O P E R A T I N G M A N U A L

DataFID™ / MicroFID™ II

Portable Flame Ionization Detector

PN 074-670-P1A

INFICON

Trademarks

The trademarks of the products mentioned in this manual are held by the companies that produce them.

Bluetooth® is a registered trademark owned by Bluetooth SIG, Inc.

ProCare™, DataFID™, and MicroFID II™ are registered trademarks of INFICON.

Teflon® is a registered trademark of DuPont Co.

Underwriters Laboratories® Inc, UL, and the UL logo are trademarks of UL LLC.

All other brand and product names are trademarks or registered trademarks of their respective companies.

Disclaimer

The information contained in this manual is believed to be accurate and reliable. However, INFICON assumes no responsibility for its use and shall not be liable for any special, incidental, or consequential damages related to the use of this product.

Due to our continuing program of product improvements, specifications are subject to change without notice.

Copyright

INFICON

DECLARATION OF CONFORMITY

This is to certify that this equipment, designed and manufactured by:

INFICON Inc.
Two Technology Place
East Syracuse, NY 13057
USA

Meets the essential safety requirements of the European Union and is placed on the market accordingly. It has been constructed in accordance with good engineering practice in safety matters in force in the Community and does not endanger the safety of persons, domestic animals or property when properly installed and maintained and used in applications for which it was made.

A Technical Documentation File is also available for review by competent authorities and will be maintained for a period of ten years after the date on which the equipment was last manufactured. In additional to this file, technical, installation, maintenance and application information concerning this equipment can also be found in the Operating Manual(s) for this product or product family.

Equipment Description: **MicroFID II, DataFID, SiteFID.**

Applicable Directives:

2014/35/EC (LVD)

1999/5/EC (R&TTE / EMC)

2014/30/EC (General EMC)

2011/65/EC (RoHS2)

Applicable Standards:

Safety:

UL 913, Fifth Edition; Dated February 21, 1997; with Revisions Through and including February 24, 1997, UL Standard for Safety for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations

ANSI/UL 1203-2006; Fourth Edition; Dated September 15, 2006, UL Standard for Safety for Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations

ANSI/UL 61010-1-2008; Second Edition; Dated July 12, 2004, (UL Standard for Safety for Electrical Equipment for Measurement, Control and Laboratory Use)

Emissions:

ETSI EN 300 328-2 v1.8.1 (2.4 Ghz)
(ERM for equipment operating in the 2.4 GHz ISM band)
ETSI EN 301 893 v1.7.1 (5 Ghz)

EN 61326-1: 2013 (Radiated & Conducted Emissions)
(EMC – Measurement, Control & Laboratory Equipment)

CISPR 11/EN 55011 Edition 2009-12 Emission standard for industrial, Scientific and medical (ISM) radio RF equipment

FCC Title 47 Part 15 Class A emission requirements (USA)

Immunity: EN 61326:2013 (Industrial EMC Environments)
(EMC – Measurement, Control & Laboratory Equipment)
Immunity per Table 2

ETSI EN 301 489-17 V2.2.1: 2012 (General EMI)
(ERM – EMC – Specific conditions for 2.4 GHz)

RoHS: Due to the classification of this product it is currently exempt from the RoHS directive until July 22, 2017.

Wireless Restrictions:

Countries	Restrictions
France	Outdoor use limited to 10mW e.i.r.p. within the band 2454 to 2483.5 MHz.
Italy	If used outside of own premises, general authorization is required.
Luxembourg	General authorization is required for public service
Romania	On a secondary basis. Individual license required.
Austria, Denmark, Finland, Germany, Greece, Iceland, Ireland, Liechtenstein, Luxembourg, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, The United Kingdom	None

CE Implementation Date: May 15, 2012, Revised January 20, 2016

Authorized Representative:

Jerry Wander

Business Line Manager, SSC
INFICON Inc.

Stephen Chabot

Vice-President, Operations and Quality
INFICON, Inc.

ANY QUESTIONS RELATIVE TO THIS DECLARATION OR TO THE SAFETY OF INFICON'S PRODUCTS SHOULD BE DIRECTED, IN WRITING, TO THE VICE-PRESIDENT OF OPERATIONS AND QUALITY AT THE ABOVE ADDRESS.

Warranty

WARRANTY AND LIABILITY - LIMITATION: Seller warrants the products manufactured by it, or by an affiliated company and sold by it, and described on the reverse hereof, to be, for the period of warranty coverage specified below, free from defects of materials or workmanship under normal proper use and service. The period of warranty coverage is specified for the respective products in the respective Seller instruction manuals for those products but shall not be less than one (1) year from the date of shipment thereof by Seller. Seller's liability under this warranty is limited to such of the above products or parts thereof as are returned, transportation prepaid, to Seller's plant, not later than thirty (30) days after the expiration of the period of warranty coverage in respect thereof and are found by Seller's examination to have failed to function properly because of defective workmanship or materials and not because of improper installation or misuse and is limited to, at Seller's election, either (a) repairing and returning the product or part thereof, or (b) furnishing a replacement product or part thereof, transportation prepaid by Seller in either case. In the event Buyer discovers or learns that a product does not conform to warranty, Buyer shall immediately notify Seller in writing of such non-conformity, specifying in reasonable detail the nature of such non-conformity. If Seller is not provided with such written notification, Seller shall not be liable for any further damages which could have been avoided if Seller had been provided with immediate written notification.

THIS WARRANTY IS MADE AND ACCEPTED IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHETHER OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, AS BUYER'S EXCLUSIVE REMEDY FOR ANY DEFECTS IN THE PRODUCTS TO BE SOLD HEREUNDER. All other obligations and liabilities of Seller, whether in contract or tort (including negligence) or otherwise, are expressly EXCLUDED. In no event shall Seller be liable for any costs, expenses or damages, whether direct or indirect, special, incidental, consequential, or other, on any claim of any defective product, in excess of the price paid by Buyer for the product plus return transportation charges prepaid.

No warranty is made by Seller of any Seller product which has been installed, used or operated contrary to Seller's written instruction manual or which has been subjected to misuse, negligence or accident or has been repaired or altered by anyone other than Seller or which has been used in a manner or for a purpose for which the Seller product was not designed nor against any defects due to plans or instructions supplied to Seller by or for Buyer.

NOTE: These instructions do not provide for every contingency that may arise in connection with the installation, operation or maintenance of this equipment. Should you require further assistance, please contact INFICON.

Table Of Contents

Chapter 1
Introduction

1.1 Overview

DataFID and MicroFID II are both portable, intrinsically safe flame ionization detectors (FID) that are approved for use in hazardous locations.

DataFID and MicroFID II measure, display, and record the concentration of total volatile organic compounds (TVOCs) ionized by a flame ionization detector. The total concentration of all flame ionizable chemicals present in the sample are displayed in parts per million (ppm) or parts per billion (ppb).

NOTE: Most user functions are identical for the DataFID and MicroFID II. In cases where an operation is specific to DataFID or MicroFID II, it will be labelled as such.

1.2 Definitions of Notes, Cautions, and Warnings

DANGER

Failure to obey these messages could result in very severe injuries or death.

WARNING

Failure to obey these messages could result in personal injury.

CAUTION

Failure to obey these messages could result in damage to DataFID/MicroFID II or the loss of data.

NOTE: Provides additional information about the current topic.

1.3 Safety Considerations When Using DataFID/MicroFID II

CAUTION

Do not expose DataFID/MicroFID II to intense sunlight for prolonged periods. Excessive heat exposure may result in erroneous readings.

CAUTION

If the exhaust port becomes obstructed, pump operation will be inhibited, which can extinguish the flame.

CAUTION

Use DataFID/MicroFID II only for purposes described in this manual.

NOTE: Water vapor is a natural by-product of the hydrogen flame. At low temperatures, the water vapor may condense at the exhaust port. If condensation does occur, refer to section 5.4, Replacing the Exhaust Frit Filter and Housing, on page 5-4 to remove the filter, and allow the moisture to dry before calibration or sampling.

1.4 Unpacking

DataFID/MicroFID II ships with the accessories found in Table 1-1.

Table 1-1 Accessories shipped with DataFID/MicroFID II

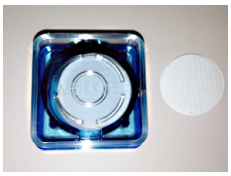
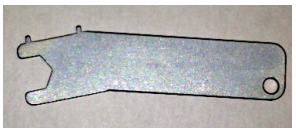
Part number	Description	Qty	Part
A1201221	Universal Battery Charger with Cord	1	
MX396015	Fluoropore Water/Particulate Filter, pack of 25	1	
ISP-951-202-G1	Foam Insert and Sleeve Assembly	1	
951-205-G1	Hydrostik Adapter Assembly	1	

Table 1-1 Accessories shipped with DataFID/MicroFID II (continued)

Part number	Description	Qty	Part
MX501205 **NOTE:** MicroFID II is shipped with this housing installed.	1/4 in. Swagelok Inlet Filter Housing	1	
PN 951-705-G1	Hydrostik Adapter Silicone Seal, pack of 25	1	
PN TL201199-01	DataFID/MicroFID II Multi-tool	1	
074-5041-G1	DataFID/MicroFID II Operating Manual CD	1	N/A

1.5 Notices and Warnings

1.5.1 Use in Areas Subject to Explosion Hazards

DataFID/MicroFID II is tested and approved according to EMI and intrinsic safety requirements defined by the US (FCC Pt. 15 and UL 913 5th edition).

CAUTION

Modifications of components or the use of faulty or incomplete parts is not permitted. Intrinsic safety certifications may be violated if DataFID/MicroFID II is serviced by individuals or organizations that are not authorized by INFICON Service personnel.

1.5.2 FCC Warning

DataFID/MicroFID II complies with the limits for a Class B Digital Device, pursuant to Subpart B, Class B of Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when DataFID/MicroFID II is operated in a commercial environment.

CAUTION

DataFID/MicroFID II generates, uses, and can radiate radio frequency energy and if not used in accordance with this operating manual, may cause interference to radio communications.

1.5.3 Intrinsic Safety Notice

DataFID/MicroFID II is Classified for use in Class I, Division 1, Groups A, B, C, D Hazardous Locations. DataFID/MicroFID II has a T4 (135°C) Rating.

DataFID/MicroFID II is listed by Intertek, Inc., to comply with Underwriters Laboratories® Inc. UL 913 Standard for Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, Division 1, Groups A, B, C, D Hazardous (Classified) Locations.

Figure 1-1 DataFID/MicroFID II product safety label (DataFID shown)

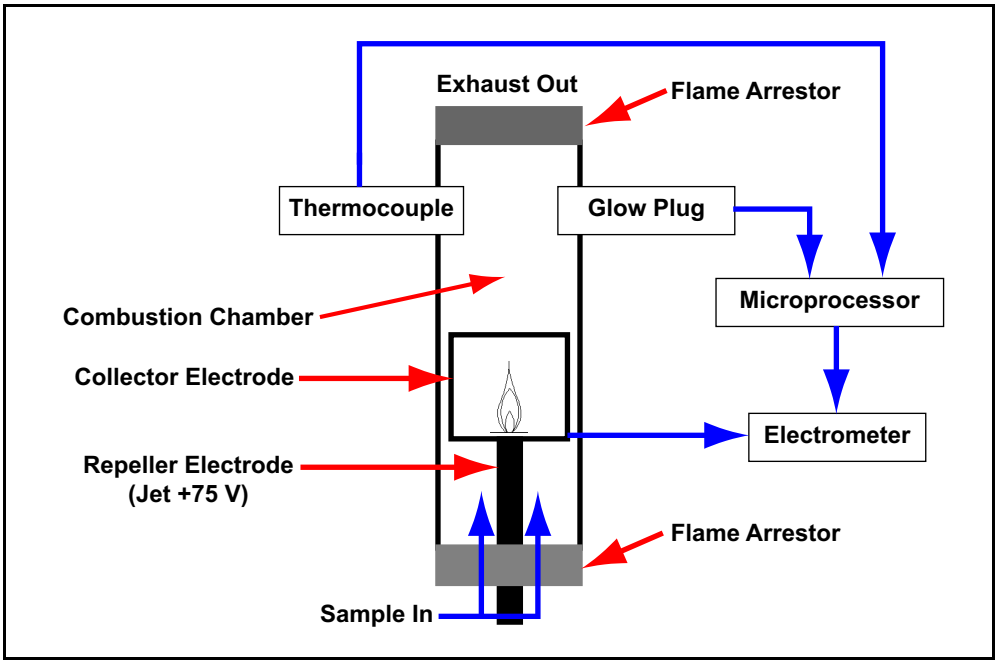
NOTE: The Intrinsic Safety label in Figure 1-1 specifies DataFID, but the certification is applicable to both DataFID and MicroFID II.

1.6 Flame Ionization Detector Operation

DataFID/MicroFID II uses a flame ionization detector to measure total volatile organic compounds (TVOCs) in air at ppm or ppb levels. Permanent air gases (argon, carbon dioxide, nitrogen, oxygen, water vapor, etc.) are not ionized by the flame and, therefore, are not measured.

When the DataFID/MicroFID II hydrogen flame is ignited, the internal pump draws in air through the inlet. This sample provides the oxygen necessary for combustion.

Figure 1-2 Flame ionization detector



When the proper hydrogen-to-air ratio is present in the combustion chamber, a glow plug will automatically ignite the flame. Flame status, whether lit or extinguished, is monitored by a thermocouple.

Volatile organic compounds (VOCs) are ionized when the sample passes through the flame. These ionized molecules are subjected to a continuous electric field between the repeller electrode at the jet and the collector electrode.

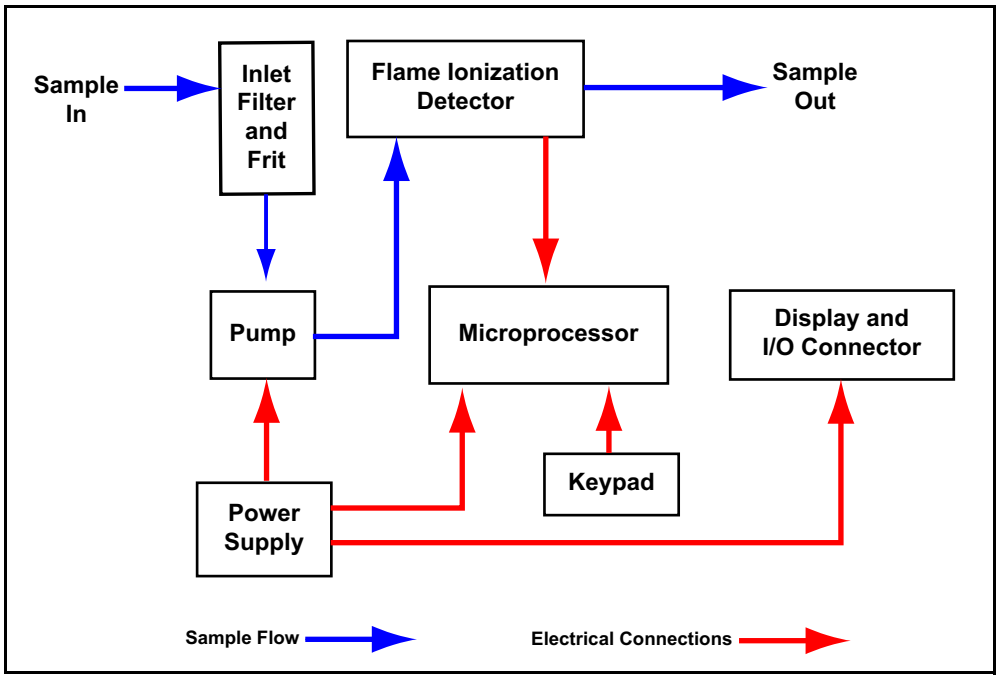
The ions moving in this electric field generate a current that is proportional to the concentration of the ionized molecules in the combustion chamber. An electrometer circuit converts this current to a voltage which is sent to the microprocessor.

After the sample passes through the flame it is vented through a flame arrestor, also known as the exhaust frit. The flame arrestor prevents the flame from igniting any flammable gases present in the sampling location.

WARNING

The flame arrestor must be in place to ensure intrinsic safety during DataFID/MicroFID II operation. Removing the flame arrestor when operating the DataFID/MicroFID II voids the intrinsic safety rating of the instrument.

Figure 1-3 DataFID/MicroFID II instrument block diagram



1.6.1 Detector Response

DataFID/MicroFID II detects volatile organic compounds. It does not detect inorganic compounds. The combustion efficiency of a compound determines sensitivity, which is highly dependent on chemical structure and bonding characteristics.

Simple saturated hydrocarbons (methane, ethane) possess high combustion efficiencies and are among the compounds that produce the highest DataFID/MicroFID II response. Organic fuels (acetylene, refined petroleum products), also burn easily and are well-detected.

The presence of substituted functional groups (amino, hydroxyl, halogens) on a simple hydrocarbon reduces combustion efficiency. DataFID/MicroFID II detects methane more easily than the compounds methanol and chloromethane. If substituted functional groups are present, then a greater number of carbon atoms can offset this loss of sensitivity.

For example, DataFID/MicroFID II is more sensitive to n-butanol than to methanol. See section 3.8.9, Compound Selection and Response Factors, on page 3-33 for more information on response factors.

NOTE: The Technical Note “FID Response Factors” Technical Note provides DataFID/MicroFID II response factors for a variety of VOCs and is available for download from www.inficon.com.

1.7 Support Equipment and Consumables

1.7.1 Precautions when Handling Compressed Gases and Regulators

WARNING

Handle cylinders of compressed gas with extreme care to avoid personal injury.

WARNING

- **Always secure hydrogen and calibration gas cylinders before use**
- **Do not mutilate the cylinders**
- **Do not expose the cylinders to direct sunlight**
- **Do not heat the cylinders**
- **Do not kink or stress the tubing on the calibration gas bag adaptor**
- **Use only the specified regulator for the calibration gas. Confirm regulator type and material with a specialty gas supplier**
- **Use only DataFID/MicroFID II Hydrogen Filling Station (PN 951-601-P1, A1201222, or 951-602-P1) for the hydrogen cylinder**
- **Always secure cylinders before removing the cylinder valve protection cap**
- **Do not drag or roll cylinders. Use a cylinder hand truck to move large cylinders**
- **Wear safety glasses when working with compressed gases**
- **Store cylinders in an upright position**
- **Do not store cylinders in a hazardous location**
- **Store hydrogen fuel and calibration (span) gas cylinders away from possible sources of ignition**
- **Keep regulators and related equipment in the same gas service. Do not change service or adapt equipment without consulting the gas supplier**

WARNING

When connecting a regulator to a pressurized gas cylinder:

- **Ensure the cylinder valve and regulator connection are compatible**
- **Ensure the regulator construction materials are compatible with the gas, and that the cylinder pressure gauge can withstand the cylinder pressure**
- **Never use the regulator as a shut-off valve**
- **Close the cylinder valve when it is not in use**
- **Ensure the cylinder pressure does not exceed the regulator input rating**
- **Do not move or detach the regulator when it is pressurized or in use**
- **Before connecting the gas cylinder valve and the CGA (Compressed Gas Association) regulator, make sure the connections are clean**
- **Do not use a soap solution when checking for leaks**

1.7.2 Hydrogen Gas

The DataFID/MicroFID II detector uses a hydrogen flame to ionize samples and produce concentration readings. The quality and purity of the hydrogen gas is important to the accuracy of the detector.

DANGER

Hydrogen gas is a fire and explosion hazard when exposed to heat or flame. Read the hydrogen material safety data sheet (MSDS), provided by the gas supplier, before handling hydrogen.

The lower explosive limit (LEL) of hydrogen is 4%. The LEL is the minimum concentration of gas or vapor in air that will ignite in the presence of a heat or ignition source.

The DataFID/MicroFID II hydrogen fuel cylinder must be filled using the Hydrogen Filling Station (PN 951-601-P1, A1201222, or 951-602-P1). (See section 2.3, Filling the Hydrogen Fuel Cylinder, on page 2-16 for more information.)

When filling the hydrogen fuel cylinder:

- Use only Ultra-High Purity hydrogen (99.999% purity) to fill the hydrogen fuel cylinder, also referred to as Grade 5.
- The hydrogen supply cylinder pressure must not exceed 3,000 psig (20,684 kPa), which is the maximum pressure rating of the Hydrogen Filling Station.

1.7.3 Calibration Gas

DataFID/MicroFID II can be calibrated using zero air and 500 ppm methane. A flow match regulator (PN MX704210) is available for calibration gases in pressurized cylinders. The instrument can be calibrated either by sampling directly from the gas cylinder or by using a sample bag. (See section 3.9, DataFID/MicroFID II Calibration, on page 3-37 for more detail.)

1.7.4 Oxygen Concentration Limits

The sample, drawn in by the pump, supplies the oxygen required to ignite and maintain the hydrogen flame.

- A minimum of 17% oxygen is required to ignite the hydrogen flame
- A minimum of 10% oxygen is required to maintain the hydrogen flame
- An oxygen deficiency will reduce or extinguish the flame, which may alter the displayed reading
- If DataFID/MicroFID II is used in a highly contaminated area where the oxygen content may be below 10%, monitor for indications of reduced flame intensity, such as lowered detection limits or a flame out fault

NOTE: DataFID/MicroFID II will not ignite nor maintain the hydrogen flame at altitudes greater than 2134 m (7000 ft.) due to the decrease in partial pressure of oxygen.

1.7.5 Flammable Gases

High concentrations of flammable gases can act as an additional fuel source. If the flame intensity increases beyond the confines of the combustion chamber, the hydrogen gas supply will suspend and the flame will extinguish.

When sampling enclosed or confined spaces, vapors and gases may be unable to escape. A high concentration of sample gas can lead to oxygen deficiency and may extinguish the flame. Monitor for indications of increased flame intensity such as erratic readings or sudden high concentrations, followed by a flame out fault.

1.8 Accessories

1.8.1 Computer

DataFID/MicroFID II can send information stored in its logged memory, or continuously stream data to a computer or handheld device via Bluetooth® wireless communication.

Data prepared on a computer may be uploaded to DataFID/MicroFID II via Bluetooth. See section 3.7, Uploading Pre-Set Data from a Computer to DataFID/MicroFID II, on page 3-16, for more information.

1.8.2 Gas Sampling Bag

If a flow match regulator is not available, a sample bag can be used to calibrate DataFID/MicroFID II. (See section 3.9, DataFID/MicroFID II Calibration, on page 3-37 for more details.)

NOTE: DataFID/MicroFID II Calibration Kit (PN MX396011) includes a sampling bag (PN MX396017), a gas bag adapter (MX396010) and a FID calibration gas regulator (MX396009). Additional gas bags are available in packs of 10 (PN 070-1726).

1.8.3 Charcoal Filters

A charcoal filter (PN MX396022) is available to remove hydrocarbon contamination from ambient air. If commercial zero air is not available, the charcoal filter may be used to filter ambient air to calibrate DataFID/MicroFID II. (See section 5.5, Connecting a Charcoal Filter, on page 5-6.)

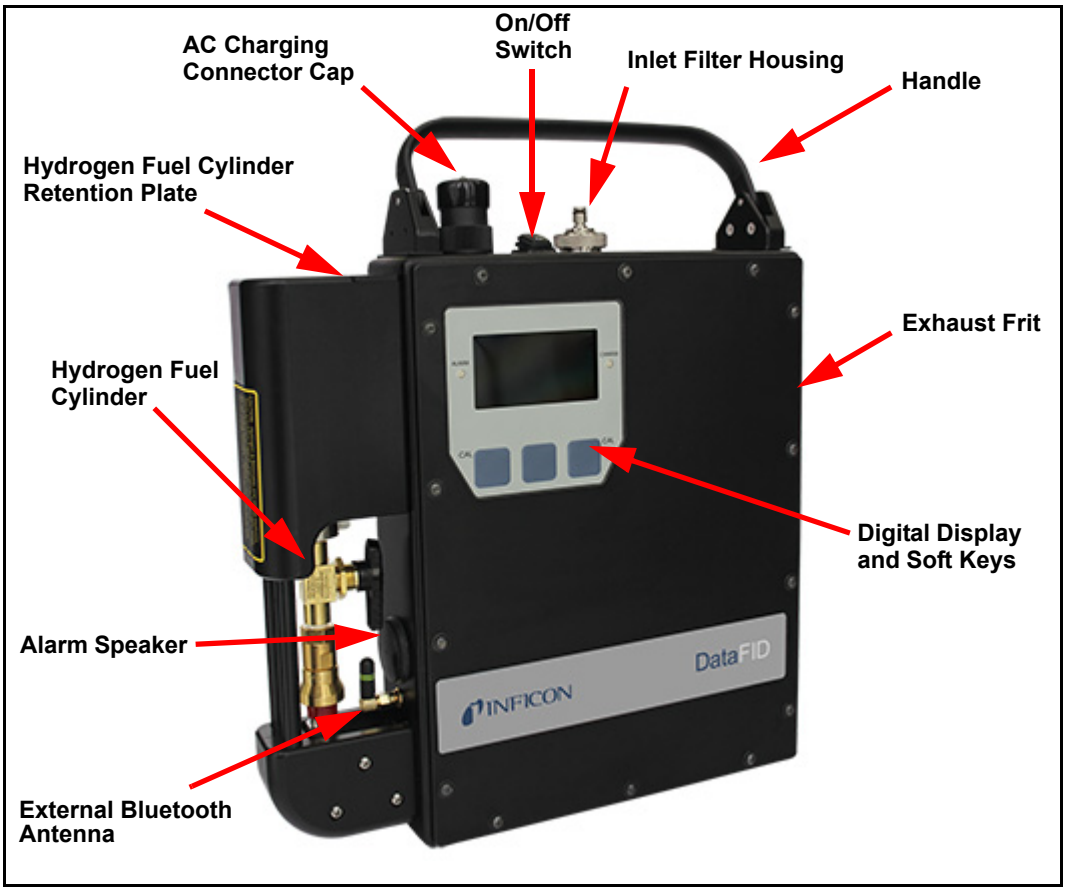
CAUTION

The charcoal filter does not filter methane or ethane. If these compounds are present, a charcoal filter cannot be used to filter ambient air for calibration.

Chapter 2
Using DataFID/MicroFID II

2.1 Overview

Figure 2-1 DataFID/MicroFID II overview (DataFID shown)



WARNING

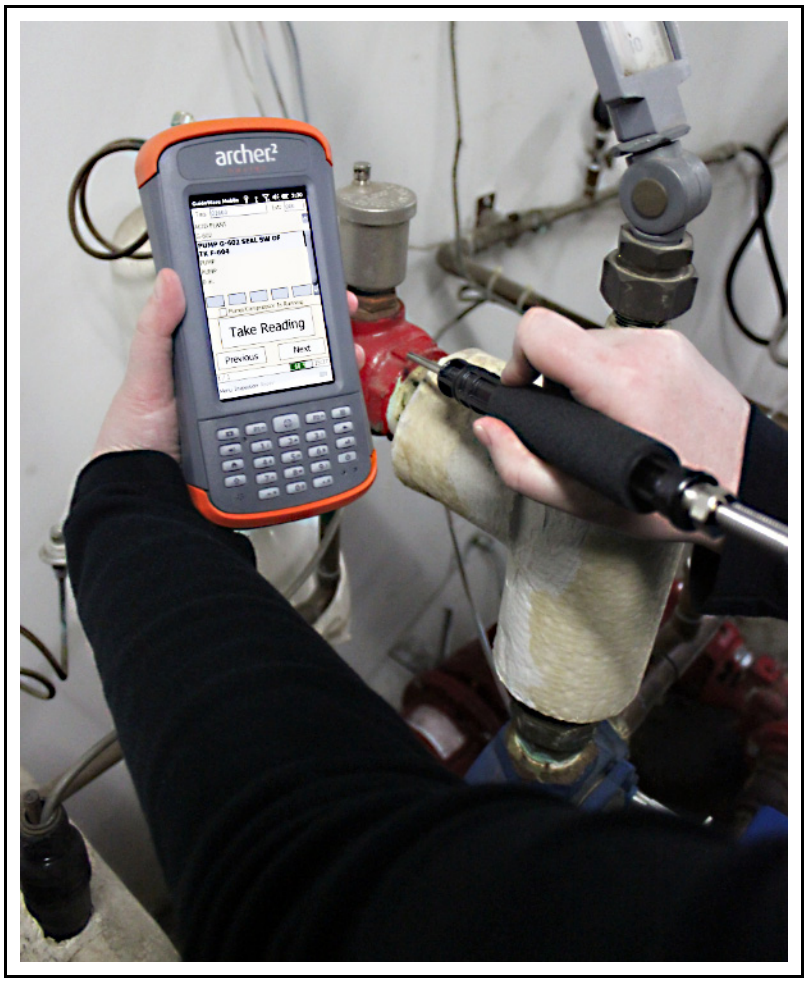
The hydrogen fuel cylinder retention plate must be attached during operation to maintain the intrinsic safety rating. Removing it during DataFID/MicroFID II operation will void the intrinsic safety rating and may cause personal injury.

NOTE: DataFID is shipped with the Inlet Filter Housing (PN F1201230, Figure 2-3) and MicroFID II is shipped with the 1/4 in. Swagelok Filter Housing (PN MX501205, Figure 2-5).

2.1.1 LDAR Probe and Handheld Computer — DataFID Only

For leak detection and repair (LDAR) operation, DataFID can be paired with an intrinsically safe handheld computer (PN 40080007) and a LDAR probe (PN A1201106). (See Figure 2-2.)

Figure 2-2 LDAR Probe and handheld computer



NOTE: To properly attach the DataFID LDAR probe, the Inlet Filter Housing (PN F1201230) must be installed onto the sample inlet. (See Figure 2-3.) DataFID is shipped with this Inlet Filter Housing pre-installed.

Figure 2-3 Inlet Filter Housing

2.1.2 Landfill Probe and Handheld Computer- DataFID Only

DataFID can also be used to conduct Surface Methane Emissions Monitoring in landfills using the landfill probe (PN MX380324), an ergonomic backpack (PM 951-407-P1), and a handheld computer. . (See Figure 2-4.)

Figure 2-4 Landfill probe, handheld computer, and ergonomic backpack

WARNING

To operate in a potentially hazardous environment, the handheld computer must be rated intrinsically safe.

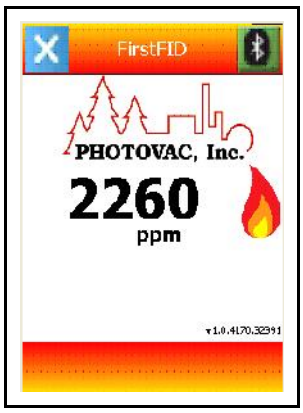
NOTE: To properly attach the landfill probe, the 1/4 in. Swagelok filter housing (PN MX501205) must be installed onto the sample inlet. (See Figure 2-5.)

Figure 2-5 1/4 in. Swagelok inlet filter housing for landfill probe

2.1.3 FirstFID Software (available for DataFID and MicroFID II)

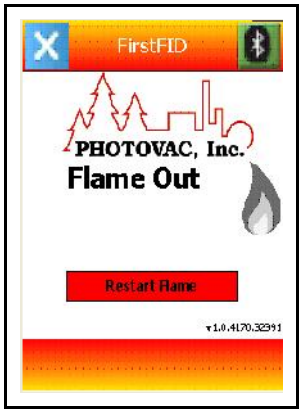
FirstFID is a software for a hand-held computer to use in lieu of the front panel screen (Figure 2-6).

Figure 2-6 FirstFID software



The DataFID/MicroFID II flame can be re-lit from the software in the event of a flame out (Figure 2-7).

Figure 2-7 FirstFID flame out screen



NOTE: FirstFID will display measured concentration from DataFID or MicroFID II. It will not store or download data onto a hand-held computer.

Hand-held computer requirements for FirstFID software:

- Windows Mobile 6 or later
- 64MB RAM
- Bluetooth 2.0
- 480 x 640 screen resolution

2.1.4 MicroFID II Telescoping Probe Holder Installation

The MicroFID II Telescoping Probe Holder can be attached to the back of the MicroFID II to store the telescoping probe when not in use.

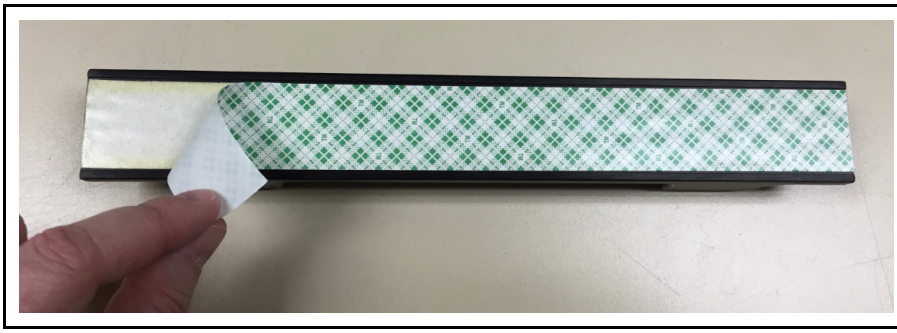
Figure 2-8 MicroFID II telescoping probe holder

1 Position MicroFID II as shown in Figure 2-9.

Figure 2-9 Back of MicroFID II

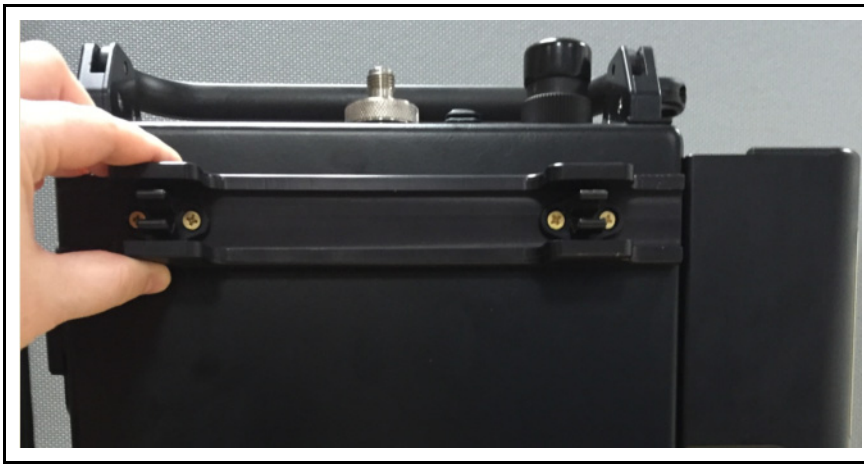
2 Peel the adhesive tape off the back of the telescoping probe holder. (See Figure 2-10.)

Figure 2-10 Remove adhesive tape



3 Position the telescoping probe holder on the back of MicroFID II as shown. Press firmly into place. (See Figure 2-11.)

Figure 2-11 Position and place probe holder



4 Attach the telescoping probe to the MicroFID II inlet as shown in Figure 2-12, and tighten clockwise until finger-tight.

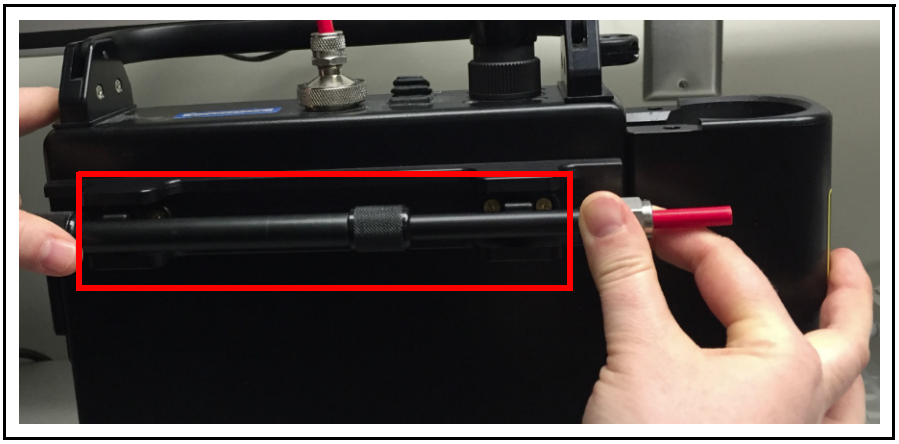
Figure 2-12 Attach telescoping probe

5 Extend the last two barrels of the telescoping probe as shown in Figure 2-13.

Figure 2-13 Extend last two barrels of telescoping probe

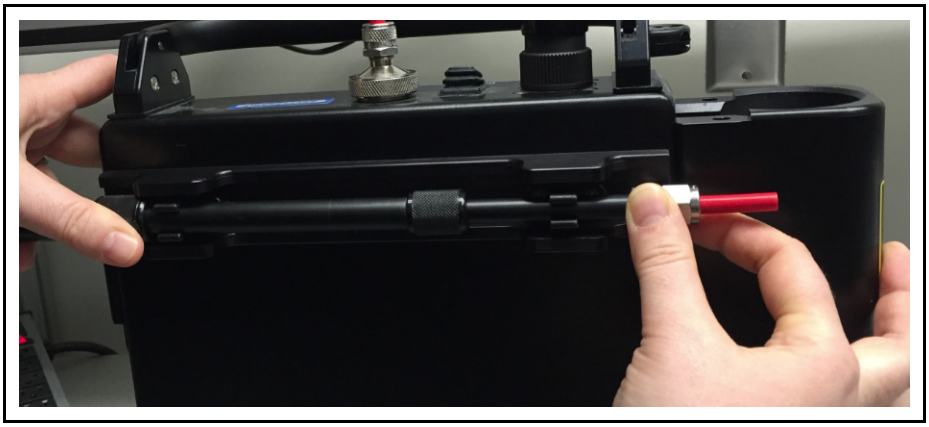
6 Line up the last two barrels of the telescoping probe to the probe holder clips. (See Figure 2-14.)

Figure 2-14 Line up barrels with probe holder clips



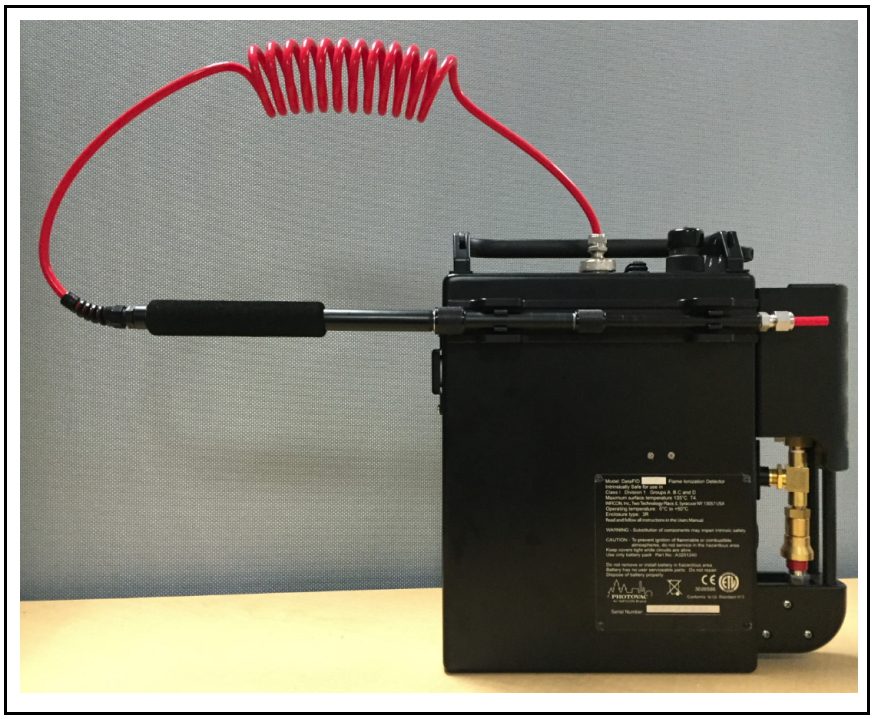
7 Press the barrels firmly into the clips. (See Figure 2-15.)

Figure 2-15 Press barrels firmly into clips



8 Secured telescoping probe. (See Figure 2-16.)

Figure 2-16 MicroFID II with telescoping probe in the probe holder



2.1.5 MicroFID II Shoulder Strap Adapter Kit Installation

The MicroFID II Shoulder Strap Adapter Kit contains the items needed to attach a shoulder strap to MicroFID II.

1 The Shoulder Strap Adapter Kit (PN MX396035) includes one shoulder strap, two shoulder strap adapters, and four screws. (See Figure 2-17.)

Figure 2-17 Kit

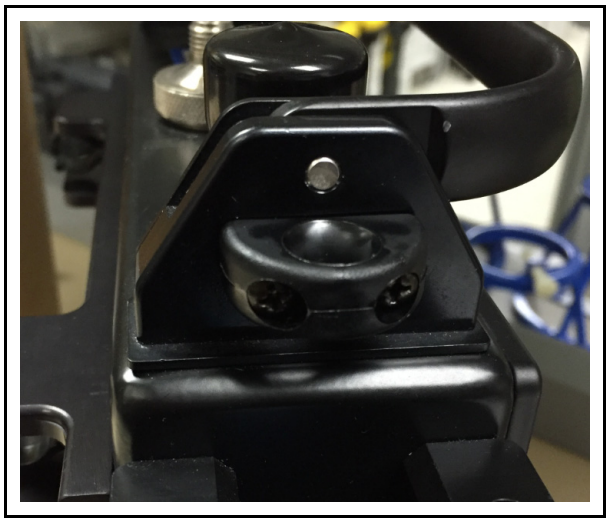
2 The shoulder strap adapter is installed in the top holes on both sides of the MicroFID II handle. (See Figure 2-18.)

Figure 2-18 Shoulder strap adapter shown next to holes in the handle

3 Screw in the adapter to the outside of the handle base. Repeat on the other side of the handle base using the second adapter. (See Figure 2-19 and Figure 2-20.)

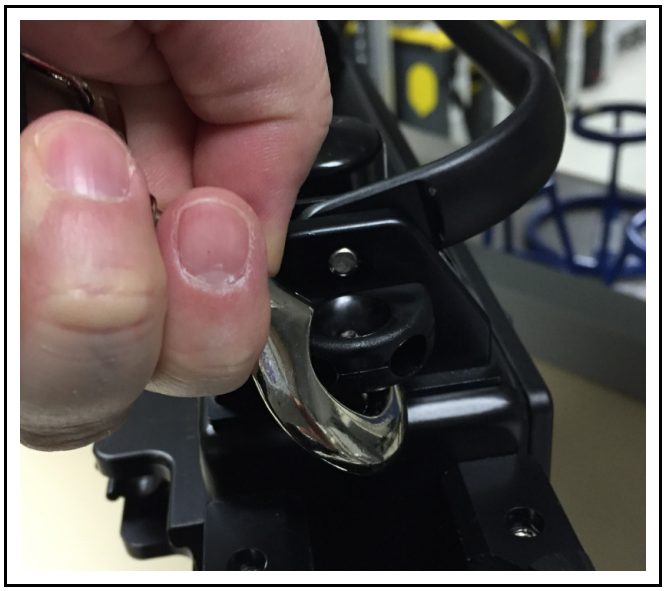
Figure 2-19 Screw in the adapter

Figure 2-20 Adapter in place



4 Install the shoulder strap fasteners onto the adapters. (See Figure 2-21.)

Figure 2-21 Install the fasteners



2.2 Using the Battery Charger

Figure 2-22 Battery charger

2.2.1 Battery Charger Warnings and Cautions

WARNING

- **The battery charger contains dangerous voltages. Removing the cover may lead to serious personal injury**
- **Do not connect the battery charger to DataFID/MicroFID II in a potentially hazardous environment**
- **The DataFID/MicroFID II battery charger is intended for indoor use only**
- **Do not allow the charger to come into contact with water**
- **When in use, do not restrict the air flow around the charger; the charger may overheat**
- **Verify that the charger cord has not been damaged. A damaged cord can result in potential electric shock to the user, and may not charge DataFID/MicroFID II**

CAUTION

Do not use the battery charger outside the temperature specification range of 3 to 43°C (38 to 110° F). Doing so will inhibit the ability of the charger to properly charge DataFID/MicroFID II.

2.2.2 Using DataFID/MicroFID II Battery Charger

Once the battery charger is connected, the DataFID/MicroFID II batteries will begin to charge.

NOTE: The charge rate automatically adjusts to prevent over-charging batteries. (See Table 2-1 on page 2-13.)

The indicator on the charger illuminates **orange** during the Initialization and Analysis Phase, then **red** for the Fast Charge Phase.

In Top-off Charge mode, the indicator will blink **green** and **orange** intermittently. When the Top-off Charge is complete, the indicator will remain solid **green** to indicate Trickle Charge mode.

The indicator will alternate **green** and **red** if a fault occurs during the charging cycle.

If the power to the battery charger is interrupted, the charge cycle will reset.

When connecting new batteries, there is a fifteen second delay while battery initialization and analysis occurs.

NOTE: It will take 3.5 to 4 hours to fully charge a DataFID/MicroFID II.

2.2.2.1 Charge Cycle Indicators

Table 2-1 Charge cycle indicators

Indicator	Mode
Orange	Battery not connected
Orange	Battery initialization and analysis
Red	Fast Charge
Green with intermittent **Orange**	Top-off charge
Green	Trickle charge
Alternating **Red** and **Green**	Fault

CAUTION

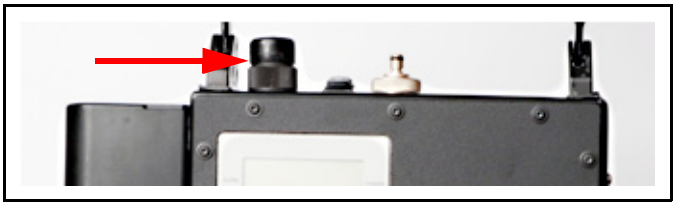
Use only Battery Charger (PN A1201221) to charge DataFID/MicroFID II. Using an alternate battery charger will void the instrument warranty.

NOTE: If DataFID/MicroFID II has been stored for an extended period of time, the batteries need to be fully recharged prior to use.

2.2.2.2 Charging the Battery

1 Remove the power interlock cap. (See Figure 2-23.)

Figure 2-23 Charging connector cap



2 Connect the charger adapter to the power interlock. (See Figure 2-24.)

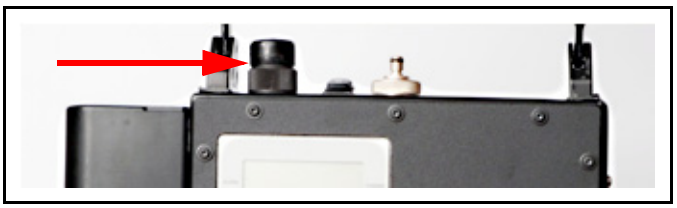
Figure 2-24 Connecting the charger adapter

3 The battery is fully charged when the indicator illuminates **green**. Disconnect the charger adapter. (See Figure 2-25.)

Figure 2-25 Disconnect the charger adapter

4 Replace the power interlock cap on the charging connector. (See Figure 2-26.)

Figure 2-26 Charging connector cap



NOTE: In compliance to the intrinsic safety requirements, DataFID/MicroFID II will not operate without the charging connector cap in place.

2.2.3 Repeat Charging with an AC Charger

The battery charger must be reset between charging when being used to charge more than one DataFID/MicroFID II.

To reset the battery charger, remove it from the charged DataFID/MicroFID II and wait until the status indicator changes to **orange** before connecting the battery charger to the next DataFID/MicroFID II.

NOTE: The reset will take up to fifteen seconds.

NOTE: If the battery charger is not reset, it will remain in trickle charge mode and DataFID/MicroFID II will not receive a full charge.

2.3 Filling the Hydrogen Fuel Cylinder

Two types of metal hydride hydrogen fuel cylinders may be used with DataFID/MicroFID II. (See Figure 2-27.) A 70 L hydrogen fuel cylinder can be used but is no longer available for purchase. A 10 L Hydrostik hydrogen fuel cylinder has replaced the 70 L cylinder. Both cylinder types store hydrogen through an absorption process onto the metal hydride contained in the cylinder. Hydrogen is released from the cylinder at a pressure of 80 psi. This low pressure release provides a safe hydrogen source for field use.

NOTE: The 70 L hydrogen fuel cylinder can only be shipped as hazardous materials via ground transportation, provided it undergoes an ultrasonic requalification within five (5) years from the date stamped on the cylinder.

NOTE: The 10 L Hydrostik hydrogen fuel cylinder may be shipped as hazardous goods via air or ground. Up to two Hydrostiks can be transported in carry-on luggage. The expiration of Hydrostik is stamped on the bottom of the cylinder. It has a ten (10) year shelf life.

Figure 2-27 Hydrogen fuel cylinders

70 L Hydrogen Fuel Cylinder

10 L Hydrostik Hydrogen Fuel Cylinder with Adapter

WARNING

Hydrogen storage on metal oxide is an exothermic reaction. The cylinder may become hot when filling.

When full, a 10 L Hydrostik hydrogen fuel cylinder can provide 10 hours of continuous operation on a DataFID/MicroFID II. A full Hydrostik (without the adapter attached) can be stored up to a month.

NOTE: The Hydrostik can be filled up to 100 times.

A 70 L hydrogen fuel cylinder can provide 70 hours of continuous operation on a DataFID/MicroFID II.

A hydrogen filling station (PN 951-601-P1, A1201222, or 951-602-P1) is required to fill the hydrogen fuel cylinders. The hydrogen filling station is equipped with either a CGA 350 fitting (see Figure 2-28, PN 951-601-P1 and A1201222), or an international version without a fitting (see Figure 2-29, PN 951-602-P1) for use with high pressure ultra-high purity (UHP) or 99.999% pure grade hydrogen.

NOTE: The user must supply the appropriate hydrogen supply cylinder regional fitting for the international hydrogen filling station.

Hydrogen filling station (PN 951-601-P1) and the international hydrogen filling station (PN 951-602-P1) contain a three-way output valve, a hydrogen fuel cylinder quick connect, and a pressure-reducing regulator with a pressure gauge installed. The pressure gauge on the regulator provides the pressure reading in the hydrogen supply cylinder.

Hydrogen filling station (PN A1201222) consists of an adapter fitting with a left-handed thread for cylinder attachment, a three-way output valve, a hydrogen fuel cylinder quick connect, and a pressure-reducing regulator.

Figure 2-28 Hydrogen filling stations (PN 951-601-P1 and A1201222)

951-601-P1

A1201222

Figure 2-29 International hydrogen filling station (PN 951-602-P1)

951-602-P1

CAUTION

Ensure that any fitting attached to the hydrogen filling station has not been used with any H_2S, SO_2, Cl_2, or CO supply cylinders prior to using with Ultra High Purity (UHP) hydrogen supply cylinders. These compounds can contaminate the metal hydride within the hydrogen fuel cylinder and reduce the hydrogen storage ability.

CAUTION

Lower purity grades of hydrogen will contaminate the hydrogen fuel cylinder with impurities and decrease its longevity. Use only ultra-high purity hydrogen (99.999%) to fill the hydrogen fuel cylinder.

WARNING

Do not modify or alter the hydrogen fuel cylinder or the fittings on it. Doing so may cause personal injury and void the intrinsic safety rating on DataFID/MicroFID II.

WARNING

Use only hydrogen filling station PN 951-601-P1, A1201222, or 951-602-P1 to fill the hydrogen fuel cylinder. Use of any other filling device may damage the hydrogen fuel cylinder and cause personal injury.

WARNING

When attaching the regional fitting to the international version of the hydrogen filling station, verify the filling station is leak tight. A hydrogen leak may cause a potentially dangerous environment. See section 2.3.2.1, Leak-checking the Hydrogen Filling Station, on page 2-25.

NOTE: To check for a leak, refer to section 2.3.2.1, Leak-checking the Hydrogen Filling Station, on page 2-25.

Hydrogen filling stations deliver an output pressure to the hydrogen fuel cylinder that is between 1,655-1,724 kPa (240-250 psi).

The output valve is positioned to deliver hydrogen from the hydrogen supply cylinder to the hydrogen fuel cylinder. Additionally, in the final stages of filling the hydrogen fuel cylinder, the output valve is used to release hydrogen held in the quick connect after filling.

Included with each DataFID/MicroFID II is a Hydrostik adapter (PN 951-205-G1), and a Foam Insert and Sleeve assembly (PN ISP-951-202-G1) that holds the Hydrostik and adapter in place. (See Figure 2-30.)

Figure 2-30 Hydrostik adapter and foam insert and sleeve assembly

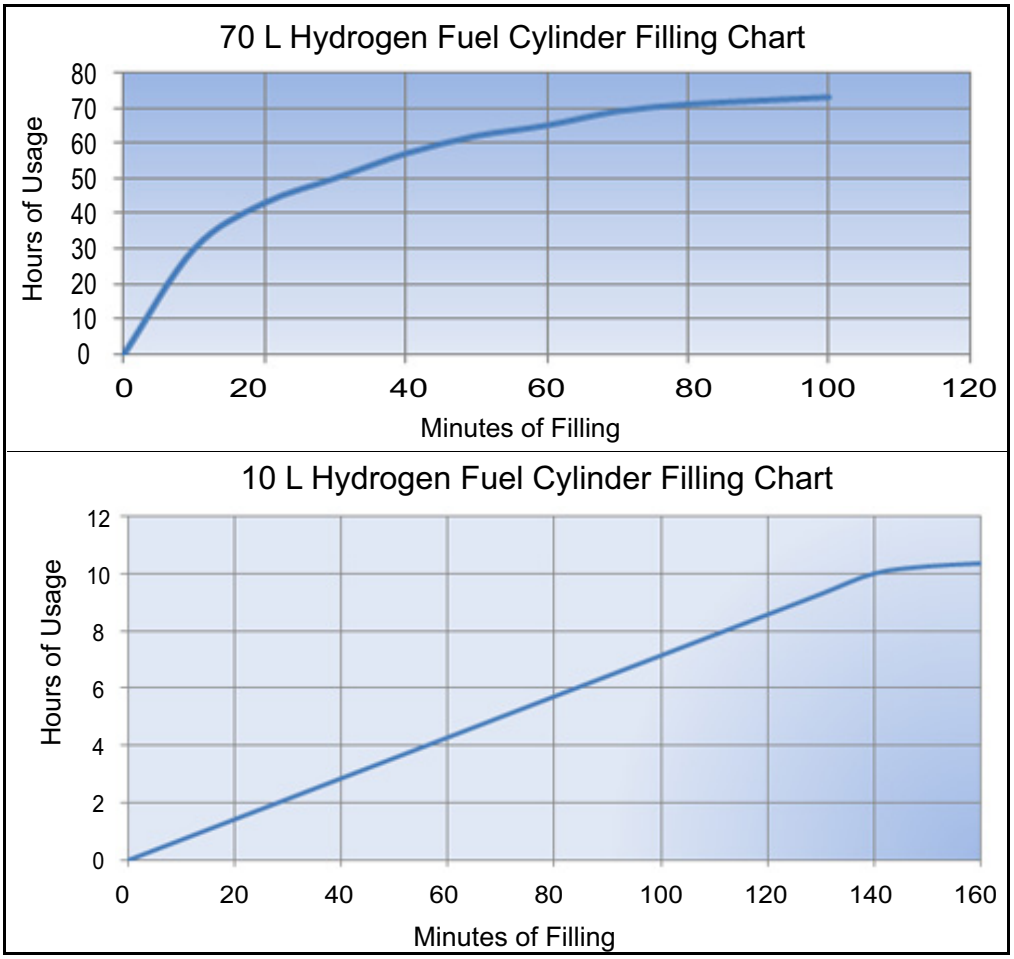
Table 2-2, and Figure 2-31 illustrate the charge time versus usage time for the two types of hydrogen fuel cylinders.

Table 2-2 Hydrogen fuel cylinder filling time and hours of use

Filling Time (minutes)	Hours of Use
70 L Hydrogen Fuel Cylinder	
5	10
10	30
30	50
60	65
10 L Hydrostik Hydrogen Fuel Cylinder	
10	1
40	3
100	5
140	10

NOTE: Figure 2-31 illustrates approximate usage times.
Usage time will decrease with subsequent recharging of the cylinder.

Figure 2-31 Hydrogen cylinder charge charts



WARNING

The hydrogen filling station regulator pressure is set at the factory. Adjustment of the hydrogen filling station regulator will void the filling station warranty and may cause personal injury.

CAUTION

When filling the DataFID/MicroFID II hydrogen fuel cylinder, ensure that the hydrogen fuel cylinder on/off valve is open.

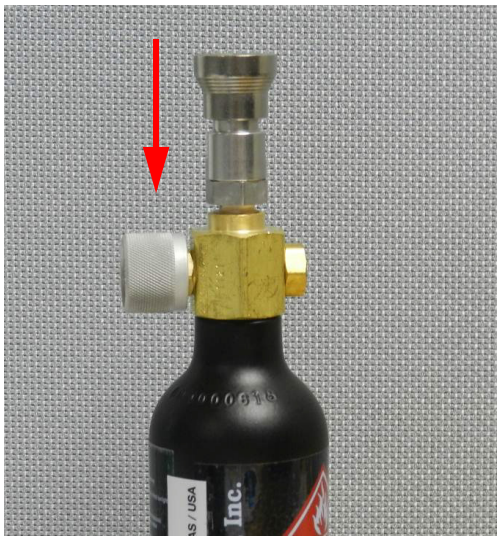
The 70 L hydrogen fuel cylinder on/off valve should be completely rotated in the counterclockwise position.

The 10 L Hydrostik hydrogen fuel cylinder on/off valve should be in the vertical position.

WARNING

Before using the hydrogen filling station, ensure the fitting connecting the hydrogen supply cylinder is leak-free. See section 2.3.2.1, Leak-checking the Hydrogen Filling Station, on page 2-25.

Figure 2-32 70 L and 10 L Hydrostik hydrogen fuel cylinder on/off valves



70 L Hydrogen Fuel Cylinder on/off valve

10 L Hydrostik Hydrogen Fuel Cylinder on/off valve (in OPEN position)

2.3.1 Hydrogen Fuel Cylinder Storage

Store the hydrogen supply cylinder in a well-ventilated area, away from heat or possible ignition sources.

DANGER

Hydrogen gas is a fire and explosion hazard when exposed to heat or flame. Read the hydrogen material safety data sheet (MSDS), provided by the gas supplier, before handling hydrogen.

The lower explosive limit (LEL) of hydrogen is 4%. The LEL is the minimum concentration of gas or vapor in air that will ignite in the presence of a heat or ignition source.

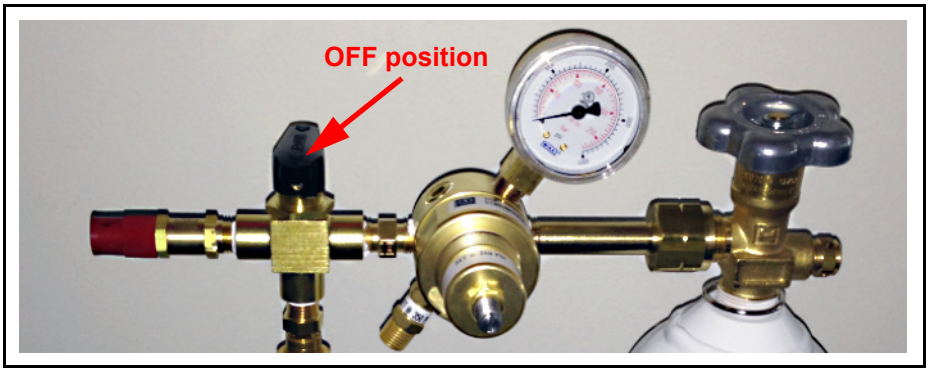
2.3.2 Attaching the Hydrogen Filling Station to the Hydrogen Supply Cylinder

1. Ensure the filling station three-way valve is in the **OFF** position, and the hydrogen supply cylinder is closed. (See Figure 2-33.)
2. Insert the filling station CGA350 fitting, or appropriate regional fitting, to the hydrogen supply cylinder inlet.

CAUTION

Do not force the connection. Do not use Teflon® tape with CGA fittings. These fittings are designed for metal to metal sealing.

Figure 2-33 Connect hydrogen fill station to hydrogen supply cylinder



3. Tighten the hydrogen filling station onto the cylinder with an open-ended wrench (1-1/8 in. for the CGA 350 fitting). Do not over-tighten.
4. Verify the fitting doesn't leak. (See section 2.3.2.1, Leak-checking the Hydrogen Filling Station, on page 2-25.)

2.3.2.1 Leak-checking the Hydrogen Filling Station

1. Ensure the filling station three-way valve is in the **OFF** position. (Refer to Figure 2-33.)
2. Open the hydrogen supply cylinder valve until the needle on the regulator indicates the cylinder pressure. Close the valve and monitor the pressure reading on the regulator for several minutes.
3. A leak is present if the pressure reading on the regulator drops within five minutes after closing the hydrogen supply cylinder.

DANGER

Do not use an open flame to test for leaks! Hydrogen is a fire and explosion hazard when exposed to heat or flame.

DANGER

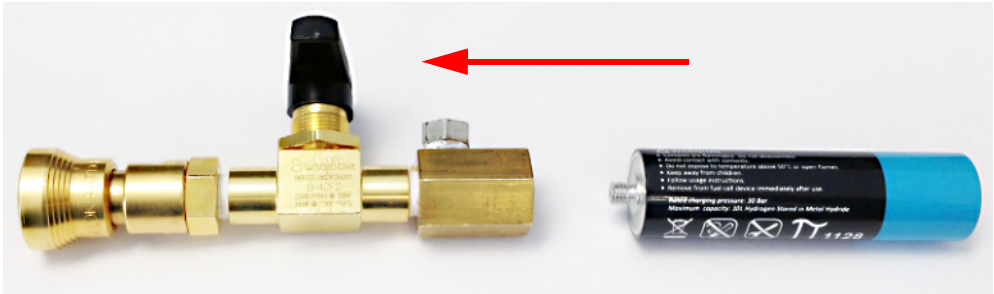
The lower explosive limit (LEL) of hydrogen is 4%.
The LEL is the minimum concentration of gas or vapor in air that will ignite in the presence of a heat or ignition source.

2.3.3 Attaching the 10 L Hydrostik Hydrogen Fuel Cylinder to the Hydrostik Adapter

NOTE: In order to fill Hydrostik with hydrogen, it must be attached to the Hydrostik adapter.

Insert the threaded end of the Hydrostik hydrogen fuel cylinder into the Hydrostik adapter and screw the fuel cylinder clockwise until finger tight. (See Figure 2-34.)

Figure 2-34 Attaching hydrostik to the hydrostik adapter



Hydrostik Adapter (in CLOSED position) **10 L Hydrostik Hydrogen Fuel Cylinder**

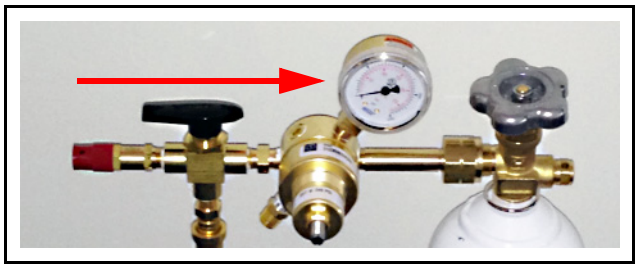
WARNING

Ensure the Hydrostik Adapter Silicone Seal is not damaged prior to use. A damaged seal can cause the hydrogen to leak. See section 5.6, Replacing the Hydrostik Adapter Silicone Seal, on page 5-7.

2.3.4 Filling the Hydrogen Fuel Cylinders

1. Rotate the hydrogen filling station three-way valve to the **FILL** position, pointing toward the hydrogen supply cylinder. (See Figure 2-35.)

Figure 2-35 Hydrogen filling station fill position



2. Attach either the 10 L Hydrostik or the 70 L cylinder to the hydrogen filling station by firmly pushing the adapter assembly up onto the quick-connect fitting of the hydrogen filling station until a click is heard. Gently pull down on the hydrogen fuel cylinder to ensure it is properly seated.
3. Rotate the Hydrostik adapter valve to its **OPEN** position. (Refer to Figure 2-32 on page 2-22.) If using the 70 L cylinder, open the on/off valve completely. (Refer to Figure 2-32 on page 2-22.)
4. Open the valve on the hydrogen supply cylinder at least one full turn.
5. Allow the hydrogen fuel cylinder to fill. (Refer to Table 2-2 on page 2-20.)

   5a A full hydrogen fuel cylinder will be cool to the touch. (Refer to Figure 2-31 on page 2-21.)

WARNING

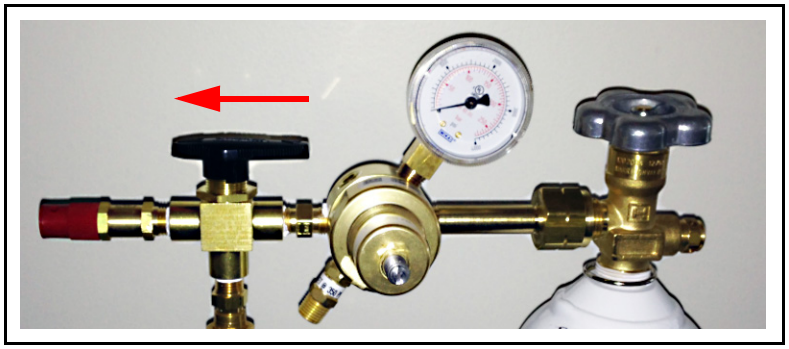
Hydrogen storage on metal oxide is an exothermic reaction. The cylinder may become hot when filling.

6. When the hydrogen fuel cylinder is full, close the valve on the hydrogen supply cylinder.

7 Rotate the hydrogen filling station three-way valve to the **VENT** position, pointing away from the hydrogen supply cylinder. (See Figure 2-36.)

NOTE: A brief, loud popping noise will occur as hydrogen is vented from the filling station.

Figure 2-36 Hydrogen fill station vent position



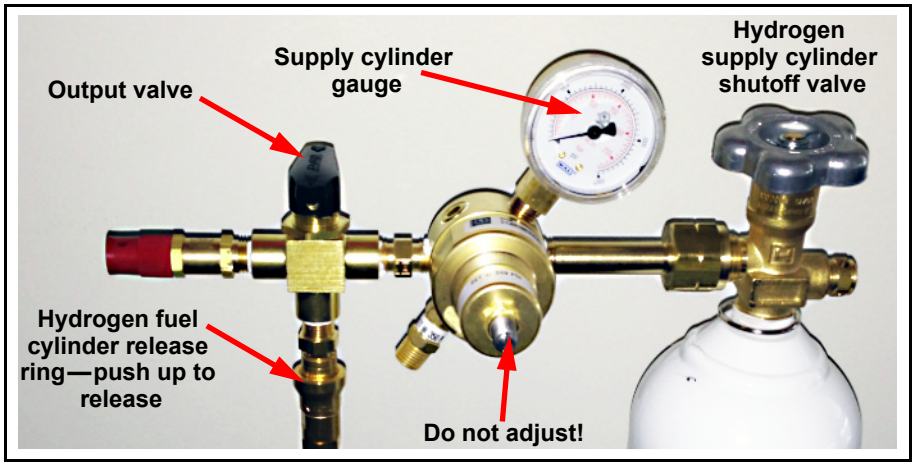
8 Wait five seconds for the filling station to vent, and then rotate the three-way valve to the **OFF** position. (Refer to Figure 2-33.)

NOTE: There will be a loud popping sound as venting occurs.

9 Rotate the Hydrostik adapter valve to its **CLOSED** position. (Refer to Figure 2-34.) Or, if using the 70 L cylinder, close the hydrogen fuel cylinder on/off valve. (Refer to Figure 2-32.)

10 Disconnect the hydrogen fuel cylinder from the hydrogen filling station by pushing up on the quick connect to release it. (See Figure 2-37.) Pull the entire assembly down for removal.

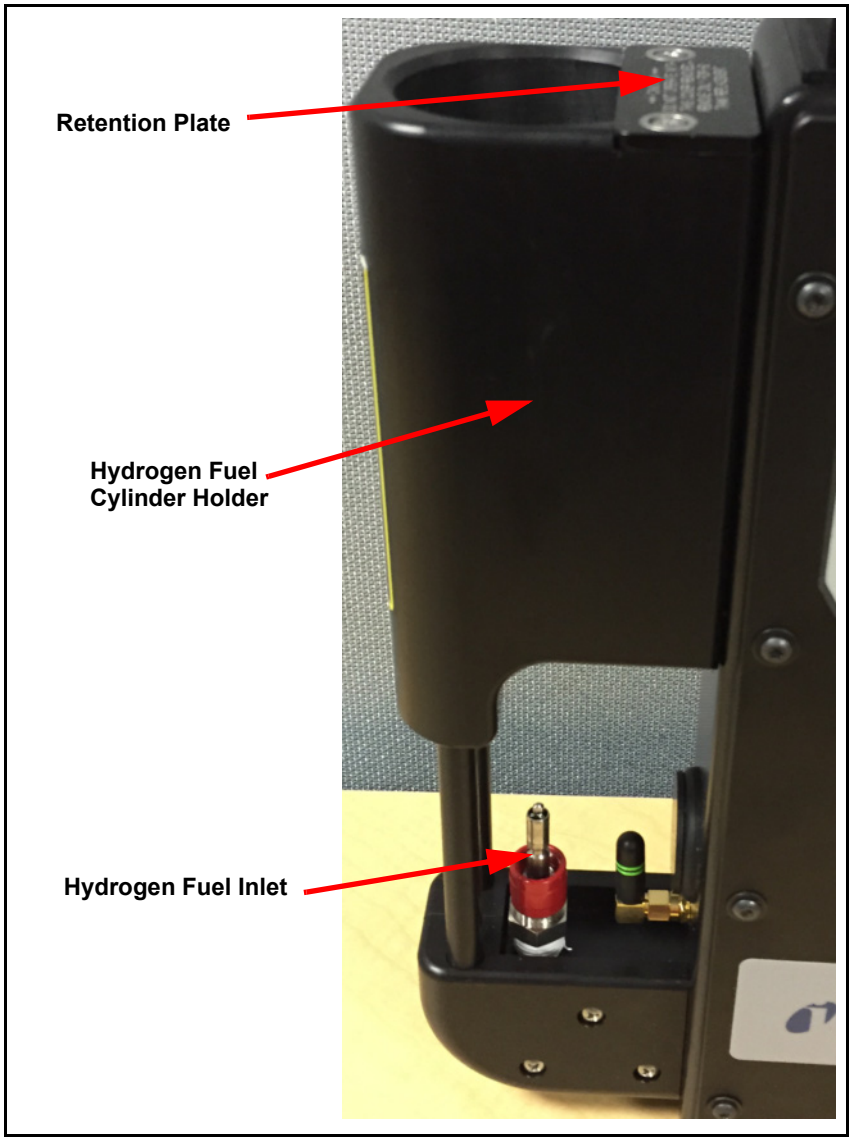
Figure 2-37 Hydrogen fuel cylinder connected to filling station



2.3.5 Installing the 70 L Hydrogen Fuel Cylinder

1 Using a Phillips #1 screwdriver, remove the hydrogen fuel cylinder retention plate from the DataFID/MicroFID II by unscrewing both captive screws on top. (See Figure 2-38.)

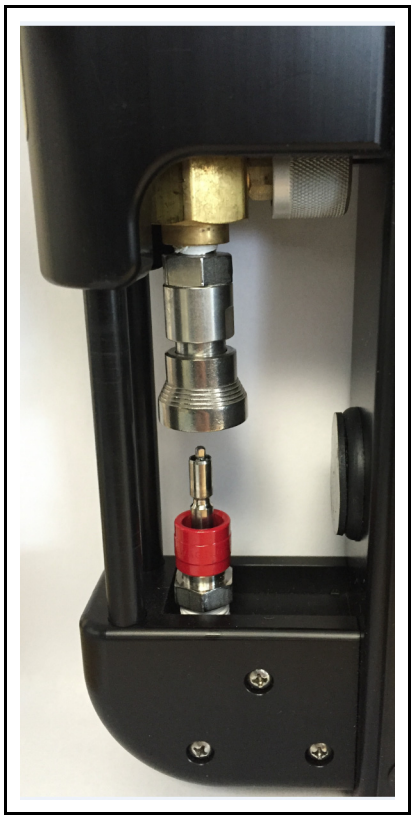
Figure 2-38 Installed hydrogen fuel cylinder



2 Insert the hydrogen fuel cylinder into the hydrogen fuel cylinder holder. (Refer to Figure 2-38.)

3 Guide the hydrogen fuel cylinder into the DataFID/MicroFID II hydrogen fuel inlet and push the hydrogen fuel cylinder until a click is heard. (See Figure 2-39.)

Figure 2-39 Hydrogen Fuel Inlet



4 Replace the hydrogen fuel cylinder retention plate and secure it with the two captive screws.

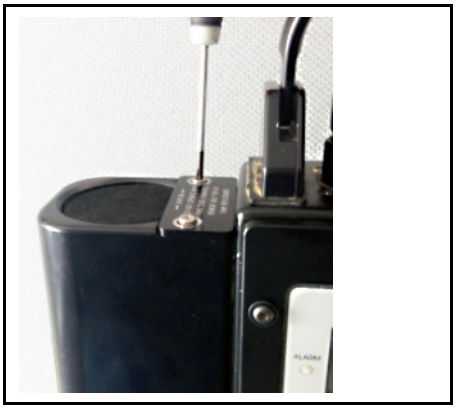
WARNING

The hydrogen fuel cylinder retention plate must be attached during operation to maintain the intrinsic safety rating. Removing it during DataFID/MicroFID II operation will void the intrinsic safety rating and may cause personal injury.

2.3.6 Installing the 10 L Hydrostik Hydrogen Fuel Cylinder

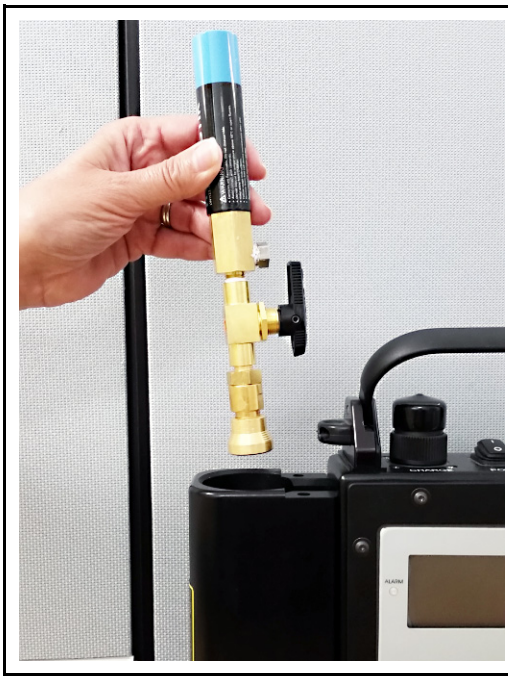
1 Using a Phillips #1 screwdriver, remove the hydrogen fuel cylinder retention plate from DataFID by unscrewing both captive screws on top. (See Figure 2-40.)

Figure 2-40 Remove hydrogen fuel cylinder retention plate



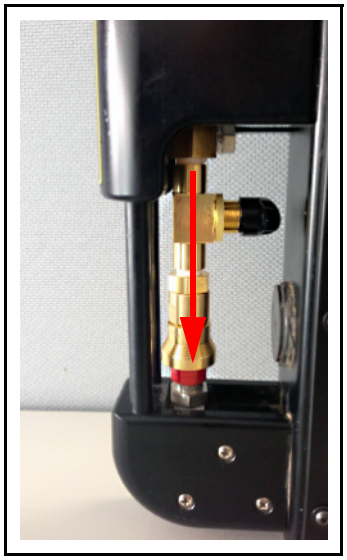
2 Insert the Hydrostik adapter assembly (refer to section 2.3.3, Attaching the 10 L Hydrostik Hydrogen Fuel Cylinder to the Hydrostik Adapter, on page 2-25) into the hydrogen fuel cylinder holder with the Hydrostik adapter valve in the **OPEN** position. (See Figure 2-41.)

Figure 2-41 Inserting Hydrostik adapter assembly into the hydrogen fuel cylinder holder



3 Guide the Hydrostik adapter inlet onto the hydrogen fuel inlet on DataFID/MicroFID II and push until a click is heard. (See Figure 2-42.)

Figure 2-42 Hydrostik adapter fully inserted into the hydrogen fuel inlet in closed position



4 Turn the Hydrostik adapter valve to the **CLOSED**, or horizontal, position until DataFID/MicroFID II is ready for use. (Refer to Figure 2-42.)

5 Place the Foam Insert and Sleeve assembly over the end of the Hydrostik. (See Figure 2-43.)

Figure 2-43 Foam insert and sleeve assembly in place

6 Replace the hydrogen fuel cylinder retention plate and secure it with two captive screws. (See Figure 2-44.)

Figure 2-44 Replace the hydrogen fuel cylinder retention plate

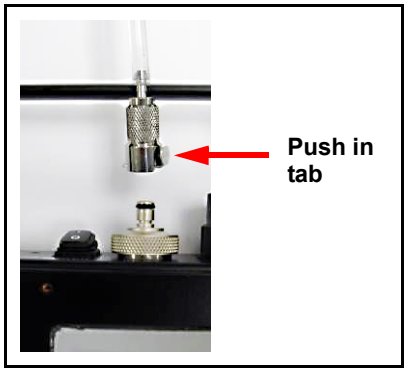
WARNING

The hydrogen fuel cylinder retention plate must be attached during operation to maintain the intrinsic safety rating. Removing it during DataFID/MicroFID II operation will void the intrinsic safety rating and may cause personal injury.

2.4 Attaching the LDAR Probe to DataFID

The LDAR Probe has a quick-connect fitting. Push in the tab on the female connector of the LDAR Probe and firmly insert it into the DataFID inlet filter housing. (See Figure 2-45.)

Figure 2-45 Attaching LDAR Probe



The LDAR Probe connector can be released by pressing in the tab and removing the LDAR Probe from the DataFID inlet.

2.5 Attaching the Landfill Probe to DataFID

The Landfill probe has a threaded connection. Attach the connector of the landfill probe to the DataFID 1/4 in. inlet filter housing by screwing clockwise until finger tight. (See Figure 2-46.)

Figure 2-46 Attaching Landfill Probe

The landfill probe is detached from the DataFID inlet by unscrewing counter-clockwise.

2.6 Attaching the Telescoping Probe to MicroFID II

The MicroFID II Telescoping Probe has a threaded connection. Attach the connector of the MicroFID II Telescoping Probe to the MicroFID II 1/4 in. inlet filter housing by screwing clockwise until finger tight. (See Figure 2-47.)

Figure 2-47 Attaching MicroFID II Telescoping Probe

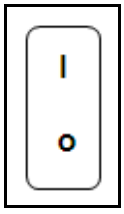
2.7 DataFID/MicroFID II Operation Overview

2.7.1 DataFID/MicroFID II Operation Quick Start Information

1. Read Chapter 3, User Functions, for information regarding the DataFID/MicroFID II user interface.
2. Ensure the DataFID/MicroFID II battery is fully charged. If the unit has been stored for an extended period of time, allow the unit to charge overnight to ensure a fully charged battery before use.
3. Follow the hydrogen fuel cylinder installation procedure (refer to section 2.3.5, Installing the 70 L Hydrogen Fuel Cylinder, on page 2-28 or section 2.3.6, Installing the 10 L Hydrostik Hydrogen Fuel Cylinder, on page 2-30.

   NOTE: If DataFID/MicroFID II has been stored for 3 months or more, purge the unit with dry air by turning on the sample pump (see section 3.8.1, Pump, on page 3-29). The dry air will remove any moisture accumulated during storage. Ensure the hydrogen fuel cylinder on/off valve is in the CLOSED position (see Figure 2-42) during the purge.
4. Open the hydrogen fuel cylinder on/off valve (refer to Figure 2-32) by either rotating the knob counter-clockwise on the 70 L cylinder or by turning the valve vertical to the **OPEN** position on the 10 L Hydrostik.
5. Wait two minutes for the hydrogen fuel to flow to the detector.
6. Turn on DataFID/MicroFID II using the power switch located on the top left of the instrument. On is the symbol **I**. Off is the symbol **o**. (See Figure 2-48.)

   Figure 2-48 On/Off switch

7. The main menu is displayed. (See Chapter 3, User Functions.)
8. Below the DataFID/MicroFID II display are three blue soft keys that operate all menu functions. (See Figure 2-49.)

Figure 2-49 Soft keys

9 When DataFID/MicroFID II is turned on, **DataFID (or MicroFID II) Setup** will appear on the display.

10 Verify that the date and time setting are correct. If not, see section 3.8.4, Setting Current Date and Time, on page 3-30.

11 Press the middle blue soft key (**meas**) to initiate the **Flame ON Procedure**. After a few seconds, the pump will turn on and measurements in ppm will be shown on the display. The flame icon will also be present.

NOTE: If DataFID/MicroFID II has not been used in more than two weeks, or has been stored in a humid area, the **Flame ON Procedure** may need to be repeated two or more times to start the flame.

12 Allow the DataFID/MicroFID II to stabilize for 30 minutes or until the reading fluctuates no more than 2 ppm in 5 seconds. If the unit has been stored for weeks or months, it may take two or more hours to stabilize.

13 Press the left and right blue soft keys simultaneously. The **Calibration Mode** screen is displayed. Calibrate DataFID/MicroFID II as instructed in section 3.9, DataFID/MicroFID II Calibration, on page 3-37.

14 Verify that DataFID/MicroFID II has been properly calibrated by sampling the calibration gas. The result on the front panel should read +/- 10%.

15 DataFID/MicroFID II is now ready for use.

16 To turn off DataFID/MicroFID II, follow the steps shown in Figure 3-8, Shutdown DataFID menu, on page 3-6.

2.7.2 Calibration

DataFID/MicroFID II must be calibrated prior to sampling to ensure accurate measurements. See section 3.9, DataFID/MicroFID II Calibration, on page 3-37, for a full description of the calibration procedure.

2.7.3 Data Communication

DataFID/MicroFID II communicates via Bluetooth with an external computer for uploading information to DataFID/MicroFID II and for downloading measurement data. Bluetooth also communicates with handheld computers used for LDAR monitoring.

See Chapter 4, Wireless Communication, for more information regarding Bluetooth set up and operation.

2.7.4 Method 21 Operation

Method 21 is a United States Environmental Protection Agency (US EPA) sampling protocol for the determination of volatile organic compound (VOC) leaks in process equipment, Leak Detection and Repair (LDAR). It also has been adopted by the landfill industry for surface methane emissions monitoring.

The specifications outlined in the Method 21 documentation must be followed when monitoring regulated sites.

DataFID/MicroFID II can be pre-programmed to identify and monitor various locations as required by US EPA Method 21. See Set DataFID/MicroFID II to Interval mode: on page 3-11 and section 3.7.1, Upload METHOD 21 Route Entry from a Computer (DataFID only), on page 3-16.

Since each location may contain different compounds and concentration ranges, the response factor of the compound(s) being monitored can be stored prior to sampling. (See section 3.8.9, Compound Selection and Response Factors, on page 3-33.)

2.7.5 Response Factors

Response factors for identified compounds are available for DataFID/MicroFID II and can be downloaded from the INFICON website. To enter these response factors prior to sampling, see section 3.8.9, Compound Selection and Response Factors, on page 3-33.

NOTE: DataFID/MicroFID II will ionize and respond to all organic compounds. Since total VOCs will be detected, a response factor representing the dominant VOC in the sample gas should be used.

2.8 Preparing for Field Operation

2.8.1 Field Check List

The following items must be readily available onsite to reduce or eliminate instrument down time:

- Fully charged Hydrostik (PN 951-604-G1 for a pack of three, or PN ISP-951-402-P1 single) or fully-charged 70-L cylinder (PN 61300001, no longer available for sale.)
- Calibration kit (PN MX396011) that includes: one (1) regulator for calibration (span) gas (MX396009), one (1) gas bag adapter (MX396010), and one (1) 3.0 L sample bag (MX396017)
- 500 ppm methane calibration (span) gas (PN MX396028)
- Additional gas bag for zero air (PN MX396017)
- Gas bag adapter for zero air (PN MX396010)
- Supply of commercial zero air
- Spare inlet filters (PN MX396015, pkg. 25)
- Charcoal filters (PN MX396022, pkg. 10)
- DataFID/MicroFID II operating manual (PN 074-670-P1)
- Computer or handheld device (for loading data from DataFID/MicroFID II)

For operations lasting more than one day, the following items should also be available:

- Battery charger (PN A1201221)
- Hydrogen filling station (PN 951-601-P1, A1201222, or 951-602-P1)
- Hydrogen supply cylinder (PN MX754112)
- Spare fully charged Hydrostiks (PN 951-604-G1, pack of three) for each day of operation
- Computer or handheld device (for downloading data from DataFID/MicroFID II)
- Extra Hydrostik adapter silicone seals, (IPN 951-705-G1 pack of 25)

Chapter 3
User Functions

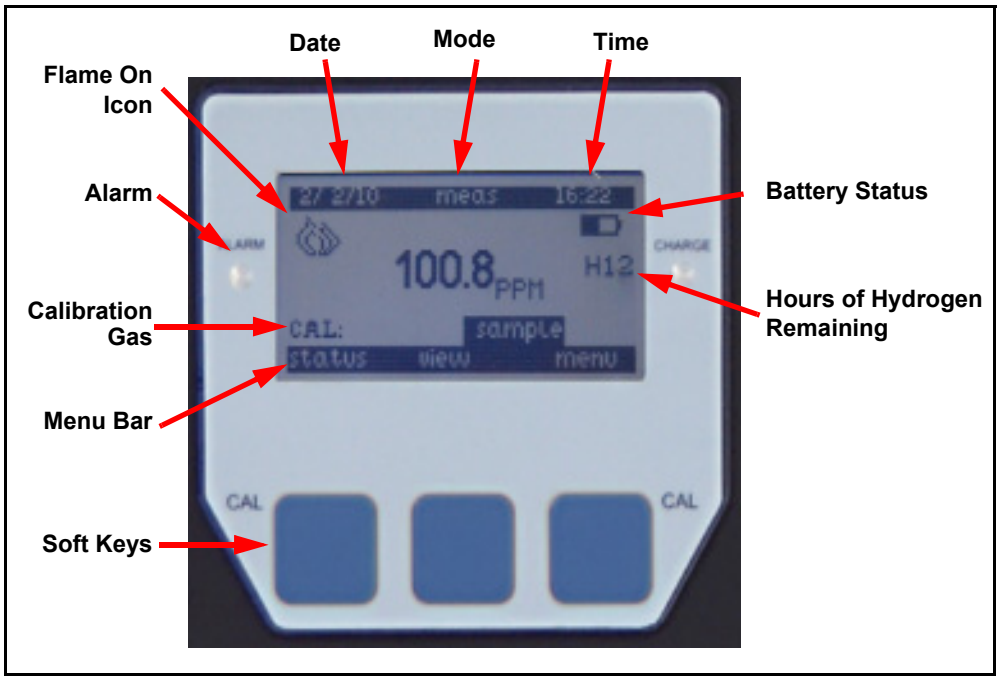
3.1 Front Panel Display

The DataFID/MicroFID II front panel display reports the detected concentration and guides the user through all DataFID/MicroFID II functions and configuration options.

The reading reported on the front panel uses one of three resolutions:

- 0.01 ppm for concentrations below 10 ppm
- 0.1 ppm for concentrations between 10 ppm and 999.9 ppm
- 1 ppm for concentrations above 1000 ppm

Figure 3-1 DataFID/MicroFID II front panel display



3.1.1 Main Menu

The **main menu** appears upon DataFID/MicroFID II startup. (Refer to Figure 3-2 and Figure 3-3.)

Figure 3-2 DataFID main menu

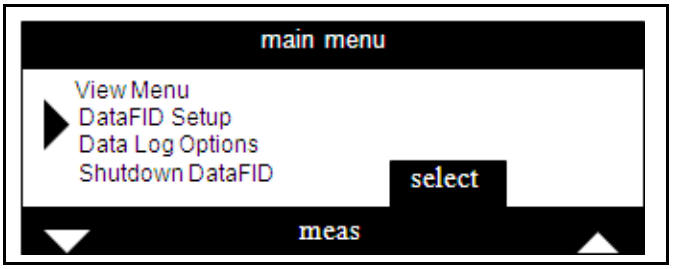
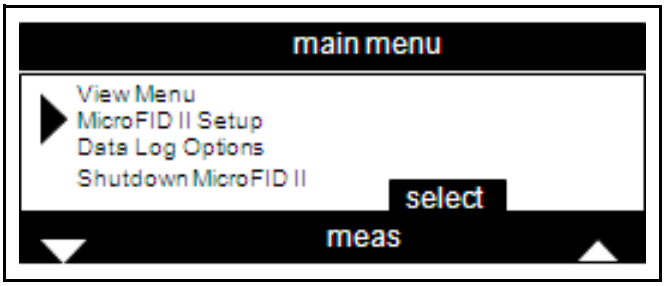


Figure 3-3 MicroFID II main menu



3.1.1.1 Main Menu on Front Panel Display

The DataFID/MicroFID II submenus, along with a brief description of what each submenu contains and a figure reference for their subsequent menus, are found in Table 3-1.

Table 3-1 Main menu selections

Menu Item	Description	Figure Reference
View Menu	Options in this menu selection allow the user to view the calibration data, system setup configuration, logged data, and any pre-set routing information	Figure 3-4

Table 3-1 Main menu selections

Menu Item	Description	Figure Reference
DataFID Setup or MicroFID II Setup	Options in this menu selection control the various system parameters, calibration parameters, and modes of operation	Figure 3-5 or Figure 3-6
Data Log Options	Options in this menu selection allow the user to download and clear the data log, or to edit the log interval	Figure 3-7
Shutdown DataFID or Shutdown MicroFID II	Begins the DataFID/MicroFID II shutdown process	Figure 3-8 or Figure 3-9

Figure 3-4 View menu

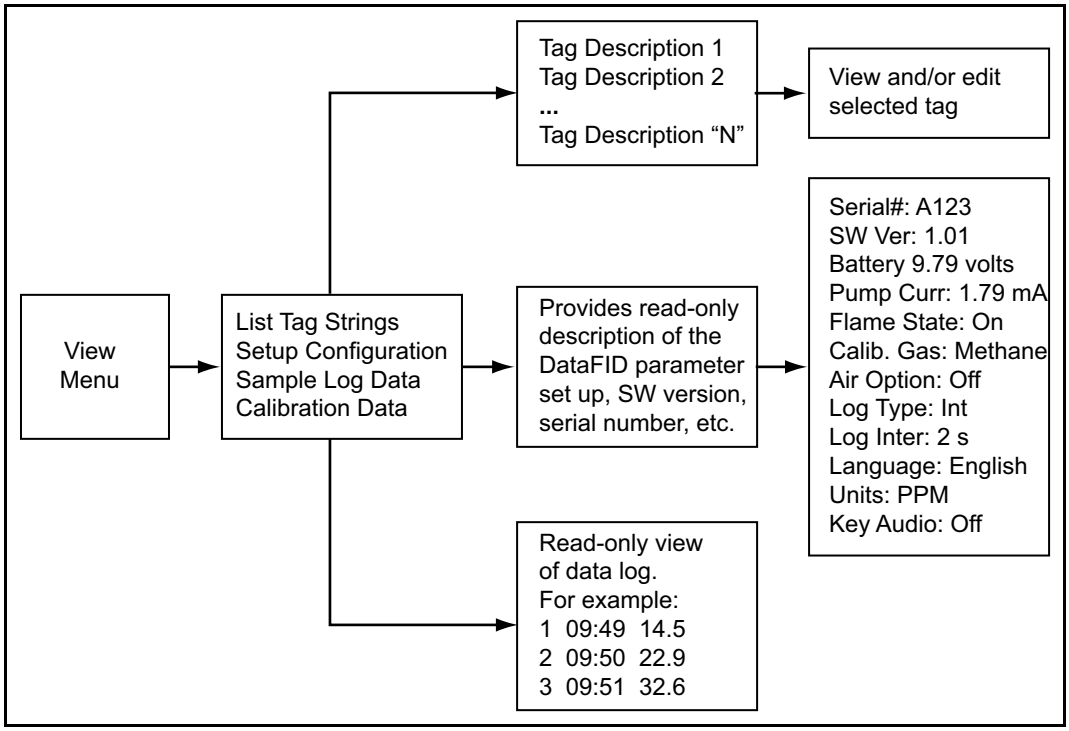


Figure 3-5 DataFID setup menu

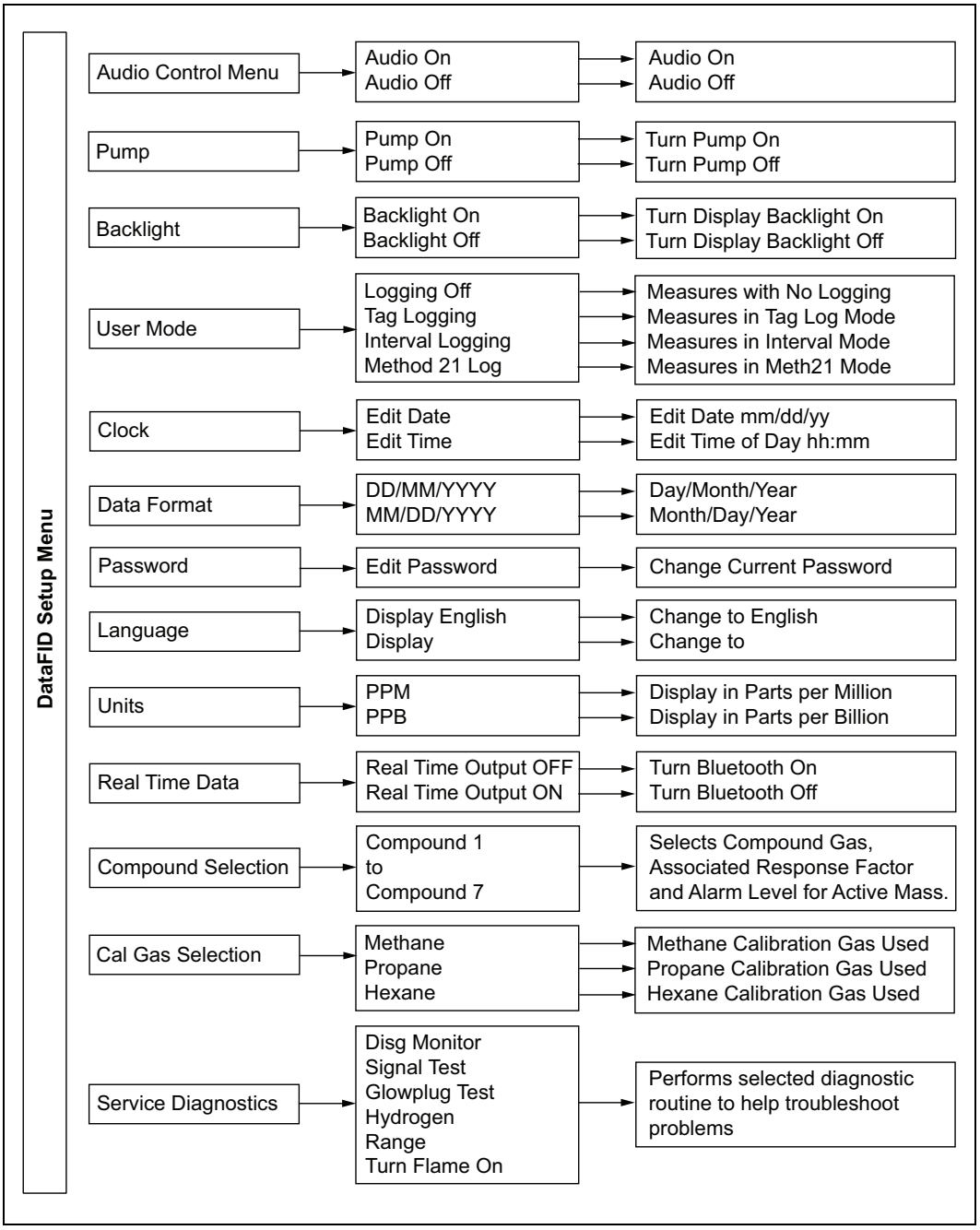


Figure 3-6 MicroFID II setup menu

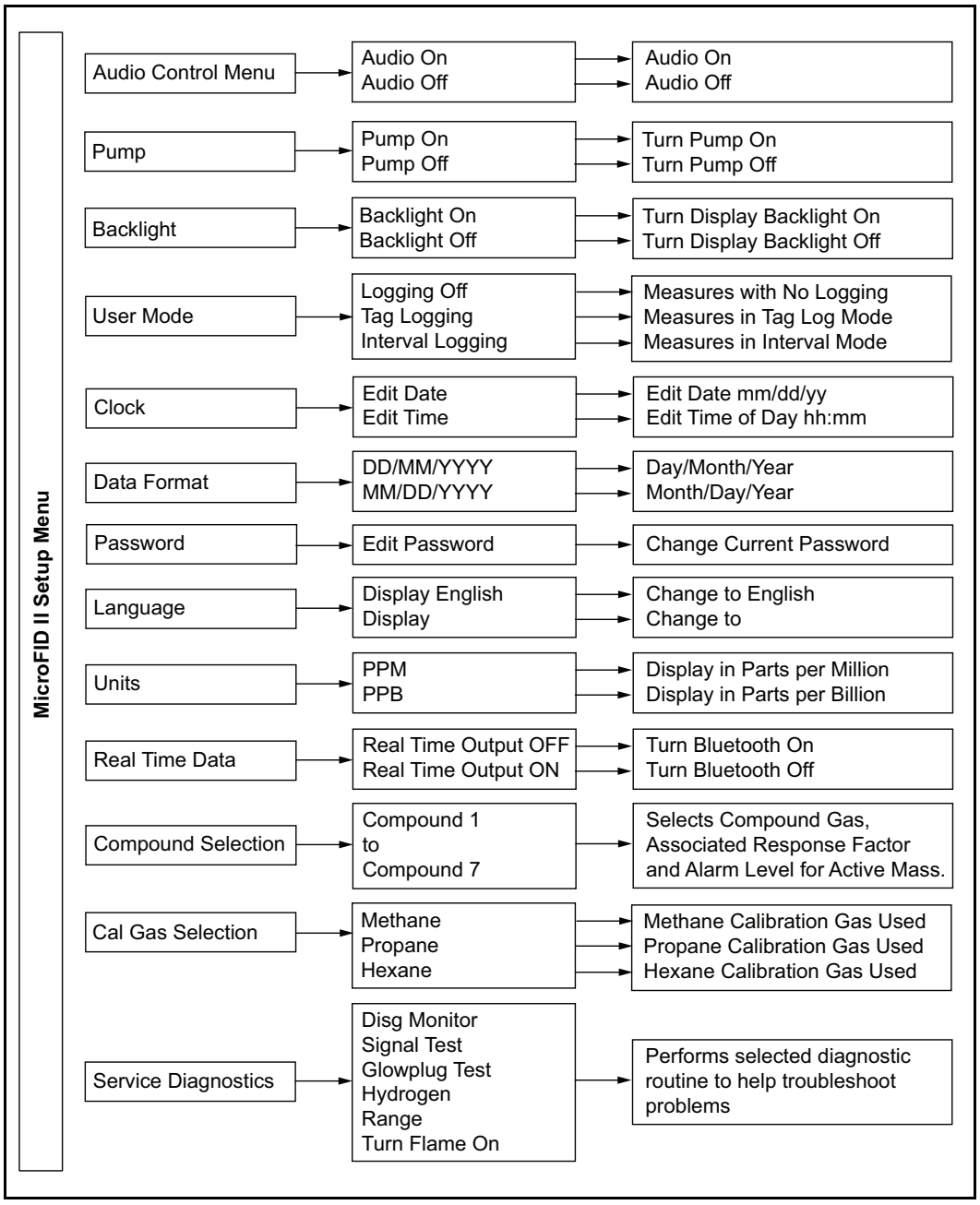


Figure 3-7 DataFID/MicroFID II Log options menu

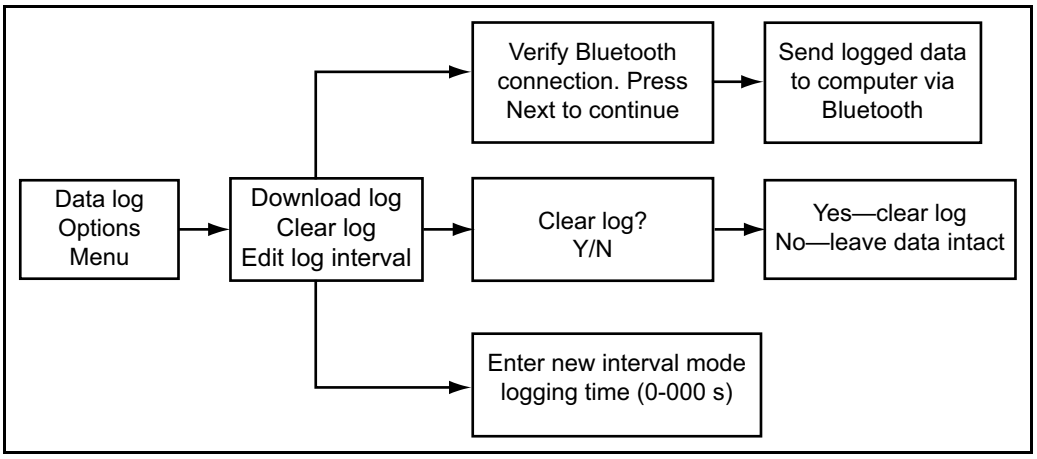


Figure 3-8 Shutdown DataFID menu

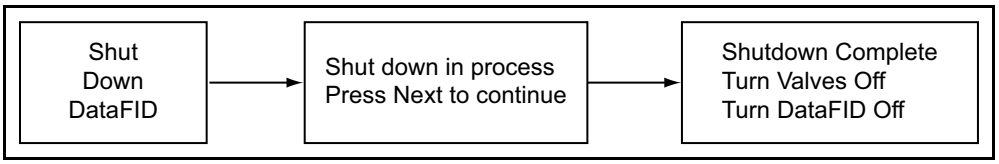
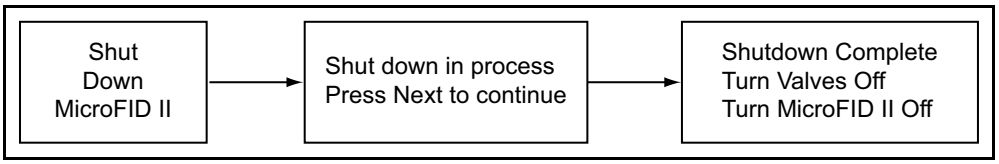


Figure 3-9 Shutdown MicroFID II menu



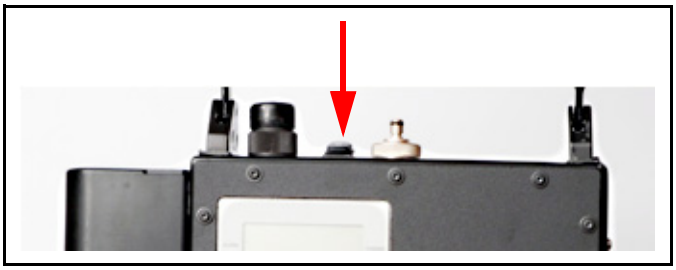
3.2 Keys

3.2.1 On/Off Switch

Press the On/Off switch to turn on DataFID/MicroFID II.

NOTE: It is recommended to go through the **Shutdown DataFID/MicroFID II** menu selection to power down the instrument. (See Section 3.10, Shutdown DataFID/MicroFID II, on page 3-55.)

Figure 3-10 On/Off switch



3.2.2 Soft Keys

Three blue soft keys are used for configuring DataFID/MicroFID II, editing the data, and controlling the display. They are located directly underneath the front panel display.

Figure 3-11 Blue softkeys

3.3 Operation of DataFID/MicroFID II

3.3.1 Turning on DataFID/MicroFID II

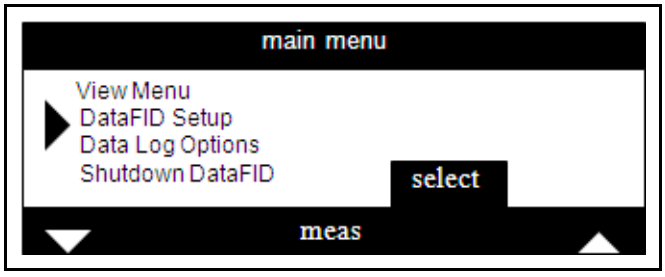
1. Press On/Off switch to turn on DataFID/MicroFID II. (Refer to Figure 3-10.)
2. The software version number is displayed.
3. The **main menu** is displayed. (Refer to Figure 3-12.)

3.3.2 Main Menu on Front Panel Display

When DataFID/MicroFID II is turned on, the **main menu** is displayed by default.

Press ▲ and ▼ (i.e., left or right soft key) to select **View Menu**, **DataFID Setup** or **MicroFID II Setup**, **Data Log Options**, and **Shutdown DataFID** or **Shutdown MicroFID II** submenu.

Figure 3-12 Example of the main menu display



3.3.3 Numeric Value, Duration, Time and Date Entry

When the user is required to enter a number, duration, time, or date, the number of digits to be entered will depend on the type of value being entered. In some cases, units may be specified (e.g., ppm or hh:mm).

Upon entering a value entry screen, a bar icon below the left most digit highlights it as the active digit. (See Figure 3-13.) Press ▲ (middle soft key) and ▼ (left soft key) to increase or decrease the digit.

Press ► to move the bar icon right, to the next digit. Select **done** (middle and right soft keys pressed simultaneously) to store the new value in memory.

Figure 3-13 Numeric value display

3.4 Password

A password is required to save and access setup data.

Figure 3-14 Enter password display

When **DataFID Setup** or **MicroFID II Setup** is selected from the **main menu**, a four digit code must be entered to access the Setup menu. The default password is **1111**.

3.5 User Modes

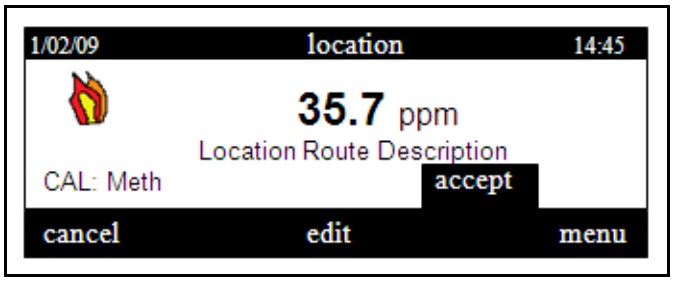
On the **DataFID Setup** or **MicroFID II Setup** menu, select **User Mode** to display the four user modes.

- Location
- Interval
- Method 21 (DataFID only)
- Logging Off

DataFID/MicroFID II retains the user mode selected through the power cycle. This means it will power up in the mode that it was running in when it was last powered down.

3.5.1 Location Mode

Figure 3-15 Location mode display



Location mode continuously displays the real-time TVOC reading, and it allows users to manually add a description once the reading is logged.

This reading may be datalogged by pressing **accept** (i.e., press the middle and right blue soft keys simultaneously).

Location strings are loaded into DataFID/MicroFID II from a computer running a terminal program.

NOTE: A commonly available terminal program is RealTerm, which can be downloaded online for free when using Windows® 7 or higher.

Table 3-2 Location mode front panel display selections

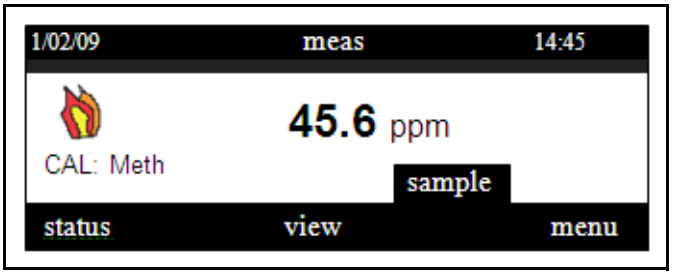
Front Panel Display Selection	Description	Blue Softkey
cancel	Exits Location mode and returns to the default interval mode	Left
edit	Selects **Modify Location numb** (number), **Edit current Location**, or **Insert new Location**	Middle
menu	Selects **DataFID/MicroFID II main menu**	Right
accept	Logs current data reading	Right and middle simultaneously

To set DataFID/MicroFID II to **Location** mode:

1. On the **DataFID Setup** or **MicroFID II Setup** menu, select **User Mode**.
2. Scroll down and select **Location**.
3. Press **back** to return to the **main menu**.
4. Press **meas** to start taking measurements.

3.5.2 Interval Mode

Figure 3-16 Interval mode display



The factory default user mode is **Interval** mode. In this mode, data is collected and stored in DataFID/MicroFID II at a fifteen-second interval. The user has the option to change this interval based on the application requirement.

Table 3-3 Interval mode front panel display selections

Front Panel Display Selection	Description	Blue Softkey
status	Displays setup parameters	Left
view	Displays current data log	Middle
menu	Returns to **DataFID/MicroFID II main menu**	Right
sample	Immediately records a data point	Right and middle simultaneously

Set DataFID/MicroFID II to **Interval** mode:

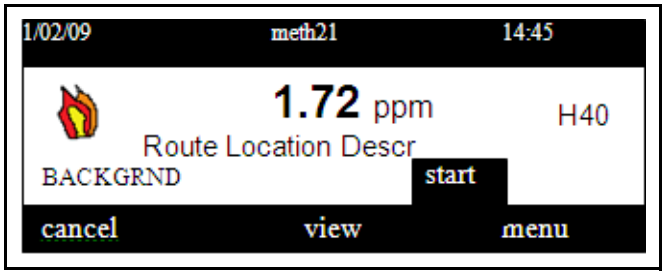
1. On **DataFID Setup** or **MicroFID II Setup** menu, select **User Mode**.
2. Scroll down and select **Interval**.
3. Press **back** to return to the **main menu**.
4. Press **meas** to start taking measurements.

3.5.3 Method 21 Mode (DataFID only)

Method 21 mode displays the current detected concentration. Measurements occur at one second intervals. The maximum background and maximum component concentrations for a selected component is stored in a log.

1. On the **DataFID Setup** menu, select **User Mode**.
2. Scroll down and select **Meth 21**.
3. Press **back** to return to the **main menu**.
4. Press **meas** to start taking measurements.
5. The **BACKGRND** screen is displayed.
6. Press **start** to begin background measurement, indicated by **BACKGRND** on the lower left portion of the front panel display. (See Figure 3-17.)

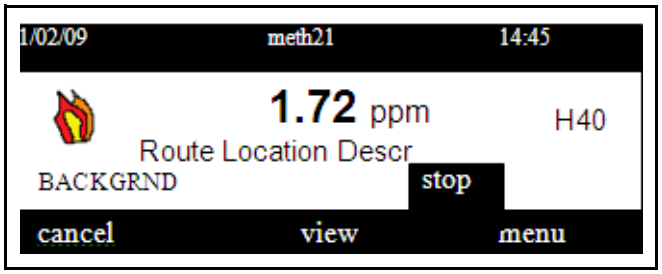
Figure 3-17 Method 21 background measurement start



7 When a stable background reading is displayed, press **stop**. (See Figure 3-18.)

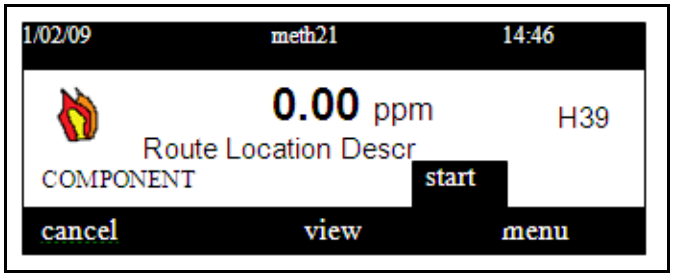
NOTE: The maximum value measured between **start** and **stop** is saved into the log associated with the current Method 21 tag.

Figure 3-18 Method 21 background measurement stop



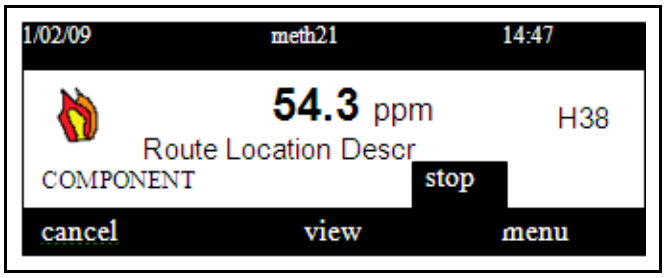
8 Press **start** to begin sample measurement, indicated by **COMPONENT** on the lower left of the front panel display. (See Figure 3-19.)

Figure 3-19 Method 21 Mode component measurement start



9 After DataFID begins to take measurements, the Method 21 mode component stop screen is displayed. (See Figure 3-20.)

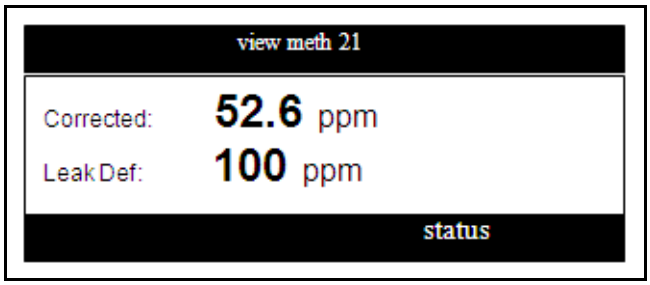
Figure 3-20 Method 21 component measurement stop



10 When a valid component reading is displayed, press **stop**. (See Figure 3-21.)

NOTE: The maximum value measured between **start** and **stop** is saved into the log associated with the current Method 21 tag.

Figure 3-21 Method 21 component measurement results

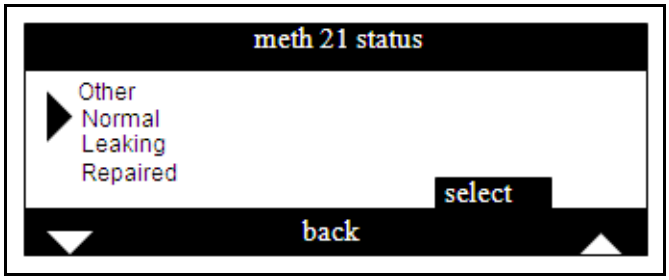


11 Figure 3-21 shows the leak definition as compared to the corrected value.

- **Corrected** value is the maximum component value minus the background max value
- **Leak Def** is the leak definition. This number can only be changed if the user creates and uploads a Method 21 route entry. See Section 3.7.1, Upload METHOD 21 Route Entry from a Computer (DataFID only), on page 3-16, regarding how to create route entries

12 When the comparison is completed, press **status**. The screen shown in Figure 3-22 will be displayed.

Figure 3-22 Method 21 Mode Status Display



13 Select the status for the current tag and press **select**.

14 Repeat procedure from step 1 for subsequent tags. DataFID will increment to the next reading.

3.5.4 Logging Off Mode

In the **Logging Off** mode, DataFID/MicroFID II displays the current TVOC reading, but will not log any values or display any location strings.

3.6 Data Logging

DataFID/MicroFID II takes one sample measurement every second. In **Interval** mode, an average of the sample measurements within the predefined period is recorded.
In **Location** or **Method 21** (DataFID only) mode, a log file is created that contains the date, time, status, TVOC reading and a user-defined character string which can contain up to twenty characters.

NOTE: DataFID/MicroFID II does not delete the data log when changing from one user mode to another. For example, if the mode is switched from Interval to Location, the Interval mode log entries are not deleted.

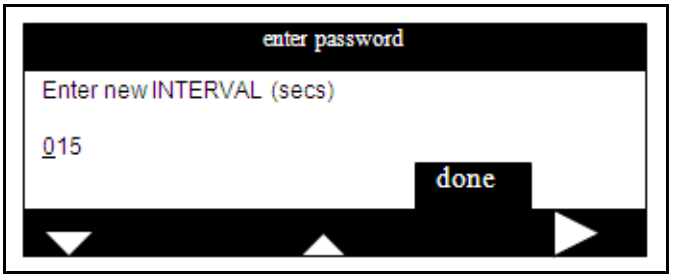
CAUTION

When DataFID/MicroFID II memory is full, previous entries are overwritten starting with entry 1.

3.6.1 Interval Mode – Data Logging

Interval mode readings are logged at a user-predefined interval between 1 to 999 seconds. DataFID/MicroFID II accumulates all readings in the interval selected and determines an average reading. DataFID/MicroFID II stores the average reading, the highest priority instrument status, and the current time and date. (See Figure 3-23.)

Figure 3-23 Interval time adjustment



3.6.2 Location Mode – Data Logging

In **Location** mode, data is logged only when **Accept** is pressed. Date, time, and the average reading, along with the identification tag displayed are stored.

3.6.3 Method 21 Mode – Data Logging

In **Method 21** mode, data is logged only when **status**, then **select** is pressed. (See Figure 3-22.) Date, time, and the average reading, along with the identification tag displayed are stored.

3.6.4 Logged Data Options

Data stored on DataFID/MicroFID II may either be downloaded to a computer or deleted from the unit, preferably after it has been backed up.

3.6.4.1 To Download Data

A Bluetooth connection between DataFID/MicroFID II and a computer must be established and active before beginning a data download. (See section Chapter 4, Wireless Communication, on page 4-1.) A terminal program such as RealTerm (can be downloaded online for free when using Windows version 7 or higher) must be loaded onto the computer in order to receive the datalog.

1. On the **Main Menu**, select **Data Log Options**.
2. Press **select**.
3. Select **Download to PC**.
4. Press **select**.
5. **Connect Instrument to PC** is displayed.
6. Press **next**.
7. Data begins downloading to the computer.
8. Press **done** when the download has completed.

3.6.4.2 To Delete Data Logged in DataFID/MicroFID II

CAUTION

Selecting Clear Data Log will delete all readings from the DataFID/MicroFID II memory. The deleted information is not recoverable. Download the logged data to a computer before deleting any information.

1. On the **Main Menu**, select **Data Log Options**.
2. Press **select**.
3. Select **Clear Data Log.**
4. Press **select**.
5. **Are you sure you want to clear all data?** is displayed.
6. Press **Yes** to clear data or **No** to exit.

3.7 Uploading Pre-Set Data from a Computer to DataFID/MicroFID II

3.7.1 Upload METHOD 21 Route Entry from a Computer (DataFID only)

A pre-set routing schedule created on the computer can be uploaded to DataFID via Bluetooth.

3.7.1.1 Method 21 Route Entry Description

meth21 list# ”Location description” ”Drawing description” ”Class” Leak definition <CR LF>

Where:

- **meth21** = The keyword that must appear at the start of every line in order for DataFID to recognize an entry in Method 21 mode.
- **list#** = Location Route number in the list.
- **"Location description"** 21 character (max) Location description that must be surrounded by quotes (" ").
- **"Drawing description"** 20 character (max) Drawing description that must be surrounded by quotes (" ").
- **"Class"** 3 character (max) leakage class code that must be surrounded by quotes (" ").
- **Leak definition** in ppm. This is the value at which the measured value gets compared against the leak definition for this component.
- **CR LF** = Carriage Return and Line Feed are accomplished by pressing the ‘Enter’ key at the end of each line.

NOTE: <> are used as separators in this manual only and are not typed in the text file.

3.7.1.2 Example Method 21 File

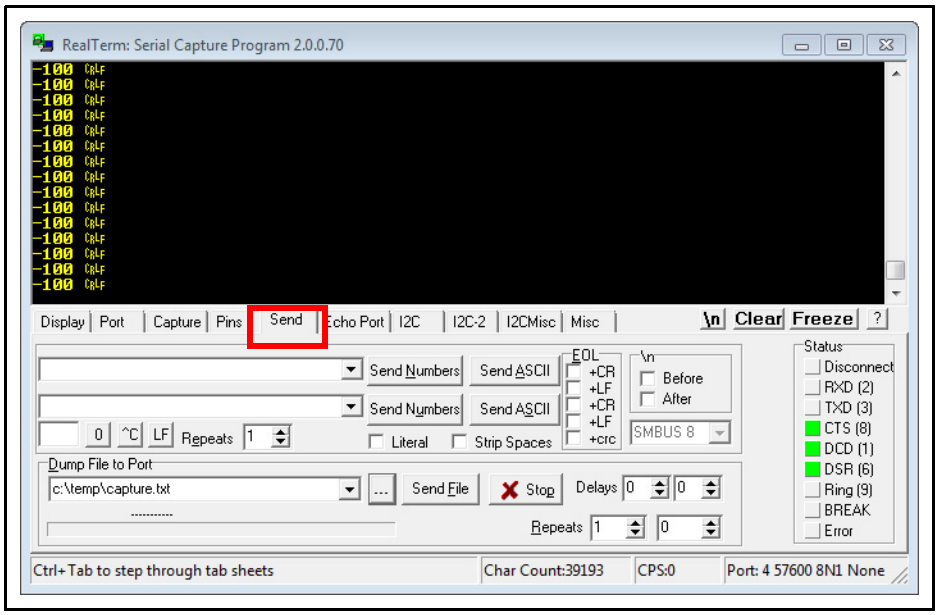
```
meth21 1 "Method 21 Location 1" "First Meth21 Drawing" "AAA" 10.0
meth21 2 "Method 21 Location 2" "Second Meth21 Drawing" "AAB" 15.0
meth21 3 "Method 21 Location 3" "Third Meth21 Drawing" "AAC" 20.0
meth21 4 "Method 21 Location 4" "Fourth Meth21 Drawing" "AAD" 25.0
meth21 5 "Method 21 Location 5" "Fifth Meth21 Drawing" "AAE" 30.0
```

3.7.1.3 Upload Method 21 List Text File from Computer to DataFID

1 Open a computer terminal program. RealTerm is used to illustrate the procedure in this example.

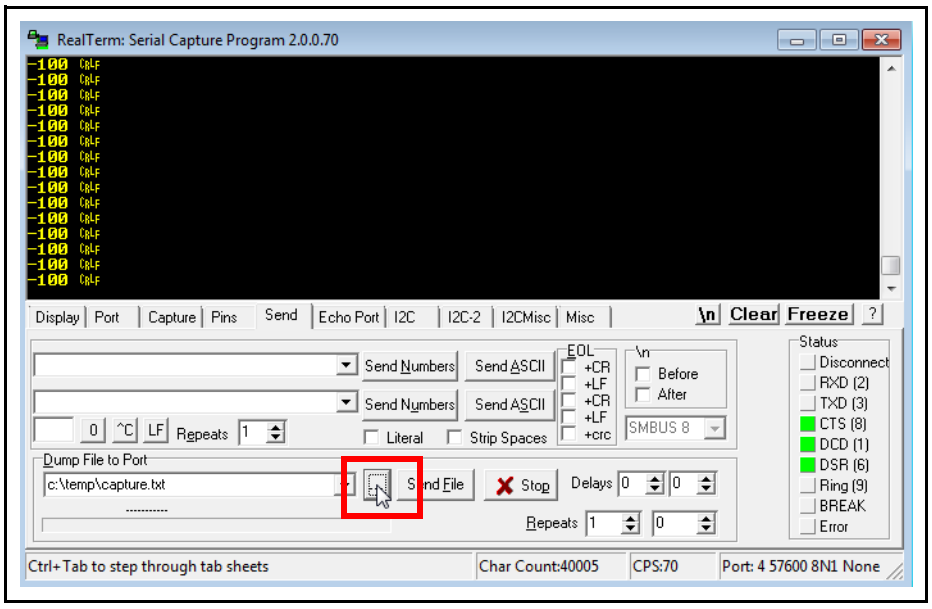
2 Click on the **Send** tab. (See Figure 3-24.)

Figure 3-24 Send tab



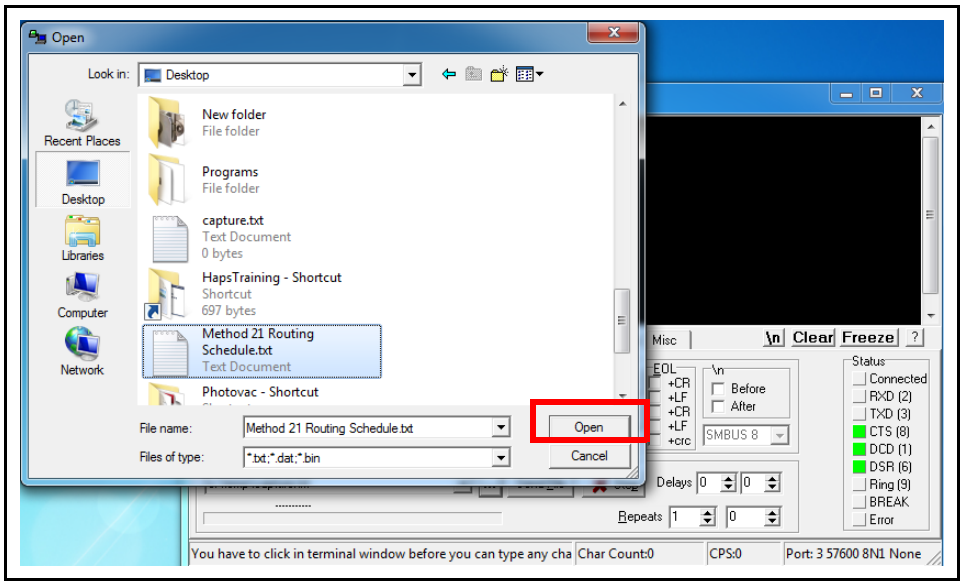
3 Click on the browse icon to open a Method 21 list text file. (See Figure 3-25.)

Figure 3-25 Browse icon



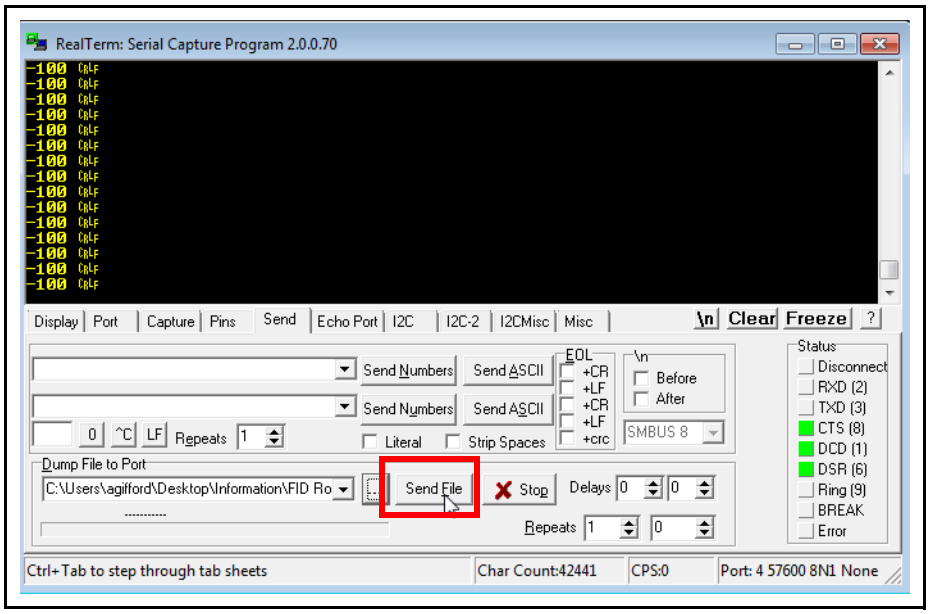
4 Select the created Method 21 list text file, and click **Open**. (See Figure 3-26.)

Figure 3-26 Select Method 21 list text file



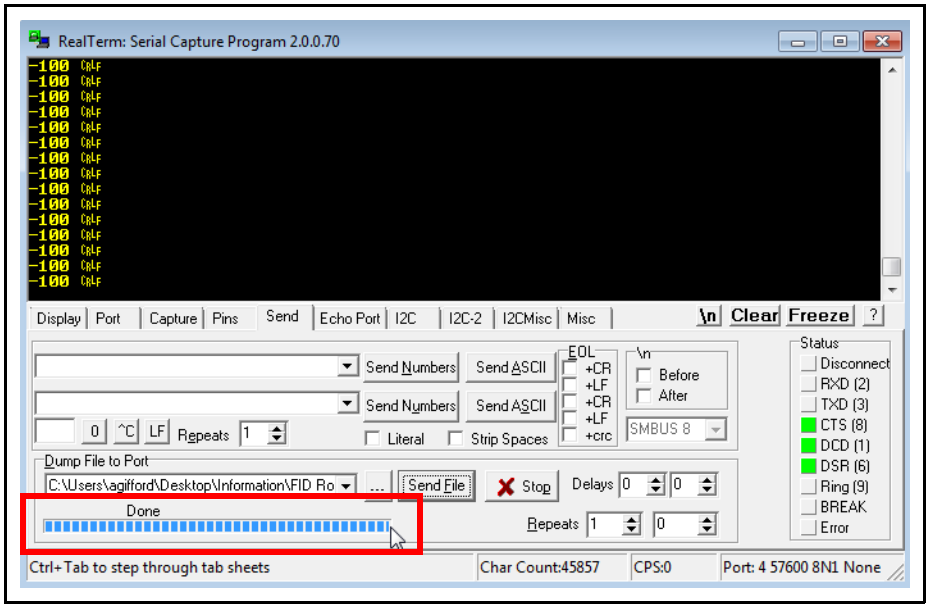
5 Click on **Send File** to send the list text to DataFID. (See Figure 3-27.)

Figure 3-27 Send file



6 When the list text is finished downloading, it will display **Done** at the bottom of the screen. (See Figure 3-28.)

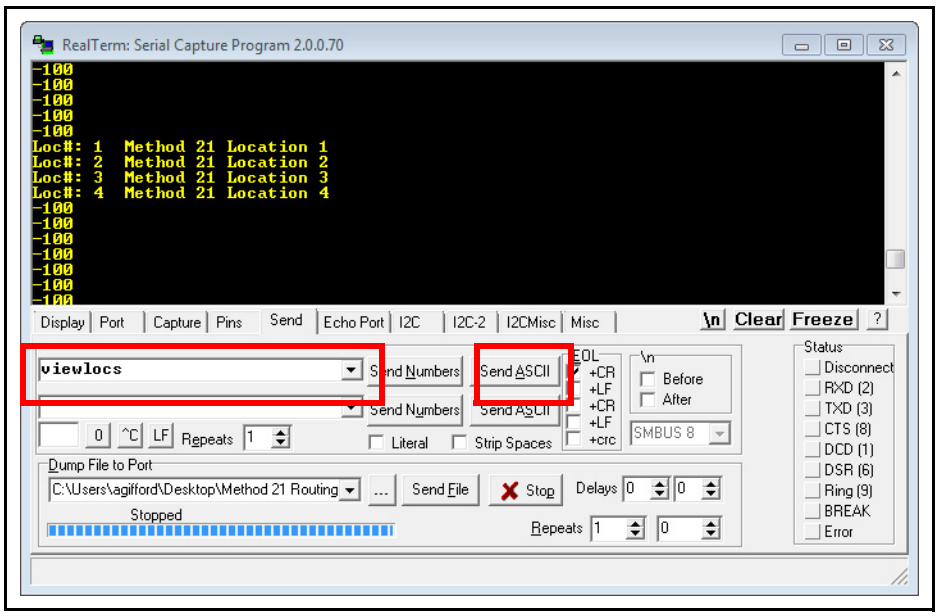
Figure 3-28 Transfer complete



7 To verify that the Method 21 list was successfully transferred to DataFID from the computer, type **viewlocs** in the first line, then press **Send ASCII**. (See Figure 3-25.)

NOTE: Method 21 routing information can be added or subtracted from the file as necessary.

Figure 3-29 Successful Method 21 list transfer



3.7.2 Upload Location Route Entry from a Computer

3.7.2.1 Single Location Route Entry Description

locroute list# ”Location description” <CR LF>

Where:

- **locroute** = Keyword that must appear at the start of every line in order for DataFID/MicroFID II to recognize an entry in Location mode.
- **list#** = Location Route number in the list.
-
- **"Location description"** = 21 character (max) Location description that must be surrounded by quotes (" ").
- **CR LF** = Carriage Return and Line Feed are accomplished by pressing the ‘Enter’ key at the end of each line.

NOTE: <> are used as separators and are not typed in the text file.

3.7.2.2 Example location route file

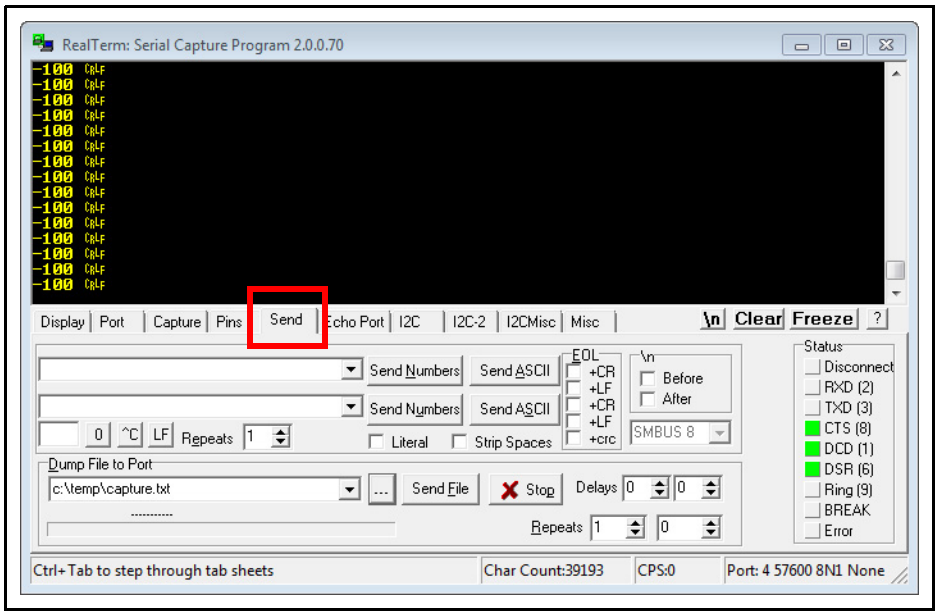
```
locroute 1 "First Route Location"
locroute 2 "Second Route Location"
locroute 3 "Third Route Location"
locroute 4 "Fourth Route Location"
locroute 5 "Fifth Route Location"
```

3.7.2.3 Sending the Location Route List File from the Computer to DataFID/MicroFID II

1 Open a computer terminal program. RealTerm is used to illustrate the procedure in this example.

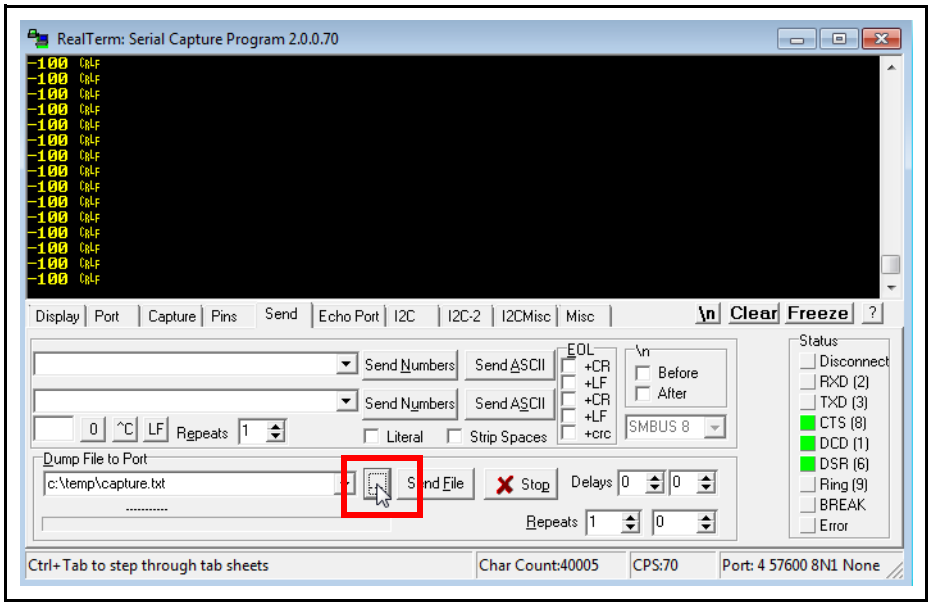
2 Click on the **Send** tab. (See Figure 3-30.)

Figure 3-30 Send tab



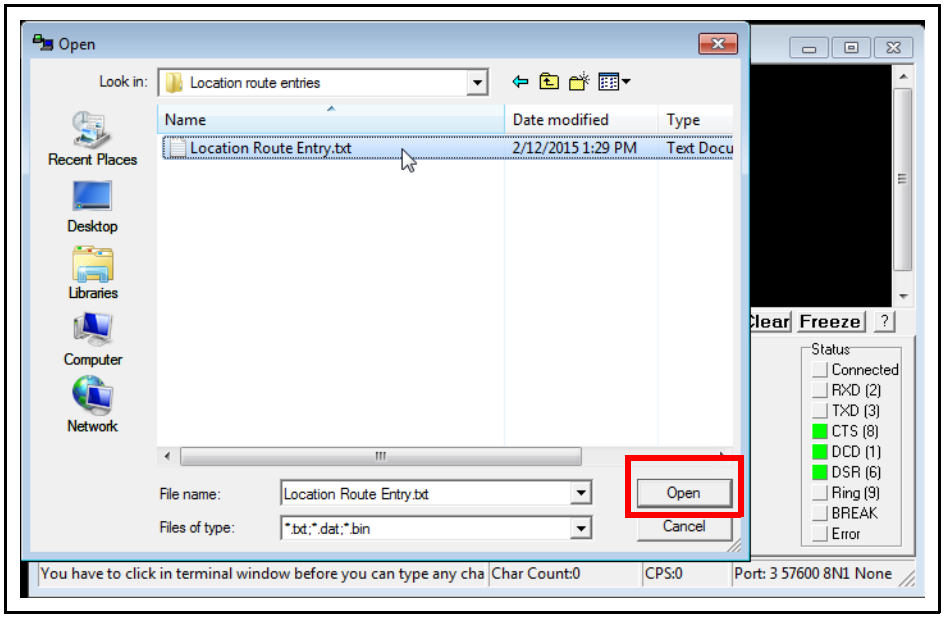
3 Click on the browse icon to open a location route list text file. (See Figure 3-31.)

Figure 3-31 Click to browse for the location route file



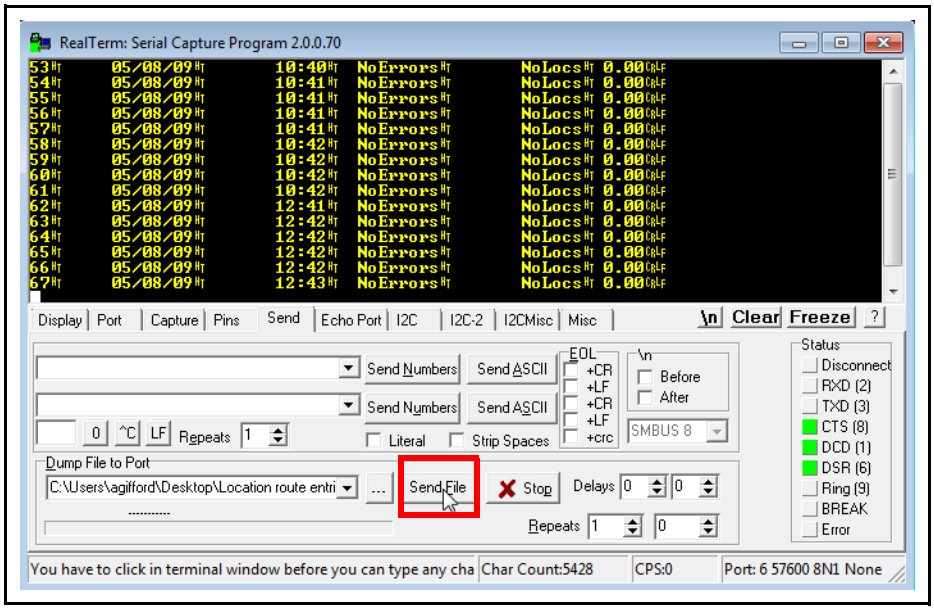
4 Select the created location route entry text file, and click **Open**. (See Figure 3-32.)

Figure 3-32 Select location route entry



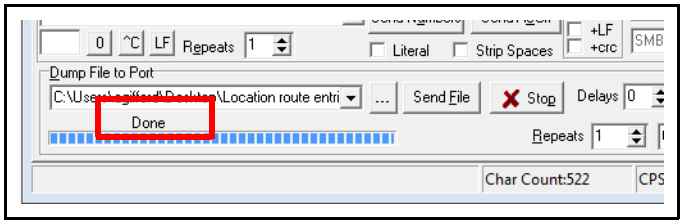
5 Click on **Send File** to send the list text to DataFID/MicroFID II. (See Figure 3-33.)

Figure 3-33 Send file



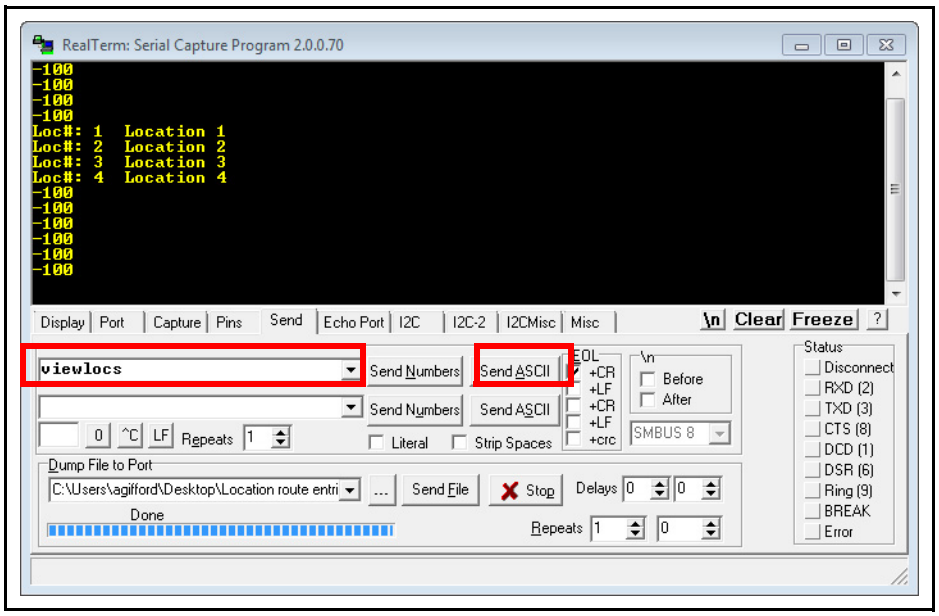
6 When the list text is finished downloading, it will say **Done** at the bottom of the screen. (See Figure 3-34.)

Figure 3-34 Location route entry finished loading



7 To verify that the Location Route list was successfully transferred to DataFID/MicroFID II from the computer, type **viewlocs** in the first line, then press **Send ASCII**. (See Figure 3-35.)

Figure 3-35 Viewlocs command



3.7.3 Upload Compound Entry from a Computer

3.7.3.1 Single Compound Entry Description

memslot list# ”Compound name” Response Factor Alarm Level Formula Weight <CR LF>

Where:

- **memslot** = Keyword that must appear at the start of every line in order for DataFID/MicroFID II to recognize an entry.
- **list#** = Compound number in the list.
- **"Compound name"** = 21 character (max) Compound description that must be surrounded by quotes (" ").
- **Response Factor** = Set by user.
- **Alarm Level** = Set by user.
- **Formula Weight** = Set by user.
- **CR LF** = Carriage Return and Line Feed are accomplished by pressing the ‘Enter’ key at the end of each line.

NOTE: <> are used as separators in this manual and are not typed in the text file.

3.7.3.2 Example of a Multiple Compound File

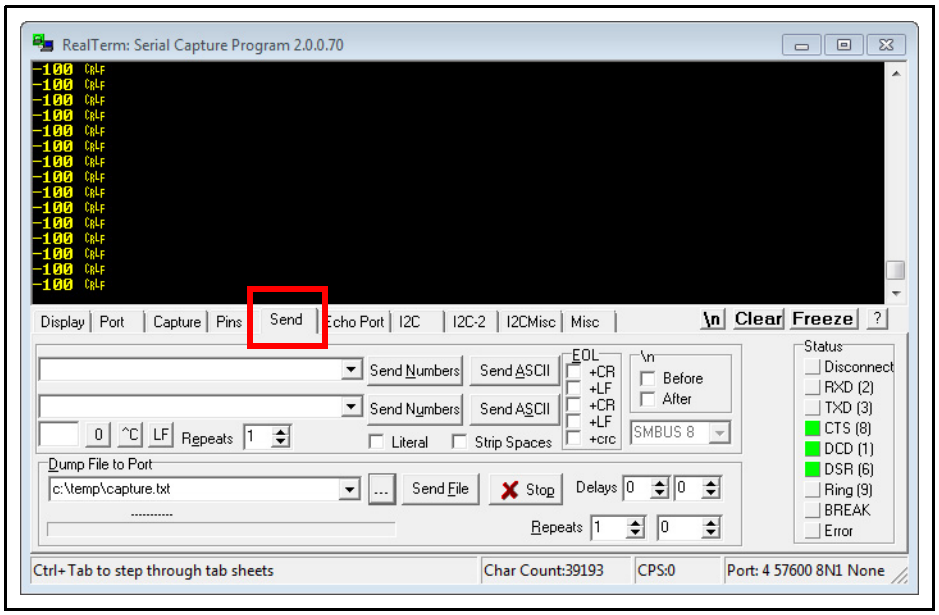
```
memslot 1 "Methane" 1.0 1000.0 16.0
memslot 2 "Hexane" 0.9 200.0 8.7
memslot 3 "Methane2" 1.0 1000.0 16.0
memslot 4 "Propanol" 1.6 500.0 6.1
memslot 5 "Isobutyl" 4.3 750.0 27.8
memslot 6 "Benzene" 7.9 250.0 37.9
```

3.7.3.3 Transferring the Compound List File from a Computer to DataFID/MicroFID II.

1 Open a computer terminal program. RealTerm is used to illustrate the procedure in this example.

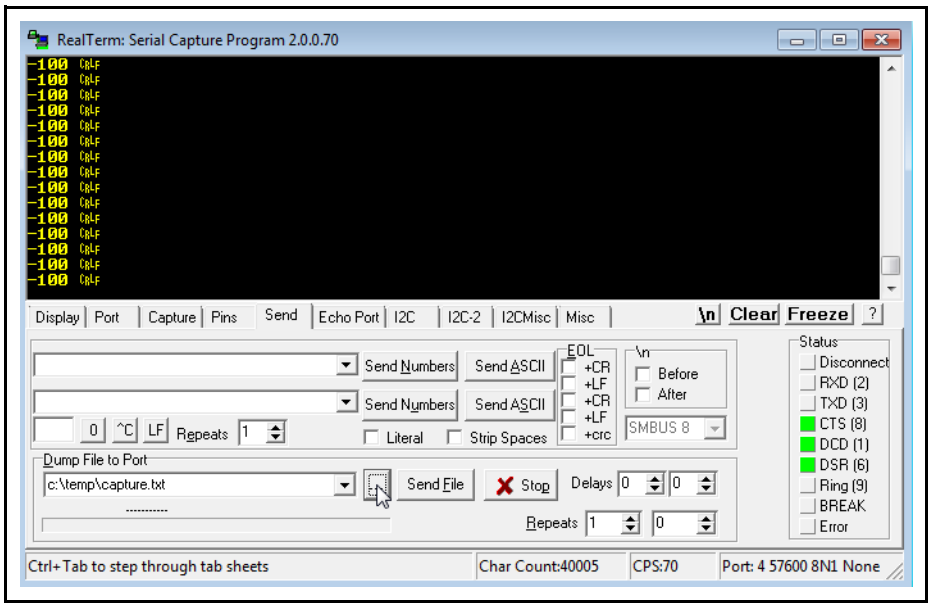
2 Click on the **Send** tab. (See Figure 3-36.)

Figure 3-36 Send text file



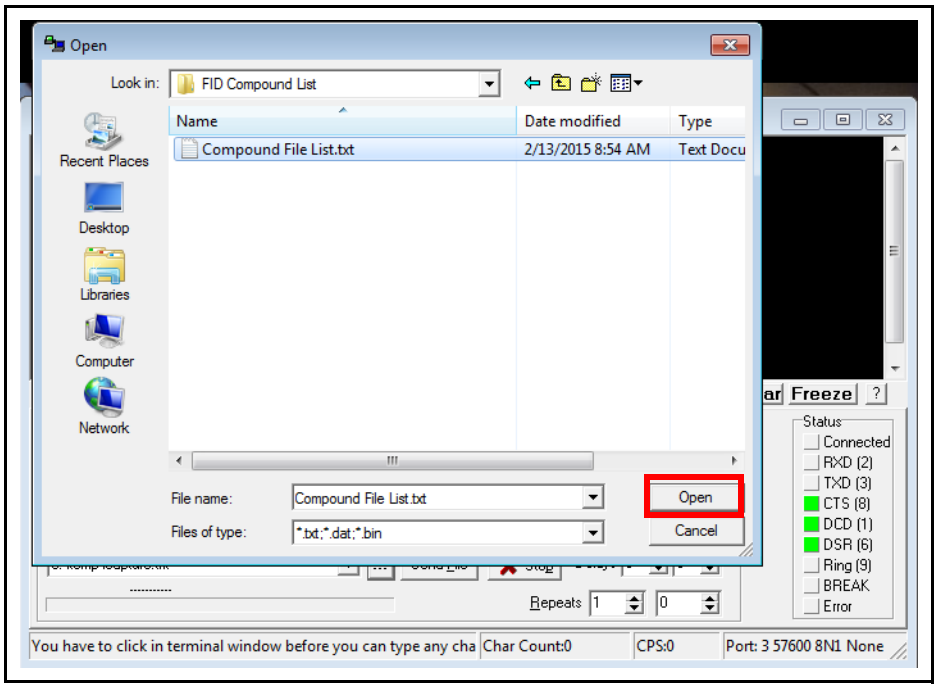
3 Click on the browse icon to open a compound list file. (See Figure 3-37).

Figure 3-37 Click browse icon



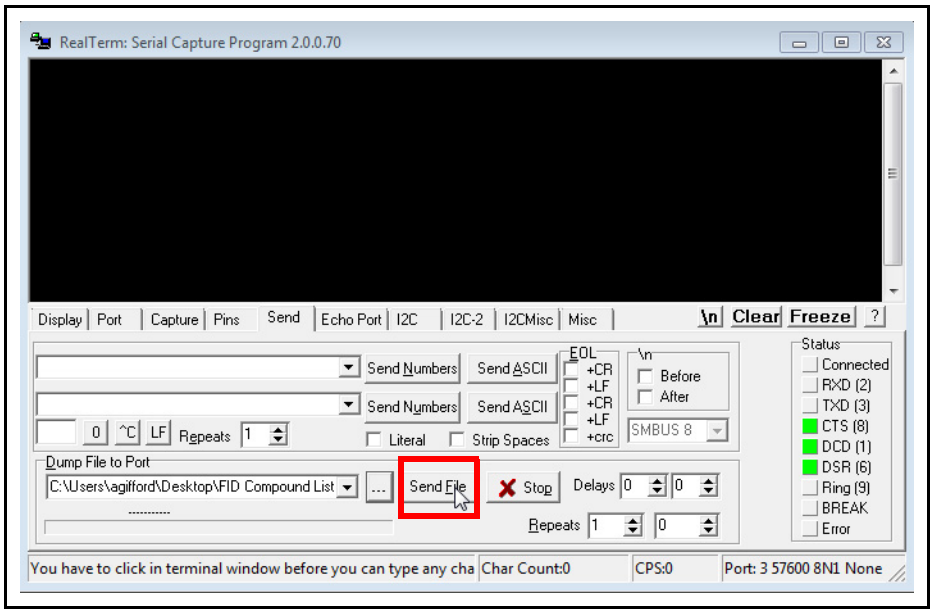
4 Select the created compound list file, and click **Open**. (See Figure 3-38.)

Figure 3-38 Select compound list



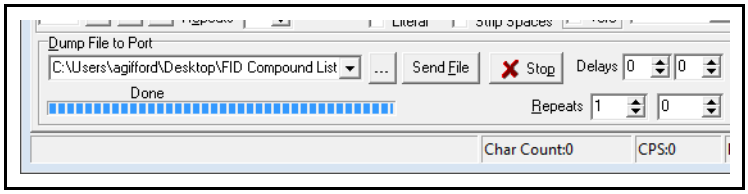
5 Click on **Send File** to send the list text to DataFID/MicroFID II. (See Figure 3-39.)

Figure 3-39 Send file



6 When the list text is finished downloading, it will say **Done** at the bottom of the screen. (See Figure 3-40.)

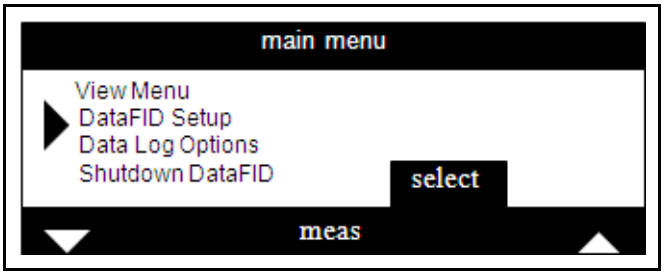
Figure 3-40 Compound list finished downloading



7 Access the memory slots on DataFID/MicroFID II to verify that the compounds list was successfully transferred from the computer:

7a From the main menu select **DataFID Setup** or **MicroFID II Setup** and press **select**.
(See Figure 3-41.)

Figure 3-41 DataFID setup



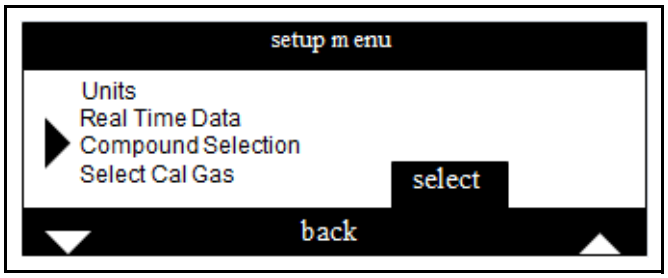
7b Enter the password and press **done**. (See Figure 3-42.)

NOTE: The factory default password is 1111.

Figure 3-42 Enter password

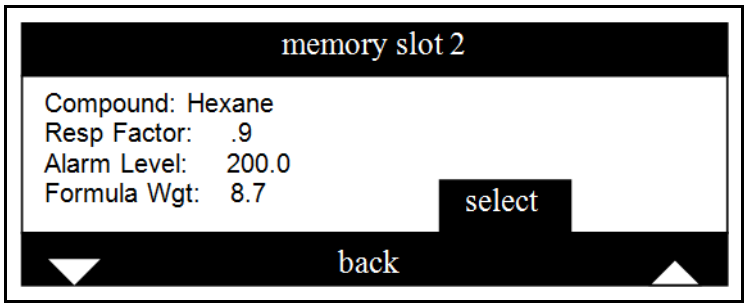
7c Scroll to **Compound Selection** and press **select**. (See Figure 3-43.)

Figure 3-43 Compound selection



7d Use the up and down arrow keys to scroll through the memory slots and verify the compounds and information are correct. (See Figure 3-44.)

Figure 3-44 Verify memory slot information



3.8 DataFID Setup or MicroFID II Setup Functions

DataFIDSetup or MicroFID II Setup Functions set up DataFID/MicroFID II features. (See Figure 3-6.)

- **Pump**
- **Backlight**
- **User Mode**
- **Clock**
- **Password**
- **Real Time Data**
- **Edit H2 Timer**
- **Units of Measure**
- **Compound Selection**
  - Response Factor is selected under this function
- **Select Calibration Gas**
- **Service Diagnostics**
- **Audio Control Menu**

Press **Menu** in any operating mode and select **DataFID Setup** or **MicroFID II Setup**.

3.8.1 Pump

Pump function turns the pump on and off.

When the pump and the detector are off, DataFID/MicroFID II displays 0.0 (ppm or ppb).

NOTE: Turn off the pump and flame when concentration measurements are not required to conserve battery life and hydrogen gas.

To turn on the pump:

1. Press **Menu**.
2. Scroll to **DataFID Setup** or **MicroFID II Setup** and press **select.**
3. Scroll to **Pump** and press **select.**
4. Scroll to **On** and press **select**.

To turn off the pump:

1. Press **Menu**.
2. Scroll to **DataFID Setup** or **MicroFID II Setup** and press **select.**
3. Scroll to **Pump** and press **select.**
4. Scroll to **Off** and press **select**.

3.8.2 Backlight

The **Backlight** function will switch the backlight on and off.

1. Press **Menu**.
2. Scroll to **DataFID Setup** or **MicroFID II Setup** and press **select**.
3. Scroll to **Backlight** and press the **select**.
4. Press ▼to turn the backlight on or off.
5. Press **select** to return to the main display.

NOTE: Turn the backlight off when it is not required to conserve battery life.

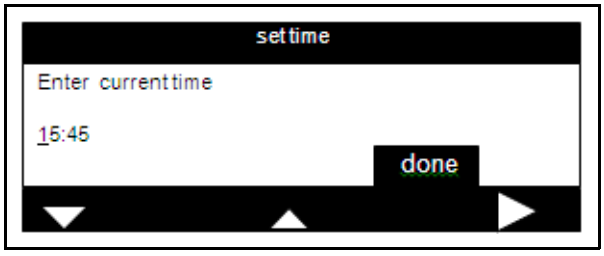
3.8.3 User Mode

Select **User Mode** to set one of the four user modes. Refer to Section 3.5, User Modes, on page 3-9.

3.8.4 Setting Current Date and Time

1. On the **DataFID Setup** or **MicroFID II Setup** menu, select **Clock**.

Figure 3-45 Setting the time

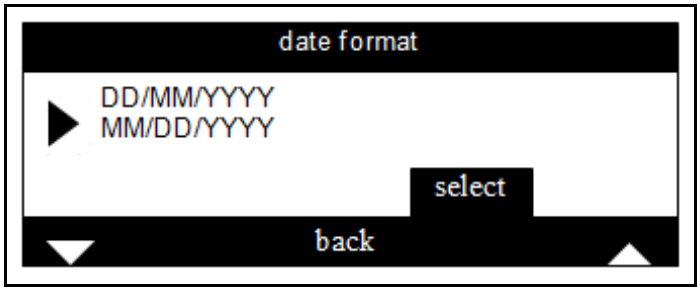


2. In the **set time** screen, press ► to move between each number. (Refer to Figure 3-45.)
3. One the number is highlighted by the cursor, press ▲ to increase or ▼ to decrease. (Refer to Figure 3-45.)
4. Press **done** to confirm the time and move to the date.
5. Enter the date.
6. Press **done** to confirm the date and return to the main screen.

3.8.5 Changing the Date Format

1. On the **DataFID Setup** or **MicroFID II Setup** menu, select **Date format**.
2. Use ▲▼ to select **MM/DD/YYYY** or **DD/MM/YYYY**.

Figure 3-46 Select date format



3. Press **select**.

3.8.6 DataFID Setup or MicroFID II Setup Password

When **DataFID Setup** or **MicroFID II Setup** is selected, a four digit password must be entered before the setup functions menu will display.

NOTE: When shipped from the factory, the password is **1111**.

To change the DataFID/MicroFID II password:

1. On the **main** menu, select **DataFID Setup** or **MicroFID II Setup**.
2. Press **select**.
3. Enter the default password, **1111**.
4. Press **done**.
5. Select **Password**.
6. Press **select**.
7. Enter the desired password.
8. Press **done.**

CAUTION

Record the new password and keep it in a safe location for reference. A password reset will require factory service.

3.8.7 Units of Measure

DataFID/MicroFID II can display readings in two units of measure, ppm (parts per million) or ppb (parts per billion).

To change the units:

1. On the **main** menu, select **DataFID Setup** or **MicroFID II Setup.**
2. Press **select**.
3. Enter default password, **1111**.
4. Press **done**.
5. Select **Units.**
6. Press **select**.
7. Select **PPM** or **PPB**.
8. Press **done**.

3.8.8 Real Time Data

DataFID/MicroFID II can be connected wirelessly via Bluetooth with a computer or handheld device. When **Real Time Data** setting is **ON**, the Bluetooth capability is enabled, allowing TVOC concentration readings be uploaded to a computer or a handheld device. To turn Bluetooth messaging on and off:

1. On the **main** menu, select **DataFID Setup** or **MicroFID II Setup.**
2. Press **select**.
3. Enter the default password, **1111**.
4. Press **done**.
5. Select **Real Time Data**.
6. Press **select**.
7. Select **Real Time output ON** or **Real Time output OFF**.
8. Press **done**.

NOTE: DataFID/MicroFID II is set to **Real Time output ON** by default.

3.8.9 Compound Selection and Response Factors

It is often impractical to carry a range of different standards into the field. Specialty gas measurements can be obtained by calibrating DataFID/MicroFID II with the recommended span gas and entering the appropriate response factor for the specific sample gas. The response factor is based on the ratio of the response of the specific compound to the response of the span gas.

NOTE: Response factors for identified compounds are available for DataFID/MicroFID II and can be downloaded from the INFICON website. To enter these response factors prior to sampling, see section 3.8.9, Compound Selection and Response Factors, on page 3-33.

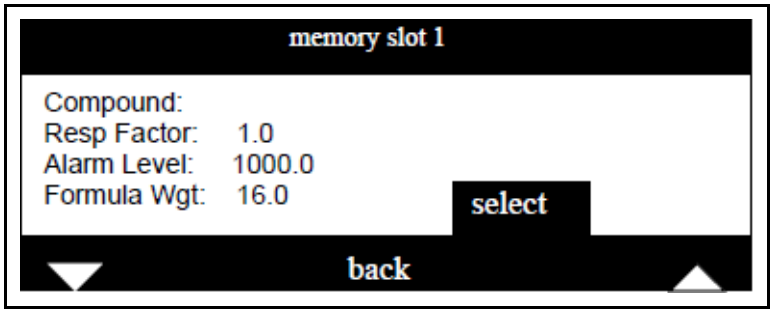
The response of a flame ionization detector to a compound is dependent on its ionization potential. In situations when only a single specific compound exists, calibrate DataFID/MicroFID II using methane, hexane, or propane. See Section 3.9, DataFID/MicroFID II Calibration, on page 3-37, for calibration instructions.

DataFID/MicroFID II has seven memory slots that are used to store information regarding individual gases. By default, these memory slots are set to measure methane with the **Compound Name** as a blank, **Response Factor** set to 1.0, **Alarm Level** set to 1000.0, and a **Formula Weight** of 16.0.

The desired compound can be selected for use during measurement. When the desired compound is displayed, press **select** to choose the compound. The individual parameters can be edited to allow for custom compound detection. (See Figure 3-47.)

NOTE: DataFID/MicroFID II measures TVOCs and will respond to all ionizable compounds present in a sample. When programming a Response Factor, use one for a compound that is closest to the expected sample to measure.

Figure 3-47 Setting the compound memory



3.8.9.1 Selecting a Response Factor

To select a response factor, the compound must be selected first.

1. On the **main** menu, select **DataFID Setup** or **MicroFID II Setup.**
2. Press **select**.
3. Enter the default password, **1111**.

4 Press **done**.

5 Scroll to **Compound Selection**.

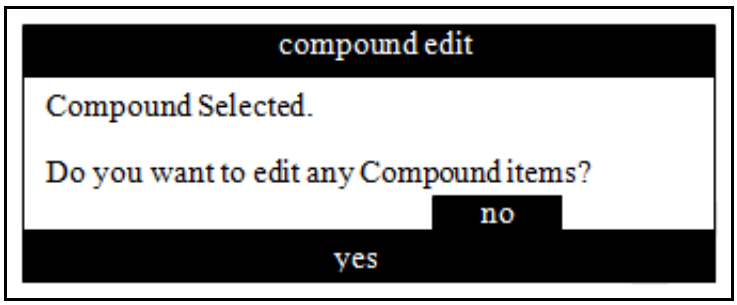
6 Press **select**.

7 Scroll to select a memory slot. Once in the desired memory slot (refer to Figure 3-47), press **select**.

NOTE: There are seven memory slots available, however memory slot 1 is intended to be for TVOCs, with methane as the span gas. Do not alter this memory slot.

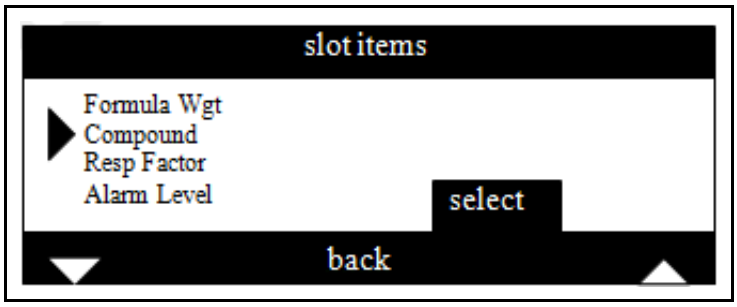
8 Edit the memory slot by pressing **yes.** (See Figure 3-48.)

Figure 3-48 Edit memory slot



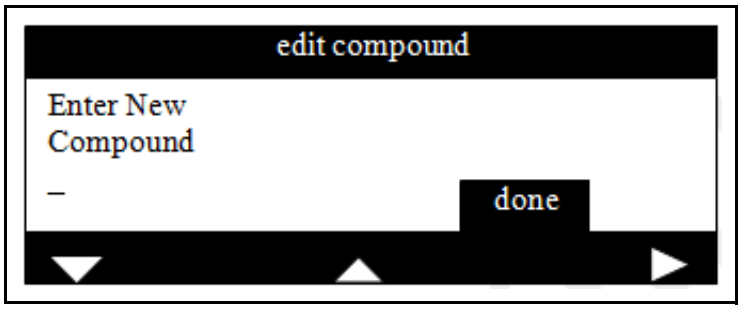
9 Scroll to **Compound** and press **select**. (See Figure 3-49.)

Figure 3-49 Select Compound



10 Enter the compound name. Use the up and down arrow keys to select each letter for the compound name. When the compound has been typed, press **done**. (See Figure 3-50.)

Figure 3-50 Enter new compound



11 The **main menu** will then appear.

12 To add the response factor, select **DataFID Setup** or **MicroFID II Setup.**

13 Press **select**.

14 Enter the default password, **1111**.

15 Press **done**.

16 Scroll to **Compound Selection**.

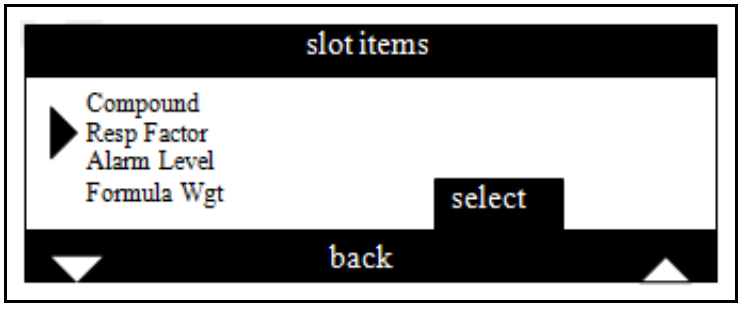
17 Press **select**.

18 Scroll to select the memory slot the compound of interest was entered, and press **select**. (Refer to Figure 3-47.)

19 Edit the memory slot by pressing **yes.** (Refer to Figure 3-48.)

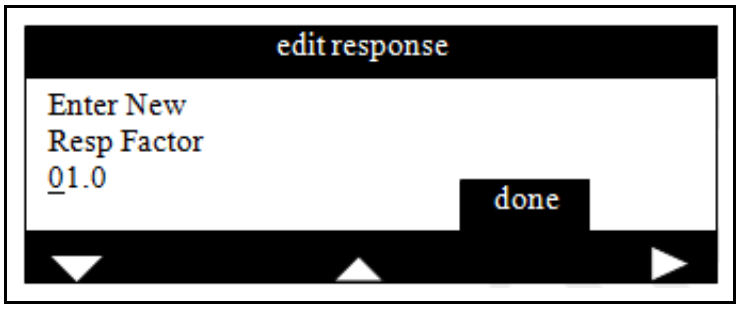
20 Scroll to **Resp Factor** and press **select**. (See Figure 3-51.)

Figure 3-51 Select Response Factor



21 Use the up and down arrow keys to enter a new response factor, then press **done**. (See Figure 3-52.)

Figure 3-52 Enter new response factor



22 The response factor is set when the main menu appears.

3.8.10 Select Calibration Gas

1. In the **main menu**, scroll to **DataFID Setup** or **MicroFID II Setup** and press **select**.
2. Scroll to **Select Cal Gas.**
3. Select **Methane**, **Propane**, or **Hexane**.
4. Press **select**.

NOTE: This function is simply to choose the calibration gas to be used during calibration; it will not initiate DataFID/MicroFID II calibration. For instructions on calibrating DataFID/MicroFID II, please refer to Section 3.9, DataFID/MicroFID II Calibration, on page 3-37.

3.8.11 Edit H2 Timer

The H2 Timer will count down the number of hours of use remaining in the hydrogen fuel cylinder. Each time the hydrogen fuel cylinder is filled, the timer needs to be reset. Depending on the type of hydrogen fuel cylinder being used, the timer should be set to 70 or 10 (representing 70 hours or 10 hours remaining of hydrogen fuel use). (Refer to Table 2-2.)

1. On the main menu, select **Edit H2 Timer**.
2. Enter the appropriate hours.
3. Press **done** to set the time.

3.8.12 Service Diagnostics

Service Diagnostics options are **Diagnostics Monitor**, **Signal Test**, **Glow Plug Test**, **Hydrogen Test**, **Range Test**, and **Turn Flame ON**.

1. In the **main menu**, scroll to **DataFID Setup** or **MicroFID II Setup** and press **select**.
2. Select **Service Diagnostics**.
3. Select the option from the list.
4. Press **select** to perform the diagnostic routine.

NOTE: This menu is for service purposes only. Do not use this menu unless instructed by INFICON Service personnel.

3.8.13 Audio Control Menu

Audio Control is used to switch the keypad beeper on and off.

1. From the Main Menu display, select **DataFID Setup** or **MicroFID II Setup** option.

2 When prompted, enter the correct 4-digit password. Once the correct password is entered, the user will be allowed to enter **DataFID Setup** or **MicroFID II Setup** menu.

NOTE: The factory default password is **1111**.

3 Select **Audio Control Menu** and then press the **select** soft key. Press the **Down** arrow soft key to either turn the Audio key beep function on (**Audio On**) or off (**Audio Off**).

4 Press **select** soft key to return to **DataFID Setup** or **MicroFID II Setup** menu display.

3.9 DataFID/MicroFID II Calibration

3.9.1 Calibration Technical Description

Calibration is required to correlate detector signal response and the span gas concentration, such that DataFID/MicroFID II can display the VOC concentration measurement in ppm or ppb units. Calibration can also compensate for temperature and climate changes as well as output changes due to inlet filter restrictions, combustion chamber cleanliness, sample pump wear, and other factors.

During calibration, DataFID/MicroFID II is first exposed to zero air. The signal level generated is used to set the zero point for the DataFID/MicroFID II. This reading is stored as part of the calibration.

NOTE: Since DataFID/MicroFID II is very sensitive, ambient air is usually unsuitable for calibration. Ultra zero air should be used for calibration. If ultra zero air is unavailable, use a charcoal filter (PN MX396022) to filter hydrocarbons from the ambient air.

Next, span (calibration) gas is connected and measured by DataFID/MicroFID II. The zero point signal is subtracted from the span gas measurement signal, and the result is divided by the gas concentration, entered by the user. The resulting sensitivity is stored in the selected memory slot with the zero signal and the alarm level. This number is then multiplied by the span gas response factor and displayed.

DataFID/MicroFID II readings are always relative to the span gas. A reading of 10 ppm indicates all ionizable compounds that are present have generated an ion current proportional to 10 ppm of the selected span gas. Almost all combustible organic compounds can be detected by DataFID/MicroFID II. However, DataFID/MicroFID II cannot distinguish between the selected span gas and other ionizable compounds.

A mix of methane with an air balance is recommended as the span gas. If desired, a mix of hexane with an air balance, or propane with an air balance, can also be used. Use the **DataFID Setup** or **MicroFID II Setup Menu** then **Selecting Calibration Gas** to enter the span gas being used. The concentration of the span gas will depend on the application.

NOTE: When ordering span gas, ensure it is diluted in ultra zero air.

NOTE: Method 21 protocol requires that commercial cylinders of span gas be analyzed and certified to be within +/- 2% accuracy and that a shelf life must be specified on the cylinder. At the end of the shelf life, the cylinder must be replaced or re-analyzed.

CAUTION

Allow DataFID/MicroFID II to warm-up (equilibrate) for at least thirty minutes before calibrating to ensure an accurate calibration.

3.9.2 Preparing for Calibration

3.9.2.1 Calibration Techniques

There are two calibration techniques:

- Direct connection of the calibration gas to DataFID/MicroFID II through a flow-match regulator. This is the preferred technique and provides the best accuracy.
  (See section 3.9.2.1.1.)
- Use a Tedlar bag filled with calibration gas and connect the bag to DataFID/MicroFID II. This technique is less preferred due to potential error introduced if the bag is compressed or squeezed. (See section 3.9.2.1.2.)

3.9.2.1.1 Using a Flow-Match Regulator

WARNING

Operate in a well-ventilated area. Observe proper handling procedures for pressurized, flammable gases.

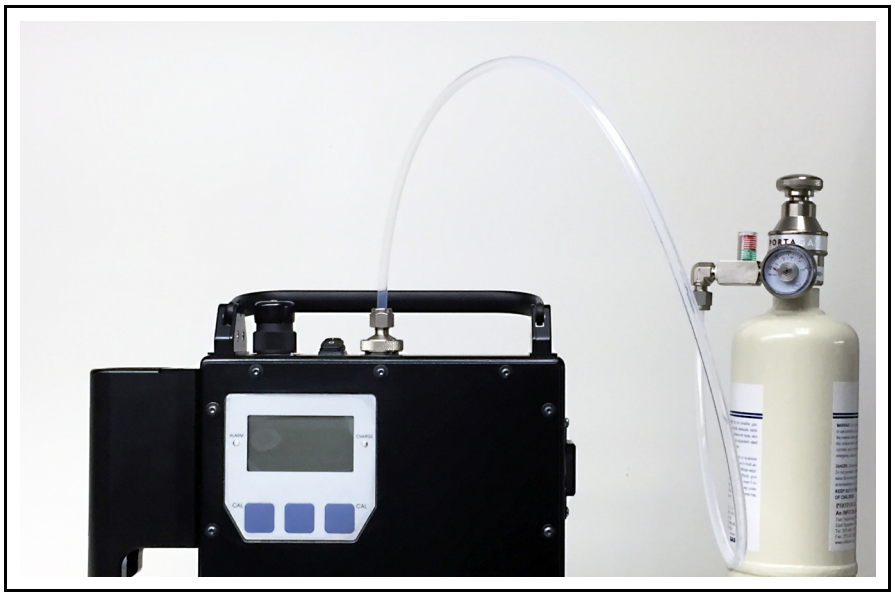
1. Ensure DataFID/MicroFID II and the span gas cylinder is in the upright position.
2. Connect the regulator to the span gas cylinder.
3. When using the portable cylinder containing 500 ppm methane span gas (PN MX396028), connect the regulator (PN MX704210) directly to the cylinder. (See Figure 3-53.) Other span gas compounds and concentrations can be used as necessary.

4 When the regulator is connected properly and opened, cylinder pressure can be read from the regulator gauge.

5 Connect the adapter tubing to the regulator, then connect the other end of the tubing to the DataFID/MicroFID II inlet.

6 Open the regulator by turning the valve counter-clockwise, until the gas flow is audible.

Figure 3-53 Span gas with flow match regulator attached to DataFID/MicroFID II



3.9.2.1.2 Using Gas Bags- Ultra Zero Air

1 Connect the appropriate high purity regulator (either CGA 590 or regional fitting for international users) to a cylinder of ultra zero air.

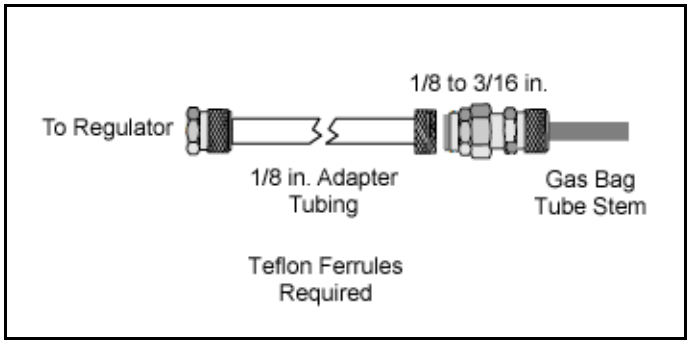
CAUTION

Do not force the connection. Do not use Teflon tape with CGA fittings. These fittings are designed for metal-to-metal sealing. Do not use adapters to connect one CGA fitting to another type of CGA fitting. If the regulator is not compatible with the cylinder, contact the gas supplier.

2 Tighten the regulator to the cylinder with an appropriately sized wrench.

3 Attach the 1/8 in. knurled nut on the gas bag adapter to the regulator. Finger-tighten the fitting. (See Figure 3-54.)

Figure 3-54 Gas Bag Adapter



4 Loosen the knurled nut on the 3/16 in. side of the bag adapter.

NOTE: Do not remove the knurled nut completely, as the Teflon ferrules contained inside the nut may be lost.

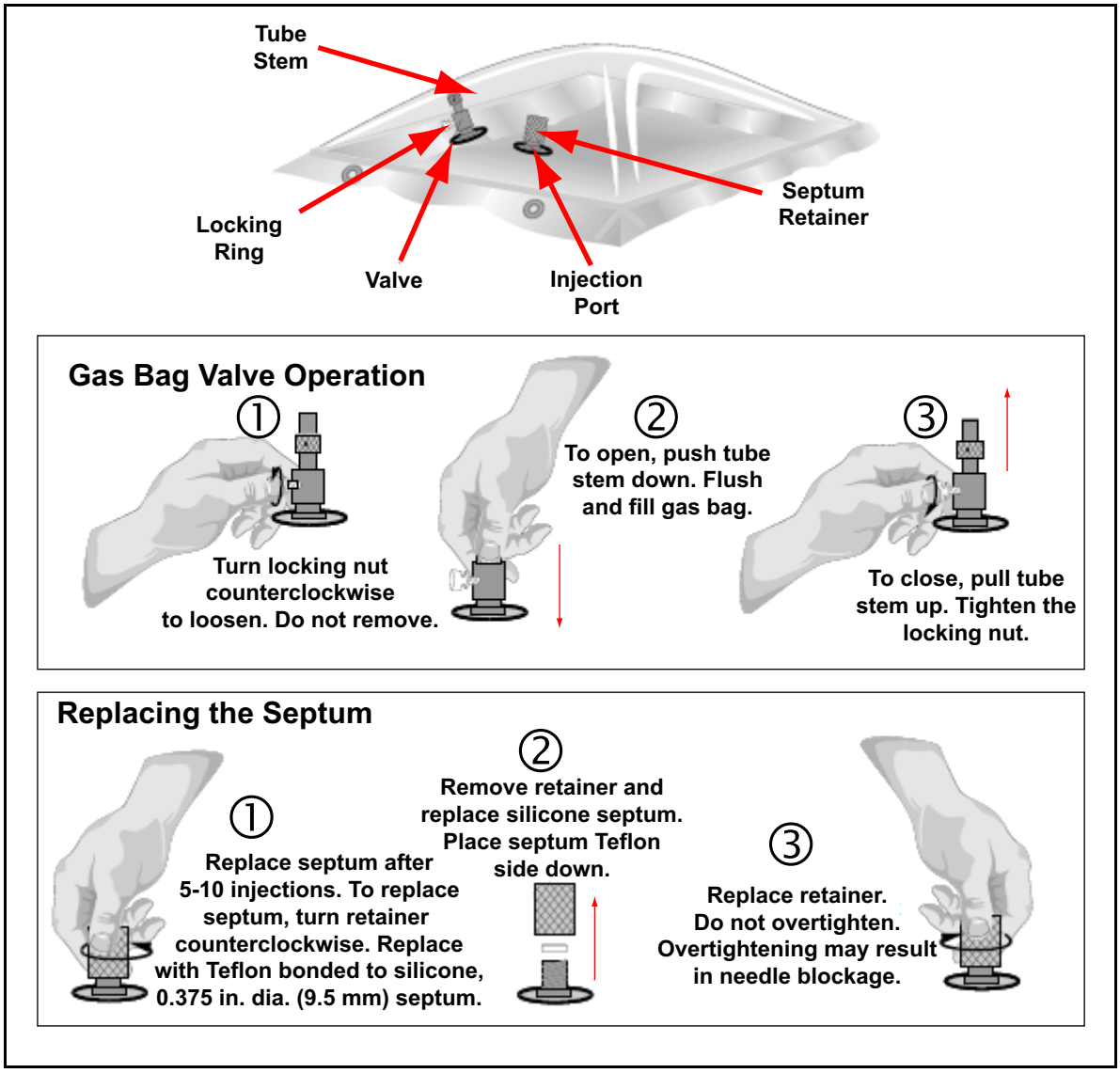
5 Insert the gas bag tube stem into the 3/16 in. knurled nut. Tighten the knurled nut and ensure the tube stem is secure. If the gas bag is not secure, ensure the tube stem is fully inserted into the knurled nut. Do not over-tighten.

CAUTION

Over-tightening the knurled nut will cause damage to the Teflon ferrules.

6 Open the gas bag valve. (See Figure 3-55.) Turn the locking nut counter-clockwise to loosen, then gently push the tube stem toward the bag.

Figure 3-55 Using the gas bag



7 Open the ultra zero air supply cylinder.

8 Turn the regulator knob counter-clockwise about half a turn to initiate the flow of gas. Fill the gas bag about half full and then close the regulator.

9 Disconnect the gas bag from the gas bag adapter and void the bag.

10 Following Steps 7-9, flush the bag a few times with the ultra zero air prior to filling it.

11 Close the gas bag valve. Gently pull the tube stem away from the bag, and then turn the locking nut clockwise, tightening it to the tube stem.

12 Disconnect the 1/8 in. knurled nut from the regulator.

3.9.2.1.3 Using Gas Bags - Span Gas

Use calibration kit (PN MX396011), as follows:

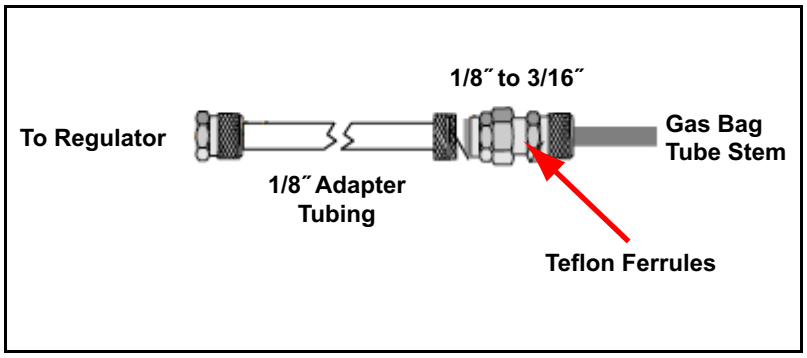
1. Connect the regulator to the span gas cylinder.
2. If a portable cylinder of span gas is being used, connect the regulator supplied with the calibration kit.
3. If a large cylinder of span gas is being used, obtain a high purity regulator. Be sure to match the regulator with the gas cylinder fitting. Connect the regulator to the cylinder of span gas.

CAUTION

Do not force the connection. Do not use Teflon tape with CGA fittings. These fittings are designed for metal-to-metal sealing. Do not use adapters to connect one CGA fitting to another type of CGA fitting. If the regulator is not compatible with the span gas cylinder, contact the gas supplier.

4. Tighten the regulator to the cylinder with an appropriately sized wrench. Do not over-tighten.
5. Attach the 1/8 in. knurled nut on the gas bag adapter to the regulator. Finger-tighten the fitting. (See Figure 3-56.)

Figure 3-56 Gas Bag Adapter



6. Loosen the 3/16 in. knurled nut on the gas bag adapter.

NOTE: Do not remove the 3/16 in. knurled nut as the Teflon ferrules contained inside the nut may be lost.

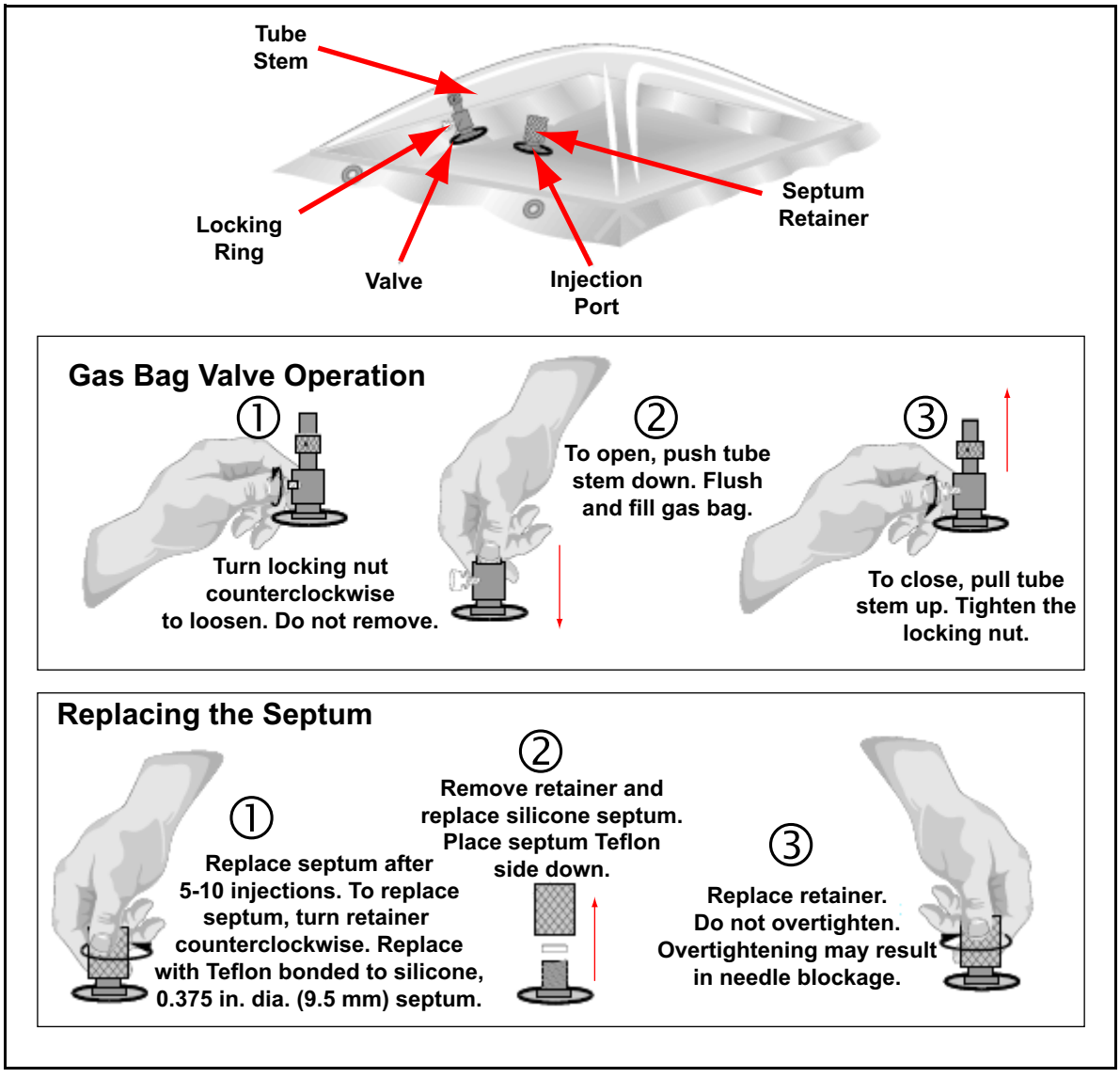
7 Insert the stem from the gas bag into the knurled nut. Tighten the knurled nut and ensure the tube stem is secure. If the gas bag is not secure, ensure the tube stem is fully inserted into the knurled nut. Do not over-tighten.

CAUTION

Over-tightening the knurled nut will cause damage to the Teflon ferrules.

8 Open the gas bag valve. (See Figure 3-57). Turn the locking nut counter-clockwise to loosen, then gently push the valve tube toward the bag.

Figure 3-57 Using the gas bag



9 Open the span gas cylinder.

10 Turn the regulator knob counter-clockwise about half a turn to start the flow of gas. Fill the gas bag about half full and then close the regulator.

11 Disconnect the gas bag from the gas bag adapter and void the bag. Flush the bag a few times with the span gas prior to filling it.

12 Close the gas bag valve. Gently pull the valve tube away from the bag, and then turn the locking nut clockwise to tighten it against the valve tube.

13 Disconnect the 1/8 in. knurled nut from the regulator.

CAUTION

To eliminate the possibility of contamination, do not use the same gas bag or gas bag adapter for both the ultra zero air and the span gas.

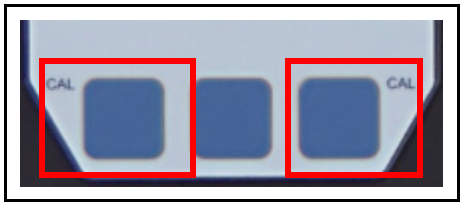
3.9.3 Calibrating DataFID/MicroFID II

Allow the DataFID/MicroFID II to stabilize until the reading changes by only 1 to 2 ppm. If the unit has been stored for weeks or months, it may take two or more hours to stabilize.

3.9.3.1 Single Point Calibration

1 Simultaneously press the left and right blue soft keys. (See Figure 3-58.) The **Calibration Mode** screen is displayed.

Figure 3-58 Calibration buttons

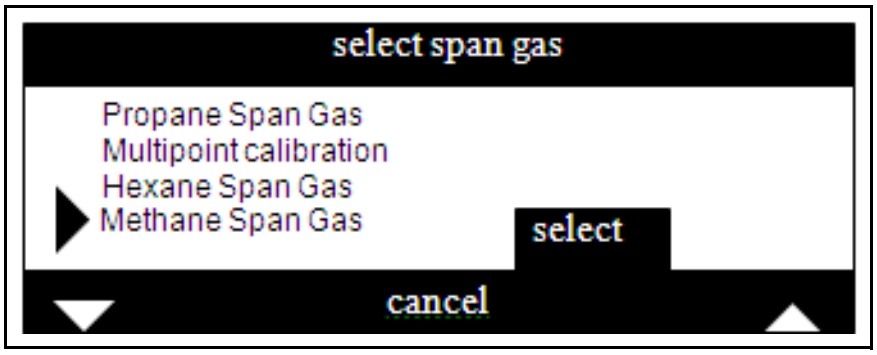


2 Select the desired calibration (span) gas. (See Figure 3-59.)

NOTE: DataFID/MicroFID II has three calibration memories and can be calibrated with three different span gases or calibration gas. Only one calibration memory can be used at a time.

3 Press **select**.

Figure 3-59 Select span gas



4 If using a gas bag with ultra zero air:

4a Connect the 1/8 in. to 3/16 in. gas bag adapter to the DataFID/MicroFID II inlet.

4b Open the bag.

4c Press **next**. (See Figure 3-60.)

4d DataFID/MicroFID II sets the zero point using ultra zero air.

5 If using a ambient air:

5a Connect the charcoal filter as shown in Section 5.5.1, To Replace the Charcoal Filter, on page 5-7.

5b Press **next**. (See Figure 3-60.)

5c DataFID/MicroFID II sets the zero point using ambient air.

NOTE: The charcoal filter does not filter methane or ethane. If these compounds are present in the ambient air, use a gas bag containing ultra zero air.

Figure 3-60 Connect to ultra zero air

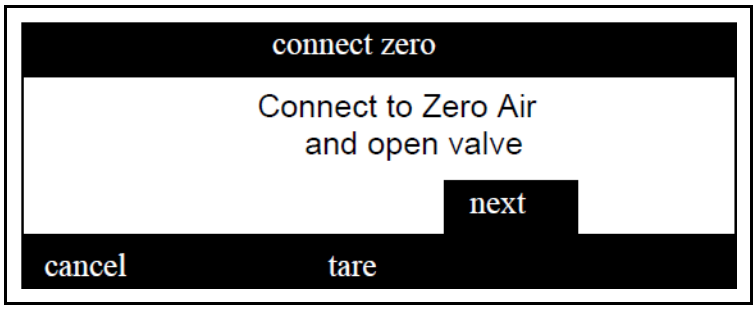
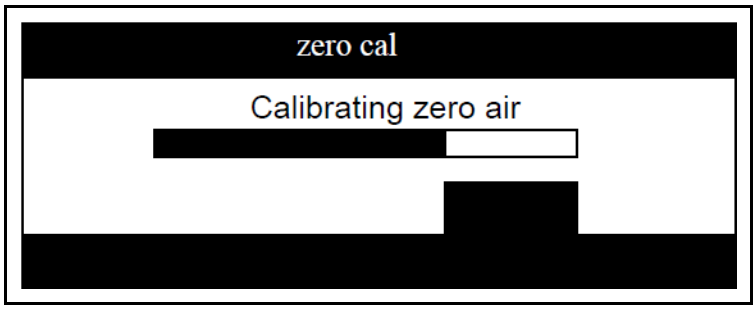
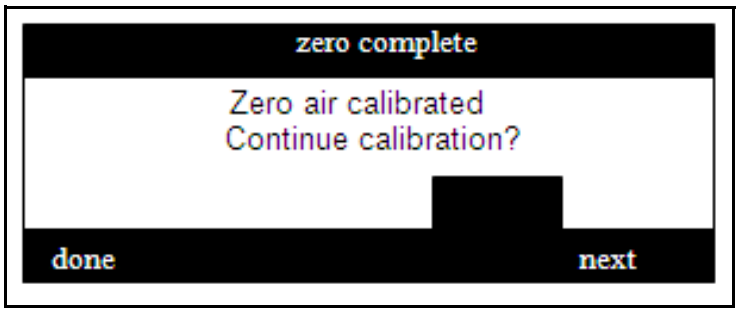


Figure 3-61 Ultra zero air calibration in-process



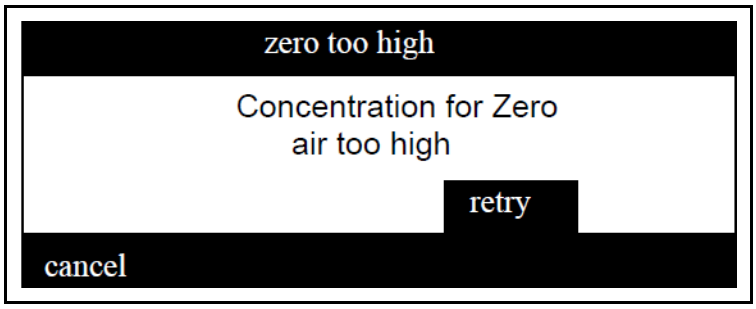
6 When the ultra zero air calibration is complete, press **next**. (See Figure 3-62.)

Figure 3-62 Ultra zero air calibration complete



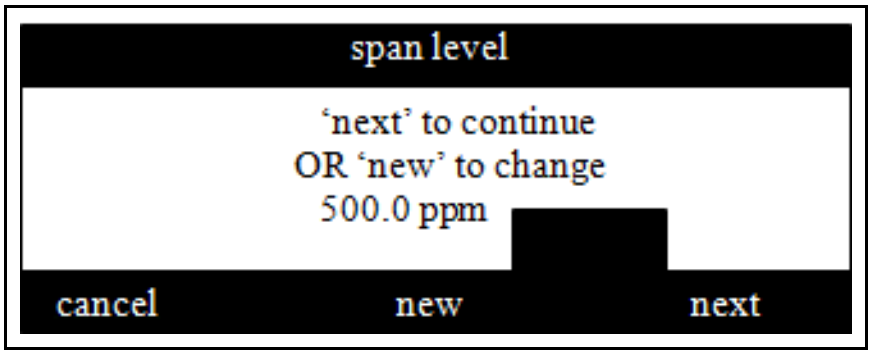
NOTE: Should an error message appear, for example **Concentration for Zero air too high** (see Figure 3-63), press **retry** to start the zero point calibration again. See Chapter 6, Troubleshooting to further investigate causes for errors.

Figure 3-63 Ultra zero air error



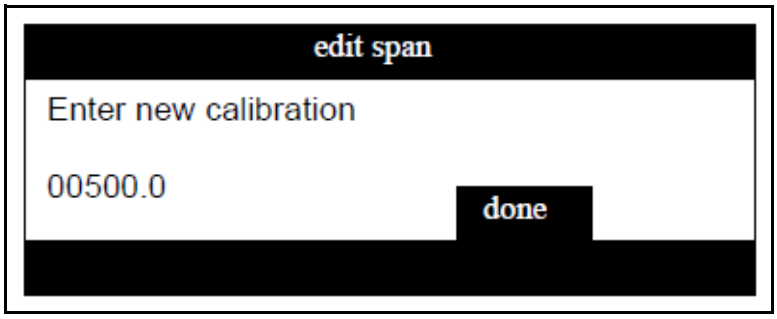
7 Enter the known concentration or select **new** to enter a different span gas concentration. (See Figure 3-64.)

Figure 3-64 Span gas concentration



7a Selecting **new** will prompt to reset the digits for the span gas value. Once the selection has been edited, press **done**. (See Figure 3-65.)

Figure 3-65 Edit span gas



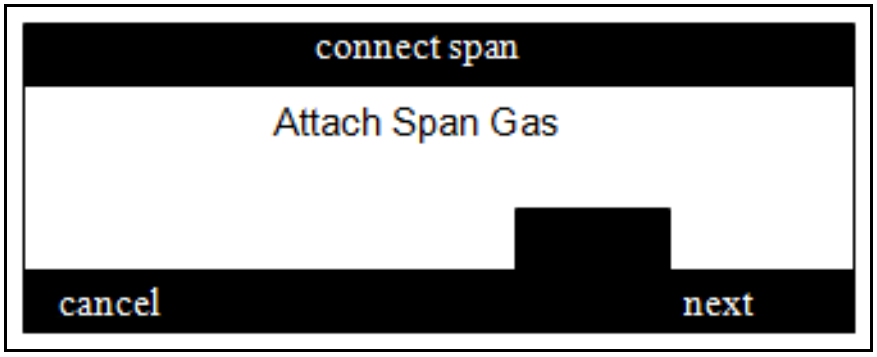
8 Connect the span gas supply (either the bag adapter filled with span gas, or directly from the span gas regulator) to the DataFID/MicroFID II inlet.

9 Press **next**.

10 Open the span gas supply.

11 Press **next**. (See Figure 3-66.)

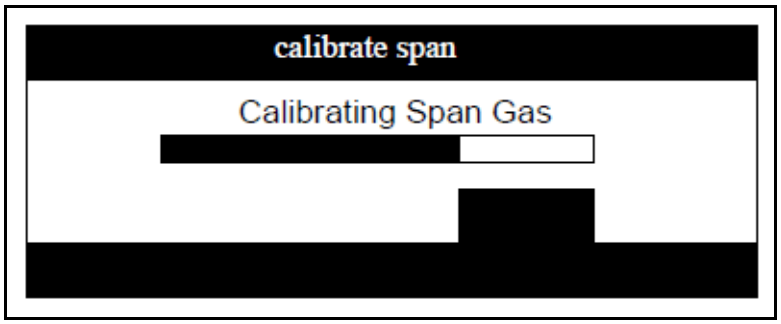
Figure 3-66 Connect span gas



12 DataFID/MicroFID II sets the sensitivity to the entered calibration span value. (See Figure 3-67.)

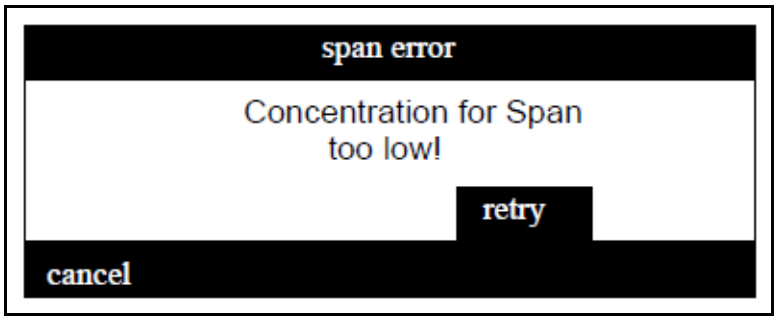
NOTE: Readings may fluctuate slightly as the gas bag empties. Do not allow DataFID/MicroFID II to evacuate the bag completely.

Figure 3-67 Calibrating span gas



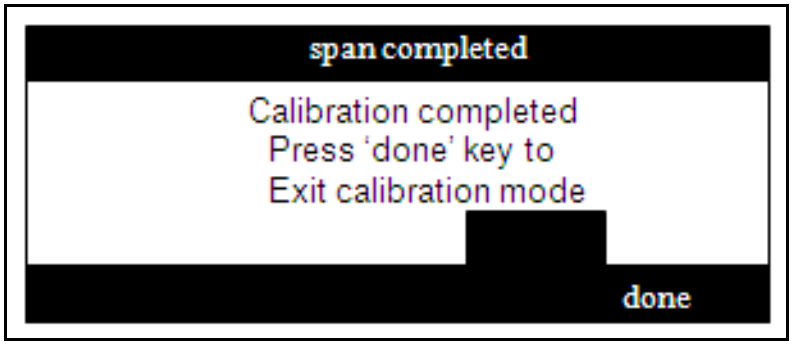
12a Should an error message appear, for example **Concentration for Span too low** (see Figure 3-68), press **retry** to start the calibration of span gas again. See Chapter 6, Troubleshooting to further investigate causes for errors.

Figure 3-68 Span gas error



13 When DataFID/MicroFID II has completed the span gas calibration, press **done**. (See Figure 3-69.)

Figure 3-69 Span completed



14 DataFID/MicroFID II is now calibrated and ready for use. Remove the span gas bag or regulator from the inlet.

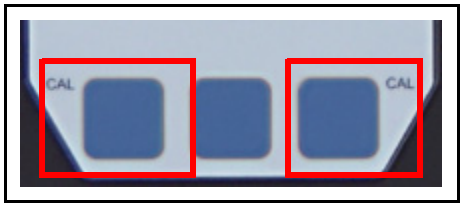
NOTE: To enter the run mode screen at any time, select **meas** and real-time data will appear.

3.9.3.2 Multi-Point Calibration

In multi-point calibration mode, DataFID/MicroFID II can calibrate up to five (5) calibration points and a zero point. Enter the concentrations of the desired number of calibration points sequentially, starting with the lowest concentration.

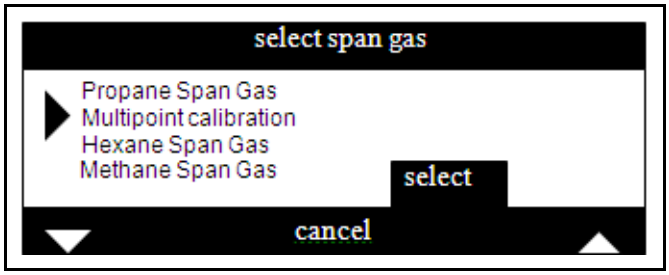
1 Simultaneously press the left and right blue soft keys. (See Figure 3-70.) The **Calibration Mode** screen is displayed.

Figure 3-70 Calibration buttons



2 On the **select span gas** screen (Figure 3-71), select **Multipoint Calibration**.

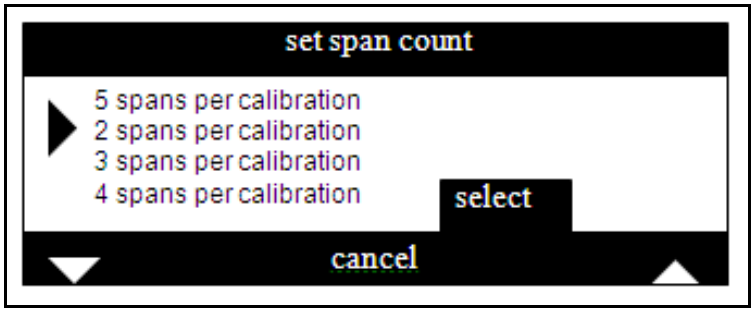
Figure 3-71 Select span gas



3 On the **set span count** menu (Figure 3-72), select the number of calibration points using the up or down arrow keys.

4 Press **select**. Two spans per calibration is shown in Figure 3-72.

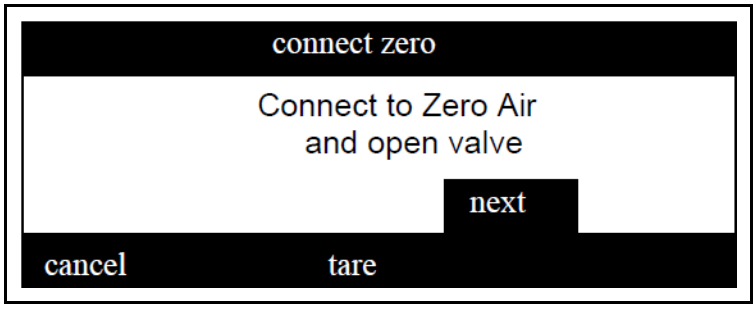
Figure 3-72 Set span count



5 Connect the supply of ultra zero air to the DataFID/MicroFID II inlet.

6 Press **next** to set the zero point for calibration. (See Figure 3-73.)

Figure 3-73 Connect ultra zero air



7 When using a gas bag with ultra zero air:

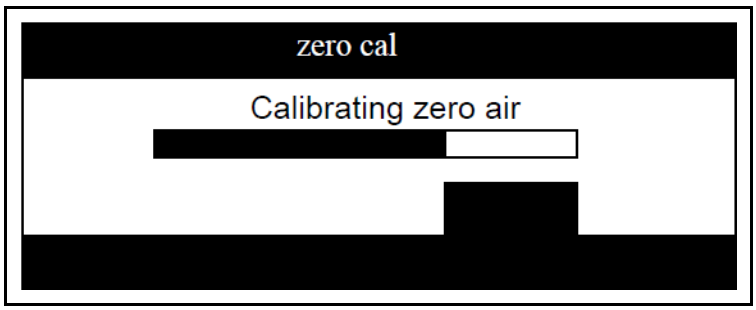
7a Connect the 1/8 in. to 3/16 in. gas bag adapter to the DataFID/MicroFID II inlet.

7b Open the bag.

7c Press **next**.

7d DataFID/MicroFID II sets the zero point using ultra zero air.

Figure 3-74 Calibrating ultra zero air



8 If using ambient air:

8a Connect the charcoal filter as shown in Section 1.8.3, Charcoal Filters, on page 1-13.

8b Press **next**.

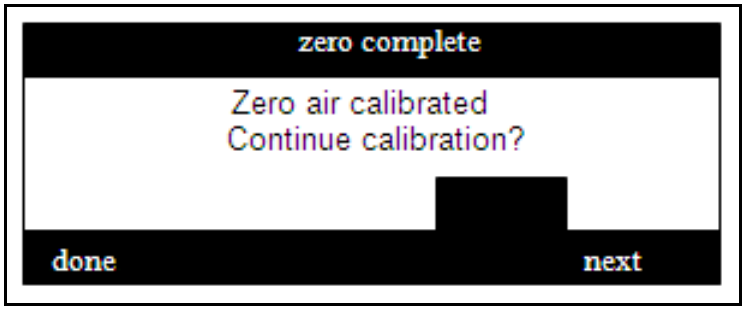
8c DataFID/MicroFID II will set the zero point using ambient air.

NOTE: The charcoal filter does not filter methane or ethane. If these compounds are present, use a gas bag containing ultra zero air.

9 Should an error message appear, for example, **Concentration for Zero air too high** (see Figure 3-63), press **retry** to start the zero point calibration again. See Chapter 6, Troubleshooting to further investigate causes for errors.

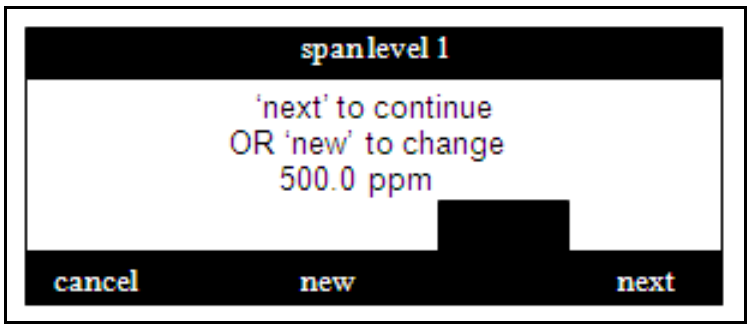
10 If only a zero calibration is required, press **done**.
If span calibrations are required, press **next**. (See Figure 3-75.)

Figure 3-75 Zero air calibration complete



11 For the first span level, the previously used calibration concentration will appear on the screen (Figure 3-76). If this is the first required concentration, press **next**. If it is not the desired value, press the **new** key and use the up, down, and forward arrows to enter in the desired value.

Figure 3-76 Span level 1



12 Attach the span gas to the DataFID/MicroFID II inlet and press **next** (Figure 3-77) to continue the calibration (Figure 3-78).

Figure 3-77 Attach span gas 1

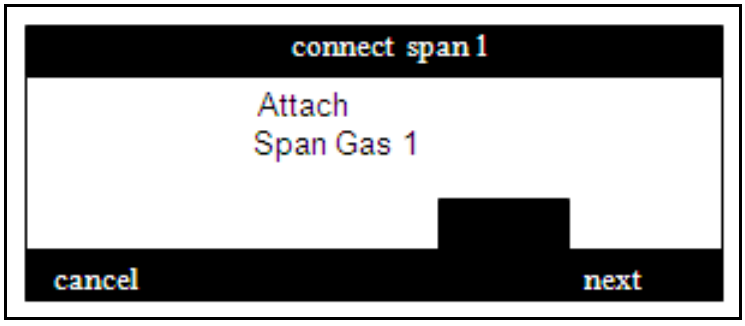
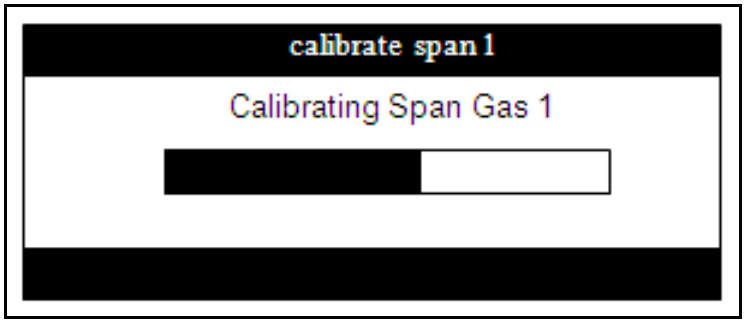


Figure 3-78 Calibrating span gas 1

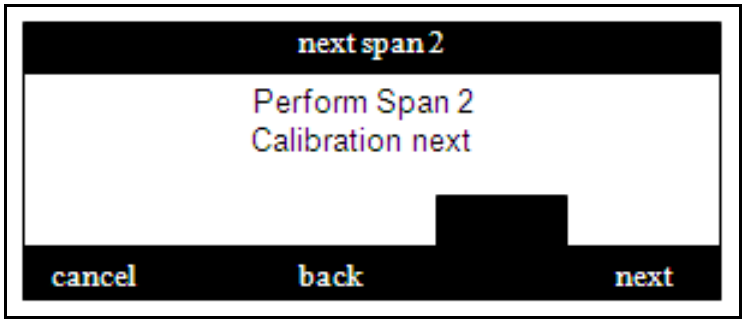


13 Should an error message appear, for example, **Concentration for Span gas too low** (see Figure 3-63), press **retry** to start the span gas calibration. (Refer to Figure 3-68.) See Chapter 6, Troubleshooting to further investigate causes for errors.

14 When first span gas has been successfully calibrated, a prompt is displayed to start the next calibration. (See Figure 3-79.)

NOTE: To go back to the first calibration step, press **back**. Otherwise, press **next** to continue to the next span gas.

Figure 3-79 Perform span 2

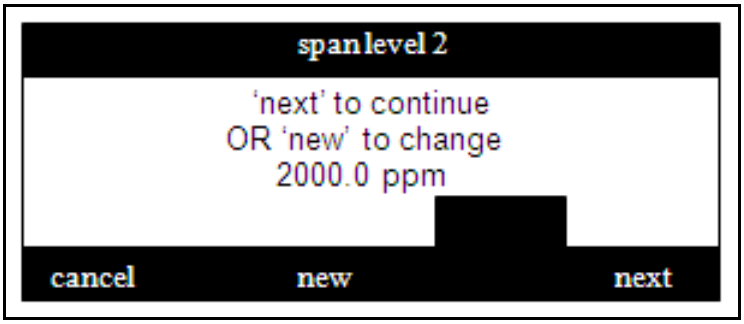


15 The previously used calibration concentration is displayed. (See Figure 3-80.)

15a If this is the first required concentration, press **next**.

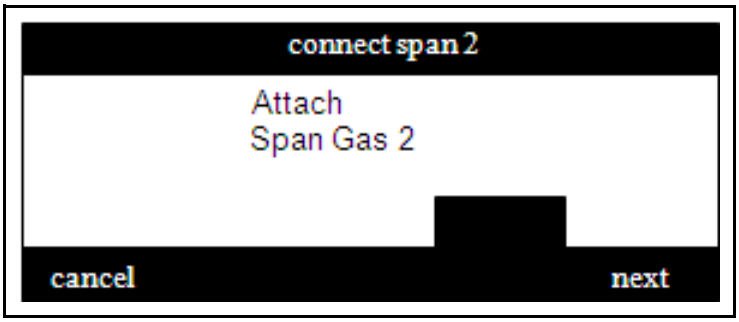
15b If it is not the desired value, press **new** and enter in the desired value.

Figure 3-80 Span level 2



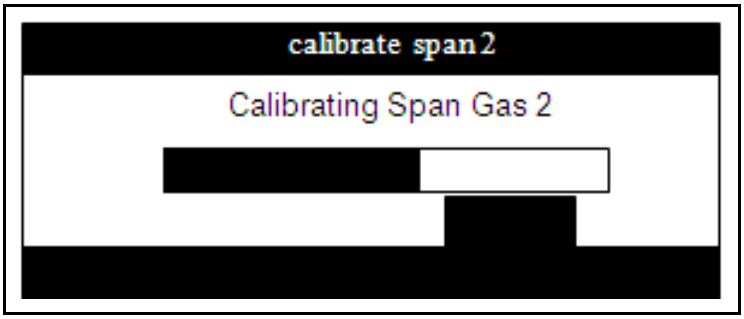
16 Attach the second span gas concentration to the DataFID/MicroFID II inlet (as directed in Figure 3-81) and press **next**.

Figure 3-81 Attach span gas 2



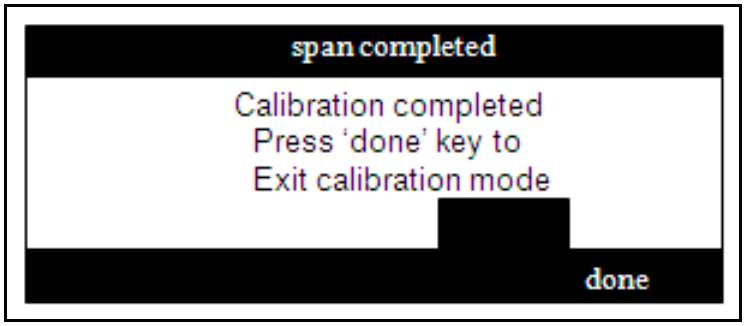
17 DataFID/MicroFID II will calibrate the second span gas. (See Figure 3-82.)

Figure 3-82 Calibrating span gas 2



18 After the second span gas is calibrated, press **done** to exit the calibration and return to measurement mode. (See Figure 3-83.)

Figure 3-83 Successful calibration



3.9.3.3 TARE Selection

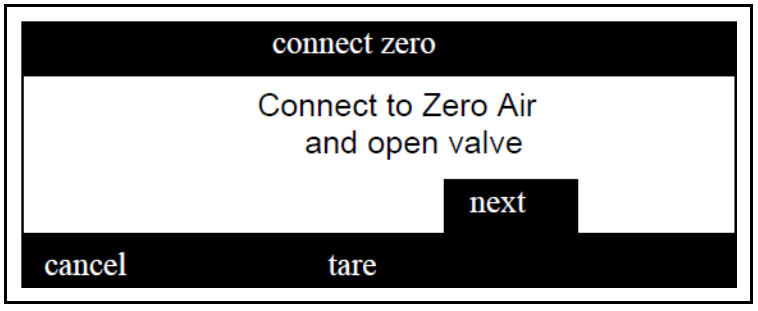
It is not unusual for the zero setting on DataFID/MicroFID II to drift below zero. To re-adjust the display to zero:

1 Connect to zero air supply (refer to section 3.9.2.1.2, Using Gas Bags- Ultra Zero Air, on page 3-39) or charcoal filter (refer to section 1.8.3, Charcoal Filters, on page 1-13).

2 Press **tare** (see Figure 3-84). DataFID/MicroFID II will zero the reading and display the **Main Menu**.

3 Perform a zero air calibration. (See section 3.9.3.1, Single Point Calibration, on page 3-44 or section 3.9.3.2, Multi-Point Calibration, on page 3-49.)

Figure 3-84 TARE

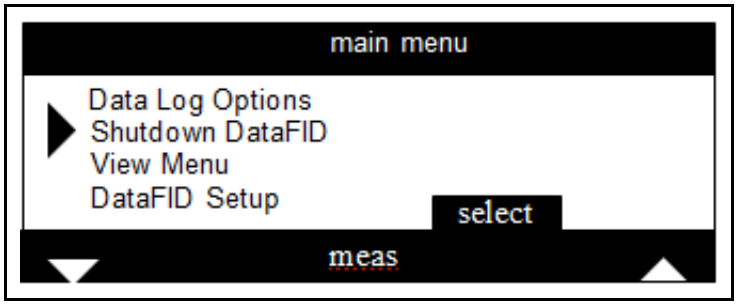


3.10 Shutdown DataFID/MicroFID II

To properly shut down DataFID/MicroFID II, use the **Shutdown DataFID/ MicroFID II** menu selection to power down the unit.

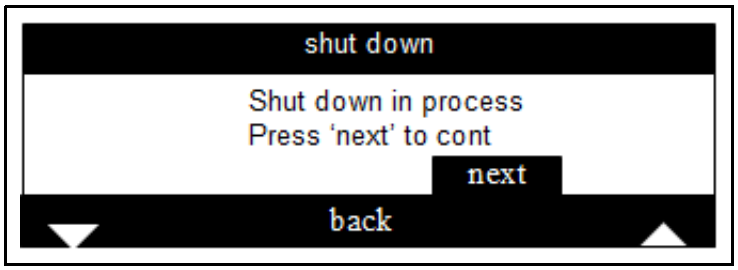
1 Using the up or down softkeys, select **Shutdown DataFID/MicroFID II** from the main menu. (See Figure 3-85.)

Figure 3-85 Shutdown DataFID/MicroFID II



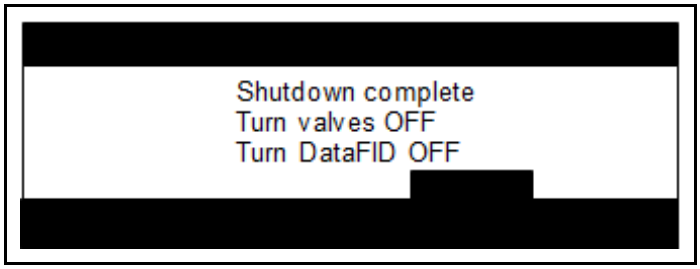
2 Select **next**. (See Figure 3-86.)

Figure 3-86 Shut down in process



3 At the prompt (see Figure 3-87), switch DataFID/MicroFID II off using the On/Off switch.

Figure 3-87 Shutdown complete



4 Close the hydrogen fuel cylinder valve to stop the hydrogen flow.

Chapter 4
Wireless Communication

Bluetooth capability in DataFID/MicroFID II enables wireless communication with a Bluetooth enabled handheld device or computer. Both DataFID/MicroFID II and the Bluetooth device must be paired and active prior to data transfer.

NOTE: Bluetooth communication must be re-established each time DataFID/MicroFID II or the pairing device or computer is powered off.

4.1 Wireless Communication Range

Bluetooth devices have a transmission range of approximately 10 m (30 ft.) between the sending and receiving device (line of sight).

NOTE: Bluetooth signal transmission may be blocked or dispersed by solid objects such as steel doors or floors.

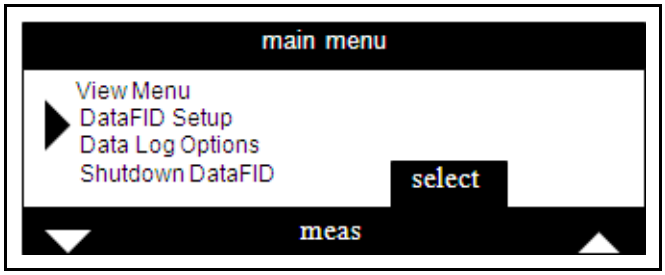
4.2 Enabling Bluetooth Communication

The Bluetooth signal from DataFID/MicroFID II transmits when power is on. Perform the following procedure to enable Bluetooth data transmission on a DataFID/MicroFID II.

NOTE: If the Bluetooth connection is turned off, it will automatically turn back on after the unit has been restarted.

1. Turn on DataFID/MicroFID II.
2. In the main menu, select **DataFID Setup** or **MicroFID II Setup** and press **select**. (See Figure 4-1.)

Figure 4-1 DataFID setup



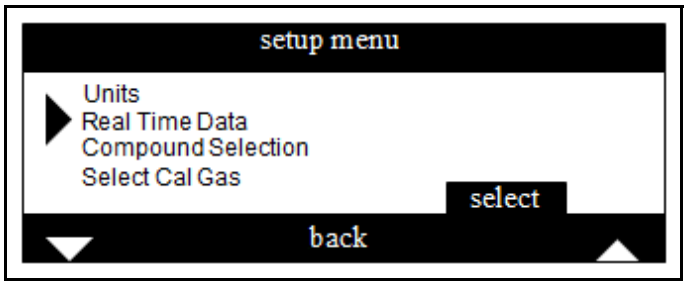
3 Enter the four-digit password when prompted, then press **done**. (See Figure 4-2.)

NOTE: The factory default password is **1111**.

Figure 4-2 Enter password

4 Select **Real Time Data** then press **select**. (See Figure 4-3.)

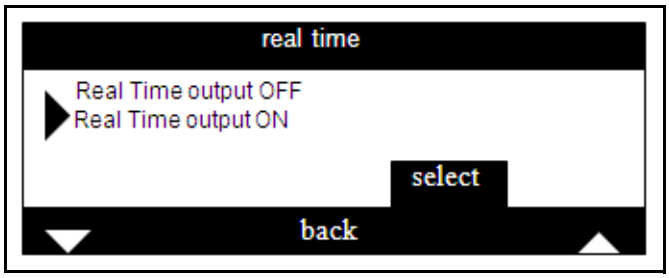
Figure 4-3 Setup menu



5 Select **Real Time output ON**. (See Figure 4-4.) DataFID/MicroFID II will transmit data via Bluetooth.

NOTE: The DataFID/MicroFID II Bluetooth is set to **Real Time output ON** by default.

Figure 4-4 Real time output on



6 Press **back** twice to return to the **main menu**.

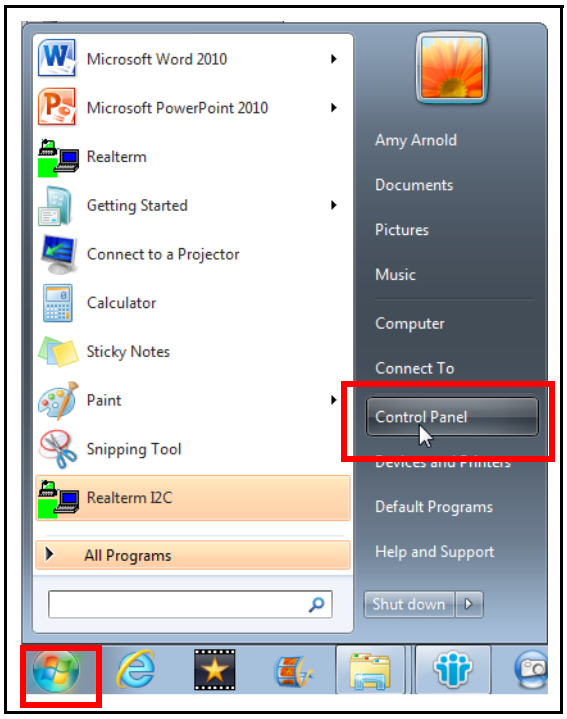
4.3 Pairing

When pairing two Bluetooth devices, one device will search and connect to the other device through its Bluetooth serial number, which is unique to each Bluetooth device.

Perform the following procedure to pair DataFID/MicroFID II to a computer running Windows 7 operating system:

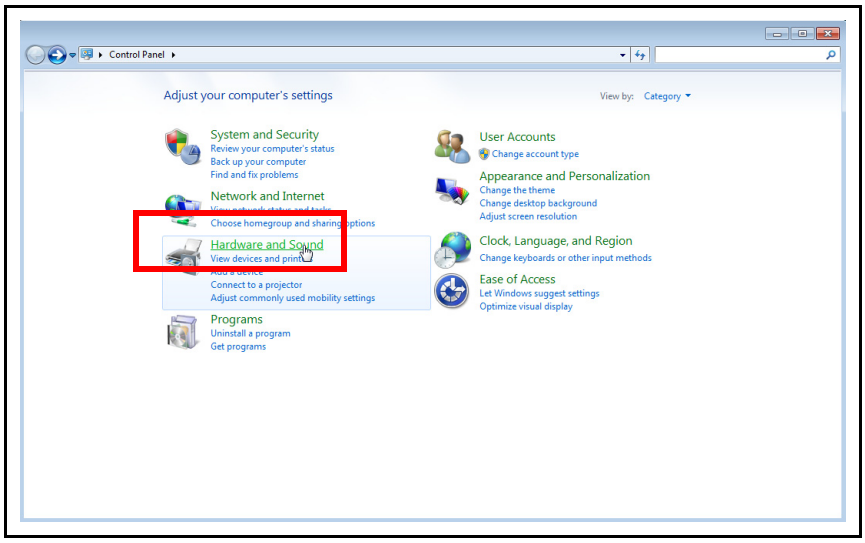
1. Ensure the DataFID/MicroFID II Bluetooth is enabled. (See section 4.2, Enabling Bluetooth Communication, on page 4-1.)
2. On the computer, click the **Start** button, and then, on the **Start** menu, click **Control Panel**. (See Figure 4-5.)

Figure 4-5 Opening control panel



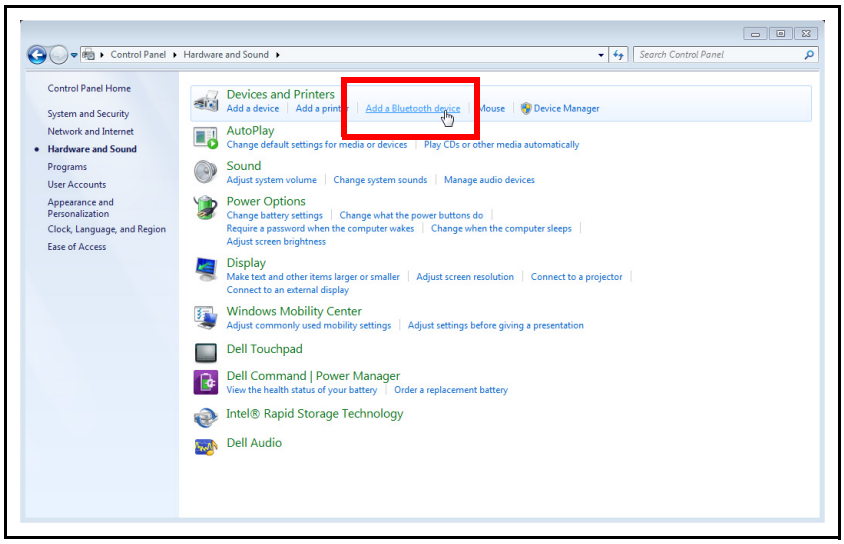
3 Click **Hardware and Sound**. (See Figure 4-6.)

Figure 4-6 Hardware and sound



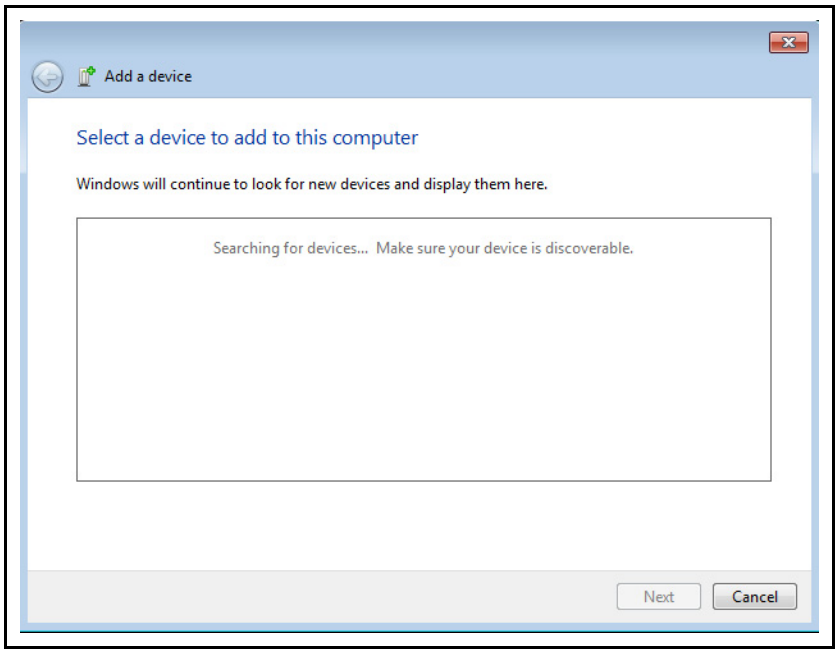
4 Click **Add a Bluetooth Device**. (See Figure 4-7.)

Figure 4-7 Add a Bluetooth device



5 The computer will search for Bluetooth devices. (See Figure 4-8.)

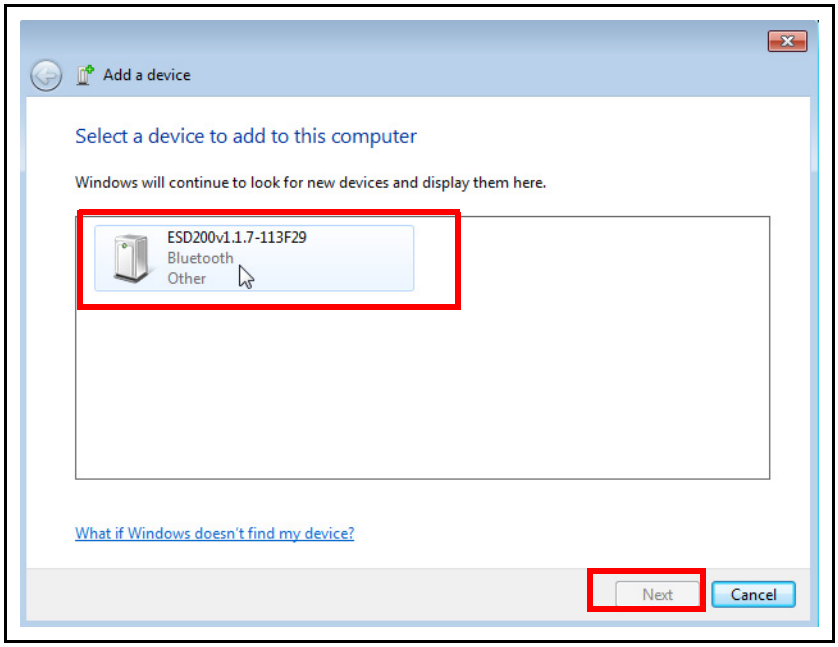
Figure 4-8 Searching for devices



6 When a nearby DataFID/MicroFID II is found on the computer, its unique Bluetooth module number will appear in the search list. Click on the device, then click **Next**. (See Figure 4-9.)

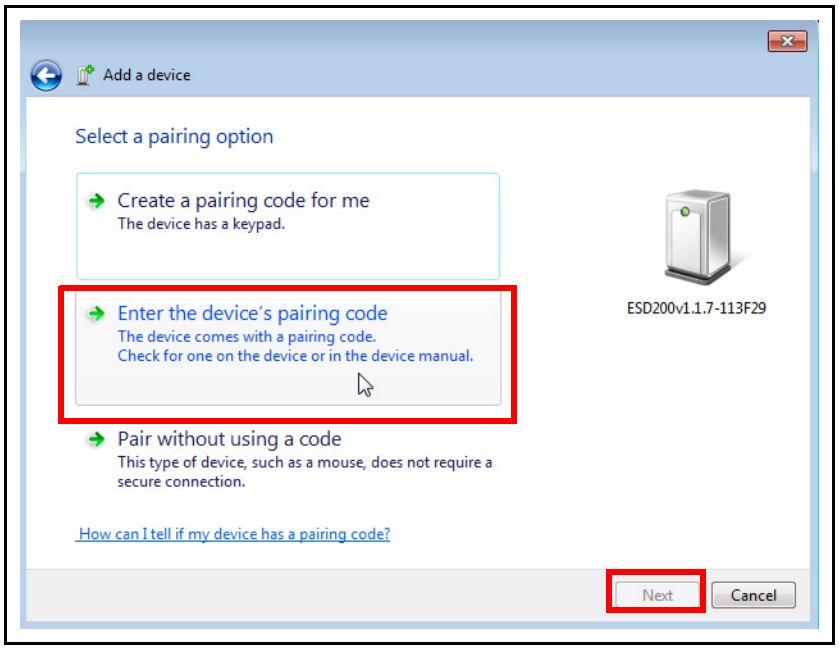
NOTE: The unique Bluetooth module number is not the instrument serial number.

Figure 4-9 Select DataFID/MicroFID II



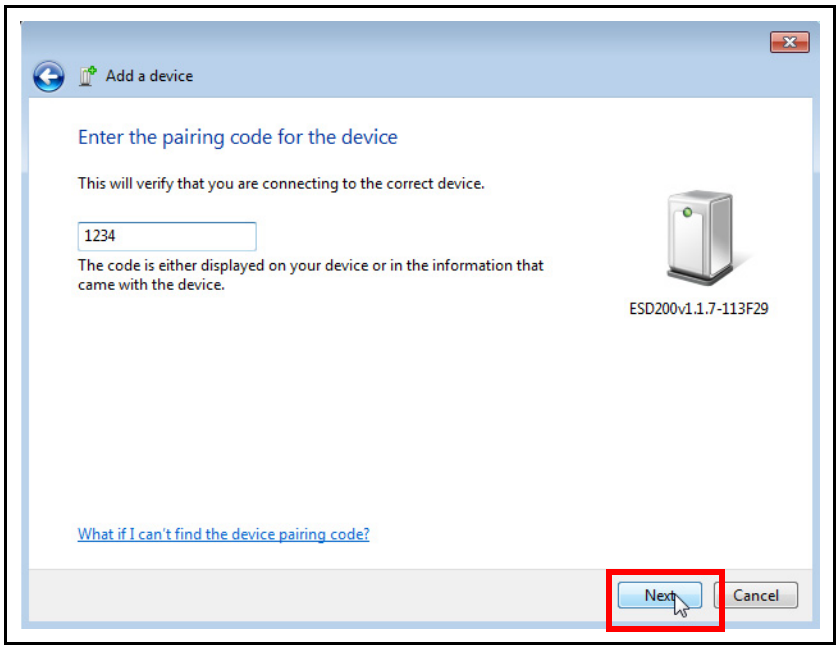
7 Click **Enter the device's pairing code**, and then click **Next**. (See Figure 4-10.)

Figure 4-10 Select a pairing option



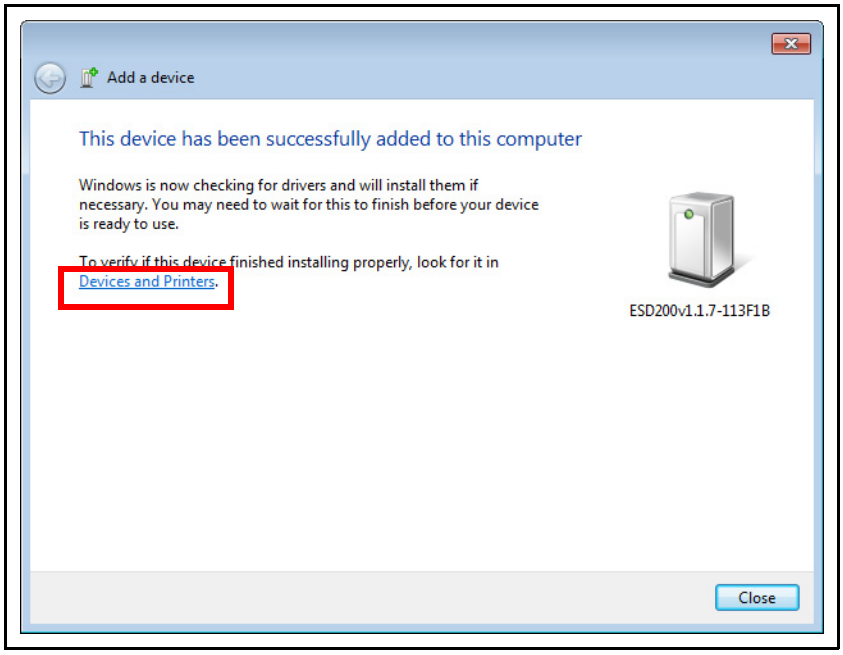
8 Enter the pairing code for DataFID/MicroFID II, the default is **1234**, click **Next**. (See Figure 4-11.)

Figure 4-11 Enter pairing code



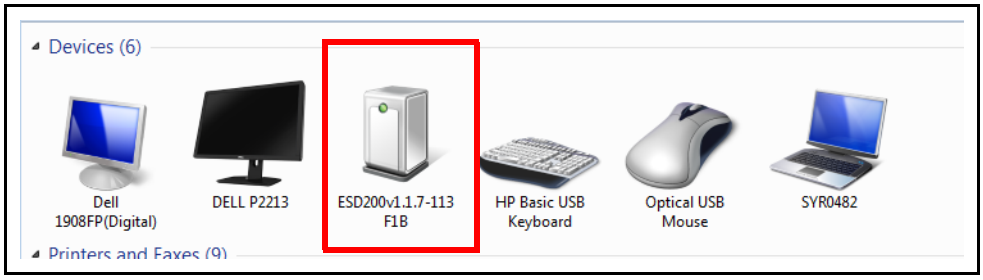
9 The device will be successfully added when the message in Figure 4-12 appears. Click **Devices and Printers** to verify DataFID/MicroFID II installation.

Figure 4-12 Successfully added DataFID/MicroFID II



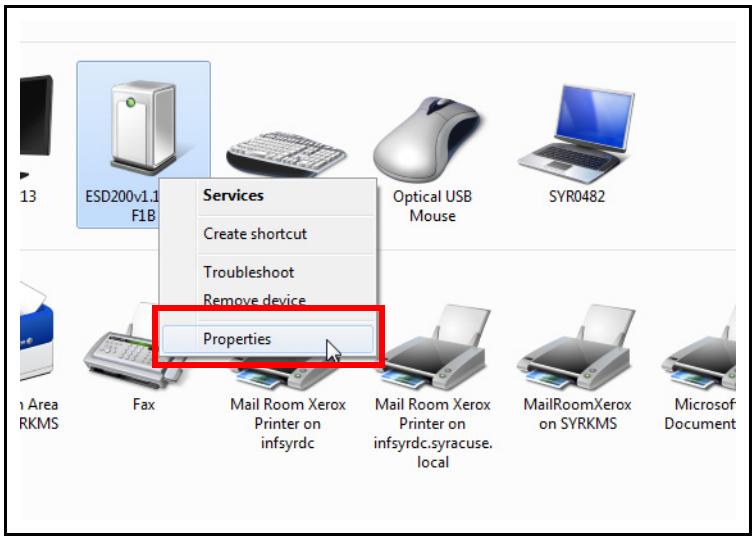
10 DataFID/MicroFID II will appear under **Devices**. (See Figure 4-13.)

Figure 4-13 DataFID/MicroFID II in Devices



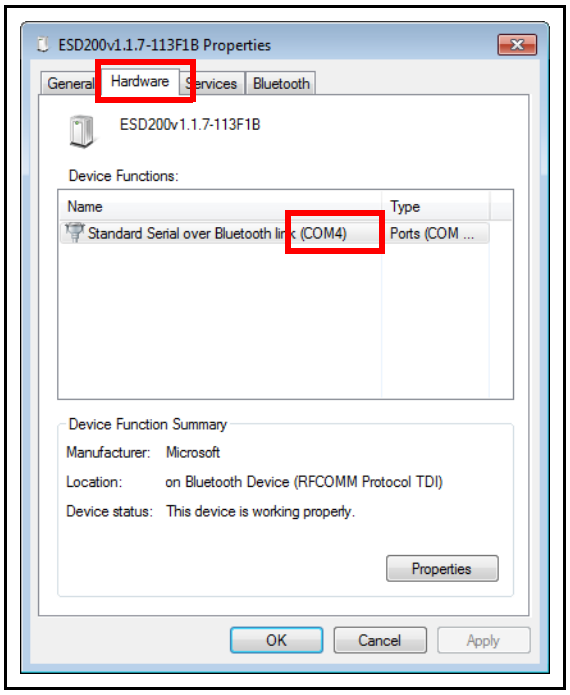
11 To locate the communication (COM) port the DataFID/MicroFID II is connected to, right click on the DataFID/MicroFID II device icon and click **Properties**. (See Figure 4-14.)

Figure 4-14 Right-click on DataFID/MicroFID II



12 Select the **Hardware** tab. The COM port will be listed under **Device Functions**. For DataFID/MicroFID II, in this example, the COM port is 4 (COM4). (See Figure 4-15.)

Figure 4-15 Select Hardware



Chapter 5
Routine Maintenance

DataFID/MicroFID II is an accurate and robust instrument when properly maintained. Follow all recommendations and perform the routine maintenance procedures in this chapter for optimum performance of DataFID/MicroFID II.

5.1 Battery Charging

The DataFID/MicroFID II battery pack must be charged for overnight before its first use. Afterwards a full recharge will take about four (4) hours. A fully charged battery powers DataFID/MicroFID II for approximately 13 hours of continuous use. Refer to section 2.2, Using the Battery Charger, on page 2-12.

When **Low Battery Error!** is displayed, the battery pack requires charging. DataFID/MicroFID II will continue to run for 2-3 minutes before automatically turning off.

WARNING

Do not connect the battery charger to DataFID/MicroFID II in a potentially hazardous environment.

CAUTION

Do not leave battery packs uncharged for an extended period of time. Doing so will result in damage to the battery packs.

The charger automatically charges at a high charge rate until the battery pack is fully charged. It then maintains the full charge indefinitely, with a low continuous charge rate.

5.2 Maintenance of the Flame Ionization Detector

The flame ionization detector in DataFID/MicroFID II is not field replaceable. If a detector failure or malfunction is suspected, please contact INFICON Service.

5.3 Replacing Inlet Filter

A sample inlet Fluoropore filter (PN MX396015) is installed under the inlet filter housing to remove dust particulates and water droplets from the gas sample to prevent detector contamination. The inlet flow rate may decrease as dust and water droplets accumulate on the filter, resulting in loss of sensitivity.

CAUTION

Aspirating liquids into DataFID/MicroFID II will cause damage to the sample pathway.

Replace the inlet filter on a daily basis, or more frequently if DataFID/MicroFID II is used in a dusty or wet environment. The filter must be replaced if DataFID/MicroFID II has been exposed to liquids or water. The pump will sound labored when the filter requires replacement.

WARNING

Do not replace the inlet filter in a potentially hazardous environment.

Perform the following procedure to replace an inlet filter:

1. Turn DataFID/MicroFID II off. Refer to section 3.10, Shutdown DataFID/MicroFID II, on page 3-55.
2. Turn the hydrogen fuel cylinder to the **CLOSED** position.
3. Unscrew the inlet filter housing from the inlet. (See Figure 5-1.)

Figure 5-1 Unscrew the inlet filter housing

4 Use gloves or forceps to remove the old Teflon/polypropylene inlet filter, and replace with a new Teflon/polypropylene inlet filter (PN MX396015). Do not handle inlet filter with bare hands. To install, place the inlet filter in the filter housing with the polypropylene mesh side facing outward in the filter housing and the Teflon side facing DataFID/MicroFID II. (See Figure 5-2.)

Figure 5-2 Replacing the inlet filter

NOTE: Each inlet filter is separated by a piece of blue paper. Discard the blue paper before installing the inlet filter in DataFID/MicroFID II.

5 Inspect the inlet frit for discoloration and blockages. (See Figure 5-3.)

Figure 5-3 Inlet frit

6 Replace the inlet filter housing. (Refer to Figure 5-1.)

7 Calibrate DataFID/MicroFID II. (Refer to section 3.9, DataFID/MicroFID II Calibration, on page 3-37.)

CAUTION

Operating DataFID/MicroFID II without an inlet filter can result in contamination of the system.

5.4 Replacing the Exhaust Frit Filter and Housing

The exhaust frit filter and housing (PN A3201116) can become clogged with fine carbon ash produced from burning vapors and gases which exit from the detector.

It may also be clogged by excess humidity generated in the flame ionization process. Clogging of the exhaust frit filter and housing will significantly reduce the sample flow through the instrument causing a flame out or flame ignition difficulty.

Inspect the exhaust frit filter and housing regularly or when there is difficulty in ignition or maintaining the flame. If it is found to be clogged, replace it with a new exhaust frit filter and housing. If sampling in a hot and humid environment, or when sampling high concentrations of organic vapors and gases, the exhaust frit filter and housing may need to changed more often. If DataFID/MicroFID II is used infrequently, the filter may only need to be changed once every 3 to 6 months.

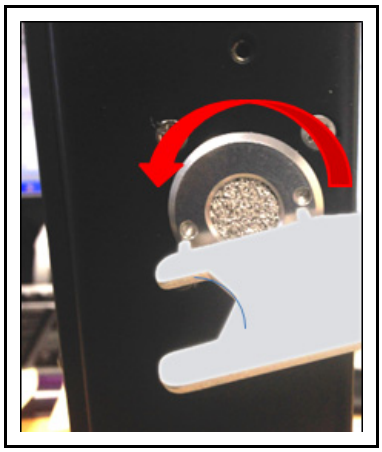
Perform the following procedure to replace an exhaust frit filter:

1. Turn DataFID/MicroFID II off. Refer to section 3.10, Shutdown DataFID/MicroFID II, on page 3-55.
2. Turn the hydrogen fuel cylinder to **CLOSED** position**.**
3. Locate the exhaust on the right-hand side of DataFID/MicroFID II. Using a Philips screwdriver, remove the exhaust cover. (See Figure 5-4.)

Figure 5-4 Remove exhaust cover

4 Use the prongs on the multi-tool (PN TL201199-01) to unscrew the exhaust frit filter and housing (PN A3201116) in a counter-clockwise direction. (See Figure 5-5.)

Figure 5-5 Exhaust



5 Remove the used exhaust frit filter and housing from DataFID/MicroFID II.

6 Insert a new exhaust frit filter and housing (see Figure 5-6), and using the multi-tool, screw clockwise until tight. (See Figure 5-7.)

Figure 5-6 New exhaust frit filter and housing

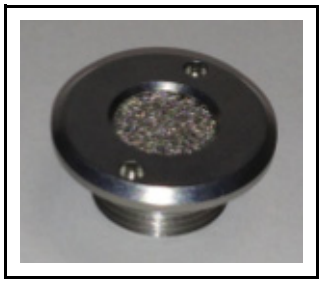
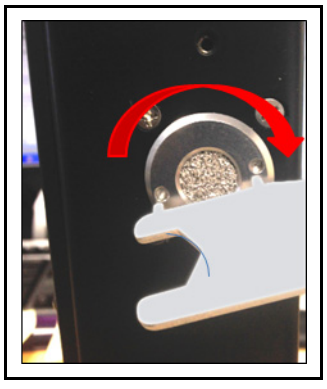


Figure 5-7 Replace exhaust frit filter and housing



7 Replace the exhaust cover. (Refer to Figure 5-4.)

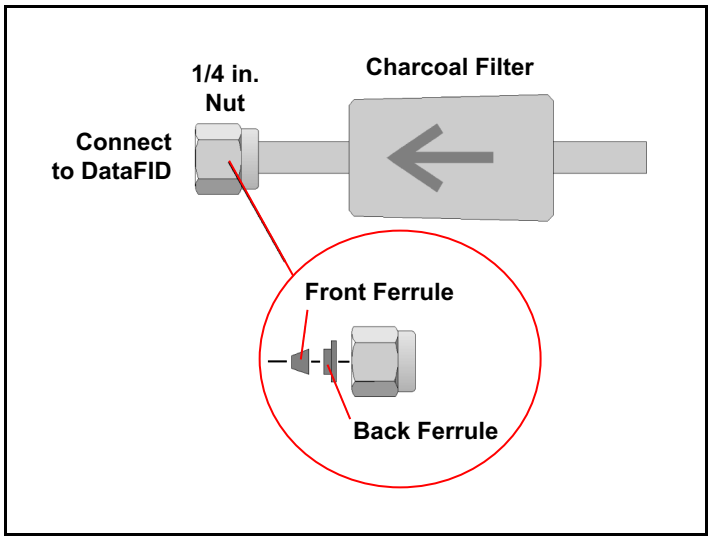
5.5 Connecting a Charcoal Filter

During the zero point calibration, a charcoal filter can be attached to the inlet filter housing to remove hydrocarbons from the sample stream.

NOTE: Make sure to remove the charcoal filter before calibration with the span gas.

1 The charcoal filter is supplied with a 1/4 in. stainless steel nut and Teflon ferrules. Assemble the nut, ferrules, and the charcoal filter. (See Figure 5-8.)

Figure 5-8 Connecting a charcoal filter



2 Connect the charcoal filter assembly to DataFID/MicroFID II inlet. (See Figure 5-8.)

3 Finger-tighten the nut onto the DataFID/MicroFID II inlet, then tighten an additional 1/4 turn with an appropriately sized open-ended wrench.

CAUTION

Over-tightening the nut can damage the ferrules, which can result in leaks.

NOTE: If the charcoal filter is not secure, the DataFID/MicroFID II inlet may not be inserted far enough into the nut.

5.5.1 To Replace the Charcoal Filter

Replace the filter when the hydrocarbon background increases.

1. Loosen the 1/4 in. nut on the charcoal filter that is attached to the DataFID/MicroFID II inlet.
2. Remove the consumed filter.
3. Insert the new charcoal filter into the nut attached to the DataFID/MicroFID II inlet. (See Figure 5-8.)
4. Finger-tighten the nut onto the DataFID/MicroFID II inlet, then tighten an additional 1/4 turn with an appropriately sized open-ended wrench. Do not over-tighten.

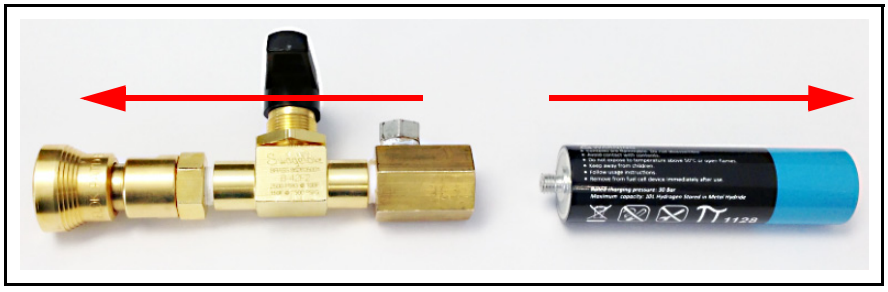
NOTE: When the charcoal filter is not in use, seal it in the plastic bag and store it in a clean, dry place.

5.6 Replacing the Hydrostik Adapter Silicone Seal

Replace the seal when it becomes damaged.

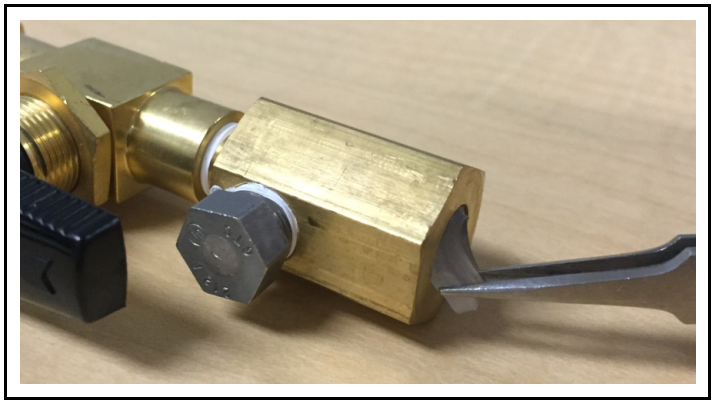
1. Unscrew and remove the Hydrostik hydrogen fuel cylinder from the Hydrostik adapter. (See Figure 5-9.)

Figure 5-9 Remove the Hydrostik hydrogen fuel cylinder from the adapter



2. Remove the damaged seal from the Hydrostik adapter using forceps or pliers and discard. (See Figure 5-10.)

Figure 5-10 Remove damaged seal



3 With the raised side facing outward (see Figure 5-11 and Figure 5-12), insert the new seal. Be careful not to damage the seal when inserting it.

Figure 5-11 Hydrostik adapter seal position

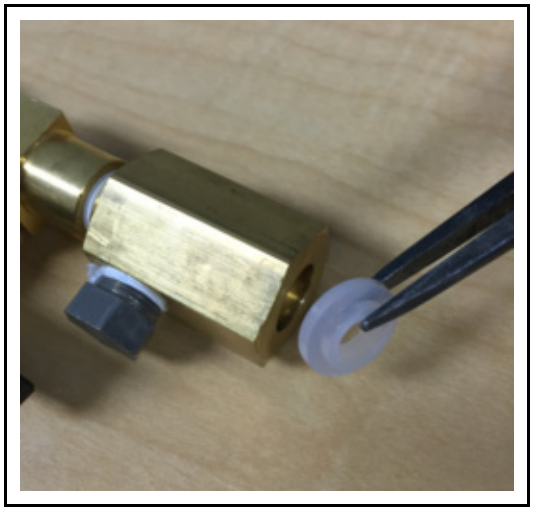
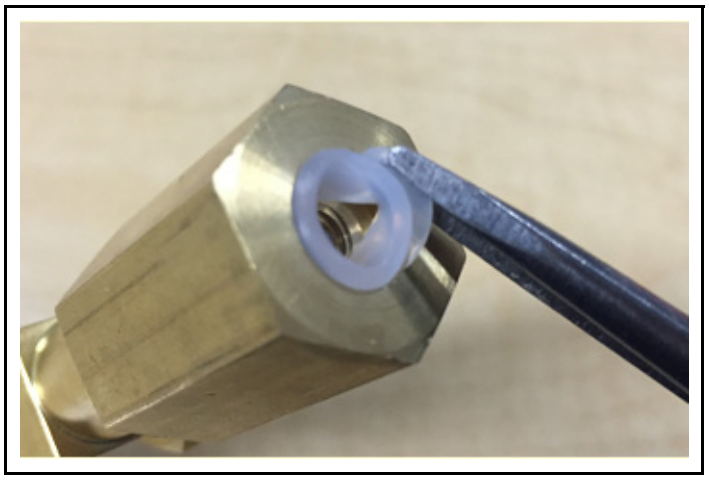


Figure 5-12 Insert Hydrostik adapter seal



4 Ensure the back portion of the seal is fully seated underneath the lip in the adapter. When inserted properly, the raised portion will be slightly higher than the adapter opening. (See Figure 5-13.)

Figure 5-13 Fully inserted Hydrostik adapter seal

5.7 Keeping DataFID/MicroFID II at Optimal Operating Condition

The maintenance schedule in Table 5-1 shows basic performance maintenance and the frequency in which it should be performed.

Table 5-1 Maintenance schedule

Item/Operation	Frequency/Usage
Battery Pack Charging	Daily, or before each use. Refer to section 2.2, Using the Battery Charger for more information.
Hydrogen Cylinder Filling	Daily, or before each use. See Table 2-2 on page 2-20 for filling times.
Inlet Filter Replacement	When dirty or once per day
Exhaust Frit Filter Replacement	◆ Monthly; more frequently if clogged or used in a wet or dusty environment or when sampling high concentrations ◆ Every 3-6 months for infrequent use
Calibration	◆ Daily, in similar conditions as the measurements will be taken ◆ Monthly, record readings. Return instrument to INFICON Service if an inaccuracy occurs consistently over 20%
ProCare™ Maintenance	Annually to ensure optimal unit performance. See section 5.7.3, Annual Service Evaluation for more information.

5.7.1 Daily Calibration

DataFID/MicroFID II should be calibrated daily, before each use.

DataFID/MicroFID II should be calibrated at a temperature similar to that at which sampling will occur to minimize the effects of temperature-induced vapor pressure changes. (Refer to section 3.9, DataFID/MicroFID II Calibration, on page 3-37.)

5.7.2 Monthly Quality Check

A quality check should be performed once a month. Prior to sampling, calibrate DataFID/MicroFID II. (Refer to section 3.9, DataFID/MicroFID II Calibration, on page 3-37.)
After the instrument is calibrated, a quality check is performed using a standard gas of a known concentration. At the end of the sampling period, this same standard gas is measured. If the readings are within 20% of one another, DataFID/MicroFID II is operating properly. If the difference in the readings are greater than 20%, contact INFICON Service.

5.7.3 Annual Service Evaluation

In order to maintain optimum measurement performance, INFICON recommends the ProCare™ Annual Maintenance service which includes unit inspection, filter replacement, software upgrade, and calibration.

5.8 Waste Electrical and Electronic Equipment (WEEE)

EU regulations for the disposal of electric and electronic appliances that have been defined in the EU Directive 2002/96/EC and in national laws became effective in August 2005 must be adhered to when disposing of DataFID/MicroFID II.

DataFID/MicroFID II is not registered for household usage and cannot be disposed of as a common household appliance. Follow local governing body regulations regarding the proper disposal of electronic equipment.

Chapter 6
Troubleshooting

6.1 General Information

This chapter provides an overview of potential issues when operating DataFID/MicroFID II.

WARNING

Do not perform maintenance on DataFID/MicroFID II in a potentially hazardous environment.

6.1.1 Troubleshooting Symptom - Cause - Remedy Table

Table 6-1 provides a list of common symptoms, their cause, and remedy.

Table 6-1 Symptom - Cause - Remedy when running a DataFID/MicroFID II

Symptom	Cause	Remedy
Flame will not ignite.	Hydrogen fuel is insufficient.	Ensure the supply valve is open.
		Refill the hydrogen fuel cylinder. (Refer to section 2.3, Filling the Hydrogen Fuel Cylinder, on page 2-16.)
	Battery voltage is low.	Recharge the battery. (Refer to section 2.2, Using the Battery Charger, on page 2-12.)
	Oxygen supply in the sample is deficient.	Ensure there is an adequate supply of oxygen. A minimum of 17% oxygen is required to ignite the hydrogen flame. The oxygen is supplied from the sample as it is drawn in by the pump. A minimum of 10% oxygen is required to maintain the hydrogen flame.
		High altitude sampling. Contact INFICON if working in areas of high altitude (below 2134 m (7000 ft.)) for readjustment of hydrogen flow rate. **NOTE:** At altitudes of 2133 m (7000 ft.) or higher, DataFID/MicroFID II will not ignite, nor maintain a flame, due to the decrease in partial pressure of oxygen.

Table 6-1 Symptom - Cause - Remedy when running a DataFID/MicroFID II (continued)

Symptom	Cause	Remedy
Flame will not ignite (cont).	Exhaust frit filter and housing is clogged.	Ensure DataFID/MicroFID II is operated within the temperature range of 0 to 50°C (32 to 122°F). At low temperatures, water vapor, a by-product of the hydrogen flame, may condense at the exhaust frit filter and housing.
		Replace the exhaust frit filter. (Refer to Section 5.4, Replacing the Exhaust Frit Filter and Housing, on page 5-4.)
	Inlet filter is plugged.	Replace inlet filter. (Refer to Section 5.3, Replacing Inlet Filter, on page 5-2.)
	Sample line is blocked.	Ensure the sample line is not obstructed.
	Glow plug may be faulty.	Ensure the glow plug is working properly. Remove the exhaust frit, start sampling and observe the glow plug. The glow plug is faulty if it does not glow orange, and will need to be changed. Contact INFICON for replacement.
	DataFID/MicroFID II has been turn off for more than 3 months.	Remove any moisture that has built up in the detector chamber during storage by purging DataFID/MicroFID II with dry air. To purge, put the hydrogen fuel cylinder on/off valve in CLOSED position (refer to Figure 2-42 on page 2-31), then turn the pump on. (Refer to section 3.8.1, Pump, on page 3-29.)

Table 6-1 Symptom - Cause - Remedy when running a DataFID/MicroFID II (continued)

Symptom	Cause	Remedy
Flame extinguished.	Hydrogen fuel is insufficient.	Ensure the supply valve is open.
		Refill the hydrogen fuel cylinder. (Refer to section 2.3, Filling the Hydrogen Fuel Cylinder, on page 2-16.)
	Oxygen supply in the sample is deficient.	Ensure there is an adequate supply of oxygen. A minimum of 17% oxygen is required to ignite the hydrogen flame. The oxygen is supplied from the sample as it is drawn in by the pump. A minimum of 10% oxygen is required to maintain the hydrogen flame.
		Move to a location where there is an adequate supply of oxygen and restart the flame. Sampling in enclosed or confined spaces where vapors and gases cannot escape can result in an inadequate oxygen supply. Watch for indications of increased flame intensity such as erratic readings or sudden high concentrations followed by a flame out.
	High concentrations of flammable gases (gases within their flammable range) are present.	Move to a location where there is an adequate supply of air and restart the flame. High concentrations of flammable gases can act as an additional fuel source and cause the flame intensity to increase beyond the capability of the detector, which will result in a flame out. Methane concentrations above 5.2% (52,000 ppm) will cause a flame out.
	Exhaust frit filter is clogged.	Replace the exhaust frit filter. Refer to Section 5.4, Replacing the Exhaust Frit Filter and Housing, on page 5-4.
		Ensure DataFID/MicroFID II is operating within the temperature range of 0–50°C (32–122°F). At low temperatures, water vapor, a by-product of the hydrogen flame, may condense at the exhaust frit filter and blockthe sample flow causing flame out.
	Sample line is blocked.	Ensure sample flowing through the sample line is not obstructed.
	Inlet filter is plugged.	Replace the inlet filter. (Refer to Section 5.3, Replacing Inlet Filter, on page 5-2.)
	Calibration gas cylinder is closed.	Open the calibration gas cylinder before using it to calibrate the instrument.

Table 6-1 Symptom - Cause - Remedy when running a DataFID/MicroFID II (continued)

Symptom	Cause	Remedy
Signal from zero air is too high.	Contamination of sample line or fittings before the detector.	Clean or replace the sample line or the inlet filter. (Refer to Section 5.3, Replacing Inlet Filter, on page 5-2.)
	Calibration gas was used instead of zero air.	Ensure zero air is being used.
	Ambient air used as zero air contains high VOC levels.	Use a charcoal filter to remove VOC contaminants in ambient air or a supply of commercial zero grade air. Refer to section 5.5, Connecting a Charcoal Filter, on page 5-6 for how to install a charcoal filter.
	Hydrogen fuel supply is contaminated.	Replace the hydrogen cylinder and DataFID/MicroFID II hydrogen fuel cylinder. Hydrogen may react with the carbon in the steel inside the supply cylinder to produce methane. This will only occur if the cylinder is in poor condition and if the hydrogen has a high moisture content.
Signal from span gas is too low.	Span gas and zero air are switched.	Ensure span gas is used to calibrate DataFID/MicroFID II.
		Ensure the span gas is within its expiration date.
No instrument response detected when compounds are known to be present	DataFID/MicroFID II has not been calibrated properly.	Ensure calibration was performed properly (outlined in Section 3.9 on page 3-37).
	Hydrogen fuel supply is contaminated.	Ensure the hydrogen supply is ultra-high purity, 99.999% pure. Refill the hydrogen fuel cylinder with the clean hydrogen supply.
Date and time settings are not retained.	DataFID/MicroFID II has not been used for 3 months or more.	Ensure the battery is charged. (Refer to section 2.2, Using the Battery Charger, on page 2-12.)

Table 6-1 Symptom - Cause - Remedy when running a DataFID/MicroFID II (continued)

Symptom	Cause	Remedy
Cannot fill the hydrogen fuel cylinder.	The hydrogen supply cylinder has insufficient pressure. The internal cylinder can only be filled to a pressure of less than or equal to the cylinder pressure.	Check the gauge reading on the hydrogen filling station, which indicates the gas pressure in the hydrogen supply cylinder. If the gauge reads below 2,758 kPa (400 psi), the cylinder needs to be replaced.
	There is a problem with the hydrogen filling station.	Contact INFICON.
 **WARNING** **Do not modify or disassemble the hydrogen filling station!**		
DataFID/MicroFID II displays Over.	Rapid change in signal level. The detector electronics have been momentarily saturated.	Wait a few seconds to return to Ready.
	The detector has become saturated.	Move DataFID/MicroFID II to a location where it can sample clean ambient air. Sample zero air until the reading stabilizes around 0.
Display is blank	Battery pack is critically low.	Recharge the battery pack. Refer to section 2.2, Using the Battery Charger, on page 2-12.
Negative reading is displayed (for units with firmware version 4.2 or higher).	Baseline has shifted below zero.	DataFID/MicroFID II needs to be re-calibrated. See Section 3.9, DataFID/MicroFID II Calibration, on page 3-37.
High background when running the DataFID/MicroFID II prior to calibration.	Hydrocarbons have built up from the unit being stored.	Allow the DataFID/MicroFID II to run for as long as necessary to clear out the TVOCs. This may take up to two hours, depending on how long the unit was stored.

Chapter 7
Service and Technical Support

7.1 How to Contact Customer Support

Worldwide support is available by contacting:

- Technical Support, to correspond with an applications engineer with questions regarding INFICON products and applications
- Sales Office, to correspond with the sales team for commercial inquiry
- Service Center, to correspond for repair services

When reporting an issue with DataFID/MicroFID II, please have the following information readily available:

- DataFID/MicroFID II part number and serial number
- A description of the problem
- An explanation of any corrective action that may have been attempted
- The exact wording of any error messages observed

To contact Customer Support, see the **Support** page at www.INFICON.com.

To submit a repair request in North America, fill out a Service Request Form at service.inficon.com.

7.2 Returning DataFID/MicroFID II to INFICON

Do not return a DataFID/MicroFID II to INFICON without first speaking with a Customer Support Representative. A Return Material Authorization (RMA) number must be obtained from the Customer Support Representative.

If a DataFID/MicroFID II is delivered to INFICON without an RMA number, it will be held until the sender is contacted. This may result in delays in servicing the equipment.

Prior to being given an RMA number, a Service Request form must be filled out and submitted. The Service Request form is available under service.inficon.com. Service Request forms must be approved by INFICON before an RMA number is issued. INFICON may require that the DataFID/MicroFID II be sent to a designated decontamination facility, rather than to the factory.

7.3 Warranty Extension

INFICON offers a multiple year warranty extension option upon DataFID/MicroFID II purchase. Contact INFICON for details.

7.4 Service Contract

INFICON offers service contracts for an out-of-warranty DataFID/MicroFID II. INFICON will conduct an evaluation to verify the condition of an out-of-warranty DataFID/MicroFID II before agreeing to offer a service contract. Contact INFICON for details.

INFICON Bring the Lab to the Sample™

www.inficon.com **reachus@inficon.com**

 PN 074-670-P1A