gAVC 1200(L) N and gAVC 1200(L) NP
Gas Volume Converter

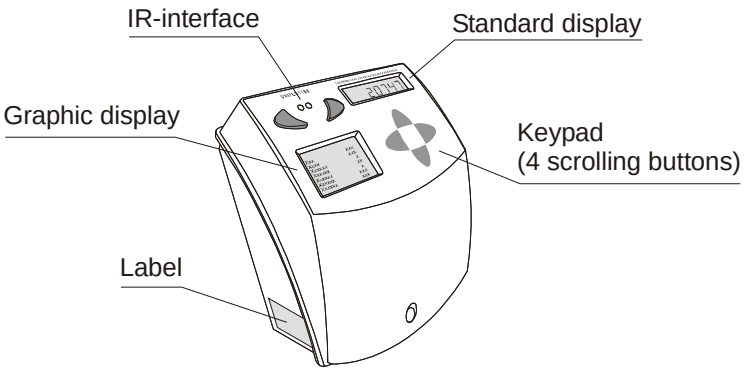
GB

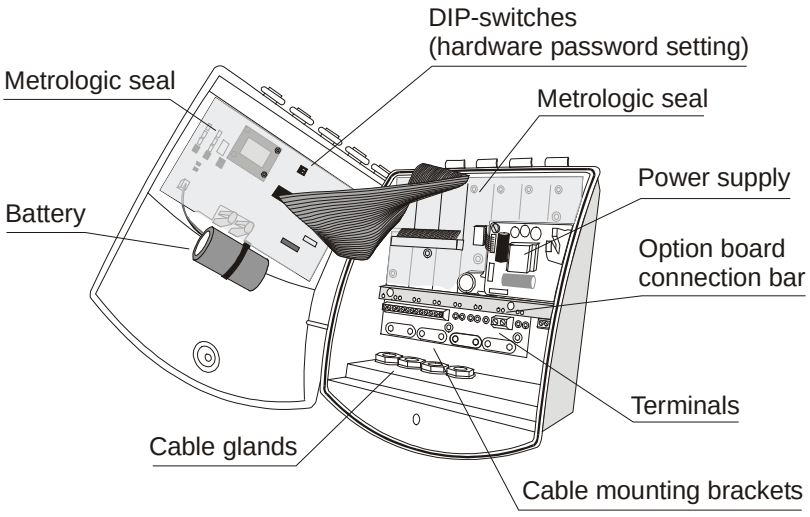
Installation Manual

GA-02.0122-EN-23-11-2022
Rev. 01

Please look at our homepage www.gavilar.nl for the latest version of the document.

gAVC 1200(L) N and gAVC 1200(L) NP overview





CONTENT

1.0 General

1.1 Introduction

The gAvilar gAVC 1200(L) N and gAVC 1200(L) NP Gas Volume Converter, is one unit out of a series of new generation High-End PTZ converters. The unit is designed with special emphasis on simple operation and low maintenance. gAVC 1200(L) N/NP performs an accurate and secure measurement of the gas consumption, to assure the most accurate customer billing.

To achieve a high level of performance, it is designed to fulfil the latest electronic technologies:

- Surface mounted components
- High accuracy pressure and temperature sensors
- User configurable graphic display etc.

There are two types available:

The gAVC 1200, with a standard and a graphical display and four cursor buttons

The gAVC 1200(L) with only the standard display and two cursor buttons.

Both types are available in the following versions:

The gAVC 1200(L) N, which is the battery powered version complying with ATEX zone 0.

The gAVC 1200(L) NP, which is the external powered version or the version containing option boards as listed in TÜV 17 ATEX 211195 X complying with ATEX zone 1.

Applying an option board in the gAVC 1200(L) N will degrade the zone from 0 to 1. The ATEX identification will change from Ga to Gb.

1.2 Operating principle

gAVC 1200(L) N/NP records all volume pulses, that is received from the gas meter. If any pulses are registered, the temperature and pressure are measured.

After this, the system makes a correction calculation and an energy calculation, consequently updating all parameters.

$$V_b = V_c \times \frac{P_{abs}}{P_b} \times \frac{(tb + 273{,}15)}{(t + 273{,}15)} \times \frac{Z_b}{Z}$$

V_b = Converted volume	(Nm^3)
V_c = Corrected volume	(m^3)
P_{abs} = Absolute gas pressure	(barA)
P_b = Absolute reference pressure	(barA)
T_b = Reference temperature	°C
T = Temperature	°C
Z_b = Gas compressibility factor at reference conditions	
Z = Compressibility	

1.3 Description

The gAVC 1200(L) N/NP is contained in a plastic cabinet, enclosure class IP 65. The cabinet is designed for either wall mounting or mounting directly on meter or gas pipe.

A. Metrological part

The cover contains the main board, the display(s), the keypad, the IR-interface a.o. Most electronic components are SMD-components (Surface Mounted Device), placed on the main board behind the metrological seal, not accessible to the user.
The hardware password DIP-switches are also included in this part.

B. User part

The battery compartment, which contains the connecting board with terminals, input/outputs, serial link and the power supply connection terminal.

The standard gAVC system also include:

- Wall mounting bracket
- A pressure sensor with 3 m cable
- A Pt1000 temperature sensor with 3 m cable

C. Optional

- gAVC Configuration Program (gAVC Config.)
- Pressure sensor housing. Dimensions: ø25 mm, Length 103.5 mm
- Temperature sensor pocket. Dimensions: ø5 mm, Length 50 mm.
- A wide range of option boards

1.4 Definitions

Technicians are qualified persons educated or trained to mount, operate, and also troubleshoot technically correct and in accordance with safety regulations.

ATEX-scheduled means that the text/drawings cannot be changed without notification of certified body. Please see Document revision history for further details.

2.0 Unpacking

2.1 What's included

When unpacking the unit, please check that all components are included in the standard package:

- The gAVC 1200(L) N/NP unit + pressure sensor + temperature sensor
- Wall mounting bracket
- Temperature sensor pocket
- Pressure sensor housing
- Certificate

The gAVC 1200(L) N/NP Unit is installed according to the guidelines in this document.

If any accessories/options are delivered, it will be shipped in a separate package, with separate manuals.

2.2 At delivery

The gAVC 1200(L) N/NP system is delivered fully mounted with temperature and pressure sensor, ready to install. Only if the installation requires more features, such as connection of inputs/outputs, additional programming etc., it is necessary to change something.

2.3 gAVC Config.

A special software program is developed for setting up and reading of the gAVC 1200(L) N/NP. This program is called gAVC Config. The program can be downloaded from the gAvilar website. Once installed, the integrated Help File is a useful tool.

Essential gAVC Config.features:

- Customized set up of installation parameters
- Remote configuration via fixed cable or modem
- Reports
- A number of system and user logs

3.0 General recommendations

Environment:

The gAVC 1200(L) N/NP is designed with enclosure class IP 65, for limited outdoor installation. However, if the unit is installed outdoor, or in a high humidity environment, it is recommended to use a special housing, suitable for outdoor weather conditions.

Pressure sensor

Always use the reference pressure tap at the gas meter, for connecting the pressure sensor. If this is not available, use a pressure tap upstream the meter. Install a valve and a check tap between meter and pressure sensor, to allow possibility for check and easy replacement.

Temperature sensor

Install the temperature sensor in a sensor pocket downstream the meter.

Tools for mounting/dismounting cables and option boards

Screw driver Slotted, Parallel tip	5 mm	Enclosure screw, Cabinet mounting screw
Screw driver Slotted, Parallel tip	2 mm	Small screw terminal
Screw driver Torx T-8		Option board cable glands
Screw driver Torx T-10		All other Torx screws
Long nose pliers		Useful when mounting wires

4.0 Installation

General

The gAVC unit must be installed according to local regulations for installation in hazardous area (Ex area).

All installation and service has to be handled by skilled Service Personnel.

Only gAvilar delivered accessories are allowed to be used, battery has to be disconnected when inserting/removing parts from the unit.
All equipment has to be connected via safety barriers

Make sure that the installation is properly prepared:

- Pressure tap available, either at the meter or at the inlet pipe.
- Line pressure and pressure range of gAVC matches (check pressure sensor)
- Pulse valve for the meter pulse output and the gAVC pulse input matches.
- Cable lengths on pressure sensor and temperature sensor can’t be changed.

4.1 Mounting gAVC 1200(L) N/NP

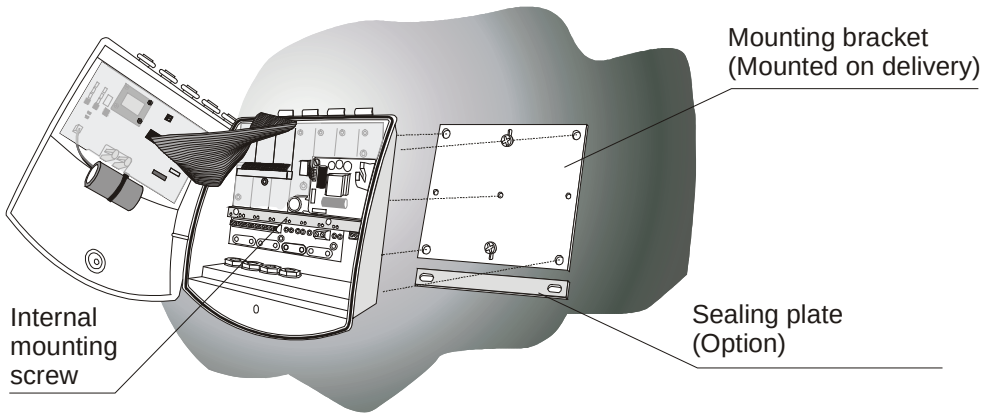
Wall mounting

The instrument is for vertical mounting, only (max 40° from vertical). Cable outlet shall be turned downwards.

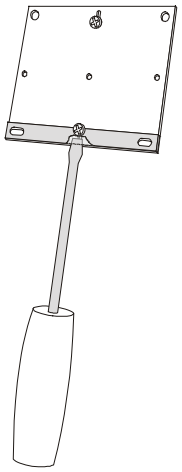
The gAVC unit is mounted on the wall with the mounting bracket and sealing plate. At delivery the mounting bracket and sealing plate is factory mounted.

All that remains to be done is to mount 2 screws on the wall.

1. Mount the 2 screws on the wall.
2. Place the gAVC unit on the screws (the keyholes in the mounting bracket).

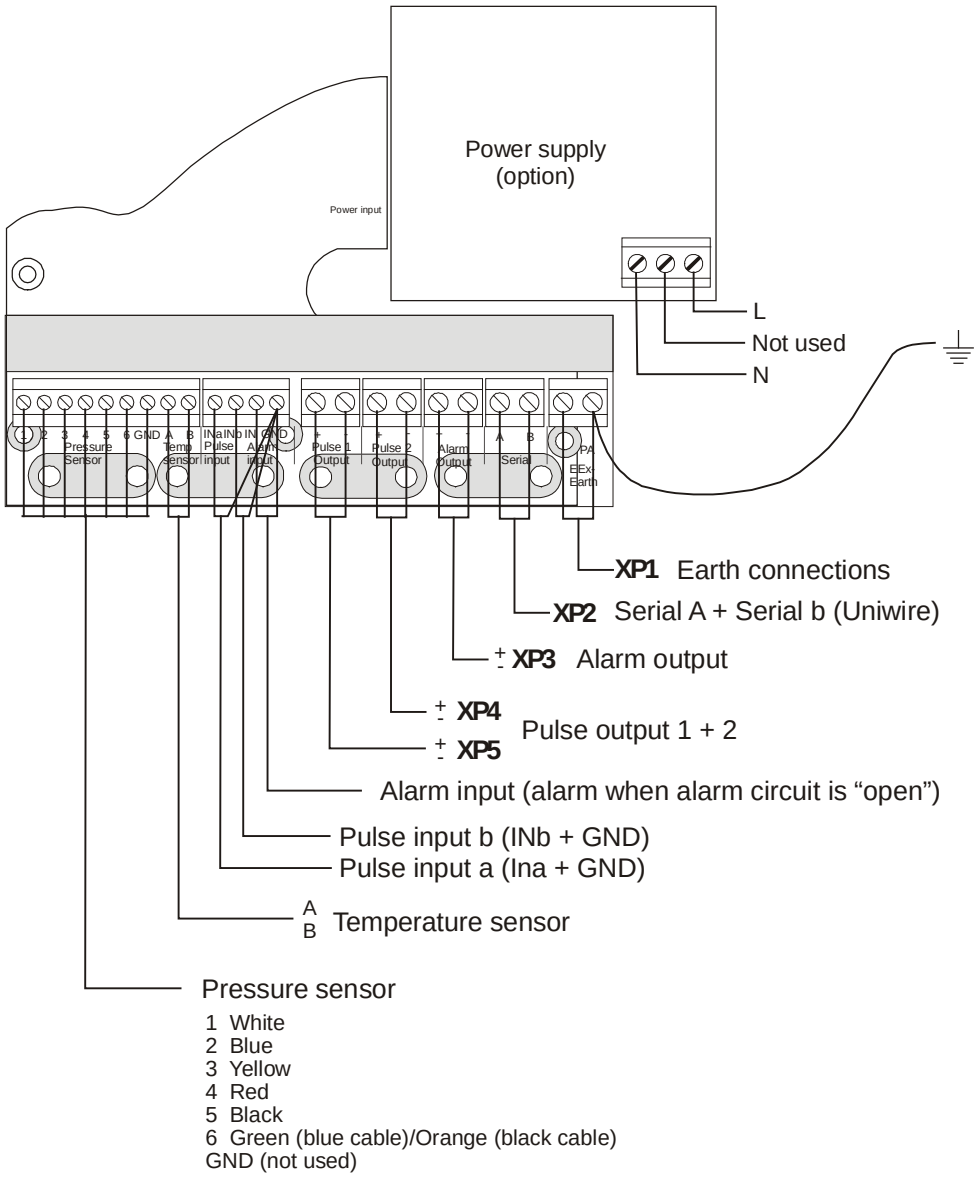


3. Pull the unit downwards until it clicks into position.
   Option: If the sealing plate is mounted it will lock the unit in this position.



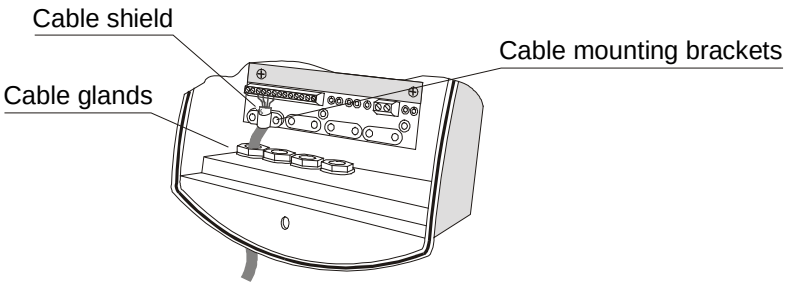
4.2 Wire connection

Terminals



The cables are tightened in the cable glands. It is important, when using shielded cable, that the shield is securely connected to the cable-mounting bracket.

Keep the unshielded wires to the screw terminals as short and direct as possible, to avoid EMC interference.



Special requirements in hazardous area: See chapter 5.

Terminal and wire description

Analogue terminals		
Pressure sensor 1	Pressure sensor supply -	White
Pressure sensor 2	Pressure sensor temperature out	Blue
Pressure sensor 3	Pressure sensor, pressure signal out	Yellow
Pressure sensor 4	Pressure sensor supply +	Red
Pressure sensor 5	Pressure sensor, serial clock	Black
Pressure sensor 6	Pressure sensor, serial data	Green (blue cable) Orange (black cable)
Pressure sensor GND	Not used	
Cable gland	Pressure sensor, screen	Screen
Temp. sensor A	Pt 1000 temperature sensor	
Pemp. sensor B	Pt 1000 temperature sensor	
Pulse- and alarm inputs		
Ina	LF pulse input a	
Inb	LF pulse input b	
IN	Alarm input	
GND	GND	
Pulse- and alarm outputs/serial communication		
Pulse 1 out +	Pulse output 1 (positive)	
Pulse 1 out -	Pulse output 1 (negative)	
Pulse 2 out +	Pulse output 2 (positive)	
Pulse 2 out -	Pulse output 2 (negative)	
Alarm out +	Alarm output (positive)	
Alarm out -	Alarm output (negative)	
Serial A	Serial port A (positive when idle)	
Serial B	Serial port B (negative when idle)	
Earth		
Earth	Earth connection connected to GND	
Earth	Earth connection connected to GND	

4.2.1 Choice of wires:

General:

Cable diameter of min - max:	4mm - 7mm
Cable cross section min - max:	0.14 mm^2 – 2.5 mm^2
Wire insulation min:	0.25mm (When installed in hazardous areas)

When installed in hazardous areas the wire insulation of min. 0.25 mm has to be checked.

Recommended types:

Soft cables: LiYCY 0.25 to 0.5mm^2 , for measurement etc.
Hard cables: HSPS 0.6 mmØ winded pairs, shielded.
Shielded cables, suitable for measurement:

Screw terminals and wire dimensions:

Terminals	**Stranded wire Max. cross-section [mm^2]**	**Stranded wire Min. cross-section [mm^2]**	**Solid wire Max. cross-section [mm^2]**	**Solid wire Min. cross- section [mm^2]**
Earth	1.5	0.14	2.5	0.14
pulse, alarm and serial outputs	2.5	0.14	4.5	0.14
pulse and alarm inputs	1	0.14	1.5	0.14
Option boards				
communication controller	0.5	0.14	0.5	0.14
HF, pulse input	1	0.14	1.5	0.14
pulse divider	2.5	0.14	4.5	0.14

4.2.2 Earthing

Earth is mainly for protection (requirement) and EMC (advantage):

Special requirements in hazardous area: See chapter 5.

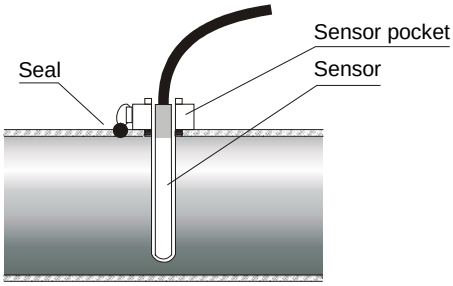
4.3 Temperature sensor

If the temperature sensor is mounted by gAvilar (when delivered), the system is already configured according to the temperature sensor specifications.

If the temperature sensor is to be mounted on site, follow the following instructions:

- On the temperature sensor cable is attached a label with a bar code.
- Write the bar code number into gAVC Config. (in the "Installation data", "Temperature" index). Then the system will detect the correct settings.
- When the temperature sensor is installed in the sensor pocket, it must be sealed with a wire.

Sensor pocket mounting



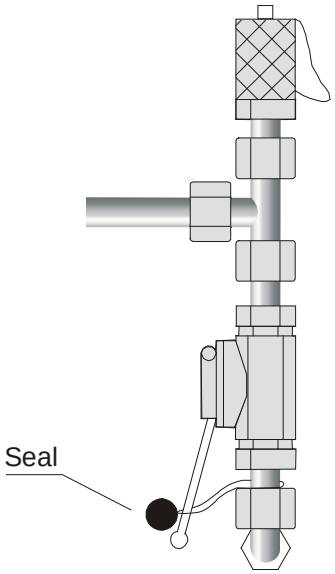
4.4 Pressure sensor

The pressure sensor is mounted in the gAVC unit by gAvilar (when delivered).

The pressure sensor is installed in the pressure tap, either at the meter, or at the inlet pipe. It is recommended to install the pressure sensor, using a connection pipe system.

After the pressure sensor is installed, perform a leak test (e.g. with soapy water). Seal the pressure sensor.

If the pipe system has an integrated valve, remember to seal the valve in open position.



4.5 Pulse inputs

There are 2 available LF-inputs on the gAVC 1200(L) N/NP unit. These inputs can be used separately or as a LF-LF pulse check. This function is configured in the gAVC Config. program.
The inputs can be connected to a reed-contact. (See "Technical data" for more information).

Pulse transmitter requirements

For correct measurement, the pulse transmitter must fulfil the following requirements (worst case):

Pulse inputs	
Pull up supply	Power supply 3..3.6VDC
Pull up resistor	32Kohm (open pulse input) 470Kohm (closed pulse input)
Pulse on, starting current	Max. 120 μA
Pulse on, current (continuous)	Max. 8μA
High trigger level	1.3 to 2.5VDC (PS=3.6VDC)
Low trigger level	0.7 to 1.8VDC (PS=3.6VDC)
Hysteresis	0.3 to 1.2VDC (PS=3.6VDC)
Max. Pulse frequency	3 Hz
Fastest "On-time"	33 m sec.
Fastest "Off-time"	300 m sec.
Max. "On resistance"	1 Kohm (LTL = 0.7 V; VCC = 3.6 V; Rpull up = 43 K; 3 Hz)
Max. "Off resistance"	4 Mohm (UTL = 2.9 V; VCC = 3.6 V; Rpull up = 470 K; 3 Hz)

Configuration

The pulse inputs are configured in gAVC Config.

4.6 Pulse outputs

There are 2 pulse outputs on the gAVC 1200(L) N/NP. The outputs can be used to repeat the converted volume, unconverted volume and energy.

Configuration

The pulse outputs are set up in the gAVC Config. program. Here is specified:

- Which parameters can be selected for pulse outputs
  1) Vol. [m3]
  2) Vol.decimal [m3]
  3) Vol.conv. [Nm3]
  4) Vol.conv.dec. [Nm3]
  5) Energy [MJ]
  6) Energy decimal [MJ]

- The pulse counting
  1) 0.1: The output transmit 10 pulses for each whole increment of the parameter.
  2) 1: The output transmit 1 pulse for each whole increment of the parameter.
  3) 10: The output transmit 1 pulse for each 10 whole increments of the parameter.
  4) 100: The output transmit 1 pulse for each 100 whole increments of the parameter.

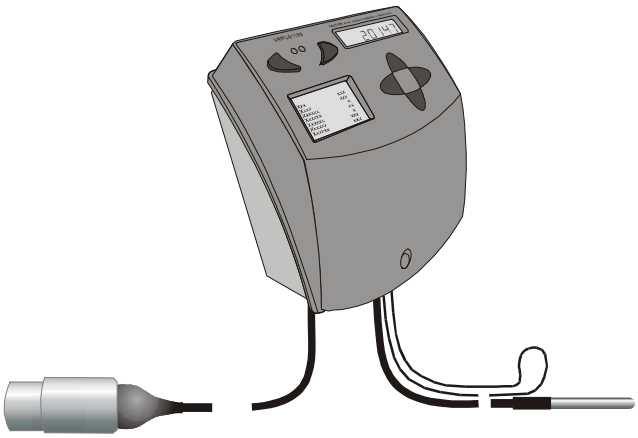
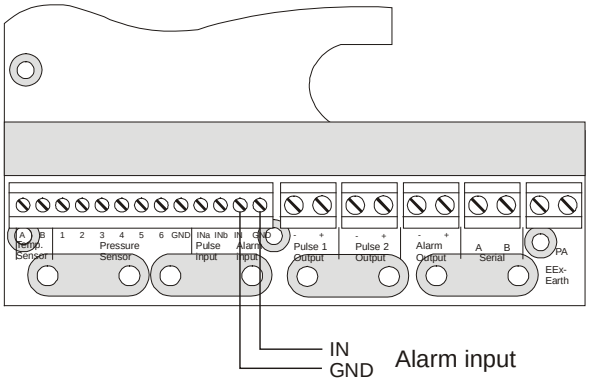
- The pulse length

  From 30-500 m sec.

  The pulse output is partly powered by the receiver. Therefore, the length of the pulse, will almost not influence the battery life time.

4.7 Alarm inputs

The gAVC 1200(L) N/NP alarm input is also called a "Tamper alarm". This input can be used for connecting an alarm circuit. The alarm input is set "ON", when the alarm circuit is opened.
This function may be used to secure the pressure and temperature sensor wire from being cut or damaged a.o.

"Tamper alarm" schematic	"Alarm input" terminals
	

When the "Tamper alarm" is activated, the word alarm in the gAVC standard display will appear (if set up in gAVC Config.). The word alarm will disappear when the alarm disappears (if set up in gAVC Config.).

4.8 Alarm output

The alarm output may be connected to an external alarm input.

Current alarms:

As long as the origin of the alarm persists, the current alarm is present. When the fault has been corrected, you may clear the alarms in gAVC Config. If the alarm is still present, after clearing the log, it will show again in gAVC Config.

Stored alarm:

All alarms are stored in the alarm log, with time stamp, alarm type and status (if the alarm is "ON " (Active) or "OFF" (not active)). From here the alarm is cleared.

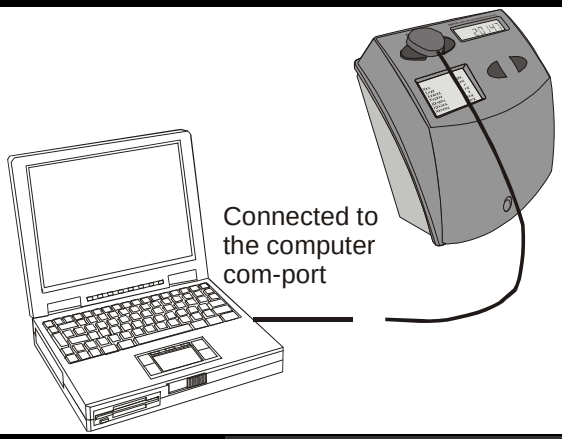
In gAVC Config. you may categorize the alarms, set up whether to detect both when the alarm occurs and when the alarm disappears.

4.9 IR-interface / Permanent Remote Reading connection

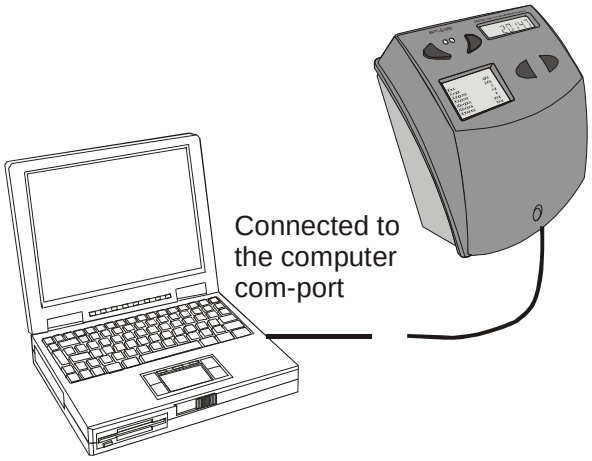
The gAVC 1200(L) N/NP and the gAVC Config. may be connected in 2 ways:

- Via the IR-interface. The IR-interface is attached to the gAVC unit with the built in magnets.
- Permanently via the serial link.

Programming via IR-interface



Programming via serial link.



5.0 Ex installation (ATEX SCHEDULED)

Attention:

Warning: Potential electrostatic charging hazard. The installation and use of the gAVC 1200(L) N/NP must be such that the risk of ignition from electrostatic discharge is minimized.

To avoid hazard caused by electrostatic discharge, No installation, maintenance and use of the push buttons at the gVAC front is allowed without ventilation of the room very well so no explosive gas atmospheres are present.

Only clean the gAVC 1200(L) N/NP with a damp cloth.

Following recommendations could be helpful:

- ***Control of environmental humidity to minimize the generation of static electricity***
- ***Protection from direct airflow***
- ***Gas detection monitoring***

For installations in which both the Ci and Li of the connected apparatus exceeds 1% of the Co and Lo parameters (excluding the cable), then 50% of Co and Lo parameters are applicable and shall not be exceeded. The reduced capacitance shall not be greater than 1 µF for Groups IIA and/or IIB.

The pressure and temperature sensors must be installed such that the resistance between the metal sensor housing and earth is < 1GOhm.

Otherwise follow normal procedure for handling risk of electrostatic discharge.

Attention to the demands of tree earth connection for zone 0 equipment. See section 5.6 of this manual.

5.1 General considerations

Only technicians who are familiar with the technical terms, warnings, and instructions in the manual and who are able to follow these should connect the module.
Should there be any doubt as to the correct handling of the module, please contact your local distributor or, alternatively,

gAvilar b.v. – Kamerlingh Onnesweg 63 - 3316 GK Dordrecht – The Netherlands
Tel. +31(0)85-489759 - E-mail: info@gavilar.nl

Mounting and connection of the module should comply with national legislation for mounting of electric materials, i.a. wire cross-section, protective fuse, and location. Descriptions of input / output and supply connections will follow in this paper.

5.2 Installation, inspection and maintenance in hazardous environment

For Installation, inspection and maintenance it's recommended to follow the standards:

- EN 60079-14 Electrical apparatus for explosive gas atmospheres
  Part 14. Electrical installations in hazardous area (other than mines).
- EN 60079-17 Electrical apparatus for explosive gas atmospheres
  Part 17. Inspection and maintenance of electrical installations in hazardous area (other than mines).

When mounting an option board and on battery replacements please also observe the guidelines in the paper "ESD correct handling".

It is also important that the gAVC 1200(L) N/NP is placed so that no direct or indirect heating/cooling is possible outside the specified ambient temperature interval for the gAVC 1200(L) N/NP.

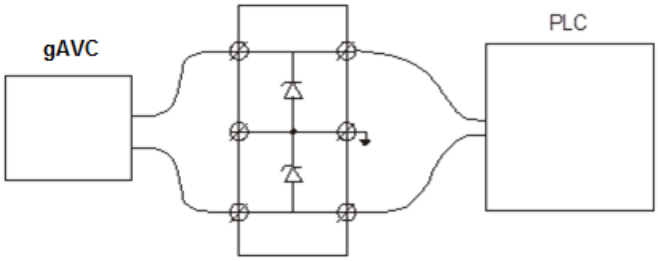
5.3 Pressure- and temperature sensor cables

The pressure and temperature sensor cables are app. 3 meters.

Note: Only the supplied cables are allowed in the installation. Do not cut or damage the cable. Damaged cables will result in poor measure precision and poor Ex security.

5.4 Pulse- and alarm outputs

These terminals are marked XP3, XP4 and XP5. The three outputs are electrically identical.



Ex data:
Uin : 28V
Iin : 75mA
Pin : 0.55W
Cin : 57 nF
Lin : negligibly small
As zener barrier may be used a
Pepperl & Fuchs type Z728

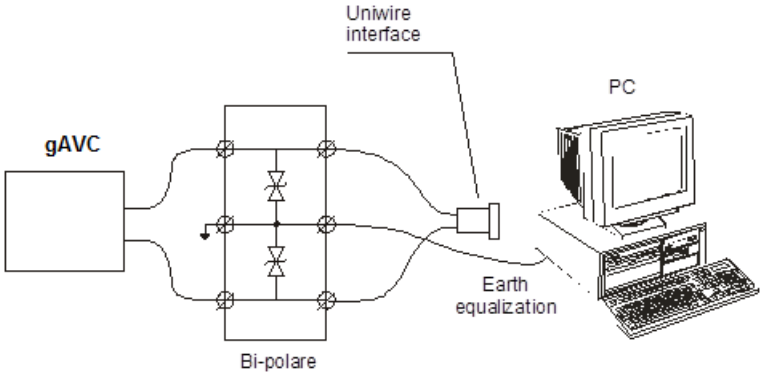
5.5 Uniwire

This terminal is marked XP2.
Ex data:
This is part of the Ex-Data at 5.4

As Zener barrier you may use a Pepperl & Fuchs type:
- Bi-polare Z966 (AC)
- Uni-polare Z722 (DC)

Check the earth connection of the connected equipment, to decide whether to use a bi-polar or a Unipolar barrier.

The bi-polar Zener barrier is used together with e.g. a PC with an RS232 earth connection.
The RS232/Uniwire interface will result in positive and negative earth connection signal.



Bad equalization between the gAVC earth connection and the earth connection of the connected equipment may result in disrupted communication.

5.6 Earthing and connection of conducting cable screens

Earth connection:

gAVC 1200(L) N/NP mounted in zone 0 requires 3 independent earth connections.

Inside the gAVC you will find 2 earth connection terminals. 2 parallel wires 1.5 mm^2 will normally be required (refer to local regulations).

The third earth connection must be made in one of two ways:

Either use the pressure sensor cable screen. In the gAVC the screen must be connected under the cable mounting bracket. The metal housing of the pressure sensor must be mounted on earth connected gas tube

Or use a wire of same dimension as stated above. But inside the gAVC connect the earth wire to screw terminal marked GND in the section for pressure sensor.

gAVC and gas pipe/meter may have to be connected with an earth connection, depending on actual installation conditions.

Precautions must be taken to avoid static electricity. Do not mount gAVC on electrically isolated base.

At mounting the gAVC: First connect the earth wires and then the rest of wires afterwards.

At dismounting the gAVC: Keep one of the earth wires connected until all the other wires and sensors are disconnected. Then disconnect the earth wire and the gAVC can be taken down.

Connection of conducting cable screens leaving hazardous area

Where screen is required the screen shall be electrically connected to earth at one point, normally at the non-hazardous area end of the circuit. This requirement is to avoid the possibility of the screen carrying a possibly incentive level of circulating current in the event that there are local differences in earth potential between one end of the of the circuit and the other.

In the publications mentioned in chapter 5.2 you find the further requirements and recommendations.

5.7 Cable requirements

General cable requirements:

Cable diameter min:	4mm
Cable diameter max:	7mm
Wire insulation thickness (surrounding copper wire) min:	0,25mm

5.8 Battery replacement

When the gAVC 1200(L) battery is replaced in an hazardous area always vent the room very well the operator has to be aware of overloading components in the gAVC 1200(L) N/NP. Therefore it's of outmost importance that the operator follows these instructions:

- Remove old battery (Actual data was stored when the cabinet was opened)
- Insert new battery, please observe ESD correct mounting. (Only batteries approved by gAvilar)

Attention: Use the right battery:

gAVC 1200(L) N for main battery supply, marked “TÜV 18 ATEX 220433 X” use: 94128

gAVC 1200(L) NP with external power supply and back-up battery, marked “TÜV 18 ATEX 220433 X” use: 94129

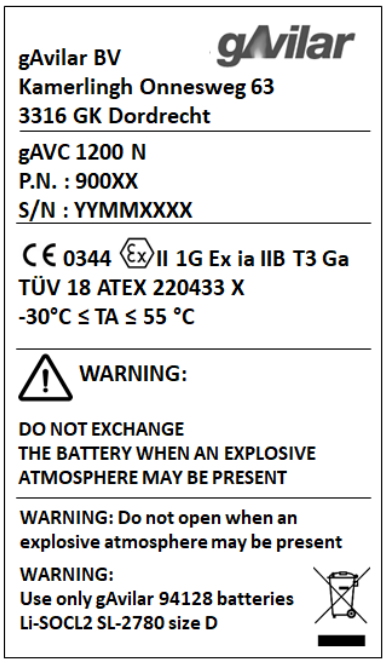
Warning: Only use primairy Lithium Thionyl Chloride Batteries type SL-2780 size D

MSDS (**Material Safety Data Sheet)** see Tadiran home page LTN-065-26-n

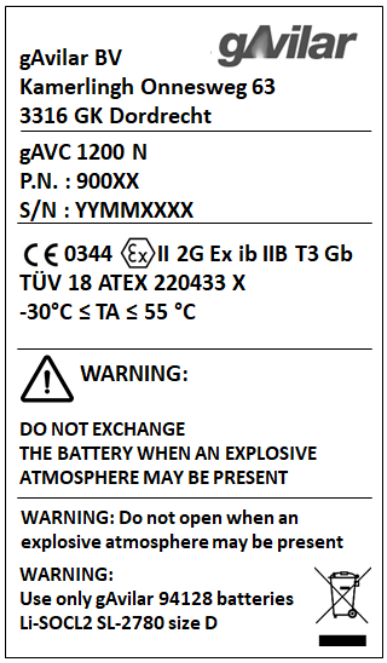
5.9 Markings on the gAVC 1200(L)

The ATEX marking is placed on the left or right side of the bottom part. For ATEX the 1200 is the same as the 1200L.

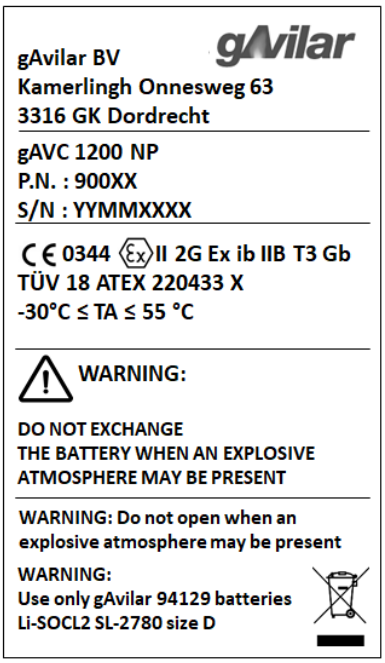
The markings are as follows:



Battery power gAVC



Battery powered gAVC with option boards



Externally powered gAVC with Back-up battery and with or without option boards

Pulse option board (part of TÜV18 ATEX 220433X)

Battery label for gAVC 1200(L) N

Battery label for gAVC 1200(L) NP

Main product identification is “gAVC 1200(L)” N or NP available as PTZ and TZ (TZ without pressure sensor)

Main product number is “900XX”

This number includes all ATEX and non-ATEX versions

variants which are not ATEX relevant. Different gAvilar package solutions by choice of ATEX approved:

- gAVC 1200(L) N/NP pressure and temperature sensors.
- Combination of gAVC option boards.
- Main battery or backup battery (depending on use of Ex- power supply)
- Internal Memory capacity.

variants which are not ATEX relevant. gAVC package solutions by choice of accessory:

- Temperature and pressure sensor mounting gear.
- Terminals, plugs, screws and brackets.

5.10 Option boards

The option boards which can be used in the gAVC are ATEX approved by TÜV with Certificate number TÜV 17 ATEX 211195 X. ATEX relevant information for option boards is to be found in their individual installation manuals. This includes information about marking, EX data for input and output, conditions for safe use, zone, classes and categories.

Be aware of that some option boards need creepage distances to other option boards. Please find the actual demands in the individual installation manuals.

Be aware of that at some option boards have intrinsic safe input or output circuits that are internal related to gAVC 1200(L) N/NP earth connection. Those circuits need isolated barriers if leaving the classified zone. Please find the actual demands in the individual installation manuals.

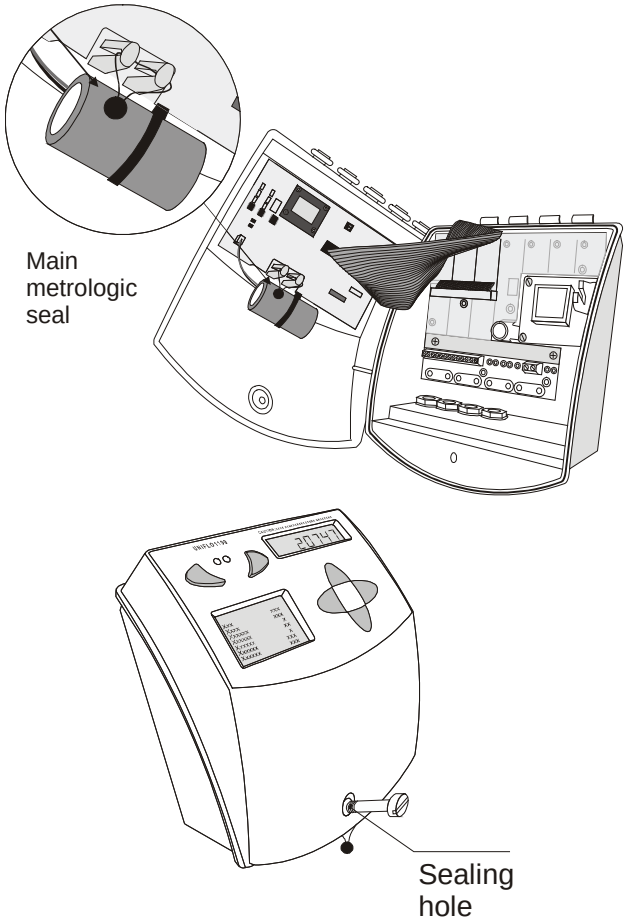
gAVC 1200(L) N/NP is an ex group IIB equipment. Product approved for IIC is allowed for use for IIB but NOT the other way around.

6.0 Commissioning

6.1 Sealing

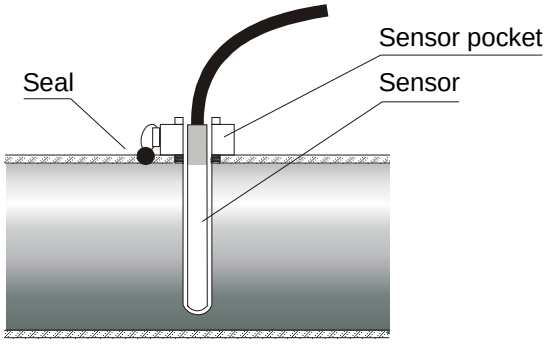
If there has been performed any installation on the unit (breaking of the outer seal), the entire system must be sealed in the correct way.

gAVC 1200(L) N/NP

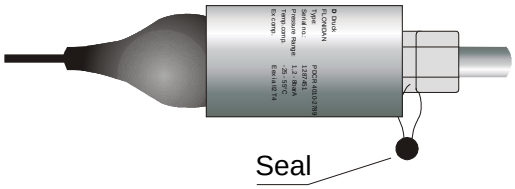


Sealing screw have to be screwed down with a torque on 1.5Nm

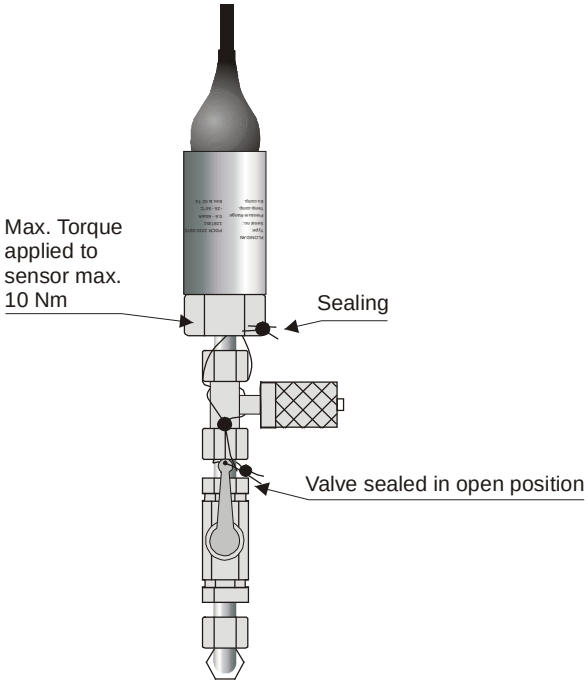
Temperature sensor



Pressure sensor



If the pipe system has an integrated valve, remember to seal the valve in open position.



Temperature and pressure sensor terminals

The temperature and pressure sensor terminals are secured with sealing tape on delivery.

Hardware password DIP-switches

The hardware DIP-switches are secured with sealing tape on delivery.
For setting combination, please refer to "Functional Description".

6.2 Programmed in factory

The gAVC unit is programmed in compliance with the order, and may be taken into use immediately. As standard, gAvilar will programme the gAVC units with a default configuration.

6.3 On-site programming

The gAVC 1200(L) N/NP can be programmed on-site by means of the gAVC Config. program. For more details on how to use this program, please refer to the Help File included in the program and the "gAVC User Manual".

7.0 Maintenance

7.1 Battery replacement

When the battery alarm is triggered, the battery must be replaced as soon as possible.
See types of batteries in chapter 5.8

WARNING: Do not exchange the battery when an explosive atmosphere may be present.

WARNING: Only use primary Lithium Thionyl Chloride Batteries type SL-2780 size D

Standard battery autonomy time

Under reference conditions the battery has a typical autonomy time of 4000 days (10-11 years). The number of days is programmed to 4000 upon delivery or after replacing the battery. The counter is decremented every day by one and when it reaches 90 days (10% remaining capacity), the "Low battery warning" is activated.

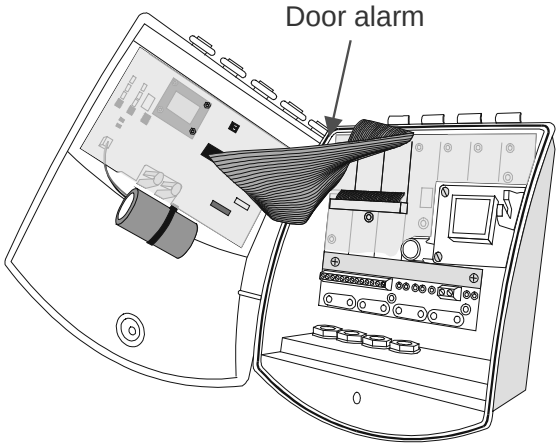
Non-standard autonomy time

For batteries (gAvilar units) that are installed in an environment that deviates from the reference conditions, such as very low or high temperature, short measurement intervals etc., these parameters may change and has to be taken into consideration.

When the battery has been replaced, remember to change the battery autonomy time in gAVC Config..

Door alarm

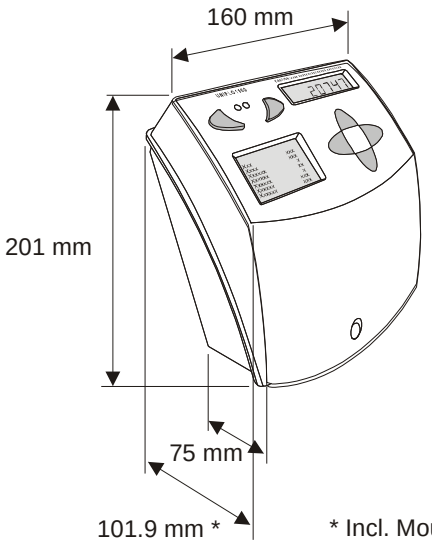
In the gAVC 1200(L) N/NP lid is mounted a so-called Door alarm. This alarm is a reed-contact. When the gAVC lid (door) is opened, the reed-contact is also opened, which will activate the Door alarm.
When the Door alarm is triggered the gAVC configuration is saved in the EEPROM. When the battery is replaced, the measuring will start from there. This means that only very few data are lost during battery replacement.

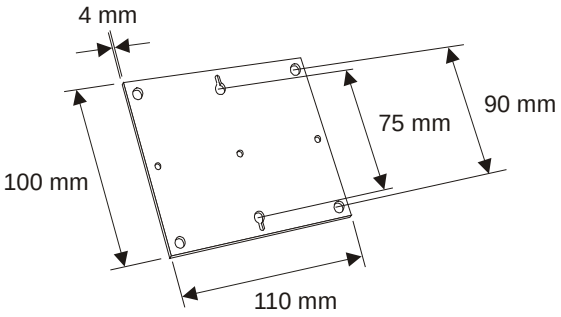


8.0 Technical data

8.1 Dimensions

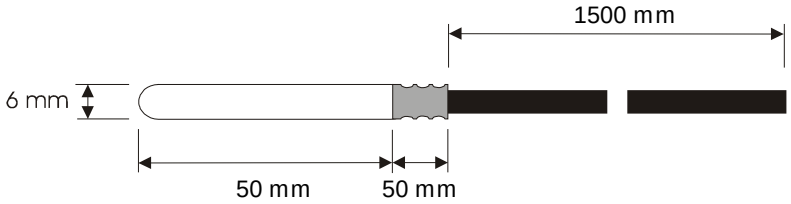
gAVC 1200(L) N/NP

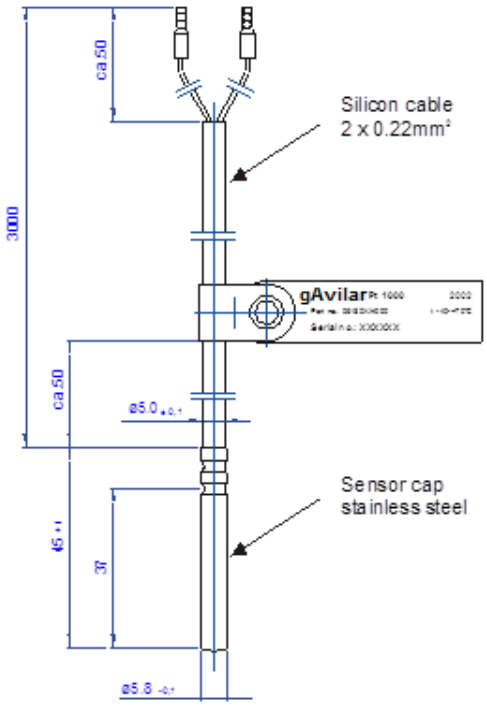


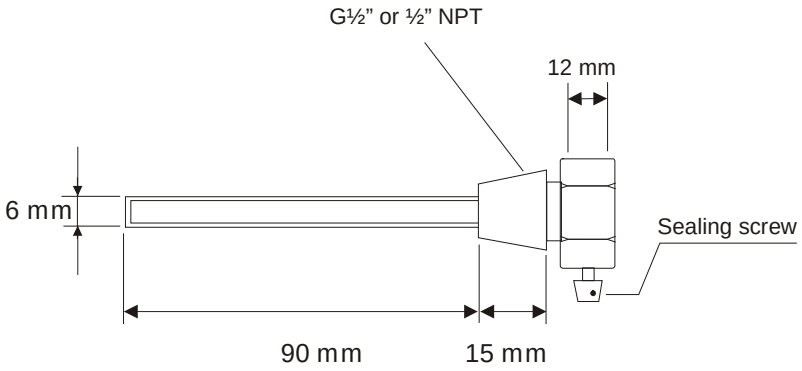


* Incl. Mounting bracket

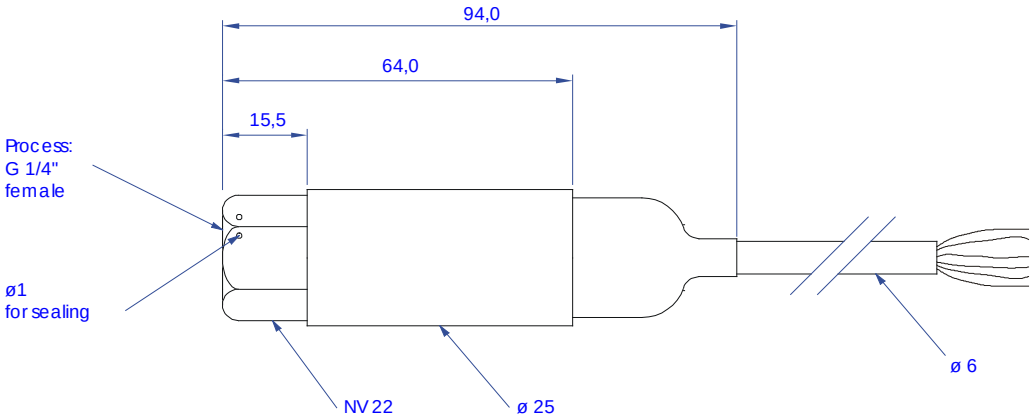
Temperature sensor







Pressure sensor



8.2 General

Rangeability	
Gas pressure	2 bar, 6 bar, 14 bar, 30 bar, 80 bar
Gas temperature	-30°C to +60°C
Ambient temperature	-30°C to +55°C
Power supply	
Battery	3.6 V. Estimated lifetime in reference conditions = 15 years
Mechanicals	
Enclosure class	
Intrinsic safety	
Cable glands IP65	
Inputs and outputs (gAVC 1200(L) basic version)	
Gas meter	Ex ia IIB T3
Alarm	14 pcs., 4…7 mm (standard: 7 pcs. + 7 blinds)
Pulse output	
Alarm output	2 LF inputs (compare function)
Serial ports	1 input (e.g. tamper switch)
	2 (configurable)
	1
	1 optical (EN 62056), 1 fixed (2 wire, half duplex), 1 optical fibre (option), all MODBUS RTU

8.3 Pressure sensor

Pressure sensor	
Cable	Ø6 mm, length 3m.
Pressure ranges	2 barA, 6 barA, 14 barA, 30 barA, 80 barA
Accuracy	± 0,2%R, at ambient temperature –20°C…+50°C Long-time drift: < 0.2%/y
Process connection	G1/4” Female (standard)

8.4 Temperature sensor

Temperature sensor			
Accuracy	With correction (correction data available at label)	± 0.1K	(-30°C…+60°C)
	Without correction EN 60751 Class B	± 0.6K	(-30°C…+60°C)

8.5 Inputs and outputs

Pulse inputs	
Pull up supply	Power supply 3..3.6VDC
Pull up resistor	32Kohm (open pulse input) 470Kohm (closed pulse input)
Pulse on, starting current	Max. 120 μA
Pulse on, current (continuous)	Max. 8μA
High trigger level	1.3 to 2.5VDC (PS=3.6VDC)
Low trigger level	0.7 to 1.8VDC (PS=3.6VDC)
Hysteresis	0.3 to 1.2VDC (PS=3.6VDC)
Max. Pulse frequency	3 Hz
Fastest "On-time"	33 m sec.
Fastest "Off-time"	300 m sec.
Max. "On resistance"	1 Kohm (LTL = 0.7 V; VCC = 3.6 V; Rpull up = 43 K; 3 Hz)
Max. "Off resistance"	4 Mohm (UTL = 2.9 V; VCC = 3.6 V; Rpull up = 470 K; 3 Hz)
Alarm input	
Pull up resistor	1 Mohm
RC filter	10K/100nF
Delay (when open)	100 msec.
Delay (when closed)	1 mSec.
Current, when closed	3.6 μA
Pulse outputs/Alarm outputs	
Power supply	3 to 35 VDC
Min. current	0.4 mA
Max. current	60 mA
On voltage at 60 mA	< 1.2 V
Pulse length	30-500 m sec.

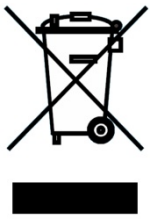
8.5 Communication

IR-interface		
Protocol		MODBUS RTU
Data spec.: 1 start bit, 8 data bit, 1 stop bit and no parity.		
Transmission speed		2400 Baud
Power consumption (at data transfer)		3.3 mA
Uniwire (permanent Remote Reading connection)		
Transmitter	Protocol	Depends on the software setting
	Transmitter off (when idle)	Max. 5.3V (NPN output)
	Leak current (when idle), power supply <5V	< 100 μA
	Transmit current (transmitter on)	Nominal 5 mA
Receiver	Receiver on current	Min. 1.5 mA
	Impedance	1.9 Kohm
	On current (at 5V)	2.6 mA
Maximum data	Power	300 mW
	Current	+/- 50 mA

9.0 Applicable standards

EN 60079-0 2012 + A11: Explosive atmospheres – part 0 General equipment
EN 60079 – 11 2012: Explosive atmospheres – part 11 equipment protected by intrinsic safety “i”

10.0 Disposal of the product after end of use.



This product, including batteries, is under the regulation of the EU directive 2002/95/EF, Waste Electrical and Electronics Equipment (WEEE) and has to be handled according to the directive, when it’s disposed of.

Revision history

ATEX-Scheduled document.
Chapter 5 Ex Installation is ATEX-scheduled

Rev.	Init	Comment
03.05.2018	EvdV	Document created
20.06.2018	EvdV	Model modification, ATEX information changed
23.11.2022	FCvD	L version added, no ATEX information changed

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