Monitoring unit of aeroengine vibration MLM 1.2

- **this unit measures aeroengine vibration.**
- **monitors extraordinary conditions of engine operation.**
- **this unit is suitable for propeller, turbo-prop and jet aeroengines.**
- **commercial and military use**
- **F3 category**

Purpose

MLM 1.2 vibration monitoring unit is suitable for continuous monitoring of vibration and extraordinary conditions of aeroengines both during land trial runs and flight. The unit consists of SV156A piezoelectric accelerometer, a low-noise connection cable and C7 electronics module. The unit measures and evaluates the vibration intensity which is defined as root means square (RMS) of vibration velocity in the frequency range from 60 to 360 Hz.

The module output is represented by DC voltage equivalent to the vibration intensity, AC voltage equivalent to vibration velocity in a specified frequency range and output logical signal activated at the moment when emergency vibration is exceeded. A second value that is monitored by the unit is the magnitude of engine acoustic emissions scanned in an ultrasonic frequency range. This value is used for a detection of extraordinary engine conditions, such as: defects of engine antifriction bearings, a contact of engine rotating parts with the engine casing or other fixed parts.

The input to the module is an activation signal of the internal testing generator for testing of unit's correct function.

The principle of unit operation

The vibration sensor converts the engine vibration to an electric charge magnitude of which is equivalent to the vibration acceleration. From the sensor the signal comes to the electronic unit where it is converted to the voltage value equivalent to vibration velocity. A required frequency range is then selected by a filter and the effective value (true RMS) is then detected. The dynamic signal is, at the same time, led into the AC output for recording or frequency analysis purposes. The unit also compares the detected vibration power with a pre-set value. If this is exceeded the logical output it sets to the active mode.

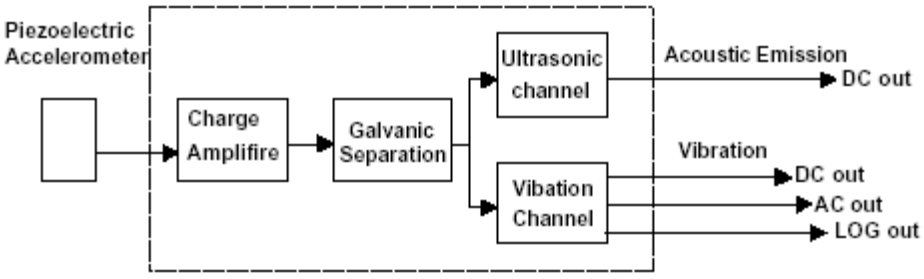

FIG. 1 Block diagram of the MLM 1.2 vibration monitor

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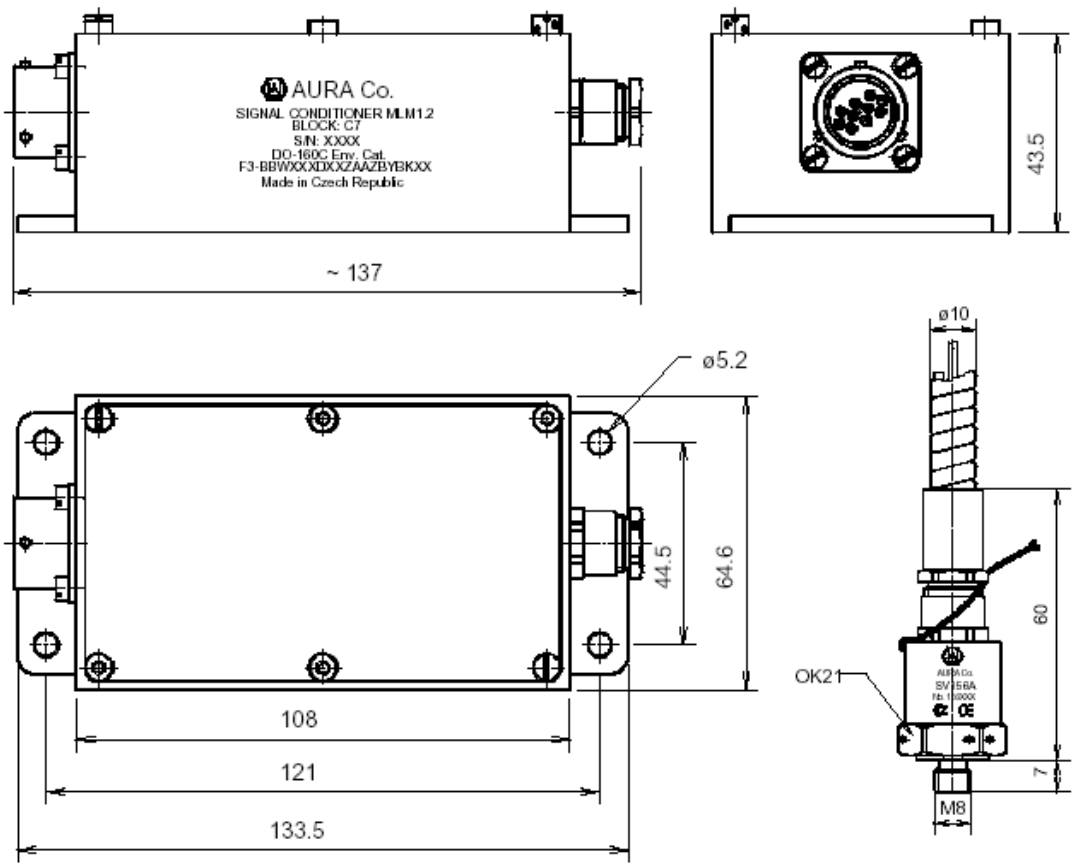
The vibration monitor contains the galvanic separation of circuits of dynamic signal processing from the output circuits. Also it contains the circuits for ensuring the device electromagnetic compatibility. They guarantee the sufficient device resistance against the electromagnetic noise both impulse, radiofrequency and against atmospheric electricity influence. All outputs are short circuit resistant except the logic one.

Parameters	
Power supply	28 V
Current consumption	70 mA
Frequency range	60 - 360 Hz, 30 kHz
Output voltage	8 V DC, 6 V AC
Transmiss. coefficient	1 V/ips DC 0,5 V/ips AC
Vibr. sensor	piezoelectric
Acoustic emission	8 V
Temperature range	sensor: -55 to +240 ℃ electronics: -55 +85 ℃ ips (inch per second) = 25,4 mm/s
Env. category according RTCA / DO -160C,1989: **F3-BBWXXXDXXZAAZBYBKXX**	

Dimensions



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