

Series of MA__ sensors to measure:
vibration, angle, rotation,
temperature.

MA14/15/16/24/25/30/31/32/33/34/35/44/71



List of available sensors of series MA__ :

1. MA14/24/35 - uni axial/biaxial/three-axis accelerometer.
2. MA15/16 – uni axial accelerometer axis X/Y with temp. measurement.
3. MA25/44 – biaxial/three-axis accelerometer with temp. measurement.
4. MA30/31/32/33/34 – inclinometer, vertical/horizontal tilt measurement.
5. MA32/33 – inclinometer, tilt and temperature measurement.
6. MA25t – temperature sensor.
7. MA51.35 – optical motion/rotation sensor.
8. MA71.007 – accelerometer with increased sensitivity. (separate brochure).

The sensors are design to work with data series AV32. They can also work with any apparatus with a measuring range of at least 0-5V(Except model MA71.007 +/-10V). Also be sure to take care of stable sensor supply 5.0V. We offer economic solutions with AV32MF37 recorder, portable with AV32G, AV32AKP and modular with AK32. Used the latest technology (accelerometers use MEMS technologies) to ensure high precision and reliability of the measurements and low power consumption. System with several sensors can be powered from a single USB port. Sealed enables the sensor immersed in a non-aggressive fluids. Sensors tested, inter alia, in harsh building site.

MA14 and **MA24** are precise accelerometer. MA24 are biaxial sensors and MA14 are uni axial sensors. Sensors have different version of mounting: neodymium magnet, screw or threaded. The sensor are suitable for indoor and outdoor. Occur at frequencies up to 2500Hz, 1500Hz, 500,100,30Hz. The lower frequency limit of the lower self-noise sensor, the lower limit of the frequency measurement.

Technical parameters:

- Measurement range: 1g,2g 5g,10g, 50g.
- Non-linearity: <1% FS.
- Maximum sensitivity: 1000mV/g, range of 1g.
- Supply: 5.0V, < 3.0mA
- Maximum frequency: 2.5k/1.5k/500/100/30Hz
- Temperature of work from -40°C to 70°C
- Maximum impact level <1000g
- Dimension: 20x20x50, without mounting.
- Weight: round about 56g. (with magnet)



MA35/MA44 is precise three-axis accelerometer. Sensor has identical parameters in all axes: x,y,z. MA44 sensor has additionally built-in temperature sensor. Available version of mounting: neodymium magnet, screw or threaded. The sensor are suitable for indoor and outdoor. It has built-in low-pass filter, range from 30Hz to 2500Hz. The lower frequency limit of the lower self-noise, the lower limit of the measurement.

Technical parameters:

- Measurement range: 0.7g,1g, 5g, 16g.
- Non-linearity: <1% FS.
- Sensitivity:1000mV/g, range of 0,7g.
- Range of temp.: from -40 to +70°C
- Temp. measuring sensitivity: 18mV/°C.
- Supply: 5.0V, < 4.0mA
- Maximum frequency: 30/100/500/2500¹⁾ Hz
- Temperature of work from -40°C to 70°C
- Maximum impact level <1000g
- Dimension: 20x20x77,without mounting.
- Weight: round about 56g. (with magnet)



¹⁾ -refer to sensor 0.7g

Producer stipulate possibilities to make change, which cannot be included in this document.

MA15, MA16, MA25 are precise accelerometer with built-in temperature sensor. It is possible to single axis acceleration measure using MA15 and MA16 sensors and in two axes measure using MA25 sensor. MA15 sensor measures vibration in Y axis and MA16 in X axis. Sensors have different version of mounting: neodymium magnet, internal or external thread. The sensors are suitable for indoor and outdoor.

Technical parameters:

Parameters of vibration measurement are the same like in sensors: MA14, MA24.

- Range of temp.: from -40 to +70°C
- Temp. measuring sensitivity: 18mV/°C.
- Supply: 5.0V, < 3.0mA
- Temp. of work from -40°C to 70°C
- Dimension: 20x20x77, without mounting.
- Weight: round about 44g. (without magnet)



MA30/MA31/MA32/MA33/MA34 are precise angle measurement sensor. Used to static and dynamic measure deviations from level. In addition, the various versions measure: MA31 measures vibration on vertical axis. MA32 sensor has built-in temperature sensor. MA33 measures vibration on vertical axis and has built-in temperature sensor. MA34 measures vibration on horizontal axis, for controlling acceleration acceptable level measurement. The sensors have a mount with three screws. The sensors are suitable for indoor and outdoor.

Angle measurement parameters:

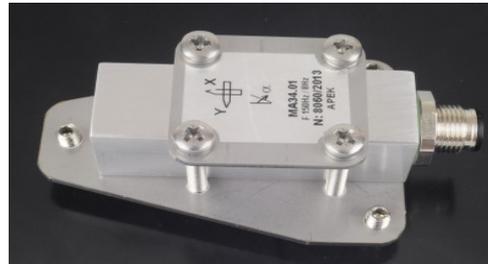
- Measurement range: +/-10°.
- Measuring sensitivity: >230mV/°.
- Resolution: < 5 second of arc.
- Precision 0.01°.
- Long-term stability (3 months) < 0.02°.

Temp. measurements parameters:

- Range of temp. measurements: from -40 to +70°C.
- Output: voltage.
- Temp. measuring sensitivity: 18mV/°C.
- Maximum resolution : 0.03.
- Precision: 0.2°C.
- Time constant: round about 10min.

Acceleration measurement parameters:

- Measurement range: 1g.
- Non-linearity: <1% FS.
- Maximum sensitivity: 1000mV/g.
- Maximum frequency: 2500/1500/500/100/30Hz.
- Maximum impact level <1000g.



Technical parameters:

- Supply: 5.0V, < 3.0mA.
- Temperature of work from -40°C to 70°C.
- Dimension: 20x20x50 without mounting.
- Weight: round about 55g.
- Mounting: 3x M5 screw.
- Handle material: Stainless acid.
- Sensor material: PA duralumin.

MA51.35 is optical sensor to synchronize. The design of the sensor allows operation even under strong back lighting. The sensor is used to measurement of rotation, synchronize, count etc. Sensors have different version of mounting: neodymium magnet, screw or threaded. Cooperate with AL154LI01 counter (count evens), measurement of rotation (RF-DUIP converter, voltage output or current output 0/4-20mA)

Technical parameters:

- Measurement range: from 0 to 1.25kHz
- Range the active distance: 10 – 30mm.
- Output: open collector, maximum 16V.
- Supply voltage: from 4.5V to 16V DC.
- Supply current: 4-11mA.
- Temperature of work from -25°C to 60 °C.
- Weight round about 40g.
- Dimension: 20x20x53mm (without magnet)
- Connecting cable 2m, 5m.



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Precise uni axial accelerometer
MA71.007

MA71.007

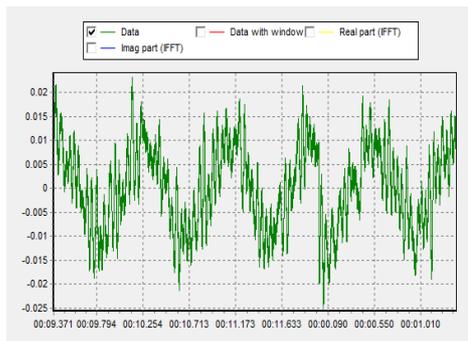


MA71 is precise uni axial sensor acceleration measuring. Reducing of lower limit of the measurement obtained by the maximum reduction of noise in the sensor.

The sensor has the ability to adjust the frequency boundary through the use of various adapters. Limiting the cut-off frequency improves to signal/noise ratio when measuring free-variables. In addition, by using higher voltage we get an increase the range of measurement with no change other parameters. For example in AK32 system where we have available 12V, the upper range will increase to 3m/s² compared to 0.7m/s² for AV32 system. Available version of mounting: neodymium magnet, screw or threaded. The sensor are suitable for indoor and outdoor. Electrical connector M12, number of pins 5.

Technical parameters:

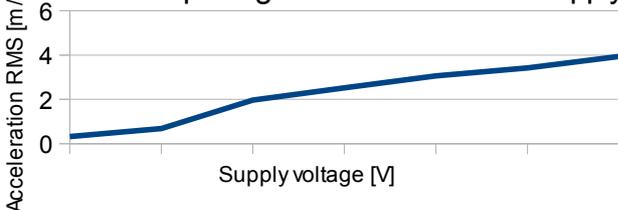
- Measurement range: 0.4g for $U_z = 12V$.
- Non-linearity: <1% FS.
- Sensitivity: 25V/g.
- Supply: from 4.0V to 12.0V, supply current < 4.0mA.
- Maximum frequency: 2500Hz.
- Temperature of work from -40°C to 70°C.
- Maximum impact level <1000g.
- Dimension: 20x20x77, without mounting.
- Weight round about: 56g (with magnet).



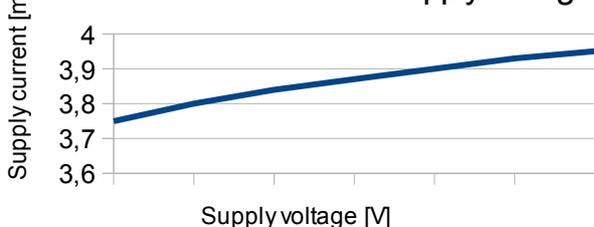
Data from accelerometer for parameters:

- Working frequency: 1,22Hz
- Working amplitude RMS 7mm/s²
- Filter F=30Hz ($C_f = 300nF$)

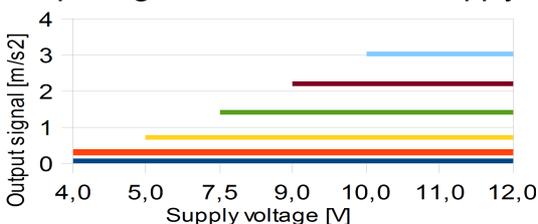
Maximum output signal as a function of supply.



Current as a function of supply voltage.



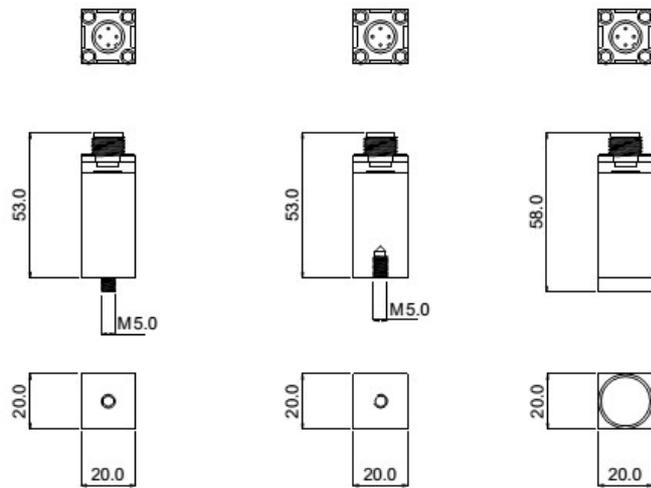
Output signal as a function of supply.



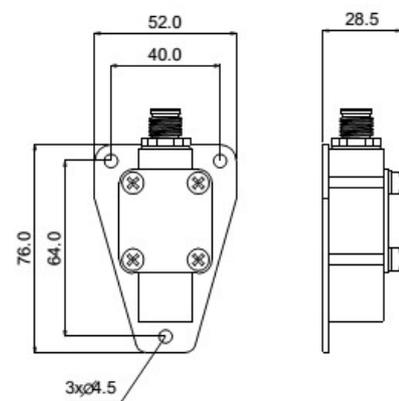
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APEK

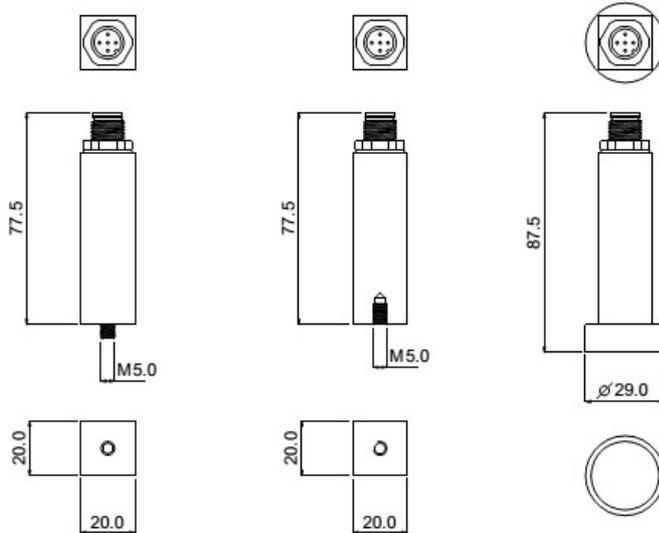
Dimensions of sensors and fixing: the male thread/internal or the neodymium magnet:



Sensors: MA14, MA15, MA16, MA24, MA25t, MA51.35



Sensors: MA30/31/32/33/34/32/33



Sensors: MA35, MA25, MA44, MA71.007