O P E R A T I N G M A N U A L

tina19e1-a

PSG100-SP
PSG101-SP

Part Number
350-022
350-032

The main instrument's (PSG100-S / PSG101-S) manual is still valid!

Profibus-DP Interface for the Pirani Standard Gauge

INFICON

General Remarks

We reserve the right to alter the design or any data given in these Operating Instructions.
The illustrations are not binding.

Contents

1 Description

1.1 General

The Pirani standard Gauge PSG100-SP / PSG101-SP is supplied ready for operation. Even so, we recommend to read these Operating Instructions with care so as to ensure optimum operating conditions right from the start.

These Operating Instructions contain important information on the functions, installation, start-up, operation and troubleshooting of the Pirani standard Gauge PSG100-SP / PSG101-SP.

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

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 Pirani standard Gauge PSG100-SP / PSG101-SP.

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

The references to diagrams, e.g. (1/3), consist of the Fig. No. and the item No. in that order.

Unpack the Pirani standard Gauge PSG100-SP or PSG101-SP immediately after delivery, even if it is to be installed at a later date.

Examine the packaging for any external damage. Completely remove all packaging materials.

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

Check that the Pirani standard Gauge PSG100-SP / PSG101-SP is complete

Carefully examine the Pirani standard Gauge PSG100-SP / PSG101-SP visually.

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

1.2 Purpose

1.2.1 Pirani standard Gauge PSG100-SP / PSG101-SP

The PSG100-SP / PSG101-SP is equipped with the fieldbus interface Profibus-DP. Automated process instruments can be linked easily.

1.2.2 Profibus-DP

The norm EN 50170 decribes the fieldbus system Profibus-DP. Technical and functional features of the Profibus-DP are specified here. The Profibus-DP distinguishes between master and slave instruments. Master instruments determine the data circulation. They transmit data to their related slaves and request data from them. It is possible to configure the fieldbus as a mono-master or multi-master system.

The PSG100-SP / PSG101-SP represents a slave unit which may receive different messages from the Profibus master and output corresponding replies in response to the information/commands from the master. In a Profibus system up to 126 units including the master may be operated. A corresponding slave address must be set up for the PSG100-SP / PSG101-SP.

1.2.3 Interfaces / Master Connection

If control is performed centrally by a programmable control system the following interfaces may be used to connect a master into the system:
- Siemens IM 308 B
- Siemens IM 308 C
- Siemens CP 5431

With a personal computer as a master, you can select one from a number of different PC plug-in boards, for example those from Softing GmbH (ISA board or PCMCIA card).

1.2.4 Profibus-DP Master Configuration Software

In order to configure the master together with the individual slaves software packages are available from the manufacturers of the master units.

1.3 Technical Description

1.3.1 Configuration of Fieldbus nodes in Profibus-DP

1.3.1.1 GSD File / Main Equipment File

Note
The GSD file is available in the internet.

The properties and capabilities of a Profibus-DP unit are documented in the GSD-File. This is a file format which is defined by the standard, so that manufacturer independent project tools may be implemented for Profibus-DP systems by various manufacturers. For operation of the configuration software please refer to the corresponding operation instructions provided by the manufacturer of the configuration software.

1.4 Technical Data

The technical data as specified in the Operating Instructions for the PSG100-S/ PSG101-S - tina 17 apply. The following data apply in addition to the Profibus-DP interface:

Supported Baud Rates:

9.6	k Baud	for automatic baud rate detection
19.2	k Baud	
93.75	k Baud	
187.5	k Baud	
500	k Baud	
1.5	M Baud	

Expanded User Parameter Data
5 bytes of parameter data are required.

Configuring
The number of input and output data is 2 bytes each.

Sync-Mode and Freeze-Mode
The sync-mode and the freeze-mode are supported.

1.5 Supplied Equipment

The supplied equipment is the same as detailed for the PSG100-S / PSG101-S in Operating Instructions tina17. The following items are supplied in addition:

- Profibus DP interface built into the
  PSG100-S / PSG101-S
  PSG100-SP; DN 16 KF Part Number 350-022
  PSG101-SP; DN 16 KF Part Number 350-032
- Operating Instructions tina19

2 Operation

2.1 Operation of PSG100-SP / PSG101-SP

The fieldbus' operation requires
- the master's configuration,
- setting of the slave's address and
- electrical installation of entire system.

2.1.1 Setting Slave's Address

The two rotary switches on the right side of the PSG100-SP / PSG101-SP are for the setting of the address. Possible setting addresses are in the range of 0 to 99. With the use of both switches the address has to be switched into the decimal code. The instruments has to be switched off during the setting of the address. A change will not be registered after the instrument is switched on.

The required decimal address is set by the address switch (see fig. 1/X10 and 1/X1). Switch (1/X10) sets the High Value (see example) and switch (1/X1) sets the Low Value.

After applying the operation voltage to the PSG100-SP / PSG101-SP, the PSG100-SP / PSG101-SP expects- in line with the Profibus specifications - an address message, a parameter message and a configuration message. If these data have been received by the PSG100-SP / PSG101-SP and if the received data match the unit's settings (slave address, configuration data and parameter data / nominal configuration = actual configuration) the unit will then enter the data exchange mode and the „RUN" LED (1/1) will come on. If this LED does not come on after having started the system, an error has occurred during the configuration phase. Please check the slave address set up in the master, the configuration and parameter data by referring to the supplied GSD file.

Caution After having removed the cause for the error in the configuration for the master, the bus logic of the PSG100-SP / PSG101-SP can only be set to its normal operating state by switching the POWER ON once more.

Factory default settings: slave address „34".

2.2 Input and Output Data

The designations used in the following for the input and output data must always be seen from the controlling (master) side. Thus, for example, measurement data sent by the slave are designated as input data (as seen by the master).

After successful run-up, i. e. slave address configuration and parameter data have been received by the PSG100-SP / PSG101-SP corresponding to the data stored in the PSG100-SP / PSG101-SP, the unit will enter the „date exchange" mode. Here 2 data bytes are transmitted as input and output data corresponding to the configuration (as stored in the GSD file).

Key to Fig. 1
1 Status-LED Profibus (RUN)
2 Status-LED Profibus (FAIL)
3 Address Switch
4 Profibus-DP Plug

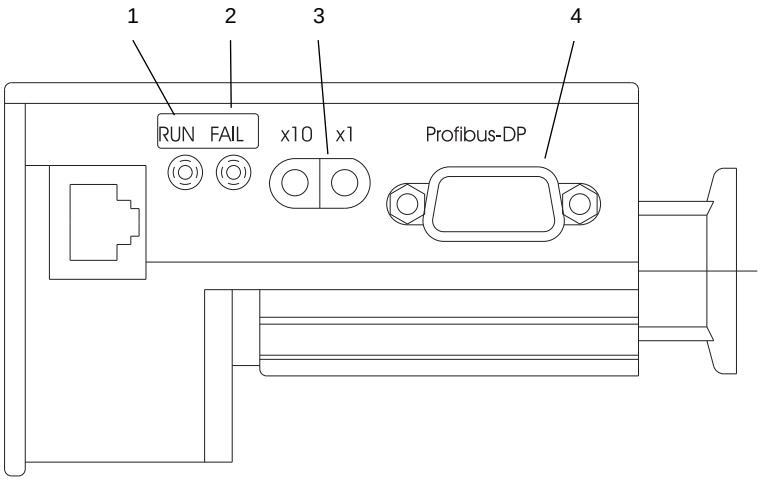

Fig. 1 Side view of the PSG100-SP / PSG101-SP

2.2.1 Meaning of PSG100-SP / PSG101-SP (slave) input and output data

2.2.1.1 PSG100-SP / PSG101-SP output data (output data from the master's view point)

At the moment, no data is evaluated. 2 bytes are sent to the unit but are not processed.

2.2.1.2 PSG100-SP / PSG101-SP input data (from master's view point)

The input data contain the following information: status information and measurement results (as 12-bit values).

Input data

Byte 0		
	Bit 7	Status bit
	Bit 6	Status bit
	Bit 5	Status bit
	Bit 4	Status bit
	Bit 3	Measurement value: Bit 11: MSB
	Bit 2	Measurement value Bit 10
	Bit 1	Measurement value Bit 9
	Bit 0	Measurement value Bit 8
Byte 1		
	Bit 7	Measurement value Bit 7
	Bit 6	Measurement value Bit 6
	Bit 5	Measurement value Bit 5
	Bit 4	Measurement value Bit 4
	Bit 3	Measurement value Bit 3
	Bit 2	Measurement value Bit 2
	Bit 1	Measurement value Bit 1
	Bit 0	Measurement value Bit 0: LSB

Explanation

Byte 0 / Bit 4 - Bit 7 - Status messages

Bit 7	Bit 6	Bit 5	Bit 4	meaning
1	1	0	0	Trigger value of trigger relay under value
1	0	0	0	Trigger value of trigger relay over value
0	0	0	0	Error

Measurement values - representation
The measurement value is given as a 12-bit value. Byte 0/Bit 3 represents the MSB, byte 1/Bit 0 the LSB. The remaining bits represent the measurement value of the instrument.

How to calculate the measurement value
The measurement values are calculated according to the following formulas in the corresponding measurement units.

Calculation formula in unit „mbar"

pressure $p = 10^{(\text{output value} / 482 - 4.778)}$

A special pressure's value is calculated with the following formula:

$$\text{value} = 482 \cdot (\log (p / \text{mbar}) + 4.778)$$

Calculation formula in unit „torr"

pressure $p = 10^{(\text{output value} / 482 - 4.9029)}$

A special pressure's value is calculated with the following formula:

$$\text{value} = 482 \cdot (\log (p / \text{Torr}) + 4.9029)$$

Calculation formula in unit „Pascal"

pressure $p = 10^{(\text{output value} / 482 - 2.778)}$

A special pressure's value is calculated with the following formula:

$$\text{value} = 482 \cdot (\log (p / \text{Pa}) + 2.778)$$

2.3 Diagnosis Data

In case of error, a user's specific diagnosis byte is given. However, only bit 0 is used.

Bit 0 ↔ 0: filament broken

Bit 0 ↔ 1: measurement operation okay

All other bits are set to „1".

3 Service at INFICON

Warning

Contaminated products (e.g. radioactive, toxic, caustic or microbiological hazard) can be detrimental to health and environment.

Products returned to INFICON 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 (see Annex).

Products that are not clearly declared as „free of harmful substances“ are decontaminated at the expense of the customer.

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

4 Disposal

Warning

Contaminated parts

Contaminated parts can be detrimental to health and environment.

Before beginning to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handlinmg contaminated parts.

Warning

Substance detrimental to the environment

Products or parts thereof (mechanical and electric components, operating fluids etc.) can be detrimental to the environment.

Dispose of such substance in accordance with the relevant local regulations.

Separating the components

After disassembling the product, separate its components according to the following criteria:

Contaminated components

Contaminated components (radioactive, toxic, caustic or biological hazard etc.) must be decontaminated in accordance with the relevant national regulations, separated according to their materials, and disposed of.

Other components

Such components must be separated according to their materials and recycled.

EEC Declaration of Conformity

as defined by the Directive relating to machinery 98/37/EG, Appendix IIb.

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

We also declare that the equipment mentioned below complies with the provisions of the Directive relating to electrical equipment designed for use within certain voltage limits 73/23/ EEC and the Directive relating to electromagnetic compatibility 89/336/EEC.

Product:

Profibus-DP Interface
for The Pirani standard Gauge
PSG100-SP
PSG101-SP

Part Number

350-022
350-032

Standards
Harmonized and international / national standards and specifications:

- EN 61010 - 1 - 1993
- EN 50081 - 2 - 1993
- EN 50082 - 2 - 1995
- VDE 0411 Teil 1 / 03.94
- VDE 0839 Teil 81 - 2 / 03.94
- VDE 0839 Teil 82 - 2 / 02.96

Balzers, 20 March 2001

Hannes Fischer, Product Manager

Balzers, 20 March 2001

Dr. Georg Sele, Technical Support Manager; Quality Representative

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:

toxic	no ❑ 1)	yes ❑
caustic	no ❑ 1)	yes ❑
biological hazard	no ❑	yes ❑ 2)
explosive	no ❑	yes ❑ 2)
radioactive	no ❑	yes ❑ 2)
other harmful substances	no ❑ 1)	yes ❑

The product is free of any substances which are damaging to health yes ❑

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!

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:

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.

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 The Instrumental Difference

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