

## SIL2-Transmitter power supply MSK 200i-TE

### Powerful Features:

- ◆ SIL2-Transmitter in DuoTec-Failsafe Technology with self-monitoring
- ◆ Input for the supply of 2-wire transmitters
- ◆ Input for mA-current
- ◆ Analogue output for mA and V
- ◆ 3 individually adjustable limit values
- ◆ 1 service alarm
- ◆ Gradient alarm function
- ◆ Square root of the output signal
- ◆ Safe galvanic separation

### Simple Operation:

- ◆ Configuration / visualization software WINSMART
- ◆ Diagnostic manager with fault memory
- ◆ BUS-Integration (RS 232 and RS 485)
- ◆ Power supply via DIN rail or terminal
- ◆ Simple assembling

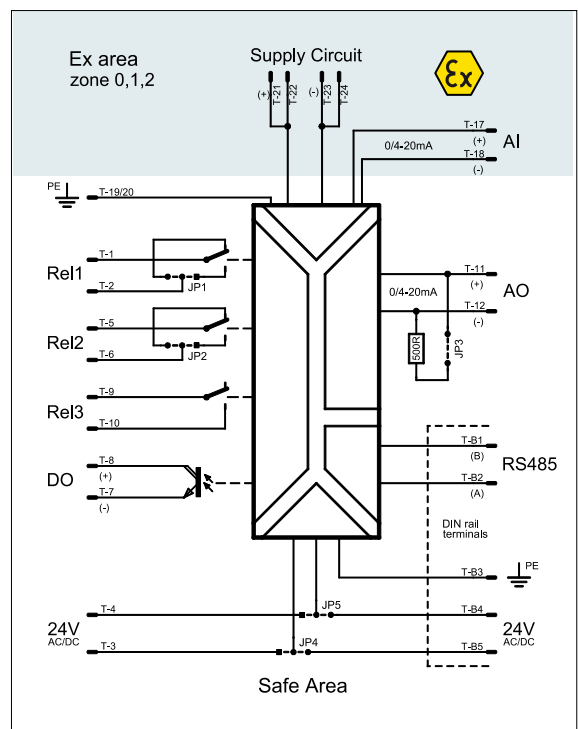
### Certificated:

- ◆ IEC 61508 / 61511 SIL2
- ◆ TÜV certificated according to DIN 19250 AK4
- ◆ ATEX II (1) G [Ex ia] IIC and ATEX II (2) G [Ex ib] IIC

### Function

The transmitter power supply unit MSK200i-TE is used for supplying of 2-wire transmitters and for processing of analogue mA-signals.

An electrically isolated mA / V output is available. The HART signal connection to the intrinsically safe power supply circuit can be done by using the front socket. Alarm monitoring takes place by two relay contacts and one transistor output. Additionally another relay contact output is available for signaling the safety functions. All output circuits can be used in safety circuits and are galvanic isolated from each other and from the power supply.



**MTP200**  
Universal  
transmitter

**MSK200**  
Transmitter  
power supply

**MTP300**  
Thermocouple  
transmitter

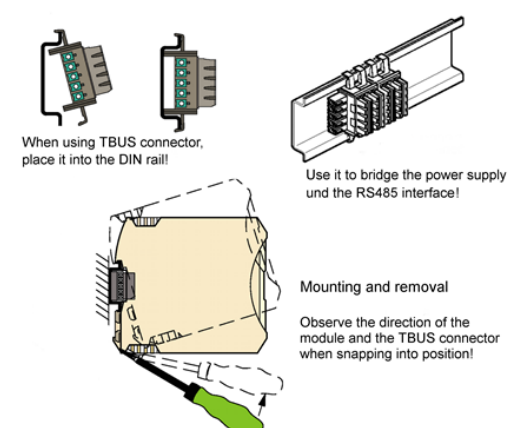
**MSK200-DP**  
Voltage  
control system

**MSK200-DV**  
mV transmitter

**MSK200-DX**  
Voltage monitoring  
transmitter

## Technical Data

Analogue input of MSK200i-TE		
A parameterizable filter of first order of (0.1 – 99.9)s!		
<b>mA-measuring input AI</b>		
mA-measurement range:	0...22 mA, free configurable	
Input resistance:	51 Ω + 2x U <sub>D</sub>	
Supply circuit (SP)		
A parameterizable filter of first order of (0.1 – 99.9)s!		
<b>Supply circuit SP</b>		
U <sub>max</sub> :	22.4 V at 4 mA load	
U <sub>min</sub> :	17.3 V at 20 mA load	
I <sub>max</sub> :	24 mA	
P <sub>max</sub> :	360 mW	
Analogue Output (AO)		
A parameterizable filter of first order of (0.1 – 9.9)s!		
Galvanic isolation between input, analogue output and power supply!		
	<b>Constant current</b>	<b>Voltage</b>
Max. range:	0...22 or 22...0 mA	0...11 or 11...0 V
Standard range:	0/4-20 mA	0/2-10 V
Load resistance:	≤ 500 Ω at 20 mA	min. 50 kΩ
Accuracy:	0.02 % of final value	0.02 % of final value
Burden influence:	<0.005 %	0.5 % at R <sub>L</sub> =100 kΩ
Rise time:	<150 ms	<150 ms
Contact Outputs (REL1, REL2) Transistor Outputs (DO)		
Alarm conditions are indicated with yellow front-side LED's!		
Number:	3 independently adjustable limit values	
Setting:	physically values with WINSMART?-Program	
Accuracy:	like measured value accuracy	
Alarm type:	free configurable	
Alarm output:	2x relay contact and 1x transistor output	
Alarm delay:	free configurable from 0 ... 9.9 s	
Switch hysteresis:	free configurable from 0 ... 99.9 %	
Mode of operation:	operating or zero current principle	
Alarm function:	signal monitoring + maintenance report	
Contact outputs REL1/REL2		
Contact:	Opening / closing (via jumper adjustment)	
Breaking capacity:	max. 62.5 VA resp. max. 30 W	
Voltage:	max. 125 V AC or 110 V DC	
Switching current:	max. 1 A	
Min. contact voltage:	10 mVDC	
Min. contact current:	10 μA	
Contact material:	AG Pd + 10 μAu	
Relay-type:	according to IEC 947-5-1 resp. EN60947	
Transistor output DO		
Switching power:	<1.4 W	
Switching voltage:	<28 V DC	
Switching current:	<50 mA	
Contact Output (REL3)		
Alarm conditions are indicated with a red front-side LED!		
Contact position:	closed in good condition	
Contact data:	see REL1/REL2	
Mode of operation:	zero current principle	
Alarm function:	maintenance requirement report	
Power supply		
Supply indicator:	green LED signal = good condition	
Power supply range:	19 ... 30 VDC or 18 ... 28 VAC	
Power consumption		
Feed separator:	1.6 W (at 24 VDC and 4 mA at AA) 2.1 W (at 24VDC and 20mA at AA)	
Buffer amplifier:	1.1 W (at 24 VDC and 4 mA at AA) 1.4 W (at 24VDC and 20mA at AA)	
Interfaces (COM, RS485, HART)		
Galvanic separation of COM and RS485 to power supply and all other circuit elements!		
COM/RS232:	via front socket for PC-connection	
RS485:	Half-duplex, without scheduling	
Baud rate:	9600 bps	
Device address:	1-248	
HART:	power supply circuit (0 ... 3 kHz band width)	
General data		
Measuring value accuracy		
Maximum:	<0.05 % of final value	
Typical:	<0.025 % of final value	
Temperature coefficient		
Maximum:	<0.01 %/K	
Typical:	<0.005 %/K	

Galvanic separation	
Input/output/supply:	300 Veff (rated insulation voltage, overvoltage category II, Contamination level 2, safe separation as per EN 61010, EN 50178); 2.5 kV AC testing voltage (50 Hz, 1 min.)
Input/output:	375 V (peak value as per EN 60079-11)
Input/supply:	375 V (peak value as per EN 60079-11)
Environmental condition	
Acceptable temperature:	-20 °C ... +60 °C
Storage/transport:	-30 °C ... +80 °C
Acceptable humidity:	10 % ... 95 % r.H. without condensation
Electric connection	
T-1 to T-12:	Screw-in connector /grey with 2.5 mm <sup>2</sup>
T-17 to T-24:	Screw-in connector /blue with 2.5 mm <sup>2</sup>
T-B1 to T-B5:	TBUS- connector with 2.5 mm <sup>2</sup>
Housing	
Material:	PBT
Protection class:	IP20
Combustibility:	V0 to UL
Dimensions (BxLxH):	22.5 mm x 114.5 mm x 99 mm without terminals
Weight:	250 g
Type:	terminal housing for DIN rail mounting
Installation/position:	arbitrary
Proceeding of self-monitoring	
Measuring input:	1 monitoring cycle (tolerance adjustable)
Analogue output:	1 monitoring cycle (tolerance adjustable)
Supply voltages:	2 monitoring cycles
Transmitter-feed circuit:	1 monitoring cycle
Relay (REL1 ... REL3):	indirect contact monitoring
Maintenance requirement:	Constant light of red front-LED and REL3-contacts opened
Conformity	
Ex-directive (ATEX):	EN60079-0, EN60079-11, EN60079-26
EMV-directive 2004/108/EG:	EN61000-6-2, EN61000-6-4, EN61326-1
ATEX-Daten [EEx ia] IIC	
Power supply circuits	
Voltage U <sub>i</sub> :	< 25.8 V
Current intensity I <sub>i</sub> :	<65 mA
Power P <sub>i</sub> :	<420 mW
Max. outer capacity C <sub>o</sub> :	83 nF
Max. outer inductivity L <sub>o</sub> :	4 mH
mA-input circuit:	
Voltage U <sub>i</sub> :	<30 V
Current intensity I <sub>i</sub> :	<110 mA
Power P <sub>i</sub> :	<700 mW
Max. capacity C <sub>i</sub> :	negligible
Max. inductivity L <sub>i</sub> :	negligible
Mounting	
The device must be operated outside a potentially explosive area only! ME-MAX-Housing is combinable with a TBUS Connector/ Support Rail Connector. Because of the TBUS-Connector, which is snapped in the DIN rail, the RS485 interface and the supply voltage can be wired convenient. The TBUS Connection occurs automatically in the grid of the participating devices. So there is no need for an elaborated preliminary or for subsequent work of the TBUS Connection anymore.	
Snap in TBUS-CONNECTOR → turn HOUSING → DEVICE installed	
	
When using TBUS connector, place it into the DIN rail!	
Use it to bridge the power supply and the RS485 interface!	
Mounting and removal	
Observe the direction of the module and the TBUS connector when snapping into position!	