PRODUCT DATASHEET

LoRaWAN 6 AXIS GYROSCOPE

OVERVIEW

NetOP 6 Axis Gyroscope Sensor is a long -range wireless sensor. It gives acceleration of X, Y, Z axes and angular rate of ΩY, ΩR, ΩP (Yaw, Roll, Pitch) output periodically, every 15 minutes(default). This sensor is fully compatible with LPWAN technology by using LoRaWAN.

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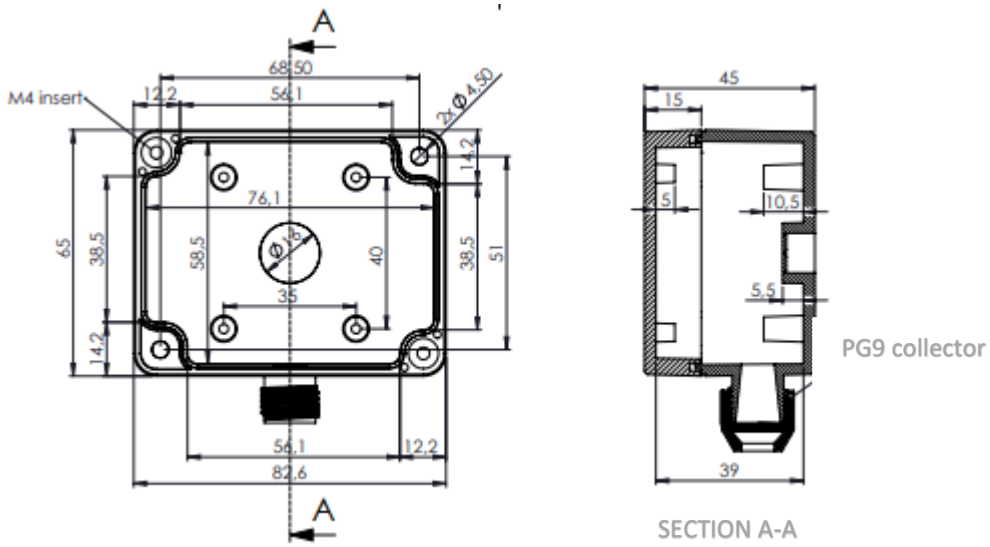
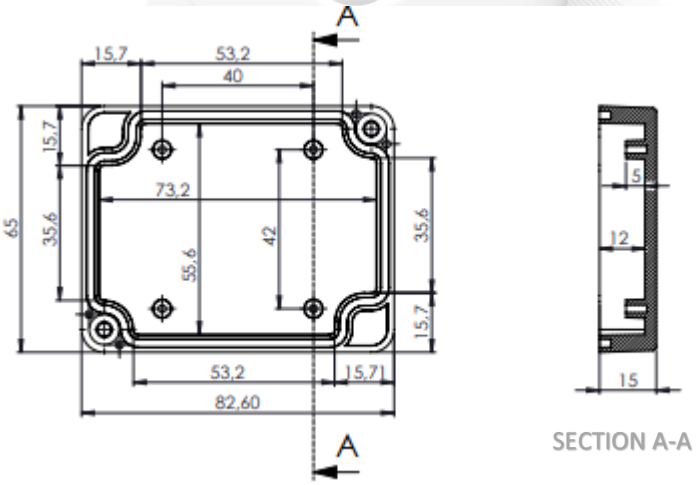
TECHNICAL DRAWING

Box With Terminal Seal



Cover Page



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KEY FEATURES

Real Plug & Play

Easy to mount & install

Compatible with LoRaWAN™ specification

Maintenance free

Secure communication (AES-128)

Ultra -Low Power Consumption

Certificate: LoRaWAN™

COMMUNICATION SPECS

Compatible with LoRaWAN Specification 1.0.3

The sensor uses Low Power Wide Area Network-LPWAN technology (LoRa) for connectivity

Compliant with Low and High Frequencies (AS923, AU915, CN470, CN779, EU433, EU868, IN865, KR920, RU864, US915 MHz ISM bands)

Supports High power and Low power LoRa RF applications: - Up to +22 dBm at US915 and AU915, - Up to +14 dBm elsewhere

Ultra -low power consumption. Excellent long-term stability.

170 dB maximum link budget

Radio Performance: High RX sensitivity down to -148 dBm

Full ADR, OTAA and ABP support

Long range wireless data transmission

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MECHANICS

Housing: ABS (IP65 or higher)

Dimensions: 82.5 x 65 x 45 mm

Operating Temperature: -40°C to 85°C

POWER SUPLY

AA Battery 3.6 V Li-SOCI2-Saft LS 14500

INDICATORS

Status LED (on board)

6 AXIS GYROSCOPE SENSOR SPECIFICATIONS

Measurement Range: ±2/±4/±8/±16 g full scale (typical value)

Linear acceleration sensitivity: 0.061(FS = ±2), 0.122(FS = ±4), 0.244(FS = ±8), 0.488(FS = ±16) mg/LSB

Angular rate sensitivity: 4.375(FS = ±125), 8.75(FS = ±245), 17.50(FS = ±500), 35(FS = ±1000), 70(FS = ±2000)

CERTIFICATIONS & RELIABILITY

EN 60950-1;2006/A2:2013

ETSI EN 301 489-17 V3.1.1(2017-02)

EN 55032:2015

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LoRaWAN FRAME FORMAT

Standard packet size: 24 Bytes

00-01-02-03-04-05-06-07-08-09-10-11-12-13-14-15-16-17-18-19-20-21-22-23

1 byte: Connection Type(1->LoRaWAN)

INFORMATION

012345678: Device ID

|1|: Indicates the type of connection the device uses.

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LoRaWAN 6 AXIS GYROSCOPE PROTOCOL

01-0A-00-59-00-E8-04-09-1E-00-59-FF-E8-04-09-YY-YY-01-2C-25-01-12-0D-EF

01: Selected Slot (1 byte)

0A: Button Sensor Board ID

0059: 0x0059H -> 89D -> (2 bytes) -> 0.089G

FFE8: 0xFFE8H -> 65512D -> (2 bytes)

i. FFE8 – FFFF -> -0x0017H -> -23D -> -0.023G

0409: 0x0409H -> 1033D -> (2 bytes) -> 1.033G

0059: 0x0059H -> 89D -> (2 bytes) -> 0.089mdps

FFE8: 0xFFE8H -> 65512D -> (2 bytes)

ii. FFE8 – FFFF -> -0x0017H -> -23D -> -0.023mdps

0409: 0x0409H -> 1033D -> (2 bytes) -> 1.033mdps

YY-YY: Empty Data

012C: Sleeping Period 0x012CH -> 300D Seconds

25: Payload Counter 0x25H -> 37D

01: Sensor Message Type Periodic (02->Sensor Message Type Interrupt) (1 byte)

12: Sensor FW Version (1 byte)

i. Main Version 1
ii. Sub Version 2

0DEF: 0x0DEFH -> 3567D -> 3567 mV -> 3.567 V (2 bytes)

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INFORMATION

01: Selected slot

0A: This slot determines the sensor type.

0059: Indicates the 0.89G accelerometer value.

(The value 0059H is converted to decimal. The result 89D.The resulting decimal value is divided by 1000.This value returns the result in G for the X-Axis.)

FFE8: Indicates the 0.023G accelerometer value.

(The value FFE8H is converted to decimal. The result 23D.The resulting decimal value is divided by 1000.This value returns the result in G for the Y-Axis.)

0409: Indicates the 1.033G accelerometer value.

(The value 0409H is converted to decimal. The result 1033D.The resulting decimal value is divided by 1000.This value returns the result in G for the Z-Axis.)

0059: Indicates the 0.089mdps accelerometer value.

(The value 0059H is converted to decimal. The result 89D.The resulting decimal value is divided by 1000.This value returns the result in mdps for the X-Axis.)

FFE8: Indicates the -0.023mdps accelerometer value.

(The value FFE8H is converted to decimal. The result 23D.The resulting decimal value is divided by 1000.This value returns the result in mdps for the Y-Axis.)

0409: Indicates the 1.033mdps accelerometer value.

(The value 0409H is converted to decimal. The result 1033D.The resulting decimal value is divided by 1000.This value returns the result in mdps for the Z-Axis.)

012C: Sleep interval along 300S.

25: Data is live or not. Each measurement is incremented by degree.

01: When the sensor message 02 comes, it enters the interrupt.

12: Sensor firmware version 1.2

0DEF: Outputs the measurement in Volt (3.567V).