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

Incl. Declaration of Conformity

tina33e1

BAG110-SP

Part Number
352-040
352-041

Remark
This Operation Manual is a supplement to the Operating Manual of the BAG110-S. The standard RS 232 interface is not active in the BAG110-SP.

Profibus-DP Interface for the Bayard Alpert Gauge

INFICON

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

Note
The Operating Manual „tina33e1“ is a supplement to “tina35e1“.

Contents

1 Description

1.1 General

The BAG110-SP ionisation vacuum gauge 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, and operation of the BAG110-SP ionisation vacuum gauge.

Important remarks concerning operational safety and protection are emphasised 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 BAG110-SP ionisation gauge.

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

The references to diagrams, e.g. (1/5), consist of the Fig. No. and the item No. in that order.

Unpack the BAG110-SP ionisation vacuum gauge immediately after delivery, even if it is to be installed at a later date.

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

Check that the BAG110-SP ionisation vacuum gauge is complete.

Carefully examine the BAG110-SP ionisation vacuum gauge 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

The BAG110-SP is equipped with a field bus interface Profibus DP. Thus networking of automated process equipment is easily possible.

Note
The BAG110-SP may not be operated simultaneously via Profibus and an INFICON controller (like, for example the VGC 103).

1.2.1 Profibus-DP

The field bus system Profibus-DP is described in the standard DIN 19245 Part 1 and Part 3 and in EN 50170. The technical and functional characteristics of the Profibus-DP are defined in these papers. The Profibus-DP makes a difference between master and slave units. Here the master units define the way in which data are transmitted. They transmit data to their related slaves and request data from these. It is possible to configure the field bus as a mono-master or multi-master system.

The BAG110-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 BAG110-SP (for this also refer to Section 2.1.1).

1.3 Technical Description

1.3.1 Configuring the Field Bus Node in the Profibus-DP Master

1.3.1.1 GSD File / Main Equipment File

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 Operating Instructions provided by the manufacturer of the configuration software.

The latest GSD file for the BAG110-SP is available for downloading free of charge from the INFICON homepage “www.inficon.com”.

1.4 Technical Data

The technical data as specified in the Operating Instructions for the BAG110-S - tina35 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	
12	M Baud	

Expanded User Parameter Data
No such parameter data are required.

Configuring
The number of input and output data is 8 bytes each.

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

1.5 Scope of Delivery

The supplied equipment is the same as detailed for the BAG110-S in Operating Manual tina35. The following items are supplied in addition:

	Part Number
- Profibus DP interface built into the BAG110-SP	
BAG110-SP; DN 25 KF	352-040
BAG110-SP; DN 40 CF	352-041
- Operating Manual	tina33e1

2 Operation

2.1 Start-Up of the BAG110-SP

The following is required for starting up the field bus:
- the master must be configured (see Operating Instructions for the master)
- the address of the slave must be set and
- the entire system must be electrically installed.

2.1.1 Setting the Address for the Slave

In order to set the address for the BAG110-SP slave, remove the screw-on lid (1/8) and set the slave address through the two rotary switches. Settings ranging from address 0 to 126 are possible. The address is set in hexadecimal code through the two rotary switches. The address must be set while the unit is off. Any changes made to the settings of these two switches will not be taken into account by the unit while the power is ON.

For conversion of decimal → hexadecimal refer to the table given in Section 2.4.

The required hexadecimal value is set through the address switches (1/9 and 1/10). Here the high value (see example) is set through switch (1/10) and the low value is set through switch (1/9).

Example:
Slave address: 106 decimal
corresponds to
Slave address: 6A hexadecimal
“6" represents the high value, “A” the low value. Thus the rotary switch (1/10) must be set to position “6” and the rotary switch (1/9) must be set to position “A”.

Due to the method of hexadecimal encoding, address settings over “126” decimal (“7E” hex.) can be set. However such settings will not make sense in connection with the Profibus. For this reason, any address settings over “126” decimal will cause the address setting for the BAG110-SP to remain set at “126” (dec.).

After applying the operating voltage to the BAG110-SP the BAG110-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 BAG110-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 “MNS” LED (1/11) will come on. (MNS = Module Network Status). 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 GSD file (see Section 1.3.1.1).

Key to Fig. 1
1 LED, 24 V power supply (orange)
2 LED for various warnings (red)
3 15 pin SUB-D connector
4 LED for emission ON (green)
5 LED for trigger status (green)
6 Screw-on lid covering various controls
7 9 pin SUB-D Profibus connection
8 Screw-on lid for Profibus address
9 Switch for the LOW value of the slave address
10 Switch for the HIGH value of the slave address
11 Profibus Status LED

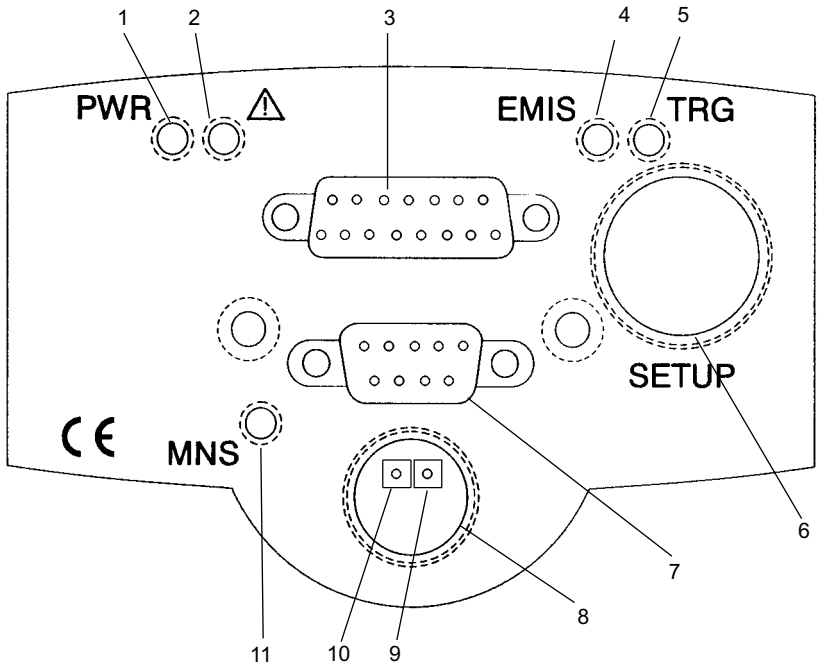

Fig. 1 Front panel

Caution After having removed the cause for the error in the configuration for the master, the bus logic of the BAG110-SP can only be set to its normal operating state by switching the POWER ON once more.

Factory default settings::
Slave address “93" dec. ≙ “5 D“ hex.

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 BAG110-SP corresponding to the data stored in the BAG110-SP, the unit will enter the “data exchange” mode. Here 8 data bytes are transmitted as input and output data corresponding to the configuration (as stored in the GSD file).

The first byte of the input or output data represents an information byte (Info byte), which indicates the contents of the bytes which then follow.

Example:
For example, if the first output byte = “0" (dec.), the output bytes which then follow represent the functions “Emission ON/OFF”, “Degas ON/OFF”, “Switchover from measurement data to trigger value on the analogue output”, “Trigger source potentiometer / Profibus” and “Trigger values” corresponding to the table given in Section 2.2.1.1.

For example, if the first output byte = “01” (dec.) this denotes the “Output data page” where the type of gas which is to be used can be set.

Depending on the value of the first byte, this byte denotes in the following different **input and output data pages**.

Example:
Input data byte = 0 × Input data page: Page 0

An input data page is related to each output data page. If the output data page “0” (dec.) is transmitted, the BAG110-SP will send the input data page “0” (dec.). If the output data page “1” (dec.) is transmitted, the BAG110-SP will send the input data page “1” (dec.) Each input and output data page consists of 8 byte.

Page “0” is so arranged that the more important functions used to control / monitor the BAG110-SP can be accessed.

Caution If the first data received by the BAG110-SP after POWER ON are not arranged according to one of the data output pages given below, the BAG110-SP will respond by sending 0xFF on all 8 input bytes until output data are received which match the following definitions.

The meaning of the individual pages is described in the following.

2.2.1 Meaning of the BAG110-SP (Slave) Input and Output Data Page “0”

2.2.1.1 BAG110-SP Output Data: Page “0” – Main Page (output data as seen from the master)

Output data page “0” contains the following functions:

Output data: Page 0

Byte 0		Info byte on output data page “00”
Byte 1		Control bits
	Bit 0	Emission ON / OFF
	Bit 1	Degas ON / OFF
	Bit 2	xx
	Bit 3	xx
	Bit 4	Switchover between measurement values / trigger values for the analogue output. / 0 = Measured values; Prio: SPS = PB
	Bit 5	xx
	Bit 6	xx
	Bit 7	xx
Byte 2	Bit 0	Trigger source Pot. (=0) or Profibus (=1)
	Bit 1	xx
	Bit 2	xx
	Bit 3	xx
	Bit 4	xx
	Bit 5	xx
	Bit 6	xx
	Bit 7	xx
Byte 3		Trigger: Upper threshold / HIGH Byte
Byte 4		Trigger: Upper threshold / LOW Byte
Byte 5		Trigger: Lower threshold / HIGH Byte
Byte 6		Trigger: Lower threshold / LOW Byte
Byte 7		xx

xx means: Any values indicated here are not taken into account.

Explanation:
Byte1 / bit 0: Emission ON / OFF
0 × Switch emission off,
1 × Switch emission on.

If the command “Switch emission on” is given when the pressure is too high, the emission is switched on and

then switched off after 4 s max. The error status “Pressure too high” or “Sensor error” is set in the data output page.

Byte 1 / bit 2: Degas ON / OFF
0 × Switch degas off,
1 × Switch degas on.

The degas mode is automatically switched off after 3 minutes max.

If the command “Switch degas on” is given when the pressure is still too high, the degas request remains stored. If the pressure drops at some later time below $2 \cdot 10^{-5}$ mbar, the degas mode is activated.

Byte 1 / bit 4: Switchover between measured value / trigger value for the analogue output

0 × The measured values are sent to the analogue output.
1 × The trigger value is sent to the analogue output. Only the lower trigger threshold is output.

Byte 2 / bit 0: Setting of the trigger value via potentiometer or Profibus

0 × The trigger values are set via the potentiometer.
1 × The trigger values are set via the Profibus. Then the following bytes (byte 3 to byte 6) are used for the trigger values.

Byte 3 to byte 6: Trigger values
Operation of the switching relay is set through a lower and an upper threshold. If the pressure is less than the set lower threshold, the trigger relay is activated (relay contact closes). If the pressure is higher than the upper threshold, the trigger relay is deactivated (relay contact opens).

How to calculate the trigger value:
The trigger values are calculated according to the following equations in the corresponding units as 16 bit data.

Equation for the unit “mbar”
Trigger value = (log [p / mbar] + 11) · 6444.9.

Equation for the unit “Torr”
Trigger value = (log [p / Torr] + 11,1249) · 6444.9.
Permissible range of values for the trigger value::
6444 ≤ “Trigger value” ≤ 64449 or
$1 \cdot 10^{-10}$ mbar ≤ trigger value in pressure unit ≤ $1 \cdot 10^{-1}$ mbar.

The high byte of the thus calculated value is entered in byte 3 and byte 5, whereas the low byte is entered in byte 4 and byte 6. Here you must make sure that the upper threshold is equivalent to a higher pressure than the lower threshold. If this condition is not met, an error bit is output on input page “0” (see input page “0”) and the previously entered trigger value remains active. If the valid trigger value was entered through the potentiometer, this value will remain active. A change in the value set through the potentiometer will, however, no longer be taken into account, if via byte 0 / byte 2 the unit is set so that the trigger value is set via the Profibus.

Special points to observe when operating the Profibus-DP inputs and programmable control signal inputs in parallel:
In case of parallel operation (field bus and programmable control inputs) the value which was most recently set is used.

Example:
For example, if the emission has been switched on via the Profibus, the emission may be switched off via the signal input (Fig. 2/3 Pin 4 - tina35 “BAG110-S”). If thereafter the emission is to be switched on again via the Profibus, the command “Switch emission off” must be sent over the Profibus first and in a next step the command for switching the emission on may be given.

Conversely the following also applies: For example, if the emission has been switched on via the programmable control input, the emission may be switched off via the Profibus. If the emission is to be switched on again via the programmable control input, the emission must first be switched off via the programmable control input and in a next step the command for switching the emission on may be given via the programmable control input.

2.2.1.2 BAG110-SP Input Data: Page “0” – Main Page (as seen from the master)

The data received through input page “0” are continuously updated. Thus current values are always available. Thus through byte 3 and byte 4 the measured value as measured currently by the unit is available.

Input data page “0” contains the following data:

Input data: Page 0

Byte 0		Info byte on input data page “00”
Byte 1		Control bits
	Bit 0	Emission status
	Bit 1	Emission status
	Bit 2	Unit of measurement 0 = mbar; 1 = Torr
	Bit 3	Toggle bit for “String received” on page 0
	Bit 4	Switchover between measurement values / trigger values for the analogue output. / 0= Measured values; 1 = Trigger values
	Bit 5	Type of gas
	Bit 6	Type of gas
	Bit 7	Type of gas
Byte 2	Bit 0	Trigger source Pot. (=0) or Profibus (=1)
	Bit 1	Error in the trigger setting / In case of an error the old values remain active (PB or pot.)
	Bit 2	Trigger status / 0 = disabled
	Bit 3	--

	Bit 4	Cathode 1 or 2 active
	Bit 5	Error / warning status
	Bit 6	Error / warning status
	Bit 7	Error / warning status
Byte 3		Measured value: High byte
Byte 4		Measured value: Low byte
Byte 5		n.a.
Byte 6		Command status value
Byte 7		not used

Explanation:
Byte 1 / bit 0 and bit 1 - Emission status

Bit 1	Bit 0	Emission-status	Emission current range
0	0	Emission Off	0 mA
0	1	Low emission current	25 µA
1	0	High emission current	5 mA
1	1	Degas	20 mA

Byte 1 / bit 2 - Unit of measurement
0 × mbar
1 × Torr

Byte 1 / bit 3 - Toggle bit
Each time the information content of output data page “0” is changed (master sends a new page “0”), the value of the toggle bit is changed thus indicating that the changed string has been received.

Example:
For example, if the emission has been switched on through the Profibus and when the signal for switching the emission off is given via the programmable control input, the emission status is set to 0 (no emission) on output data page “0”, even though the signal “Emission ON” is active on the Profibus. When giving the signal to switch the emission off via the Profibus (whereby the emission has been switched off via the programmable control input), the emission status will not change in the input data. However through the toggle bit it is possible to detect that the command “Switch emission off” has actually been received.

Byte 1 / bit 4 - Switchover between measured values / trigger values for the analogue output
0 × Measured values are output to the analogue output.
1 × The trigger value is output to the analogue output.

Byte 1 / bit 5, 6, 7 - Type of gas
The set type of gas can be read here in the same manner as also on Page “1”.

Bit 7	Bit 6	Bit 5	Type of gas
0	0	0	N_2 / Nitrogen
0	0	1	Argon
0	1	0	H_2
1	1	1	None of the above types of gas have been selected. Instead the customer-specific correction factor for the type of gas will be used through the following 2 bytes.

Byte 2 / bit 0 - Trigger source, potentiometer or Profibus
0 × The trigger values are entered via the potentiometer.
1 × The trigger values are entered via the Profibus.

Byte 2 / bit 1 - Trigger setting fault
If, when setting the trigger values, an incorrect relationship occurs on output data page “0” (e.g. pressure values over 10^{-1} mbar or upper threshold lower than the lower threshold) the error bit is set to “1”. The error bit is only reset after the correct relationship for the trigger values is received. In case of an error the values which were valid remain as they were.

Byte 2 / bit 2 - Trigger status
0 × Trigger inactive (contact open).
1 × Trigger active (contact closed).

Byte 2 / bit 4 - Cathode 1 or 2 active
0 × Cathode 1 active.
1 × Cathode 2 active.

Byte 2 / bit 5, 6, 7 - Status messages
The following error/warning messages can be read here:

Bit-No.	ok	Electr. fault	Sensor warning	Electr. warning	Sensor fault	Press. too high	Temp. too high	Intern. transmission error
5	0	1	0	1	0	1	0	1
6	0	0	1	1	0	0	1	1
7	0	0	0	0	1	1	1	1

Additionally, a diagnostic message is sent over the Profibus in the case of faults / warnings, electronics faults, sensor warnings, electronics warnings, sensor faults and internal transmission faults (see Section 2.3).

Remedies are detailed in Section 2.3.

Byte 3 and byte 4 - Measured values
The measured value is output as a 16 bit value through these two bytes. Byte 3 / bit 7 represents the MSB, byte 4 / bit 0 the LSB.

How to calculate the measured value:
The measured values are calculated in the corresponding unit of measurement according to the following formulae.

Formula for calculating the measured value in “mbar”
Pressure p = 10 (output value / 6444.9 - 11)

Formula for calculating the measured value in ”Torr”
Pressure p = 10 (output value / 6444.9 -11.1249)

Byte 6 - Command status values
If the master outputs output data pages which do not exist, this byte provides information as to the type of error. The following command status values are possible (here the output is in ASCII):

ASCII 'b' = Wrong command word.
Remedy: Correct input data.
ASCII 'n' = Write command which is not permissible.
Remedy: Correct input data.
ASCII 'a' = Wrong command parameter.
Remedy: Correct input data.
ASCII 'z' = Wrong command parameter.
Remedy: Correct input data.
ASCII 't' = There is an internal error present.
A diagnostic message is output. Check the BAG110-SP and have the unit repaired, if required.

2.2.2 BAG110-SP Input and Output Data Page “1”

2.2.2.1 BAG110-SP Output Data: Page"1" - Page for Setting the Type of Gas and the Unit of Measurement (as seen from the master)

Output data page “1” contains the following functions for setting the type of gas. One may select between the types of gas N_2, argon and H_2 or a customer-specific correction factor for the type of gas used may be entered.

The structure of output data page “1” is as follows:

Output data: Page 1

Byte 0		Info byte on output data page “01”
Byte 1	Bit 0 Bit 1 Bit 2 Bit 3 Bit 4 Bit 5 Bit 6 Bit 7	Type of gas Type of gas Type of gas Measurement unit 0 = mbar / 1 = Torr xx xx xx xx
Byte 2		Factor for the type of gas, high byte, bit 7 MSB
Byte 3		Factor for the type of gas, low byte, bit 0 LSB
Byte 4		xx
Byte 5		xx
Byte 6		xx
Byte 7		xx

xx indicates: Any values which are entered here are not taken into account.

Explanation:
Byte 1:
Byte 1 / Bit 0, 1, 2 - Type of gas

Bit 2	Bit 1	Bit 0	Type of gas
0	0	0	N_2
0	0	1	Argon
0	1	0	H_2
1	1	1	None of the above types of gas is valid. Instead the correction factor stated by the two following bytes applies.

Byte 2 and Byte 3:
For the entry of factors for gases which can not be directly addressed, like gas mixtures, for example, bytes 2 and 3 may be used to enter a customer-specific factor for the type of gas used. This is done by entering a 16 bit value.

The value entered here corresponds to the ionisation probability. The value for nitrogen:
Ionisation probability = 1.

For an ionisation probability of 1, the value in byte 2 and byte 3 is set to 5000 (decimal).

Other values may be calculated as follows:
Value to be entered = Ionisation probability · 5000.
Permissible range: 500 < value < 500,000.

Byte 2 / bit 7 represents the MSB, byte 3 / bit 0 the LSB.

2.2.2.2 BAG110-SP Slave Input Data: Page"1" - Page for the Type of Gas and the Unit of Measurement (as seen from the master)

Input data page “1” is arranged as follows:

Input data: Page 1

Byte 0		Info byte on input data page “01”
Byte 1	Bit 0 Bit 1 Bit 2 Bit 3 Bit 4 Bit 5 Bit 6 Bit 7	Type of gas Type of gas Type of gas Measurement unit 0 = mbar / 1= Torr
Byte 2		Factor for the type of gas, high byte
Byte 3		Factor for the type of gas, low byte

Byte 4	Software version
Byte 5	--
Byte 6	Command status value
Byte 7	

For items without an entry “00” will be output.

The values output here are not continuously updated. For example, if the type of gas is changed through the rotary switches, the value output by the BAG110-SP remains as it was.

Explanation:
Byte 1/ bit 0,1,2 - Type of gas
Structure of the data corresponds to the input data page.

Byte 2 and Byte 3 - Factor for the type of gas
The factor is output in the same was as the factor is entered (see input data page “1”).

Byte 4
The software version is represented by an integer in the range from 0 to 255. The software version number corresponds to the value output divided by 100.
Example:
A value of 120 is equivalent to a software version number of V 1.20.

Byte 6 - Command status value
See command status values page “0”.

2.2.3 BAG110-SP Input and Output Data Page “3”

2.2.3.1 BAG110-SP Output Data: Page “3” - Service Page (as seen from the master)

Page “3” is a data output page through which a variety of different data can be read from the BAG110-SP.

Output data: Page 3

	Error		Trigger values		Prog, cont. signal Emission ON / OFF		
Byte No.	dec.	hex.	dec.	hex.	dec.	hex.	
0	03	03	03	03	03	03	Info byte on input data page “3”.
1	68	44	179	B3	68	44	Abbreviation for data which are to be read
2	41	29	62	3E	165	A5	Abbreviation for data which are to be read
3	04	04	04	04	01	01	Number of bytes to be read
4	xx	xx	xx	xx	xx	xx	
5	xx	xx	xx	xx	xx	xx	
6	xx	xx	xx	xx	xx	xx	
7	xx	xx	xx	xx	xx	xx	

xx indicates: Any values which are entered here are not taken into account.

	Prog. cont. signal Degas ON / OFF		Software version BAG110		Serial No.		
Byte No.	dec.	hex.	dec.	hex.	dec.	hex.	
0	03	03	03	03	03	03	Info byte on input data page “3”.
1	68	44	68	44	68	44	Abbreviation for data which are to be read
2	166	A6	170	AA	168	A8	Abbreviation for data which-are to be read
3	01	01	02	02	02	02	Number of bytes to be read
4	xx	xx	xx	xx	xx	xx	
5	xx	xx	xx	xx	xx	xx	
6	xx	xx	xx	xx	xx	xx	
7	xx	xx	xx	xx	xx	xx	

xx indicates: Any values which are entered here are not taken into account.

	Sensor model		Sensor Serial No.		Op. mode analogue output		
Byte No.	dec.	hex.	dec.	hex.	dec.	hex.	
0	03	03	03	03	03	03	Info byte on input data page “3”.
1	68	44	68	44	68	44	Abbreviation for data which are to be read
2	38	26	39	27	14	0E	Abbreviation for data which are to be read

	Sensor model		Sensor Serial No.		Op. mode analogue output		
Byte No.	dec.	hex.	dec.	hex.	dec.	hex.	
3	01	01	02	02	01	01	Number of bytes to be read
4	xx	xx	xx	xx	xx	xx	
5	xx	xx	xx	xx	xx	xx	
6	xx	xx	xx	xx	xx	xx	
7	xx	xx	xx	xx	xx	xx	

xx indicates: Any values which are entered here are not taken into account.

The requested data are received on the corresponding input data page “3”.

2.2.3.2 BAG110-SP Input Data: Page"3" – Service Page (as seen from the master)

Corresponding to the requested read data in output page “3”, this page outputs the corresponding values.

The values output here are not continuously updated. For example, if the type of gas is changed through the rotary switches, the value output by the BAG110-SP remains as it was.

General reply format:
Byte 0: Info byte on the input data: Page “03”
Byte 1: Abbreviation for the requested data (= Byte 2 in output data page “03”)
Byte 2: Requested read data
Byte 3: Requested read data
Byte 4: Requested read data
Byte 5: Requested read data
Byte 6: “Command status value, see above”

The data are output in the same format and the same sequence as for the corresponding output. In the case of integers, the high byte is output first.

Example: Reading of trigger values
Byte 0: “03”
Byte 1: “62” dec.
Byte 2: “high byte upper threshold, Bit 7 = MSB”
Byte 3: “low byte upper threshold Bit 0 = LSB”
Byte 4: “high byte lower threshold Bit 7 = MSB”
Byte 5: “low byte lower threshold Bit 0 = LSB”
Byte 6: “Command status value”

Explanation of the output for:

Read error

Byte No.	Occurred error	
Byte 2	Bit 0	Both cathodes broken
	Bit 2	Faulty emission current
	Bit 3	Faulty anode voltage
	Bit 4	Cathode voltage too low
	Bit 5	Temperature too high
	Bit 6	Pressure too high
	Bit 7	Error during degassing
Byte 3	Bit 0	Cathode heater power > maximum
	Bit 4	Cathode voltage too high
Byte 4	Bit 0	Cathode 1 broken
	Bit 1	Cathode 2 broken
	Bit 2	Emission current inaccurate
	Bit 3	Anode voltage inaccurate
	Bit 4	Cathode voltage inaccurate
	Bit 5	Temperature too high
	Bit 6	EEPROM instrument data lost
	Bit 7	EEPROM sensor data lost
Byte 5	Bit 0	No emission
	Bit 1	Cathode heater power too high
	Bit 2	Trigger improperly set

The remedies to the errors described here are detailed in Section 2.3.

Read emission current:
The value of the emission current is calculated as follows:

$$\text{Emission current} = \frac{\text{Output value}}{12568 \cdot \text{emission current range}}$$

The emission current range can be read off from the emission status (output page 0, byte 1).

Byte 1 / bit 0 and bit 1 - Emission status

Bit 1	Bit 0	Emission status	Emission current range
0	0	Emission Off	0 mA
0	1	Low emission current	25 µA
1	0	High emission current	5 mA
1	1	Degas	20 mA

Read programmable control input emission ON / OFF / Degas ON / OFF:
Voltage applied to the programmable control input = Read value · 0.197

Read software version:
Software version = Read value / 100

Read Serial No:
Serial No.= Read value

Read sensor model:
1 = IE 100 KF
2 = IE 100 CF

Analogue output operating mode
The output value corresponds to the setting of the encoding switches. For this also refer to Section 2.3.2 of the Operating Instructions 09.414 “ITR 100”.

2.2.4 Meaning of the BAG110-SP (Slave) Input and Output Data Page “4”

2.2.4.1 BAG110-SP Output Data: Page “4” – (output data as seen from the master)

Caution Except for byte 0, output data page 4 is identical to output data page 0!

Output data page “4” contains the following functions:

Output data: Page 4

Byte 0		Info byte on output data page “04”
Byte 1		Control bits
	Bit 0	Emission ON / OFF
	Bit 1	Degas ON / OFF
	Bit 2	xx
	Bit 3	xx
	Bit 4	Switchover between measurement values / trigger values for the analogue output. / 0 = Measured values; Prio: SPS = PB
	Bit 5	xx
	Bit 6	xx
	Bit 7	xx
Byte 2	Bit 0	Trigger source Pot. (=0) or Profibus (=1)
	Bit 1	xx
	Bit 2	xx
	Bit 3	xx
	Bit 4	xx
	Bit 5	xx
	Bit 6	xx
	Bit 7	xx
Byte 3		Trigger: Upper threshold / HIGH Byte
Byte 4		Trigger: Upper threshold / LOW Byte
Byte 5		Trigger: Lower threshold / HIGH Byte
Byte 6		Trigger: Lower threshold / LOW Byte
Byte 7		xx

xx means: Any values indicated here are not taken into account.

Explanation:
Byte1 / bit 0: Emission ON / OFF
0 × Switch emission off,
1 × Switch emission on.

If the command “Switch emission on” is issued when the pressure is still too high, then the emission can not be switched on. The error status “Pressure too high” or “Sensor error” is set in the data output page.

Byte 1 / bit 2: Degas ON / OFF
0 × Switch degas off,
1 × Switch degas on.

The degas mode is automatically switched off after 3 minutes max.

If the command “Switch degas on” is given when the pressure is still too high, the degas request remains stored. If the pressure drops at some later time below $2 \cdot 10^{-5}$ mbar, the degas mode is activated.

Byte 1 / bit 4: Switchover between measured value / trigger value for the analogue output
0 × The measured values are sent to the analogue output.
1 × The trigger value is sent to the analogue output. Only the lower trigger threshold is output.

Byte 2 / bit 0: Setting of the trigger value via potentiometer or Profibus
0 × The trigger values are set via the potentiometer.
1 × The trigger values are set via the Profibus. Then the following bytes (byte 3 to byte 6) are used for the trigger values.

Byte 3 to byte 6: Trigger values
Operation of the switching relay is set through a lower and an upper threshold. If the pressure is less than the set lower threshold, the trigger relay is activated (relay contact closes). If the pressure is higher than the upper threshold, the trigger relay is deactivated (relay contact opens).

How to calculate the trigger value:
The trigger values are calculated according to the following equations in the corresponding units as 16 bit data.

Equation for the unit “mbar”
Trigger value = (log [p / mbar] + 11) · 6444.9.

Equation for the unit “Torr”
Trigger value = (log [p / Torr] + 11,1249) · 6444.9.
Permissible range of values for the trigger value::
6444 ≤ “Trigger value” ≤ 64449 or
$1 \cdot 10^{-10}$ mbar ≤ trigger value in pressure unit ≤ $1 \cdot 10^{-1}$ mbar.

The high byte of the thus calculated value is entered in byte 3 and byte 5, whereas the low byte is entered in byte 4 and byte 6. Here you must make sure that the upper threshold is equivalent to a higher pressure than the lower threshold. If this condition is not met, an error bit is output on input page “4” (see input page “4”) and the previously entered trigger value remains active. If the valid trigger value was entered through the potentiometer, this value will remain active. A change in the value set through the potentiometer will, however, no longer be taken into account, if via byte 0 / byte 2 the unit is set so

that the trigger value is set via the Profibus.

Special points to observe when operating the Profibus-DP inputs and programmable control signal inputs in parallel:
In case of parallel operation (field bus and programmable control inputs) the value which was most recently set is used.

Example:
For example, if the emission has been switched on via the Profibus, the emission may be switched off via the signal input (Fig. 2/3 Pin 4 - tina35 “BAG110-S”). If thereafter the emission is to be switched on again via the Profibus, the command “Switch emission off” must be sent over the Profibus first and in a next step the command for switching the emission on may be given.

Conversely the following also applies: For example, if the emission has been switched on via the programmable control input, the emission may be switched off via the Profibus. If the emission is to be switched on again via the programmable control input, the emission must first be switched off via the programmable control input and in a next step the command for switching the emission on may be given via the programmable control input.

2.2.4.2 BAG110-SP Input Data: Page “4” – (as seen from the master)

Caution Except for byte 0, input data page 4 is identical to input data page 0!

The data received through input page “4” are continuously updated. Thus current values are always available. Thus through byte 3, byte 4 and byte 5 the measured value as measured currently by the unit is available.

Input data page “4” contains the following data:

Input data: Page 4

Byte 0		Info byte on input data page “04”
Byte 1		Control bits
	Bit 0	Emission status
	Bit 1	Emission status
	Bit 2	Unit of measurement 0 = mbar; 1 = Torr
	Bit 3	Toggle bit for “String received” on page 4
	Bit 4	Switchover between measurement values / trigger values for the analogue output. / 0= Measured values; 1 = Trigger values
	Bit 5	Type of gas
	Bit 6	Type of gas
	Bit 7	Type of gas
Byte 2	Bit 0	Trigger source Pot. (=0) or Profibus (=1)
	Bit 1	Error in the trigger setting / In case of an error the old values remain active (PB or pot.)
	Bit 2	Trigger status / 0 = disabled
	Bit 3	--
	Bit 4	Cathode 1 or 2 active
	Bit 5	Error / warning status
	Bit 6	Error / warning status
	Bit 7	Error / warning status
Byte 3		Measured value mantissa: High byte
Byte 4		Measured value mantissa: Low byte
Byte 5		Measured value exponent
Byte 6		Command status value
Byte 7		not used

Explanation:
Byte 1 / bit 0 and bit 1 - Emission status

Bit 1	Bit 0	Emission-status	Emission current range
0	0	Emission Off	0 mA
0	1	Low emission current	25 µA
1	0	High emission current	5 mA
1	1	Degas	20 mA

Byte 1 / bit 2 - Unit of measurement
0 × mbar
1 × Torr

Byte 1 / bit 3 - Toggle bit
Each time the information content of output data page “4” is changed (master sends a new page “4”), the value of the toggle bit is changed thus indicating that the changed string has been received.

Example:
For example, if the emission has been switched on through the Profibus and when the signal for switching the emission off is given via the programmable control input, the emission status is set to 0 (no emission) on output data page “4”, even though the signal “Emission ON” is active on the Profibus. When giving the signal to switch the emission off via the Profibus (whereby the emission has been switched off via the programmable control input), the emission status will not change in the input data. However through the toggle bit it is possible to detect that the command “Switch emission off” has actually been received.

Byte 1 / bit 4 - Switchover between measured values / trigger values for the analogue output
0 × Measured values are output to the analogue output.
1 × The trigger value is output to the analogue output.

Byte 1 / bit 5, 6, 7 - Type of gas
The set type of gas can be read here in the same manner as also on Page “1”.

Bit 7	Bit 6	Bit 5	Type of gas
0	0	0	N_2 / Nitrogen
0	0	1	Argon
0	1	0	H_2
1	1	1	None of the above types of gas have been selected. Instead the customer-specific correction factor for the type of gas will be used through the following 2 bytes.

Byte 2 / bit 0 - Trigger source, potentiometer or Profibus
0 × The trigger values are entered via the potentiometer.
1 × The trigger values are entered via the Profibus.

Byte 2 / bit 1 - Trigger setting fault
If, when setting the trigger values, an incorrect relationship occurs on output data page “4” (e.g. pressure values over 10^{-1} mbar or upper threshold lower than the lower threshold) the error bit is set to “1”. The error bit is only reset after the correct relationship for the trigger values is received. In case of an error the values which were valid remain as they were.

Byte 2 / bit 2 - Trigger status
0 × Trigger inactive (contact open).
1 × Trigger active (contact closed).

Byte 2 / bit 4 - Cathode 1 or 2 active
0 × Cathode 1 active.
1 × Cathode 2 active.

Byte 2 / bit 5, 6, 7 - Status messages
The following error/warning messages can be read here:

Bit-No.	ok	Electr. fault	Sensor warning	Electr. warning	Sensor fault	Press. too high	Temp. too high	Intern. transmission error
5	0	1	0	1	0	1	0	1
6	0	0	1	1	0	0	1	1
7	0	0	0	0	1	1	1	1

Additionally, a diagnostic message is sent over the Profibus in the case of faults / warnings, electronics faults, sensor warnings, electronics warnings, sensor faults and internal transmission faults (see Section 2.3).

Remedies are detailed in Section 2.3.

Byte 3 and byte 4 - measured value
The mantissa of the measured value is output as an unsigned 16 bit integer through these two bytes.
Byte 3 / Bit 7 represents the MSB, byte 4 / bit 0 the LSB.

The range for this integer is: 1000 to 9999, whereby:
1000 dec. (03 E8 hex) <---> 1.000
9999 dec. (27 0F hex) <---> 9.999

Byte 5 - Measured value exponent
The exponent is output as signed char through this byte, i.e. with the correct sign.

Example:
Exponent “-2” is represented by “FE” hex.

Byte 6 - Command status values
If the master outputs output data pages which do not exist, this byte provides information as to the type of error. The following command status values are possible (here the output is in ASCII):
ASCII 'b' = Wrong command word.
Remedy: Correct input data.
ASCII 'n' = Write command which is not permissible.
Remedy: Correct input data.
ASCII 'a' = Wrong command parameter.
Remedy: Correct input data.
ASCII 'z' = Wrong command parameter.
Remedy: Correct input data.
ASCII 't' = There is an internal error present.
A diagnostic message is output. Check the BAG110-SP and have the unit repaired, if required.

2.3 Diagnostic Data and Troubleshooting

The BAG110-SP offers diagnostic facilities which are related to the unit.

In case of an occurring fault further 7 user-specific diagnostic pieces of information are output in addition to the standard diagnostic information. The diagnostic data are arranged as follows:

Byte	Diagnostic data	Remark	Remedy For an explanation on the numbers, see next page
0	Station status_1	Byte 0 to 5 is a fixed diagnostic header (see DIN 19245-3/ Sec. 8.3.1 DP-Slave, read diagnostic information).	
1	Station status_2		
2	Station status_3		
3	Diag.Master_Add		
4	Ident_Number_High		
5	Ident_Number_Low		
6	Header byte	Instrument related diagnosis	
7	Expanded diagnostic byte 1	Bit 0 Both cathodes broken Bit 2 Faulty emission current Bit 3 Faulty anode voltage Bit 4 Cathode voltage too low Bit 5 Temperature too high Bit 6 Pressure too high Bit 7 Error during degassing	3, 8 1, 2, 8 1, 2 3, 1 5 4 3
8	Expanded diagnostic byte 2	Bit 0 Heater power over maximum Bit 4 Cathode voltage too high	3 3
9	Expanded diagnostic byte 3	Bit 0 Cathode 1 broken Bit 1 Cathode 2 broken Bit 2 Emission current inaccurate Bit 3 Anode voltage inaccurate Bit 4 Cathode voltage inaccurate Bit 5 Temperature too high Bit 6 EEPROM instrument data lost Bit 7 EEPROM sensor data lost	2 2 2, 1 1 1 5 1, 6 2, 6
10	Expanded diagnostic byte 4	Bit 0 No emission Bit 1 Heater power above nominal	3, 8 3
11	Expanded diagnostic byte 5 Diagnosis on the internal transmission via the data transmitted to the ITR 100 operating unit	ASCII ´c´ = Checksum error for internal transmission ASCII ´s´ = Wrong length of the string ASCII ´b´ = Wrong command word ASCII ´n´ = Not permitted write command ASCII ´t´ = Timeout ASCII ´a´ = Wrong command parameter ASCII ´d´ = Wrong data during read-back ASCII ´z´ = Transmission error during internal transmission (too many bytes requested for reading)	6 6 6, 7 7 6 7 7 7
12	Expanded diagnostic byte	Not yet used	

Point of time when diagnostic messages are erased:

In the case of diagnostic messages a difference is made between “Warnings” and “Errors”.

In the case of warnings the diagnostic message is withdrawn as soon as the cause for the warning is no longer present.

In the case of errors the diagnostic message is only erased after switching the emission or the power off and then on again.

Example:
If it is found that both cathodes are broken while the emission is on, a corresponding error message will be output. This error message persists even if the emission is subsequently turned off. Upon switching on of the emission once more, the error message is initially erased and the instrument status is checked. If it is found that both cathodes are broken, the corresponding diagnostic message is output again.

Explanations for the number codes relating to the remedy:

1: Check the BAG110-SP and have it repaired if required.
2: Exchange the sensor as soon as possible.
3: Exchange the sensor, check the BAG110-SP and have it repaired if required.
4: Possibly improve pressure monitoring.
5: Reduce the ambient temperature.
6: Possibly excessive EMI levels, check EMI shielding measures.
7: Check the data on the input data pages.
8: The pressure was too high upon switching on of the emission.

The fault causes and remedies detailed here may be used to directly remedy the fault in some cases. In the case of repairs or warranty claims, these fault causes should be stated in every case in order to assist trouble-shooting on the units at our service canters.

2.4 Conversion Table
Decimal Code → Setting of the Address Switch

Dec.	Hex.	Dec.	Hex.	Dec.	Hex.
0	00	52	34	104	68
1	01	53	35	105	69
2	02	54	36	106	6A
3	03	55	37	107	6B
4	04	56	38	108	6C
5	05	57	39	109	6D
6	06	58	3A	110	6E
7	07	59	3B	111	6F
8	08	60	3C	112	70
9	09	61	3D	113	71
10	0A	62	3E	114	72
11	0B	63	3F	115	73
12	0C	64	40	116	74
13	0D	65	41	117	75
14	0E	66	42	118	76
15	0F	67	43	119	77
16	10	68	44	120	78
17	11	69	45	121	79
18	12	70	46	122	7A
19	13	71	47	123	7B
20	14	72	48	124	7C
21	15	73	49	125	7D
22	16	74	4A	126	7E
23	17	75	4B	127	7E
24	18	76	4C	128	7E
25	19	77	4D	129	7E
26	1A	78	4E.	.	
27	1B	79	4F.	.	
28	1C	80	50.	.	
29	1D	81	51	255	7E
30	1E	82	52		
31	1F	83	53		
32	20	84	54		
33	21	85	55		
34	22	86	56		
35	23	87	57		
36	24	88	58		
37	25	89	59		
38	26	90	5A		
39	27	91	5B		
40	28	92	5C		
41	29	93	5D		
42	2A	94	5E		
43	2B	95	5F		
44	2C	96	60		
45	2D	97	61		
46	2E	98	62		
47	2F	99	63		
48	30	100	64		
49	31	101	65		
50	32	102	66		
51	33	103	67		

2.5 Brief Overview on the Input and Output Data Pages

2.5.1 Input Data and Output Data Page "0"

Input Data BAG110-SP Page 0

Byte 0		Info byte on input data page "00"
Byte 1		Control bits
	Bit 0	Emission status
	Bit 1	Emission status
	Bit 2	Unit of measurement 0 = mbar; 1 = Torr
	Bit 3	Toggle bit for "String received" on page 0
	Bit 4	Switchover between measurement values /trigger values on the analogue output. / 0 = Measured values; 1 = Trigger values
	Bit 5	Type of gas
	Bit 6	Type of gas
	Bit 7	Type of gas
Byte 2	Bit 0	Trigger source Pot. (=0) or Profibus (=1)
	Bit 1	Error in the trigger setting. In case of an error the old values remain active (PB or pot.)
	Bit 2	Trigger status / 0 = disabled
	Bit 3	--
	Bit 4	Cathode 1 or 2 active
	Bit 5	Error / warning status
	Bit 6	Error / warning status
	Bit 7	Error / warning status
Byte 3		Measured value: High byte
Byte 4		Measured value: Low byte
Byte 5		n.a.
Byte 6		Command status value
Byte 7		not used

Output Data BAG110-SP Page 0

Byte 0		Info byte on output data page "00"
Byte 1		Control bits
	Bit 0	Emission ON / OFF
	Bit 1	Degas ON / OFF
	Bit 2	xx
	Bit 3	xx
	Bit 4	Switchover between measurement values / trigger values for the analogue output. / 0= Measured values; Prio: SPS = PB
	Bit 5	xx
	Bit 6	xx
	Bit 7	xx
Byte 2	Bit 0	Trigger source Pot. (=0) or Profibus (=1)
	Bit 1	xx
	Bit 2	xx
	Bit 3	xx
	Bit 4	xx
	Bit 5	xx
	Bit 6	xx
	Bit 7	xx
Byte 3		Trigger: Upper threshold / HIGH Byte
Byte 4		Trigger: Upper threshold / LOW Byte
Byte 5		Trigger: Lower threshold / HIGH Byte
Byte 6		Trigger: Lower threshold / LOW Byte
Byte 7		not used

2.5.2 Input Data and Output Data Page "1"

Input Data BAG110-SP Page 1		
Byte 0		Info byte on input data page "01"
Byte 1	Bit 0	Type of gas
	Bit 1	Type of gas
	Bit 2	Type of gas
	Bit 3	Measurement unit 0 = mbar / 1= Torr
	Bit 4	
	Bit 5	
	Bit 6	
	Bit 7	
Byte 2		Factor for the type of gas, high byte, bit 7 MSB
Byte 3		Factor for the type of gas, low byte, bit 0 LSB
Byte 4		Software version
Byte 5		
Byte 6		Command status value
Byte 7		

Output Data BAG110-SP Page 1		
Byte 0		Info byte on output data page "01"
Byte 1		
	Bit 0	Type of gas
	Bit 1	Type of gas
	Bit 2	Type of gas
	Bit 3	Measurement unit 0 = mbar / 1 = Torr
	Bit 4	xx
	Bit 5	xx
	Bit 6	xx
	Bit 7	xx
Byte 2		Factor for the type of gas, high byte, bit 7 MSB Only valid for Byte 1 / bit 0, 1, = 1 1 1 2
Byte 3		Factor for the type of gas, low byte, bit 0 LSB
Byte 4		xx
Byte 5		xx
Byte 6		xx
Byte 7		xx

2.5.3 Input Data and Output Data Page "3"

	Error		Trigger values		Prog. control signal emission ON / OFF		Prog. control signal degas ON / OFF		Software version BAG100		Serial No.		Sensor model		Sensor Serial No.		Status analogue output	
Byte No.	dec.	hex.	dec.	hex.	dec.	hex.	dec.	hex.	dec.	hex.	dec.	hex.	dec.	hex.	dec.	hex.	dec.	hex.
0	03	03	03	03	03	03	03	03	03	03	03	03	03	03	03	03	03	03
1	68	44	179	B3	68	44	68	44	68	44	68	44	68	44	68	44	68	44
2	41	29	62	3E	165	A5	166	A6	170	AA	168	A8	38	26	39	27	14	0E
3	04	04	04	04	01	01	01	01	02	02	02	02	01	01	02	02	01	01
4	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
5	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
6	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
7	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx

xx indicates: Any values which are entered here are not taken into account.

2.5.4 Input Data and Output Data Page "4"

Input Data BAG110-SP Page 4

Byte 0		Info byte on input data page "04"
Byte 1		Control bits
	Bit 0	Emission status
	Bit 1	Emission status
	Bit 2	Unit of measurement 0 = mbar; 1 = Torr
	Bit 3	Toggle bit for "String received" on page 0
	Bit 4	Switchover between measurement values /trigger values on the analogue output. / 0 = Measured values; 1 = Trigger values
	Bit 5	Type of gas
	Bit 6	Type of gas
	Bit 7	Type of gas
Byte 2	Bit 0	Trigger source Pot. (=0) or Profibus (=1)
	Bit 1	Error in the trigger setting. In case of an error the old values remain active (PB or pot.)
	Bit 2	Trigger status / 0 = disabled
	Bit 3	--
	Bit 4	Cathode 1 or 2 active
	Bit 5	Error / warning status
	Bit 6	Error / warning status
	Bit 7	Error / warning status
Byte 3		Measured value mantissa: High byte
Byte 4		Measured value mantissa: Low byte
Byte 5		Measured value exponent
Byte 6		Command status value
Byte 7		not used

Output Data BAG110-SP Page 4

Byte 0		Info byte on output data page "04"
Byte 1		Control bits
	Bit 0	Emission ON / OFF
	Bit 1	Degas ON / OFF
	Bit 2	xx
	Bit 3	xx
	Bit 4	Switchover between measurement values / trigger values for the analogue output. / 0= Measured values; Prio: SPS = PB
	Bit 5	xx
	Bit 6	xx
	Bit 7	xx
Byte 2	Bit 0	Trigger source Pot. (=0) or Profibus (=1)
	Bit 1	xx
	Bit 2	xx
	Bit 3	xx
	Bit 4	xx
	Bit 5	xx
	Bit 6	xx
	Bit 7	xx
Byte 3		Trigger: Upper threshold / HIGH Byte
Byte 4		Trigger: Upper threshold / LOW Byte
Byte 5		Trigger: Lower threshold / HIGH Byte
Byte 6		Trigger: Lower threshold / LOW Byte
Byte 7		not used

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 handling 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:

DeviceNet Interface of the BAG110-SP

Part Number

352-040
352-041

Standards
Harmonized and international / national standards and specifications:

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

Balzers, 18 February 2001

Hannes Fischer, Product Manager

Balzers, 18 February 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

INFICON The Instrumental Difference

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