CAMILLE BAUER

Rely on us.

- Signal adaptation and conversion
- Limit value monitoring
- Communication with higher-ranking systems
- Protection of people and plants
- Safe measurement and analysis
- Signal amplification
- Remote I/O functionality

SINEAX V604s

Signal converter of the premium class

- Multifunctional
- Precise
- Safe

One instrument – numerous functions

SINEAX V604s is a high-performance multifunctional signal converter with a very high basic accuracy of 0.1 %.

However, SINEAX V604s is more than a simple isolation amplifier or temperature transmitter.

The instrument may be adapted to the most varied measuring tasks via the MODBUS/RTU interface integrated as a standard and the CB-Manager software available free-of-charge.

This multifunctionality in combination with very easy operation results in a wide range of applications of classical tasks, e.g. temperature measurement or signal isolation through to intelligent monitoring tasks aligned to safety.

SINEAX V604s is characterised by the following features:

- Sensor connection without any external jumpers
- High-quality pluggable screw terminals
- 2 analogue inputs and 2 analogue outputs
- Digital MODBUS/RTU interface for parameterising and system integration
- Integrated mathematical functions
- Customised linearisation
- Numerous limit value monitoring and alarms
- AC/DC wide-range power supply unit
- Functions for safety-aligned measurements

Safe measurement and analysis

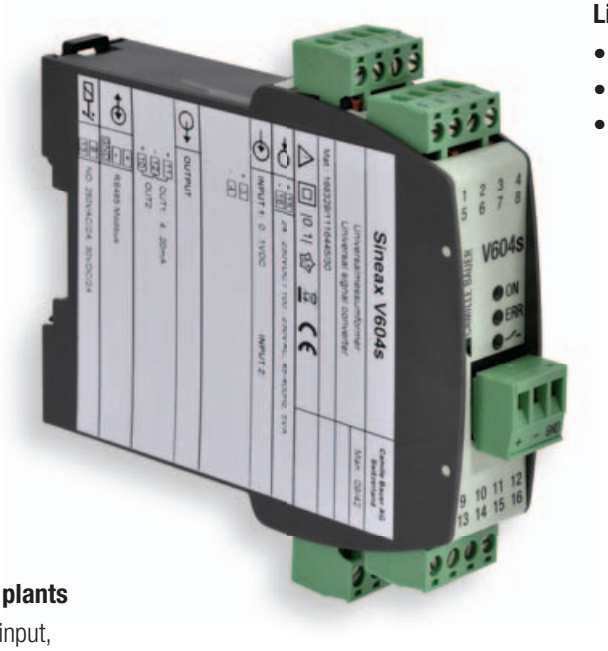
- Highly precise measurements at 2 inputs
- Safety-aligned measurement by redundant temperature measurement
- Mathematical linking of both inputs

Signal amplification

- Signals are amplified by SINEAX V604s and transferred without any losses

Remote I/O functionality

- Outputs can be accessed independent of the input via MODBUS
- Relays can be controlled via MODBUS



Limit value monitoring

- 4 limit values + 1 alarm
- 2 relays (changer)
- Monitoring of changes over time

Communication

- MODBUS/RTU interface
- 2 analogue outputs
- 2 relays

Protection of persons and plants

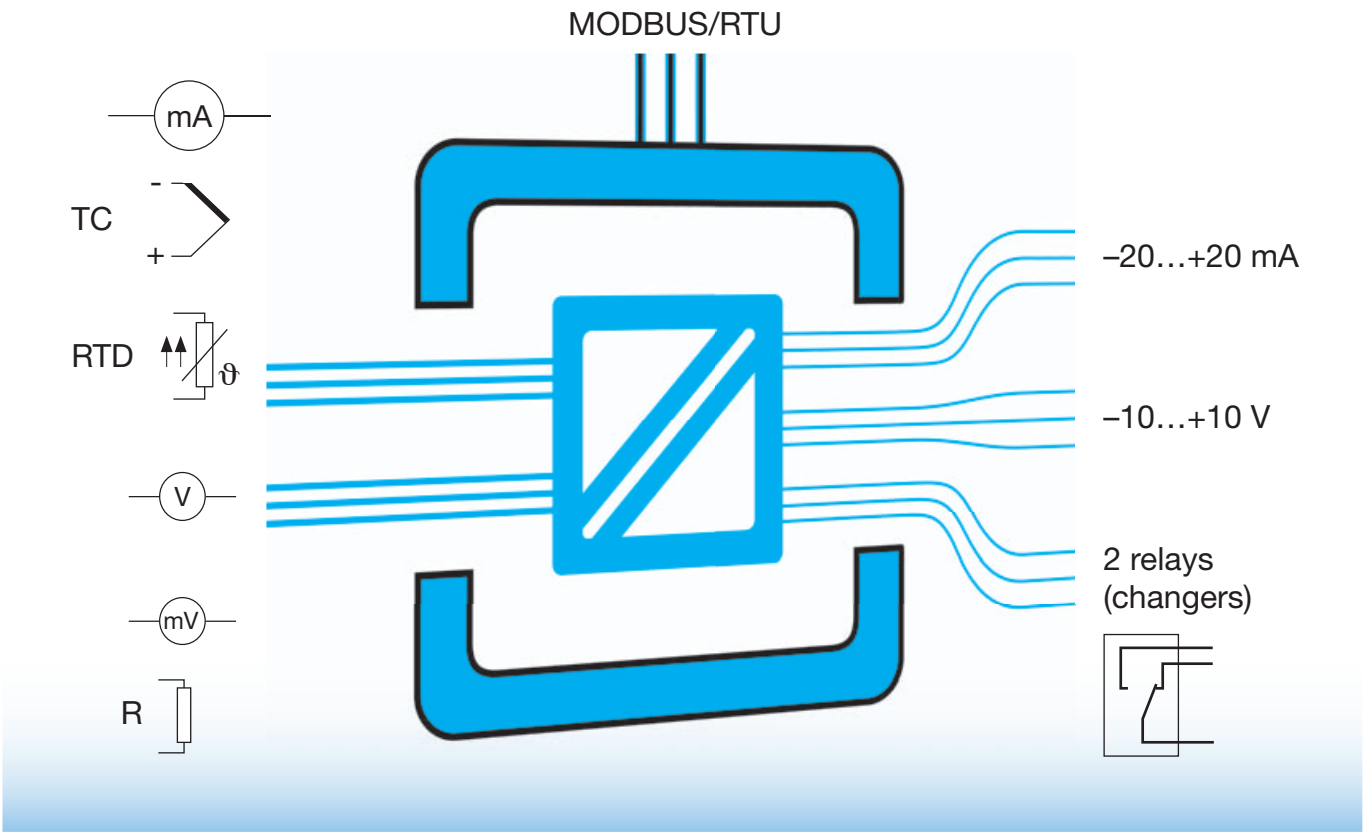
- Galvanic isolation between input, output and power supply
- Measurement up to 300 V DC according to overvoltage Category III

Signal adaptation and conversion

- Stored characteristic curve for TC, RTD, cylindrical horizontal tank, etc.
- User-specific characteristic curve with up to 24 basic values in free allocation of the X and Y coordinates

Please note: Not all functions are available in any combination.

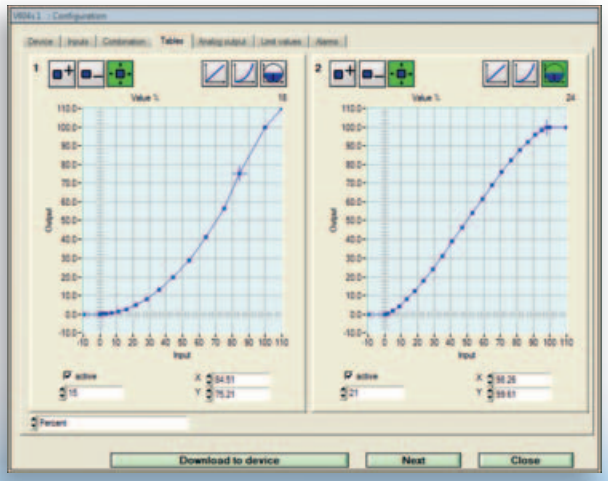
As versatile as a Swiss army knife



Input variables, measuring ranges

SINEAX V604s may be quickly and easily adapted to the measuring task using CB-Manager software. Direct currents, direct voltages, resistances, potentiometers, thermocouples and resistance thermometers can be measured. Since the specific data is stored for all listed temperature sensors, optimum adaptation to a linear output signals is achieved.

If an individual adaptation of the input signal is required, SINEAX V604s makes a basic value table per channel available in which up to 24 basic values can be comfortably allocated to the X and Y coordinates.

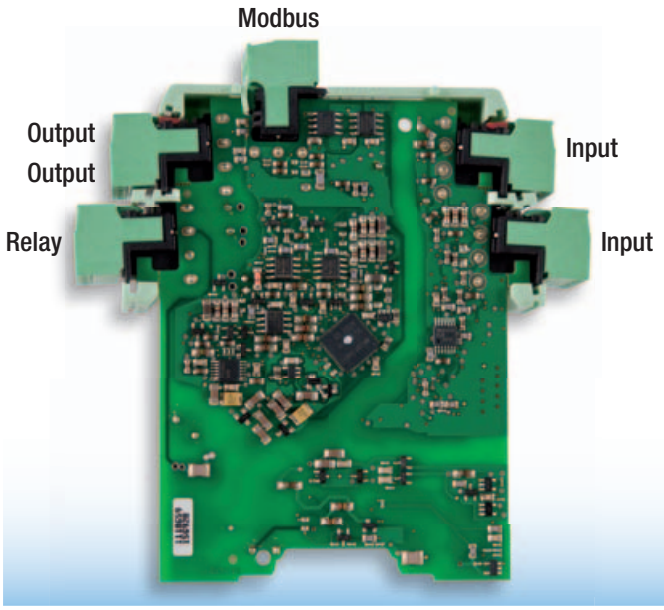


Type of measurement	Measuring range	Minimum span
DC voltage	–1000 … 1000 mV	2 mV
DC voltage	–300 … 300 V	>1 V
DC current	–50 … 50 mA	0,2 mA
Resistance	0 … 5000 Ω	8 Ω
RTD Pt100	–200 … 850 °C	20 K
RTD Ni100	–60 … 250 °C	15 K
TC Type B	0 … 1820 °C	635 K
TC Type E	–270 … 1000 °C	34 K
TC Type J	–210 … 1200 °C	39 K
TC Type K	–270 … 1372 °C	50 K
TC Type L	–200 … 900 °C	38 K
TC Type N	–270 … 1300 °C	74 K
TC Type R	–50 … 1768 °C	259 K
TC Type S	–50 … 1768 °C	265 K
TC Type T	–270 … 400 °C	50 K
TC Type U	–200 … 600 °C	49 K
TC Type W5Re-W26Re	0 … 2315 °C	135 K
TC Type W3Re-W25Re	0 … 2315 °C	161 K

High-level safety

Personal safety

SINEAX V604s offers protection for people and plants through consistent galvanic isolation of the input, output and power supply circuits. The instrument provides reinforced insulation according to overvoltage category III. (Operating voltage 300 V / test voltage 3.7 kV)



Electromagnetic compatibility	EN 61000-6-2/61000-6-4
Ingress protection (according to IEC EN 60529)	Housing IP 40 Terminals IP 20
Electric design	According to IEC or EN 61010
Degree of pollution	2
Between power supply and all circuits and between the measuring input (1+2) and all circuits	Reinforced insulation overvoltage category III operating voltage 300 V test voltage 3.7 kV AC rms
Between output and relay contact	Reinforce insulation overvoltage category II Operating voltage 300 V Test voltage 2.3 kV AC rms
Between output (1+2) and Modbus connection	Function insulation Operating voltage <50 V Test voltage 0.5 kV AC rms
Environmental assessment	EN 60068-2-1/-2/-78/-6/-27

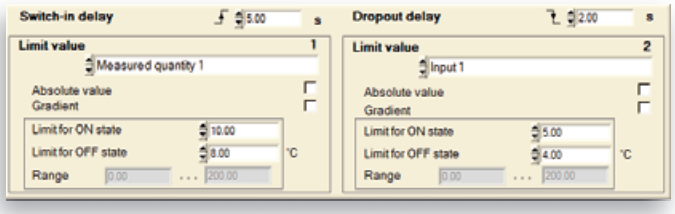
Process safety

Sensor breakage/short circuit

If a temperature sensor or a resistance sensor is connected to SINEAX V604s, the instrument can perform, apart from the actual measurement, a simultaneous check for a sensor break or short circuit. Users can define the behaviour of the instrument in case of a failure which may be indicated via the analogue output, the relay and/or the alarm function.

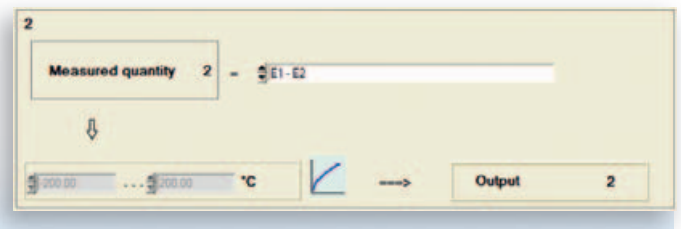
Sensor drift

Sensor drift monitoring concerns the difference of 2 input sensors. If a previously defined deviation is exceeded, an alarm can be issued. Even if the sensors to be monitored have different response times, SINEAX V604s can perform drift monitoring for a certain period of time thus compensating the different response times.



Sensor redundancy

If safe and comprehensive temperature measurement is required, SINEAX V604s realises redundant measurement. The instrument measures a temperature using two independent sensors. If a failure occurs in one sensor (short circuit or breakage), V604s switches to the correctly working sensor without any interruption. At the same time, the failure is indicated so that the defective sensor can be replaced. Measurement continues during the sensor change and subsequently uses both sensors again.

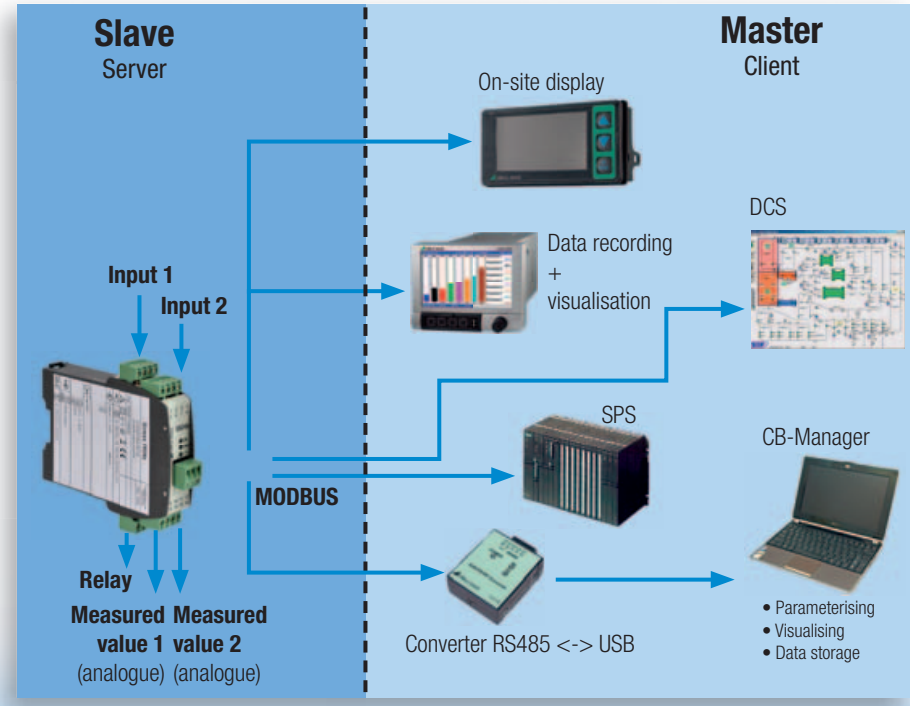


Process interfaces

SINEAX V604s communicates in numerous ways with its environment.

Communication interfaces:

- 2 outputs 4…20 mA for measured values and failure messages according to NAMUR
- MODBUS interface to communicate with higher-ranking systems
- MODBUS interface to parameterise the instrument
- MODBUS interface to visualise and store measured values
- Relay to indicate limit values and alarms

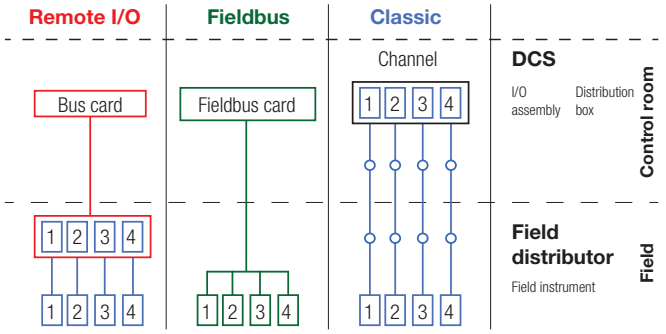


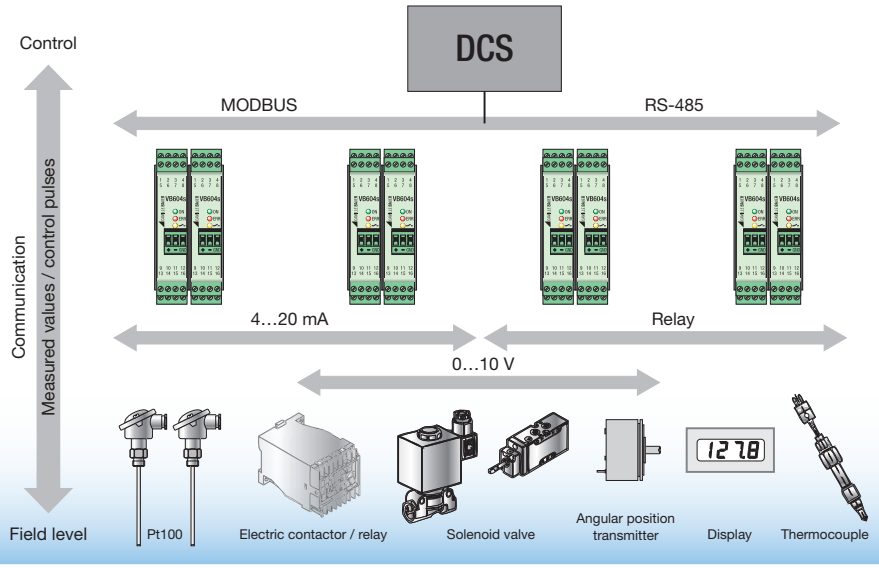
Bidirectional control

The SINEAX VB604s version activates a bidirectional control via the MODBUS interface which enables the instrument to act as a remote I/O component.

The inputs are “decoupled“ from the outputs which means that a change at the inputs does not have a direct effect on the outputs any more. Both outputs as well as the relay may be directly switched via the MODBUS interface.

SINEAX VB604s can thus be used to acquire signals and forward them to a higher-ranking control. At the same time, the control can access field actuators and control them via the outputs of SINEAX VB604s.





Parameterising, service and measured value acquisition

CB-Manager software individually configures all SINEAX V604s variants. The software is included in every instrument delivery or is available for download free of charge from our web page www.camillebauer.com.

The CB-Manager offers the following functions:

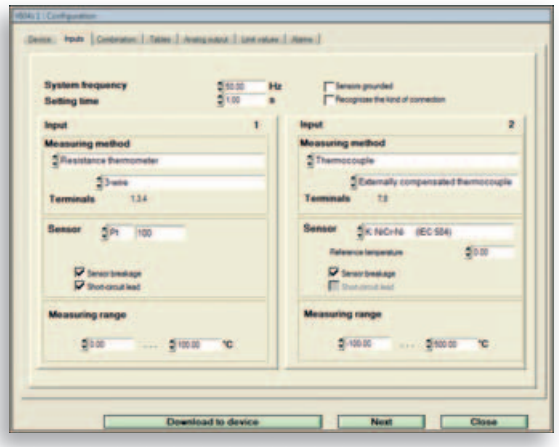
- Comfortable complete configuration of V604s
- Storage of configurations
- Visualising of measured values, links as well as alarm and failure statuses
- Storage of recorded measured values
- Extensive service functions

Configuration:

All settings are comfortably arranged via the CB-Manager software. Users are guided step by step through the settings. Depending on the selected settings, only those functions are subsequently released which make sense in the respective context.

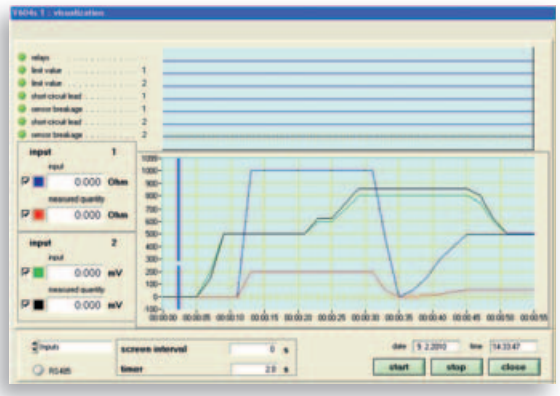
The following groups may be configured:

- General instrument and interface settings
- Configuration of inputs
- Mathematical linking of inputs
- Application-specific linearisation
- Configuration of outputs
- Limit value, alarm and relay switching on



Visualising and storing of measured data

Any measured data as well as any status can be visualised online by the CB-Manager software. This concerns the inputs, outputs, the relay status as well as all failure and alarm messages. If the inputs have been mathematically linked, these values may also be displayed.
The data of all visualised values can be stored in form of a file on the computer and loaded again into the CB-Manager at a later time.



Simulation

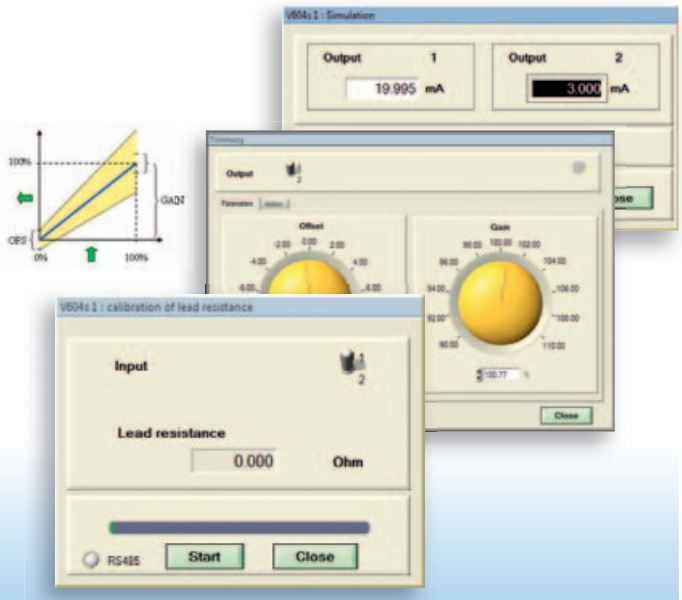
The CB-Manager simulates the outputs of a connected V604s. This permits the instrument to be comfortably tested during commissioning without any input signal.

Adjustment

An application might require that the entire measuring chain be adjusted. The output values of SINEAX V604s may be adjusted in this respect.

Lead calibration

For resistances or resistance thermometers in 2-wire arrangement, the CB-Manager offers a comfortable option to measure the lead resistance.



The CB-Manager features a context-related help function which always provides users with the right information concerning a certain item in the configuration program.

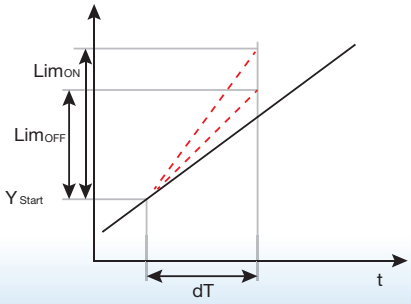
Application examples

Limit value/gradient monitoring

If a sudden change of a process parameter causes problems in a plant, the change of measured values must be constantly monitored. SINEAX V604s monitors the gradients of measured values and can trigger an alarm if defined parameters are exceeded or intervene in the process in a controlling manner.

Gradient monitoring is used, for example, in:

- Level monitoring (tank farms, rain retention basins, pump sumps, etc.)
- Temperature monitoring in pressurised systems
- Extruders
- Injection moulding plants
- Pasteurisation plants



Gradient monitoring

SINEAX V604s as an input component for MODBUS/RTU devices, e.g. videographic recorders.

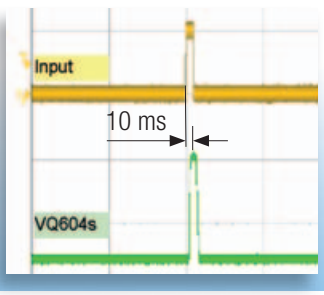
The MODBUS/RTU interface makes SINEAX V604s a high-quality input component for all MODBUS/RTU devices with client functionality. With its multifunctionality and high galvanic isolation SINEAX V604s offers, apart from high safety aspects, also an economic solution for the extension of existing systems.
For example, SINEAX V604s can extend videographic recorders without any free inputs by additional channels in an easy, safe and cost-effective manner.

Photovoltaics monitoring

SINEAX V604s is used to monitor voltages and currents in photo-voltaics. One input directly acquires the voltage up to 300 V DC. The voltage drop is measured in mV via a shunt using the 2nd input and scaled to the respective current value. Depending on the parameters set, the outputs now provide the current value, the voltage values or the power as analogue signals. In addition, all of the values may be transmitted via MODBUS.

Measurement of fast signal changes

- E.g. on electric arcs in glass melting or welding plants
- Measurement of pressure changes
- In CD production



Overview of instrument versions

	The universal instrument	The bidirectional instrument	The monitoring instrument	The fast instrument
	V604s	VB604s	VC604s	VQ604s
				
2 universal inputs	•	•	•	•
Galvanic isolation of all circuits	•	•	•	•
AC/DC wide-range power supply unit	•	•	•	•
Fast measurement up to 10 ms	-	-	-	•
Number of analogue outputs	2	2	1	2
Number of relays	1	1	2	1
Remote I/O functionality	-	•	-	-
300 V input selectable	•	-	-	-
High-quality pluggable screw terminals	•	•	•	•
Output signal (selectable for each output separately)	U or I	U or I	U or I	I
Mathematical linking of inputs	•	•	•	•
Sensor drift monitoring	•	•	•	•
Breakage and short circuit monitoring	•	•	•	•
Sensor redundancy	•	•	•	•
MODBUS interface	•	•	•	•

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CAMILLE BAUER

Rely on us.

Camille Bauer AG
Aargauerstrasse 7
CH-5610 Wohlen / Switzerland
Phone +41 56 618 21 11
Fax +41 56 618 21 21
info@camillebauer.com
www.camillebauer.com