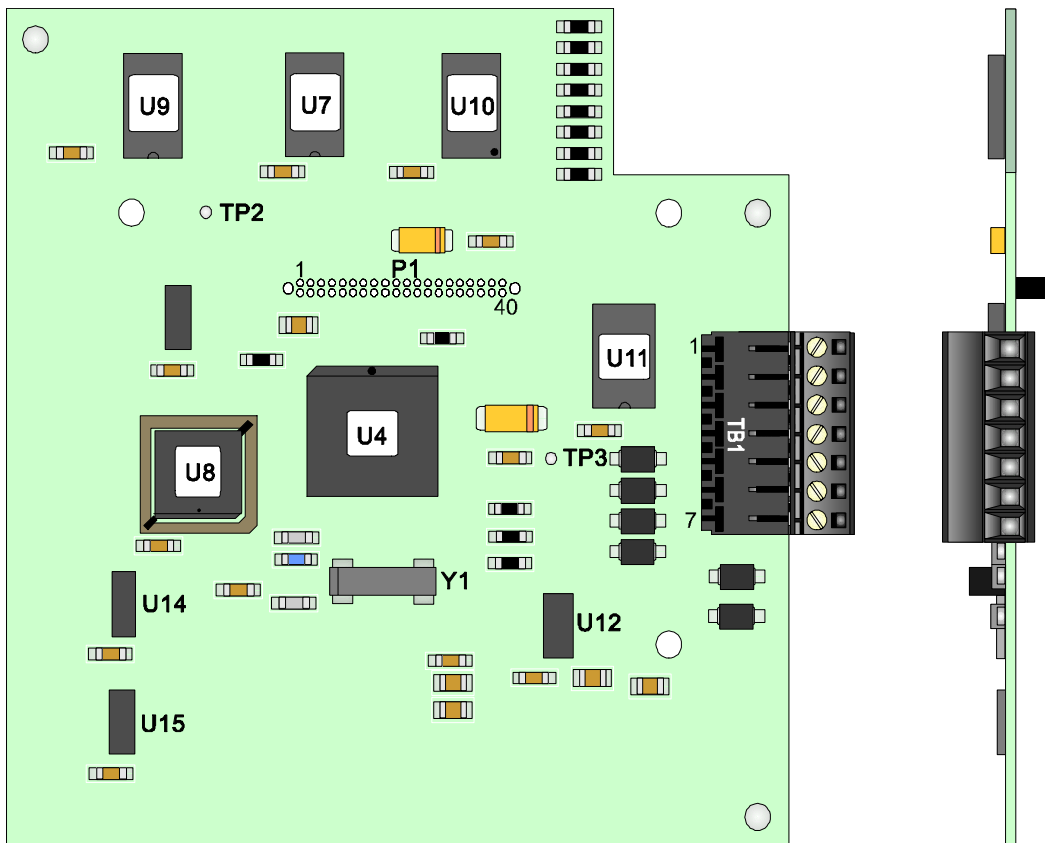


# EXPANSION COMMUNICATIONS PORT RS-232 BOARD Part No. 392970-01-5 (For Models 3530-XXX)

For The Following BBI Instruction Manuals:  
CI-3530-10B, CI-3530-15B, CI-3530-20B, CI-3530-25B,  
CI-3530-35B, CI-3530-40B, CI-3530-45B & CI-3530-50B



Bristol Babcock

## **NOTICE**

### *Copyright Notice*

The information in this document is subject to change without notice. Every effort has been made to supply complete and accurate information. However, Bristol Babcock assumes no responsibility for any errors that may appear in this document.

## **Request for Additional Instructions**

Additional copies of instruction manuals may be ordered from the address below per attention of the Sales Order Processing Department. List the instruction book numbers or give complete model number, serial or software version number. Furnish a return address that includes the name of the person who will receive the material. Billing for extra copies will be according to current pricing schedules.

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## **IMPORTANT! READ INSTRUCTIONS BEFORE STARTING!**

Be sure that these instructions are carefully read and understood before any operation is attempted. Improper use of this device in some applications may result in damage or injury. The user is urged to keep this book filed in a convenient location for future reference.

These instructions may not cover all details or variations in equipment or cover every possible situation to be met in connection with installation, operation or maintenance. Should problems arise that are not covered sufficiently in the text, the purchaser is advised to contact Bristol Babcock for further information.

### **EQUIPMENT APPLICATION WARNING**

The customer should note that a failure of this instrument or system, for whatever reason, may leave an operating process without protection. Depending upon the application, this could result in possible damage to property or injury to persons. It is suggested that the purchaser review the need for additional backup equipment or provide alternate means of protection such as alarm devices, output limiting, fail-safe valves, relief valves, emergency shutoffs, emergency switches, etc. If additional information is required, the purchaser is advised to contact Bristol Babcock.

### **RETURNED EQUIPMENT WARNING**

When returning any equipment to Bristol Babcock for repairs or evaluation, please note the following: The party sending such materials is responsible to ensure that the materials returned to Bristol Babcock are clean to safe levels, as such levels are defined and/or determined by applicable federal, state and/or local law regulations or codes. Such party agrees to indemnify Bristol Babcock and save Bristol Babcock harmless from any liability or damage which Bristol Babcock may incur or suffer due to such party's failure to so act.

### **ELECTRICAL GROUNDING**

Metal enclosures and exposed metal parts of electrical instruments must be grounded in accordance with OSHA rules and regulations pertaining to "Design Safety Standards for Electrical Systems," 29 CFR, Part 1910, Subpart S, dated: April 16, 1981 (OSHA rulings are in agreement with the National Electrical Code).

The grounding requirement is also applicable to mechanical or pneumatic instruments that include electrically-operated devices such as lights, switches, relays, alarms, or chart drives.

### **EQUIPMENT DAMAGE FROM ELECTROSTATIC DISCHARGE VOLTAGE**

This product contains sensitive electronic components that can be damaged by exposure to an electrostatic discharge (ESD) voltage. Depending on the magnitude and duration of the ESD, this can result in erratic operation or complete failure of the equipment. Read BBI supplemental document S14006 for proper care and handling of ESD-sensitive components.

**Bristol Babcock** 1100 Buckingham Street, Watertown, CT 06795  
Telephone (860) 945-2200

## **WARRANTY**

- A. Bristol warrants that goods described herein and manufactured by Bristol are free from defects in material and workmanship for one year from the date of shipment unless otherwise agreed to by Bristol in writing.
- B. Bristol warrants that goods repaired by it pursuant to the warranty are free from defects in material and workmanship for a period to the end of the original warranty or ninety (90) days from the date of delivery of repaired goods, whichever is longer.
- C. Warranties on goods sold by, but not manufactured by Bristol are expressly limited to the terms of the warranties given by the manufacturer of such goods.
- D. All warranties are terminated in the event that the goods or systems or any part thereof are (i) misused, abused or otherwise damaged, (ii) repaired, altered or modified without Bristol's consent, (iii) not installed, maintained and operated in strict compliance with instructions furnished by Bristol, or (iv) worn, injured or damaged from abnormal or abusive use in service time.
- E. THESE WARRANTIES ARE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED (INCLUDING WITHOUT LIMITATION WARRANTIES AS TO MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE), AND NO WARRANTIES, EXPRESS OR IMPLIED, NOR ANY REPRESENTATIONS, PROMISES, OR STATEMENTS HAVE BEEN MADE BY BRISTOL UNLESS ENDORSED HEREIN IN WRITING. FURTHER, THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACE HEREOF.
- F. No agent of Bristol is authorized to assume any liability for it or to make any written or oral warranties beyond those set forth herein.

## **REMEDIES**

- A. Buyer's sole remedy for breach of any warranty is limited exclusively to repair or replacement without cost to Buyer of any goods or parts found by Seller to be defective if Buyer notifies Bristol in writing of the alleged defect within ten (10) days of discovery of the alleged defect and within the warranty period stated above, and if the Buyer returns such goods to Bristol's Watertown office, unless Bristol's Watertown office designates a different location, transportation prepaid, within thirty (30) days of the sending of such notification and which upon examination by Bristol proves to be defective in material and workmanship. Bristol is not responsible for any costs of removal, dismantling or reinstallation of allegedly defective or defective goods. If a Buyer does not wish to ship the product back to Bristol, the Buyer can arrange to have a Bristol service person come to the site. The Service person's transportation time and expenses will be for the account of the Buyer. However, labor for warranty work during normal working hours is not chargeable.
- B. Under no circumstances will Bristol be liable for incidental or consequential damages resulting from breach of any agreement relating to items included in this quotation from use of the information herein or from the purchase or use by Buyer, its employees or other parties of goods sold under said agreement.

## How to return material for Repair or Exchange

Before a product can be returned to Bristol Babcock for repair, upgrade, exchange, or to verify proper operation, form (GBU 13.01) must be completed in order to obtain a RA (Return Authorization) number and thus ensure an optimal lead time. Completing the form is very important since the information permits the Bristol Babcock Repair Dept. to effectively and efficiently process the repair order.

You can easily obtain a RA number by:

### A. FAX

Completing the form (GBU 13.01) and faxing it to (860) 945-3875. A BBI Repair Dept. representative will return call (or other requested method) with a RA number.

### B. E-MAIL

Accessing the form (GBU 13.01) via the Bristol Babcock Web site ([www.bristolbabcock.com](http://www.bristolbabcock.com)) and sending it via E-Mail to [brepair@bristolbabcock.com](mailto:brepair@bristolbabcock.com). A BBI Repair Dept. representative will return E-Mail (or other requested method) with a RA number.

### C. Mail

Mail the form (GBU 13.01) to

**Bristol Babcock Inc.**  
Repair Dept.  
1100 Buckingham Street  
Watertown, CT 06795

A BBI Repair Dept. representative will return call (or other requested method) with a RA number.

### D. Phone

Calling the BBI Repair Department at (860) 945-2442. A BBI Repair Department representative will record a RA number on the form and complete Part I, then send the form to the Customer via fax (or other requested method) for Customer completion of Parts II & III.

A copy of the completed Repair Authorization Form with issued RA number should be included with the product being returned. This will allow us to quickly track, repair, and return your product to you.

# Bristol Babcock Inc. Repair Authorization Form

(Providing this information will permit BBI to effectively and efficiently process your return. Completion is required to receive optimal lead time. Lack of information may result in increased lead times.)

Date \_\_\_\_\_ RA # \_\_\_\_\_ SH \_\_\_\_\_ Line No. \_\_\_\_\_

**Standard Repair Practice is as follows:** Variations to this is practice may be requested in the "Special Requests" section.

- Evaluate / Test / Verify Discrepancy
- Repair / Replace / etc. in accordance with this form
- Return to Customer

**Please be aware of the Non warranty standard charge:**

- There is a \$100 minimum evaluation charge, which is applied to the repair if applicable (✓ in "returned" B,C, or D of part III below)

## Part I Please complete the following information for single unit or multiple unit returns

Address No. \_\_\_\_\_ (office use only) Address No. \_\_\_\_\_ (office use only)

Bill to : \_\_\_\_\_ Ship to: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Purchase Order: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ E-Mail: \_\_\_\_\_

## Part II Please complete Parts II & III for each unit returned

Model No./Part No. \_\_\_\_\_ Description \_\_\_\_\_

Range/Calibration \_\_\_\_\_ S/N \_\_\_\_\_

**Reason for return** :  Failure  Upgrade  Verify Operation  Other \_\_\_\_\_

1. Describe the conditions of the failure (Frequency/Intermittent, Physical Damage, Environmental Conditions, Communication, CPU watchdog, etc.)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(Attach a separate sheet if necessary)

2. Comm. interface used:  Standalone  RS-485  Ethernet  Modem (PLM (2W or 4W) or SNW)  Other: \_\_\_\_\_

3. What is the **Firmware** revision? \_\_\_\_\_ What is the **Software** & version? \_\_\_\_\_

## Part III If checking "replaced" for any question below, check an alternate option if replacement is not available

A. If product is within the warranty time period but is excluded due to BBI's warranty clause, would you like the product:  repaired  returned  replaced  scrapped?

B. If product were found to exceed the warranty period, would you like the product:  repaired  returned  replaced  scrapped?

C. If product is deemed not repairable would you like your product:  returned  replaced  scrapped?

D. If BBI is unable to verify the discrepancy, would you like the product:  returned  replaced  \*see below?

\* Continue investigating by contacting the customer to learn more about the problem experienced? The person to contact that has the most knowledge of the problem is: \_\_\_\_\_ phone \_\_\_\_\_

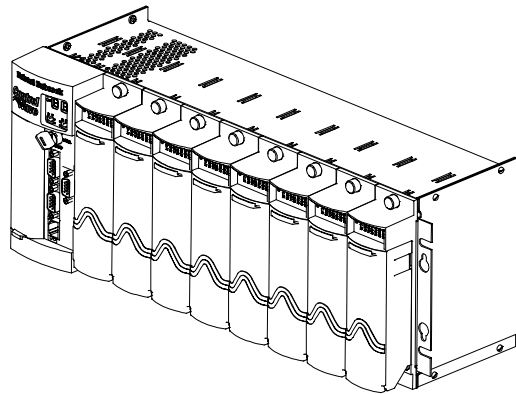
If we are unable to contact this person the backup person is: \_\_\_\_\_ phone \_\_\_\_\_

**Special Requests:** \_\_\_\_\_

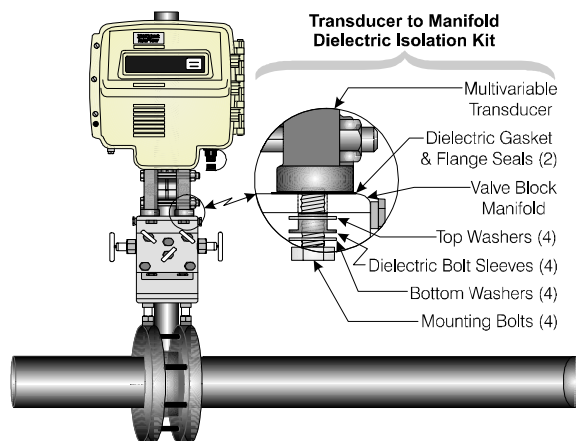
Ship prepaid to: Bristol Babcock Inc., Repair Dept., 1100 Buckingham Street, Watertown, CT 06795  
Phone: 860-945-2442 Fax: 860-945-3875

# Bristol Babcock *Training*

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- Avoid Delays and problems in getting your system on-line
- Minimize installation, start-up and maintenance costs.
- Make the most effective use of our hardware and software.
- Know your system.



As you know, a well-trained staff is essential to your operation. Bristol Babcock offers a full schedule of classes conducted by full-time, professional instructors. Classes are offered throughout the year at three locations: Houston, Orlando and our Watertown, CT headquarters. By participating in our training, your personnel can learn how to install, calibrate, configure, program and maintain any and all Bristol Babcock products and realize the full potential of your system.

For information or to enroll in any class, contact our training department in Watertown at (860) 945-2269. For Houston classes, you can also contact our Houston office, at (713) 685-6200.

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For over 100 years, Bristol<sup>®</sup> has been providing innovative solutions for the measurement and control industry. Our product lines range from simple analog chart recorders, to sophisticated digital remote process controllers and flow computers, all the way to turnkey SCADA systems. Over the years, we have become a leading supplier to the electronic gas measurement, water purification, and wastewater treatment industries.

On off-shore oil platforms, on natural gas pipelines, and maybe even at your local water company, there are Bristol Babcock instruments, controllers, and systems running year-in and year-out to provide accurate and timely data to our customers.

## Getting Additional Information

In addition to the information contained in this manual, you may receive additional assistance in using this product from the following sources:

### Contacting Bristol Babcock Directly

Bristol Babcock's world headquarters are located at 1100 Buckingham Street, Watertown, Connecticut 06795, U.S.A.

Our main phone numbers are:

**(860) 945-2200**  
**(860) 945-2213 (FAX)**

Regular office hours are Monday through Friday, 8:00AM to 4:30PM Eastern Time, excluding holidays and scheduled factory shutdowns. During other hours, callers may leave messages using Bristol's voice mail system.

### Telephone Support - Technical Questions

During regular business hours, Bristol Babcock's Application Support Group can provide telephone support for your technical questions.

For technical questions about TeleFlow<sup>™</sup> products call (860) 945-8604.

For technical questions about **ControlWave** call (860) 945-2244 or (860) 945-2286.

For technical questions regarding Bristol's **OpenEnterprise** product, call (860) 945-3865 or e-mail: **openenterprise@bristolbabcock.com**

For technical questions regarding **ACCOL** products, **Open BSI Utilities**, as well as Bristol's **Enterprise Server<sup>®</sup>/Enterprise Workstation<sup>®</sup>** products, call (860) 945-2286.

For technical questions about **Network 3000** hardware, call (860) 945-2502.

You can e-mail the Application Support Group at: **bsupport@bristolbabcock.com**

The Application Support Group maintains an area on our web site for software updates and technical information. Go to: **[www.bristolbabcock.com/services/techsupport/](http://www.bristolbabcock.com/services/techsupport/)**

For assistance in interfacing Bristol Babcock hardware to radios, contact Bristol Babcock's **Communication Technology Group** in Orlando, FL at **(407) 629-9463** or **(407) 629-9464**.

### **Telephone Support - Non-Technical Questions, Product Orders, etc.**

Questions of a non-technical nature (product orders, literature requests, price and delivery information, etc.) should be directed to the nearest sales office (listed on the rear cover) or to your Bristol-authorized sales representative.

Please call the main Bristol Babcock number (860-945-2200) if you are unsure which office covers your particular area.

### **Visit our Site on the World Wide Web**

For general information about Bristol Babcock and its products, please visit our site on the World Wide Web at: **[www.bristolbabcock.com](http://www.bristolbabcock.com)**

### **Training Courses**

Bristol Babcock's Training Department offers a wide variety of courses in Bristol hardware and software at our Watertown, Connecticut headquarters, and at selected Bristol regional offices, throughout the year. Contact our Training Department at **(860) 945-2269** for course information, enrollment, pricing, and scheduling.

# PIP-EXP232TF

## EXPANSION COMMUNICATIONS PORT RS-232 BOARD

PT. Number 392970-01-5

### Product Information Package

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# Section 1

## INTRODUCTION

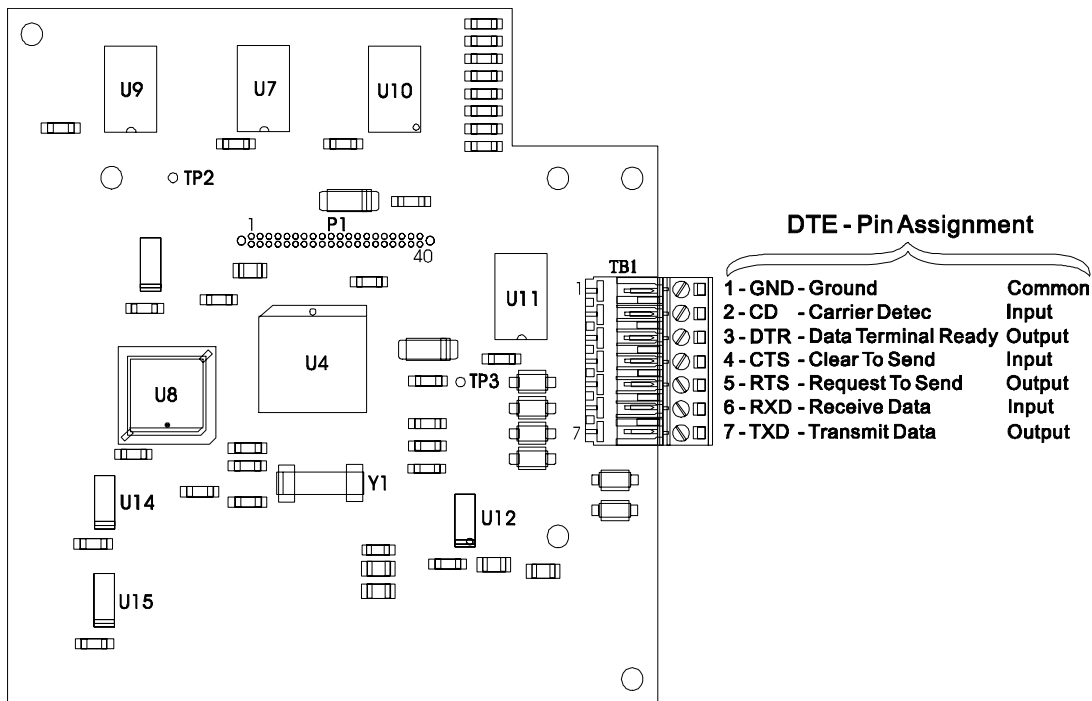
### 1.1 DESCRIPTION

#### 1.1.1 Function

The Expansion Communications Port RS-232 Board (EXPCOM232) provides a single RS-232 asynchronous serial communications port to ACCOL-based 3530-XXX models. In addition to assignments of the resident (host) CPU's "local" and "network" RS-232 ports, any model 3530-XXX unit equipped with an EXPCOM232 Board can establish RS-232 communications with an external device. An EXPCOM232 Board plugs into the Expansion Connector of the TeleFlow or TeleRTU CPU Board and is stood-off by three 15/32" long hex standoffs and is secured via three screws. The CPU Board Expansion Connector supplies power and 3530-XXX communication to the EXPCOM232 Board.

EXPCOM232 Boards measure 4.0" by 3.75" and utilizes a 7-position Industrial 3.5mm pitch plugable connector to interface with an external RS-232 device. 16V bi-directional Transient Absorption Zener Diodes are placed across all RS-232 outputs.

Programmable baud rates up to 19.2Kbps are supported by the EXPCOM232 Board. TXD, RXD, RTS, CTS, DTR, CD and GND (RS-232) signals are available at TB1 of the EXPCOM232 Board. CD (Carrier Detect) (supplied by a DCE attempting to communicate with a model 3530-XXX), will awaken the 3530-XXX CPU Board. If no activity is required, the EXPCOM232 Board's serial communications controller (SCC) chip and RS-232 drivers can be put to sleep (low power mode) along with the host/parent 3530-XXX.



**Figure 1 - Expansion Communications Port RS-232 Board**

## 1.1.2 Features

- **Low Power**  
+5V @ 20mA (Max) regulated power is supplied by the host/parent 3530-XXX via the 40-pin Expansion Interface Connector P1.
- **ESD & Transient Susceptibility**  
The RS-232 I/O circuitry has been designed to meet the requirements of IEC 801-2 for ESD withstand capability up to 10KV and the requirements of ANSI/IEEE C37.90.1-1989 (formerly IEE 472) for surge withstand capability.
- **EMI Compatibility**  
EXPCOM232 Boards have been designed to coexist inside a shielded enclosure with the TeleFlow™ electronics. EMI radiation is insignificant and susceptibility is comparable or superior to associated electronics.
- **Mounting**  
The EXPCOM232 Board measures 3.75" (9.525cm) in width x 4.0" (10.160cm) in height and mounts piggy-back on a TeleFlow or TeleRTU CPU Board.
- **RS-232 Serial Port**  
EXPCOM232 Boards provide an additional RS-232 serial port that is programmable for rates up to 19.2Kbps. 3530-XXX units equipped with the EXPCOM232 Board can communicate with a local RS-232 device even though a radio or modem may be installed on the CPU Board's network port.

## 1.2 COMPONENT IDENTIFICATION

EXPCOM232 Boards do not contain LEDs, switches or configuration jumpers. Two connectors are provided; 40-pin connector P1 mates with the host 3530-XX-X (connector J4 - TeleFlow CPU or J18 - TeleRTU CPU) and accommodates the TTL interface between the two entities, while 7-pin connector TB1 mates with the RS-232 device that is being interfaced to the 3530-XXX. Additionally, the 3.5mm pitch plugable connector TB1 is removable from its mating EXPCOM232 Board socket.

## 1.3 INSTALLATION COMPATIBILITY

An EXPCOM232 Board can be installed into any of the following 3530-XXX models:

3530-10B - TeleFlow	3530-35B - TeleRTU Module
3530-15B - TeleRTU	3530-40B - TeleFlow ECR
3530-20B - TeleFlow Plus	3530-45B - TeleRecorder
3530-25B - TeleRTU Plus	3530-50B - TeleFlow Corrector

### 1.3.1 Restrictions

The 3530-XXX in question must be equipped with ACCOL application software. 3530-XXX units support installation of only one optional piggyback mounted Expansion Board (I/O, Comm. or TIB).

## *Section 2*

# **INSTALLATION & SERVICE**

---

## **2.1 EXPCOM232 REMOVAL/REPLACEMENT & INSTALLATION**

### **2.1.1 Installation/Removal of the EXPCOM232 Board**

In addition to hardware normally contained within the 3530-XXX in question, units with an installed EXPCOM232 Option will contain the following major parts.

1. Expanded Communications Port RS-232 Board (EXPCOM232)
2. Three #4-40 x 15/32" Standoffs (*Note: Models 3530-10B, -15B, -40B, -45B & -50B will also contain Three (3) #4-40 x .188" Standoffs & Two (2) #4-40 x 1/8" SEM Screws*)
3. Modified PC Shield Assembly (for models 3530-10B, -15B, -40B, -45B & -50B)

#### **WARNING**

*Never attempt to service a TeleFlow, TeleRTU, TeleRecorder or TeleFlow Corrector while it is powered and operating in a hazardous environment. Either the area must be made safe or the unit must be powered down, unwired, unmounted, and taken to a safe, non-hazardous area.*

#### **WARNING**

*Never attempt to install or remove any components (PCBs, Field Wiring, Transducers, etc.) while the unit is powered and running. Doing so can cause sudden electrical transients or imbalances that are capable of causing damage to the module or component in question, as well as other associated circuit boards. Always turn off the external/internal power source, including any additional supply sources used for externally-powered I/O circuits, before changing or adding any components.*

#### **CAUTION**

*Place any related critical processes under manual or auxiliary control prior to shutting down or performing any of the steps discussed herein.*

#### **2.1.1.1 Installation/Removal for Models 3530-10B, -15B, -40B, -45B & -50B**

To install the optional EXPCOM232 Board into a model 3530-10B, -15B, -40B, -45B or -50B, follow steps 1 through 14 below. To remove the optional EXPCOM232 Board, see step 15. *Note: The Instrument Front Cover must be open.*

1. To open the Instrument Front Cover, remove the lock if present and turn each of the three captive screws a quarter (1/4) turn counterclockwise.

**Note:**

***The CPU Board is not to be removed under any circumstances unless the unit has been moved to an ESD safe area (see ESDS Manual - S14006).***

2. Remove the Power Plug(s), Solar Panel Power Plug, and the Auxiliary Power Plug as required, from the CPU Board in question.
3. Remove the optional radio or modem if installed.  
**To remove an optional modem:**  
Disconnect the phone wires. Loosen the four (4) screws that secure the Modem/Radio Mounting Plate (with modem) to the Battery Mounting Bracket. Slide the modem to the left and remove it and then disconnect the D-Type connector from the modem.  
**To remove an optional radio:**  
Disconnect the Radio/TeleFlow Interface Cable from the bottom of the Radio. Unplug the 2-wire power connector associated with the 2-wire Radio Power Interface Cable from the bottom of the Radio. Loosen the four (4) screws that secure the Modem/Radio Mounting Plate (with radio) to the Battery Mounting Bracket. Slide the radio to the left and remove it.
4. Remove the Battery(s) (if present).  
**To remove the battery(s) from units without an optional modem or radio:**  
Hold the battery securely and remove the Left Battery Mounting Bracket (secured with 2 screws. Loosen the screws which secure the Right Battery Mounting Bracket (Carefully remove the battery (with wiring harness). Remove the Right Battery Mounting Bracket.  
**To remove the battery(s) from units with an optional modem or radio:**  
Carefully remove the battery (with wiring harness). *Note: You may have to loosen the two left 1/4-20 x 3/8" screws that secure the left side of the Battery Mounting Bracket and the Main Mounting Bracket to the rear of the unit.* While holding the Main Mounting Bracket, remove the four (4) 1/4-20 x 3/8" screws and lock washers that secure the Battery Mounting Bracket and Main Mounting Bracket to the rear of the unit. Remove the Battery Mounting Bracket and temporarily reinstall the four screws to secure the Main Mounting Bracket to the 3530-10B, 15B, -45B or -50B.
5. Disconnect the Local Port, Network Port, RTD, and Field I/O wires from the CPU Bd. connectors by unplugging their associated Term. Plugs on the front edge of the CPU.
6. Carefully remove the PC Shield which is secured to the Main Mounting Bracket by 2 (#4-40 x 1/4") screws and to the CPU Board by 2 (#4-40 x 1/4") screws.
7. Remove the screw (location 'A' in Figures 2 & 3) and the two (2) #4-40 x 5/8" Standoffs (location 'B' in Figures 2 & 3) which secure the CPU Board to the Main Mounting Bracket. Replace these items with the three new #4-40 x 15/32" Standoffs.

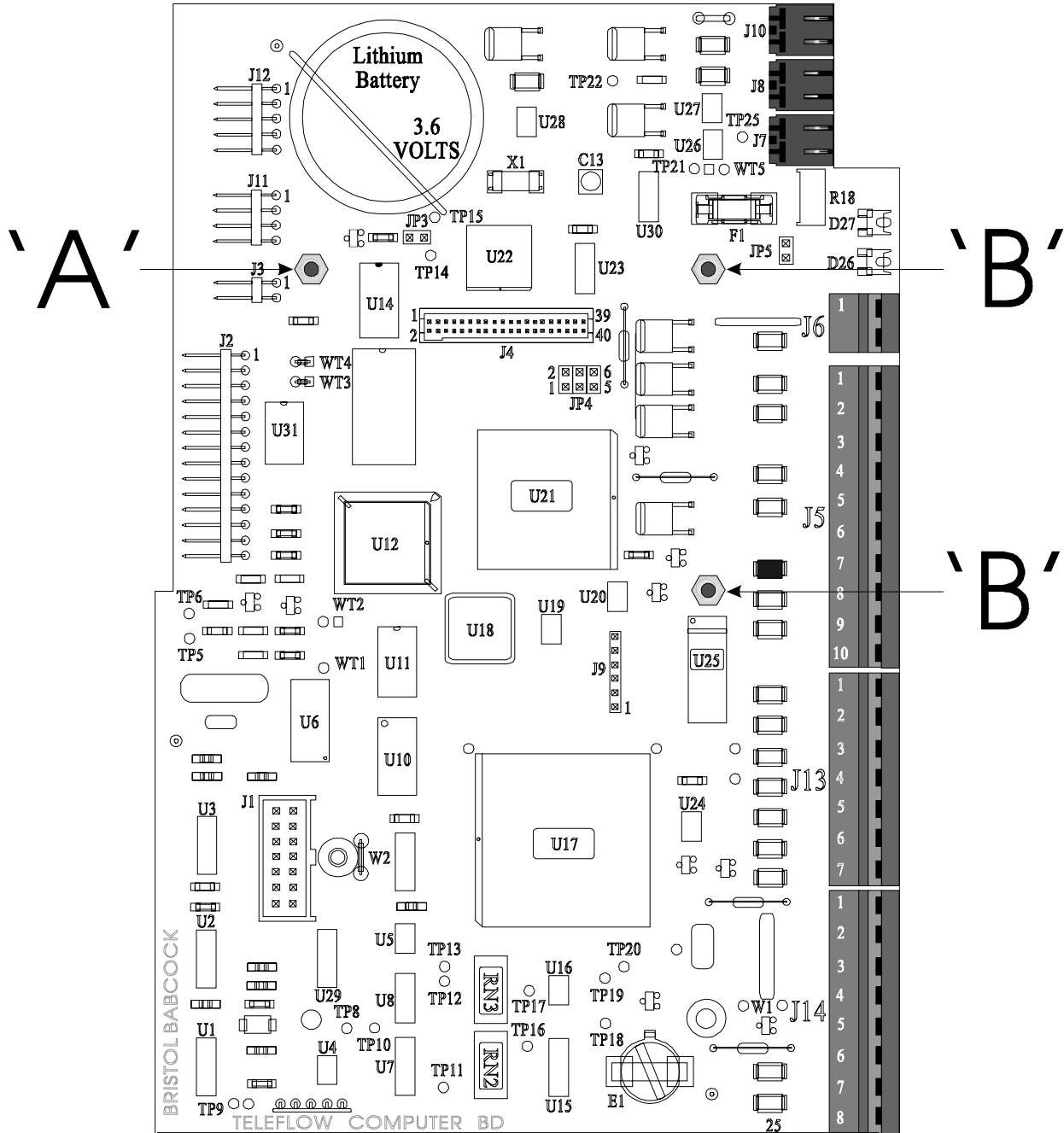
**Note:**

***This operation should only be performed in an ESD safe area.***

8. Align the EXPCOM232 Board Connector P1 with CPU Board Connector J4 (for 3530-10B, 40B or -50B) or J18 (for 3530-15B & -45B). Push the EXPCOM232 Board toward the CPU Board until Connector P1 is fully seated.

Replace Mounting Screw 'A' with #4-40 x 15/32" Hex Standoff.

Replace #4-40 x 5/8" Hex Standoffs 'B' with #4-40 x 15/32" Hex Standoffs.



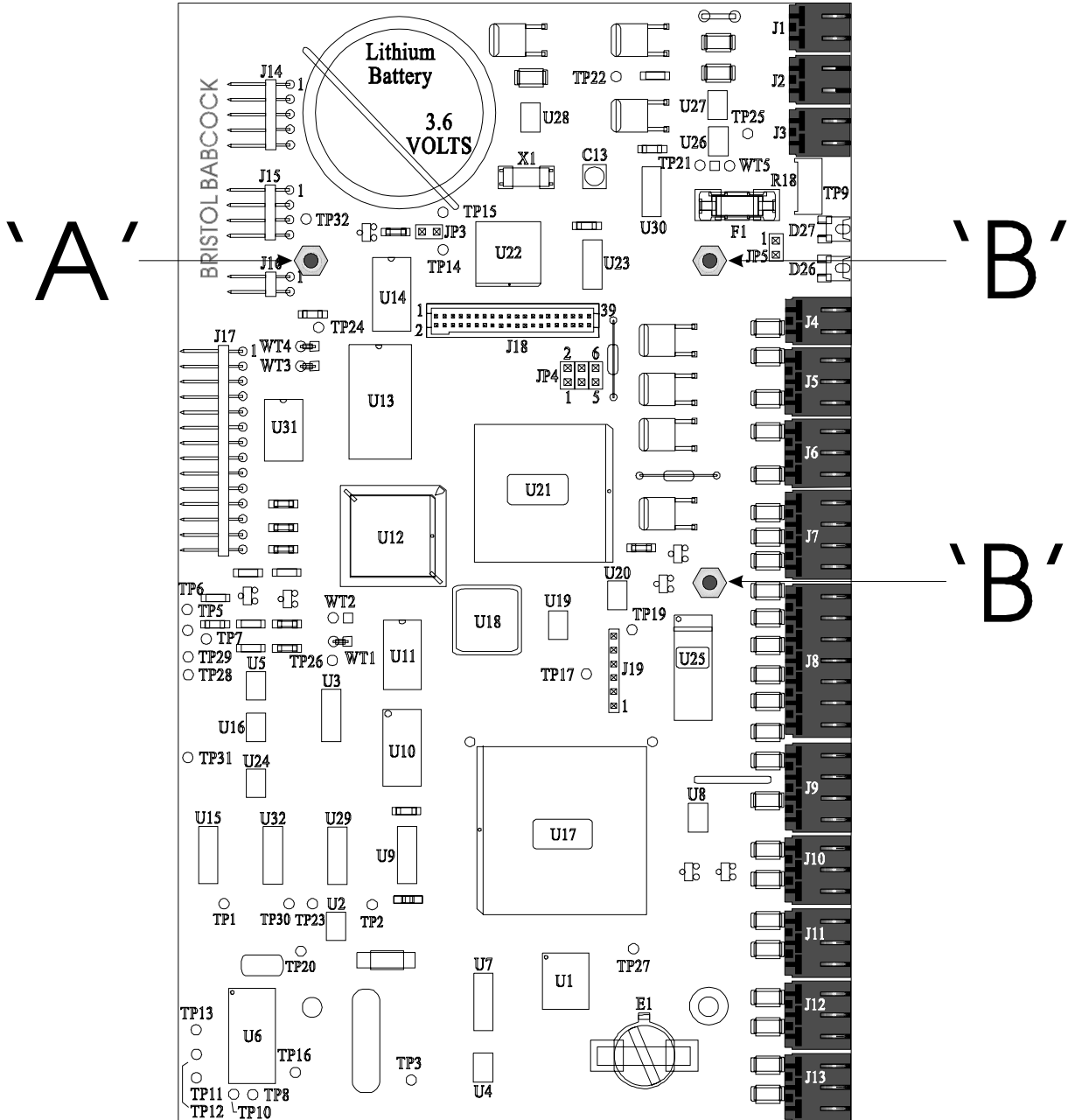
**Figure 2 - TeleFlow CPU Board – Installation Drawing #1**

9. Secure the EXPCOM232 Board to the CPU Board by installing three (3) #4-40 x .188" Standoffs at locations 'A' and 'B' (see Figures 2 & 3).
10. Carefully install the Modified PC Shield, securing it to the Main Mounting Bracket (at locations 'C') with two #4-40 x 1/4" screws and to the CPU Board (at locations 'B') with two (2) #4-40 x 1/8" SEM screws (see Figures 4, 5, 6 & 7).
11. Follow steps 2 through 6 in reverse order, replacing rather than removing the item in question.

12. Connect wiring between the EXPCOM232 Board and the DTE/DCE device to which it is to be interfaced (see Section 2.2).
13. Configure the new network port in the ACCOL Load resident in the host 3530-XXX device.

Replace Mounting Screw 'A' with #4-40 x 15/32" Hex Standoff.

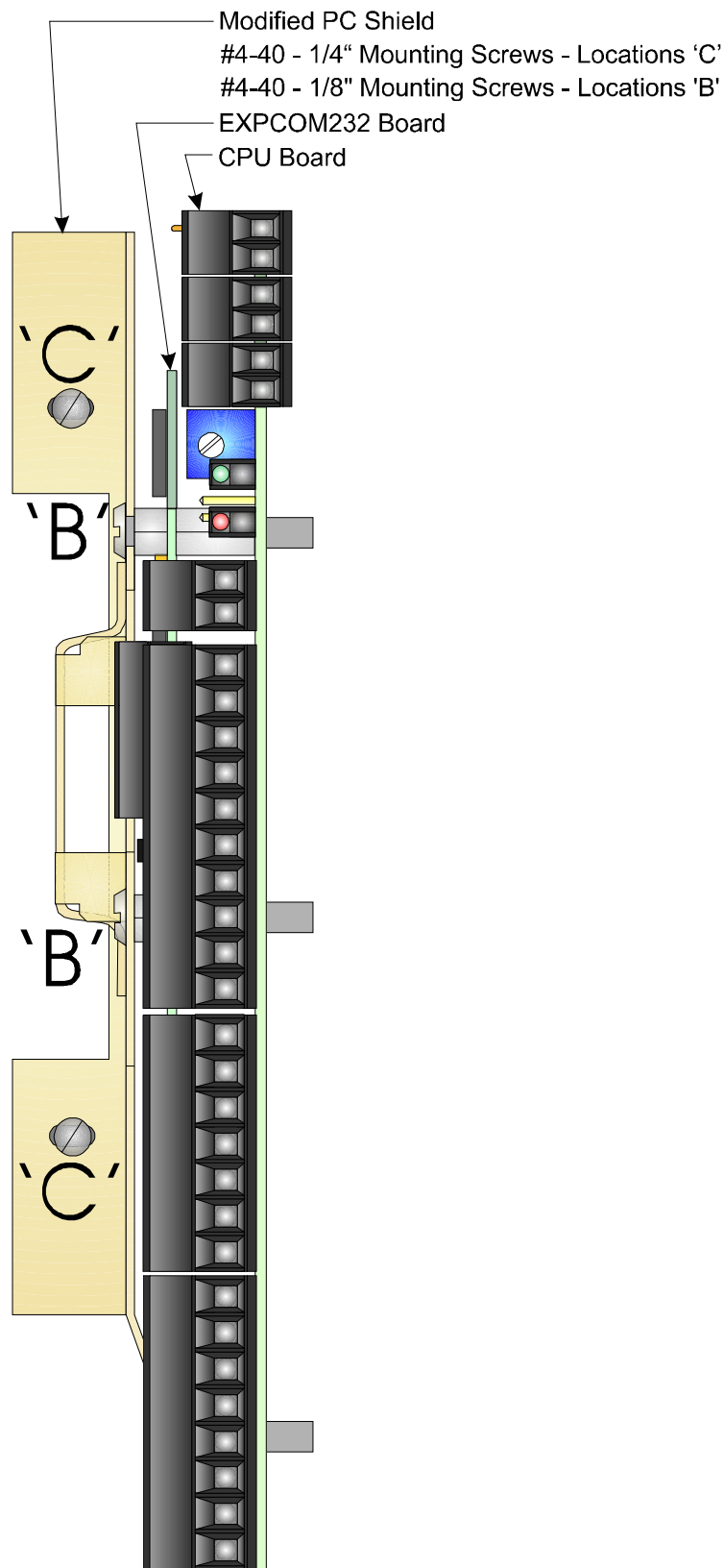
Replace #4-40 x 5/8" Hex Standoffs 'B' with #4-40 x 15/32" Hex Standoffs.



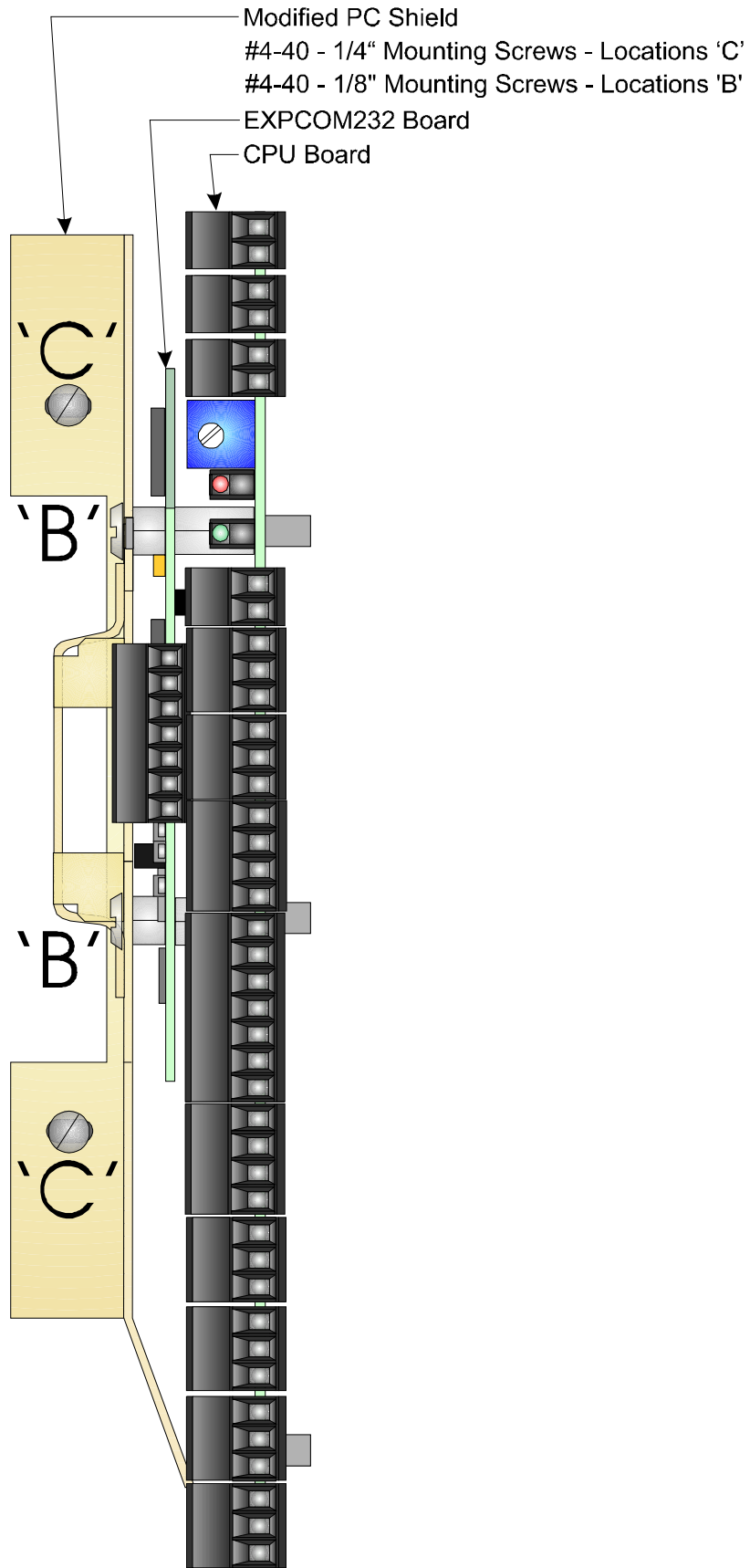
**Figure 3 - TeleRTU CPU Board - Installation Drawing #1**

14. Close and secure the Instrument Front Cover.
15. To remove an optional EXPCOM232 Board, follow steps 1 through 6 (unplug the RS-232 cable during step 5). Remove the PC Shield along with the three Standoffs that

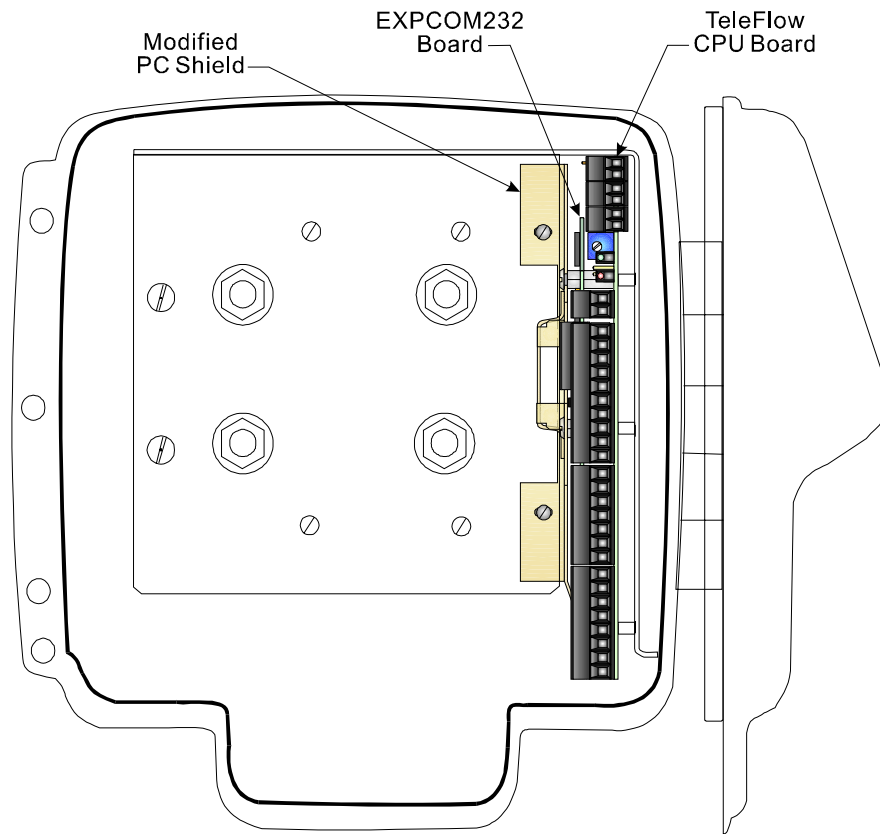
secure the EXPCOM232 Board to the CPU Board. Then unplug the EXPCOM232 Board from the CPU Board in question.



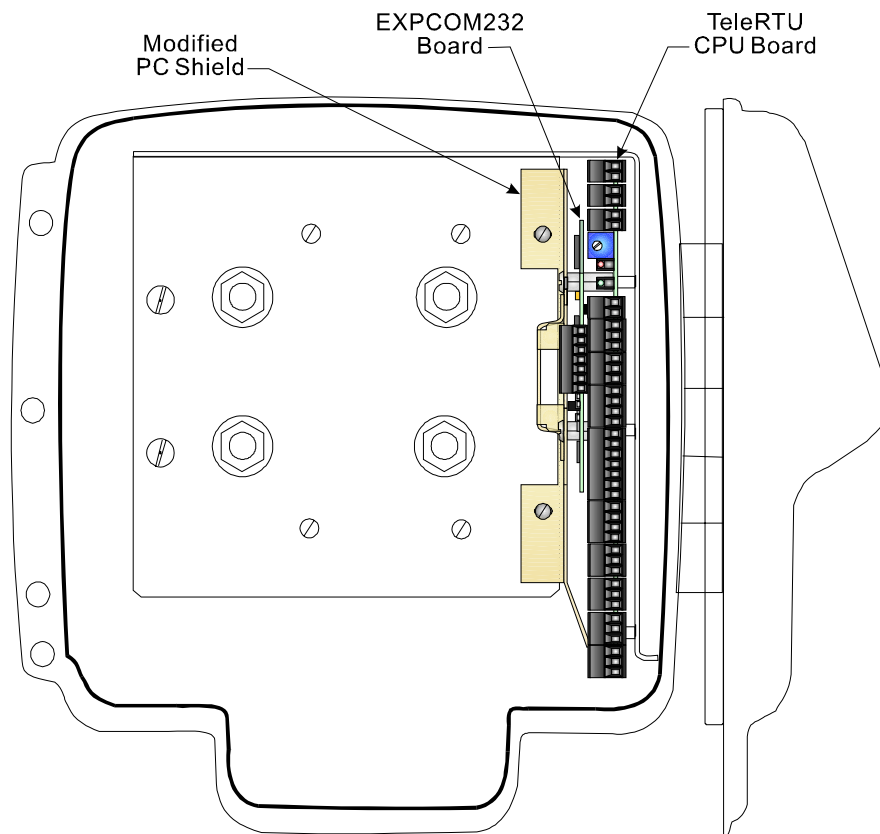
**Figure 4 - TeleFlow CPU Board (with EXPCOM232 Installed)  
Installation Drawing #2**



**Figure 5 - TeleRTU CPU Board (with EXPCOM232 Installed)  
 Installation Drawing #2**



**Figure 6 - 3530-10B, 3530-40B & 3530-50B (with EXPCOM232 Installed)**

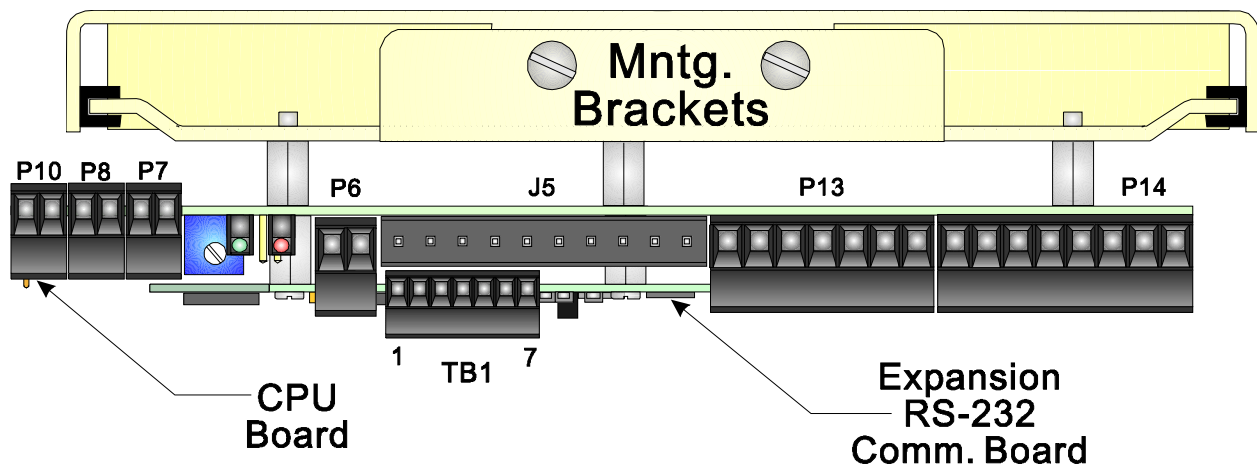


**Figure 7 - 3530-15B & 3530-45B (with EXPCOM232 Installed)**

### 2.1.1.2 Installation/Removal for Models 3530-20B & -25B

To install the optional EXPCOM232 Board into a model 3530-20B or 3530-25B, follow steps 1 through 11 below. To remove the optional EXPCOM232 Board, perform steps 1 and 2 and then follow steps 4 through 9 in reverse order, removing rather than installing the item in question after the system has been shut down. *Note: The Instrument Front Cover must be open.*

1. Open the Instrument Front Cover
2. Disconnect power by removing harness connector plug (P8 for TeleFlow - P2 for TeleRTU) from the CPU Board edge connector (J8 for TeleFlow – J2 for TeleRTU).



**Figure 8 - 3530-20B CPU (with EXPCOM232 Installed)**

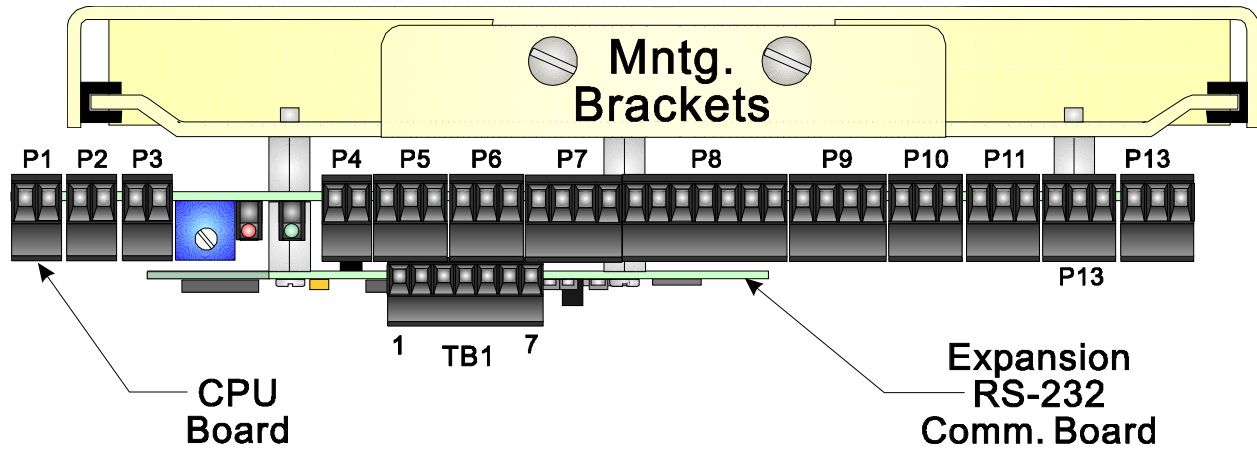
3. Unplug the remaining removable Terminal Blocks (with wiring harnesses installed) from the CPU Board's front edge connectors.
4. Remove the two screws that secure the CPU Board's Sliding Mounting Bracket to the Fixed Bracket on the bottom of the Battery Bracket. Carefully slide the CPU Board (and optional EXPCOM232 Board) toward the front of the unit. Remove harness connections from the Front Panel Switch (J12 on the TeleFlow CPU - J14 on TeleRTU CPU), the Display Module (J2 on TeleFlow CPU - J16 on TeleRTU CPU), the Wakeup Switch (J3 on TeleFlow CPU - J16 on TeleRTU CPU), and for TeleFlow CPU Boards connector J1 (associated with the Multivariable Transducer).

5. Remove the three screws (of five) that secure the CPU Board to the Sliding Mounting Bracket (locations 'A' & 'B' in Figures 2 & 3) and replace these items with the three new #4-40 x 15/32" Standoffs.

**Note:**

***This operation should only be performed in an ESD safe area.***

6. Align the EXPCOM232 Board Connector P1 with CPU Board Connector J4 (for 3530-20B) or J18 (for 3530-25B). Push the EXPCOM232 Board toward the CPU Board until Connector P1 is fully seated.
7. Secure the EXPCOM232 Board to the CPU Board by installing three (3) #4-40 x 1/4" SEM screws as illustrated in Figures 8 & 9.



**Figure 9 - 3530-25B CPU (with EXPCOM232 Installed)**

8. Route the RS-232 cable through a ¼" conduit fitting (user installed) on the bottom of the enclosure.
9. Connect wiring between the EXPCOM232 Board and the DTE/DCE device to which it is to be interfaced (see Section 2.2).
10. Configure the new network port in the ACCOL Load resident in the host 3530-XXX device.
11. Close and secure the Instrument Front Cover.

### 2.1.1.3 Installation/Removal for Models 3530-35B

To install the optional EXPCOM232 Board into a model 3530-35B, follow steps 1 through 8 below. To remove the optional EXPCOM232 Board, perform step 1 and then follow steps 5 through 7 in reverse order, removing rather than installing the item in question after the system has been shut down.

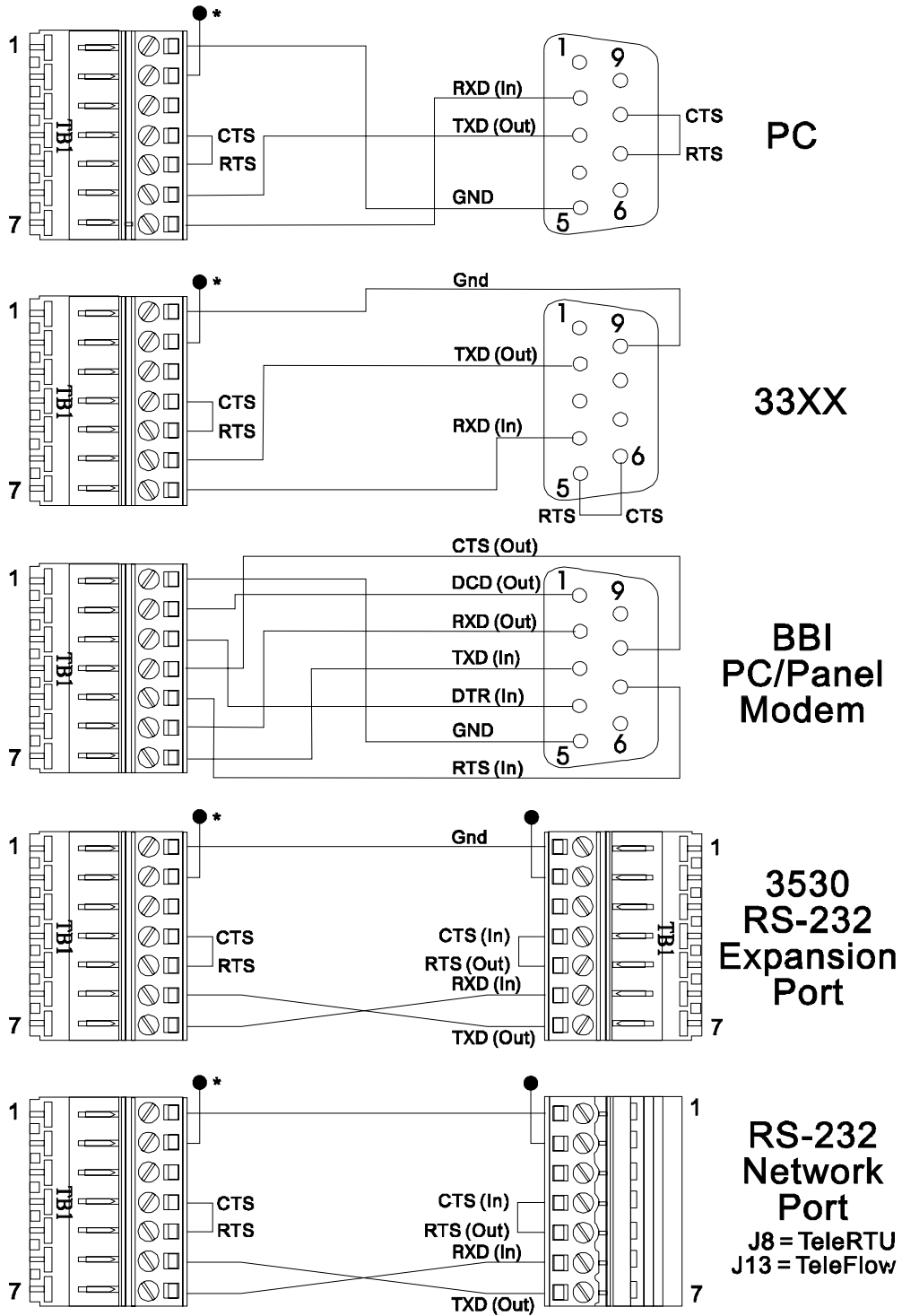
1. Disconnect power by removing harness connector plug P2 from the CPU Board edge connector J2.
2. Unplug the remaining removable Terminal Blocks (with wiring harnesses installed) from the CPU Board's front edge connectors.
3. Remove harness connections from the Front Panel Switch (J14), the Display Module (J16) and the Wakeup Switch (J16).
4. Remove the three screws (of five) that secure the CPU Board to the RTU Mounting Bracket (locations 'A' & 'B' in Figures 2 & 3) and replace these items with the three new #4-40 x 15/32" Standoffs.

**Note:**

***This operation should only be performed in an ESD safe area.***

5. Align the EXPCOM232 Board Connector P1 with CPU Board Connector J18. Push the EXPCOM232 Board toward the CPU Board until Connector P1 is fully seated.





**\* Note:**  
 Pin 2 of TB1 = DCD (Data Carrier Detect). DCD is used to wake-up the 3530-XX, but is not supplied by DTE equipment. An RS-232 level control signal must be supplied to the 3530-XX or TB1-2 may be connected to the EXC signal on the unit's CPU Board.  
 TeleFlow CPU Connector = Pin 7 of J14  
 TeleRTU CPU Connector = Pin 2 of J10 - J13

As long as TB1-2 (DCD) is High, the 3530-XX will remain awake.

Figure 11 - EXPCOM232 Wiring Diagrams

Either an RS-232 level control signal (high) can be supplied to TB1-2, or TB1-2 may be connected to the EXC signal on the CPU Board. It must be noted that as long as TB1-2 (DCD) remains HIGH, the 3530-XXX in question will remain awake. Therefore, if TB1-2 is connected to an EXC signal on the resident CPU Board, power conservation will be defeated, thus reducing the battery back-up time.

RS-232 cables are typically short (20' or less in length). When significant distances are a factor (i.e., between an EXPCOM232 Board and the remote Data Terminal Device (DTE) to which it is desired to communicate), the RS-232 Port (TB1) cable can be connected to the RS-232 Port of a modem or that of a BBI Isolated RS-485 Board (see Table 2-1).

**Table 2-1  
EXPCOM232 Board (DTE) & DCE/DTE - RS-232 Port Pin Assignments**

<b>EXPCOM232 RS-232 – TB1</b>	<b>EXPCOM232 RS-232 TB1 or 3530 Network Port J13/J8</b>	<b>Modem 9-Pin – J4</b>	<b>PC (RS-232)</b>	<b>3310/30/35 3305 3332 Notes 1 &amp; 2</b>	<b>BBI Isolated RS-485 Board Option J1</b>
DTE	DTE	DCE	DTE	DTE	DTE
2 - DCD (In)	-	1 - DCD (Out)	-	-	-
6 - RXD (In)	7 - TXD (Out)	2 - RXD (Out)	3 - TXD (Out)	2 - TXD (Out)	7 - TXD (Out)
7 - TXD (Out)	6 - RXD (In)	3 - TXD (In)	2 - RXD (In)	4 - RXD (In)	6 - RXD (In)
3 - DTR (Out)	-	4 - DTR (In)	-	-	-
1 - GND	1 - GND	5 - GND	5 - GND	9 - GND	1 - GND
-	-	6 - DSR (Out)	-	-	-
5 - RTS (Out)	4 - CTS (In)	7 - RTS (In)	8 - CTS (In)	6 - CTS (In)	4 - CTS (In)
4 - CTS (In)	5 - RTS (Out)	8 - CTS (Out)	7 - RTS (Out)	5 - RTS (Out)	5 - RTS (Out)
-	-	9 - N/A	-	-	-

**Note 1: Ports BIP1 & BIP2**

BIP1 and BIP2 are RS-562 Ports (RS-232 compatible).

**Note 2: 3310 Ports A & C (MFIB Board)**

A & C are RS-423 Ports (RS-232 compatible).

**3330 Ports A, B, C, D, G, H, I & J (Enhanced Comm. Boards)**

ECB's 392587-01-7, 392587-02-5, 392587-03-3 & 392903-01-6

A, B, C, D, G, H, I & J are RS-562 Ports (RS-232 compatible).

**3335 Ports A, B, C, D, I & J (Enhanced Comm. Boards)**

ECB's 392589-01-0 & 392589-02-8

A, B, C, D, I & J are RS-232 Ports

**3335 Ports A, B, C & D (Comm. Engine Boards)**

CEB's 392043-01-7 & 392058-01-4

A, B, C & D are RS-423 Ports (RS-232 compatible)

The device uses compression-type terminals that accommodate up to #14 AWG wire. A connection is made by inserting the bared end (1/4 inch Max.) into the clamp beneath the screw and then securing the screw. Insert the bared end fully to prevent short circuits.

Allow some slack in the wires when making terminal connections. The slack makes the connections more manageable and minimizes mechanical strain on the printed circuit boards and harnesses.

## *Section 3*

# ***SPECIFICATIONS***

---

### **3.1 PERFORMANCE SPECIFICATIONS**

Baud Rate (Max.):	19.2K Asynchronous
Power Requirements:	+5Vdc @ 20mA Max. (Regulated)
Transient Protection:	16V Bi-directional Transient Absorption Zeners across all RS-232 outputs
RS-232 Outputs:	TXD (TB1-7) DTR (TB1-3) RTS (TB1-5)
RS-232 Inputs:	DCD (TB1-2) RXD (TB1-6) CTS (TB1-4)
RS-232 Ground:	GND (TB1-1)
RS-232 Interface Connector:	7-Pin Industrial 3.5mm Pitch Pluggable Connector

### **3.2 ENVIRONMENTAL SPECIFICATIONS**

Operating Temperature:	-40° to +60° (C) [-40° to 140° (F)]
Storage Temperature:	-40° to +85° (C) [-40° to 185° (F)]
Humidity:	15% to 90% RH (Non-Condensing)
ESD Susceptibility:	Meets the requirement of IEC 801-2 for ESD withstand Capability up to 10KV.
EMI Compatibility:	Designed to coexist inside a shielded enclosure with the TeleFlow electronics. EMI radiation is insignificant and Susceptibility is comparable or superior to associated Electronics.
Transient Susceptibility:	Designed to meet the requirements of ANSI/IEEE C37.90.1-1989 (Formerly IEEE 472) for surge withstand Capability.

**Expansion Communications Port RS-232 Board  
Special Instructions for Class I, Division 2 Hazardous Locations**

1. The BBI Expansion Communications Port RS-232 Board is listed by Underwriters Laboratories (UL) as nonincendive and is suitable for use in Class I, Division 2, Groups A, B, C and D hazardous locations or non-hazardous locations only. Read this document carefully before installing a nonincendive BBI Expansion Communications Port RS-232 Board. In the event of a conflict between the Expansion Communications Port RS-232 Board User Manual (PIP-EXP232TF) and this document, always follow the instructions in this document.
2. Wiring must be performed in accordance with Class I, Division 2 wiring methods as defined in Article 501-4 (b) of the National Electrical Code, NFPA 70 for installations within the United States, or as specified in Section 18-152 of the Canadian Electrical Code for installation in Canada.
3. **WARNING: EXPLOSION HAZARD - Substitution of components may impair suitability for use in Class I, Division 2 environments.**
4. **WARNING: EXPLOSION HAZARD - When situated in a hazardous location, turn off power before servicing/replacing the unit and before installing or removing I/O wiring.**
5. **WARNING: EXPLOSION HAZARD - Do Not disconnect equipment unless the power has been switched off or the area is known to be nonhazardous.**

**Expansion Communications Port RS-232 Board for 3530-XXX**  
***Special Instructions for Class I, Division 1 Hazardous Locations***

1. A version of the Expansion Communications Port RS-232 Board is available that is listed by Underwriters Laboratories (UL) as intrinsically safe for use in Class I, Division 1, Groups C and D hazardous locations. Read this document carefully before installing an intrinsically safe Expansion Communications Port RS-232 Board. Refer to the Expansion Communications Port RS-232 Board User's Manual (PIP-EXP232TF) for general information. In the event of a conflict between the Expansion Communications Port RS-232 Board User's Manual and this document, always follow the instructions in this document.
2. Unless the Expansion Communications Port RS-232 Board is used in conjunction with an IStran Communications Interface Assembly (see CI-3530-Istran) it may not be used in a Class I, Division 1 hazardous location.
3. When a TeleFlow equipped with an Expansion Communications Port RS-232 Board is used in a Class I, Division 1 location, it must be used in conjunction with a BBI IStran Communications Interface and installed per instruction manual CI-3530-IStran and PIP-EXP232TF.
4. The IStran and Expansion Communications Port RS-232 Board can be located in a nonhazardous or Division 2 rated area, while the TeleFlow can reside in a Division 1, 2 or nonhazardous area.

A suitable enclosure must be provided for the IStran. When the IStran is mounted in a Division 2 area, the nonhazardous interface connections shall be made in accordance with Article 501-4(b) of the National Electrical Code NFPA 70.

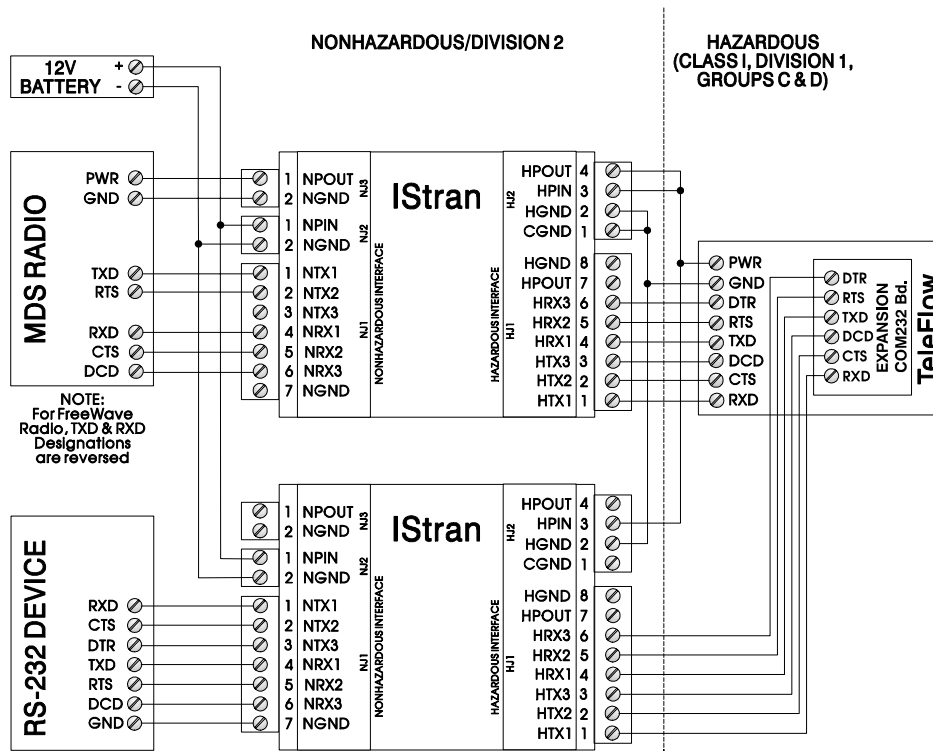
***CAUTION***

*When connecting the IStran and Expansion Communications Port RS-232 Board to a TeleFlow that is mounted in a Division 1 area, wire all circuits using wiring methods specified in article 504 of the National Electrical Code NFPA 70. Contact your IStran supplier for assistance.*

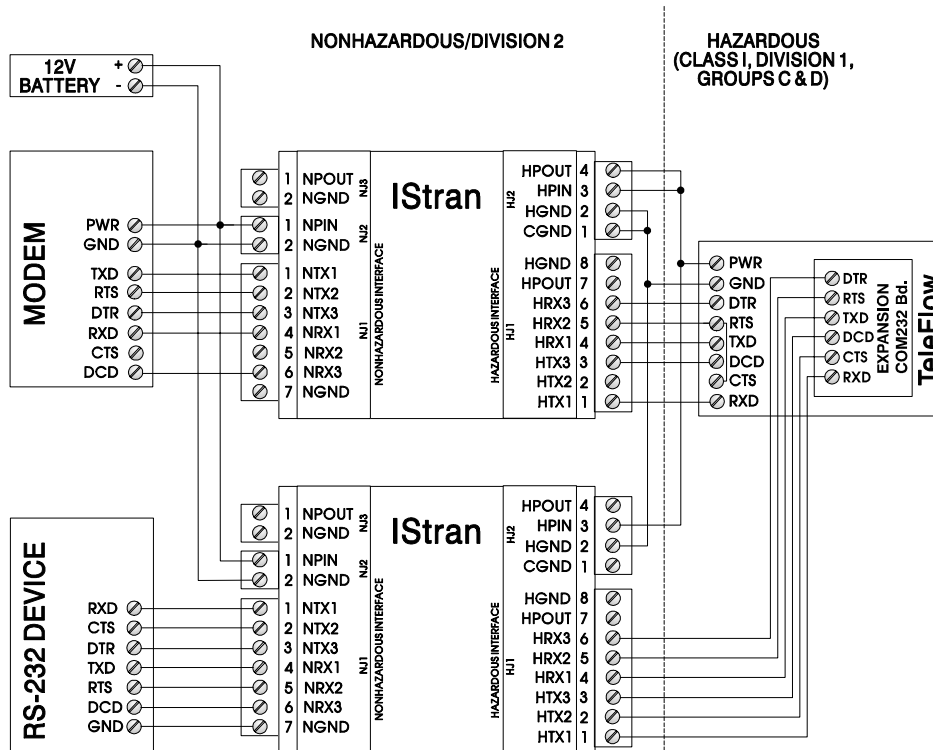
*When installing an Expansion Communications Port RS-232 Board in a TeleFlow that is mounted in a Division 2 area, ensure that the area is nonhazardous before connecting or disconnecting the nonhazardous interface.*

5. Figures B1 through B4 show variations of approved connections to the Expansion Communications Port RS-232 Board via a BBI IStran Communications Interface Assembly.

**Expansion Communications Port RS-232 Board for 3530-XXX  
Special Instructions for Class I, Division 1 Hazardous Locations**

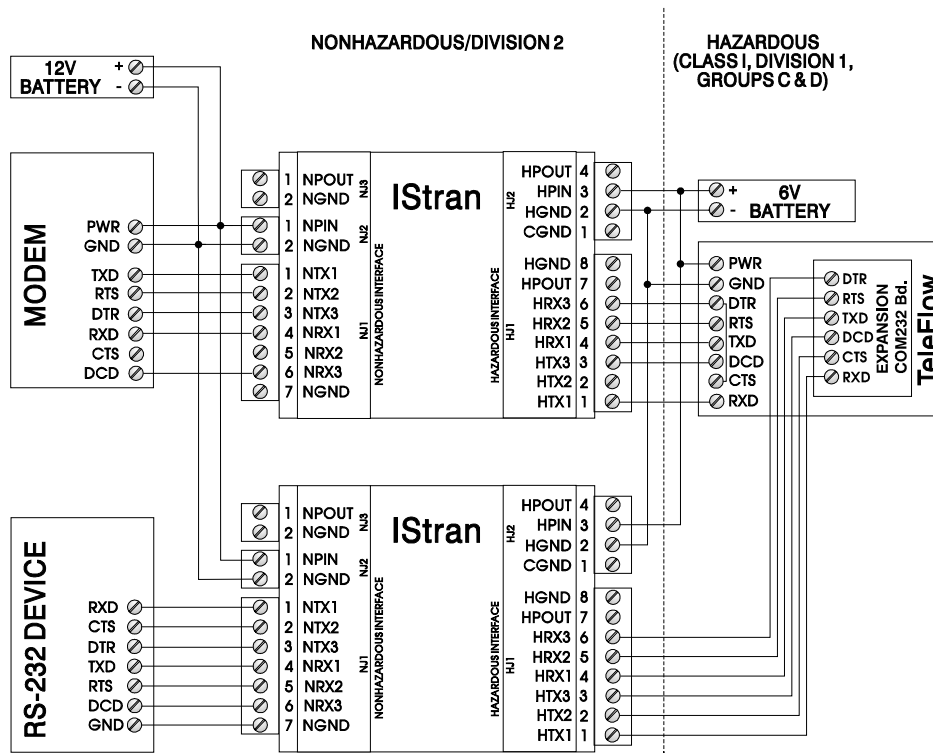


**Figure B1 - Intrinsically Safe System with Radio and EXPCOM232 Board  
(with Single Power Source)**

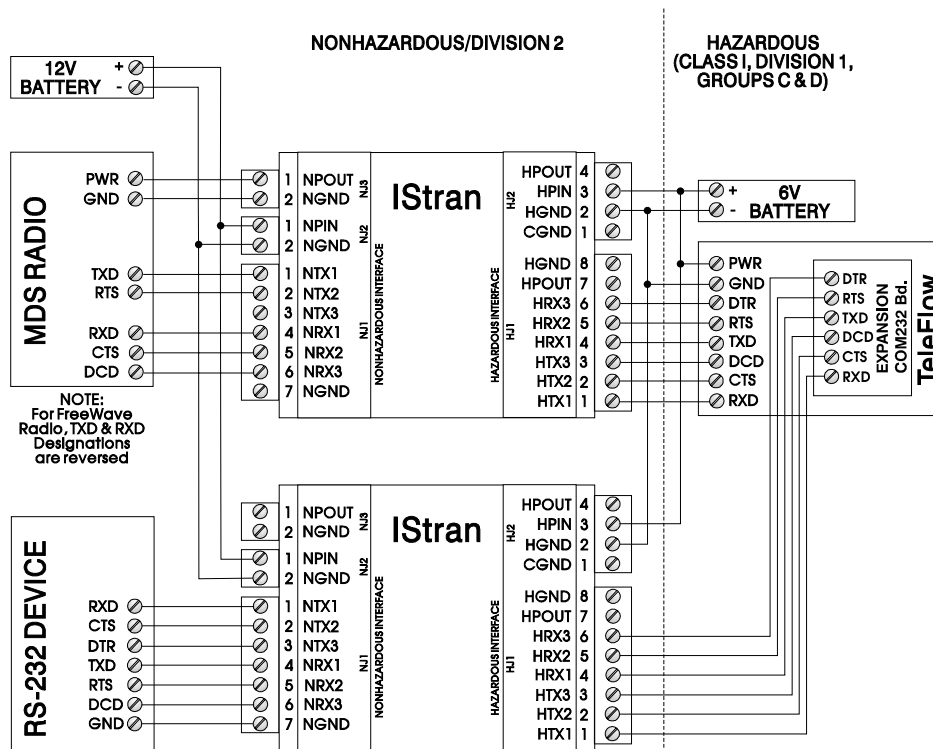


**Figure B2 - Intrinsically Safe System with Modem and EXPCOM232 Board  
(with Single Power Source)**

**Expansion Communications Port RS-232 Board for 3530-XXX  
Special Instructions for Class I, Division 1 Hazardous Locations**



**Figure B3 - Intrinsically Safe System with Modem and EXPCOM232 Board  
(with Independent Power Sources)**



**Figure B4 - Intrinsically Safe System with Radio and EXPCOM232 Board  
(with Independent Power Sources)**



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