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Author:	AC

Newsteo LGR range Temperature Humidity
Product Specification

Revisions

Revision	Issue Date	Author	Comments
1.0	August 18th, 2011	AC	
1.1	February 16th 2012		
1.2	May 11th, 2012	AC	Correction on LGR54 resolution
1.3	October 16th 2012	AC	Adding of the STH54-001 probe
1.4	November 12th, 2013	AC	Suppression of the LGR54 reference Adding of the LGR64 reference
1.5	November 14th, 2014	AC	Suppression of the STH50-003 reference Adding of Response time and long term drift on LGR64 and STH54-001
1.6	January 10th 2017	AC	Suppression of the PFPN-STH55-001 reference

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1 Introduction

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

Products: LGR temperature and humidity range

	References	Interface
	PFPN-LGR32-001	For Newsteo temperature and humidity probe

	References	Interface
	PFPN-LGR64-001	Temperature and humidity sensor on the product

2 Summary of the product functioning

1 - The Data Loggers
They are spread in the area which has to be monitored. They send to the RF-to-USB key by radiofrequency the measures they take. They can be wireless configured and updated.

2 - The RF-to-USB Key
It is the bridge between the PC and the loggers

3 - The RF Monitor
This software is installed on the PC and allows the monitoring of the loggers

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 LGR 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.

|	LGR32	LGR64
Temperature Measurement range		-40°C ... +85°C
Relative humidity Measurement range	Depends on the connected probe	0 ... 100%RH The maximum dew point is brought down to 80°C Dew formation resistant
Accuracy		See below
Resolution		Humidity: 0.03% rH Temp.: 0.015°C
Response time t$_{63}$		< 10 seconds For temperature and humidity
Long term drift		Humidity : < 0.5% rH / year Temp. : <0.05K / year
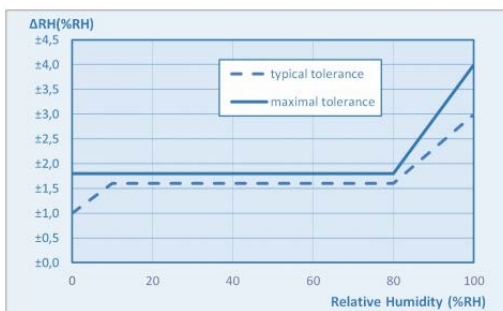
Figure 2: LGR64 relative humidity accuracy @ 23°C
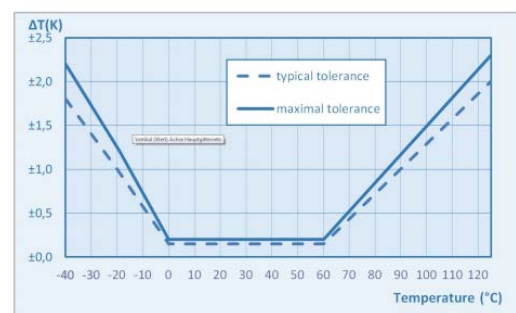

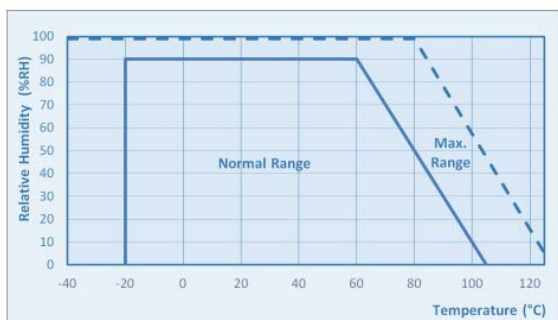**Figure 3: LGR64 temperature accuracy**

Figure 4: Operating temperature of the humidity sensor

Concerning the LGR64 temperature and humidity sensor:
To obtain a time of answer and of desaturation the fastest possible, the sensor is particularly exposed.
Precautions of use:

- The sensor must not be scratched, touched by the finger, scratched with the nail or a tool (even a soft one).
- The sensor must not be subjected to projections of oil, paint or tight products (tars, resins etc.)
- The sensor must not be exposed to sandy winds, projections of muds or undergo deposits.
- The LGR64 must not be put down on the ground.

In case of spot, some distilled water must be used without sponge.

3.1.2 Electronic board temperature

LGR32 only: The electronic board temperature is measured by a temperature sensor integrated on the electronic board.

3.1.3 Casing

Characteristics	Newsteo LGR range
Temperature range of use of the Logger	-40 °C to + 85°C
IP Level of the Logger and the connector	LGR32 : IP65 LGR64 : IP65, sensor excepted The level of tightness of the product is valid only if the probe and antenna are properly tightened (seals crushed).

3.1.4 Power supply / Autonomy

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

3.1.5 Other characteristics

Characteristics	Newsteo LGR range
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
Time resolution	1s
Time deviation	+/- 2 min/month @ 25°C
Data memory retention	100 years
ILS	ILS integrated for several functions: - wakeup of the product in hibernate mode - take of a measure outside of the frequency measure set

3.2 Casing specification

Figure 5: LGR casing

Characteristics	Newsteo
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 Depth : 64 mm Height: 34 mm
Weight	About 280 g
Stickers	2 stickers on the product : - 1 sticker on the top face, giving the product range - 1 sticker on the side, giving the complete product reference and its serial number

3.3 Starting of the 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.

On order, Newsteo can provide COFRAC certification for its products.

4   Newsteo probe for LGR32

Assembly:

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

Concerning the probe temperature and humidity sensor:

To obtain a time of answer and of desaturation the fastest possible, the sensor is particularly exposed.

Precautions of use:

- The sensor must not be scratched, touched by the finger, scratched with the nail or a tool (even a soft one).
- The sensor must not be subjected to projections of oil, paint or tight products (tars, resins etc.)
- The sensor must not be exposed to sandy winds, projections of muds or undergo deposits.
- The sensor must not be put down on the ground.

In case of spot, some distilled water must be used without sponge.
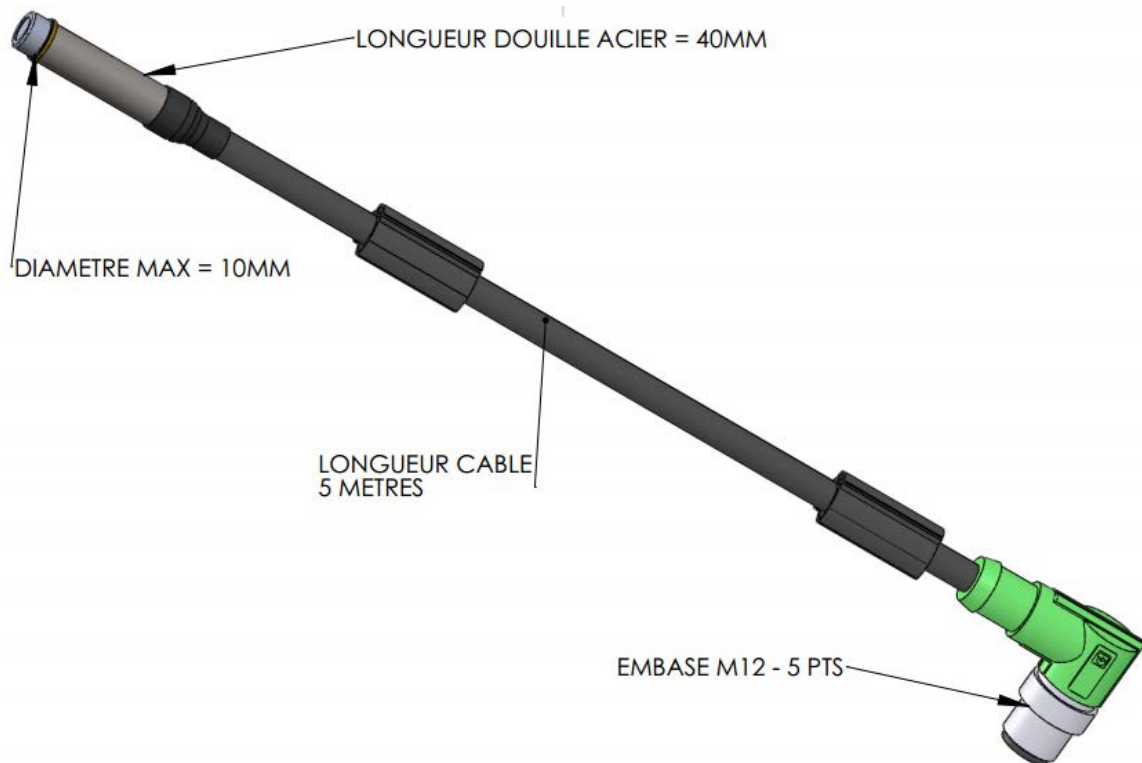
4.1 PFPN- STH54-001

Figure 6: PFPN-STH54-001 Probe

| Characteristics	
Type	Temperature & Humidity probe - M12 connector for direct connection to the LGR
Dimensions	Cable length : 5 meters Stainless steel protection (protecting sensor): length : 40mm, diameter : 10mm
IP	TBD

Ambient temperature (operation)	Sensor and stainless steel protection : - 40 ... +125 °C
	Cable :
	    -40 °C ... 80 °C (cable, fixed installation)
	    -5 °C ... 80 °C (cable, flexible installation)

Range of measure	Temperature : -40 ... +125°C Humidity : 0 ... 100%RH The maximum dew point is brought down to 80°C Dew formation resistant
Accuracy	Temperature : ±0.2°C (0 ... 60 °C) Humidity @ 23°C : ±1.8% rH (0 ... 80% rH) See below accuracy curves
Resolution	Temperature : ±0.015°C Humidity : 0.03%
Response time t_{63}	< 10 seconds For temperature and humidity
Long term drift	Temp. : <0.05K / year Humidity : < 0.5% rH / year
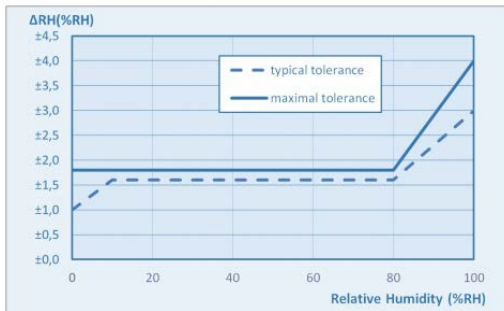
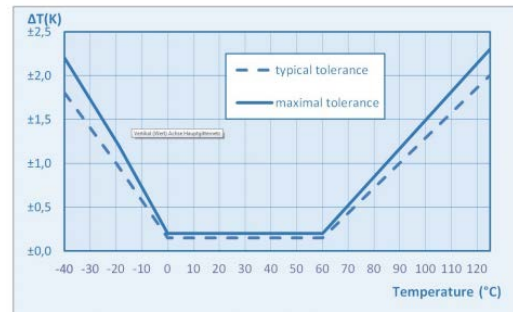**Figure 7: STH54-001 relative humidity accuracy @23°C**

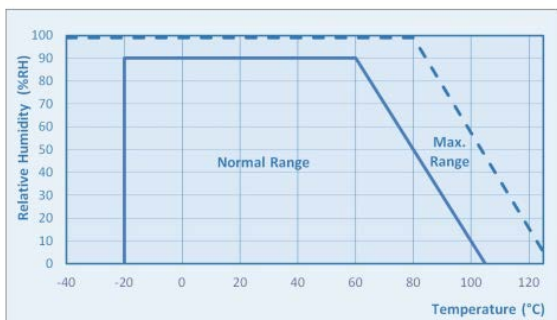**Figure 8: STH54-001 temperature accuracy**

Figure 9: Operating temperature of the humidity sensor

5 How to order?

You need to order a data logger with a temperature and humidity probe. You order for example:
- 1 PFPN-LGR32-001 (battery and antenna included)
- 1 PFPN-STH54-001 (humidity probe)