

Optical acquisition module DC ÷ 1MHz

OAM301



TESEO DC and low frequency plug-in modules and remote satellites are fiber optic communication links for the transmission of analog signals, including DC, in hostile environments subjected to electromagnetic interferences, noises, or characterized by the presence of high voltages.

A plug-in system consists of a two channels base module fitting in TESEO mainframes, one or two dual fiber optic cables for signal and control, one or two battery powered, shielded transmitters, and one or two battery chargers. Each plug-in system holds two independent optical channels.

It provides researchers and engineers with an integrated technology solution to the problem of monitoring equipment under-test functionality in safety conditions in environments characterized by high levels of electromagnetic field or very high voltages.

SYSTEM CHARACTERISTICS

- Two channels plug-in for MOCS-MF mainframe (up to eight independent channels per mainframe)
- DC to 1 MHz operating frequency range
- 1 MOhm input
- 1 to 500 Vpp full scale input in 9 selectable ranges
- ± 500mV (1Vpp) full scale output on 50 Ohm
- Signal-to-noise ratio better than 50 dB
- Shielded to >200 V/m EM fields, 10 kHz to 18 GHz

BASE UNIT PLUG-IN

OAM301 plug-in system will receive an analog signal in the range DC to 1 MHz up to a distance of 1 km via fiber optic link.

OAM301P base unit plug-in is a two optically and electrically independent channels receiver; you can connect to it one or two OAM301S satellite units.

MOCS-MF mainframe can house up to six OAM301P base unit plug-ins for a total of twelve independent optical channels.

System setup and status are shown on the mainframe LCD graphic display; all functions are available and manageable by means of MOCS keyboard or built-in GPIB-RS232 interface.

During startup OAM301 automatically performs a complete calibration in order to compensate possible gain variation due, for instance, to the joining/disjoining of optical connectors.

Furthermore you can perform a calibration using the zero and reference level selectable on the output.

The information relative to the battery status is also available.

SATELLITE UNIT

The small sized battery powered OAM301S satellite unit can be located close to the signal monitoring points, also in hard to reach zones (e.g. engines, industrial equipment). It can be switched on or off from the mainframe, and you can select nine input ranges, from 1 Vpp to 500 Vpp full scale.

Input is 1 MOhm and coupling can be both AC and DC; the source can be switched from the signal input to zero and reference levels to perform the calibration of the measure setup or to battery to check the remaining charge.

OAM301S withstands more than 200 V/m electro-magnetic field level from 10 kHz to 18 GHz and is designed to operate over an exceptionally wide environmental range without significant change in performance.

It can operate continuously for over eight hours and can be recharged in short time by means of the associated battery charger. The ruggedness of this satellite makes it the ideal choice also for the acquisition of signals from remote transducers placed in extremely hard environments.

APPLICATIONS

- General purpose signal monitoring
- Equipment under test functional monitoring
- Acquisition from remote transducers
- EMC/EMI
- High voltage floating and safe measurements

SYSTEM PARTS

- **OAM301P** two channels plug-in for MOCS-MF
- **OAM301S** battery powered satellite unit
- **CB1** dedicated battery charger
- **FBmmm** duplex zip cord fiber optic cable for signal and control lines (*mmm* = length in meters)
- **FOBC ST** ST fiber optic cable feedthrough (OPTION)
- **FORF** fiber optic cable reeling frame (OPTION)

OPTIONS

The fiber optic cable is available in any length up to 1 Km. A rugged reeling frame (up to eight fibers in one cable) can also be supplied.

Feedthroughs for the fiber optic cables can be supplied too.

TECHNICAL SPECIFICATIONS

Frequency

- Bandwidth (-3 dB) DC to 1 MHz
- Max harmonic level -34 dBc
- S/N [$20 \cdot \log(V_{\max_{pp}}/V_{\text{rms}})$] > 50 dB
- Flatness $\pm 2\text{dB max, } \pm 1.5\text{dB typ}$

Amplitude

- Input impedance 1 M Ω
- Input ranges $\pm 0.5 / 1 / 2.5 / 5 / 10 / 25$
50 / 100 / 250 V full scale
- Output impedance 50 Ω
- Output level ± 1 V full scale (Hi-Z)
 ± 0.5 V full scale (50 Ω)
- Accuracy: $\pm(10\% + 10\text{mV})$ max
 $\pm(5\% + 5\text{mV})$ typ, full range

Features and controlled functions

- satellite unit stand-by
- range selection
- coupling (AC/DC)
- source (input, zero, reference, battery)
- calibration

Mechanical and environmental

Satellite Unit

- battery operating time continuous > 8 hours
switch-off > 1000 hours
- battery recharging time 2 hours
- battery charger connector LEMO 5 poles circular
- electrical input connector BNC
- fiber optic connectors signal: ST
control: ST
- dimensions 108 x 69 x 59 mm
- operating temperature $-10^\circ / +70^\circ\text{C}$
- storage temperature $-20^\circ - +80^\circ\text{C}$

Base unit

- electrical output connector BNC
- fiber optic connectors signal: ST
control: ST
- dimensions plug-in for MOCS-MF
- operating temperature $+0^\circ / +50^\circ\text{C}$
- storage temperature $-20^\circ - +70^\circ\text{C}$