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|---|---|
| **Doc. Type:** | Product |
| **Sub. Type:** | Specification |
| **Status:** | **Rev 1.3** |
| **P/N:** | Newsteo Potentiometric Data Loggers |
| **Author:** | AC |

# Newsteo Potentiometric Data Loggers
# Product Specification

# Revisions

| Revision | Issue Date | Author | Comments |
|---|---|---|---|
| 1.0 | August 18th, 2011 | AC | |
| 1.1 | February 27th, 2014 | AC | Merge with LGP33 reference |
| 1.2 | January 10th, 2017 | AC | Modification of the connexion cables<br>PFPN-FISSU-005 - Crackmeter probe 4 added |
| 1.3 | August 21th, 2018 | AC | New references |
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# 1 Introduction

**Object:**
Define the products specifications in term of technical characteristics, physical dimensions, aperture, accessories and casing.

**Products:** potentiometric interface Loggers

| | References | Interface |
|---|---|---|
|  | PFPN-LGS31-001 | Logger with potentiometric interface<br>1 input |
| | PFPN-LGP33-001 | Logger with potentiometric interface<br>3 inputs |
| | | |
| | | |
| | | |

# 2 Summary of the product functioning

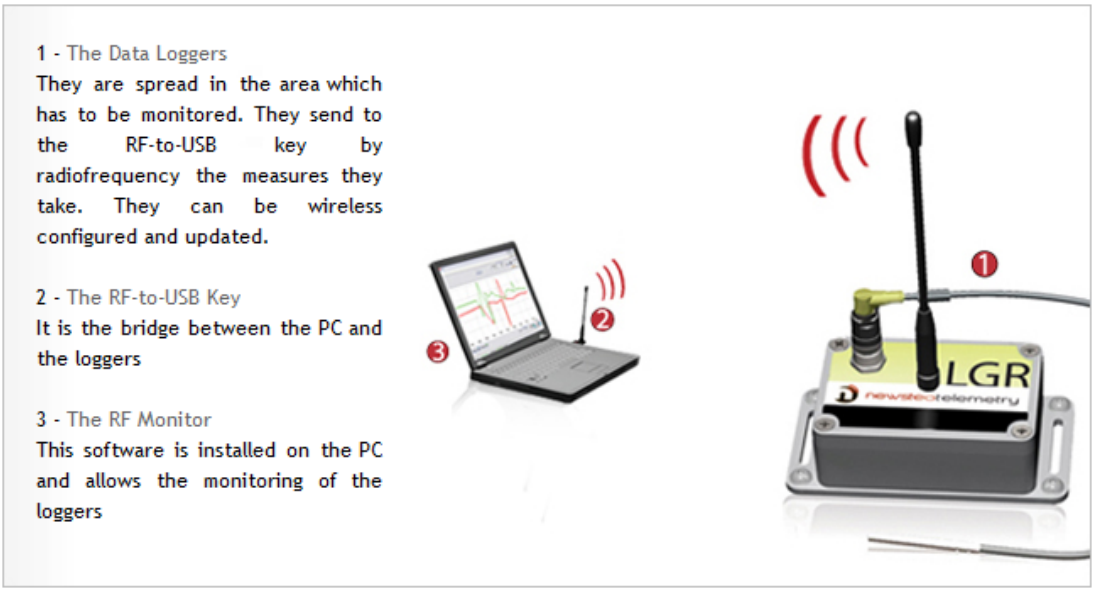


**Figure 1: Functioning**

The loggers can be used in two different modes:

- **Monitoring** (real time monitoring applications): the logger sends in real time its measurements to the PC. If a measurement is not received by the PC, it stores it inside its internal memory and sends it to the PC on the next communication channel
- **Record / Restitution** (a posteriori monitoring): the logger records in its embedded memory the measurements it takes. The user can download on the PC all the stored measurements when he wants.

# 3 Newsteo Potentiometric data logger

## *3.1 Technical characteristics*

Preliminary specification – Subjected to change without prior notification.
**TBC** : To be confirmed
**TBD** : To be defined
**NA**: Not applicable

### 3.1.1 Measurement accuracy / interface

The connexion to the external probe is done through an external connector available on the top of the casing.
Caution: for each input, performance data in the table below will be reached only if you follow the calibration procedure given by Newsteo.
The following characteristics are valid for each of the 3 channels for LGP33 reference.

| Characteristics | LGS31 | LGP33 |
|---|---|---|
| **Type** | Potentiometric<br>For Rp=1kOhms to 10kOhm : linear transfer function<br>Pour Rp=10kOhms to 65KOhms : complex transfer function<br>The transfer functions are integrated into RF Monitor and can be brought in another tool of data reception | |
| **Channel** | 1 | 3 inputs multiplexed (inter-channel delay: 150ms) cannot be deactivated, common supply. |
| **Measurement range** | From 1KOhm to 65KOhm (for each channel) | |
| **Accuracy** | Total sum of the errors : 1LSB max meaning ±3x10-3% (using Newsteo transfer functions) | |
| **Resolution** | 1LSB (corresponds to the full scale of the sensor divided by 32768) | |
| **Response time** | 0,15s per sensor<br>Maximum measurement speed : 1s | |
| **Temperature compensation** | Onboard integrated temperature sensor can be used for temperature compensation | |

### 3.1.2 Casing

| Characteristics | |
|---|---|
| **Temperature range of use of the Data Logger** | -40 °C to + 85°C |
| **IP Level of the Data Logger and the connector** | IP65<br>The level of tightness of the product is valid only if the probe and antenna are properly tightened (seals crushed). |

### 3.1.3 Power supply / Autonomy

| Characteristics | LGS31 | LGP33 |
|---|---|---|
| **Battery** | AA Lithium Thionyl (included) with plug-in connector | |
| **Autonomy @ 25°C** | Up to 3 years<br>At 25°C with a frequency measures of 10 minutes.<br>Average value which can slightly vary depending on the use. It is given with the product working in non alert mode. | > 2 years<br>At 25°C with a frequency measures of 30 minutes.<br>Average value which can slightly vary depending on the use. It is given with the product working in non alert mode. |

### 3.1.4 Other characteristics

| Characteristics | Newsteo LGS31 | LGP33 |
|---|---|---|
| **Measurement frequency** | Can be set from 1 s to 4 hours | |
| **Antenna RF Connector** | SMA connector | |
| **Antenna** | 1/2 wave antenna (included) | |
| **RF range in free land** | 100m to 1Km, depending on the antenna used on the reception side | |
| **Memory Capacity** | 32 256 measurements with date and time | 10700 measurements with date and time<br>Either with a measurement every 10 minutes : memory autonomy of 74 days |
| **Time resolution** | 1s | |
| **Time deviation** | +/- 2 min/month @ 25°C | |
| **Data memory retention** | 100 years | |
| **ILS** | ILS integrated for several functions:<br>- wakeup of the product in hibernate mode<br>- take of a measure outside of the frequency measure set | |

## 3.2 Casing specification


**Figure 2: LGS casing**

| Characteristics | |
|---|---|
| **Features** | Aluminium casing (4mm) |
| **Fixation** | Fixation support provided screwed in the casing for screwing in 4 points or strapping through 2 holes |
| **Colour** | Grey (aluminium) |
| **Dimensions (w/o antenna)** | Length : 98 mm<br>Depth : 64 mm<br>Height: 34 mm |
| **Weight** | About 280 g |
| **Stickers** | 2 stickers on the product :<br>- 1 sticker on the top face, giving the product range<br>- 1 sticker on the side, giving the complete product reference and its serial number |

## 3.3 Starting of the data logger

The product is delivered with a battery inserted, in hibernate mode.
The user has to pass a magnet on the product to wake up it and to set it.
The time is set in production.

## 3.4 Certification

Products certified for radio use in Europe, on the frequency of 868 MHz (ISM band). For use in another area, check with local authorities.

# 4 Newsteo probes and connection cables

**Assembly**:
When installation is required, the customer is responsible for the proper assembly of the sensors and good connection of the probe on the Data Logger.

## *4.1 Cables*

Cables and connectors can be ordered to connect customer's sensor on Newsteo LGS.

### 4.1.1 PFPN-SES58-001

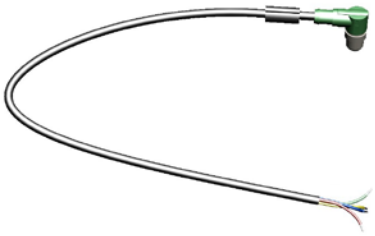

**Figure 3: PFPN-SES58-001 (cables and quick connectors)**

| | Characteristics |
|---|---|
| **Type** | Cable<br>- M12 connector for direct connection to the LGR<br>- Wires to connect the sensor (The connection instructions are provided). |
| **Length of cable** | 5 meters (can be shortened by the customer if necessary) |
| **IP level** | IP68 (male connector, cable and quick connectors) |
| **Ambient temperature (operation)** | Cable :<br>-40 °C ... 80 °C (cable, fixed installation)<br>-5 °C ... 80 °C (cable, flexible installation)<br>Connector (plugged on the data logger):<br>-25 °C ... 90 °C |

## 4.2 Crackmeter probes

Newsteo can provide crackmeter probes and associated cables to connect directly on the LGS31.

### 4.2.1 Crackmeter probe 1

#### 4.2.1.1 PFPN-FISSU-001 or PFPN-FISSU-004 [crackmeter]

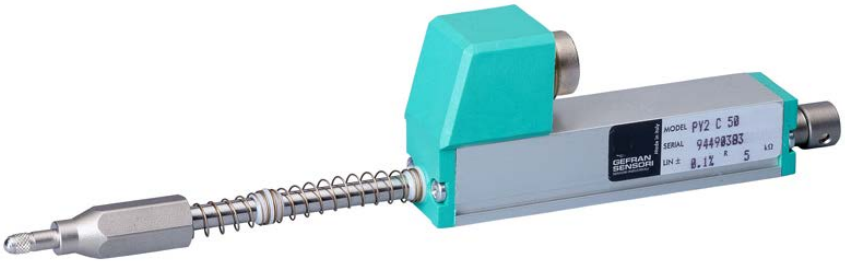

**Figure 4: FISSU-001**

Gefran crackmeter that can be used with the LGS31 Data Logger. To plug the crackmeter, use the cable PFPN-STI58-002.
Detailed specification of the crackmeter: http://www.gefran.com/en/products/product_529.aspx

Installation guide and specifications are available on the manufacturer's website.

Main characteristics:

| | Characteristics |
|---|---|
| **Type** | Rectilinear displacement transducer |
| **Operating temperature** | -30°C to +100°C |
| **IP** | IP 40 |
| **Measurement range** | PFPN-FISSU-001: 0 to 10 mm<br>PFPN-FISSU-004: 0 to 25 mm<br>(other range available on request) |
| **Resolution** | Infinite resolution |
| **Linearity** | Independent linearity up to ± 0.1% |
| **Displacement speed** | up to 10 m/s |

#### 4.2.1.2 PFPN-STI58-002 [cable]

**Figure 5: PFPN-STI58-002**

| | Characteristics |
|---|---|
| **Type** | Cable for direct connection of the PFPN-FISSU-001 or PFPN-FISSU-004<br>- Male connector to connect to the LGS<br>- Other connector to connect to the PFPN-FISSU-001 or PFPN-FISSU-004 |
| **Length** | 5 meters |
| **Operating temperature** | -25 °C ... 80 °C (cable, fixed installation)<br>-5 °C ... 80 °C (cable, flexible installation) |

#### 4.2.1.3 PFPN-FIXFI-001 [fixing kit]

Fixing kit: 2 “wraparound” brackets for the crackmeter

### 4.2.2 Crackmeter probe 2

#### 4.2.2.1 PFPN-FISSU-002 or PFPN-FISSU-008 [crackmeter]


**Figure 6: PFPN-FISSU-002**

Gefran crackmeter that can be used with the LGS31 Data Logger. To plug the crackmeter, use the cable PFPN-STI58-003.
Detailed specification of the crackmeter: http://www.gefran.com/en/products/product_738.aspx

Installation guide and specifications are available on the manufacturer's website.

Main characteristics:

| | Characteristics |
|---|---|
| **Type** | Rectilinear displacement transducer with IP67 protection level |
| **Operating temperature** | -30°C to +100°C |
| **IP** | IP 67 |
| **Measurement range** | PFPN-FISSU-002 : 0 to 25 mm<br>PFPN-FISSU-008 : 0 to 50 mm<br>(other range available on request) |
| **Resolution** | Infinite resolution |
| **Displacement speed** | Standard ≤ 3 m/s max ≤ 5 m/s |

#### 4.2.2.2 PFPN-STI58-003 [cable]

**Figure 7: PFPN-STY58-003**

| | Characteristics |
|---|---|
| **Type** | Cable for direct connection of the PFPN-FISSU-002 & PFPN-FISSU-008<br>- Male connector to connect to the LGS<br>- Other connector to connect to the PFPN-FISSU-002 & PFPN-FISSU-008 |
| **Length** | 5 meters |
| **Operating temperature** | -25 °C ... 80 °C (cable, fixed installation)<br>-5 °C ... 80 °C (cable, flexible installation) |

### 4.2.3 Crackmeter probe 3

#### 4.2.3.1 PFPN-FISSU-003 [crackmeter]

**Figure 8: PFPN-FISSU-003**

Gefran crackmeter that can be used with the LGS31 Data Logger. To plug the crackmeter, use the cable PFPN-STI58-004.
Detailed specification of the crackmeter: http://www.gefran.com/en/products/product_525.aspx

Installation guide and specifications are available on the manufacturer's website.

Main characteristics:

| | Characteristics |
|---|---|
| **Type** | Selfloading rectilinear displacement transducer with cylindrical case |
| **Operating temperature** | -30°C to +100°C |
| **IP** | IP 65 |
| **Measurement range** | 0 to 50 mm (other range available on request) |
| **Resolution** | Infinite resolution |
| **Displacement speed** | ≤ 5 m/s |

#### 4.2.3.2 PFPN-STI58-004 [cable]

**Figure 9: PFPN-STI58-004**

| | Characteristics |
|---|---|
| **Type** | Cable for direct connection of the PFPN-FISSU-003<br>- Male connector to connect to the LGS<br>- Other connector to connect to the PFPN-FISSU-003 |
| **Length** | 5 meters |
| **Operating temperature** | -25 °C ... 80 °C (cable, fixed installation)<br>-5 °C ... 80 °C (cable, flexible installation) |

### 4.2.4 PFPN-FISSU-005 - Crackmeter probe 4 [crackmeter + cable]

**Figure 10: PFPN-FISSU-005**

This crackmeter / extensometer is directly connected to a cable to be connected on the Newsteo Data Logger. There is no need of an additional connection cable.

| | Characteristics |
|---|---|
| **Type** | Linear displacement sensors |
| **Operating temperature** | Sensor : - 30 to +100°C<br>Cable :<br>-25 °C ... 80 °C (cable, fixed installation)<br>-5 °C ... 80 °C (cable, flexible installation) |
| **IP** | IP 66 |
| **Measurement range** | 0 to 25 mm (other range available on request) |
| **Resolution** | Virtually Infinite resolution |
| **Cable length** | 5 meters |

### 4.2.5 PFPN-FISSU-009 - Crackmeter probe 5 [crackmeter + cable]

This crackmeter / extensometer is directly connected to a cable to be connected on the Newsteo Data Logger. There is no need of an additional connection cable.

Detailed specification of the crackmeter: https://www.gefran.com/en/products/75-pz12-1-2-cylindrical-housing
Model : PZ-12-A 50 mm
Installation guide and specifications are available on the manufacturer's website.

Main characteristics:

| | Characteristics |
|---|---|
| **Type** | Rectilinear displacement transducer with cylindrical case |
| **Operating temperature** | Sensor : - 30 to +100°C<br>Cable :<br>-25 °C ... 80 °C (cable, fixed installation)<br>-5 °C ... 80 °C (cable, flexible installation) |
| **IP** | IP 60 |
| **Measurement range** | 0 to 50 mm (other range available on request) |
| **Resolution** | Virtually Infinite resolution |
| **Cable length** | 5 meters |

# 5 How to order?

You need to order a data logger with a crackmeter. You order for example:

- 1 PFPN-LGS31-001 (battery and antenna included)
- 1 PFPN-STY58-003 (cable)
- 1 PFPN-FISSU-002 (crackmeter)