

Fizoptika Malta FOG-based Inertial Measurement Unit (FOG IMU) sends data via RS422 port configured as follows:

- Baud rate: 921600 • Data bits: 8 • Stop bits: 1 • Parity: None • Flow control: None
- Repetition rate: 4000 Hz.

Each data packet has length of 23 byte and starts with a preamble 0xDD (see Table 1). Data field contains 18 bytes – accelerometers outputs (a_x, a_y, a_z), FOGs outputs (w_x, w_y, w_z) and temperature (t). Sensor outputs ($a_x, a_y, a_z, w_x, w_y, w_z$) are binary complementary 24-bit words (see Table 2). Temperature is 16-bit positive word (see Table 3).

Table 1. Data packet structure

Preamble	a_x	a_y	a_z	w_x	w_y	w_z	t	Counter	Checksum
0xDD	3 bytes	3 bytes	3 bytes	3 bytes	3 bytes	3 bytes	2 bytes	1 byte	1 byte

Table 2. Sensor data field structure (LSB = 0.3 μ V)

1 st byte	2 nd byte	3 rd byte
lowest byte (L)	middle byte (M)	highest byte (H)

Table 3. Temperature data field structure

1 st byte	2 nd byte
low byte (L)	high byte (H)

The checksum is calculated as CRC8 of all bytes between preamble and “Checksum” bytes.

Table 4. CRC8 calculation parameters

Parameter	Value
Name	CRC-8
Poly	0x07 (x^8+x^2+x+1)
Revert	false
XorOut	0x00
Check 0x00 0x01 0x02 0x03 0x04 0x05 0x06 0x07 0x08 0x09 0x0A 0x0B 0x0C 0x0D 0x0E 0x0F 0x10 0x11 0x12 0x13 0x14	0x99

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