

Sensor supply and 100-kHz sampling rates

Ipetronik (Germany) is extending its measuring module family with the Mx-Sens2 4 with CAN data output. The X-Link module is made for voltage measurements of up to ± 100 V and ICP measurements.

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The analog measuring module measures 106 mm x 60 mm x 62 mm (Photo: Ipetronik)

[Zoom](#)

THE FOUR-CHANNEL ANALOG MEASURING MODULE with sensor supply combines sampling rates of up to 100 kHz per channel with time-synchronous data acquisition and ICP-mode for piezoelectric sensors, such as acceleration, vibration, and acoustic sensors. Optionally, TEDS sensor detection is supported.

“The Mx-Sens2 4 is a compact module for mobile measurement applications in the automotive sector with high demands on reliability, flexibility and fast signal sampling rates”, explained Harry Stoerzer, head of application and support at Ipetronik. “It is the ideal solution for the high-precision data acquisition in combustion or electrical engines. For example for noise/vibration analysis to detect background noise and the transmission paths in the vehicle as well as special analysis on the engine, like the injection cycle of the nozzle or the pressure gradient in a cylinder.”

The data output stream runs via CAN with up to 1 Mbit/s or with maximum 100 Mbit/s on Fast Ethernet. The data format has a resolution of 16 bit or 32 bit. All measuring inputs, CAN, power supply and housing, are completely galvanically isolated from each other. Status LEDs on each data acquisition input inform about the correct channel allocation and display an overcurrent during the data acquisition process.

The four analog inputs cover ten measuring ranges with voltages of $\pm 0,01$ V up to ± 100 V. The inputs are voltage proof up to ± 500 V. Each input has its own adjustable sensor supply of up to ± 15 V with up to ± 60 mA. The integrated hardware filter is a switchable butterworth filter of 8th order with 12 kHz cutoff frequency. The module supports channel sampling rates from 10 kHz up to 100 kHz.

The module has an anodized aluminum housing with protection level IP67. It operates in the temperature range from -40 °C up to $+105$ °C with a relative humidity of 5 % to 95 % in the voltage supply range of $9 V_{DC}$ to $36 V_{DC}$. If the voltage drops beneath 6 V, the module turns off. The power consumption is typically 4,2 W.

The measuring module can be used as an independent module as well as in connection with other modules of the Mx- and Sx-series. The configuration is made via a X-Link Ethernet interface. All settings can be done with the Windows software IpeMotion. The module has a special attachment mechanism for the tool-less combination of modules.