Measurement Signal vs. Pressure

1.5 cm³

Installation

1.5 cm³

≈

cm³

≈

1E+6

≈

1E+3

≈

5×10⁻⁴ … 1000 mbar

≈

1E+4

1×10⁻³ … 100 mbar

±15% of reading

5×10⁻⁴ … 1×10⁻³ mbar

±50% of reading

5×10⁻⁴ Torr <p< 750 Torr

5×10⁻² Pa <p< 1×10⁵ Pa

DANGER: overpressure in the vacuum system

>2.5 bar

FK connections with dead-end seals (e.g. O-rings) cannot withstand such pressures. Pressure

must conform to the requirements of a protective connection according to EN 61010:

• CP systems (VDE) and UN systems fulfill this requirement:

• FP systems with a CP connection, use a con-

ductive metallic clamping ring.

• If it’s 24 V is used, take appropriate meas-

ures for this requirement to be fulfilled.

Aerodynamic metallic clamping ring.

Dirt and damages impair the function of the vac-

uum component.

Keep the protective lid.

The gauge may be mounted in any orientation. To keep the protective lid, avoid scratching it from getting into the measuring chamber preferably choose a horizontal position in order to avoid possible use as a seal with a possible after the gauge has been installed, be sure to install it so that the button can be accessed with a pin (of “Adjusting the Gauge”).

Remove the protective lid and install the product to the vac-

uum system.

Caution: vacuum component

and damages impair the function of the vac-

uum component. When handling vacuum components, take ap-
propriate measures to ensure cleanliness and prevent damages.

Caution: dirt sensitive area

Always wear clean, lint-free glasses and use clean tools when working in this area.

Caution: overpressure in the vacuum system

The gauge must be electrically connected to the grounded vacuum chamber. This connection must

conform to the requirements of a protective connection according to EN 61010:

• CP systems (VDE) and UN systems fulfill this requirement:

• FP systems with a CP connection, use a con-

ductive metallic clamping ring.

• If it’s 24 V is used, take appropriate meas-

ures for this requirement to be fulfilled.

Validity

This document applies to products with the following part numbers:

PIR-TG-1

Personnel Qualifications

DANGER

Personnel Qualifications

DANGER: overpressure in the vacuum system

>2.5 bar

All work described in this document may only be carried out by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

General Safety Instructions

• Adheres to the applicable regulations and take the nec-

essary precautions for the process media used:

Consider possible reactions between the materials and the process media

Consider possible reactions (e.g. explosion) of the process media due to the heat generated by the product

• Adheres to the applicable regulations and take the neces-

sary precautions for all work you are going to do and con-

sider the safety instructions in this document.

Before beginning to work, find out whether any vacuum components are contaminated. Adhere to the relevant re-

quirements concerning the use of necessary precautions when handling

contaminated parts.

Communicate the safety instructions to all other users.

Liability and Warranty

Kurt J. Lesker Company reserves liability and the war-

rancy becomes null and void if the end-user or third party

• damaged the information in this document

• use the product in a non-conforming manner

• make any kind of interventions (modifications, alterations etc.) on the product

• use the product with accessories not listed in the product documentation

The end-user assumes the responsibility in conjunction with the process media used.

Gauge failures due to contamination or wear and tear, as well as expendable parts (e.g. filament), are not covered by the warranty.

Intended Use

The Standard Pirani Gauge KJLC PIR has been designed for vacuum measurement of gaseous in the range of 5×10⁻¹ – 1000 mbar.

It must not be used for measuring flammable or combustible gases in mixtures containing oxygen (e.g. atmospheric oxygen) within the explosion range.

Technical Data

Measurement principle

thermal conductance according to Pirani

Accuracy [%]

±1% of reading at 10-5 bar

±1.5% of reading with process gases

Resolution [%]

1% of reading

Repeatability [%]

0.5% of reading

Output signal (measurement signal) V (dc)

0 … 1,286 V/decade

Voltage range

0 … 1,286 V

Voltage measurement range

0 … 1,286 V

Input impedance

2×47 kΩ

Minimum loaded imped-

ance

10 kΩ, short-circuit-proof

Response time

ms 80

Gauge identification

27.0 cm³, referenced to supply current (voltage at pin 4 3.5 V)

Adjustment

tactile switch for ATM and

1V adjustment

Switching functions

SP1, SP2

Threshold value indi-

cation and setting

one tactile switch at measure-

ment value output. Press briefly for threshold indication. Keep pressed for 3 seconds for threshold setting.

Setting range

2x10⁻³ … 500 mbar

Hysteresis

10% above lower threshold

Relay contact

closed

open

Supply voltage

At gauge

V (dc) 114 ± 30 V

Rated

400 mA

Current consumption

mA <500

(max. starting current)

Power consumption

W ≤ 1

 Fuse required

AT (1 kA)

Electrical connection

FCC-69 / SIA5 appliance connection, 5-pin, male

Sensor cable

8 pin plug-in connector

Cable length

≤ 100 m (8014 mm)

Grounding concept

Vacuum connection to the gauge via a 1.5 m long cable (voltage difference <15 V)

Vacuum connection to common

Ground potential

Conductive metallic clamping ring.

Material exposed to vacuum

DN 1.4303, DN 1.4303, DN 1.4345, glass, Ni, NiP

Filament

W 1.5% of reading

PIR-Meas W

PIR-Meas N

295 °C with long tube.

DANGER overpressure in the vacuum system

DANGER: overpressure in the vacuum system

>2.5 bar

Caution: vacuum component

and damages impair the function of the vac-

uum component. When handling vacuum components, take ap-
propriate measures to ensure cleanliness and prevent damages.

Caution: overpressure in the vacuum system

>2.5 bar

Use O-rings provided with an outer containing

ring.

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Electrical Connection

Make sure the vacuum connection is properly made (→ “Vacuum Connection”).

1. If no sensor cable is available, make one according to the following diagram.

2. Connect the sensor cable to the gauge and the controller.

Operation

When the supply voltage is applied, the measurement signal is available between pins 2 and 5 (relationship between measurement signal and pressure → “Technical Data”).

1. Allow a stabilization period of at least 10 minutes. It is advisable to operate the gauge continuously, irrespective of the pressure.

2. If you are using a seal with centering ring and filter, check that they are clean or replace them if necessary (→ “Deinstallation”).

3. If you have a controller, set the corresponding controller. (→ “Controller”).

Adjusting the Gauge

The gauge is factory calibrated. Due to long time operation or contamination, a drift could occur. Periodically check the zero and adjust if necessary.

1. If the gauge is operated with a controller, a calibration factor for the actual reading can be applied (→ “Controller”).

2. The gauge is adjusted to default values. However, it can also be adjusted to other pressure values, if the exact pressure value is known (reference measurement).

3. Adjusting the Setpoints

The status of the relay is not affected by pressing the button.

1. The status of the relay and lamp is not affected by pressing the button.

2. Pressing the button <SP> only if you are sure that no damages can arise from a malfunction.

Spares Parts

When ordering spare parts, always indicate:

• all information on the product nameplate
• description and ordering number according to the spare parts list

Maintenance, Repair

In case of severe contamination or a malfunction, the sensor can be replaced.

1. Gauge failures due to contamination or wear and tear, as well as expendable parts (e.g. filament), are not covered by the warranty.

2. Products returned to Kurt J. Lesker Company should preferably be free of harmful substances. Adhere to the forwarding regulations of all involved countries and forwarding companies and enclose a duly completed declaration of contamination (for further information please contact your Kurt J. Lesker Company accounting).

Products

Products not accompanied by a duly completed declaration of contamination are returned to the sender at his own expense.

EU Declaration of Conformity

We, Kurt J. Lesker Company, hereby declare that the equipment mentioned below complies with the provisions of the Directive relating to electromagnetic compatibility 2014/30/EU and the Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2011/65/EU.

Products

Standard Pirani Gauge KJLC PIR

Standards

Harmonized and international/national standards and specifications:

• EN 50100-2-2:2005 (SBC generic emission standard)
• EN 50100-4-2:2007 + A1:2011 (SBC generic immunity standard)
• EN 61326-1:2013; Group 1, Class B (EMC requirements for electrical equipment for measurement, control and laboratory use)
• EN 61010-1:2010 (Safety requirements for electrical equipment for measurement, control and laboratory use)

Manufacturer / Signatures

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John Luke

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