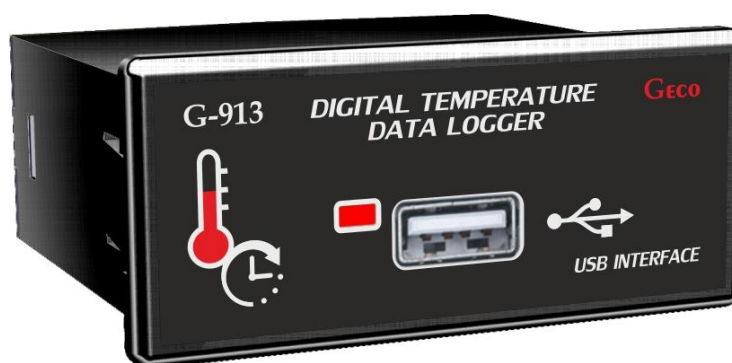


The Geco logo is displayed in white text on a red rectangular background. The word "Geco" is in a bold, sans-serif font, with a registered trademark symbol (®) to the upper right of the "o".

Geco®



***SERVICE OPERATING MANUAL FOR INDEPENDENT TEMPERATURE
RECORDER***

G-913-P00/P01

For software version 01a

Please read the manual carefully before connecting and starting any of our devices. In case of any doubts, please contact us during working hours (8 a.m. to 4 p.m.).

I.	VERSION MARKING	3
1.1.	DESCRIPTION	3
1.2.	HOW TO ORDER.....	3
II.	GENERAL CHARACTERISTICS	3
2.1.	DESCRIPTION OF THE RECORDER PANEL.....	4
III.	CONNECTING AND POWERING THE RECORDER	5
3.1.	WORKING STATES OF G-913.....	6
3.2.	ALARM TYPES	6
3.3.	VISUALIZATION OF STATES TRANSITION.....	7
3.4.	DESCRIPTION OF THE CONDITIONS FOR TRANSITIONS BETWEEN STATES:	7
IV.	STATUS INDICATION.....	7
V.	STANDARD WORK	8
5.1.	DATE AND TIME CHANGING	8
5.2.	CONFIGURATION FILES	9
5.3.	READING OF REGISTERED MEASUREMENTS	10
VI.	INFORMATION REGARDING MARKING AND COLLECTION OF WASTE ELECTRIC AND ELECTRONIC EQUIPMENT	13
VII.	NOTES.....	13

I. VERSION MARKING

1.1. Description

The controller is available in two versions: G-913-P00 (without built-in battery) and G-913-P01 (with built-in battery):

The G-913-P00 recorder can only operate on mains supply

The G-913-P01 recorder can operate on a lithium-polymer battery that maintains data recording after a power failure.

Operation under battery supply:

- the G-913 recorder powered only by a battery, works for at least 24 hours from the moment of power failure.
- when the battery is completely discharged, an appropriate log is saved in the device.
- when the mains supply is restored, the battery is automatically recharged.

1.2. How to order

When ordering a product, please:

- specify the version P00(without battery) or P01(with battery)
- select the supported sensor type: NTC 2.2k Ω or PT1000
- select the default language: PL, EN, DE, FR (later configuration is possible, see page 9)
- specify the required registration period

II. GENERAL CHARACTERISTICS

The G-913 digital temperature recorder was made in microprocessor technology with the use of an automatic surface mount. The device is designed to record data from two temperature sensors directly connected to it. The recorder is designed for stand-alone operation. The operating mode depends on the settings made by the manufacturer.

The G-913 recorder is equipped with:

- built-in memory for recording the measured temperatures
- USB interface for reading stored temperature values
- li-po battery depending on the version



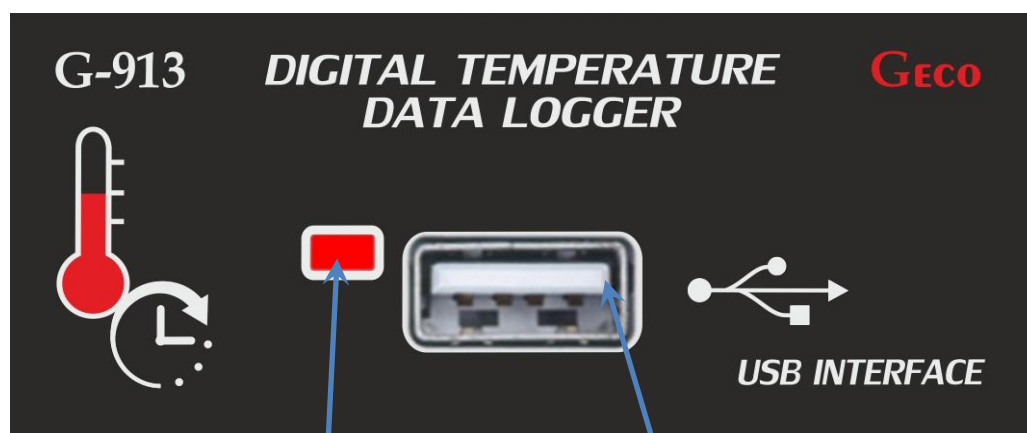
ALWAYS DISCONNECT THE RECORDER FROM POWER DURING THUNDERSTORMS



***PENDRIVE CONNECTED TO THE RECORDER MUST BE FORMATTED TO THE FAT32 FILE SYSTEM!
USING A PENDRIVE FORMATTED TO ANOTHER FILE SYSTEM IS UNSUPPORTED AND MAY CAUSE INCORRECT OPERATION OF THE DRIVER***

The recorder does not require any special maintenance. The keyboard was made from a special type of foil resistant to high temperature and most chemicals. It is not permitted to clean it with sharp objects. It is sufficient to clean the front plate with a wet cloth from time to time.

2.1. DESCRIPTION OF THE RECORDER PANEL



A diode that signals recording, operation of USB storage and alarm states

USB 2.0 connector to support USB storage

Technical Data

Operating voltage	230V AC +10% -15%
Power frequency	50÷60Hz
Operating temperature range	od +5°C do +40°C
Humidity	od 20% do 80% RH
Sensor type	NTC 2,2k Ω
Sensor operating temperature range	NTC: -40°C ÷ 120°C
Recording interval	5 min
Number of recording memory	30000 pozycji

III. CONNECTING AND POWERING THE RECORDER

The room where the Recorder is installed should be equipped with a 230V/50Hz electrical system, in accordance with applicable regulations. The device does not require an external power supply and can be connected directly to the mains. Connect the power cable conductors according to the installation diagram shown in Fig. 1.



***THE RECORDER IS CONNECTED TO 230V/50HZ POWER.
DISCONNECT THE POWER AT THE FUSE BEFORE ATTEMPTING
TO MAKE ANY REPAIRS***

In order to enable the recorder to work in the event of a power failure or damage of the power cord, G-913 was equipped with a built-in lithium-polymer battery. The recorder can work on batteries for 1.5 - 2 weeks. The battery is automatically charged every time the power returns and its high state of charge is maintained to ensure the longest possible battery life. In new recorders the battery can be discharged and the clock reset. After correct installation of the device, the date and time should be set up immediately.

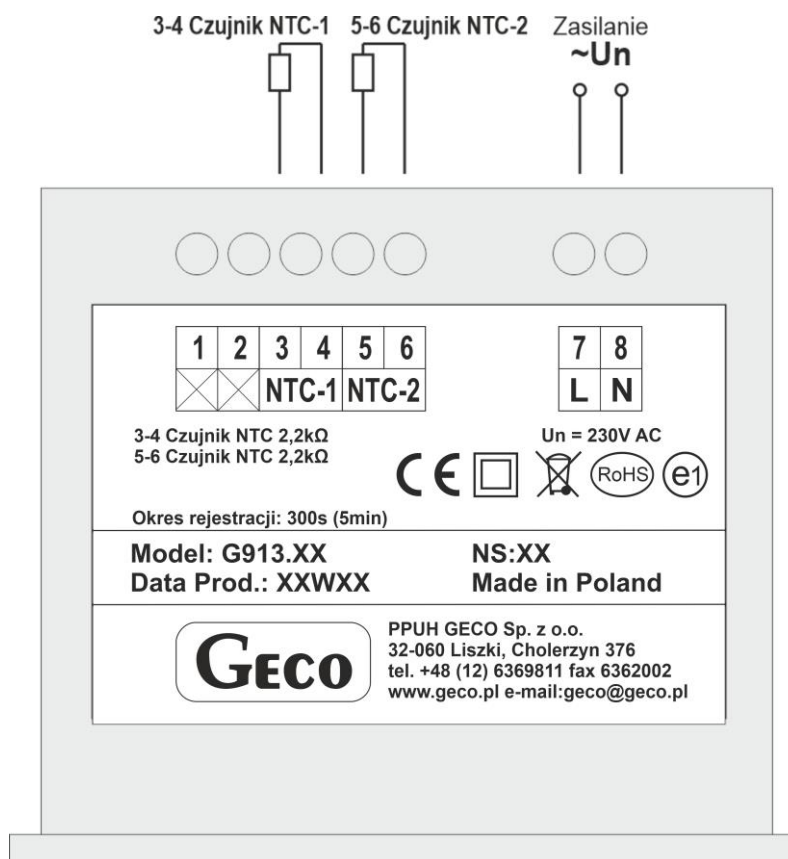


Fig 1. Connection diagram of the G-913 – version with NTC Sensors

3.1. WORKING STATES OF G-913

The recorder may be in one of the following operating states:

- Initialization after turning on the power supply - **POWERUP**;
- Standard work - **RUN**;
- Alarm – **ALARM**;

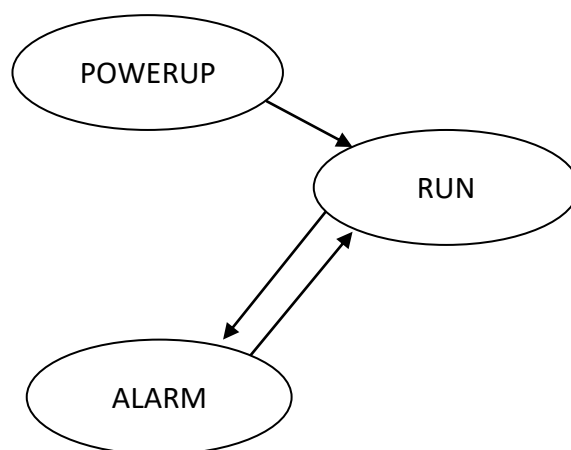
3.2. Alarm types

- Sensor 1 error
- Sensor 2 error
- No communication between module and usb flash

All alarms are indicated in the same way, the red LED works in the following sequence:

3 signals | break

3.3. Visualization of states transition



→ change of state by a control algorithm

3.4. Description of the conditions for transitions between states:

- From **POWERUP** (after about 5 seconds from turning on a power supply):
 - to **RUN** mode – after making sensor calibration and stabilization of power supply
- from **RUN** mode:
 - to **ALARM** mode – after detecting a fault of one of the sensors
- from **ALARM** mode:
 - to **RUN** mode – when the sensor failure is removed

IV. STATUS INDICATION

The device is equipped with a two-color LED. Diodes behavior is described below.

Green:

- | | | |
|------------------------------|---|-----------------------|
| • During normal operation | - | 1 beep / 1 second |
| • When downloading data | - | 4 beeps / 1 second |
| • Process ended successfully | - | continuous indication |

Red:

- | | | |
|------------------------------|---|-----------------|
| • During normal operation | - | no indication |
| • Alarm occurred | - | 3 beeps brake |
| • Process ended successfully | - | 2 beeps brake |

If more than one alarm occurs, the alarm codes are displayed one after another. The alarm states are recorded in the register as **Err +** (sensor opening) and **Err** (sensor short-circuit) instead of the registered temperature.

POWER LOSS

If the recorder detects a loss of the main power supply, after the voltage recovery, information about the date and time of the power supply return and the duration of the decay is recorded in the log.

V. STANDARD WORK

The device has the task of recording the indications from two temperature sensors. The device starts to work after approx. 5 seconds. since the power is detected, the recorder performs the first measurement. Each subsequent measurement is saved at a specific frequency (default: 5 min). The device can store 30,000 measurements. Data recording is circular, i.e. after overflow of memory the oldest measurements are overwritten, thus the last 30000 measurements are constantly stored in memory. Mixing data to a USB drive does not delete them from the recorder. Each correct data registration is confirmed by a short blink of the diode. During the operation of the device, it is possible to read the measurement register at any time, and change the date and time settings.



**DO NOT REMOVE THE USB HEADER FROM THE SOCKET DURING
DATA DOWNLOAD – LOOK AT POINT 6!
THIS WILL DAMAGE FILES AND DAMAGE USB STORAGE DEVICE!**

Writing data to a USB drive can take from a few seconds to several minutes depending on the hardware characteristics of the media and the amount of data written on it!

5.1. Date and time changing

To change date and time you need to plug in USB storage device with saved text file named "CLOCK.txt" to the USB connector.

Text file should be in the following format (see Fig 2.):

D: yyyy.mm.dd T: HH: MM

Where:

yyyy – year,
mm – month,
dd – day,
HH – hour,
MM – minute,

Warning!!!

Omitting the configuration variables "D:" and "T:" will bypass the change of date and time, and these variables are necessary to properly decode the file and save the file REPORT.txt in which additional information will be attached.

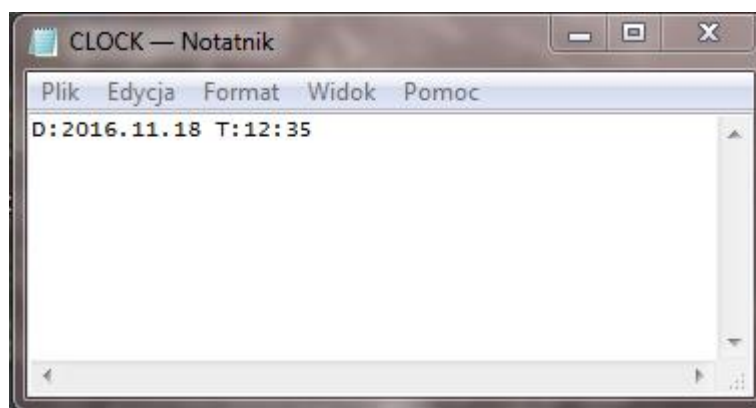


Fig 2. An example of correct encoding of the file CLOCK.txt

5.2. Configuration files

Configuration files should be placed on a flash drive (fat32) in the root directory. The memory device can only be removed when the green diode lights up permanently and the red diode operates in the following sequence: **2 signals | break**

1) Default settings reset

File name:	factory_reset.txt
Data to write in file:	"2485"
Action:	The logger resets, clears logs, and maintains off until main supply is turned on again

2) Log clear

File name:	clear.txt
Data to write in file:	none
Action:	Clears all logs in module

3) Language

File name:	lang.txt
Data to write in file:	L:XX (where XX is a language code (PL – polish, EN – english, DE – german, FR – french
Action:	Changes the language in generated files to the set as above. If the data in the file or the incorrect language are not saved, a report.txt file will be created on the flash drive

4) Timeout setting

File name:	timeout.txt
Data to write in file:	T:XXX (where XXX timeout between temperature data readings from 1 to 900sec)
Action:	Changes sensor reading timeout and logging. If the data in the file or the recording are incorrect, the timeout value will not be saved, a report.txt file will be created on the flash drive

5.3. Reading of registered measurements

At any time during the device operation, it is possible to read the data registered on it. There are two ways to read.

1) Reading of recorded data without using a configuration file

After plugin USB memory in **without** a configuration file on it you will save on this USB memory device 30 000 last registered measurements.

The .txt file with temperature data will be saved into the flash disc. File name: G913_XXX_R_DDMMRRRR_HHMMSS

2) Reading of recorded data with using a configuration file (see Fig 3.)

After plugin USB memory in **with** a configuration file on it named „READ.txt”, registers could be saved in ways shown below:

- Reading a certain number of registers (from 1 to 30,000)

In the file "READ.txt", write **R: XXXXX**

where XXXXX is any number between 1 and 30,000 corresponding to the number of read entries

- **Reading from 1 to 24 hours**

The file "READ.txt" should be written **H: XX**

where XX is any number from 1 to 24 corresponding to the number of hours to be read

- **Reading form 1 to 90 days**

The file "READ.txt" should be written **D: XX**

where XX is any number from 1 to 90 corresponding to the number of days to be read

- **Reading from 1 to 3 month**

The file "READ.txt" should be written **M: X**

where X is any number from 1 to 3 corresponding to the number of month to be read

Warning!!!

Entering an incorrect number or omitting the configuration variable "R:", "D:", "H:", "M:" will skip this file and read the maximum number (30,000) measurements and save the file REPORT.txt in which the information will be attached additional.

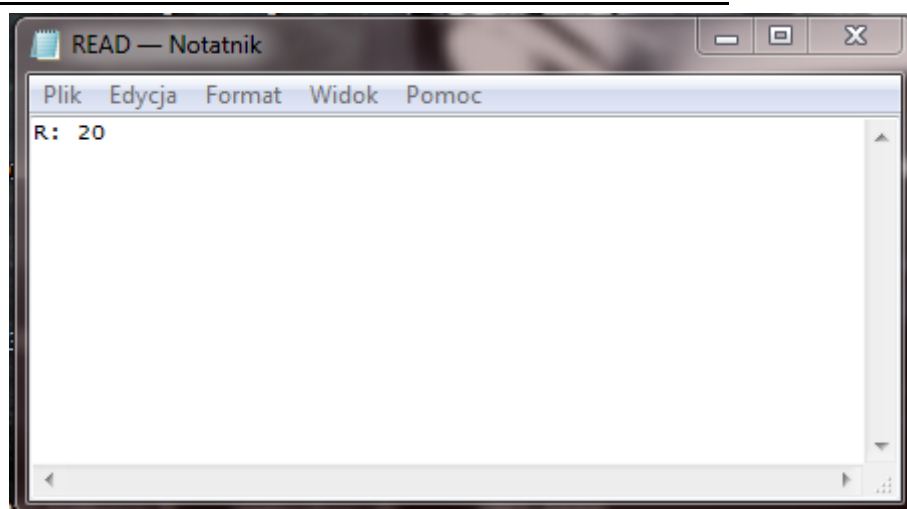


Fig 3. An example of a correctly saved reading configuration file

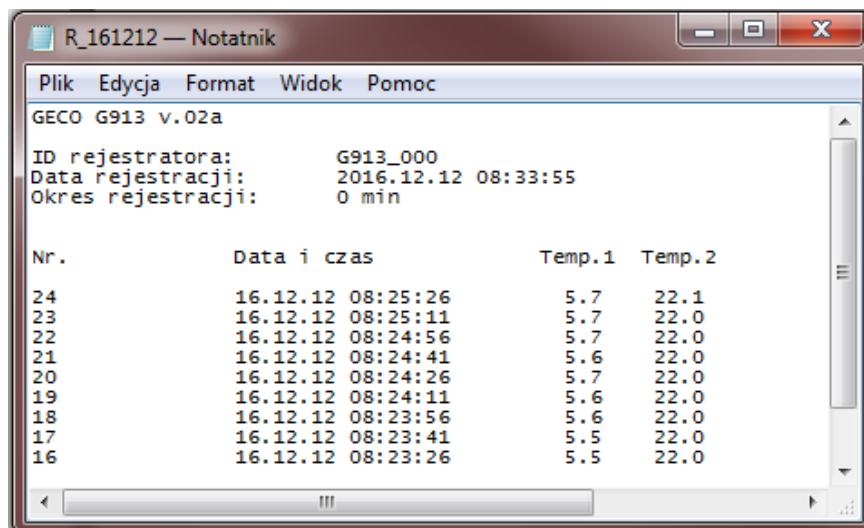
3) File with saved record

After correct data saving on a USB storage device, the following information is saved in the device's directory:

- The name of the recorder and the version of the software
- Device ID,
- Date of registration,
- Registration period,

Then the temperature registers are saved in the form:

- Record number,
- Date and time of recording,
- Sensor 1 temperature,
- Sensor 2 temperature



R_161212 — Notatnik

Plik Edycja Format Widok Pomoc

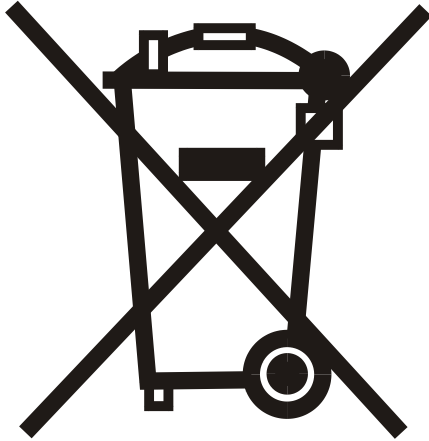
GECO G913 v.02a

ID rejestratora: G913_000
Data rejestracji: 2016.12.12 08:33:55
Okres rejestracji: 0 min

Nr.	Data i czas	Temp.1	Temp.2
24	16.12.12 08:25:26	5.7	22.1
23	16.12.12 08:25:11	5.7	22.0
22	16.12.12 08:24:56	5.7	22.0
21	16.12.12 08:24:41	5.6	22.0
20	16.12.12 08:24:26	5.7	22.0
19	16.12.12 08:24:11	5.6	22.0
18	16.12.12 08:23:56	5.6	22.0
17	16.12.12 08:23:41	5.5	22.0
16	16.12.12 08:23:26	5.5	22.0

Fig 4. Example of a correctly saved file with temperature register

VI. INFORMATION REGARDING MARKING AND COLLECTION OF WASTE ELECTRIC AND ELECTRONIC EQUIPMENT



UWAGA!

The symbol placed on a product or on its packaging indicates that it is subject to selective collection of waste electric and electronic equipment. This means that the product should not be discarded together with other household waste.

Appropriate removal of old and waste electric and electronic equipment will prevent potentially harmful effects on the environment and human health.

The obligation of selective equipment collection rests on the user who should deliver the equipment to a collection point.

VII. NOTES

[illegible]



P.P.U.H. „Geco” Sp. z o. o.
Cholerzyn 376, 32-060 Liszki
tel. 012 6369811, 6361290
fax. 012 6362002
<http://www.geco.pl>
e-mail: geco@geco.pl