



# SIMUR

## Integrated Universal Monitoring System



It is a modular and integrated system for real time monitoring by remote control of structures and infrastructures allocated on the territory. The main properties are:

**Modularity and system integration.** They guarantee high level of customization, useful to define the best configuration for each specific structure to be monitored.

**Real time control.** It allows to visualize the hazard and trend data, improving the planning of an appropriate maintenance action.

**Remote control and new data readings.** They allow to optimize available resources, improving the overall efficiency of the system;

**Data engineering.** It introduces a new level of information analysis, useful to define more punctual and timely actions.

The idea of data control in real time wants to overcome the traditional monitoring, making it an operative instrument able to ensure

the recognition of crisis mechanisms, and to develop appropriate engineering solutions, using dedicated algorithms.

**Hardware:** Card able to manage at the same time different systems of monitoring and data acquisition and guarantees remote reception and sending of data generated by the instruments (sms).

**Software:** web platform with customized user able to visualize data. **Data storage:** Cloud environment to provide greater data interoperability. **Power supply:** Solar panels and rechargeable batteries. **Security system:** motorized camera with live visualization of site to guarantee its security and viewing.

SIMUR allows to acquire data from n°64 sensors and then areas of application can be multiple:

**Study of flood-wave speed** monitoring the changes water heights; **Study of flood**

**areas** at different return times by monitoring the flow-rate; **Study of the suitable transit speed** of vehicles through wind monitoring; **Study of gravitational slope** scenarios monitoring in real time the movements; **Study of design activities** about bridge in river-bed, monitoring the effects of scoured piers; **Study of the cracks of the structure**, monitoring the behavior of cracks and their development; **Study of vibratory phenomena**, monitoring the movements of structure and its components.

Thanks to SIMUR it is possible to have a global vision of the actual state of the work and of the phenomena in progress, and then during the planning phase, to evaluate the appropriate interventions to be implemented.



# SIMUR

System for adaptive, analytical and reactive monitoring of complex systems just in a click



## Technical Specifications

### Data acquisition components

#### Standard configuration

Battery pack	2 x (12V, 60 Ah)
Photovoltaic panel	2 x
Camera	1 x
Central acquisition board	1 x
Water gauge	1 x
Mechanical and capabilities	
Photovoltaic panel dimension	2 x (66cm x 120cm)
Enclosures material	Fiberglass
Battery dimensions	224mm x 135mm x 178mm
Electrical enclosures dimensions	428mm x 325mm x 183mm
Operating current	0.6 A
Max current drawn	1.2 A
Camera dimensions	120mm x 120mm x 150mm
Operation temperature	-40 °C to 85 °C
Battery charge duration	3 days of normal operations (standard configuration)
Mobile communications	LTE/3G/2G Europe bands (SIM card not included)
Cache capability	over 1'500'000'000 acquisitions whitout central server connectivity
Alarm notification type	sms

#### Custom configurations

Sensor types	Radar 8m - 15m - 30m, crackmeters, accelerometers
Max number of low rate sampling sensors	from 4 min to 32 per bus line (max 2 bus lines)
Max number of low rate sampling inputs	64

### Graphic User Interface

#### General capabilities

##### Application server based GUI

Systems compatibility	Firefox, Crhome, Internet Explorer (standard descktop and mobile version)
Number of users	Customizable
Number of monitored sites	Unlimited
Alarm notification type	Visual alerts and email

#### Basic stand-alone configuration

All-in one	Dedicated with acquisition, storage and GUI capabilities
Max storage	over 200 billions of acquisitions
Max simultaneous video streams	100 approx.

#### Advanced configuration

Acquisition, storage and GUI cloud based	
Max storage	Unlimited
Max simultaneous video streams	Configurable

#### Software specifications

Communication	Monitoring side: SSLv3 Protocol, Cipher
	GUI side: SSLv3 Protocol

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