ONYX

SPILBA ONYX 1 is a data acquisition system designed to operate in a wide range of applications.

It features a GNSS module with a sampling rate of 10 Hz, capable of acquiring signals from GPS (L1), GLONASS (L1), Galileo (E1), and Beidou (B1) bands simultaneously, always ensuring maximum resolution of position and velocity.

By using a 6-axis accelerometer, it provides the user with precise data on acceleration and rotation in all 3 axes (X, Y, Z).

The acquired data is recorded on an external SD or SDHC memory. SPILBA ONYX 1 supports memories formatted in FAT32, with capacities up to 2 TB.

Features:

- GPS/GLONASS 10 Hz
- 3-axis accelerometer
- 3-axis gyroscope
- Periodic synchronization to avoid data loss
- Data recording on SD or SDHC card
- Auto-calibration of accelerometer
- Compact and robust design
- Status LEDs
- Automatic system reset on failure
- Automatic low voltage detection

Technical Specifications

Core Specifications	
Core	32 bit ARM Cortex-M4
Performance	50 MHz

GNSS Specifications		
Frequency Bands	GPS (L1) GLONASS (L1) Galileo (E1) Beidou (B1)	
Acquisition Speed	10 Hz	
Accuracy (CEP50*)	< 1,5m	
Sensitivity	Accquisition	-148 dbm
	Navigation	-163 dbm
	Tracking	-165 dbm
Channels	99 Acquisition 33 Simultaneous Tracking	

Accelerometer Specifications	
Number of Axes	3 (X, Y, Z)
Maximum Acquisition Speed	1000 Hz
Range	±4 G
Resolution	0,0001 G

Gyroscope Specifications	
Number of Axes	3 (X, Y , Z)
Maximum Acquisition Speed	8000 Hz
Range	±250 °/s
Resolution	0,01 °/s

Memory Specifications	
Supported Card Types	SD SDHC
Supported File System	FAT32
Supported Sizes	Up to 2TB
Write Speed	Variable and adaptable to the card used
Recording Time	Depends on the capacity of the card used. Typically uses 3.2 Mb/hour.

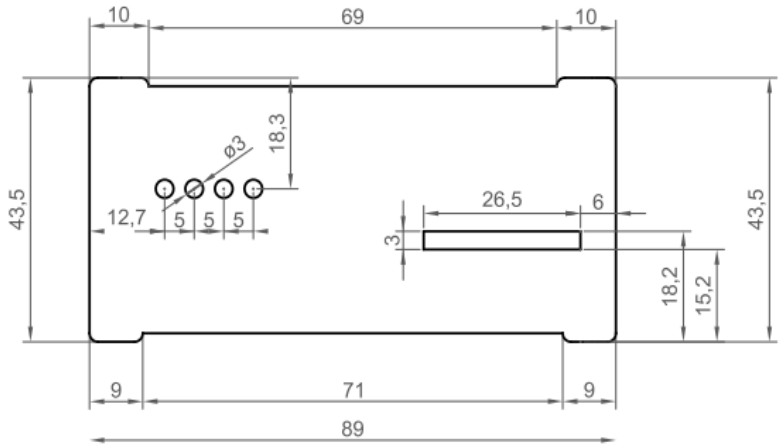
Power Supply, Consumption, and Operating Conditions	
Supply Voltage	+9 a +24V DC
Current Consumption	130mA Typical
Protections	Overvoltage, reverse voltage, and overcurrent protection with self-resetting fuse, varistors, and protection diodes.
Operating Temperature	-25 ºC ~ +70 ºC

GNSS Antena	
Frequencies	1575 Mhz/ 1602 Mhz
Total Gain with LNA	26 ± 3dBic @ Zenith @ 1575.42MHz 27 ± 3dBic @ Zenith @ 1602MHz
Nominal Output Impedance	50 Ω 66.52 +j3.85 Ohm@ 1575MHz 46.77 +j0.98 Ohm@ 1602MHz
Polarization	Right-Hand Circular
VSWR	2.6 dB maximum
Mounting	Magnetic Base
Protection Rating	IP67
Connector Type	SMA 26 GHz Bandwidth
Operating Temperatures	-40C +85C

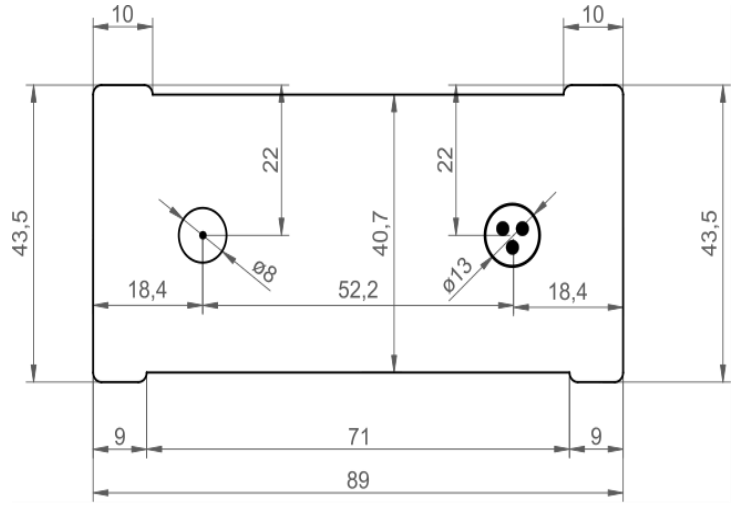
Battery Connector	
Dust and Water Protection	Protection Rating IP68. Complete protection against dust. Waterproofing for up to 48 hours of submersion at a depth of 1.8m.
Contact Material	Copper Alloy, Gold Plated.
Enclosure Material	Zinc Alloy, Nickel Plated.
Connection Type	Bayonet Closure
Maximum Supported Current	5 A maximum
Operating Temperature	-25 ºC ~ +85 ºC
Durability (Connection and Disconnection)	1000 Cycles
Vibration	The vibration test shows that for a vibration frequency of 10 to 55Hz with amplitudes of 0.75mm and accelerations up to 10G for 3 hours, the maximum disconnect time is less than 10µs.
Shock	The impact test shows that for three cycles of impacts of 50G on each axis with a duration of 11 ms, the maximum disconnect time is less than 10µs.

Dimensions

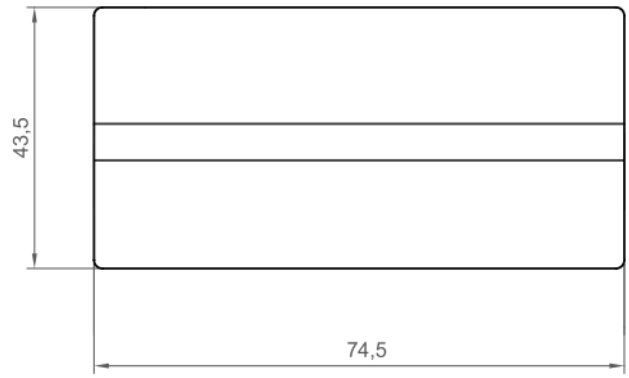
Note: All dimensions are in mm. Figures are not to scale.



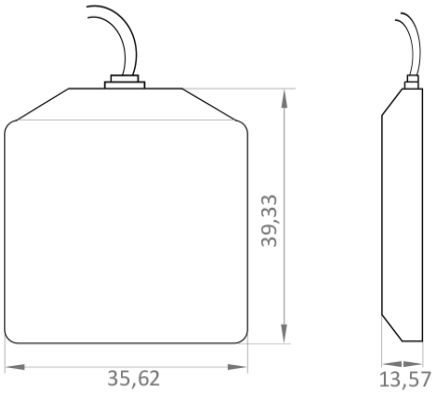
Front View



Rear View



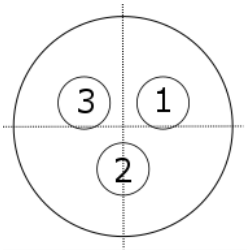
Side View



GNSS Antenna

Connectors

POWER SUPPLY (male connector seen from the front)



1 - NC
2 - VCC
3 - GND

ANTENNA

1- RF signal + VCC (5Vcc)
2- GND