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Author:	AC

Newsteo Repeater
RPT20 - RPT30 - RPS51
Product Specification

WARNING

WARNING: The Newsteo Repeater RPS51 is heavy (several Kg /lbs) and can cause serious injury when falling on any person/object underneath.
The installer is fully responsible for fixating properly the system.
Newsteo or any reseller will never be responsible for damage due to the product fall, bad screwing or any injury caused by the product.
Working on a roof or in a window space is risky and should only be operated by authorized skilled people.

ATTENTION: Le Newsteo Repeater RPS51 est lourd (plusieurs kilos) et peut causer des blessures / dégâts graves en cas de chutes sur toute personne / objet. L'installateur est pleinement responsable de la fixation correcte du système. Newsteo ou tout revendeur ne sera jamais responsable pour les dommages dus à la chute de produit, au mauvais vissage ou à tout dommage causé par le produit. Travailler sur un toit ou sur une façade en hauteur est dangereux, le travail d'installation du système ne doit être effectué que par des personnes qualifiées.

Revisions

Revision	Issue Date	Author	Comments
1.0	August 18th, 2011	AC	
1.3	August 27th, 2012	AC	
1.4	January 18th, 2016	HSO	RPX51 update RPT41 remove update
1.5	April 05th, 2016	HSO	RPS51 update
1.6	January 11, 2017	AC	RPT30 antenna update

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Object:

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

Figure 1: PFPN-RPT20-001- Repeater with main current power supply

Figure 2: PFPN-RPT30-001- Waterproof Repeater with main current power supply

Figure 3: Repeater with solar power supply – PFPN-RPS51-001

2 Summary of the functioning of the product

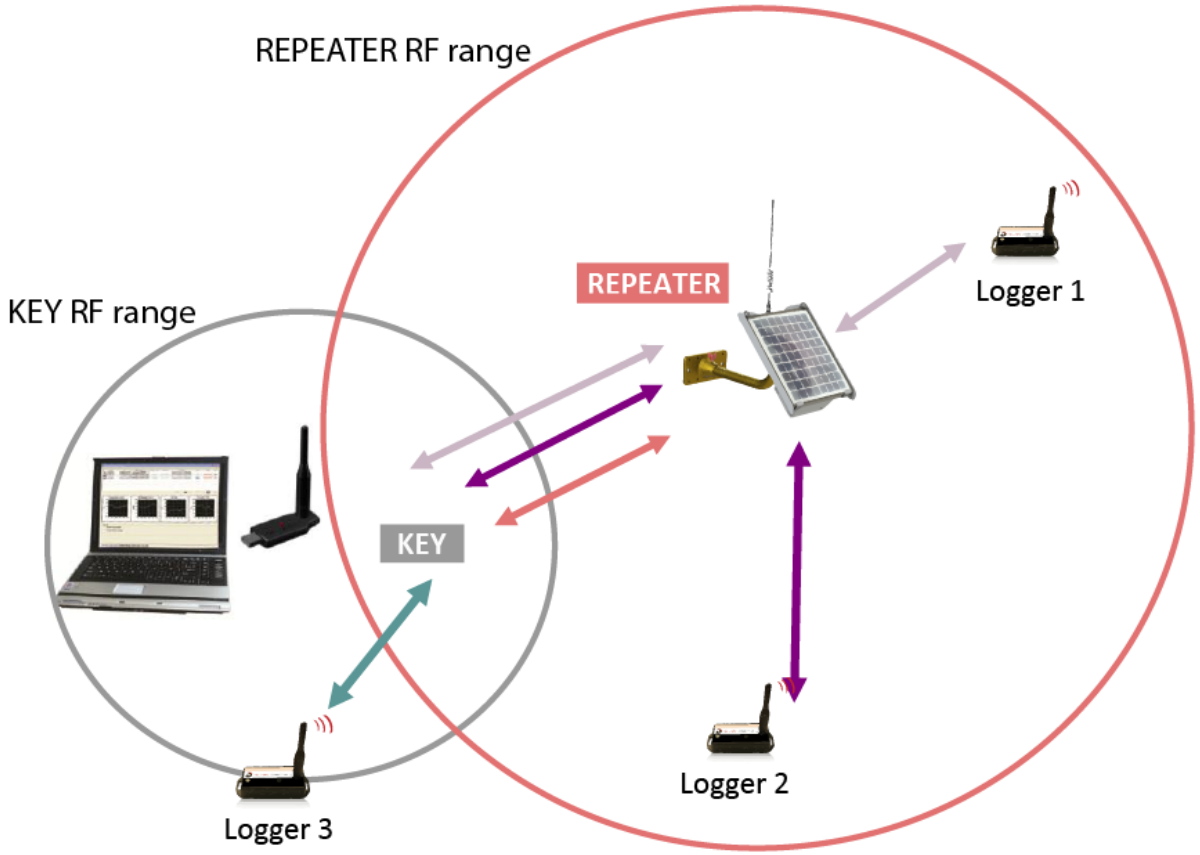

Figure 4: Range of the product

Newsteo repeater allows collecting measures from distant Newsteo products (loggers) and transfer commands from the PC to the products.
Loggers 1 and 2, which are in the area of the repeater, will communicate to the PC through the repeater.
Logger 3, which is in the area of the Key, will directly communicate to the PC.

In both cases, the installation is automatic: no need to specify if the Logger has to communicate to the key or to the repeater. A Logger which is in the area of both the Key and the Repeater will directly communicate to the Key, and never to the Repeater.

3 Features

3.1 Technical characteristics

Model	Main current supply		Solar power supply
Reference	PFPN-RPT20-001	PFPN-RPT30-001	PFPN-RPS51-001
Operating temperature	[-40 ; +85 °C]		
Max. number of products the repeater can manage	Unlimited		
RF Range (free field)	Depending on the antenna (several kinds of antenna can be connected), from 1 km to several kilometers.		
Supplied antenna	½ wavelength PFPN-ANT20-001	Full wavelength PFPN-ANT10-001	Full wavelength
Power supply	Main current (220 Volts) with 5V adaptor		1 individual solar panel, with 3 Lithium Ion 12Ah reloadable batteries.
Autonomy @ 25°C	Unlimited (depending on main current)		Battery life @25°C: 14 days without sun (a weak luminosity is enough to reload the battery). Full load time : 24 sun hours
ILS	ILS integrated to start the repeater.		
Weight	500 g	580 g	1900g (without foot)
IP level	IP50	IP65	IP67

3.2 Consequences on logger battery use

A repeater can double or even tenfold the radio range of the loggers, but it causes higher consumption on the loggers used in monitoring (due to latency and transmission times with the receiver). In general and on average, it is recommended to divide by two the autonomy of the loggers (which go through the repeater to transmit). Consequently, when it is possible, it is always better to use a large antenna (full-wave grounded ideally), rather than a repeater in your applications.

3.3 Communication protocol

3.3.1 Organization of the products

The repeater can only communicate to a RF-to-USB Key and to Loggers. It is not possible to chain several repeaters.

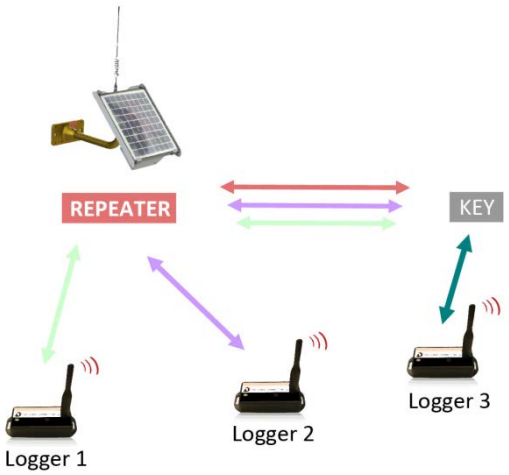

Figure 5: Typical installation

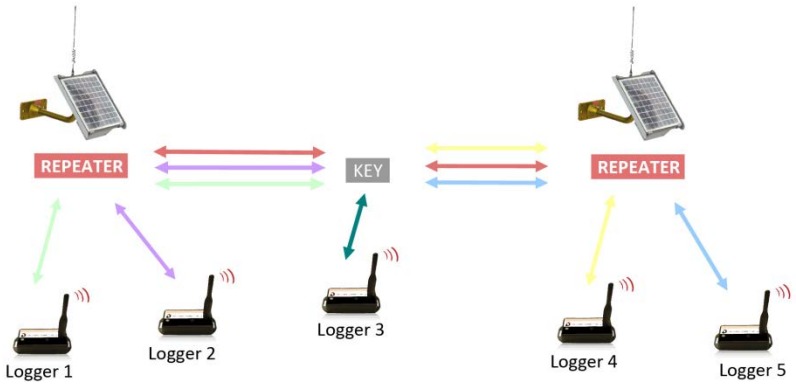

Figure 6: Possible installation

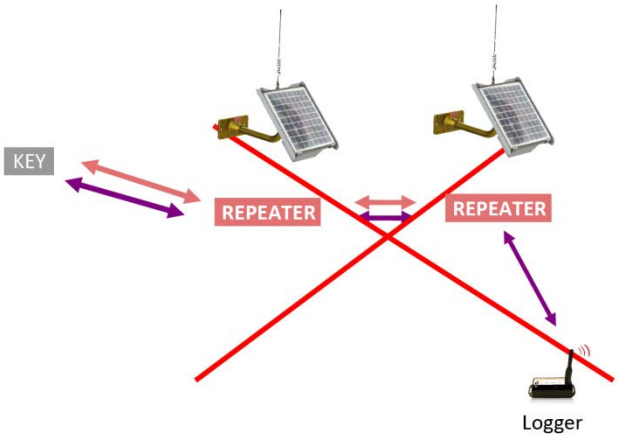

Figure 7: Not possible installation

3.3.2 Communication

The communication between the RF-to-USB Key and the repeater is bidirectional.
Every command usually sent by the Key to a logger can also be sent to it through the repeater (i.e.: parameter setting, firmware update …).
On the other hand, the Repeater sends to the RF-to-USB Key all the measures of the loggers it catches.

3.3.3 Supervision of the repeater

The functioning parameters of the solar repeater can be supervised through the RF Monitor software.
Every 1 to 60 seconds (can be set by the user), the Repeater sends a measurement packet which contains:

- The temperature of the repeater boards, mainly to monitor the battery temperature
- The input voltage of the charging battery unit

The repeater can be updated by radio.

3.4 Casing specification

3.4.1 Main current power supply

The product is delivered with ½ wavelength antenna and the power adaptor corresponding to the model.

Figure 8: PFPN-RPT20-001- Repeater with main current power supply

Figure 9: PFPN-RPT30-001- Waterproof Repeater with main current power supply

Size of the repeater white box:

- RPT20 : width : 104 mm High: 55 mm Depth : 75 mm
- RPT30 : width : 104 mm High: 55 mm Depth : 107 mm (power supply connector included)

3.4.2 Solar supply product

The product is delivered with a full wave antenna and a rotating foot.

Figure 10: Repeater RPS51 on solar supply mounted on its rotating foot

Casing dimensions: 134 x 88 x 68 mm.
Solar panel dimensions: 260 x 220 x 18 mm
Total height of the antenna: 310 mm.
The product is delivered with full wavelength antenna.

The orientation of the solar panel (angle of 52°) is optimized for the best possible battery charge.

3.4.2.1 LED indicators

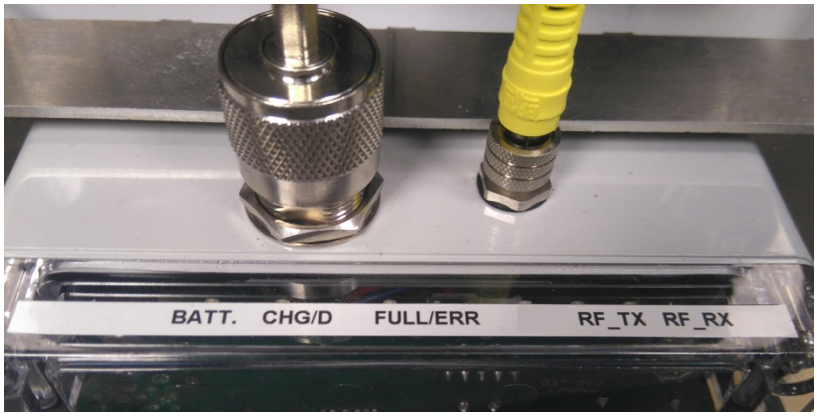

Figure 11: LED indicators

On the face of the solar repeater, 5 LEDs indicate the status of the product. To get this status, you need to put a magnet on the MAGNET area. Release the magnet to switch off the LEDs.

Functioning of the LED indicators:

BATT

- RED: battery empty or not connected
- GREEN: battery present over 2.7V

CHG/D

- GREEN: recharge of battery in progress. Charge from solar panels is higher than COL consumption
- ORANGE: recharge is partially sufficient to cover COL consumption
- RED: discharge of battery in progress. Recharge from solar panels is not sufficient to cover the COL consumption

FULL/ERR

- GREEN: Batteries Recharge over (Full)
- RED: Batteries charge cycle is being disrupted by overheating, freezing or battery is out of service

RF_TX

- RED: No transmission at all
- GREEN/ORANGE: The LED toggles between GREEN and ORANGE each time the COL receives a packet from any Newsteo device (logger, key, collector)

RF_RX

- RED : No reception at all
- GREEN/ORANGE: The LED toggles between GREEN and ORANGE each time the RPX sends a packet to any Newsteo device (logger, key, collector)

3.4.2.2 Rotating foot

To make installation and fixation of the Solar Repeater easier, a foot is supplied.
The foot is:

- rotating and multi-axis
- made of steel bichromate
- resistant to a wind of 200 km/h.

It can be used to fix the repeater on a flat roof, a pitched roof, a wall.

Weight: 1,3 kg

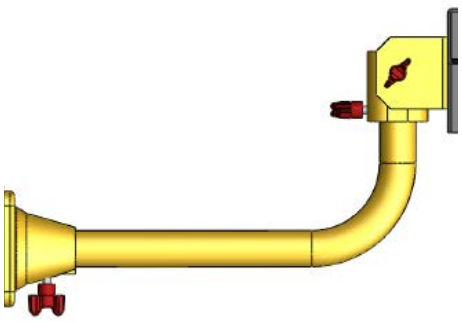

Figure 12: Foot

4 Installation & Startup

The installation is very fast as there is no need to specify to the loggers to which product (repeater or key) they have to communicate to.
The installer is fully responsible of fixating properly the system. Newsteo or any reseller will never be responsible of any damage due to the product fall, bad screwing or any injury caused by the product.

To facilitate the installation, the repeater integrates a **Range tester tool.** This tool displays on the RF Monitor software the quality of the communication between the repeater and the key and vice versa.

4.1 Solar product

To correctly charge the batteries, the solar panel has to be oriented toward the south (direction of the sun at 12am).
The top panel supporting the antenna should be placed horizontally and without tilt.
Special care should be taken to potential buildings, trees or any shield in the sun direction.
We recommend using the Newsteo rotating foot to fix the product: it allows to simply position the solar panel.

Important remark: the repeater is not resistant to lightening bolt. Before installing the product, you need to check that your lightening conductor will protect the repeater.

The product is delivered with a charged battery. To start the product, you need to use a magnet and to pass it near the ILS of the repeater. Then, it immediately starts functioning.

If ever, the product is stored in a dark area while activated, an electronic protection will automatically go off when the battery reaches 1.8V, and the product will restart only when the battery will be recharged over 1.9V and above. This prevents unrecoverable damage to the battery in case of over discharge.

4.2 Main current power supply

The product just needs to be connected to the main power.
As soon as the product is powered, it starts functioning.

Important remark: The RPT30 model has an IP level of IP65. To get this waterproof level, you need to use the supplied antenna (Newsteo reference: PFPN-ANT10-001). The antenna has to be correctly screwed on the repeater.