

TECHNICAL HANDBOOK

kina40e1-g (1007)



Catalog No.

510-010

510-015

510-016

510-017

510-018

from software version V 4.1

HLD5000

Refrigerant Sniffer Leak Detector

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General Safety Precautions



Warning

Indicates procedures that must be strictly observed to prevent hazards to persons.



Caution

Indicates procedures that must strictly be observed to prevent damage to or destruction of the HLD5000 leak detector.

Notice Indicates special technical requirements that the user must comply with.

The INFICON HLD5000 leak detector has been designed for safe and efficient operation when used properly and in accordance with this Technical Handbook. It is the responsibility of the user to carefully read and strictly observe all safety precautions described in this chapter and throughout this Technical Handbook. The HLD5000 must only be operated in the proper condition and under the conditions described in this Technical Handbook. It must be operated and maintained by trained personal only. Consult local, state, and national agencies regarding specific requirements and regulations. Address any further safety, operation and / or maintenance questions to our nearest office.

Failure to observe the following precautions could result in serious personal injury:



Warning

The HLD5000 must not be operated while standing in water or under running or dripping water. The same applies to all other kinds of liquids.

The HLD5000 should only be used indoors.



Warning

The HLD5000 must not be operated in explosion hazard areas.

Do not use the HLD5000 on hot surfaces.



Warning

Only mains cords having three conductors with a protective ground conductor may be used. The HLD5000 must never be operated with a disconnected protective ground conductor.



Warning

Danger of electric shock.

- Don't touch live parts with the sniffer tip.
- Test samples need to be disconnected from electricity before leak testing.



Warning

To replace the fuses remove the mains cord first.

Failure to observe the following precautions could result in damage to the equipment:



Caution

Avoid contact of the HLD5000 with bases, acids or solvents and also avoid exposure to extreme climatic conditions.



Caution

Before loosening the connecting nut, you must switch off the HLD5000 first. When exchanging the sniffer tip make sure that no dust or particles of dirt enter into the opening.



Caution

The HLD5000 will only operate after having connected the sniffer line first.



Caution

Do not place the HLD5000 on hot surfaces.



Caution

During warm-up the sniffer tip must not be inserted in the test leak opening. Otherwise, the internal calibration will be disabled and an error message will be displayed.

**Caution**

Under all circumstances the intake of liquids which may still be present on the surface of the test object has to be avoided.

In the case of moist test objects (e.g. condensed water) the use of the water protection tip is recommended (see Chapter [1.6.6](#)).

**Caution**

Under all circumstances memorize the new PIN!

The PIN can only be reset by INFICON's service organization.

**Caution**

Before exchanging any of the sniffer line filters please switch off the HLD5000.

When replacing filters please make sure that no particles enter into the intake opening.

**Caution**

Before replacing the air filter at the bottom of the housing please disconnect the HLD5000.

1 General

The refrigerant leak detector HLD5000 is delivered ready for use. Even so, we strongly recommend that you carefully read this manual so as to ensure optimum operating conditions right from the start.

1.1 Introduction

1.1.1 Purpose

The HLD5000 is suited for running sniffer leak tests on air conditioning and automotive air-conditioning systems (overpressure method). Its area of application is within the air-conditioning industry and it is used to check air-conditioners as well as components these contain.



Warning

The HLD5000 must not be operated while standing in water or under running or dripping water. The same applies to all other kinds of liquids.

The HLD5000 should only be used indoors.



Caution

Avoid contact of the HLD5000 with bases, acids or solvents and also avoid exposure to extreme climatic conditions.



Warning

The HLD5000 must not be operated in explosion hazard areas.

Do not use the HLD5000 on hot surfaces.

Applied guide lines, harmonized standards and applied national standards in languages and specifications:

EN 50081-1	electromagnetical compatibility
EN 61000-6-2	electromagnetical compatibility
EN 61010-1	electrical safety

1.2 Technical Data

1.2.1 Physical Data

Lowest trigger level setting	
For single gas probes	1.0 g/a (0.04 oz/yr)
For universal Smart probe	0.5 g/a (0.02 oz/yr)
Maximum trigger level setting	50 g/a (1.76 oz/yr)
Measurement range	
For single gas probes	0 - 100 g/a (3.57 oz/yr)
For universal Smart probe	0 - 300 g/a (10.7 oz/yr)
Detectable refrigerants	
Single gas probe (dependent on the instrument version)	R134a, R744 (CO ₂), SF ₆
Universal Smart probe	all halogens
Response time	1 s
Time until ready for operation	30 s
Recovery time	approx. 2 s
Gross leak recovery time	approx. 8 s

1.2.2 Electrical Data

Mains supply voltage	100 V ... 230 V ± 10 % 50/60 Hz
Power consumption	< 60 VA
in standby	< 40 VA
Protection	IP 30
Overvoltage category	II
Gas flow at the intake	320 sccm

1.2.3 Other Data

Dimensions (height, diameter)	365 mm; 260 mm (14.4 in.; 10.25 in.)
Weight of the main unit	4.5 kg (10 lb.)
Weight of the probe	390 g (0.9 lb.)
Permissible ambient temperature range (during operation)	5 – 50 °C; 40 – 120 °F
Max. rel. humidity of the air	80 % at +31 °C, decreasing to 50% at 40°C (104°F)
Length of the sniffer line	4.8 m (15.5 ft.)

Visual leak rate indication	LED display, 24 pcs.; 0 – 200 %; (trigger level = 100 %)
Noise level	<50 dBA
Pollution degree	2
Audio alarm	100 dBA
Max. permissible height above sea level (during operation)	2000 m

1.2.4 Ordering Information

HLD5000 for R134a	Cat. No. 510-010
HLD5000 for R744 (CO ₂)	Cat. No. 510-015
HLD5000 for SF ₆	Cat. No. 510-016
HLD5000 with Smart Probe	Cat. No. 510-017
HLD5000 for R600a/R290	Cat. No. 510-018

1.3 Supplied Equipment

The HLD5000 is delivered ready for operation. Before installing the HLD5000 please read Chapter 1.6. The following items have been included with the leak detector:

- Probe with line
- Sniffer tip, 100 mm long
- Flexible extension for sniffer tip with adapter
- 2 mains cords EU version, US version
- Documentation
 - Operating Instructions of the HLD5000 kima40e2
 - Technical Handbook HLD5000 kina40e1
 - Interface Description HLD5000 kins40e1
 - Spare Parts List HLD5000 kiua40e1
 - Repair Instructions kipa40e1
 - HEX Code
- Set of spare fuses
- Set of replacement filter holders (5 pieces)
- Set of replacement silicone filter cartridges (4 pieces)

For R744 (CO₂) version (510-015) only:

- Adapter for CO₂ calibration

1.3.1 Replacement parts / Accessories

Sniffer tips

	Cat.-No.
Probe tip, 100 mm long	511-021
Probe tip, 400 mm long, flexible	511-024
Extension line, 400 mm long (flexible) for the probe tip (20 pieces)	511-020
Extension (flexible) for sniffer tip, angled by 45° (20 pieces)	511-029
Water protection tip	511-025

Filters

Filter holders (20 pieces)	511-027
Filter cartridge (20 pcs.)	511-018
COOL-Check	511-010

Sniffer lines including handle (for conversion to other refrigerants)

R134a	511-030
R744 (CO ₂)	511-035
SF ₆	511-036
Smart probe	511-037
R600a/R290	511-018
Sniffer line extension, 5 m	511-040
Adapter for CO ₂ calibration	511-042

1.4 Service


If the HLD5000 is returned to INFICON, indicate whether the leak detector is free of substances damaging to health or whether it is contaminated. If it is contaminated also indicate the nature of the hazard. INFICON will return any leak detector without a "Declaration of Contamination" to the sender's address.

Before returning any equipment, please get in touch with the Service Center for the purpose of discussing the issue (RMA number, for example).

General

We reserve the right to modify the design and the specified data. The illustrations are not binding.

Please refer to national shipping requirements - Dangerous Goods - due to pressurized calibrated leak.



Declaration of Contamination


The service, repair, and/or disposal of vacuum equipment and components will only be carried out if a correctly completed declaration has been submitted. Non-completion will result in delay.
This declaration may only be completed (in block letters) and signed by authorized and qualified staff.

- Description of product**
 Type _____
 Article Number _____
 Serial Number _____
- Reason for return**

- Operating fluid(s) used** (Must be drained before shipping.)

- Process related contamination of product:**

toxic	no <input type="checkbox"/> 1)	yes <input type="checkbox"/>
caustic	no <input type="checkbox"/> 1)	yes <input type="checkbox"/>
biological hazard	no <input type="checkbox"/>	yes <input type="checkbox"/> 2)
explosive	no <input type="checkbox"/>	yes <input type="checkbox"/> 2)
radioactive	no <input type="checkbox"/>	yes <input type="checkbox"/> 2)
other harmful substances	no <input type="checkbox"/> 1)	yes <input type="checkbox"/>



1) or not containing any amount of hazardous residues that exceed the permissible exposure limits

2) Products thus contaminated will not be accepted without written evidence of decontamination!
- Harmful substances, gases and/or by-products**
 Please list all substances, gases, and by-products which the product may have come into contact with:

Trade/product name	Chemical name (or symbol)	Precautions associated with substance	Action if human contact
- Legally binding declaration:**
 I/we hereby declare that the information on this form is complete and accurate and that I/we will assume any further costs that may arise. The contaminated product will be dispatched in accordance with the applicable regulations.
 Organization/company _____
 Address _____ Post code, place _____
 Phone _____ Fax _____
 Email _____
 Name _____
 Date and legally binding signature _____ Company stamp _____

This form can be downloaded from our website. Copies: Original for addressee - 1 copy for accompanying documents - 1 copy for file of sender

INFICON GmbH
 Bonner Str. 498, 50968 Cologne, Germany
 Tel: +49 221 3474 2222 Fax: +49 221 3474 2221
 www.inficon.com leakdetection.service@inficon.com

zisa01e1-a

Fig. 1-1 Declaration of Contamination (original size see attachment)


1.4.1 Service Centers

Algeria	jhj@agramkow.dk	Finland	jhj@agramkow.dk
Agramkow	Phone: +45 741 236 36	Agramkow	Phone: +45 741 236 36
Sonderborg	Fax: +45 744 336 46	Sonderborg	Fax: +45 744 336 46
Belarus	akhlestine@gertnergroup.de	France	Christophe.Zaffanella@oerlikon.com
Gertner Service	Phone: +7 959 319 646	OLV France	Phone: +33 476 351 584
Moscow	Fax: +7 959 319 645	Orsay	Fax: +33 476 351 584
Belgium	leakdetection.service@inficon.com	Germany	leakdetection.service@inficon.com
INFICON GmbH	Phone: +49 221 34742222	INFICON GmbH	Phone: +49 221 34742222
Cologne	Fax: +49 221 347 42221	Cologne	Fax: +49 221 347 42221
Brazil	fernandoz@prestvacuo.com.br	Hungary	adam.lovics@kon-trade.hu
PV Pest Vácuo Ltda.	Phone: +55 114 154 4888	Kontrade	Phone: +36 23 50 38 80
Santa de Parnaíba	Fax: +55 114 154 4888	Budaörs	Fax: +36 23 50 38 96
Bulgaria	leakdetection.service@inficon.com	India	asdash@hotmail.com
INFICON GmbH	Phone: +49 221 34742222	Dashpute	Phone: +91 22 888 0324
Cologne	Fax: +49 221 347 42221	400 064	Fax: +91 22 888 0324
Canada	reachus@vpcinc.ca	Ireland	reach.unitedkingdom@inficon.com
Vacuum Products Canada Ltd.	Phone: +905.672.7704	INFICON	Phone: +44 1254 678 250
Ontario	Fax: +905.672.2249	Blackburn	Fax: +44 1254 698 577
Central America	infoqro@meisa.com	Italy	davide.giovanetti@inficon.com
MEISA S.a. de C.V.	Phone: +52 44 22 25 42 80	INFICON GmbH	Phone: +39 045 6 40 25 56
Querétaro	Fax: +52 44 22 25 41 57	Castelnuovo	Fax: +39 045 6 40 24 21
China	reach.china@inficon.com	Israel	urimark@mark-tec.co.il
INFICON LTD	Phone: +852.2862.8863	Mark Technologies Ltd.	Phone: +972 35 34 68 22
Hong Kong	Fax: +852.2865.6883	Kiriat Ono	Fax: +972 35 34 25 89
INFICON LTD	Phone: +86.10.6590.0164	Japan	reach.japan@inficon.com
Beijing	Fax: +86.10.6590.0521	INFICON Co. Ltd.	Phone: +81.45.471.3396
INFICON LTD	Phone: +86.20.8723.6889	Yokohama	Fax: +81.45.471.3387
Guangzhou	Fax: +86.20.8723.6003		
INFICON LTD	Phone: +86.21.6209.3094		
Shanghai	Fax: +86.21.6295.2852		
Czech Republic	filip.lisec@inficon.com	Korea	reach.korea@inficon.com
INFICON GmbH	Phone: +420 734 331 758	INFICON Ltd.	Phone: +82 312 062 890
Pilsen	Fax: +420 604 203 037	Sungnam city	Fax: +82 312 063 058
Denmark	jhj@agramkow.dk	INFICON Ltd.	Phone: +82 312 062 890
Agramkow	Phone: +45 744 336 36	Suwon City	Fax: +82 312 063 058
Sonderborg	Fax: +45 744 336 46	INFICON Ltd.	Phone: +82 312 062 890
Egypt	jhj@agramkow.dk	Cheonan City	Fax: +82 312 063 058
Agramkow	Phone: +45 741 236 36	Latvia	leakdetection.service@inficon.com
Sonderborg	Fax: +45 744 336 46	INFICON GmbH	Phone: +49 221 34742222
Estonia	leakdetection.service@inficon.com	Cologne	Fax: +49 221 347 42221
INFICON GmbH	Phone: +49 221 34742222	Lithuania	leakdetection.service@inficon.com
Cologne	Fax: +49 221 347 42221	INFICON GmbH	Phone: +49 221 34742222
		Cologne	Fax: +49 221 347 42221


Mexico	infoqro@meisa.com	Spain	richard.cunill@leyboldoptics.com
MEISA S.a. de C.V.	Phone: +52 442 225 42 80	Leybold Optics Ibérica	Phone: +34 93 66 60 778
Querétaro	Fax: +52 442 225 41 57	Barcelona	Fax: +34 93 66 64 612
Netherlands	leakdetection.service@inficon.com	Sweden	jhj@agramkow.dk
INFICON GmbH	Phone: +49 221 347 42222	Agramkow	Phone: +45 741 236 36
Cologne	Fax: +49 221 347 42221	Sonderborg	Fax: +45 744 336 46
Norway	jhj@agramkow.dk	Syria	leakdetection.service@inficon.com
Agramkow	Phone: +45 741 236 36	INFICON GmbH	Phone: +49 221 34742222
Sonderborg	Fax: +45 744 336 46	Cologne	Fax: +49 221 347 42221
Poland	kamola@vakpol.com	Taiwan	Susan.Chang@inficon.com
VAK-POL & GAZ Sp. zo.o	Phone: +48 60 23 15 212	INFICON Company Limited	Phone: +886.3.5525.828
Pulawy	Fax: +48 60 23 15 212	Chupei City, HsinChu Hsien	Fax: +886.3.5525.829
Portugal	ana.correia@zickermann.pt	Tunisia	leakdetection.service@inficon.com
Sociedade Zickermann	Phone: +351 21 322 41 60	INFICON GmbH	Phone: +49 221 34742222
S.A.R.L, Lissabon	Fax: +351 21 346 91 29	Cologne	Fax: +49 221 347 42221
Republic of South Africa	vacuquip@hotmail.com	Turkey	jhj@agramkow.dk
Vacuquip	Phone: +27 73 15 78 355	Agramkow	Phone: +45 741 236 36
Randburg		Sonderborg	Fax: +45 744 336 46
Russia	leakdetection.service@inficon.com	Ukraine	leakdetection.service@inficon.com
INFICON GmbH	Phone: +49 221 34742222	INFICON GmbH	Phone: +49 221 34742222
Cologne	Fax: +49 221 347 42221	Cologne	Fax: +49 221 347 42221
Singapore	reach.singapore@inficon.com	United Kingdom	reach.unitedkingdom@inficon.com
INFICON PTE LTD.	Phone: +65.890.6250	INFICON	Phone: +44 1254 678 250
Singapur	Fax: +65.890.6266	Blackburn	Fax: +44 1254 698 577
Slovakia	filip.lisec@inficon.com	United Arab Emirates	leakdetection.service@inficon.com
INFICON GmbH	Phone +420 734 331 758	INFICON GmbH	Phone: +49 221 34742222
Pilsen	Fax: +420 604 203 037	Cologne	Fax: +49 221 347 42221
Slovenia	medivak@siol.net	USA	service.usa@inficon.com
Medivac	Phone: +386 15 63 91 50	Inficon Inc.	Phone: +1.315.434.1167
Ljubljani	Fax: +386 17 22 04 51	East Syracuse, NY	Fax: +1.315.434.2551
South America except Brazil	infoqro@meisa.com	Inficon Inc.	Phone: +1.408.361.1200
		San Jose, CA	Fax: +1.408.362.1556
MEISA S.a. de C.V.	Phone: +52 44 22 12 36 15	Inficon Inc.	Phone: +1.512.448.0488
Querétaro	Fax: +52 44 22 12 19 40	Austin, TX	Fax: +1.512.448.0398

1.5 Notes on How to Read this Manual

Important remarks concerning operational safety and protection are emphasised as follows:

**Caution**

Indicates procedures that must strictly be observed to prevent damage to or destruction of the HLD5000 leak detector.

**Warning**

Indicates procedures that must be strictly observed to prevent hazards to persons.

Notice Indicates special technical requirements that the user must comply with.
The references to diagrams, e.g. (2-2/1) consist of the Chapter No., Fig. No. and the Item No. in that order. For example: (2-2/1) refers to item 1 in the second figure of chapter 2, i.e. the calibration port for the calibrated leak.

1.5.1 Definition of Terms

Rejection leak rate	Trigger level or leak rate limit setting at which the test sample reaches the limit between good and bad. If the reject leak rate is exceeded, in the measurement mode the HLD5000 will output a visually and audibly apparent alarm.
Default status	State the HLD5000 is in when leaving the factory.
Main menu	This is the first menu which is displayed after switching on the HLD5000.
Submenus	All further menus which can be accessed from the main menu.
Menu item	A single menu line.
Standby mode	Resting status of the HLD5000. The pump and valve system is off in this mode.
PIN	Personal password number so as to be able to prevent unauthorised changes to leak detector settings.

1.6 Installation

1.6.1 Unpacking

Unpack the HLD5000 immediately after delivery, even if it is to be installed later on. Examine the shipping container for any external damage. Completely remove the packaging materials.

Notice Retain the shipping container and the packaging materials in the event of complaints about damage.

Check that the HLD5000 is complete and carefully examine the HLD5000 visually.

If any damage is discovered, report it immediately to the forwarding agent and insurer. If the damaged part has to be replaced, please contact the orders department.

Remove the protection foil from the display.

After switching on the HLD5000 the programmed type of gas has to appear in the upper left corner of the display and has to match with the sticker on the probe.

1.6.2 Mechanical Connections

In order to operate the HLD5000, a sniffer line must be connected. The connection (Fig. 2-1/2) is located on the left side on the front of the main unit. Insert the plug into the opening until it engages. For this the red mark on the plug must correspond with the mark on the main unit.

To disconnect the plug, retract the coupling and remove the probe's line.

1.6.3 Electrical Connection

The HLD5000 is equipped with a wide voltage range power supply unit covering 100 V to 230 V ($\pm 10\%$, 50/60 Hz). The mains cord is connected to the mains socket (Fig. 2-1/7) on the rear of the main unit. A fuse (Fig. 2-1/8) for each conductor of the mains cord has been integrated in the mains socket (Fig. 2-1/7) of the main unit.



Warning

Only mains cords having three conductors with a protective ground conductor may be used. The HLD5000 must never be operated with a disconnected protective ground conductor.

1.6.4 Wall Mounting

A fixture at the bottom of the HLD5000 (Fig. 2-2/7) allows mounting the leak detector on walls, (for example due to space restrictions). It is recommended to place the HLD5000 high enough (at least 2 m) so that the display points downwards.

1.6.5 RS232 Interface

The HLD5000 is equipped with a RS232 interface which is located on the rear of the main unit under the mains connection (Fig. 1-2). This interface is of the DCE type (Data Communications Equipment) and allows the connection of a PC for monitoring and data logging. The connection is provided through a commercially available Sub-D plug. For further information see "Interface Description HLD5000" (kins40e1).

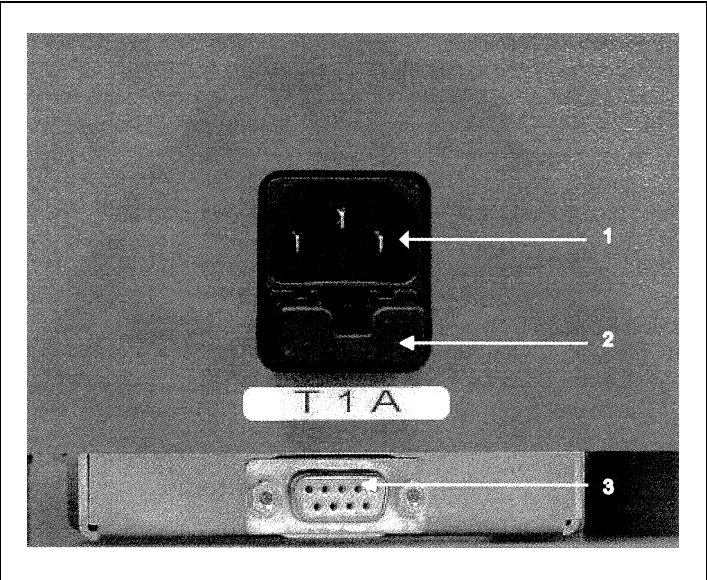


Fig. 1-2 RS232 Interface


Pos.	Description	Pos.	Description
1.	Mains Socket	3.	RS232 Interface
2.	Mains Fuses		

1.6.6 The Sniffer Tip

1.6.6.1 Changing the sniffer tip

To change the complete sniffer tip (see Fig. 1-3) loosen the nut connection (Fig. 1-3) and pull off the sniffer tip. Insert the new sniffer tip with the guide pin (Fig. 1-3/2) running in the groove, and firmly retighten the nut.

Ensure, that the filter cartridge (Fig. 1-3/1) is clean, and replace it as required.

**Caution**

Before loosening the connecting nut, you must switch off the HLD5000 first. When exchanging the sniffer tip make sure that no dust or particles of dirt enter into the opening.

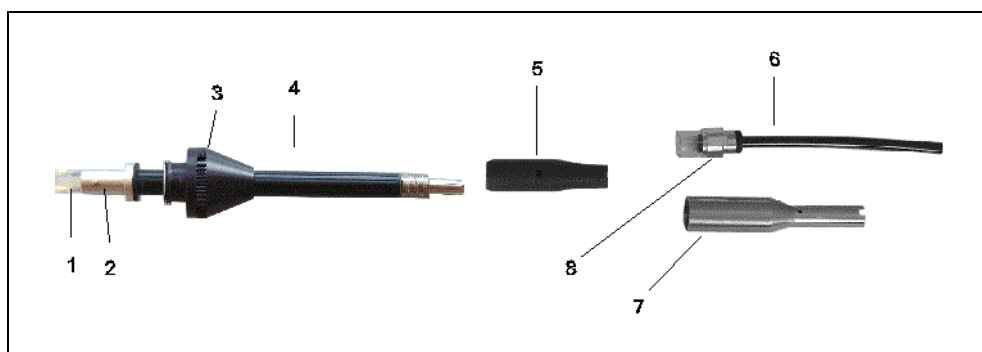


Fig. 1-3 Sniffer tip with accessories

Pos.	Description	Pos.	Description
1	filter cartridge	5	filter holder
2	guide pin	6	extension
3	connecting nut	7	water protection tip
4	sniffer tip	8	holder for extension

1.6.6.2 Use of the flexible sniffer tip

In addition to the rigid sniffer tip included with the HLD5000, also a 400 mm long flexible tip (Cat. No. 511-024) may be used. By correspondingly bending the flexible tip, areas which are hard to access can be reached.

1.6.6.3 Use of the sniffer tip extension

For the purpose of measuring refrigerant concentrations (e.g. in the case of already packaged test objects in the package), for reaching points which are difficult to access or for finding large leaks quickly a flexible extension (Cat. No. 511-020) may be screwed onto the filter holder (see Fig. Fig. 1-3/5). Make sure that the plastic hose surrounds holder and filter holder. The 400 mm long extension (Fig. 1-3/6) may be pulled out after pressing down the ring of the holder (Fig. 1-3/8); if required, you can cut the extension down to the required length. The tip facing the test object must always be cut at an angle of approximately 45°.

1.6.6.4 Use of water protection tip

In order to avoid sucking in liquids, the water protection tip (Fig. 1-3/7) (Cat. No. 511-025) may be screwed onto the filter holder. The water protection tip will prevent liquids in up to about 3 mm in height (the e.g. puddles of condensed water) from being sucked.

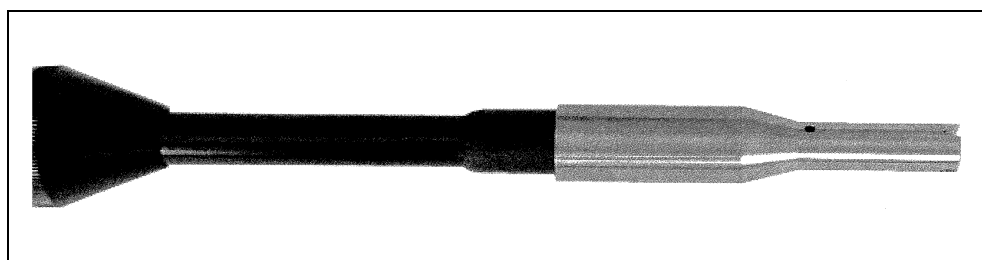


Fig. 1-4 Water protection tip fitted

In order to prevent the entry of liquids when working on moist test objects, the handle should not be held vertically with the sniffer tip facing up, this avoids liquids in the water protection tip from flowing back into the sensor. If, even so, liquid has been sucked into the sensor system, let the HLD5000 run for about 10 minutes (not in the standby mode) to pump out the liquid from the sensor system via the supply pump in the main unit.

2 Principle of Operation

2.1 Description

The HLD5000 is capable of detecting, measuring and displaying quantitatively the refrigerant, CO₂ or SF₆ sucked in through the probe's line by means of its infrared gas analyzer.

The important subassemblies of the HLD5000 are:

- the sensor system subassembly located in the probe
- the pump system together with the electric and electronic subassemblies accommodated in the main unit

Infrared light from a corresponding source is made to pass through a cell through which also the gas taken in by the HLD5000 flows. This light is filtered so that only light having a specific wavelength is allowed to pass on to an infrared light detector.

If in the presence of a leak, refrigerant, SF₆ or CO₂ enters with the air taken into the cell, the infrared light is partly absorbed by the refrigerant. The intensity of the light arriving at the detector is thus reduced.

The change in the intensity of the light is amplified electronically, converted from analogue to digital and is displayed visually and audibly after processing by the microprocessor in the main unit. By means of a reference measurement based on the ambient air, the background concentration of the test gas or other interfering gases is taken into account when processing the measured data.

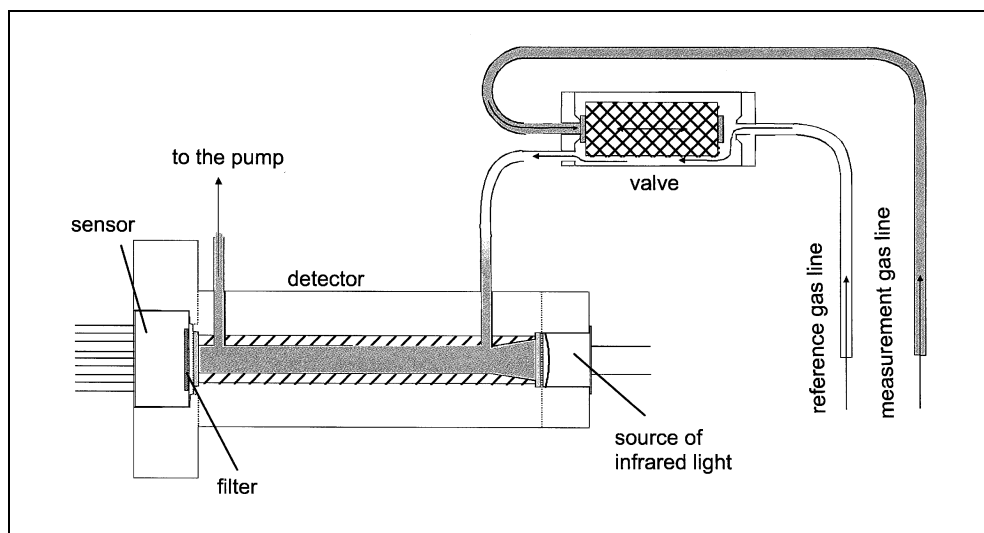


Fig. 2-1 Flow of the gas within the HLD5000

2.2 HLD5000 Overview

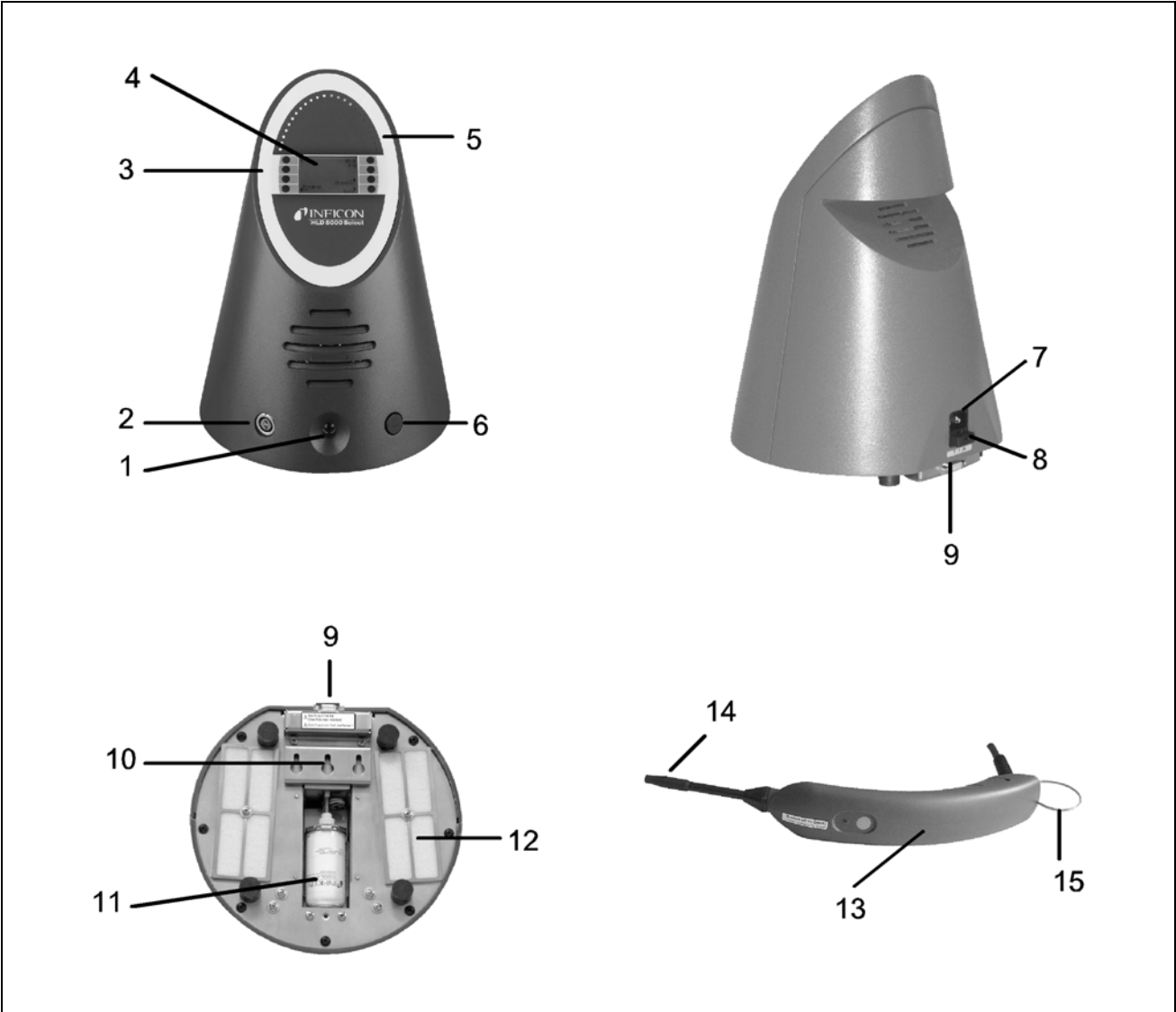


Fig. 2-2 Overview

Pos.	Description	Pos.	Description
1	Calibration port	9	RS232 Interface
2	Connection for the probe's line	10	Mount
3	Keys for operating the menu	11	Built-in calibrated leak (not for SF ₆ /CO ₂ version)
4	LC display	12	Air filter
5	LED display	13	Probe
6	Mains switch	14	Sniffer tip
7	Mains socket	15	Eye
8	Mains fuses		

3 Operating the HLD5000

3.1 Start-up

Put the HLD5000 in place (see also chapter wall installation), connect the sniffer line and the mains cord.



Caution

The HLD5000 will only operate after having connected the sniffer line first.



Caution

Do not place the HLD5000 on hot surfaces.

Notice In the default setting the serial numbers of the main unit and the probe has to match.

Press the mains switch (Fig. 3-2/6) to switch on the HLD5000. The HLD5000 will take about 30 seconds to warm up as indicated by the display.



Caution

During warm-up the sniffer tip must not be inserted in the test leak opening. Otherwise, the internal calibration will be disabled and an error message will be displayed.

In the default setting, the HLD5000 uses English menu text. To switch to another language press the keys PROGRAMM, OPTIONS AND LANGUAGE. Press the button for the chosen language and confirm with "OK".

After the warm-up phase of the HLD5000, an audible signal is produced and the leak detector will be ready to make measurements. The green LED (Fig. 3-3/2) in the probe indicates that the HLD5000 is ready to make measurements. The type of gas to which the HLD5000 has been programmed as well as the unit of measurement for the leak rate (factory default: g/a) is indicated on the display (Fig. 3-2/4). Moreover, the type of probe (detectable gas) to which the HLD5000 has been set up is indicated on the sticker on the probe.

The main unit is usable for all refrigerants, the detectable refrigerant is determined by the probe.

3.2 Working with the HLD5000

Provided the HLD5000 has been adapted to the specific requirements of the application (see Chapter 4) and calibrated accordingly, a leak test can be performed as follows:

Lead the probe tip as close as possible to the locations that are to be tested. If needed, the tip may even touch the unit under test.



Warning

Danger of electric shock.

- Do not touch live parts with the sniffer tip.
- Test samples need to be disconnected from electricity before leak testing.



Caution

Under all circumstances the intake of liquids which may still be present on the surface of the test object has to be avoided.

In the case of moist test objects (e.g. condensed water) the use of the water protection tip is recommended (see Chapter 1.6.6).

If a welded seam or a joint needs to be tested, the tip of the probe should be moved no faster than 2.5 cm/s (1 inch/s) across the location which is to be tested. The distance between probe tip and unit under test should be kept as small as possible. In the case of probing a specific location, the tip should remain in place briefly (at least 1 s).

The HLD5000 compares the measured leak rates with the rejection leak rates (trigger levels) set up as described in Chapter 4.1. If the measured leak rate exceeds the rejection leak rate, then more than half of the yellow lamps (LED) on the arc-shaped display (Fig. 3-2/5) will come on and an audible alarm is released.

Due to its working principle (see Chapter 2.1) background concentrations in the environment are suppressed and do not cause an alarm. Refrigerant clouds in front of large leaks will also be considered a background concentration. Different from the behavior of its predecessor HLD4000, the HLD5000 will not alarm when only approaching leaks from a larger distance. Larger leaks will also only be detected when close to the leak and thus, can be localized reliably.

Notice If you can not guarantee getting close enough to the leak (as described above) larger leaks may be missed. In this case, please use the flexible sniffer tip extension (Cat. no. 511-020) which is delivered with the HLD5000. For this application the extension tip can be cut down to 100 mm (4 in.) length for easier handling. (see Chapter 1.6.6.3)

Depending on the measurement mode (see Chapter 4.1) the test should be repeated with the key of the probe pressed to precisely pinpoint the location of the leak or to double check the rejection leak rate.

3.3 Controls and their Function

3.3.1 Overview of the Controls and Display Components

The controls and display components of the HLD5000, with the exception of the button and the LED at the probe, are all located at the main unit (Fig. 3-2).

3.3.2 Mains Switch

The HLD5000 is switched on and off via the mains switch (Fig. 3-2/6). In addition, it can enter a standby mode which can be activated automatically or manually.

3.3.3 LED Display of the HLD5000

The arc-shaped LED display (Fig. 3-2/5) is divided into a green half (on the left) and a yellow half (on the right). The relative leak rates as detected are indicated here. The center of the arc of LEDs where the LEDs change from green to yellow indicates the rejection leak rate which has been set up. Leak rates which remain below the rejection leak rate are indicated by the green LEDs, higher leak rates are indicated by the yellow LEDs. The last yellow LED corresponds to approximately 200% of the trigger level entered.

3.3.4 LC Display

In its default setting the LC display (Fig. 3-2/4) will show the measuring screen after switching on:

- The type of gas, for example R134a, which is detected is indicated at the top on the left side.
- If a universal Smart probe is connected the designation "Smart" is displayed below the gas type.
- The currently entered rejection leak rate (trigger level), for example 09.0 g/a is indicated at the top on the right
- The actual leak rate currently detected is displayed in the center of the display. (The lower display limit is 0.3 g/a (0.02 oz / yr) for single gas probes, and 0.2 g/a (0.02 oz / yr) for the Smart probe.)



Fig. 3-1

Pos.	Description	Pos.	Description
1	Gas type of probe	4	Info button
2	Trigger	5	Display of leak rate
3	Standby button	6	Menu button

- The left lower button opens the main menu.
- The right lower button opens the info page HLD5000 to sleep mode.

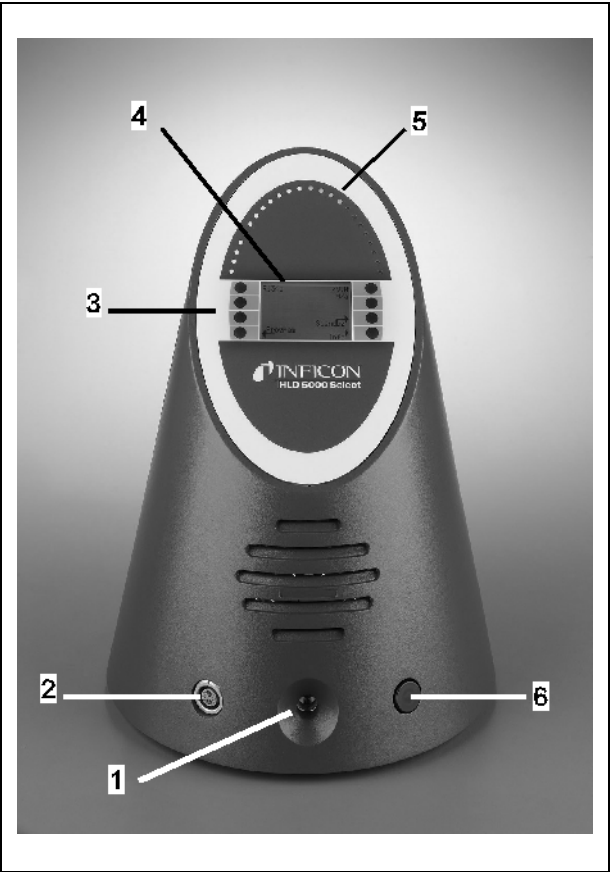


Fig. 3-2 Main unit

Pos.	Description	Pos.	Description
1	Calibration port	4	LC display
2	Connection for the probe	5	LED display (leak rate display)
3	Keys to operate the menu to 4 and on the right from 5 to 8) (Key numbering on the left side is from top to bottom from 1	6	mains switch

3.3.5 Probe

The probe (see Fig. 3-3) is firmly attached to the probe's line; only the sniffer, tip which is available in different lengths, can be exchanged.

Located on the probe are an LED (Fig. 3-3/2) and a button (Fig. 3-3/3). The LED indicates the following operating modes:

Operating condition	Description
off:	HLD5000 not ready to measure
green (steady):	normal operating mode / no errors
green, flashing:	error / measurement not possible or accuracy of the measurements can not be guaranteed.

Operating condition	Description
yellow (steady):	measured leak rate >40% but below the rejection leak rate.
yellow, flashing fast:	the measured leak rate has exceeded the rejection leak rate.
yellow / green, flashing:	after a restart no link between probe and main unit has yet been established.

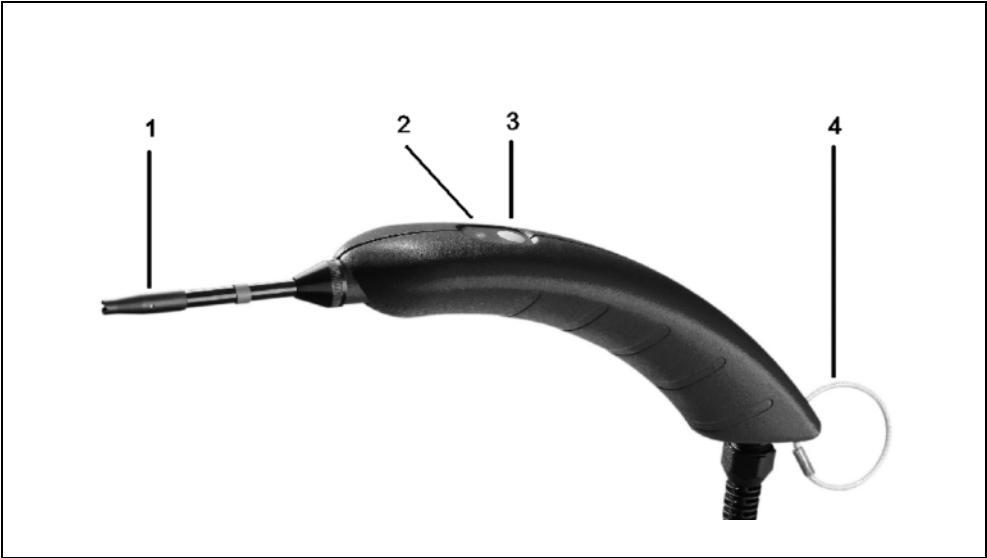


Fig. 3-3 hand unit

Pos.	Description	Pos.	Description
1	filter holder	3	button
2	LED	4	eye

The button is provided to select the different testing modes, see Chapter 4 and to calibrate the HLD5000, see Chapter 4.5.

The eye (see Fig. 3-3/4) serves the purpose of hanging the handle, for example, when not being used.

4 HLD5000 Settings (Menu Structure)

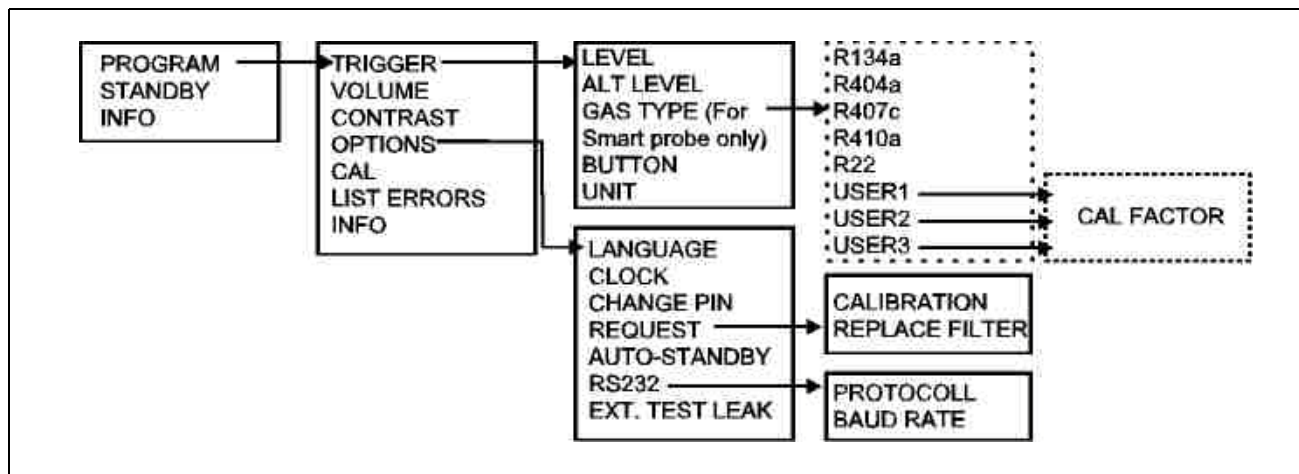


Fig. 4-1 Structure of the menu

Via the menu, the HLD5000 may be adapted to the specific operating conditions or requirements in each case.

The menu opens by pressing the PROGRAM key.

Operating STANDBY sets the HLD5000 into the standby mode in which the valve and pump are switched off.

INFO contains set-up information on important parameters and settings.

The entries for the parameters are made according to the same scheme. After having selected the menupoint which is to be set up, for example TRIGGER → LEVEL, the desired numerical value is selected. If, for example, an 8 is to be entered, press the key next to the numbers 8 and 9, thereafter the number 8 may be selected. In order to skip a setting or to return, the keys next to the arrows ← and → can be pressed.

In order to save changed entries into the menu, these must be acknowledged by "OK". Entries may be cancelled at any time by pressing "ESC". In such a case the new entries are not saved.

All parameters necessary to operate the HLD5000 are saved even after powering down the HLD5000.

4.1 Description of the Menu "Program"

This menu consists of the following items:

TRIGGER
VOLUME
CONTRAST
OPTIONS
CAL
LIST ERRORS
INFO

4.1.1 TRIGGER

Through this menu item the following settings can be entered:

LEVEL (rejection leak rate)

ALT LEVEL

GAS TYPE (**with Smart probe only**)

BUTTON

UNIT

These settings are described in the following:

LEVEL (rejection leak rate)

The "LEVEL" menu item is selected when wanting to enter the leak rate at which the units under test shall be rejected. The level may be set 1 g/a (0.04 oz/yr) (depending on type of gas) and 50 g/a (1.76 oz/yr). For further units please refer to the following table:

Unit	Lower display limit	Upper display limit
g/a	(0.5) 1.0	50.0
mbar l/s ⁻¹	4 x 10 ⁻⁶	3.9 x 10 ⁻⁴
lb/yr	(1) 2 x 10 ⁻³	1.0 x 10 ⁻¹
oz/yr	(0.02) 0.04	1.76
Pa m ³ x s ⁻¹	4 x 10 ⁻⁷	3.9 x 10 ⁻⁵

(Values in parenthesis are for Smart probe only)

ALT LEVEL

Entry of the alternative rejection rate. This rejection rate is used only when the key on the handle has been programmed to "ALT" (see below). This setting may be entered representing a percentage of the value for LEVEL, for example 50 %, or in absolute terms, for example 10 g/a.

GAS TYPE (**For Smart probe only**)

The HLD5000 with Smart probe offers 5 pre-programmed gases to choose from. When opening the gas type menu a list of these five gases plus three user-definable gases is displayed. The bottom two buttons on the left side of the display allow to scroll the list. The currently selected gas is highlighted by inverted colors.

When switching between the pre-programmed gases the HLD5000 does not require to be recalibrated. The HLD5000 will automatically adjust for the different sensitivities the Smart probe has for the different gases. However, the trigger value will stay the same.

When choosing a user definable gas the HLD5000 can either be calibrated externally or a calibration factor can be entered to enable a calibration with the built-in calibrated leak. These factors have to be determined for each additional gas and may be obtained from INFICON on request in most cases. When not entering a calibration

factor a request for external calibration will be issued after selecting this gas. If a calibration factor is entered the HLD5000 may be calibrated with the internal calibrated leak as for all other gases from the list.

BUTTON

The HLD5000 permits the entry of different configurations as to the operation of the button in the probe so as to allow different working and test methods to be implemented:

- "OFF" "OFF" means that the button in the probe is disabled (except during the calibration process, see Chapter 4.5.2). The rejection leak rate (LEVEL) set up under the menu item "TRIGGER" is used, the alternative rejection leak rate does not apply here.
- "ALT" "ALT" should be selected if a unit under test is to be tested at two different points at differing sensitivities. If the button on the probe is not pressed the rejection leak rate set up under "LEVEL" will apply. When operating the button, then the alternative rejection leak rate will apply (as set up under "ALT LEVEL").
- "SEARCH" With the setting "SEARCH" selected it is possible to quickly sniff the unit under test at a high sensitivity defined by the HLD5000 with the button on the probe not pressed. As soon as the HLD5000 has detected a leak, the button may then be pressed to determine if the leak found exceeds the rejection leak rate as set up under "LEVEL". The alternative rejection leak rate is not available in this mode. In the main menu and with this setting, Search (Test) will be displayed when button on at the handle is not pressed.

UNIT

Here the unit of measurement required for the measurements can be selected. One may select from g/a; mbar x l/s; lb/yr; oz/yr and Pa x m³/s.

For the Smart probe only g/a, oz/yr and lb/yr are available. When switching from a pre-programmed gas to a user-definable gas the HLD5000 will default to g/a.

4.1.2 VOLUME

Here the loudspeaker may be switched "OFF" or "ON". When selecting "ON" the volume may be adjusted from 1 (quiet) to 20 (loud) with the aid of the arrows ↑ and ↓.

With the Test button the selected volume can be checked.

The error sound is a two-tone sound.

4.1.3 CONTRAST

Through this function one may set up the contrast for the LC display. For this press the keys "brighter" or "darker" as required until the desired level of brightness has been attained. The range spans from 1 to 99.

If by accident the display has been set too bright or too dark so that it can not be read anymore, this may be changed as follows:

Switch off the HLD5000 and switch it on again. During the warm up phase hold the menu key 3 or 7 pressed (see Fig. 3-2) until the display can be read properly again. (Keys are numbered beginning at the top left side with No. 1, going down and end with No. 8 at the button on the right side.) This value is saved permanently only after having acknowledged it through the menu item "CONTRAST". If this setting is not confirmed, the former setting will apply once again after switching on the HLD5000 once more.

4.1.4 OPTIONS

Under "OPTIONS" the following parameters can be set up:

LANGUAGE

Here one may select the language for the menus and messages which are displayed. Choose between English, Spanish, French, German, Chinese and Japanese (Katakana) language.

If by accident Chinese or Katakana language is chosen, press the buttons 2 and 6 to get back to the english menu.

CLOCK

Here date and time may be set. The date setting format is day, month and year (DD.MM.YY), the time format is the 24 hour format in hours and minutes (HH.MM).

CHANGE PIN

Through this function it is possible to define or change the PIN (password).

The PIN (password) protects the program menu from unauthorized access.

A new PIN is defined by entering a four digit number twice in succession.

The PIN function can be disabled by entering 0000 as the PIN, using the steps defined above. Enabling is possible at any time by proceeding as described above.



Caution

Under all circumstances memorize the new PIN!

The PIN can only be reset by INFICON's service organization.

REQUEST

Request for calibration	Request for calibration. The HLD5000 can be set up to remind the operator at regular intervals to run a calibration. Through this function the automatic request to calibrate can be switched on or off whereby the time interval can be selected in increments of 30 minutes. The setting is entered through the keys ↑ and ↓, and a period ranging between 30 minutes and 24 hours may be selected. After the entered time span has elapsed, the HLD5000 will sound an alarm and indicate on the display a request to recalibrate.
Request for filter replacement	The HLD5000 can be set up to remind the operator at regular intervals to replace the filter holder at the sniffer tip. By selecting ON or OFF the function can be enabled or disabled. When enabled the message „Please replace filter holder!“ will be displayed every 40 hours of operation. In this case please replace the filter holder (see Chapter 6.2.1) and acknowledge the message. The next request for filter replacement will pop up after further 40 hours of operation. As factory default the function is enabled.

AUTO STANDBY

The HLD5000 offers the possibility of automatically reverting to the standby mode during pauses or periods during which it is not used. A time span ranging between 1 and 15 minutes may be entered. If the HLD5000 is not used for a period of time longer than the one set up here, the leak detector will thereafter revert automatically to the standby mode.

When lifting the probe, the HLD5000 will automatically revert to normal operation and will be ready to make measurements within 2 seconds.

RS232

Through this menu, the settings for the RS232 interface of the HLD5000 can be entered.

Protocol	Selection of the interface protocol: "OFF", "Normal" or "Simple". If the RS232 interface is not used, the "OFF" setting is recommended to exclude the possibility of any interference. For further details on the interface protocol refer to "Interface Description HLD5000 (kins40e1)".
Baud rate	Entry of the baud rate for the RS232 interface. Available settings are 300, 600 1200, 2400, 4800 or 9600 baud. The default setting is 9600 baud.

External Calibrated Leak

Here the setting for the leak rate of the external leak can be entered.

The setting is performed as described on Chapter 4.4 and has to be confirmed with "OK". If for example the external leak rate is entered in g/a and changed into another unit of measurement, the HLD5000 converts the leak rate g/a into the new unit of measurement.

4.1.5 CAL

Through this menu item the HLD5000 may be calibrated with an external test leak. The SF₆ and CO₂ version of the HLD5000 can only be calibrated using an external calibrated leak. When pushing the „CAL“ button the following information appears in the display: „Sniff external test leak“, the appointed leak rate and the type of refrigerant of the external test leak.

The calibration is performed as follows:

- Enter the leak rate of the external test leak under the menu item „Ext. Test leak“.
- Go back to menu item „CAL“.
- Hold the sniffer tip against the gas outlet of the external leak until the LED signal is stable.
- Confirm with probe button.
- Keep the sniffer tip on the outlet until the information „calibration successful“ or a beep is displayed.

The HLD5000 is calibrated now.

4.1.6 LIST ERRORS

Here a list containing the 12 most recent error messages and the acknowledgement of error messages is displayed. The time, date and an error code is displayed, and via the key "View" the error with time and date can be displayed in plain text.

The error code consists of a letter and a two digit number.

Meaning of the letter:

- E: Error / warning was displayed
- R: Error / warning has been removed (remove)
- M: General message, for example "power up" (message)

The two digit number in the error code corresponds to the number given in the table, found in the repair instruction (doc. no. kipa40e).

4.1.7 INFO

The INFO key provides important information to the user relating to the entered parameters and the operating modes of the HLD5000. By scrolling forward and backward using the arrow keys the 6 different information pages can be displayed.

Detailed in the following is the information which can be accessed:

Main Unit Info

- Internal housing temperature
- Number of operating hours of the main unit
- Software version number for the main unit

Probe Info 1

- Internal sensitivity factor S for monitoring the sensor circuitry
- Differential pressures Δp_1 and Δp_2 to monitor the gas flows in the measurement and reference lines
- Channel used by the AD converter
- Number of operating hours for the probe
- Software version number for the probe

Probe Info 2

- HEX Code of probe
- Contains information for service people

CAL Info

- CAL factor
- Phase
- Sensor factor e.g. R134a → R404A
- Factor which is multiplied with the internal test leak to get the equivalent leak rate for the measured gas.

Test leak info

- Leak rate for the calibrated leak normalized to 20 °C
- Leak rate of the calibrated leak compensated for temperature and type of gas

U / I-Info

- + 12 Volt supply voltage (U+)
- - 12 Volt supply voltage (U-)
- Supply voltage for the infrared light source in the probe (U light)
- Current flow through the infrared light source in the probe (I light)
- Probe test voltage to monitor the voltage supply (U probe)

4.2 Description of the Menu Item INFO

The INFO menu item contains set-up information relating to the following parameters. By scrolling back and forth you can switch between „Setup-Info 1“ and „Setup-Info 2“.

Setup-Info 1:	Trigger level
	Alt. trigger level
	Button
	Volume
Setup-Info 2:	Date
	Time
	Next calibration

TRIGGER LEVEL

Displays the selected rejection leak rate, for example 10 g/a.

ALT. TRIGGER LEVEL

Displays the selected alternative rejection leak rate. Values which were entered in % are converted to absolute values.

BUTTON

Informs about the selected setting (OFF, ALT, TEST) for the button in the probe.

VOLUME

Indicates the volume setting for the loudspeaker.

DATE

Indicates the current date as day, month and year.

TIME

Indicates the current time as hours, minutes and seconds.

NEXT CALIBRATION

Indicates how long it will be (hours and minutes) until the reminder to calibrate will be displayed.

4.3 Menu Item **STANDBY**

Pressing the standby key makes the HLD5000 enter the standby mode during which the valve in the handle is disabled and the diaphragm pump is shut down.

In this mode, no leak rate measurements can be run.

When letting the HLD5000 enter the standby mode by operating the key "Standby" and not through the automatic shut down feature (can be configured through the menu item "AUTO STANDBY") during the first 25 seconds, the HLD5000 can only be reactivated by pressing any key.

After this time, operating any key on the HLD5000 or moving the handle will reset the leak detector back to the measurement mode.

4.4 Selecting the gas type

For selective, single gas probes (Cat. No. 510-010 through 510-016 or sniffer line Cat. No. 511-030 to 511-036) the detected gas type can be changed by connecting a different, selective sniffer line.

For the Smart probe the detectable gas can be selected from a list of 5 pre-programmed gases plus three user-definable gases. (See „Gas Type“ in Chapter [4.1.1](#))

4.5 Calibration

The HLD5000 is equipped with a built-in calibrated leak by means of which the leak detector may be calibrated. The service life of the calibrated leak is about 2 years. Three months before expiration of the calibrated leak a message will be displayed reminding the operator to replace it.

- Notice* The SF₆ and CO₂ version of the HLD5000 is not equipped with its own calibrated leak. Calibration will only be possible using an external calibrated leak (see „Gas Type“ in Chapter [4.1.1](#)).
- Notice* When operating the Smart probe user definable gases will require to be calibrated with an external test leak until a calibration factor is entered for this gas type.
- Notice* Replacement leaks should not be purchased in advance of their need as they have a limited lifetime. Any leaks being held in stock should be kept in a cool place.
- Notice* In order to ensure accurate measurements wait for at least five minutes after switching on before running a calibration.

4.5.1 Checking the Calibration

A calibration can be checked by inserting the probe tip into the calibration port without depressing the button on the probe. A message will be displayed indicating whether or not the calibration is still OK (refer also to Chapter 4.1.4, manual calibration).

On the leak rate display, two LEDs to the left and right of the 100% mark will flash. If the measured value is outside this mark, a recalibration will be required. The currently measured value is indicated by two moving LEDs just like during the calibration process. Moreover, the calibration status is indicated on the display.

A recalibration can be started immediately by pressing the button, and the probe tip does not have to be removed from the calibration port.

If a recalibration is required, this is indicated on the display and by an audible tone.

During the check, the probe must be held still and straight.

4.5.2 Calibrating the HLD5000 with the COOL-Check

To calibrate the HLD5000, press the button on the probe and insert the sniffer tip into the calibration port at the front of the main unit. The HLD5000 will then start the calibration process automatically. During the calibration process it is not necessary to keep the button on the probe pressed. The individual phases of the calibration process are indicated on the display which also informs the user about a successful calibration.

Notice During the calibration process, the probe must be held still and straight, otherwise no calibration will be possible.

Notice During the calibration, the opening for the calibrated leak should not be exposed to strong air flows (from air-conditioning units, for example).

Notice When performing the calibration using the extension tip Cat. No. 511-020 the insert should be used in the opening of the calibrated leak so as to ensure that the tip is properly centered in the opening.

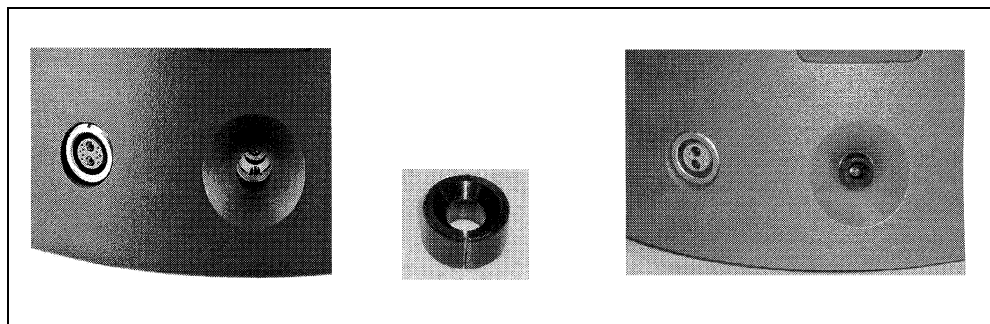


Fig. 4-2 Opening at the calibration port



Fig. 4-3 Calibrated leak

4.5.3 Calibrated leak (COOL-Check)

The calibrated leak is located in the bottom of the main unit. It consists of a gas canister with a printed circuit board attached to the bottom.

When the calibrated leak is nearly empty, the message "Leak nearly empty. Please replace!" will be displayed.

The user will have to replace the calibrated leak within two to three months before the calibrated leak will be completely empty.

How to replace the COOL-Check is described in Chapter [6.2.5](#).

Notice Replacement leaks should not be purchased in advance of their need as they have a limited lifetime.

4.6 Shutting Down

The HLD5000 may be switched off at any time by operating the mains switch independently of the operating mode it is in.

All parameters are saved when the HLD5000 is powered down.

4.7 Switching probes

To convert the HLD5000 to a different probe shut down the HLD5000, unplug the current sniffer line and connect a different sniffer line with a different probe. The probe type will be indicated in the upper left corner of the display after restarting the HLD5000.

5 Messages

While operating in the leak detection mode, the display will provide information which will support the operator using the HLD5000. Besides messages relating to leak detector settings also warnings and error messages may be displayed.

The HLD5000 is equipped with comprehensive self-diagnostic means. If a fault condition is detected by the controller board this is indicated via the display to the operator.

Errors are events which force an interruption to the measurement sequence and which the HLD5000 is not capable of remedying on its own. Errors are displayed in plain text on the display. The error sound is a two-tone sound.

The error message can be erased by pressing the "OK" key.

As long as an error status exists, a warning triangle comes up in the lower line of the display.

An overview over the error messages which may occur while the machine is in use and possible remedies are listed below.

A list of all error messages as well a notes for troubleshooting is provided in the Repair Instructions (kpa40e1).

Displayed message	Explanation/possible cause	Remedies
Leak nearly empty Please replace!	Service life of the Cool Check is less than 3 months Cool Check is nearly empty Set on wrong date	Replace Cool Check Program Main Unit with new date
Probe not connected!	There is no data connection to the sniffer probe Sniffer Probe is not connected If LED at Sniffer Probe is off: processor in the Sniffer Probe does not run	Check the sniffer line Check the LEMO plug or change sniffer line
Leak temperature is too high!	Main Unit is standing on a hot surface Ambient temperature too high	Decrease the temperature around the main unit
Leak temperature too low!	Ambient temperature too low	Increase temperature around the main unit
Housing temperature too high!	Ambient temperature too high Fan defect or blocked	Decrease temperature around the main unit Change the fan
Flow at measuring line too low!	Measuring line is blocked Differential sensor is broken	Change the filters of the sniffer tip Change the CPU-Board (Sniffer Probe)
Leak at measuring line!	Measuring line is leaking One of the hoses to differential sensor is leaking Differential sensor is broken	Check the gasket of sniffer tip Check or change the hoses to differential sensor Change the CPU-Board (Sniffer Probe)
Flow at reference line too low!	Reference line is blocked Filter is clogged Differential sensor is broken	Check the sniffer line, change the sniffer tip Change the filters of the sniffer tip Change the CPU-Board (Sniffer Probe)

Displayed message	Explanation/possible cause	Remedies
Leak at reference line!	Reference line is leaking One of the hoses to differential sensor is leaking Differential sensor is broken	Change the sniffer line Check or change the hoses to the differential sensor Change the CPU-Board (Sniffer Probe)
Leak empty. Please replace!	Cool Check empty Wrong date (main unit)	Change the Cool Check Adjust new date (main unit) Change Cool Check
Sensor sensitivity too low!	Optical cell is contaminated with water	Depending on the quantity of water let run the HLD5000 from 1 minute to 2 hours
Light barrier dirty	Dust has accumulated in the test leak opening and is interrupting the light barrier. Calibration with internal test leak can be started from the main menu manually.	Turn off HLD5000. Blow out the test leak opening with compressed air. Restart HLD5000.
Calibration proof not possible Wrong gas type in internal test leak	Smart probe programmed to user-definable gas CO ₂ or SF ₆ probe connected	Check calibration with external test leak
Calibration not possible Wrong gas type in internal test leak	Smart probe programmed to user-definable gas CO ₂ or SF ₆ probe connected	Check calibration with external test leak
Warning 02: light barrier dirty	Light barrier dirty	Clean test port of calibrated leak If problem persists confirm and calibrate with external leak until light barrier is replaced
Calibration time out limit exceeded	Light barrier dirty	Clean test port of calibrated leak If problem persists shut down the HLD5000 and restart. Calibrate with external leak afterwards until light barrier is replaced

6 Maintenance

6.1 INFICON Service

If an the HLD5000 is returned to INFICON, please indicate whether it is free of substances damaging to health or whether it is contaminated. If it is contaminated also indicate the nature of the hazard. For this you must use a form pre-prepared, which we will send to you upon request or which you may copy from this manual.

The form is called: "Declaration of Contamination of Vacuum Equipment and Components".

Affix this form to the HLD5000 or enclose it with the leak detector. This Declaration of Contamination is required by us to meet the requirements of the laws and to protect our staff.

INFICON will return any leak detectors without a "Declaration of Contamination" to the sender's address.

6.2 Maintenance Work

No fixed maintenance intervals have been specified for the HLD5000. The work described in the following will only have to be done as required.

6.2.1 Replacing the Filters

The filters serve the purpose of filtering the air taken in. In order not to obstruct the airflow and to prevent the HLD5000 from being contaminated all filters should be exchanged preventatively.

There are three filters in the HLD5000, two within the sniffer tip filtering the air intake through the sniffer line and one air filter at the bottom of the housing.

6.2.1.1 Exchanging the filters in the sniffer line

We recommend to exchange the filter holder at the probe tip preventatively at least once a week and the filter cartridge at the bottom of the sniffer tip at least once a month.

If the function "Request for filter replacement" is enabled, the message „Please replace filter holder!“ will be displayed every 40 hours of operation. After replacing the filter holder and acknowledging the message the internal counter for this function will be reset and the message will pop up after another 40 hours of operation. Any dirty or clogged filter in the sniffer line will lead to the same error message as a dirty tip filter holder. In dirty conditions the error message "flow at measuring line too low" or "flow at reference line too low" may occur before expiration of these time limits. On occurrence of these error messages please exchange the tip filter holder first. If this does not fix the problem, please also exchange the filter cartridge.



Caution

Before exchanging any of the sniffer line filters please switch off the HLD5000.

When replacing filters please make sure that no particles enter into the intake opening.

The fine filters at the probe tip are firmly built into the filter holder. To replace the filter holder please:

- 1 Unscrew the filter holder from the probe tip
- 2 Screw on a new filter holder.

Replacement filter holders are available for order in sets of 20 pieces as Cat. No. 511-027.

The fine filters at the bottom of the sniffer tip are firmly built into the filter cartridge. To exchange the filter cartridge please:

- 1 Loosen the screw at the bottom of the sniffer tip and detach the sniffer tip from the probe handle
- 2 Take off the filter cartridge from the bottom of the sniffer tip
- 3 Place a new one on the two ends of the measurement and reference line
- 4 Attach the sniffer tip back onto the probe handle and retighten the screw at the bottom of the sniffer tip.

Replacement filter cartridges are available for order in sets of 20 pieces as Cat. No. 511-018.

- 5 Exchanging the air filter at the bottom of the housing.

The air filter at the bottom of the housing should be replaced once it has turned dark gray or deposits of dirt are clearly visible on the filter.



Caution

Before replacing the air filter at the bottom of the housing please disconnect the HLD5000.

- 1 Switch off the HLD5000 off and pull the mains plug
- 2 Unscrew the screws in the middle of the filter
- 3 Remove the filter and depending on how dirty it is either replace it or clean it (for example with compressed air or a brush)
- 4 Insert the filter once more
- 5 Tighten the screw

Replacement air filters are available for order as Cat.No. 200 000 086.

6.2.2 Cleaning the Opening of the Calibrated Leak

In order to prevent the light barrier in the opening of the calibrated leak from being interrupted by dirt, the opening should be blown out with clean compressed air regularly.

6.2.3 Cleaning

The housing of the HLD5000 is made of plastic. Therefore to clean the housing use cleaning only agents which are recommended to clean plastic surfaces (for example mild household cleaning agents). Do not use any solvents which attack plastic materials.

6.2.4 Replacing Fuses



Warning

To replace the fuses remove the mains cord first.

The fuse holder (Fig. 2-2/8) of the HLD5000 is located below the mains socket on the rear of the main unit. To replace the fuses proceed as follows:

- 1 Press down the pin in center and pull the fuse holder out.
- 2 Pull the fuses out and check these.
- 3 If required insert a new fuse. In any case two fuses of the same rating will have to be inserted. The mains fuses required are slow-blow T 1 A (Ø 5 x 20 mm).
- 4 Insert the fuse holder once more and press it home until the securing pin engages.

After having replaced the fuses, reconnect the mains cord to the HLD5000 and switch on the leak detector.

6.2.5 Replacing the Calibrated Leak (not for SF₆ / CO₂ version)

The calibrated leak should be replaced two to three months at the latest after the message "Leak nearly empty. Please replace!" has been displayed. The calibrated leak is replaced as follows:

- 1 Switch off the HLD5000 off and pull the mains plug.
- 2 Turn the main unit on its side to expose the base.
- 3 Turn the yellow plastic screw back completely.
- 4 Carefully remove the calibrated leak. Don't damage the cable.
- 5 Pull off the plug (blue) from the calibrated leak's printed circuit board.
- 6 Take a new calibrated leak and insert the plug into the socket.

- 7** Insert the new calibrated leak and feed the cable with the plug through the hole.
- 8** Secure with the screw. Please make sure that the rubber seal is firmly in place and that the outlet opening of the calibrated leak is positioned approximately at the middle of the opening for the calibrated leak.
- 9** Switch off the HLD5000 on and run a new calibration after about 5 minutes.

A residual amount of refrigerant might be left under pressure (more than 5 bar) in the canister of the empty leak standard. Therefore the COOL-Check must be disposed PROPERLY - following the local, state and national regulations - or must be sent back to INFICON / your supplier.



Declaration of Contamination

The service, repair, and/or disposal of vacuum equipment and components will only be carried out if a correctly completed declaration has been submitted. Non-completion will result in delay.

This declaration may only be completed (in block letters) and signed by authorized and qualified staff.

1 Description of product Type _____ Article Number _____ Serial Number _____	2 Reason for return _____ _____ _____																				
3 Operating fluid(s) used (Must be drained before shipping.) _____ _____																					
4 Process related contamination of product: <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;">toxic</td> <td style="width: 10%;">no <input type="checkbox"/> 1)</td> <td style="width: 10%;">yes <input type="checkbox"/></td> <td rowspan="6" style="width: 40%; text-align: center; vertical-align: middle;"> 2) Products thus contaminated will not be accepted without written evidence of decontamination! </td> </tr> <tr> <td>caustic</td> <td>no <input type="checkbox"/> 1)</td> <td>yes <input type="checkbox"/></td> </tr> <tr> <td>biological hazard</td> <td>no <input type="checkbox"/></td> <td>yes <input type="checkbox"/> 2)</td> </tr> <tr> <td>explosive</td> <td>no <input type="checkbox"/></td> <td>yes <input type="checkbox"/> 2)</td> </tr> <tr> <td>radioactive</td> <td>no <input type="checkbox"/></td> <td>yes <input type="checkbox"/> 2)</td> </tr> <tr> <td>other harmful substances</td> <td>no <input type="checkbox"/> 1)</td> <td>yes <input type="checkbox"/></td> </tr> </table>		toxic	no <input type="checkbox"/> 1)	yes <input type="checkbox"/>	 2) Products thus contaminated will not be accepted without written evidence of decontamination!	caustic	no <input type="checkbox"/> 1)	yes <input type="checkbox"/>	biological hazard	no <input type="checkbox"/>	yes <input type="checkbox"/> 2)	explosive	no <input type="checkbox"/>	yes <input type="checkbox"/> 2)	radioactive	no <input type="checkbox"/>	yes <input type="checkbox"/> 2)	other harmful substances	no <input type="checkbox"/> 1)	yes <input type="checkbox"/>	
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radioactive	no <input type="checkbox"/>	yes <input type="checkbox"/> 2)																			
other harmful substances	no <input type="checkbox"/> 1)	yes <input type="checkbox"/>																			
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> The product is free of any substances which are damaging to health yes <input type="checkbox"/> </div> <div style="width: 50%;"> 1) or not containing any amount of hazardous residues that exceed the permissible exposure limits </div> </div>																					
5 Harmful substances, gases and/or by-products Please list all substances, gases, and by-products which the product may have come into contact with: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 25%;">Trade/product name</th> <th style="width: 25%;">Chemical name (or symbol)</th> <th style="width: 25%;">Precautions associated with substance</th> <th style="width: 25%;">Action if human contact</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>		Trade/product name	Chemical name (or symbol)	Precautions associated with substance	Action if human contact																
Trade/product name	Chemical name (or symbol)	Precautions associated with substance	Action if human contact																		
6 Legally binding declaration: I/we hereby declare that the information on this form is complete and accurate and that I/we will assume any further costs that may arise. The contaminated product will be dispatched in accordance with the applicable regulations. <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 60%;"> Organization/company _____ Address _____ Phone _____ Email _____ Name _____ </div> <div style="width: 35%;"> Post code, place _____ Fax _____ </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 55%;"> Date and legally binding signature _____ </div> <div style="width: 40%;"> Company stamp _____ </div> </div>																					

This form can be downloaded from our website.

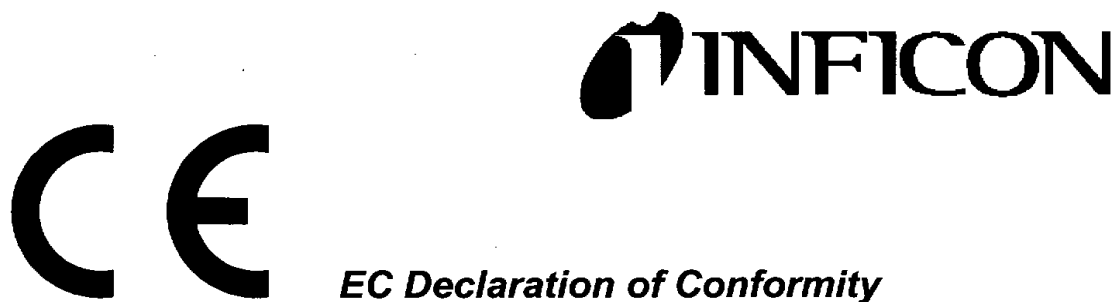
Copies:
Original for addressee - 1 copy for accompanying documents - 1 copy for file of sender

INFICON GmbH

Bonner Str. 498, 50968 Cologne, Germany
 Tel: +49 221 3474 2222 Fax: +49 221 3474 2221
 www.inficon.com leakdetection.service@inficon.com

zisa01e1-a

Fig. 6-1 Declaration of contamination



We – INFICON GmbH - herewith declare that the products defined below meet the basic requirements regarding safety and health of the relevant EC directives by design, type and the versions which are brought in to circulation by us.

In case of any products changes made without our approval, this declaration will be void.

The products meet the requirements of the following directives:

- **Directive on Low Voltage**
(2006/95/EC)
- **Directive on Electromagnetic Compatibility**
(2004/108/EC)

Designation of the product:

Halogen Sniffer Leak Detector

Applied harmonized standards:

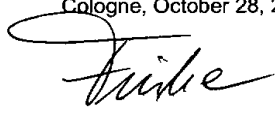
- **EN 61010 - 1 : 1993**
- **EN 61000-6-3 : 2002 Parts EN 55011 Class A**
EN 61000-3-2
- **EN 61000-6-2 : 2005 Parts EN 61000-4-2**
EN 61000-4-3
EN 61000-4-4
EN 61000-4-5
EN 61000-4-6

Model: **HLD5000**

Cologne, October 28, 2008


Dr. Döbler, Manager

Cologne, October 28, 2008


Finke, Research and Development

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INFICON GmbH
Bonner Strasse 498 (Bayenthal)
D-50968 Köln
Tel.: (0221) 3474-0
Fax: (0221) 3474-1429
<http://www.inficon.com>
e-mail: LeakDetection@inficon.com

Fig. 6-2 Declaration of Conformity

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INFICON GmbH, Bonner Strasse 498, D-50968 Cologne, Germany
Phone: +49 (0)221 347-40 Fax: +49 (0)221 347-41429 E-mail: leakdetection@inficon.com

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Dokument: kina22e1-g (1007)