



GA-300 GAS CONTROLLERS Operation Manual

Revision: A.1

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Due to ongoing research and development, the specifications of this product may be changed at any time without notice.

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1. General Information

This manual is designed to provide users with simple and precise information. Manufacturer shall not be held responsible or liable for any misinterpretation that may result from the reading of this manual. Although every effort is made to ensure accuracy, this manual may contain unintentional technical inaccuracies.

Please read the following notice carefully before installation and start-up, paying particular attention to the end-user safety instructions. This user's guide should be distributed to every individual involved in the start-up, use, maintenance or repair of the product. The information contained in this manual, the data and technical drawings are correct as of the date of publication. Should questions arise, please contact Invest Electronics Ltd for additional information.

Manufacturer reserves the right to modify the technical characteristics of its equipment without notice to improve product performance. This user manual and its contents are the inalienable property of Invest Electronics Ltd

2. Safety Warnings



Installation and electric connections should be performed by a qualified professional, according to Manufacturer's specifications and to the standards of authorities in the field. Failure to observe these rules may result in serious injury. Accuracy, particularly regarding electricity and assembly (couplings, network connections) is imperative.

Icons have been placed on the sensor to call attention to general use safety precautions. These labels are an integral component of the sensor. The meanings of these labels are described below.

3. Symbols



Please refer to the instructions.



Caution: In the current operating mode, failure to adhere to the instructions preceding this symbol can result in a risk of electric shock or death.



This equipment must be grounded



Safety grounding terminal. A cable of adequate diameter must ground any terminal with this signal.



The accordance with Directive DEEE (2002/96/EC) this product may not be disposed with household waste. Dispose of this product at a collection site intended for electrical waste.

4. Important Information

The modification of any component or the use of any third party components will automatically void any and all guarantees. The central controller is intended to be used for precise applications of a technical nature. Exceeding the indicated values is strictly prohibited.

5. Limitation of liability

Neither Invest Electronics Ltd nor any other affiliated organization shall be held liable under any circumstances for any damage whatsoever including, without limitations, damages for loss of production, interruption of production, loss of information, controller failure, personal injury, loss of time, money, or materials, or for any indirect or consecutive consequence of loss occurring during the use of the product or the inability to use the product, even in the event that Invest Electronics Ltd had been informed of such damages.

6. Warranty

We hereby guarantee that gas detection controllers GA-300 have been manufactured and tested to the highest quality standards.

We warrant above products to be free from materials and work defects for the period of 12 months from the date of purchase. If such defects appears during the warrantee period products will be repaired or replaced with new products without charge.

7. Technical specifications

The GA-300 gas controller is a compact, economic unit, which is available in versions with 2 and 4 input lines. GA-300 have internal potential free relays, visual indication and sound signalization.

The GA-300 gas controller is intended for installation on the DIN rail. The controller can be connected to combustible or toxic gas detectors, or oxygen detectors. In the event that the measurement exceeds the threshold, the controller activates the relays which can control external components.

Tabl. Technical specifications

Controller Model	GA-300.E02	GA-300.E04
INPUTS		
Number of input lines	2	4
Number of detectors	2	4
POWER SUPPLY		
Main power supply-DC	230 VAC-50Hz	230 VAC-50Hz
Back-up battery	12VDC/8Ah	12VDC/8Ah
Power consumption	Max 5W	Max 10W
ALARMS		
Alarm events	AL-1, AL-2,FAULT	AL-1, AL-2,FAULT
Alarming	LED, Internal buzzer	LED, Internal buzzer
Output relays	3 pcs SPDT-250V/2A	6 pcs SPDT-250V/2A
ENVIRONMENTAL		
Working temperature	-10 - +55°C	-10 - +55°C
Humidity	0 – 95% R.H.	0 – 95% R.H.
MECHANICAL		
Sizes	71 x 90 x 58mm	105 x 90 x 58mm
Weight	0,230 kg	0,230 kg
Enclosure material	ABS	ABS
Mounting method	On a DIN rail	On a DIN rail
CERTIFICATION		
Conformity mark	CE	CE
Standards applied	EN 50270	EN 50270

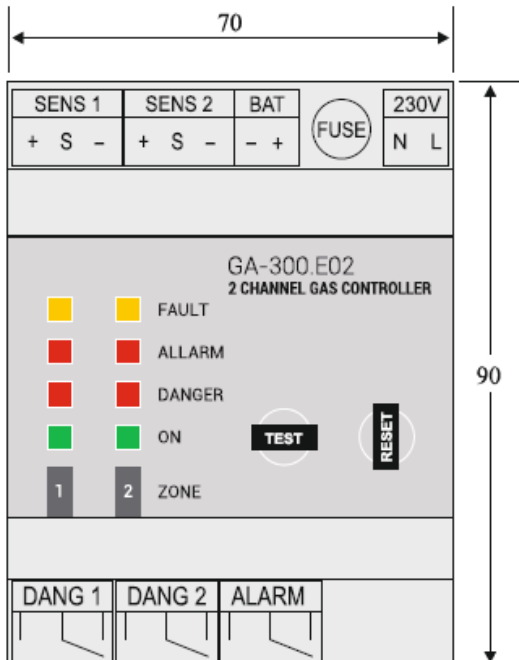
8. General introduction

Gas detection controllers GA-300 series are analogue controller intended to maintain gas detectors series GS-300, GS-220 and GDPC. They are available in versions for 2 and 4 detector inputs.

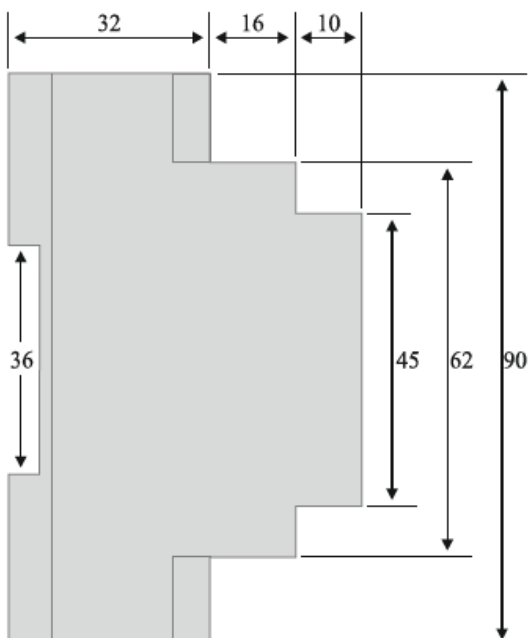
GA-300 controller are installed into a DIN rail mounting enclosure. Power supply is 230 VAC and back up 12 VDC power supply option is available.

9. Mechanical drawing

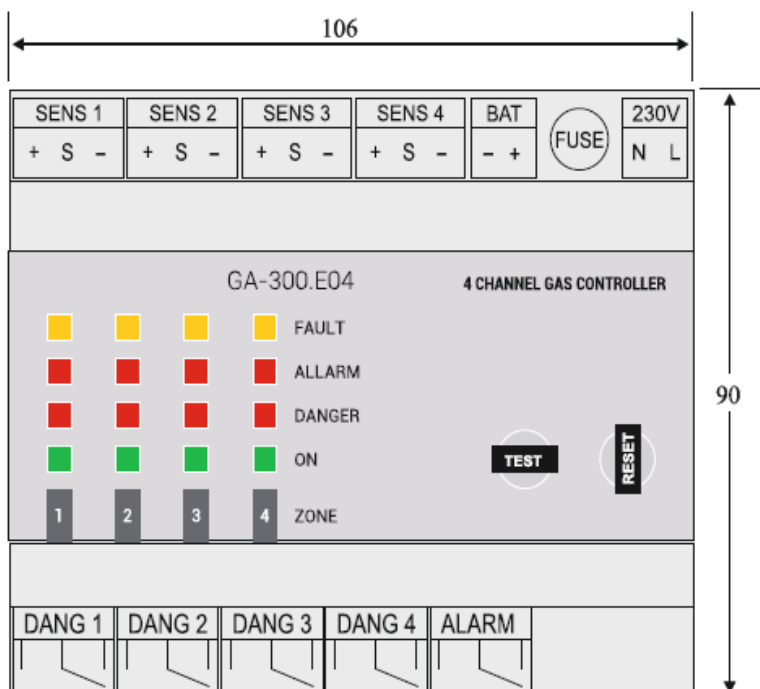
GA-300 1-2 front view



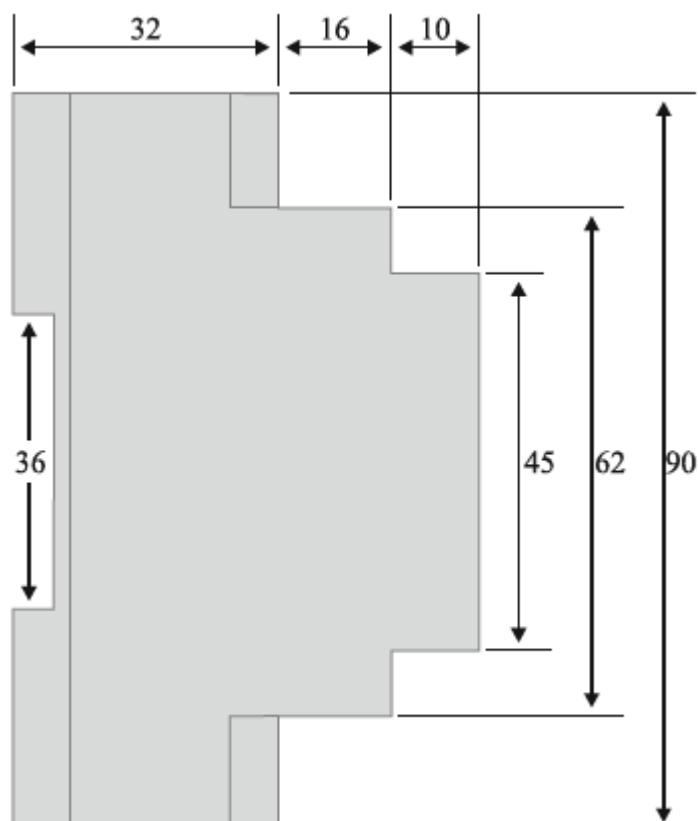
GA-300 1-2 side view



GA-300 3-4 front view



GA-300 3-4 side view



10. Installation and wiring

10.1. Mounting the controller

The GA-300 should be mounted on DIN rail. The controller may be installed in any area except for explosive atmospheres, ideally in a monitored area (control room, equipment room, security office, etc.), in a dry (no condensation) and temperate area. The controller's front panel should be forward facing, so that settings, monitoring and wiring can be easily accessed.

If ex-sensors are used, note the following checks must be carried out:

- The device must not show any damage or other conspicuous changes;
- The IP protection of the device must conform to the operational and environmental conditions;
- The operator must have already defined zones;
- Check whether the device category corresponds to the predefined zones.
- Check the product documentation, whether any upstream safety devices (fuse, etc.) are required.

10.2. Electrical connection

Gas detectors must be connected using shielded cable for communication S terminals and for the power supply of gas detectors.

Recommended is shielded cable $3 \times 1,50 \text{ mm}^2$. Data transmission with this cable can be expected up to approx. 500 m.



The electrical connection must:

- Be carried out by a specialist and (with the controller) with the power supply disconnected.
- Verify the current and the grid power supply: the grid power supply must correspond to the supply indicated on the controller.
- Use a power cable connected to the grid (230 VAC) with a minimum diameter of 1.5 mm^2 and a maximum diameter of 2.5 mm^2 .



Gas controller GA-300 is powered with 230VAC.

The GA-300 does not have an on/off switch. Certain power supplies can cause serious or fatal injury. All installation and wiring should be performed before turning on the power supply.

Incorrect installation can lead to measurement errors or system failure, all instructions in this manual must be followed carefully to guarantee proper system operation.

10.3. Ground connection



The controller power supply must be connected to a functional ground connection. The ground terminal is indicated with the following symbol

10.4. Power supply 230 VAC

Protection is provided by fuse. The sector power supply must be wired to the two terminals marked ~230V (N and L) on the label of power supply unit. The power supply must be protected upstream by a differential bipolar circuit breaker with a nominal current of 1A. The response curve must be type D.

10.5. Battery back-up power supply 12 VDC

The 12 V DC power supply is connected to the terminals **BAT** + and - as shown in the back panel picture of the controller.

10.6. Detector input

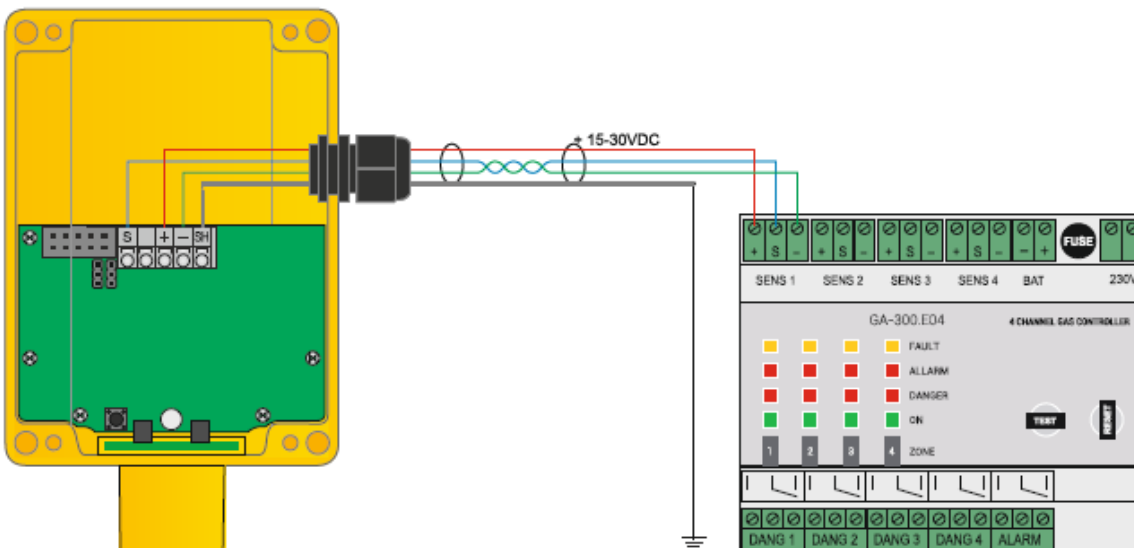
Detectors are connected to the terminals "S" "+" and "-" at the line terminal blocks. GA-300.E is designed to work with detector type GS-300. A Communication between controller and the detectors takes place via current transmission.

Attention: if you do not use all the available outputs for the detectors, it will be necessary to insert a 3K3 Ohm end-of-line resistor between the "S" and "+" terminals.

10.7. Relay outputs

The controller GA-300 has relay outputs which correspond to the preprogrammed alarm thresholds and FAULT of detectors. The relays are voltage.

10.8. Typical wiring diagramme of gas detection system including gas detection controller GA-300.E and analogue gas detectors GS-300



11. Operating instructions

11.1. Initial connecting

After correct wiring apply the power supply to the gas detection system. The system will pass starting procedure and will enter "Normal operation" mode".

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12. Maintenance and servicing

Cleaning

If necessary, clean the exterior of the enclosure with a damp cloth. Do not use alcohol or ammonia based liquids to clean the controller.

Servicing

We recommend that the user periodically inspect the proper triggering of alarm and fault relays, the buzzer and indications on the front panel of the controller. Test must be done by applying ethane gas mixture to the gas detectors.



The adjustment operations of the gas detection system must be done only by authorized, trained personnel because they may compromise gas detection system reliability.

Servicing frequency

Invest Electronics recommends regular testing of fixed gas detection installations. The type of test consists of injecting a standard gas mixture of sufficient concentration into the sensor to set off the preadjusted alarms. This test does not, replace a full calibration of the detector. Frequency of gas testing depends on the industrial application in which the sensors are used. Inspection should be done frequently during the first months after installation start up, later it may be spaced out if no problem is observed.

If a detector does not react upon contact with gas, it must be calibrated. The frequency of calibration will depend on tests (humidity, temperature, dust, etc.); calibration should occur at least once every year. We also recommend calibrating the detector after exposure to high gas concentrations. The site manager is responsible for implementing the safety procedures on his site. Invest Electronics is not responsible for implementing safety procedures.

13. Ordering information

Analogue gas controllers GA-300 for DIN rail mounting

Model – ordering code	Number of input lines	Power supply
SKU554460	1	230VAC - 50Hz
SKU554461	2	230VAC - 50Hz
SKU554462	3	230VAC - 50Hz
SKU554463	4	230VAC - 50Hz



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