Fieldbus Controller for the 9250 Instrumentation Amplifier series

MODEL **9251**

burster TEDS

NEW
9251 with integrated strain gage measuring input

EtherNet/IP PROFINET EtherCAT

Highlights

- NEW: Measuring input: Strain gage, Potentiometer, ±10 V
- Non-linearity < 0,005 % F.S.
- TARA function with LED display
- PROFINET, EtherCAT and EtherNet/IP
- High measurement speed
- Up to 8 model 9250 instrumentation amplifiers can be modularly connected

Applications

- Automation technology
- Production
- Research and development
- Mechanical engineering
- Test-bench equipment

Fieldbus controller 9251 with up to 8 instrumentation amplifiers 9250

Product description

The new 9250/9251 amplifier generation unites all the features that make modern measurement data acquisition actually possible for the first time. Network-compatible, high-precision, user-friendly, smart and versatile: the combined system of amplifier module and Fieldbus controller can be integrated into any existing setup.

The Fieldbus controller delivers all signals exactly where they are needed, to be combined, checked and linked. With the available Fieldbus interfaces, you are flexible, perfectly connected and you save time, costs and other resources when linking to and integrating into existing systems. Due to the integrated measuring input, the use of a Fieldbus controller module is sufficient for single-channel applications. For multi-channel applications, the system can be expanded to up to 9 measuring channels.

Up to 8 bus-compatible model 9250 instrumentation amplifiers can be cascaded on the model 9251 Fieldbus controller. Automatic detection and addressing of the instrumentation amplifier modules allows easy expansion. By means of measuring input, the fieldbus controller can be operated as a stand-alone device.

Some applications require large amounts of measurement data to be acquired and transmitted within a very short time. Very fast PLC communication with high update rates is needed. To optimize data throughput, the model 9251 Fieldbus controller can transmit a whole data array with the last 32 measured values per channel. The scaled measured values are read simultaneously in the real-time data of the Fieldbus link.

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Technical data

Interfaces	
PROFINET	
Connection	2 x RJ45, 10/100 Mbit/s
Communication	RT communication **Cyclical real-time process data** *Short mode:* Transmission of each individual measured value for slow measurements or very fast PLC communication *Extended mode:* Simultaneous transmission of 32 measured values for high measurement speed **Acyclical parameter data**
EtherCAT	
Connection	2 x RJ45, 10/100 Mbit/s
Communication	**PDO – Process Data Objects** Transmission of each individual measured value for slow measurements or very fast PLC communication Simultaneous transmission of 32 measured values for high measurement speed **SDO – Service Data Objects**
EtherNet/IP	
Connection	2 x RJ45, 10/100 Mbit/s
Communication	cyclical data transmission (implicit messaging) acyclical data transmission (explicit messaging)
Internal communication bus to the 9250 modules	
Transmission speed	3.6 kHz per channel
Number of devices (model 9250)	Up to 8
Compatible sensors / provisional data	
Strain gage full bridge	
Excitation voltage	2.5 / 5 / 10 V, configurable, short-circuit proof
Connection technology	4 or 6 wire, automatic recognition
Excitation current	approx. 40 mA
Input impedance	1 GOhm
Measuring ranges	±15 mV, ±30 mV, ±300 mV
Potentiometer	
Excitation voltage	5 V
Excitation current	max. 40 mA
Resistance	> 200 Ohm
Input impedance	1 GOhm
Voltage metering	
Measuring range	±10 V
Input impedance	1 GOhm

4543-009251EN-5699-041528

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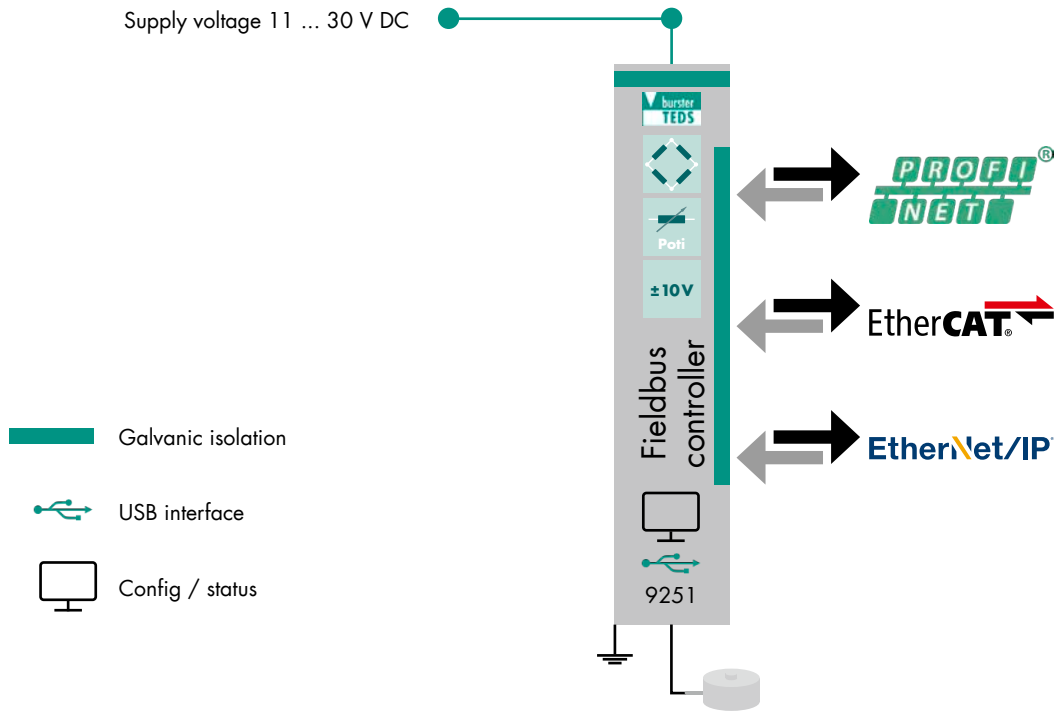
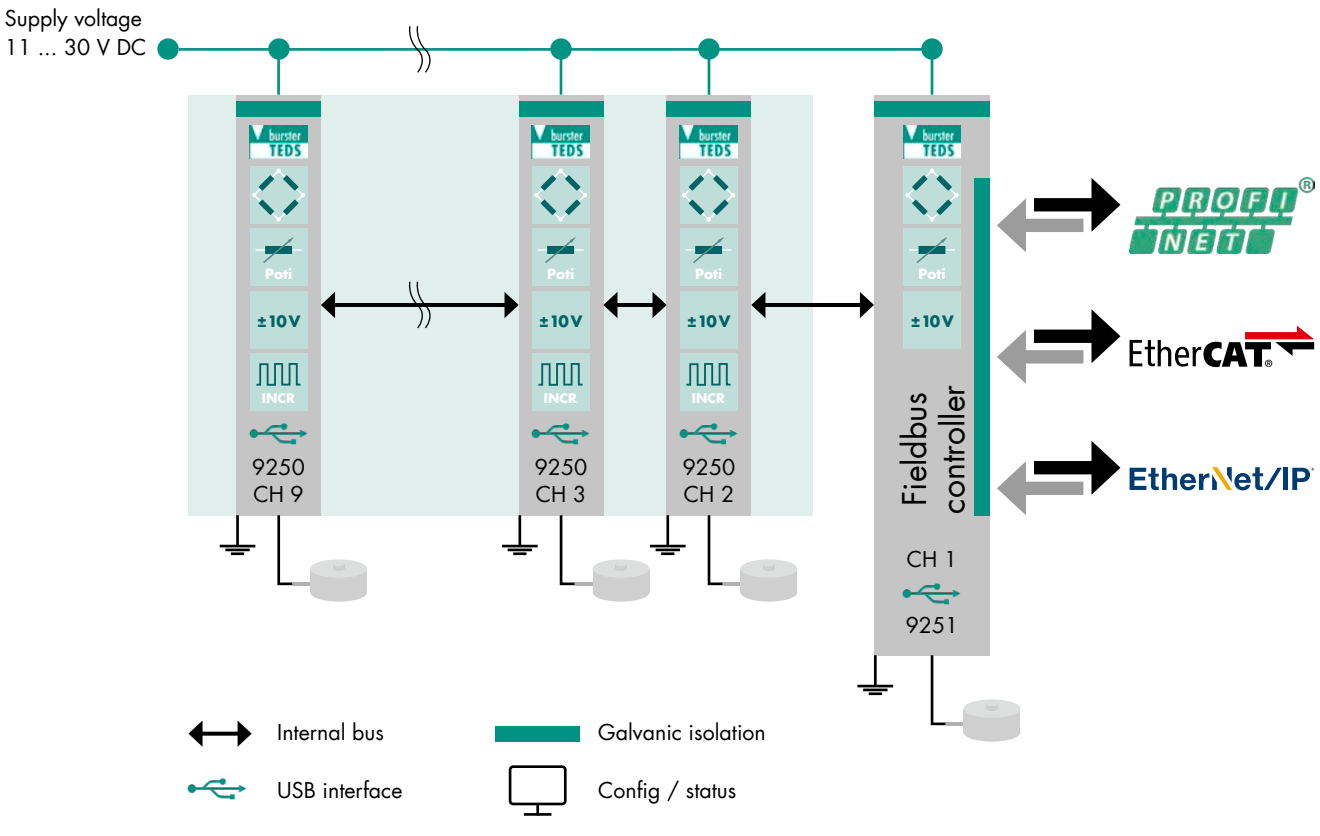
Housing		
Material		Polyamide
Dimensions (WxHxD)		22.5 x 110 x 115 mm
Weight		Approx. 210 g
Protection class		IP20 to EN 60529
Connections		Screw clamps, up to 2.5 mm, RJ45, USB Micro B
General data		
Supply voltage		11 ... 30 V DC, galvanic isolation, inverse polarity protection, overvoltage protection
Power consumption		Approx. 3 W
Operating temperature range		0 °C ... +50 °C
Storage temperature range		-25 °C ... +70 °C
Humidity		0 ... 70 % non-condensing
Sampling rate		10000/s (in standalone mode) 1000/s (per channel when cascading of 1 to 8 model 9250 instrumentation amplifiers)
Electrical isolation		Instrumentation amplifier, supply voltage
Error limit		±0.03 % F.S.
AD conversion		24-Bit
Non-linearity		< 0.005 % F.S.
Temperature coefficient Gain		< 15 ppm/K Rd
Input zero drift		< 0.1 µV/K
Common mode rejection (CMRR)		140 dB (Bei DC)
Installation		Grounded mounting rail 35 mm to DIN EN 50022
Interfaces		2 x RJ45, Micro-USB for configuration, internal bus interface for cascading up to 8 bus-compatible model 9250 instrumentation amplifiers
Display		1 x status LED, 3 x fieldbus-specific LEDs, 1 x TARA LED, 1 x TEDS LED

Block diagram – singlechannel application, fieldbus controller with measuring input and load cell



Block diagram – multichannel application with universal instrumentation amplifier, fieldbus controller with measuring input and load cells



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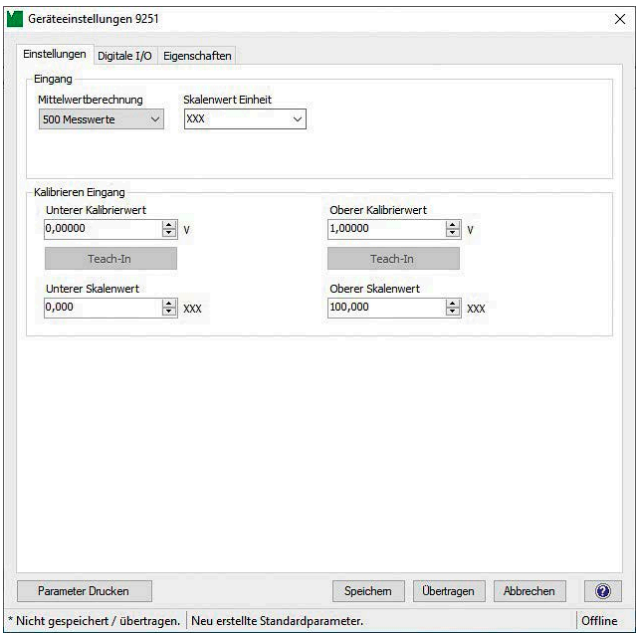
DigiVision PC software

- **Free of charge at www.burster.com**

- Convenient device configuration via front-panel USB port
- Automatic recognition of amplifier modules in DigiVision
- Backup facility for storing settings
- Analog output configuration
- Scaling of output values
- Configuration of PLC I/O outputs
- Device information



Accessories

Order code		
9900-K358		USB cable for configuration
9250-Z001		1 set of terminals (supplied with device)

Calibration of the measuring chain

Calibration of measuring chain		
92ABG		Calibration of the measuring chain in sensor's reference direction
92ABG-S		Calibration of the measuring chain according to customer request

Calibration certificate with accreditation symbol

Calibration certificate with accreditation symbol for Feldbus-Controller 9251 with measuring input. The calibration is based on the accreditation of the calibration laboratory D-K-15141-01-00 for the scope of accreditation listed in the annex. The traceability to national standards as well as wide international recognition (DAkkS as a signatory of the multilateral agreements of EA, ILAC and IAF) are guaranteed.

DAkkS
Deutsche
Akkreditierungsstelle
D-K-15141-01-00

burster calibration services according to the accredited scope of services

Calibration certificates for instrumentation amplifiers

Standard factory calibration certificate for instrumentation amplifiers (WKS)		
On request		Calibration is performed by electrical simulation of the input variables.
Calibration certificate with accreditation symbol for instrumentation amplifiers (DKD)		
On request		Our ISO 17025 accredited calibration laboratory (DAkkS) offers accredited calibrations in accordance with its scope of services. Calibration is performed by electrical simulation of the input variables.

Calibration certificates for measurement chains

Standard factory calibration certificate for measurement chains (WKS)		
Optional available		Normally, our standard factory calibration certificate contains measuring points which are recorded starting from zero in 5 steps (distributed as evenly as possible over the measuring range) until the nominal sensor value is reached. In this process, the change of the physical input variable takes place with increasing and decreasing signal with unchanged installation position of the sensor. Calibration is performed in conjunction with a transducer (sensor) for physical quantities and is based on the procedure specified in the sensor data sheet.
Special factory calibration certificate for measurement chains (WKS)		
On request		We are happy to calibrate sensors and measurement chains to the customer's specification.
Calibration certificate with accreditation symbol for measurement chains (DKD)		
Optional available		Our ISO 17025 accredited calibration laboratory (DAkkS) offers accredited calibration certificates according to its scope of services. The applied calibration procedures can also be taken from the data sheet of the used transducer (sensor). Calibration is performed in conjunction with a transducer (sensor) for physical quantities.

Example order

PROFINET 4-channel instrumentation amplifiers with compression load cells			
4 x		Miniature compression load cell	Model 8402-6005-N000S000
1 x		Fieldbus controller	Model 9251-V3200
3 x		Universal instrumentation amplifier	Model 9250-V000010
4 x		Compensation of measurement chain	92ABG
EtherCAT 1-channel fieldbus controller with tension and compression load cell			
1 x		Precision miniature tension and compression load cell	Model 8431-5500-T000S000
1 x		Fieldbus controller with strain gage input	Model 9251-V1200
1 x		Compensation of measurement chain with TEDS sensors	92ABG-2

Order Code

9	2	5	1	–	V		2	0	0

Fieldbuses	
■ EtherCAT	1
■ PROFINET	3
■ EtherNet/IP	4

Analog input signals	
■ Measuring input: Strain gage, Potentiometer, ±10 V	2

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