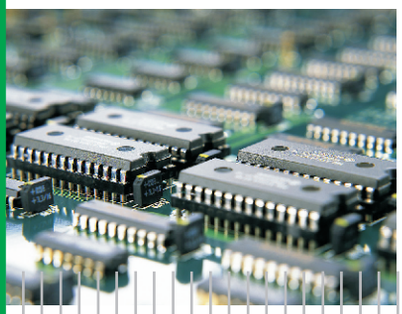
Make Things Different



Catalogue 2011

Muesen
Make Things Different

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Muesen
Make Things Different

Index

Temperature transmitters

MST1er Serie	Head B	Pt100	eHART®
MST3er Serie	Head B	universal	HART®
MST5er Serie	Head B	2 channels, universal	HART®
MST6er Serie	DIN-rail	universal	HART®
MST8er Serie	Field	universal	HART®

Pressure transmitter

MSP101T	Compact	Ceramic piezoresistive sensor
MSP101P	Compact	Silicon piezoresistive stainless steel sensor
MSP80/F	Field	Ceramic sensor diaphragm Al2O3 99.9%
MSP80D	Field	Difference Pressure transmitter

PC-Interface Modem

USB-Modem	Communicationstool for USB-Interface
HART-Modem	Communicationstool for HART®-Interface

OEM PCBs

MST92E01	OEM-Temperaturemodul, Compact Design
MST92E02	OEM-Temperaturemodul, Form B Design
MST92E03	OEM-Temperaturemodul, DIN Design
MSP90E01	OEM-Pressuremodul, 40x22 mm
MSP90E02	OEM-Pressuremodul, 22x20 mm
MSP90E03	OEM-Pressuremodul, 35x19 mm

Contact:

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Temperature head transmitter MST 1er Series MST10R

Free programmable head transmitter

MST10R: Head transmitter for 3-wire resistance thermometers Pt100

Input

MST10R: Resistance thermometer 3-wire Pt100

Performance

- Simple and user-friendly configuration PC-Software in connection with either USB-Modem or HART-Modem
- "S" und "Z" buttons for fast configuration on site
- High stability in total ambient temperature range
- Wide voltage supply range

New

- "S" und "Z" buttons on site for fast configuration No PC, no Software, to save time and costs
- eHART®-Interface
  Communication through Supply loop 4...20mA using HART-Modem or HART-Communicator

Application areas

Temperature head transmitter for converting input signals into a scalable 4 to 20 mA or 0..10V analogue output signal.

Technical data

Power supply			
Supply voltage		7.5...45V DC	
Input			
	Type	Measurement ranges	Min. measurement Ranges
MST10R: RTD	Pt100	-200 to 850 °C (-328 to 1562 °F)	10K
acc. to IEC 60751 (á=0.00385) Connection type: 3-wire connection Sensor current: 0.5 mA			

Output	
Output signal	4 to 20 mA
Load	max.(VVersorgungsspannung-7.5 V)/0.022 A
Signal on alarm	Underranging: Linear drop to 3.8 mA
	Overranging: linear rise to 20.5 mA
	Sensor break; sensor open-circuit: 3.6 mA or 22mA
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear

Accuracy			
Accuracy	Input	Type	Accuracy
	RTD	Pt100	0.2K or 0.1% of span
	TC	K, J , T, E	Typ. 0.1% of span
		N	Typ. 0.1% of span
		S, B, R	Typ. 0.1% of span

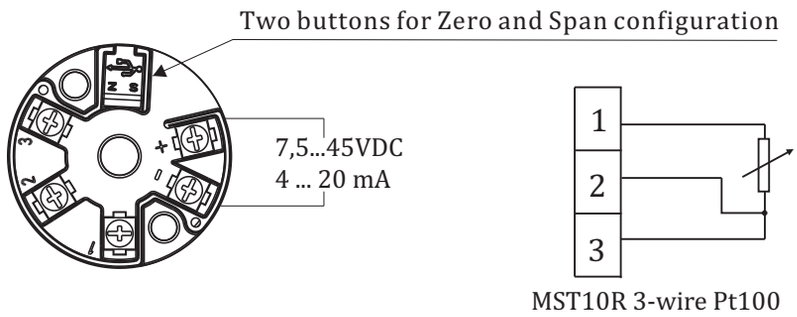
Performance characteristics	
Response time	1s
Referenzbedingungen	Calibration temperature: +23 °C (73.4K)± 5 K
Long term stability	≤0.05% /year
Switch on delay	≤5s
Influence of ambient	Negligible
Load influence	Negligible
Power supply influence	Negligible
Resolution	1µA

Environment conditions	
Installation instructions	Installation angle: no limit
	Installation area: Connection head accord. To DIN 43 729 From B; TAF 10 field housing"

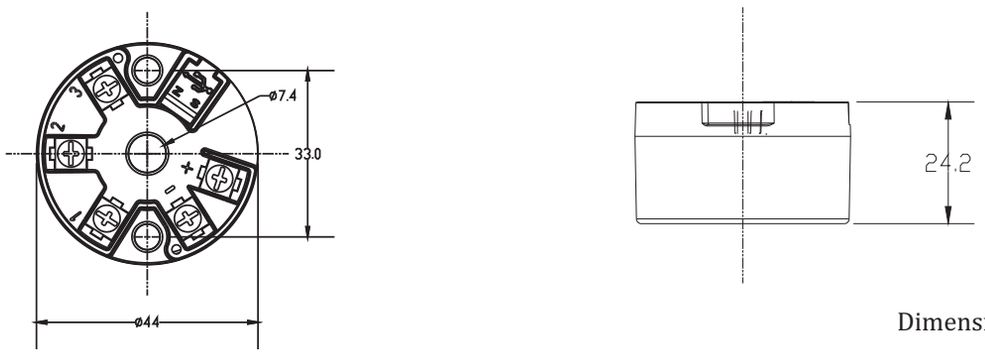
Storage temperature	
Ambient temperature limits	-40 to +85 °C (-40 to 185 °F)
Storage temperature	-40 to +100 °C (-40 to 212 °F)
Condensation	Allowable
Degree of protection	IP00/IP66 installed
Shock and vibration resistance	4g/2 to 150 Hz as per IEC 60 068-26
Electromagnetic compatibility (EMC)	Interference immunity and interference emission according to GB/T17626.2-1998), compliance with IEC 61000-4-3:1995

Others	
Dimensions	44mm x 24mm
Weight	Approx. 36g
Materials	Housing: PC Potting: Silicone

Electrical Connection for type with 4...20mA output

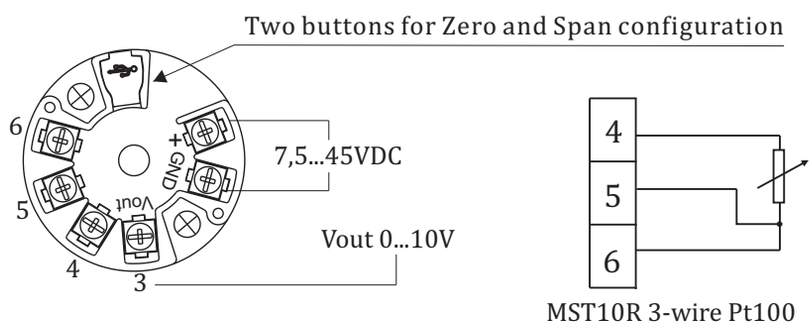


Dimensions for type with 4...20mA output



Dimensions in mm (in)

Electrical Connection for type with 0..10V output



Dimensions for type with 0...10V output

Dimensions in mm

Calibration

It offers three possibilities to calibrate the transmitter.

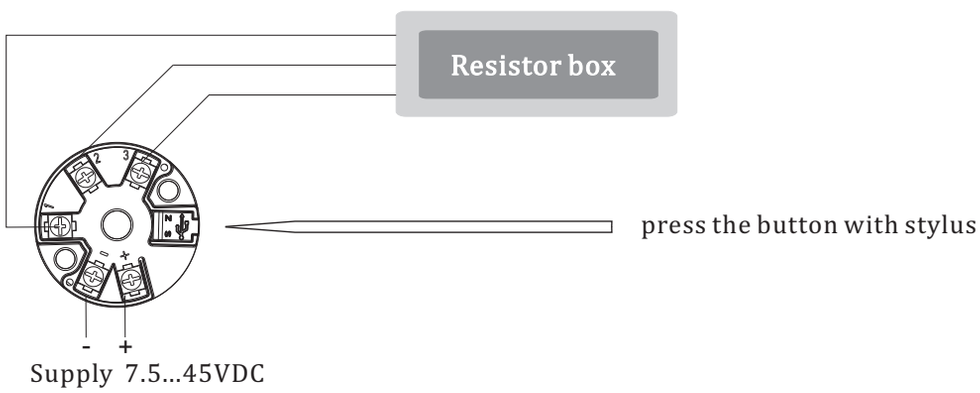
1. Using two Buttons on the housing

Take the calibration from 0...100°C to 0...200°C for example, you can calibrate the of Zero and Span as follows:

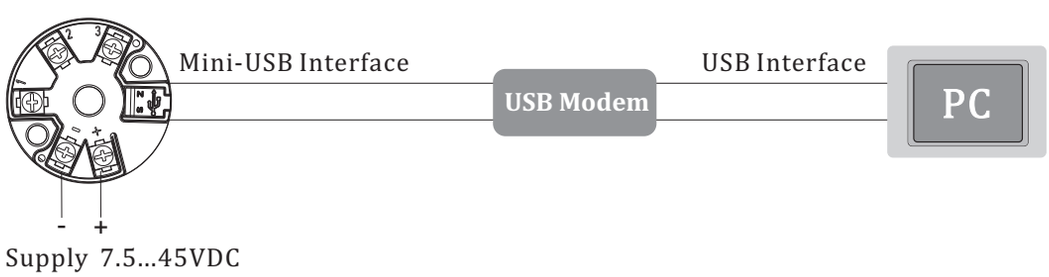
1. Please connect the power supply and resistor box with the MST10R.
2. Set the resistance value of resistance box to 100 Ohm (corresponding to 0 °C), then press the "Z" key for 3 seconds
3. Set the resistance value of resistance box to 175.86 Ohm (corresponding to 200 °C), then press the "S" button for 3 seconds.

The new range has been calibrated to 0 .. 200 °C.

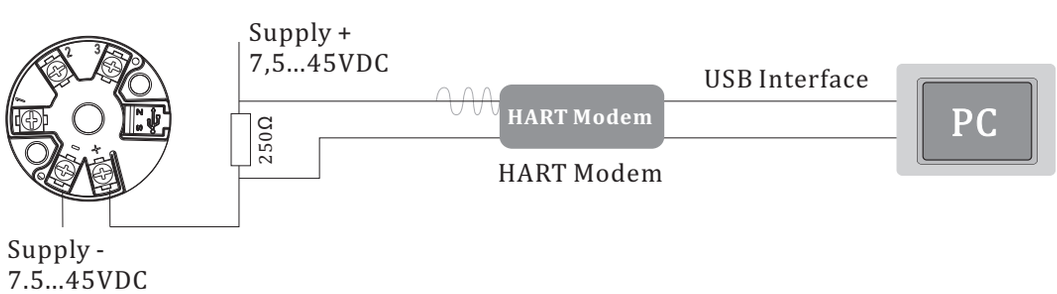
The corresponding resistance value, please see the **Supplementary Documentation**.



2. With USB Modem and PC-Software



3. With HART Modem and PC-Software



Odering code

MST1er Series

Type											
Programmable Temperature head transmitter	MST10R										
Input (configurable)											
Factory preset (Pt100, 3-wire, 0...100 °C)				1	0	0					
Factory preset (Pt100, 3-wire, 0...200 °C)				2	0	0					
Configuration according to customer specification				9	9	9					
Output											
4...20mA, 2-wire							0	0			
0...5V, 3-wire							0	5			
0...10V, 3-wire							1	0			
Communication type:											
Configuration via PC-Software using HART-Modem (eHART®-Interface)										0	0
Configuration via PC-Software using USB-Modem										0	2
Configuration via two buttons on device and via PC-Software using HART-Modem (eHART®-Interface)										0	3

Inventory

Type	Interface
MST10R-100-00-00	eHART®

Supplementary documentation

Resistance tables for Pt-100 Sensors according to DIN EN 60751 for temperature range: -200°C ... +850°C

Temp, °C	0	1	2	3	4	5	6	7	8	9	10
	Resistance value										
-200	**18,52**	18,95	19,38	19,82	20,25	20,68	21,11	21,54	21,97	22,40	22,83
-190	22,83	23,25	23,68	24,11	24,54	24,97	25,39	25,82	26,24	26,67	27,10
-180	27,10	27,52	27,95	28,37	28,80	29,22	29,64	30,07	30,49	30,91	31,34
-170	31,34	31,76	32,18	32,60	33,02	33,44	33,86	34,28	34,70	35,12	35,54
-160	35,54	35,96	36,38	36,80	37,22	37,64	38,05	38,47	38,89	39,31	39,72
-150	39,72	40,14	40,56	40,97	41,39	41,80	42,22	42,63	43,05	43,46	43,88
-140	43,88	44,29	44,70	45,12	45,53	45,94	46,36	46,77	47,18	47,59	48,00
-130	48,00	48,42	48,83	49,24	49,65	50,06	50,47	50,88	51,29	51,70	52,11
-120	52,11	52,52	52,93	53,34	53,75	54,15	54,56	54,97	55,38	55,79	55,79
-110	56,19	56,60	57,01	57,41	57,82	58,23	58,63	59,04	59,44	59,85	60,26
-100	**60,26**	60,66	61,07	61,47	61,88	62,28	62,68	63,09	63,49	63,90	64,30
-90	64,30	64,70	65,11	65,51	65,91	66,31	66,72	67,12	67,52	67,92	68,33
-80	68,33	68,73	69,13	69,53	69,93	70,33	70,73	71,13	71,53	71,93	72,33
-70	72,33	72,73	73,13	73,53	73,93	74,33	74,73	75,13	75,53	75,93	76,33
-60	76,33	76,73	77,12	77,52	77,92	78,32	78,72	79,11	79,51	79,91	80,31
-50	80,31	80,70	81,10	81,50	81,89	82,29	82,69	83,08	83,48	83,87	84,27
-40	84,27	84,67	85,06	85,46	85,85	86,25	86,64	87,04	87,43	87,83	88,22
-30	88,22	88,62	89,01	89,40	89,80	90,19	90,59	90,98	91,37	91,77	92,16
-20	92,16	92,55	92,95	93,34	93,73	94,12	94,52	94,91	95,30	95,69	96,09
-10	96,09	96,48	96,87	97,26	97,65	98,04	98,44	98,83	99,22	99,61	100,00
0	**100,00**	100,39	100,78	101,17	101,56	101,95	102,34	102,73	103,12	103,51	103,90
10	103,90	104,29	104,68	105,07	105,46	105,85	106,24	106,63	107,02	107,40	107,79
20	107,79	108,18	108,57	108,96	109,35	109,73	110,12	110,51	110,90	111,29	111,67
30	111,67	112,06	112,45	112,83	113,22	113,61	114,00	114,38	114,77	115,15	115,54
40	115,54	115,93	116,31	116,70	117,08	117,47	117,86	118,24	118,63	119,01	119,40
50	119,40	119,78	120,17	120,55	120,94	121,32	121,71	122,09	122,47	122,86	123,24
60	123,24	123,63	124,01	124,39	124,78	125,16	125,54	125,93	126,31	126,69	127,08
70	127,08	127,46	127,84	128,22	128,61	128,99	129,37	129,75	130,13	130,52	130,90
80	130,90	131,28	131,66	132,04	132,42	132,80	133,18	133,57	133,95	134,33	134,71
90	134,71	135,09	135,47	135,85	136,23	136,61	136,99	137,37	137,75	138,13	138,51
100	**138,51**	138,88	139,26	139,64	140,02	140,40	140,78	141,16	141,54	141,91	142,29
110	142,29	142,67	143,05	143,43	143,80	144,18	144,56	144,94	145,31	145,69	146,07
120	146,07	146,44	146,82	147,20	147,57	147,95	148,33	148,70	149,08	149,46	149,83
130	149,83	150,21	150,58	150,96	151,33	151,71	152,08	152,46	152,83	153,21	153,58
140	153,58	153,96	154,33	154,71	155,08	155,46	155,83	156,20	156,58	156,95	157,33
150	157,33	157,70	158,07	158,45	158,82	159,19	159,56	159,94	160,31	160,68	161,05
160	161,05	161,43	161,80	162,17	162,54	162,91	163,29	163,66	164,03	164,40	164,77
170	164,77	165,14	165,51	165,89	166,26	166,63	167,00	167,37	167,74	168,11	168,48
180	168,48	168,85	169,22	169,59	169,96	170,33	170,70	171,07	171,43	171,80	172,17
190	172,17	172,54	172,91	173,28	173,65	174,02	174,38	174,75	175,12	175,49	175,86
200	**175,86**	176,22	176,59	176,96	177,33	177,69	178,06	178,43	178,79	179,16	179,53
210	179,53	179,89	180,26	180,63	180,99	181,36	181,72	182,09	182,46	182,82	183,19
220	183,19	183,55	183,92	184,28	184,65	185,01	185,38	185,74	186,11	186,47	186,84

	0	1	2	3	4	5	6	7	8	9	10
230	186,84	187,20	187,56	187,93	188,29	188,66	189,02	189,38	189,75	190,11	190,47
240	190,47	190,84	191,20	191,56	191,92	192,29	192,65	193,01	193,37	193,74	194,10
250	194,10	194,46	194,82	195,18	195,55	195,91	196,27	196,63	196,99	197,35	197,71
260	197,71	198,07	198,43	198,79	199,15	199,51	199,87	200,23	200,59	200,95	201,31
270	201,31	201,67	202,03	202,39	202,75	203,11	203,47	203,83	204,19	204,55	204,90
280	204,90	205,26	205,62	205,98	206,34	206,70	207,05	207,41	207,77	208,13	208,48
290	208,48	208,84	209,20	209,56	209,91	210,27	210,63	210,98	211,34	211,70	212,05
300	**212,05**	212,41	212,76	213,12	213,48	213,83	214,19	214,54	214,90	215,25	215,61
310	215,61	215,96	216,32	216,67	217,03	217,38	217,74	218,09	218,44	218,80	219,15
320	219,15	219,51	219,86	220,21	220,57	220,92	221,27	221,63	221,98	222,33	222,68
330	222,68	223,04	223,39	223,74	224,09	224,45	224,80	225,15	225,50	225,85	226,21
340	226,21	226,56	226,91	227,26	227,61	227,96	228,31	228,66	229,02	229,37	229,72
350	229,72	230,07	230,42	230,77	231,12	231,47	231,82	232,17	232,52	232,87	233,21
360	233,21	233,56	233,91	234,26	234,61	234,96	235,31	235,66	236,00	236,35	236,70
370	236,70	237,05	237,40	237,74	238,09	238,44	238,79	239,13	239,48	239,83	240,18
380	240,18	240,52	240,87	241,22	241,56	241,91	242,26	242,60	242,95	243,29	243,64
390	243,64	243,99	244,33	244,68	245,02	245,37	245,71	246,06	246,40	246,75	247,09
400	**247,09**	247,44	247,78	248,13	248,47	248,81	249,16	249,50	249,85	250,19	250,53
410	250,53	250,88	251,22	251,56	251,91	252,25	252,59	252,93	253,28	253,62	253,96
420	253,96	254,30	254,65	254,99	255,33	255,67	256,01	256,35	256,70	257,04	257,38
430	257,38	257,72	258,06	258,40	258,74	259,08	259,42	259,76	260,10	260,44	260,78
440	260,78	261,12	261,46	261,80	262,14	262,48	262,82	263,16	263,50	263,84	264,18
450	264,18	264,52	264,86	265,20	265,53	265,87	266,21	266,55	266,89	267,22	267,56
460	267,56	267,90	268,24	268,57	268,91	269,25	269,59	269,92	270,26	270,60	270,93
470	270,93	271,27	271,61	271,94	272,28	272,61	272,95	273,29	273,62	273,96	274,29
480	274,29	274,63	274,96	275,30	275,63	275,97	276,30	276,64	276,97	277,31	277,64
490	277,64	277,98	278,31	278,64	278,98	279,31	279,64	279,98	280,31	280,64	280,98
500	**280,98**	281,31	281,64	281,98	282,31	282,64	282,97	283,31	283,64	283,97	284,30
510	284,30	284,63	284,97	285,30	285,63	285,96	286,29	286,62	286,95	287,29	287,62
520	287,62	287,95	288,28	288,61	288,94	289,27	289,60	289,93	290,26	290,59	290,92
530	290,92	291,25	291,58	291,91	292,24	292,56	292,89	293,22	293,55	293,88	294,21
540	294,21	294,54	294,86	295,19	295,52	295,85	296,18	296,50	296,83	297,16	297,49
550	297,49	297,81	298,14	298,47	298,80	299,12	299,45	299,78	300,10	300,43	300,75
560	300,75	301,08	301,41	301,73	302,06	302,38	302,71	303,03	303,36	303,69	304,01
570	304,01	304,34	304,66	304,98	305,31	305,63	305,96	306,28	306,61	306,93	307,25
580	307,25	307,58	307,90	308,23	308,55	308,87	309,20	309,52	309,84	310,16	310,49
590	310,49	310,81	311,13	311,45	311,78	312,10	312,42	312,74	313,06	313,39	313,71
600	**313,71**	314,03	314,35	314,67	314,99	315,31	315,64	315,96	316,28	316,60	316,92
610	316,92	317,24	317,56	317,88	318,20	318,52	318,84	319,16	319,48	319,80	320,12
620	320,12	320,43	320,75	321,07	321,39	321,71	322,03	322,35	322,67	322,98	323,30
630	323,30	323,62	323,94	324,26	324,57	324,89	325,21	325,53	325,84	326,16	326,48
640	326,48	326,79	327,11	327,43	327,74	328,06	328,38	328,69	329,01	329,32	329,64
650	329,64	329,96	330,27	330,59	330,90	331,22	331,53	331,85	332,16	332,48	332,79
660	332,79	333,11	333,42	333,74	334,05	334,36	334,68	334,99	335,31	335,62	335,93
670	335,93	336,25	336,56	336,87	337,18	337,50	337,81	338,12	338,44	338,75	339,06
680	339,06	339,37	339,69	340,00	340,31	340,62	340,93	341,24	341,56	341,87	342,18
690	342,18	342,49	342,80	343,11	343,42	343,73	344,04	344,35	344,66	344,97	345,28

	0	1	2	3	4	5	6	7	8	9	10
700	**345,28**	345,59	345,90	346,21	346,52	346,83	347,14	347,45	347,76	348,07	348,38
710	348,38	348,69	348,99	349,30	349,61	349,92	350,23	350,54	350,84	351,15	351,46
720	351,46	351,77	352,08	352,38	352,69	353,00	353,30	353,61	353,92	354,22	354,53
730	354,53	354,84	355,14	355,45	355,76	356,06	356,37	356,67	356,98	357,28	357,59
740	357,59	357,90	358,20	358,51	358,81	359,12	359,42	359,72	360,03	360,33	360,64
750	360,64	360,94	361,25	361,55	361,85	362,16	362,46	362,76	363,07	363,37	363,67
760	363,67	363,98	364,28	364,58	364,89	365,19	365,49	365,79	366,10	366,40	366,70
770	366,70	367,00	367,30	367,60	367,91	368,21	368,51	368,81	369,11	369,41	369,71
780	369,71	370,01	370,31	370,61	370,91	371,21	371,51	371,81	372,11	372,41	372,71
790	372,71	373,01	373,31	373,61	373,91	374,21	374,51	374,81	375,11	375,41	375,70
800	**375,70**	376,00	376,30	376,60	376,90	377,19	377,49	377,79	378,09	378,39	378,68
810	378,68	378,98	379,28	379,57	379,87	380,17	380,46	380,76	381,06	381,35	381,65
820	381,65	381,95	382,24	382,54	382,83	383,13	383,42	383,72	384,01	384,31	384,60
830	384,60	384,90	385,19	385,49	385,78	386,08	386,37	386,67	386,96	387,25	387,55
840	387,55	387,84	388,14	388,43	388,72	389,02	389,31	389,60	389,90	390,19	390,48
850	**390,48**										

Muesen
Make Things Different

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Muesen
Make Things Different

High accurate temperature head transmitter MST3er Series MST320, MST323, MST325

High accurate temperature head transmitter for resistance thermometers (RTD), thermocouples (TC), resistance and voltage transmitters, settable via HART®-protocol* (MST325), for installation in a sensor head (From B)

Application areas

Temperature head transmitter with HART®-protocol* for converting various input signals into a scalable 4 to 20 mA analogue output signal

Input

Resistance thermometer (RTD)
Thermocouple (TC)
Resistance transmitter (Ω)
Voltage transmitter (mV)

Performance

- Universal settings with HART®-protocol* for variousinput signals
- 2 wire technology, 4 to 20mA analogue output
- Best in Class accuracy in total ambient temperature range
- Galvanic isolation** (MST323 and MST325)
- An internal temperature sensor for activetemperature compensation(For T/C)
- Wide voltage supply range
- Expanded resistance input (max 2K Ω)
- Expanded voltage input (max 2KmV)

** MST325 is with HART-Protocll-communication.*
** * MST323 and MST325 are galvanic isolated, MST320 is not isolated.*

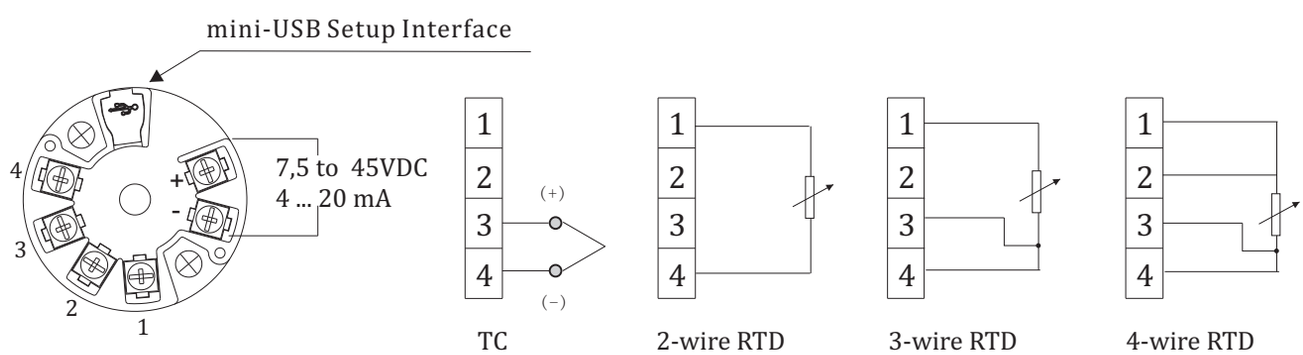
Technical data

Power supply			
Supply voltage		7.5 ...45V DC	
Input			
Input	Type	Measurement ranges	Min.meas.Ranges
Resistances thermometer (RTD)	Pt100 Pt500 Pt1000 *acc. to IEC 60751(a=0.00385)*	-200 to 850 °C (-328 to 1562 °F) -200 to 250 °C (-328 to 482 °F) -200 to 250 °C (-328 to 482 °F)	10K 10K 10K
	Cu50 Cu100	-50 to 150 °C (-58 to 302 °F) -50 to 150 °C (-58 to 302 °F)	10K 10K
	Ni100 Ni500 Ni1000 *acc. to DIN 43760(a=0.006180)*	-60 to 180 °C (-76 to 356°F) -60 to 180 °C (-76 to 356°F) -60 to 150 °C (-76 to 302 °F)	10K 10K 10K
Resistancetransmitter	Widerstand Ω	10 to 400 Ω 10 to 2000 Ω	10Ω 10Ω
Connection type: 2-, 3- or 4-wire connection Sensor current: 0.5 mA			
Thermocouples(TC)	B(PtRh30-PtRh6) E(NiCr-CuNi) J(Fe-CuNi) K(NiCr-Ni) N(NiCrSi-NiSi) R(PtRh13-Pt) S(PtRh10-Pt) T(Cu-CuNi)	0 to +1820 °C (32 to 3308 °F) -270 to +1000 °C (-454 to 1832 °F) -210 to +1200 °C (-346 to 2192 °F) -270 to +1372 °C (-454 to 2501 °F) -270 to +1300 °C (-454 to 2372 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +1768 °C (-58 to 3214 °F) -270 to +400 °C (-454 to 752 °F)	500K 50K 50K 50K 50K 500K 500K 50K
Voltage transmitters(mV)	(mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	5mV 5mV 6mV 20mV

Output	
Output signal	4 to 20 mA
Load	max.(VVersorgungsspannung-7.5 V)/0.022 A
Signal on alarm	Underranging: Linear drop to 3.8 mA
	Overranging: linear rise to 20.5 mA
	Sensor break; sensor open-circuit: 3.6 mA or 22mA
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Galvanic isolation	U=2 KV AC (input/output)
Performance characteristics	
Response time	1s
Referenzbedingungen	Calibration temperature: +23 °C (73.4K)± 5 K
Long term stability	RTDs - ±0.1% of reading or 0.1 °C, whichever is greater, for 24 months. Thermocouples - ±0.1% of reading or 0.1 °C, whichever is greater, for 12 months.
Switch on delay	⩽5s
Influence of ambient	Negligible
Load influence	Negligible
Power supply influence	Negligible
Self stability configuration	0 to 2%
Filter configurating	0 to 160µA
Resolution	0.3 µ A

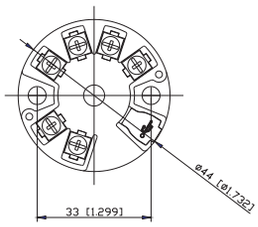
Accuracy			
	Input	Type	Accuracy
Accuracy	RTD	Pt100. Ni100 Pt500. Ni500 Pt1000. Ni1000 Cu50 Cu100	0.02% 0.05% 0.3% 0.2% 0.3%
	TC	K, J , T, E N S, B, R	typ. 0.1% typ. 0.1% typ. 0.1%
	Ω	10 to 400 Ω 10 to 2000 Ω	± 0.1 Ω or 0.02% ± 1.5 Ω or 0.03%
	mV	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	± 4 µV or 0.02% ± 4 µV or 0.02% ± 7.5 µV or 0.02% ± 7.5 µV or 0.02%
Environment conditions			
Installation instructions		Installation angle: no limit	
		Installation area: Connection head accord. To DIN 43 729 From B; TAF 10 field housing"	
Storage temperature			
Ambient temperature limits		-40 to +85 °C (-40 to 185 °F)	
Storage temperature		-40 to +100 °C (-40 to 212 °F)	
Condensation		Allowable	
Degree of protection		IP 00	
Shock and vibration resistance		4g/2 to 150 Hz as per IEC 60 068-26	
Electromagnetic compatibility (EMC)		Interference immunity and interference emission according to GB/T17626.2-1998), compliance with IEC 61000-4-3:1995	
Others			
Dimensions		44 mmX22.5 mm	
Weight		Approx. 33.5g	
Materials		Housing: PC Potting: epoxy	

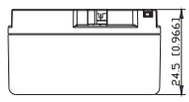
Electrical Connection



The MST325 has no USB Interfece, it can be set up only with HART Modem.

Dimensions

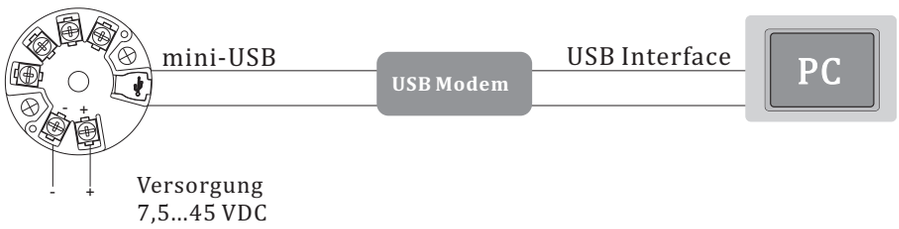




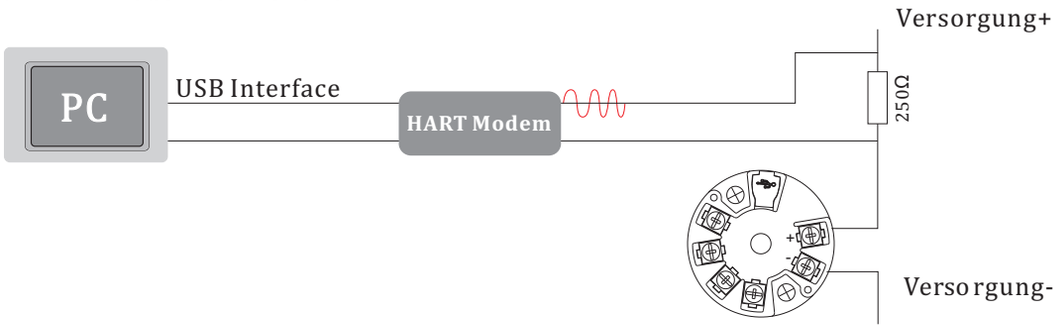
Dimensions in mm

How to programm

With USB Modem for MST320 and MST323



With HART Modem for MST325



Odering code

MST3er Series

Type												
Programmable Temperature head transmitter	MST320											
Programmable Temperature head transmitter galvanic isolated	MST323											
HART® Programmable Temperature head transmitter galvanic isolated, with HART®-Protocol	MST325											
Input (configurable)												
Factory preset (Pt100, 3-wire, 0...100 °C)					1	0	0					
Configuration according to customer specification					9	9	9					
Output												
4...20mA, 2-wire								0	0			
0...10V, 3-wire								9	9			
Additives												
None											0	0
According to customer specification											9	9

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Muesen
Make Things Different

Temperature head transmitter MST5er Series with two Input-Channels MST530

Free programmable Transmitter

Universal head transmitter for resistance thermometers (RTD), thermocouples (TC), resistance and voltage transmitters,
2 Input-Channels
settable via eHART®- or USB-Interface,
for installation in a sensor head (From B)

- eHART®-Interface
  Communication through Supply loop 4...20mA using HART-Modem or HART-Communicator

Two Inputs

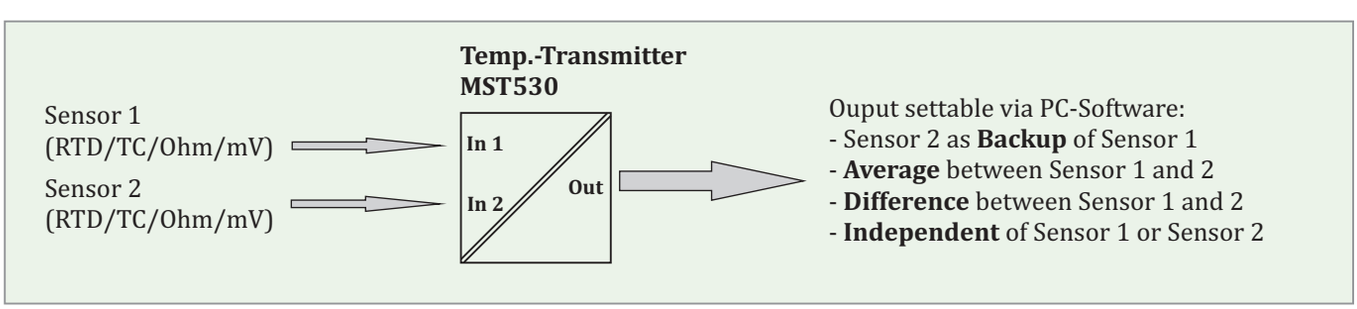
- Resistance thermometer (RTD)
- Thermocouple (TC)
- Resistance transmitter (Ω)
- Voltage transmitter (mV)

Application areas

Temperature head transmitter with 2 input channels and HART®-protocol for the conversion of different input signals into digital output signals.

Performance

- Temperature head transmitter with 2 input channels for the conversion of different input signals into digital output signals.
- 2 wire technology, 4 to 20mA analogue output
- High accuracy through sensor-transmitter matching, for the highest level of safety, availability and risk reduction
- Wide voltage supply range
- DIN B style head transmitter to fit in the smallest connection heads or in remote housings
- Electronic recording and conversion of various input signals in industrial temperature measurement.
- Output settable via PC-Software: Backup, Average, Difference and Independent.



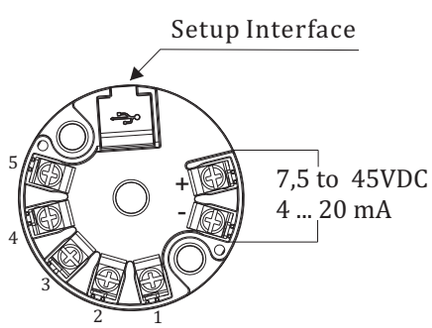
Technical data

Power supply			
Supply voltage		7.5 ...45V DC	
Input			
Input	Type	Measurement ranges	Min.meas.Ranges
Resistances thermometer (RTD)	Pt100 Pt500 Pt1000 *acc. to IEC 60751(a=0.00385)*	-200 to 850 °C (-328 to 1562 °F) -200 to 250 °C (-328 to 482 °F) -200 to 250 °C (-328 to 482 °F)	10K 10K 10K
	Cu50 Cu100	-50 to 150 °C (-58 to 302 °F) -50 to 150 °C (-58 to 302 °F)	10K 10K
	Ni100 Ni500 Ni1000 *acc. to DIN 43760(a=0.006180)*	-60 to 180 °C (-76 to 356°F) -60 to 180 °C (-76 to 356°F) -60 to 150 °C (-76 to 302 °F)	10K 10K 10K
Resistancetransmitter	Widerstand Ω	10 to 400 Ω 10 to 2000 Ω	10Ω 10Ω
Connection type: 2-, 3- or 4-wire connection Sensor current: 0.5 mA			
Thermocouples(TC)	B(PtRh30-PtRh6) E(NiCr-CuNi) J(Fe-CuNi) K(NiCr-Ni) N(NiCrSi-NiSi) R(PtRh13-Pt) S(PtRh10-Pt) T(Cu-CuNi)	0 to +1820 °C (32 to 3308 °F) -270 to +1000 °C (-454 to 1832 °F) -210 to +1200 °C (-346 to 2192 °F) -270 to +1372 °C (-454 to 2501 °F) -270 to +1300 °C (-454 to 2372 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +1768 °C (-58 to 3214 °F) -270 to +400 °C (-454 to 752 °F)	500K 50K 50K 50K 50K 500K 500K 50K
Voltage transmitters(mV)	(mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	5mV 5mV 6mV 20mV

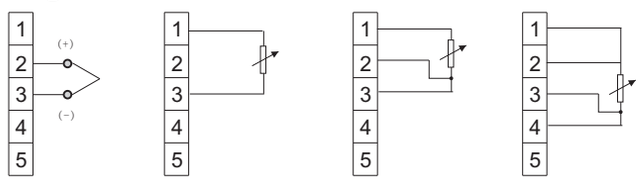
Output	
Output signal	4 to 20 mA
Load	max.(VVersorgungsspannung-7.5 V)/0.022 A
Signal on alarm	Underranging: Linear drop to 3.8 mA
	Overranging: linear rise to 20.5 mA
	Sensor break; sensor open-circuit: 3.6 mA or 22mA
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Galvanic isolation	U=2 KV AC (input/output)
Performance characteristics	
Response time	1s
Referenzbedingungen	Calibration temperature: +23 °C (73.4K)± 5 K
Long term stability	RTDs - ±0.1% of reading or 0.1 °C, whichever is greater, for 24 months. Thermocouples - ±0.1% of reading or 0.1 °C, whichever is greater, for 12 months.
Switch on delay	⩽5s
Influence of ambient	Negligible
Load influence	Negligible
Power supply influence	Negligible
Self stability configuration	0 to 2%
Filter configurating	0 to 160µA
Resolution	0.3 µ A

Accuracy			
	Input	Type	Accuracy
Accuracy	RTD	Pt100. Ni100 Pt500. Ni500 Pt1000. Ni1000 Cu50 Cu100	0.02% 0.05% 0.3% 0.2% 0.3%
	TC	K, J , T, E N S, B, R	typ. 0.1% typ. 0.1% typ. 0.1%
	Ω	10 to 400 Ω 10 to 2000 Ω	± 0.1 Ω or 0.02% ± 1.5 Ω or 0.03%
	mV	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	± 4 µV or 0.02% ± 4 µV or 0.02% ± 7.5 µV or 0.02% ± 7.5 µV or 0.02%
Environment conditions			
Installation instructions		Installation angle: no limit	
		Installation area: Connection head accord. To DIN 43 729 From B; TAF 10 field housing"	
Storage temperature			
Ambient temperature limits		-40 to +85 °C (-40 to 185 °F)	
Storage temperature		-40 to +100 °C (-40 to 212 °F)	
Condensation		Allowable	
Degree of protection		IP 00	
Shock and vibration resistance		4g/2 to 150 Hz as per IEC 60 068-26	
Electromagnetic compatibility (EMC)		Interference immunity and interference emission according to GB/T17626.2-1998), compliance with IEC 61000-4-3:1995	
Others			
Dimensions		44mm x 24,5 mm	
Weight		Approx. 38g	
Materials		Housing: PC Potting: Silicone	

Electrical Connection

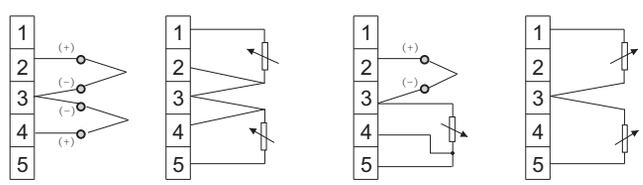


Single Sensor



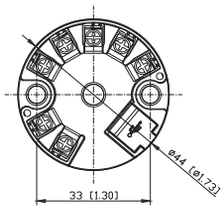
TC 2-wire RTD 3-wire RTD 4-wire RTD

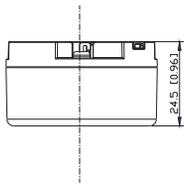
Dual-sensor



TC 3-wire RTD 3-wire RTD and TC 2-wire RTD

Dimensions

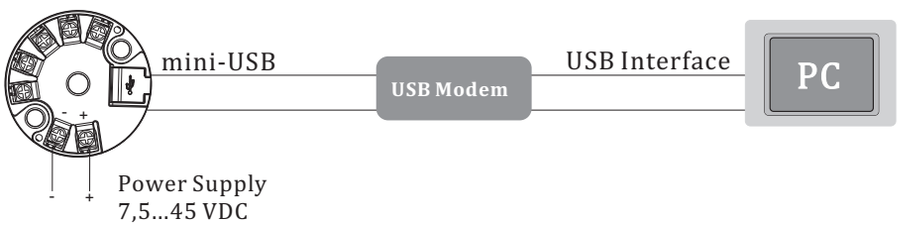




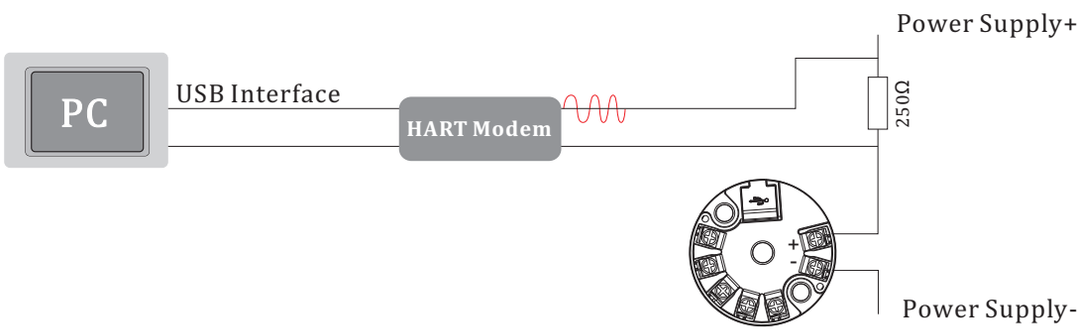
Dimensions in mm

How to programm

With USB Modem for MST530 with USB-Interface



With HART Modem for MST530 with eHART-Interface



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Muesen
Make Things Different

Temperature head transmitter MST5er Series with two Input-Channels MST535

WE'VE GOT HART ABILITY

HART® FIELD COMMUNICATIONS PROTOCOL

Free programmable HART Transmitter

Free programmable transmitter
via USB-interface or HART-protocol
2 Universal Inputs
Installation in a sensor head (From B)
Push-In Connection, self-locking festener

Two Inputs

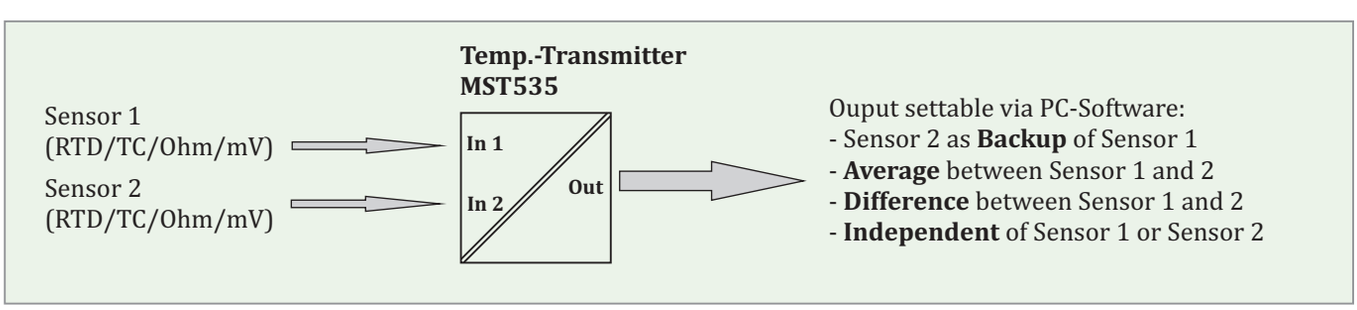
- Resistance thermometer (RTD)
- Thermocouple (TC)
- Resistance transmitter (Ω)
- Voltage transmitter (mV)

Application areas

Temperature head transmitter with 2 Input-channels and HART-protocol for the conversion of different input signals into digital output signals.

Performance

- Temperature head transmitter with 2 input channels for the conversion of different input signals into digital output signals.
- 2 wire technology, 4 to 20mA analogue output
- High accuracy through sensor-transmitter matching, for the highest level of safety, availability and risk reduction
- HART-protocol
- Galvanic isolation
- Wide voltage supply range
- DIN B style head transmitter to fit in the smallest connection heads or in remote housings
- Electronic recording and conversion of various input signals in industrial temperature measurement.
- Output settable via PC-Software: Backup, Average, Difference and Independent.



Technical data

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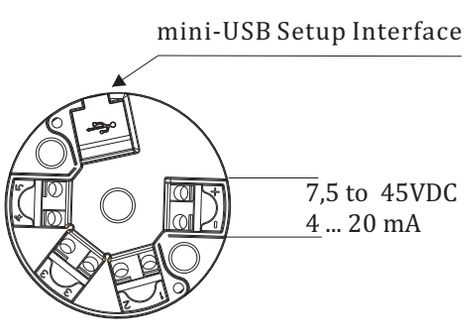
	Ni100 Ni500 Ni1000 *acc. to DIN 43760(a=0.006180)*	-60 to 180 °C (-76 to 356°F) -60 to 180 °C (-76 to 356°F) -60 to 150 °C (-76 to 302 °F)	10K 10K 10K
Resistancetransmitter	Widerstand Ω	10 to 400 Ω 10 to 2000 Ω	10Ω 10Ω
Connection type: 2-, 3- or 4-wire connection Sensor current: 0.5 mA			
Thermocouples(TC)	B(PtRh30-PtRh6) E(NiCr-CuNi) J(Fe-CuNi) K(NiCr-Ni) N(NiCrSi-NiSi) R(PtRh13-Pt) S(PtRh10-Pt) T(Cu-CuNi)	0 to +1820 °C (32 to 3308 °F) -270 to +1000 °C (-454 to 1832 °F) -210 to +1200 °C (-346 to 2192 °F) -270 to +1372 °C (-454 to 2501 °F) -270 to +1300 °C (-454 to 2372 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +1768 °C (-58 to 3214 °F) -270 to +400 °C (-454 to 752 °F)	500K 50K 50K 50K 50K 500K 500K 50K
Voltage transmitters(mV)	(mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	5mV 5mV 6mV 20mV

Output	
Output signal	4 to 20 mA
Load	max.(VVersorgungsspannung-7.5 V)/0.022 A
Signal on alarm	Underranging: Linear drop to 3.8 mA
	Overranging: linear rise to 20.5 mA
	Sensor break; sensor open-circuit: 3.6 mA or 22mA
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Galvanic isolation	U=2 KV AC (input/output)
Performance characteristics	
Response time	1s
Referenzbedingungen	Calibration temperature: +23 °C (73.4K)± 5 K
Long term stability	RTDs - ±0.1% of reading or 0.1 °C, whichever is greater, for 24 months. Thermocouples - ±0.1% of reading or 0.1 °C, whichever is greater, for 12 months.
Switch on delay	≤5s
Influence of ambient	Negligible
Load influence	Negligible
Power supply influence	Negligible
Self stability configuration	0 to 2%
Filter configurating	0 to 160µA
Resolution	0.3 µ A

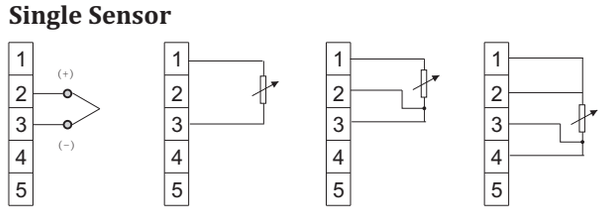
Accuracy			
	Input	Type	Accuracy
Accuracy	RTD	Pt100. Ni100 Pt500. Ni500 Pt1000. Ni1000 Cu50 Cu100	0.02% 0.05% 0.3% 0.2% 0.3%
	TC	K, J , T, E N S, B, R	typ. 0.1% typ. 0.1% typ. 0.1%
	Ω	10 to 400 Ω 10 to 2000 Ω	± 0.1 Ω or 0.02% ± 1.5 Ω or 0.03%
	mV	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	± 4 µV or 0.02% ± 4 µV or 0.02% ± 7.5 µV or 0.02% ± 7.5 µV or 0.02%
Environment conditions			
Installation instructions		Installation angle: no limit	
		Installation area: Connection head accord. To DIN 43 729 From B; TAF 10 field housing"	
Storage temperature			
Ambient temperature limits		-40 to +85 °C (-40 to 185 °F)	
Storage temperature		-40 to +100 °C (-40 to 212 °F)	
Condensation		Allowable	
Degree of protection		IP 00	
Shock and vibration resistance		4g/2 to 150 Hz as per IEC 60 068-26	
Electromagnetic compatibility (EMC)		Interference immunity and interference emission according to GB/T17626.2-1998), compliance with IEC 61000-4-3:1995	
Others			
Dimensions		44mm x 24.5mm	
Weight		Approx. 38g	
Materials		Housing: PC Potting: Silicone	

Electrical Connection



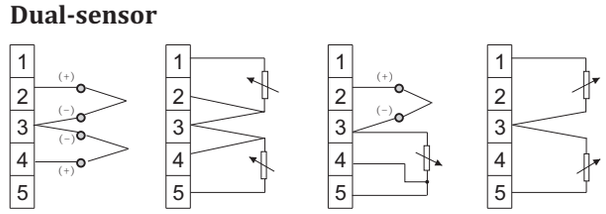
The MST535 has no USB Interfece,
it can be set up only with HART Modem.

Single Sensor



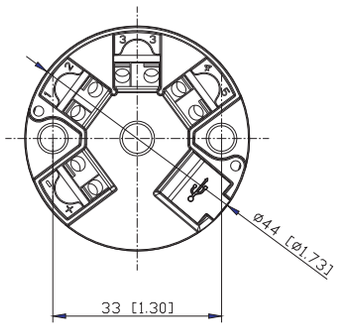
TC 2-wire RTD 3-wire RTD 4-wire RTD

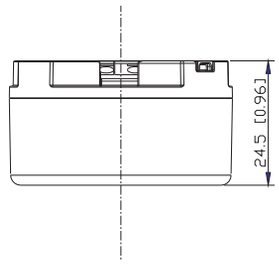
Dual-sensor



TC 3-wire RTD 3-wire RTD and TC 2-wire RTD

Dimensions

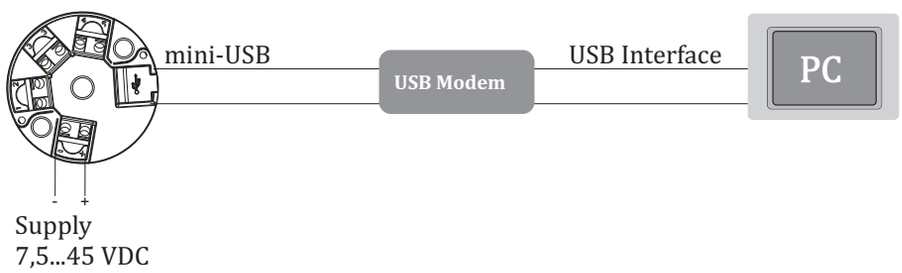




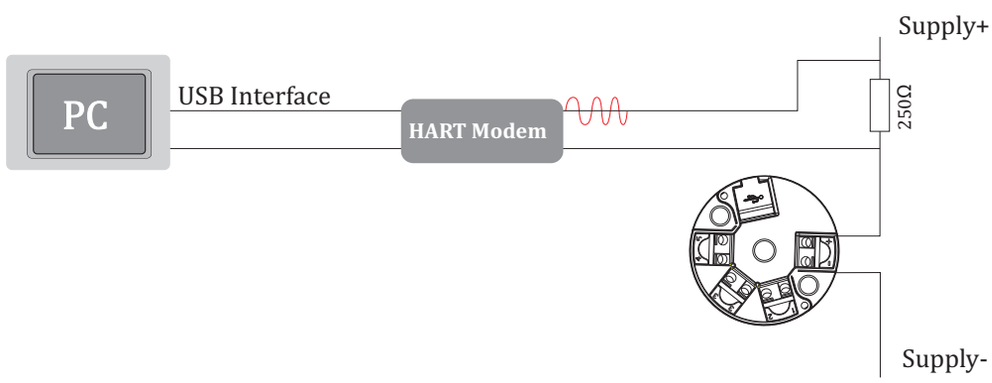
Dimensions in mm

How to programm

With USB Modem for MST530 with USB-Interface



With HART Modem for MST535 with HART-Interface



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High accurate temperature DIN transmitter MST6er Series MST660, MST663, MST665

Free programmable Transmitter
Universal DIN transmitter for
resistance thermometers (RTD), thermocouples (TC),
resistance and voltage transmitters,
settable via HART-protocol* (MST665),
The slim housing with 12.5 mm wide for
DIN-rail mounting

Application areas

Temperature DIN transmitter with HART-protocol* for converting various input signals into a scalable 4 to 20 mA analogue output signal

Input

Resistance thermometer (RTD)
Thermocouple (TC)
Resistance transmitter (Ω)
Voltage transmitter (mV)

Performance

- Universal settings with HART-protocol* for variousinput signals (MST665)
- 2 wire technology, 4 to 20mA analogue output
- Best in Class accuracy in total ambient temperature range
- Galvanic isolation** (MST663 and MST665)
- An internal temperature sensor for activetemperature compensation(For T/C)
- Wide voltage supply range
- Expanded resistance input (max 2KΩ)
- Expanded voltage input (max 2KmV)

** MST665 with HART-Protocll-communication.*
** * MST663 and MST665 are galvanic isolated, MST660 is not isolated.*

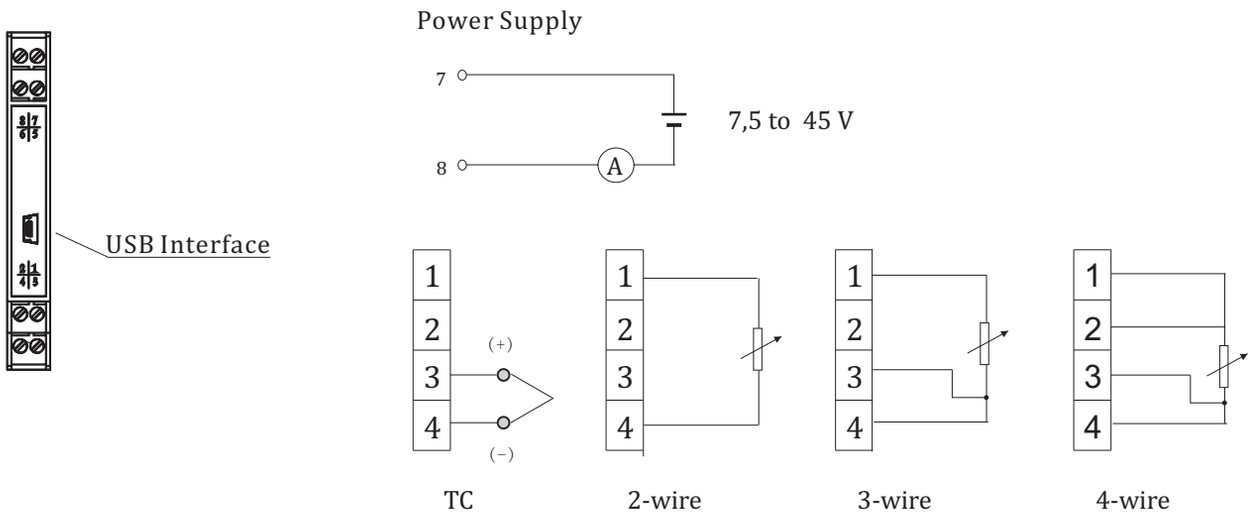
Technical data

Power supply			
Supply voltage		7.5 ...45V DC	
Input			
Input	Type	Measurement ranges	Min.meas.Ranges
Resistances thermometer (RTD)	Pt100 Pt500 Pt1000 *acc. to IEC 60751(a=0.00385)*	-200 to 850 °C (-328 to 1562 °F) -200 to 250 °C (-328 to 482 °F) -200 to 250 °C (-328 to 482 °F)	10K 10K 10K
	Cu50 Cu100	-50 to 150 °C (-58 to 302 °F) -50 to 150 °C (-58 to 302 °F)	10K 10K
	Ni100 Ni500 Ni1000 *acc. to DIN 43760(a=0.006180)*	-60 to 180 °C (-76 to 356°F) -60 to 180 °C (-76 to 356°F) -60 to 150 °C (-76 to 302 °F)	10K 10K 10K
Resistancetransmitter	Widerstand Ω	10 to 400 Ω 10 to 2000 Ω	10Ω 10Ω
Connection type: 2-, 3- or 4-wire connection Sensor current: 0.5 mA			
Thermocouples(TC)	B(PtRh30-PtRh6) E(NiCr-CuNi) J(Fe-CuNi) K(NiCr-Ni) N(NiCrSi-NiSi) R(PtRh13-Pt) S(PtRh10-Pt) T(Cu-CuNi)	0 to +1820 °C (32 to 3308 °F) -270 to +1000 °C (-454 to 1832 °F) -210 to +1200 °C (-346 to 2192 °F) -270 to +1372 °C (-454 to 2501 °F) -270 to +1300 °C (-454 to 2372 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +1768 °C (-58 to 3214 °F) -270 to +400 °C (-454 to 752 °F)	500K 50K 50K 50K 50K 500K 500K 50K
Voltage transmitters(mV)	(mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	5mV 5mV 6mV 20mV

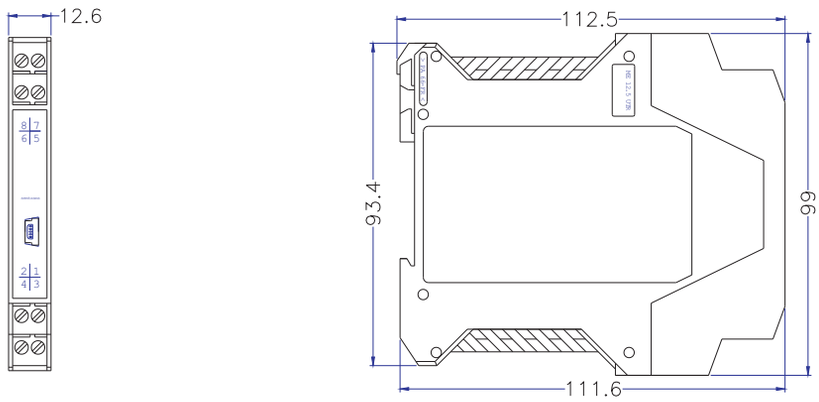
Output	
Output signal	4 to 20 mA
Load	max.(VVersorgungsspannung-7.5 V)/0.022 A
Signal on alarm	anderranging: Linear drop to 3.8 mA
	Overranging: linear rise to 20.5 mA
	Sensor break; sensor open-circuit: 3.6 mA or 22mA
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Galvanic isolation	U=2 KV AC (input/output)
Performance characteristics	
Response time	1s
Referenzbedingungen	Calibration temperature: +23 °C (73.4K)± 5 K
Long term stability	RTDs - ±0.1% of reading or 0.1 °C, whichever is greater, for 24 months. Thermocouples - ±0.1% of reading or 0.1 °C, whichever is greater, for 12 months.
Switch on delay	⩽5s
Influence of ambient	Negligible
Load influence	Negligible
Power supply influence	Negligible
Self stability configuration	0 to 2%
Filter configurating	0 to 160µA
Resolution	0.3 µ A

Accuracy			
	Input	Type	Accuracy
Accuracy	RTD	Pt100. Ni100 Pt500. Ni500 Pt1000. Ni1000 Cu50 Cu100	0.02% 0.05% 0.3% 0.2% 0.3%
	TC	K, J , T, E N S, B, R	typ. 0.1% typ. 0.1% typ. 0.1%
	Ω	10 to 400 Ω 10 to 2000 Ω	± 0.1 Ω or 0.02% ± 1.5 Ω or 0.03%
	mV	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	± 4 µV or 0.02% ± 4 µV or 0.02% ± 7.5 µV or 0.02% ± 7.5 µV or 0.02%
Environment conditions			
Installation instructions		Installation angle: no limit	
Storage temperature			
Ambient temperature limits		-40 to +85 °C (-40 to 185 °F)	
Storage temperature		-40 to +100 °C (-40 to 212 °F)	
Condensation		Allowable	
Degree of protection		IP 20	
Shock and vibration resistance		4g/2 to 150 Hz as per IEC 60 068-26	
Electromagnetic compatibility (EMC)		Interference immunity and interference emission according to GB/T17626.2-1998), compliance with IEC 61000-4-3:1995	
Others			
Dimensions		12,5X99X112,5mm	
Weight		Ca. 90g	
Materials		PA 66-FR	

Electrical Connection



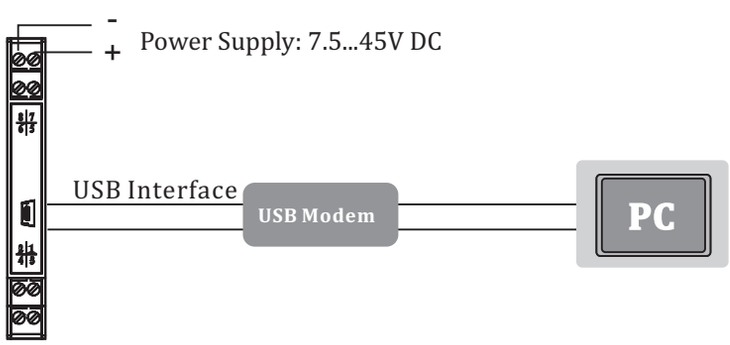
Dimensions



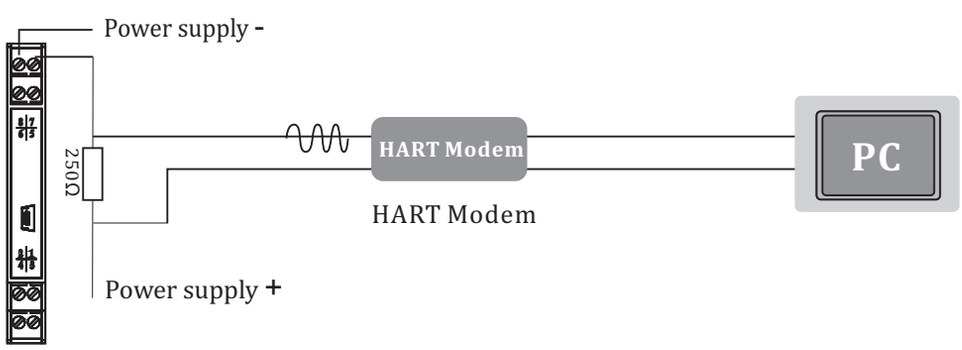
Dimensions in mm (in)

How to programm

With USB Modem (MST660, MST663)



With HART Modem (MST665)



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Temperature field transmitter MST8er Series MST885

Free programmable HART Transmitter
Universal head transmitter for resistance thermometers (RTD), thermocouples (TC), resistance and voltage transmitters,
settable via HART-protocol
for field installation

Application areas

Temperature filed transmitter with HART-protocol for converting various input signals into a scalable 4 to 20 mA analogue output signal

Input

Resistance thermometer (RTD)
Thermocouple (TC)
Resistance transmitter (Ω)
Voltage transmitter (mV)

Performance

- Universal settings with HART-protocol for various input signals
- 2 wire technology, 4 to 20mA analogue output
- High accuracy in total ambient temperature range
- Galvanic isolation
- An internal temperature sensor for active temperature compensation(For T/C)
- Wide voltage supply range
- Expanded resistance input (max 2KΩ)
- Expanded voltage input (max 2KmV)
- Materials: Die-cast aluminium
- Multiparametric backlight rotatable LCD Display

Technical data

Power supply			
Supply voltage		7.5 ...45V DC	
Input			
Input	Type	Measurement ranges	Min.meas.Ranges
Resistances thermometer (RTD)	Pt100 Pt500 Pt1000 *acc. to IEC 60751(a=0.00385)*	-200 to 850 °C (-328 to 1562 °F) -200 to 250 °C (-328 to 482 °F) -200 to 250 °C (-328 to 482 °F)	10K 10K 10K
	Cu50 Cu100	-50 to 150 °C (-58 to 302 °F) -50 to 150 °C (-58 to 302 °F)	10K 10K
	Ni100 Ni500 Ni1000 *acc. to DIN 43760(a=0.006180)*	-60 to 180 °C (-76 to 356°F) -60 to 180 °C (-76 to 356°F) -60 to 150 °C (-76 to 302 °F)	10K 10K 10K
Resistancetransmitter	Widerstand Ω	10 to 400 Ω 10 to 2000 Ω	10Ω 10Ω
Connection type: 2-, 3- or 4-wire connection Sensor current: 0.5 mA			
Thermocouples(TC)	B(PtRh30-PtRh6) E(NiCr-CuNi) J(Fe-CuNi) K(NiCr-Ni) N(NiCrSi-NiSi) R(PtRh13-Pt) S(PtRh10-Pt) T(Cu-CuNi)	0 to +1820 °C (32 to 3308 °F) -270 to +1000 °C (-454 to 1832 °F) -210 to +1200 °C (-346 to 2192 °F) -270 to +1372 °C (-454 to 2501 °F) -270 to +1300 °C (-454 to 2372 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +1768 °C (-58 to 3214 °F) -270 to +400 °C (-454 to 752 °F)	500K 50K 50K 50K 50K 500K 500K 50K
Voltage transmitters(mV)	(mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	5mV 5mV 6mV 20mV

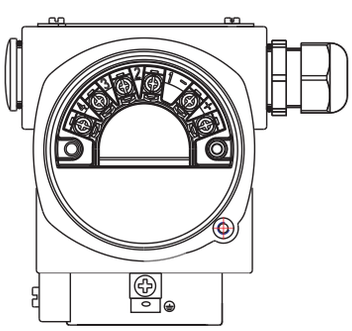
Output	
Output signal	4 to 20 mA
Load	max.(VVersorgungsspannung-7.5 V)/0.022 A
Signal on alarm	Underranging: Linear drop to 3.8 mA
	Overranging: linear rise to 20.5 mA
	Sensor break; sensor open-circuit: 3.6 mA or 22mA
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Galvanic isolation	U=2 KV AC (input/output)
Performance characteristics	
Response time	1s
Referenzbedingungen	Calibration temperature: +23 °C (73.4K)± 5 K
Long term stability	⩽0.05%year
Switch on delay	⩽5s
Influence of ambient	Negligible
Load influence	Negligible
Power supply influence	Negligible
Self stability configuration	0 to 2%
Filter configurating	0 to 160µA
Resolution	0.3 µ A

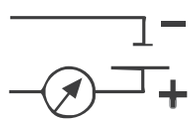
Accuracy			
	Input	Type	Accuracy
Accuracy	RTD	Pt100. Ni100 Pt500. Ni500 Pt1000. Ni1000 Cu50 Cu100	0.08% of span 0.20% of span 0.12% of span 0.08% of span 0.12% of span
	TC	K, J , T, E N S, B, R	typ. 0.1% of span typ. 0.1% of span typ. 0.1% of span
	Ω	10 to 400 Ω 10 to 2000 Ω	± 0.1 Ω or 0.08% ± 1,5 Ω or 0.12%
	mV	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	± 20 µV or 0.08% ± 20 µV or 0.08% ± 30 µV or 0.08% ± 50 µV or 0.08%

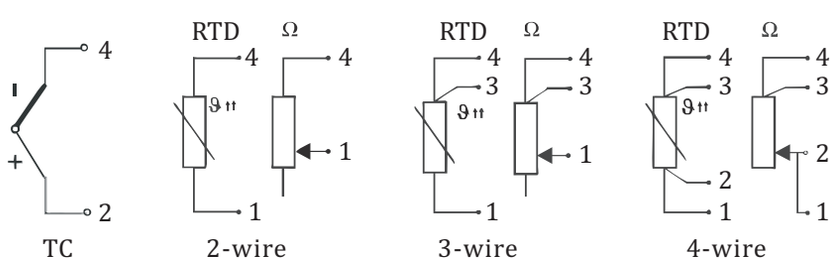
Storage temperature	
Ambient temperature limits	-40 to +85 °C (-40 to 185 °F)
Storage temperature	-40 to +100 °C (-40 to 212 °F)
Condensation	Allowable
Degree of protection	IP 00
Shock and vibration resistance	4g/2 to 150 Hz as per IEC 60 068-26
Electromagnetic compatibility (EMC)	Interference immunity and interference emission according to GB/T17626.2-1998), compliance with IEC 61000-4-3:1995

Others	
Dimensions	128mm x 89.4mm x 77mm
Weight	Approx. 800g
Materials	Die-cast aluminium
Display	Visible range 32.5 x 22.5mm; 5-digit, 7-segment main display, digit height 8mm, 8-digit 14 segment additional display, digit height 5mm; 52 bars meter with 2% resolution, range: -19999...99999

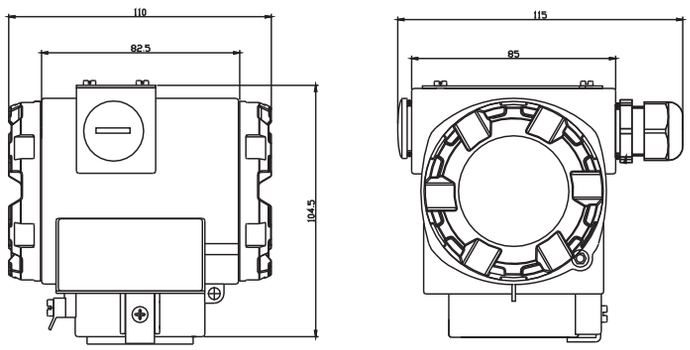
Electrical Connection







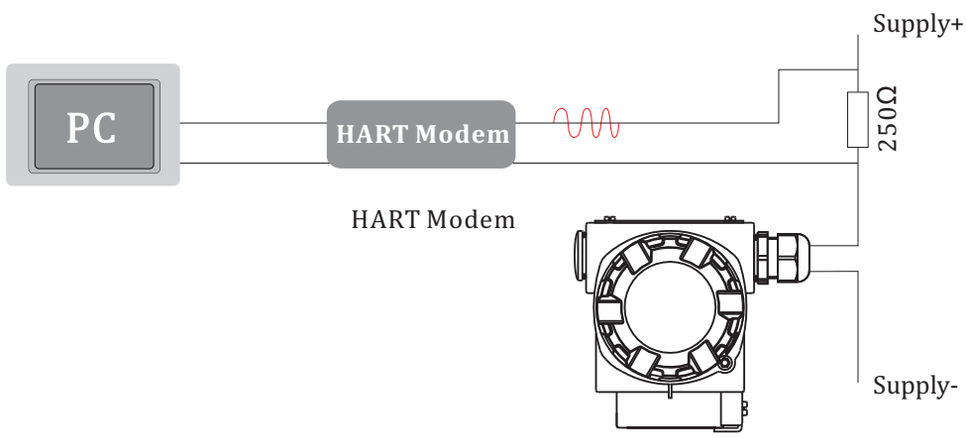
Dimensions



Dimensions in mm

How to programm

With HART Modem



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Pressure Transmitter MSP101T

Fixed measuring ranges up to 600bar
Compact construction
Simple mounting
Excellent long term stability
Long operational life
Low price
Option: HART-Communication

Pressure transmitter MSP101T with ceramic piezoresistive sensor is suitable for a wide variety of liquids, gases, and vapors.
It is a compact, economical system that provides measurement in gauge or absolute gauge measurement.

Nominal Pressure Ranges

From: 0...1bar
Up to 0...600bar

Area for application

Compressed air
Non-aggressive gases
Vacuum technology
Pneumatics

Mounting Simplicity

The MSP101T can be mounted in any orientation(Vertical, Horizontal, or inverted) without affecting its performance.
M20X1.5 process connection(standard, others on request), 304SS
4 to 20mA output
10.5 to 45VDC power supply

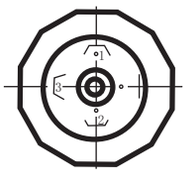
Technische Daten

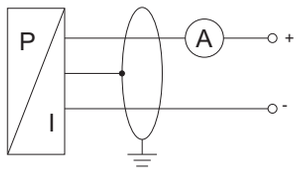
Measuring range									
Pressure gauge (bar)	1	2	5	10	20	100	200	250	400
Max.permissible overload (bar)	1	4	12	25	50	120	150	500	650

Power supply (polarity protected)		
Supply voltage		10.5-45 V DC
Output signal		
2-wire-system		Standard: 4...20mA Optional:HART-protocoll-communication
3-wire-system(optional)		1..5V
Signal range-4 to 20 mA		3.8mA...20.8mA
Signal on alarm		3.8mA/Option:22.8mA/Others on request
Electrical protection		
Instinct safe type		Ex ia ll T4-CT6
Insulation resistance		250Ω
Short-Circuit protection		Permanent
Reverse polarity protection		No damage, and no function
Overvoltage protection		500V
Performance		
Accuracy	Nominal range	<0.3%
	Turndown 2:1	<0.5%
Insulation resistance		250 Ω
Power supply effect		Negligible
Vibration effect		〈0,01%of URL /g when tested 200Hz in any axis relative
Thermal effect		±0,02%/FS/10K
Permissible load		≤1000Ω
Switch on delay		Typically 0.2% per year
Stability		5s
Damping		0 to 100s, in 0.1s-step
Response time		≤200ms((without consideration of electronic damping)
Self stability configuration		0 to 2%
Filter configured		0 to 160μA
Adjustability		Two buttons
Conditions		
Compensated temperature		0...70°C
Storage		-20 to +85 °C
Environment		-40 to +125 °C
Ingress protection		IP 65
Materials		
Housing		304SS
Sensor		Ceramic piezoresistive sensor
Seals		FPM/Others: on request
Process connection		
Standard		M20x1.5
Optional		G1/2/NPT1/2/NPT1/4/G1/4 Others on request
Others		
Display		4-digit, red LED display, digit height 7mm,
		digit width 4.85mm
Display ragne		-1999-9999
Weight		Approx. 190g (with Display)

Elektrical Connection

Pin Configuration



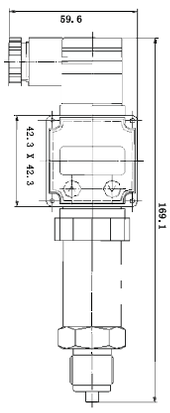


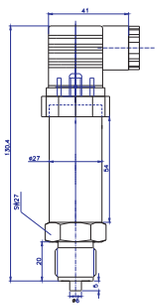
Wiring diagrams

2-Leiter System:
1: Stromversorgung +
2: Stromversorgung -
3: GND
Versorgungsspannung: 10 bis 45VDC
Ausgangssignal: 4 bis 20mA

3-Leiter System:
1: Stromversorgung +
2: Stromversorgung - (Signal-)
3: Signal+
Versorgungsspannung: 10 bis 45VDC
Ausgangssignal: 1 bis 5V

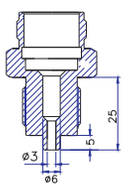
Dimensions





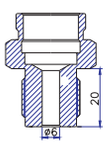
With LEDD-01 Standard Dimensions in mm

Mechanical Connection



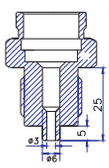
M20X1,5 EN

01



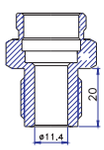
M20X1,5 DIN

02



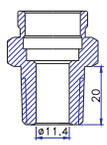
G1/2 EN

03



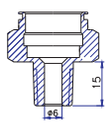
G1/2 DIN

04



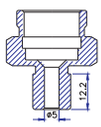
1/2 NPT

05



1/4 NPT

06



G1/4

07

Standard Optional

EN Pressure

Type	**MSP101T**	
Pressure		
	Gauge	G
	Absolute	A
Communication Type		
	HART	H
	Digital	D
Meas. Range		
Gauge	0...1	1001
	0...2	2001
	0...5	5001
	0...10	1002
	0...20	2002
	0...50	5002
	0...100	1003
	0...250	2503
	0...400	4003
	0...600	6003
Absolute	0...2	2001
	0...10	1002
	Sondermessbereiche	9999
Process connection		
	M20X1.5 EN	01
	M20X1.5 DIN	02
	G1/2 EN	03
	G1/2 DIN	04
	1/2NPT	05
	1/4NPT	06
	G1/4	07
Seals		
	FPM	01
	Others on request	99
Wetted Parts Material		
	SUS304	01
	Others on request	99
Electrical connection		
	Hirschmann GDM3009	01
	Others on request	99
LCD Display		
	None	N
	With Display	D
Typical model number: MSP101T-G-H-1001-01-01-01-01-D		99

EN

Pressure

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Pressure Transmitter MSP101P

Fixed measuring ranges up to 350bar
Compact construction
Simple mounting
Excellent long term stability
Long operational life
Low price
Option: HART-Communication

Pressure transmitter MSP101P with silicon piezoresistive stainless steel sensor is suitable for a wide variety of l iquids, gases, and vapors.
It is a compact, economical system that provides measurement in gauge or absolute gauge measurement.

Nominal Pressure Ranges

From: 0...35KPa
Up to 0...350bar(gauge) 0...35bar(absolute)

Area for application

Compressed air
Non-aggressive gases
Vacuum technology
Pneumatics

Mounting Simplicity

The MSP101P can be mounted in any orientation(Vertical, Horizontal, or inverted) without affecting its performance.
M20X1.5 process connection(standard, others on request), 304SS
4 to 20mA output
10.5 to 45VDC power supply

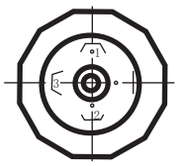
Technische Daten

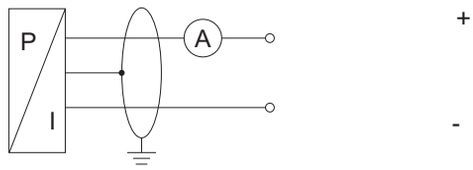
Measuring range												
Pressure gauge (bar)	0.35	0.7	1	2	3.5	7	10	20	35	70	100	350
Max.permissible overload (bar)	3X or 50MPa, whichever is less											
Absolutdruck (bar)	0.35	0.7	1	2	3.5	7	10	20	35			
Max. permissible overload (bar)	3X or 50MPa, whichever is less											

Power supply (polarity protected)		
Supply voltage		10.5-45 V DC
Output signal		
2-wire-system		Standard: 4...20mA Optional:HART-protocoll-communication
3-wire-system(optional)		1..5V
Signal range-4 to 20 mA		3.8mA...20.8mA
Signal on alarm		3.8mA/Option:22.8mA/Others on request
Electrical protection		
Instinct safe type		Ex ia ll T4-CT6
Insulation resistance		250Ω
Short-Circuit protection		Permanent
Reverse polarity protection		No damage, and no function
Overvoltage protection		500V
Performance		
Accuracy	Nominal range	<0.2%
	Turndown 2:1	<0.25%
	Turndown 3:1	<0.3%
Power supply effect		Negligible
Vibration effect		〈0,01%of URL /g when tested 200Hz in any axis relative
Thermal effect		±0,02%/FS/10K
Permissible load		≤1000Ω
Switch on delay		Typically 0.15% per year
Stability		5s
Damping		0 to 100s, in 0.1s-step
Response time		≤200ms((without consideration of electronic damping)
Self stability configuration		0 to 2%
Filter configured		0 to 160μA
Adjustability		Two buttons
Conditions		
Compensated temperature		0...70°C
Storage		-20 to +85 °C
Environment		-40 to +125 °C
Ingress protection		IP 65
Materials		
Housing		304SS
Sensor		Silicon piezoresistive stainless steel sensor
Seals		FPM/Others: on request
Process connection		
Standard		M20x1.5
Optional		G1/2/NPT1/2/NPT1/4/G1/4 Others on request
Others		
Display		4-digit, red LED display, digit height 7mm,
		digit width 4.85mm
Display ragne		-1999-9999
Weight		Approx. 190g (with Display)

Elektrical Connection

Pin Configuration



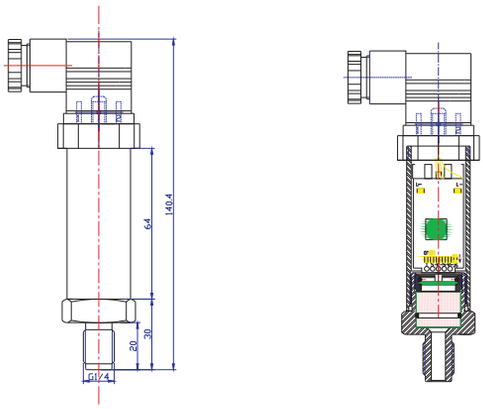


Wiring diagrams

2-Leiter System:
1: Stromversorgung +
2: Stromversorgung -
3: GND
Versorgungsspannung: 10 bis 45VDC
Ausgangssignal: 4 bis 20mA

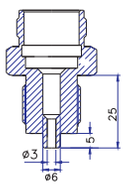
3-Leiter System:
1: Stromversorgung +
2: Stromversorgung - (Signal-)
3: Signal+
Versorgungsspannung: 10 bis 45VDC
Ausgangssignal: 1 bis 5V

Dimensions



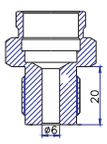
Dimensions in mm

Mechanical Connection



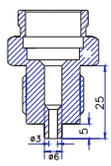
M20X1,5 EN

01



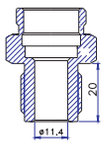
M20X1,5 DIN

02



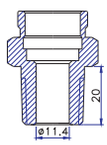
G1/2 EN

03



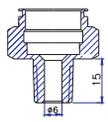
G1/2 DIN

04



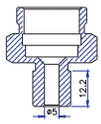
1/2 NPT

05



1/4 NPT

06



G1/4

07

Standard Optional

EN

Pressure

Type	MSP101P	Code
Pressure		
	Gauge	G
	Absolute	A
Communication Type		
	HART	H
	Digital	D
Meas. Range		
	0...0.35	3 5 0 0
	0...0.7	7 0 0 0
	0...1	1 0 0 1
	0...2	2 0 0 1
	0...3.5	3 5 0 1
	0...7	7 0 0 1
	0...10	1 0 0 2
	0...20	2 0 0 2
	0...35	3 5 0 2
	0..70	7 0 0 2
	0...200	2 0 0 3
	0...350	3 5 0 3
	Others on request	9 9 9 9
Process connection		
	M20X1.5 EN	0 1
	M20X1.5 DIN	0 2
	G1/2 EN	0 3
	G1/2 DIN	0 4
	1/2NPT	0 5
	1/4NPT	0 6
	G1/4	0 7
Seals		
	FPM	0 1
	Others on request	9 9
Wetted Parts Material		
	SUS304	0 1
	Others on request	9 9
Electrical connection		
	Hirschmann GDM3009	0 1
	Others on request	9 9
LCD Display		
	None	N
	With Display	D
Other Opitions		
		9 9

Typical model number: MSP101T-G-H-1001-01-01-01-01-D
*** Absolute mear. Ragnges > 35 bar unavailable**

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Pressuretransmitter MSP80

Optional: flush mounted
Ceramic sensor with diaphragm Al2O3. 99.9%
Separate electronics and connection compartments
Easily accessible operation elements on the outside of the instrument
Housing can be rotated through 360°
From -500pa ...500pa up to -1bar...70bar

The MSP80 can accurately measures the pressure of gases,vapours and liquid is used in all areas of chemical and process engineering, especially for hygienic applications, e.g.in the food processing and pharmaceutical industries. The
housing can be turned through 360°.

Area of Application

For higher viscous media, chemical industry, foodstuff industry and medias which are compatible with stainless steel.

Features and Benefits

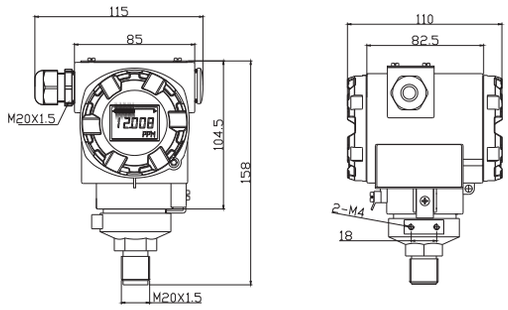
Perfect figure
Excellent long term stability
High resistance against electrical faults
Short reaction time
Long operational life
Housing can turned through 360°
Display see optimally
Extremely high overload limit

Technical data

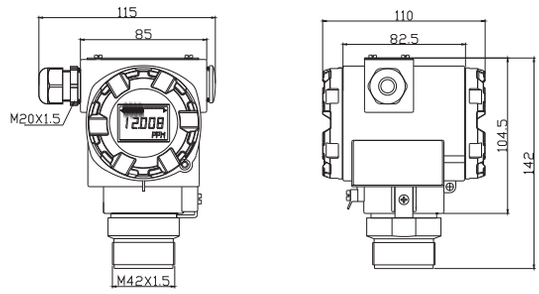
Measuring range						
Pressure gauge (kPa)	-2.5...2.5	0...5	0..10	-10...10	0...20	0...40
Overpressure Pmax (kPa)	250	-30...400	-30...400	600	600	600
Pressure gauge (kPa)	0...100	-40...100	-100...100	0...200	-100...400	
Overpressure Pmax	1	1	1	1.8	2.5	
Pressure gauge (MPa)	-0.1...1	-0.1...2	-0.1...4	-0.1...7		
Overpressure Pmax (MPa)	4	4	6	10.5		
Pressure abs. (kPa)	0...20	0...100	0...200	0...400	0...500	
Overpressure Pmax (MPa)	0.6	1	1	2.5	2.5	
Pressure abs. (MPa)	-0.1...1	-0.1...2	-0.1...4	-0.1...7		
Overpressure Pmax (MPa)	4	4	6	10.5		

Power supply (polarity protected)		
Supply voltage		10.5-45 V DC
Output signal		
2-wire-system		4...20mA with superimposed signal for HART protocoldigital communication
3-Leiter-Sensor (optional)		1..5V
Signal range-4 to 20 mA		3.8mA...20.8mA
Signal on alarm		3.8mA/Option: 22.8mA/Others on request
Electrical protection		
Insulation resistance		＞250MΩ
Short-Circuit protection		Permanent
Reverse polarity protection		No damage and no function
Overvoltage protection		500V
Performance		
Accuracy	Nominal range	<0.1% of span
	Turndown 4:1	<0.25% of span
	Turndown 10:1	<0.5% of span
Power supply effect		Negligible
Vibration effects		<0.01% of URL /g when tested 200Hz in any axis relative
Thermal effect		±0.05%/10K
Compensated temperature range of sensor		-40 to +85 °C
Permissible loadt		≤50（V-12)Ω
Stability		0.1%URL of Year
Switch on delay		5s
Damping		0 to 100s. in 0.1s-step
Response time		≤200ms （without consideration of electronic damping)
Self stability configuration		0 to 2%
Filter configured		0 to 160μA
Adjustability		Three push buttons
Communication resistance		Typ. 250Ω
Application conditions		
Humidity		5...98%
Ambient and operation		-40 to +85 °C (without Display).
		-20 to +70 °C(with Display)
Storage		-40 to +85 °C
Ingress protection		IP 65
Electromagnetic coMPatibility(EMC)		Interference immunity and interference emission according to GB/T17626.2-1998), compliance with IEC 61000-4-3:1995.
Materials		
Housing		Aluminum die cast
Sensor		Ceramic Al_2O_3 99.9%
Seals		FPM/ Others: on request
Process connection		
Process connection		Stainless steel 1.4435(316L)/Others: on request
Sight glass		Laminated safety glass
DisplayType		Visible range 32.5X22.5mm;
		5-digit 7-segment main display,digit height 8mm,
		8-digit 14 segment additional display， digit height 5mm;
		52 bars meter with 2% resolution
Display Range		-19999...99999
Installation position		Any
Weight		Standard model approx. 1.8kg

Dimensions



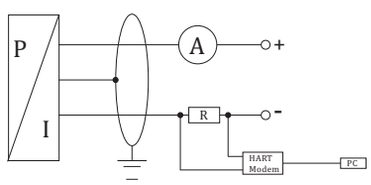
MSP80



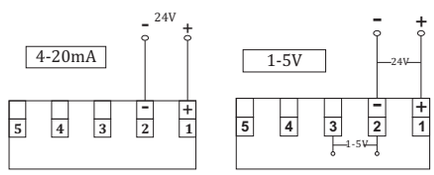
MSP80F

Dimensions in mm

Wiring diagram



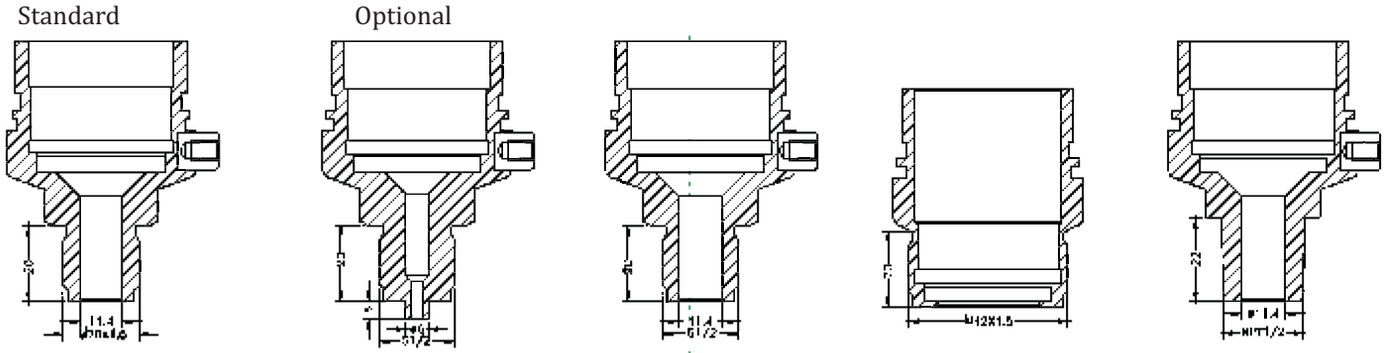
Electrical connection



Ordering Code

Standard

Optional



M20X1.5 DIN	G1/2 " EN	G1/2 " DIN	M42X1.5 DIN	1/2 " NPT DIN
Ordering code: 02	Ordering code:03	Ordering code:04	Ordering code: 08	Ordering code:05

Operation

The MSP80 can be operated in the following ways:Using the two keys for calibrating zero point and span at the touch of a button.
Or
Operating remotely using the HART protocols-e.g. via HART Modem and a PC with the Muesen operating programm Software or-using the Handheld.

The MSP80 can be programmed via three buttons. Following parameters can be adjusted: scaling, decimal point, damping, display model, fix output current, and reset. HART-commnication via HART-protocol the possibility of setting zero and span value is given. HART-communicatin, which can run via PC, notebook, handheld, measured values and parametersbecome transparent and are available on every step of the signal circuit.

Type	**MSP80**																				
Pressure																					
	Gauge	G																			
	Absolute	A																			
Communication type																					
	HART		H																		
Mears. Ranges	**[bar]**																				
Gauge	0...0.05			0	5	0	0														
	0...0.1			1	0	0	0														
	0...0.2			2	0	0	0														
	0...0.4			4	0	0	0														
	0...1			1	0	0	1														
	0...2			2	0	0	1														
	-1...10			V	1	0	3														
	-1...20			V	2	0	3														
	-1...40			V	4	0	3														
	-1...70			V	7	0	3														
	-0.025...0.025			S	0	2	5														
	-0.1...0.1			S	1	0	0														
	-0.4...1			H	1	0	2														
	-1...1			S	1	0	2														
	-1...4			V	4	0	2														
Absolute	0...0.5			2	0	0	0														
	0...1			1	0	0	1														
	0...2			2	0	0	1														
	0...4			4	0	0	1														
	0...5			5	0	0	1														
	-1...10			V	1	0	2														
	-1...20			V	2	0	2														
	-1...40			V	4	0	2														
	-1...70			V	7	0	2														
	Others on request			9	9	9	9														
Mechanical connection																					
	M20X1.5 DIN							0	2												
	G1/2 EN							0	3												
	G1/2 DIN							0	4												
	1/2NPT DIN							0	5												
	Others on request							9	9												
Seals																					
	FPM									0	1										
	Others on request									9	9										
Wetted Parts Material																					
	SUS304											0	1								
	Others on request											9	9								
Electrical Connection																					
	M20X1.5													0	1						
	Others on request													9	9						
Mounting bracket																					
	Horizontale Halterung															H					
	Vertikale Halterung															V					
	Ohne Halterung															O					
LCD Display																					
	No display																	N			
	Mit Display																	D			
Other Options																					
																				9	9

Typical model number: MSP80-H-G-1002-02-01-01-01-OD

Flush mounted

Type	MSP80F																		
Pressure																			
	Gauge	G																	
	Absolute	A																	
KommunicationsType																			
	HART		H																
Messbereich	**[bar]**																		
Gauge	0...0.05			0	5	0	0												
	0...0.1			1	0	0	0												
	0...0.2			2	0	0	0												
	0...0.4			4	0	0	0												
	0...1			1	0	0	1												
	0...2			2	0	0	1												
	-1...10			V	1	0	3												
	-1...20			V	2	0	3												
	-1...40			V	4	0	3												
	-1...70			V	7	0	3												
	-0.025...0.025			S	0	2	5												
	-0.1...0.1			S	1	0	0												
	-0.4...1			H	1	0	2												
	-1...1			S	1	0	2												
	-1...4			V	4	0	2												
Absolute	0...0.5			2	0	0	0												
	0...1			1	0	0	1												
	0...2			2	0	0	1												
	0...4			4	0	0	1												
	0...5			5	0	0	1												
	-1...10			V	1	0	2												
	-1...20			V	2	0	2												
	-1...40			V	4	0	2												
	-1...70			V	7	0	2												
	Others on request			9	9	9	9												
Mechanical Connection																			
	M42X1.5 DIN							0	8										
	Others on request							9	9										
Wetted Parts Material																			
	SUS304									0	1								
	SUS316									0	2								
	Others on request									9	9								
Electrical Connection																			
	M20X1.5											0	1						
	Others on request											9	9						
Display																			
	No display													N					
	LCD Display													D					
	LED Display													E					
Other Options																			
																		9	9

Typical model number: MSP80F-G-H-1002-08-01-01-D

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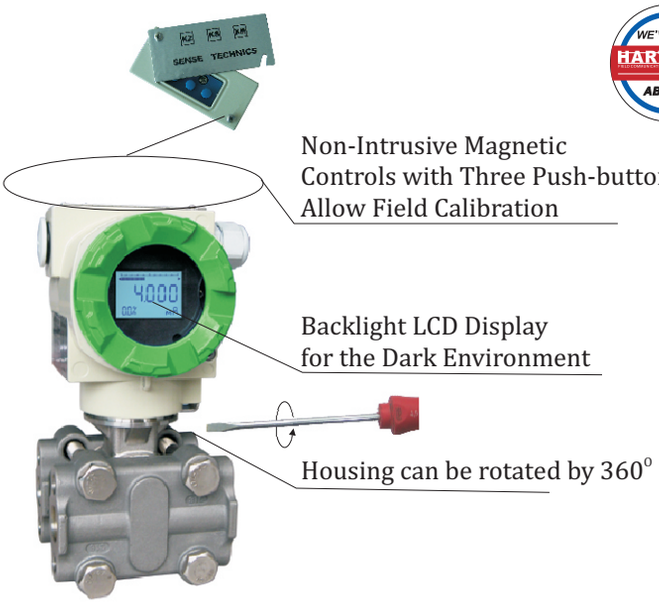
Differential pressure transmitter MSP80D with HART-protocol



Applicaition Arears

For application in the process engineering
Suit for liquids, vapour, or gases
Preferred areas of use are: Process engineering
Chemical industry

Performance

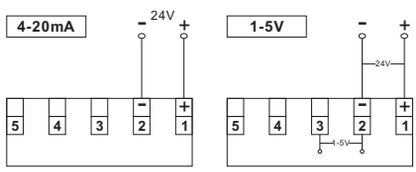
- Max. Turndown:100:1
- Nicht-intrusive magnetische Steuerung
- LCD Display mit Hintergrundlicht
- Gehäuse bis zu 360°drehbar
- Hervorragende Stabilität

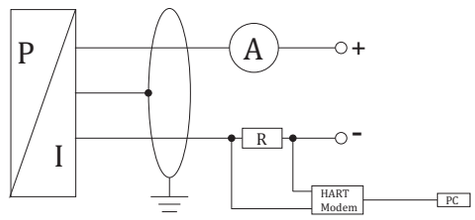
Technical data

Measuring range					
Code	Nominal pressure	Measurement limit		Overload	Min.operating pressure
		Lower (LRL)	Upper (URL)		
3S	7.5kPa	-7.5kPa	7.5kPa	13MPa	0.12kPa
4S	40kPa	-40kPa	40kPa	13MPa	0.04kPa
5S	200kPa	-200kPa	200kPa	13MPa	2kPa
6S	700kPa	-700kPa	700kPa	13MPa	7kPa
7S	2100kPa	-2100kPa	2100kPa	13MPa	21kPa
8S	7000kPa	-7000kPa	7000kPa	125%	70kPa
Power supply (polarity protected)					
Supply voltage			10.5...45 V DC		
Input					
2-wire-system			4...20mA with superimposed signal for HART protocoldigital communication		
Signal range- 4 to 20 mA			3.8mA...20.8mA		
Signal on alarm			3.8mA/Option: 22.8mA/Others on request		

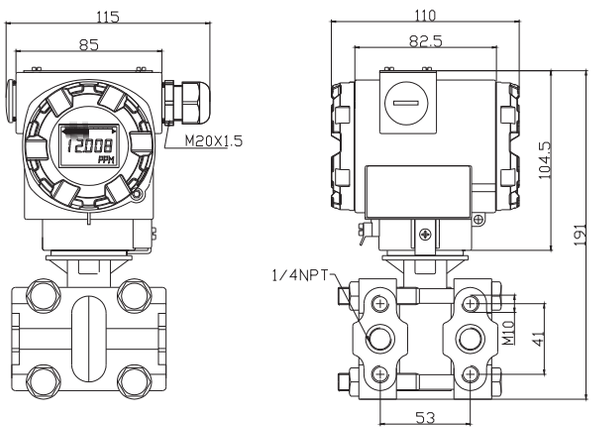
Electrical protection		
Isolationswiderstand		＞250MΩ
Insulation resistance		Permanent
Reverse polarity protection		No damage, and no function
Overvoltage protection		500V
Intrinsic safety		Exia CT4～T6
Performance		
Accuracy	3S	0.1% accuracy for range trundown 5:1
		(0.1+0.01XURL/Span) between 1/5 and 1/50 of measuring
	4S...7S	0.075% accuracy for range trundown 10:1
		(0.075+0.00751XURL/Span) between 1/10 and 1/100 of measuring
	8S	0.2% accuracy for range trundown 10:1
		(0.2+0.01XURL/Span) between 1/10 and 1/100 of measuring
Power supply effect		Vernachlässigbar
Static pressure effect		<0.01%URL/g bei 200Hz
Vibration effect		±0. 05%/10K
Installation position effect		Nullpunkt: 0.1%/7MPa; Messspanne: 0.2%/7MPa
Thermal effect		Nullpunktverschiebung kann auf Null gesetzt werden
Static pressure		0.1%URL /Jahr
Stability		5s
Cycle time/Updater time		0 bis 100s, in 0.1s-Schritt
Switch on delay		≤200ms (Ohne Berücksichtigung der elektronischer Dämpfung)
Damping		0 bis 2%
Response time		0 bis 160μA
Self stability configuration		30bar...130bar
Filter configured		0.25s
Environment		
Humidity		5...98%
Ambient and operation		-40 to +85 °C (without display),
		-20 to +70 °C(with display)
Storage Temperature		-40 to +85 °C
Ingress protection		IP 65
Electromagnetic coMPatibility(EMC)		Interference immunity and interference emission according to GB/T17626.2-1998), compliance with IEC 61000-4-3:1995.
Physical specifications		
Diaphragms		Stainless steel 316L, Others on request
Flange		Stainless steel 316L
Drain/vent valve		Stainless steel 316L
Media wetted o-rings		FKM, others on request
Electronic housing		Die-cast aluminium
Flange screws, identification plate		Carbon steel with Zinc coating
Mounting brackets (Option)		Carbon steel with Zinc coating or with painting
Sight glass		Laminated safety glass
Filling fluid		Silicon oil/Others on request
Others		
Display		Visible range 32.5X22.5mm; 5-digit 7-segment
		main display, digit height 8mm, 8-digit 14
		segment additional display, digit height 5mm;
		52 bars meter with 2% resolution
Display Range		-19999-99999
Weight		Standard model approx. 3.8kg

Electrical Connection





Dimensions



Dimensions in mm

Operation

The MSP80D can be operated in the following ways:
Using the three keys
Or
Operating remotely using the HART protocols
-e.g. via HARTTalker and a PC with the Muesen operating programm HARTTran or
-using the PDA

Software

Muesen offers two configuration software.
They can be used the PC and Handbediengerät.

Operation of push buttons

The MSP80D can be programmed via three buttons. Following parameters can be adjusted: scaling, decimal point, damping, display model, fix output current, and reset.
HART-commnication via HART-protocol the possibility of setting zero and span value is given. HART-communicatin, which can run via PC, note-book, handheld, measured values and parameters become transparent and are available on every step of the signal circuit.

Type	**MSP80D**	
Communication Type		
	HART	H
Meas. Range	**[bar]**	
	-0.075...0.075	3S
	-0.4...0.4	4S
	-2...2	5S
	-7...7	6S
	-21...21	7S
	-70...70	8S
	Others on request	99
Fill Fluid		
	Silicone oil, standard cleaning	01
	Silicone oil, degrease cleaning	02
	Fluorocarbonoil, degrease cleaning	03
Process connection		
	None, 1/4 NPT female on the voer flanges	10
	1/2-14, female, two electrical connections	11
	Others on request	99
Seal		
	FPM	01
	Others on request	99
Wetted Parts Material		
	SUS316 SST with SUS316 SST Isolating diaphragm	01
	SUS316 SST with Hastelloy C276 Isolating diaphragm	02
	Hastelloy C276 with Hastelloy C276 Isolating diaphragm	03
Electrical connection		
	M20X1.5 DIN	01
	Others on request	99
Mounting bracket		
	Horizontal bracket	H
	Vertical bracket	V
	None	O
LCD Display		
	None	N
	With Display	D
Sigal on alarm		
	Factory preset 3.8 or 22.8mA	00
	Others on request	99
Other Opitions		
		99

Typical model number: MSP80D-H-3S-01-10-01-01-01-OD-00

EN

Pressure

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USB Modem

Economical and easy-to-use
Standard USB connector
Send/Receive LED indicators
Galvanic isolation

The USB Modem is designed for Muesen temperature and pressure products with USB interface.
The USB Modem can be directly connected to the USB serial port in the PC.

Application

For Muesen temperature and pressure products with USB interface.

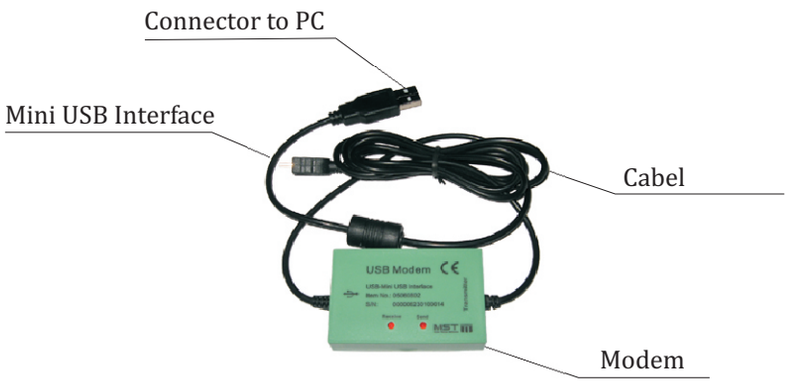
Performance

Economical and easy-to-use
Galvanic isolation
Send/ receive LED indicators
No external supply required
Standard USB connector

Technical data

Electronical	
Power supply	no external supply required
Galvanic isolation	1500VDC isolation between instrument and computer
Pins to computer	USB-plug
Cable length	Approx 1.76m
Enclosure	
Weight	Approx. 150 g
Modem dimensions	70mm*45mm*18mm
Environmental	
Operating temperature	0 to 50°C
Storage temperature	-40 to 80°C
Humidity	0-95% (no-condensing)
System requirements	
Operating system	Windows 95/98/ME/2000/XP
CPU	350 Mhz
Resolution	Windows 95/98/ME: 64 MB
	Windows 2000/XP: 128 MB
Auflösung	800*600 Pixels
Others	CD-ROM drive

Construction



Installation and connection

To connect the USB connector to the USB port on PC. The Send/ Receive LED indicators will indicate by turns if it is working well.

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HART Modem

Economical and easy-to-use
Galvanic isolation
Send/ receive LED indicators
No external supply required
Standard USB connector
Fully compliant all HART instruments

The HART Modem is designed for HART transmitter developers and users.
The HART Modem is fully compliant any HART instrument with a PC.The HART Modem can be directly connected to the PC.

Application

For Muesen Ttemperature and pressure products with USB interface.

Performance

Economical and easy-to-use
Galvanic isolation
Send/ receive LED indicators
No external supply required
Standard USB connector

Technical data

Electronical	
Power supply	no external supply required
Galvanic isolation	1500VDC isolation between instrument and computer
Pins to HART device	2-banana plug, polarity insensitive test clips
Pins to computer	USB-plug
Cable length	Length for interface cable : 1.40m Length for hart cable: 1.10m
Enclosure	
Weight	Approx. 150 g
Modem dimensions	70mm*45mm*18mm
Environmental	
Operating temperature	0 to 50°C
Storage temperature	-40 to 80°C
Humidity	0-95% (no-condensing)
System requirements	
Operating system	Windows 95/98/ME/2000/XP
CPU	350 Mhz
Resolution	Windows 95/98/ME: 64 MB Windows 2000/XP: 128 MB
Auflösung	800*600 Pixels
Others	CD-ROM drive

Construction

Installation and connection

Connect the Modem to the PC, then Connect the two clips to the HART device or HART loop.
The Send/ Receive LED indicators will indicate by turns if it is working well.
The hart protocol requires a loop resistance between 230 and 600 ohms, typical 250 ohms.

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OEM HART Temperature Transmitter Module MST92E01

Compact design
Universal temperature transmitter module for resistance thermometers (RTD), thermocouples (TC), resistance and voltage transmitters, settable via HART-protocol

EN

OEM-PCBs

Application areas

OEM Temperature Transmitter Module with HART- protocol for converting various input signals into a scalable 4 to 20 mA analogue output signal

Input

Resistance thermometer (RTD)
Thermocouple (TC)
Resistance transmitter (ohm)
Voltage transmitter (mV)

Performance

Compact design
Universal settings with HART-protocol for various input signals
2 wire technology, 4 to 20mA analogue output
High accuracy in total ambient temperature range
An internal temperature sensor for active temperature compensation(For T/C)
Wide voltage supply range
Customer specific measurement range settings
Expanded resistance input (max 2KΩ)
Expanded voltage input (max 2KmV)

Technical data

Power supply(polarity protected)	
Power voltage	7.5 to 45V DC (without Display), polarity protected
Output	
Output signal	4 to 20mA
Signal on alarm	Underranging: 3.8mA
	Overranging: 20.8mA
	Sensor break; sensor open-circuit:3,6mA or 22mA
Load	Max. ($V_{power\ supply}$-7.5V/0.022A)
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Galvanic isolation	U=2 KV AC (input/output)

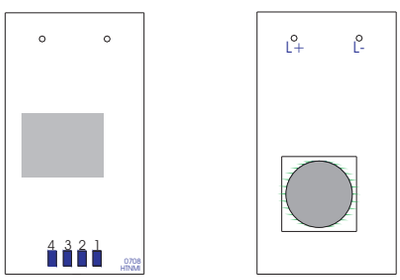
Technical data

Input			
Input	Type	Measurement ranges	min. measurement
Resistances thermometer (RTD)	Pt100 Pt500 Pt1000	-200 to 850 °C (-328 to 1562 °F) -200 to 250 °C (-328 to 482 °F) -200 to 250 °C (-328 to 482 °F)	10K 10K 10K
	Cu50 Cu100	-50 to 150 °C (-58 to 302 °F) -50 to 150 °C (-58 to 302 °F)	10K 10K
	*Ni100 *Ni500 *Ni1000	-60 to 180 °C (-76 to 356°F) -50 to180 °C (-76 to 356°F) -50 to 150 °C (-76 to 302 °F)	10K 10K 10K
Resistances	Resistance (Ω)	0 to 400 Ω 0 to 2000 Ω	10Ω 20Ω
*α=5000ppm/K oder 6180ppm/K Anschlussart: 2- 3- oder 4-Leiteranschluss Sensorstrom≤0. 5mA			
Thermocouples (TC)	B(PtRh30-PtRh6) E(NiCr-CuNi) J(Fe-CuNi) K(NiCr-Ni) N(NiCrSi-NiSi) R(PtRh13-Pt) S(PtRh10-Pt) T(Cu-CuNi)	0 to +1820 °C (32 to 3308 °F) -270 to +1000 °C (-454 to 1832 °F) -210 to +1200 °C (-346 to 2192 °F) -270 to +1372 °C (-454 to 2501 °F) -270 to +1300 °C (-454 to 2372 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +400 °C (-454 to 752 °F)	500K 50K 50K 50K 50K 500K 500K 50K
MIlivolttransmitters (mV)	Milivolt transmitters (mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	5mV 5mV 6mV 20mV

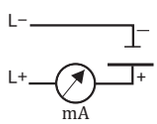
Performance characteristics			
Response time	1s		
Referenzbedingungen	Calibration temperature: +23 °C (73.4K)± 5 K		
Long term stability	≤0.05% year		
Switch on delay	≤5s		
Influence of ambient	Negligible		
Load influence	Negligible		
Power supply influence	Negligible		
Self stability configuration	0 to 2%		
Filter configurating	0 to 160µA		
Resolution	0.3µA		
Maximum measured error	Eingang	Bezeichnung	Messgenauigkeit
	Resistance thermometers (RTD)	Pt100. Ni100 Pt500. Ni500 Pt1000. Ni1000 Cu50 Cu100	0.2K or 0.08% 0.5K or 0.20% 0.3K or 0.12% 0.2K or 0.08% 0.3K or 0.12%
	Thermocouples (TC)	K, J , T, E N S, B, R	typ. 0.5 K or 0.08% typ. 1,0 K or 0.08% typ. 2,0 K or 0.08%
	Resistance (Ω)	10 to 400 Ω 10 to 2000 Ω	± 0.1 Ω or 0.08% ± 1.5 Ω or 0.12%
	Milivolttransmitter (mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	± 20 µV or 0.08% ± 20 µV or 0.08% ± 30 µV or 0.08% ± 50 µV or 0.08%

Environment conditions	
Ambient temperature limits	-40 to +85 °C (-40 to 185 °F)
Storage temperature	-40 to +100 °C (-40 to 212 °F)
Condensation	Allowable
Degree of protection	IP 00
Shock and vibration resistance	4g/2 to 150 Hz as per IEC 60 068-26
Electromagnetic compatibility (EMC)	Interference immunity and interference emission accordingto GB/T17626.2-1998), compliance with IEC 61000-4-3:1995.TAF 10 field housing
Others	
Dimensions	44mmX22.5 mm
Weight	Approx. 33.5g

Electrical connection

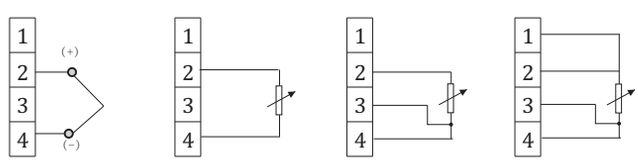


A. Sensor power: XS1



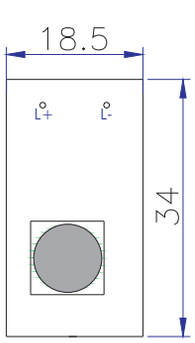
7,5 to 45VDC
4 to 20 mA

B. Sensor connection



TC 2-wire 3-wire 4-wire

Dimensions



Dimensions in mm

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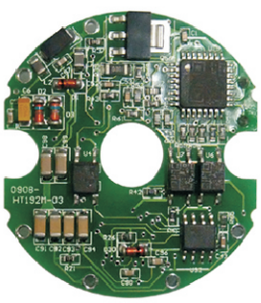
OEM HART Temperature Transmitter Module MST92E02



Compact design
Universal temperature transmitter module for resistance thermometers (RTD), thermocouples (TC), resistance and voltage transmitters, settable via HART-protocol

Application areas

OEM Temperature Transmitter Module with HART- protocol for converting various input signals into a scalable 4 to 20 mA analogue output signal

Input

Resistance thermometer (RTD)
Thermocouple (TC)
Resistance transmitter (ohm)
Voltage transmitter (mV)

Performance

Compact design
Universal settings with HART-protocol for various input signals
2 wire technology, 4 to 20mA analogue output
High accuracy in total ambient temperature range
An internal temperature sensor for active temperature compensation(For T/C)
Wide voltage supply range
Customer specific measurement range settings
Expanded resistance input (max 2KΩ)
Expanded voltage input (max 2KmV)

Technical data

Power supply(polarity protected)	
Power voltage	7.5 to 45V DC (without Display), polarity protected
Output	
Output signal	4 to 20mA
Signal on alarm	Underranging: 3.8mA
	Overranging: 20.8mA
	Sensor break; sensor open-circuit:3,6mA or 22mA
Load	Max. ($V_{power\ supply}$-7.5V/0.022A)
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Galvanic isolation	U=2 KV AC (input/output)

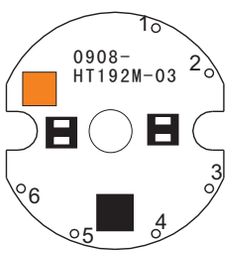
Technical data

Input			
Input	Type	Measurement ranges	min. measurement
Resistances thermometer (RTD)	Pt100 Pt500 Pt1000	-200 to 850 °C (-328 to 1562 °F) -200 to 250 °C (-328 to 482 °F) -200 to 250 °C (-328 to 482 °F)	10K 10K 10K
	Cu50 Cu100	-50 to 150 °C (-58 to 302 °F) -50 to 150 °C (-58 to 302 °F)	10K 10K
	*Ni100 *Ni500 *Ni1000	-60 to 180 °C (-76 to 356°F) -50 to180 °C (-76 to 356°F) -50 to 150 °C (-76 to 302 °F)	10K 10K 10K
Resistances	Resistance (Ω)	0 to 400 Ω 0 to 2000 Ω	10Ω 20Ω
*α=5000ppm/K oder 6180ppm/K Anschlussart: 2- 3- oder 4-Leiteranschluss Sensorstrom≤0. 5mA			
Thermocouples (TC)	B(PtRh30-PtRh6) E(NiCr-CuNi) J(Fe-CuNi) K(NiCr-Ni) N(NiCrSi-NiSi) R(PtRh13-Pt) S(PtRh10-Pt) T(Cu-CuNi)	0 to +1820 °C (32 to 3308 °F) -270 to +1000 °C (-454 to 1832 °F) -210 to +1200 °C (-346 to 2192 °F) -270 to +1372 °C (-454 to 2501 °F) -270 to +1300 °C (-454 to 2372 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +400 °C (-454 to 752 °F)	500K 50K 50K 50K 50K 500K 500K 50K
MIlivolttransmitters (mV)	Milivolt transmitters (mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	5mV 5mV 6mV 20mV

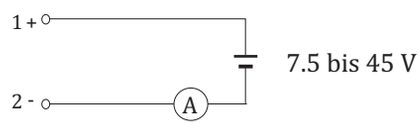
Performance characteristics			
Response time	1s		
Referenzbedingungen	Calibration temperature: +23 °C (73.4K)± 5 K		
Long term stability	≤0.05% year		
Switch on delay	≤5s		
Influence of ambient	Negligible		
Load influence	Negligible		
Power supply influence	Negligible		
Self stability configuration	0 to 2%		
Filter configurating	0 to 160µA		
Resolution	0.3µA		
Maximum measured error	Eingang	Bezeichnung	Messgenauigkeit
	Resistance thermometers (RTD)	Pt100. Ni100 Pt500. Ni500 Pt1000. Ni1000 Cu50 Cu100	0.2K or 0.08% 0.5K or 0.20% 0.3K or 0.12% 0.2K or 0.08% 0.3K or 0.12%
	Thermocouples (TC)	K, J , T, E N S, B, R	typ. 0.5 K or 0.08% typ. 1,0 K or 0.08% typ. 2,0 K or 0.08%
	Resistance (Ω)	10 to 400 Ω 10 to 2000 Ω	± 0.1 Ω or 0.08% ± 1.5 Ω or 0.12%
	Milivolttransmitter (mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	± 20 µV or 0.08% ± 20 µV or 0.08% ± 30 µV or 0.08% ± 50 µV or 0.08%

Environment conditions	
Ambient temperature limits	-40 to +85 °C (-40 to 185 °F)
Storage temperature	-40 to +100 °C (-40 to 212 °F)
Condensation	Allowable
Degree of protection	IP 00
Shock and vibration resistance	4g/2 to 150 Hz as per IEC 60 068-26
Electromagnetic compatibility (EMC)	Interference immunity and interference emission accordingto GB/T17626.2-1998), compliance with IEC 61000-4-3:1995.TAF 10 field housing
Others	
Dimensions	ϕ 33mm
Weight	Approx. 7g

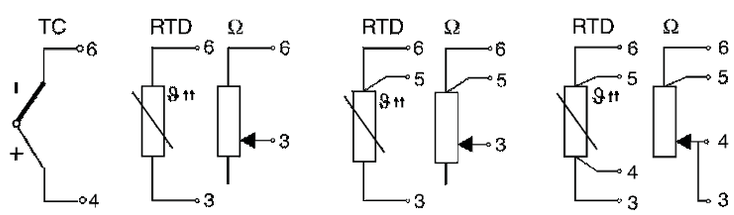
Electrical connection



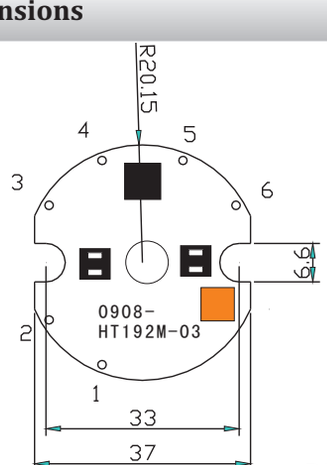
A. Power supply.



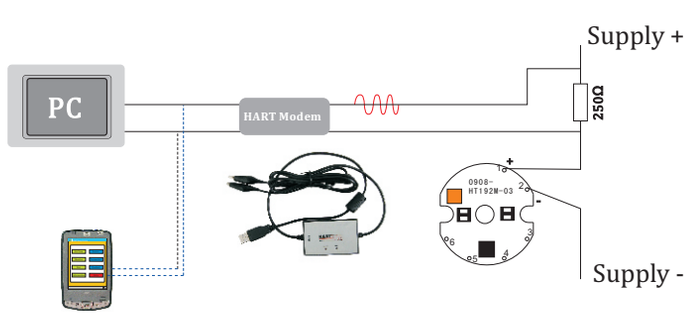
B. Sensor connection



Dimensions



Dimensions in mm



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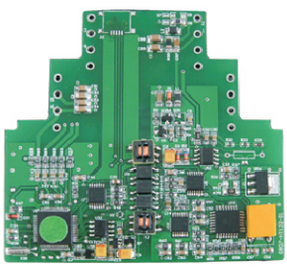
OEM HART Temperature Transmitter Module MST92E03



Compact design
Universal temperature transmitter module for resistance thermometers (RTD), thermocouples (TC), resistance and voltage transmitters, settable via HART-protocol

Application areas

OEM Temperature Transmitter Module with HART- protocol for converting various input signals into a scalable 4 to 20 mA analogue output signal

Input

Resistance thermometer (RTD)
Thermocouple (TC)
Resistance transmitter (ohm)
Voltage transmitter (mV)

Performance

Compact design
Universal settings with HART-protocol for various input signals
2 wire technology, 4 to 20mA analogue output
High accuracy in total ambient temperature range
An internal temperature sensor for active temperature compensation(For T/C)
Wide voltage supply range
Customer specific measurement range settings
Expanded resistance input (max 2KΩ)
Expanded voltage input (max 2KmV)

Technical data

Power supply(polarity protected)	
Power voltage	7.5 to 45V DC (without Display), polarity protected
Output	
Output signal	4 to 20mA
Signal on alarm	Underranging: 3.8mA
	Overranging: 20.8mA
	Sensor break; sensor open-circuit:3,6mA or 22mA
Load	Max. ($V_{power\ supply}$-7.5V/0.022A)
Linearisation/transmission behaviour	Temperature linear, resistance linear, voltage linear
Galvanic isolation	U=2 KV AC (input/output)

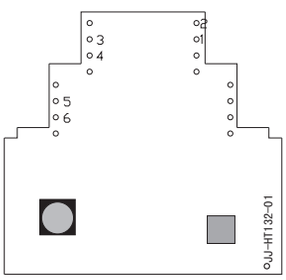
Technical data

Input			
Input	Type	Measurement ranges	min. measurement
Resistances thermometer (RTD)	Pt100 Pt500 Pt1000	-200 to 850 °C (-328 to 1562 °F) -200 to 250 °C (-328 to 482 °F) -200 to 250 °C (-328 to 482 °F)	10K 10K 10K
	Cu50 Cu100	-50 to 150 °C (-58 to 302 °F) -50 to 150 °C (-58 to 302 °F)	10K 10K
	*Ni100 *Ni500 *Ni1000	-60 to 180 °C (-76 to 356°F) -50 to180 °C (-76 to 356°F) -50 to 150 °C (-76 to 302 °F)	10K 10K 10K
Resistances	Resistance (Ω)	0 to 400 Ω 0 to 2000 Ω	10Ω 20Ω
*α=5000ppm/K oder 6180ppm/K Anschlussart: 2- 3- oder 4-Leiteranschluss Sensorstrom≤0. 5mA			
Thermocouples (TC)	B(PtRh30-PtRh6) E(NiCr-CuNi) J(Fe-CuNi) K(NiCr-Ni) N(NiCrSi-NiSi) R(PtRh13-Pt) S(PtRh10-Pt) T(Cu-CuNi)	0 to +1820 °C (32 to 3308 °F) -270 to +1000 °C (-454 to 1832 °F) -210 to +1200 °C (-346 to 2192 °F) -270 to +1372 °C (-454 to 2501 °F) -270 to +1300 °C (-454 to 2372 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +1768 °C (-58 to 3214 °F) -50 to +400 °C (-454 to 752 °F)	500K 50K 50K 50K 50K 500K 500K 50K
MIlivolttransmitters (mV)	Milivolt transmitters (mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	5mV 5mV 6mV 20mV

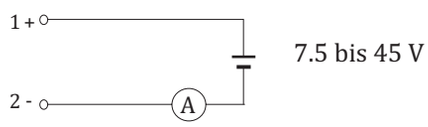
Performance characteristics			
Response time	1s		
Referenzbedingungen	Calibration temperature: +23 °C (73.4K)± 5 K		
Long term stability	≤0.05% year		
Switch on delay	≤5s		
Influence of ambient	Negligible		
Load influence	Negligible		
Power supply influence	Negligible		
Self stability configuration	0 to 2%		
Filter configurating	0 to 160µA		
Resolution	0.3µA		
Maximum measured error	Eingang	Bezeichnung	Messgenauigkeit
	Resistance thermometers (RTD)	Pt100. Ni100 Pt500. Ni500 Pt1000. Ni1000 Cu50 Cu100	0.2K or 0.08% 0.5K or 0.20% 0.3K or 0.12% 0.2K or 0.08% 0.3K or 0.12%
	Thermocouples (TC)	K, J , T, E N S, B, R	typ. 0.5 K or 0.08% typ. 1,0 K or 0.08% typ. 2,0 K or 0.08%
	Resistance (Ω)	10 to 400 Ω 10 to 2000 Ω	± 0.1 Ω or 0.08% ± 1.5 Ω or 0.12%
	Milivolttransmitter (mV)	-10 to 75mV -100 to 100mV -100 to 500mV -100 to 2000mV	± 20 µV or 0.08% ± 20 µV or 0.08% ± 30 µV or 0.08% ± 50 µV or 0.08%

Environment conditions	
Ambient temperature limits	-40 to +85 °C (-40 to 185 °F)
Storage temperature	-40 to +100 °C (-40 to 212 °F)
Condensation	Allowable
Degree of protection	IP 00
Shock and vibration resistance	4g/2 to 150 Hz as per IEC 60 068-26
Electromagnetic compatibility (EMC)	Interference immunity and interference emission accordingto GB/T17626.2-1998), compliance with IEC 61000-4-3:1995.TAF 10 field housing
Others	
Dimensions	80.5mmX76 mm
Weight	Approx. 20.5g

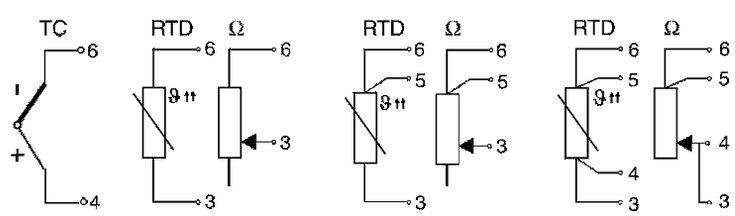
Electrical connection



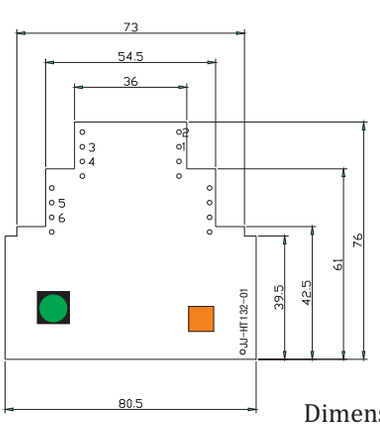
A. Power supply.

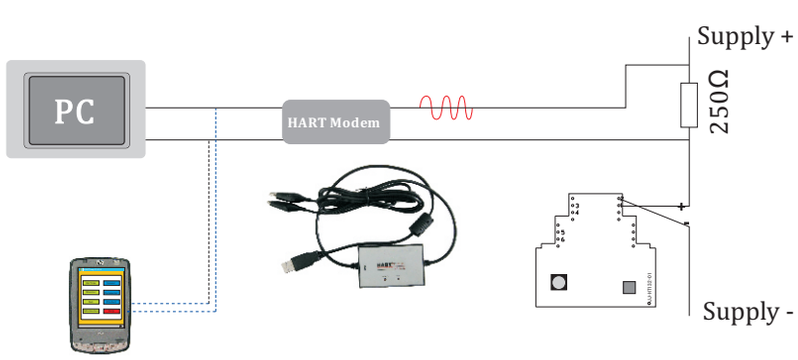


B. Sensor connection



Dimensions





Dimensions in mm

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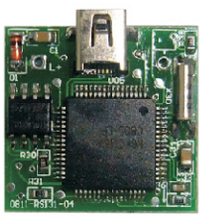
Digital Transmitter OEM Module MSP90E01



Only 21.7mm x 20.8mm

Small size, simple mounting
Popular sensors acceptable
Economical price, high accuracy
Long-term stability
Excellent EMC performance
USB Programming interface

The MSP90E01 is a very small size, only 21.7mmx20.8mm .
The MSP90E01 is suitable for various sensors and converts input signals into 4 to 20 mA analogue output signal.
The MSP90E01 can be programmed via two buttons on the PCB. Following parameters can be adjusted: zero, span, restore data and so on.
Inside temperature sensor of PCB could be directly used for the temperature error compensation.
The MSP90E01 is protected against miswiring and transient overvoltages.

Application areas

The MSP90E01 may be used for a wide variety of measure sensor:
-pressure sensors
-differential sensors
-load cells
-magnetic field sensors
-strain gauge
-resistor of 2/3/4 wires

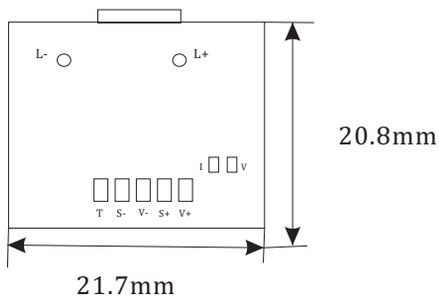
Performance

Wide voltage supply range: 9-45VDC
Self stability and filter setup: Improve transmitter stability
Freely linearity and temperature compensation: Min. 2 points, max 11 points
Self-learning function: Acceptability 1.5mV-4.8V signal input
Popular sensors acceptable: E.g. Pressure, differential, load cell, magnetic float ball, strain gauge etc.
Backup and restore data: Convenient for using on the locale
Excellent EMC performance: Suitable for harsh conditions

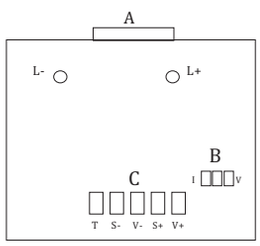
Technical data

Power supply (polarity protected)		
Supply voltage	9-45 V DC	
Input		
2-wire sensor	Such as: 2-wire resistor, magnetic float ball, magnetic rotating pole, etc	
3-wire sensor	Such as: 2-wire resistor, E+H Ceracore II, E+H Ceracore M usw.	
4-wire sensor	Such as: 2-wire resistor, all bridge sensor, etc	
mV	z.B. 3-Leiter-Widerstand und alle Brückensensoren usw.	
Sensors supply	Constant voltage: 5V Constant current: 0.2-2.0mA	
Output		
2--wire system	4...20mA singal	
Underranging	linear drop to 3.8mA	
Overranging	linear rise to 20.8mA	
Load	max.($V_{powersupply}$-12V)/0.02A	
Performance		
Accuracy	Turndown 10:1	<0.05%
	Turndown 20:1	<0.075%
	Turndown 30:1	<0.1%
	Turndown 40:1	<0.25%
Long term stability	0.1%URL /Jahr	
Switch on delay	5s	
Temperature influence	<0.05%/10 °C	
Response time	≤200ms (setting damping time 0)	
Self stability configuration	0 to 2%	
Filter-configuration	0 to 160µA	
Load influence	Negligible	
Power supply influence	Negligibile	
Application area		
humidity	5...98%	
Ambient and operation temperature	-40 to +85 °C (ohne Display),	
	-20 to +70 °C(mit Display)	
Storage	-40 to +85 °C	
Ingress protection	IP 00	
Short-cricuit	Permanent	
Reverse polarity protection	Keine Beschädigung und auch keine Funktion	
Option: Ex-protection	EEx ia II Ct4- CT6	
Electromagnetic compatibility (EMV)	Interference immunity and tnterference emission according to GB/17626.21998), compliance with IEC 61000/4/3:1995	
Others		
Dimensions	21.7mm x 20,8mm	
Weight	Approx. 3,25g	

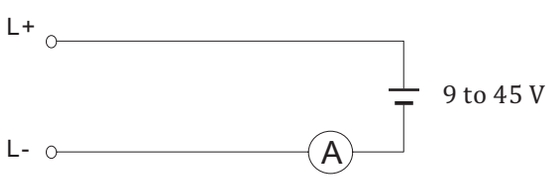
Dimensions



Electrical connections

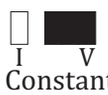


A. Power supply



A: USB programming interface:

B: Sensor power select:



Constant voltage: Left open right close

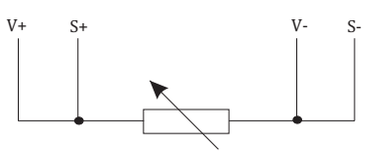
Constant current: Left close right open

C:Sensor connection

V+ sensor power
S+ signal output
V- sensor power
S- signal output
T temperature signal

How to connect a Sensor

A) 2-wire connection

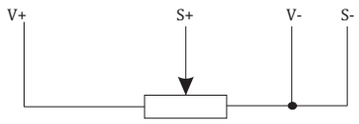


For 2-w ire resistor, magnetic rotating pole and magnetic float ball, etc. For example:

Type	Sensor supply	Max. Resistance	Sensor power	Recommend
Magnetic float ball 2-wire resistor	Constant current	10Ω to 22.5 KΩ	I×Rmax.≥4.5 V	I×Rmax.≥2 V

Application: max. Sensor Resistance 5 KΩ, may choose 0.2 to 0.8 mA (Sensor power), 0.2 to 0.4 mA is recommended.

B) 3-wire connection

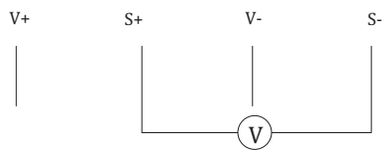


For 3-wire resistor, E+H Ceracore II,
E+H Ceracore M, etc .For example:

Type	Sensor supply	Max. Resistance	Sensor power	Recommend
3-wire resistor	Constant current Constant voltage	10Ω to 22.5 KΩ		
E+H Ceracore II E+H Ceracore M	Constant voltage		5 V	5 V

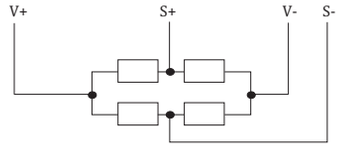
Application:3-wire resistor:10 KΩ, 5 V(constant voltage) is chosen; 2 KΩ choose 1.6 mA(constant current).

D) connection of external voltage



Type	Sensor supply	Input Range	Max. Input range
Mv	Constant current Constant voltage	-4500 mV to 4500 mV	4800 mV

C) 4-wire connection



For 4-wire resistor, all of bridge sensors, etc.
For example:

Type	Sensor supply	Max. Input Resistance	Sensor power
4-wire resistor	Constant current Constant voltage	10Ω to 22.5 KΩ	
Silicon	Constant current constant voltage	≥5.6KΩ ≤5.6KΩ	0.8 mA 5 V
ME501/ME505/ ME 651 thick film	Constant voltage		5 V
Load cell Strain gauge	Constant current	1 KΩor 2 KΩ	1.6 mA
Silicon on sapphire	Constant current Constant voltage	2.2 KΩ 10 KΩ	0.8 mA 5 V

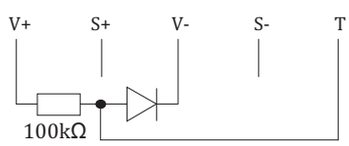
Application: Load cell and Strain gauge, max.
Input resistance 350 Ω, 1.6 mA or 2.0 mA (sensor power) is chosen.; max. Input resistance 700 to 1000Ω, 1.6 mA or 2.0 mA is chosen.

EN

OEM-PCBs

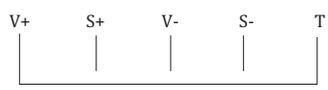
How to do temperature compensation

A) Constant voltage (or current) for sensors



Use an external temperature sensor when you need temperature compensation.
The recommended temperature sensor is an ordinary Si-diode (e.g. 1N4148)

B) Constant current for sensors



V+ and T is short circuit for sensors of constant current.

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HART-protocol OEM Transmitter Module MSP90E02 with HART-protocol

Popular sensors acceptable
Self stability and filter setup
Backup and restore data
Excellent EMC performance
Small size, simple mounting

The MSP90E02 with HART-protocol is very small size.
TheMSP90E02 is suitable for various sensors and converts input signals into 4 to 20 mA analogue output signal.
The module is protected against miswiring and transient overvoltages.

Application areas

The MSP90E02 may be used for a wide variety of measure sensor:
-pressure sensors
-differential sensors
-load cells
-magnetic field sensors
-strain gauge
-resistor of 2/3/4 wires

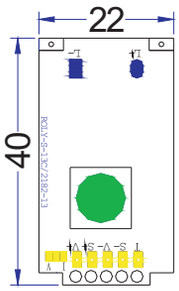
Performance

Wide voltage supply range: 9-45VDC
Self stability and filter setup: Improve transmitter stability
Freely linearity and temperature compensation: Min. 2 points, max 11 points
Self-learning function: Acceptability 1.5mV-4.8V signal input
Popular sensors acceptable: E.g. Pressure, differential, load cell, magnetic float, strain gauge etc.
Backup and restore data: Convenient for using on the locale
Excellent EMC performance: Suitable for harsh conditions

Technical data

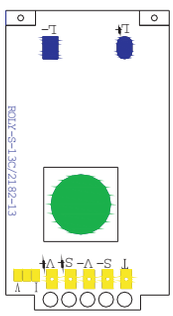
Power supply (polarity protected)		
Supply voltage	9-45 V DC	
Input		
2-wire sensor	Such as: 2-wire resistor, magnetic float ball, magnetic rotating pole, etc	
3-wire sensor	Such as: 2-wire resistor, E+H Ceracore II, E+H Ceracore M usw.	
4-wire sensor	Such as: 2-wire resistor, all bridge sensor, etc	
mV	z.B. 3-Leiter-Widerstand und alle Brückensensoren usw.	
Sensors supply	Constant voltage: 5V Constant current: 0.2-2.0mA	
Output		
2--wire system	4...20mA with superimposed communication singal for HART-protocol	
Underranging	linear drop to 3.8mA	
Overranging	linear rise to 20.8mA	
Load	max.($V_{powersupply}$-12V)/0.02A	
Performance		
Accuracy	Turndown 10:1	<0.05%
	Turndown 20:1	<0.075%
	Turndown 30:1	<0.1%
	Turndown 40:1	<0.25%
Long term stability	0.1%URL /Jahr	
Switch on delay	5s	
Temperature influence	<0.05%/10 °C	
Response time	≤200ms (setting damping time 0)	
Self stability configuration	0 to 2%	
Filter-configuration	0 to 160µA	
Load influence	Negligible	
Power supply influence	Negligibile	
Application area		
humidity	5...98%	
Ambient and operation temperature	-40 to +85 °C (ohne Display),	
	-20 to +70 °C(mit Display)	
Storage	-40 to +85 °C	
Ingress protection	IP 00	
Short-cricuit	Permanent	
Reverse polarity protection	Keine Beschädigung und auch keine Funktion	
Option: Ex-protection	EEx ia II Ct4- CT6	
Electromagnetic compatibility (EMV)	Interference immunity and tnterference emission according to GB/17626.21998), compliance with IEC 61000/4/3:1995	
Others		
Dimensions	18.5 x 40mm	
Weight	Approx. 5,25g	

Dimensions

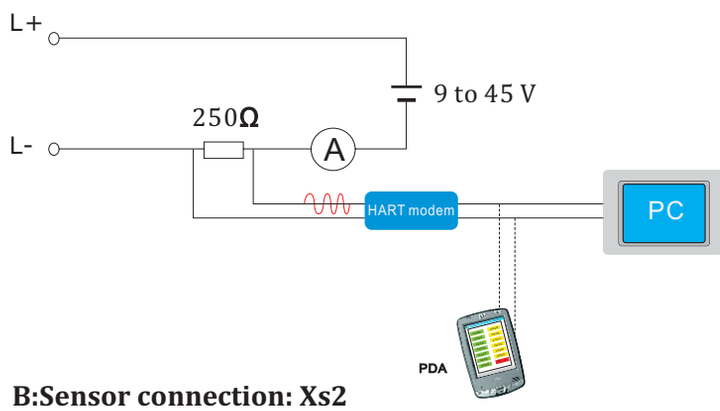


Dimensions in mm

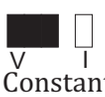
Electrical Connetion



A. Power supply: XS1



C: Sensor power select: JS



Constant voltage: Left close right open

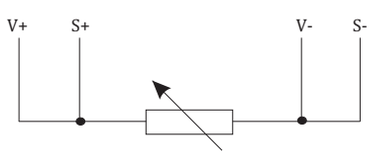
Constant current: Left open right close

B:Sensor connection: Xs2

V+ sensor power
S+ signal output
V- sensor power
S- signal output
T temperature signal

How to connect a Sensor

A) 2-wire connection

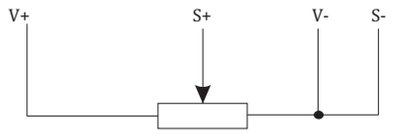


For 2-w ire resistor, magnetic rotating pole and magnetic float ball, etc. For example:

Type	Sensor supply	Max. Resistance	Sensor power	Recommend
Magnetic float ball 2-wire resistor	Constant current	10Ω to 22.5 KΩ	I×Rmax.≥4.5 V	I×Rmax.≥2 V

Application: max. Sensor Resistance 5 KΩ, may choose 0.2 to 0.8 mA (Sensor power), 0.2 to 0.4 mA is recommended.

B) 3-wire connection

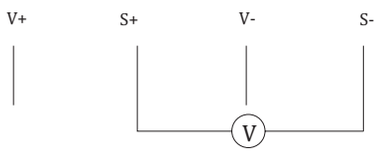


For 3-wire resistor, E+H Ceracore II,
E+H Ceracore M, etc .For example:

Type	Sensor supply	Max. Resistance	Sensor power	Recommend
3-wire resistor	Constant current Constant voltage	10Ω to 22.5 KΩ		
E+H Ceracore II E+H Ceracore M	Constant voltage		5 V	5 V

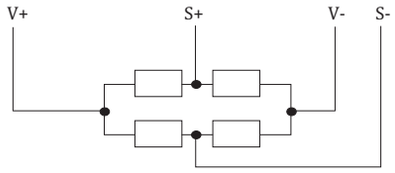
Application:3-wire resistor:10 KΩ, 5 V(constant voltage) is chosen; 2 KΩ choose 1.6 mA(constant current).

D) connection of external voltage



Type	Sensor supply	Input Range	Max. Input range
Mv	Constant current Constant voltage	-4500 mV to 4500 mV	4800 mV

C) 4-wire connection



For 4-wire resistor, all of bridge sensors, etc.
For example:

Type	Sensor supply	Max. Input Resistance	Sensor power
4-wire resistor	Constant current Constant voltage	10Ω to 22.5 KΩ	
Silicon	Constant current constant voltage	≥5.6KΩ ≤5.6KΩ	0.8 mA 5 V
ME501/ME505/ ME 651 thick film	Constant voltage		5 V
Load cell Strain gauge	Constant current	1 KΩor 2 KΩ	1.6 mA
Silicon on sapphire	Constant current Constant voltage	2.2 KΩ 10 KΩ	0.8 mA 5 V

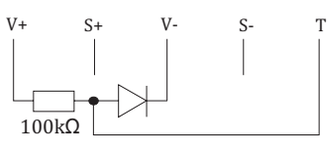
Application: Load cell and Strain gauge, max.
Input resistance 350 Ω, 1.6 mA or 2.0 mA (sensor power) is chosen.; max. Input resistance 700 to 1000Ω, 1.6 mA or 2.0 mA is chosen.

EN

OEM-PCBs

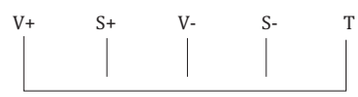
How to do temperature compensation

A) Constant voltage (or current) for sensors



Use an external temperature sensor when you need temperature compensation.
The recommended temperature sensor is an ordinary Si-diode (e.g. 1N4148)

B) Constant current for sensors



V+ and T is short circuit for sensors of constant current.

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HART-protocol OEM Transmitter Module MSP90E03 with HART-protocol

Popular sensors acceptable
Self stability and filter setup
Backup and restore data
Excellent EMC performance
Small size, simple mounting

The MSP90E03 with HART-protocol is very small size 18.5x34.5mm.
The MSP90E03 is suitable for various sensors and converts input signals into 4 to 20 mA analogue output signal.
The module is protected against miswiring and transient overvoltages.

Application areas

The MSP90E03 may be used for a wide variety of measure sensor:
-pressure sensors
-differential sensors
-load cells
-magnetic field sensors
-strain gauge
-resistor of 2/3/4 wires

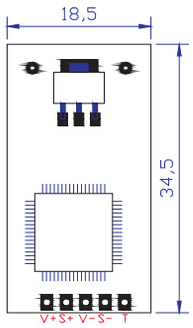
Performance

Wide voltage supply range: 9-45VDC
Self stability and filter setup: Improve transmitter stability
Freely linearity and temperature compensation: Min. 2 points, max 11 points
Self-learning function: Acceptability 1.5mV-4.8V signal input
Popular sensors acceptable: E.g. Pressure, differential, load cell, magnetic float, strain gauge etc.
Backup and restore data: Convenient for using on the locale
Excellent EMC performance: Suitable for harsh conditions

Technical data

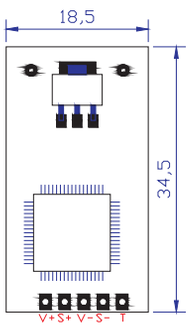
Power supply (polarity protected)		
Supply voltage	9-45 V DC	
Input		
2-wire sensor	Such as: 2-wire resistor, magnetic float ball, magnetic rotating pole, etc	
3-wire sensor	Such as: 2-wire resistor, E+H Ceracore II, E+H Ceracore M usw.	
4-wire sensor	Such as: 2-wire resistor, all bridge sensor, etc	
mV	z.B. 3-Leiter-Widerstand und alle Brückensensoren usw.	
Sensors supply	Constant voltage: 5V Constant current: 0.2-2.0mA	
Output		
2--wire system	4...20mA with superimposed communication singal for HART-protocol	
Underranging	linear drop to 3.8mA	
Overranging	linear rise to 20.8mA	
Load	max.($V_{powersupply}$-12V)/0.02A	
Performance		
Accuracy	Turndown 10:1	<0.05%
	Turndown 20:1	<0.075%
	Turndown 30:1	<0.1%
	Turndown 40:1	<0.25%
Long term stability	0.1%URL /Jahr	
Switch on delay	5s	
Temperature influence	<0.05%/10 °C	
Response time	≤200ms (setting damping time 0)	
Self stability configuration	0 to 2%	
Filter-configuration	0 to 160µA	
Load influence	Negligible	
Power supply influence	Negligibile	
Application area		
humidity	5...98%	
Ambient and operation temperature	-40 to +85 °C (ohne Display),	
	-20 to +70 °C(mit Display)	
Storage	-40 to +85 °C	
Ingress protection	IP 00	
Short-cricuit	Permanent	
Reverse polarity protection	Keine Beschädigung und auch keine Funktion	
Option: Ex-protection	EEx ia II Ct4- CT6	
Electromagnetic compatibility (EMV)	Interference immunity and tnterference emission according to GB/17626.21998), compliance with IEC 61000/4/3:1995	
Others		
Dimensions	18.5 x 34.5mm	
Weight	Approx. 5,25g	

Dimensions

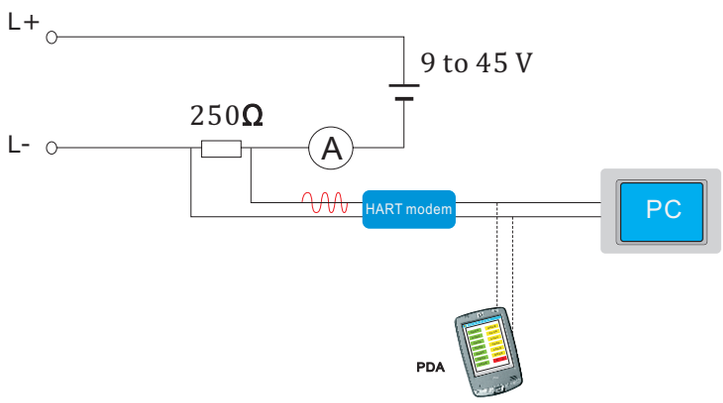


Dimensions in mm

Electrical Connetion



A. Power supply: XS1



C: Sensor power select: JS

Constant voltage: Left close right open

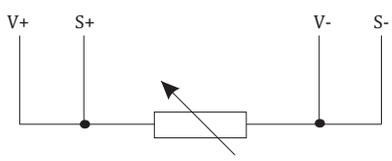
Constant current: Left open right close

B:Sensor connection: Xs2

V+ sensor power
S+ signal output
V- sensor power
S- signal output
T temperature signal

How to connect a Sensor

A) 2-wire connection

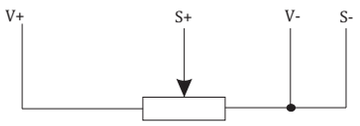


For 2-w ire resistor, magnetic rotating pole and magnetic float ball, etc. For example:

Type	Sensor supply	Max. Resistance	Sensor power	Recommend
Magnetic float ball 2-wire resistor	Constant current	10Ω to 22.5 KΩ	I×Rmax.≥4.5 V	I×Rmax.≥2 V

Application: max. Sensor Resistance 5 KΩ, may choose 0.2 to 0.8 mA (Sensor power), 0.2 to 0.4 mA is recommended.

B) 3-wire connection



For 3-wire resistor, E+H Ceracore II,
E+H Ceracore M, etc .For example:

Type	Sensor supply	Max. Resistance	Sensor power	Recommend
3-wire resistor	Constant current Constant voltage	10Ω to 22.5 KΩ		
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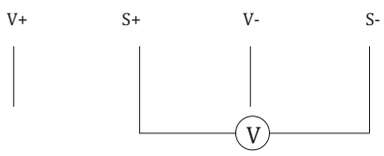
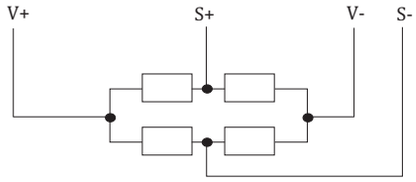
Application:3-wire resistor:10 KΩ, 5 V(constant voltage) is chosen; 2 KΩ choose 1.6 mA(constant current).

D) connection of external voltage



Type	Sensor supply	Input Range	Max. Input range
Mv	Constant current Constant voltage	-4500 mV to 4500 mV	4800 mV

C) 4-wire connection



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For example:

Type	Sensor supply	Max. Input Resistance	Sensor power
4-wire resistor	Constant current Constant voltage	10Ω to 22.5 KΩ	
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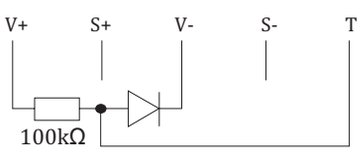
Input resistance 350 Ω, 1.6 mA or 2.0 mA (sensor power) is chosen.; max. Input resistance 700 to 1000Ω, 1.6 mA or 2.0 mA is chosen.

EN

OEM-PCBs

How to do temperature compensation

A) Constant voltage (or current) for sensors



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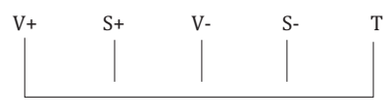
The recommended temperature sensor is an ordinary Si-diode (e.g. 1N4148)

B) Constant current for sensors



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Muesen spezialisiert sich auf Messung, Übertragung und das Anzeigenmodul der Prozessvariablen bei Temperatur- sowie Druckmesstechnik in der industriellen Automatisierung und bietet F+E und Produktion der intellektualisierten integralen Kontrollösungen. Als Kernmitglied von HART Communication Foundation schenkt Muesen technologischer Innovation und Design-Optimierung große Aufmerksamkeit. Mit kontinuierlicher Entwicklung der Intellektualisierung bieten wir zuverlässige und optimierte Lösungen zum Druck- und Temperaturprozessleitsystem.

Durch schnelle Reaktion, flexible Produkte und Planung stellt Muesen den Kunden optimierte und wirtschaftliche OEM-Lösungen zur Verfügung und hilft unseren Kunden die Kernwettbewerbsfähigkeit zu verbessern. ..

Muesen Technik GmbH is specialized in the industrial automation projects, provides solutions for processes that involve the temperature and pressure measurement, R&D and manufacture of transmitters and indicator modules as well as the integral control solutions. As core member of HART Communication Foundation, Muesen pay great attention to the technological innovation and design improvement, constantly push forward to the intelligent system, provide reliable, optimized integral solutions for various process control systems like temperature and pressure process control systems.

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