



Manufacturer Certificate

We certificate with this document, that our product

Gealog Compact Datalogger

fulfils all of the following technical specifications. Additionally the product fulfils all standards which are applicable within the EC area. (CE Conformity)

Technical specifications:



Objectives

- The data-logger is especially suited for all applications with a high reliable registration under hard environmental conditions. A lot of different parameters can be measured by Gealog Compact Dataloggers in an easy and inexpensive way. The operating software of the Gealog Dataloggers offers all functions which are today necessary for a powerful data logging system.
- The Gealog Compact Datalogger has a integrated LCD-Display and a membrane keyboard. For the operation of the devices there is no need for a separated operating unit. The datalogger is equipped with a serial interface for connecting a PC or a modem and as an option a Memory Card interface. The Gealog Compact Datalogger is powered by internal Lithium Batteries or an external lead battery and is working up to several years with one Lit-battery pack (depends on measuring rate)



- **Gealog Measuring Interfaces:**
The datalogger consists of a basic unit with one or two integrated Gealog-measuring-interfaces. By use of the Gealog-RS485-Fieldbus the number of measuring interfaces can be extended externally. Because of the big variety of Gealog-Measuring-Interfaces many parameters can be measured with the same type of instrument.
Self calibration : Most of the Gealog Measuring Interfaces, namely interfaces with analogue inputs, perform auto-calibration cycles before every measuring cycle.
- **Expandability, Gealog-RS485-Fieldbus:**
Further interfaces can be added by the external RS485-Gealog-Fieldbus (4 wire-bus, eventually 2 additional lines for special sensor power supply). This RS485-fieldbus can be up to 1.2 km long. Remote sensors can be connected very easily to the measuring system. Some sensors are connected directly with a Gealog-RS485-Fieldbus interface and can be connected directly to the datalogger (Gealog Water Level Sensor, Gealog Shaft Encoder, Gealog Radar Sensor)
- **Programmability:**
All measuring parameters can be defined by use of the datalogger's keyboard and display units or via the serial interface and a connected notebook PC. If remote data transfer is used, all configuration can be defined via the remote lines by download of complete parameter sets or by changing of single parameters in "Terminal Emulation Mode".
- **Control possibilities:**
The Gealog Compact Datalogger can be equipped with Gealog-Relay-Output Interfaces. These interfaces are connected to the Gealog-RS485-Fieldbus and comprise potential free relay contacts. The relay contacts can be switched according to different events and procedures:
 - Switching of the power supply of power-consuming sensors.
 - Switching of the power supply of communication equipment.
 - Also some Gealog Measuring Interfaces have digital outputs, which can be used for switching of external units.
- **Intelligent Power Management:**
 - **Deep Discharge Mode:**
At a battery voltage level of 10.5V the datalogger enters the "Deep-Discharge Mode". In that case no external power consumers are switched on, no measurements are taken. The datalogger only checks periodically the actual battery voltage. If the voltage exceeds the low-discharge level the datalogger starts normal operation again.
- The Gealog Compact Datalogger can be configured by use of the whole variety of Gealog measuring interfaces as follows:
 - **Hydrography:**
Water level with pressure probe/water temperature, water level with shaft encoder, bubble sensor and radar sensor
 - **Water quality parameters:**
Conductivity/Temperature, pH, Redox, Oxygen content, Oxygen concentration, turbidity, etc.
Control of water samplers for event driven water sampling.

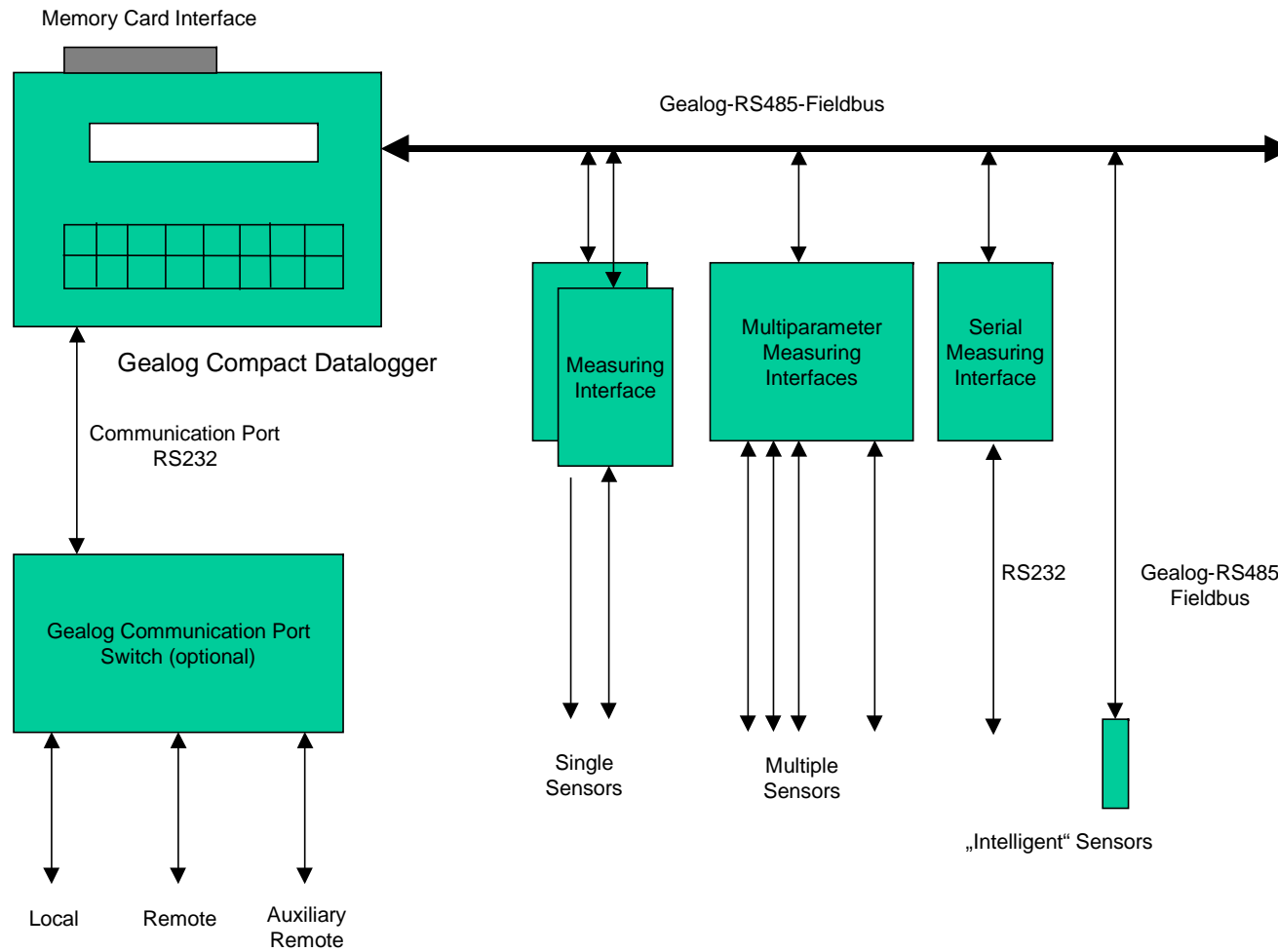


- Meteorology:
Precipitation, air temperature, humidity, air pressure, global radiation, wind direction, wind speed, etc
- Soil investigations:
Tensiometers, soil temperature, Lysimeters
- Process control:
20mA inputs, current and voltage-measurement, digital inputs, 20mA-output
- Relay-output for switching of external power supply, controlling of water-samplers, local alarming.

Functionality of the Gealog Compact Datalogger

Operation:

- Gealog Compact Dataloggers have the following interfaces:
 - Alphanumeric Display and 16-key-keyboard for controlling of all functionality.
 - Optional Memory Card Interface for Memory Cards (PCMCIA-standard).
 - Communication interface: Serial interface according RS232 standard for connecting a PC or a telephone modem, GSM cellular-telephone modem or a data-radio.
 - Gealog-RS485-Fieldbus interface to connect Gealog measuring interfaces.
- On using a Notebook-PC as operating unit (via communication interface) or remote data transfer some additional functionality can be used:
 - Readout of the data memory (115kBaud)
 - Terminal emulation: Keyboard and display of the PC is in parallel to the dataloggers keyboard and display.
 - Download of parameters from PC to datalogger
Parameters can be prepared on PC and downloaded afterwards to the datalogger.



Basic structure of a Gealog measuring station



General

- Integrated data memory for 45000 or 100000 readings (256kByte)
- The maximum number of measuring channels is 32. The assignment "physical measuring channel" to "logical measuring channel" is done by software. So i.g. one sensor-input can be used in more than one different logical measuring channels with different registration parameters or different alarming thresholds.
- All measuring parameters can be defined separately for each measuring channel (Measuring rate, storage rate, channel names, physical units)
- Sample rates can be defined between 10 seconds and 12 hours. Storage rates from 1 minute to 12 hours.
- Event based registration, controlled by measuring values (threshold triggering, Delta triggering)
- Registration of all values in physical units. All parameters are automatically converted into physical units by use of the according calibration functions for each measuring channel separately.
- Integrated self learning calibration process, calibration polynomial up to the 6th degree, sensor specific calibration-procedures (ig: ph-value: 2-point calibration)
- All functions locally operational by display and keyboard, also operation with PC and remote data transfer by „Terminal emulation“

Data transport

- Memory Card (PCMCIA-standard), optional
- Direct readout by RS232 and PC-system (Notebook)
- Readout by remote data transfer (telephone, radio-data modem, GSM-cellular telephone modem, satellite modems)

Alarming

- Alarming both locally by relay-contact or by active alarming via the remote data transfer line.

Multilingual

- German, English, Polish, Portuguese, Spanish, Hungarian, other languages possible on request

Interfaces

- Communication interface:
 - RS232-interface for connecting a PC or a modem
 - Protocol: Packet orientated Gealog-protocol, high security level
The protocol is open for the users. The protocol definition is part of the datalogger's documentation.
 - Interface parameters: Programmable by datalogger software, Baud rate up to 115kb/sec
- Gealog-RS485-Fieldbus interface:
Connection of Gealog Measuring Interfaces or intelligent sensors.
- Gealog Measuring Interface "Serial Interface"(option):
To connect third party sensors via a serial interface a special type of interface can be used. This interface has a serial port according to RS232. The system-software of the measuring interface is adaptable for different data-transfer protocols. If necessary also more than one interface can be connected to the Gealog-RS485-fieldbus.



- Memory Card-Interface for PCMCIA Memory Cards (option)

Data Memory

- Internal data memory for up to 100000 measuring values, standard capacity: 45000 measuring values. (256 kByte)
- Storage principle:
 - Cyclic storage principle (FIFO), overwrite of oldest values on memory full

Real Time Clock

- Battery buffered clock with calendar-function
- Resolution: 1 second
- Max. error 5 minutes per year
- Synchronisation: Manually via keyboard and display or automatically in an automated network operation via the communication interface. (Gealog for Windows-software)
- Optionally the Gealog-GPS-Module can be connected via the Gealog-RS485-Fieldbus. In that case the clock can be synchronised from the GPS-signal.

Power Supply

- Power supply can be done by an internal Li-battery or by an external lead-battery.
- Internal Li-battery:
 - Easy battery exchange
 - Operation time with internal Li-battery:
 - 1 channel operation (water level): app. 1.5 years @ sample rate of 15 minutes
 - 1 channel operation (water level): app. 5 years @ sample rate of 60 minutes
- External power supply is possible by use of rechargeable lead-battery, photovoltaic power supply, etc.
Voltage range: 10.0V to 30V
Standard battery capacities: 2.2Ah, 7.5Ah, 14Ah, also higher capacities available
- Power consumption:
 - The datalogger is switched on only for short periods when it takes measures (app. 5 seconds), when a data transfer via the communication interface is active or when a user at site has switched on. Between measurements the datalogger is switched off and consumes no energy. In the switched-on mode the datalogger needs 40mA without measuring interfaces. Depending on the type and quantity of the connected measuring interfaces the power consumption is increased app. 10mA per additional measuring interface.

The average power consumption can be computed as follows:

Example:

- Sample rate, storage rate 15 minutes
- One Gealog measuring interface connected

⇒ Power consumption per month:



$$((45\text{mA}+10\text{mA}) \times 5 \text{ sec} \times 4 \times 24 \times 31) / (1000 \times 3600) = 0.23\text{Ah}$$

This means an average power consumption of less than 0.3mA continuously.

Self Test Functions, Diagnostics

- The datalogger monitors continuously the battery voltage and produces an alarm (on display) on low voltage. The Intelligent Power Management is activated by that monitoring input.

Download of operating software

- The operating software can be programmed via the Communication Port by special commands.
- The programming starts only after several security checks.
- Programming can be done locally from a notebook-PC and a special programming adapter for the serial RS232 interface line.

Environmental/Mechanical Data

- Operating temperature -35 °C to +60 °C
Special type of LCD-display for low temperatures, operable until -20°C.
- Protection mode according to IP65
- Housing made of ABS plastic, L x W x H = 200 mm x 120 mm x 90 mm, wall mounting
- Weight (without two internal measuring interfaces and Li-batteries): 1.2kg

Integrated overvoltage protection

- The following interfaces are protected by Transzorp diodes against overvoltage. In combination with external overvoltage protection units a perfect overvoltage protection for the whole system can be guaranteed.
 - Gealog-RS485-Fieldbus-lines
 - RS232-Communication interface
 - External power supply line

Origin

- Manufacturer: Logotronic GmbH, Vienna, Austria
- Country of origin: European Community

Production quality standard

- Production according to ISO9001, Registration No. 12 100 9568 TMS



Ordering Information

- **Gealog Compact Datalogger Battery Operated**
 - o Internal data memory 45000 values
 - o Integration of max. 2 Internal Measuring Interfaces into the enclosure
 - o Additionally external Measuring Interfaces
 - o Power supply by 8 internal Li-batteries
 - o Serial interface RS232 (PC or modem)

- **Gealog Compact Datalogger External Power Supply**
 - o Internal data memory 45000 values
 - o Integration of max. 2 Internal Measuring Interfaces into the enclosure
 - o Additionally external Measuring Interfaces
 - o Power supply external, please select one of the options for an external lead battery
 - o Serial interface RS232 (PC or modem)

Options

- **Data memory extension for 100000 Measuring for Gealog Compact**

- **Memory Card Interface for Gealog Compact Datalogger**
 - o Excl. Memory Card
 - o For Jeida4 Memory Cards (PCMCIA)

- **Connection of an external lead battery through cable gland by 4,8mm Faston connectors for the battery - Gealog Compact**
 - o Connection cable for an external battery.
 - o Connection of battery by 4,8mm Faston connectors
 - o This type of connectors is used for the following batteries: 2,2Ah, 7.2Ah, 17Ah

- **Connection of an external lead battery by Round Pin connector and 4,8 mm Faston connectors for battery - Gealog Compact**
 - o Connection cable for an external battery.
 - o Connection of battery by 4,8mm Faston connectors
 - o This type of connectors is used for the following batteries: 2,2Ah, 7.2Ah, 17Ah