

Pressure transmitters

Agat-100MT, Agat-100M pressure transmitters are designed for continuous measurement and translation of pressure of operating media (liquid, steam, gas) – into a standardized output current signal 4-20 mA, 0-5 mA (additionally equipped with a transducer), digital signal according to HART protocol or Modbus protocol based on RS-485 interface. The degree of ingress protection for transmitters fits into IP67 group as per GOST 14254. **The verification interval is 5 years.**

Example	Code designation														
Agat-100M	Exd	DI	1151	(0...2.5) MPa	015	–	S	TSI	t1070	N	B	K03	M20	SK	KBust
Agat-100MT						Mbs	–								
1	2	3	4		5	6	7	8	9	10	11	12	13	14	15

1 Pressure transmitter type

Code	Description
Agat-100M (M)	Smart pressure transmitter
Agat-100MT (MT)	Advanced function smart pressure transmitter

2 Type of explosion protection

Code	Description
–	General-purpose electrical equipment
Exi	Intrinsically safe electric circuit
Exd	Explosion-proof barrier “d”
Exdia *	Explosion-proof with two types of explosion protection – “explosion-proof barrier “d” and “intrinsically safe electric circuit with “ia” level”

* – For “MT” only.

3 Type of measured pressure

Code	Description
DA	Absolute pressure
DI	Gauge pressure
DV	Vacuum
DIV	Pressure-vacuum
DD	Differential pressure
DG	Hydrostatic pressure

4 Measurement limits (measurement range), type of connection to operating medium

Model	Upper measurement limit			Version characteristics		
	Minimum Pmin	Transmitter type	Maximum Pmax	Connection	Diaphragm seal	Fig.
1	2	3	4	5	6	7
<i>Absolute pressure transmitters</i>						
1020	2.5 kPa		10 kPa	Flange	No	A.2
1030	4.0 kPa		40 kPa			
1040	25 kPa		250 kPa			
1041	60 kPa		600 kPa	Fitting	No	A.4
1050	250 kPa		2.5 MPa		Dismountable	A.5
1051					No	A.4
1052					Undismountable	A.6

4 Table "Measurement limits (measurement range), type of connection to operating medium", continued

1	2	3	4	5	6	7
<i>Absolute pressure transmitters</i>						
1060	1.6 MPa		16 MPa	Fitting	Dismountable	A.5
1061					No	A.4
1062					Undismountable	A.6
<i>Gauge pressure transmitters</i>						
1110	0.16 kPa		1.6 kPa	Flange	No	A.1
1120	0.6 kPa		10 kPa			
1130	1.6 kPa		40 kPa			
1140	10 kPa		250 kPa			
1141	25 kPa		600 kPa	Fitting	No	A.4
1142					Undismountable	A.6
1150	0.1 MPa		2.5 MPa		Dismountable	A.5
1151					No	A.4
1152					Undismountable	A.6
1160					Dismountable	A.5
1161	0.6 MPa		16 MPa		No	A.4
1162					Undismountable	A.6
1167	4 MPa	MT	60 MPa		No	A.4
1168		MT			Dismountable	A.5
1170	4 MPa		100 MPa	Dismountable	A.5	
1171				No	A.4	
<i>Vacuum pressure transmitters</i>						
1210	0.16 kPa		1.6 kPa	Flange	No	A.1
1220	1.0 kPa	MT	10 kPa		No	
	0.6 kPa	M				
1230	4.0 kPa	MT	40 kPa		No	
	1.6 kPa	M				
1240	10 kPa		100 kPa	No		
<i>Pressure – vacuum transmitters</i>						
1310	Vacuum Pv(-): 0.125 kPa Gauge pressure 0.125 kPa		Vacuum Pv(-): 0.8 kPa Gauge pressure 0.8 kPa		Flange	No
1320	Vacuum Pv(-): 0.5 kPa Gauge pressure: 0.5 kPa		Vacuum Pv(-): 5 kPa Gauge pressure: 5 kPa			
1330	Vacuum Pv(-): 2 kPa Gauge pressure: 2 kPa		Vacuum Pv(-): 20 kPa Gauge pressure: 20 kPa			
1340	Vacuum Pv(-): 12.5 kPa Gauge pressure: 12.5 kPa		Vacuum Pv(-): 100 kPa Gauge pressure: 150 kPa			
1341	Vacuum Pv(-): 31.5 kPa Gauge pressure: 31.5 kPa	M	Vacuum Pv(-): 100 kPa Gauge pressure: 530 kPa	Fitting	No	A.4
1342		MT			Undismountable	A.6
1350	Vacuum Pv(-): 50 kPa Gauge pressure: 50 kPa				Dismountable	A.5
1351					No	A.4
1352					Undismountable	A.6

4 Table "Measurement limits (measurement range), type of connection to operating medium", continued

1	2	3	4	5	6	7
<i>Differential pressure transmitters</i>						
1410	0.16 kPa		1.6 kPa	Flange	No	A.1
1420	0.63 kPa		10 kPa		No	
1430	1.6 kPa		40 kPa		No	
1434					No	
1440	10 kPa		250 kPa		No	
1444					No	
1450	0.1 MPa	M	1.6 MPa		No	
	0.16 MPa	MT		No		
1460	0.63 MPa		16 MPa	No		
<i>Hydrostatic pressure transmitters</i>						
1530	1.6 kPa		40 kPa	Flange	Open diaphragm	A.3
1540	10 kPa		250 kPa			

5 Basic full-scale error limits

Code	Transmitter type	Permissible basic full-scale error limits γ , % of upper range value			Applicability for models depending on upper range value P_{max}			
		$\frac{P_{max}}{2} \leq P_u \leq P_{max}$	$\frac{P_{max}}{10} \leq P_u \leq \frac{P_{max}}{2}$	$\frac{P_{max}}{25} \leq P_u \leq \frac{P_{max}}{10}$	$P_{max} \geq 600$	$P_{max} \geq 250$	$P_{max} \geq 10$	$P_{max} \geq 1,6$
					kPa	kPa	kPa	kPa
005	MT	± 0.05	± 0.1	± 0.5	+	-	-	-
006		± 0.065	± 0.1	± 0.5	+	-	-	-
007		± 0.075	± 0.1	± 0.5	+	+	+	-
010		± 0.1	± 0.1	± 0.5	+	+	+	-
015	M MT	± 0.15	± 0.15	± 0.5	+	+	+	-
020	MT	± 0.2	± 0.2	± 0.5	+	+	+	+*
025	M	± 0.25	± 0.25	± 0.5	+	+	+	+*
050	MT	± 0.5	± 0.5	± 1	+	+	+	+
100	MT		± 1		+	+	+	+

* – except for DA-1020.

6 Output signal

Code	Transmitter type	Description
Hart42	MT	Analog current signal 4-20 mA superimposed with HART-protocol
Hart42v		Analog current signal 4-20 mA superimposed with HART-protocol, with root extraction function
Hart24		Analog current signal 20-4 mA superimposed with HART-protocol
Mbs		RS-485 interface Modbus protocol digital output signal
-	M	Analog current signal 4-20 mA superimposed with HART-protocol (see code "S" for the rest)

7 Custom transmitter settings

Code	Transmitter type	Description
S	M	Custom transmitter settings (setting options sheet to be filled in)

8 Indication

Code	Description
–	Without digital LED indicator
TSI	Digital LED indicator

9 Operational temperature range

Code	Transmitter type	Description
–	M	from minus 40 to plus 80 °C
NT*		from minus 56 to plus 80 °C
t1070	M MT	from minus 10 to plus 70 °C
t4380	MT	from minus 43 to plus 80 °C
t4580*		from minus 45 to plus 80 °C
t6080*		from minus 60 to plus 80 °C

* – Except for DD-1450.

10 Additional running-in time

Code	Description
N	Additional running-in time

11 Identification tag

Code	Description
B	Identification tag

12 Cable entries and electrical connectors

Code	Thread	∅	Armour ∅	Material	Metal hose	Type of explosion protection	
<i>Cable entries</i>							
K01	M20x1.5	6.5 – 13.6	No	Nickel-plated brass	No	No	
K02		6.5 – 13.6		Stainless steel			
K03		6.1 – 11.6	12.5 – 20.9	Nickel-plated brass		No	ExdIIC
K05 ¹⁾		6.5 – 13.6					
K06 ¹⁾		6.1 – 11.6					
K07		6.5 – 13.9					
K08		6.5 – 13.9	No	R3-TsH-15			

Note – degree of ingress protection for cable entries fits into IP67 group as per GOST 14254.

1) A cable entry is used to seal an armoured cable with different armour type (mesh braiding, wire armour, aluminium or steel tape)

Connectors

ShR14	Plug connector: plug 2RMT14B4Sh1V1BV GEO.364.140 TU (Socket 2RM14KPN4G1V1 GEO.364.126 TU)
ShR22	Plug connector: plug 2RMT22B4Sh3V1 GEO.364.140 TU (Socket 2RM22KPN4G3V1 GEO.364.126 TU) or plug 2RMT22B4Sh3V1V GEO.364.140 TU (Socket 2RM22KPN4G3V1V GEO.364.126 TU)
GSP	Connector GSP as per DIN 43650 (plug – socket)

Notes

- Connectors ShR14, ShR22 and GSP are not used for Exd explosion-proof transmitters.
- Degree of ingress protection for plug connectors fits into IP65 group as per GOST 14254

13 Mounting parts

Code	Mounting parts	Transmitter model	
1	2	4	
M20	Mounting flange with male thread M20x1.5, nipple with union nut. Material is stainless steel.	1020, 1030, 1040, 1110, 1120, 1130, 1140, 1210, 1220, 1230, 1240, 1310, 1320, 1330, 1340, 1410, 1420, 1430, 1434, 1440, 1444, 1450, 1460	
M20U	Mounting flange with male thread M20x1.5, nipple with union nut. Material is carbon steel.		
M20 (09G2S)	Mounting flange with male thread M20x1.5, nipple with union nut. Material is 09G2S grade steel.		
K1/2	Mounting flange with female thread K ^{1/2} . Material is stainless steel.		
K1/4	Mounting flange with female thread K ^{1/4} . Material is stainless steel.		
1/2NPT	Mounting flange with female thread 1/2 NPT. Material is stainless steel.		
1/4NPT	Mounting flange with female thread 1/4 NPT. Material is stainless steel.		
K1/2 _{male}	Mounting flange with male thread K ^{1/2} . Material is stainless steel.		
K1/4 _{male}	Mounting flange with male thread K ^{1/4} . Material is stainless steel.		
1/2NPT _{male}	Mounting flange with male thread 1/2 NPT. Material is stainless steel.		
1/4NPT _{male}	Mounting flange with male thread 1/4 NPT. Material is stainless steel.		
M20	Nipple with union nut M20x1.5. Material is stainless steel.		1041, 1051, 1061, 1141, 1151, 1161, 1167, 1171, 1341, 1351, 1142, 1152, 1162, 1052, 1062, 1342, 1352, 1050, 1060, 1150, 1160, 1170, 1350
M20U	Nipple with union nut M20x1.5. Material is carbon steel.		
M20 (09G2S)	Nipple with union nut M20x1.5. Material is 09G2S grade steel.		
PR3	Adapter with thread K ^{1/2} _{female} – M20x1.5 _{male}		
PR4	Adapter with thread K ^{1/4} _{female} – M20x1.5 _{male}		
PR7	Adapter with thread 1/4 NPT _{male} – M20x1.5 _{male}		
PR8	Adapter with thread 1/2 NPT _{male} – M20x1.5 _{male}		
PR9	Adapter with thread 1/4 NPT _{female} – M20x1.5 _{male}		
PR10	Adapter with thread 1/2 NPT _{female} – M20x1.5 _{male}		
PR11	Adapter with thread K ^{1/4} _{male} – M20x1.5 _{male}		
PR12	Adapter with thread K ^{1/2} _{male} – M20x1.5 _{male}		
PR20	Adapter with thread G ^{1/2} _{male} – M20x1.5 _{male}		

14 Mounting bracket

Code	Description
SK	A clamp, bracket for fixing a pressure transmitter on a 50 mm diameter pipe and on a panel

15 "KBust" is specified if a transmitter is ordered with a valve manifold installed

A valve manifold is recorded as a separate entry of an order. A note on leakage testing of the "transmitter + valve manifold" assembly is made in the transmitter certificate.

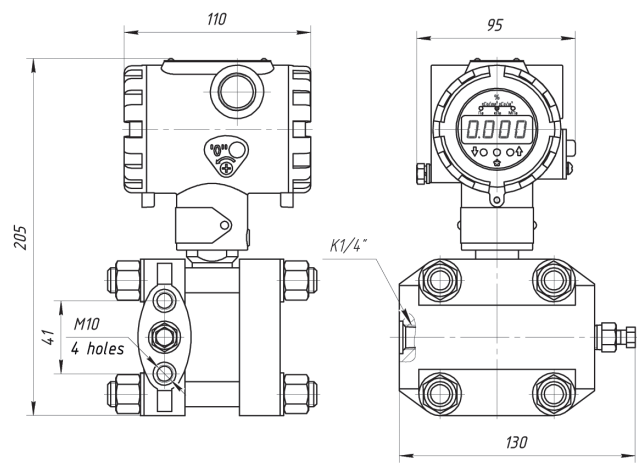
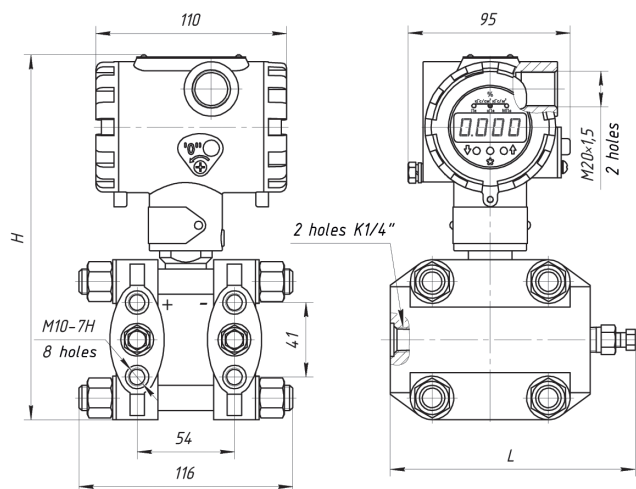


Figure A.1:

DI, versions 1110, 1120, 1130, 1140
 DV, versions 1210, 1220, 1230, 1240
 DIV, versions 1310, 1320, 1330, 1340
 DD, ver. 1410, 1420, 1430, 1434, 1440, 1444, 1450, 1460

Figure A.2:

DA, versions 1020, 1030, 1040

Attention: working cavity of DV type transmitters is at the “_” marking side

Model	H, mm	L, mm
1110, 1210, 1310, 1410	250 max	190
1120, 1130, 1140, 1220, 1230, 1240, 1320, 1330, 1340, 1420, 1430, 1434, 1440, 1444, 1450, 1460	205 max	130

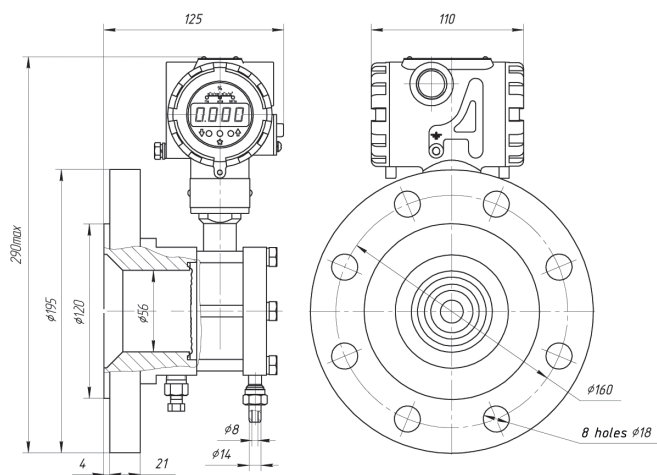


Figure A.3

DG, versions 1530, 1540

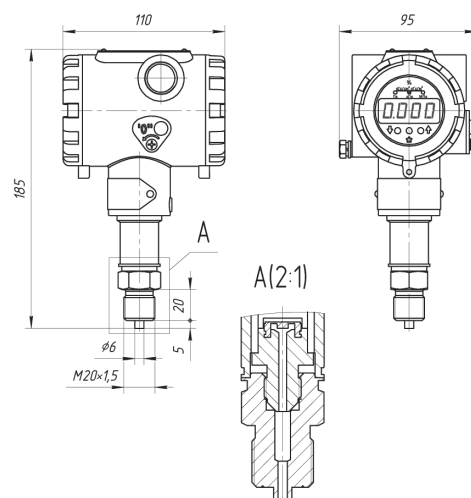


Figure A.4:

DI, versions 1141, 1151, 1161, 1167, 1171
 DA, versions 1041, 1051, 1061
 DIV, versions 1341, 1351

Transmitter design without diaphragm seal.

Overall and connection dimensions

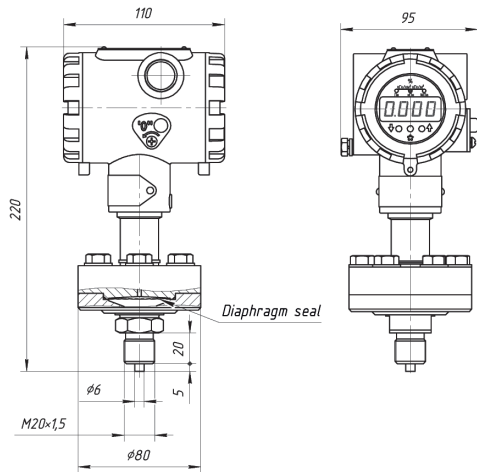


Figure A.5:
DI, versions 1150, 1160, 1168, 1170
DA, versions 1050, 1060
DIV, versions 1350

Transmitter design with diaphragm seal, dismountable.
Fill fluid is PMS-5 (polymethylsiloxane fluid).

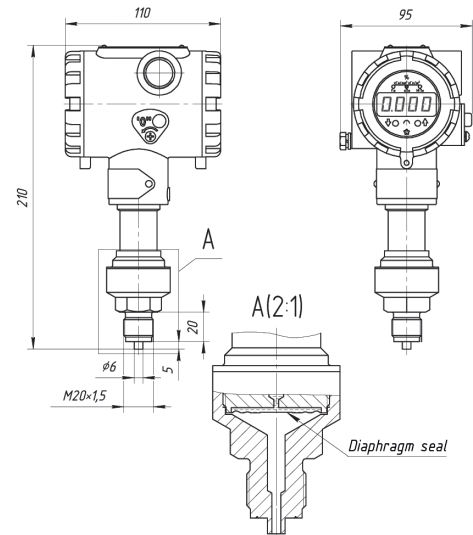


Figure A.6:
DI, versions 1142, 1152, 1162
DA, versions 1052, 1062
DIV, versions 1342, 1352

Transmitter design with diaphragm seal, undismountable.
Fill fluid is PMS-5 (polymethylsiloxane fluid).

A series of horizontal dashed lines for writing notes.

A series of horizontal dashed lines for writing notes.