

1600 Series LED Remote Display

Models:

- 1601
- 1605
- 1605RF
- 1605T
- 1605T-RF
- 4-in-1 1601
- 777 Traffic Light



Amendment Record

1600 Series LED Remote Display Document 51157

Manufactured by Fairbanks Scales Inc.

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Revision 1	05/2007	Created and released manual.
Revision 2	07/2007	Included 1601 drawings and information. Updated 1605 specifications.
Revision 3	08/2007	Corrected drawings and verbiage.
Revision 4	01/2008	Updated specifications and steps.
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Revision 6	10/2009	Updated parts list.
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Revision 24	04/2025	Updated: General Information; Parts
Revision 25	07/2025	Updated: Installation Added: Appendix III: RF-1605T Channel Address...

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Section 1: General Information

1.1. Introduction

The **Fairbanks 1600 series** is an intelligent LED Remote Display.

- The bright red LED display is easily viewed from distances of **up to 75 feet** for the **1601**, and up to **300 feet** for the **1605**.
 - The unit is equipped with an **Adjustable Intensity Control**.
- The **1600 Series Remote Displays** are housed in a weather-tight enclosure for inside or outside use.
 - The **Reflect Mode** displays the weight information correctly in a mirror.
 - A hooded shield eliminates glare and protects it from debris and weather.
 - There are no moving parts within the Remote Display.
 - The unit can detect the data communication protocols of nearly every scale manufacturer's instruments with a **Programmable Learning Mode**.
- The **1605RF Remote Display** is installed with a **Radio Frequency (RF) Controlled Modem** and comes with a **Stand-alone RF Modem** for the transmitting peripheral device.
 - The system allows for wireless communication between the remote display and a weighing instrument or computer.
- The **1605T Traffic Light** can be configured to work with dry contact relay closure or with serial data from instruments such as FB3000. Refer to the appropriate instrument manual for details.
- The **777 Stop Light** is a separate stand-alone unit that interfaces with a Remote Display and the instrument for a simultaneous **GO/STOP** message.

1.2. Specifications

Display Types	• 1601 Remote Display (27720) — One-and-a-half inch (1.5") High Intensity LED Display 
	• 4-in-1 1601 Remote Display (34249) — Four (4) One-and-a-half inch (1.5") High Intensity LED Displays packaged in a single enclosure — Suitable for pole or wall mounting. 
	• 1605 Remote Display (26575) — Five inch (5") High Intensity LED Display — Six (6) digits with seven (7) segments — Includes decimal and colon 
	• 1605RF Remote Display with RF Interface (31850) — Comes with a factory-installed internal RF Transmitter/Receiver, and a stand-alone RF Transmitter/Receiver. — The system allows for wireless communication between the remote display and a weighing instrument or computer.
	• 1605T Display with Stop Light (29000) — Green circle for GO. — Five inch (5") red "X" for STOP. 
	• 1605T-RF Display with Stop Light and RF Interface (31934) — Green circle for GO. — Five inch (5") red "X" for STOP. — Comes with a factory-installed internal RF Transmitter/Receiver, and a stand-alone RF Transmitter/Receiver. — The system allows for wireless communication between the remote display and a weighing instrument or computer.
	• 777 Stop Light (29001) — Green circle for GO. — Five inch (5") red "X" for STOP. 
Additional Display Features	— Time — Date — Temperature (<i>optional</i>) — Lb. or Kg displays — GR or NT displays
Communication Interface	• RS232, 50 feet maximum • RS485, 4000 feet max • 20mA Current Loop, 1000 feet maximum • Active or Passive • Dry contact relay closure for traffic lights



Frequency Range	902-928 MHz
Program Setup	Automatic or Manual
Viewing Distance	• 1601 – Up to 75 feet • 1605, 1605RF, 1605T, and 1605T-RF – Up to 300 feet
Enclosure	1601 – NEMA 4X 4-in-1 1601 – NEMA 4X 1605, 1605RF, 1605T, 1605T-RF, and 777 – NEMA 3
Temperature Range	-29C to 49C / -20F to 120F
Power	117 VAC, 1A Max

Section 2: Company Service Information

2.1. General Service Policy

Prior to installation, ***always*** verify that the equipment satisfies the customer's requirements as supplied, and as described in this manual.



2.1.1. Conferring with Our Client

- The lead tech must be prepared to recommend the arrangement of components which provide the most efficient layout, utilizing the equipment to the best possible advantage.
- The warranty policy must be explained and reviewed with the customer.

If the equipment cannot satisfy the application and the application cannot be modified to meet the design parameters of the equipment, **the installation should NOT be attempted.**

It is **the customer/operator's responsibility** to ensure the equipment provided by Fairbanks is operated within the parameters of the equipment's specifications and protected from accidental or malicious damage.

Before the installation is considered complete, the equipment is to be programmed to meet or exceed any applicable weights and measures requirements.

2.2. Getting Started

2.2.1. Pre-Installation Checklist

The following points should be checked and discussed with the **Area Sales Manager and/or customer**, if necessary, before the technician goes to the site and installs the equipment.

- ✓ Check the customer's application to make certain it is within the capabilities and design parameters of the equipment.
- ✓ If the installation process might disrupt normal business operations, tell the customer and ask that they make ample arrangements.
- ✓ Is properly grounded power available at the installation location?
- ✓ Be sure that the equipment operator(s) are available for training.
- ✓ The Service Technician must thoroughly review the installation procedures.
- ✓ The service technician reviews the recommended setup with the Area Sales Manager or Area Service Manager, and together they identify all necessary variations to satisfy the customer's particular application.



2.2.2. Unpacking

Follow these guidelines when unpacking all equipment:

- Check in all components and accessories according to the customer's order.
- Remove all components from their packing material, checking against the invoice that they are accounted for and not damaged.
 - Advise the shipper immediately, if damage has occurred.
 - Order any parts necessary to replace those which have been damaged.
 - Keep the shipping container and packing material for future use.
 - Check the packing list.
- Collect all necessary installation manuals for the equipment and accessories.
- Open the equipment and perform an inspection, making certain that all hardware, electrical connections and printed circuit assemblies are secure.
- Do not reinstall the cover if the final installation is to be performed after the pre-installation checkout.
- Keep equipment away from magnetic material or other instruments which use magnets in their design.



2.2.3. Safety

Follow these safety precautions during operation:

- Be careful lifting and moving the remote terminal when installing or repairing it.
- Ensure that the supporting structure for the remote display suits its weight in advance of installation.



2.3. Users' Responsibilities

All electronic and mechanical calibrations and or adjustments required for making this equipment perform to accuracy and operational specifications are considered to be part of the installation.

- They are included in the installation charge.
- Only those charges which are incurred as a result of the equipment's inability to be adjusted or calibrated to performance specifications may be charged to warranty.

The equipment consists of printed circuit assemblies which must be handled using ESD handling procedures and must be replaced as units.

- Replacement of individual components is not allowed.
- The assemblies must be properly packaged in ESD protective material and returned intact for replacement credit per normal procedures.

Absolutely no physical, electrical or program modifications are to be made to this equipment, other than selection of standard options and accessories.

- Electrical connections other than those specified may not be performed, and **physical alterations to the installed unit** (holes, etc.) **are not allowed.**



Section 3: Installation

3.1. Installing the 1605 Remote Display

3.1.1. Introduction

The **1600 Series Display** comes with a mounting bracket on the back of the enclosure.

- The AC power cord exits the enclosure through a watertight gland in the bottom of the case.
- One additional small watertight gland on the left side of the unit is provided for future expansion.
- Two additional watertight glands are provided for the RS232 or 20mA loop cable from the instrument.
- The **Display** can be wall mounted or, using **ACC 1400**, mounted to a pole.
- The **777** can be pole mounted using **Slip-fitter Accessory**, or wall mounted using **Wall Mount Bracket**.

3.1.2. Installation

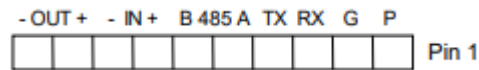
1. Mount the display in its proper designated location.
2. **Remove the four screws** holding the Access Panel and Liquid-tight Glands on the **bottom of the display enclosure**.
3. Bring the **Communications Cable** from the instrument through the Water-tight Gland in the plate from the bottom of the display.
 - Provide enough cable inside the display to reach **TB1** on the **PC Board**.
4. Dress and tin the ends of the **Communications Cable** wires.
5. Remove the **Plug-in Connector** from TB1.
6. Wire the plug as shown in the selected wiring configuration.
7. Insert the **Plug** into **TB1**.
8. **Reinstall the four screws** on the bottom of the display enclosure.

3.2. Wiring the Remote Display

The 1605 Series LED Remote Display can be wired for **20mA Active**, **20mA Passive**, **RS485**, or **RS232**.

NOTE: The following instructions are for wiring a single Remote Display to an instrument. For instructions on connecting multiple displays to one instrument see section **3.6. INSTALLING MULTIPLE DISPLAYS**.

3.2.1. Wiring Configuration, Remote Display



TB1 in 160X RMT

A. Instruments with **PASSIVE 20MA OUTPUT** (polarity sensitive).

INSTRUMENT	160x Remote Display	
	Terminal Block: TB1	
	Pin #	Pin Label
20mA (+)	1	P
20mA (—)	7	IN (+)
	2 } Jumper	G
	8 }	IN (—)

Passive Instrument using the Serial Expansion Card

SERIAL EXPANSION CARD	160x Remote Display	
	Terminal Block: TB1	
	Pin #	Pin Label
TB1-14	1	P
TB1-15	7	IN (+)
	2 } Jumper	G
	8 }	IN (—)

B. Instruments with **ACTIVE 20MA OUTPUT**

INSTRUMENT	160x Remote Display	
	Terminal Block: TB1	
	Pin #	Pin Label
20mA (+)	7	IN (+)
20mA (—)	8	IN (—)

Active Instrument using the Serial Expansion Card

SERIAL EXPANSION CARD	160x Remote Display	
	Terminal Block: TB1	
	Pin #	Pin Label
TB1-15	7	IN (+)
TB1-16	8	IN (—)

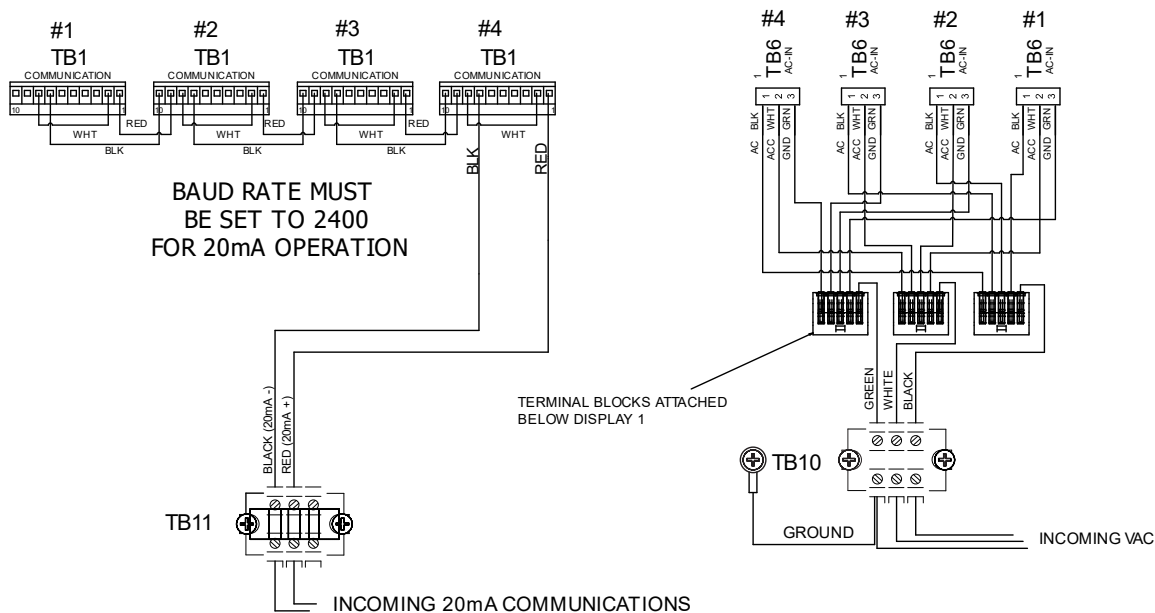
C. Instruments with **RS232 Output**

INSTRUMENT	160x Remote Display	
	Terminal Block: TB1	
	Pin #	Pin Label
GND	2	G
Tx	3	RX

D. Instruments with **RS485 Output**

INSTRUMENT	160x Remote Display	
	Terminal Block: TB1	
	Pin #	Pin Label
GND	2	G
RS485A	5	485A
RS485B	6	485B

3.2.2. Wiring the 4-in-1 1601

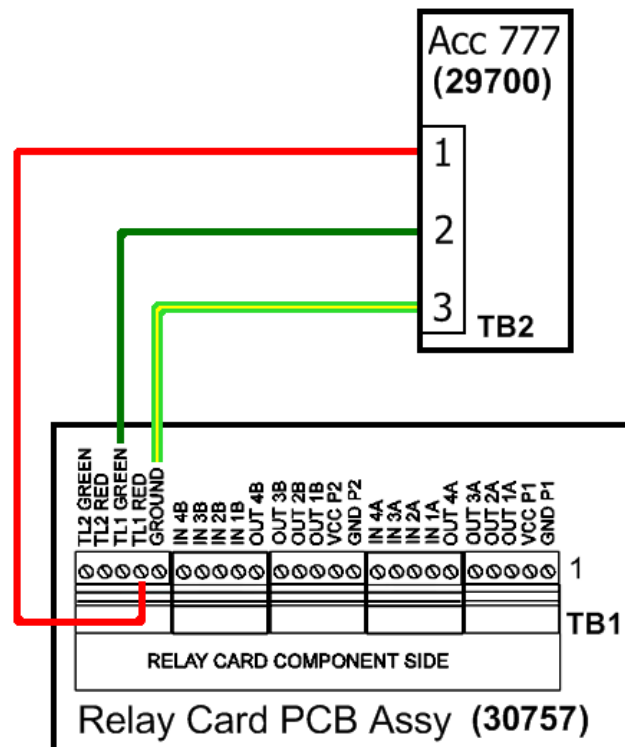


3.2.3. Wiring ACC 777 LED Traffic Light (29001) to FB2550

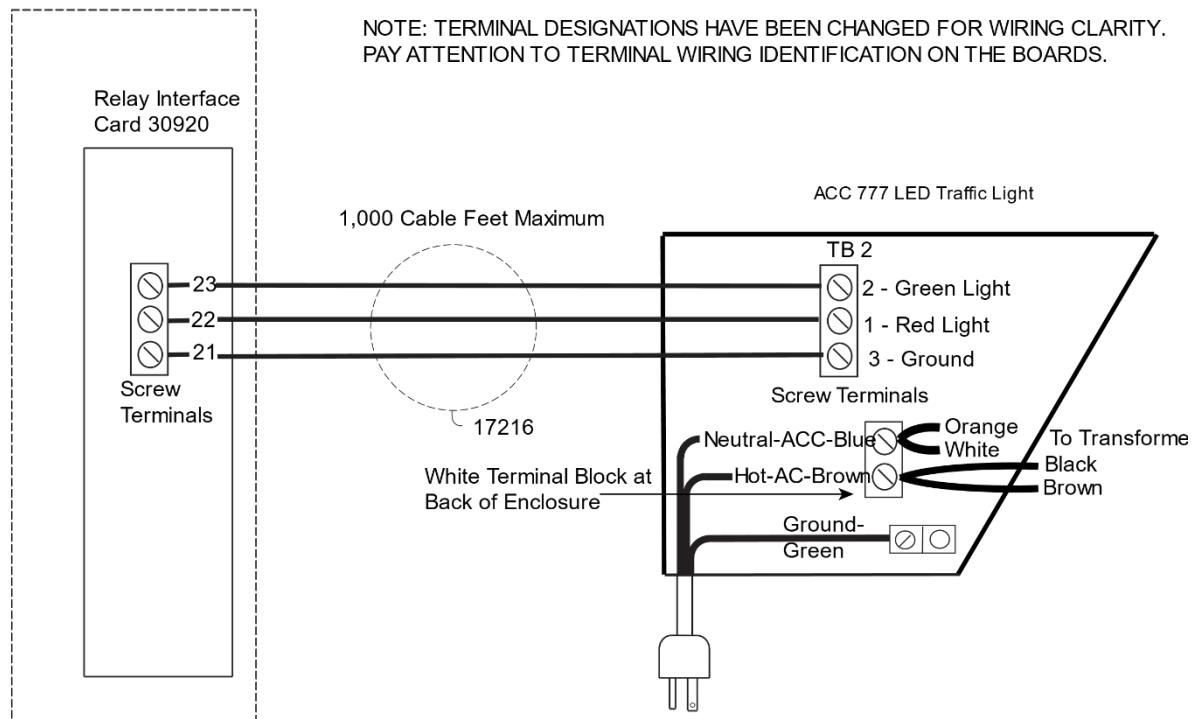
A. Wire the ACC 777 LED Traffic Light according to the chart shown at the right.

- The maximum number of installed **ACC 777s** is **two (2)**.
- **ACC 777 (29700)** is a sub-assembly component within the **Traffic Light (29001)**.
- Requires Relay Interface Accessory (**30920**) to be installed in the FB2550.

TRAFFIC LIGHT CONNECTIONS



3.2.4. ACC 777 AC Power Connections



3.2.5. Wiring ACC 777 LED Traffic Light (29001) to an Existing RMT 160X Remote Display

The table below shows wiring for control wires only. Power to the 777 is shown above in [ACC 777 AC Power Connections](#)

TB2 ACC 777	TB8 RMT 160X
1	3
2	4
3	5

3.2.6. Wiring AC Power to the ACC 777 from the RMT160X

- Remove factory installed wires from TB1 of the ACC 777
- Wire ACC 777 to RMT 160X as shown in the table below:

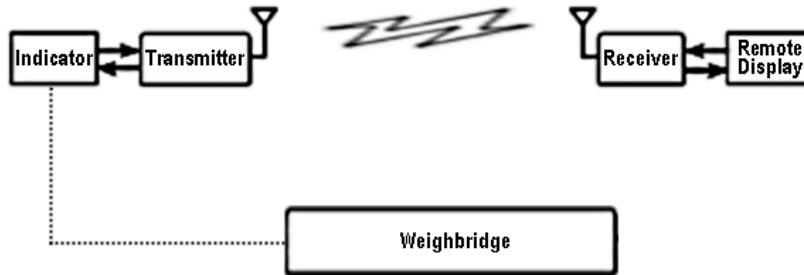
TB1 ACC 777	TB8 RMT 160X
1	1
4	2

3.3. Installing the 1605RF/1605T-RF Remote Display

3.3.1. Introduction

The RF Transmitter/Receiver allows the 1605 (p/n 30981) to display the weightment wirelessly.

— In ideal conditions, the RF Signal transmits up to one thousand feet (1000').



NOTE: It is recommended to program each wireless modem before installing. See [Appendix III: RF-1605T Channel Addressing for XBEE RF Modem \(900HP RS232 & 900HP RS485\)](#)

3.3.2. Installing the **REMOTE DISPLAY** RF Antenna

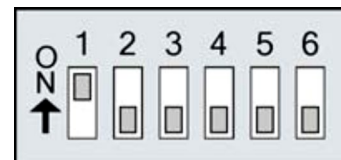
- Mount the 1605RF Remote Display in a similar manner as the model 1605.
 - The Remote Display RF Antenna components are internal, and are factory preinstalled and wired..

TB1 on PCB Assembly (30400)	DB9 on RF Receiver
GND 2	GND 5
RXD 3	TXD 2

NOTE: For complete installation details, see **SECTION 3.1.**

- Remove the **four (4) cover screws** on the RF Transmit/Receiver inside 1605 Remote Display.
- Set the **switch positions** on both RF Transmit/Receiver to those like the image below.

- Switch One** is the only one in the **ON** position. **All others** are **OFF**.



4. Program the **communication settings** on both the Instrument and the Remote Display RF Transmitter/Receivers to match the parameters shown below.

Baud Rate	9600
Data Bits	8
Stop Bits	1
Parity	None

NOTE: Use these settings *ONLY* with the **1605RF/1605T-RF Remote Display**

5. Replace the **cover**, fastening it with the **screws**.
6. Plug in the **DB9 cable** from the RF Antenna to the Remote Display.

3.3.3. Installing the **INSTRUMENT RF Antenna**

1. Set the **switch positions** on both RF Transmit/Receivers to those in **Step 3** above, if equipped.
2. Determine the best instrument RF Antenna position.
 - This will be in a direct line-of-sight to the Remote Display.
 - Follow the distance guidelines shown below:

Indoor/Urban Range	Up to 300 ft.
Outdoor RF Line-of-sight Range	Up to 1000 ft.

3. Cable from instrument to RF modem is to be built in the field, per the following table.

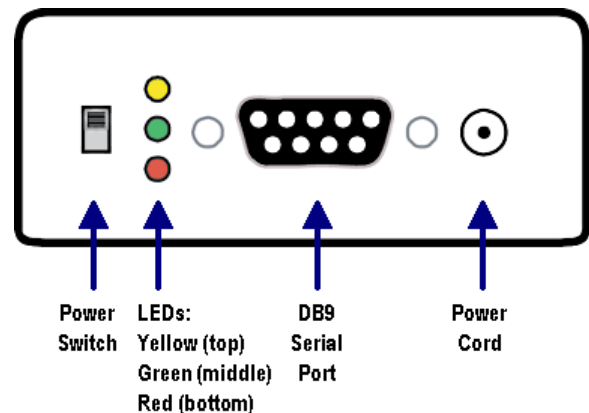
DB9 Instrument	DB9 on RF Receiver
TXD 3	TXD 3
GND 5	TXD 5

4. Position the Antenna in a secure, permanent and protected place.
 - If the signal is blocked between the two antennas by passing vehicles or other obstructions, the transmitted data will be incomplete or corrupted.
5. Hold up the Antenna in its proper position on the wall, then mark the drill holes with a pencil.
6. Drill the appropriate size holes for mounting the external RF Antenna.
7. If needed, insert the wall anchor.
8. Secure the Antenna into position with the four screws.
9. Plug in the **DB9 cable** from the RF Antenna to the Instrument.



3.3.4. Powering Up for RF Unit Test

1. **Apply power** to the Remote Display and to the Instrument.
2. Move the External RF Transmitter/Receiver Power **Switch to ON** (up).



The LEDs on the External RF Transmitter/Receiver indicates the following:		
Yellow		Serial Data Out (to host)
Green		Serial Data In (from host)
Red		Power/TX Instrument

1. The red light is on when the unit is powered.
2. The green LED pulses on/off briefly during RF transmission.

3.4. Wiring Configuration, Traffic Light

The **1605T and 1605T-RF** is shipped with the traffic light connected to the CPU PCB. It operates in this mode when used with a **Fairbanks FB3000 Instrument** with the proper output string in the **Kernel**.

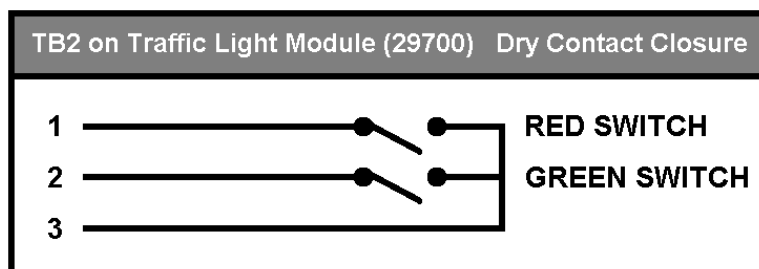
A. Wiring when connected to **ACC 702T Manual Switch (30006)**

TB2 on Traffic Light Module (29700)	TB1 ACC 702T
1	3
2	2
3	1

B. Wiring when connected to **ACC 703 Relay Box (13170)**

TB2 on Traffic Light Module (29700)	TB1 ACC 703
1	3
2	2
3	1

C. Wiring when connected to non-specified relay or switch



3.5. Installing the Optional Temperature Probe

1. Insert the optional **Temperature Probe** into the open **Watertight Gland**, tightening the threads until it is snug.
2. Connect the two (2) **Temperature Probe wires** to TB2.
 - Connections are not polarity sensitive (+ and -), so wires can attach to either terminal.

3.6. Installing Multiple Displays

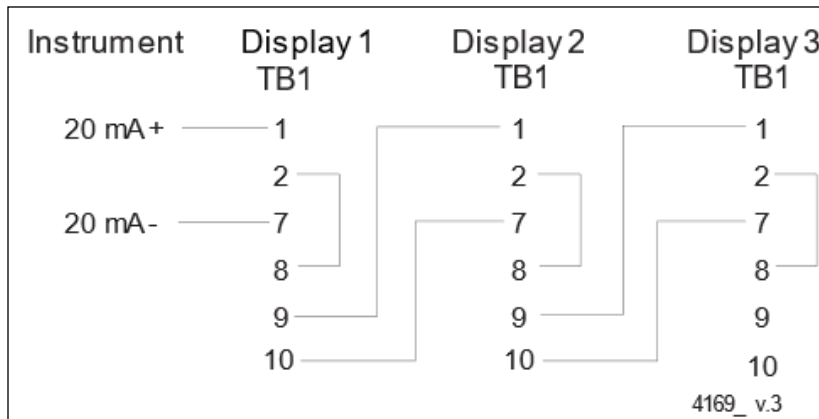
Multiple Displays are Daisy-Chain^{ed} together using either an **Active** or **Passive 20mA Retransmission**.

- Out +	- IN +	B485A	TX	RX	G	P
10	9	8	7	6	5	4
3	2	1				

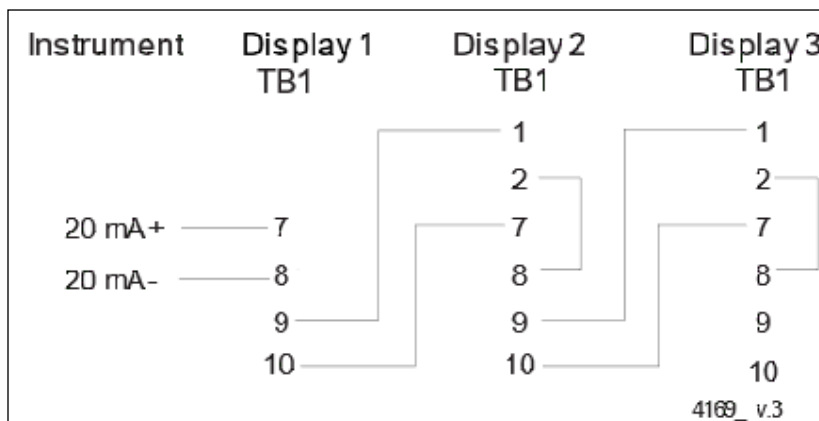
160X Remote: TB1 Layout

3.6.1. 20mA Configuration (using a PASSIVE Instrument)

Additional displays are wired the same as **Display 2** and **Display 3**.

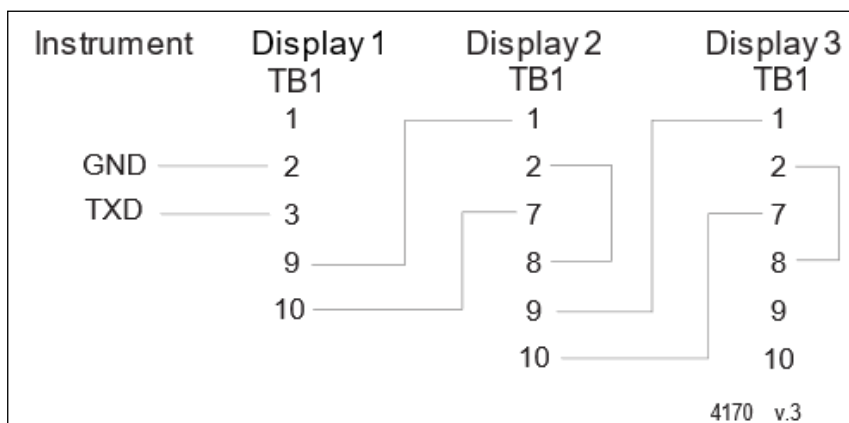


3.6.2. 20mA Configuration (using an ACTIVE Instrument)



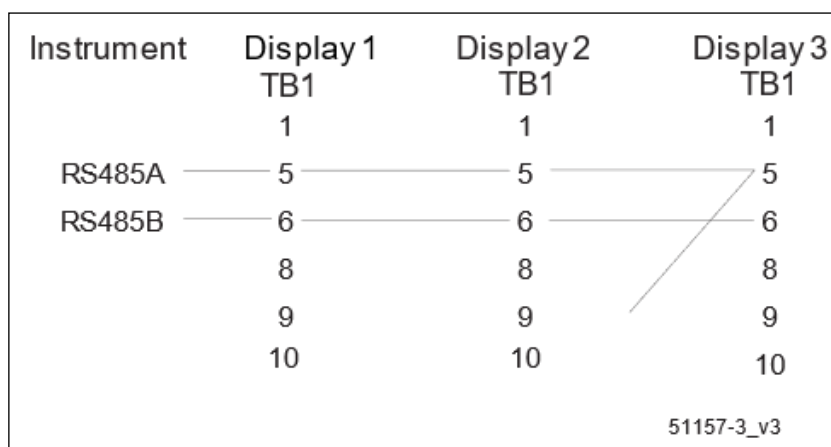
3.6.3. RS232 Configuration

Additional displays are wired the same as **Display 2** and **Display 3**.



3.6.4. RS485 Configuration

When using the **RS485 Configuration**, displays are Daisy-chained together.



3.7. Starting up the Remote Display

1. Turn on the Remote Display.
 - The Remote Display first displays the **Program** and **Revision Number**, then it proceeds through a counting sequence.
 - The intensity of the light changes.
 - The display blanks momentarily, then shows the weight value sent by the instrument.
 - The warm-up sequences are complete, and the Remote Display is ready.



Section 4: Programming

4.1. Accessing the Control Buttons

Programming the Remote Display to perform its daily functions requires pressing the six (6) control buttons on the PCB, located inside the unit.

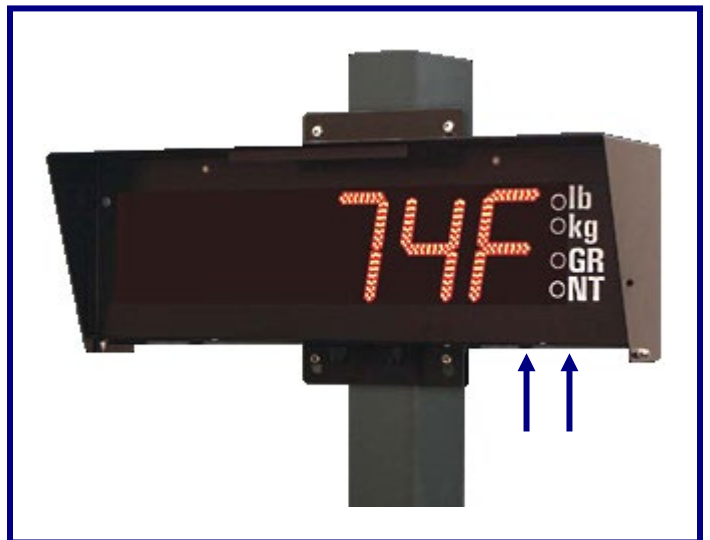
4.1.1. 1601 Remote Display

1. Remove the **two (2) screws** on the **front** of the Display Panel.
2. Carefully drop down the display front to access the Control Buttons



4.1.2. 1605 Remote Display

1. Remove the **four (4) screws** on the **bottom**, opening the access panel.



4.2. Programming with the Buttons

- There are **six switches** located on the PC Board used to program the display.
- **These switches are accessed either through the small door on the under side of the display enclosure or through the front panel.**
- Remove the four fastening screw to open the front panel, then carefully open the display enclosure.

4.2.1. PCB Switch Functions

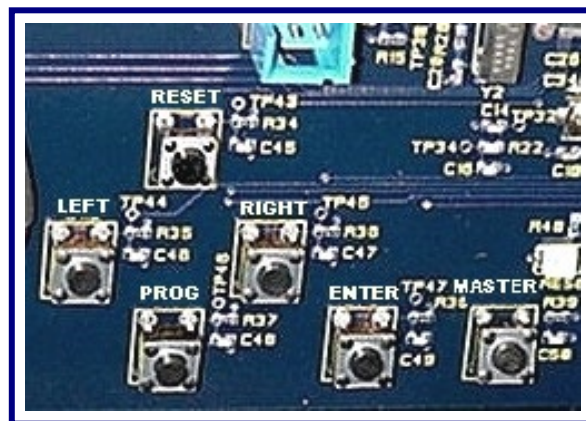
SW1 RESET

Resets the microprocessor and allows the display to go through the **Warm-up Sequence**.

SW2 LEFT

Shifts the displayed data one place to the **LEFT**.

- This switch will also **ADVANCE** to the next program step.



SW3 RIGHT

Shifts the displayed data one place to the **RIGHT**.

- This switch will also **BACKUP** to the previous program step.

SW4 PROG

Allows access for manual programming or auto programming.

SW5 ENTER

Accepts the displayed choice during the programming operation.

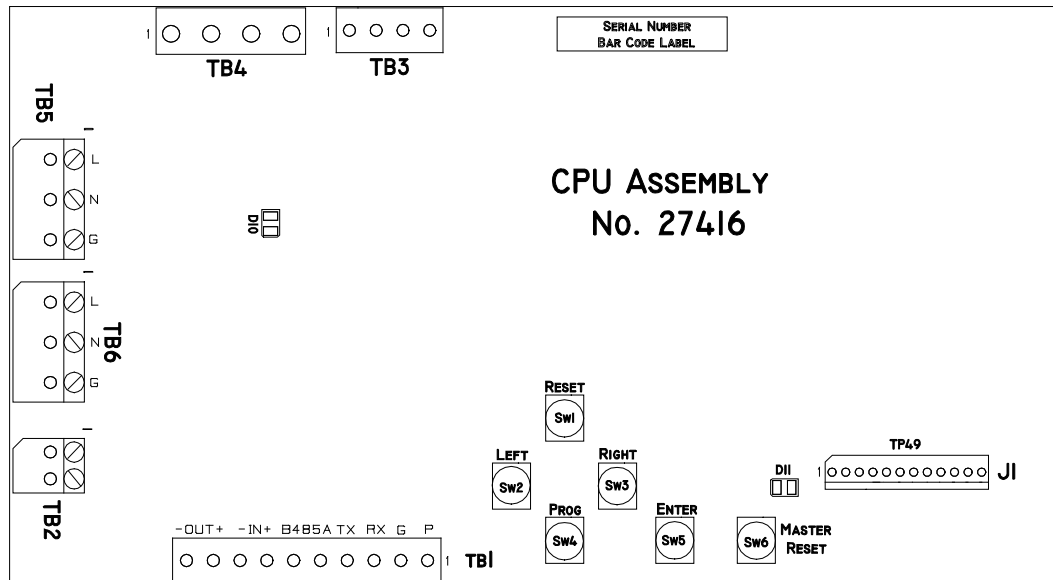
SW6 MASTER RESET

Issues a **Hardware Reset**.

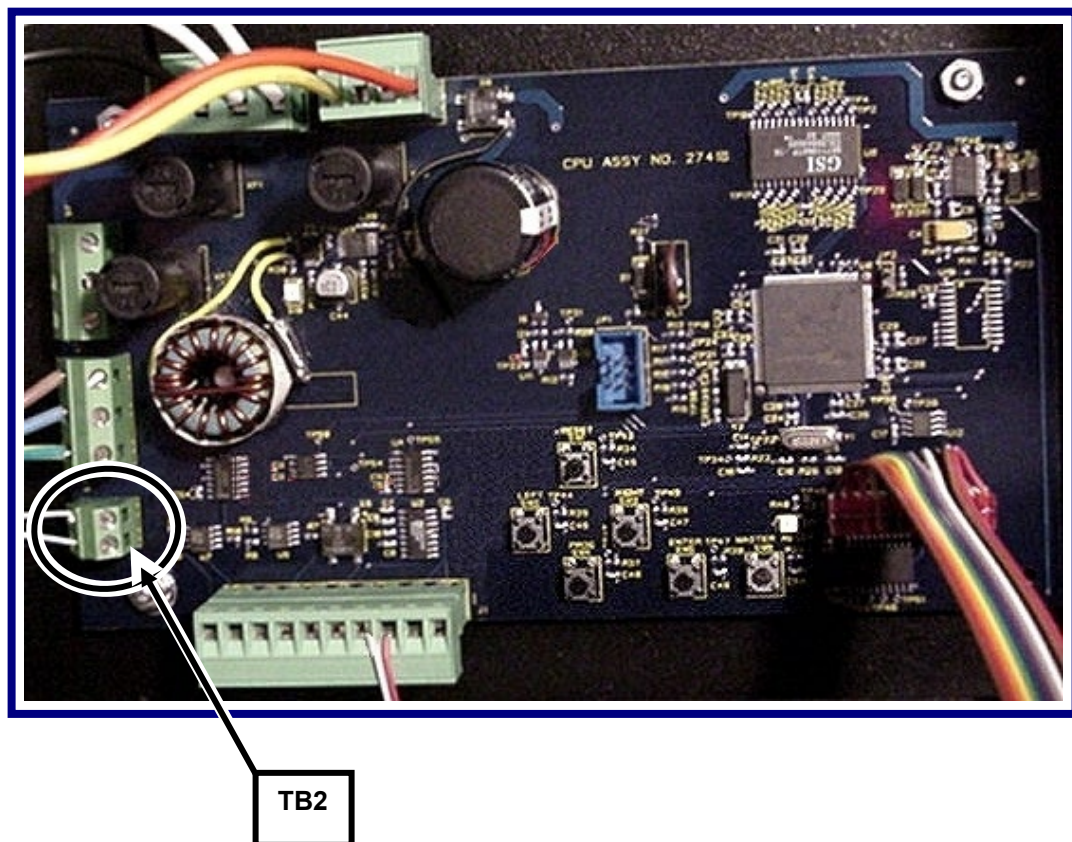
- Currently the same as pressing the **RESET** button.

See the following page for the diagram and accompanying picture.

4.2.1. PCB Switch Functions, Continued



The drawing above shows the formatting buttons and the pertinent I/O plugs.
Pictured below is the actual CPU Assembly.



NOTE: Previous version PCB Card drawing is shown in [Appendix III](#).

4.3. Communications Programming

The **Communications Programming** performs either *automatically* or *manually*.

- When using the **Automatic Mode**, the display automatically tries to determine the communications protocol sent by the instrument during the warm-up sequence.
- Once the protocol is determined, it is stored in memory for future use.
- Protocol parameters include the **Baud Rate**, **Data Bits**, and **Parity**.
- ***It is recommended to use the automatic method first.***
 - If this does not succeed, use the manual method.

4.3.1. Automatic Programming Mode

The instrument interfaced to the **1600 Series Remote Display** must have the following to perform properly.

- The proper port must be configured.
 - The cable must be connected to the appropriate port.
 - For the **Automatic Programming Mode** to work properly, the unit must be placed in the **Continuous Output Mode**.
1. Press the **RESET** switch to start the **Warm-up Sequence**.
 2. During the sequence, press down and hold the **PROG** switch for **three (3) seconds**, and then release.
 - The display continues through the warm-up sequence.
 - The display will start at **9 8 2** and count down searching for a communications match. All other programming is unaffected.

When the Automatic Programming is complete and successful, the current weight is displayed.

4.3.2. Adjusting the Digit Placement

If **Step 4** is successful and weight information is being received, use the **LEFT** and **RIGHT** switches to move the displayed digits to their appropriate location.

NOTE: If **INTELL** is set to **ON** the left and right buttons are inactive.

1. Press the **LEFT** or **RIGHT** switch to shift the displayed data.

If the display shows:



Press:



S3 (Right)



S3 (Right)



Or press:



S1 (Left)



S1 (Left)



50885-1

4.3.3. Display Output Default Setups

The **Remote Display Output** has the following default setups:

- **2400 Baud**
- **Seven (7) Data bits**
- **Odd parity**

4.3.4. Manual Programming Mode

1. Power-up the display.
2. After the warm-up sequence is complete, press and hold the **PROG** switch for **three (3) seconds**, then release.
 - To advance or back up through the program steps, **press the LEFT or RIGHT switch.**
 - To view the stored value, **press the ENTER switch.**

NOTE: *At any time through the formatting process, press the **PROG** switch to exit to **DONE** then press **ENTER** to save and exit.*

3. Press the **LEFT** or **ENTER** switch.
 - The word **BAUD** displays.
4. Press the **ENTER** switch.
 - The current Baud Rate Setting displays (*i.e.* 2400).
5. Use the **LEFT** or **RIGHT** switches to toggle through the available **Baud Rate Settings**.

— 300	— 600	— 1200	
— 2400	— 4800	— 9600	
— 19,200	— 38,400	— 57,600	— 115,200
6. Press the **ENTER** switch to select the appropriate setting.
7. When the abbreviation **CHAR** displays, press the **ENTER** switch.
 - Either a seven (**7**) or an eight (**8**) displays for the current **Data Bits Setting**.
8. Use the **LEFT** or **RIGHT** switches to toggle and select the correct setting.
9. Press the **ENTER** switch to confirm the setting.
 - The word **PARITY** displays.
10. Press the **ENTER** switch and the display will show the current parity setting.
11. Use the **LEFT** or **RIGHT** switches to toggle through the three choices.

— None	— Even	— Odd
--------	--------	-------
12. With the appropriate choice displayed, press the **ENTER** switch.

4.3.4. Manual Programming Mode, Continued

13. The abbreviation **ID** displays, signifying “*Identification.*”

- The **ID Filter** sorts data from a **Data String** from the Instrument.
- The **ID Filter** then displays that Data only.

14. Press the **ENTER** switch

- **ALPH X** displays, where **X** is the current setting.

15. Press the **LEFT** or **RIGHT** switches to toggle through choices.

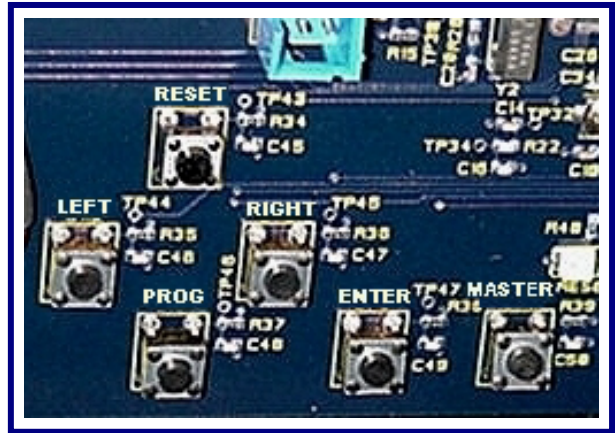
- **Y = Yes N = No.**
 - If **Y** is selected, the display uses **Alpha Characters for the ID.**
 - If **N** is selected, the display uses a **Numeric ID.**
 - See tables on the next page.

16. Press the **ENTER** switch.

- The current **ID Setting** displays.
- The **RIGHT** switch increments the **right digit.**
- The **LEFT** switch increments the **left digit.**

17. Press the **ENTER** switch.

18. With the appropriate choices displayed, press the **ENTER** switch.



Numeric ID Formats

CODE	DATA DISPLAYED
40	Lb. Gross
41	Lb. Net
42	Lb. Tare
43	Kg. Gross
44	Kg. Net
45	Kg. Tare
00	Display all data received

NOTE: The letters **M** and **W** are not displayed.

- The word **INTELL** displays

19. Press the **ENTER** switch.

- The current setting displays either **ON** to automatically justify weight data, or **OFF** to manually justify (**LEFT** and **RIGHT** buttons active).
- Pressing the **LEFT** or **RIGHT** switches toggles the choices.

4.3.4. Manual Programming Mode, Continued

IMPORTANT NOTE: All output strings other than the *Fairbanks Remote Display* will require **INTELL** to be **OFF**

20. Press **ENTER**

- The word **REFLECT** displays.

21. Press the **ENTER** switch.

- The current setting displays either a **YES** for **Reflect, Mirror Viewing** or **NO** for **Normal Viewing**.
- The **Reflect, Mirror Viewing Option** presents the digits in reverse for viewing through the truck mirrors.

22. Pressing the **LEFT** or **RIGHT** switches toggles the choices.

23. Press **ENTER**.

- The word **IDLE** displays.

24. Press the **ENTER** switch.

- The **Current Idle Time-Out Value** (*in seconds*) displays.
- This blanks the weight value *when no valid data is received*.

25. Use the **LEFT** or **RIGHT** switches to select a value between **5-15 seconds**.

26. With the appropriate selection displayed, press the **ENTER** switch.

- The word **INT** displays.

27. Press the **ENTER** switch, and the current setting displays (**20, 40, 60, 80, 100, or AUTO**).

NOTE: On all **1601** remote displays manufactured after 10/1/2023, do **NOT** use the Auto setting.

28. Press the **LEFT/RIGHT** switch to **increase/decrease** the digits' value.

- **AUTO INTENSITY** automatically adjusts the brightness of the display dependent upon ambient light conditions. This setting will max at 80 in bright sunlight.
- *The numeric value represents the percentage of brightness. The larger the number, the brighter the display.*

29. With the desired setting displayed, press the **ENTER** switch.

- The word **COLON** displays.

4.3.4. Manual Programming Mode, Continued

30. Press the **ENTER** switch, and the current **COLON** setting displays.
31. Select **NO**.
 - Only select **YES** if time output from 2500 series instrument is selected.

NOTE: *If selected incorrectly, display errors may occur.*

32. Press the **ENTER** switch.
 - The word **TIME** displays.
33. Press the **ENTER** switch and the current setting displays.
34. Press the **LEFT** or **RIGHT** switches to select either **12hr**, **24hr**, or **NO**.

Select one of the following:

- 35A. Select the Twelve (**12hr**) hour or the Twenty-four (**24hr**) hour setting.
 - Press the **ENTER** switch and the **current time** setting displays.
 - Use the **LEFT** or **RIGHT** switches to change the **hour**.
 - Press the **ENTER** switch when the hour is correct.
 - Use the **LEFT** or **RIGHT** switches to change the **minute**.
 - Press the **ENTER** switch when the minute is correct.
 - Press the **ENTER** switch.
- 35B. Or, select **NO** and follow the steps on the next page.
 - The word **DATE** displays.
 - Press the **ENTER** switch and the **DATE SETTING** displays.

NOTE: *Time output from 2500 Series Instrument will override internal time setting.*

4.3.4. Manual Programming Mode, Continued

36. Press the **LEFT** or **RIGHT** switches to select either **YES** or **NO**.
37. Press the **ENTER** switch.
- If **YES**, the **CURRENT MONTH** displays.
 - Use the **LEFT** or **RIGHT** switches to change the **MONTH**.
 - Press the **ENTER** switch when the month is correct.
 - Use the **LEFT** or **RIGHT** switches to change the **DAY**.
 - Press the **ENTER** switch when the day is correct.
 - Use the **LEFT** or **RIGHT** switches to change the **YEAR**.
 - Press the **ENTER** switch when the year is correct.
 - The word **TEMP** displays to set the option of whether the temperature displays or not.
38. Use the **LEFT** or **RIGHT** switches to select **YES** for displaying the temperature, or **NO** for not displaying the temperature.
- If **YES** is selected, then the *optional* temperature sensor must be installed.
39. Press the **ENTER** switch.
40. If **YES** Use the **LEFT** or **RIGHT** switches to select either **C** (Celsius) or **F** (Fahrenheit) temperature to be displayed.
41. Press the **ENTER** switch.
- The word **ANNUN** displays.
 - **ANNUN** refers to **Annunciator**, which displays whether the scale is programmed for the following:
 - Pounds or Kilograms (lb/kg).
 - Gross Weight or Net Weight (GR/NT).
 - Automatic.
42. Press the **ENTER** switch and the current **Annunciator** setting displays.
43. Press the **LEFT** or **RIGHT** switches to select **YES**, **NO**, **AUTO** or **SCALE**.



4.3.4. Manual Programming Mode, Continued

Select one of the following:

44A. If **YES** is selected, the word **MODE** displays.

1. Press the **ENTER** switch and the word **UNIT** displays.
2. Press the **ENTER** switch, and the current measure of **UNITS** displays.
3. Press the **LEFT** or **RIGHT** switches to select **KG** or **LB**.
4. Press the **ENTER** switch and the word **TYPE** displays.
5. Press the **ENTER** switch and the current setting displays.
6. Press the **LEFT** or **RIGHT** switches to select **TR1**, **TR2**, **GR**, or **NET**.
 - **TR1** mode displays **both** the **Gross** and **Net Weights**.
 - **TR2** mode displays **neither** the **Gross** nor **Net Weights**.
7. Observe the annunciator lights for the setting value.

44B. Selecting **NO** turns off the **Annunciator Display**.

44C. Selecting **AUTO** works only with **ID** set to **“00”**, and changes according to the **ID CODE** sent from the instrument.

44D. Selecting **SCALE** offers a choice of scales **one (1) thru eight (8)** when connected to an FB3000 instrument.

1. Press the **LEFT** or **RIGHT** switches to select the **correct scale number**.

MULTISCALE ID FORMATS								
No 1	No 2	No 3	No 4	No 5	No 6	No 7	No 8	
CODE SENT FROM Instrument								DATA DISPLAYED
40	46	52	58	64	70	76	82	Lb. Gross
41	47	53	59	65	71	77	83	Lb. Net
42	48	54	60	66	72	78	84	Lb. Tare
43	49	55	61	67	73	79	85	Kg. Gross
44	50	56	62	68	74	80	86	Kg. Net
45	51	57	63	69	75	81	87	Kg. Tare

4.3.4. Manual Programming Mode, Continued

45. Press the **ENTER** switch and the word **TEST** displays.

46. Press the **ENTER** switch to display **DIGIT**.

Select one of the following:

47a. To test **LED digits**, press the **ENTER** switch and the *left-most digit* turns on.

a. Use the **LEFT** or **RIGHT** switches to display any of the six digits.

b. Press the **ENTER** switch to return to the **TEST** selections.

47b. To test the display intensity, press the **LEFT** or **RIGHT** switches to display **A2D**.

a. Press the **ENTER** switch.

b. Counts from the **A2D** for the light sensor are displayed.

c. To check **A2D operation**, increase and decrease light intensity on the annunciator panel between the **KG** and **GR** labels.

d. Press the **ENTER** switch to return to the **TEST** selections.

47c. To revert to the factory default settings, press the **LEFT** or **RIGHT** switches to display **DEFAULT**.

a. Press the **ENTER** switch and **RUSURE** displays.

b. Press the **ENTER** switch to set defaults, or press the **LEFT** or **RIGHT** switches to return to the **TEST** selections.

c. The word **DEFAULT** displays, and the unit returns to the **TEST** selections.

48. Press the **PROG** switch to exit the **TEST** selections.

— **DONE** displays.

49. Press the **ENTER** switch to be finished with the setup, or use the **LEFT** or **RIGHT** switches to cycle back through the program steps.

— The word **STORE** displays.

4.3.4. Manual Programming Mode, Continued

50. Press the **PROG** switch to toggle the display between **STORE** and **CANCEL**.

- The **STORE** selection keeps the program changes.
- The **CANCEL** selection **does not** store the changes made.

51. Press the **ENTER** switch.

- The word **SAVED** flashes if **STORE** is selected, saving the changes, and then returning to the **Normal Mode**.

IMPORTANT NOTE: *All the changes are lost if **CANCEL** is selected, and then the display returns to the **Normal Mode**.*

Section 5: Service & Maintenance

5.1. Receive / Warning

There is a **green LED Display** located by the switches on the PC Board that **verifies the data flow in the system.**

- The **LED blinks on and off continuously**, indicating it has a “**live connection.**”
 - This indicates the **data is being received.**
- When the display is **not receiving data** from the instrument, it becomes “blank”.
- If the display **receives invalid data** from the instrument, it becomes “blank”.
 - Invalid data is data without a string terminator.
 - Proper string terminators are **CR** (carriage return), **LF** (line feed), **ETX** (end of text), or **EOT** (end of transmission).

5.2. RF Transmitter/Receiver Will Not Transmit

If the Instrument does not detect the RF Transmitter/Receiver, the problem may be in the **Power Adapter.**

- The red power LED on the RF Transmitter/Receiver will be on.
- When a message is transmitted to the Remote Display, the yellow and green lights do not flicker simultaneously.

The solution is to replace the **RF Transmitter/Receiver Power Adapter.**

- The adapter output is **9VDC at 500mA.**

5.3. VOLTAGE Test

Unloaded voltage measurement for the 20 mA loop.

MODEL	TB1-1 TO TB1-2
218, 218T, 218RF	23 VDC
218 1.5”	14.5 VDC

5.4. Factory Default Settings

This process will load the Factory Default settings into the remote display's configuration programming.

1. Load the Factory Default settings by holding the left and right buttons down while pressing the **Master Reset** button or applying power.
 - **"FACT"** will display.
2. Press the **Master Reset** button again or reset the power at this time.

Section 6: Parts

6.1. Model 1601 (27720)

6.1.1. Model 1601 Parts List

ITEM	PART NO.	QTY	DESCRIPTION
1	27723	1	ENCLOSURE ASSEMBLY
2	27722	1	FRONT PANEL ASSEMBLY
3	27719	1	WINDOW
5	27714	1	BRACKET
6	30400*	1	CPU PCB ASSEMBLY
7	28040	1	LED DISPLAY PCB ASSEMBLY
9			
10	15435	1	POWER CORD ASSY
11			
12	27106	1	CABLE ASSY
13	27109	1	CABLE ASSY, GROUND
14	17545	2	CONNECTOR, LIQUIDTIGHT .75
15	15651	2	O-RING - FOR .75
16	17534	1	CONNECTOR, LIQUIDTIGHT .75
17	12342	1	O-RING - FOR .75
18	12609	2	ROD, NYLON
19			
20			
21	27727	1	OVERLAY, LEGEND 1601
22	27432C	1	BLOCK, TERMINAL PLUG 10 POS XTB1
23			
25			
26	27715	1	GASKET, TOP
27	27716	1	GASKET, BOTTOM

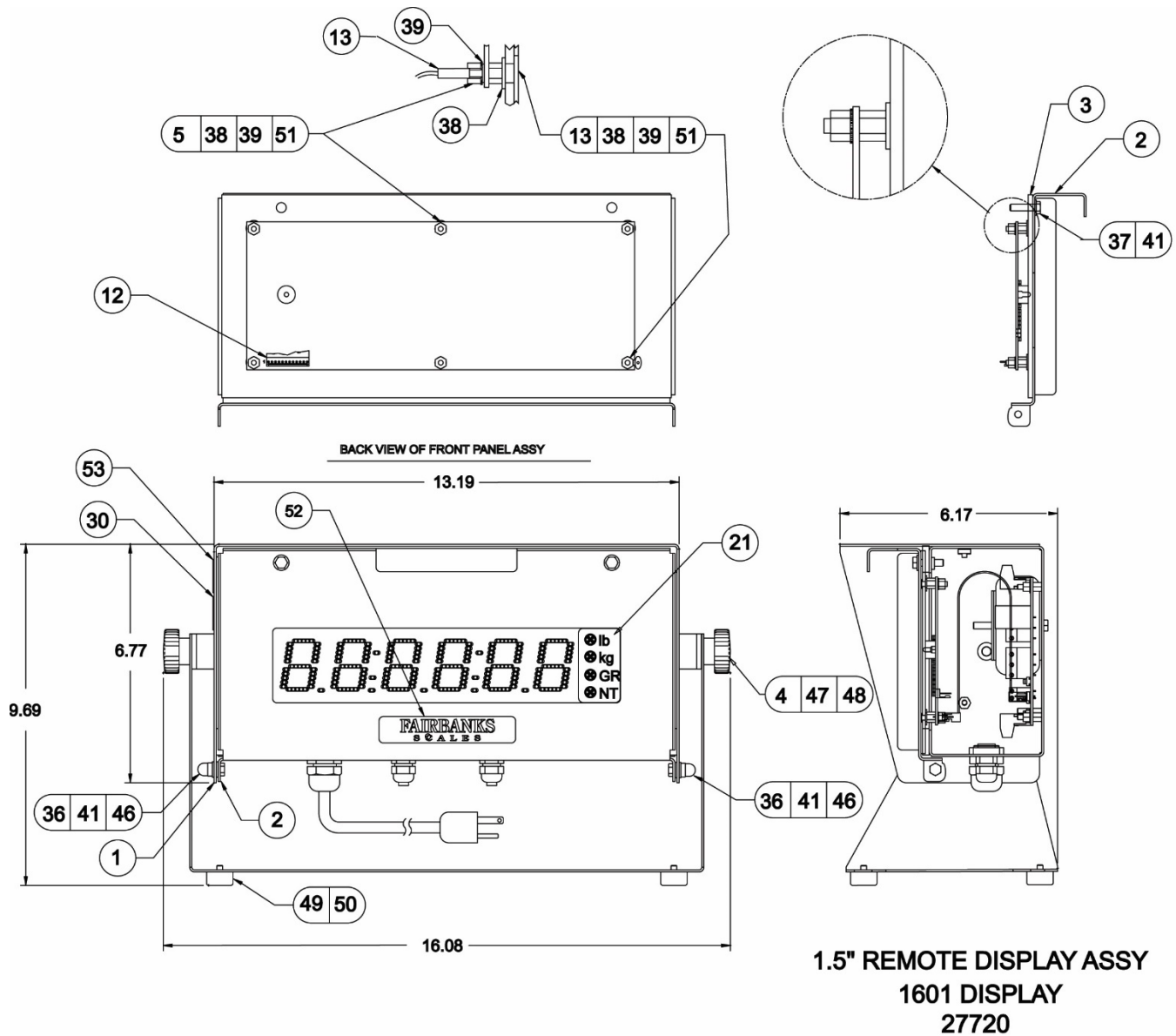
* Previous CPU PCB Assembly model number is **27416**.

6.1.1. Model 1601 Parts List, Continued

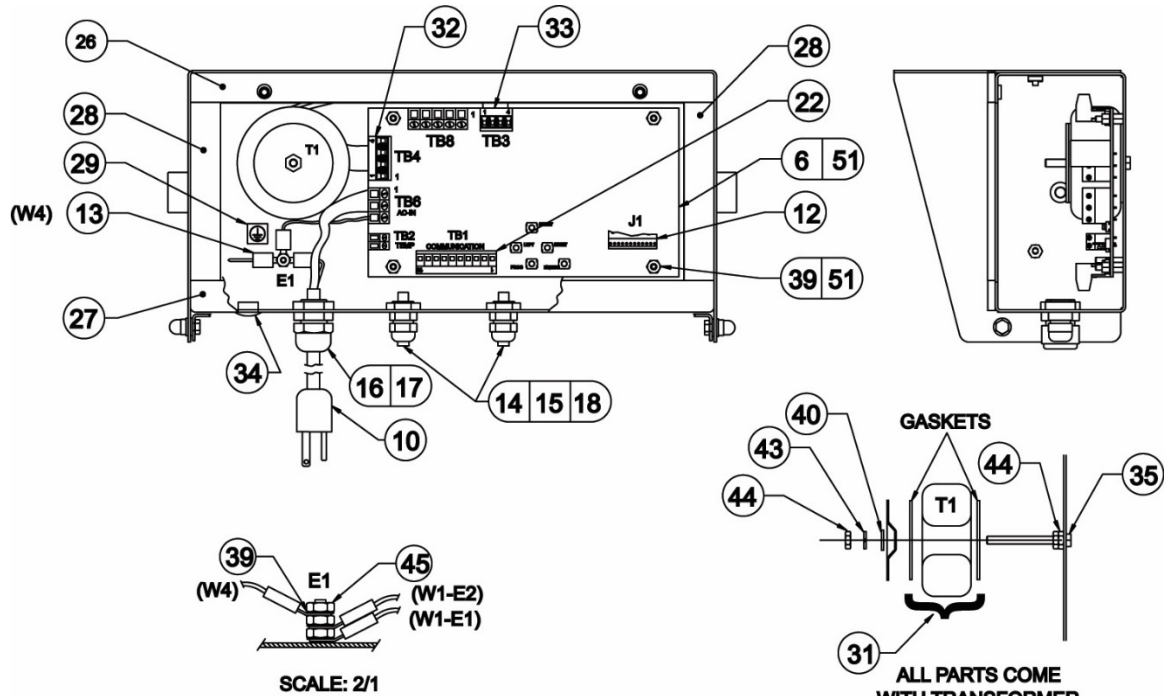
ITEM	PART NO.	QTY	DESCRIPTION
28	27717	2	GASKET, SIDE
29			
30			
31	28229	1	TRANSFORMER
32	17521	1	PLUG, TERMINAL 4 POS .295 C-C
33	27434C	1	PLUG, TERMINAL 4 POS .197 C-C
34	14225	1	PLUG, HOLE .50 DIA.
35	11073	1	SCREW-CAP-HEX HD. 10-24 X 2.00
36	11075	2	SCREW-CAP-HEX HD. 10-32 X .50
37	11076	2	SCREW-CAP-HEX HD. 10-32 X .75
38	10310	6	WASHER-FLAT NO. 6
39	11191	13	WASHER-LOCK-EXT. TOOTH NO. 6
40	11192	1	WASHER-FLAT NO. 10
41	11495	6	WASHER-PLAIN (NYLON) NO. 10
42			
43	11092	1	WASHER-LOCK-MED-SPRING NO. 10
44	11099	3	NUT-HEX 10-24
45	11102	13	NUT-HEX 6-32
46	15716	2	NUT, THREAD-LOCK ACORN 10-32
47	15745	2	KNOB
48	12621	2	WASHER, RETAINER
49	12103	4	FOOT
50	11134	4	SCREW-MACH-PH-PHIL 8-32 X .31
51	17507	20	SPACER, HEX 6-32 THDS. X .19 LONG
52	11226	1	NAMEPLATE
53	27726	1	NAMEPLATE-DATA FOR TAG ON SH 1
54			
55	13486	1	CONNECTOR KIT, DB9 ACC 334
*	27428C	2	FUSE 2A F1, F2
*	27429C	1	FUSE 6.3A F3

* Parts not shown in diagram.

6.1.2. Model 1601 Parts Diagram



6.1.2. Model 1601 Parts Diagram, Continued



SCALE: 2/1

TRANSFORMER ASSY MOUNTING DETAIL

1.5" REMOTE DISPLAY ASSY
1601 DISPLAY
27720

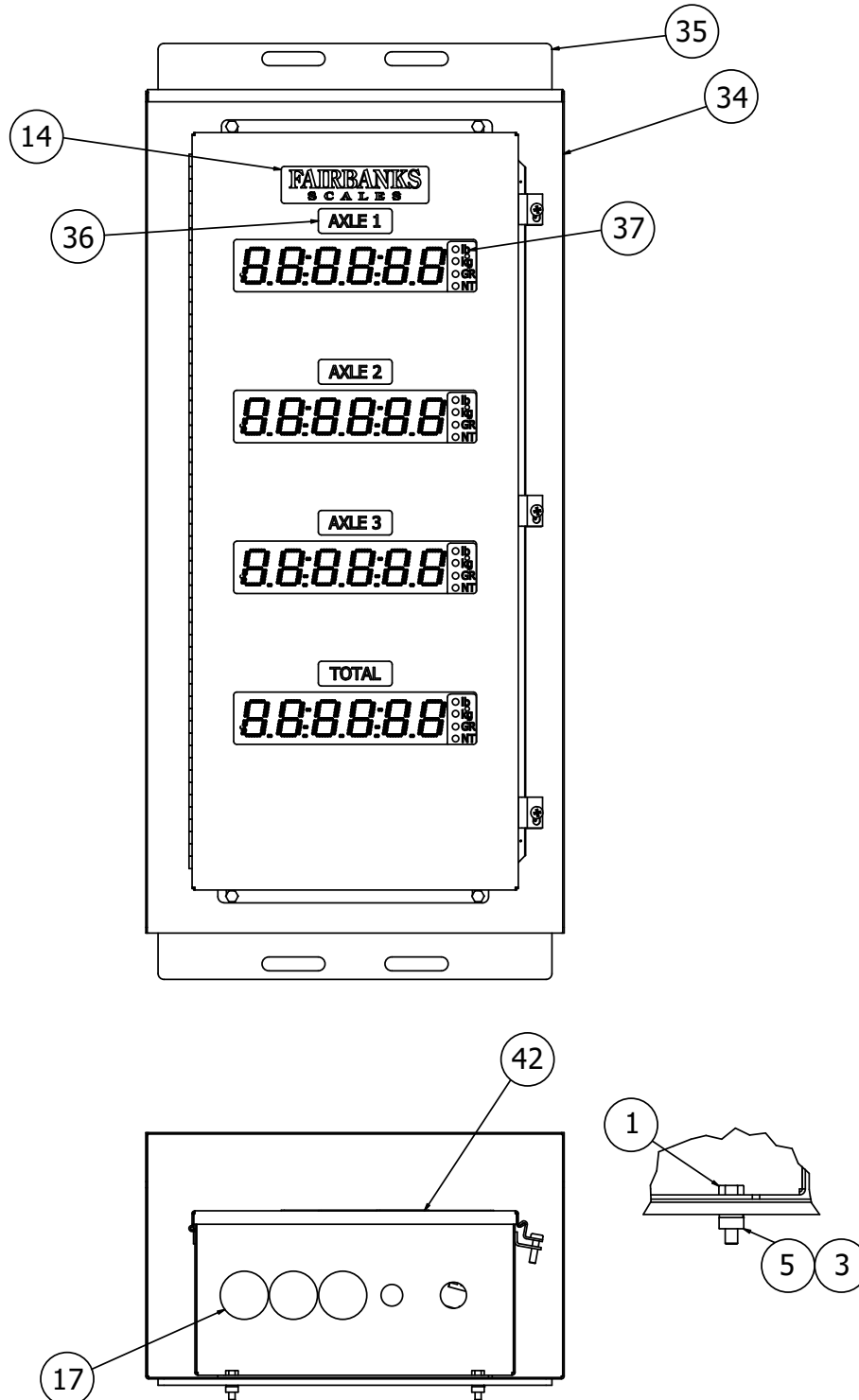
6.2. Model 4-in-1 1601 (34249)

6.2.1. Model 4-in-1 1601 Parts List

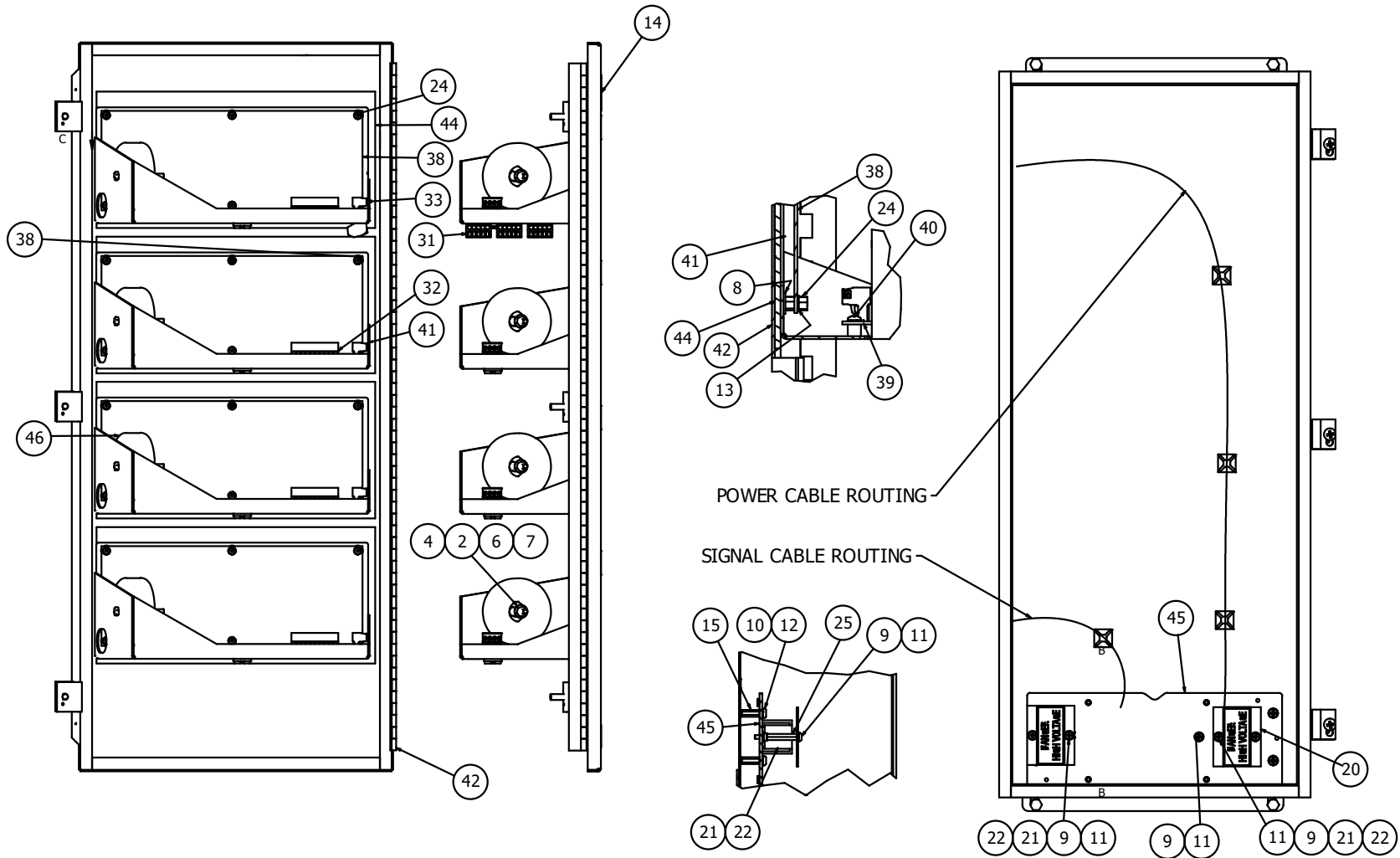
ITEM	PART NO.	QTY	DESCRIPTION
1	11048	4	SCREW, CAP, SS, 1/4-20 X 1.00
2	11073	4	SCREW, HEX HD, SS, 10/24 X 2.00
3	11091	4	WASHER, LOCK, MED SPRING, SS 1/4"
4	11092	4	WASHER, LOCK, MED SPRING SS, #10
5	11098	4	NUT, 1/4-20, HEX, SS
6	11099	12	NUT, HEX, SS 10/24
7	11119	4	WASHER-PLAIN #10 SS
8	11124	24	WASHER, FLAT, PLAIN, SS, #6
9	11138	5	SCREW, PH, SS 8-32 X .375
10	11161	4	SCREW, PH, PHIL, 10-32 X .38 SS
11	11188	5	WASHER, LOCK, EXTERNAL TOOTH, #8 SS
12	11189	4	WASHER, LOCK, EXT TTH #10, SS
13	11191	24	WASHER, LOCK, EXT TTH, SS, #6
14	11224	1	NAMEPLATE, 6 X 1.5 SS
15	12001	4	SPACER, 10-32 X 3/4"
17	14827	3	LABEL, HOLE SEAL, H90-5150
20	16228	2	COVER, TERMINAL BLOCK, HIGH VOLTAGE
21	17501	6	BLOCK, TERMINAL, GK6
22	17502	2	BLOCK, TERMINAL, END GK6B
23	17521	4	PLUG, TERMINAL, 4 POS. .295 CTR-CTR
24	17597	52	SPACER, HEX, 6-32 X .19, .25 HEX, ALUMINUM
25	17611	4	SPACER, HEX, .250 ALUMINUM, M/F, 1.25 8-32
28	23797	1	GROUND LUG, #8 TO BARE LEAD, GREEN, 5"
31	27106	4	CABLE ASSY, DISPLAY
32	27432C	4	BLOCK, TERMINAL PLUG, 10 POS 5MM SPACING
33	27434C	4	BLOCK, TERMINAL PLUG, 4 POSITION 5MM SPACING
34	27633Q	1	SHROUD, WEATHER
35	27634Q	1	PLATE, POLE MOUNT FOR 3, 4, 5 INCH POLE
36	27635Q	1	LABEL, AXLES AND TOTAL, SET
37	27727	4	OVERLAY, LEGEND 1601 1.5
38	28040	4	PCB, ASSY, LED DISPLAY (1.5)
39	30400	4	PCB, ASSY, CPU, 1601
41	34246Q	4	PLATE, MOUNTING, PCB, RMT 1601 MULTI DISPLAY
42	34248Q	1	BOX, ASSY, RMT 1601 MULTI DISPLAY
44	36553Q	4	PANEL, DISPLAY WINDOW, MODIFIED FOR QUAD DISPLAY
45	36768Q	1	PLATE, HEATER MOUNTING, QUAD 1601 DISPLAY
46	39406	4	TRANSFORMER, TOROID 10V WITH EXTENDED LEADS

47	39407	3	WIRING HARNESS, 20 mA, QUAD DISPLAY 23 INCH
48	39408	1	WIRING HARNESS, 20 mA INPUT, QUAD DISPLAY 36 INCH
49	39409	1	WIRING HARNESS, AC POWER FOR QUAD 1601

6.2.2. Model 4-in-1 1601 Parts Diagram



6.2.2. Model 4-in-1 1601 Parts Diagram, Continued



6.3. Model 1605 (26575)

6.3.1. Model 1605 Parts List

ITEM	PART NO.	QTY	DESCRIPTION
1	26571	1	ENCLOSURE ASSEMBLY (OLD STYLE, HINGE ON SHROUD)
"	37700	1	ENCLOSURE ASSEMBLY (HINGE ON ENCLOSURE)
2	26568	1	FRONT PANEL ASSEMBLY
3	26569	1	WINDOW
5	27212	2	LED DISPLAY PCB ASSEMBLY
6	30400*	1	CPU PCB ASSEMBLY
7	27531	1	ANNUNCIATOR PCB ASSEMBLY
8	27721	1	FOAM SPACER
10	15435	1	POWER CORD ASSEMBLY
11	27105	2	CABLE ASSEMBLY
12	27106	1	CABLE ASSEMBLY
13	27109	1	GROUND CABLE ASSEMBLY
14	17545	2	LIQUID TIGHT CONNECTOR 0.50
15	15651	2	O-RING FOR 0.50
16	17534	2	LIQUID TIGHT CONNECTOR 0.75
17	12342	2	O-RING FOR 0.75
18	12609	3	NYLON ROD
20	26570	1	ACCESS DOOR
21	27107	1	LEGEND OVERLAY
22	27432C	1	TERMINAL BLOCK PLUG 10 POSITION
24	11660	4	HEX SPACER 6-32 THDS X 0.25 LONG
26	26572	1	TOP GASKET
27	16573	1	BOTTOM GASKET
28	16574	2	SIDE GASKET
30	26563	1	TRANSFORMER MOUNTING PLATE
31	27656	1	TRANSFORMER
32	17521	1	TERMINAL PLUG 4-POS 0.295 C-C
33	27434C	1	TERMINAL PLUG 4-POS 0.197 C-C
34	14225	1	HOLE PLUG 0.50 DIA.
36	11075	6	SCREW-CAP-HEX HD. 1032 X 0.50
37	11076	4	SCREW-CAP-HEX HD. 1032 X 0.75
38	10310	14	WASHER-FLAT
39	11191	25	WASHER-LOCK-EXT. TOOTH NO. 6
41	11495	12	WASHER-PLAIN (NYLON) NO. 10
42	25715	8	WASHER-RETAINING NO. 10
44	17597	14	SPACER 6-32 X 0.19

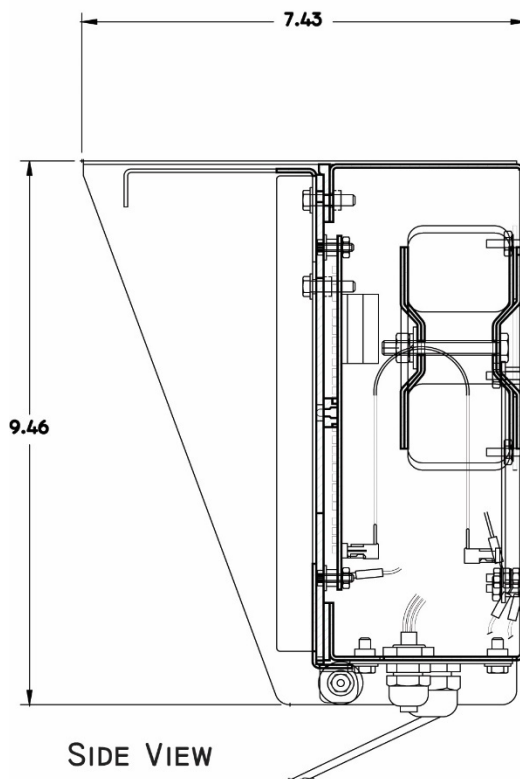
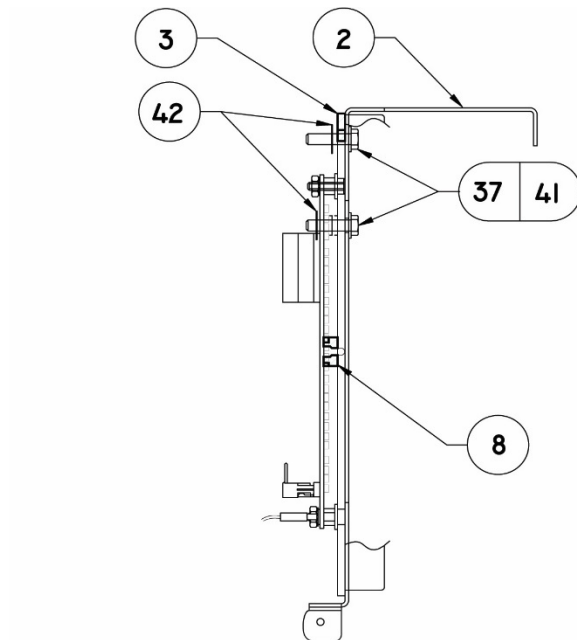
45	11102	25	HEX NUT 6-32
46	15716	2	THREAD-LOCK ACORN NUT 10-32
52	11224	1	NAMEPLATE
53	27108	1	NAMEPLATE
**	51157	1	MANUAL
**	13486	1	CONNECTOR KIT, DB9 ACC 334
**	27428C	2	FUSE 2A F1, F2
**	27429C	1	FUSE 6.3A F3

* Previous **CPU PCB Assembly** model number is **27416**.

** Not pictured in the following Parts Diagrams.

[illegible]

6.2.2. Model 1605 Parts Diagram, Continued



5" REMOTE DISPLAY ASSY
1605 DISPLAY
51157-1

6.4. Model 1605RF (30981)

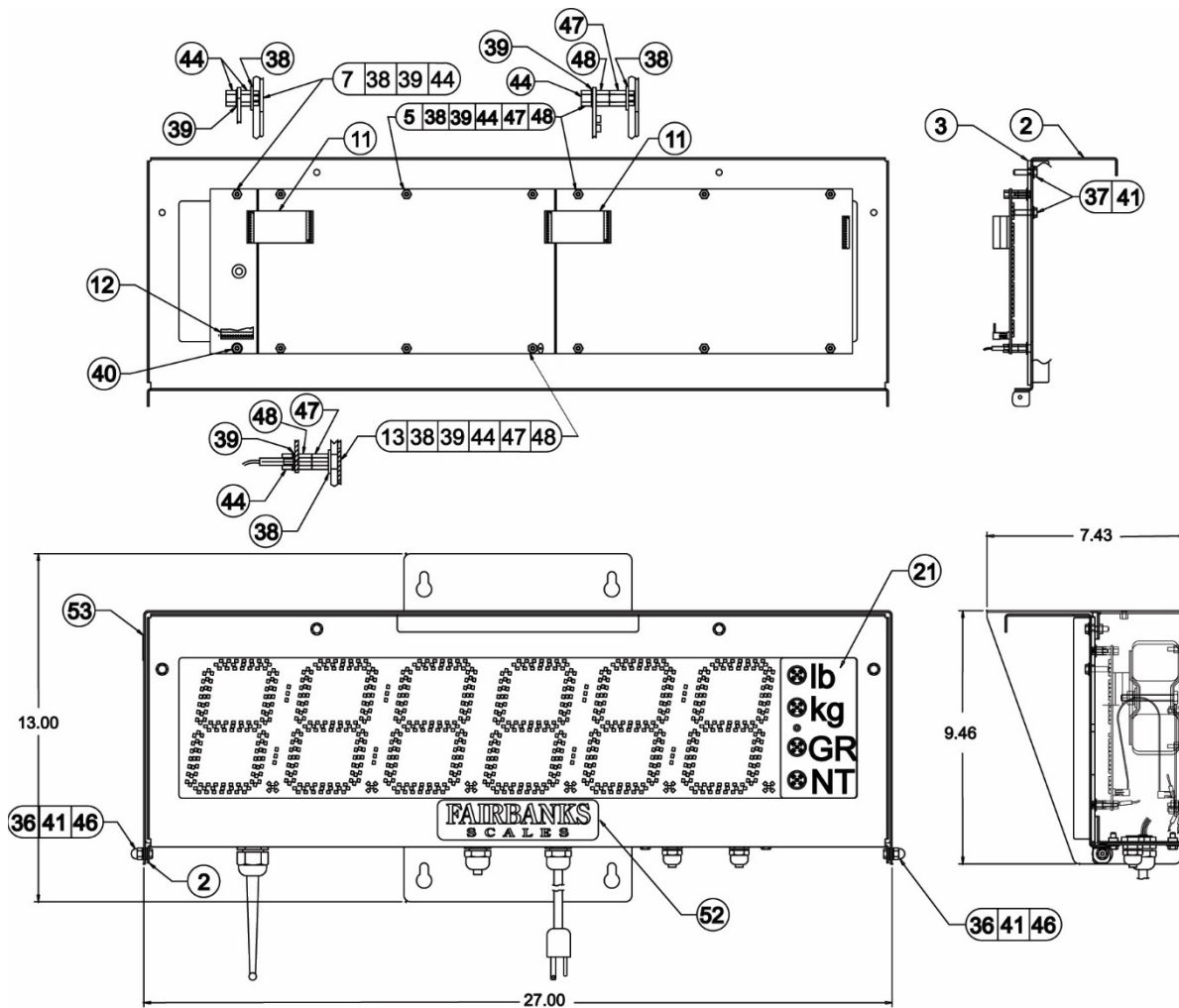
6.4.1. Model 1605RF Parts List

ITEM	PART NO.	QTY	DESCRIPTION
1	26567	1	ENCLOSURE WELDMENT (OLD STYLE, HINGE ON SHROUD)
"	37700	1	ENCLOSURE ASSEMBLY (HINGE ON ENCLOSURE)
2	26568	1	FRONT PANEL ASSEMBLY
3	26569	1	WINDOW
5	27212	2	LED DISPLAY PCB ASSEMBLY DS1, DS2
6	30400	1	CPU PCB ASSEMBLY A1
7	27531	1	ANNUNCIATOR PCB ASSEMBLY DS3
8	34986	2	RF MODEM - RS232 XBEE 900 Mhz
10	15435	1	POWER CORD ASSEMBLY W1
11	27105	2	CABLE ASSEMBLY W2, W3
12	27106	1	CABLE ASSEMBLY W5
13	27109	1	GROUND CABLE ASSEMBLY W4
14	17545	2	LIQUID TIGHT CONNECTOR 0.50
15	15651	2	O-RING FOR 0.50
16	17534	2	LIQUID TIGHT CONNECTOR 0.75
17	12342	2	O-RING FOR 0.75
18	12609	3	NYLON ROD
19	12011	1	NYLON ROD
20	26570	1	ACCESS DOOR
21	27107	1	LEGEND OVERLAY
22	27432C	1	TERMINAL BLOCK PLUG 10 POSITION
23	30984	2	RF MODEM CLAMP
24	14721	6.5 IN	VELCRO, LOOP (CUT INTO 5.00" AND 1.50 LENGTHS)
25	14722	6.5 IN	VELCRO, LOOP (CUT INTO 5.00" AND 1.50 LENGTHS)
26	26572	1	TOP GASKET
27	26573	1	BOTTOM GASKET
28	26574	2	SIDE GASKET
29	29932	1	CLAMP, POWER SUPPLY
30	26563	1	TRANSFORMER MOUNTING PLATE
31	27656	1	TRANSFORMER T1
32	17521	1	TERMINAL PLUG 4-POS 0.295 C-C XTB4
33	27434C	1	TERMINAL PLUG 4-POS 0.197 C-C XTB3
34	14225	1	HOLE PLUG 0.50 DIA.

6.3.1. Model 1605RF Parts List, Continued

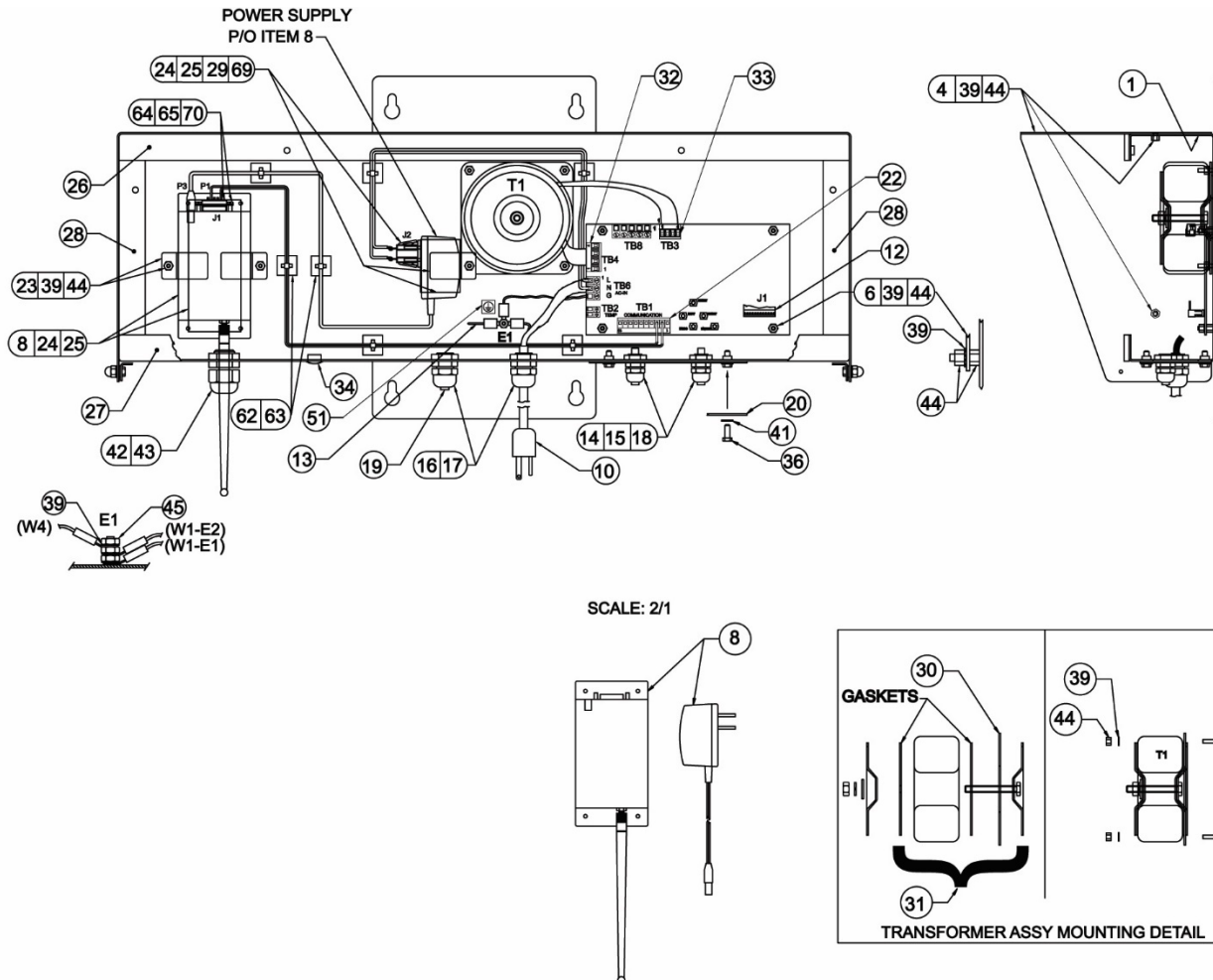
ITEM	PART NO.	QTY	DESCRIPTION
36	11075	6	SCREW-CAP-HEX HD. 1032 X 0.50
37	11076	4	SCREW-CAP-HEX HD. 1032 X 0.75
38	10310	14	WASHER, FLAT NO. 6
39	11191	30	WASHER, LOCK, EXT. TOOTH NO. 6
40	11339	1	WASHER, PLAIN (NYLON) NO. 8
41	11495	12	WASHER-PLAIN (NYLON) NO. 10
42	18455	1	CONNECTOR, LIQUIDTIGHT
43	18454	1	O-RING
44	17597	34	SPACER, HEX 6-32 THDS X .19 LONG
45	11102	3	NUT-HEX 6-32
46	15716	2	NUT, THREADLOCK ACORN 10-32
47	11662	12	SPACER, HEX 6-32 THDS X .31 LONG
48	17586	12	STANDOFF, HEX, M/F 6-32 THDS X .25 LONG
51	24366	1	LABEL, GROUND SYMBOL
52	11224	1	NAMEPLATE
53	**27108	1	NAMEPLATE **SAME AS 27108 EXCEPT ASSY NO. IS 30981, AND THE MODEL NUMBER IS RMT-1605-RF
55	13486	1	CONNECTOR KIT DB9 ACC 334
62	17613	7	TIE, WIRE
63	17617	7	MOUNT, CABLE TIE, SELF ADHESIVE
64	10888	2	SCREW, MACH, PH, PHIL 4-40 X .19
65	10919	2	WASHER, LOCK, INT. TOOTH NO. 4
69	31508	1	CABLE ASSY, POWER W6
70	31509	1	CABLE ASSY, COMMUNICATION W7

6.4.2. Model 1605RF Parts Diagram, Exterior



REMOTE DISPLAY ASSY (5")
WITH RF
RMT-1605-RF
30981

6.4.3. Model 1605RF Parts Diagram, Interior



**REMOTE DISPLAY ASSY (5")
WITH RF LINK
RMT-1605-RF
30981**

6.5. Model 1605T (29000)

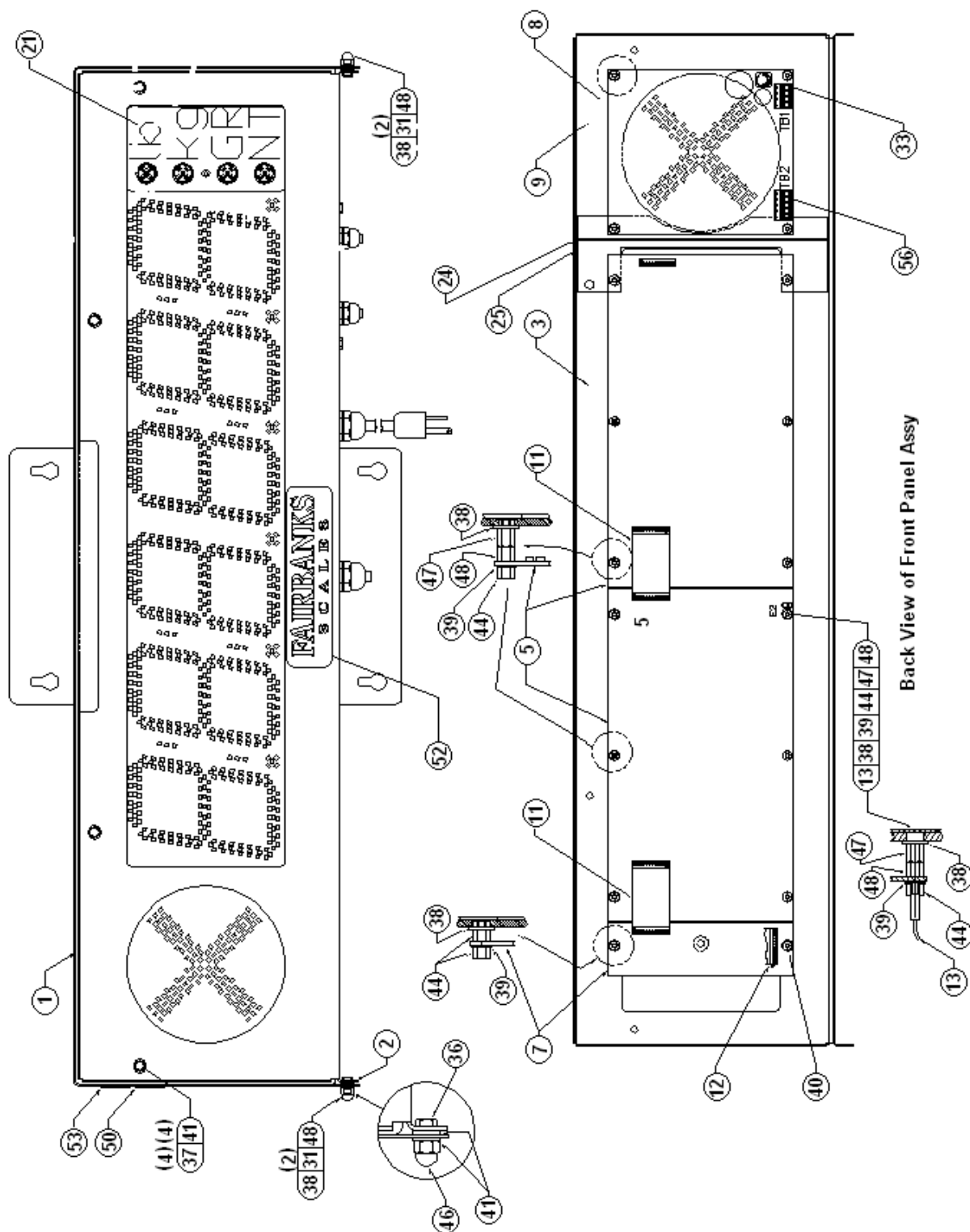
6.5.1. Model 1605T Parts List

ITEM	PART NO.	QTY	DESCRIPTION
1	28986	1	ENCLOSURE WELDMENT (OLD STYLE, HINGE ON SHROUD)
2	37940	1	ENCLOSURE WELDMENT (HINGE ON ENCLOSURE)
3	28991	1	WINDOW, LARGE
4	28987	2	SHROUD ASSY
5	27212	2	PCB ASSY, LED DISPLAY DS1, DS2
6	30400	1	PCB ASSY, CPU A1
7	27531	1	PCB ASSY, ANNUNCIATOR DS3
8	29700	1	PCB ASSY, TRAFFIC LIGHT MODULE
9	28992	1	WINDOW, SMALL
10	15435	1	POWER CORD ASSY W1
11	27105	2	CABLE ASSY W2, W3
12	27106	1	CABLE ASSY W5
13	27109	1	CABLE ASSY, GROUND W4
14	17545	2	CONNECTOR, LIQUIDTIGHT .50
15	15651	2	O-RING FOR .50
16	17534	2	CONNECTOR, LIQUIDTIGHT .75
17	12342	2	O-RING FOR .75
18	12609	2	ROD, NYLON .25 DIA X 1.00
19	12011	1	ROD, NYLON .375 DIA X 1.00
20	26570	1	DOOR, ACCESS
21	27107	1	OVERLAY, LEGEND
22	27432C	1	BLOCK, TERMINAL, PLUG 10 POS XTB1
23	29772	1	CABLE ASSY
24	13223	AR	ADHESIVE, SEALANT RTV
25	29780	1	BRACKET, WINDOW
26	28993	1	GASKET, TOP
27	28994	1	GASKET, BOTTOM
28	26574	2	GASKET, SIDE
29			
30	26563	1	PLATE, TRANSFORMER MOUNTING
31	27656	1	TRANSFORMER T1
32	17521	1	BLOCK, TERMINAL, PLUG 4 POS .295 C-C XTB4
33	27434C	1	BLOCK, TERMINAL PLUG 4 POS .197 C-C XTB3
34	14225	1	PLUG, HOLE .50 DIA
35			

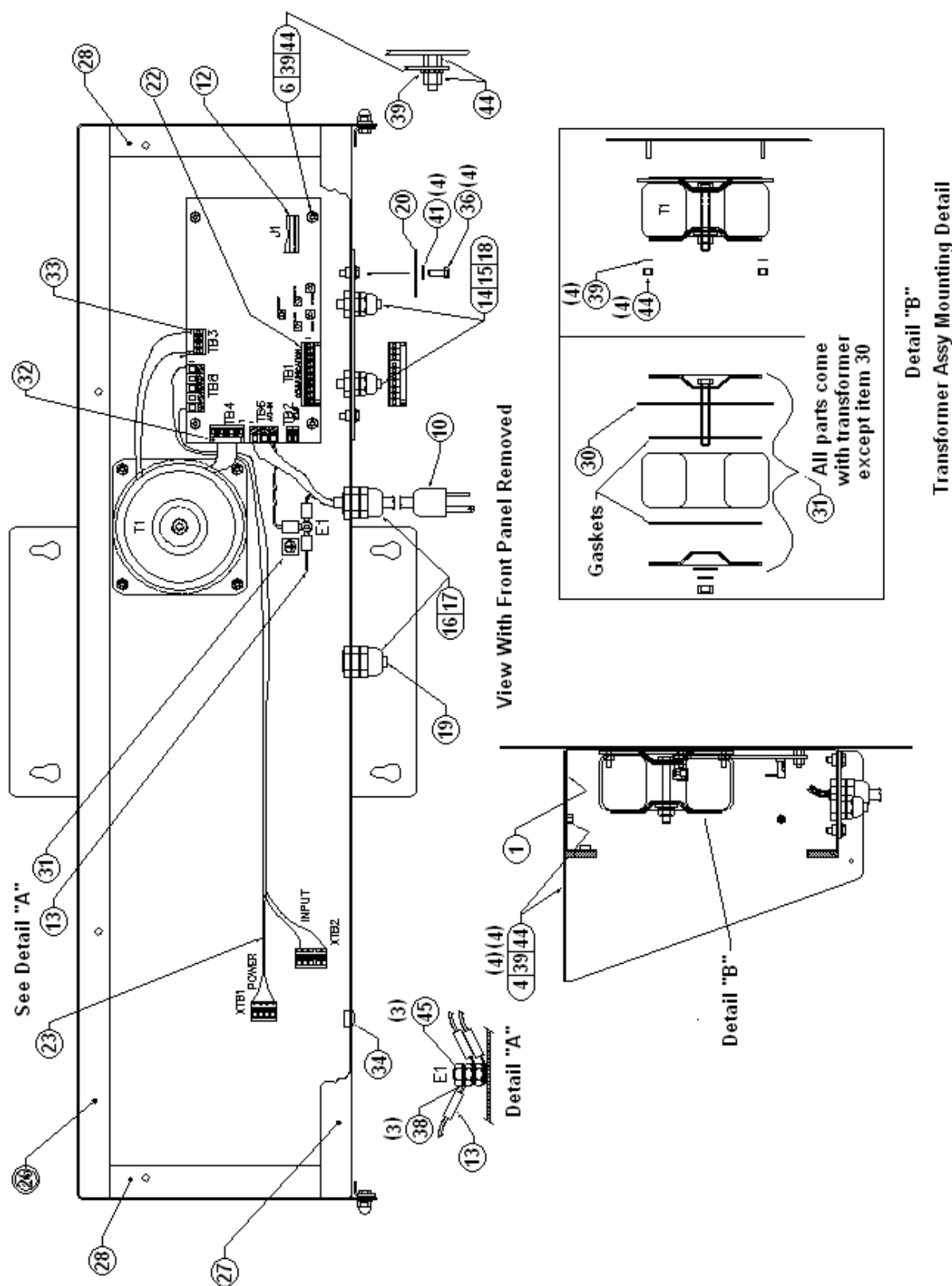
6.4.1. Model 1605T Parts List, Continued

ITEM	PART NO.	QTY	DESCRIPTION
36	11075	6	SCREW-CAP-HEX HD. 10-32 X .50
37	11076	4	SCREW-CAP-HEX HD. 10-32 X .75
38	10310	14	WASHER-FLAT NO. 6
39	11191	33	WASHWER-LOCK-EXT. TOOTH NO. 6
40	11339	1	WASHER-PLAIN (NYLON) NO. 8
41	11495	12	WASHER-PLAIN (NYLON) NO. 10
42			
43			
44	17597	34	SPACER, HEX 6-32 THDS X .19 LONG
45	11102	3	NUT-HEX 6-32
46	15716	2	NUT, THREADLOCK ACORN 10-32
47	17595	12	SPACER, HEX 6-32 THDS X .31 LONG
48	17586	12	STANDOFF, HEX M/F 6-32 THDS X .25 LONG
49			
50	29081	1	ETL MARK LABEL
51	24366	1	LABEL, GROUND SYMBOL
52	11224	1	NAMEPLATE
53	29771	1	NAMEPLATE
55	13486	1	CONNECTOR KIT DB9 ACC 334
56	17509	1	PLUG, TERMINAL 5 POS .197 C-C

6.5.2. Model 1605T Parts Diagram, Exterior



6.5.3. Model 1605T Parts Diagram, Interior



6.6. Model 1605T-RF (31934)

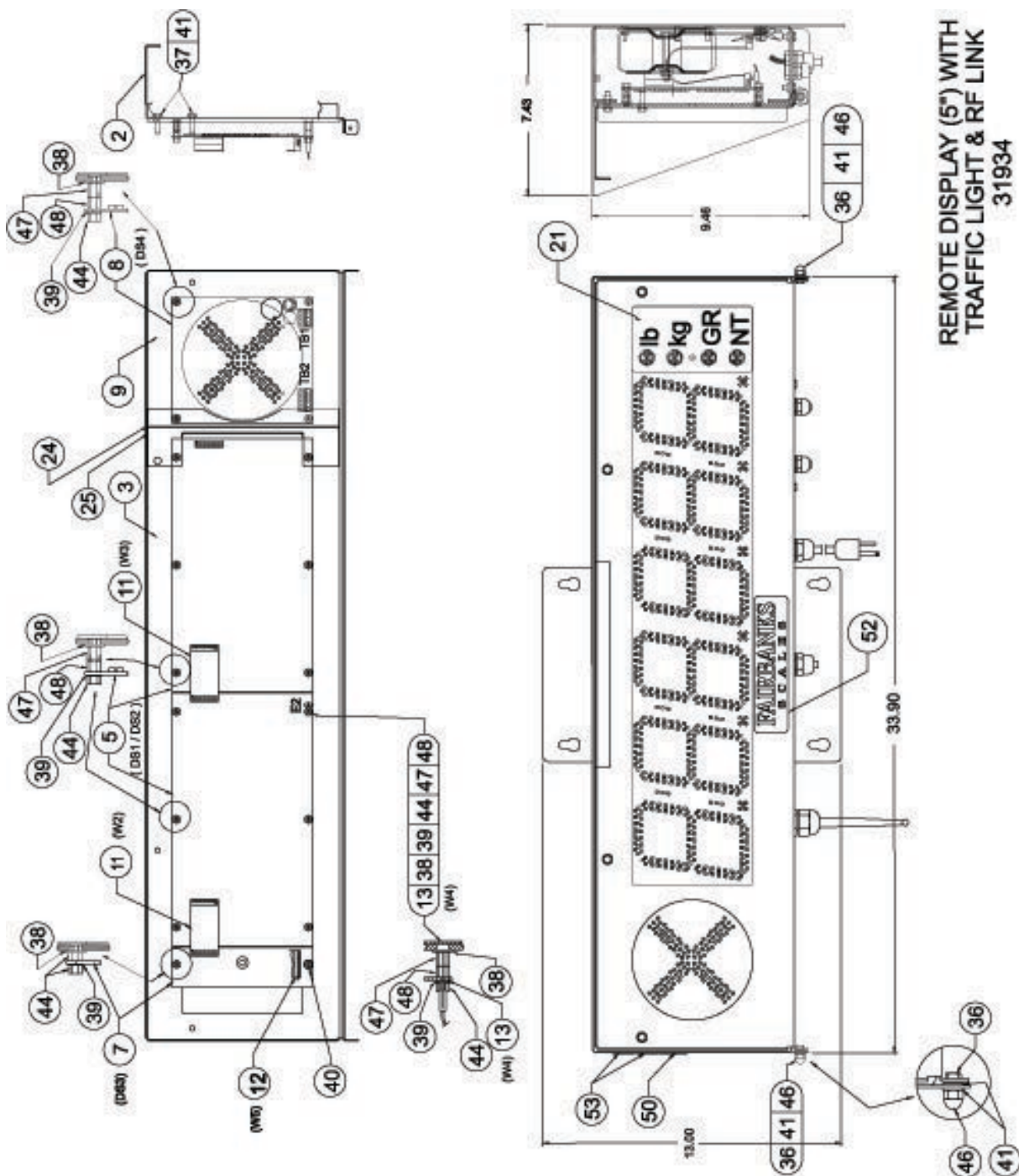
6.6.1. Model 1605T-RF Parts List

ITEM	PART NO.	QTY	DESCRIPTION
1	28986	1	ENCLOSURE WELDMENT (OLD STYLE, HINGE ON SHROUD)
"	37940	1	ENCLOSURE WELDMENT (HINGE ON ENCLOSURE)
2	28988	1	FRONT PANEL ASSEMBLY
3	28991	1	WINDOW LARGE
4	28987	1	SHROUD ASSY
5	27212	2	LED DISPLAY PCB ASSEMBLY DS1, DS2
6	30400	1	CPU PCB ASSEMBLY A1
7	27531	1	ANNUNCIATOR PCB ASSEMBLY DS3
8	29700	1	TRAFFIC LIGHT MODULE PCB ASSY
9	28992	1	WINDOW, SMALL
10	15435	1	POWER CORD ASSEMBLY W1
11	27105	2	CABLE ASSEMBLY W2, W3
12	27106	1	CABLE ASSEMBLY W5
13	27109	1	GROUND CABLE ASSEMBLY W4
14	17545	2	LIQUID TIGHT CONNECTOR 0.50
15	15651	2	O-RING FOR 0.50
16	17534	2	LIQUID TIGHT CONNECTOR 0.75
17	12342	2	O-RING FOR 0.75
18	12609	3	NYLON ROD
19	12011	1	NYLON ROD
20	26570	1	ACCESS DOOR
21	27107	1	LEGEND OVERLAY
22	27432C	1	TERMINAL BLOCK PLUG 10 POSITION
23	29772	1	CABLE ASSY TO TRAFFIC LIGHT FROM CPU
24	13223	AR	RTV ADHESIVE SEALANT
25	29780	1	WINDOW BRACKET
26	28993	1	TOP GASKET
27	28994	1	BOTTOM GASKET
28	26574	2	SIDE GASKET
29	29932	1	CLAMP, POWER SUPPLY
30	26563	1	TRANSFORMER MOUNTING PLATE
31	27656	1	TRANSFORMER T1
32	17521	1	TERMINAL PLUG 4-POS 0.295 C-C XTB4
33	27434C	1	TERMINAL PLUG 4-POS 0.197 C-C XTB3
34	14225	1	HOLE PLUG 0.50 DIA.

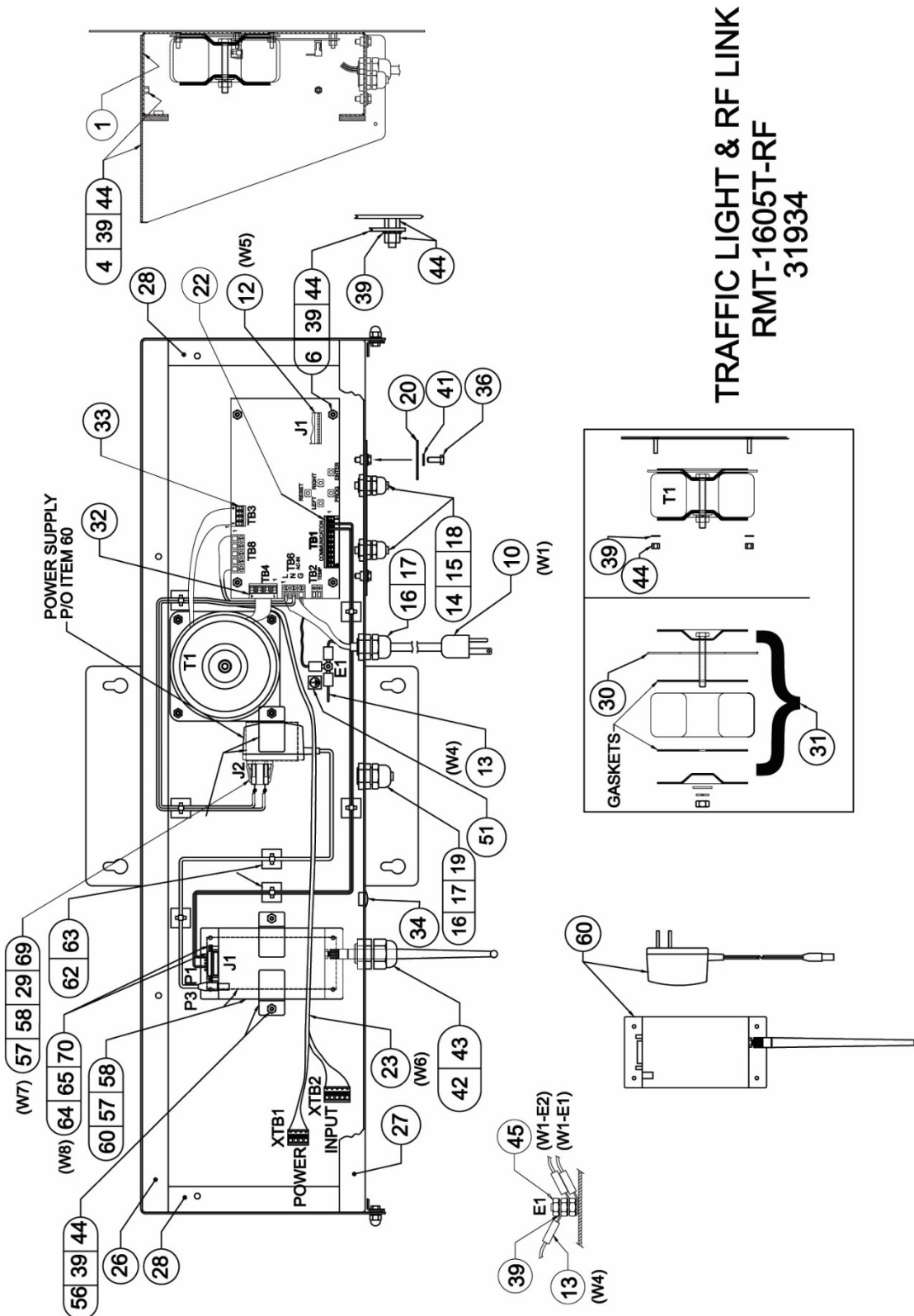
6.5.1. Model 1605T-RF Parts List, Continued

ITEM	PART NO.	QTY	DESCRIPTION
36	11075	6	SCREW-CAP-HEX HD. 1032 X 0.50
37	11076	4	SCREW-CAP-HEX HD. 1032 X 0.75
38	10310	14	WASHER, FLAT NO. 6
39	11191	35	WASHER, LOCK, EXT. TOOTH NO. 6
40	11339	1	WASHER, PLAIN (NYLON) NO. 8
41	11495	12	WASHER-PLAIN (NYLON) NO. 10
42	18455	1	CONNECTOR, LIQUIDTIGHT
43	18454	1	O-RING
44	17597	38	SPACER, HEX 6-32 THDS X .19 LONG
45	11102	3	NUT-HEX 6-32
46	15716	2	NUT, THREADLOCK ACORN 10-32
47	11662	16	SPACER, HEX 6-32 THDS X .31 LONG
48	17586	16	STANDOFF, HEX, M/F 6-32 THDS X .25 LONG
51	24366	1	LABEL, GROUND SYMBOL
52	11224	1	NAMEPLATE
53	31935	1	NAMEPLATE
55	13486	1	CONNECTOR KIT DB9 ACC 334
56	30984	2	RF MODEM CLAMP
57	14721	6.5 IN	VELCRO, LOOP (CUT INTO 5.00" AND 1.50 LENGTHS)
58	14722	6.5 IN.	VELCRO, LOOP (CUT INTO 5.00" AND 1.50 LENGTHS)
60	34986	2	RF MODEM - RS232 XBEE 900 Mhz
62	17613	7	TIE, WIRE
63	17617	7	MOUNT, CABLE TIE, SELF ADHESIVE
64	10888	2	SCREW, MACH, PH, PHIL 4-40 X .19
65	10919	2	WASHER, LOCK, INT. TOOTH NO. 4
69	31508	1	CABLE ASSY, POWER W6
70	31509	1	CABLE ASSY, COMMUNICATION W7

6.6.2. Model 1605T-RF Parts Diagram, Exterior



6.6.3. Model 1605T-RF Parts Diagram, Interior



6.7. Model 777 (29001)

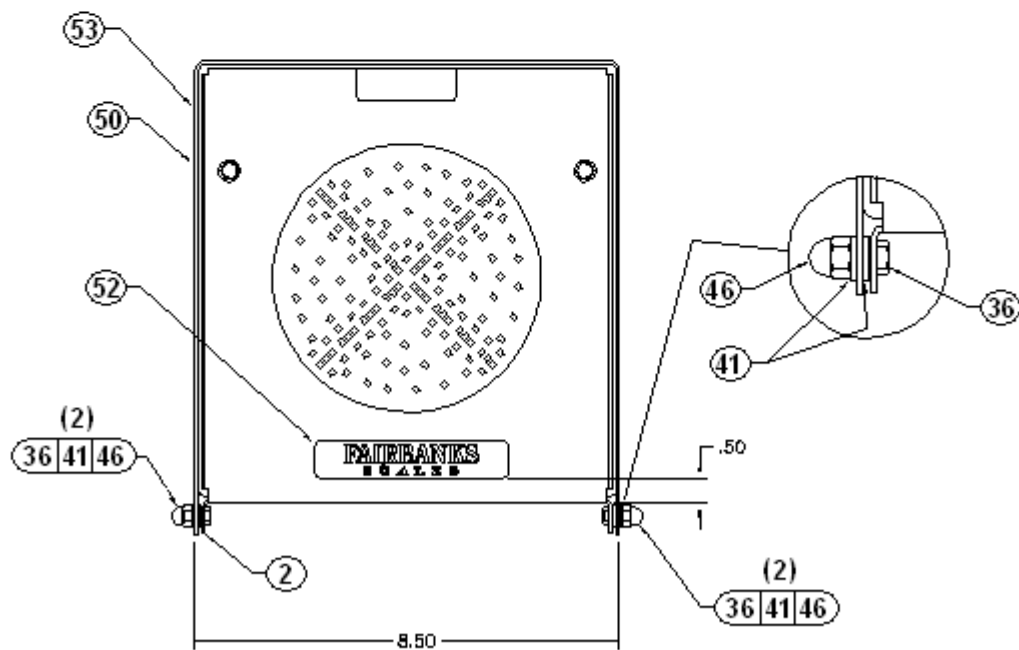
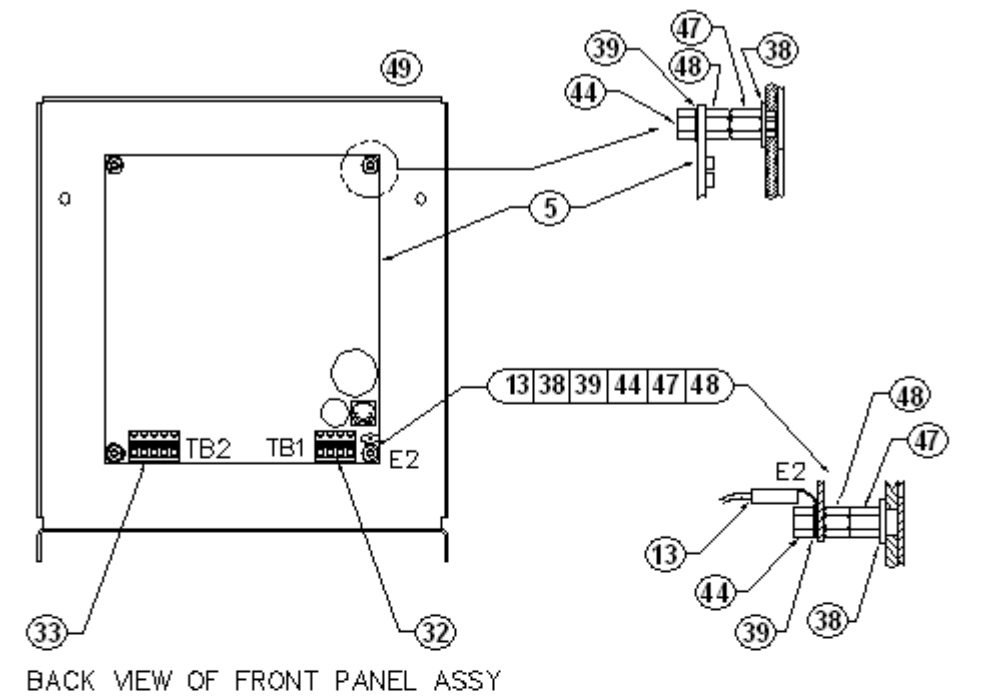
6.7.1. Model 777 Parts List

ITEM	PART NO.	QTY	DESCRIPTION
1	28996	1	ENCLOSURE WELDMENT
2	28998	1	FRONT PANEL ASSY
3	29002	1	WINDOW
4	28997	2	SHROUD ASSY
5	29700	1	PCB ASSY, TRAFFIC LIGHT MODULE
6			
7			
8			
9			
10	17502	1	BLOCK, TERMINAL END TB3
11	17501	1	BLOCK, TERMINAL TB3
12			
13	27109	1	CABLE ASSY, GROUND
14	17545	1	CONNECTOR, LIQUIDTIGHT .50
15	15651	1	O-RING FOR .50
16	17534	1	CONNECTOR, LIQUIDTIGHT .75
17	12342	1	O-RING FOR .75
18	12609	1	ROD, NYLON .25 DIA X 1.00
19	12011	1	ROD, NYLON .38 DIA X 1.00
20			
21	12100	1	PLUG, HOLE .875 DIA
22	29289	3	PLUG, HOLE .875 DIA
23			
24	17429	1	CLAMP, GROUND
25			
26	28995	2	GASKET, TOP AND BOTTOM
27			
28	26574	2	GASKET, SIDE
29			
30			
31	27656	1	TRANSFORMER
32	27434C	1	PLUG, TERMINAL 4 POS .197 C-C
33	17509	1	PLUG, TERMINAL 5 POS .197 C-C
34	11141	2	SCREW-MACH-PAN HD-PHIL 6-32 X .50
35			

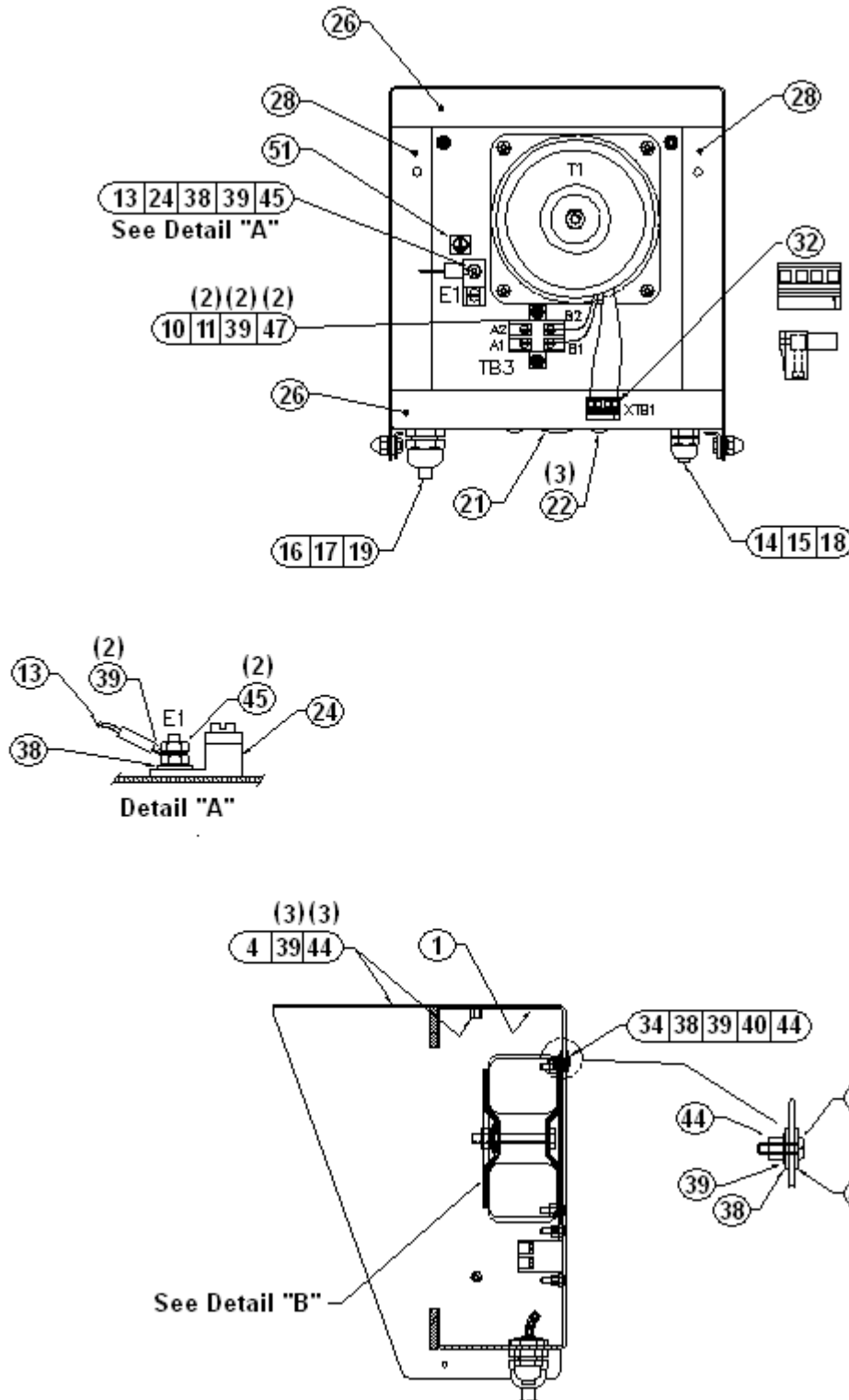
6.6.1 Model 777 Parts List, Continued

ITEM	PART NO.	QTY	DESCRIPTION
36	11075	2	SCREW-CAP-HEX HD. 10-32 X .50
37	11076	2	SCREW-CAP-HEX HD. 10-32 X .50
38	10310	7	WASHER-FLAT NO. 6
39	11191	17	WASHER-LOCK-EXT. TOOTH NO. 6
40	11339	2	WASHER-PLAIN (NYLON) NO. 8
41	11495	6	WASHER-PLAIN (NYLON) NO. 10
42			
43			
44	17597	13	SPACER, HEX 6-32 THDS X .19 LONG
45	11102	2	NUT-HEX 6-32
46	15716	2	NUT, THREADLOCK ACORN 10-32
47	17595	6	SPACER, HEX 6-32 THDS X .31 LONG
48	17586	4	STANDOFF, HEX, M/F 6.32 THDS X .25 LONG
49			
50	29081	1	ETL MARK LABEL
51	34366	1	LABEL, GROUND SYMBOL
52	11226	1	NAMEPLATE
53	29770	1	NAMEPLATE

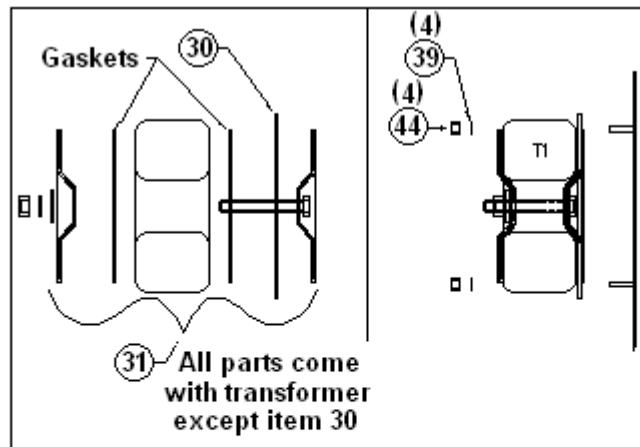
6.7.2. Model 777 Parts Diagram



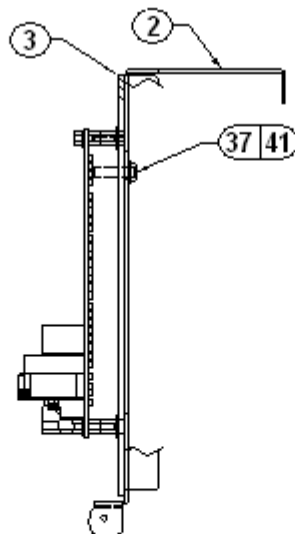
6.6.2. Model 777 Parts Diagram, Continued



6.6.2. Model 777 Parts Diagram, Continued



Detail "B"
Transformer Assy Mounting Detail



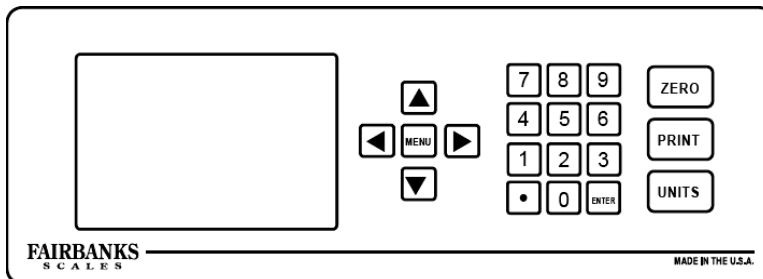
Appendix I: FB350 Programming

With the remote display **ID** set to **00**, set the **FB350** parameters to the following.

Motion Stability Time	step 115	=	.2 or less
Update Rate	step 117	=	.5 or longer
Parity	step 202	=	None
Stop Bit	step 203	=	One (1) Bit
Handshake	step 204	=	None
Sent	step 210	=	Continuous

Appendix II: 2500 Series Programming

Follow these steps to configure the **2500 Instrument** so it interfaces with the **1600 Series Display**.



1. Press **MENU** button to open the **Configuration Menu**.
2. Using the **UP** and **DOWN** arrow buttons, select **COMMUNICATION**.
3. Using the **UP** and **DOWN** arrow buttons, select **REMOTE DISPLAY**.
4. Using the **UP** and **DOWN** arrow buttons, select **GROSS ONLY**.
 - ✓ *If using the **2500 instrument TIME OUTPUT** setting under the Remote Display menu selection the **1605** time display will be overridden, and the **2500** time will be displayed.*
 - ✓ *If **RF LINK TO COM3** is selected ensure **COM3** is set to **COM PORT OFF** in the **DEVICES** menu.*
5. Press **MENU** button repeatedly to exit.

NOTE: For more information about programming the **2500 Series Instrument**, see one of the following manuals:

- **50525** – IND-R2500-F1 IND-HR2500-F1 Instruments **Service Manual**
 - **50697** – IND-2500-F2, DF2, IND-HR2500-F2, DF2 Instruments **Service Manual**
 - **50698** – IND-HR2500-F2 Instruments **Service Manual**
 - **50740** – IND-HR2500-F1 Instruments **Service Manual**
-

NOTE: If using a custom string from the **2500** make sure that leading zeroes are disabled in the weight string to prevent all digits from lighting.

Appendix III: RF-1605T Channel Addressing for XBEE RF Modem (900HP RS232 & 900HP RS485)

These Instructions are for setting up pairs of RF modems in RF-1605T, 218-RF and RF Pit Power Systems.

1. Requirements

- A. RF Modem Pair
- B. USB to Micro-USB cable
- C. PC

2. Download and Run Application (must have internet connection to download the application)

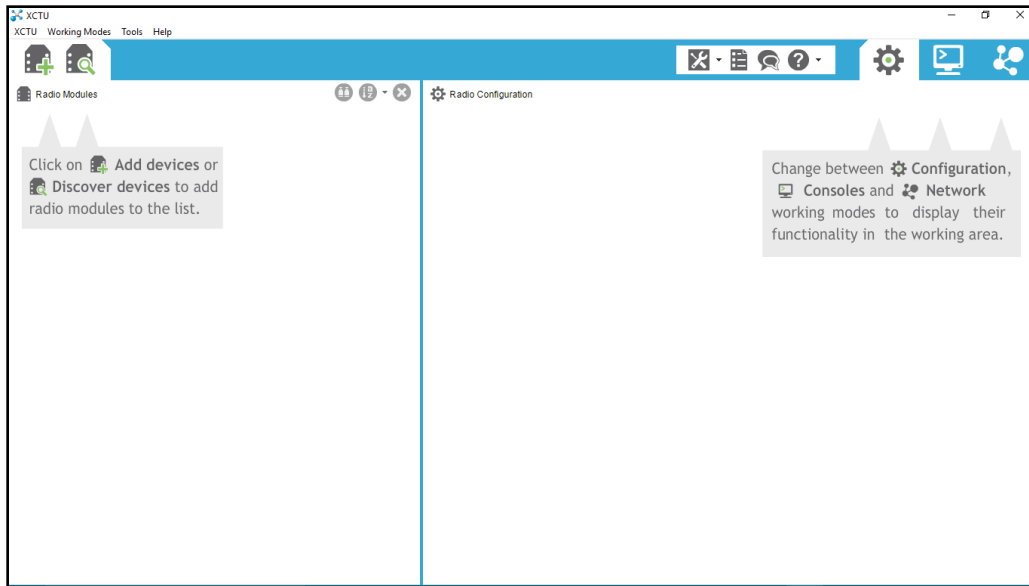
- A. Go to www.digi.com/xctu
- B. Visit Support to Download XCTU
- C. Select the XCTU version for your system requirements
- D. Select Download
- E. Select "Save File"
- F. Run the executable that you just downloaded.
- G. Proceed through the installation of the software.

3. Connecting XBEE Modem to PC

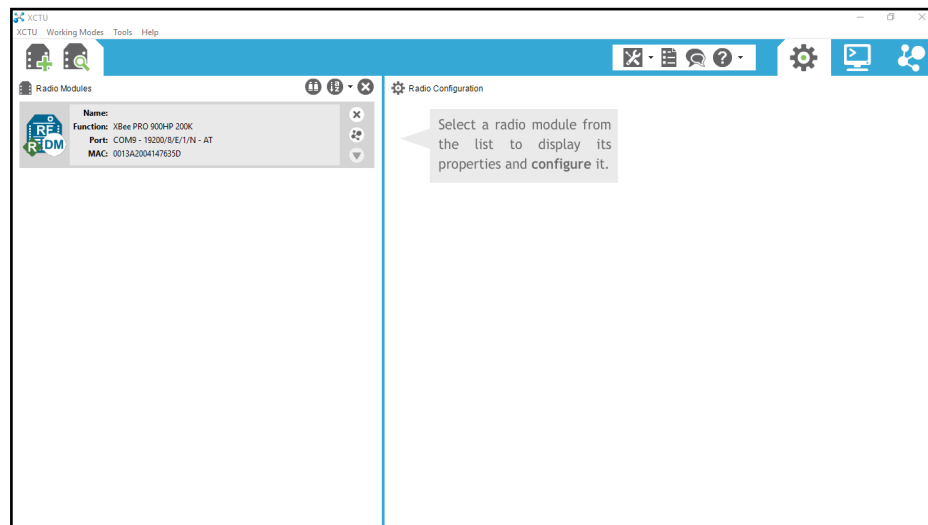
- A. Plug the USB cable into a free USB port on the PC
- B. Plug the micro-USB end of the cable into the XBEE RF Modem
- C. Wait for the PC to install drivers and indicate that device is ready
 - Red LED on XBEE should be blinking

4. Readdressing

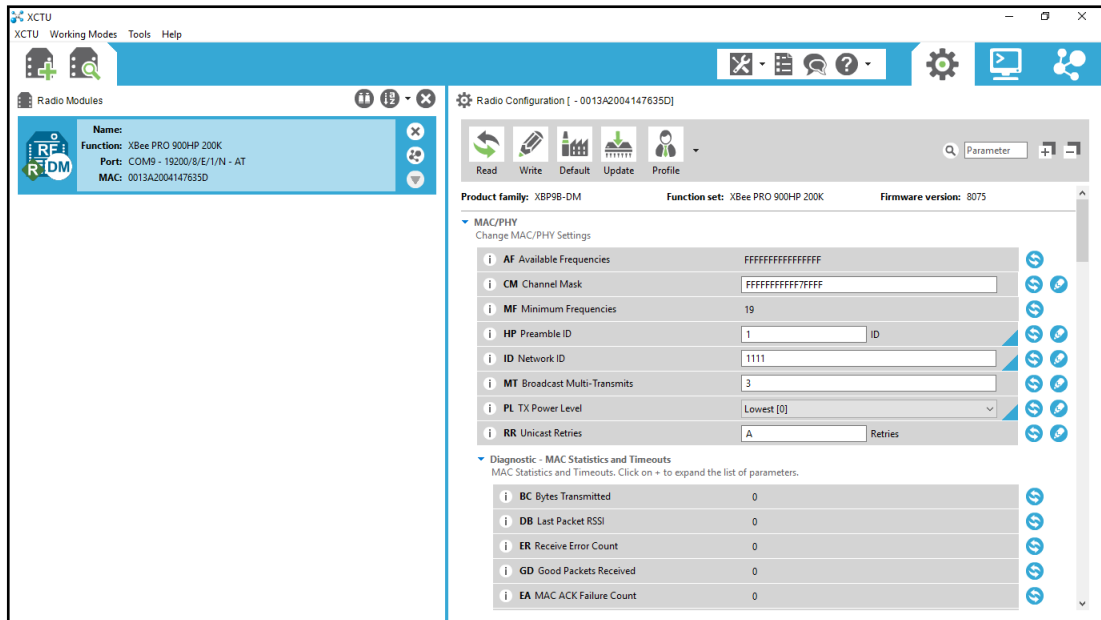
- A. After modem is connected, run the XCTU application.
- B. Select "Add devices" 



- C. Expand this window
- D. In the “select serial/USB port”, all comports will be showing to choose from.
- E. Remove the USB from your laptop going to the radio.
 1. Hit refresh ports
 - a. One will disappear (remember that port number)
 2. Install the USB from the radio to your laptop.
 - a. Hit refresh ports.
 3. The port will reappear in the list.
 4. Double left tap this com. This will look for and add the radio to the radio modules list.
- F. The device will now be displayed under Radio Modems on the left side of the screen.



G. Click on the newly added module on the left and let all the settings load.



- All modem pairs must have matching values entered for the following parameters (below). When any change is made to the existing parameters, the “write” button  must be selected to write the new value to the memory in the modem.
 - **CM (Channel Mask)** - This is a bit mask which should be used when more than one RF radio set is used in “close” proximity. If 2 or less pairs are used, default mask can be kept.
 - Low Mask (Channels 0-24) = FFFFFFFF8000000000
 - Mid Mask (Channels 19-43) = 1FFFFFFF00000
 - High Mask (Channels 39-63) = 01FFFFFF
 - **HP (Preamble ID)** - Value between 0 – 7. Recommend starting at 1, and giving each matching pair a unique number up to 7.
 - **ID (Network ID)** - Acceptable values are between 0x0 and 0x7. Recommend using 4 digit ID based on HP value (ie HP = 1, ID = 1111)
 - **PL (TX Power Level)** - Recommend setting power level to lowest level which still achieves 3 green signal indicators “Very Strong Signal”.

- This setting will require some trial and error. Be sure antennas are installed properly before proceeding. Start with a low PL setting and increase as necessary.
- **DH (Destination address high)** - The upper 32 bits of the 64 bit destination address. 0x000000000000FFFF is the broadcast address. If configuring the host, this will be the first 6 characters of the DESTINATION device serial number. If configuring the destination, this will be the first 6 characters of the HOST device.
- **DL (Destination address low)** - The lower 32 bits of the 64 bit destination address. 0x000000000000FFFF is the broadcast address. If configuring the host, this will be the SL (serial number low) setting of the DESTINATION device. If configuring the destination, this will be the SL (serial number low) setting of the HOST device.

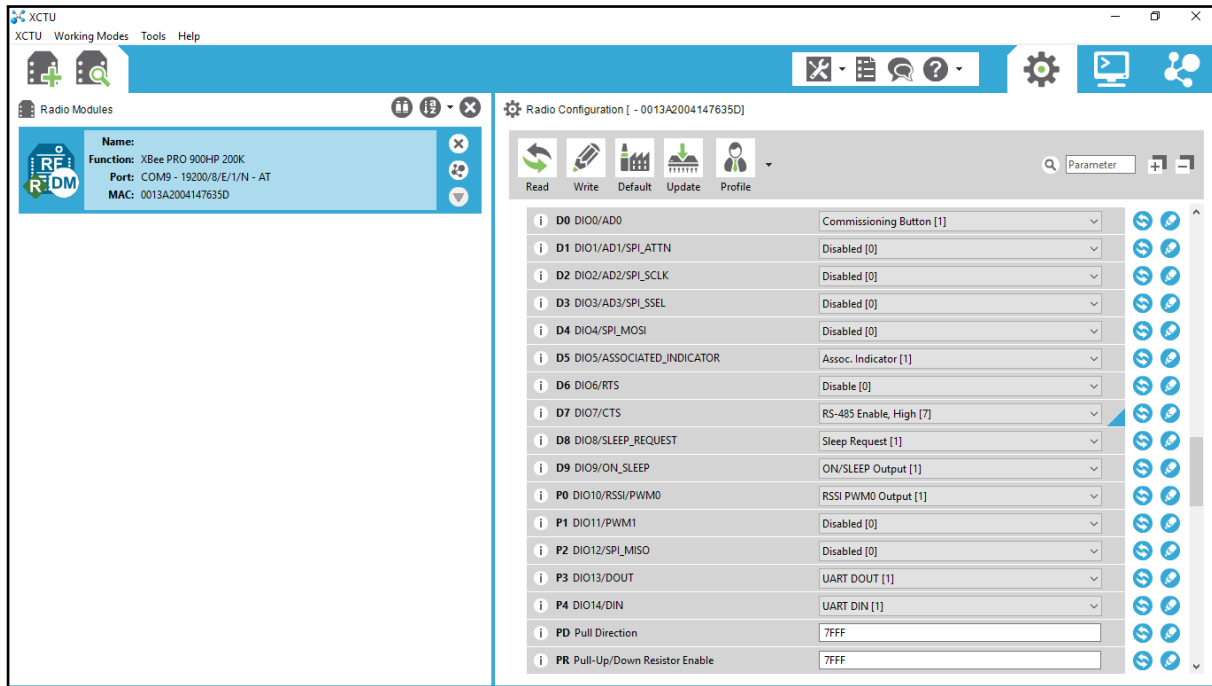
i	SH Serial Number High	13A200		
i	SL Serial Number Low	4147635D		
i	DH Destination Address High	13A200		
i	DL Destination Address Low	415014C0		
i	TO Transmit Options	C0		
i	NI Node Identifier			
i	NT Network Discovery Back-off	82 * 100 ms		
i	NO Network Discovery Options	0		
i	CI Cluster ID	11		

H. Select Interfacing Options:

- 19200
- Even
- 1

i	BD Baud Rate	19200 [4]		
i	NB Parity	Even Parity [1]		
i	SB Stop Bits	One stop bit [0]		
i	RO Packetization Timeout	3 * character times		
i	FT Flow Control Threshold	13F Bytes		
i	AP API Enable	Transparent Mode [0]		
i	AO API Options	API Rx Indicator - 0x90 [0]		

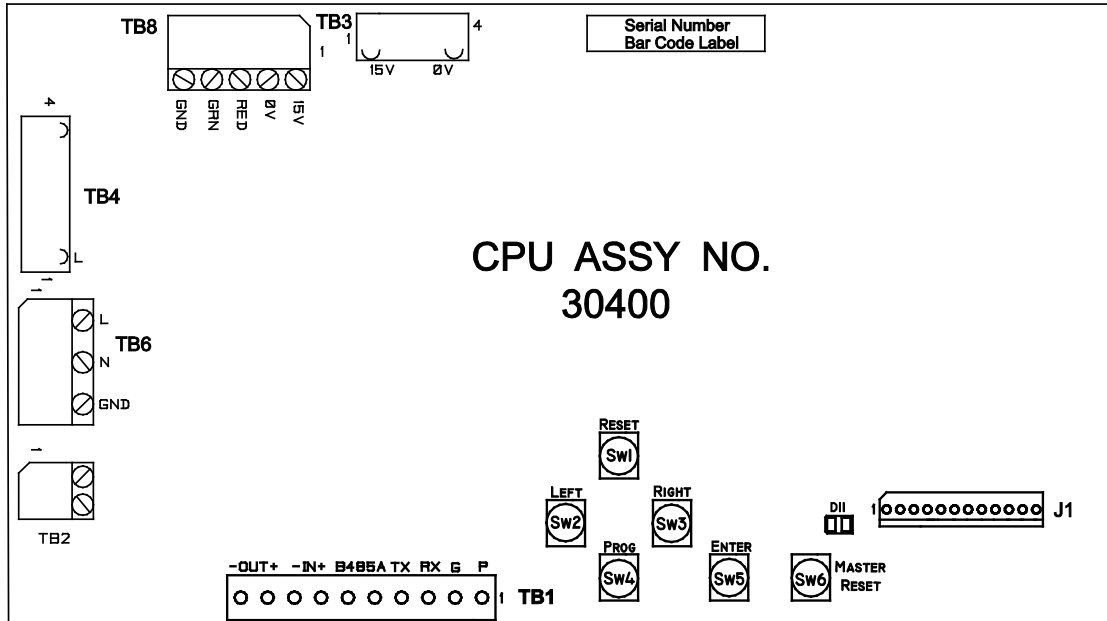
- D7 = CTS Pin configuration. Leave default of 1 for RS232. Set to 7 for RS485, high.
- Be sure to document the CM, HP, DH, DL and ID with labels on both modems for future techs.



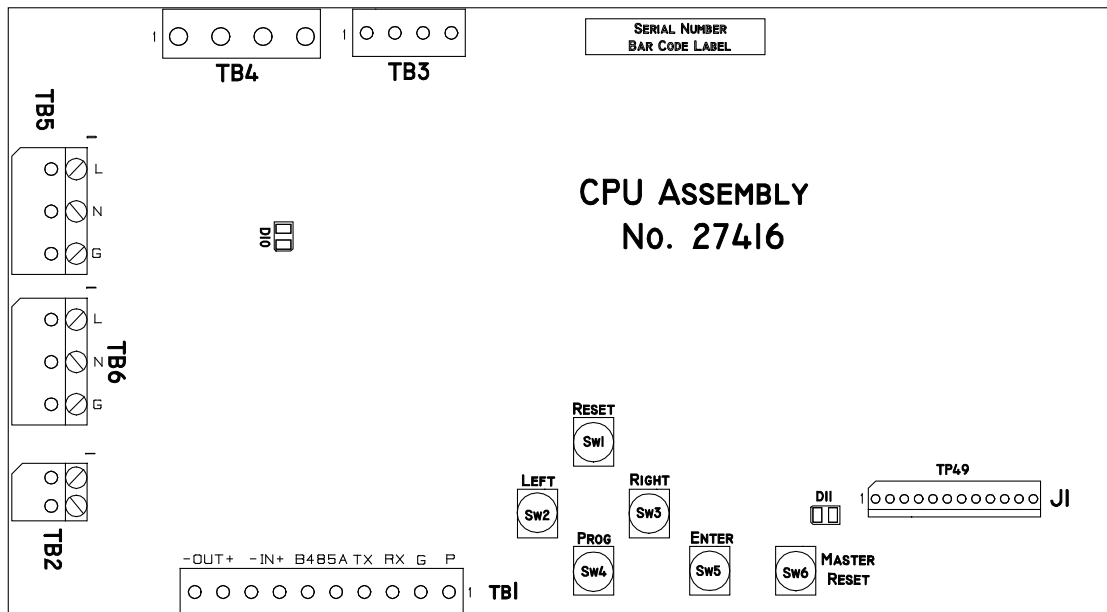
- Complete the process for the matching modem in the pair. Be sure to match all settings or communication between the two will fail.

Appendix IV: CPU Assembly – Current vs. Previous Models

Shown below is a diagram of the **current** CPU Assembly.



Shown below is a diagram of the CPU model **previous to 10/11**.



A. 1601 (30400) –CPU Assy Wiring Chart (1-1/2" Display)

WIRE NO.	FROM		WIRE				RTE	TO		REMARKS
	TERMINATION	NOTE	ITEM #	COLOR	GAGE	LGTH		TERMINATION	NOTE	
1	W1-BR	—	10	BR	—	—	—	TB6-1	3	AC
2	W1-BL	—	10	BL	—	—	—	TB6-2	3	ACC
3	W1E1	—	10	G/Y	—	—	—	E1	3	CHASSIS GND
4	W1E2	—	10	G/Y	—	—	—	E1	3	CHASSIS GND
5	W1E2	—	10	G/Y	—	—	—	TB6-3	3	GND
6	T1-W	—	31	W	—	—	—	TB4-1	3	OV
7		—			—	—	—			
8		—			—	—	—			
9	T1-B	—	31	B	—	—	—	TB4-4	3	110 VAC
10	T1-BL	—	31	BL	—	—	—	TB3-1	3	OV
11	T1-BL	—	31	BL	—	—	—	TB3-4	3	20V/8A

B. 1605 and 1605RF (30400) –CPU Assy Wiring Chart (5" Display)

WIRE NO.	FROM		WIRE				RTE	TO		REMARKS
	TERMINATION	NOTE	ITEM #	COLOR	GAGE	LGTH		TERMINATION	NOTE	
1	W1-BR	—	10	BR	—	—	—	TB6-1	3	AC
2	W1-BL	—	10	BL	—	—	—	TB6-2	3	ACC
3	W1E1	—	10	G/Y	—	—	—	E1	3	CHASSIS GND.
4	W1E2	—	10	G/Y	—	—	—	E1	3	CHASSIS GND.
5	W1E2	—	10	G/Y	—	—	—	TB6-3	3	GND.
6	T1-BLK	—	31	BLK	—	—	—	TB4-1	3	110 VAC
7	T1-BRN	—	31	BRN	—	—	—	TB4-2	3	110 VAC
8	T1-WHT	—	31	WHT	—	—	—	TB4-3	3	OV
9	T1-ORG	—	31	ORG	—	—	—	TB4-4	3	OV
10	T1-YEL	—	31	YEL	—	—	—	TB3-1	3	OV
11	T1-RED	—	31	RED	—	—	—	TB3-4	3	15V/2.67A
12	T1-BLU	—	31	BLU	—	—	—	TB3-2	3	OV
13	T1-GRY	—	31	GRY	—	—	—	TB3-3	3	15V/2.67A



C. 1605T and 1605T-RF (30400) –CPU Assembly Wiring Chart (5" Display)

WIRE NO.	FROM		WIRE				RTE	TO		REMARKS
	TERMINATION	NOTE	ITEM #	COLOR	GAGE	LGTH		TERMINATION	NOTE	
1	W1-BR	—	10	BR	—	—	—	TB6-1	3	AC
2	W1-BL	—	10	BL	—	—	—	TB6-2	3	ACC
3	W1E1	—	10	G/Y	—	—	—	E1	3	CHASSIS GND.
4	W1E2	—	10	G/Y	—	—	—	E1	3	CHASSIS GND.
5	W1E2	—	10	G/Y	—	—	—	TB6-3	3	GND.
6	T1-BLK	—	31	BLK	—	—	—	TB4-1	3	110 VAC
7	T1-BRN	—	31	BRN	—	—	—	TB4-2	3	110 VAC
8	T1-WHT	—	31	WHT	—	—	—	TB4-3	3	OV
9	T1-ORG	—	31	ORG	—	—	—	TB4-4	3	OV
10	T1-YEL	—	31	YEL	—	—	—	TB3-1	3	OV
11	T1-BLU	—	31	BLU	—	—	—	TB3-2	3	OV
12	T1-GRY	—	31	GRY	—	—	—	TB3-3	3	15V/2.67A
13	T1-RED	—	31	RED	—	—	—	TB3-4	3	15V/2.67A
14	W4-E1	—	13	GRN	—	—	—	W4-E2	3	CHASSIS GND.
15										
16	W6-BK	—	23	BLK	—	—	—	TB8-1	3	15V/2.67A
17	W6-WHT	—	23	WHT	—	—	—	TB8-2	3	OV
18	W6-RED	—	23	RED	—	—	—	TB8-3	3	RED LIGHT
19	W6-GRN	—	23	GRN	—	—	—	TB8-4	3	GREEN LIGHT
19	W6-YEL	—	23	YEL	—	—	—	TB8-5	3	GROUND

D. 1605 (30400) –CPU Assembly Wiring Chart (1-1/2" Display)

WIRE NO.	FROM		WIRE				RTE	TO		REMARKS
	TERMINATION	NOTE	ITEM #	COLOR	GAGE	LGTH		TERMINATION	NOTE	
1	W1-BR	—	10	BR	—	—	—	TB6-1	3	AC
2	W1-BL	—	10	BL	—	—	—	TB6-2	3	ACC
3	W1E1	—	10	G/Y	—	—	—	E1	3	CHASSIS GND
4	W1E2	—	10	G/Y	—	—	—	E1	3	CHASSIS GND
5	W1E2	—	10	G/Y	—	—	—	TB6-3	3	GND
6	T1-W	—	31	W	—	—	—	TB4-1	3	0V
7	T1-W	—	31	W	—	—	—	TB4-2	3	0V
8	TB-W	—	31	B	—	—	—	TB4-3	3	110 VAC
9	T1-B	—	31	B	—	—	—	TB4-4	3	110 VAC
10	T1-BL	—	31	BL	—	—	—	TB3-1	3	0V
11	T1-BL	—	31	BL	—	—	—	TB3-4	3	20V/8A

NOTE: The wiring chart listed above is for the CPU Card part number **27416**, which is an older, obsolete version.

Appendix V: 20mA Codes

CODE	UNITS	WEIGHT	SCALE #
00 – Display all data			
40	Lbs	Gross	1
41	Lbs	Net	1
42	Lbs	Tare	1
43	Kg	Gross	1
44	Kg	Net	1
45	Kg	Tare	1
46	Lbs	Gross	2
47	Lbs	Net	2
48	Lbs	Tare	2
49	Kg	Gross	2
50	Kg	Net	2
51	Kg	Tare	2
52	Lbs	Gross	3
53	Lbs	Net	3
54	Lbs	Tare	3
55	Kg	Gross	3
56	Kg	Net	3
57	Kg	Tare	3
58	Lbs	Gross	4
59	Lbs	Net	4
60	Lbs	Tare	4
61	Kg	Gross	4
62	Kg	Net	4
63	Kg	Tare	4

Appendix V: 20mA Codes, Continued

CODE	UNITS	WEIGHT	SCALE #
64	Lbs	Gross	5
65	Lbs	Net	5
66	Lbs	Tare	5
67	Kg	Gross	5
68	Kg	Net	5
69	Kg	Tare	5
70	Lbs	Gross	6
71	Lbs	Net	6
72	Lbs	Tare	6
73	Kg	Gross	6
74	Kg	Net	6
75	Kg	Tare	6
76	Lbs	Gross	7
77	Lbs	Net	7
78	Lbs	Tare	7
79	Kg	Gross	7
80	Kg	Net	7
81	Kg	Tare	7
82	Lbs	Gross	8
83	Lbs	Net	8
84	Lbs	Tare	8
85	Kg	Gross	8
86	Kg	Net	8
87	Kg	Tare	8

Appendix VI: Data Input

A. Remote Display Input

Data Format

<STX><4><0><SP/-><XXXXXX><ETX>

Note(s):

1. Characters denoted by **X** are characters 0-9.
 2. Leading zeroes are suppressed.
 3. Polarity indication for a positive value is a space (**SP**).
 - Negative values are not transmitted.
 4. **Identifier code <4><0> = Gross weight.**
 - Transmission is **Gross Only**.
-

Appendix VII: ACC 1400 Pole Mount Assembly

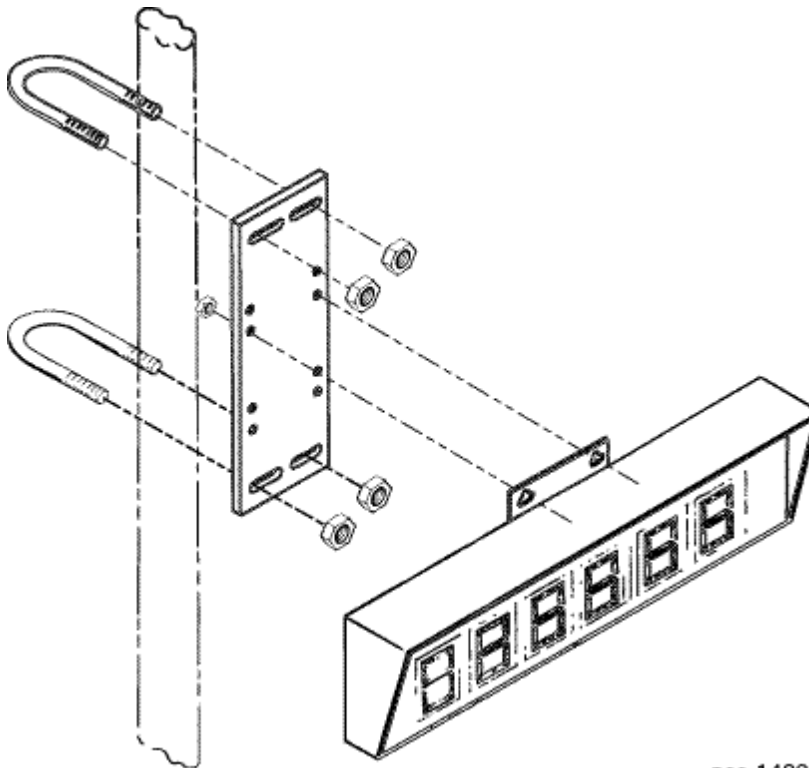
A. Application

For mounting Fairbanks Remote Display to 3", 4" or 5" pole.

B. Description

ACC 1400-1 consists of a mounting plate drilled for mounting to the remote display and hardware for that purpose.

ACC 1400-3, -4, and -5 consists of a U-Bolt and hardware for mounting the plate to the pole.



C. Installation

Installation is accomplished by mounting the plate to the pole with the U-Bolts, washers, lock washers and nuts provided, then securing the remote display to the plate with the 1/4-20 x 1" cap screw, washers and nuts provided. Select a good viewing angle then tighten all hardware.

(use grease or Never-Seize on threads)



D. Parts List

ACC #	PART NO.	DESCRIPTION
ACC-1400-1	15807	1 ea 20" x 8 ½" Plate, Mounting 4 ea ¼-20 x 1 cap screw 4 ea ¼-20 x hex nut 4 ea ¼" lock washer 4 ea ¼" washer
ACC-1400-3	15808	1 ea U-Bolt 3" ½-13
ACC-1400-4	15809	1 ea U-Bolt 4" ½-13
ACC-1400-5	15810	1 ea U-Bolt 5" ½-13



Manufactured by
Fairbanks Scales Inc.

1600 Series Remote Display

Installation/Operator's Manual

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