Multifunction Transducer

AD-VC 1 GVD

Description

The digital multi-function measuring transformers of series VarioCheck AD-VC 1 are freely programmable digital measuring transducers with two analogue outputs and up to 2 limiting value relays. Extensive standard equipment and additional options solve almost all imaginable tasks of a modern evaluation. All measuring ranges and outputs can be freely parameterized. This can be carried out via the optional operating modul AD-VarioControl or via the programming software AD-Studio. VarioCheck AD-VC 1 fulfils all tasks of a universal and secure measuring value recording through integral function modules such as limiting value messages, freely adjustable hysteresis, selectable relay functions, time-delayed switching, automatic or manual simulation modus, free linearizing curves and a wide range of supply voltage.

Specific characteristics

- bipolar current input
- bipolar mV voltage input
- voltage input
- Power supply for 2-wire transmitters
- Thermocouples inputs, types J, T, K, E, N, S, R, B, C; internal or external reference junction
- Resistance thermometer inputs, types Pt/Ni 100, Pt/Ni 500, Pt/Ni 1000
- Resistance, Potentiometer input
- Sensor error detection for thermocouples and resistance thermometers
- Input of a characteristic curve possible
- Automatic or manual simulation operation
- 2 bipolar current or voltage output
- 23 mm narrow housing with detachable terminal clamp
- Operating module AD-VarioControl as an accessory

Business data

Order number	
AD-VC1 GVD-R0	without relay
AD-VC1 GVD-R2	two relays
Accessory (optional)	
Operating module	AD-VarioControl
Control panel with RS-485	AD-VarioConnect
USB programming adapter	AD-VarioPass
Configuration software	AD-Studio

Technical specifications

Input current	
Measuring range	-24 ... + 24 mA DC
Input resistance	20 Ohm
Basic accuracy	4 µA
Transmitter supply	
Off-load voltage	24,0 V
Voltage at 20mA	18,0 V
Current limit	~ 25 mA
Input voltage	
Measuring ranges	0 ... + 12 V DC
Input resistance	1 MOhm
Basic accuracy	1 mV
Input voltage mV	
Measuring ranges	-15 ... +15 mV -30 ... +30 mV -60 ... +60 mV -125 ... +125 mV -250 ... +250 mV
Input resistance	1 MOhm
Basic accuracy	20 µV
Thermocouples	
Comparative place:	
Internal	measurement with sensor in the device connecting terminals
External	Cold junction temperature selectable by parameters
To DIN EN 60584:	
measuring range type J	-200 ... +1200 °C
measuring range type T	-200 ... +400 °C
measuring range type K	-200 ... +1360 °C
measuring range type E	-200 ... +1000 °C
measuring range type N	-200 ... +1300 °C
basic accuracy	1 K
To DIN EN 60584:	
measuring range type S	-40 ... +1760 °C
measuring range type R	-40 ... +1760 °C
measuring range type B	+400 ... +1800 °C
basic accuracy	2 K
After standard ASTM E988:	
measuring range type C	0 ... +2320 °C
basic accuracy	2 K

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AD-VC 1 GVD

Technical specifications

Resistance input

Resistance thermometer inputs DIN EN 60751: Pt100, Pt500 and Pt1000 DIN 43760: Ni100, Ni500 and Ni1000

measuring range Pt	-200 ... +850 °C
measuring range Ni	-60 ... +230 °C
smallest measuring spans	20 K
short circuit detection	< 20 Ohm
basic accuracy	0,2 K

Linear resistance

measuring range	0 ... 4000 Ohm
basic accuracy	0,1 Ohm
Connection method	2-, 3- oder 4-wire system
Sensor supply	100 µA
Max line resistance [1]	50 Ohm/cable

[1] With 2-conductor the line resistance comes as an offset into the measurement.

Potentiometer input

Connection method	3-wire system
Max. Resistance	50 Ohm ... 100 kOhm
Sensor supply	<=500µA

Current outputs

Max. output range	-21,5 ... 21,5 mA DC
Max. burden	400 Ohm
Residual ripple	20 µAss

Voltage outputs

Max. output range	-10,5 ... 10,5 V DC
Min. burden	10 kOhm
Residual ripple	10 mVss

Relay outputs A/B

Contact type	potential free changeover
Max. AC-breaking capacity	250 V AC, 2 A AC, 50Hz
Max. DC-breaking capacity	50 V DC, 2 A DC
Switching operations	
Mechanical	10^7
AC: 230V / 2A, cos(phi)=1	$6 * 10^5$
AC: 230V / 2A, cos(phi)=0,4	$2 * 10^5$
DC: 24V / 1A	$2 * 10^5$

Transmission behaviour

Linearity error	< 0,2 % of the measuring range
Rise time	500 ms (0...90 %, 100...10 %)
Rise time (temperature input)	< 1s (0...90 %, 100...10 %)
Temperature influence	+/- 100 ppm/K of the measuring range

Supply

Voltage range AC	50 ... 253 V AC, 50/60 Hz
Voltage range DC	20 ... 253 V DC
Nominal voltage AC / DC	230 V AC / 24 V DC
Power consumption AC / DC	5,2 VA / 3,2 W
Power consumption with operating module AC / DC	5,4 VA / 3,6 W

Housing

Dimensions (WxHxD)	23x110x134 mm
With operating module (bxhxt)	23x110x138 mm
Type of protection	IP 20
Connection method	detachable terminal clamp
Terminals, wire cross section	2,5 mm² flex wire / 4 mm² one wire
Bolting torque terminals	0,5 Nm
Weight	~ 150 g
Manner of fastening	35 mm DIN rail 35mm

Environmental conditions

Ambient temperature	-10 ... 50 °C
Storage and transport	-10 ... 70 °C (no condensation)

EMC

Product family standard [1]	EN 61326-1
Emitted interference	EN 55011, CISPR11 Cl. B, Gr. 1

[1] During electromagnetic disturbance minor changes in output signal are possible.

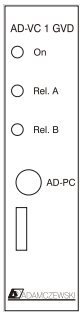
Electrical safety requirements

Product family standard	EN 61010-1
Overvoltage category	II
Pollution degree	2

Galvanic isolation, test voltages

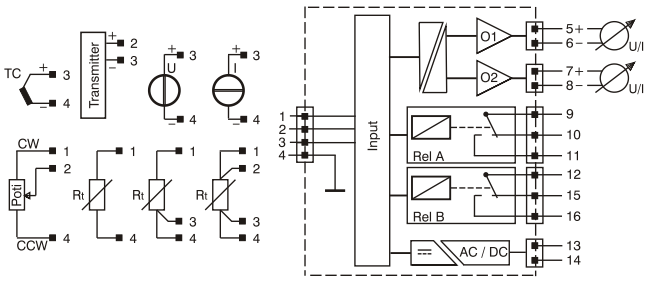
Input to output	2,5 kV (1 min)
In-/output to auxiliary voltage	4 kV (1 min)

Display and operating elements

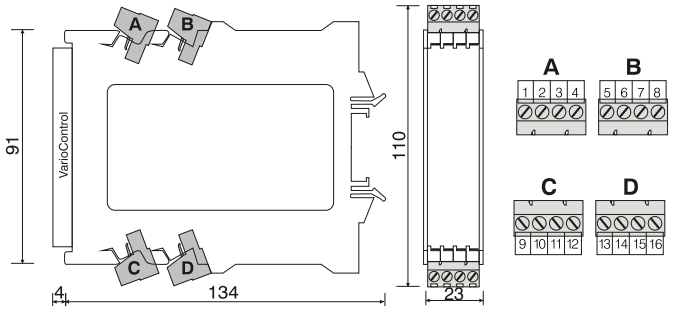


On: LED for operating display in green
on - normal operation
flashing - Signal failure, signal outside range limits
Rel: two LEDs for relays A and B in red
on - relay activated
AD-PC: Communication interface for configuration by a PC
Communication interface for VarioControl

Block and wiring diagram



Dimensions



Modbus Communication

The optional AD-VarioConnect operating module has an RS-485 interface. The data is transferred via the Modbus RTU protocol, the AD-VarioConnect operating module represents a Modbus slave. Communication takes place according to the master-slave procedure and starts with a request from the master, e.g. from a PLC or a PC. Each bus participant must have a unique address. If a slave detects that its address has been addressed by the master, the slave always sends an answer. The slaves never communicate with each other. They are also not able to start a communication with the master.
The Modbus master can read out the individual registers of the AD-VC 1 GVD via the addresses.
The default standard data format is 19200,e,8,1 with slave address 1. These settings can be changed via the AD-VarioConnect operating module.

Start address	Number of registers	Name	Unit	Data type	read	write
Measured values:						
40101	2	Input signal	InUnit	7	1	0
40103	2	Cold-junction temperature	°C	7	1	0
40301	2	Output signal 1	OutUnit	7	1	1
40303	2	Output signal 2	OutUnit	7	1	1
40601	1	Relay state A		3	1	1
40602	1	Relay state B		3	1	1
40801	2	Scaled input	ScUnit	7	1	0

Legend of the datatypes:

U08: 1	**S08:** 2	**U16:** 3	**S16:** 4	**U32:** 5	**S32:** 6	**float:** 7