



Measuring transducers for process parameters

parameterizable using USB

Type:
TSM-MU



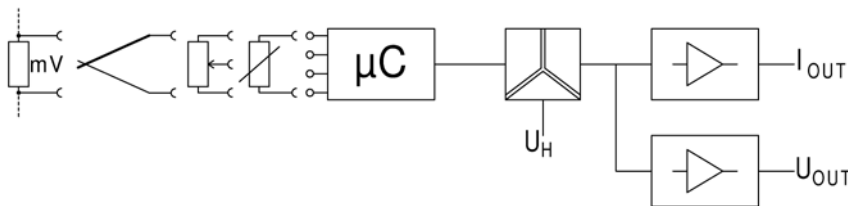
Application

The measuring transducer TSM-MU is used for the transformation and isolation of measurements at thermocouples, resistance thermometers, resistors, potentiometers and voltage measurement (e.g. shunt). In case of measurements at resistors (e.g. Pt100), the connection (2-, 3- or 4-wire connection) is automatically recognized when starting the instrument. Via an USB interface, the measuring transducer may be parameterized. The corresponding software may be downloaded under www.mueller-ziegler.com.

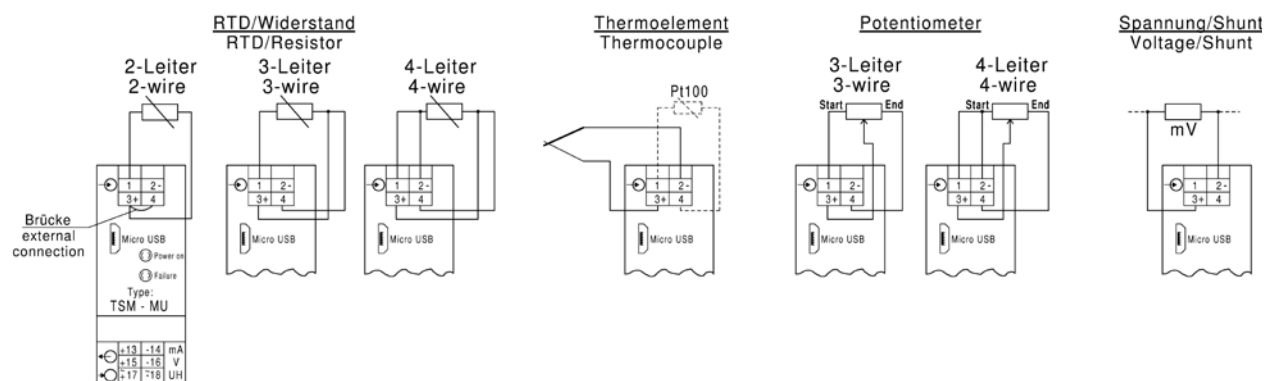


Function

The voltage values measured at the inputs are linearized and transformed into an impressed direct current and in an impressed direct voltage. When making measurements at a thermocouple, the cold junction compensation is done by an internal, external or constant temperature measurement. The galvanic isolation is realized using an optocoupler. An auxiliary voltage is required. Both outputs are no-load proof and short-circuit proof. Connecting the two outputs is not permissible.



Connection



Types and variants

Input	Thermocouples, Pt100, Pt1000, resistor, potentiometer or voltage
Output	0-20 mA + 0-10 V, 4-20 mA + 2-10 V, 0-10 mA + 0-5 V adjustable per software
Surcharges	Auxiliary voltage other than 230 V AC: 24 V DC 6-30 V AC + DC 36-265 V AC + DC 110 V AC
Frequency module	Type FM (frequency output 0-5 Hz up to 0-10 kHz) - (description page 10)
Relay module	for limit monitoring Type GWM - (description page 11)



Technical data

Input	Input variables	<p>Thermocouples (DIN 60584-1)</p> <p>Type B +100 ... +1820 °C, Type E -270 ... +1000 °C, Type J -210 ... +1200 °C, Type K -270 ... +1372 °C, Type N -270 ... +1300 °C, Type R -50 ... +1768 °C, Type S -50 ... +1768 °C, Type T -270 ... +400 °C</p> <p>cold junction compensation internal: Pt 100, 0-80 °C external: Pt 100, sensor current max. 0,5 mA, detection of sensor break constant: 0-100 °C</p> <p>Resistance thermometer / resistance / potentiometer</p> <p>Type Pt100 (DIN 60751) -200 ... +850 °C Type Pt1000 (DIN 60751) -200 ... +850 °C resistance 0 ... 5 kΩ potentiometer 100 Ω ... 10 kΩ sensor current max. 0,5 mA max. 100 Ω wire resistance symmetrical (2-wire connection max. 10 Ω) connection 2-, 3-, 4-wire with automatic recognition when starting the instrument, detection of sensor break</p> <p>Voltage measurement -1000 ... + 1000 mV</p>	
	Overload	max. 5 V between inputs	
	Input resistance	10 MΩ	
	Sensor break	max. 2-fold output value	
	Parameterization	via micro USB port and software (www.mueller-ziegler.de)	
	Function indicators	1x green „Power“ LED and type of connection when starting the instrument and resistance measurement; 1x red "Fail" LED, error status display	
	Output	Output variables	double output
		Rated values	0-20 mA/500 Ω load and 0-10 V / max. load 10 mA as well as 4-20 mA/500 Ω load and 2-10 V / max. load 10 mA and 0-10 mA/0-500 Ω load and 0-5 V / max. load 10 mA, adjustable via software
		Options	<ul style="list-style-type: none"> ● Frequency module a value from 0-5 Hz to 0-10 kHz ● „Open-collector“ NPN, max. load 30 V 100 mA, pulse/pause 50/50 % ● Square wave signal 5 V, max. load 10 mA, pulse/pause 50/50 %
	Transfer behavior	Resolution	16 bit
Accuracy		± 0,5 %	
Temperature range		-15 °C to +20 °C to +30 °C to +55 °C	
Temperature influence		< 0,2 % at 10 K	
Auxiliary voltage influence		no	
Load influence		no	
External magnetic field influence		no (400 A/m)	
Residual ripple		< 30 mV _{ss}	
Response time		< 300 ms	
Open circuit voltage		max. 24 V	
Current limiting		max. 2-fold in case of overload	
Test voltage	4 kV between input, output, auxiliary voltage		
Standards	EMC	DIN EN 61326	
	Mechanical strength	DIN EN 61010 part 1	
	Electrical safety	DIN EN 61010 part 1, housing insulated working voltage 300V (phase to neutral), pollution degree 2, measurement category CAT III	
	Accuracy, overload	DIN EN 60688	
	Isolation	DIN EN 61010 part 1, 3,52 kV 50 Hz 10 s	
	Air and creep distances	DIN EN 61010 part 1	
	IP code	DIN EN 60529 housing IP30, terminals IP20	
	Connections	DIN 43807	
	Auxiliary voltage		230 V AC ± 20 %, 45-65 Hz, 2,5 VA
Options		<ul style="list-style-type: none"> ● 110 V AC ± 20 %, 45-65 Hz, 2,5 VA ● 24 V DC - 15 % to + 25 %, 2 W ● 6-30 V AC + DC, 2 VA ● 36-265 V AC + DC, 2 VA 	
Dimensions	Housing	Housing A, (22,5 mm wide) Page A1	
Weight		150 g	
Installation	Fastening	Snap-on fastening on top hat rail 35 mm acc. to DIN EN 60 715	
	Electrical connection	Screw terminal max. 4 mm ²	