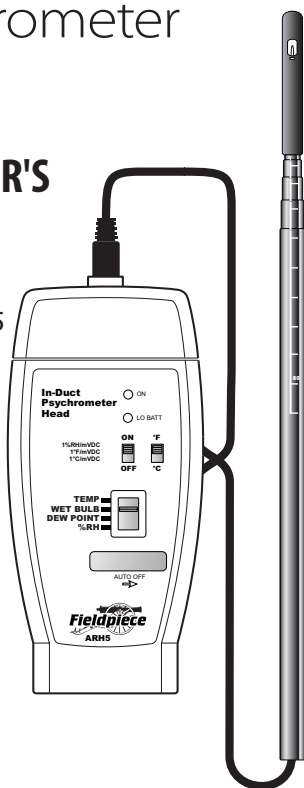# Fieldpiece

In-Duct
Psychrometer
Head

**OPERATOR'S
MANUAL**

Model ARH5

01

Quick Start

1. Connect ARH5 to Fieldpiece meter.
2. Select mVDC range on meter.
3. Remove vinyl slip cover from the probe tip.
4. Select desired switch position on ARH5 for temperature, wet bulb, dew point, or %RH.
5. Read your measurement directly on the display of the Fieldpiece meter.

Certifications

N22675   C-Tick (N22675)

CE

RoHS compliant

WARNING
Do not retract the sensor probe by pulling on the cord. Doing so may sever the cord from the sensors.

02

Description

With your purchase of the ARH5 you now have the ability to take supply/return temperature, %RH, wet bulb and dew point measurements from inside the duct or plenum.

Use the telescopic probe to take measurements in hard to reach places.
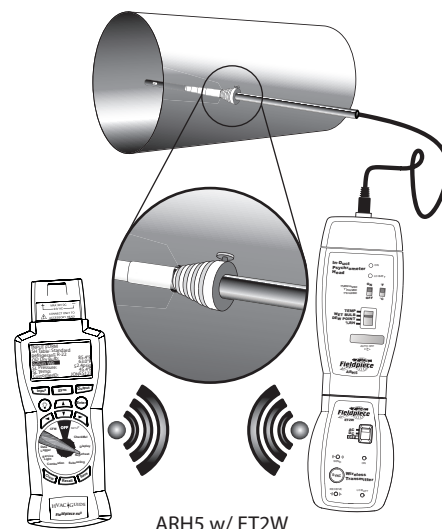
Your ARH5 measures both relative humidity and ambient air temperature. It also calculates dew point and wet bulb temperatures automatically.

The ARH5 snaps directly onto Fieldpiece HS series DMMs, Fieldpiece Datalogger or HVAC Guide® System Analyzer. For other meters, use Fieldpiece ADLS2 test leads or the AHDL1 handle adapter.

Use your ARH5 in combination with the HVAC Guide and easily perform Target Evaporator Exit Temperature tests and get more reliable and convenient Target Superheat calculations.

03

Go **wireless** with your ARH5 by using Fieldpiece wireless transmitters (ET2W/EH4W) to send measurements over-the-air to Fieldpiece wireless receivers (HG3, LT17AW, EH4W) anywhere on the jobsite.

Use the RCONE1 for hands-free in-duct measurements.

ARH5 w/ ET2W

transmitting wirelessly to HG3
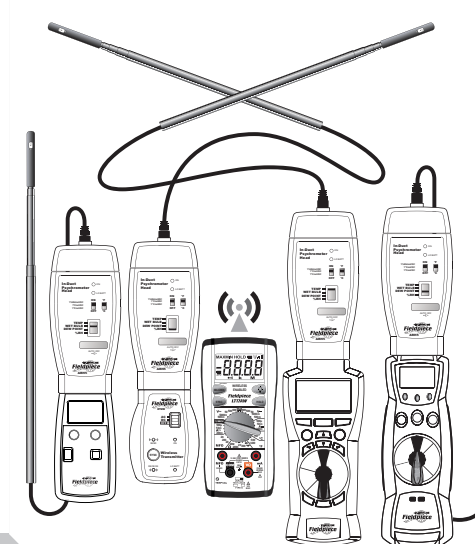
Figure 1

04

Specifications

Telescoping Probe Length: Up to 38 inches (97cm)
Probe Tip Diameter: 0.35 inch (9mm)
Storage temperature: -4°F to 140°F (-20°C to 60°C), 0 to 80% RH (with battery removed)
Temperature Coefficient: 0.1 x (specified accuracy)/°C (<18°C or >28°C)
Power: Single standard 9-volt battery, NEDA 1604, JIS 006P, IEC 6F22
Auto Power Off: Approx. 15 minutes
Battery life: 150 hours typical (alkaline)
Low Battery Indication: Red LO BATT LED will light to indicate low battery.
Output Impedance: 500Ω approx.
Dimensions: 144mm(H) x 67mm(W) x 32mm(D)
Weight: Approx. 240g, including battery

Temperature:
Sensor type: Precision thermistor
Operating environment: -4°F to 140°F (-20°C to 60°C)
Range: -4°F to 140°F (-20°C to 60°C)
Resolution: 0.1°F / 0.1°C
Accuracy: ±(1°F) 32°F to 113°F
±(2°F) -4°F to 32°F, 113°F to 140°F
±(0.5°C) 0°C to 45°C
±(1°C) -20°C to 0°C, 45°C to 60°C
Output: 1mV to 1°F/°C

05

Relative Humidity:
Sensor Type: Capacitance polymer film
Operating environment: 32°F to 131°F (0°C to 55°C)
Range: 0% to 100%RH
Accuracy: ±(2.5%) 10% to 90%RH
±(5%) <10%RH and >90%RH
Note: Above accuracies stated at 73.4°F (23°C).
Output: 1mV to %RH
Sensor Response Time: 60 seconds typical for 90% of total range.
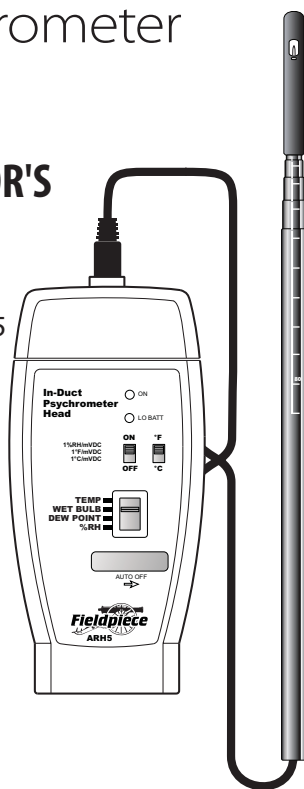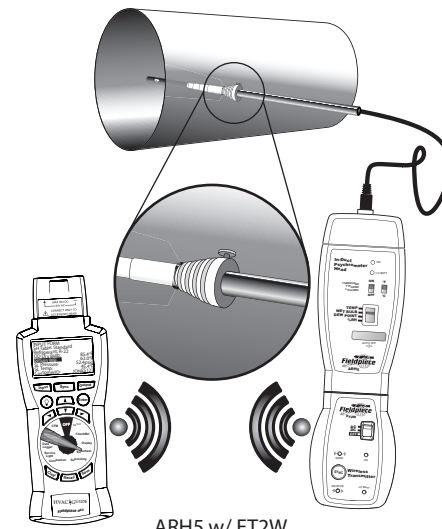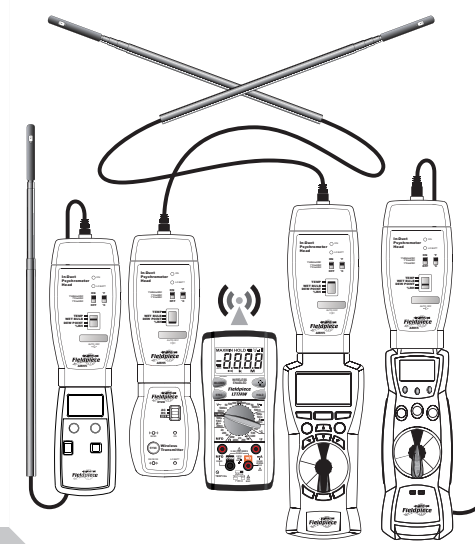Sensor Hystersis: ±1%RH typical (Excursion of 10% to 90% to 10%RH)

06

How to Use

General Instructions

1. Remove vinyl slip cover from the telescopic probe tip.
2. Connect directly onto any Fieldpiece HS multimeter. For most Fieldpiece SC and LT meters, use Fieldpiece ADLS2 test leads plugged into the COM and VΩ jacks.
3. Select mVDC range on multimeter.
4. Set switch position of ARH5 to TEMP, WET BULB, DEW POINT, or %RH.
5. Read the measurement directly on the multimeter display.

Protecting the Sensor

The ARH5 uses a precision thermistor sensor. When not in use it is best to protect this sensor with the vinyl slip cover included with the ARH5.

RCONE1 Probe Lock

For hands-free use, RCONE1 locks your sensor probe in place inside the duct. See Figure 1 on other side.

07

Diagnostic Tests

Wireless Return Wet Bulb for Target Superheat

The ARH5 with a wireless transmitter (ET2W, EH4W, or LT17AW) allows you to monitor the return wet bulb while you are at the condensor. Send this real-time WB measurement wirelessly to the INPUT FORM of the HG3 HVAC Guide® System Analyzer to calculate a real-time target superheat.

1. Sync your transmitter with ARH5 to the Return WB INPUT line in Superheat Test of the HG3 HVAC Guide.
2. Punch or drill a small 3/8" hole in the return plenum to insert ARH5 probe. Press ENTER to lock in reading.
3. Input an outdoor dry bulb temperature manually with the ATH4 at the condensor into the OD Dry Bulb INPUT line in the Superheat Test of the HVAC Guide.
4. Press OUTPUT on HVAC Guide to see your target superheat calculations.

08

Target Evaporator Exit Temp with the HVAC Guide

The ARH5 with Fieldpiece HVAC Guide allows you to easily perform a Target Evaporator Exit Temperature (TEET) test to determine if the evaporator is getting the optimum airflow.

1. Slide ARH5 onto the top of the HVAC Guide. Select TEET switch position.
2. In the INPUT FORM, highlight Return DB. Press ENTER to measure air temperature going into the evaporator. Drill a small 3/8" hole in the return plenum and insert the ARH5 probe. Set ARH5 switch position to TEMP. Press ENTER to lock in reading. Take measurements as close to the air handler as possible. Seal any holes before leaving the jobsite.
3. In the INPUT FORM, highlight Return WB. Press ENTER to measure wet bulb temperature going into the evaporator by inserting ARH5 probe through the same hole at the return. Set ARH5 switch position to WET

09

BULB. Press ENTER to lock reading.
4. In the INPUT FORM, highlight Supply DB. Press ENTER to measure air temperature coming out of the evaporator. Punch or drill a small 3/8" hole in the supply plenum and insert ARH5 probe in the center of the plenum to take measurement. Press ENTER to lock reading.
5. Press OUTPUT to view results.

Maintenance

Clean the exterior with a dry cloth. Do not use liquid.

Battery Replacement

The batteries on the ARH5 must be replaced when the LO BATT LED turns red. Replace with one 9V battery.

Auto Power Off

Your ARH5 powers off automatically after approximately 15 minutes to lengthen battery life. To disable "Auto Off," remove the grey rubber cover on the front of ARH5 and slide the Auto Off switch to the left.

10

Limited Warranty

In the USA, this meter is warranted 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 unreasonable 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 loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim of such damage, expenses, or economic loss.

State laws vary. The above limitations or exclusions may not apply to you.

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For Service

In the USA, call Fieldpiece Instruments for one-price-fix-all out of warranty service pricing. Send check or money order for the amount quoted. Send the meter 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 transportation. Outside of the USA, please visit www.fieldpiece.com for service contact information.

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