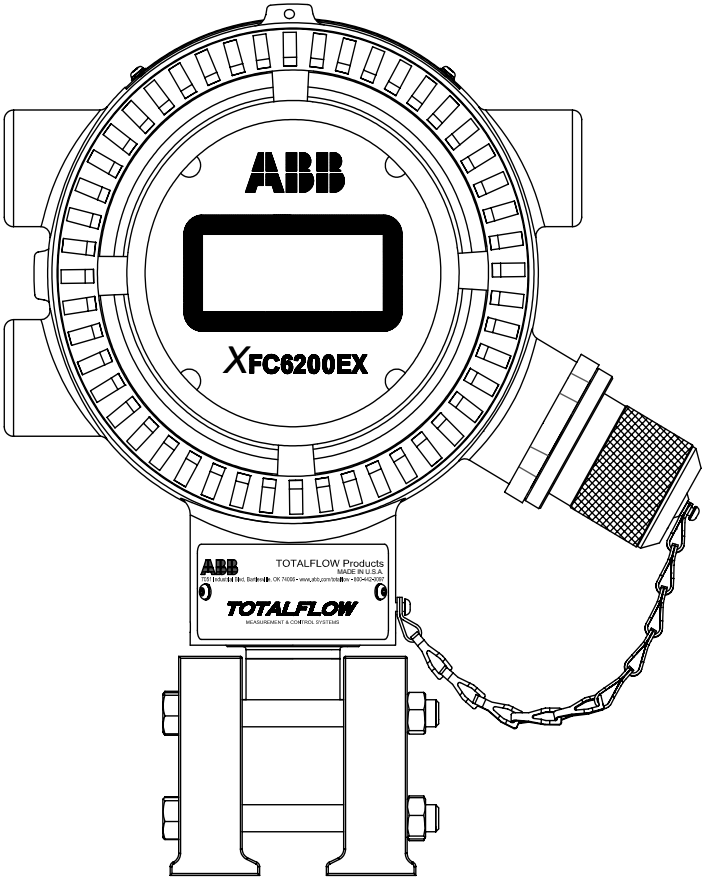
# XFC6200EX Start-Up Guide




TOTALFLOW

MEASUREMENT & CONTROL SYSTEMS

# Introduction

This startup guide is to assist in the startup of the XFC6200EX flow computer. It is hoped that this guide in conjunction with other drawings and documentation that accompanies your order will result in a smooth installation. If for some reason, you have questions that are not answered in this guide or your other documentation, call your local Totalflow representative or call the number listed on the back page of this guide.

# Installation & Start-Up Sequence

**HINT:** Step 1 thru 25 is a recommended start-up sequence and some of the steps do not go into any great detail. Some steps because detail is not required and some because more information is available later in the Start-Up Guide. For example there are later topics such as installing the RTD, batteries, solar panel etc. So, scan through the guide to see what information is available before you begin the installation.

1. Unpack the XFC6200EX and 6270 OEU (Optional Equipment Unit) if purchased. Inspect for damage and missing or incorrect components.
2. Determine where to mount the 6200EX and OEU. Install the 6200EX first and the OEU will be covered later. The 6200EX is rated for Division 1, but the OEU must be installed in a Division 2 or General Purpose area.
3. Install the support for the 6200EX (pipe saddle, direct mount, standalone pipe, etc.). If mounting pipe to meter run, use a saddle mount kit as shown in Fig. 1. Different size Saddle Mount kits are available based on the meter run size. If mounting the 6200EX to a pipe, use the 2-piece bracket Mtg. kit (Pt. # 210193) as shown in Fig. 2. Attach the side mount bracket to the 2" pipe with the two U-bolts and then attach the 6200EX Mtg. bracket with available hardware. The 6200EX can be on either side of the pipe depending on how the side mount bracket is mounted (See Fig. 1). Use silicone spray or Teflon tape to prevent galling of threads.
4. The method of mounting the 6200EX using the bracket mounting kit depends on whether a discrete or block manifold is used. For discrete manifolds, mount the 6200EX directly to the bracket as shown in Figure 1 and then screw the tubing from the discrete manifold into the bottom of the 6200EX's transducer. If a block manifold is used, sandwich the manifold between the 6200EX's transducer and the top of the bracket as shown in Figure 3. Block manifolds as shown in Figure 3 can be mounted with four bolts inserted up through the bottom of the bracket, through the manifold and into the threaded holes of the 6200EX transducer. Larger block manifolds with flanges on top and bottom will require separate hardware to mount the manifold to the 6200EX's transducer and then

mount the manifold to the mounting bracket. Do not forget to install the o-ring flange seals in the recessed grooves on the block manifold flange(s).

To verify direction of flow, look at the (+) and (-) signs on the transducer tag. Plus(+) indicates high side (upstream) and (-) indicates the low side (downstream), therefore flow is from (+) to (-). If this causes the device to face the wrong direction, loosen the Allen Head set screw on the neck of the device and with the hands turn the unit clockwise until the unit is facing the correct direction. If the unit gets tight before achieving the correct position, turn counter-clockwise (no more than 360 degrees) until the correct position is obtained; then re-tighten the set screw.

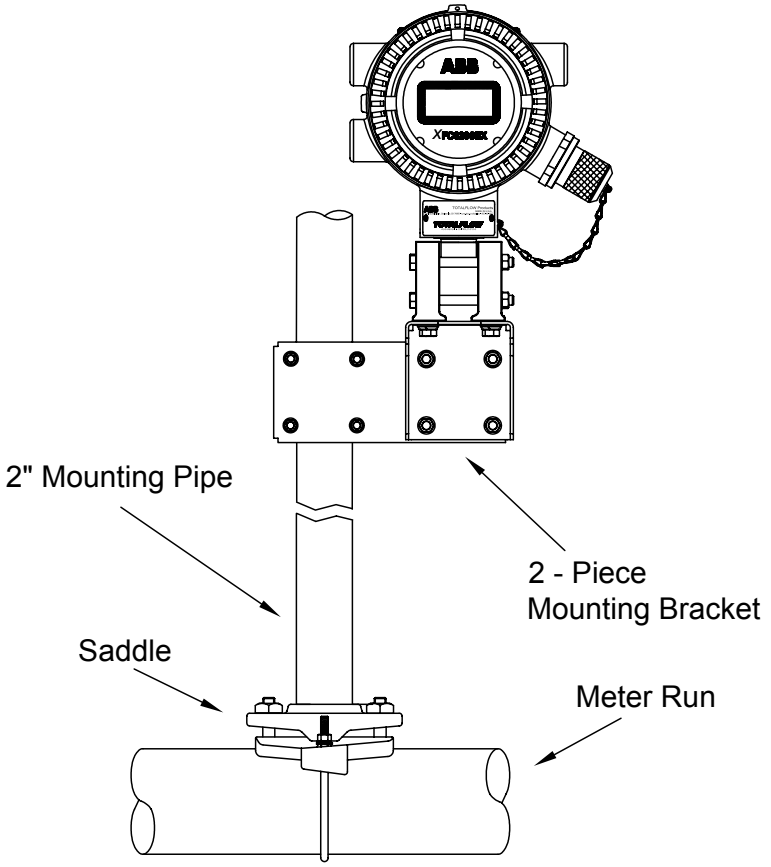



**Figure 1 (Typical Installation)**

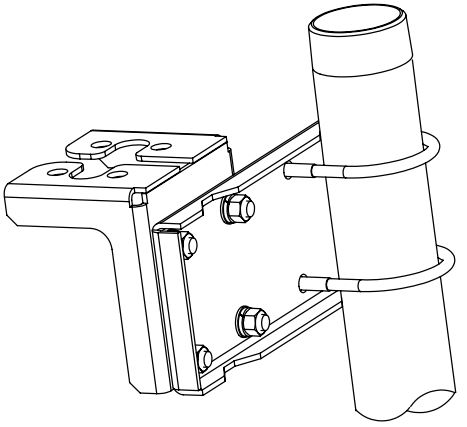


**Figure 2 (Side Mounting Kit P/N 2101913)**

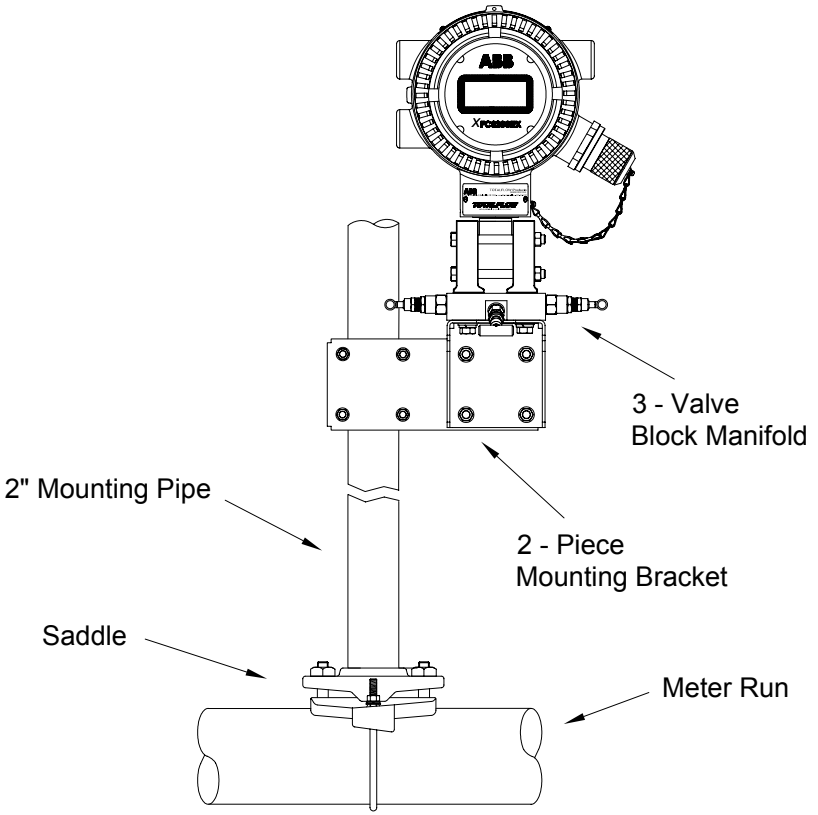



**Figure 3 (Typical Block Manifold Setup)**

5. Connect stainless steel tubing from manifold to orifice tap valves. For best measurement, use large bore, short, equal length gage lines with a downward slope to taps (at least 1" per 3 feet). With the manifold equalized to avoid damaging the device's transducer, apply pressure to the manifold and check for leaks.
6. Assemble and install the RTD using the instructions included with the RTD kit. Wire RTD to unit per local codes. See page 7 for additional information. See also Figures 6 & 9 for wiring terminations.

## Installing the 6270 Optional Equipment Unit

The 6270 OEU (*Optional Equipment Unit)* contains the power supply, battery and any optional communication's equipment. If the user is providing their own power and/or communications and not using the *Optional Equipment Unit* go to Step 10.

The OEU can only be installed in a Division 2 or General Purpose area. All wiring between the 6200EX which can be in a Div 1 area and the OEU must be done per local codes. See pages 12 & 13 for wiring terminations.

7. Mount the OEU on a 2" pipe or flat surface using the supplied installation kit. If a solar panel is used and is to be pipe mounted, use a pipe long enough or be able to add a coupling and pipe joint on top of the existing pipe.

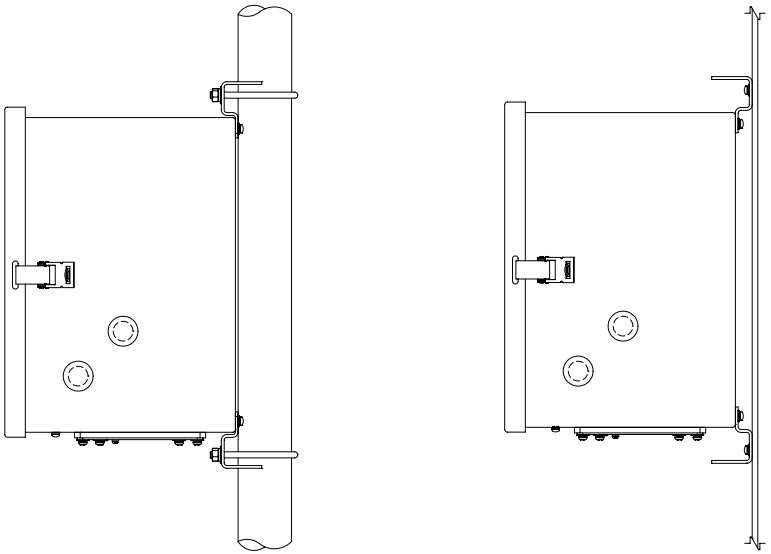


**Figure 4 (6270 OEU Pipe or Panel Mount)**

8. Assemble, mount, and run solar panel power cable down to 6270 OEU. If using an external AC power supply, run the DC output wiring to the OEU. Remove one of the rubber plugs and using an approved cord connector, run solar panel power cable or DC cable into OEU. If using Totalflow's external AC power Supply, it can be connected directly to the side of the enclosure. Do not connect solar panel wiring until all other wiring is complete. If using AC, the DC wiring can be connected as long as the AC power remains off. See "Solar Panel Installation" on page 9 for more information.
9. Run the appropriate conduit and wiring between the 6200EX and the 6270 OEU or customer supplied equipment. See pages 12 and 13 for terminations.
10. Verify all wiring is correct per drawings. If enclosed Wiring Interconnect drawings (WIs) or User Drawings (UDs) conflict with illustrations in this startup guide, the drawings should take precedence. All wiring must meet local electrical codes.
11. If using the OEU, Mount and connect a *fully charged* battery to one of the battery connectors or apply customer supplied power to the 6200EX.
12. The display on the 6200EX should go quickly through the startup routine then start scrolling through the default display items. (If not, see *Tip* on Page 22). This typically insures that the components and power wiring are good. Refer to "Standard Displays" on page 18 for typical default displays. Refer to "Visual Alarm & Status Codes" on page 19 for location, symbols, and descriptions.
14. Connect FS/2 or laptop running PCCU32 to the unit. To use an FS/2, the 6200EX must have been configured at the factory for FS/2 support. PCCU32 must have software Version 4.3 or higher and the FS/2 must be 2018583-007 or higher.
15. Configure the 6200EX: Set date/time, ID, location, AGA setup, using *Entry Mode* in PCCU32 or an FS/2.
16. If device supports multiple pressure ranges, select the correct Sp & Dp range from the *Range Select* tab in *Calibration Mode*. (PCCU32)
17. In *Calibration Mode*, verify registers for Static pressure, Differential pressure and Temperature. (PCCU32)
18. In *Calibration Mode*, assuming a temperature input device is used, select *TF Device Connected*, un-check *Use Fixed TF*.
19. In *Calibration Mode,* perform (*as found)* calibration checks.
20. If calibration is needed or required by company policy, calibrate static pressure first, then differential pressure, using a deadweight tester or acceptable standard. Insure that both orifice taps are closed and bypass valves are open during AP calibration to avoid a *false DP*. Make sure there are no leaks in the manifold or test equipment.

21. Perform (*as left*) calibration checks.
22. Place Flow Computer on line: To avoid inducing toggle and/or a calibration shift, close vent valve, open both bypass valves, then open orifice tap valves SLOWLY (high pressure side first). Once both orifice tap valves are fully opened, the bypass valves can be closed.
23. Verify that the unit is calculating volume correctly. Watch the display or look at the *Current Values* in the *Entry Mode* of PCCU32.
24. Collect data and review the event and characteristic files to insure all parameters are set properly.
25. **Optional:** When you are reasonably sure that all setup and calibration is complete and the unit is on line calculating volume, it is recommended that a *Reset Volume* command be sent from the PCCU32 *Entry Mode*. This allows the unit to have what might be considered as an official starting point for good live data. The *Reset Volume* will be recorded in the *Events* file to mark the date and time.

**Note:** This is the end of the startup sequence, individual topics follow.

## Installing and Wiring RTD

If the 6200EX is installed in a Div 1 area, a Div 1 approved RTD assembly must be used. RTD kits are available from ABB Totalflow. If the customer orders the RTD kit but provides their own thermowell, the U-length must be provided. Various sizes of thermowells are available from Totalflow, but the U-length or insertion depth will be required.

The following procedure assumes a Totalflow kit was provided. (Reference drawing 2101779-AI provided with the kit.)

1. Install thermowell into meter run and tighten.
2. Install the ½" stainless steel nipple into the thermowell and tighten.

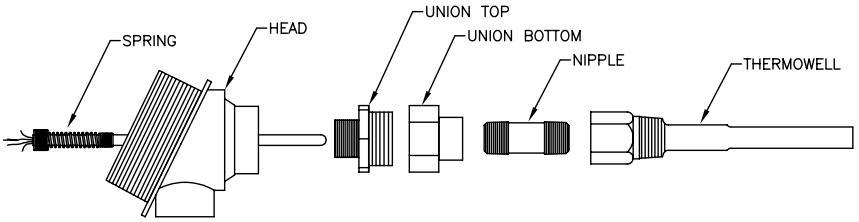



**Figure 5 (RTD Probe Assembly)**

3. Separate the union and install the female end of the union along with its nut onto the nipple and tighten. With the RTD Head still loose, screw the male end of the union into the bottom of the Head and tighten.

4. Insert the RTD sensor probe down through the top of the RTD Head and holding the sensor probe from underneath the Head, turn the probe screwing the spring into the threaded hole in the terminal block. Stop when the top of the spring is flush with the top of the terminal block. If the probe came with a terminal block, remove it, since there should be a terminal block already mounted inside the RTD Head.
5. Guide the sensor probe down through the bottom half of the union. As the two halves of the union come together, you should feel some resistance as the sensor probe contacts the bottom of the thermowell. You should see the top of the probe rise (3/4" max.) above the terminal block as you push the two halves of the union together. If the assembly is to long or to short, you may need to change-out the nipple for a different length.
6. Slide the union nut up and screw on to the top half of the union but do not tighten.
7. Align the RTD Head such that the connecting conduit or cable will be pointing in the desired direction and then tighten the union.
8. Install the probe wire spade lugs under the small screw heads per drawing. One color (typically white) is one side of the RTD and will go to the RTD (Out & +) connections on the 6200EX and the other color (typically red) is the other side of the RTD and will go to (In & -). See Figure 9 on page 12 for a view of the 6200EX RTD terminals.

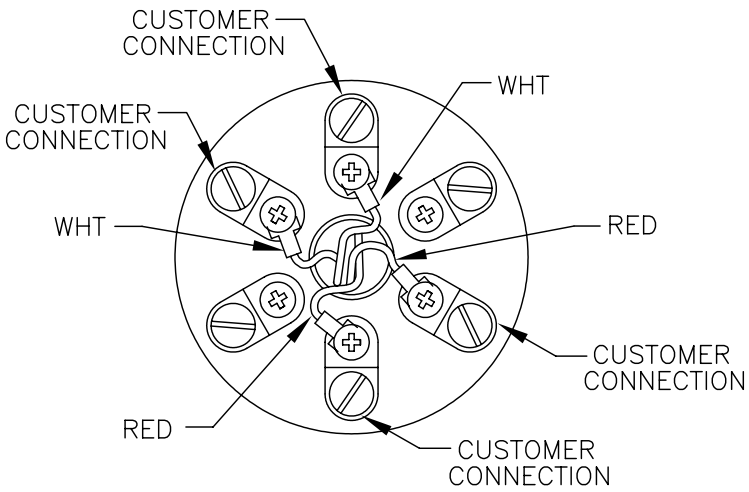



**Figure 6 (RTD Terminal Block)**

## **Solar Panel Installation** (6270 OEU Only)

| | |
|---|---|
| ***Totalflow Materials Supplied*** | • One Solar Panel and Cable<br>• Two U-Bolts and fastening hardware<br>• One Solar Panel Bracket |
| ***Customer Materials Supplied*** | • Cable Ties<br>• One 9-inch or greater extension of 2-inch pipe<br>• One 2-inch collar |

**Procedure:**

**Note:** Step 1 and 2 are not required if pipe is tall enough without the extension. (Reference Fig. 7 for the following procedure).

1. Attach 2-inch pipe collar to top end of the 6200EX mounting pipe. Securely tighten.
2. Install a 2-inch pipe extension into collar and securely tighten.
3. Install Solar Panel on mounting bracket with provided hardware.
4. Attach Solar Panel mounting plate to top end of 2-inch pipe with U-bolts and associated mounting hardware. Do not tighten U-bolts until Solar Panel has been correctly oriented.
5. If needed, connect Solar Panel power cable to Solar Panel connector on back of unit. **DO NOT** connect the other end of Solar Panel wiring to the OEU (Optional Equipment Unit) until all steps are complete **AND** main battery pack has been connected.
6. Position Solar Panel to face south in the northern hemisphere and north in the southern hemisphere. Tighten U-bolts securely to avoid movement by wind or vibration.
7. Check solar panel polarity using digital voltmeter to insure (+) and (-) wires are properly identified.
8. The Solar Panel power cable connects to the Array Input terminals (See Fig. 10). Remove one of the hole plugs from the OEU and install cord connector. Remove nut, sealing ring and rubber grommet from cord connector. Slide nut, sealing ring and grommet over cable and insert cable through body of cord connector. Allow enough power cable to extend into the unit for connection to Array Input +/- terminals.
9. Secure Solar Panel cable using grommet, sealing ring and nut.

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

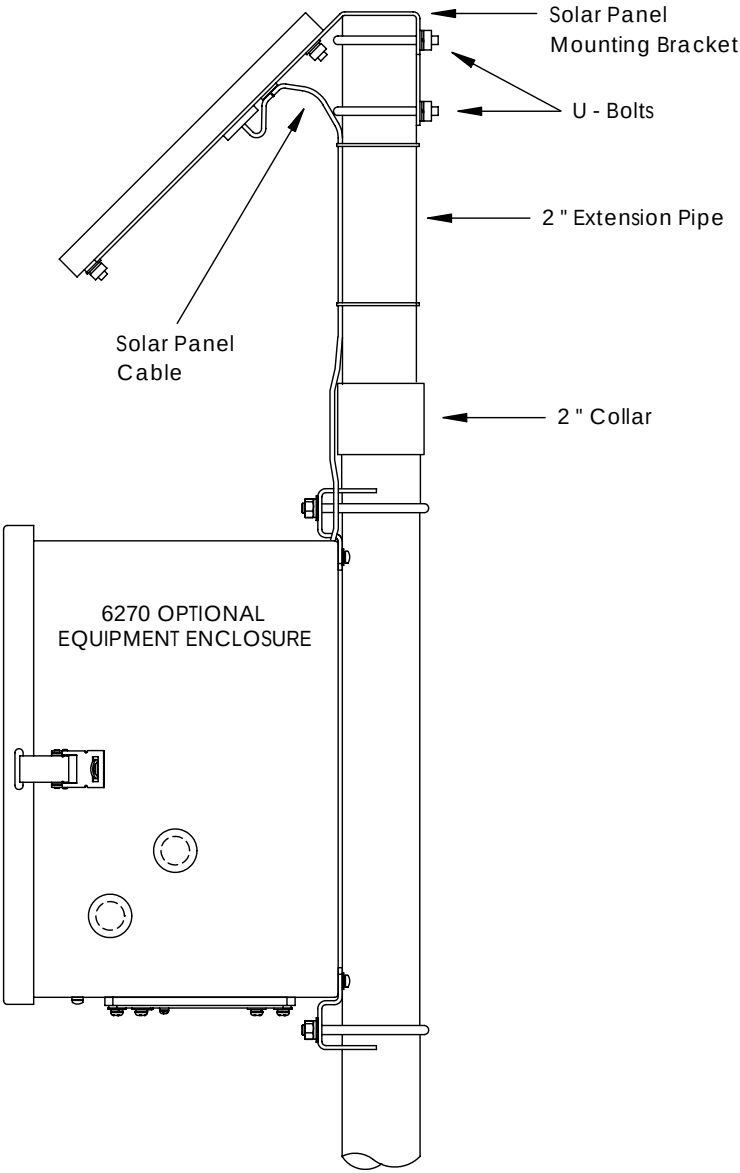



**Figure 7 (Solar Panel Mounting)**

## **Battery Installation** (6270 OEU Only)

1. To extend the life of the 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 can't provide, improves the life of the battery. (See tip below)
2. Insert the battery pack into the battery compartment with its long dimension facing outward.
3. Verify that the covers are screwed onto the 6200EX, then connect the battery to one of the battery connector mates.
4. Observe the LCD on the 6200EX; the display should power up displaying *Warm Start* information and begin scrolling through the default display items.
5. Connect solar panel power cable to the *Array* inputs of the charger/regulator inside the OEU.

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

### Lithium Battery

Verify that the $^{L}_{L}$ (low lithium alarm) is not being displayed on the A7 annunciator (default). This alarm indicates the Lithium battery is not connected or is below 2.5 volts and should be replaced. To verify the battery is connected and/or is good, remove the front cover of the 6200EX and look for 4 vertical solder pads behind and to the upper right side of the display (Fig. 8). This is the back side of the battery connector. The very bottom pad is the Positive(+) and the very top is negative(-) side of the battery. This is a confined space, so place the ground lead of a voltmeter on bare metal such as the plate behind the display and put the positive lead on the bottom solder pad being careful not to get the lead against ground.

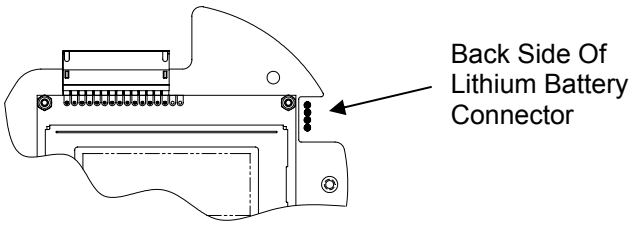



**Figure 8 (Lithium Battery Solder Pads)**

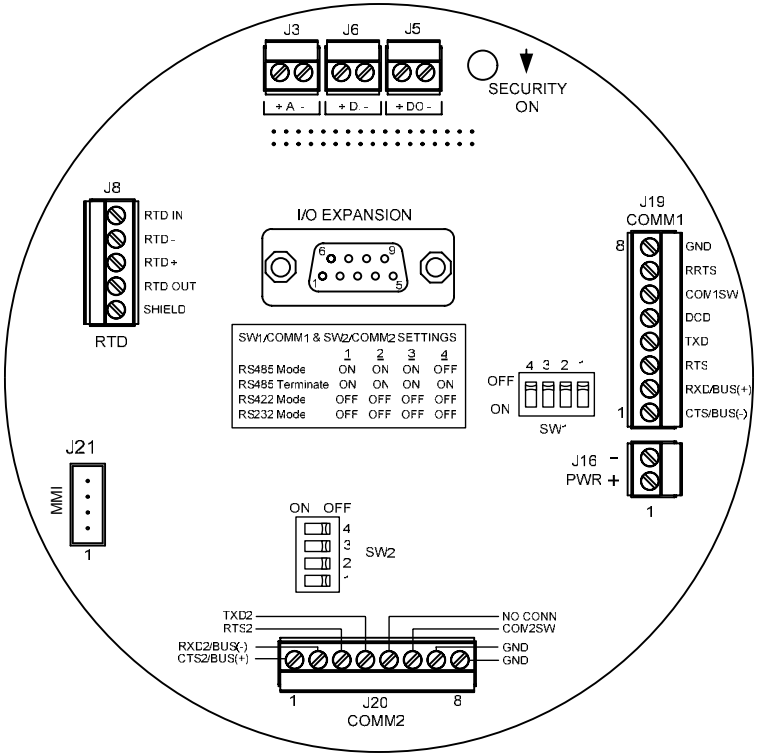



**Figure 9 (XFC6200EX Termination Board)**

| | **COMM 1 (J19) – RS232** | **COMM 1 (J19)** | **RS485** | **RS422** |
|---|---|---|---|---|
| Pin 1 | Clear To Send (CTS) | Receive Bus- | (BUS-) | (RBUS-) |
| Pin 2 | Receive Data (RXD) | Receive Bus+ | (BUS+) | (RBUS+) |
| Pin 3 | Request To Send (RTS) | Transmit Bus- | | (TBUS-) |
| Pin 4 | Transmit Data (TXD) | Transmit Bus+ | | (TBUS+) |
| Pin 5 | Data Carrier Detect (DCD) | Data Carrier Detect (DCD) | | |
| Pin 6 | Switched Output (COM1SW) | Switched Output (COM1SW) | | |
| Pin 7 | Mirrors RTS | Remote Request To Send (RRTS) | | |
| Pin 8 | Ground (GND) | Ground (GND) | | |
| | **COMM 2 (J20) – RS232** | **COMM 2 (J20)** | **RS485** | **RS422** |
| Pin 1 | Clear To Send (CTS2) | Receive Bus+ | (BUS+) | (RBUS+) |
| Pin 2 | Receive Data (RXD2) | Receive Bus- | (BUS-) | (RBUS-) |
| Pin 3 | Request To Send (RTS2) | Transmit Bus- | | (TBUS-) |
| Pin 4 | Transmit Data (TXD2) | Transmit Bus+ | | (TBUS+) |
| Pin 5 | No Connection | No Connection | | |
| Pin 6 | Switched Output (COM2SW) | Switched Output (COM2SW) | | |
| Pin 7 | Ground (GND) | Ground (GND) | | |
| Pin 8 | Ground (GND) | Ground (GND) | | |

**Table 1 - Comm 1 and Comm 2 Pin-Outs**

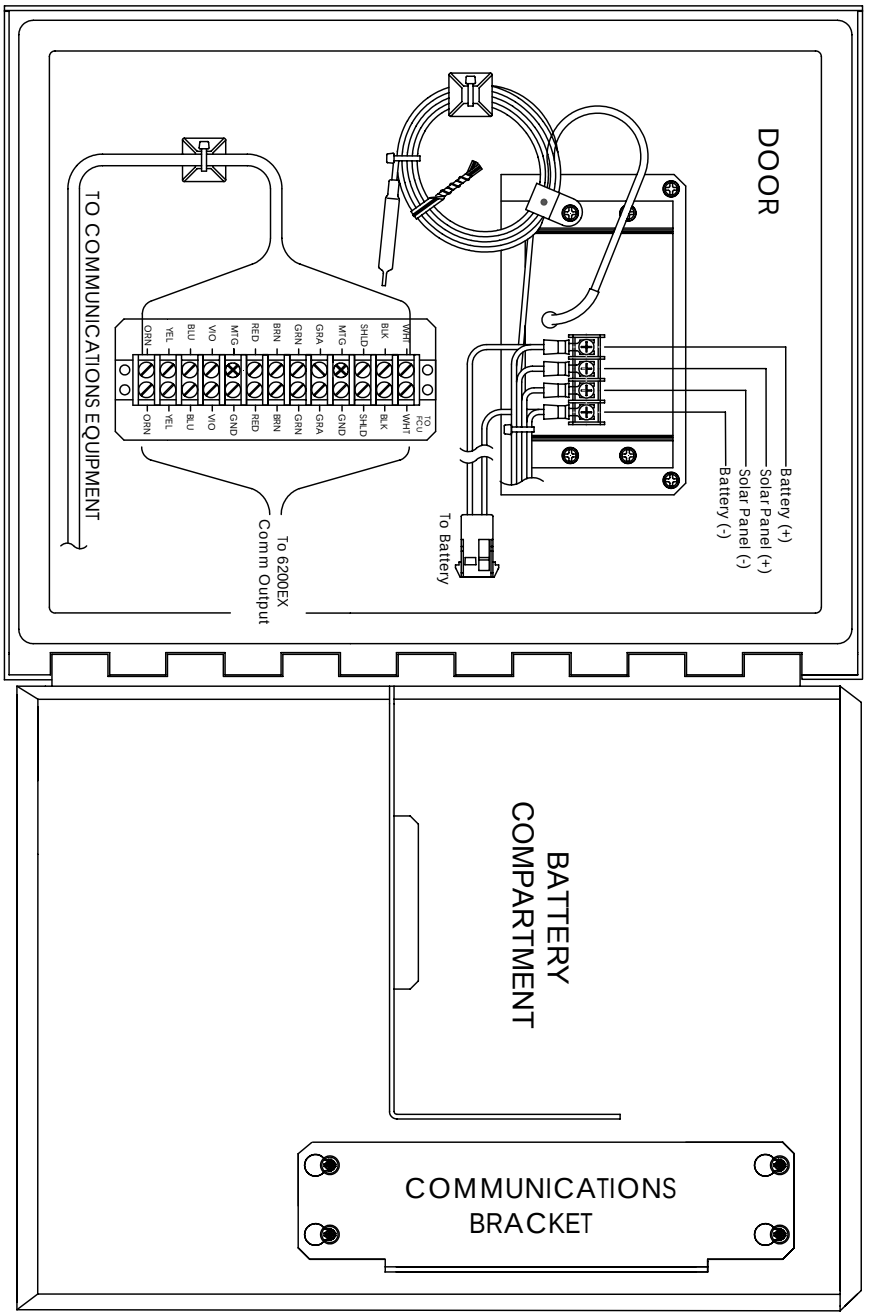



**Figure 10 (Model 6270 Optional Equipment Unit)**
Unit rotated 90 degrees for enlargement

**Important:** See next page regarding powering radios.

## Radio Communications

The XFC6200EX was designed such that the customer would provide local power and communications if required. However, in those cases where power is not available and solar power is required, the Model 6270 Optional Equipment Unit can be used. The 6270 enclosure has a charger/regulator module designed for solar input power and is typically fitted with a solar panel and a 26 amp-hour battery. This is ample to power the 6200EX flow computer and maintain some amount of autonomy.

In situations where radio communication is required, the power requirements of some radios might compromise the autonomy of the system. This problem can be handled in the following ways:

1. Upgrade to the larger Model 6770 Optional Equipment Unit which can handle a 42 amp-hour battery or two 26 amp-hour batteries.
2. Use low power radios such as the FreeWave® Spread Spectrum radio.
3. Use radios that have a *Sleep* feature which lets the radio go to sleep via a control line going low and then wakes up when the control line is driven high or allowed to float. Totalflow has a Power Scheduler application that runs in the 6200EX and switches an output called COM1SW on COMM 1 and COM2SW on COMM 2. This is a FET output which when in the OFF condition provides a path to ground and when turned ON appears as an open. This may sound backwards, but was designed this way to support radios with the *Sleep* function.
4. Switch the radio's power off when not in use. Since the COM1SW and COM2SW signal does not provide a switched voltage, the user will need to provide an interposing relay to switch the radio's power on and off. In order to do this, the enclosure is required to be in a General Purpose area since adding the relay compromises the enclosure's Division 2 certification. Below is a simplified drawing of how this would work. Due to the polarity of the COMSWs, the radio will need to be connected to a normally closed set of contacts.

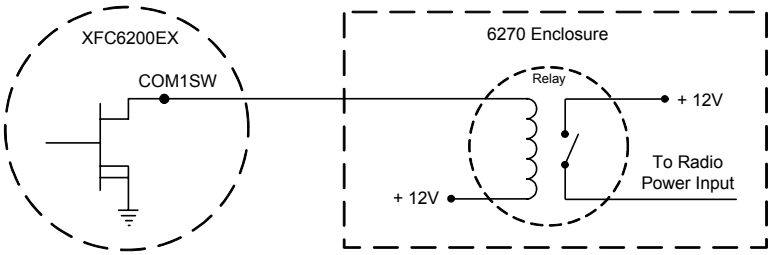



**Figure 11 (Using Interposing Relay)**

# Remote Communications

The following discussion deals primarily with communications between the 6200EX and Host (typically WinCCU).

To communicate with the Host, the 6200EX uses the remote communications port (Comm 1) that can function as RS232 or RS485. If the 6270 OEU was ordered, the customer had several communications options to choose from.

After installation of the 6200EX and with the communications path complete, the user needs to enter the appropriate communications parameters. The 6200EX was most likely shipped with Comm 1 set up for *Totalflow Remote* Protocol. If not, select the protocol using the *Entry* mode of PCCU32 as shown below. 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 symbol may not be visible if the baud rate is above 2400. See Alarm & Status Codes on page 19 for a full description of alarm characters, locations, and descriptions.

### Other Communication Options

After selecting the protocol, verify the other communication parameters. All communication parameters with the exception of modems are found on the *Setup* and *Advanced* tabs (See Fig. 12). Modem parameters have there own tab. Systems are shipped with default settings for communications but may need fine tuning. The *Schedule* tab parameters are only required if the user wants to power-up the communication's port and communication's devices on and off at designated times to conserve power.

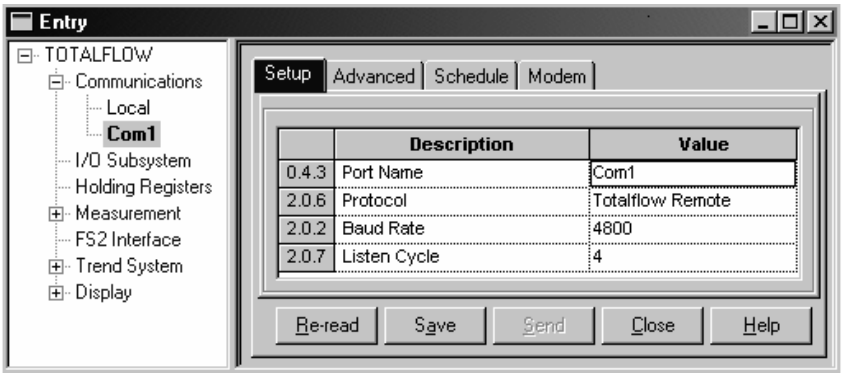



**Figure 12 (Communications Setup)**

# Communications Troubleshooting

A new radio or modem system that doesn't communicate is sometimes 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 trouble shooting technique. A checklist follows as an aid.

- Does the "ǂ" symbol flash (Totalflow Remote Protocol only) with the Listen Cycle time in the A8 display (default position)? If no,

  Note: You may not see the "ǂ" symbol flashing where baud rates are set higher than 2400. You may need to set the baud rate to 1200 to see if port is active and then set it back to the desired baud rate.

  1) The protocol needs to be selected in the *Entry Mode* using PCCU32.
  2) Inadequate DC voltage (9 volts minimum). Or as specified by user in *Station Setup* of PCCU *Entry* mode.
- Insure base radio is working for other locations.
- Verify Station ID and Device ID matches with WinCCU and is the only device with that ID.
- Verify Baud rate, Stop Bits, Security Code, and Listen Cycle time are the same as WinCCU.
- Verify WinCCU is using Packet Protocol. The 6200EX only supports DB2 Packet Protocol.
- Verify wiring from the 6200EX to the 6270 enclosure terminal strip and terminal strip to radio. Verify cable from the radio to the antenna.
- Verify SW1 or SW2 switches on the 6200EX termination board are in the proper position. (See Fig. 9 on page 12)

**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 device to another. If black and white wires are to be tested, disconnect both wires at both ends, put 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 devices are apart.

If a radio is used, verify directional antenna with correct frequency range is pointed toward base (± 6°). The antenna should be mounted vertically, with the vanes perpendicular to the ground. Verify that the radio is good, with the same frequencies used for base radio and remote.

- 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 available. Insure phone number is correct in the 6200EX and WinCCU.

  **Note:** The telephone company uses a 48 volt power supply so the typical 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.

**Wiring Documentation**

Specific wiring drawings are sent with each 6200EX based on the options ordered. Many wiring diagrams, including communications are available on the web at http://www.abb.com/totalflow. To see if a diagram is available, go to the web site, Select "*Continuing Customer Service and Support*", and then select "*Wiring Instructions*". Communications pin-outs of the 6200EX are shown on page 12 of this guide.

## Standard Displays

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

**Table 2 – Default AGA-3 Displays**

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

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 6200EX completes recording 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 6200EX'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 3 will appear on the lower right side of the LCD screen (see Fig. 13 below). Descriptions of each code are described in Table 3.

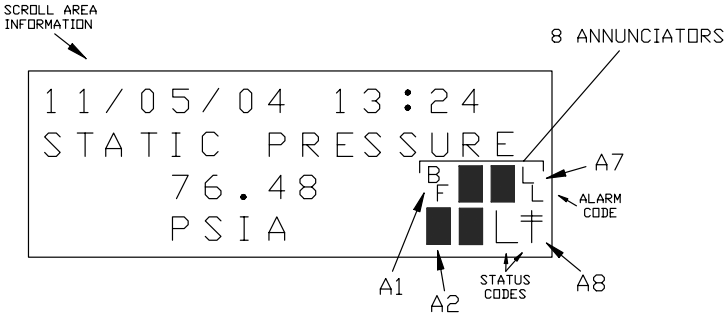



**Figure 13 (Annunciator Locations)**

**Note:** Applications in a 6200EX device can be assigned to any annunciator. To verify the current assignments, see *Annunciators* under *Display* in PCCU32's *Entry Mode*. (See Figure 14)

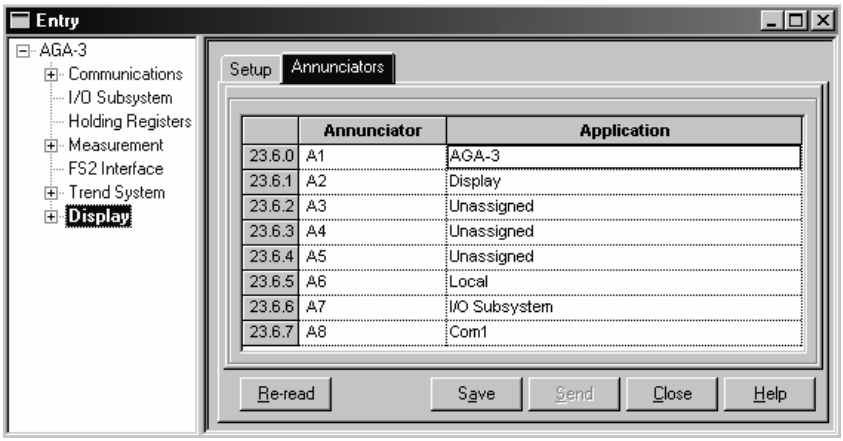



**Figure 14 (Annunciator Assignments)**

## Table 3 Alarm & Status - Codes and Description

| Alarm/ Status Codes | Description |
|---|---|
| **I/O Subsystem** | |
| $^{L}_{L}$ | *Low Lithium Battery Alarm*: When $^{L}_{L}$ (low lithium) is displayed, lithium battery voltage is below 2.5 VDC. A new lithium battery measures approximately 3.6 VDC. |
| **Communications** | |
| → | *Transmitting Data*: |
| ← | *Receiving Data*: |
| ! | *Nak*. Negative Acknowledgement w/packet list. |
| + | *Ack*. Positive Acknowledge of receipt of request. |
| ⍊ | *Waiting for Ack*. Waiting for response after transmission. |
| ? | *Exception Alarm Processing.* |
| ⍑ | *ID Recognized.* |
| ⍏ | *Listen Cycle*. 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. May not be visible if baud rate is faster than 2400. |
| M | *MODBUS ASCII*: Modbus ASCII protocol is selected for the port assigned to this annunciator. |
| m | *MODBUS RTU*: Modbus RTU protocol is selected for the port assigned to this annunciator. |
| L | *Local Protocol.* Displayed when PCCU32 port is active and running TOTALFLOW Local Protocol. |

| | |
|---|---|
| ¥ | *Packet Protocol.* The Totalflow Packet protocol is selected for the port assigned to this annunciator. |
| R | *LevelMaster Protocol*: The LevelMaster protocol is selected for the port assigned to this annunciator. |
| **Measurement Applications** | |
| $B_F$ | *Back Flow Condition*: Visible only when the DP variable is being displayed. |
| Z | *Zero Flow Condition*: Visible only when the Flow Rate variable is being displayed. |
| H | *Hold:* Displayed when PCCU32 is in *Calibration Mode* and has a measurement application in *Hold* mode. |
| A | *Alarm Condition.* Need to view alarm. You may need to compare application limits to current values to determine where the alarm condition is present. |
| $A_D$ | *A to D Failure.* Displayed if A to D Converter's Differential Pressure, Absolute Static Pressure or temperature readings exceed maximum counts or are less than minimum counts. |
| **Display Application** | |
| 1 | A number represents the Display Group number currently being displayed. |
| ↑ | The displayed item's value is above the *Data High Limit* value specified on the display *Item Setup* screen. |
| ↓ | The displayed item's value is below the *Data Low Limit* value specified on the display *Item Setup* screen. |

**Tip: If the Display Does Not Scroll As Expected**

When power is first applied, the unit should quickly go through its startup routine and begin cycling through the pre-programmed display items. If the display does not scroll after startup and/or looks similar to the following: (Part numbers are for example only)

XFC6200EX Prom
2101715-001
(COPYRIGHT)

Disconnect the main power and then re-connect it. You should see something similar to:

Verifying Flash
XXXXX
Checksum = Passed
XXXX = XXXX

or

COLD FLASH
Flash 2101715-001

6200EX Flash
2101715-001
(COPYRIGHT)

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 then begin scrolling. If this does not succeed, call the number on the back of this guide and talk to a customer service representative.

# NOTES

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