



INCORPORATED
Precision Industrial System
SENSOR MANUFACTURER



D-2 Incorporated

JF-1A-HH Handheld Fuel Conductivity Product Brochure

Part Number: JF-1A-HH & JF-1A-HH-CM
Revision 1: 4/29/19
Drawing Number: 445-001



JF-1A-HH Handheld Conductivity Meters provide the most accurate and reliable measurement of liquid chemical conductivity for ASTM D2624.

Advantages of the JF-1A-HH Handheld Sensors

1. ASTM Listed in D2624 “Standard Test Methods for Electrical Conductivity of Aviation and Distillate Fuels”
2. D-2 Highest Available Accuracy due to AC Measurement Technology, see Graph from the Precision Statement in ASTM D2624 on p. 4, from ASTM Research Report RR-D02-1680.
3. Provides digital reading of conductivity, temperature, date and time of sample.
4. AC Measurement technology allows for measurement of conductivity in any sample container, no need to relax fuel in a metal beaker with our handheld.
5. We offer a removable sensor tip version of the handheld for Ink Measurement Applications, allows easier cleaning of the sensor tip to remove high solid content liquid chemicals.
6. Large two button design allows for easy operation and use with gloves on.
7. Eight internal data storage locations, stores conductivity, temperature, date and time of samples.
8. Storage locations names may be customized for your sample locations.
9. USB Connection allows for easy data transfer to PC.
10. Long Life Lithium Rechargeable battery.
11. Comes with data graphing software, graphs conductivity and temp vs. time.
12. Internal real time date and clock for record keeping.
13. USB Connection allows for device to be calibrated in the field, with our step-by-step pc calibration software and calibration verification tip. See Page 3 for more information.
14. Multiple custom ranges available for either fuel, solvents, or, ink measurement applications. Standard ranges as an example are 0-2,000 pS/m, or 0-2,000 pS/cm.
15. Full Line of Accessories available, p.5
16. See www.d-2inc.com for Real-Cond Handheld Demonstration Video!



JF-1A-HH/CM
Handheld
Conductivity
Sensor

D-2 Inc.



D-2 JF-1A-HH Conductivity Sensors use our Unique AC Measurement technology rather than DC Measurement technology, here is why:

When using a traditional DC sensor you must time your measurement reading due to the build up of polarization impedance, which is depicted in the graph below. The current flow of a traditional meter rise and falls due the polarization effect of the DC applied voltage. As the voltage is first applied there is a steep in-rush current, then, as the electrons form a polarization layer on the electrodes, the current starts to decrease. The user has to “pick” a value from this complex response, which they see only one value at a time.

From this graph of the DC current response that the actual conductivity measured is a “function” of when the sample read from the meter. It can be seen that the rapid change in the value on either side of the “read window” results in large variability of reported value.

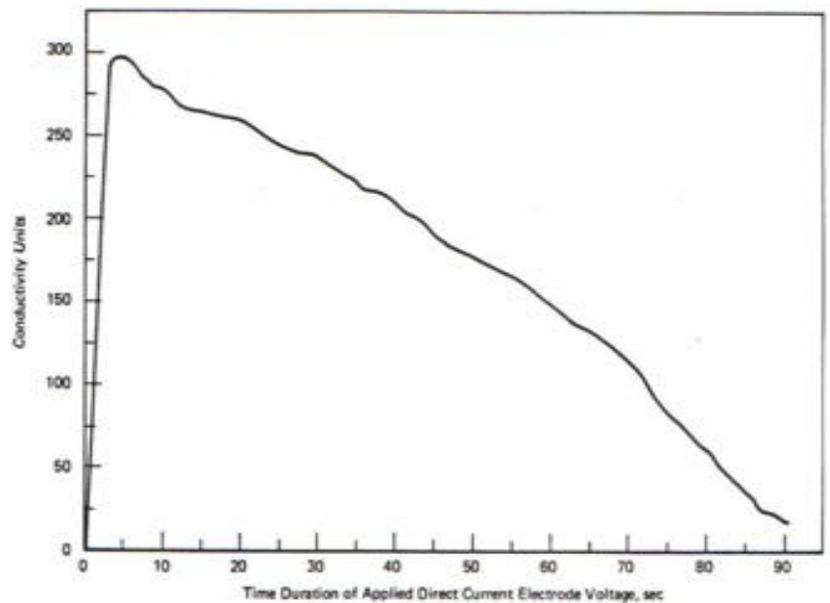


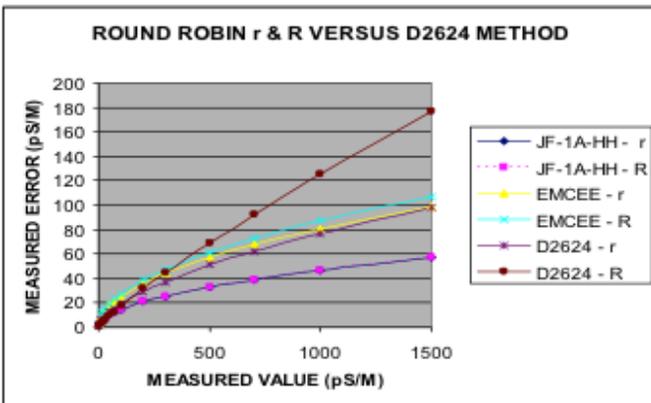
Figure 1. Polarization Effect
(Typical - For Illustration Only)

AC Vs. Dc Measurement Continued...

Secondly, the shape of the above curve actually varies as a function of fluid movement past the electrodes; hence the value read in a DC meter is also a function of the rate of flow. Flow slows the rate at which electrons can collect at the electrodes. Hence DC Measurement of any precision requires the fluid to be absolutely still, no movement. All instruments using DC measurement principles must spot sample in stilled flow and can not measure in a moving fuel sample. AC measurement, allows for direct rapid readings without the worry of stilling the fuel sample.

The DC type response curve may also vary due the “temperature” of the fuel. The electro-chemical interaction at the electrode is dependent on ambient temperature. It is common knowledge that all chemical reaction rates vary dependent on the temperature at which they occur. All the above factors lead to significant errors in DC type meters, and absolutely prevented their use in flowing of moving samples. That is why we developed our conductivity meters with AC measurement principles; to ensure the most accurate, efficient, reliable measurement of conductivity anywhere in the world.

To see how a DC Meter compares to our AC Handheld, please see Graph from ASTM Research Report RR-D02-1680 below:



Custom Engineering Designs Possible, contact us for details!

Do you have a unique application requirement for the measurement of conductivity? We are the experts in the field of conductivity measurement, and we may be able to design a custom sensor for your application, please contact us for more information.

JF-1A-HH Portable Conductivity Sensors will eliminate any of your Conductivity Specification concerns.

Sensor Specifications:

JF-1A-HH Real-Cond Handheld Conductivity Meter



- ❖ Accuracy: +/- 1.5% of Reading
- ❖ Measurement Range: 0-2,000 pS/m
- ❖ Temperature: 0°C to 35°C
- ❖ Operational: Up to 35°C
- ❖ Resolution: 0.1 pS/m
- ❖ USB Data output
- ❖ Sensor Tip: 316 SS
- ❖ ASTM D2624 Listed
- ❖ Patented AC Measurement Technology

JF-1A-HH-CM Real-Cond Handheld Conductivity Meter for Ink Industry

All Specs are the same as JF-1A-HH except the following:

- ❖ Measurement Range: 0-2,000 pS/cm
- ❖ Optional Removable sensor tip
- ❖ Multiple Ranges of measurement available.



JF-1A-HH Handheld Accessories and Field Calibration

Calibration Verification Tip (PN: JF-1A-HH-VF)



This is metal tip that is used for calibration verification. It has two set calibration standards points with the tolerances and values printed on the tip. It has one switch to transfer between the two set points. One low value and one high value allows you to linearly verify the calibration of the instrument. Comes with a case, USB Drive with software, and a USB Cable.



Handheld Water Proof Carrying Case (PN: JF-1A-HH-CC)

Waterproof, available in Black or Yellow. MIL-SPEC. Very durable design for long-term use in harsh environments. Fits all components required for the field operation of the Handheld Conductivity Meter.



Handheld Bench Stand & Metal Beaker with Grounding Strap. (PN: JF-1A-STD, PN: JF-1A-BK)

The bench stand holds the handheld upright to allow the user to easily run tests while the Handheld sits perfectly still. The stand is a sturdy rugged metal design; and is very easy to assemble and disassemble for transportation purposes.

The beaker is a standard 600 ml metal beaker with grounding strap to allow dissipation of DC electrical current present in the fuel.



D-2 Incorporated Direct Customer Support

Fully Supports all of our equipment with direct technical support. We are an ISO 9001:2008 Quality Certified Manufacturer. All of our equipment and services are covered by our one year limited warranty.

JF-1A-HH Handheld Conductivity

JF-1A-HH & JF-1A-HH-CM

D-2 Incorporated
23 Edgerton Drive, Suite A
North Falmouth, MA 02556

www.d-2inc.com