

# Measuring transducer for temperature, input NiCr-Ni-type K thermocouple

- Straightforward application
- Suitable for severe operating conditions
- Compact construction
- Galvanic isolation between sensor input and output signal to the operating voltage
- Provision made for fine adjustment of measuring range
- Anti-tamper seal for the fine adjustment
- Meet high EMC-requirements
- **CE** requirements
- Short-circuit-proof output selectable from 0 ... 10 V/DC, 2 ... 10 V/DC, 0 ... 20 mA, 4 ... 20 mA
- Reference junction for temperature compensation integrated
- Broken-wire monitoring of input signal
- Operating characteristics displayed by integrated LED
- Flame-inhibiting and self-extinguishing body
- Suitable thermocouples are available

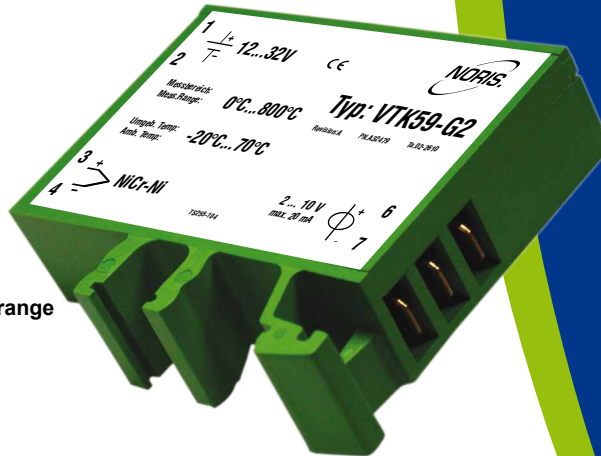


Image  
VTK59-G2



Germanischer Lloyd

## Measuring transducers of series 5

Measuring transducers of the Series 5 are designed to convert electric input values into standardised output signals.

Principle of operation: The transducer signal measured at the converter input is converted into a standardised output signal that is proportional to the input and lends itself to further customised processing, for instance, in a machine controller.

## General notes on Type VTK5..

### Description VTK5..

The Type VTK5.. is measuring the temperature dependently voltage of a NiCr-Ni-type K thermocouple according to EN60584-1.

The for temperature measuring with thermocouples needed reference junction is integrated in the measuring transducer. No external reference sensor is required.

For satisfactory working of the device, it is necessary that the compensating line be extended to the transducer.

### Electric isolation

Sensor input and output signals are electrically isolated from the operating voltage. Multiple operation of amplifiers and evaluation devices is therefore possible at the same operating voltage. The sensor only supplies one amplifier device.

### Output signal

The output signal generated is a standardized voltage of 0 ... 10 V/DC or 2 ... 10 V/DC, respectively, a standardized current of 0 ... 20 mA or 4 ... 40 mA. The output signal follows the input signal proportionally.

The output signal can be used to supply additional devices, such as indicating instruments and limit-value switches. Point to be noted: the maximum driver capability of the output.

### Monitoring for integrity

The devices come equipped with sensor monitoring for sensor-lead breakage. In the event of any fault, the output signal setting is 22 mA or, respectively 11.5 V.

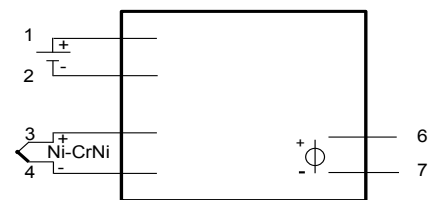
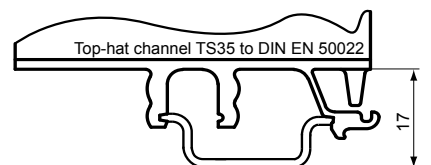
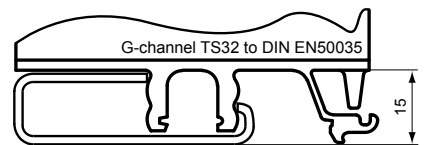
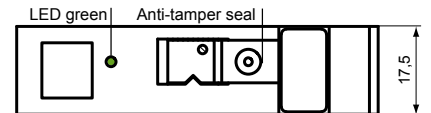
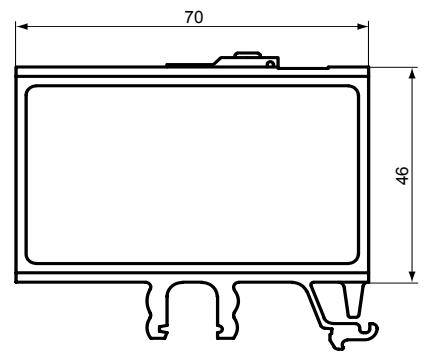
### Operating status display by LED

The green LED will be lit when the operating voltage is applied and the device is working normally. In addition to the fault signal, it will be flashing to signal a broken wire.

## Technical Data

Series VTK5..	
Operating voltage	$U_o=9 \dots 32$ V/DC, $U_R=24$ V/DC
Ripple	$< 20\%$ $U_o$
Reverse voltage protection	Integrated
Overvoltage	2.5 times $U_R$ up to 2 ms
Voltage drops	100% up to 10 ms
Power consumption	Approx. 50 mA (24 V/DC)
Galvanic isolation	Between sensor input and output signal to the operating voltage
Input signal	Thermocouple NiCr-Ni typ K according to EN60584-1
Output VTK5..-G.	0 ... 10 V/DC (VTK5..-G1), 2 ... 10 V/DC (VTK5..-G2), short-circuit-proof, load current 20 mA max.
Output VTK5..-I.	0 ... 20 mA (VTK5..-I1), 4 ... 20 mA (VTK5..-I2), load resistance 500 $\Omega$ max.
Noise voltage	Approx. 20 mV
Linearity	$< \pm 0.5\%$
Error class	IEC51-1 1.5%
Temperature sensitivity	$< \pm 0.1\%$ per 10 °K
Voltage sensitivity	$< \pm 0.1\%$ for 10% change in operating voltage
Load sensitivity	$< \pm 0.1\%$ for 50% change in load current
Vibration resistance	IEC60068-T2-6 15g increased strain, characteristic 2 (10 ... 100 Hz)
Shock resistance (impact)	DIN IEC60068-T2-27 300 m/s <sup>2</sup> with 18 ms dwell time
Climatic test	IEC60068-T2-30
Operating temperature	-20 °C ... +70 °C
Storage temperature	-45 °C ... +85 °C
Humidity	RH 96% maximum
ESD	IEC61000-4-2 $\pm 8$ kV
Electromagnetic field	IEC61000-4-3 10 V/m f=10 kHz ... 2000 MHz, 80% AM @ 1 kHz 10 V/m f=900 $\pm$ 5 MHz, 50% AM @ 200 Hz 10 V/m f=1800 MHz $\pm$ 5 MHz, 50% AM @ 200 Hz
Burst	IEC61000-4-4 $\pm 2$ kV supply $\pm 1$ kV sensor
Surge	IEC61000-4-5 sym. $\pm 1$ kV (R=2 $\Omega$ ) asym. $\pm 2$ kV (R=2 $\Omega$ )
HF-susceptibility	IEC61000-4-6 3 V <sub>pp</sub> 80% AM @ 1 kHz f=0.01 ... 100 MHz
LF-susceptibility	IEC60553 3 V <sub>pp</sub> 0.05 ... 10 kHz
Interference field intensity	Basis CISPR 16-1, 16-2 reduced characteristic
Connection	DIN46244 flat connector, gold-plated A6.3 x 0.8
Protection class	DIN EN60529 Body IP20, terminals IP00
Mounting	Snap-fit on top-hat channel or G-channel
Installed position	Any
Body material	Thermoplastic polyester, green, fire protection class V0
Weight	55 g
Standard supply	CE requirements complied with, DIN EN 61000-6-2, DIN EN 61000-6-4, DIN EN 50155, approved by GL, BV, LR, DNV

## Other Data



### LED code

x= LED lighting  
- = LED out  
o= LED flashing

	LED green
Operating	x
Wire-break	o (and failure signal)

## Type key / variants

Input range:	0 ... 600 °C	0 ... 800 °C
Output: 0 ... 10 V/DC	VTK58-G1	VTK59-G1
Output: 2 ... 10 V/DC	VTK58-G2	VTK59-G2
Output: 0 ... 20 mA	VTK58-I1	VTK59-I1
Output: 4 ... 20 mA	VTK58-I2	VTK59-I2

### Device codes

V	Measuring transducer
TK	Input signal Thermocouple NiCr-Ni typ K
5	Type series Type 5
8	Input range 0 ... 600 °C = 0 ... 24,902 mV
9	Input range 0 ... 800 °C = 0 ... 33,277 mV
G1	Variante Output 0 ... 10 V/DC, short-circuit-proof
G2	Variante Output 2 ... 10 V/DC, short-circuit-proof
I1	Variante Output 0 ... 20 mA
I2	Variante Output 4 ... 20 mA

V TK 5 8 -I2 (VTK58-I2) order example



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