
Digital Baro Transmitter

3.1159.00.0xx



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1 Models available

Denomination	Order-No.	Meas. range	Electrical Output
Digital Baro Transmitter	3.1159.00.040	913,3 ... 1113,3 hPa	0 ... 20 mA
Digital Baro Transmitter	3.1159.00.041	913,3 ... 1113,3 hPa	4 ... 20 mA

2 Application

The Digital Baro Transmitter serves for the measurement of the atmospheric air pressure. Via the electrical output the measuring value is available as constant current, and is displayed by an LED-indicating instrument.

3 Mode of Operation

The air pressure is measured by means of a CuBe aneroid capsule which is compressed as a function of air pressure. This movement is detected by an inductive displacement pickup. The electrical signal is converted into a normalized current signal in a connected measuring transducer and displayed as a digital value.

4 Recommendation for Side Selection / Standard Installation

As air pressure is dependent on the site elevation, in meteorology all pressure readings are relative to height above sea level (NN (NSL) = mean sea level). This is called **reduction**. The user himself can reduce the displayed value, provided that the site elevation above NN(NSL) is known. (Location level is often indicated in blue prints of buildings). If the baro-transmitter is used at the coast (i.e. approximately at sea level), the value does not have to be reduced. At higher site elevations the air pressure is reduced in accordance with the barometric height formula (see table).

The device is designed for inside installation. If used outside, an additional external housing including the appropriate type of protection is necessary; in this connection, please pay particular attention to the temperature effect (see Technical Data).

5 Installation

Attention

The electrical connection must be carried out only by a qualified expert.

Please pay attention to the allowable operating voltage!

Please pay attention to the allowable measuring range!

Please pay attention to the allowable temperature for storing, transport and operation!

Please protect the instrument against solar radiation!

The instrument is not suited to use with aggressive gases.

Comment

Before installation, the settings of the instrument are possibly to be changed (ref. chapter 6).

5.1 Mechanical Mounting:

The Digital Baro Transmitter is designed for installation in a control panel. The necessary control panel opening must be 92 x 92 mm in size. The scope of supply includes two fixing brackets. Mounting position: horizontal.

5.2 Electrical Mounting:

At the rear panel of the housing there are terminal clamps for the supply voltage, and the analogue output.

3 supply options are realized with this instrument. The instrument can be supplied with 230 V AC, 115 V AC or with 12 –28 V DC, by connecting the respective supply voltage to the corresponding clamp (terminal pin assignment ref. chapter 7).

Remark:

Please do not connect anything to the terminal clamps not used.

In case of supply 12 –28 V DC please take into account that analogue output and supply are not galvanically isolated.

6 Setting

Please note:

The instrument is set to NN at the factory.

Reduction goes off as follows:

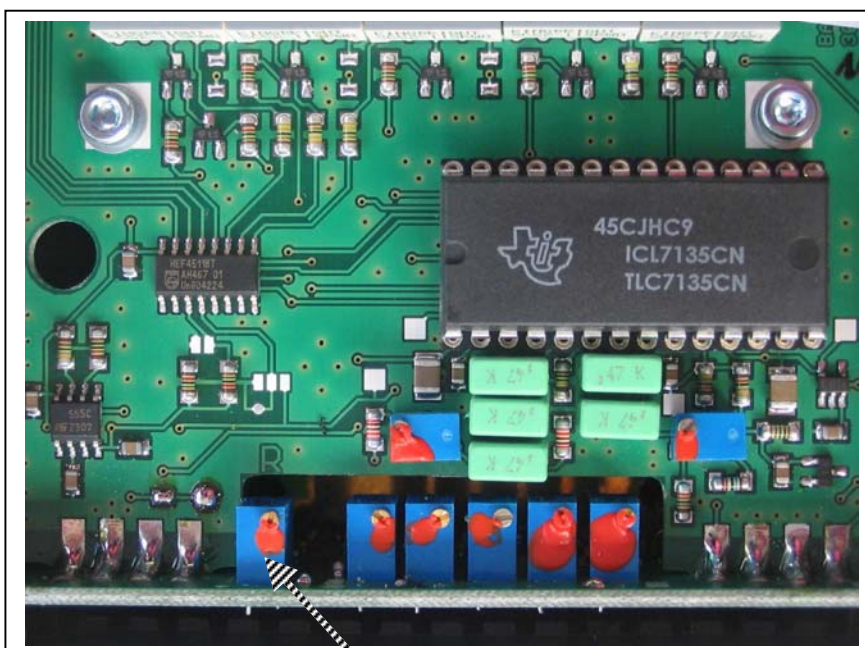
- Remove the front panel
- First run the instrument for five hours
- Then read the differential value (correction value) which corresponds to the height of the site in the table and add this value to the displayed value.
- The calculated value (see example) is to be set at the display through reducing potentiometer by clockwise rotation

Example:

Site: Göttingen, 150 m above NN (NSL)
Difference value: 17,9 mbar
Displayed value: 993,9 mbar
Calculated value: $993,9 \text{ mbar} + 17,9 \text{ mbar} = 1011,8 \text{ mbar}$

The value can be reduced up to an elevation of ca. 850 m above NN.

The baro-transmitter is now reduced, and displays the air pressure calculated to sea level.

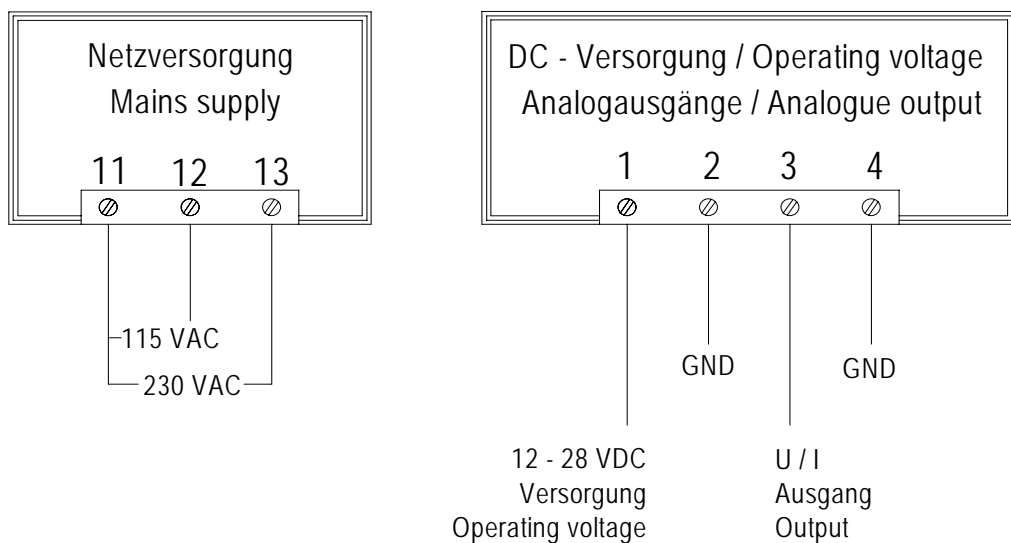


Reducing
potentiometer

Table: Air pressure as a function of height and difference to 1013,3 mbar (calculated according to DIN ISO 2533).

Höhe m	Diff. hPa	Höhe m	Diff. hPa	Höhe m	Diff. hPa	Höhe m	Diff. hPa	Höhe m	Diff. hPa	Höhe m	Diff. hPa	Höhe m	Diff. hPa
0	0,0	230	27,3	460	54,1	690	80,2	920	105,7	1150	130,7	1380	155,2
10	1,2	240	28,5	470	55,2	700	81,3	930	106,8	1160	131,8	1390	156,2
20	2,4	250	29,7	480	56,4	710	82,4	940	107,9	1170	132,9	1400	157,3
30	3,6	260	30,8	490	57,5	720	83,6	950	109,0	1180	134,0	1410	158,3
40	4,8	270	32,0	500	58,6	730	84,7	960	110,1	1190	135,0	1420	159,4
50	6,0	280	33,2	510	59,8	740	85,8	970	111,2	1200	136,1	1430	160,4
60	7,2	290	34,4	520	60,9	750	86,9	980	112,3	1210	137,2	1440	161,4
70	8,4	300	35,5	530	62,1	760	88,0	990	113,4	1220	138,2	1450	162,5
80	9,6	310	36,7	540	63,2	770	89,1	1000	114,5	1230	139,3	1460	163,5
90	10,8	320	37,9	550	64,4	780	90,3	1010	115,6	1240	140,4	1470	164,6
100	12,0	330	39,0	560	65,5	790	91,4	1020	116,7	1250	141,4	1480	165,6
110	13,1	340	40,2	570	66,6	800	92,5	1030	117,8	1260	142,5	1490	166,7
120	14,3	350	41,3	580	67,8	810	93,6	1040	118,9	1270	143,6	1500	167,7
130	15,5	360	42,5	590	68,9	820	94,7	1050	119,9	1280	144,6		
140	16,7	370	43,7	600	70,0	830	95,8	1060	121,0	1290	145,7		
150	17,9	380	44,8	610	71,2	840	96,9	1070	122,1	1300	146,7		
160	19,1	390	46,0	620	72,3	850	98,0	1080	123,2	1310	147,8		
170	20,3	400	47,1	630	73,4	860	99,1	1090	124,3	1320	148,8		
180	21,4	410	48,3	640	74,6	870	100,2	1100	125,4	1330	149,9		
190	22,6	420	49,4	650	75,7	880	101,3	1110	126,4	1340	151,0		
200	23,8	430	50,6	660	76,8	890	102,4	1120	127,5	1350	152,0		
210	25,0	440	51,8	670	77,9	900	103,5	1130	128,6	1360	153,1		
220	26,2	450	52,9	680	79,1	910	104,6	1140	129,7	1370	154,1		

7 Connecting Diagram



8 Technical Data

Description	
Measuring range	913,3 ... 1113,3 hPa (1 hPa = 1 mbar)
Resolution	0,1 hPa
Measuring accuracy	± 0,5 hPa, relative auf NN
Temperature effect	+/- 0,2 hPa / °C within temperature range 20 ... 50°C
Angular deviation	+/- 0,1 hPa at 10° tilt
Longterm drift	0,3 hPa / year
Side elevation reduction	0 ... 850 m over NN by means of a potentiometer
LED-Display	rot, 4 ½ digit, 14 mm height
Electrical Output	0 ... 20 mA with order-no. 3.1159.00.040 4 ... 20 mA with order-no. 3.1159.00.041 $R_L \leq 250 \Omega$
Operating voltage	230 V AC +6/-15% or 115 V AC +6/-15% or 12 ...28 V DC
Current consumption	ca. 3 VA
Operating temperature	0 ... +50°C
Storing temperature	-10 ... +70°C
Model	Control panel mounting case, acc. toDIN 43700
Dimensions	96mm x 96mm x 127mm
Weight	0,6 kg
Protection	IP20
EMC- immunity	Corresponds to EN 61000-6-3 and EN 61000-6-1
CE-sign	

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