WiNG FIELD MONITOR BOX (FM)

USER MANUAL

Ahead of the Curve℠

To Contact Sercel

Europe

Nantes, France
Sales; Customer Support; Manufacturing & Repair

B.P. 30439, 16 rue de Bel Air 44474 Carquefou Cedex
Tel: +33 2 40 30 11 81
Hot-Line: Land:+33 2 40 30 58 88
Marine:+33 2 40 30 59 59
Navigation: +33 2 40 30 69 87
E-mail: sales.nantes@sercel.com customersupport. land@sercel.com
customersupport.marine@sercel.com
customersupport.navigation@sercel.com repair.france@sercel.com
streamer.repair@sercel.com

St Gaudens, France
Vibrator & VSP Customer Support; Vibrator Manufacturing & Repair Streamer Manufacturing & Repair

Tel: +33 5 61 89 90 00, **Fax**: +33 5 61 89 90 33
Hot Line:(Vib) +33 5 61 89 90 91
(VSP) +33 5 61 89 91 00

Brest, France
Sales; Customer Support

Tel: +33 2 98 05 29 05; **Fax**: +33 2 98 05 52 41
E-mail: sales.nantes@sercel.com

Toulouse, France
Sales; Customer Support

Tel: +33 5 61 34 80 74; **Fax**: +33 5 61 34 80 66
E-mail: support@metrolog.com sales.@metrolog.com info@metrolog.com

Russia

Moscow, Russia
Customer Support
Tel: +7 495 644 08 05, Fax: +7 495 644 08 04
E-mail: repair.cis@geo-mail.org support.cis@geo-mail.org
Surgut, Russia Customer Support; Repair Tel: +7 3462 28 92 50

North America

Houston, Texas, USA

Sales; Customer Support; Manufacturing & Repair
Tel: +1 281 492 6688,
Hot-Line:Contact Sercel Nantes Hotline
E-mail: sales.houston@sercel.com
HOU_Customer.Support@sercel.com HOU_Training@sercel.com
HOU_Customer.Repair@sercel.com

Tulsa, Oklahoma, USA

Tel: +1 918 834 9600, **Fax**: +1 918 838 8846
E-mail: support@sercel-grc.com sales@sercel-grc.com

Middle East

Dubai, U. A. E.

Sales; Customer Support; Repair
Tel: +971 4 8832142, **Fax**: +971 4 8832143
Hot Line: +971 50 6451752
E-mail: dubai@sercel.com repair.dubai@sercel.com

Far East

Beijing, P. R. of China

Research & Development Tel: +86 106 43 76 710,
E-mail: support.china@geo-mail.com repair.china@geo-mail.com

E-mail: customersupport.vib@sercel.com customersupport.vsp@sercel.com

Xushui, P. R. of China

Manufacturing & Repair
Tel: +86 312 8648355, **Fax**: +86 312 8648441

Singapore

Streamer Manufacturing; Repair; Customer Support
Tel: +65 6 417 7000, **Fax**: +65 6 545 1418

Guidelines for Safe and Efficient Use

Read this information before using your FIELD MONITOR BOX.

Warnings, Cautions, and Important notices throughout this manual guide you to avoid injury, prevent equipment damage, and determine equipment use when varying components or configurations exist. Notes provide tips or additional information.

SERCEL is not responsible for damages or injuries that result from failure to observe the information provided.

 WARNING	When a Warning or Caution appears with a lightning-bolt icon, as shown in this example, this is to indicate a potential hazard that may lead to bodily injury or even death.

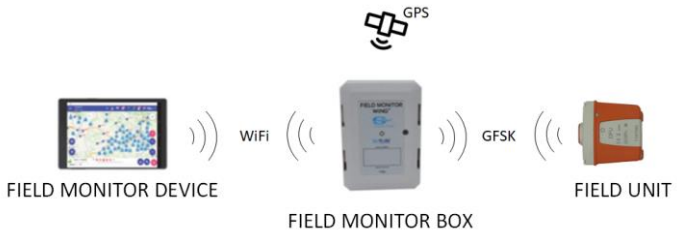
 CAUTION	When a Warning or Caution appears with an exclamation-point icon, as shown in this example, this is to indicate possible equipment damage or potential risk of misuse and incorrect operation.

 IMPORTANT	Important notices appear in the manual to highlight information that does not affect the risk of bodily injury, death, or equipment damage, but is nevertheless important. These notices appear with a stop-sign icon, as shown in this example.

SUMMARY

Description

The Field Monitor (Field Monitor Box and Field Monitor Device) is used to collect seismic sample data and QC data from Field Units deployed in the field,



and to transport this data to the Central Unit where it can be uploaded to the DCM system server.

The Field Monitor Box connects to the USB port of the DCM Server or an available USB port of the DCM Nodal Laptop PC.

The Field Monitor is composed of two devices to connect to the field units wirelessly:

- The Field Monitor Box is used to bridge to the proprietary wireless communication protocol.
- The Field Monitor Device allows you to monitor several field units simultaneously, using Pathfinder technology,
- You may also perform QC harvesting (State of health & numeric values)
- It can also harvest a few traces of seismic data from a single field unit for data QC.

Description of radio protocol

Frequency range and channel spacing

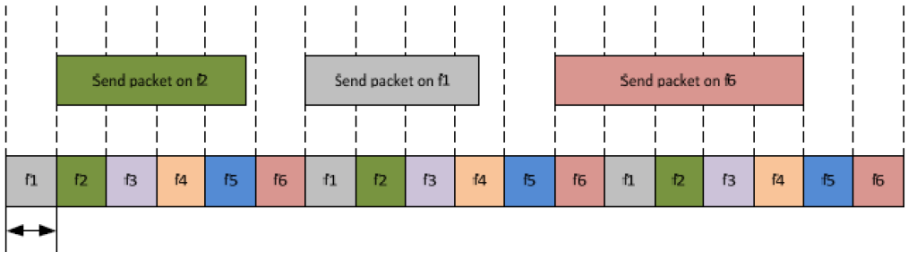
The frequency range covered by the equipment is 2402.5MHz up to 2478.5MHz, using 1MHz channel spacing. According to FCC rules FHSS (Frequency Hopping Spread Spectrum) scheme is used, on 20 different frequencies.

Data rate

Data rate is 1Mbps with GFSK modulation.

FHSS

The FHSS operates on a set of frequencies. It uses one frequency for a fixed period of time and then switches to another channel. The next frequency is given by a pseudo-random sequence.
In order to communicate, the transmitter and the receiver have to us the same set of frequencies, the same frequency sequence defined by the Frequency key.
Transmitter and receiver are time synchronized thanks to the GNSS receiver module that delivered a PPS signal to the micro-controller. So both transmitter and receiver switch their frequency at the same time.



Example of FHSS based on a set of 6 sequencies.

Listen Before Talk (LBT) and backoff

The LBT is based on a Channel Control Access mechanism. DFU radio measures the Received Signal Strength Indication (RSSI) before beginning packet transmission. If the RSSI is too high, the media is said “busy” and the DFU postpones the transmission for a random back off time.

GPS configuration

List of allowed GNSS constellations (GLONASS, GPS)

- GPS Only is the default mode
- GLONASS only
- GPS + GLONASS

Navigation model

- Stationary (Default mode)
- Pedestrian

Deployment

Recharge battery

Take care of the orientation of the connector when plugging to the FIELD MONITOR BOX.

The two locking ribs should be facing up.

CAUTION

Use only GLOBTEK WR9MA2000USBMF USB charger or equivalent in accordance with the local standards.

Maintenance

IMPORTANT

Do not use any aggressive chemicals (like petrol or gasoline) liable to attack plastic. Prior to connecting any plug, make sure there is no water inside connectors.

Electrostatic discharge:

Use the following guidelines to provide a static-free repair station that will preclude any ESD-related damage to electronic circuits:

• All spare parts (circuit boards and ESD sensitive devices) should be stored and transported in static- shielding bags.

• Unless the repair station rests on a conductive floor, chairs or stools should rest on a grounded, rigid-type, static-dissipative floor mat.

• Use a static-dissipative table mat.

• Wear a static-control wrist strap or foot grounder.

• Provide common-point grounding for all conductive items (including personnel and soldering iron tip).

• To control the discharge rate and protect workers from electric shocks, both the table mat and wrist strap should be grounded through a 1-MΩ resistor. The mat should be connected to the same earth ground point as the wrist strap.

• Wear static-dissipative garments.

Battery

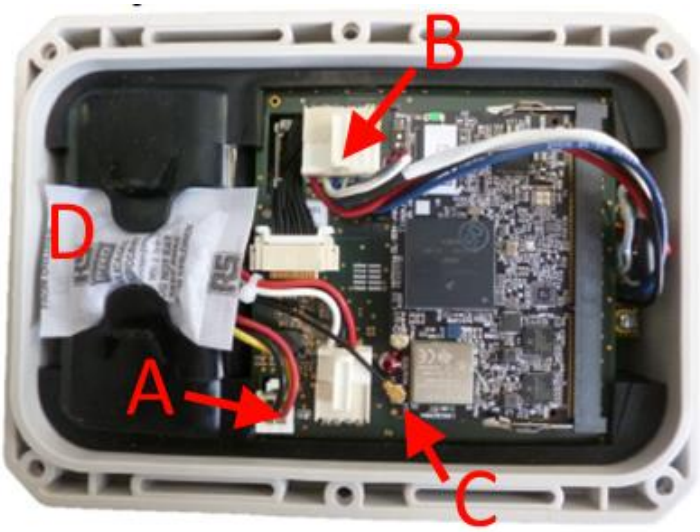
CAUTION

Use only the type of battery provided by Sercel: **WING FIELD MONITOR PACK BATTERY 19.6 WH, ref. 10046318**

Caution: risk of explosion if the battery is replaced by an incorrect type.

Do not put the battery in a fire or a hot oven. Do not crush or cut the battery as this could cause an explosion.

1- Shut down the FMB using the Power stick.
2- Untighten the 6 SCREWS DELTA PT 40x16 on cover (screw head type : TORX T20).



3- Unplugged the battery connector (A) from the electronic board.

4- Unplugged the USB cable(B) from the electronic board.

5- Unplugged the Wifi antenna cable(C) from the electronic board.

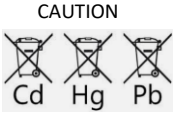
6- Remove the silica gel sachet (D).

7- Pull the electronic out.

8- Place BATTERY PACK in the two shock absorbers.

9- Place a new silica gel sachet (RS 388-8421) in the tabs of the shock absorbers.
10- Connect the USB cable (B) and the Wifi antenna cable(C) to the electronic board.
11- Connect the battery connector (A) to the electronic board
12- Close the FMB with the cover. Tighten the 6 SCREWS DELTA PT 40x16 (screw head type: TORX T20 ; torque 2,1Nm).

CAUTION



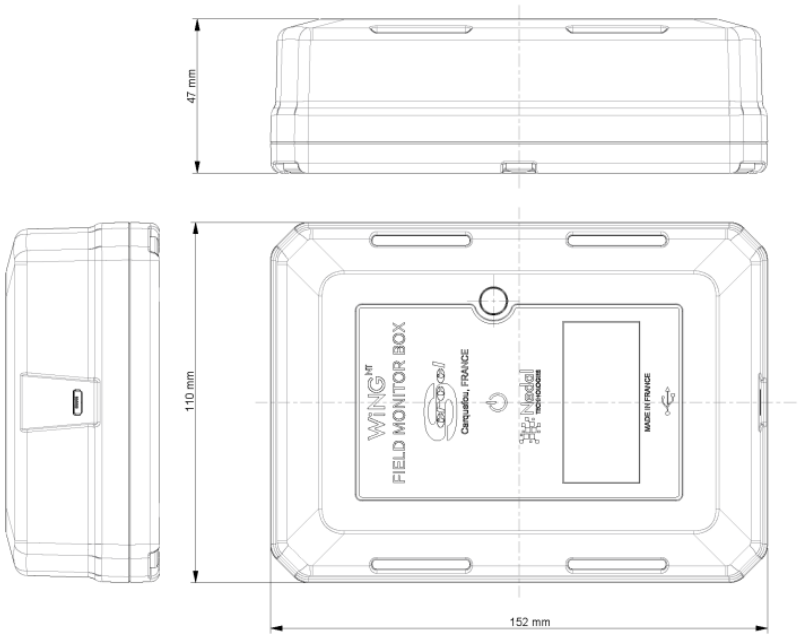
Do not discard Sercel product batteries in the trash.

This product contains sealed batteries and must be disposed of properly. For more information, contact your local recycling/reuse or hazardous waste center.

Specifications

Operating Voltage	3,6V (2,5V to 4,2V)
Battery capacity (nominal)	5800 mAh
Battery autonomy	Up to 10h
Charging time	3hrs (fully discharged – fully charged)
Input Voltage	5V (USB) – (230Vac / 5V 2A for USB Charger)
Dimensions (HxWxD):	152mm (6") x 110mm (4.33") x 47mm (1.85")
Weight	565g
Operating Environment	IP67
Operating Temperatures	-20°C to +60°C
Storage Temperatures	-40°C to +60°C
Battery charge temperatures	0°C to +30°C
Pollution degree	II
Altitude functioning	< 2000m

	FIELD MONITOR BOX ↕ FIELD MONITOR DEVICE	Between FIELD MONITOR BOX ↕ FIELD UNIT
Radio data rates	802.11a, g: 54Mbps / 802.11n: 450Mbps	1Mbps
Radio Frequency Characterisitics: Frequency band Spreading method Number of channels	 2,4GHz : 802.11g 5GHz : 802.11a, n	 2402 MHz – 2478 MHz GFSK FHSS 3 x 20
Radiated output power	20dBm	14dBm
Supported GNSS Constellations	GPS, GLONASS	



Regulatory Information

European Union Statement

Sercel products meet the essential requirements of Directives

- RED 2014/53/UE (Radio)
- 2014/ 30/UE (EMC)
- 2014/35/UE (Low Voltage)
- 2011/65/UE (ROHS).

IMPORTANT

The WiNG Field Monitor is a class-A device. In residential areas, the user may be requested to take appropriate measures in the event of RF interference caused by this device.

FCC US Statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment complies with FCC's radiation exposure limits set forth for an uncontrolled environment under the following conditions :

1. This equipment should be installed and operated such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and user's/nearby person's body at all times.
2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IC Canadian Statement

SERCEL products comply with Industry Canada EMI Class A requirements according to ICES-003 and RSS Gen.

Les produits SERCEL sont conformes aux exigences Classe A de l'Industrie Canada selon les normes NMB-003 et CNR Gen.

Note These devices comply with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

1. These devices may not cause interference; and
2. These devices must accept any interference, including interference that may cause undesired operation of the device.

This equipment complies with RSS102's radiation exposure limits set forth for an uncontrolled environment under the following conditions:

1. This equipment should be installed and operated such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and user's/nearby person's body at all times.
2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.