



The new geo-FENNEL

FGS 1 GNSS Receiver



FGS 1

Unique GPS Set for multipurpose applications



The *geo-FENNEL* FGS 1 is a robust receiver designed for challenging environments integrated into a compact device that is lightweight and highly portable.

The FGS 1 can track all current working GNSS constellations. By using a unique algorithm it can operate in RTK mode combining all GNSS constellation signals or by using a single GNSS constellation signal such as GLONASS or BeiDou. The strong anti-interference ability of the receiver makes it possible to work in any environment. The FGS 1 integrates a cutting edge GNSS board, Bluetooth®, optional UHF (Rx & Tx) into a compact system. The smart design positions the FGS 1 among the lightest and most compact receivers currently available. The system is open to third party applications and supported by MicroSurvey FieldGenius and Carlson Surv-CE field applications.

TECHNICAL DATA

Signal Tracking

256 channels with simultaneously tracked satellite signals:

- GPS
- GLONASS
- BeiDou
- Galileo
- SBAS

L1 C/A, L1/L2P, L5

L1/L2

B1, B2, B3

Yes, but not activated

WAAS, EGNOS, MSAS

Performance Specifications

Cold start

<50s

Warm start

<30s

Initialization time

typically <10s

Initialization reliability

typically >99,9%

Signal reacquisition

<2s

TECHNICAL DATA

Positioning Specifications

Post processing static

- horizontal
- vertical

Real time kinematic

- horizontal
- vertical

E-RTK (<100km)

- horizontal
- vertical

Code differential GNSS positioning

- horizontal
- vertical

SBAS

Stand-alone

2,5 mm + 0,5 ppm RMS

5,0 mm + 0,5 ppm RMS

10 mm + 0,5 ppm RMS

20 mm + 0,5 ppm RMS

0,20 m + 1 ppm RMS

0,40 m + 1 ppm RMS

0,25 m + 1 ppm RMS

0,50 m + 1 ppm RMS

typically <1 m 3D RMS

<1,5 m RMS

Communication

1 Serial port (7 Pin Lemo), Baud rates up to 921 600 bps

Radio modem (optional)

- transmit power

Positioning update rate

5 LED Indicating lights

Tx/Rx with full frequency rang from 410 - 4702 MHz

0.5 - 2W adjustable

1 Hz, 2 Hz, 5 Hz, 10 Hz

Power, satellite tracking, differential data

and data recording

Bluetooth®; V 2.X protocol, work compatible with Windows 7®, Windows mobile® and Android®

Data Format

Data inputs / outputs

- Correction data I/O

Position data outputs

- ASCII

RTCM 2.x, 3.x, CMR & CMR+ (GPS only)

NMEA-0183 GSV, RMC, HDT, VHD, GGA,

GSA, ZDA, VTG, GST, PJK, PTNL

geo-FENNEL Binary update to 20 Hz

Key features

- High speed processing
- Support for both post-processing and kinematic
- Processing ability separate or to be combined with GPS, GLONASS and BeiDou
- Supports downloads & use of precise ephemeris
- Generation of various reports
- User friendly



Network rover configuration

The FGS 1 Network rover relies on its 3G field computer to communicate with GNSS networks via a cellular network or the internet. This allows the user to work with a single receiver in the field eliminating the logistical burden of setting up a base station in the field. The 3G technology also allows extending the measuring baseline over 100 kilometers.

A very compact base and rover configuration

The FGS 1 contains a very efficient digital data link. When used as a base system the UHF transmitter can broadcast a powerful 2 watt transmission which allows the rover to receive corrections in conditions that normally require the use of an external radio. With the FGS 1 you can work with longer baselines, since most of the current reference networks available do not support BeiDou signals.

The use of a FGS 1 in a base and rover configuration opens the opportunity to work in more confined areas, near buildings, obstructions or under canopies.

Hot swap battery design

Extending the field working time is always important which is why the FGS 1 is designed to perfectly manage its power consumption and system efficiency.

The extended working time depends on the setup configuration and the capability to hot swap the battery source allowing you to keep working with one battery while charging the other. It can also be connected to an external power source for permanent setups or long transmission time in high power mode.



FGS 1 Antenna with optional radio modem

TECHNICAL DATA

Physical

Size (W x H)

15,8 x 7,5 cm

Weight

0,95 kg (including battery)

Environmental

Operating temperature

-40 °C - +65 °C (40 °F - 149 °F)

Storage temperature

-40 °C - +85 °C (40 °F - 185 °F)

Humidity resistance

100% condensation

Dust and water protection

IP 67 (withstands 1m submersion)

Shock and vibration proof

Yes (survives a 2 m pole drop)

Electrical

Input voltage

5 - 27 VDC

Power consumption

2,85 W (3 constellations)

Power supply

Li-Ion 1800 mAh

Operating time

8 hours

Memory

256 MB



geo-FENNEL GRU Software and Post Processing Solution

GRU-Software

The *geo-FENNEL* Utility Software is an easy-to-use tool for setting up the configuration of the FGS 1 GPS Antenna. It also provides the option to load recordings from the internal memory and convert into RINEX.



geo-FENNEL Post-Processing Solution

The *geo-FENNEL* PPS is a fully functioned post-processing software which is developed independently. This software package adopts a brand new data processing engine which can process mixed data of GPS, GLONASS and BeiDou. The main functions are including static baseline processing, ephemeris forecast, project management, closure search, network adjustment, result export, coordinate system management and coordinate transformation.



This software can process *geo-FENNEL* FGS 1 static GNSS data and RINEX standard format. This way it can import data from various brands of GNSS receivers available on the market. It can freely process GPS, GLONASS and BeiDou combined or separate data. It supports the operation modes of static, rapid static and post processing kinematic (PPK). The software has a user friendly interface.



TECHNICAL DATA

Software

Supplied software

MicroSurvey Field Genius 7

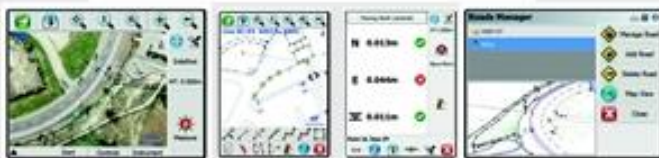
DC5

Modern field controller



A reliable and feature-packed data collector, at an astounding price. The DC5 provides a fast processor, a 9-pin serial port, and much storage space.

The DC5 strikes an unprecedented value when it comes to a rugged handheld data collector. This feature-packed device is a simple yet powerful solution to your biggest field data challenges.



System

Microsoft Windows Mobile® 6.5
 806MHz Marvell PXA-310 Xscale CPU
 Integrated Bluetooth® v2.1+EDR and Wi-Fi and GSM/GPRS modem
 Integrated 3.1 megapixel camera
 256 MB RAM and 4 GB TF internal storage
 Supports up to 32 GB TF memory
 VGA color display, TFT color, LED backlight
 Speaker and microphone
 TWO 1500 mAh Li-Ion batteries (12 hours of operation)

Physical

Size: 177 mm (7") x 91 mm (3.6") x 33 mm (1.3")
 Weight: 453 g (16 oz)
 Active Viewing Area: 480x640 portrait

Environment

Operating Temperature: -20 °C - +60 °C (-4 °F - 140 °F)
 Storage Temperature: -30 °C - +70 °C (-22 °F - 158 °F)
 Drop: 1,5 m (5ft) height onto a concrete floor
 Waterproof: IP65

Input/Output

Expansion: microSD card slot
 Display: 3.7" VGA TFT color
 Waterproof mini-USB port
 Wireless connectivity: Bluetooth 2.1+EDR
 Wi-Fi 802.11 b/g
 GSM/GPRS Modem 850/900/1800/1900 Global Four Frequency Support
 Digital camera: 3.1 Megapixel camera with autofocus

GPS Performance

U-blox6 single frequency GPS receiver (GPS, SBAS)
 50 channels
 1-3 meter accuracy
 Time to first fix: 32 seconds
 NMEA-0183, RTCM/CMR, CORS (VRS/NRS)

Standard Configuration

Li-Ion Battery
 Stylus pen and tether, Hand Strap
 USB data/charging cable
 USB wall charger/adaptor

Supported languages

English, German, Czech, French, Greek, Hungarian, Italian, Spanish, Portuges, Russian, Slovak, Turkish, Korean, Polish, Swedish



FGS 1 Availability

Our GPS system is available in the following specifications:



FGS 1 Complete Set

The unique *geo-FENNEL* FGS 1 Complete Set has everything what is needed

to support the work for static measurements, measurements with base and rover or network measurements. No extra instrument is needed and in nearly all areas a trouble-free measurement is possible.



FGS 1 Network Set

The *geo-FENNEL* FGS 1 Network Set supports measurements with NTRIP

Casters. After log-in to the system of the provider by using the internal GSM Modem of the field controller the FieldGenius 7 software will use the transmitted data for the measurements.

GPS SYSTEM FGS 1 COMPLETE SET

ART.-NO. 751000

QTY	Article
2	GNSS Antenna FGS 1
1	MicroSurvey Fieldgenius Software
1	Fieldcontroller DC5
1	Postprocessing Software
2	USB-Cable for FGS 1
2	RS-232 Cable for FGS 1
1	Measuring Tape 3 m
1	Tribrach AJ 10 black
1	Tribrach Adaptor AL 11-D black with optical plummet
1	Container
1	Operators' manual

GPS SYSTEM FGS 1 NETWORK SET

ART.-NO. 750100

QTY	Article
1	GNSS Antenna FGS 1
1	MicroSurvey Fieldgenius Software
1	Fieldcontroller DC5
1	Postprocessing Software
1	USB-Cable for FGS 1
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