



# **S**YTGEO receivers for geotechnical monitoring of underground operations and geostructures

**S**YTGEO receivers are very low power, small size rugged acquisition modules ready to connect the most types of geotechnical sensors available on the market.

**S**YTGEO receivers are bus cabled and/or radio connected, enable to build easily a monitoring system made of hundreds of sensors related to all relevant parameters as strains, displacements, inclinations, forces, pressures, temperatures, levels, flows, gas, rainfall on an unique integrated network. They offer the mixing of both daisy chain and star topologies controlled from a unique PC based computer or SYTGEM-ulp unit in harsh outdoor conditions.

**S**YTGEO receivers feature multi-channel high quality data acquisition and digital transmission. They offer high performance and modularity to fit observational research as well as operational monitoring projects.



## **Highlights**

**Very Low Power technology**

**High data quality**

**Built-in calibration**

**Modular cluster architecture**

## **Field applications**

**Mines and quarries**

**Underground waste disposals**

**Dams and embankments**

**Civil engineering**

**Landslides and rockfalls**

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for sustainable development*

# SYTGEO solution for geotechnical monitoring of underground operations and geostructures

| SYTGEO Receiver     | RC   | R4               | RP               | RM multi parameter                             |                  |                         |
|---------------------|--|------------------|------------------|--|------------------|-------------------------|
| Application         | Strain Gauge   | Current loop     | Potentiometric   | Current loop                                   | Potentiometric   | Counting                |
| Number of channels  | 12   | 7                | 7                | 4  | 2                | 2                       |
| Type of sensor      | 120 W $\pm$ 2,5 W  | 4-20 mA (1)      | R > 1 KW (2)     | 4-20 mA (1)                                    | R > 1 KW (2)     | F < 100 Hz              |
| Digitization        | 15 bits + sign   | 15 bits + sign   | 15 bits + sign   | 8 bits   | 8 bits           | Dry contact relay       |
| Multiplexing        | relay  | Static switching | Static switching | Static switching                               | Static switching | Static switching        |
| Resolution          | 0,48 mW  | 0,625 mA         | 30 ppm           | 80 mA  | 0,4 %            | 1 tipping               |
| Accuracy at 20°C    | $\pm$ 10 mW  | $\pm$ 0,1 %      | $\pm$ 0,02 % (3) | $\pm$ 1 %                                      | $\pm$ 1 %        | $\pm$ 0,1 % (frequency) |
| Sampling frequency  | From SYTGEOscop software : from 0 to 9999 minutes  |                  |                  |  |                  |                         |
| Type of measurement | Average of 4 measurements during 300 ms  |                  |                  | Statistics (average, min, max, standard-error) |                  |                         |
| Duration            | 10 s   | 8 s              | 8 s              | NA   |                  |                         |
| Supply voltage      | 8 à 32 V   | 8 à 32 V         | 8 à 32 V         | 8 à 32 V                                       |                  |                         |
| Stand by power      | 12 mW  | 12 mW            | 12 mW            | 20 mW (without sensor)                         |                  |                         |
| Nominal power       | 800 mW   | 1,5 W            | 800 mW           | -  |                  |                         |
| Programmable output | 1 monostable TOR to activate local alarm   |                  |                  |  |                  |                         |
| Network topology    | Star or daisy chain topology linked to a SYTGEO controller module  |                  |                  |  |                  |                         |
| Connection          | 4 wires for the bus RS 485 et power supply, maximum distance without repeater 1500 0,6 mm <sup>2</sup> wire<br>radio transmission based on SYTGEO RTS or RGPS module |                  |                  |  |                  |                         |
| Format              | Proprietary protocol, rate at 1200 bauds, 8 bits without parity  |                  |                  |  |                  |                         |
| Capacity            | 15 receivers maximum for one monitoring branch   |                  |                  |  |                  |                         |
| Housing             | Rugged polyester 120 * 90 * 220 mm, weight around. 1.2 kg, IP67  |                  |                  |  |                  |                         |
| Connection          | Screw terminal and steal gland   |                  |                  |  |                  |                         |
| Temperature         | Operating : -20°C to +45°C   |                  |                  | Storage : -20°C to +50°C                       |                  |                         |
| CE                  | EN 61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN6100-4-6 ; EN 55022 (04/01) class B. low voltage directive 73/23/CEE  |                  |                  |  |                  |                         |



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