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Modular system of fieldbus controller and up to 8 instrumentation amplifiers

Fast digital networking for sensors

In modern automation concepts, digitization poses special challenges all the way down to the sensor. Design and space constraints or harsh environments often require sensors without integrated evaluation electronics. In this case, smart instrumentation amplifiers digitally evaluate measured values from such sensors and transmit them to the automation network via a fieldbus controller, allowing end-to-end digitization. burster offers a scalable, fully digital, compact module system for this kind of data acquisition. It comprises a fieldbus controller (model 9251) for industrial Ethernet standards such as PROFINET, EtherNet/IP or EtherCAT, and instrumentation amplifiers that can be used flexibly. Up to eight instrumentation amplifiers (model 9250) can be connected to one controller for sensors like strain gages, potentiometers or analog ±10 V or incremental signals. The instrumentation amplifier automatically detects burster sensors using the burster TEDS sensor recognition system, and can be configured quickly and easily on the module. Readily accessible terminals for the sensor wiring and rail mounting allow rapid installation in the control cabinet by simply lining up the fieldbus controller and amplifier modules.

Flexible, scalable, practical

The fieldbus controller can read up to nine measurement channels: the eight channels of the 9250 instrumentation amplifier and an additional ±10 V DC channel as a standard signal or transmitter input. In addition to ultra-fast pushbutton configuration on the amplifier modules, a USB interface on the front also enables convenient device configuration or backups via DigiVision PC software. Thanks to its compact design, the complete system consisting of fieldbus controller and instrumentation amplifiers is easily accommodated in the control cabinet, allowing digital measurement data acquisition even in limited space.

The amplifier modules operate with 24-bit A/D conversion, the measurement rate of the individual instrumentation amplifiers is up to 14,400 measurements per second with linearity deviations of < 0.005 % F.S. They provide a strain gage supply voltage of 2.5, 5 or 10 volts with a maximum supply current of 40 mA. This also allows multiple strain gage sensors to be connected to the supply voltage in parallel. The sensor connection uses the 6-wire system to compensate for any measurement errors to due to line and contact resistance, which can occur e.g. due to temperature changes. A configurable limit switch also enables direct switching via an output on the module, for example for a fast emergency stop. This eliminates runtime delays that occur with PLC integration.

Picture captions:

Figure 1: Compact module system for digital sensor integration into the industrial Ethernet concept of modern process control systems (copyright: burster) $$Image fieldbus controller plus amplifier modules, possibly in control cabinet$$

Figure 2: Readily accessible connection terminals and pushbutton configuration allow fast setup (copyright: burster) $$Image amplifier module with view of front panel and terminals$$

Company box: About burster

burster supplies measuring technology ranging from individual sensors to system solutions. Its customers are mainly in mechanical and plant engineering, automation, the automotive industry and its suppliers, electrical and electronic engineering and the chemicals industry. The range includes measuring instruments and testers as well as standard sensors for mechanical and electrical measured values, such as load cells, pressure, torque and displacement sensors, milli- and megohmmeters, and resistance decade boxes. In addition, individual custom OEM solutions are possible, including for many other sectors and future markets such as medical engineering and biotechnology. Many years of experience in designing and building measuring instruments and sensors guarantee optimum solutions every time. Developed and manufactured in Germany, burster sensors, amplifiers and transmitter modules, precision instruments and measuring systems for sensor signal processing are shipped to customers all around the world.

Further details are available at: https://www.burster.de/de/sensorelektronik/neue-messverstaerker-generation

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