Appion®

PTC900™

PRESSURE-TEMPERATURE GAUGE

⚠WARNING TO REDUCE THE RISK OF INJURY OR PRODUCT DAMAGE, READ OPERATION MANUAL PRIOR TO OPERATING PRODUCT.

Table of Contents

Introduction

With the PTC900 Pressure Temperature Compound Gauge, you can take measurements directly from system access ports and monitor the readings remotely, without the refrigerant loss caused by manifolds and long hoses.

A temperature clamp with minimal thermal mass and a thermally isolated contact sensor leads to improved response times, and highly accurate temperature readings.

These accurate pressure and temperature readings, paired with the onboard refrigerant library gives you the ability to view Saturated Temperature, Superheat, and Subcool calculations in real-time with ease.

With its high accuracy and repeatability, you can depend on real-time readings on the built-in display or on a remote smartphone or tablet for easy AC/R system service.

Safety

WARNING: *Do NOT drill or puncture holes blindly for sensor probing purposes.*

WARNING: *Do NOT touch or insert any objects into the sensor or gauge housing openings. Doing so may permanently damage the sensor or gauge.*

WARNING: *Do NOT remove the sensor housing.*

WARNING: *ALWAYS inspect the core depressor in the pressure probe end for proper depth prior to connecting to a system. A core depressor set to the proper depth will mitigate unnecessary refrigerant loss when connecting to a service port with a Schrader valve.*

- Always wear hand and eye protection when handling connections to systems under pressure.
- Always wear proper personal protective equipment when handling measuring instruments and probes.
- Do not use the measuring instrument and probes to measure on or near live parts.
- Never store the measuring instrument together with solvents, and do not use any desiccants.
- Operate the measuring instrument only within the parameters specified in this manual.

Safety

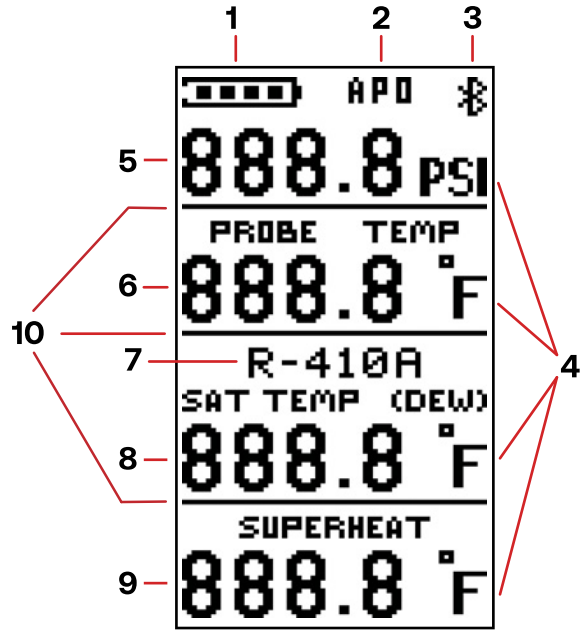
- Do not connect the measuring instrument to pressures exceeding the instrument's rating.
- Do not expose the measuring instruments or equipment to temperatures outside of the stated operating temperatures.
- Use only specified batteries. (AA Batteries)
- Do not use leaky or damaged batteries.
- Batteries must only be changed in a non-hazardous area.
- Battery operating temperatures may vary by manufacturer. The batteries supplied with this unit are for storage and operating temperatures between 32°F - 104°F (0°C - 40°C).
- Dispose of batteries in accordance with any applicable local law and regulations.
- Do not dispose of the product or battery in a fire or heat above 212°F (100°C).
- Remove batteries before storing device for long periods of time.

Main Screen

Main Screen Display:

Access the Main Screen by pressing and holding the Power button to turn on the gauge.

Main Screen Example:



1 - Battery Level Indicator
2 - Auto Power Off Indicator
3 - Bluetooth Indicator
4 - Units
5 - Pressure
6 - Probe Temperature
7 - Selected Refrigerant
8 - Saturated Temperature
(with Dew or Bubble Indicator for Blended Refrigerants)
9 - Superheat/Subcool
10 - Separation Lines (Flashing)

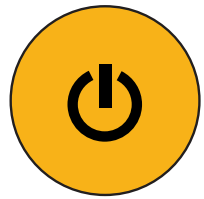
General Functions

Pressure Units:
Psi and in/hg
kg/cm2 and cm/hg
kPa
MPa
bar

Temperature Units:
Fahrenheit
Celsius

Button Configuration

Backlight/Up



Power/Select

Cycle/Down

Press	Backlight On/Off	Menu/Select	Cycle Superheat/Subcool
Hold	Units Selection	Gauge Power On/Off	Zero Pressure
Both	↑ Bluetooth On/Off ↑		
		↑ Auto Power Off On/Off ↑	
	↑ Select Favorite Refrigerant ↑		

1. Quick PRESS a button for the “Press” function.
2. HOLD a button for 2 seconds for the “Hold” function.
3. Quick press BOTH buttons for the “Both” function.

General Functions (cont.)

Power/Menu/Select:

Quick Press:

- Gauge Power On
  - *A quick press of the power button will turn the gauge on.*
- Menu
  - *From the main screen, press the power button to open the Main Menu.*
- Select
  - *Press the power button to select an option.*

Hold 2 Seconds:

- Gauge Power Off
  - *If the gauge is on, hold the power button for 2 seconds to power off.*

Backlight/Up:

Quick Press:

- Backlight On/Off
  - *When the backlight is toggled on, the backlight stays on for 2 minutes.*
- Up
  - *Users press the Backlight button to scroll UP through selectable options.*

General Functions (cont.)

- Backlight+Power:
  - *Bluetooth Toggle On/Off*

- Backlight+Cycle:
  - Cycle Favorite Refrigerants
    - *Press both the Backlight and Cycle buttons to select a favorite refrigerant.*
    - *Press the Backlight/Up and Cycle/Down buttons to scroll through selectable units.*
    - *Select the desired refrigerant by pressing the Power button.*

Hold 2 Seconds:

- Units selection
  - *Press and hold the Backlight button for 2 seconds to select the pressure and temperature units.*
  - *Press the Backlight/Up and Cycle/Down buttons to scroll through selectable units.*
  - *Select the desired unit by pressing the Power button.*

Cycle/Down/Zero:

Quick Press:

- Cycle:
  - *Cycles Superheat/Subcool readings*

- Down:
  - *Press the Cycle button to scroll DOWN through selectable options.*

General Functions (cont.)

- Cycle+Power:
  - *Auto Power-Off Toggle On/Off*

- Cycle+Backlight:
  - Cycle Favorite Refrigerants
    - *Press both the Cycle and Backlight buttons to select a favorite refrigerant.*
    - *Press the Backlight/Up and Cycle/Down buttons to scroll through the favorite refrigerant list.*
    - *Select the desired refrigerant by pressing the Power button.*

Hold 2 Seconds:

- Zero Pressure
  - *Press and hold the Cycle button to zero the pressure reading.*

Main Menu

Main Menu Display:

Access the Main Menu by quick-pressing the Power button while on the Main Screen.

Main Menu Screen Example:

Main Menu Selections:

- Exit
  - *Return to the Main screen.*
- Library
  - *Refrigerant Library to modify the favorite refrigerant list.*
- Temp Adjust
  - *Adjust the calibrated temperature offset.*
- Factory Reset
  - *Reset the gauge to factory-calibrated settings.*
- About
  - *View the gauge serial number and version number.*

Main Menu (cont.)

Main Menu Screen Controls

Power/Select

Quick Press:

- *Press the Power button to select an option.*

Backlight/Up:

Quick Press:

- *Press the Backlight/Up button to scroll UP through selectable options.*

Cycle/Down:

Quick Press:

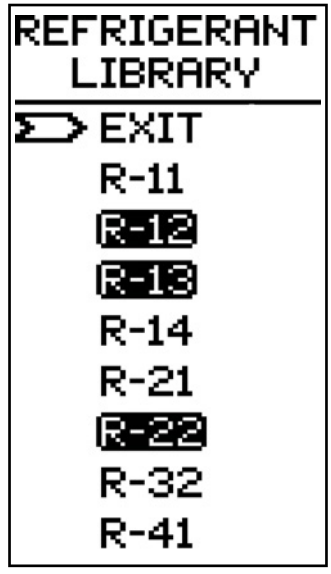
- *Press the Cycle/Down button to scroll DOWN through selectable options.*

Refrigerant Library

Refrigerant Library Display:

Access the Refrigerant Library by selecting “Library” from the Main Menu. Select or unselect refrigerants in the Refrigerant Library to build a favorite refrigerants list. The favorite refrigerants list is then accessed from the Main Screen for quickly selecting refrigerants on the fly.

Refrigerant Library Screen Example:



Refrigerant Library (cont.)

Refrigerant Library Screen Controls

Power/Select

Quick Press:

- *Press the Power button to select or unselect a refrigerant.*

Backlight/Up:

Quick Press:

- *Press the Backlight/Up button to scroll UP through selectable options.*

Cycle/Down:

Quick Press:

- *Press the Cycle/Down button to scroll DOWN through selectable options.*

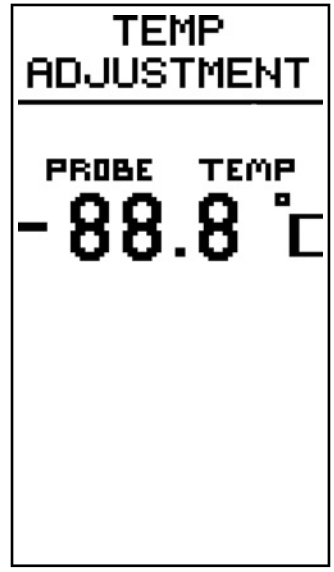
Library Navigation Tips:

- A quick press of the Up and Down buttons will move the cursor one refrigerant at a time.
- Hold the Up and Down buttons to scroll one page at a time in intervals of 0.5 seconds.
- Select EXIT to save the selected refrigerants and return to the Main Menu.

Temperature Adjustment

Access the Temperature Adjustment by selecting “Temp Adjust” from the Main Menu. With the temperature probe inserted, adjust the factory-calibrated temperature in increments of .1 °F or .1 °C.

Temperature Adjustment Screen Example:



Temperature Adjustment (cont.)

Temperature Adjustment Screen Controls

Power/Save

Quick Press:

- *Save the desired temperature adjustment by pressing the Power button and return to the Main Menu.*

Backlight/Up:

Quick Press:

- *Press the Backlight/Up button to adjust the temperature UP in increments of .1 °F or °C.*

Cycle/Down:

Quick Press:

- *Press the Cycle/Down button to adjust the temperature DOWN in increments of .1 °F or °C.*

Temperature Adjustment Tips:

- Ensure the temperature probe is connected to the PTC900 before entering the temperature adjustment screen.
- Select the desired temperature units from the main screen before entering the temperature adjustment screen.
- Ensure the probe is saturated to a known temperature before starting the temperature adjustment procedure.

Factory Reset

Factory Reset:

Access Factory Reset by selecting “Factory Reset” from the Main Menu. Reset all user-saved settings back to the original factory-calibrated settings.

Factory Reset Screen Example:

Factory Reset (cont.)

Factory Reset Screen Controls

Power/Select

Quick Press:

- *Press the Power button to CANCEL or CONTINUE*

Backlight/Up:

Quick Press:

- *Press the Backlight/Up button to scroll UP through selectable options.*

Cycle/Down:

Quick Press:

- *Press the Cycle/Down button to scroll DOWN through selectable options.*

Factory Reset Tips:

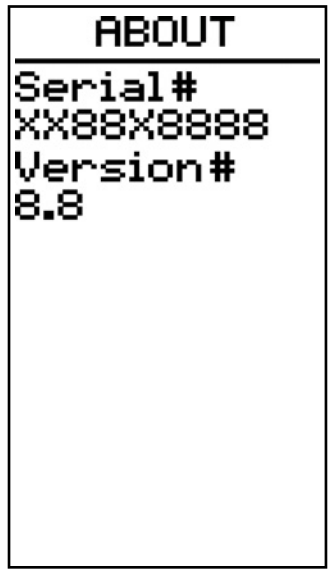
- Selecting CANCEL exits back to the Main Menu.
- Selecting CONTINUE resets the device to factory-calibrated settings.

About Screen

About:

Access the About screen by selecting “About” from the Main Menu. View the serial number and firmware version number of the device.

About Screen Example:



About Screen Controls:

Power/Exit

Quick Press:

- *Press the Power button to exit the About screen and return to the Main Menu.*

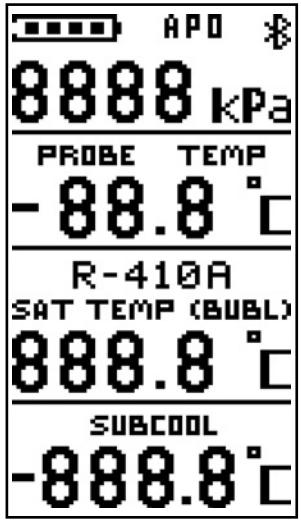
Saturated Temperature, Superheat, and Subcool Calculations

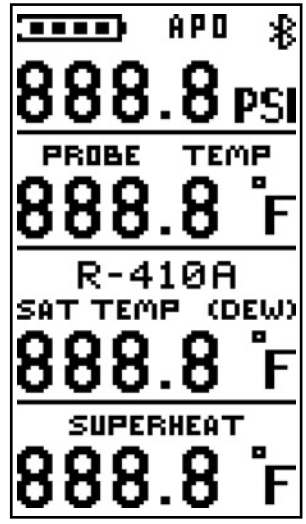
Once a refrigerant is selected on the Main Screen and the temperature sensor is connected, Saturated Temperature and Superheat or Subcool calculations will be displayed.

Use the Cycle button to switch between Superheat and Subcool.

- Non-Blended Refrigerants:
  - *Non-blended Refrigerants will display a saturated temperature value.*
- Blended Refrigerants (Mixtures):
  - *Blended Refrigerants will display a saturated temp of (Dew) if displaying Superheat or a saturated temp of (Bubble) if displaying Subcool.*

Blended Refrigerant Dew & Bubble Examples:





Using the PTC900

CAUTION: *Always wear hand and eye protection when handling connections to systems under pressure.*

1. Power the gauge on.

2. Connect the gauge via Bluetooth to the Appion Central™ App (optional).

3. Zero the pressure sensor to atmospheric pressure.

4. Plug the temperature probe's 3.5 mm male connector into the 3.5 mm female port on the front of the gauge.

5. Select the refrigerant from the favorite refrigerants list that matches the refrigerant in the system being monitored.

6. Connect the pressure probe end of the gauge to the system to be monitored.

    - *Before connecting directly to the system through a Schrader valve, inspect that the core depressor in the pressure probe end is set to the proper depth.*

Using the PTC900 (cont.)

7. View the system pressure, temperature, and selected refrigerant's Saturated Temperature and Superheat or Subcool calculations on the backlit display or via the Appion Central™ App.
    - *Press the CYCLE button to switch between Superheat or Subcool calculations on the backlit display.*
    - *Add the device to the Low Side Measurements tab within the Appion Central™ App to view the Superheat calculations (optional).*
    - *Add the device to the High Side Measurements tab within the Appion Central™ App to view the Subcool calculations (optional).*

Important Note: Never tool tighten a knurled fitting. Tool tightening may damage the knurling and service ports.

Important Note: Always inspect the core depressor in the pressure probe end for proper depth prior to connecting to a system. A core depressor set to the proper depth will mitigate unnecessary refrigerant loss when connecting to a service port with a Schrader valve.

Important Note: Complete contact of the temperature probe sensor to the surface being measured is necessary for an accurate measurement.

Using the Temperature Clamp

WARNING: *Always wear hand and eye protection when handling temperature probes.*

WARNING: *Do NOT drill or puncture holes blindly for sensor probing purposes.*

WARNING: *Do not use the temperature clamp or probe to measure on or near live parts.*

The Temperature Clamp included with your PTC900 is thermally isolated for high accuracy and is highly versatile, as it can be used to measure the temperature on pipes of any size.

Using the Temperature Clamp

The temperature clamp can be attached to pipes up to 1.625 inches in diameter.

1. Plug the 3.5mm connector into the PTC900.

2. The gauge display will show temperature readings.

3. Squeeze to open, and attach clamp to pipe.

4. Use the gauge display or the Appion Central™ App to monitor temperatures and other critical calculations.

Using the Temperature Clamp (cont.)

Using the Temperature Clamp on Large Diameter Pipes

For pipes larger than 1.625 inches in diameter, the sensor may be detached from the clamp and attached to pipes of any size using cable ties.

1. To use the temperature clamp with a cable tie: first remove it from the clamp and thread the cable tie through the opening on either side of the sensor.

2. Loop the loose end of the cable tie around the pipe, thread it through the other opening on the side of the sensor, and through the ratchet head on the cable tie.

3. To tighten, pull the end of the cable tie until tight.

Note: *Full contact of the sensor to the pipe is necessary for accurate temperature readings. If the sensor becomes misaligned, it can be moved back into the correct position on the clamp using your fingers. The sensor should fit square in the non-rubberized "V" of the clamp.*

Using the Temperature Probe

The temperature probe can be used for probing ductwork, venting, and thermal wells. Use the sharp tip for minimally invasive precision probing purposes in flex ducts, venting, and many other applications.

Important Note: The stainless steel construction transfers heat very easily. Always wear hand protection when handling the temperature probe.

Important Note: Never use the probe to puncture high-pressure piping.

Using the Temperature Probe

1. Plug the 3.5mm connector into the PTC900.

2. The gauge display will show temperature readings.

3. Immerse or place the probe tip into the medium being monitored.

4. Use the gauge display or the Appion Central™ App to monitor temperatures and other critical calculations.

Appion Central™ Bluetooth Operation

Note: *Bluetooth communication requires a compatible device running the Appion Central™ App. Development of the Appion Central™ App is ongoing, and any information presented in this manual about the Appion Central™ App may not be up to date. Please visit AppionTools.com or your device's App Store for the latest Appion Central™ App and additional information.*

1. With the PTC900 powered on, press and hold the "Backlight/Up" button AND the "Power" button until the Bluetooth symbol appears on the PTC900 screen.

2. In the Appion Central™ App, navigate to "My Devices" and connect to the PTC900 as shown.

3. If the connection is lost due to exceeding the Bluetooth range, or due to loss of power, repeat Step 1, then "Reconnect" the PTC900 through the Appion Central ™ App interface.

Note: *Bluetooth range may vary due to obstructions or interference. The Appion Central™ App will indicate when communication is lost.*

Note: *The PTC900 will continue to operate normally even if Bluetooth communication is lost.*

Appion Central™ App

Scan to download app and access user guide.

General Maintenance & Care

The PTC900 is a precision instrument that must be maintained to ensure proper function. Please follow the guidelines listed.

1. Store the PTC900 and temperature probe in a cool, dry environment when not in use. The recommended storage temperature (without batteries) is -4 °F to 140 °F (-20 °C to 60 °C).

2. Inspect the pressure probe openings before operating to ensure no objects or materials are obstructing the sensor.

3. Inspect the pressure probe gasket for damage before operating to ensure a good seal is made between the probe and system service ports.

4. Inspect the temperature probe to ensure it is clean and that no objects or materials are isolating the sensor from complete contact.

5. Remove batteries before storing device for long periods of time.

NOTICE

Do not insert any objects into the sensor or gauge openings.
Doing so may permanently damage the sensor or gauge.

NOTICE

The flexible probe is designed to bend and move as needed. However, do not twist, pull, or overextend the flexible probe. Doing so may permanently damage the sensors or gauge.

Gauge Specifications

Weight:
5.32 oz. (151 g) **without batteries*

Gauge Body Dimensions:
0.43 x 1.9 x 1 in. (265 x 48.25 x 25.4 mm)

Flexible Probe Dimensions:
Length: 4.3 in. (110 mm)
Diameter: 0.38 in. (9.75 mm)

Pressure Probe Connection:
1/4 in. Female Flare

Water Resistance:
IP55 **with temperature probe or clamp connected*

Units:
Pressure: psi and in/Hg, kg/cm^2 and cm/Hg, bar, kPa, MPa
Temperature: Fahrenheit (°F), Celsius (°C)

Gauge Operating Temperature:
-4 °F to 131 °F (-20 °C to 55 °C) **limited by battery performance*

Storage Temperature:
-4 °F to 140 °F (-20 °C to 60 °C) **without batteries*

Gauge Specifications (cont.)

Battery Type:
2 x AA

Battery Life:
Bluetooth On: 175 hours at 77 °F (25 °C)
Bluetooth Off: 220 hours at 77 °F (25 °C)

Wireless Range:
1000 ft. (300 m) **line of sight*

Auto Power Off Time:
15 Minutes (Selectable On/Off)

Sensor Operating Range:
Pressure: -28 in/Hg to 900 psi

Resolution:
Pressure: .1 psi, .1 in/Hg, .01 kg/cm^2, .1 cm/Hg, .001 bar, 1 kPa, .001 MPa
Temperature: 0.1 °F, 0.1 °C

Pressure Accuracy:
Pressure: ≤ .06% of Full Scale

Display Overload:
900.1 psi

Sensor Overload:
1450.4 psi

Temperature Clamp Specifications

**Included with the PTC900, PTC Gauge Kit, and sold individually*

Weight:
2.32 oz. (66 g)

Temperature Probe Dimensions:
Clamp Size: 4.17 x .98 x 1.81 in. (106 x 25 x 46 mm)
Probe Size: .86 x .78 x .39 in. (22 x 20 x 10 mm)
Pipe Size Compatibility: 1/8 in. to 1 ⅝ in. (3.175 to 41.275 mm)
Cable Length: 6 ft. (1.82 m)

Water Resistance:
IP67 **clamp only*

Probe Operating Temperature:
-4 °F to 131 °F (-20 °C to 55 °C)

Storage Temperature:
-4 °F to 140 °F (-20 °C to 60 °C)

Part# TCLMP1

Sensor Saturation Time:
8 Seconds **varying conditions may delay saturation time*

Sensor Operating Range:
-40 °F to 221 °F (-40 °C to 105 °C)

Temperature Accuracy:
±.45 °F at 77 °F / ±.25 °C at 25 °C
±1.8 °F (-40 °F to 221 °F) / ±1 °C (-40 °C to 105 °C)

Temperature Probe Specifications

**Sold individually or in the PTC Gauge Kit (Part#PTCGKT1)*

Weight:
1.05 oz. (30 g)

Temperature Probe Dimensions:
Probe Size: 3.54 in. x .086 in. (90 x 2.0 mm)
Cable Length: 6 ft. (1.82 m)

Part# TPRB1

Water Resistance:
IP67 **probe only*

Probe Operating Temperature:
-4 °F to 131 °F (-20 °C to 55 °C)

Storage Temperature:
-4 °F to 140 °F (-20 °C to 60 °C)

Sensor Saturation Time:
8 Seconds **varying conditions may delay saturation time*

Sensor Operating Range:
-40 °F to 221 °F (-40 °C to 105 °C)

Temperature Accuracy:
±.45 °F at 77 °F / ±.25 °C at 25 °C
±1.8 °F (-40 °F to 221 °F) / ±1 °C (-40 °C to 105 °C)

PTC Kit

The PTC Kit features all of the products you need for complete refrigerant circuit monitoring. Each of the kit components are also available for individual purchase.

Kit Includes:

(2) PTC900 Gauges
(2) Temperature Clamps
(1) Temperature Probe
(1) 1/4 in. Charging T-Fitting
(1) 5/16 in. Charging T-Fitting
(4) AA Batteries
(1) Durable Hard Case
(1) Quick Start Guide

Part# PTCGKT1

SCAN FOR MORE PRODUCT DETAILS

Regulatory Information

This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:

1. This device may not cause harmful interference
2. This device must accept any interference received, including the interference that may cause undesired operation.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which may be determined by turning the equipment off and on, the user is encouraged to try to connect the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Regulatory Information (cont.)

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Caution

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada Radio Equipment

This device complies with Industry Canada license exempt RSS-210 standard. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference that may cause undesired operation of the device.

Équipement radio d'Industrie Canada

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio
exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne
doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Warranty Information

Appion Inc. (Hereinafter Appion) warrants that this equipment will, under normal and anticipated use, be free from defects in materials and workmanship for a period of one (1) year from the date of purchase by Purchaser from an Appion-authorized distributor.

The complete Manufacturer's Limited Warranty is available online at AppionTools.com.
All warranty services must receive Appion Factory Authorization and an RGA number prior to any action. Contact your local Appion authorized distributor to obtain the RGA number and shipping instructions. To help us provide the best service, be sure to have the following information available:

- Serial number of the equipment
- Purchase date of the defective unit
- A detailed description of the problem

Appion offers technical troubleshooting customer support for the lifetime of every product. Regardless of your warranty status, you can always contact us for assistance. Our website includes additional technical information that can help you experience the fullest potential of our products, making your job quicker and easier.

Appion PTC900 Warranty Registration Card

Please complete this card and return it within 10 days of purchase with a copy of your sales receipt.

Your Name	Your Company
Street Address	Phone Number
City	State Zip
Email Address	Serial Number
Place of Purchase	Date of Purchase

How did you learn about our products?
(Please only check one)

- ☐ Wholesaler _____
- ☐ Recommended By: _____
- ☐ Magazine
- ☐ Newspaper Ad
- ☐ Internet
- ☐ Other: _____

Please select your primary line of business.
(Check all that apply)

- ☐ Automotive
- ☐ Commercial
- ☐ Residential
- ☐ Service
- ☐ Installation
- ☐ Other: _____

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Appion Inc.
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Englewood, CO 80110 USA

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or Fax this page and your sales receipt to: 1-303-937-1599

What features most interested you?
(Check all that apply)

- ☐ High Production
- ☐ Low Cost
- ☐ Low Maintenance
- ☐ Portability
- ☐ Ease of Use
- ☐ Other: _____

Scan for Product Registration

QR Code Index

Appion Central App Download

Product Registration

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