

JAV-1283

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# **D-TEK<sup>®</sup> 3 LEAK DETECTOR**

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 Safety Instructions & Operation Manual

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# 1 EU Declaration of Conformity



## EU DECLARATION OF CONFORMITY

This declaration is issued under the sole responsibility of the manufacturer INFICON. The object of the declaration is to certify that this equipment, designed and manufactured by:

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

is in conformity with the relevant Community harmonization legislation. 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.

<b>Equipment Description:</b>	D-TEK 3 Refrigerant Leak Detector	
<b>Model Number:</b>	721-20x-Gxx	(Applicable to all Group numbers)
<b>Applicable Directives:</b>	2014/35/EU 2014/30/EU 2011/65/EU 2006/66/EC	Low Voltage Directive (LVD) General Electromagnetic Compatibility (EMC) as amended by 2015/863/EU RoHS as amended by 2013/56/EU Battery Directive
<b>Applicable Standards:</b>	Safety: EN 61010-1:2010 EN 62133:2013 UL 2054 UL 60950-1 & CAN/CSA-C22.2 No. 60950-1-07 UN 38.3	
<b>Emissions:</b>	EN 61326-1:2013 CISPR 11/EN 55011:2009	Part 1: General Requirements: Safety requirements for electrical equipment for measurement, control, and laboratory use. Safety requirements for portable sealed secondary cells and for batteries made from them, for use in portable applications. CB Test Cert DK-73443-UL UL Standard for Safety Household and Commercial Batteries Cert 20180518-MH29443 UL Standard for Safety Information Technology Equipment – Safety – Part 1: General Requirements Cert 20180518-MH294 UN Manual of Tests and Criteria, Part III, sub-section 38.3. Safe Transport of Li-Ion Rechargeable Battery
<b>Immunity:</b>	EN 61326-1:2013	Edition 2.0 (EMC – Measurement, Control & Laboratory Equipment) Immunity per Table A.1 – Portable Test and Measurement Equipment
<b>RoHS</b>	Compliant	

**CE Implementation Date:** April 20, 2020

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ANY QUESTIONS RELATIVE TO THIS DECLARATION OR TO THE SAFETY OF INFICON'S PRODUCTS SHOULD BE DIRECTED, IN WRITING, TO THE AUTHORIZED REPRESENTATIVE AT THE ABOVE ADDRESS.

## 2 UKCA Declaration of Conformity



UK DECLARATION  
OF  
CONFORMITY



This declaration is issued under the sole responsibility of the manufacturer INFICON. The object of the declaration is to certify that this equipment, designed and manufactured by:

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

is in conformity with the requirements regarding safety, health and relevant provisions of the relevant legislation by design, type and the versions, which are brought into circulation by us. 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.

<b>Equipment Description:</b>	D-TEK 3 Refrigerant Leak Detector	
<b>Model Number:</b>	721-20x-Gxx	(Applicable to all Group numbers)
<b>Applicable Directives:</b>	S.I. 2016 No. 1101 S.I. 2016 No. 1091 S.I. 2012 No. 3032 S.I. 2008 No. 2164	LVD EMC RoHS Battery Directive
<b>Applicable Standards:</b>		
Safety:	EN 61010-1:2010  EN 62133:2013	Part 1: General Requirements: Safety requirements for electrical equipment for measurement, control, and laboratory use. Safety requirements for portable sealed secondary cells and for batteries made from them, for use in portable applications. CB Test
Emissions:	EN 61326-1:2013  CISPR 11/EN 55011:2009	Edition 2.0 (Radiated, Conducted & Harmonic Emissions) (EMC- Measurement, Control & Laboratory Equipment) (+A1:2010) Emission standard for industrial, scientific, and medical (ISM) radio RF equipment, Class A
Immunity:	EN 61326-1:2013	Edition 2.0 (EMC – Measurement, Control & Laboratory Equipment) Immunity per Table A.1 – Portable Test and Measurement Equipment
RoHS	Compliant	

**UKCA Implementation Date:** 27 July 2021

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## 3 Cautions and Warnings

### Cautions:

- Only use a certified charger/cord with an output of 5 V (dc)  $\pm 5\%$ , 1 A  $\pm 5\%$ .
- Keep the device out of extremely high or low temperature locations.
- Do not expose the battery to liquid.
- Do not use the device if you notice any damage to the battery.
- Do not disassemble or modify the battery.
- Handle and dispose of the battery per local regulations.
- If the recharging operation fails to complete, even when the specified recharging time has elapsed, immediately stop further recharging.
- Do not leave the battery unattended while charging.
- Unplug the charger when the battery is fully charged.
- Improper use or disposal of lithium ion batteries can cause a fire.
- High RF environments may cause a false alarm.

### WARNING

This symbol alerts the user to the presence of important operating and maintenance (servicing) instructions.



### WARNING

Exposure to high concentrations of CO<sub>2</sub> or refrigerants is dangerous and can be life-threatening.

The instrument is not for use in toxic or hazardous environments. It is not a personal protection or life-saving device. Always exercise extreme caution in potentially toxic or hazardous environments.

### WARNING

This product is not intrinsically safe and should not be used in the presence of explosive fumes, explosive dust, or other explosive chemicals. Use in an environment with flammable refrigerant concentration approaching the LEL (lower explosive limit) could cause an explosion or fire resulting in serious injury, death, or damage to property.

## 4 Specifications

Usage	Indoor/outdoor
Sensor type	Infrared
Compatible refrigerants	
• Refrigerant sensor (standard, PN 724-701-G1)	All CFCs, HCFCs, HFCs, HFOs, and blends (including A2Ls)
• CO <sub>2</sub> sensor (PN 724-701-G2)	R744 (carbon dioxide)
• Flammable refrigerant (HC) sensor (PN 724-701-G3)	R290, R600a, R441a (see safety warnings)
Sensitivity (tested to EN14624 standard) <sup>1</sup>	
• R134a	0.04 oz./yr (1g/yr)
• R1234yf	0.02 oz./yr (0.5g/yr)
• R290	0.2 oz./yr (5g/yr)
• R744 (CO <sub>2</sub> )	0.07 oz./yr (2g/yr)
• Ammonia	0.1 oz./yr (3g/yr)
Battery type	Lithium ion
Charging input type	Micro USB
Charging time (starting at 0%)	Approximately 3 hours
Battery life	Approximately 9 hours
Sensor life	Up to 2000 hrs
Input voltage	5 V (dc) ±5%
Input current	1 A ±5%
Warm-up period	45–90 seconds
Temperature ranges and humidity	
• Storage	-20–60°C (-4–140°F)
• Operating <sup>2</sup>	-20–50°C (-4–122°F)
• Charging	0–45°C (32–113°F)
• Humidity	95% RH NC maximum
Altitude	2000 m (6500 ft.)
Pollution degree	2
Overvoltage category	2
Weight (with battery; not including carrying case or accessories)	0.97 lb. (0.44 kg)

<sup>1</sup> To achieve optimal performance and the specified sensitivities, it is recommended to allow D-TEK 3 to run for 15 minutes prior to use.

<sup>2</sup> Use in temperatures below 0°C (32°F) should be limited. Extended warm-up time is recommended before use in low temperature environments.

**Specification table in accordance with EN 14624:2020**

	R134a	R1234yf	R744 (CO <sub>2</sub> )	Ammonia (R717)	R290
Minimum sensitivity, fixed (static)	1 g/yr	0.5 g/yr	2 g/yr	3 g/yr	5 g/yr
Minimum sensitivity, moving (dynamic)	1 g/yr	1 g/yr	2 g/yr	3 g/yr	5 g/yr
Minimum response/detection time	<1 s	<1 s	<1 s	<1 s	<1 s
Recovery time for x g/yr exposure <sup>3</sup>	7.6 s	6.4 s	13 s	4 s	4 s
Minimum sensitivity in contaminated environment	>2 g/yr	1 g/yr	> 4g/yr	3 g/yr	7 g/yr
Calibration frequency	Check annually with calibrated leak standard				

<sup>3</sup> x = R134a: 32 g/yr

R1234yf: 35 g/yr

R744: >50 g/yr

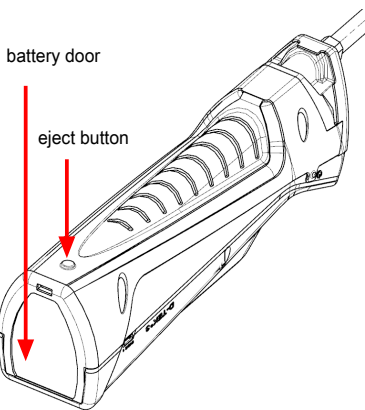
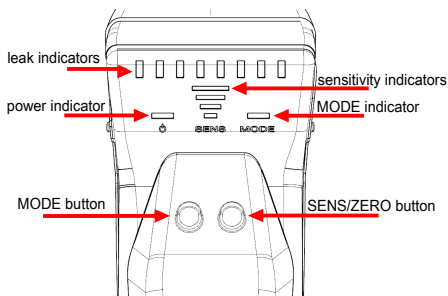
R717: 35 g/yr

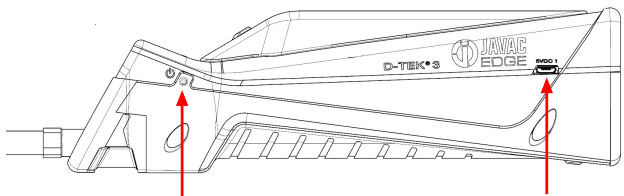
R290: 30 g/yr

**Patents (Pending)**

Application #10 2018 208 826.8

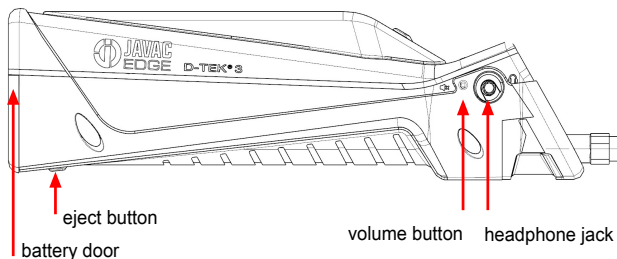
## 5 D-TEK 3





power button

micro USB power input



eject button

battery door

volume button

headphone jack

## 6 Charging the Battery

D-TEK 3 uses a rechargeable lithium ion battery that comes partially charged. JAVAC recommends charging the battery before use. Using the supplied charger or charging cradle accessory, a dead battery can be charged to 80% in approximately 2 hours and 100% in approximately 3 hours. A full charge typically lasts about 9 hours of operation, depending on the operating temperature. The power indicator indicates the remaining battery percentage.

Color	% Charge
Green	>30%
Orange	10–29%
Red	<10%



D-TEK 3 can be used while charging.

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## 7 Turning On the Instrument and Preparing for Use



If the unit does not turn on, the battery is low and needs to be charged. D-TEK 3 can be used while charging.

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- 1 Long press the power button (located on the left side of the body of the instrument) to turn D-TEK 3 **On** or **Off**.
    - ⇒ D-TEK 3 begins a variable-time warm-up for 45 to 90 seconds. When warm-up is complete, D-TEK 3 is ready to use.
  - 2 To switch modes, press the **MODE** button. This toggles between **Pinpoint** and **Manual Zero** modes.
- 



D-TEK 3 always starts in the last mode that was used.

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## 8 Pinpoint Mode

- 1 Place the tip of D-TEK 3 as close as possible to the suspected leak (do not block the air flow).
- 2 Slowly move the probe past each possible leak point.  
⇒ If a leak is detected, D-TEK 3 alarms and the leak indicators illuminate.
- 3 When a leak is identified, pull the probe away from the leak for a few seconds and then recheck the spot to verify the leak.



In **Pinpoint** mode, D-TEK 3 automatically zeros to the background refrigerant concentration and only alarms again with a higher concentration of refrigerant. When this occurs, either continue looking for a higher concentration of refrigerant or move the probe to an area of lower concentration for a few seconds to reset the zero point.



Press the **SENS/ZERO** button to switch the sensitivity setting. When working with a large leak, it can be easier to pinpoint the leak location using a lower sensitivity setting. The current sensitivity is displayed by the sensitivity (SENS) indicator.

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## 9 Manual Zero Mode

**Manual Zero** mode operates similar to **Pinpoint** mode, but is identified by the **MODE** indicator slowly flashing. **Manual Zero** mode allows the user to manually zero to the background refrigerant by pressing the **SENS/ZERO** button. Once the new zero point is set, D-TEK 3 will not alarm unless a higher concentration of refrigerant is detected.

**Manual Zero** mode beeps faster at the zero point than other modes. If the concentration is lower than the current zero point, the beeping slows. This allows the user to know if they are moving away from the leak by listening to a change in the beep rate.



There is no sensitivity setting in **Manual Zero** mode.



**Manual Zero** mode requires an extra warm-up time of up to 15 minutes for optimal performance.

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## 10 Earbuds and Volume Control

A headphone jack is located on the right side of D-TEK 3 for listening to the alarm sounds through headphones or earbuds.

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### WARNING

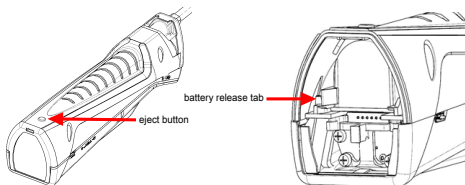
**If attempting to use headphones not supplied by JAVAC, be sure to test them carefully to avoid hearing damage.**

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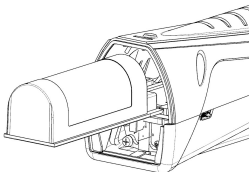
A volume button is located next to the headphone jack. Press the volume button to toggle from 100% volume, to 50% volume, and to mute. The volume defaults to 100% at startup. When headphones or earbuds are plugged in, the volume toggles between 100% volume and mute.

## 11 Removing and Installing the Lithium Ion Battery

- 1 Press the eject button on the back of D-TEK 3 and remove the battery door.



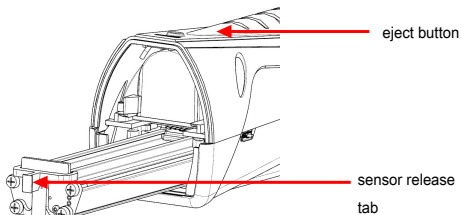
- 2 Remove the battery by moving the battery release tab to the side until the battery begins to eject. Slide the battery out.
- 3 Re-insert the battery by first aligning the battery with the rails.



- 4 Gently push the battery along the rails until the battery release tab engages.  
⇒ Do not force the battery. If the battery does not slide freely, check the alignment and try again.
- 5 Reinstall the battery door.

## 12 Removing and Installing the Sensor

D-TEK 3 uses a cartridge style sensor that is quick and easy to remove and replace in the field. In addition to the standard sensor, JAVAC offers a CO<sub>2</sub> specific sensor for use in refrigeration and air conditioning applications. See Replacement Parts and Accessories [▶ 23].

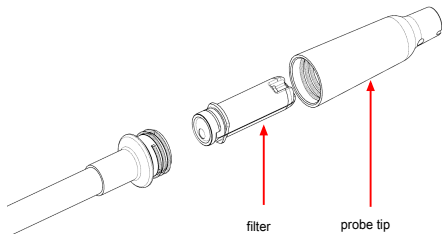


To replace the sensor:

- 1 Press the eject button on the back of D-TEK 3 and remove the battery door.
- 2 Grasp the sensor release tab and gently pull it out.
- 3 Align the new sensor with the rails.
- 4 Gently push the sensor along the rails until it is fully inserted.  
⇒ Do not force the sensor. If it does not slide freely, check the alignment and try again.
- 5 Reinstall the battery door.

## 13 Replacing Filters

D-TEK 3 uses a hydrophobic filter cartridge that allows air and refrigerants to pass through while filtering out water, dirt, and oil. Examine the white cloth to determine if the filter needs to be changed. If the cloth appears discolored, install a new filter. Changing the filter is also an easy troubleshooting step if you suspect your leak detector is not properly detecting refrigerants. A clogged air filter can limit the sample air flow.



Exposing the filter to water or oil can block air flow. If this occurs, remove the filter with the unit turned off and the probe facing down to avoid getting contaminants in the probe and install a new filter. If the filter is wet, it can be reused once it dries.



### CAUTION

**Never use the instrument without a probe tip and filter.**

To replace the filter:

- 1 Unscrew the probe tip and remove the filter.
- 2 Insert the new filter into the probe.
- 3 Screw the probe tip on. Do not overtighten.

## 14 Extra-long Probe

The optional extra-long replacement probe can be used for leak checking in hard-to-reach areas.

To install the extra-long probe:

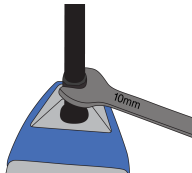
- 1 Unscrew the standard probe from the D-TEK 3 body using a 10 mm wrench.
- 2 Screw on the extra-long probe to approximately 35 in·lb (4 N·m).  
Do not overtighten.
- 3 Unscrew the probe tip from the standard probe and remove the filter (or use a new one).
- 4 Insert the filter into the extra-long probe.
- 5 Screw the probe tip onto the extra-long probe. Do not overtighten.



### CAUTION

**Always remove the probe with a 10 mm wrench at the base of the probe.**

Unscrewing the probe in any way other than the specified method can cause damage to the probe.



## 15 Needle Probe Extension

The optional needle probe extension accessory allows for leak checking in tight spots and insulation. This probe is pointed to easily puncture insulation and fit into small areas.

To install the needle probe extension:

- 1 Unscrew the probe tip. Leave the filter in place.
- 2 Insert the new filter into the probe tip.
- 3 Screw the probe tip on. Do not overtighten.

## 16 Optional Sensors

Optional sensors are available for use in CO<sub>2</sub> (PN 724-701-G2) or flammable refrigerant (PN 724-701-G3) applications. To use the CO<sub>2</sub> or flammable refrigerant sensor, remove the standard sensor and install the new sensor following the instructions in Removing and Installing the Sensor [ 17]. D-TEK 3 automatically recognizes the sensor type and the **MODE** indicator illuminates the appropriate color to indicate the sensor type the entire time the sensor is installed. Green indicates CO<sub>2</sub>, red indicates flammable refrigerant, and orange indicates the standard refrigerant sensor is installed.



If D-TEK 3 does not automatically recognize your flammable refrigerant sensor, contact JAVAC to arrange a software update.



The flammable refrigerant sensor does not detect hydrogen, including hydrogen forming gas.



While searching for CO<sub>2</sub> leaks, it is recommended to wear a respirator or mask to avoid exhaling CO<sub>2</sub> toward the probe.



### WARNING

**Exposure to high concentrations of CO<sub>2</sub> or refrigerants is dangerous and can be life-threatening.**

The instrument is not for use in toxic or hazardous environments. It is not a personal protection or life-saving device. Always exercise extreme caution in potentially toxic or hazardous environments.



### WARNING

**This product is not intrinsically safe and should not be used in the presence of explosive fumes, explosive dust, or other explosive chemicals. Use in an environment with flammable refrigerant concentration approaching the LEL (lower explosive limit) could cause an explosion or fire resulting in serious injury, death, or damage to property.**

## 17 Cleaning and Storage

D-TEK 3 can be cleaned with mild detergent or isopropyl alcohol. Care should be taken to prevent cleaner from entering the instrument. Do not clean with gasoline, acetone, or other aggressive solvents as they may damage the plastic or display.

## 18 Replacement Parts and Accessories

Earbuds	721-607-G1
12 V (dc) car charger	721-605-G1
AC wall charger (includes plugs for multiple regions)	721-606-G1
Lithium ion battery	721-702-G1
Battery charging cradle	721-610-G1
Battery/charging cradle combination	721-604-G1
Standard sensor (detects CFCs, HCFCs, HFCs, HFOs, and blends (including A2Ls))	724-701-G1
CO <sub>2</sub> sensor	724-701-G2
Flammable refrigerant (HC) sensor	724-701-G3
Filter cartridges (quantity, 5)	712-707-G1
Replacement probe cap	712-705-G1
Needle probe extension	721-612-G1
Extra-long probe	721-611-G1
TEK-Check R134a test leak	703-080-G10

## 19 Troubleshooting Guide

Problem	Cause	Remedy
The power indicator quickly flashes red.	A battery error has occurred. This can be caused by a failed battery or by the battery being improperly installed, or having a poor connection.	Remove and reinstall the battery. If the problem is not fixed, replace the battery. Refer to Removing and Installing the Lithium Ion Battery [ 16].
	The battery is above or below the ideal temperature range and may not charge properly.	Allow the battery to return to normal temperature.
All leak indicators flash.	A sensor error has occurred. This can be caused by a failed sensor, or by the sensor being improperly installed, or having a poor connection.	Remove and reinstall the sensor. If the problem is not fixed, replace the sensor. Refer to Removing and Installing the Sensor [ 17].
The indicators do not turn on after long-pressing the power button.	The battery level is critically low.	Charge the battery or plug the unit into a charger.
The unit turns on, but does not detect refrigerant.	The unit has not completed warm-up.	Wait for the warm-up to complete. This takes 45 to 90 seconds.
	The filter is clogged, restricting the air flow.	Replace the filter cartridge. Refer to Replacing Filters [ 18].
	The pump has failed.	Listen for the pump sound. If the pump is not making a sound and the battery has a proper charge, contact JAVAC.
	The sensitivity is set too low ( <b>Pinpoint</b> mode only).	Verify the sensitivity level. For very small leaks, <b>High</b> or <b>Super</b> should be used.
	The incorrect sensor is installed.	Verify that the correct sensor is being used (refrigerant sensor or CO <sub>2</sub> sensor).
The unit alarms in clean air.	The incorrect sensor is installed.	Verify that the refrigerant sensor is installed instead of the CO <sub>2</sub> sensor.
The pump is not making a sound.	The pump has failed.	If the battery has a proper charge, contact JAVAC.

## 20 Warranty and Liability-Limitation

JAVAC warrants your D-TEK 3 Refrigerant Leak Detector to be free from defects of materials or workmanship for one or two years (depending on region) from the date of purchase. JAVAC does not warrant items that deteriorate under normal use, including batteries, sensors, and filters. In addition, JAVAC does not warrant any instrument that has been subjected to misuse, negligence, or accident, or has been repaired or altered by anyone other than JAVAC. JAVAC liability is limited to instruments returned to JAVAC, transportation prepaid, not later than thirty (30) days after the warranty period expires, and which JAVAC judges to have malfunctioned because of defective materials or workmanship. JAVAC liability is limited to, at its option, repairing or replacing the defective instrument or part. This warranty is in lieu of all other warranties, express or implied, whether of MERCHANTABILITY or of FITNESS FOR A PARTICULAR PURPOSE or otherwise. All such other warranties are expressly disclaimed. JAVAC shall have no liability in excess of the price paid to JAVAC for the instrument plus return transportation charges prepaid. JAVAC shall have no liability for any incidental or consequential damages. All such liabilities are EXCLUDED.



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