
Application note

Wireless data logger for strain gauge

Reference : LGJ3D



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1 PRODUCT DESCRIPTION

This range of data logger enables connection of strain gauges or deformation gauges to monitor modifications and movements of a structure. The data logger sends the measurements by radio to a monitoring computer or stores them in its embedded memory while waiting for the remote download.

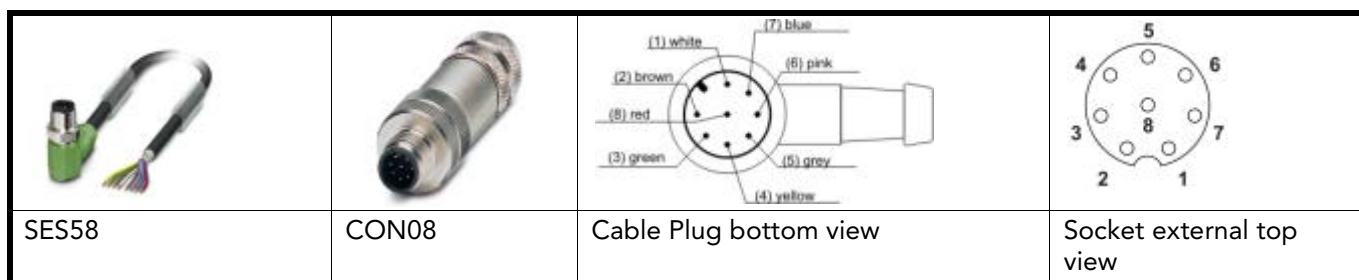
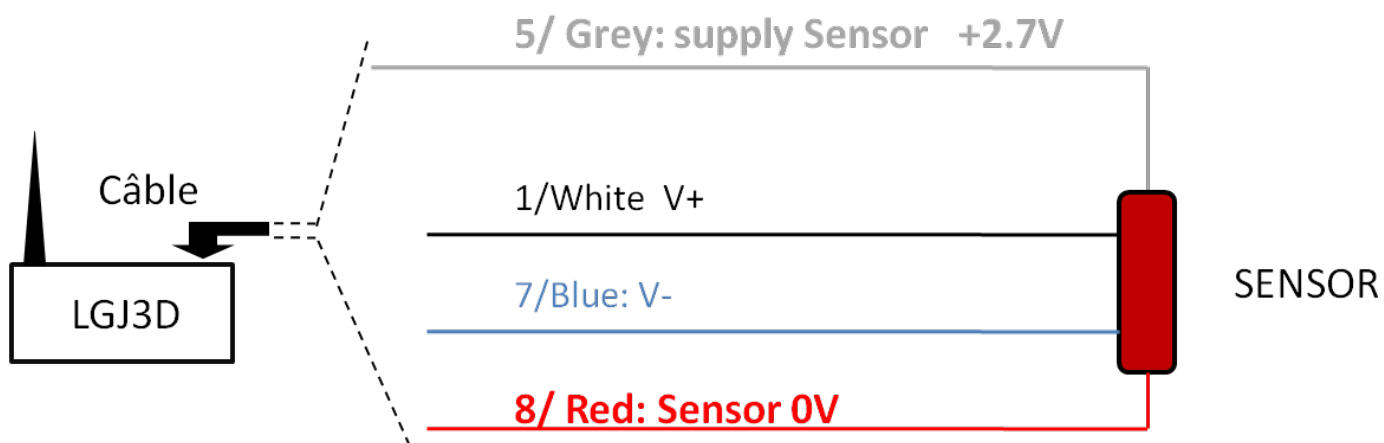
This data logger:

- records measurements or monitors in real time
- sends the data to a smartphone, a tablet or a PC

Who uses the wireless Newsteo data logger for strain gauge?

- Strain gauge users: move from a wired connection to a wireless connection, safer, faster to install and less expensive

2 WIRING PLAN



PRODUCT	Sensor TYPE	PIN	1	2	3	4	5	6	7	8
		Color	White	Brown	Green	Yellow	Grey	Pink	Blue	Red
LGJ3D	Full Bridge Strain Gauge		Positive Signal Vp	NC	NC	NC	Vsupply 2.7 V	NC	Negative Signal Vn	0V Ground

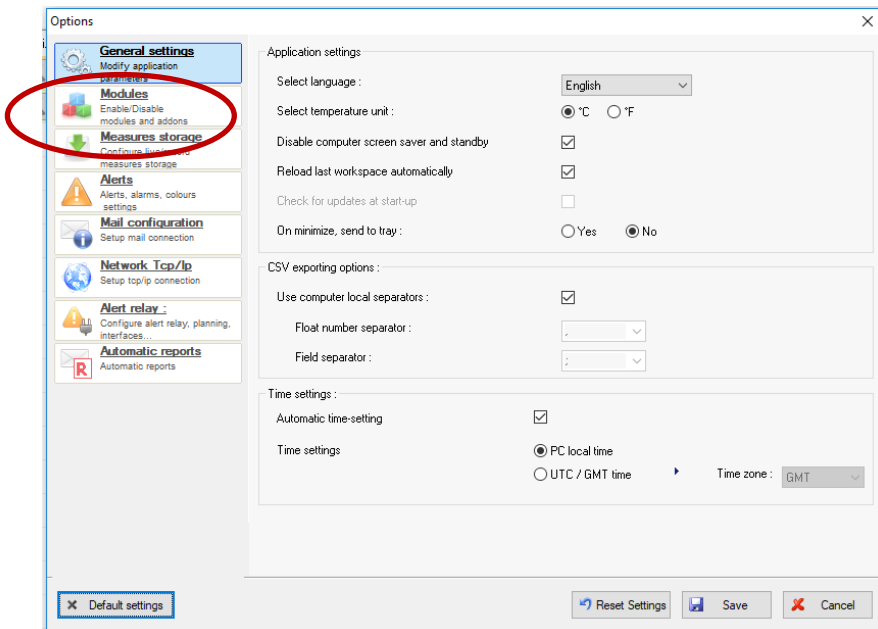
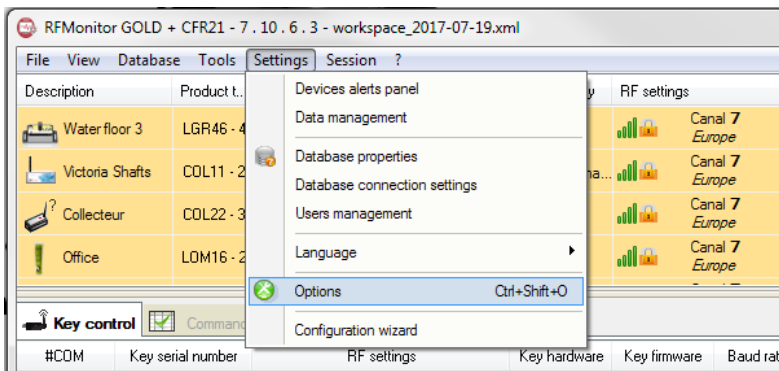
3 SETTING

- To set the data logger, launch RFmonitor, insert the USB radio key (see RFmonitor manual guide)
- Devices formulas settings

3.1 Launch RFM, enable devices formulas

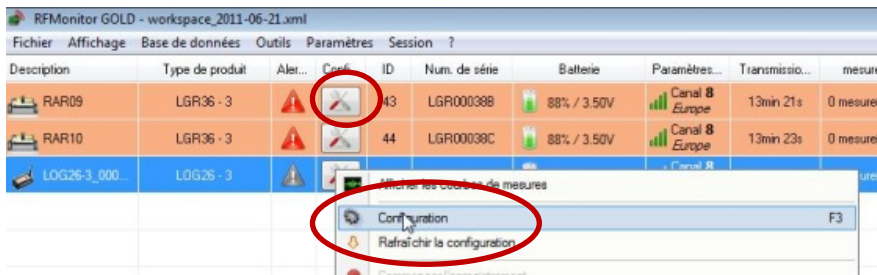
- Start RFMonitor
- Insert USB radio key
- Swipe the magnet at the magnet area

- Enable devices formulas edition :
 - Click on Settings/Options/Modules
 - Select Enable devices formulas edition
 - Click on Save



3.2 Formulas setting access

- Click on tools symbol
- Click on Configuration



3.3 Formulas setting

3.3.1 Example with a R10X compression load cell

- Characteristics of the load cell



R10X

1 t ... 100 t

Caractéristiques - Specifications

MÉTROLOGIQUES	METROLOGICAL		
Capacité nominale (Cn)	Rated capacity (Cn)	1, 2.5, 5, 10, 15, 30, 50, 100	t
Erreur combinée	Combined error		±0.1 %Cn
Effet de la temp. sur le zéro	Temperature effect on zero		±0.005 %Cn/°C
Erreur de linéarité	Linearity error		±0.1 %Cn
Répétabilité	Repeatability		±0.05 %Cn
Effet de la temp. sur la sensibilité	Temperature effect on sensitivity		±0.005 %Cn/°C
Fluage (30 min.)	Creep error (30 min.)		±0.03 %Cn
Plage de zéro initial	Zero balance		±1 %Cn
ÉLECTRIQUES	ELECTRICAL		
Plage de tension d'alimentation	Nominal range of excitation voltage		1 ... 15 V
Sensibilité nominale à Cn	Rated output at Cn		2 ±0.1 % mV/V
Résistance d'entrée/sortie	Input/output resistance	760 ±20 / 700 ±5	Ω
Résistance d'isolement	Insulation resistance	2 000	MΩ/50V
GÉNÉRALES	GENERAL		
Plage de temp. compensée	Compensated temperature range		-10 ... +50 °C
Plage de temp. de fonctionnement	Service temperature range		-20 ... +60 (HT : -20 ... +125)* °C
Charge limite admissible	Safe load limit	200, 150 (50 t S-Size)	%Emax
Charge ultime avant rupture	Ultimate overload	400, 200 (50 t S-Size)	%Emax
Degré de protection	Protection class		IP68 EN 60529
Matière	Material		
Corps d'épreuve	Measuring body		Inox - Stainless Steel
Presse étoupe	Cable gland		Inox - Stainless Steel
Gaine de câble	Cable sheath		PVC (HT : Teflon PFA)
Longueur du câble	Cable length		10 m
Poids net	Net weight	Voir au recto - See on the front	kg

* HT : version haute température - High temperature version

- Features

Rated capacity (Cn) = 30 tonnes

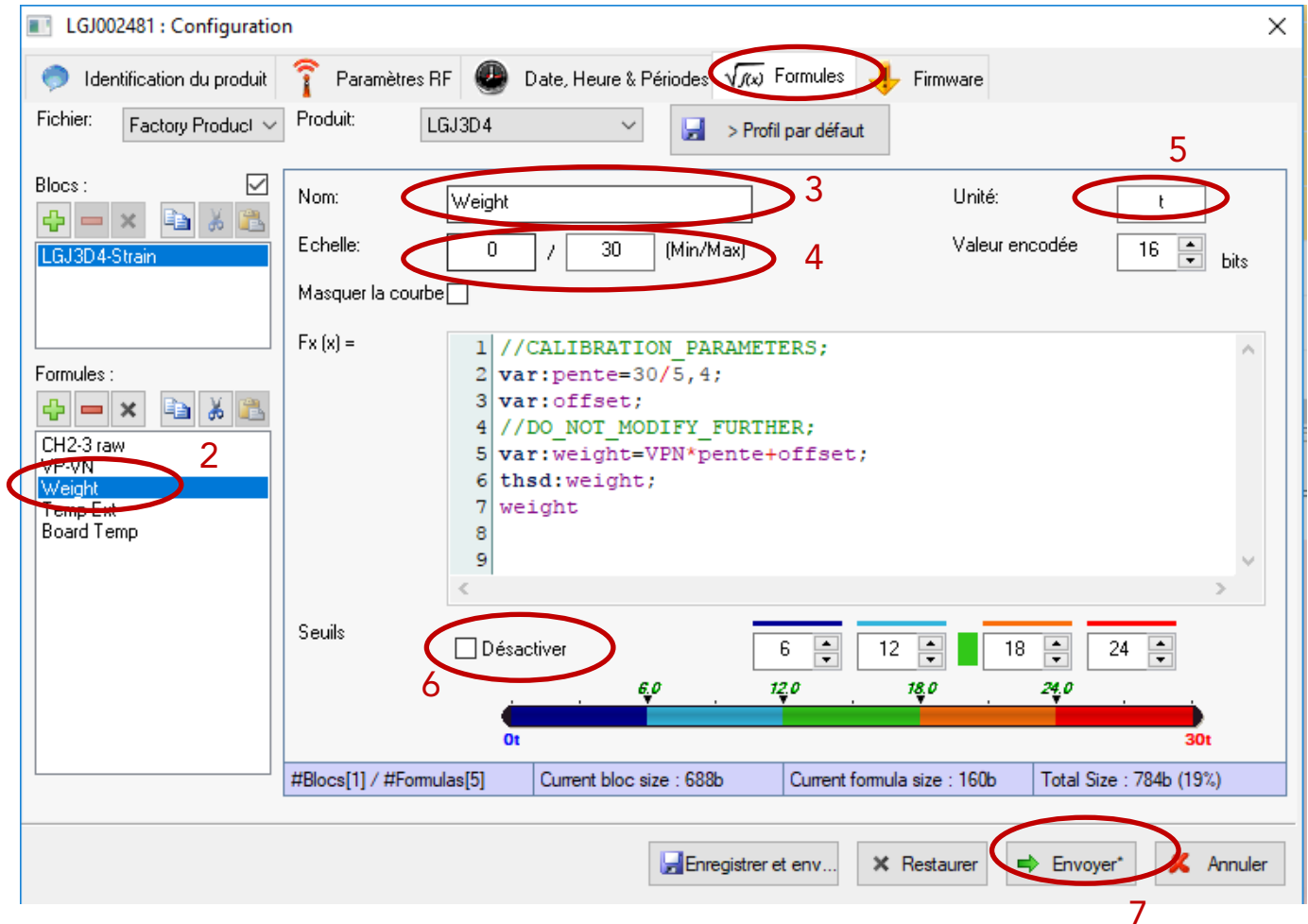
Rated output at Cn = 2mV/V

Excitation voltage = 2.7 Volts

➤ Formula calculation

Maximal output voltage = 2.7 volts x 2mv/V = 5.4 mVolts

Weight measured = (30 tonnes/5.4mV) x output voltage + offset



1. Click on Formula
2. Click on Strain
3. Change the name
4. Set the range
5. Set the unit
6. Disable or enable thresholds
7. Click on send

4 OFFSET SETTING

- Select monitoring mode, note the offset value
- Select formulas tab
- Fill the offset value

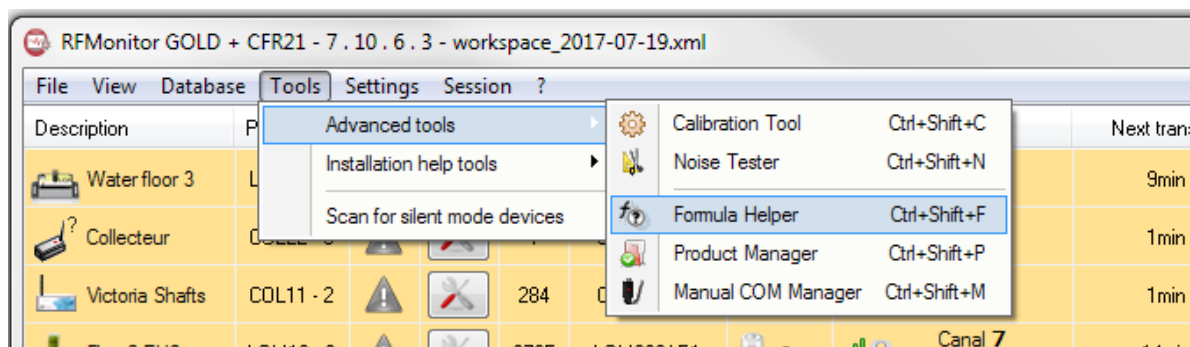
5 SENSOR FEATURES

- Impedance > 120 ohms (ideally between 350 to 10K ohms)
- Rated output sensor < 18.8 mV/V

6 RESOLUTION CALCULATION

- Example with a R10X compression load cell
 - Rated output: $R0 = 2\text{mV/V}$
 - Supply voltage = 2.7 V (Supply by the LGJ3D)
 - Sensor maximal range = $2.7\text{V} \times 2\text{mV/V} = 5.4\text{ mV}$
 - LGJ3D maximal range= 103mV (16bits)
 - LGJ3D resolution, 16 bits digital output
 $103/2^{16} = 0.001576\text{ mV/bits}$
 - Rated capacity = 30 tons
 - Formula = $30\text{ tons} / 5.4\text{ mV} = 5.55\text{ tons/ mV}$
 - Resolution calculation = $5.55 * 0.001576 = 0.00868\text{ tons}$

7 FORMULA HELPER



8 FORMULAS SYNTAXES

pvar: Positive value ou svar: positive or negative values → Declaration of the values returned by the logger

var: at the start of new line

; at the end of each line

thsd: to activate the threshold for a variable

No ; at the last line to display the variable

9 LGJ3D FEATURES

LGJ3D	
Description	strain gauge
Range	103 mV
Resolution	0.001576 mV/bits
Supply voltage	2.7 Volts

LGJ3D	
IP	IP65

10 BATTERIES REPLACEMENT

If you need to replace the batteries, use the Newsteo battery reference.

Newsteo supplies battery if you need.

Ref : *XENO XL-060F with wires and fast connector (3.6 V, AA model)*

11 SUPPORT

<http://support.newsteo.com/>

- For a remote support we use AMMY software

To download AMMY, you have to use Internet Explorer, you need to be administrator of your PC

Download :

<http://support.newsteo.com/customer/en/portal/articles/1155444-prise-en-main-%C3%A0-distance-par-le-support-technique>

12 NEWSTEO ADDRESS

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