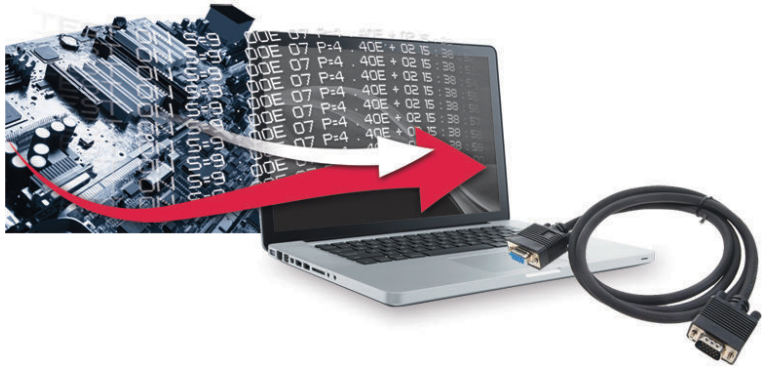


OPERATING INSTRUCTIONS

EN

Translation of the original instructions

15 PINS I/O BOARD

Communication interface

PFEIFFER VACUUM

Table of contents

1 About this manual

1.1 Validity

This operating manual is for customers of Pfeiffer Vacuum. It describes the functioning of the designated product and provides the most important information for safe use of the unit. The description follows applicable EU guidelines. All information provided in this operating manual refers to the current state of the product's development. The documentation remains valid as long as the customer does not make any changes to the product.

Up-to-date operating instructions can also be downloaded from www.pfeiffer-vacuum.com.

This manual covers products with the following part numbers:

Reference	Description
JSVA00A0Mx9x	ASM 340 Wet - 15 pins I/O board
JSVA00A1Mx9x	ASM 340 Wet - 15 pins I/O board - Bluetooth
KSBA00A0MM9A	ASM 340 Dry - 15 pins I/O board
KSBA00A1MM9A	ASM 340 Dry - 15 pins I/O board - Bluetooth
MSXA00A0MM9A	ASM 340 Integrable - 15 pins I/O board
MSXA00A1MM9A	ASM 340 Integrable - 15 pins I/O board - Bluetooth
PSGB00E0MM9A	ASM 380 - 15 pins I/O board
PSGB00E1MM9A	ASM 380 - 15 pins I/O board - Bluetooth
BSAA0000MM9A	ASM 310 - 15 pins I/O board
Sxxx0x06MM9A	ASI 35 - 15 pins I/O board - Profibus
CSGB01G0MM9x	ASM 390 - 15 pins I/O board
ESGB02G0MM9x	ASM 392 - 15 pins I/O board

1.2 Conventions

1.2.1 Safety instructions

Operating manual safety instructions Pfeiffer Vacuum are based on the UL, CSA, ANSI Z-535, SEMI S2, ISO 3864 and DIN 4844 certification standards. This document describes the following information and danger levels:

WARNING

Possibly imminent danger

Indicates an imminent hazardous situation that can result in death or serious injury.

NOTICE

Command or note

Command to perform an action or information about properties, the disregarding of which may result in damage to the product.

1.2.2 Pictographs

Warning of a displayed source of danger in connection with operation of the unit or equipment

Command to perform an action or task associated with a source of danger, the disregarding of which may result in serious accidents

1.2.3 Instructions in the text

⇨ or ➔	Work instruction: you must perform an operation here.
[XXXX]	You must press the **XXXX** key on the control panel.
I/O	Inputs/Outputs

Screenshots are given as examples only. They can therefore vary depending on the operator's settings.

2 Safety precautions

Obligation to inform

Any person responsible for installing, using or maintaining the product must first read the security instructions in this operating manual and comply with them.

➔ It is the operating customer's responsibility to protect all operators against the dangers associated with the product, with the media pumped and with the entire installation.

WARNING

Electric shock hazard in case of contact

When the product's circuit breaker is set at **O**, some internal components still have an electrical charge.

➔ Make sure that the mains connection is always visible and accessible so that it can be unplugged at any time.

➔ Disconnect the power cable from all power sources before starting any work on the product.

- Only qualified personnel trained in safety rules (EMC, electrical safety, chemical pollution) may carry out the installation and maintenance described in this manual. Our service centers can provide the necessary training.
- Do not turn on the product if the covers are not in place.

3 Installation

3.1 Description

The 15 pin D-Sub male plug and its hood are supplied with the leak detector.

The wire is at the customer's expense.

WARNING

Risk of electromagnetic disturbance

The product's EMC behavior is guaranteed only if the relevant EMC standards are followed during installation.

➔ Use shielded cables and connections for the interfaces in interference-prone environments.

NOTICE

Extra low voltage circuit

The remote control circuits are equipped with dry contact outputs (30 V - 1 A max.). Any overvoltage or overcurrent can result in internal electrical damage. The installer must:

➔ Connect these outputs in accordance with the rules and protection of safety extra low voltage (SELV) circuits,

➔ Supply these contacts with voltage of less than 30 V and current of less than 1 A.

3.2 Detector connector

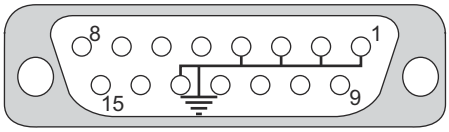


Fig. 1: Connector female 15 pins of the detector

Inputs	Logics	14	Starting the test
	Analogs	5	Disabled
Outputs	Logics	6	Test threshold crossed
		7	Selected test mode reached ASI 35: Detector ready
	Analogs	9	Mantissa (0/10 V)*
		10	Leak rate (logarithmic) (*)
		11	Disabled
		12	Exponent (0/10 V)
Mass			1 - 2 - 3 - 4 - 13
Headset		8	Headset + (1)
		15	Headset - (1)

(*) By default: parameterizable by the operator

(1) To enable the audio/headset output, it is necessary to issue a command RS-232 "=HPD" to the detector: this command will disable the loudspeaker.
To disable the audio/headset output, it is necessary to issue a command RS-232 "=HPE" to the detector: this command will enable the loudspeaker.

3.3 Connection

*See **Operating instructions** of the leak detector.*

4 Setting

From the "Settings" screen, press **[Avanced] [Input/Output]**.

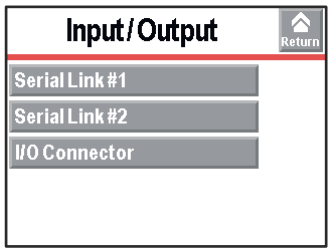


Fig. 2: Input/Output menu

4.1 Allocation to Serial Links 1 and 2

From the "Settings" screen, press [Advanced] [Input/Output], then [Serial Link 1] or [Serial Link 2].	
Typ	⇨ Set the type of serial link: see table below.
Parameters	⇨ Set the serial link mode: see detail below.

Type The operator must allocate the 2 serial links (1 and 2) according to their use.

Use	**ASM 310**	**ASM 340**	**ASM 380**	**ASM 390 ASM 392**	**ASI 35**	**Possible allocation**		**Type to select**
						Serial Link 1	**Serial Link 2**	
RS-232	x	x	x	x	x	Yes	No	Serial
Bluetooth (1)	x	x	x			No	Yes	Bluetooth
Bluetooth transmitter for RC 500 WL remote (2)	x	x	x	x		Yes	No	Serial
RC 10 remote control (2)	x	x	x	x	x	Yes	No	Serial
ECB WiFi remote (2)	x	x	x	x	x	Yes	No	Serial

(1) Option or accessory
(2) Accessory

Parameters ➔ From the "Settings" screen, press **[Advanced] [Input/Output] [Serial Link 1]** or **[Serial Link 2] [Parameters]**.

Modes list:according to leak detector model, some modes are not available.

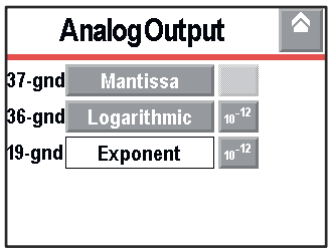
Mode	**Description**	**Use**	
		RS-232 (1)	**Bluetooth (2)**
Basic	Continuous acquisition of data according to a defined time duration. At any time, a command can be sent to the leak detector. 5 V power supply available.	x	x
Spreadsheet	Variant on the Basic mode. Continuous data acquisition, formatted in a spreadsheet such as Excel Microsoft ® Office or other similar software. 5 V power supply available.	x	x
Advanced	Full control of the detector by a supervisor. The detector sends information at the supervisor's request. 5 V power supply available. **Recommended mode for automatic systems.**	x	x
Export Data	Export, via a PC, of "tickets" issued by the detector after: • Calibration with an internal/external calibrated leak, • Calibration control with an internal leak, • A test. 5 V power supply available. **Serial links 1 and 2 must not be in "Export Data" mode at the same time.**	x	x

Mode	Description	Use	
		RS-232 (1)	Bluetooth (2)
RC 500 WL	Use of a wireless remote control (model RC 500 WL). (1) 5 V power supply available.	x	x
RC 500	Use of a wired remote control (model RC 500). (1) 24 V power supply available.	x	-
HLT 5xx	Protocol for compatibility with the HLT 5xx detector protocol. 5 V power supply available. List of orders for the protocol compatible with ASM 340/ASI 35 *(See RS-232 Operating instructions)*.	x	-
HLT 2xx	Protocol for compatibility with the HLT 2xx.detector protocol. 5 V power supply available. List of orders for the protocol compatible with ASM 340/ASI 35 *(See RS-232 Operating instructions)*.	x	-
Ext. Module	Full control of the detector by a supervisor. The detector sends information at the supervisor's request. 24 V power supply available. **A 24 V power supply is required for using an external module (example: profibus).**	x	-

(1) Available for all models odf leak detectors
(2) Not available for ASM 390/392

4.2 I/O connector: Analog Output

From the "Settings" screen, press [Avanced] [Input/Output] [I/O Connector].



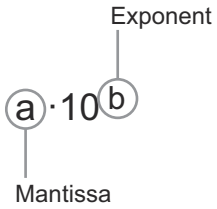


Fig. 3: Analog output screen

4.2.1 Save

A save of all the set I/O is automatically proposed at the menu exit if a parameter has been modified.

➔ Enter the file name and valid the save (".IOP" file).

4.2.2 Setting

37-gnd	⇨ Select the value to be allocated: see table below. ⇨ Depending on the value, configure the low decade.
36-gnd	⇨ Select the value to be allocated: see table below. ⇨ Depending on the value, configure the low decade.
19-gnd	Output allocated to «Exponent»

The low decade is the decade corresponding with 0 V.

Value	Function
Mantissa	1/10 V (*)
Exponent	0/10 V (*)
Logarithmic	0/10 V (*)

Value	Function
Inlet pressure	If a pressure measurement gauge is installed (at customer's expense) (*) **Internal Gauge (Pirani)**, set: ● external gauge = 'none' *(see Advanced Menu in the Operating instructions)*. ● range: 2.5 V/8.5 V (10^{-3} to 10^{+3} hPa) **External Gauge (Pirani)**, set: ● external gauge = 'TPR/PCR' ● source = external' ● range: *see documentation of the gauge*. **External linear Gauge**, set ● external gauge = 'linear' ● source = 'external' ● range: *see documentation of the gauge*.
He compound	0/10 V (compound exponent, mantissa) (*)

(*)*(see 4.2.3)*

4.2.3 Formulas

Mantissa (1/10 V)

The "Mantissa" output corresponds with the leak rate mantissa:

Formula

U = Voltage measured (V) on analog output

Mantissa= U

Examples

- U = 3.5 V -> Mantissa = 3.5
- U = 6.9 V -> Mantissa = 6.9

Exponent (0/10 V)

The "Exponent" output corresponds with the leak rate exponent:

- it increases by 1 V per decade,
- the starting decade corresponds with 10 V.

Formula

U = Voltage measured (V) on analog output

D_0 = Low decade for 0 V

$$Exponent = 10 - U + D_0$$

Example 1

Low decade at 10^{-12} (10 V = -12) -> D_0 = -12

- U = 7 V -> Exponent = 10 - 7 - 12 -> Exponent = -9
- U = 2 V -> Exponent = 10 - 2 - 12 -> Exponent = -4

Example 2

Low decade at 10^{-10} (10 V = -10) -> D_0 = -10

- U = 7 V -> Exponent = 10 - 7 - 10 -> Exponent = -7
- U = 2 V -> Exponent = 10 - 2 - 10 -> Exponent = -2

Logarithmic (0/10 V)

The "Logarithmic" output corresponds with the leak rate value:

- it increases by 1 V per decade,
- the starting decade corresponds with 0 V.

Formulas

U = Voltage measured (V) on analog output

D_0 = Low decade for 0 V

$$Mantissa = 10^{(U - Integer\ value\ (U))}$$

$$Exponent = Integer\ value\ (U) + D_0$$

$$Leak\ rate = Mantissa \times 10^{Exponent}$$

Example 1

Low decade at 10^{-12} (0 V = $1 \cdot 10^{-12}$) -> D_0 = -12

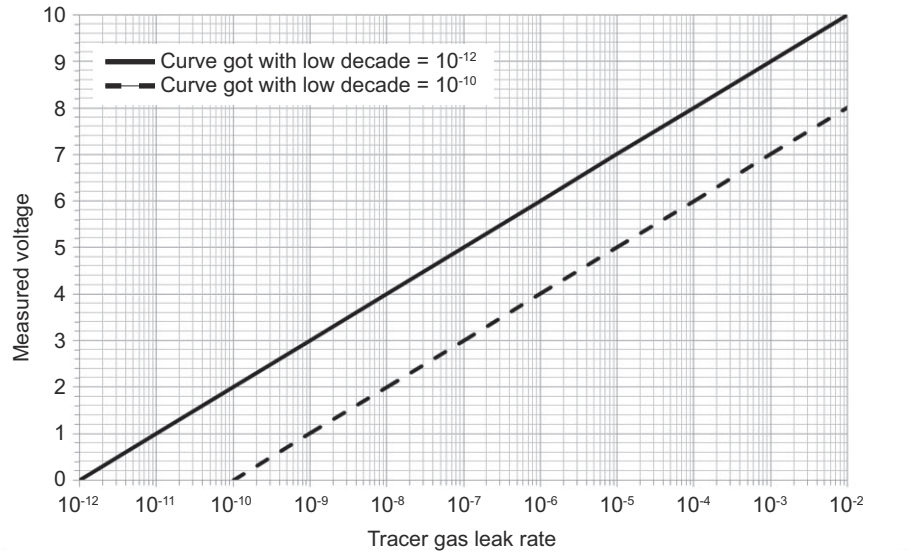
- V = 3.91 V -> Leak rate = $10^{(3.91-3)}$ x $10^{(3-12)}$= $8.13 \cdot 10^{-9}$
- V = 8.25 V -> Leak rate = $10^{(8.25-8)}$ x $10^{(8-12)}$= $1.78 \cdot 10^{-4}$

Example 2

Low decade at 10^{-10} (0 V = $1 \cdot 10^{-10}$) -> D_0 = -10

- V = 3.91 V -> Leak rate = $10^{(3.91-3)}$ x $10^{(3-10)}$= $8.13 \cdot 10^{-7}$
- V = 8.25 V -> Leak rate = $10^{(8.25-8)}$ x $10^{(8-10)}$= $1.78 \cdot 10^{-2}$

Graphs



Inlet pressure

The "Inlet Pressure" output corresponds with the inlet pressure source:

– ASM 310/340/380/390/392: leak detector inlet gauge
– ASI 35: external gauge (at the customer's charge)

Formula

– ASM 310/340/380/390/392 (2.5 V/8.5 V):

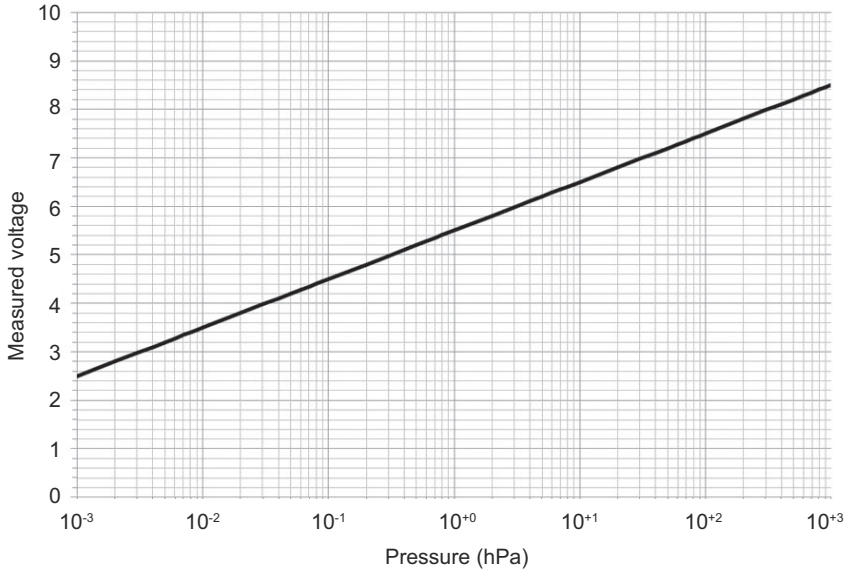
U = Voltage measured (V) on analog output

Inlet pressure = $10^{(U-5.5)}$ hPa

– ASI 35 (0/10 V): *see **Operating instructions** of the gauge*.

Graphs

– ASM 310/340/380/390/392 (2.5 V/8.5 V):



– ASI 35 (0/10 V): *see **Operating instructions** of the gauge*.

He Compound (0/10 V)

The "He Compound" output is a combination of mantissa and exponent:

- the integer part represents the exponent
- the decimal part represents the mantissa.

Formulas

U = Voltage measured (V) on analog output

Mantissa = 10 x (U - Integer value (U))
Exponent = Integer value (U) - 12
He Compound = Mantissa x $10^{Exponent}$

Examples

- U = 3.91 V -> He Compound = 10 x (3.91-3)) x $10^{(3-12)}$ = $9 \cdot 10 \cdot 10^{-9}$
- U = 8.25 V -> He Compound = 10 x (8.25-8)) x $10^{(8-12)}$ = $2.50 \cdot 10^{-4}$

5 Malfunctions

In case of difficulties when using these communication interfaces, please refer to the ***Malfunction*** chapter of the leak detector maintenance instructions.

VACUUM SOLUTIONS FROM A SINGLE SOURCE

Pfeiffer Vacuum stands for innovative and custom vacuum solutions worldwide, technological perfection, competent advice and reliable service.

COMPLETE RANGE OF PRODUCTS

From a single component to complex systems:
We are the only supplier of vacuum technology that provides a complete product portfolio.

COMPETENCE IN THEORY AND PRACTICE

Benefit from our know-how and our portfolio of training opportunities!
We support you with your plant layout and provide first-class on-site service worldwide.

Ed06- Date 2018/02 - P/N:121776OEN

Are you looking for a perfect vacuum solution? Please contact us:

Pfeiffer Vacuum GmbH
Headquarters • Germany
T +49 6441 802-0
info@pfeiffer-vacuum.de

www.pfeiffer-vacuum.com

PFEIFFER VACUUM