



# OBJECTGUARD

ADVANCED MONITORING SYSTEMS

## Highly accurate vertical movement measurement

ObjectGuard is a free space light barrier system based on fiber optics which provides a highly precise measurement of vertical object movement. An optical head mounted on a fixed point emits a laser light which is returned by a retroreflector mounted on the surface of an object. Based on the intensity of the reflected light a sophisticated algorithm calculates the change of vertical position with respect to the fixed point.

### Power over fiber

The camera head is powered only via power delivered over the standard single mode optical fiber to ensure continuous operation.

### Energy harvesting

The delivered optical power is converted to electrical energy and stored in the internal battery to power all electrical equipment in the optical head.

### Complex monitoring system

The ObjectGuard provides not only an interrogation unit, optical head and retroreflector but also data storage and basic data processing.

## PRODUCT VERSIONS

**This monitoring system comes in three product versions depending on the acceptable object distance and corresponding range of the vertical movement.**

|                         | Version 1    | Version 2    | Version 3    |
|-------------------------|--------------|--------------|--------------|
| Object distance         | 1.5 - 6 m    | 4 - 16 m     | 6 - 24 m     |
| Vertical movement range | ±10 - ±16 mm | ±15 - ±25 mm | ±20 - ±40 mm |

# KEY PRODUCT FEATURES & BENEFITS

## Advanced customization available

The monitoring system can be modified to meet your project's needs, such as the desired functionality, interoperability and others.

## Long term field operation

ObjectGuard is highly durable and reliable even in demanding environments. This makes it especially suitable for a long term field operation.

## Real-time monitoring 24/7

The unit monitors any issues that may arise in real time, alerting you immediately if necessary. Furthermore, it enables you to work with collected data right away.

## Manufactured in-house

The ObjectGuard is made by Safibra, which gives us complete control over the product output, quality, logistics, production costs and support and enables us to customize the product whenever it is necessary.

## Analysis & configuration SW

The system is supplied with analysis and configuration SW, which are both platform independent and feature an embedded processing board with all decision functions.

## Usage of existing fiber optic network

Installation of an expensive sensor infrastructure or availability of an electrical power are not necessary.

## Passive optical head

The optical head is powered over the optical fiber without any need of power supply. Therefore it easily monitors places without electricity and hazardous or hard to reach areas.

## Long distances

Optical head at the place of monitoring can be located up to 10 km from the interrogation unit. The interconnection is done using an existing optical network over standard telecom fibers.

## SSH & web interface

The configuration of the system, sensors and alarms, frequency of measurements and self data logging on an integrated SSD are possible by SSH and the web interface.

## Fully autonomous system

Thanks to an embedded PC and a web server running on Linux, the ObjectGuard is independent of external devices and control procedures.

# ADDITIONAL HARDWARE & SOFTWARE



## ProcessGuard

Server for data processing. For proper functionality it needs to be equipped with SigProc licence.



## SigProc

Signal Processor

Software used for acquisition of raw data and their consequent analysis and processing.



## Graflux

Data storage, analyzing and visualisation service for easy and user friendly presentation of collected data.



## Database server

Local or in cloud

Server that provides other systems with services related to accessing and retrieving data from a database.



## Installation services

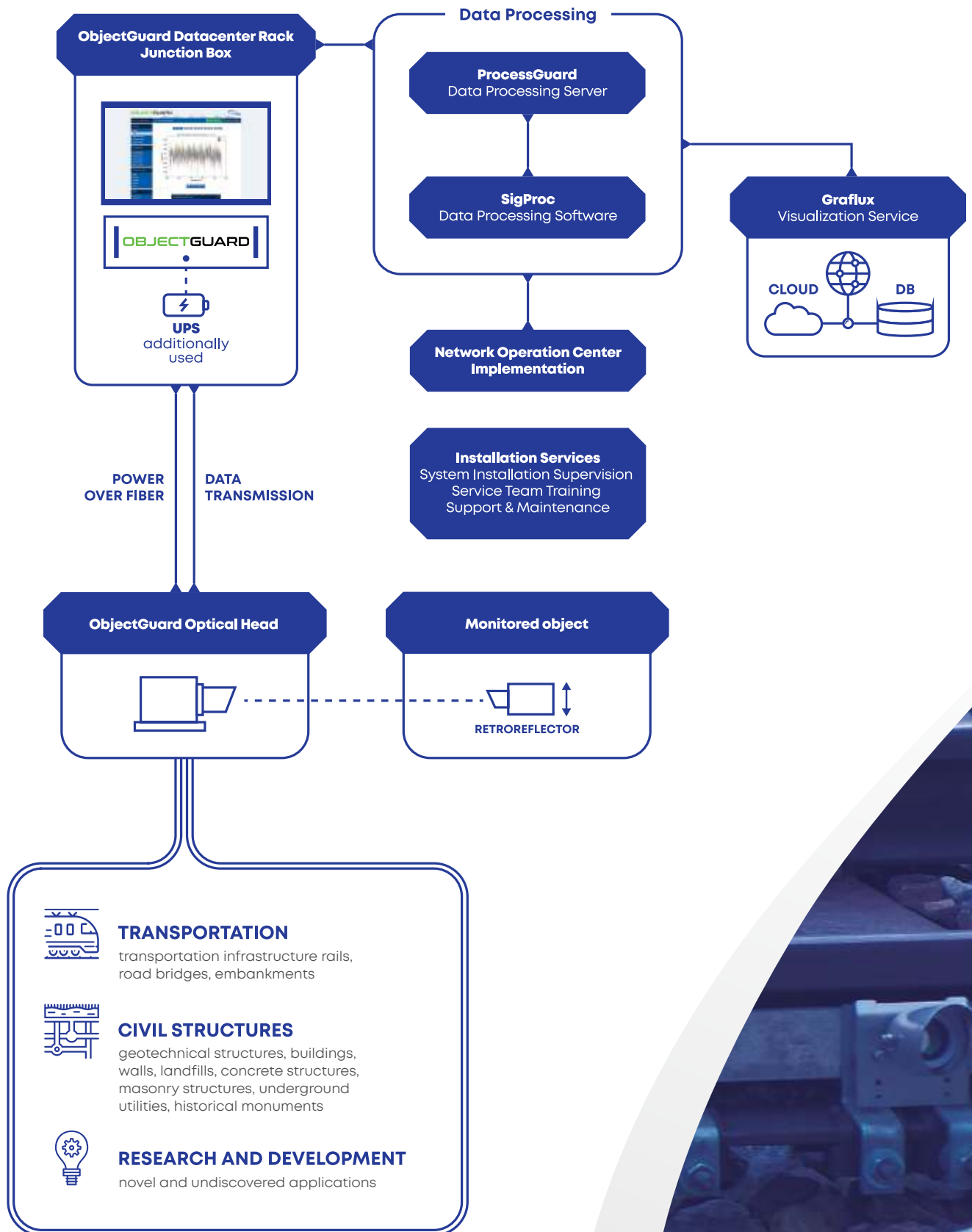
System installation, supervision and commissioning, support and maintenance, service level agreement.



## Training

Service team training tailored to your needs provided by a highly skilled and experienced team.

# PROJECT REQUIREMENTS



# TECHNICAL PARAMETERS

## ObjectGuard Interrogation Unit

### Optical

|                                  |                     |
|----------------------------------|---------------------|
| Maximal number of optical heads  | 2                   |
| Maximal output power per channel | 0 dBm               |
| Maximal input power per channel  | -14 dBm             |
| Dynamic range (DC coupled input) | 50 dB (SNR = 0 dB)  |
| Sensitivity (DC coupled input)   | -64 dB (SNR = 0 dB) |
| Sampling frequency               | 1 kHz               |
| Bandwidth                        | 500 Hz              |
| Optical fiber connector          | FC/APC              |

### Electrical, Environmental and Mechanical

|  |  |
|--|--|
| Power supply (adaptor to 230 V included) | 12 V   |
| Power consumption                        | < 80 W   |
| Operating temperature                    | 0 °C to 40 °C  |
| Operating humidity                       | < 80 %, non-condensing   |
| Dimensions                               | 19" rack 3U<br>Without front panel:<br>131 x 383 x 436 mm<br>With front panel:<br>131 x 383 x 482 mm<br>(mind the space for connectors<br>and air ventilation - 50 mm) |
| Weight                                   | 9,3 kg   |

### Other

|                        |  |
|------------------------|--|
| Embedded PC/SSD Disk   | Yes/Yes  |
| Communication protocol | TCP/IP, RS-232, Modbus   |
| Interfaces & ports     | 12 VDC, IN/OUT, RS 232, HDMI,<br>2x USB 3.1, RS 485 IN/OUT (on request),<br>Ethernet |

# TECHNICAL PARAMETERS

## Optical head

|  |   |
|--|---|
| Distance from the optical head to the retroreflector | 1 - 24 m*   |
| Product versions                                     | Depend on the acceptable object distance (1.4 - 24 m) and corresponding vertical movement range ( $\pm 10$ - $\pm 40$ mm) |
| Measurement frequency                                | Max 100 Hz  |
| Operating temperature                                | -20 °C to 50 °C   |
| Measurement accuracy                                 | 1 % of the range  |
| Measurement range                                    | $\pm 10$ to $\pm 40$ mm*  |
| Measurement resolution                               | 0,1 % of range  |
| Connector  | FC/APC, other on request  |
| Max. distance to the interrogation unit              | 10 km cable length (when powered over fiber)  |
| Central wavelength                                   | 1550 nm   |
| Housing material                                     | Painted aluminum  |
| Dimensions   | 23 cm x 20 cm x 11 cm (excluding the tube for optics)   |
| Protection class                                     | IP65 (IP66 excluding optics)  |
| Weight   | 4,5 kg for IP66   |

## Retroreflector

|            |                                  |
|------------|----------------------------------|
| Dimensions | 25 mm (active aperture diameter) |
| Material   | Aluminum, glass                  |

## Mounting plate

|                 |   |
|-----------------|---|
| Dimensions      | Typ. 100 x 50 mm  |
| Material        | Aluminum, stainless steel                                     |
| Mounting method | Permanent magnet, screws, glue (according to target features) |

\* It is necessary to choose the corresponding option of the embedded optics. We reserve the right to change these parameters.

**GET IN TOUCH WITH US**  
and we will recommend you the most suitable solution for your project.

SAFIBRA, s.r.o., U Sanitasu 1621, 251 01 Říčany, Czech Republic  
[+420 323 601 615](tel:+420323601615) [safibra@safibra.cz](mailto:safibra@safibra.cz) [www.safibra.cz](http://www.safibra.cz)