B** Remove the unit's battery cover plate, and insert the battery pack (See Figure 6). Insert the battery pack with its long dimension facing outward. When the cover is reinstalled, it will fit snugly against some battery packs. The screws can be loosened to accommodate large batteries.

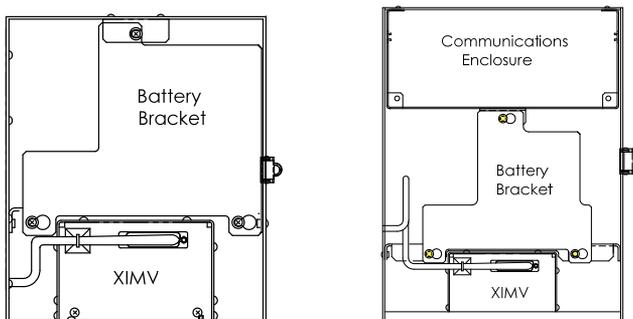


Figure 6. Battery Compartment

- 3C** Connect the battery pack connector to the main electronic board battery connector J1 on the XFC^{G4} or J16 on the XRC^{G4}. This is located in the upper right corner of the board.
- 3D** Observe the LCD. The display should power up displaying Warm Start information and begin scrolling through the default display items. If unit display does not display, see display topic later in this guide.

CAUTION: NEVER connect the solar panel power cable to the unit unless the main battery pack is connected.

TIP: To recharge a battery, a quick charge will remove the buildup in the battery more effectively than a “trickle” charge. A battery slowly drained by the low light conditions on a solar charged system or setting in storage will be less likely to recover than a battery pack that was quickly discharged from a short. Store batteries in a cool environment for less drainage.

Step 4 Lithium Battery Connection

- 4A** G4 units are shipped from the factory with the lithium battery jumper in the Disabled position. Verify that the Memory Backup is set to enabled with a jumper on the upper two pins of J13 on the XFC^{G4} or J1 on the XRC^{G4}. In Station Setup, verify that the Lithium Battery Status is OK. If the status is not OK, the lithium battery is below 2.5 volts and should be replaced.

Step 5 Solar Panel Installation

Totalflow Supplied Materials

- One solar panel and cable
- Two U-bolts and fastening hardware
- One solar panel bracket

Customer Materials Supplied

- Cable ties
- One 9-inch or greater extension of 2-inch pipe
- One 2-inch collar

NOTE: Step 5A is not required if the pipe is tall enough without the extension.

- 5A** Attach the 2-inch pipe to the top end of the XFC^{G4} or XRC^{G4} mounting pipe. Securely tighten. Install a 2-inch pipe extension into the collar, and securely tighten.
- 5B** Install the solar panel on the mounting bracket with the provided hardware. Attach the solar panel mounting plate to the top end of the 2-inch pipe with U-bolts and associated

mounting hardware. Do not tighten U-bolts until the solar panel has been correctly oriented.

5C If needed, connect the solar panel power cable to the solar panel connector on the back of the unit. **DO NOT** connect the other end of the cable to the unit until all steps are complete, and the main battery pack has been connected.

5D Position the solar panel to face south in the northern hemisphere and north in the southern hemisphere. Tighten the U-bolts to avoid movement by wind or vibration. Check the solar panel polarity using the digital voltmeter to insure (+) and (-) wires are properly identified.

5E Remove one of the hole plugs from the side of the enclosure, and install the cord connector.

Remove the nut, sealing ring and rubber grommet from the cord connector. Slide the nut, sealing ring and grommet over the cable, and insert the cable through the body of the cord connector. Allow enough cable to extend into the unit for the connection to the charger input +/- terminals located on the main electronic board, XFC^{G4} terminal block J5 or XRC^{G4} terminal block J17 charger input terminals. Secure the solar panel cable using the grommet, sealing ring and nut.

TIP: To prevent moisture from entering the unit, allow the cable to dip below and then rise to the access hole. This will provide a path for rainwater away from the access hole.

5F Connect solar panel wiring to main electronic board.

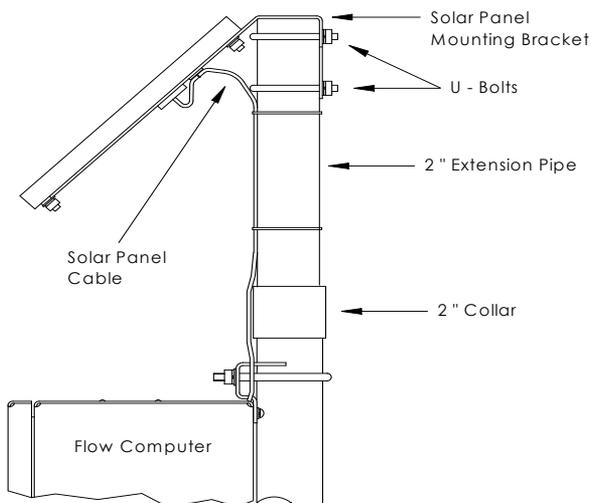


Figure 7. Solar Panel Mounting

Step 6 XFC/XRC Setup

NOTE: Connecting to the G4 meters with PCCU32 will require version 7.05.5 or later.

- 6A** Connect the laptop running PCCU32 to the unit via local serial, USB or Ethernet. For more information on making a local connection to the flow computer, see PCCU32 Connectivity later in this guide.
- 6B** Set the date/time, ID, location and AGA setup using the Entry mode in PCCU32.
- 6C** In Calibration mode, verify the registers for static pressure, differential pressure and temperature. After completing this task, select RTD Installed, uncheck Use Fixed TF and adjust RTD Bias if a temperature standard is used. Perform as found calibration checks.
- 6D** If calibration is needed, calibrate the static pressure first and then differential pressure using a deadweight tester or acceptable standard. Insure that both orifice taps are closed and bypass valves are open during the AP calibration to avoid a false DP. Make sure there are no leaks in the manifold or test equipment. Perform as left calibration checks, as needed.
- 6E** Place the unit online. To avoid inducing toggle and/or a calibration shift, close the vent valve, open the bypass valve and then open the orifice tap valves slowly (high pressure side first). Once both orifice tap valves are fully opened, the bypass valves can be closed.
- 6F** Verify that the unit is calculating volume correctly. Watch the display or look at the Current Values in Entry mode of PCCU32. Collect data, and review the event and characteristic files to insure all parameters are set properly.
- 6G** **Optional** – When the user has verified that all setup and calibration is complete and the unit is online calculating volume, it is recommended that a Reset Volume command be sent using PCCU. This allows the unit to have what might be considered an official starting point for good live data. The Reset Volume will be recorded in the Events file to mark the date and time.

IF THE DISPLAY CONTRAST IS DIM, TURN THE CONTRAST POT CCW TO BRIGHTEN.
DO NOT TURN THE POT PAST THE POINT OF THE DISPLAY'S BACKGROUND TURNING DARK.
J10 MUST ALWAYS REMAIN IN 2-3 POSITION AS SHOWN.

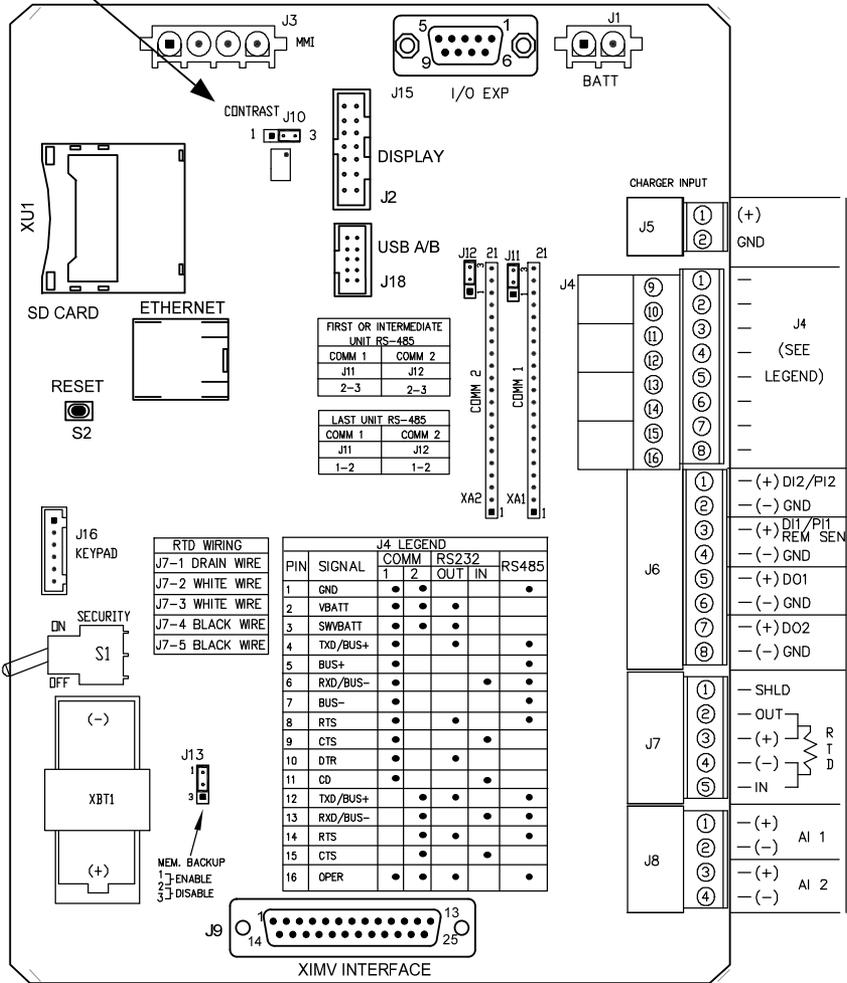


Figure 8. XFC^{G4} Layout

NOTE: Refer to the Wiring Interconnect drawing 2015225-WI for more information on communication wiring.

IF THE DISPLAY CONTRAST IS DIM, TURN THE CONTRAST POT CCW TO BRIGHTEN.
DO NOT TURN THE POT PAST THE POINT OF THE DISPLAY'S BACKGROUND TURNING DARK.
J14 MUST ALWAYS REMAIN IN 2-3 POSITION AS SHOWN.

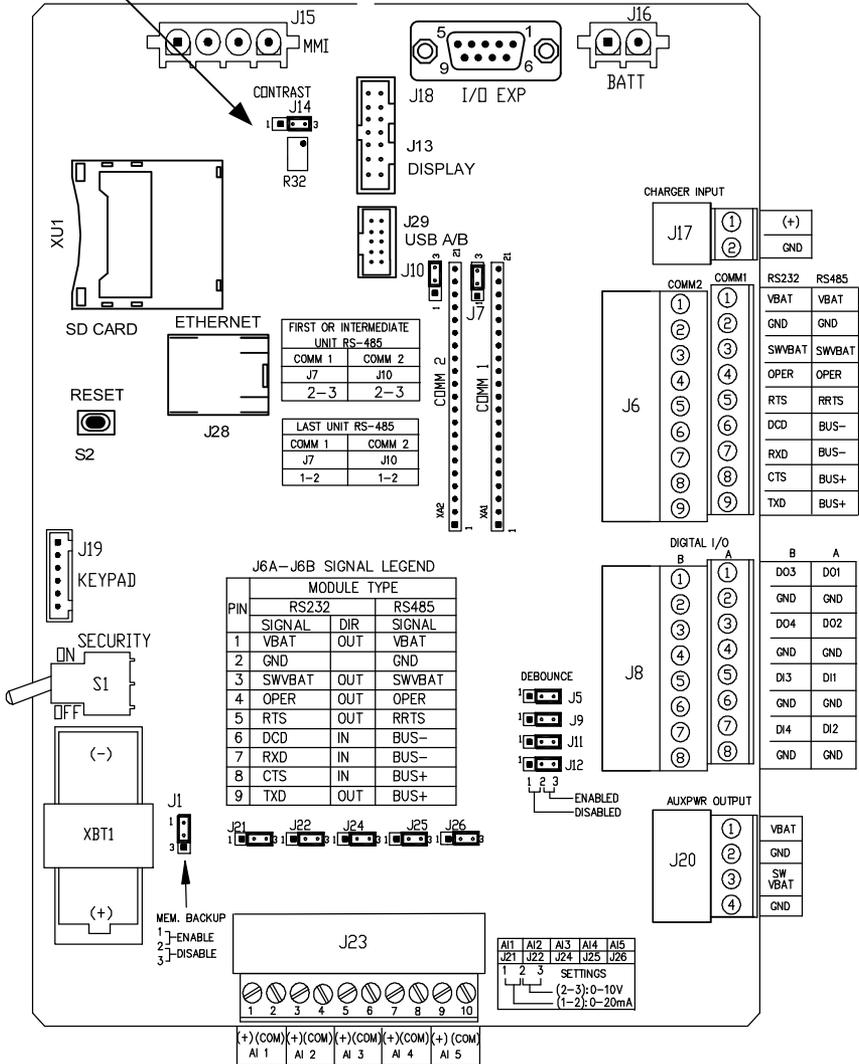


Figure 9. XRC^{G4} Layout

NOTE: Refer to Wiring Interconnect drawing 2015225-WI for more information on communication wiring.

PCCU32 Connectivity

RS-232 Local Connect

The RS-232 local connection requires a serial port on the host computer (generally a laptop). A PCCU cable is required to connect the host computer to the flow meter's round military connector. Connecting the PCCU cable to the flow meter will cause an annunciator in the LCD to display an upper case letter "L" for local connect. To connect PCCU32 to the meter, click the Connect to Totalflow icon on the toolbar. To connect and move directly to Entry mode, click on Entry instead of the Connect icon.

If the meter has been given a security code, the user needs to ensure that they have entered that code in the PCCU32 System Setup screen. The factory default for a security code is 0000. Cold starting the meter re-establishes the 0000 security code; however, cold starting the meter also deletes historical data.

USB Connectivity

Note: USB connectivity requires PCCU32 version 7.17 or higher.

The first time that the user connects their laptop to a G4 meter using the USB connectivity, the appropriate drivers need to be installed.

- A** Connect the G4 meter (XFC/XRC) to the laptop. After a couple of seconds the "Found New Hardware Wizard" will appear. It will ask if, "Windows should connect to Windows Update and search for software?"
Select "No, not this time" and click "Next" to continue.
- B** The next dialogue box will ask, "What do you want the wizard to do?"
Select "Install the software automatically (Recommended)" and click "Next" to continue.
- C** At this point you will get a Microsoft® message warning that the Totalflow USB driver has "not passed Windows Logo testing". If you want to use your laptop's USB port you will need to click on "Continue Anyway" and proceed with the installation.
- D** The "Found New Hardware Wizard" has finished. Click "Finish". The Totalflow USB driver is now installed.

NOTES: The above procedure creates a virtual com port on the laptop. The com port disappears when the meter is disconnected. The com port can be seen to appear and disappear in the Device Manager whenever the USB cable is connected or disconnected from the laptop.

The user does not need to go through the installation again. If the user sees the Wizard initiate on subsequent connects to their meter, click the Cancel button. If connecting to a different USB port on their laptop, the user needs to go through the same procedure.

Ethernet Connectivity

ABB Totalflow now supports TCP APIPA functionality. Automatic Private Internet Protocol Addressing (APIPA) is a common alternative to the user of the Dynamic Host Configuration Protocol (DHCP) to request and retrieve an Internet Protocol (IP) address for a host. A Windows-based computer that is configured to use DHCP can automatically assign itself an IP address if a DHCP server is not available. For example, this can occur on a network without a DHCP server or if that server is down for maintenance.

With the addition of this feature, a computer can assign itself an IP address in the event that a DHCP server is not available or does not exist on the network. The feature has been implemented to make configuring and supporting a Local Area Network (LAN) running TCP/IP less difficult. After the network adapter has been assigned an IP address, the computer can use TCP/IP to communicate with any other computer that is connected to the same LAN and that is also configured for APIPA or has the IP address manually set to 169.254.x.y (where the x and y are the client's unique identifier) address range with a subnet mask of 255.255.0. Additionally, the DNS Server is set to 0.0.0.0, and the Default Gateway is 0.0.0.0.

- A** Connect locally to the meter using either RS-232 or USB. Move into Entry mode within the PCCU application. Select Communications from the tree-view and then the Network tab. Within the screen, enter in the network ID, set the Enable DHCP to Yes and then fill in the remaining fields, as necessary. Click the Send button.
- B** Select Totalflow/TCP from the tree-view. On the Setup screen, select Totalflow/TCP as the communication protocol. Click Send.
- C** Click the Setup icon on the PCCU toolbar. The System Setup dialog box displays. In the PCCU Com Port drop-down menu, select Network. Enter in the network ID or IP for the meter that was established earlier in the meter setup. Click the Close button. Connect the Ethernet cable between the laptop and the G4. Press the Reset button on the G4.

NOTE: The user will need to allow for the local area connection to stop acquiring the network. The progress can be tracked by clicking the Windows Start button > Settings > Network Connections > Local Area Connection. Upon completion, continue to step D.

D Exit PCCU, and reconnect.

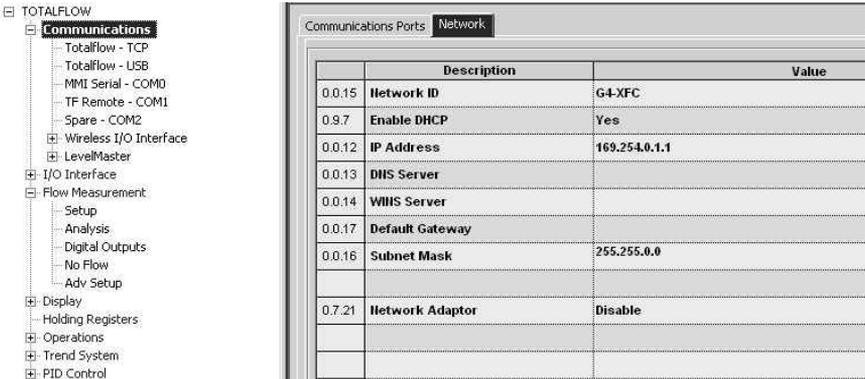


Figure 10. Network Tab

Alternate Ethernet Connectivity—Adding a 2nd Ethernet Port to a Laptop

A second Ethernet connection is easily installed on the laptop using a USB to Ethernet adaptor (Totalflow recommends TRENDnet USB to 10/100Mbps Adaptor, Part No. TU2-ET100). This configuration allows the user to keep their current laptop network settings for home or office networking.

A Insert the USB to Ethernet adaptor in an available USB slot. Install the software/drivers per adaptor manufacturers' instructions. Windows generates an IP address for the Ethernet adaptor using APIPA. Connect to the flow computer via a crossover cable (or adaptor), and reboot the laptop. APIPA will assign the laptop an IP address between 169.254.0.1 and 169.254.255.254 (the actual address is not important).

B Go to the folder where PCCU is installed. Create a PCCU32.exe shortcut, and drag to the desktop. Right-click the shortcut, and move to Properties. Under the Shortcut tab, set the Target to C:\PCCU32\pccu32.exe TCP:169.254.0.11, and click Apply. Under the General tab, the user can then give the shortcut a recognizable name (i.e., CrossoverCablePCCU).

Communications

Most wiring diagrams, including communications are available on the web at <http://www.abb.com/totalflow>. Communication pin-outs of the XFC^{G4} and XRC^{G4} are shown on pages 8 and 9 of this guide.

The following discussion deals primarily with the unit communicating with the Host (typically WinCCU).

To communicate with the Host, the XFC^{G4} or XRC^{G4} has remote communication's ports that can function as RS232, RS485 or RS422. Depending on the customer's order, most units are shipped with the appropriate wiring in place for the specified communication's equipment.

After installation of the unit and with the communications path complete, the user needs to enter the appropriate communication's parameters. The unit was most likely shipped with Comm 1 set up for *Totalflow Remote* protocol. If not, select the *Protocol* using the *Entry* mode and *TF Remote* setup (see Figure 11) of PCCU32. The protocol must be selected first for the appropriate communications parameters to be displayed. A blinking telephone pole symbol "†" in annunciator position A8 (default) indicates Comm 1 port is active.

The data bits, stop bits and all required communications parameters can be modified with PCCU32. Units will typically be shipped with correct default comm port settings but may need fine tuning for optimum operation.

Warning: As opposed to the XRC^{G4}, the XFC^{G4} has only one *Switched V-Batt/Operate* line; if it is needed, *Enable* it only on one Comm Port even though both ports may require its use. The V-Batt/Operate line will switch on/off at the *Listen Cycle* timing of the port that enabled it.

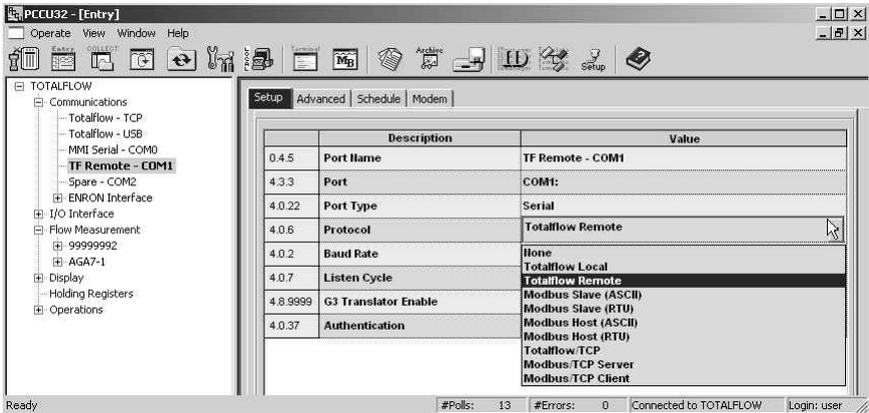


Figure 11. PCCU32 Remote Communication Setup

Communications Troubleshooting

A new radio or modem system that doesn't communicate is difficult to troubleshoot because proper operation has never been proven, and all the initial hardware and software settings are suspect. More than one problem can be present, causing component replacement to be an inadequate troubleshooting technique. Use the following checklist as an aid.

- Does the "卅" flash (*Totalflow Remote Protocol* only) in the A8 annunciator position on the display (default position)? If no,
 - 1) The *Protocol* needs to be selected in the *Entry Mode* using PCCU32.
 - 2) The communication's module in Comm 1 or Comm 2 is missing or bad or the module is the wrong type (RS232 or RS485).

Note: Comm 1 and Comm 2 are in opposite locations when compared to older electronics boards (2015333) generation 2 and older.

3) Inadequate 12 VDC battery voltage.

- Insure base radio is working for other locations.
- Verify Station ID and Device ID matches with WinCCU and is the only Totalflow device with that ID.
- Verify Baud rate, Stop Bits, Security Code, and Link Establishment time are same as CCU.
- Verify WinCCU is using Packet Protocol. XSeries^{G4} devices support only DB2 Packet Protocol.
- Verify wiring to antenna, to UCI, UCI to Radio for RS485 installation or to Radio/Modem for RS232 installation.

TIP: To check for wiring shorts or opens with two or more wire connections, use a multimeter set on continuity (resistance). Check two wires at a time from one unit to another. If black and white wires are to be tested, disconnect both wires at both ends, set one probe on black, the other on white. The meter should read OL or OFL (over range) if no shorts. Jumper the two wires at the other end. The meter should read a low resistance if no opens. This method requires only one end of wiring to be tested, no matter how far the units are apart.

- If a radio is used, verify directional antenna with correct frequency range is pointed toward base ($\pm 6^\circ$). The antenna should be mounted vertically, with the vanes perpendicular to the ground. Verify radio is good, with the same frequencies used.
- If a modem is used, verify dial tone on line at the telephone company's termination box by checking Tip and Ring. Check wiring from phone company's box to dial-up modem. If cellular, also check for proper Tip & Ring voltage. Insure that the phone number is correct in the unit and WinCCU.

NOTE: Telephone companies in the United States typically use a 48 volt power supply so the on-hook voltage between the *Tip* and *Ring* wires should be something less than 48 volts. Measuring another way, *Tip* to ground is approx. zero volts and *Ring* to ground is approx. -48 volts.

In the off-hook condition; Tip to ground will be approx. –20 volts while Ring to ground will be approx. –28 volts or approx. 8 volts between Tip and Ring. Users in other countries will need to consult with their local telephone company.

Standard Display

Items that appear on the unit's display are programmable by the user, however based on the measurement application; units will be shipped with some default display items. Table 1 is a typical set of default displays for an AGA-3 application. Engineering units may vary from those shown if the unit supports the "Selectable Units" feature.

Table 1. Standard Display

Description	Standard Display
Current Date and Time 24 hour clock	DATE/TIME MM/DD/YY HH:MM:SS
Yesterday's Percent DP Low Limit Percent time below DP Low Set Point	Yest DP Low NN PERCENT
Yesterday's Percent DP High Limit Percent time above DP High Set Point	Yest DP High NN PERCENT
Current Flow Rate Programmable SCF, MCF or MMCF	Flow Rate NNNNNN.N SCF/HR
Total Accumulated Volume Programmable SCF, MCF or MMCF	Total Accum. Volume NNNNNN.NN MCF
Battery Voltage Displayed in Volts	Battery Voltage NN.N VOLTS
Station ID ID of the box.	Station ID
Differential Pressure Inches H2O	Diff. Pressure NN.N IN. H2O
Static Pressure Absolute PSIA	Static Pressure NN.N PSIA
Flowing Temperature °F	Temperature NN.N DEG. F
Yesterday's Volume Programmable SCF, MCF or MMCF	Yesterday's Volume NNNN.N MCF
Previous Calculation Period Volume	Last Calc. Volume NNNN.N SCF
Device ID Individual application ID	Device ID
Charger Voltage	Charger NN.N VOLTS

The duration that each parameter is displayed can vary from 1 to 255 seconds (default is 4 seconds); a setting of 0 seconds will turn that display item off.

Visual Alarm & Status Codes

After the unit completes recording of Log Period flow and operational records, the LCD will show any alarm conditions that have occurred. Also, the date, hour and type of alarm conditions are stored in the device's memory. Status codes are also displayed when the conditions exist. An alarm or status code can be a character, letter or symbol. The alarm and status codes shown in Table 2 will appear on the right side of the LCD screen (see Figure 12).

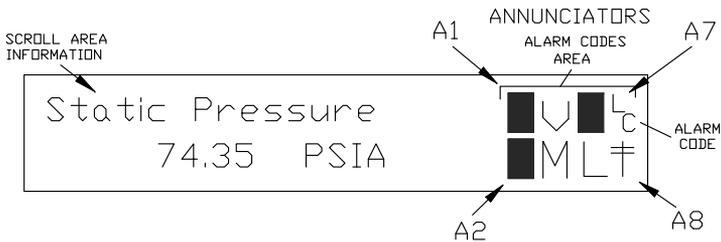


Figure 12. Annunciator Locations

Note: Applications in XSeries^{G4} devices can be assigned to any annunciator. To verify the current assignments, see *Annunciators* under *Display* in PCCU32's *Entry Mode* (see Figure 13).

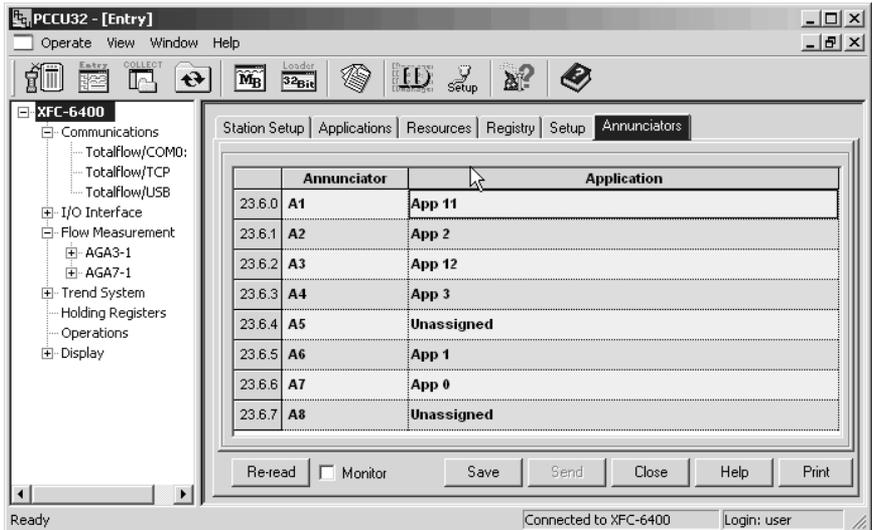


Figure 13. Annunciator Assignments

Table 2. Alarm & Status–Codes and Description

Alarm/Status Codes	Description
I/O Subsystem	
L_L	<i>Low Lithium Battery Alarm:</i> When L_L (low lithium) is displayed; lithium battery voltage is below 2.5 VDC. A new lithium battery measures approximately 3.6 VDC.
L_C	<i>Low Charger:</i> Displayed if the battery charging voltage is less than 0.4 VDC greater than the battery voltage.
Communications	
→	Transmitting Data:
←	Receiving Data:
!	<i>Nak.</i> Negative Acknowledgement w/packet list.
+	<i>Ack.</i> Positive Acknowledge of receipt of request.
\dagger	<i>Waiting for Ack.</i> Waiting for response after transmission.
?	Exception Alarm Processing.
Υ	ID Recognized.
\ddagger	<i>Listen Cycle.</i> Flashes if this remote port is active and running Totalflow Remote Protocol. Flashes in sync with listening cycle that occurs at 1, 2 or 4 second intervals.
M	<i>MODBUS ASCII:</i> Modbus ASCII protocol is selected for this port.
m	<i>MODBUS RTU:</i> Modbus RTU protocol is selected for this port.
L	<i>Local Protocol:</i> Displayed when PCCU32 port is active and running <i>Totalflow Local</i> Protocol.
¥	<i>Packet Protocol:</i> Totalflow Packet Protocol is active on this port.
R	<i>LevelMaster Protocol:</i> LevelMaster protocol is selected for this port.
Valve Control	
V	<i>Valve Control:</i> Displayed when the Valve Control option is installed and no other Valve Control symbols are valid.
=	<i>Valve Control:</i> Valve Control option installed. Process Value (PV) is within the user set dead band. No control action required.
┌	<i>Valve Control:</i> Valve Control option installed. Valve is in full open position.

↓	<i>Valve Control:</i> Valve Control option installed. Valve is in full closed position.
↑	<i>Valve Control:</i> Valve Control option installed. Valve is opening (open signal is being sent to valve actuator).
↓	<i>Valve Control:</i> Valve Control option installed. Valve is closing. (Close signal is being sent to valve actuator).
ö	<i>Valve Control:</i> Valve Control option installed. Valve controller override conditions met (DP/SP override set point or Low Battery).
L _L	<i>Valve Control:</i> Valve Control option installed. Local Lock-out is initiated.
Measurement Applications	
B _F	Back Flow Condition: Visible only when DP variable displayed.
Z	Zero Flow Condition: Visible only when Flow Rate displayed.
H	<i>Hold:</i> Displayed when PCCU32 is in <i>Calibration Mode</i> and has a measurement application in <i>Hold</i> mode.
A	<i>Alarm Condition:</i> Need to view alarm. You may need to compare application limits to current values to determine where the alarm condition is present.
A _D	<i>A to D Failure:</i> Displayed if A to D Converter's Differential Pressure, Absolute Static Pressure or temperature readings exceed maximum counts or are less than minimum counts.

The Display Does Not Scroll As Expected

When power is first applied, the unit should quickly go through startup and begin cycling through the pre-programmed display items. If the display does not scroll after startup, disconnect the main power and then re-connect it. You should see something similar to:

Totalflow 32 Bit XFC
OS Part No. 2102900-001

If the display still doesn't scroll, try disconnecting the power and re-connecting it again. If still no success, do the following:

With PCCU32, connect to the unit and establish communications such as *Connect To Totalflow, Entry Mode*, etc. Go into *Terminal Mode* and type "0.0.0=COLD" (Do not enter quotes). The unit should go through a *Cold Start* procedure and begin scrolling. If this does not succeed, call the number on the back of this guide and talk to a customer service representative.



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