D-2 INCORPORATED

Jet Fuel 1A Conductivity Sensor Handheld
ASTM Test Method D-2624

JF-1A-ST
OWNERS MANUAL

Revision History:

Rev	Date	Description	
0	12/03/21	Written	**AJF**
1	26-JAN-22	REVIEW OF INITIAL	SWS
2	3AUG22	Add Cradle Drawing and Sensor Insertion to Cradle Drawing, Update Major Component	AJF
3	3-OCT-22	Updated warranty as per latest revision, noted air values for larger range sensors	SWS
4	12-SEP-23	Updated manual for added time on display, UOM	SWS
5	5-FEB-26	Added note on JF-1A-ST-VC-USB software distribution, new certifications, batteries	SWS

This manual covers the operational aspects of the D-2 JF-1A-ST Stick Conductivity Sensor. The manual does not differentiate between the sensor's possible measurement ranges other than to list the proper ordering number, see Appendix C. As of this revision, the JF-1A-ST has been given FM, FMC, ATEX and IECEx certifications so that the instrument may be used in hazardous locations.

D-2 continuously strives to meet the full expectations of our customers, and we welcome comments on the structure, content and the ability of this manual to answer your questions regarding our product. If you have any suggestions or comments, please contact us at Sales@D-2inc.com. This document is provided with the understanding that future versions of this instrument may have additional commands, and the function of the commands shown in this document may vary from the present operation.

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Notes for User:

Use the following conventions when reading this manual.

WARNING!

There is a danger to life and limb or a risk of serious injury if the notes on safety are disregarded!

CAUTION!

There is a risk of injury and damage to property if the notes on safety are disregarded!

ATTENTION!

There is a risk of damage to property if the notes on safety are disregarded!

! IMPORTANT

Notes on working procedures.

Read the instructions in this manual carefully before using the sensor. Note throughout this manual the term JF-1A-ST applies to all models of the instrument, unless specific individual model numbers are detailed.

D-2 Incorporated will accept no liability for damages due to non-observance of this manual.

ATTENTION!

If the instructions in the operating manual are not adhered to or are inadequately adhered to, there shall be no entitlement to services under the warranty and the CE Declaration of Conformity shall cease to be valid.

Information in this manual is subject to change without notice and does not represent a commitment on the part of D-2 Incorporated.

Where manuals are written in several languages, the text it was created in is considered the original.

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1.0 CONTENTS OF THE BOX

1.1 Inspection

Upon arrival, visually inspect the box for any damage. Damage must be reported to the shipping carrier.
Upon arrival, visually inspect the box for any damage. Damage must be reported to the shipping carrier.

1.2 Unpacking the Sensor

The JF-1A-ST is a delicate instrument, and care should be taken during the unpacking of the box. The Contents of the box vary depending on exact purchase order. The following list of components can be considered the minimal shipment for the JF-1A-ST

1. The JF-1A-ST carrying case
2. JF-1A-ST: Hand-Held sensor. See figure 1.
3. Securing Adaptor
4. 448-010: Owner's Manual (this document)

1.3 Accessories

Other items may be included in the box depending on what was exactly ordered. Always check contents versus the purchase order/packing slip. Available accessories can be found on the web at www.d-2inc.com or by D-2 Incorporated's document number 448-013.

2.0 GENERAL DESCRIPTION

D-2 Incorporated is pleased to announce the release of their newest version of a handheld conductivity meter, the JF-1A-ST. This instrument can turn on and off with the press of the button located at the top of the sensor.(See figure 1)

Turn on: hold button for approximately 1 seconds, see display light up. Turn off: hold button for approximately 2 seconds. This allows the user to do many operations between battery changes.

The JF-1A-ST, Stick Conductivity Sensor, is a reliable instrument for the

spot sampling measurement of electrical conductivity of fuels. The JF-1A-ST incorporates innovative electronic Digital Signal Processing (DSP) techniques to accurately determine the electrical conductivity of fuel products and is listed in the ASTM Method : D2624. The instrument will measure fuel electrical conductivities between 0 and 2,000 picoSiemens/meter (pS/m), although other ranges can be configured. The sensor offers standard commercial "AAA" LI-ION replaceable batteries. Using the optional cradle, the JF-1A-ST can link with any USB equipped personal computer for ease of conductivity validation and calibration.

Accurate Conductivity measurements depend on the calibration of the instrument. Calibration relies on the physical stability of the sensor. If the instrument is dropped and damage has occurred to the metal tip, the instrument should be returned to the factory, as calibration is no longer valid, even if the instrument continues to read conductivity values.

Accurate Temperature measurements depend on the stability of the environment in which the measurements are being made. As with all temperature measurement devices in dynamic environmental conditions, measurement errors will occur due to differences in temperature responses of temperature measurement devices. As differences between the sample and instrument temperature increase the user will experience increased errors in measurements. These errors are two-fold, one is, the temperature sensor in the instrument will be slow to become equal to the sample temperature, while at the same time the conductivity probe itself will be heating or cooling the sample as it is immersed sample. As the value of conductivity is highly dependent on temperature the heating/cooling of the sample by the probe will cause additional measurement errors. Hence, it is our "strong" recommendation that both sensor and sample be at equal temperature for a period of time before any measurements are conducted. If a larger temperature difference exists, a longer time of equilibration should be allowed to occur. If a temperature differential is expected, a second measure, with reproducibility within the method would indicate that adequate thermal equalization has occurred.

3.0 REPLACING BATTERIES

Replacing the batteries is relatively easy but should be performed with great care. The Housing must be removed, thus, exposing the printed circuit board and the LCD. Attention should be paid to the handling of the electronic printed circuit board, as static occurrences can be detrimental to electronic components. When replacing batteries, always do so in a static safe environment, and try not to touch any of the electronics on the printed circuit board.

D-2 Incorporated suggests an antistatic station consisting of a grounded table and either antistatic foot or wrist straps, connected properly.

IMPORTANT: Use only Energizer LN92 (AAA) batteries for replacement. Failure to do so will invalidate any certification for hazardous locations (FM, FMC, ATEX, IECEx)

First, make sure the sensor tip is clean and dry, without residue from any prior tests. Inserting residue or dirt of any kind into the internal sensor tip can affect the calibration negatively.

To replace the batteries, unscrew (counterclockwise) the metal tip measurement end from the outer housing. Carefully remove the board assembly from the housing and place the housing down.

Flip the board assembly over to reveal the two battery holders. Remove each battery from the battery holder, the use of a small pry tool may be necessary, but removal can be accomplished by hand only. The operator should keep from touching the actual circuitry or the LCD during this process. Hold the printed circuit board by the edges only.

Place the replacement batteries into the clips, ensuring they are installed with the correct polarity. Always use high quality AAA Li-Ion batteries as comparable to the original ones. These batteries are easily obtainable or contact factory for correct type.

Slide the board assembly back into the housing, be careful not to damage or scratch LCD. Align housing threads with tip threads and screw back together.

Hand tightening only, no tool should ever be used on the tip.

Before completely securing the housing, verify the O-ring, located on the tip assembly has not been damaged and is fitting properly into the housing. Replacement O-rings can be purchased from D-2 Inc.

The sensor is now ready to continue accurately performing conductivity sampling. A quick sample in air should show 0.0 – 0.5 pS/m reading. If you have one of the JF-1A-ST-VC accessories, you can perform a quick conductivity verification.

4.0 SPECIFICATIONS

Table 1

JF-1A-ST Sensor

Parameter	Conductivity	Temperature
Range	0 – 2,000 pS/m*	-30 - 50°C
Accuracy	Equivalent to ASTM D2624	±0.5°C
Resolution	0.1 pS/m	0.1C

*Alternate ranges available – contact factory

JF-1A-ST Series

Parameter	Conductivity	Temperature
Sensor Type	316SS Coaxial Electrode	Electronic
Calibration	Performed under ISO-9001 company directives. D-2 has an ISO 17025 calibration lab pending	Performed under ISO-9001 company directives D-2 has an ISO 17025 calibration lab pending

Table 2

SYSTEM SPECIFICATIONS

Power	Replaceable AAA Lithium-Ion Battery (1000 Samples) Battery Life: up to 100 hours before replacing
Display	128X64 OLED Display with Black lettering on yellow background with inverting capabilities. Display reads left to right with housing button towards the right.
Output	IRD Data Interface
Materials	Housing 6061-T6 Aluminum Anodized Sensor - 316SS and PEEK
Weight	0.3 Lbs.
Certification	ASTM D2624, CE

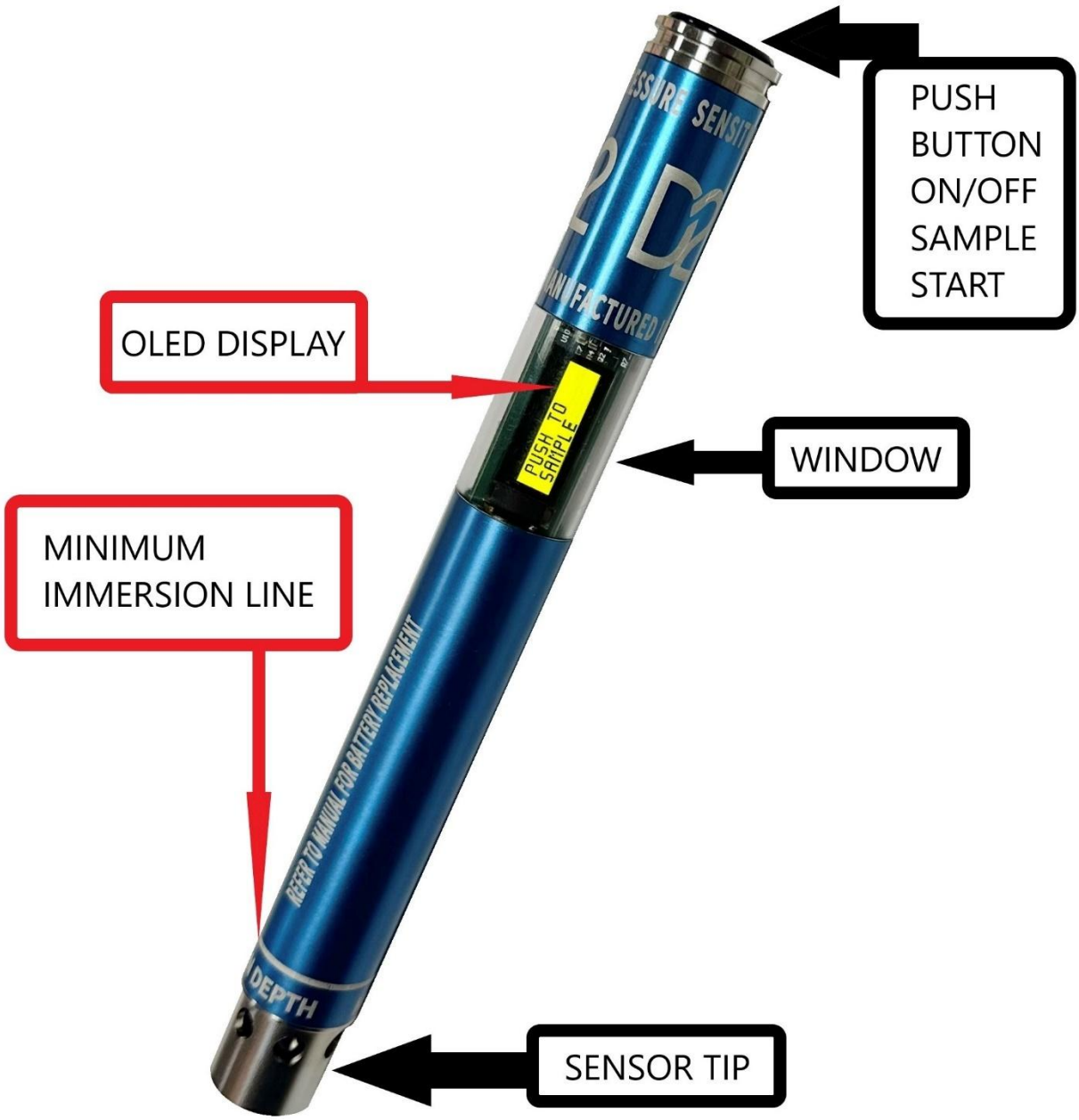
Table 3

SYSTEM CERTIFICATIONS

FM	FM25US0364X	CL 1, DIV 1, GRP A, B, C, & D, T4 Ta=-30 °C to +50°C
FMC	FM25CA0122X	CL 1, ZN 0, Aex/Ex ia IIC T4 GA Ta =-30 °C to +50°C
ATEX	FM25ATEX0043X	EX ia IIC T4 Ga Ta= -30 °C to +50°C
IECEx	IECEx FMG 25.0048X	

CE 2809 Ex II 1 G FM C US APPROVED

All instruments have certifying marks on housing



Diameter 0.785”
Length 8-3/16”

Figure 1
Major System Components

5.0 OPERATION

The JF-1A-ST Stick Conductivity Sensor runs on two replaceable AAA LI-ION batteries. The top of the sensor is a thumb press piezo switch. The activation of the switch requires applied pressure. The button is not a tactile switch, but a pressure switch. Note the customer will not feel any movement or indentation when pressing on the switch, it simply reacts when the pressure exceeds 3 – 5 newtons. The act of pressing the top control button will be described henceforth as **ENTER.**

To turn the sensor on, apply the necessary pressure on the button for approximately one second and release. The user will see the display illuminate. The display will flash the instrument's serial number for three seconds, then the date the instrument was calibrated (MM-DD-YY) for three seconds and finally, indicate "Push to Sample." The instrument will now stay on for approximately fifty seconds awaiting the instructions to sample a fluid.

To turn the sensor off, apply the necessary pressure on the button for approximately two seconds and release. The display will go blank which indicates the sensor is off. The built-in timer to "auto shut down" is keyed by the **ENTER** button. Anytime the ENTER button is activated, the timer resets to zero and counts to one minute before shutting down the instrument. This safeguard combats against battery drain if someone inadvertently forgets to power down the sensor.

5.1 Sampling Data

Proper techniques as described in ASTM D2624 should be used to collect a fuel sample from your test location.

! IMPORTANT

Cross contamination of fuels can lead to erroneous conductivity values. Always clean sensor tip prior to and between sampling; recommended cleaning practices include an alcohol rinse and air dry, see section on Maintenance.

***WARNING:* The user should employ proper bonding techniques when taking samples of low conduction fluids and when sampling these fluids using the JF-1A-ST instrument. Containers should be tied to Safety Ground during product line sampling. The JF-1A-ST has an optional ground clip to allow the user to bond the instrument when required by local codes.**

- Prior to sampling fuel, the sensor tip should be immersed into and

out of the fuel 3 times up to the "minimum" mark (see side of the sensor housing). The sensor should also be used to stir the fluid in an attempt to remove any air bubbles that may have been introduced into the measurement cavity.

- Use the ***ENTER*** key to power up the sensor, if not already powered.
- When the display reads "Press to Sample", hold the sensor steady and press the ***ENTER*** key to commence sampling.

The display has three critical sections during the sampling :

1. START SAMPLE: Initially after the ENTER key has been pressed, the word "DONE" is placed on the upper half, of the LCD. On the bottom half of the LCD, an indicator is placed directly below the letter 'D'. This starts the sample.
2. FINISH SAMPLE: The user must hold the instrument in the fluid until the indicator reaches the end of the letter 'E' in the word DONE, approximately 12 seconds. The display then removes the word "DONE" and places a conductivity reading on the screen.
3. DISPAY DATA: At this point, the sample has completed, and the user is free to remove the instrument from the sample fluid. The Conductivity will display on the LCD along with the Unit of Measure. For sensors configured for picoSiemens per meter, a P and an M are vertically displayed after the value. For sensors configured for picoSiemens per centimeter, a C and an M are vertically displayed after the value. The unit's display will then invert colors and show the value for temperature followed by °C, vertically. The display toggles between conductivity and temperature values six separate times, each lasting 3 seconds. The display then returns to "press to sample". At any point during the data being displayed, pressing the ENTER key will initiate a new sample process, and remove the previous data from the display.

5.2 Preferred Sampling Procedural Steps

Step 1: Sensor Probe Cleaning
Step 2: Proper Fuel Sample Collection
Step 3: Proper Sample Bonding to Safety Ground
Step 4: Proper Insertion of Sensor Probe
Step 5: Initiating Sample Measurement
Step 6: Completing Sample Measurement
Step 7: Recording of Information

6.0 IRD SERIAL DATA INTERFACE

The D-2 JF-1A-ST has an IrDA serial data interface which can be accessed using the IrDA D-2 Stick Cradle (JF-1A-ST-VC-USB or JF-1A-ST-VC-SEF).

Width: 2”
Length: 9”
Height: 2-1/8”

Figure 2
JF-1A-ST-VC-USB
Note: JF-1A-ST not fully inserted

The Stick Cradle has an industry standard USB Interface. To properly connect to the sensor certain USB drivers are needed. These drivers may or may not be already loaded on your computer. These drivers can be found online from http://www.ftdichip.com/Drivers/VCP.htm and looking for the FT232R product line. This USB connection will have properties of a virtual serial port, and the connection shall automatically be given a comport number. This Comport number will be needed for communications with the sensor through D-2 Inc.’s Windows® software. The optional software allows for validation, calibration, and reporting of calibration. Follow software menus and instructions as required.

6.1 Serial Port Parameters

Once connected to the Virtual Serial Port, communication parameters must be set to 19200 N 8 1 (D-2 Inc. software shall do this automatically).

Baud Rate of 19200 BPS
No Parity
8 Data bits
1 Stop bit
No handshaking of any kind

6.2 Firmware Commands

A list of commands has been developed to communicate with the sensor and enhance operation. All commands end with a carriage return. The ability to read a parameter needs only the command, the ability to set a parameter needs the command, an equal sign, and the formatted parameter, i.e. to set the variable A0 to 10, the command structure would be: A0=10<cr>. To read variable A0, the command structure would be: A0<cr>.

A list of available commands can be found in Appendix B.

7.0 CALIBRATION

! IMPORTANT

Cross contamination of fuels can lead to erroneous conductivity values. Always clean sensor tip prior to and between sampling. Recommended cleaning practices include an alcohol rinse and air dry; see section on Maintenance.

7.1 Factory Calibration

Factory calibration shall be performed in D-2 Inc.'s ISO 17025 accredited lab. The JF-1A-ST sensor has a normal re-calibration interval of one year but can be field calibrated using a D-2 Inc VC accessory.

At time of every power up the date of the unit's last calibration is displayed on the screen. Use of the sensor is recommended for the year following this date.

7.2 Validation Checks

The JF-1A-ST can be validated using one of the two different types of Validation accessories. The JF-1A-ST-VC-USB accessory plugs into a computer via a USB port/cable and uses a free proprietary

Windows® based applet to interface with and validate the JF-1A-ST. For customers within labs that do not allow connecting USB cables to their company computers, a standalone device, JF-1A-ST-VC-SEF is the ideal accessory. These accessories allow the user to verify conductivity readings at multiple standard conductivity points in the calibrated range. If any reading is observed to be out of tolerance or the user suspects that the unit is not reading properly the sensor should be recalibrated at the factory or with the use of the VC series accessory.

7.3 Field Calibration

The JF-1A-ST-VC-USB or JF-1A-ST-VC-SEF accessories can also be used to perform an on-site calibration. The calibration procedure is automated and performed with the use of D-2 Incorporated software or by using the stand-alone version.

The use of the JF-1A-ST-VC-USB or JF-1A-ST-VC-SEF does not hold the ISO 17025 accreditation.

See Appendix A for Warranty and Return Merchandise Information.

8.0 MAINTENANCE

ATTENTION!

The batteries are the only user-serviceable components inside the D-2 JF-1A-ST Conductivity Sensor.
There are no electronic adjustments inside the sensor. At no time should the user attempt anything other than battery replacement when the housing has been removed. Modifying the interior of the housing, attempted repair or modification of circuitry shall void all warrantees.

The total Maintenance of the instrument has been reduced to sensor probe cleaning and replacing the batteries.

8.1 Cleaning

The JF-1A-ST Stick Conductivity Sensor should be cleaned prior to and in between sampling procedures. Fuel additives or particulates may build up on the sensor, degrading the sensor performance. The instrument can be cleaned using the following procedure:

Rinse the sensor in "Clean" Isopropyl Alcohol and blow-dry using "dry", filtered, compressed air. Note that this step should be repeated until all signs of fuel residues have been removed from the sensor.

Note: Isopropyl Alcohol is highly conductive and any residual traces inside the sensor between the two electrodes will over- range the instrument. Note that if the Isopropyl Alcohol is well blown off with dry compressed air no residuals will be left.

Make sure the sensor does not display a large reading when sampling in air. This could be due to an improper cleaning procedure or residual Isopropyl Alcohol in the sensor cavity. NOTE: larger scale ranges may show larger values IN AIR. This is an artifact of the sensor's gain to accommodate the larger range and only shows up in the case of measuring air. The standard ranges of 0 -2,000 pS/m and 0 – 2,000 pS/cm can show a value < 5.0 in each respective unit of measure, in Air. A good rule of thumb for ranges larger than the base ranges would be to see a value of less than 25.0 in air. Seeing values greater than that may indicate a dirty sensor tip or issues with the circuitry.

8.1 Security Adaptor (anti-rotation device)

As we are all aware, cylindrical things can roll when placed onto uneven or slanted surfaces. To alleviate the fear of damage to the sensor from an unexpected fall, each JF-1A-ST comes equipped with a security fastener. This fastener can be press-fit onto any area of the JF-1A-ST Housing (see figure 3). It will prevent unexpected rolling and can stay attached to the housing during sampling.

It can also be mounted to a surface, with the proper fastener and then the JF-1A-ST can be located in the Security Adaptor when not in use.

Figure 3: Shown with two separate Security Adaptors, unit only comes with one.

APPENDIX A : LIMITED WARRANTY

LIMITED WARRANTY: Subject to the limitations contained in "Limitation of Remedy & Liability" section, as shown below, Seller warrants that products provided will perform to the ability of the published specifications or Industry Method(s) claimed by the Seller. The Seller certifies that the goods manufactured or services provided will be free from defects in materials or workmanship under normal use and care until the expiration of the applicable warranty period.

Standard laboratory products, are warranted for twelve (12) months from the date of initial calibration, which will be referenced by supplied documentation or electronically embedded into the product's memory or both.

Specialized equipment in the form of product line additive systems, also known as "Skids" are warranted for twelve (12) months from the initial installation or eighteen (18) months from the date of shipment by Seller, whichever period expires first.

Marine laboratory or deployment products, are warranted for twelve (12) months from the date of initial calibration, which will be referenced by supplied documentation or electronically embedded into the product's memory or both.

If Buyer discovers any warranty defects and notifies Seller thereof in writing during the applicable warranty period, Seller shall, at its option, correct any errors that are found by Seller in the firmware or Services or repair or replace F.O.B. point of manufacture that portion of the Goods or firmware found by Seller to be defective, or refund the purchase price of the defective portion of the Goods/Services. All replacements or repairs necessitated by inadequate maintenance, normal wear and usage, unsuitable power sources or environmental conditions, accident, misuse, improper installation, modification, repair, storage or handling, or any other cause not the fault of Seller are not covered by this limited warranty, and shall be at Buyer's expense. Seller shall not be obligated to pay any costs or charges incurred by Buyer or any other party except as may be agreed upon

in writing in advance by Seller. All costs of dismantling, reinstallation and freight and the time and expenses of Seller's personnel and representatives for site travel and diagnosis under this warranty clause shall be borne by Buyer unless accepted in writing by Seller. Goods repaired and parts replaced by Seller during the warranty period shall be in warranty for the remainder of the original warranty period or ninety (90) days, whichever is longer. This limited warranty is the only warranty made by Seller and can be amended only in a writing signed by Seller. THE WARRANTIES AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE. THERE ARE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE OR ANY OTHER MATTER WITH RESPECT TO ANY OF THE GOODS OR SERVICES.

LIMITATION OF REMEDY AND LIABILITY: Seller shall not be liable for damages caused by delay in performance. The remedies of buyer set forth in this agreement are exclusive. In no event, regardless of the form of the claim or cause of action (whether based in contract, infringement, negligence, strict liability, other tort or otherwise), shall seller's liability to buyer and/or its customers exceed the price to buyer of the specific goods manufactured or services provided by seller giving rise to the claim or cause of action. Buyer agrees that in no event shall seller's liability to buyer and/or its customers extend to include incidental, consequential or punitive damages. The term "consequential damages" shall include but not be limited to, loss of anticipated profits, revenue or use and costs incurred including without limitation for capital, fuel and power, and claims of buyer's customers. The following information should accompany any instrument being returned to the factory:

Return Authorization Number
Model/Serial Number
Brief Description of the Problem
Customer Contact/Telephone Number

CALIBRATION SERVICE POLICY

A calibration only service is available for JF-1A-ST Stick Conductivity Sensors. The service is limited to instruments requiring only calibration and minor adjustment. Instruments that are not operating properly and require repair or replacement parts will not be covered. If repair is necessary the customer will be contacted and apprised of the additional cost. The customer will be charged the standard repair cost, which includes repair and calibration. In the event that the customer does not approve repair, the unit will be returned in "as received" condition and the teardown and inspection charge will be invoked.

The customer will be required to obtain a return authorization number from Customer Service at D-2 Incorporated prior to the return of the instrument. This number should be displayed on the outside of the container, preferably on the shipping label, and included on the shipping documentation sent with the instrument.

If possible, the following information should accompany the instrument:

Return Authorization Number
Model/Serial Number
Customer Contact/Telephone Number
All Correspondence/Shipping:

Customer Service
D-2 Incorporated
6 Otis Park Drive, STE 1
Bourne, MA 02532

APPENDIX B : Serial Port Command List

Communication with the JF-1A-ST-ST-VC-USB or the JF-1A-ST inserted into its cradle can occur when properly connected. System parameters must be set as described in section 6. Depending on the information needed, the correct command would need to be used.

To query the JF-1A-ST-VC-USB

Function	**Command**
Save parameters	ST
List variables	LI
Get firmware version	VR
Get list of help commands	F1

To query the JF-1A-ST installed into the cradle of the JF-1A-ST-VC-USB

Function	**Command**
Save parameters	SV
Get a list of calibration constants	IL
Get firmware version	IV
Get type of Instrument	IP
Get maximum possible conductivity value	IX
Get Serial Number	IN
Get Calibration Date	IC

IMPORTANT

Notes on working procedures.

Serial communications with the sensor should only be performed by qualified distributors, technicians, or extremely experienced users. The ability to render the instrument inoperable or detrimentally affect the calibration is possible.

The JF-1A-ST-VC-USB functionality is achieved using the latest version of the D-2 Inc. StickCal Windows® software. This software can be downloaded from the www.d-2inc.com website in the form of a zip file.

Contact factory for complete information concerning serial communications.

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An ISO 9001 Company

APPENDIX C : Ordering Information

The JF-1A-ST series has the versatility to cover a wide range of applications. The ability to measure a wide range of conductivity can be obtained through the Ordering Matrix Below. Please consult the factory with any questions you may have.

End Item Number							Range
JF-1A-ST	-		-		-		0 - 2,000 pS/m
JF-1A-ST	-		-	**4000**	-		0 - 4,000 pS/m
JF-1A-ST	-		-	**20000**	-		0 - 20,000 pS/m
JF-1A-ST	-	**CM**	-		-		0 - 2,000 pS/cm
JF-1A-ST	-	**CM**	-	**4000**	-		0 - 4,000 pS/cm
JF-1A-ST	-	**?**	-	**???**	-		Other ranges available upon request**

TBD

INDICATES MAX RANGE

INDICATES DISPLAY UNITS

i.e. JF-1A-ST-4000	BLANK = is not a place holder, it just does not appear in the part number. For this example, the following is not valid: JF-1A-ST- -4000
JF-1A-ST-CM	CM= pS/cm - picoSiemens per centimeter Blank is the default maximum value of 2,000 pS/cm
Possibilities	nS/cm - nanoSiemens per centimeter ** uS/cm - microSiemens per centimeter** mS/cm - milliSiemens per centimeter**

BASE MODEL

** still in development

Statement of Compliance with Applicable European Directives

We: D-2 Incorporated
6 Otis Park Drive
Location 1
Bourne, MA, 03532

as the manufacturer of the equipment listed below:

Conductivity Sensor – JF-1A-ST

confirm, in accordance with the requirements of clause 1.2.7 of the Essential Health and Safety Requirements of Community Directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres that the above equipment has been designed and manufactured so as to:

(a) avoid physical injury or other harm which might be caused by direct or indirect contact;

(b) assure that surface temperatures of accessible parts or radiation which would cause a danger, are not produced;

(c) eliminate non-electrical dangers which are revealed by experience;

(d) assure that foreseeable conditions of overload shall not give rise to dangerous situations.

and where these risks are wholly or partly covered by other Community Directives, the equipment satisfies the requirements of those specific Directives.

and that literature describing the equipment will not contradict the instructions regarding safety aspects.

Issued on: 26-Jan-2026

Authorized by:

Name: Stephen Sayles

Position: Quality Manager