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Model OAL200
DC TO 200kHz
OPTICAL ACQUISITION LINK

GENERAL

The OAL200 is an application specific Optical Modular Acquisition System (see the Model OMA sheet for details on the generic OMAS system concept.) An OAL200 Optical Acquisition Link consists of an Optical Modular Mainframe (OMM), one or more OAM200 plug-in modules and OAS200 satellite associated fiber optic cables. Since both the plug-ins and satellites feature dual-channels, a minimal system consisting of an OMM with a single OAM200 and OAS200 can acquire two independent analog signals in the frequency range of DC to 200kHz. Each OAM200 module occupies one slot in the OMM. The OMM can accommodate up to six plug-ins, for a total of twelve acquisition channels per mainframe. If additional channels are required, up to four OMMs can be daisy chained via the RS232 serial bus.

The OAL200 system was designed to acquire low frequency, low voltage signals from a DUT immediately adjacent to a high field or high voltage area. A typical application is automotive immunity testing where EMC immunity is required at the component level, as well as on the entire vehicle.

MAIN FEATURES

Immunity to high field levels - Immunity to a hostile EMC environment is achieved by shielding the satellite, powering the satellite via batteries rather than the AC mains, EMI filtering, acquiring signals differentially, use of fiber optics to transmit the signals from the satellite to the mainframe, and final use of short resistive cables to connect the DUT to the satellites.

Large bandwidth - A doubling of the bandwidth over the model previously available allows for accurate monitoring of DUT signals.

Small satellite size - Even though each satellite houses two independent channels, the size has been intentionally kept very small. In particular, the version that houses disposable batteries is especially small. Size is of paramount importance when monitoring on-board automotive components in very confined spaces such as under the hood of an automobile.

Remote operation - Satellites can be addressed manually from the front panel of the OMM, or from a personal computer via the RS232 serial bus.

Long operating time - Satellites can be powered from either four AAA non-rechargeable batteries or optional rechargeable batteries (user selectable at time of order). In either case, long battery life is compatible with anticipated long work shifts. A standby mode is available for the channel not being used for acquisition. When both channels are inoperative, the satellite is automatically switched off as an energy saving measure.

Exceptional electrical performance - Each signal channel offers excellent linearity, low residual offset, high signal-to-noise ratio, low channel to channel crosstalk, and outstanding stability. A re-calibration function enhances acquisition accuracy.

REV110698

OAL200 SPECIFICATIONS

ELECTRICAL

| | |
|---------------------------------|---|
| INPUT SIGNAL: | Differential |
| INPUT IMPEDANCE: | 1 MOhms |
| INPUT RANGE: | +/- 6V or +/-30V |
| OVER-RANGE: | +/- 60 V continuous, +/- 350V transient |
| GAIN: | 1 to 1 (0.95 to 1.2 using Manual Gain Adjustment), output range equal to input range |
| GAIN ACCURACY: | +/- 3% of reading after calibration, (does not include offset error) |
| GAIN ADJUSTMENT (MANUAL): | -5% to + 20% of range |
| RESIDUAL DC OFFSET ERROR: | +/-0.1% of range (after calibration) |
| DC OFFSET ERROR STABILITY: | +/-0.5% of range after 24 hours |
| DC OFFSET MANUAL ADJUSTMENT: | +/-3% of range |
| BANDWIDTH: | DC to 200 kHz (3 dB), with fast roll-off beyond |
| SIGNAL TO NOISE: | 60 dB (pp/RMS) |
| CHANNEL TO CHANNEL CROSSTALK: | 60 dB |
| OUTPUT SIGNAL: | Unbalanced |
| OUTPUT DRIVE CAPABILITY: | 10 ma |
| OUTPUT IMPEDANCE: | 50 Ohms |

CONFIGURATION/OPERATION

| | |
|-------------------------------|---|
| CHANNELS PER OAM: | 2 |
| CHANNELS PER OAS: | 2 |
| CONTROLS: | Standby, Range selection, Zero/full scale calibration |
| TYPE OF CONTROLS: | Local (front panel of OAM200) or Remote via a PC |
| MANUAL ADJUSTMENTS: | Gain and Offset from front panel of OMM |
| INDICATORS: | Standby, 6V range, 30V range, over-range and panel lock on front panel |
| OAM ELECTRICAL CONNECTORS: | On the front panel |
| OAM OPTICAL CONNECTORS: | On the rear panel |
| DISTANCE BETWEEN OAM AND OAS: | Up to 100 meters |
| SATELLITE BATTERY LIFE: | 16 hours for 2 channels, 24 hours for 1 channel, 40 hours in standby |
| STATUS INFORMATION: | Calibration fault, absence of optical power on the fiber cable |

NUMBER OF FIBER CABLES: 3, 2 for signal acquisition, 1 for commands (one FBmmm and one FCmmm cable recommended)

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OAL200 SPECIFICATIONS

MECHANICAL/ENVIRONMENTAL

OAS SHIELDING: 300 V/m from 500 kHz to 1 GHz, 200 V/m up to 18 GHz, 600 V/m pulsed (5% duty cycle, 5 us risetime) from 1 to 2 GHz

OAS DIMENSIONS (WxHxD): 8 x 2.6 x 11 cm

OAS ELECTRICAL CONNECTORS: Type BNC, Two, Insulated

OAS OPTICAL CONNECTORS: Type SMA, Three

OAS TEMPERATURE RANGE: 0° to 70° C

OAM SIZE (WxHxD): 5.1 x 13.2 x 25 cm, eurocard type plug-in boards, occupies 1 of the 6 available OMM slots

OAM ELECTRICAL CONNECTORS: Type BNC, Two

OAM OPTICAL CONNECTORS: Type SMA, Three

OAM TEMPERATURE RANGE: 10° to 40° C

FIBER CABLE SIZE: 200/230 um, glass type

OAL200 SYSTEM PARTS

OMM: Optical Modular Mainframe

OAM200: Optical Acquisition Module

OAS200: Optical Acquisition Satellite

FCmmmSMA: Single fiber optic cable, mmm meters long, with Type SMA connectors

FBmmmSMA: Bifiber optic cable, mmm meters long with Type SMA connectors

OAL200 OPTIONS

OAS200-RB: OAS with rechargeable battery. Dimensions are: 12 x 2.7 x 11 cm

CB200: Fast charger (2 hours recharge time) for OAS200-RB rechargeable battery, 230VAC, European power cord

CB200/US: Same as CB200, but powered from 120 VAC, 60 Hz, US power cord

FCRmmmSMA: Rugged single fiber optic cable mmm meter long, SMA connectors

FBRmmmSMA: Rugged bifiber optic cable mmm meter long, SMA connectors

FOBCSMA: Bulkhead feedthrough for SMA optical connectors (x3)

RC20BNC: Resistive cable (x2), 20 cm, Type BNC connector. Other lengths available on request.

