**Quick Start**

1. Power on your SMAN4 by holding the ON/OFF button for 1 second.
2. Select desired units (English or Metric or a combination) by holding ENTER for 1 second.
3. Connect hoses and pipe clamps to the system.
4. Press the circular button to select between Actual Superheat and Subcooling. Target Superheat, Direct Temperature Display (T1 T2 Direct) or Saturation Temperature Display.

**Description**

Your SMAN4 is the first true wireless-enabled digital refrigerant 4-port manifold and vacuum gauge for HVAC service. Use optional wireless transmitters like SDP2 Dual In-Duct Psychrometer to receive temperature measurements over-the-air for real-time target superheat calculations. Your SMAN4 can wirelessly send data to the HG3 HVAC Guide for more extensive analysis, data logging, or printing reports for your customers.

Your SMAN4 combines high precision, absolute pressure manifold gauges, a superheat/subcooling calculator, true micron gauge for vacuum, and dual temperature measurements into one easy-to-use instrument. Your SMAN4 can simultaneously displays target superheat and actual superheat to verify proper charging of a unit. Your SMAN4's 4-port manifold has a large 3/8" vacuum port and 3/8" bore throughout the block for quicker recovery and evacuations.

Your SMAN4 is designed to meet the demands of the HVAC technician with a ruggedized rubber boot for durability, a strong metal handle for easy storage and a form fitting, water resistant, padded nylon pouch.

**Functions**

**Superheat and Subcooling**

1. Press circular button to cycle through temperature modes until SH and SC are shown. The SMAN4 can calculate and display both superheat and subcooling simultaneously.
2. Select the appropriate refrigerant using the REFRIGERANT button.
3. Connect EPA approved refrigerant hoses to low and high side on SMAN4. Plug Type K thermocouple pipe clamps into T1 and T2.
4. Connect your SMAN4 to the system.

**Superheat:**
- Hand tighten low side hose to suction line service port. Place the T1 pipe clamp thermometer on the suction line between the evaporator and compressor, no closer than 6 inches from the side of the condenser. For accurate results, keep it shaded from direct sunlight.
- Hand tighten high side hose to liquid line service port. Place the T2 pipe clamp thermometer on the liquid line between the condenser and expansion valve (TXV), as close to the evaporator as possible.
- After turning the system on or making any adjustments to the system wait 15 minutes before charging by superheating or subcooling to ensure that the system is running normally.
- Add or remove refrigerant as needed from the refrigerant tank.
- Receive IDWB and ODDB temperatures wirelessly.
- Press circular button to select between Actual Superheat or Subcooling.

**Subcooling:**
- Hand tighten high side hose to liquid line service port. Attach the T2 pipe clamp thermometer on the liquid line between the condenser and expansion valve (TXV), as close to the evaporator as possible.
- After turning the system on or making any adjustments to the system wait 15 minutes before charging by superheating or subcooling to ensure that the system is running normally.
- Add or remove refrigerant as needed from the refrigerant tank.
- Receive IDWB and ODDB temperatures wirelessly.
- Press circular button to select between Actual Superheat or Subcooling.

**Saturation**

Shows vapor (VSAT) and liquid (LSAT) saturation temperatures calculated from the temperature measured and the refrigerant selected.

**Target Superheat**

Target Superheat is only used for charging fixed orifice air conditioning systems. Your SMAN4 allows you to receive real-time indoor wet bulb (IDWB) and outdoor dry bulb (ODDB) temperatures wirelessly to calculate target superheat. This can also be used to verify charging by selecting the included wet and dry bulb thermocouples to T1 and T2 respectively.

**Receive IDWB and ODDB temperatures wirelessly**

1. Press circular button until you've entered Target SH mode.
2. Press UP or DOWN ARROW. IDWB icon will begin blinking.
3. Hold SYN on SMAN4 until a beep is heard (>1 sec).
4. Adjust an accessory head (like ARH5, ARH4, or ARU1) capable of measuring indoor wet bulb temperature to a field replaceable transmitter (sold separately). Ready instrument to measure indoor wet bulb temperature and display it at the return of the evaporator between the filter and coil.
5. Select transducer mode on Fieldpiece transmitter and hold SYN until wireless partner begins communicating.
6. Press SYN on SMAN4 once the icon disappears,
7. Real-time target superheat is calculated and located in lower left corner of display when SMAN4 is receiving real-time indoor wet bulb and outdoor dry bulb temperature data from the wireless devices.

**Input temperatures with Type K thermocouples**

Press circular button until Target SH is shown at the bottom of center screen.

1. Plug in ATP10 wet bulb Type K thermocouple into T1 and AT1 Dry bulb Type K thermocouple into T2. Both included with SMAN4.
2. Press UP or DOWN ARROW to toggle between IDWB or ODDB input. The icon will begin blinking. Press ENTER to select which temperature you want to input first, either IDWB or ODDB. The far left digit of IDWB or ODDB will begin blinking indicating manual input mode is active.
3. To re-enter either IDWB or ODDB, press UP or DOWN ARROW until the icon (IDWB or ODDB) you wish to re-enter is blinking. Press ENTER. Re-entering any temperature will force IDWB and ODDB measurements to resume.

**Input temperatures manually**

Press circular button until Target SH is shown at the bottom of center screen.

1. Plug in ATP10 wet bulb Type K thermocouple into T1 and AT1 Dry bulb Type K thermocouple into T2. Both included with SMAN4.
2. Press UP or DOWN ARROW to toggle between IDWB or ODDB input. The icon will begin blinking. Press ENTER to select which temperature you want to input first, either IDWB or ODDB. The far left digit of IDWB or ODDB will begin blinking indicating manual input mode is active.
3. To re-enter either IDWB or ODDB, press UP or DOWN ARROW until the icon (IDWB or ODDB) you wish to re-enter is blinking. Press ENTER. Re-entering any temperature will force IDWB and ODDB measurements to resume.

**Certifications**

- FCC ID: VEAF915
- C-Tick (N22675)
- RoHS Compliant

**Controls**

- 1 Insert Type K thermocouple plugs here.
- 2 Temperature calibration pots.
- 3 Press to zero atmospheric pressure.
- 4 Press to calibrate to refrigerant tank. (See Advanced Pressure Calibration section.)
- 5 Press to turn on backlight. Hold when powering on to toggle Auto Power Off.
- 6 Press hold 1 second to cycle through refrigerants. (See Advanced Pressure Calibration section.)
- 7 Hold 1 second to toggle power on/off.
- 8 Press up or down arrow to adjust values.
- 9 Press to confirm selection.
- 10 Hold 1 second to adjust units.
- 11 Press to turn on/off the Hi/Lo vacuum alarms and hold to change alarm settings.
- 12 Press to toggle through temperature tests.
- 13 Hold 1 second to Sync to a wireless enabled partner device.
- 14 Turn clockwise to close High side port.
- 15 Turn clockwise to close Low side port.
- 16 Turn clockwise to close 3/8" Vacuum port.
- 17 Turn clockwise to close Refrigerant port.
### Calibration

#### Temperature

To calibrate your SMAN4 temperature thermocouples, adjust the pot on the front of the label T1 or T2 Cal. This best way to calibrate is to match to a known temperature. Ice water is very close to 32°F and is readily available. Accuracies of one degree or better are obtained through field calibration.

1. Stabilize a large cup of ice water by stirring. Pure, distilled water is recommended.
2. Press the circular button until your SMAN4 enters Direct Calibration.
3. Connect the SMAN4 to a refrigerant cylinder of a known, single refrigerant.
4. Fill the tank with a Room Temperature to obtain a set point of 70°F.
5. Set the vacuum to a stable 100 micron by using the vacuum pump.
6. Use the SMAN4 to measure the vacuum to within ±3 microns of 100 microns.

#### Pressure Zeroing

1. If necessary, adjust the pressure sensor linearity to match the P-T chart.
2. Corollary to the vapor saturation temperature, the SMAN will display pressures on your SMAN are within ±3psi of the P-T chart pressure.

### SMAN4 to HVAC Guide® (HG3)

Your SMAN4 can wirelessly send measurements to the HG3 System Analyzer. Follow all equipment manufacturer’s testing procedures over these in this manual. To update your SMAN4 to HG3 Guide’s 4.48 or higher for advanced pressure analysis and logging. Your SMAN4 can send suction and liquid line pressures and temperatures, superheat/subcooling calculations, indoor wet bulb and outdoor dry bulb temperatures. You can also verify the pressure of the refrigerant you are measuring (by checking the vacuum), and vacuum micron measurements (for dialgoging) all in real-time. From the HG3, you can print reports for whatever test line. You can use the HG3 for your own remote monitoring. This HG3 System Analyzer can receive wireless measurements from the SMAN4 to the following tests: CheckMe®, Superheat, Subcooling, Charging jacket, and Data Logger.

1. Connect your SMAN4 to the system for measurement of suction and liquid line pressures and temperatures.
2. Press the CAL Test Pressure button. If successful, “Good” will display for 3 seconds. If failed, “Err” will display for same time.
3. Use the UP or DOWN ARROW to select the value and press ENTER to store the value.
4. Cap VAC port and gently shake your SMAN4 upside down to clean the pressure sensor.

### Specifications

#### Mini-USB port:

- For updating to newer versions of firmware
- Display size: 5 inches (diagonal)
- Backlight: Blue (for 1 minute unless turned off manually)
- Battery: 6 AA (battery life below zero on alkaline type)

#### Pressure Sensor:

- Type J thermocouple
- Resolution: ±0.1°F (-20°F to 60°F) ±0.05°F (82°F to 122°F)

#### Vacuum Measurements:

- Resolution: 1 micron (50 to 2000 microns)
- Resolution: ±10 microns, whichever is greater (50 to 1000 microns)

### Limited Warranty

This warranty is voided against defects in material or workmanship for one year from date of purchase. Fieldpiece will replace or repair the defective unit, at its option, subject to verification of the defect.

This warranty does not apply to defects resulting from abuse, neglect, accident, unauthorized repair, alteration, or unreasonnable use of the instrument.

Any implied warranties arising from the sale of a Fieldpiece product, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the above. Fieldpiece shall not be liable for the loss of any use of the instrument or incidental or consequential damages, expenses, or for any claim of such damage, economic or economic loss.

### Obtaining Service

Call Fieldpiece Instruments for current costs on our fixed price warranty service. Send check or money order for the amount quoted. Send your digital manifold, freight prepaid, to Fieldpiece Instruments. Send proof of date and location of purchase for in-warranty service. The meter will be repaired or replaced, at the option of Fieldpiece, and returned via least cost transport.

For international customers, warranty for products purchased outside of the U.S. should be handled through local distributors.

### Warning

**Do not perform any test on the manifold**

Follow ALL equipment manufacturer’s testing procedures outlined above in this manual. In regards to properly serving your equipment.