

# ELECTRONIC TRANSMITTER FOR LIQUID LEVEL WITH DISPLACER

Type FE 7B



## PERFORMANCE SPECIFICATIONS

Accuracy	: ± 0,5%
Hysteresis	: 0,25%
Repeatability	: 0,2 %
Temperature effect	: ± 0,4% / 10° C
Voltage variation effect	: ± 0,25%

## PHYSICAL SPECIFICATIONS

Weight	: 25... 76 kg
Materials	: see coding

## FUNCTIONAL SPECIFICATIONS

Input signal	: level 0...350...2400 mm
Output signal	: 4...20 mA <sub>cc</sub>
Supply voltage	: 24...48V <sub>cc</sub> (nominal 24V <sub>cc</sub> )
Load resistance	: 0...650 ohms, conf.fig.
Temperature range	
Process	: 180° C, optionally 400° C
Ambient	: - 40 ° C ÷ +80 ° C
Static pressure	: the one is admitted at the used mountig flange
Protection class	
Mechanical protection	: IP65, SR EN 60529
Explosion-proof protection	: EEx dII CT6, SR EN 50014,50018

## TYPICAL VERSIONS AND OVERALL DIMENSIONS

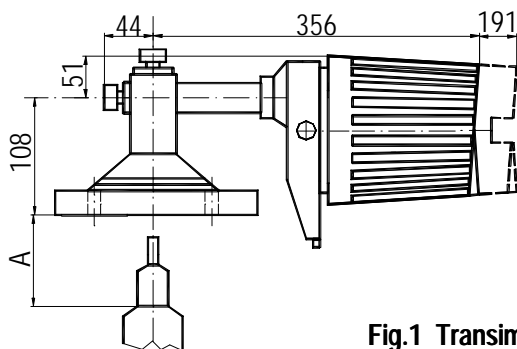


Fig.1 Transmitter head for top and displacer chamber mounting

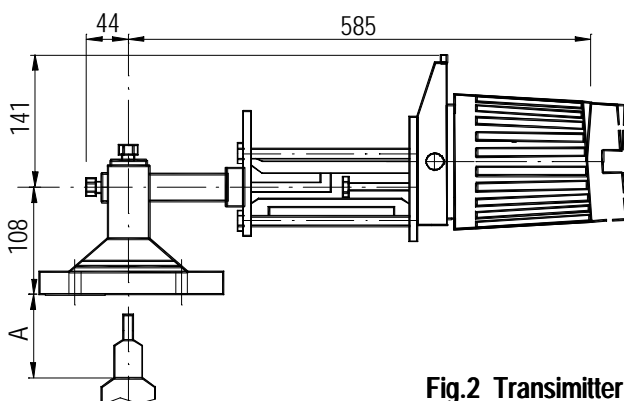
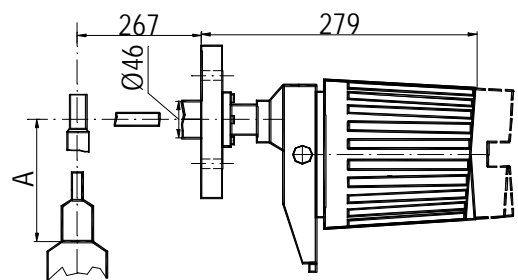
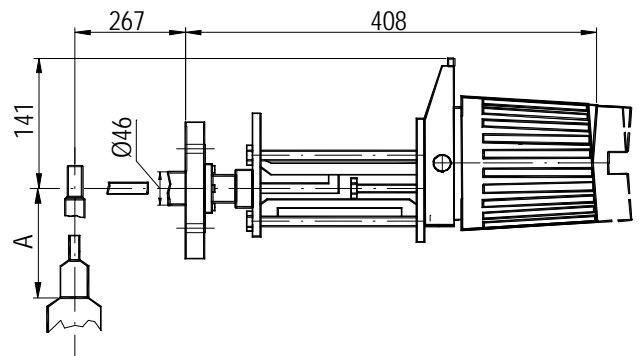


Fig.2 Transmitter heat - insulating option



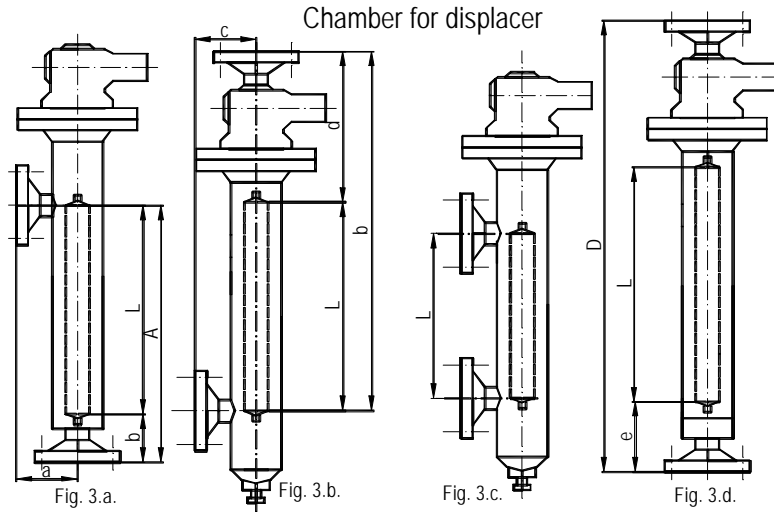


Table 1 Chamber type	Flange STAS		Flange ANSI		A	B	D	a	b	c	d	e	Obs.
	Dn mm	Pn bar	Dn inch	Pn psi									
As in fig. 3a	1 1/2"NPT F		2	150	L+b	-	-	92	R10*	-	-	-	Ri* = row "i" of table 2
				300		-	-	152	R1*	-	-	-	
				600		-	-			-	-	-	
			150	-		-	-			-	-		
			1 1/2	300		-	-	-	-	-	-		
				600		-	-	-	-	-			
				16		-	-	-	-	-			
	50		40	-		-	-	-	170	R1*	-	-	
			64	-		-	-	-	-	-	-	-	
	As in fig. 3b	1 1/2"NPT F		2		150	-	-	-	-	92	R9*	
		300	-		L+d	-	-	-	-	R2*	-		
		600	-		-	-	-	-	-	R3*	-		
		1 1/2	150	-	R15*	-	-	-	152	R18*	-		
			300	-	R16*	-	-	-		R19*	-		
			600	-	R17*	-	-	-		R20*	-		
		50	16	-	-	-	-	-	-	314	-		
			40	-	L+d	-	-	-	-	317	-		
			64	-	-	-	-	-	-	R1*	-		
As in fig. 3b		1 1/2"NPT F		2	150	-	-	-	-	-	-	-	-
			300		-	-	-	-	-	-	-	-	
			600		-	-	-	-	-	-	-	-	
			1 1/2	150	-	-	-	-	-	-	-	-	
				300	-	-	-	-	-	-	-	-	
				600	-	-	-	-	-	-	-	-	
			50	16	-	-	-	-	-	-	-	-	
				40	-	-	-	-	-	-	-	-	
				64	-	-	-	-	-	-	-	-	
	As in fig. 3d	1 1/2"NPT F		2	150	-	-	L+507	-	-	-	-	209
		300	-		-	R5*	-	-	-	-	R8*		
		600	-		-	R6*	-	-	-	-			
		1 1/2	150	-	-	R7*	-	-	-	-		R11*	
			300	-	-	R12*	-	-	-	-			
			600	-	-	R13*	-	-	-	-			
		50	16	-	-	L+507	-	-	-	-	173		
			40	-	-	L+510	-	-	-	-			
			64	-	-	L+529	-	-	-	-			

Row	Dim.	Dimension in mm								
		Table 2								
1	<b>L</b>	350	600	800	1000	1200	1500	1800	2100	2400
	<b>b</b>	170	170	170	170	170	170	170	170	170
	<b>d</b>	338	338	338	338	338	338	338	338	338
2	<b>d</b>	343	343	343	343	343	343	343	343	343
3		350	350	350	350	350	350	350	350	350
4		354	354	354	354	354	354	354	354	354
5	<b>D</b>	886	1137	1137	1537	1737	2037	2337	2367	2937
6		892	1143	1343	1543	1743	2043	2434	2643	2943
7		896	1147	1347	1547	1747	2047	2347	2647	2947
8	<b>e</b>	193	193	193	193	193	193	193	193	193
9	<b>d</b>	323	327	330	338	336	341	346	351	355
10	<b>b</b>	177	181	184	190	190	195	200	205	210
11	<b>e</b>	193	193	193	193	193	193	193	193	193
12	<b>D</b>	878	1128	1328	1528	1728	2028	2328	2628	2928
13		885	1135	1335	1535	1735	2035	2335	2635	2935
14		886	1136	1336	1536	1736	2036	2336	2636	2936
15	<b>B</b>	686	936	1336	1336	1535	1836	2136	2436	2736
16		693	943	1143	1343	1543	1843	2143	2443	2743
17		694	944	1144	1344	1544	1844	2144	2444	2744
18	<b>d</b>	336	336	336	336	336	336	336	336	336
19		343	343	343	343	343	343	343	343	343
20		344	344	344	344	344	344	344	344	344

Level ranges					Tabel 3				
Code	Displacer specifications				Liquid level		Interface and density		
	L mm	D mm	V cmc	G kg.	$\gamma_{min}$ gf/cmc	$\gamma_{max}$ gf/cm	$\Delta\gamma_{min}$ gf/cmc	$\gamma_{max}$ gf/cmc	$\Delta\gamma_{max}$ gf/cmc
035	350	76,3	1600	2,6	0,5	1,5	0,5	1,5	1,5
060	600	50,8	1216	3,13	0,6	2,47	0,6	2,47	2,13
061	600	76,3	2743	4,64	0,35	1,6	0,35	1,6	0,93
080	800	50,8	1621	3,9	0,53	2,3	0,53	2,3	1,59
081	800	76,3	3658	4,4	0,3	1,1	0,3	1,1	0,67
100	1000	50,8	2027	4,86	0,45	2,3	0,45	2,3	1,27
120	1200	41,27	1605	3,7	0,54	2,2	0,54	2,2	1,6
121	1200	50,8	2432	4,75	0,4	1,85	0,4	1,85	1,05
150	1500	38	1701	4,2	0,51	2,37	0,51	2,37	1,52
151	1500	76,3	6858	9	0,2	1,2	0,2	1,2	0,36
180	1800	34	1634	4,4	0,53	2,6	0,53	2,6	1,59
210	2100	30	1484	4,3	0,57	2,8	0,57	2,8	1,75
240	2400	29,2	1607	4,4	0,54	2,6	0,54	2,6	1,59

### FE 7BT - Electronic level transmitter with displacer for top mounting

Type	X	X	X	X	XXX	-	X	X	Coding levels denomination
FE 7BT-H	a	b	c	d	e	f	g	h	
									<b>a. Protection grade</b>
	A								with watertight enclosure IP65, SR EN 60529
	B*								with watertight enclosure, in explosionproof protection EEx d II BT6, SR EN 50014, 50018 - only by PC5 option
	C								with watertight enclosure, with intrinsic safety protection EEx ia II CT6, SR EN 50014, 50018
									<b>b. Body material</b>
		K							cadmium plated carbon steel
		S							stainless steel AISI 316 or equivalent one
									<b>c. Sealing surface type</b>
			1						plane STAS 1730-82
			2						CP 2 STAS 1731-80
			3						PA 2 STAS 1732-80
			4						RF-cf. ANSI B 16,5
									<b>d. Displacer material</b>
			A						stainless steel AISI 316 or equivalent one
									<b>e. Measurement range - see table 3.</b>
									<b>f. Specific gravity</b>
						0			you will indicate the specific gravity of the measuring liquid which must be included within the limits mentioned in table 3.
									<b>g. Flange type</b>
							A		4inch.150psi.ANSI
							B		4inch.300psi.ANSI
							C		4inch.600psi.ANSI
							D		Dn100, Pn40, STAS 6066-84
							E		Dn100, Pn16, STAS 6064-84
							F		Dn100, Pn64, STAS 6150-84
									<b>h. Options</b>
							JB1		terminal box with test jack
							JB2		terminal box with test indicator
							PC1		cable gland D11, of brass
							PC2		cable gland D11, of stainless steel
							PC3		cable gland D14, of brass
							PC4		cable gland D14, of stainless steel
							PC5		cable gland D12, of aluminium alloy
							R		reverse output signal, 20 ..4 mAcc
							RAA		transmitter with watertight housing mounted amplifier
							RAB		transmitter with remote amplifier housing EEx ia II CT6
							A(.)		hanger cable length : the length is specified in mm (200,300,400,500,600,700,800,1000, 1200,1500, 1800, 2000 or 2500 mm)
							T		transmitter to measure media with max. temperature of 400°C

## CODING

### FE 7BC - Electronic level transmitter with displacer for chamber mounting

Type	X	X	X	XX	X	-	X	X	X	Coding levels denomination
FE 7BC-H	a	b	c	d	e	f	g	h	i	
										<b>a. Protection grade</b>
	<b>A</b>									with watertight enclosure IP65, SR EN 60529
	<b>B*</b>									with watertight enclosure, in explosionproof protection EEx d II BT6, SR EN 50014, 50018 - only by PC5 option
	<b>C</b>									with watertight enclosure, with intrinsic safety protection EEx ia II CT6, SR EN 50014, 50018
										<b>b. Body type</b>
	<b>1</b>									with upper side and lower end connections, fig.3.a.
	<b>2</b>									with upper and lower side connection, fig 3.b.
	<b>3</b>									with side connections at the upper and lower end, fig.3.c.
	<b>4</b>									with connection at the upper and lower end, fig.3.d.
										<b>c. Body material</b>
		<b>K</b>								cadmium plated carbon steel
		<b>S</b>								stainless steel AISI 316 or equivalent one
										<b>d. Connection type</b>
			<b>1F</b>							thread 1 1/2".NPT
			<b>21</b>							2inch.150psi.ANSI B 16,5
			<b>23</b>							2inch.300psi.ANSI B 16,5
			<b>26</b>							2inch.600psi.ANSI B 16,5
			<b>31</b>							1 1/2inch.150psi.ANSI B 16,5
			<b>33</b>							1 1/2inch.300psi.ANSI B 16,5
			<b>36</b>							1 1/2inch.600psi.ANSI B 16,5
			<b>51</b>							Dn50, Pn40, STAS 6066-84
			<b>52</b>							Dn50, Pn16, STAS 6064-84
			<b>53</b>							Dn50, Pn64, STAS 6150-84
										<b>e. Sealing surface type</b>
			<b>A</b>							PU, STAS 1730-82
			<b>B</b>							CP2, STAS 1731-80
			<b>C</b>							PA2, STAS 1732-80
			<b>D</b>							RF, for ANSI B 16,5
			<b>E</b>							RJ, for ANSI B16,5
										<b>f. Measurement range - see table 3.</b>
										<b>g. Specific gravity</b>
										you will indicate the specific gravity of the measuring liquid which must be included within the limits mentioned in table 3.
										<b>h. Displacer materials</b>
								<b>A</b>		stainless steel AISI 316 or equivalent one
										<b>i. Options</b>
									<b>JB1</b>	terminal box with test jack
									<b>JB2</b>	terminal box with test indicator
									<b>PC1</b>	cable gland D11, of brass
									<b>PC2</b>	cable gland D11, of stainless steel
									<b>PC3</b>	cable gland D14, of brass
									<b>PC4</b>	cable gland D14, of stainless steel
									<b>PC5</b>	cable gland D12, of aluminium alloy
									<b>R</b>	reverse output signal, 20 ..4 mAcc
									<b>RAA</b>	transmitter with watertight housing mounted amplifier
									<b>RAB</b>	transmitter with remote amplifier housing EEx ia II CT6
									<b>T</b>	transmitter to measure media with max. temperature of 400°C

## CODING

### FE 7BS - Electronic level transmitter with displacer for side mounting

Type	X	X	X	X	XXX	-	X	X	Coding levels denomination
FE 7BS-H	a	b	c	d	e	f	g	h	
									<b>a. Protection grade</b>
	<b>A</b>								with watertight enclosure IP65, SR EN 60529
	<b>B*</b>								with watertight enclosure, in explosionproof protection EEx d II BT6, SR EN 50014, 50018 - only by PC5 option
	<b>C</b>								with watertight enclosure, with intrinsic safety protection EEx
									<b>b. Body material</b>
		<b>K</b>							cadmium plated carbon steel
		<b>S</b>							stainless steel AISI 316 or equivalent one
									<b>c. Sealing surface type</b>
			<b>1</b>						plane STAS 1730-82
			<b>2</b>						CP 2 STAS 1731-80
			<b>3</b>						PA 2 STAS 1732-80
			<b>4</b>						RF-cf. ANSI B 16,5
									<b>d. Displacer material</b>
			<b>A</b>						stainless steel AISI 316 or equivalent one
									<b>e. Connection type</b>
			<b>21</b>						2 inch.150psi.ANSI B16,5
			<b>23</b>						2 inch.300psi.ANSI B16,5
			<b>26</b>						2 inch.600psi.ANSI B16,5
			<b>41</b>						4 inch.150psi.ANSI B16,5
			<b>43</b>						4 inch.300psi.ANSI B16,5
			<b>51</b>						Dn50, Pn16, STAS 6064-84
			<b>52</b>						Dn50, Pn40, STAS 6066-84
			<b>53</b>						Dn100, Pn16, STAS 6064-84
									<b>f. Measurement range - see table 3.</b>
									<b>g. Specific gravity</b>
						<b>(.)</b>			you will indicate the specific gravity of the measuring liquid which must be included within the limits mentioned in table 3.
									<b>h. Options</b>
							<b>JB1</b>		terminal box with test jack
							<b>JB2</b>		terminal box with test indicator
							<b>PC1</b>		cable gland D11, of brass
							<b>PC2</b>		cable gland D11, of stainless steel
							<b>PC3</b>		cable gland D14, of brass
							<b>PC4</b>		cable gland D14, of stainless steel
							<b>PC5</b>		cable gland D12, of aluminium alloy
							<b>R</b>		reverse output signal, 20 ..4 mAcc
							<b>RAA</b>		transmitter with watertight housing mounted amplifier
							<b>RAB</b>		transmitter with remote amplifier housing EEx ia II CT6
							<b>A(.)</b>		hanger cable length : the length is specified in mm (200,300,400,500,600,700,800,1000, 1200,1500, 1800, 2000 or 2500 mm)