



Translation of the original operating instructions

LDS Retrofit Kit

Electronic module

Catalog No.
560-400

From software version
2.72 (LDS3000) / 2.72 (CU1000)

jinb10en1-02-(1901)



INFICON GmbH
Bonner Strasse 498
50968 Cologne, Germany

Table of Contents

1	About these instructions	5
1.1	Warnings	5
1.2	Other associated documents	5
1.3	Target groups	6
2	Safety	7
2.1	Intended use	7
2.2	Owner requirements	7
2.3	Duties of the operator	8
2.4	Dangers	8
3	Shipment, Transport, Storage	9
4	Description	10
4.1	Function	10
4.2	Device setup	10
4.3	Technical data	11
5	Installation	13
5.1	Setup	13
5.2	Connect the device with the MSB box of the LDS3000	14
5.3	Connecting the device with external installation of CU1000	15
5.4	Connect the device when installing the CU1000 in the installation slot of the device	16
5.4.1	Install and connect the CU1000	17
5.5	Connect the device to the mains power	18
5.6	Setup the compatibility mode	18
5.7	Set the user defined parameters	18
5.8	Make the vacuum connection between the device and the existing leak detection system	19
5.8.1	LDS1000 operating modes	19
5.8.2	Vacuum technical specification of the backing pump	20
5.8.3	Recommended system configuration for the operating mode GROSS with pump module	20
5.8.4	Recommended system configuration for the operating mode FINE with pump module	21
5.8.5	LDS3000 operating modes	22
5.8.6	LDS3000 configuration	23
5.8.6.1	Connection LDS3000	23
5.8.6.2	LDS3000 specification	23

5.8.6.3	LDS3000 vacuum configuration for the operating mode GROSS with pump module.....	24
5.8.6.4	LDS3000 vacuum configuration for the operating mode FINE with pump module	25
5.8.6.5	LDS3000 vacuum configuration for the operating mode ULTRA with pump module.....	26
5.8.6.6	Comparison of the specifications LDS1000 and LDS3000	27
5.8.7	Vacuum connection transfer from the LDS1000 to the LDS3000	28
5.8.7.1	Vacuum connection transfer for the operating mode GROSS	28
5.8.7.2	Vacuum transfer for the operating mode FINE	29
5.8.7.3	Vacuum connection transfer for the operating mode FINE to ULTRA	29
5.9	Interface protocol LDS1000/LDS2010	29
6	Operation.....	30
7	Error messages	31
8	Maintenance and repair	32
8.1	Cleaning the device	32
8.2	Send in for repair	32
9	Decommissioning the device.....	33
9.1	Disposing of the device.....	33
9.2	Sending in the device	33
10	Appendix.....	34
10.1	CE Declaration of Conformity	34

1 About these instructions

This document applies to the software version stated on the title page.

Product names may occur in the document, which are added for identification purposes only and belong to the respective owner of the rights.

1.1 Warnings



DANGER

Imminent hazard resulting in death or serious injuries



WARNING

Hazardous situation resulting in potential death or serious injuries



CAUTION

Hazardous situation resulting in minor injuries

NOTICE

Hazardous situation resulting in damage to property or the environment

1.2 Other associated documents

Name	Document number
Operating Instructions LDS3000 MS module	jiqa54
Operating Manual Control Unit CU1000	jina54
Operating instructions bus module	jiqb10
Operating instructions I/O module	jiqc10
Operating instructions XL sniffer adapter	jinxa54
Interface protocols	jira54

1.3 Target groups

These operating instructions are intended for the owner and for technically qualified personnel with experience in leak detection technology and integration of leak detection devices in leak detection systems. In addition, the installation and use of the device require knowledge of electronic interfaces.

2 Safety

2.1 Intended use



Under certain circumstances the device functions also in the leak detection systems with LDS2000. When installed with a LDS2000 contact the INFICON Service.

The device forms the interface between the existing leak detection system and the retrofitted LDS3000. The LDS3000 can then be used without any electrical adaptations.

- You must install, operate and service the device only in compliance with these operating instructions.
- Comply with application limits, see "Technical Data".
- Only use the device in connection with the existing leak detection systems, in which a LDS1000/LDS2010 is being used and retrofitted with a LDS3000.

Improper use

Avoid the following, non-intended uses:

- Operation at too high ambient temperature
- Using the device outside of the specific area

The device is an accessory for retrofitting into an existing leak detection systems with the LDS1000/LDS2010. The device is installed in connection with a LDS3000.

2.2 Owner requirements

The following notes are for companies or any person who is responsible for the safety and effective use of the product by the user, employee or third party.

Safety conscious operation

- Operate the device only if it is in perfect technical condition and has no damage.
- Only operate the device in accordance with this instruction manual, in a safety and risk conscious manner.
- Adhere to the following regulations and observe their compliance:
 - Intended use
 - General applicable safety and accident prevention regulations
 - International, national and local standards and guidelines
 - Additional device-related provisions and regulations
- Only use original parts or parts approved by the manufacturer.

- Keep this instruction manual available on site.

Personnel qualifications

- Only instructed personnel should be permitted to work with and on the device. The instructed personnel must have received training on the device.
- Make sure that authorized personnel have read and understood the operating instructions and all other applicable documents.

2.3 Duties of the operator

- Read, observe, and follow the information in this manual and in the work instructions provided by the owner. This concerns in particular the safety instructions and warnings.
- Always observe the complete operating instructions for all work.
- If you have any questions about operation or maintenance that are not answered in this manual, please contact Customer Service.

2.4 Dangers

The measuring instrument was built according to the state-of-the-art and the recognized safety regulations. Nevertheless, improper use may result in risk to life and limb on the part of the user or third parties, or damage to the measuring instrument or other property may occur.

Hazards due to liquids and chemicals

Liquids and chemical substances can damage the instrument.

- Do not suck up liquids with the instrument.
- Never try to find toxic, caustic, microbiological, explosive, radioactive or other harmful substances with the device.

Dangers from electric power

There is a danger to life from the contact of conductive parts inside the device.

- Disconnect the device from the power supply prior to any installation and maintenance work. Make sure that the electric power supply cannot be reconnected without authorization.

The device contains electric components that can be damaged from high electric voltage.

- Before connecting the device to the power supply, make sure that the supply voltage specified on the device is the same as the local power supply.

3 Shipment, Transport, Storage

Shipment

Item	Quantity
LDS retrofit kit	1
Operating instructions	1
Power supply line 24 V, 3 m	1
Power supply line 24V, 5 m	1
EU power supply cord 2.5 m	1
USA power supply cord 2.5 m	1

Table 1: Shipment

Check the scope of delivery of the product for completeness after receipt.

Transport

NOTICE

Damage caused by transport

Transport in unsuitable packaging material can damage the device.

- ▶ Retain the original packaging.
- ▶ Only transport the device in its original packaging.

Storage

Always store the device in compliance with the technical data, see Technical data [▶ 11].

4 Description

4.1 Function

The device is an accessory for retrofitting into an existing leak detection systems with the LDS1000/LDS2010. The device is installed in connection with a LDS3000.



Under certain circumstances the device functions also in the leak detection systems with LDS2000. When installed with a LDS2000 contact the INFICON Service.

The device forms the interface between the existing controller of the leak detection system and the retrofitted LDS3000. Take the LDS3000 device into operation as a Plug and Play device.

Make an adaptation to the vacuum equipment depending on the existing leak detection system.

4.2 Device setup

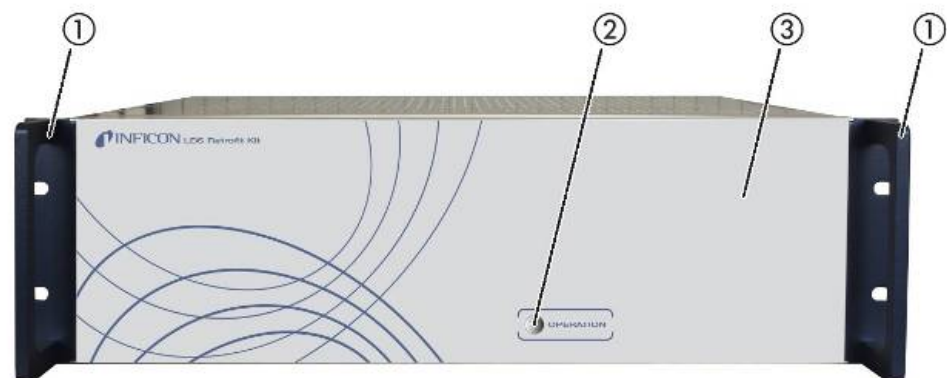


Fig. 1: Front view

1	Front panel handles	3	Cover installation slot CU1000
2	LED operating display		

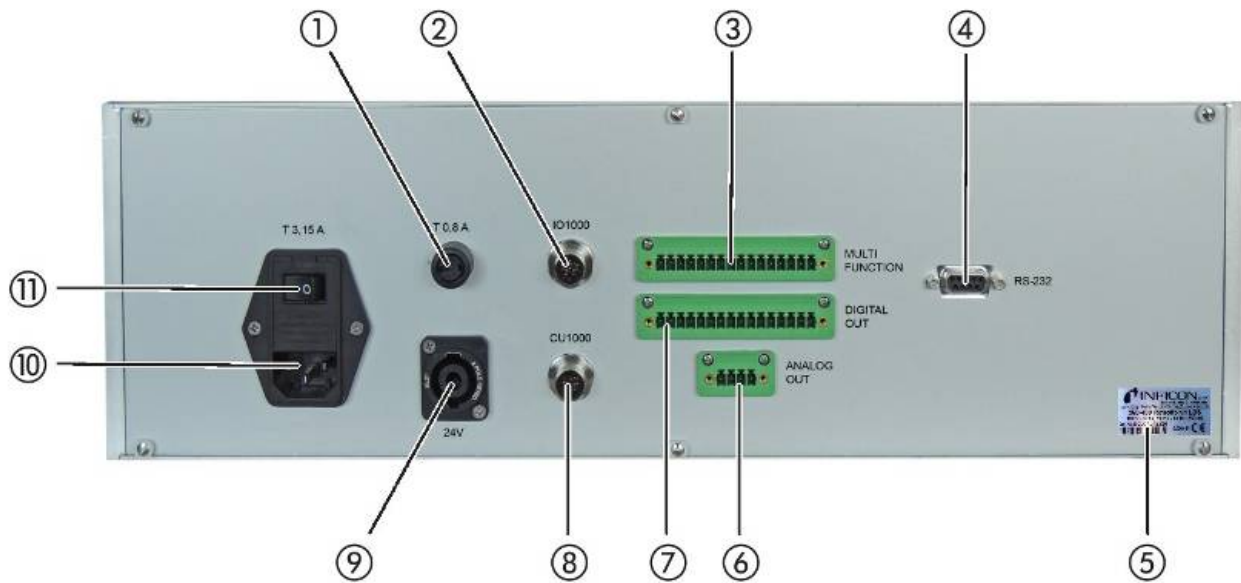


Fig. 2: Rear view

1	Fuse T 0.8 A	7	Digital out, relay output
2	Connection for module IO1000	8	Connection for control unit CU1000
3	Connection multifunction PLC	9	24 V DC Out
4	RS 232 port, sub-D, 9-pin	10	Power cord connector with 2 pcs. fuses T 3.15 A
5	Rating plate	11	On/off switch
6	Analog out, recorder output		



For the assignment of the individual interfaces 3, 4, 7 and 6, refer to the operating instructions for the LDS1000 (jina50) or LDS2010 (jina52).

4.3 Technical data

Basic unit	
Dimensions (W x H x D)	483 × 133 × 375 mm
Weight	7.0 kg
Over voltage category (as per DIN EN 61010-1)	II

Table 2: Mechanical data

Permissible ambient temperature (during operation)	5 °C to 45 °C
--	---------------

Max. relative humidity	80% up to 31 °C decreasing linearly from 80% to 50% in the range from 31 °C to 40 °C 50% above 40 °C
Max. altitude above sea level	2000 m

Table 3: Ambient conditions

Power supply	100 V ... 230 V AC 50 Hz ... 60 Hz 280 VA
Protection class	IP 20

Table 4: Electrical data

Recorder output analog out	0 - 10 Volt @ max. 1 mA ±15 mV offset, additional ±1% from measurement (current output voltage) as linearity error (at 25°C) Resolution type 2.5 mV
Relay outputs digital out	Max. 60 VDC / 25 VAC / 1 A
Control input multifunction 24 V / GND	Type 24 V / 7mA / max. 35 V Active signal: V = 13 ... 35 V (typical 24 V), I = approx. 7 mA Inactive signal: U < 7 V (typical 0 V), I = 0 mA 24 V (T 0.8 A)
IO1000	M12
CU1000	M12
RS-232	RS-232 (Sub-D 9-pin) (1:1 connection, RxD and TxD not crossed, no null modem cable)
24 V Out	24 V / 9.2 A / 220 W (Speakon)
Fuses	T 0.8 A / T 3.15 A

Table 5: Interfaces

5 Installation

5.1 Setup



⚠ WARNING

Danger from moisture and electricity

Moisture entering the device can lead to personal injury due to electric shocks as well as damage to property due to short circuiting.

- ▶ Only operate the device in a dry environment.
- ▶ Operate the device away from sources of liquid and moisture.

NOTICE

Material damage from overheated device

The device heats up during operation and can overheat when located incorrectly.

- ▶ Comply with the technical data, see Technical data [▶ 11].
- ▶ Keep heat sources away from the device.
- ▶ Do not expose the device to direct sunlight.

NOTICE

Material damage due to electrostatic charging

If you are electrostatically charged, you can trigger damage to the equipment via the multifunction PLC terminals.

- ▶ Make sure you take appropriate grounding measures to prevent and dissipate static charge.

5.2 Connect the device with the MSB box of the LDS3000

The connections vary depending on the version of the CU1000. Select one of the two installation versions for the CU1000 and connect the device according to the selected installation version:

- In the installation slot CU1000 in the device, see [Connect the device when installing the CU1000 in the installation slot of the device \[▶ 16\]](#).
- Outside of the device, e.g. as in a control cabinet, see [Connecting the device with external installation of CU1000 \[▶ 15\]](#).

5.3 Connecting the device with external installation of CU1000

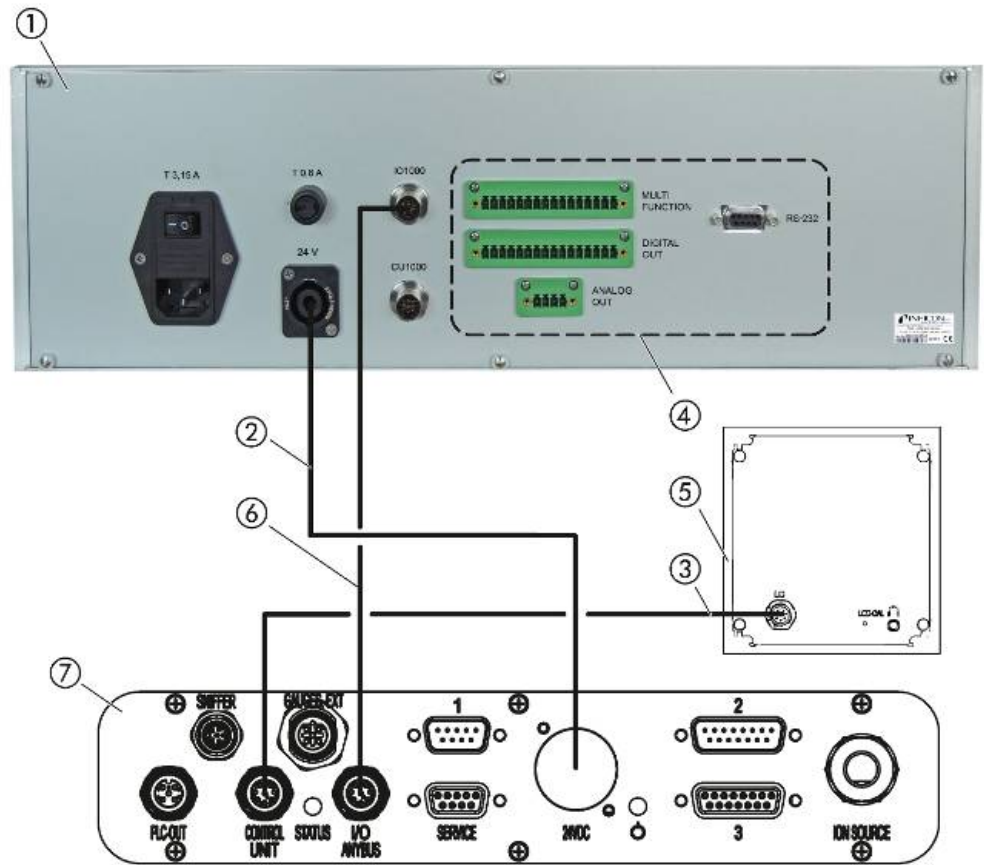


Fig. 3: Connection scheme, CU1000 installed externally

1	LDS retrofit kit	5	Control unit CU1000
2	Power supply line 24 V	6	Connection cable IO1000
3	Connection cable CU1000	7	MSB box
4	Customer specific connections		

5.4 Connect the device when installing the CU1000 in the installation slot of the device



⚠ DANGER

Life threatening hazard from electric shock

High voltages are inside the device. Touching parts where electrical voltage is present can result in death.

- ▶ Separate the device from the power supply and secure against being switched on again.

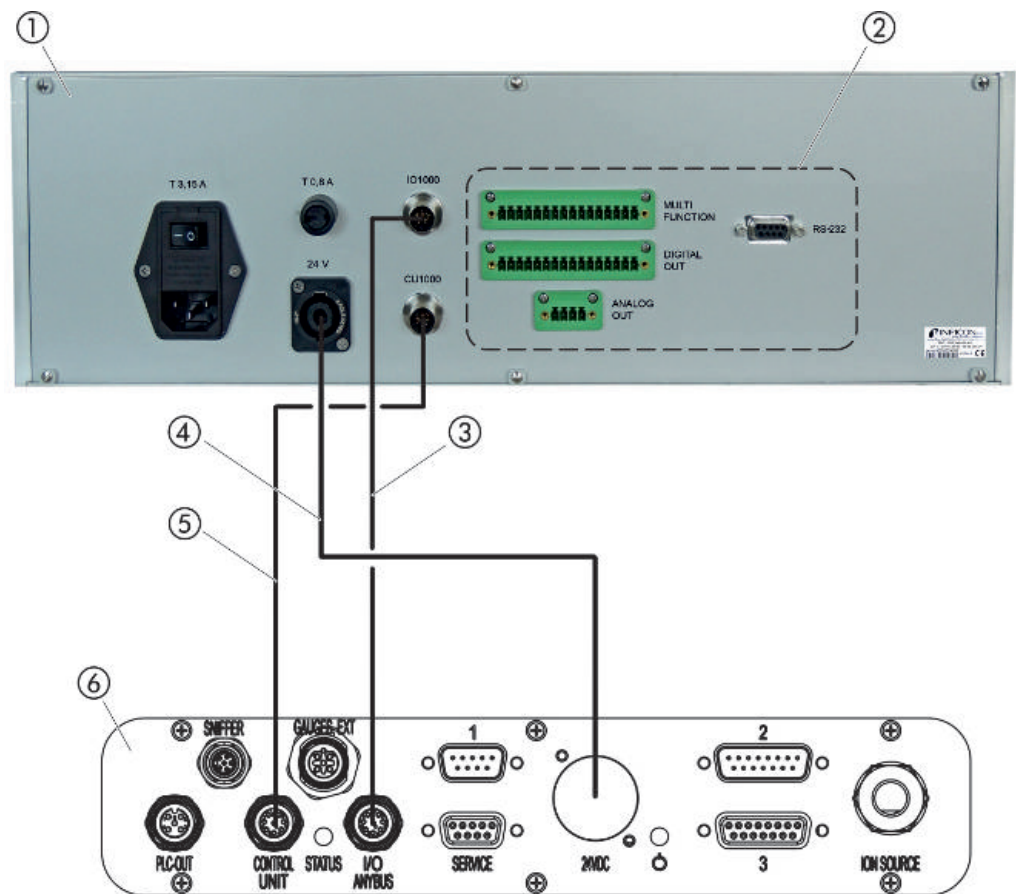


Fig. 4: Connection scheme, CU1000 installed in the installation slot of the device

1	LDS retrofit kit	4	Power supply line 24 V
2	Customer specific connections	5	Connection cable CU1000
3	Connection cable IO1000	6	MSB box

5.4.1 Install and connect the CU1000



⚠ DANGER

Life threatening hazard from electric shock

- ▶ Switch off the device and disconnect from the mains.

- 1** To remove the cover of the CU1000 installation slot, loosen the 4 securing screws.



- 2** Remove the connection cable from the installation slot and connect it to the CU1000.



- 3** Assemble the CU1000 with the 4 securing screws.



5.5 Connect the device to the mains power



WARNING

Danger from electric shock

Improperly grounded or protected products may be dangerous to life in case of a fault. The use of the device is not permitted without a connected protective conductor.

- ▶ Use only a 3 core power supply cord, as provided with the delivery.



CAUTION

Danger due to incorrect supply voltage

Incorrect supply voltage can destroy the device and injure persons.

- ▶ Check whether the supply voltage specified on the rating plate of the device matches the supply voltage available on site.

5.6 Setup the compatibility mode

To operate the LDS3000 as a replacement for an existing LDS1000/LDS2010, setup the compatibility mode.

- 1 Before conversion, note the user defined settings of the existing LDS1000/LDS2010 for later use.
 - 2 Switch on the LDS retrofit kit.
 - 3 On the touchscreen select the CU1000 "Menu (icon) > Settings > Setup > Compatibility".
 - 4 Select the setting for the existing system: "LDS1000" or "LDS2010" and confirm with "OK".
- ⇒ The CU1000 restarts the LDS3000. After restarting, the LDS3000 is in the compatibility mode with the factory settings of the LDS1000/LDS2010.

5.7 Set the user defined parameters

Use the settings noted with the compatibility mode for the LDS3000 (see Setup the compatibility mode [▶ 18]). Also refer to the operating manual LDS3000 MS module jjqa54.

5.8 Make the vacuum connection between the device and the existing leak detection system.

The vacuum technical specifications of the LDS3000 are different to that of the LDS1000. Adapt for the exchange of the vacuum technical configuration.

5.8.1 LDS1000 operating modes

The LDS1000 has two operating modes (GROSS, FINE) for vacuum applications and operates with a fixed turbo pump rotational speed of 1020 Hz.

Operating mode

GROSS

GROSS: The device allows an inlet pressure of 3 mbar. The minimum detectable leak rate is $3.5 \cdot 10^{-10}$ mbar·l/s.

Operating mode FINE

FINE: The device allows an inlet pressure of 0.3 mbar. The device has thereby a rapid response time. The minimum detectable leak rate is $5 \cdot 10^{-11}$ mbar·l/s.

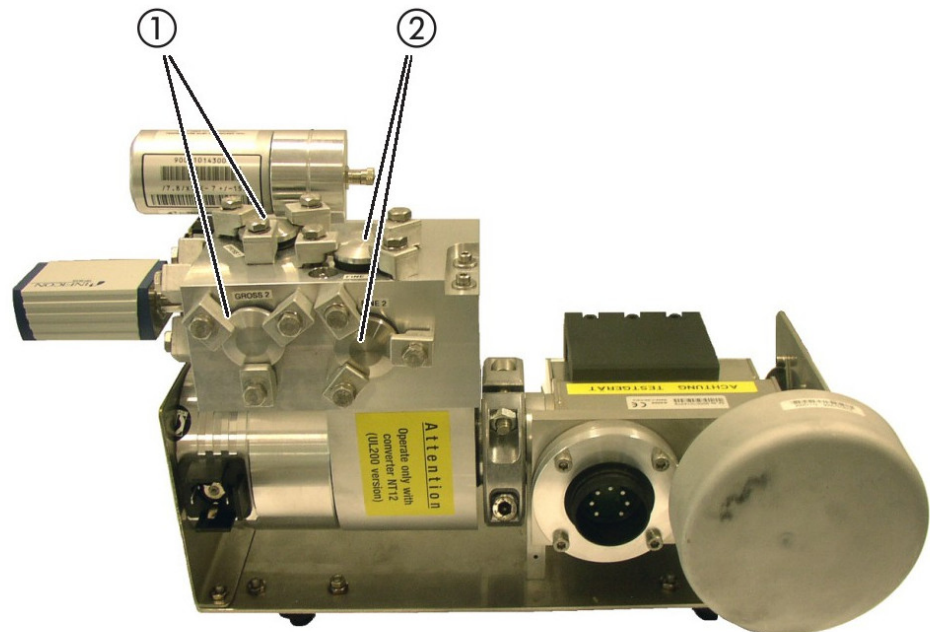


Fig. 5: LDS1000

1	GROSS (DN 16 KF)	2	FINE (DN 16 KF)
---	------------------	---	-----------------

5.8.2 Vacuum technical specification of the backing pump

The noted specifications for the operating modes GROSS and FINE are reached with the LDS1000 by using an Oerlikon Leybold Trivac backing pump D4 B. If you use another backing pump, the following backing pump vacuum technical minimum specifications must be fulfilled:

- Pumping speed: $\geq 1.6 \text{ m}^3 / \text{h}$, Total pressure: $\leq 5 \cdot 10^{-3} \text{ mbar}$

5.8.3 Recommended system configuration for the operating mode GROSS with pump module

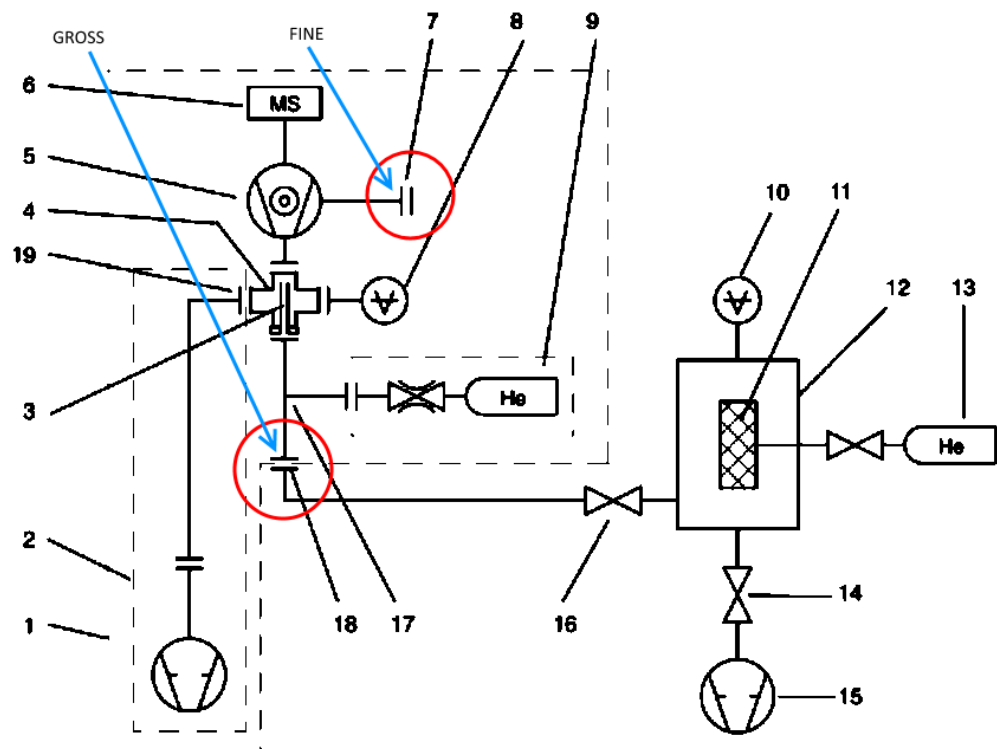


Fig. 6: LDS1000 vacuum configuration for the operating mode GROSS with pump module

1	Mass spectrometer module	11	DUT
2	Pump module (option)	12	Test chamber
3	Coaxial pipe	13	Tracer gas supply
4	Crosspiece	14	Pump valve
5	Turbo molecular pump	15	Vacuum pump stand
6	Mass spectrometer	16	Inlet valve
7	Connection FINE	17	T piece
8	Pressure measuring point pv	18	Connection GROSS
9	Internal calibration leak (option)	19	Pump module connection (option)
10	Test chamber pressure measuring point		

The maximum inlet pressure to the LDS1000 is 3 mbar. The minimum detectable Helium leak rate is $3.5 \cdot 10^{-10}$ mbar·l/s. With an inlet pressure of 3 mbar, the detectable helium leak rate is $3 \cdot 10^{-5}$ mbar·l/s. As long as the pump valve is open, the minimum detectable Helium leak rate is detected by the ratio of the pumping speed of the pump module (2) and the vacuum pump stand (15). If the pump valve (14) is closed, and the inlet pressure is constant, the configuration for the maximum sensitivity is reached with this inlet pressure. The pump valve can only be closed when the pumping speed of the pump module is so large that the vacuum pressure in the test chamber does not rise (> 3 mbar).

5.8.4 Recommended system configuration for the operating mode FINE with pump module

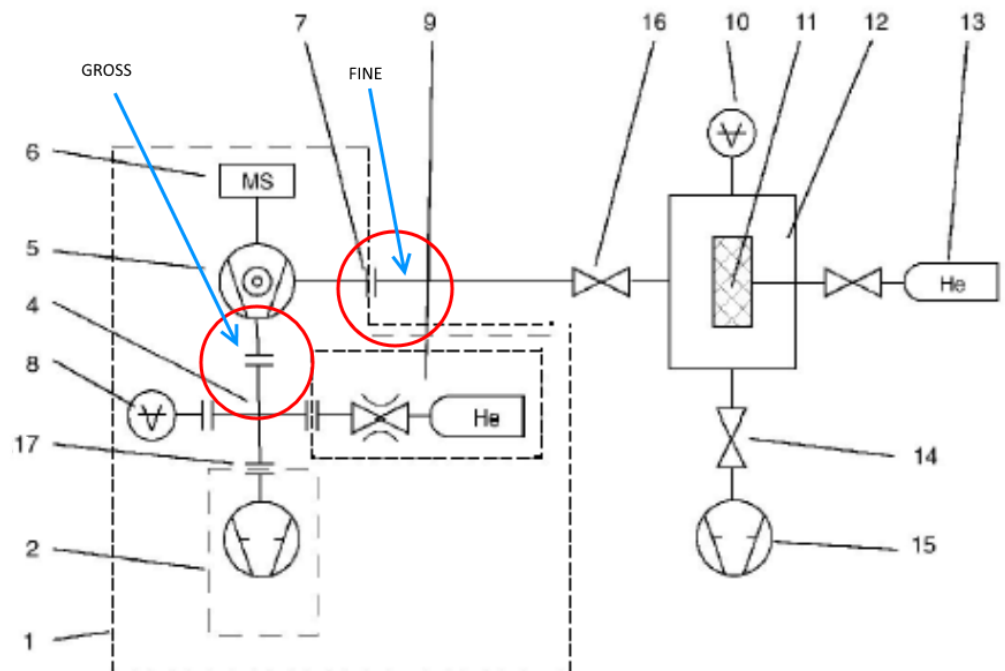


Fig. 7: Recommended system configuration for the operating mode FINE with pump module

1	Mass spectrometer module	10	Test chamber pressure measuring point
2	Pump module (option)	11	DUT
3	---	12	Test chamber
4	Crosspiece	13	Tracer gas supply
5	Turbo molecular pump	14	Pump valve
6	Mass spectrometer	15	Vacuum pump stand
7	Connection FINE	16	Inlet valve
8	Pressure measuring point pv	17	Pump module connection (option)
9	Internal calibration leak (option)		

The maximum inlet pressure is 0.3 mbar. The minimum detectable Helium leak rate is $7 \cdot 10^{-7}$ mbar·l/s with an inlet pressure of 0.3 mbar. As long as the pump valve (**14**) is open, the minimum detectable Helium leak rate is determined by the complete gas loss of the entire vacuum system. If the pump valve is closed, and the inlet pressure is constant, the configuration for the maximum sensitivity is reached with this inlet pressure.

5.8.5 LDS3000 operating modes

The LDS3000 has three possible operating modes for vacuum applications:

- GROSS
- FINE
- ULTRA

The LDS3000 operates with two selectable turbo pump rotational speeds:

- 1000 Hz
- 1500 Hz

Operating mode

GROSS

In the operating mode GROSS the LDS3000 is in the measuring mode with the least sensitivity with considerable delayed response time at a very high inlet pressure of 18 mbar (1000 Hz). The detection limit is $1 \cdot 10^{-9}$ mbar·l/s. If you select the rotational speed of 1500 Hz, the detection limit falls due to the high compression of the turbo molecular pump down to $2 \cdot 10^{-8}$ mbar·l/s with a maximum inlet pressure of up to 15 mbar.

Operating mode FINE

The operating mode FINE has - in comparison to GROSS - a higher sensitivity of $1 \cdot 10^{-11}$ mbar·l/s at 1000 Hz, with a reduced inlet pressure of 0.9 mbar.

Operating mode

ULTRA

In the operating mode ULTRA the LDS3000 is in the most sensitive measuring configuration. This configuration implements both the highest pumping speed of 6 l/s and the maximum sensitivity of $5 \cdot 10^{-12}$ mbar·l/s (at 1000 Hz) by varying the turbo pump rotational speed.

5.8.6 LDS3000 configuration

5.8.6.1 Connection LDS3000

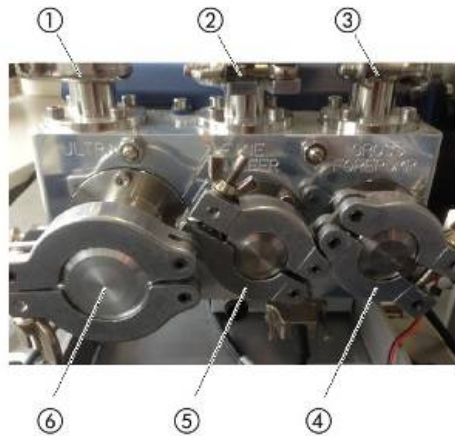


Fig. 8: Connection LDS3000

1	ULTRA (DN1 6 KF)	4	GROSS (DN 16 KF)
2	FINE (DN 16 KF)	5	FINE (DN 16 KF)
3	GROSS (DN 16 KF)	6	ULTRA (DN 25 KF)

5.8.6.2 LDS3000 specification

Operating mode		Turbo pump rotational speed	
		1000 Hz	1500 Hz
ULTRA	MDLR:	5·10-12mbar· l/s	1·10-11mbar· l/s
	Pmax	0.2 mbar	0.2 mbar
	S:	5 l/s	6 l/s
FINE	MDLR:	1·10-11mbar· l/s	5·10-11mbar· l/s
	Pmax	0.9 mbar	0.4 mbar
	S:	1.8 l/s	2.5 l/s
GROSS	MDLR:	1·10-9mbar· l/s	2·10-8mbar· l/s
	Pmax	18 mbar	15 mbar
	S:	depends on the backing pump	

Table 6: LDS3000 specification

MDLR = Minimum detectable leak rate

S = Throughput

The specifications noted in the table are only reached with a two-stage rotary vane pump with the following specifications:

- Pumping speed: $\geq 2.5 \text{ m}^3/\text{h}$
- Final pressure (total): $\leq 6 \cdot 10^{-3} \text{ mbar}$

5.8.6.3 LDS3000 vacuum configuration for the operating mode GROSS with pump module

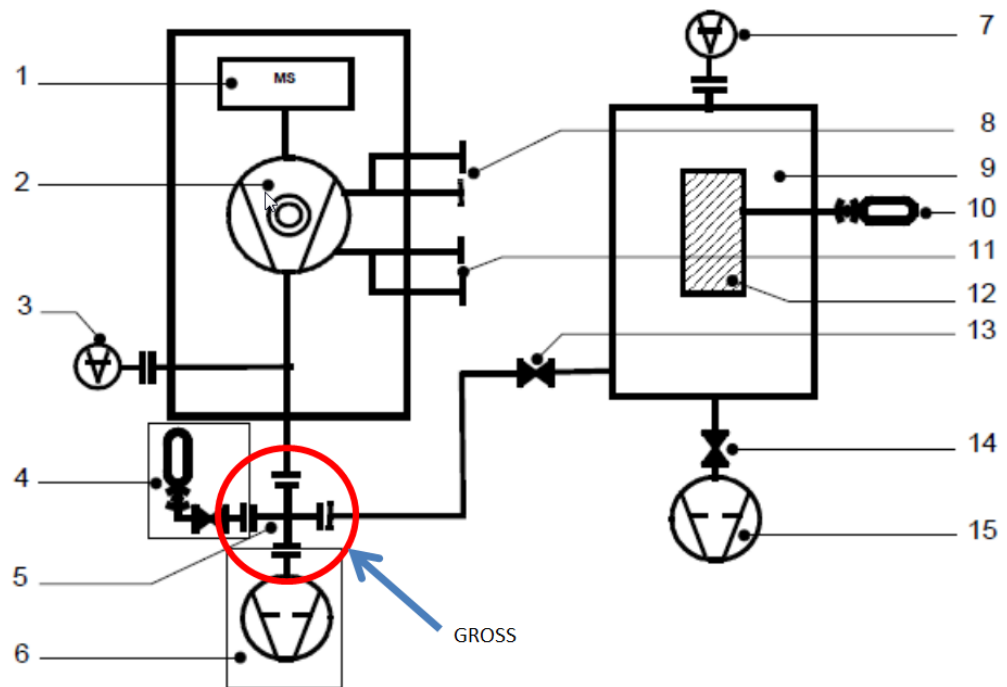


Fig. 9: LDS3000 vacuum configuration for the operating mode GROSS with pump module

1	Mass spectrometer module	9	Test chamber
2	Turbo molecular pump	10	Tracer gas supply
3	Pressure measuring point pv	11	Connection FINE
4	External calibration leak	12	DUT
5	Crosspiece DN 16 KF	13	Inlet valve
6	Pump module (option)	14	Pump valve
7	Test chamber pressure measuring point	15	Booster pump
8	Connection ULTRA		

5.8.6.4 LDS3000 vacuum configuration for the operating mode FINE with pump module

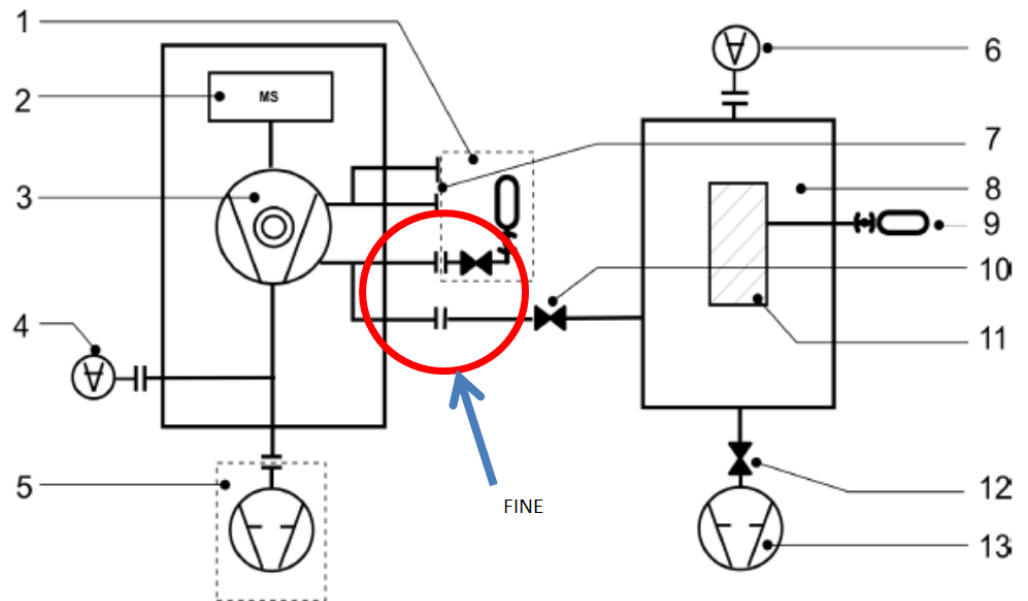


Fig. 10: LDS3000 vacuum configuration for the operating mode FINE with pump module

1	Internal calibration leak (option)	8	Test chamber
2	Mass spectrometer	9	Tracer gas supply
3	Turbo molecular pump	10	Inlet valve
4	Pressure measuring point pv	11	DUT
5	Pump module (option)	12	Pump valve
6	Test chamber pressure measuring point	13	Booster pump
7	Connection ULTRA		

5.8.6.5 LDS3000 vacuum configuration for the operating mode ULTRA with pump module

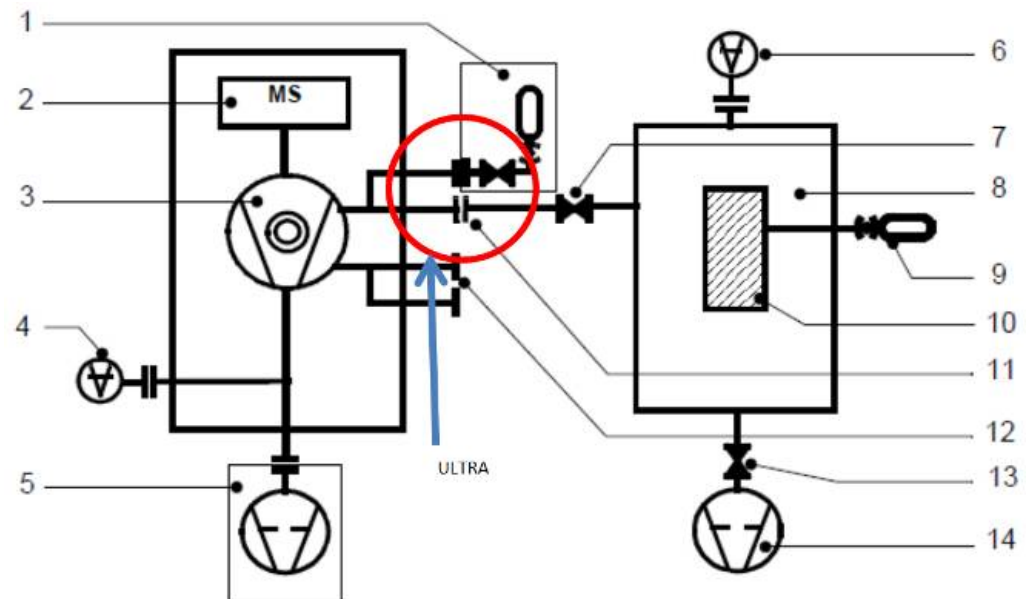


Fig. 11: LDS3000 vacuum configuration for the operating mode ULTRA with pump module

1	Internal calibration leak (option)	8	Test chamber
2	Mass spectrometer	9	Tracer gas supply
3	Turbo molecular pump	10	DUT
4	Pressure measuring point pv	11	Connection ULTRA
5	Pump module (option)	12	Connection FINE
6	Test chamber pressure measuring point	13	Pump valve
7	Inlet valve	14	Booster pump

5.8.6.6 Comparison of the specifications LDS1000 and LDS3000

Note: Please note that the LDS1000 switches to the standby state after booting without external wiring. The LDS3000, on the other hand, switches directly to measuring mode.

In the following graph the specification of both devices, the LDS1000 and the LDS3000 are in two separate diagrams each with the same scaling, this is to make comparison easier.

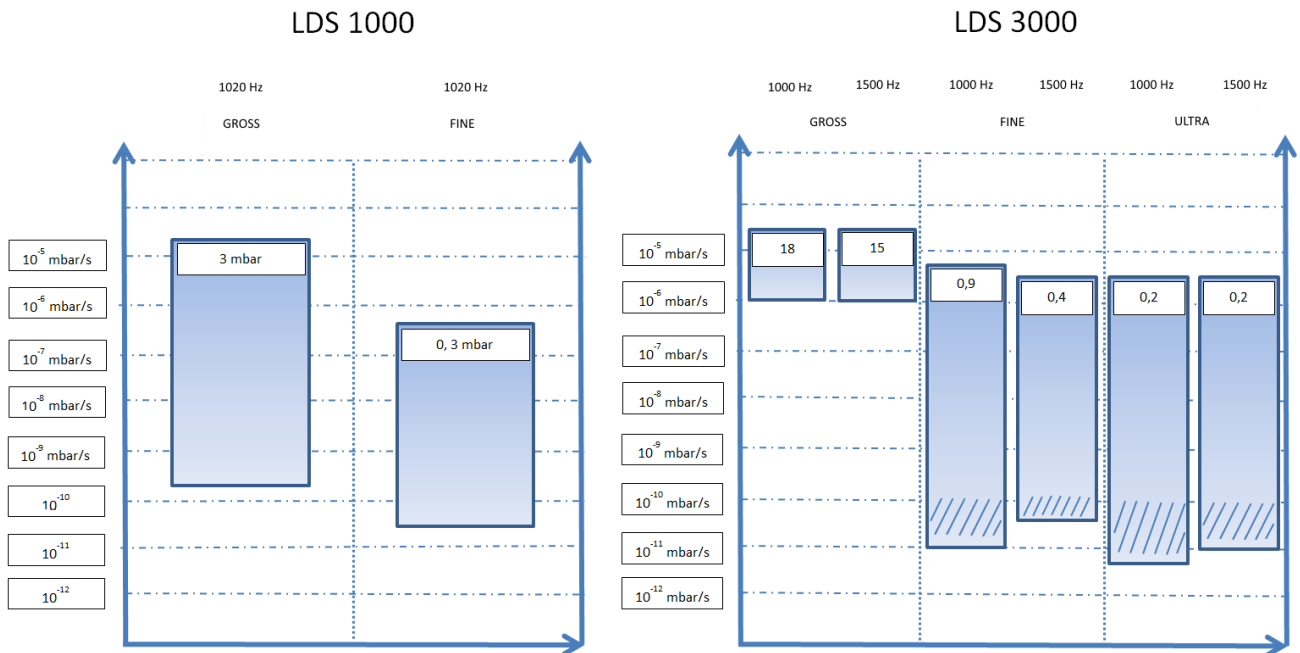


Fig. 12: Comparison diagrams of the specifications for the LDS1000 and the LDS3000

The blue areas show the possible measurement ranges for each of the selected operation modes. For each operation mode and each range, the maximum transfer pressures are also given.



The shaded areas in the lower range of the operation modes FINE and ULTRA are only possible in industrial applications with a high technical effort.

The following shows two example configurations for transferring a vacuum connection LDS1000 to a vacuum connection LDS3000.

Example 1: LDS1000 in GROSS mode

Depending on the working pressure of the respective applications you must select the different configurations.

Working pressure between 1 mbar and 3 mbar

The maximum transfer pressure of the LDS1000 at 1020 Hz is 3 mbar. The minimum detectable leak rate in this mode is 3.5×10^{-10} mbar l/sec. In the GROSS mode the LDS3000 has a maximum transfer pressure of up to 18 mbar. However, the lowest

practical detection limit is only in the range 1×10^{-6} mbar l/s. With working pressures between 1 mbar and 3 mbar only the GROSS connection of the LDS3000 with the reduced response time and the lower sensitivity (up to 1×10^{-6} mbar l/s) can be used.

Working pressure of less than 1 mbar

If you operate the LDS1000 in this working pressure range you can select the FINE connection of the LDS3000 with 1000 Hz. This range allows measurements with sensitivities to 1×10^{-10} mbar l/s.

Example 2: LDS1000 in FINE mode

Depending on the working pressure of the respective application there are also here different configurations.

Working pressure between 0.2 mbar and 0.3 mbar

If you operate the LDS1000 in this working pressure range, you can retrofit the system with the LDS3000 in the operation mode FINE for both 1000 Hz and 1500 Hz. Select preferable the operation FINE with 1000 Hz. The operation mode FINE with 1000 Hz produces reduced wear for the turbo pump.

Working pressure of less than 0.2 mbar

If you operate the LDS1000 in this working pressure range you can retrofit the system to the operation mode ULTRA of the LDS3000. The pumping speed of the LDS3000 in "ULTRA" is higher by a factor of 2.7. This higher pumping speed results in a faster response time. Select preferable the operation with 1000 Hz. This operation mode produces reduced wear to the turbo pump.

5.8.7 Vacuum connection transfer from the LDS1000 to the LDS3000

5.8.7.1 Vacuum connection transfer for the operating mode GROSS

The maximum transfer pressure with the LDS1000 at 1020 Hz is 3 mbar. The minimum detectable leak rate in this operating mode is $3.5 \cdot 10^{-10}$ mbar·l/s. To transfer this measurement configuration from the LDS1000 to the LDS3000 select the FINE connection of the LDS3000 with 1000 Hz. For this reduce the transfer pressure with the LDS3000 compared to the LDS1000 to < 1 mbar. We do not recommend the direct transfer to the GROSS connection of the LDS3000 due to the reduced response times and the lower sensitivities of the LDS3000. We recommend that you only use the operating mode GROSS of the LDS3000 for measuring leak rates that are larger the 10^{-5} to 10^{-6} mbar·l/s. For transfer pressures that are larger than 3 mbar you can only use the GROSS connection of the LDS3000 with the reduced response time and the lower sensitivity.

5.8.7.2 Vacuum transfer for the operating mode FINE

The maximum transfer pressure with the LDS1000 is 3 mbar. The transfer pressure for the LDS3000 with the FINE connection at 1000 Hz is reduced to 0.9 mbar. The transfer pressure must therefore be less than 1 mbar to ensure a safe operation with "FINE". For higher transfer pressures use the GROSS connection. Note here the reduced response time and the lower sensitivity.

5.8.7.3 Vacuum connection transfer for the operating mode FINE to ULTRA

The pumping speed of the LDS3000 in "ULTRA" is higher than "FINE" by a factor of 2.7. The higher pumping speed reduces the response time and allows the trouble-free system retrofitting from the LDS1000 "FINE" to the LDS3000 "ULTRA". To reduce the wear of the turbo pump select the operation with 1000 Hz.

5.9 Interface protocol LDS1000/LDS2010

The interface protocol in the compatibility mode of the LDS3000 are almost identical with the standard protocol of the LDS1000/LDS2010.

Error numbers of the LDS3000 are converted via the interface into the corresponding error numbers of the LDS1000 / LDS2010. Error numbers of the LDS3000 that have no equivalent in the LDS1000 / LDS2010 are displayed in the group error number E99.

The TIC interface protocol of the LDS2010 is no longer supported.

Interface protocols

- LDS1000: Document "Interface Description, jira50"
- LDS2010: Document "Interface Description, jira53"
- LDS3000: Document "Interface Description, jira54"

6 Operation



WARNING

Danger from moisture and electricity

Moisture entering the device can lead to personal injury due to electric shocks as well as damage to property due to short circuiting.

- ▶ Only operate the device in a dry environment.
- ▶ Operate the device away from sources of liquid and moisture.

Operate the device in accordance with the operating manual LDS3000 MS module j1qa54.

7 Error messages

If there are any faults to the power supply or if the MSB box is not connected the operating display goes out, see Device setup [► 10]. If there is a CU1000 control unit, the fault messages are shown on the display of the CU1000. Valid fault messages can be found in the document "Operating manual LDS3000 MS module jja54".

8 Maintenance and repair

The device is maintenance free.

8.1 Cleaning the device

- 1 Switch off the device and disconnect from the mains.
- 2 When cleaning the housing, use an agent accepted for synthetic and metal surfaces (for example a light household cleaner). Do not use any solvents that attack synthetic materials.

8.2 Send in for repair

You can send the device to the manufacturer for repair. For further information regarding this topic see "Sending in the device [[▶ 33](#)]".

9 Decommissioning the device

9.1 Disposing of the device

The device can either be disposed of by the operator or be sent to the manufacturer. The device consists of materials that can be recycled. This option should be exercised to prevent waste and also to protect the environment. During disposal, observe the environmental and safety regulations of your country.

9.2 Sending in the device

If you want to send the device to the manufacturer, contact the Manufacturer Service. Use the original packaging when returning.

10 Appendix

10.1 CE Declaration of Conformity



EU Declaration of Conformity

We – INFICON GmbH - herewith declare that the products defined below meet the basic requirements regarding safety and health and relevant provisions of the relevant EU Directives by design, type and the versions which are brought into circulation by us. This declaration of conformity is issued under the sole responsibility of INFICON GmbH.

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

Designation of the product:

Interface unit

Models:

LDS Retrofit Kit

Catalogue numbers:

560-400

Cologne, July 20th, 2017

Dr. Döbler, President LDT

The products meet the requirements of the following Directives:

- **Directive 2014/35/EU (Low Voltage)**
- **Directive 2014/30/EU (Electromagnetic Compatibility)**
- **Directive 2011/65/EC (RoHS)**

Applied harmonized standards:

- **DIN EN 61010-1:2011**
- **DIN EN 61326-1:2013**
Class B according to EN 55011
- **DIN EN 50581:2013**

Cologne, July 20th, 2017

Bausch, Research and Development

INFICON GmbH
 Bonner Strasse 498
 D-50968 Cologne
 Tel.: +49 (0)221 56788-0
 Fax: +49 (0)221 56788-90
 www.inficon.com
 E-mail: leakdetection@inficon.com

