GrainWatch®

Guarding the quality

GW-200 Hand-Reader for Solid Bulk Storage

Installation and User Manual

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1. OVERVIEW

The GW-200 is a portable hand-held temperature reader that is part of the GrainWatch temperature monitoring product line. It is intended for facilities where the temperatures are to be monitored manually.

The GW-200 is very easy to use. Just plug in the 3.5mm jack plug, press any of the two buttons, and the temperatures are presented on the large, backlit display. There is no need for external power supplies. All the power needed comes from the batteries inside the GW-200.

Since the GW-200 interfaces to the same type of digital sensors used in all GrainWatch equipment, upgrading to an automatic system is easy. Systems using the GW-200 are not ATEX-approved, but upgrading to an automatic system ensures ATEX compliance.

The GW-200 can read up to 32 sensors per sampling cycle and access point. These sensors can be divided between several temperature cables or spears. More than 32 sensors in total require multiple access points.

■ 1.1 GW-200 with temperature cables for silos

When used for silo storages, the GW-200 interfaces with GWSL1100 or GWSL2100 temperature cables suspended from the silo roof. Standard sensor spacing is 2 m or 3 m. Every access point is limited to:

  - 32 sensors in total
  - 200 m maximum cable length (including the temperature cables)
  - max. 4 temperature cables per access point.

When using multiple temperature cables connected to one access point, it is necessary to program the sensors inside the temperature cables in one continuous sequence from sensor no. 1 - 32, since every sensor ID needs to be unique (e.g. cable 1: sensors 1-5; cable 2: sensors no. 6-10; cable 3: sensors 11-15, etc.). The temperature cables do not need to have the same amount of sensors.



GW-JB-05

GW-200
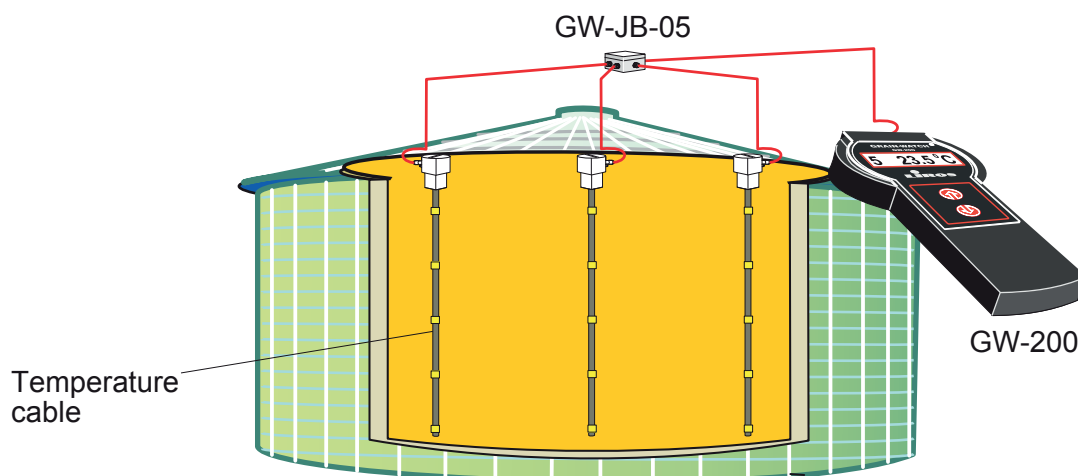
Temperature cable

■ 1.2 GW-200 with temperature spears for flat storages

When used in flat storages, the GW-200 usually interfaces with temperature spears from the Grain-Watch product range. Multiple spears can be daisy chained and connected to one access point. Every access point is limited to:

- 32 sensors in total
- 200 m maximum cable length (including the temperature spears)
- max. 10 temperature spears per daisy-chain.

As with temperature cables, it is necessary to program the sensors inside the temperature spears in one continuous sequence from sensor no. 1 - 32, since every sensor ID needs to be unique (e.g. spear 1: sensors 1-3; spear 2: sensors no. 4-6; spear 3: sensors 7-9, etc.). The temperature spears do not need to have the same amount of sensors.

Temperature spears
(daisy-chained)
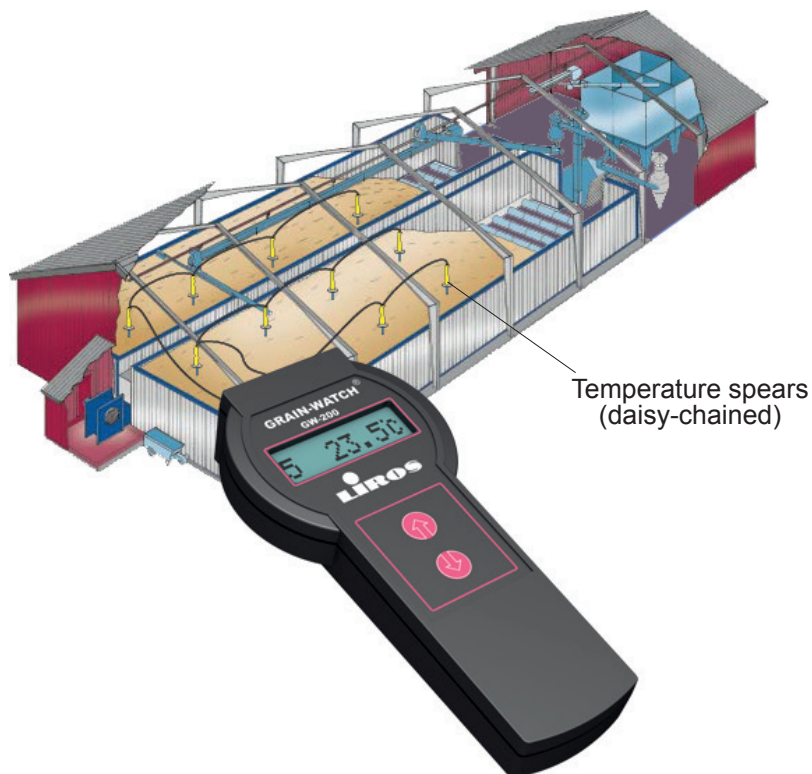
2. ELECTRICAL INSTALLATION

The GW-200 connects to the sensors through a 3.5 mm standard jack plug. The tip of the plug connects to the data signal (+) from the sensors and the sleeve connects to 0V (-).
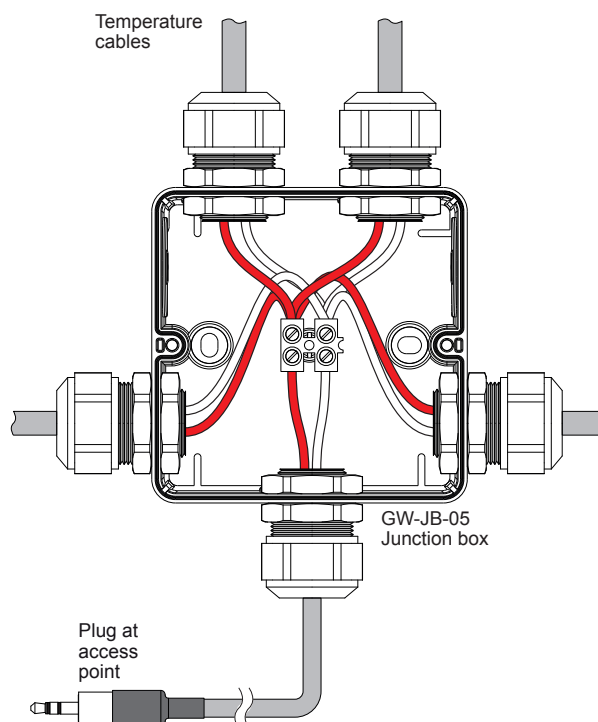

Temperature cable

Signal (+)

Signal (+)

0V (-)

0V (-)

Signal (+)

0V (-)
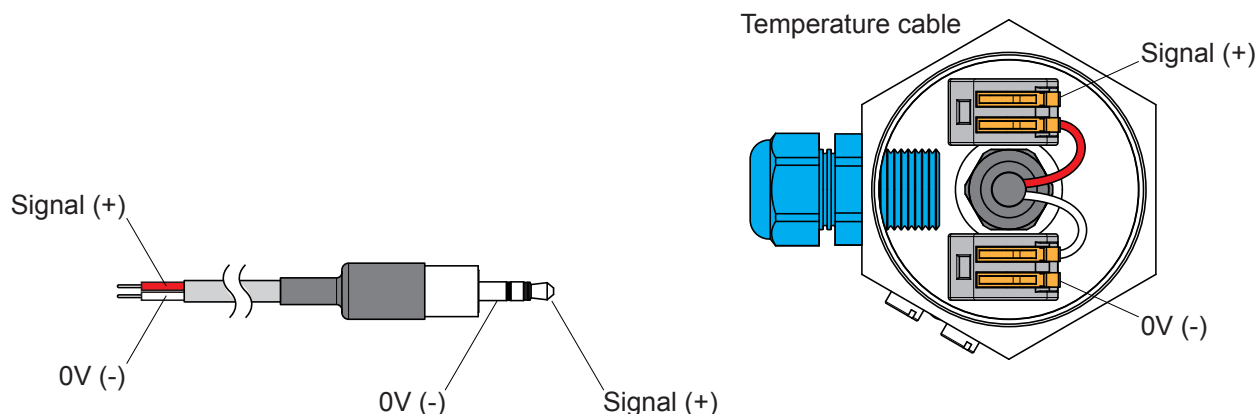
## ■ 2.1 GW-200 with temperature cables GWSL1100/2100

When using a single temperature cable, a 2-core cable is needed between the temperature cable suspension and the jack plug. The signal (+) from the jack plug connects to the red wire inside the temperature cable suspension. The 0V (-) from the jack plug connects to the white wire inside the temperature cable suspension.

Up to 4 temperature cables can be joined by using a junction box GW-JB-05. It is possible to interconnect multiple junction boxes as long as the total number of sensors and maximum cable lengths are not exceeded.

The junction box should be placed on top of the silo or the walkway, as close to the temperature cables as possible.


Temperature cables

GW-JB-05 Junction box

Plug at access point

Temperature cables
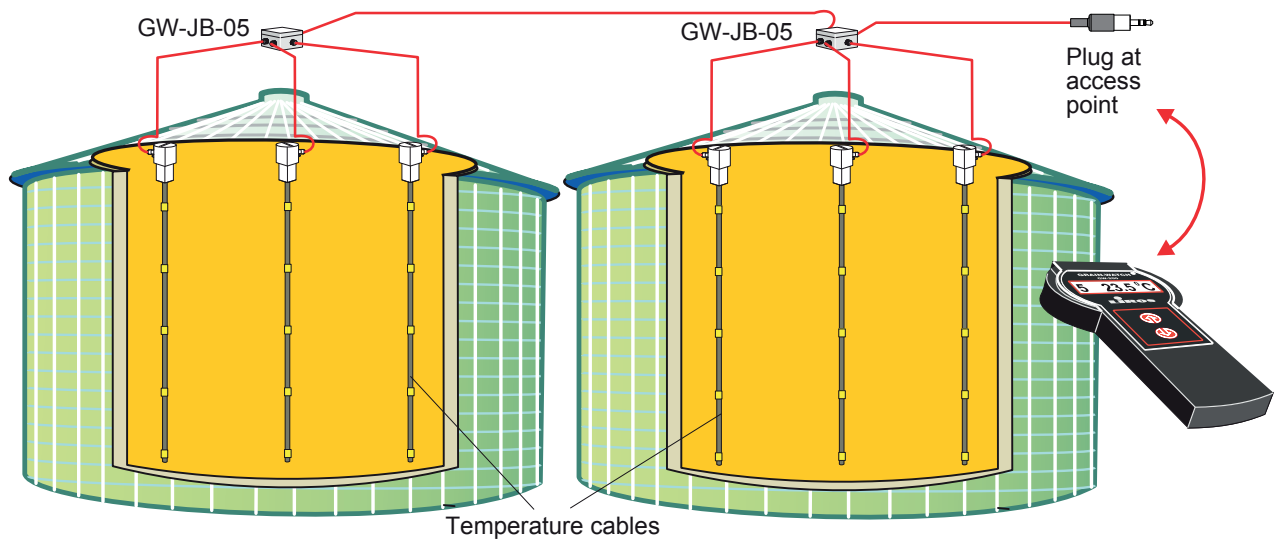
■ 2.2 GW-200 with temperature spears

Multiple spears can be daisy-chained using specific connection cables before connecting to the GW-200. All sensors need a unique ID from 1-32, and the spears should be connected in the correct order to form a sequence from 1-32.

Connection cables

Connectors

Plug at access point

Temperature spears
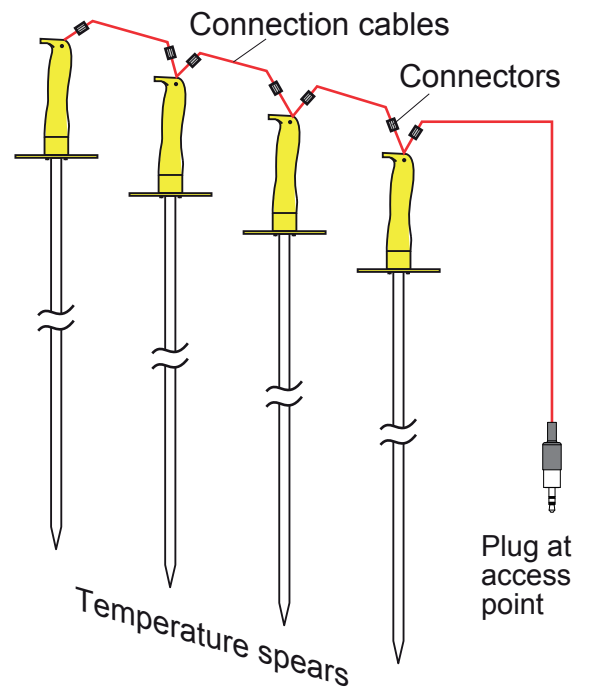
■ 2.3 ATEX

Systems using a GW-200 are currently only available as simple, cost-efficient non-ATEX systems.

3. OPERATION AND MAINTENANCE

The GW-200 is easy to use. It features 2 buttons and a large, backlit display. The GW-200 samples all sensors from 1-32 automatically, and then displays the sensor with the highest temperature after successful sampling is completed.

1   Insert the jack plug into the GW-200 at the access point.
2   Press any of the 2 buttons and hold it for about 1 second. The GW-200 is now powered on and displays the current software version.
3   The display briefly displays "Scanning".
4   The GW-200 now starts sampling the tempertures, starting with sensor no. 1. It displays the sensor number and the current temperature for each sensor.
5   When sampling is completed, the GW-200 displays the sensor with the highest temperature by alternating between the text "Hi" and the sensor and its current temperature.
6   The 2 buttons enable the operator to scroll between the sensors.
7   The GW-200 switches off automatically after a few seconds if no buttons are pushed.

It is recommended to follow the sampling process carefully to ensure that all sensors are displayed. Sensors that are not displayed have not been found by the GW-200. See also 3.3 Troubleshooting.

If sensors are missing, the GW-200 indicates this by displaying dashes ("---") instead of temperatures for that sensor.

Note that some operators may use a "blank" sensor as a spacer to indicate a new temperature cable or spear is being sampled. It is important to know the individual setup of the temperature monitoring system!

■ 3.1 Batteries

The GW-200 is powered by two standard AA batteries. When the batteries run low, "Low bat" is shown in the display, alternated with the regular sampling data. The backlight will also be switched off to save power.

■ 3.2 Troubleshooting

Symptom	Cause	Solution
The display shows "No Line" while the jack plug is inserted.	There is no connection between the GW-200 and the sensors.	Check the wiring.
The display continuously shows "Scanning".	The connection cables are either shorted or crossed. Sensors cannot be found.	Check the wiring.
One or more sensors display "---" instead of temperatures.	Sensor(s) cannot be found or is broken. The sensor(s) may occur twice or be left blank as a spacer.	Check the amount of sensors to confirm that a sensor is damaged. Check that all sensors have a unique ID from 1-32. Ensure that sensors don't act as a spacer (left blank).

Make sure you have the software version number (see 3.1) available before contacting Liros for support.

4 TECHNICAL DATA

Item	Data
Type name	GW-200 hand-held temperature reader
Interfaces with	Temperature spears, temperature cables GWSL1100/2100
Dimensions	200 mm * 95 mm * 40 mm
Weight	240 g (including batteries)
Material	ABS
Power	2 * standard AA size batteries
Battery life	Circa 1 year
Operating temperature	-20°C – +40°C