



User Manual & Product Guide

Rev. B

YJACK™ Series Bluetooth® Sensing Technology



Contents

| | |
|---|----|
| Getting Started..... | 2 |
| Introduction | 2 |
| Safety and Warning Information | 3 |
| Using your YJACK™ Devices | 3 |
| Powering the device on | 3 |
| Placing the device on the system..... | 4 |
| Status LED: what does it mean?..... | 5 |
| Changing the batteries..... | 7 |
| With a P51-870 TITAN® Digital Manifold | 7 |
| With the YJACK VIEW™ smart application | 8 |
| P51-870 TITAN® Digital Manifold – Update V2.0X..... | 14 |
| Device Specifications | 17 |
| Troubleshooting & FAQs | 21 |

Getting Started

Introduction

Thank you for your purchase of the YELLOW JACKET® YJACK™ Series of Bluetooth® Sensing devices. The YJACK™ series of devices are the next evolution in creating an interconnected and efficient work environment allowing service technicians to work more quickly and precisely in the ever growing and complicated HVAC/R industry.

Take a moment to familiarize yourself with your new device(s). You will notice that all YJACK™ devices feature a simple on/off button to power cycle the device, a quick-coupler for system attachment and/or a mounting magnet for strategic placement on surrounding metallic surfaces, and flexible connections to aid in the proper positioning of the device within your workspace. Each YJACK™ product is powered by (2) AAA batteries housed beneath the removable battery door on the back of the device. The procedure to replace the product batteries is the same across all YJACK™ devices and will be covered in more detail later.

All YJACK™ products include an integrated Electronic Paper Display (EPD) or a status indication LED adjacent to the power button which can provide feedback as to the device's current mode of operation. During normal operation, the status indicator LED will flash yellow once every two seconds to indicate that a measurement has been transmitted via Bluetooth®.

Unlike other Bluetooth® devices, YJACK™ devices do not require "pairing" or an established connection between one another or the user's smart device to transmit and receive information. Simply power the device on and it will immediately begin broadcasting data to other available devices within the broadcast range.

YJACK™ tools may be used individually or together, broadcasting up to (6) unique measurements to one P51-870 TITAN® Digital Manifold (see firmware requirements) or an unlimited number of unique measurements to a smart device running the YJACK VIEW™ smart application.

To order accessories, receive assistance, or locate the nearest YELLOW JACKET® distributor, contact Ritchie Engineering Company, Inc.

Corporate Office and Mailing Address:

Ritchie Engineering Company, Inc.
YELLOW JACKET® Products Division
10950 Hampshire Avenue South
Bloomington, MN 55438-2623 USA
Phone: (952) 943-1300 or (800) 769-8370
Fax: (800) 769-8370
E-mail: custserv@yellowjacket.com
www.yellowjacket.com

Safety and Warning Information

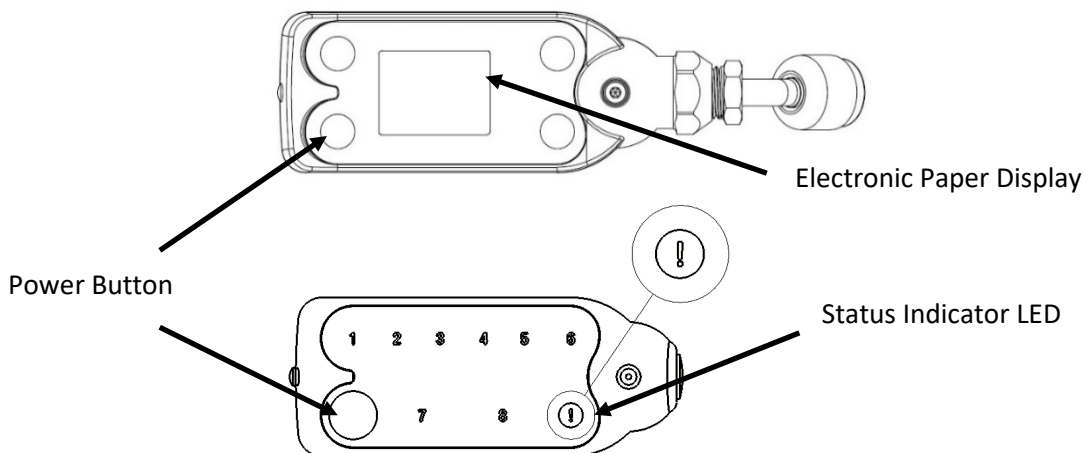
Use the YJACK™ Series of Bluetooth® sensing devices only as specified in this manual.

- Most governments and legal authorities require that HVAC technicians be trained and certified in the safe and proper operation of HVAC tools, such as these instruments.
- Read the entire User Manual before using the instrument.
- Do not use the instrument if it is damaged. Before you use the instrument, inspect the case. Look for cracks or loose components.
- The instrument contains no internal user serviceable parts, except for the AAA batteries.
- Do not open the instrument. Have the instrument serviced only by Ritchie Engineering Co. or authorized service centers.
- Do not use the instrument if it operates abnormally. Protection may be impaired. When in doubt, have the instrument serviced.
- Do not operate the instrument around explosive gas, vapor, or dust.
- Do not operate the instrument outside of its rated specifications, outlined later in this manual.
- The refrigerant database used in conjunction with these tools may include refrigerants classified as flammable. If such refrigerants are selected, the operator may need additional certifications and/or training. Consult your government and legal authority and comply fully with all requirements.
- Always wear eye and skin protection when working with refrigerants. Escaping refrigerant vapors will present a freezing danger. Do not direct refrigerant vapors venting from hoses towards the skin.

Using your YJACK™ Devices

Powering the device on

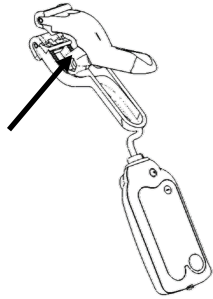
All YJACK™ devices utilize the same power switch and either an integrated display or a status indicator LED. Press and hold the power button to power on the device. Release the power button when the display image changes or the status indicator LED illuminates.



When using the YJACK PATH™, numeric LEDs 1-8 will illuminate to indicate the number of YJACK™ and P51-870 TITAN® devices within range.

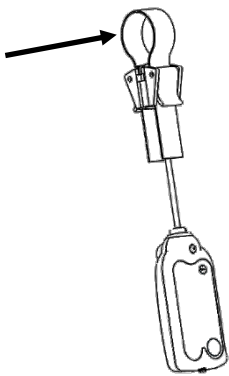
Placing the Device on the System

YJACK™ Temperature Clamp



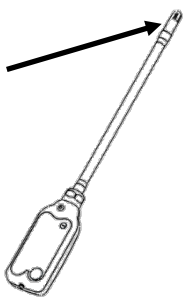
Depress the clamp handle to open the clamp jaws and attach the clamp to the pipe surface where temperature measurements are desired. For best results, attach the clamp in an area where the clamp jaws have full engagement of the pipe surface. The clamp can be used on pipes up to 1.25 inches in diameter. Avoid clamping over areas of pipe that are coated or insulated as this may impact the accuracy of the system temperature reading. If there is a ferrous metal surface near the placement of the clamp, the magnet on the bottom of the radio module can be attached to the surface for a more secure connection.

YJACK™ Temperature Strap



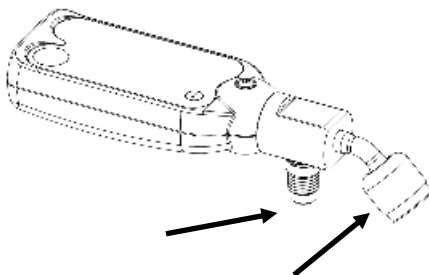
Utilize the flexible strap to tightly secure the strap clamp to the pipe surface where temperature measurements are desired. First, open one of the buckles and pull the strap out of the buckle so that it is only retained in the second buckle. Feed the strap around the pipe and back through the open buckle. Pull the strap tightly around the pipe and then close the buckle. The strap can be used on pipes up to 6 inches in diameter. For best results, attach the strap in an area where the strap body has full engagement of the pipe surface. Avoid attaching the strap over areas of pipe that are coated or insulated as this may impact the accuracy of the system temperature reading. If there is a ferrous metal surface near the placement of the clamp, the magnet on the bottom of the radio module can be attached to the surface for a more secure connection.

YJACK DEW™ Psychrometer



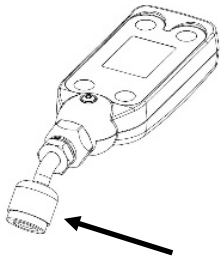
Remove the black vinyl cap covering the sensing element. Form the flexible wand to the desired shape and place the sensing element within the ventilation system or wherever psychrometric data is desired. If there is a ferrous metal surface near the placement of the Dew, the magnet on the bottom of the radio module can be attached to the surface for a more secure connection.

YJACK PRESS™ Wireless Pressure Gauge



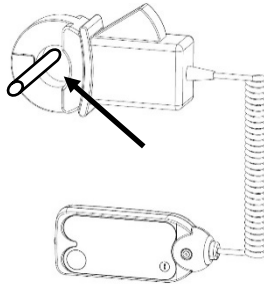
Remove the red plug from the brass quick coupler nut. Make sure the pressure transducer has been zeroed (this will be covered in more detail later) and attach the device directly to the system low-side or high-side service port. A 5/16" adapter (19121 straight or 19221 90 degree) can be used for systems with 5/16" connections. The integrated charging port on the back of the device can be connected to a charging hose for adjustment of system charge while continuing to monitor system pressure.

YJACK VAC™ Wireless Vacuum Gauge



Remove the red plug from the brass quick coupler nut. Then the device can be attached directly to the side port of a core removal tool or to a system service port. A 5/16" adapter (19121 straight or 19221 90 degree) can be used for systems with 5/16" connections. For the most accurate system vacuum readings and to avoid contamination of the sensor, it is not recommended to connect the vacuum gauge directly to the vacuum pump.

YJACK AMP™ Wireless Current Probe



Depress the clamp lever and place the CT around the hot or neutral wire where AC current is to be measured. Make sure the clamp jaws are fully closed for best accuracy. If there is a ferrous metal surface near the placement of the clamp, the magnet on the bottom of the radio module can be attached to the surface for a more secure connection.

YJACK MANO™ Wireless Dual Port Manometer

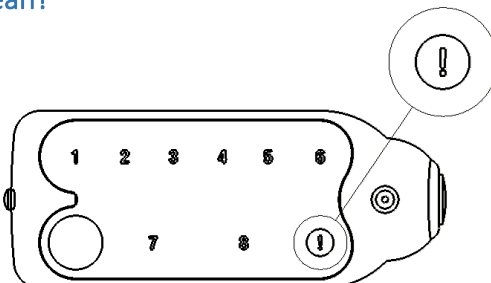


Make sure that the supply and return pressures have been zeroed (this will be covered in more detail later). For static pressure measurements in ducting, drill 3/8" holes where the static pressure tips are to be placed. Insert the static pressure tips into the ductwork so that the tips are pointing towards the direction of airflow and use the provided tubing to connect the corresponding pressure tips to the supply and return pressure ports on the device. For gas pressure measurements, use the appropriate gas manifold fitting and use the provided tubing to connect the fitting to the corresponding pressure port on the device.

YJACK PATH™

Although the YJACK PATH™ is not placed directly on the system, the location of the device can impact its effectiveness in repeating the Bluetooth® signals from the other YJACK™ devices. Be mindful of the environment in which readings are being taken. If there are obstructions, such as walls, paneling, or other equipment between the YJACK™ devices and the P51-870 TITAN® or smart device running the YJACK VIEW™ app, placing the YJACK PATH™ in an area that has direct line-of-sight of the Bluetooth® devices often provides the best results and longest communication ranges. Also keep in mind that there could be obstructions and interference caused by signals not visible. If you believe that you may be experiencing signal interferences, move the YJACK PATH™ to a different location until the Bluetooth signal improves. If there is a ferrous metal surface near the placement of the YJACK PATH™, the magnet on the bottom of the radio module can be attached to the surface for a more secure connection.

Status LED: what does it mean?



When powering on the YJACK™ device, hold the power button until the status LED illuminates solid yellow, then release the power button. Once powered on, the LED will flash every time the YJACK™ devices readings are broadcast, every 2 seconds. When the battery level reaches 10%, the LED will flash red to indicate the low battery condition. When powering off the device, the LED stays red until the power button is released and the device is powered down.

Changing the Display and Settings on the YJACK VAC™

The diagram below outlines the button functions and device settings for the YJACK VAC™:

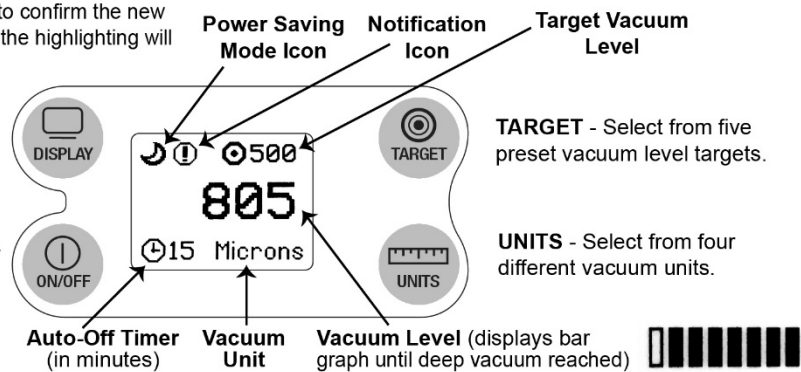
TO CHANGE A SETTING:

- Tap the corresponding button to highlight the current setting.
- Continue to tap this button until the desired value is displayed.
- Press and hold this button for 2 seconds to confirm the new setting. The setting will be confirmed and the highlighting will disappear when the button is released.

DISPLAY - Select from several notification options. To change the background, press and hold for three seconds to inverse LCD mode.

ON/OFF - Power on and off, select from four different auto-off timer settings.

POWER SAVING MODE - Powers off display after 15 minutes of inactivity to extend battery life while viewing readings remotely. Press any button to refresh the display.



Changing the Display and Settings on the YJACK MANO™:

The diagram below outlines the button functions and device settings for the YJACK MANO™:

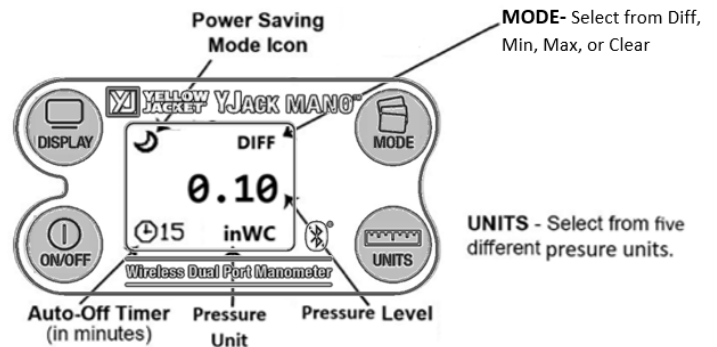
TO CHANGE A SETTING:

- Tap the corresponding button to highlight the current setting. Tap the corresponding button to highlight the current setting
- Continue to tap this button until the desired value is displayed
- Press and hold this button for 2 seconds to confirm the new setting— the setting will be confirmed and the highlighting will disappear when the button is released

DISPLAY: Select from several notification options. To change the background, press and hold for three seconds to inverse LCD mode.

ON/OFF: Power on and off, select from four auto-off timer settings.

POWER SAVING MODE: Powers off display after 15 minutes of inactivity to extend battery life while viewing readings remotely. Press any button to refresh the display.



Changing the Batteries

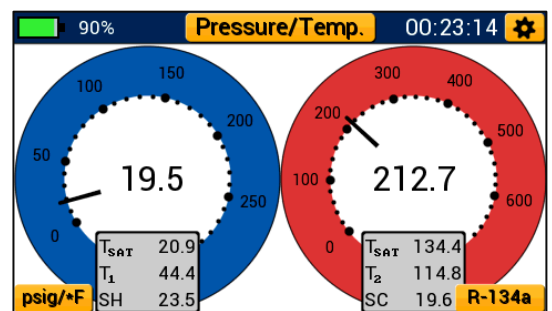
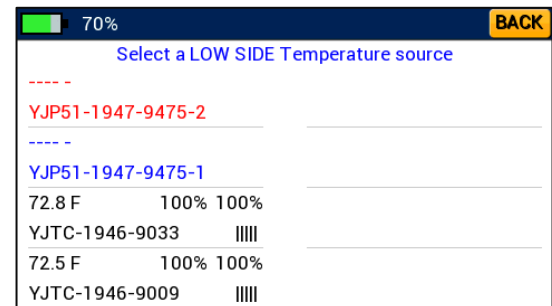
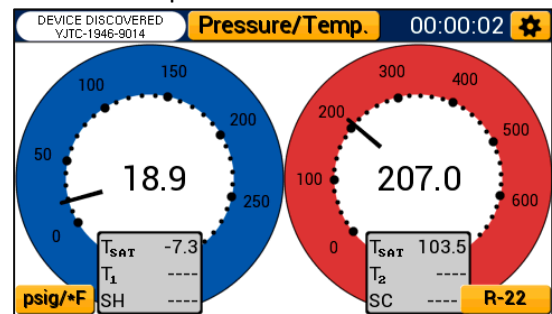
Each YJACK™ product is powered by (2) AAA batteries housed beneath the removable battery door on the back of the device. Using your finger or a flat blade, pry up on the battery door to remove it from the device. Remove the batteries and place (2) new AAA batteries into the battery holder. Reference the required polarity of the batteries molded into the battery holder. Replace the battery door by inserting the tab on the inside edge of the door into the slot in the module enclosure and then press down on the battery door until it snaps into place.

With a P51-870 TITAN® Digital Manifold

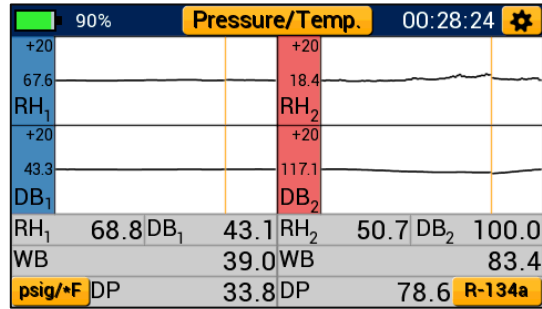
To use the YJACK™ series of Bluetooth® Sensing devices with the P51-870 TITAN® Digital Manifold, ensure that the P51-870 TITAN® firmware version is up to date. Version 2.01 or higher is required to display information from the YJACK™ Temperature Clamp/Strap and YJACK DEW™. Version 3.0 and higher (both board and radio firmware) is required to display information from the YJACK™ VAC and YJACK AMP™. The YJACK PRESS™ and YJACK MANO™ readings are only broadcast to the YJACK VIEW™ app and cannot be displayed on the P51-870 TITAN®. To check the firmware version, access the general settings screen on the P51-870 TITAN® by pressing the “gear” icon in the upper right-hand corner of the display and confirm the board and radio firmware versions. If a firmware update is required, reference the “P51-870 TITAN® Digital Manifold – Firmware Update” section below for details on updating the firmware.



When a compatible YJACK™ device is turned on and within range of the P51-870 TITAN®, a message will appear in the upper left corner of the display, indicating that the P51-870 TITAN® has discovered a YJACK™ device. For display of YJACK™ Temperature Clamp and Strap probes within the Pressure/Temperature session, press on the gray box containing the temperature measurements. A list of available temperature measurement devices will appear and the YJACK™ Temperature Clamp and Strap probes can be selected along with any wired temperature probes plugged into the P51-870 TITAN®. This can be done for both the low-side and high-side temperature readings. Pressing in the center of the low-side and high-side pressure gauges changes the display of the pressure and temperature readings into a line graph format. Pressing on the pressure/temperature line graphs changes the display to show psychrometric readings from the YJACK DEW™ probes. The readings can be assigned by pressing in the gray area below the line graphs. A list of available YJACK DEW™ probes will appear. The left slide of the display which previously contained the low-side system measurements is now the supply air side and the right side of the display is the return air. The P51-870 TITAN®



graphs the supply and return air relative humidity and dry bulb temperatures. Below the graphs are the numeric values of the relative humidity and dry bulb temperatures, along with the wet bulb temperature and dew point. To go back to pressure readings, press on the line graphs and the analog pressure gauge will appear. There is not a unique session to display readings from the YJACK AMP™, but the readings can be viewed from the reading assignment screens within the Pressure/Temperature session and data from the YJACK AMP™ and other P51-compatible YJACK™ devices that are within range will automatically be logged to the P51 manifold's internal memory.



With the YJACK VIEW™ Smart Application

The YJACK VIEW™ smart application provides a simple yet comprehensive interface to display, analyze,



<https://play.google.com/store/apps/details?id=com.ritchieengineering.yjackview>

<https://apps.apple.com/us/app/yjack-view/id1492358956>



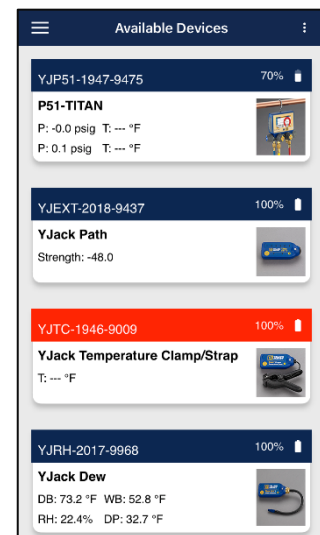
and record the data from the P51-870 TITAN® and all YJACK™ Bluetooth® devices. The app is available for both iOS and Android smart devices through the App Store and Google Play Store, respectively. Be sure to download any available app updates as they will include new features and app enhancements. Open the camera app on your Android or iOS smart device and scan over the QR codes or click on the links below to go directly to the app store pages:

Google Play Store for Android™ devices

App Store for iOS devices

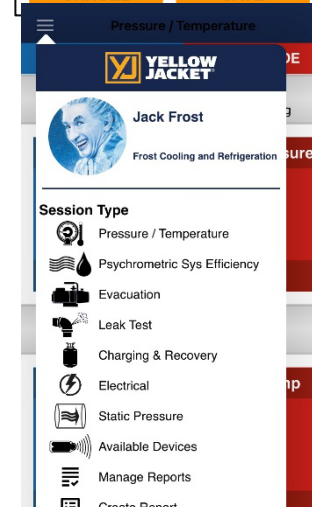
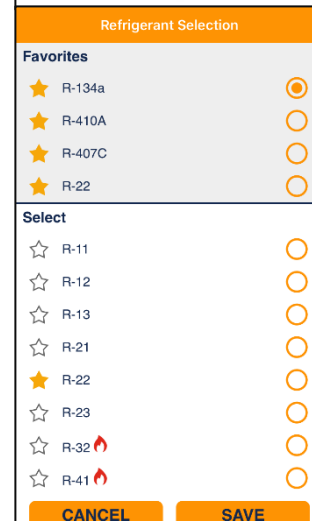
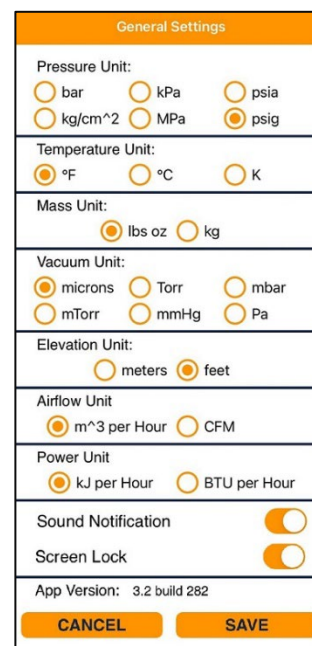
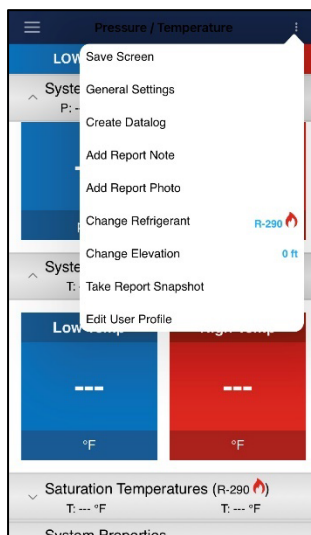
Available Devices

Upon opening the app, a list of available devices will appear. If there are no P51-870 TITAN® or YJACK™ devices turned on and within range, no devices will be listed, but as these devices are powered on, they will populate on this screen. Each device that appears on the list of available devices includes some basic information about the device. This includes the device serial number/Bluetooth® ID, the battery level, and any readings that the device is broadcasting. Keep in mind that the YJACK PATH™ can be utilized to repeat the readings from any P51-870 TITAN® or YJACK™ device, improving the connection range. If a device moves out of range or is turned off, it will display on the available devices screen with a red banner. If this occurs make sure the device is turned on and moved back within range, possibly by relocating the YJACK PATH™ device.



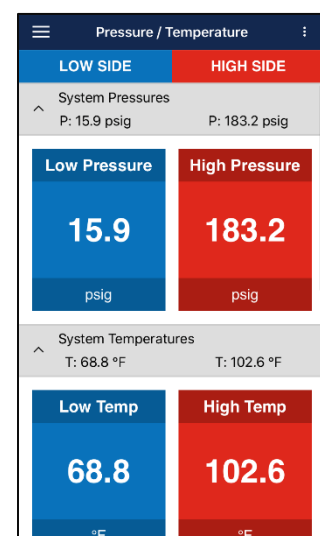
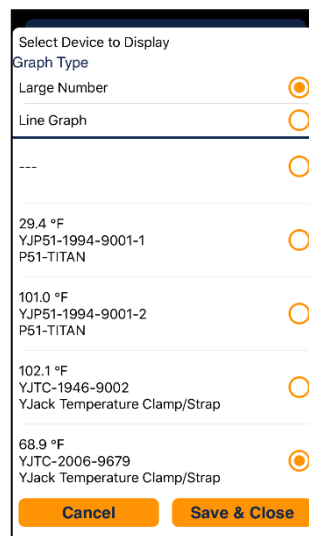
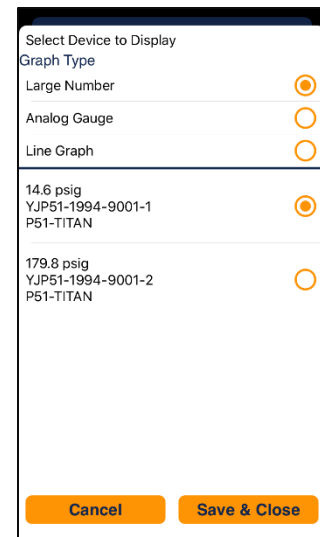
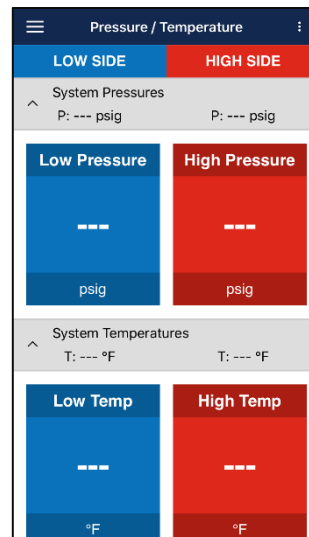
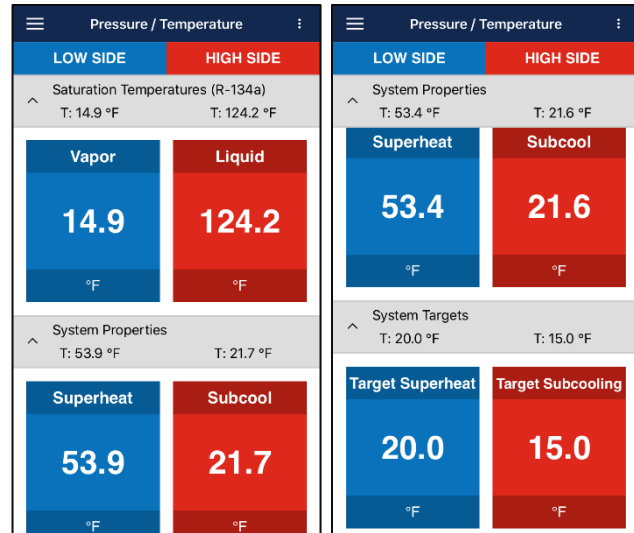
General Settings

Before starting any system readings session with the YJACK VIEW™ app, make sure the app settings are configured to your preferences. Press on the three-dot icon in the upper right corner of the screen. A list of configurable settings will appear including General Settings, Create Datalog, Change Refrigerant, Change Elevation, and Edit User Profile. First, access the “General Settings.” This screen will allow you to set your preferred units of measurement for pressure, temperature, vacuum, and elevation. You can also turn on and off sound notifications and the screen lock functions. Once the proper settings have been selected, press “Save.” If you plan to start a Pressure/Temperature Session, again tap the three-dot icon and select “Change Refrigerant.” The list of over 126 selectable refrigerants will appear. Next to each refrigerant name, there is an outline of a star. Pressing on the star icon will turn the star solid yellow and classify that refrigerant as a favorite. Favorite refrigerants will always appear at the top of the refrigerant selection screen for easy access. To remove a refrigerant from the list of favorites, simply press on the solid yellow star next to the desired refrigerant and it will instantly be removed from the list of favorites. Once the favorites have been configured as desired, and the proper refrigerant has been selected, press Save. The final app configuration setting is to set the elevation where the service is being performed. Press on the three-dot icon once again and select “Change Elevation.” Enter the elevation where service is being performed and press “OK.” This will implement pressure measurement compensation when reading gauge pressure. The fourth option from the app settings, “Create Datalog,” is discussed in more detail below. Now that the app settings have been configured. The session type can be selected. Press on the three-line icon on the upper left corner of the screen to bring up the session selection menu. You can select from Pressure/Temperature, Psychrometric Air Calculations, Evacuation, Static Pressure, or Available Devices to return to the Available Devices screen.

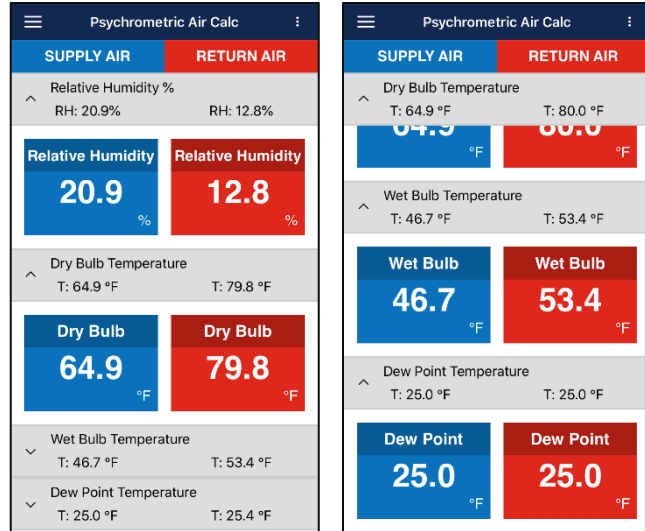


Pressure/Temperature Session

The Pressure/Temperature session type displays system pressure and temperature measurements, as well as saturation temperatures and superheat/subcooling data. The first time a Pressure/Temperature session is started, the system pressure and temperature measurements will need to be assigned to the specific P51-870 TITAN® and YJACK™ devices being used. Press on the 3 dashes within the Low-Pressure measurement box. A list of available devices broadcasting pressure measurements will appear. Select the device and measurement that corresponds with the low side of the system. Above the device selection, there is also a list of reading display options. Pressures can be displayed as a large digital number, a simulated analog gauge, or as a line graph to show measurement changes over time. Select the preferred graphical type and press “Save & Close.” Follow this same procedure for the High-Pressure measurement. Now assign the system low-side and high-side temperatures. Press on the 3 dashes within the Low Temperature measurement box. A list of available devices broadcasting system temperature measurements will appear including any YJACK™ Temperature Clamp or Strap probes as well as any wired temperature clamps plugged into a P51-870 TITAN®. Select the device and measurement that corresponds with the low side of the system. Above the device selection, there is also a list of reading display options. Temperatures can be displayed as a large digital number or as a line graph to show measurement changes over time. Select the preferred graphical type and press “Save & Close.” Repeat this process for the system high temperature reading. Below the system pressure and temperature readings are the vapor and liquid Saturation Temperatures, which are automatically generated once the pressures are assigned. The refrigerant that has been selected is also displayed in this line and

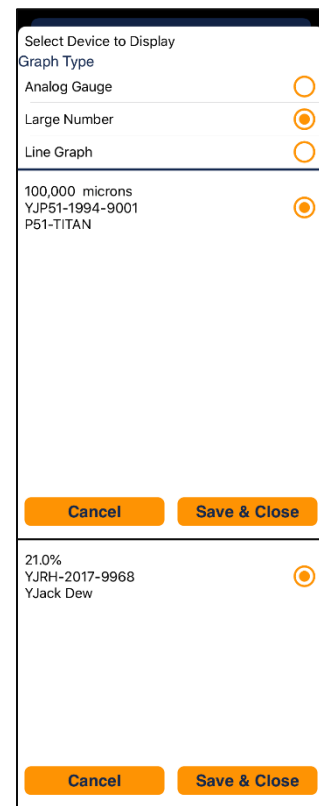
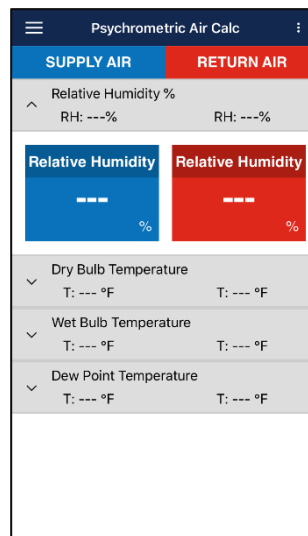


can be changed at any time in the app settings as outlined earlier. The next set of data is the System Properties, which includes the system superheat and subcooling values generated once the pressure and temperature measurements have been assigned. The last set of data is the System Targets, where you can input the target superheat and subcooling values for reference against the actual system readings. To adjust the datasets that appear on the Pressure/Temperature session screen, press the caret “^” icon next to each dataset to minimize or maximize it until the desired datasets are displayed. The system readings assignments are stored in the app memory for future sessions, but the assignments can be changed at any time by pressing on the reading that is to be changed.



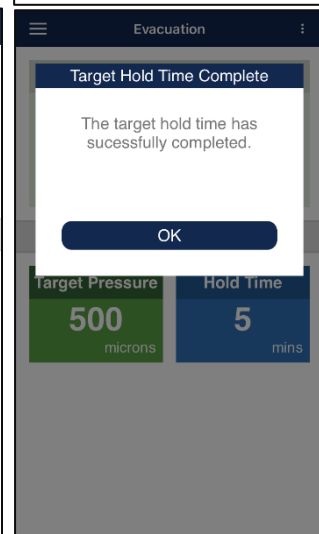
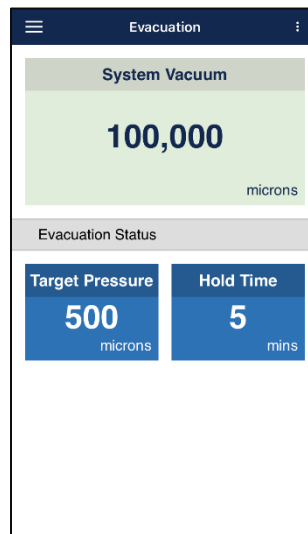
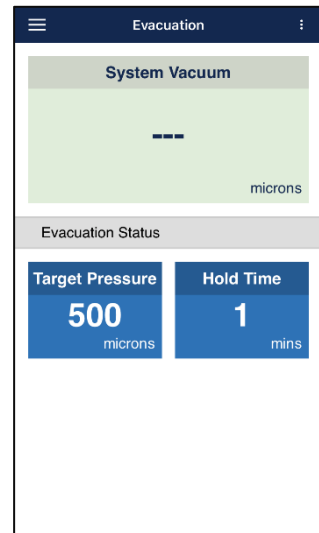
Psychrometric Air Calculations

The Psychrometric Air Calculations session type displays relative humidity, dry bulb temperature, wet bulb temperature, and dew point temperature from 2 YJACK DEW™ psychrometer probes, great for taking supply air and return air measurements in ventilation systems. The first time a Psychrometric Air Calculations session is started, the supply and return air measurements will need to be assigned to the specific YJACK DEW™ psychrometer probes being used. Press on the 3 dashes within the Supply Air Relative Humidity measurement box. A list of available devices broadcasting psychrometric measurements will appear. Select the device that corresponds with supply air side of the system and press “Save & Close.” Follow this same procedure for the return air measurement. Once the readings have been assigned, the Psychrometric Air Calculations readings screen will display the relative humidity, dry bulb temperature, wet bulb temperature, and dew point temperature for both the supply and return air. To adjust the datasets that appear on the session readings screen, press the caret “^” icon next to each dataset to minimize or maximize it until the desired datasets are displayed. The system readings assignments are stored in the app memory for future sessions, but the assignments can be changed at any time by pressing on the reading that is to be changed.



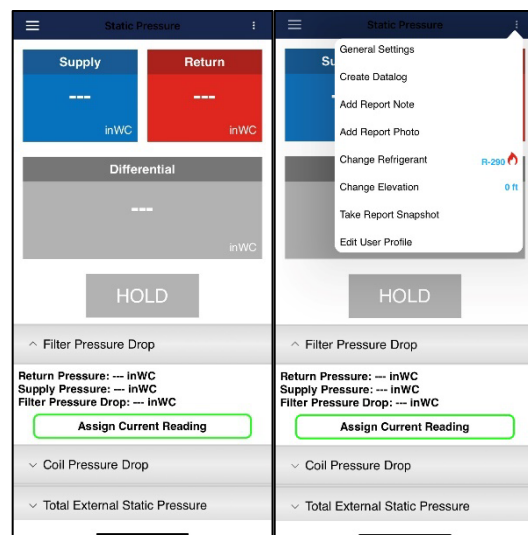
Evacuation

The Evacuation session type displays the system vacuum level from any vacuum probe plugged into a P51-870 TITAN®. The first time an Evacuation session is started, the vacuum measurement will need to be assigned to the specific P51-870 TITAN® vacuum probe. Press on the 3 dashes within the System Vacuum measurement box. A list of available devices broadcasting vacuum measurements will appear. Select the correct P51-870 TITAN® being used in conjunction with the vacuum probe. Above the device selection, there is also a list of reading display options. Pressures can be displayed as a large digital number, a simulated analog gauge, or as a line graph to show measurement changes over time. Select the preferred graphical type and press “Save & Close.” Once assigned, the system vacuum level will be displayed. If the system is initially at atmospheric pressure, the reading is displayed as 100,000 microns (or other unit equivalent) until the system vacuum drops below that level. From the Evacuation reading screen, a target vacuum pressure and hold time can also be set. To set the target vacuum pressure, press on the 3 dashes within the Target Pressure display box. Enter the target vacuum pressure and press “Save.” Follow the same process for the Hold Time. Once the system vacuum level reaches the target pressure, the target pressure box will turn green and the timer corresponding to the hold time will begin. If the system maintains the target pressure throughout the duration of the hold time, a message will appear indicating that the target hold time test has completed. The vacuum reading assignment is stored in the app memory for future sessions, but the assignment can be changed at any time by pressing on the system vacuum reading.



Static Pressure

The Static Pressure session type displays the differential pressure level from any two sources connected to the YJACK MANO®. The first time a static pressure session is started, the Supply & Return measurement will need to be assigned to the specific YJACK MANO® pressure probe. Press on the 3 dashes within either the Supply or Return measurement box. A list of available devices broadcasting differential pressure measurements will appear. Select the correct YJACK MANO® being used in conjunction with the pressure differential and press “Save & Close.” Once assigned, the system pressure

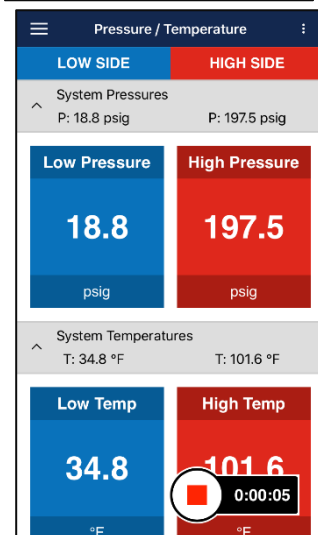
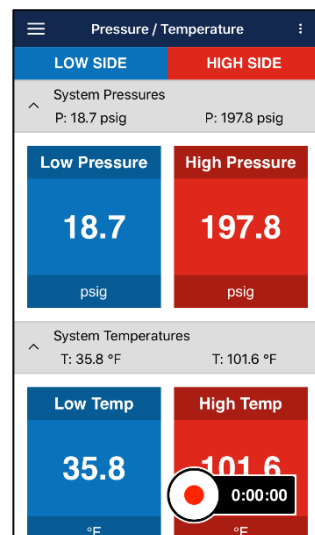
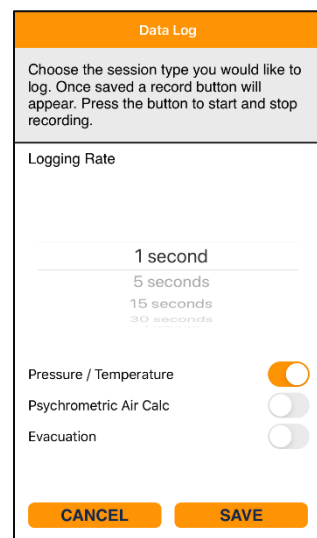
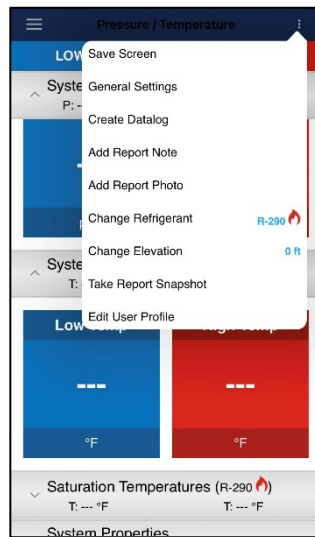


levels will be displayed. Pressures will be displayed as a large digital number to show measurement changes over time. If the system is initially at balanced pressure, the reading is displayed as 0 inWC (or other unit equivalent) until the system pressure differentials change from that level. From the Static pressure reading screen, a Filter Pressure Drop, Coil Pressure drop,

Total external static Pressure, pressure differential, Static Pressure, and Gas Pressure can also be recorded. To record the pressure, press on the heading display box. Tap the “Assign current Reading” box. Follow the same process for each pressure drop recording. Once the readings have been recorded, “Take Report Snapshot” can be used to capture all the held data.

Create Datalog

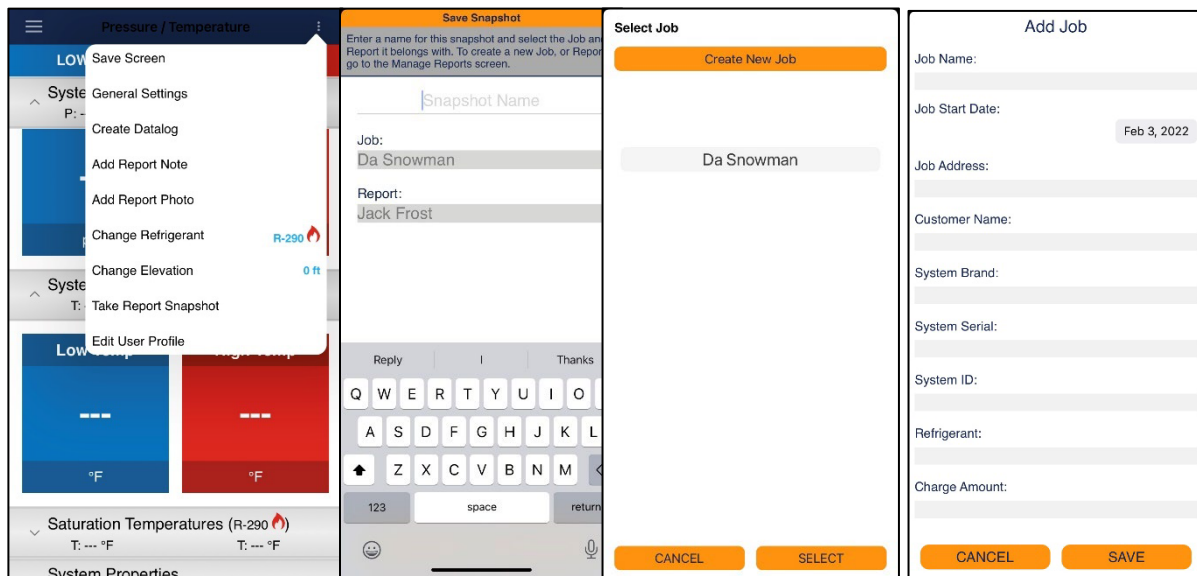
Datalogs can be created to log readings during any of the 3 session types. To start a datalog from within any session, press on the three-dot icon in the upper right corner of the screen and select “Create Datalog.” From this screen you can select the logging rate, which is how frequently the readings will be logged, and which session type to log readings from. Multiple session types can be selected if desired, but keep in mind that only one session readings screen can be displayed within the app at any given time. Once the logging rate and session type(s) have been selected, press “Save.” A recording icon and timer will display in the lower right corner of the screen. When you are ready to start recording data, press on the red circle “record” icon to begin the datalog. The timer will count from the time that the datalog was started. When you are ready to stop the datalog, press on the red square “stop” icon. You can then select to either save or discard the log file. If you wish to save the log file, a list of available save options will appear.



Take Report Snapshot

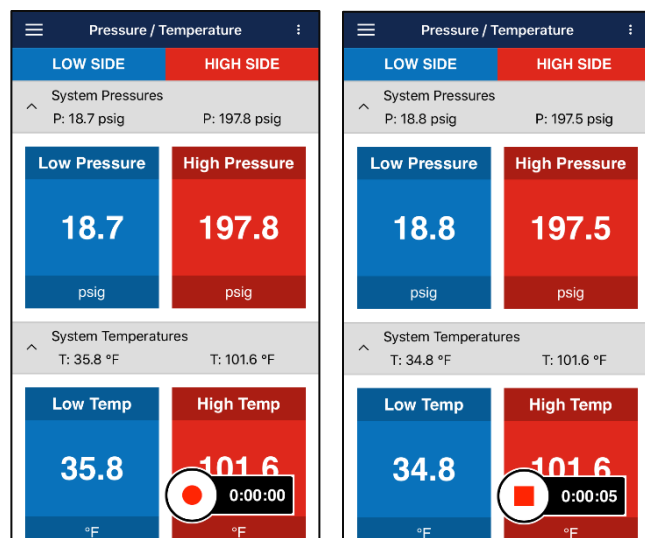
Report snapshots can be recorded to log readings during any of the sessions. To take a data “snapshot” (record capture) from within any active session, press on the three-dot icon in the upper right corner of the screen and select “Take Report Snapshot.”

From this screen you will Name the snapshot and be able to pick which job and which report to record the snapshot on. Once the name is entered and the proper job and Report are selected, press “Save.”



P51-870 TITAN® Digital Manifold – Firmware Update

For communication between your P51-870 TITAN® Digital Manifold and the YJACK VIEW™ App, as well as the YJACK™ Series of Bluetooth® Sensing devices, the P51-870 TITAN® firmware must be version V2.01 or later. All P51-870 TITAN® Digital Manifolds manufactured in 2019 and earlier were produced with firmware version V1.XX and must be updated. These manifolds will have a serial number and Bluetooth ID starting with YJP51-1XXX-XXXX. If your P51-870 TITAN® serial number and Bluetooth® ID is YJP51-2XXX-XXXX, it was

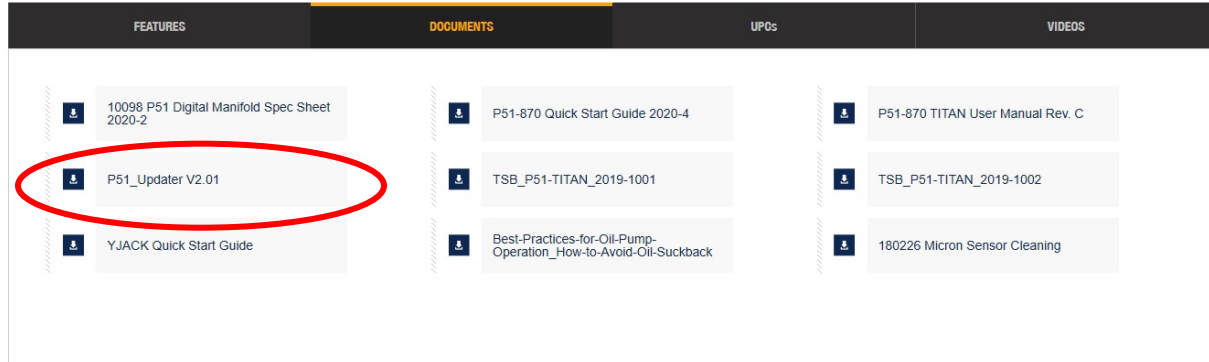


produced with firmware version V2.0X and is already configured for communication with the YJACK VIEW™ app and YJACK™ Series of Bluetooth® Sensing devices. If you are unsure if your older manifold has been updated or not, there are a few different ways to determine the firmware version of your P51-870 TITAN® and whether an update is required. During startup, the firmware version is displayed in the lower left-hand corner of the display on your P51-870 TITAN®. If the firmware version is V1.40 or earlier, your P51-870 TITAN® will need to be updated. Also, if you access the general settings screen on your P51-870 TITAN® by pressing the “gear” icon in the upper right-hand corner of the display, manifolds with the updated firmware will display the firmware version, radio version, and serial number just above the “EXIT” button in the lower left-hand corner of the screen. If you do not see this text above the “EXIT” button, your P51-870 TITAN® will need to be updated.

There are 2 separate firmware updates; one is for the P51-870 TITAN® radio which allows for communications with the YJACK VIEW™ app, and the other is for the P51-870 TITAN® circuit board, or USB Firmware, which allows for the P51-870 TITAN® to display the readings being broadcasted from the YJACK™ tools. If your P51-870 TITAN® is running on firmware version V1.40 or earlier, you can update both the radio and board firmware from either a Windows or MacOS computer.

Windows P51-870 TITAN® Firmware Updater

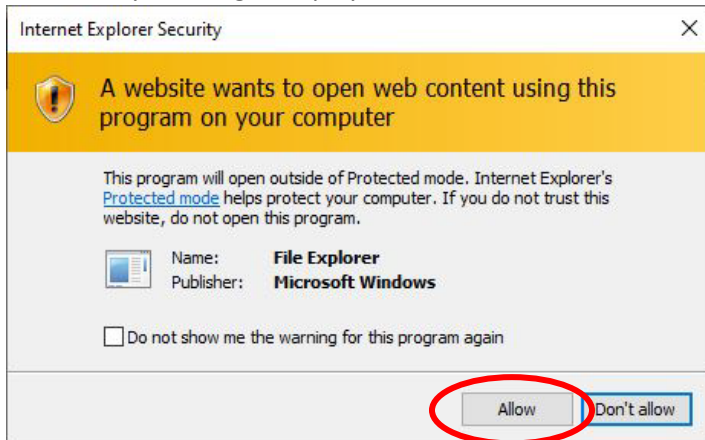
If you are using a PC running the Windows 10 Operating System, open a web browser and navigate to the P51-870 TITAN® product page at www.yellowjacket.com or click the following link: www.yellowjacket.com/product/p51-titan-digital-manifold. Click on the “DOCUMENTS” tab to access the updater files and click on the “P51-870 TITAN V2.01 UPDATER”.






The following window will appear, click “Open.”



If a security warning is displayed, click “Allow”.



The updater files will open in a new window with the following (3) files.

-  P51_RadioUpdater_3.0.0.0_x64
-  P51-870 V2.01 UPDATER INSTRUCTIONS
-  p51-870_USB Firmware_V02_01

First, open the “P51-870 V2.01 UPDATER INSTRUCTIONS” PDF document. This document outlines the system requirements and steps for updating your P51-870 TITAN®. Familiarize yourself with the process and review the requirements. To proceed with the update, the PC must be running the Windows 10 OS, Bluetooth peripheral is required, and Bluetooth must be turned on.

Double click on “P51_RadioUpdater_X.X.X.X_x64 file and follow the onscreen instructions. Once the radio firmware has been updated, double click on “p51-870_USB Firmware_VX_XX” and follow the onscreen instructions to update the radio firmware as well. Once the firmware updates have been completed, access the general settings screen on your P51-870 TITAN® by clicking the “gear” icon in the upper right-hand corner of the display and confirm that the firmware and radio versions displayed are 2.01 or higher.

MacOS P51-870 TITAN® Firmware Updater

If you are using a PC running MacOS, Download the YJFlash.zip file. Using the Finder on your MacOS computer, go to the Downloads folder and double-click on the YJFlash.zip file. This will extract the YJFlash app and place it in the Downloads folder. Double-click the YJFlash icon to run the app. If you choose, you can drag the icon onto your desktop or other location for easier future access. You may receive a warning about opening an app downloaded from the internet. Click Open to allow the YJFlash app to run. NOTE: On newer versions of MacOS, you may need to allow "Input Monitoring" in System Preferences> Security and Privacy> Privacy. This is due to the USB communications used during the firmware update.

Device Specifications

General Device Specifications

The following tables outline the specifications for each of the YJACK™ products. All YJACK™ products have the following features and specifications:

Warranty: 2 years

IP Rating: IP-52

Battery Type: 2 x AAA (Included)

Radio Module System Attachment: Mounting Magnet*

Radio Version: Bluetooth 4.2 Compliant Low Energy

Bluetooth Range: 400 feet (122 meters) line-of-sight**

Communication Interface: YJACK VIEW™ App & P51-870 TITAN® Digital Manifold***

*YJACK PRESS & YJACK VAC mount directly to system service port and do not include mounting magnet

**Radio interference and nearby obstructions may reduce signal strength

***YJACK AMP & YJACK MANO only communicate w/ YJACK VIEW app

YJACK PATH™ Range Extender Specifications

67060 YJACK PATH Range Extender

| | |
|---------------------------|---------------------------------------|
| Measurement Type | N/A, Signal Repeater |
| Weight | 0.19 lbs (86 g) |
| Dimensions | 4"L x 1.7"W x 1.4"H (102 x 43 x 36mm) |
| Tether Length | N/A |
| Operating Temperature | -0.4°F to 131°F (-18°C to 55°C) |
| Storage Temperature | -40°F to 122°F (-40°C to 50°C) |
| Battery Life | 75 hours continuous use |
| Max Connections - YJACK | 6 Connections |
| Max Connections - P51-870 | 2 Connections |
| Auto-Off Timer | 30 minutes w/o readings |

YJACK™ Temperature Clamp Specifications

67061 YJACK Temperature Clamp

| | |
|------------------------------|---------------------------------------|
| Measurement Type | Temperature |
| Weight | 0.35 lb (160 g) |
| Dimensions (including clamp) | 10"L x 4"W x 1.5"H (254 x 102 x 38mm) |
| Tether Length | 1.5" (38mm) |
| Operating Temperature | -0.4°F to 131°F (-18°C to 55°C) |
| Storage Temperature | -40°F to 122°F (-40°C to 50°C) |
| Battery Life | 1200 Hours |

| | |
|----------------------|--------------------------------|
| Measurement Range | -40°F to 176°F (-40°C to 80°C) |
| Measurement Accuracy | +/-1.0 °C TYP* |
| Pipe Diameter - Max | 1.25" (32mm) |
| Auto-Off Timer | N/A |

*Results may vary with ambient conditions

YJACK™ Temperature Strap Specifications

67062 YJACK Temperature Strap

| | |
|------------------------------|--|
| Measurement Type | Temperature |
| Weight | 0.25 lb (115 g) |
| Dimensions (including strap) | 10"L x 1.7"W x 1.4"H (254 x 43 x 36mm) |
| Tether Length | 5" (127mm) |
| Operating Temperature | -0.4°F to 131°F (-18°C to 55°C) |
| Storage Temperature | -40°F to 122°F (-40°C to 50°C) |
| Battery Life | 1200 Hours |
| Temp Measurement Range | -40°F to 176°F (-40°C to 80°C) |
| Temp Measurement Accuracy | +/-1.5 °C TYP* |
| Pipe Diameter - Max | 6" (152mm) |
| Auto-Off Timer | N/A |

*Results may vary with ambient conditions

YJACK DEW™ Psychrometer Specifications

67063 YJACK DEW Psychrometer

| | |
|-------------------------------|--|
| Measurement Type | Psychrometric (Temp, Humidity) |
| Weight | 0.38 lb (175 g) |
| Dimensions (including wand) | 13"L x 1.7"W x 1.4"H (330 x 43 x 36mm) |
| Wand Length | 8" (203mm) |
| Operating Temperature | -0.4°F to 131°F (-18°C to 55°C) |
| Storage Temperature | -40°F to 122°F (-40°C to 50°C) |
| Battery Life | 1500 Hours |
| Humidity Measurement Range | 0-100% RH |
| Humidity Measurement Accuracy | +/- 2.0 %RH TYP (10 to 90 %RH)* |
| Temp Measurement Range | -40°F to 257°F (-40°C to 125°C) |
| Temp Measurement Accuracy | +/- 0.2 °C TYP (-10°C to 80°C)* |
| Auto-Off Timer | N/A |

*Results may vary with ambient conditions

YJACK PRESS™ Pressure Gauge Specifications

67065 YJACK PRESS Pressure Gauge

| | |
|-------------------------------|---|
| Measurement Type | Pressure |
| Weight | 0.52 lb (235 g) |
| Dimensions | 6.5"L x 1.8"W x 2.3"H (165 x 45 x 58mm) |
| Tether Length | N/A |
| Operating Temperature | 0°F to 130°F (-18°C to 55°C) |
| Storage Temperature | -40°F to 130°F (-40°C to 55°C) |
| Battery Life | 300+ Hours |
| Quick Coupler Fitting | 1/4" Flare w/ Depressor |
| Charging Port | 1/4" Male Flare w/ Core |
| Pressure Measurement Range | -14.7 to 725 psig (-1.01 to 50 bar gauge) |
| Pressure Measurement Accuracy | 0.5% full scale at 77°F (25°C), 1.8% full scale from 0 to 130°F (-18 to 55°C) |
| Units of Measure | psig, psia, bar, kPa, MPa, kg/cm ² |
| Auto-Off Timer | N/A |

YJACK VAC™ Vacuum Gauge Specifications

67066 YJACK VAC Vacuum Gauge

| | |
|-----------------------------|---|
| Measurement Type | Vacuum |
| Weight | 0.39 lb (180 g) |
| Dimensions | 6.5"L x 1.8"W x 1.5"H (165 x 45 x 38mm) |
| Tether Length | N/A |
| Operating Temperature | 32°F to 104°F (0°C to 40°C)* |
| Storage Temperature | -4°F to 122°F (-20°C to 50°C) |
| Battery Life | Up to 240 hours |
| Quick Coupler Fitting | 1/4" Flare w/ Depressor |
| Vacuum Measurement Range | 1 to 760,000 microns with YJACK VIEW app, 1 to 99,999 microns on integrated display |
| Vacuum Measurement Accuracy | +/- 20% of reading from 10 to 25,000 microns |
| Units of Measure | microns, Torr, mTorr, mbar, mmHg, Pa |
| Auto-Off Timer | Adjustable from 15 minutes to never |

*Operating temperature is restricted by integrated display; range is extended when using with YJACK VIEW app

YJACK AMP™ Current Probe Specifications

67067 YJACK AMP Current Probe

| | |
|------------------------------|--|
| Measurement Type | Electrical Current (Amps) |
| Weight | 0.39 lb (180 g) |
| Dimensions | 6.5"L x 1.8"W x 1.5"H (165 x 45 x 38mm) |
| Tether Length | 12" spiral cable (extends to 72") |
| Operating Temperature | -0.4°F to 131°F (-18°C to 55°C) |
| Storage Temperature | -22°F to 130°F (-30°C to 55°C) |
| Battery Life | 600 hours |
| Clamp Jaw Opening | 1.2" (30.5mm) |
| Maximum Voltage | 660 V |
| Current Measurement Range | 0-50 Amps AC |
| Current Measurement Accuracy | +/- 1% of reading or +/- 0.15 A (whichever is greater) |
| Auto-Off Timer | N/A |

YJACK MANO™ Dual Port Manometer Specifications

67068 YJACK MANO Dual Port Manometer

| | |
|--------------------------------------|---|
| Measurement Type | Static Pressure |
| Weight | 0.20 lb (95 g) |
| Dimensions | 4.5"L x 1.8"W x 1.5"H (115 x 45 x 38mm) |
| Tether Length | N/A |
| Operating Temperature | 32°F to 104°F (0°C to 40°C)* |
| Storage Temperature | -4°F to 122°F (-20°C to 50°C) |
| Battery Life | Up to 280 hours |
| Port Barb Fitting | For 1/8" ID tubing |
| Static Pressure Measurement Range | +/- 80 inWC |
| Static Pressure Measurement Accuracy | +/- 0.03 from 0 to 2 inWC, +/- 1.5%FS from 2 to 80 inWC |
| Units of Measure | inWC, mmWC, mbar, psi, Pa |
| Auto-Off Timer | Adjustable from 15 minutes to never |

*Operating temperature is restricted by integrated display; range is extended when using with YJACK VIEW app

Troubleshooting & FAQs

Q: Why am I losing my Bluetooth® connection when I am within 400' of the YJACK™ device(s)?

A: With any radio technology, when you start to add obstructions between the transmitter and the receiver, the ultimate range may decrease as different objects interfere with the radio signal in different ways. The more obstructions you add between YJACK™ device and either the P51-870 TITAN® or the smart device running the YJACK VIEW™ app, the weaker the signal may become after it has passed through or around the obstacles. This could ultimately lead to a shorter maximum range, but this can be improved by using the YJACK PATH™ signal repeater device. All YJACK™ devices, including the YJACK PATH™, utilize a Bluetooth® 4.2 compliant low energy radio to ensure the best possible range, however each situation will be slightly different depending on the environment/ surroundings within you are working. The YJACK PATH™ can be positioned to get around obstructions and up to 6 YJACK PATH™ devices can be used simultaneously to maximize the connection range, even in environments with multiple obstructions.

Q: Why doesn't my P51-870 TITAN® show up on the list of available devices within the YJACK VIEW™ app?

A: The radio inside the P51-870 TITAN® must be programmed with radio firmware version 2.01 or higher. This firmware version includes critical updates for communication with the YJACK VIEW™ app. The firmware can be updated over-the-air through a Bluetooth® connection to a Windows or MacOS device. The radio firmware updater files are available on the P51-870 TITAN® (40870) product webpage under the "Documents" tab (<https://yellowjacket.com/product/p51-titan-digital-manifold>).

Q: Why are the YJACK™ devices not showing up on my P51-870 TITAN®?

A: The circuit board inside the P51-870 TITAN® must be programmed with USB firmware version 2.01 or higher to recognize the YJACK™ series of devices. If the P51-870 TITAN® firmware version that is displayed during power up is 1.40 or lower, the firmware must be updated through a USB connection to either a Windows or MacOS device. The firmware updater files are available on the P51-870 TITAN® (40870) product webpage under the "Documents" tab (<https://yellowjacket.com/product/p51-titan-digital-manifold>).