



# Base Unit & Transmitter Installation Guide



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## APPLICATION

The WESROC® Route Management System consists of a tank transmitter, a Base Unit, and a computer database host. The database host normally resides at your distribution office. Remote hosting is an option provided by Independent Technologies, Inc. for demonstration purposes and to assist during installations. Backup host services are available as an extra charge product.

## OVERVIEW

After installation on a tank, the transmitter monitors the tank level using a Rochester R3D remote ready dial. As the fuel level in the tank changes it is transmitted to the Base Unit for display and processing. Tank low and critical thresholds are entered on the host computer for each tank. When the tank level drops below either the low or critical threshold, a report will automatically be sent to the host computer notifying the supplier of the event. A Base Unit can support up to eight individual tank transmitters at the same time. Tank transmitters may be field programmed as tank 1 through 8 (the default is tank 1). The Base Unit does not interfere with the customer's telephone line but does require the connection to report into the host computer. If the phone line is already in use, the Base Unit will retry later. If someone, or another device, interrupts a Base Unit during its report, the Base Unit will immediately hang up and try again in about two minutes. After two attempts, it will wait 1 hour and then try to call a secondary host phone number. Base Unit reports are usually made to a local or to a toll-free number to your host computer.

The Base Unit is normally positioned within 500 feet of the tank, but ranges up to 1,000 feet are possible if line of sight transmission is available.

The Base Unit has a two-digit display that shows the latest level percentage (for up to 8 tanks). The Base Unit will report in, using a telephone line, on a schedule that is downloaded from the host computer. Report schedules may be hourly, daily, or weekly. The Base Unit will also report in if there is a tank fill, low level, critical level, or decompression event.

**Figure 1: Rochester R3D Remote Ready Dials**



## OPERATION OF THE BASE UNIT

### Power Up

When the Base Unit is first powered on, all of the display segments, icons, and LEDs will be illuminated. This is done to ensure all display components are working properly. After a power outage, it will return to the last display mode.

### Operational Overview

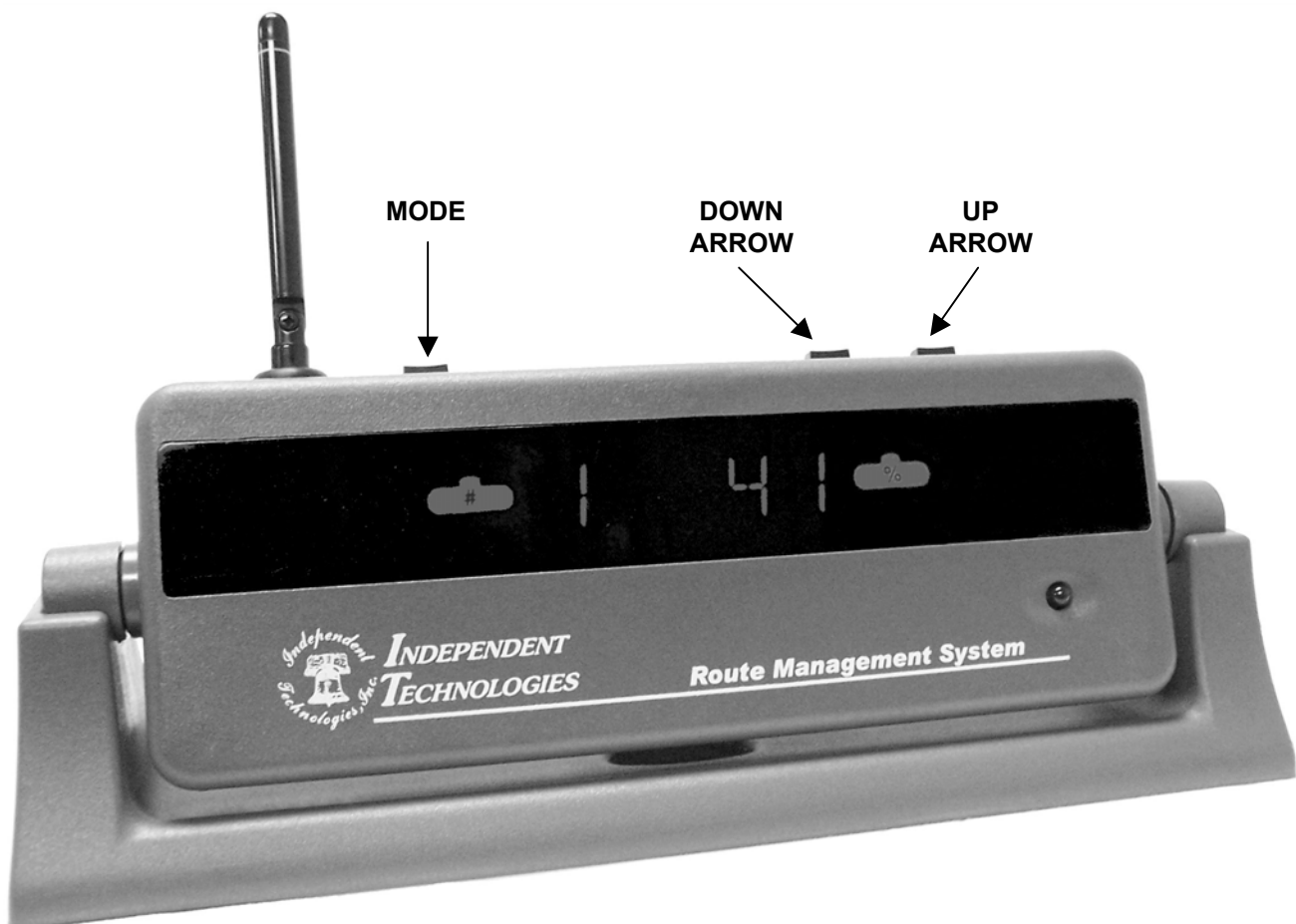
The Base Unit has three pushbutton switches on the top:

- The single button on the left-hand side is the MODE button.
- The center button is the DOWN ▼ arrow.
- The right-hand button is the UP ▲ arrow.

The Base Unit display will show tank level percentage (for up to eight tanks), time of day, and indoor temperature. Pressing the Mode button will select one of the following three display modes:

**Figure 2: WESROC® RMS Base Unit (front view)**

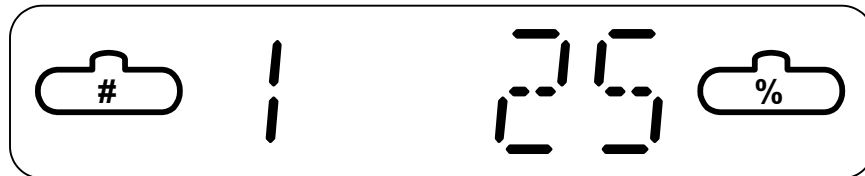
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## OPERATION OF THE BASE UNIT (continued)

### Tank Level Display

- This mode is indicated by the illumination of the tank icons located on the left and right sides of the display. The number on the left is the tank number, and the number on the right is the tank level percentage.



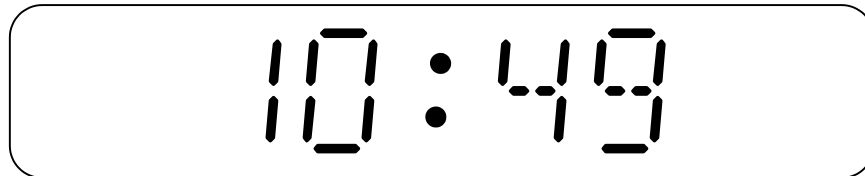
- If more than one tank is being monitored, the UP and DOWN arrow buttons may be used to scroll through the tank list. Always keep track of the number (1 – 8) that each tank is reporting under.
- Abnormal Display Explanations
  - *Both the tank number and level are displayed as dashes.* This indicates that no tank transmitters have been initialized to this Base Unit. All tank transmitters that are assigned to this Base Unit MUST be initialized to it. Refer to the Initialize Base Unit section for more details.
  - *The tank level is displayed as dashes.* This is displayed after the Base Unit has lost power. The level will be updated within four hours when the Base Unit receives new information from the tank transmitter.
  - *The tank level is displayed as flashing dashes.* The Base Unit has not received any new information from the tank transmitter within the timeframe specified. Check the signal strength of this tank transmitter and reposition the Base Unit to obtain the highest possible signal strength. Refer to the Initialize Base Unit section for more details.
  - *The tank level is displayed as a flashing “NS”.* The tank transmitter has detected that it has “No Sensor”. Check the cable connecting the tank gauge sensor to the transmitter for any signs of damage.
  - *The tank level is flashing.* This occurs when the tank level has dropped below a specified threshold. If more than one tank is below its specified threshold, the Base Unit will display a different tank level each minute. The Base Unit will return to its normal display mode when either the tank level has risen above the specified threshold or any key is pressed.

**NOTE:** A reading of 50% is normal for a tank transmitter that is NOT connected to a gauge.

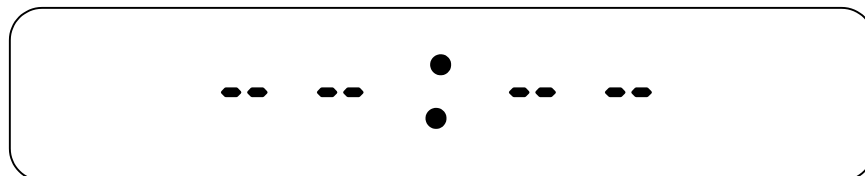
## OPERATION OF THE BASE UNIT (continued)

### Digital Clock Display and Setting

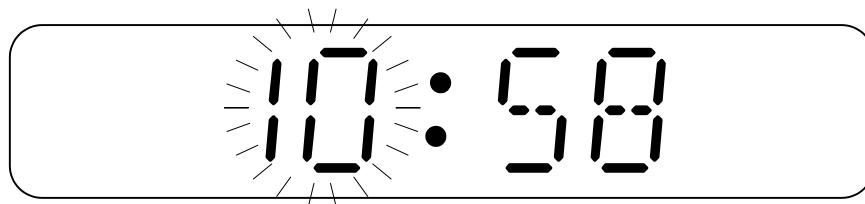
- This mode is indicated by the illumination of the clock colon in the center of the display window.



- Abnormal Display Explanations
  - *Both the hour and minutes are displayed as dashes.* This is displayed after the Base Unit has lost power. The time will be automatically updated when the Base Unit reports the tank level to the host computer, or the time may be set manually by using the following instructions:



- Setting the Time
  - While in Time Display mode, press and hold the MODE button for approximately two seconds.
  - Once the HOURS start to flash, release the MODE button and use the UP/DOWN arrow buttons to adjust the HOURS.



- Press and release the MODE button to advance to the MINUTES position.
- Once the MINUTES start to flash, use the UP/DOWN arrow buttons to adjust the MINUTES.
- Press and release the MODE button to advance to the AUTO-UPDATE (AU) option.
  - AUTO-UPDATE (AU) is a feature that allows the Base Unit to automatically set its clock when it sends your tank level to your propane supplier. You may want to disable this feature if you have set the Base Unit to a time different than that provided by your propane supplier.
- With AU displayed on the left, use the UP/DOWN arrow buttons to select YS to enable this feature or NO to disable it.
- Press and release the MODE button to return to the Time Display.

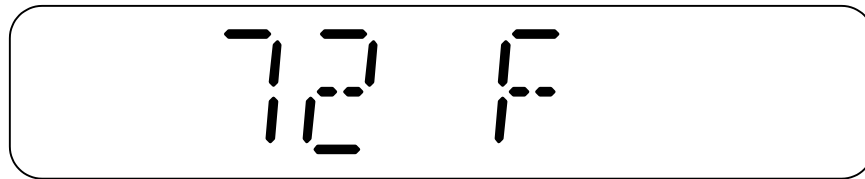
**NOTE 1:** While setting the time, if no buttons are pressed for 30 seconds, the Base Unit will automatically return to the time display.

**NOTE 2:** Daylight savings time and time zone offsets are controlled by the host computer for each Base Unit.

## OPERATION OF THE BASE UNIT (continued)

### Temperature Display

- This mode is indicated by the illumination of an “F” or “C” in the right side of the display window. The UP/DOWN arrow buttons can be used to toggle the display between Fahrenheit (F) and Celsius (C).

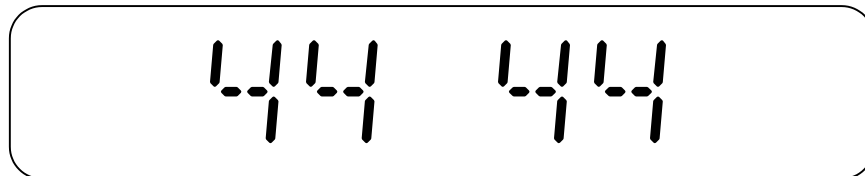


- Abnormal Display Explanations
  - *A flashing 99.* The temperature has risen above 99°F in Fahrenheit (F) mode, or 99°C in Celsius (C) mode.
  - *A flashing 00.* The temperature has dropped below 0°F in Fahrenheit (F) mode, or 0°C in Celsius (C) mode.

**NOTE:** To provide the most accurate temperature reading, do not place the Base Unit in direct sunlight or near a heating or cooling source.

### Brightness Adjustment

- While displaying the temperature, pressing and holding the MODE button for two seconds will show the current display brightness level. Pressing the UP or DOWN arrow buttons will select one of the eight brightness levels. Pressing the MODE button briefly will return to the Temperature Display.



**NOTE:** While setting the brightness, if no buttons are pressed for 30 seconds, the Base Unit will automatically return to Temperature Display.

## TRANSMITTER INSTALLATION

The Transmitter has five basic operating modes.

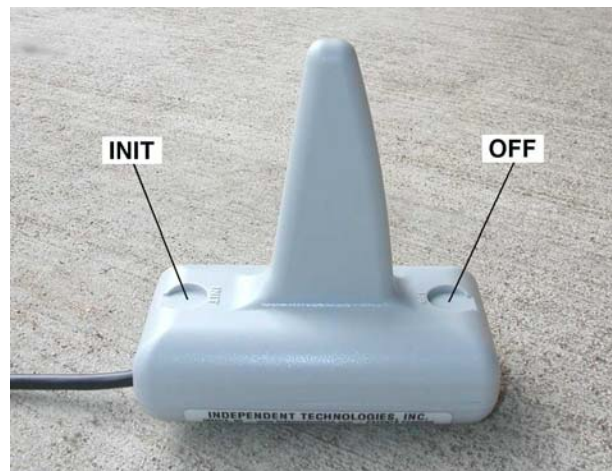
The following table defines the operating modes and programming magnet positions for each of the modes.

**NOTE:** To maximize battery life, set the Transmitter to OFF mode when not in use.

Operating Mode	OFF Position	INIT Position
OFF	X	
INITIALIZATION		X
TRANSMITTER NUMBER	X	X
PARAMETER *		X
NORMAL		

\* Must be entered from Transmitter Number mode.

**Figure 3:**  
**WESROC® RMS**  
**Transmitter**



### Program Transmitter Number

- Transmitters are set to transmitter number 1 by default. To change the Transmitter's number for a multi-tank installation, perform the following steps:
  - Place the transmitter into TRANSMITTER NUMBER Mode
    - Place one programming magnet in the OFF position.
    - Place another programming magnet in the INIT position.
  - If a Transmitter Monitor is being used to monitor transmissions, the transmitter number and serial number will automatically be displayed. If a Base Unit is being used to monitor transmissions, the Base Unit must first be placed into "4 PG" PROGRAM Mode.
    - Enter the Installation Menu (refer to the Base Unit Installation section for details).
    - Use the UP/DOWN arrows to display "4 PG" and press MODE to enter PROGRAM Mode. This mode is indicated by a flashing "P".
    - Only a transmitter with a changing transmitter number will be displayed. The number to the left of the flashing "P" is the transmitter number, and the two numbers to the right are the last two digits of the transmitter's serial number.
    - When done, press and hold MODE to return the Base Unit to Tank Level Display Mode.
  - Wait for the transmitter number of the Transmitter to change to the desired number (1 - 8).
  - Once the desired transmitter number has been received, immediately remove the programming magnet from the INIT position.

**NOTE 1:** The displayed transmitter number will change approximately every 5 to 6 seconds while the transmitter is in TRANSMITTER NUMBER Mode.

**NOTE 2:** Transmitter number programming can be performed in the field or at your office prior to installation. Transmitters programmed to a number other than "1" should be marked to reflect the new transmitter number.



## **TRANSMITTER INSTALLATION (continued)**

### **Replace Gauge Dial**

- Record the current tank level on the old dial in a notebook or in the space provided in this guide.
- If the tank gauge is not already equipped with a sensor ready dial, replace the dial with one having a sensor interface (Rochester R3D). Tanks with older Taylor 4-bolt gauges may need a dial adapter to enable upgrading to a sensor ready dial.
- Record the current tank level on the new dial in a notebook or in the space provided in this guide.

### **WARNING!!!**

**DO NOT REMOVE THE SCREWS HOLDING THE TANK GAUGE HEAD IN PLACE!!!  
TANK DECOMPRESSION CAN CAUSE SERIOUS INJURY AND/OR PROPERTY DAMAGE!!!**

### **Install Transmitter**

- Place the Transmitter on the tank near the gauge; the mounting magnet will hold it in place.
- Carefully route the sensor cable to the dial and position the cable so that it will not be damaged when the tank hood is closed.
- Snap the sensor on the end of the cable into the face of the sensor ready dial.
- Secure the sensor cable to the tank using at least one of the supplied cable ties.
- Re-position the Transmitter on the tank to take up any excess cable slack.
- TO ENSURE SAFE OPERATION:
  - The Transmitter **MUST** be installed according to the instructions in this guide.
  - **DO NOT** connect the Transmitter to any apparatus or wiring from another manufacturer.
  - **DO NOT** open the Transmitter enclosure under any circumstances. The Transmitter has no field serviceable parts and the internal batteries **ARE NOT** user replaceable.

**NOTE 1:** MT-9100TNK-U Universal Transmitter sensor cables are attached to WESROC RMS Large Dial assembly cables using in-line connectors. Carefully connect the two cable sections, making sure the locking ring on the connector is fully engaged. This will ensure that the connector remains weatherproof.

**NOTE 2:** If a Transmitter is removed or taken out of service, place a programming magnet in the OFF position and tape into place. This will maximize the battery life of the unit.

## **TRANSMITTER INSTALLATION (continued)**

### **Initialize Transmitter**

- Move the programming magnet from the OFF position to the INIT position.
- The Transmitter will now send an Initialization packet every 15 seconds for approximately 60 minutes.
- The Base Unit should now be installed in a location agreed upon with the customer (see the next section of this guide for instructions).
- After the Base Unit has been installed, remove the programming magnet from the Transmitter so that it will enter Normal operating mode. If the Transmitter is not taken out of Initialization mode within 60 minutes, it will automatically revert to Normal operating mode.

### **Transmitter Service**

- The Transmitter does NOT contain any field serviceable components. The Transmitter's internal batteries are NOT field replaceable. If a Transmitter is not functioning properly, return it to the factory for service or replacement.
- Transmitter battery status is reported with each transmission. Replace a Transmitter when the WESROC® RMS system reports a low battery alarm for that Transmitter. The Transmitter's internal batteries have a typical operating life of at least six years.

## **BASE UNIT INSTALLATION**

### **Installation Menu**

- To enter the Installation Menu the Base Unit must be in Tank Level Display mode. Press and hold the MODE button, while holding down the MODE button, press and hold BOTH the UP and DOWN arrow buttons until "1 IN" is displayed.
- There are four sections of the Installation Menu that can be selected by pressing the UP or DOWN arrow buttons:

- "1 IN" – Initialization: Look for tank transmitters**
- "2 CN" – Configuration: Call host to configure Base Unit**
- "3 SC" – Service Call: Base Unit test call to the host**
- "4 PG" – Program: Used while programming transmitter tank #**

- To select a menu item press and release the MODE button.
- To exit the menu at any time, press and hold the MODE button for one second.

## **BASE UNIT INSTALLATION (continued)**

### **Install Base Unit**

- Check that there is a WORKING telephone RJ-11 jack and 110VAC outlet in the selected Base Unit location. A touchtone telephone is required to complete the installation, but is not necessary for normal operation. If a customer's telephone is to be connected through the Base Unit, ensure that it works correctly prior to proceeding.
- Connect the LINE jack on the back of the Base Unit to the telephone wall jack, with the supplied telephone cord.
- Connect the touchtone telephone, or craftsmen's handset, that will be used for configuration to the PHONE jack on the back of the Base Unit.
- Plug the AC adapter into a 110-Volt outlet and the round L-shaped power plug into the 9VDC receptacle of the Base Unit. The Base Unit should power up and be in Tank Level Display Mode.
- Confirm that you have dial tone. Lift up the receiver of the telephone connected to the PHONE jack on the back of the Base Unit to ensure proper operation.

**Figure 4: WESROC® RMS Base Unit (rear view)**

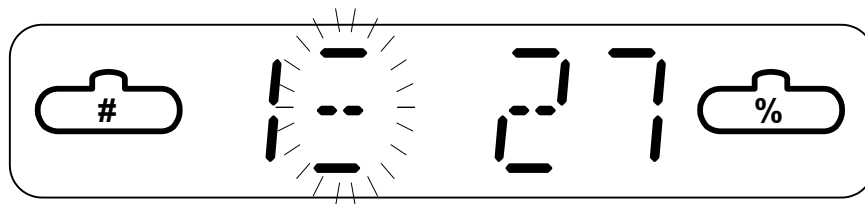
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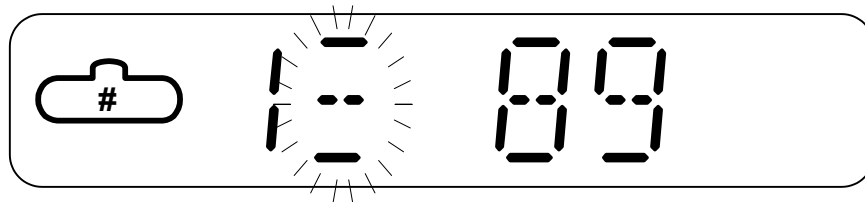
## BASE UNIT INSTALLATION (continued)

### Initialize Base Unit

- Enter the Installation Menu, as described at the beginning of the Base Unit installation section, and select “1 IN”, INITIALIZATION Mode. The Base Unit should display “1 IN” - (Option 1 = Initialization). Press the MODE button to display a column of flashing dashes. The Base Unit will now accept transmissions from any tank transmitter that is in INITIALIZATION mode, and will display the tank number and level percentage. Transmissions from any other tank transmitters will not be displayed while in this mode.
- When the Base Unit receives any transmitter’s initialization packet, it will record its unique transmitter serial number along with its tank number. The Base Unit should show the tank number (1-8) and the level percentage in that tank. Confirm the level percentage is the same as recorded earlier from the tank gauge (+/- 2% is acceptable).



- On completion of INITIALIZATION, the Base Unit will accept transmissions only from tank transmitters that have been initialized to it.
- **Signal Strength:** While in INITIALIZATION Mode, momentarily press the MODE button to display Received Signal Strength Indication (RSSI). The right side tank icon will turn off, and the signal strength will be displayed as a number from 00 to 99 for any transmitter in INITIALIZATION mode and within range of the Base Unit. The higher the number, the stronger the signal from the tank transmitter.



- Position the Base Unit, and its antenna for optimal reception. Observe the RSSI level for the highest possible signal strength.
- Press and hold the Base Unit MODE button for one second to return to Tank Level Display mode.

**NOTE 1:** Marginal signal strength is indicated by an RSSI level lower than 30. Either the Base Unit, transmitter, or both should be repositioned to increase the signal strength.

**NOTE 2:** The displayed tank level or signal strength will be updated every 15 seconds while the transmitter is in INITIALIZATION Mode.

**NOTE 3:** The Base Unit will return to Tank Level Display if it has not received any tank transmitter initialization packets within 10 minutes.

## **BASE UNIT INSTALLATION (continued)**

### **Configure Base Unit**

- Enter the Installation Menu, as described at the beginning of the Base Unit installation section, and select “**2 CN**”, to enter CONFIGURATION Mode. “**CN FG**” is displayed to verify that the Base Unit is ready to be configured.
  - CONFIGURATION Mode allows the installer to manually call the host so that the Base Unit can report in and receive its alarm thresholds, report interval, and other configuration data. The number of tanks initialized must agree with the configuration data that will be downloaded from the host.
  - The installer will normally use a touchtone telephone from his or her toolkit or the customer’s telephone.

**NOTE 1:** If no phone connection is available, the Base Unit will scroll “**NO LINE**” across its display several times, then return to Tank Level Display.

**NOTE 2:** If the phone is in use, the Base Unit will scroll “**IN USE**” across its display several times, then return to Tank Level Display.

- While the Base Unit displays “**CN FG**”, use a touch-tone telephone to go off-hook. The Base Unit will now scroll “**DI AL**” across its display. Dial the host phone number (\_\_\_\_ - \_\_\_\_ - \_\_\_\_\_) and listen for this voice prompt:

***“Please enter the Base ID now...”***

- The Base Unit will now scroll “**CN FG**” across its display until the configuration process is complete.
- After Base ID voice prompt is heard, use the touch-tone telephone to enter the unique Base ID for this installation site.
  - The Base ID is a 12 digit number that is typically some form of the customer’s account number or the installation site’s phone number with extension.
  - The host computer and the Base Unit will communicate for approximately 30 seconds.
- A successful configuration will be indicated by a voice message on the phone handset, and also by the Base Unit showing “**PA SS**” on its display.
- An unsuccessful configuration will be indicated by a voice message on the phone handset, and also by the Base Unit showing “**FA IL**” on its display.
- Reasons for failure may be a poor quality handset, entering the wrong Base ID number, or poor line quality.

## **BASE UNIT INSTALLATION (continued)**

### **Service Call**

- Enter the Installation Menu, as described at the beginning of the Base Unit installation section, and select “**3 SC**” to activate a SERVICE CALL.
- NOTE 1:** If no phone connection is available, the Base Unit will scroll “**NO LINE**” across its display several times, then return to Tank Level Display.
- NOTE 2:** If the phone is in use, the Base Unit will scroll “**IN USE**” across its display several times, then return to Tank Level Display.
- NOTE 3:** If the Base Unit has not been configured, the Base Unit will scroll “**NO CNFG**” across its display several times, then return to Tank Level Display.
- The Base Unit will now scroll “**CA LL**” across its display. During this time the Base Unit will attempt to call the host computer. Upon connection to the host, an exchange of information will occur. Observe the Base Unit for a display of “**PA SS**” or “**FA IL**”. On completion of a successful SERVICE CALL, the Base Unit is ready for service.

### **Final Inspection**

- If a customer's telephone is to be connected through the Base Unit, connect it to the PHONE jack on the back of the Base Unit and ensure that it works correctly.
- Make sure that all telephone and power cords are neatly routed.
- Ask the customer if they have any questions before you leave.
- Return to the tank where the transmitter was installed and remove the programming magnet from the transmitter INIT position. Upon removal, the transmitter will begin normal monitoring and transmitting. Even if the magnet is left in the INIT position, the transmitter will enter normal operation in about 30 minutes.

**NOTE:** Keep the programming magnet for use in future installations.

### **Operational Review**

- Demonstrate to the customer by pressing the MODE button, how the Base Unit can toggle between tank level, digital time display, and indoor temperature display.
- While in Tank Level Display mode, press the UP or DOWN arrow buttons to display tank numbers 1-8 (if more than one tank transmitter has been installed).
- Show that the brightness of the display can be adjusted to eight levels.
- Explain that the Base Unit is respectful of the customer's telephone line use. Reports are normally scheduled for off-peak use times and are either local or toll-free. Reports are usually less than 15-20 seconds. It will not interrupt customer calls, and it will stop reporting and retry later if the customer picks up the line during a report. Pressing the telephone hook-switch will restore normal dial tone if the customer interrupts the Base Unit during a report.

## EQUIPMENT CHECKLIST

- ☐ Base Unit Kit: Base Unit, AC Adapter, 6' RJ-11 Cord and User's Guide
- ☐ Spare RJ-11 Phone Cords (6' & 12')
- ☐ Tank Transmitter(s)
- ☐ Rochester Remote Ready Dial(s) (Application Specific)
- ☐ Taylor SR to Rochester SR Dial Adapter(s)
- ☐ Taylor JR to Rochester JR Dial Adapter(s)
- ☐ Safety Glasses
- ☐ Set of Basic Installation Tools
- ☐ Nylon Cable Ties
- ☐ Tube of Silicone Adhesive
- ☐ Touch-Tone Telephone Handset with Memory and Redial Functions
- ☐ WESROC® RMS Transmitter Monitor
- ☐ Ladder for Working on Higher Tanks

## INSTALLATION CHECKLIST

- ☐ Host Computer Entry for This Customer's Base Unit & Tank(s)
- ☐ Host Computer Telephone Number: \_\_\_\_ - \_\_\_\_ - \_\_\_\_
- ☐ Account Contact Name: \_\_\_\_\_
- ☐ Appointment With Customer for Access to Base Unit Installation Location
- ☐ Base ID for this Installation: \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_

## TANK INFORMATION

#	Size (Gallons)	Old Dial Level (%)	New Dial Level (%)	Base Unit Level (%)
1				
2				
3				
4				
5				
6				
7				
8				



Omaha Customer Service Center  
11640 Arbor Street  
Suite 100  
Omaha, NE 68144  
Phone: 402-496-4700 Fax: 402-493-5100

Email: [info@IndependentTech.com](mailto:info@IndependentTech.com) Web: [www.IndependentTech.com](http://www.IndependentTech.com)