



# **GC-10 Wireless Control Box**

## **Installation Guide**



**BRODERSEN**  
simplifying systems

### Regulations for installation and operation of GC-10

The GC-10 complies with all relevant regulations according to EN/IEC61010-1 amongst others.

The GC-10 is classified according to; DIN VDE (EN/IEC60664-1) 0110: Insulation coordination for equipment within low-voltage systems:

Part 1: Principles, requirements and tests.

- Pollution degree 2.  
Only non-conductive pollution occurs except that occasionally a temporary conductivity caused by condensation is to be expected.
- Over voltage category II  
is in accordance with the specification in EN/IEC61010-1, table J1.

DIN VDE 0113

Electrical equipment of machines part 1: General requirements

DIN VDE 0160

Electronic equipment for use in electrical power installations and their assembly into electrical power installations.

EN/IEC61131

Programmable controllers  
Part 2: Equipment requirements and tests.

### Integrated GSM

The GSM modem is designed, tested and approved according to the following specifications:

Radio: TBR19Ed. 3 (10/1996)  
TBR31Ed. 2 (03/1998)  
EMC: ETS 300342-1:1997

EC-R& TTE directive marking is  
CE0681

### Installation and application info

Please note that the user has to ensure that the devices and associated components are mounted in accordance with such safety regulations and standards as may from time to time be in force. Relevant standards are:

DIN VDE 0100

Erection of power installations with rated voltages below 1000V.

DIN VDE 0 106

Protections against electrical shock part 100: Actuating members positioned close to parts liable to shock.

If the pollution degree 2 (VDE 0110) cannot be guaranteed or an ongoing protection against direct contact is required the devices should be mounted into appropriate cubicles.

If the GC-10 is coupled with or fed by power-frequency voltage networks of overvoltage category III, qualified protective provisions have to be taken to guarantee overvoltage category II according to VDE 0110 at the terminal connectors (e.g. surge voltage protectors).

### Qualified personnel

The GC-10 modules conduct dangerous contact voltages at their connectors.

Touching parts which are live can cause serious injuries.

Installation, commissioning and maintenance of such systems therefore must only be undertaken by technical trained personnel who should have relevant knowledge:

- in dealing with dangerous voltages.
- in the use of specifications and standards.

The GC-10 module was developed, manufactured, tested and all documentation prepared in compliance with all relevant standards. When observing the valid regulations for installation, commissioning and maintenance, the product presents no danger to persons and objects under normal conditions.

Brodersen Controls cannot accept any liability for the consequences of misuse or unauthorized repairs.

#### WARNING CAUTIONS



##### **Earthing of the GC-10**

Before connecting any power to the GC-10, make sure that the earth terminal is wired to protective earth. The earthing may be removed only if it is certain that no more power is being supplied to the device.



##### **Connecting of the supply voltage**

A terminal block carrying dangerous contact voltages (supply, input/output channels) should only be plugged in or removed when the device is switched off.

- **Protect the device from dampness, dirt and damage during transport, storage and operation.**
- **Do not operate the device other than as specified in the technical data.**
- **Operate device according to the protection degree IP20 (DIN 40050)**
- **Mount into a closed cubicle or rack if the environmental conditions so require.**
- **Lead signal- and power-lines separately**  
Capacitive and inductive interference

of the power lines to signal lines should be prevented by appropriate cabling (distance, crossing).

##### - **GSM Emission**

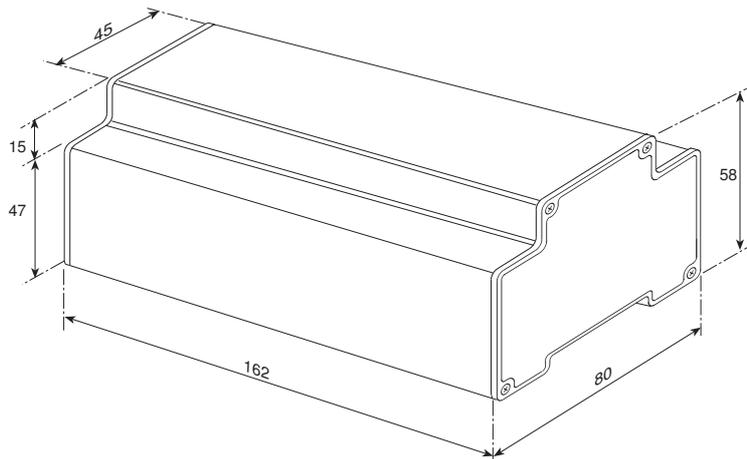
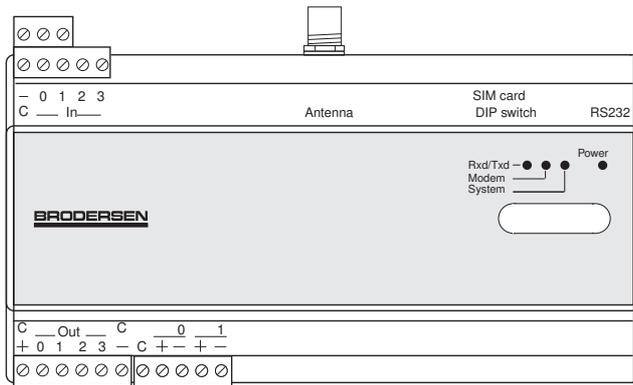
The operation of the GC-10 within the vicinity of inadequately protected personal medical devices, such as hearing aids or pacemakers may create a hazard. Consult the manufacturers of the medical device to determine if it is adequately protected.

Operation of the GC-10 close to other electronic equipment may cause interference if the equipment is inadequately protected. Observe any warning signs and manufacturers recommendations.

##### - **Installation Personnel**

Ensure that the installation is performed by qualified personnel.

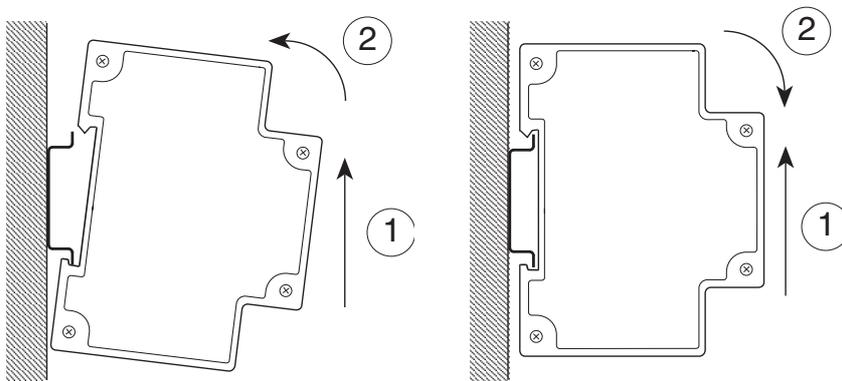
Layout and dimension drawings



**Mounting instruction**

The GC-10 is mounted on a 35mm DIN-rail (enclosed in the package). Mount the DIN rail on a wall or in a suitable panel or box. Note that you must have space for the antenna and wiring.

For mounting and de-mounting the GC-10 on the DIN rail - see the drawings below.

**CODE SWITCH/ADDRESS SELECTOR**

The code switch of the GC-10 is normally not used and must under normal operation be set as shown below.

The code switch is used for special features like station address, communication baud rate settings and GSM mode setup.



**Wiring Diagram - general**

Terminal blocks for I/O and power supply are plug-in connectors with screw terminals. It is recommended to use ferrules on wires. Programming cable is connected via 6-pole RJ11 connector.

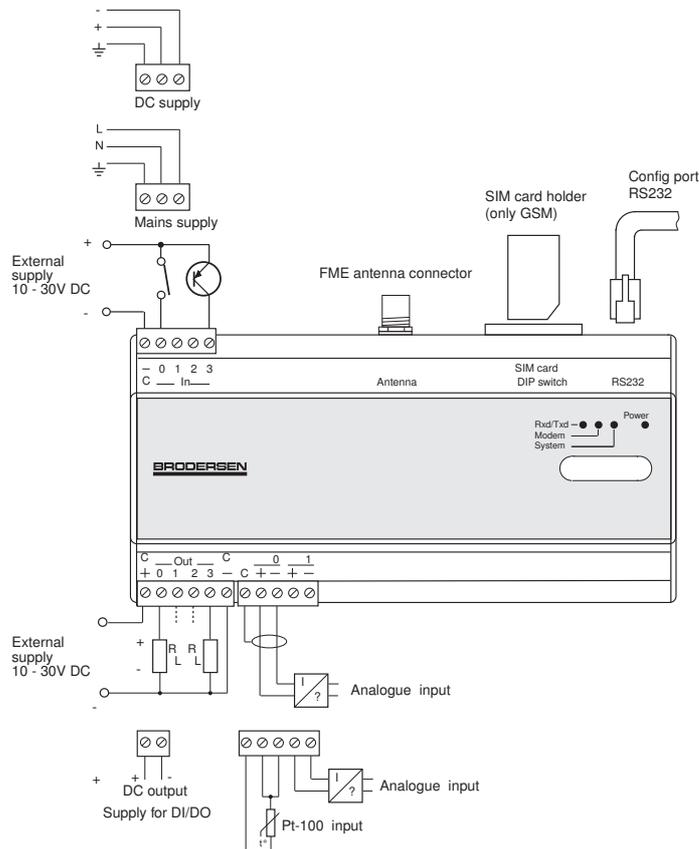
For specific wiring examples - see at the end of this section.

**Wire size**

Earth and power supply: max. 2,5mm<sup>2</sup> (earth wiring must be 2,5mm<sup>2</sup> and kept as short as possible)

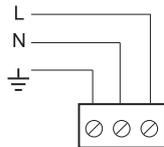
Other connectors: Max. 1,5mm<sup>2</sup> with ferrules.

**General - Wiring diagram**



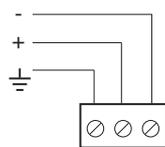
**Power Supply**

Version 10



Mains supply

Version 50



VDC supply

Earthing: Connect to PE conductor - wire as short as possible.

Version 10:

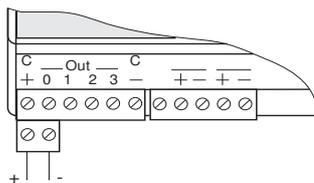
L: 115-230VAC Mains supply

N: 0V Mains supply (neutral).

Version 50:

+: +V DC positive

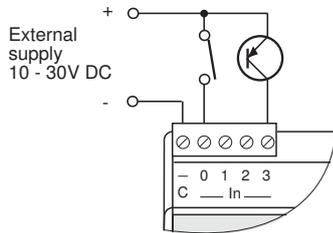
-: 0V negative

**Supply output**


Supply for I/O etc.  
12V max. 4,8W

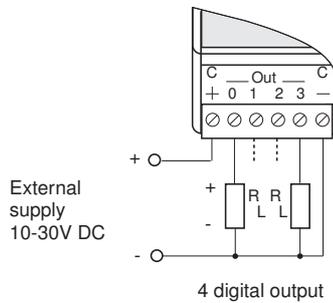
**Digital Input**

To activate the inputs an external voltage is required, use e.g. the 12V supply from the GC-10. Must be connected via volt free contacts.



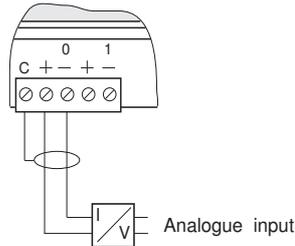
**Output Wiring**

4 PNP collector outputs - all equipped with opto couples.  
Max. 0,5A pr. input and max. 1A in total for 4 outputs.



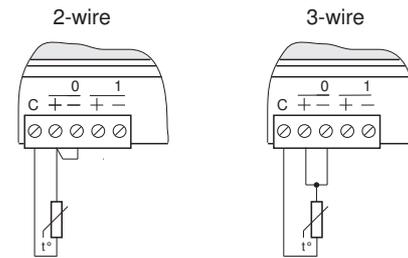
**Analogue Input (voltage or current)**

Is configured from the factory according to the last digit in the type no:  
D1=0-10V, D2=4-20mA, D6=0-20mA.  
The shield must be connected to the common terminal (C). The connector for analogue inputs has gold plated contacts and is specifically marked.



**Analogue input (Pt-100 sensor input)**

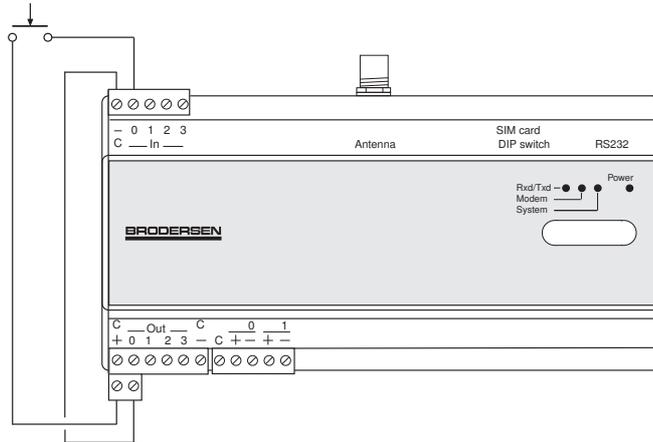
1 Pt-100 sensor input. Is configured from the factory. Standard range -50-100°C. 2 or 3 wire is supported.



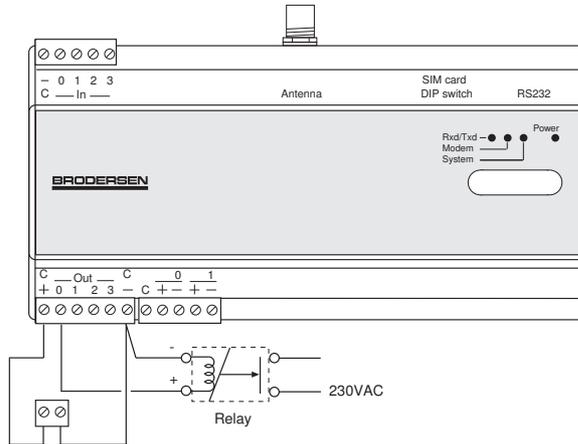
Sensor cable length above 30m is not recommended. If cable length is more than 5m 3-wire sensors are recommended to avoid offset i naccuracy caused by loss in cables.

**I/O Wiring examples**

Switch wired to first digital input:

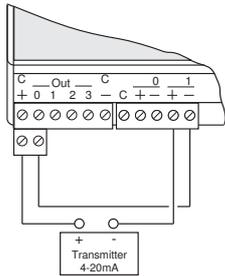


First control output for switching 230V AC via relay:

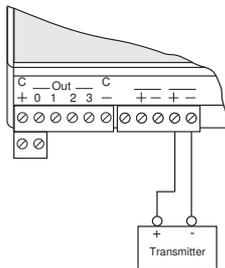


**Analogue input wired to a pressure terminal**

Option 1 Loop powered 4-20mA.



Option 2 - Not loop powered transmitter (4-20mA or 0-10V).

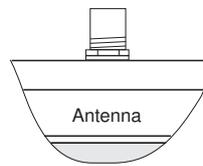


**Programmer/RS232 port wiring**

Pin no	Signal	Description/Remarks
1	SG	Signal ground
2	RTS	Not used
3	RX	Receive data (in)
4	TX	Transmit data (out)
5	CTS	Not used
6	GND	Not used

**GSM antenna and SIM cards**

FME antenna connector



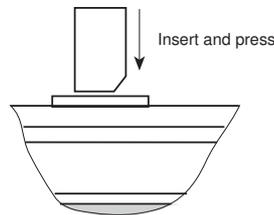
Connector for dual band antenna. If a longer cable is required it is highly recommended to keep the total damping for cable below 10dB. **Note:** GC-10 must **NOT** be powered up without antenna. Powering up without antenna or with wrong antenna (like single band type) may damage the GSM engine.

**SIM card**

The GC-10 is equipped with an external SIM card holder.

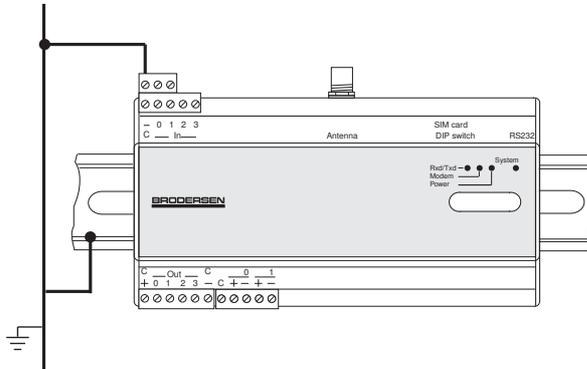
**SIM card holder**

Place the SIM card as shown below. Firmly press the card down until it locks in place. If you want to remove it, briefly press the SIM card down and the spring will release and lift the SIM card from its holder.



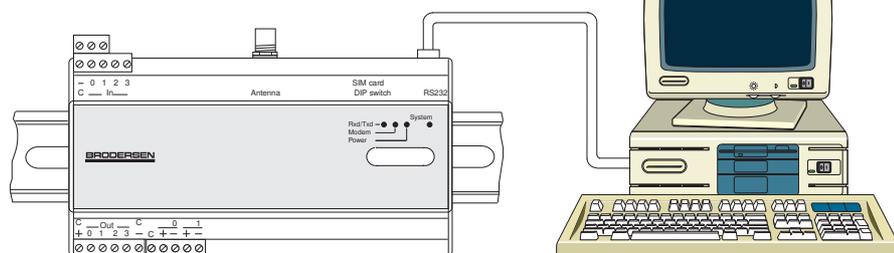
**Application ground wiring**

A protective grounded back plane is recommended in the panel. The GND terminal on the GC-10 and the DIN rail must be connected directly to the grounded back plane.



### Configuration of the GC-10

The GC-10 is configured with a PC running the configuration program. Connect a PC with a serial cable to the GC-10 programmer port (cable UCC-301).



### Indicators

4 LEDs are placed on the front of the GC-10.

#### System LED:

On= Application program running OK  
 Off= Application program error  
 Flashing = General Error.

#### Power LED:

On= Power on  
 Off= Power off

#### Modem LED (GSM):

On= Searching for network  
 Flashing slowly= Connected to network and off-line.  
 Flashing faster= Connected to network and on-line.

#### Rxd/Txd LED:

Indicate RX/TX communication activity to modem interface.

### Document notes:

This installation and connection guide is subject to change without notice. Technical data sheet and other applicable documents are available through your local distributor and on our company homepage: [www.brodersencontrols.com](http://www.brodersencontrols.com)