CATALOGUE No. 1
Moisture meters FIZEPR-SW100 and microwave barrier for level SIUR-03V2 for bulk and paste-like materials

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(v.3.10)

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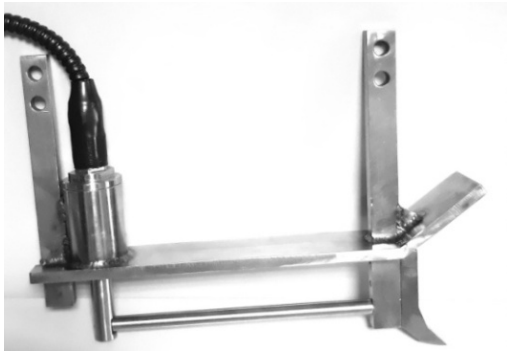
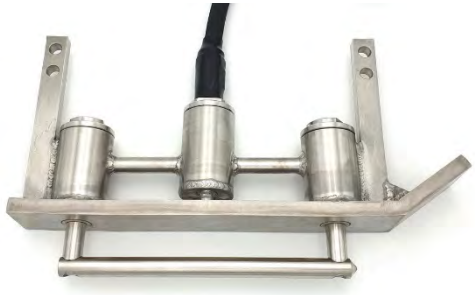
Item No.	Description, design version	Application, materials controlled	Sensor design	
Bulk material moisture analyzers (moisture meters) FIZEPR-SW100.10.x				
1	Moisture analyzer FIZEPR-SW100. **10.6**	Powdered, granular, bulk materials in a hopper or in-line on a conveyor belt (grain, sand, etc.). For materials with particle sizes up to 30 mm.		Sensor is made as a panel with a flat-topped probe mounted on it. 120 x 356 mm panel. Probe-to-panel clearance is 40 mm. Sensor material is AISI 321 stainless steel
2	Moisture analyzer FIZEPR-SW100. **10.21**	Powdered, granular, bulk materials in a dryer, hopper or in-line on a conveyor belt (grain, sand, etc.) For materials with particle sizes up to 30 mm.		Sensor is made as a panel with a flat-topped probe mounted on it. 120 x 356 mm panel. An additional shielding conductor is placed on the panel parallel to the probe to eliminate any effects from metal items located near the sensor. Probe-to-panel clearance is 40 mm. Sensor material is AISI 321 steel.

3	Moisture analyzer FIZEPR-SW100. **10.63**	Powdered, granular and bulk materials **in a mixer** (silicate mixture, sand, etc.). For materials with particle sizes up to 30 mm.		Sensor is made as a panel with a flat-topped probe mounted on it. A 120 x 356 mm panel is made radially bent (radius to be specified when ordering). Probe-to-panel clearance is 40 mm. Sensor material is AISI 321 stainless steel.
4	Moisture analyzer FIZEPR-SW100. **10.22**	Powdered, granular and bulk materials **in a mixer** (silicate mixture, sand, etc.). For materials with particle sizes up to 30 mm.		Sensor is made as a panel with a flat-topped probe mounted on it. An additional shielding conductor is placed on the panel parallel to the probe to eliminate any effects from metal items located near the sensor. A 120 x 356 mm panel is made radially bent (radius to be specified when ordering). Probe-to-panel clearance is 40 mm. Sensor material is AISI 321 stainless steel.
5	Moisture analyzer FIZEPR-SW100. **10.5**	Bulk materials (crushed stone, sand, etc. on a conveyor belt. For materials with particle sizes up to 30 ... 40 mm.		Flat-topped probe is made of AISI 321 wear-resistant stainless steel (or AISI 316Ti). Sensor is mounted above the conveyor belt in the material flow. The sensor shaped so that it creates minimum resistance to the flow. A "prong" made of steel highly resistant to impacts and abrasion (ASTM A128 A (UNS J91109)) is mounted at the front of the sensor to loosen the material and completely fill the probe-to-panel clearance with the material.

6	Moisture analyzer FIZEPR-SW100. **10.51**	Bulk materials (sand) on a conveyor belt. For materials with particle sizes up to 30 ... 40 mm.		Flat-topped probe is made of AISI 321 wear-resistant stainless steel. Sensor is mounted above the conveyor belt in the material flow. The sensor shaped so that it creates minimum resistance to the flow.
7	Moisture analyzer FIZEPR-SW100. **10.16**	Bulk materials featuring **high conductivity** (coal, iron ore, salts, etc.), in a hopper or in a trough. For materials with particle sizes up to 30 ... 40 mm.		Sensor is made as a panel with a flat-topped probe mounted on it. Probe diameter is 14mm. Probe-to-panel clearance is 45 mm (sensor with up to 60 mm clearance is available on request). Probe is made of AISI 321 steel.
8	Moisture analyzer FIZEPR-SW100. **10.166**	Bulk materials featuring **high conductivity** (coal, iron ore, salts, etc.), in a hopper or in a trough. For materials with particle sizes up to 30 ... 40 mm. Sensor can be used for materials with a temperature of 120°C.		Sensor is made as a panel with a probe mounted on it. Probe is replaceable to enable its replacement in case of abrasion. Probe diameter is 18 mm. Probe material is ASTM 440B stainless steel subjected to heat treatment (hardening). Probe-to-panel clearance is 44 mm. Sensor housing is made of AISI 321 steel.

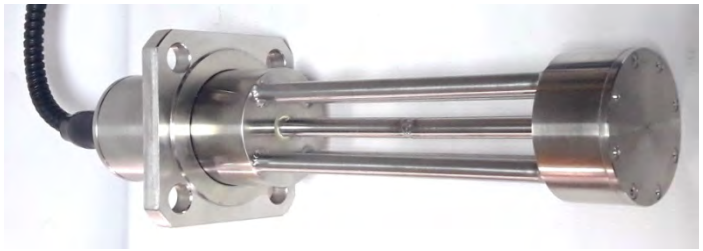
9	Moisture analyzer FIZEPR-SW100. **10.56**	Bulk materials featuring **high conductivity** (coal, iron ore, salts, etc.), in-line on a conveyor belt. For materials with particle sizes up to 30 ... 40 mm.	 Flat-topped probe is made of AISI 321 wear-resistant stainless steel (or AISI 316Ti). Sensor is mounted above the conveyor belt in the material flow. The sensor shaped so that it creates minimum resistance to the flow. Sensor probe is made of impact-resistant Hadfield steel ASTM A128 A (UNS J91109).
10	Moisture analyzer FIZEPR-SW100. **10.561**	Bulk materials featuring **high conductivity** (coal, iron ore, salts, etc.), in-line on a conveyor belt. For materials with particle sizes up to 30 ... 40 mm.	 Flat-topped probe is made of AISI 321 wear-resistant stainless steel (or AISI 316Ti). Sensor is mounted above the conveyor belt in the material flow. Sensor shaped so that it creates minimum resistance to the flow. Sensor probe is replaceable and made of ASTM 440B hardened stainless steel. In case of significant wear the sensor probe can be easily replaced with a spare kit.
11	Moisture analyzer FIZEPR-SW100. **10.4**	Bulk materials (sand, crushed stone, ore, grain, wood chips, etc.) in a hopper, dispenser, including materials that adhere on the hopper walls and probe. For materials with particle sizes up to 100 ... 150 mm.	 Probe is made as a straight rod with a cross section of 27 mm, length up to **1.2 m,** manufactured of AISI 321 stainless steel, with a set of AISI 1020 steel coupling holders 

12	Moisture analyzer FIZEPR-SW100. **10.44**	Bulk materials (sand, crushed stone, gravel, ore, grain, etc.) in a hopper, dispenser, including materials that adhere on the hopper walls and probe. For materials with particle sizes up to 150 mm.	 Probe is made as a straight rod with a cross section of 27 mm, length up to **1.5 m**, manufactured of AISI 321 stainless steel. A set of holder-couplings from AISI 321 or from AISI 1020 steel at the request of the customer.
13	Moisture analyzer FIZEPR-SW100. **10.441**	Bulk materials (sand, crushed stone, gravel, ore, grain, etc.) in a hopper, dispenser, including materials that adhere on the hopper walls and probe. For materials with particle sizes up to 150 mm.	 Probe is made as a straight rod with a cross section of 27 mm, length up to **2 m**, manufactured of AISI 321 stainless steel. A set of holder-couplings from AISI 321 or from AISI 1020 steel at the request of the customer.
14	Moisture analyzer FIZEPR-SW100. **10.41**	Powdered, granular, bulk materials in a hopper, pipe or trough including **sawdust, wood chips, wafers, grain,** etc.	 Probe is made as a straight rod with a diameter of 14 mm, length up to 0.6 m, manufactured of AISI 321 stainless steel, with a set of AISI 321 steel coupling holders.
15	Moisture analyzer FIZEPR-SW100. **10.411**	Powdered, granular, bulk materials in a hopper, pipe or trough including **sawdust, wood chips, wafers, grain**, etc. Moisture meter can be used for materials with a temperature of 180°C.	 Sensor contains a straight rod (probe) with a diameter of 20 mm and length up to 1.0 m. Sensor probe and a set of coupling holders are made of AISI 321 steel. Sensor electronic unit (measuring cell) is located outside coupling holders.

16	Moisture analyzer FIZEPR-SW100. **10.46**	Bulk materials (coal including anthracite, iron ore and other materials) featuring **high conductivity** including those adhering to hopper walls and the probe. For lump materials with particle sizes up to 100 mm.	 Probe is made as a straight rod with a cross section of 32 mm, length up to 1 m. Sensor is made completely of AISI 321 stainless steel.
17	Moisture analyzer FIZEPR-SW100. **10.461**	Bulk materials (coal including anthracite, iron ore and other materials) featuring **high conductivity** including those adhering to hopper walls and the probe. For lump materials with particle sizes up to 150 mm.	 Probe is made as a straight rod with a cross section of 32 mm, length up to 1.5 m. Sensor is made completely of AISI 321 stainless steel.
18	Moisture analyzer FIZEPR-SW100. **10.43**	Bulk materials (wood chip waste, sawdust, pulp, etc.) **in a screw.**	 Probe is made as a radially bent rod with a diameter of 14 mm. It is bent along the screw diameter to be specified when ordering. Sensor is made completely of AISI 321 stainless steel.

Moisture analyzers (moisture meters) FIZEPR-SW100.11.x / 12 universal				
19	Moisture analyzer FIZEPR-SW100. **11.32**	Powdered, granular and bulk materials in a hopper, mixer, as well as liquid materials (e.g. sludge) in a tank, trough It can be used to measure bulk materials in storage pits		Sensor with two-pin probe. The sensor housing is supplied with a G1 threaded fitting. The sensor is fixed permanently on a 1" pipe, but can also be attached to the wall of the bunker. The probe is made of AISI 321 stainless steel. The sensor body is made of D16t alloy, but upon agreement with the customer, it can be made of AISI 321 stainless steel.
20	Moisture analyzer FIZEPR-SW100. **11.33**	Powdered and granular bulk and paste-like materials (e.g. silicate mixture) on a conveyor belt, as well as liquid materials (e.g. sludge) in a tank, trough		Sensor with a two-pinned bent probe. Housing is equipped with G1 thread nozzle. It is fixed permanently on a 1" pipe. Sensor is made completely of AISI 321 stainless steel.
21	Moisture analyzer FIZEPR-SW100. **11.4**	Liquid and bulk materials in hoppers, tanks. The moisture meter can also be used for soil moisture control		Immersion sensor with a two-pinned probe. Probe is equipped with a tip to immerse the sensor in a dense controlled material Housing is equipped with a G1 thread nozzle. It is fixed permanently on a 1" pipe. Sensor is made completely of AISI 321 stainless steel.

22	Moisture analyzer FIZEPR-SW100. **11.41**	Grain and other bulk materials, as well as paste-like and liquid products. In the **11.411** version it can be used in boiling tanks with a temperature up to 180°C and pressure up to 6 atm.	 Immersion sensor with a two-pinned probe. Ø10 mm probe pins are made as a fork and have a length of 160 mm. Housing is equipped with a G1 thread nozzle for sensor attachment to a 1" pipe.
22.1	**11.411**		Version **11.411** is designed for boiling tank applications.
22.2	Moisture analyzer FIZEPR-SW100. **11.412**	Grain and other bulk materials, as well as paste-like products in hoppers	 Immersion sensor FIZEPR-SW100.**11.41** equipped with attachment fittings for mounting on tank, hopper walls.
23	Moisture analyzer FIZEPR-SW100. **11.6**	Paste-like and liquid materials **featuring high conductivity** located in troughs and tanks including sewage sludge, ion-exchange resin, etc.	 Immersion sensor with a two-pinned probe. Housing is equipped with a G1 thread nozzle and can be attached to a 1" pipe.
24	Moisture analyzer FIZEPR-SW100. **12**	Paste-like and liquid materials in troughs and tanks including sludge, diesel oil emulsion, etc.	 Probe sensor contains a center pin and 4 perimeter-wise pins. Sensor material is AISI 321 stainless steel. Sensor comprises a flange for mounting on tank walls.

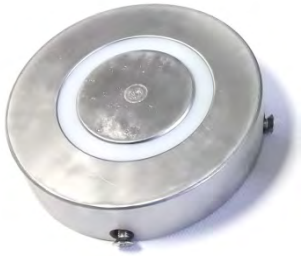
<table>
<tr><td>25</td><td>Moisture analyzer FIZEPR-SW100.
12.16
(21.16)</td><td>Paste-like and liquid materials featuring high conductivity located in troughs and tanks including sewage sludge, ion-exchange resin, etc.</td><td> 
Probe sensor contains a center pin and 4 perimeter-wise pins. Sensor material is AISI 321 stainless steel. Sensor comprises a flange for mounting on tank walls..</td></tr>
<tr><td colspan="4">Moisture analyzers (moisture meters) FIZEPR-SW100.14.x for measurements in boilers, piles, as well as for soil moisture measurement</td></tr>
<tr><td>26</td><td>Moisture analyzer FIZEPR-SW100.
14.1</td><td rowspan="2">Bulk materials, as well as paste-like and liquid materials. It can be used for soil moisture measurement. Version 14.11 is designed for boiling tank applications with a temperature up to 180°C at pressures up to 6 atm.</td><td rowspan="2"> 
Sensor contains a Ø24 mm diameter probe, has a length up to 600 mm and is made of AISI 321 stainless steel.

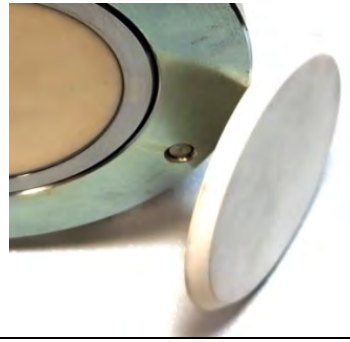
Version 14.11 is designed for applications with extreme temperatures and pressures up to 6 atm. Sensor contains a Ø24 mm diameter probe, has a length up to 600 mm and is made of AISI 321 stainless steel.

Version 14.11 is designed for applications with extreme temperatures and pressures up to 6 atm.</td></tr>
<tr><td>26.1</td><td>14.11</td></tr>
</table>

Moisture analyzers (moisture meters) FIZEPR-SW100.16.x for bulk, paste-like and liquid materials			
27	Moisture analyzer FIZEPR-SW100. **16.1**	Water and sand pulp, slack and other liquid, paste-like, and bulk materials in tanks and pipelines with a diameter of at least 200 mm, working pressure – up to 10 atm.	  In-line probe sensor with one Ø16 mm pin 150 mm in length installed along the pipeline diameter. Attachment - to a nozzle with a flange welded to a pipeline, tank wall. Sensor housing and probe are made of AISI 321 stainless steel. For water and sand pulp and sand flow applications the probe is made of ASTM 440B hardened stainless steel.

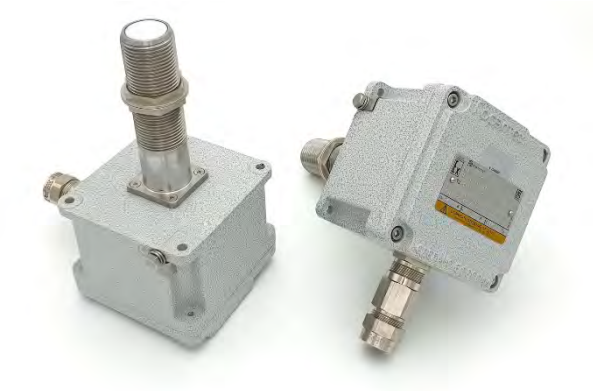
Moisture analyzers (moisture meters) FIZEPR-SW100.17.x for concrete mixture, coal and other bulk and paste-like materials			
28	Moisture analyzer FIZEPR-SW100. **17.1**	Control of water content in concrete mixture inside concrete mixing machines, control of material moisture inside hoppers, on a conveyor belt	 Sensor 80 mm in diameter (supplied with a fixing set). Sensor head is made of corrosion-resistant hardened steel.
29	Moisture analyzer FIZEPR-SW100. **17.2**	Measurements of bulk, paste-like materials in cylindrical sampling systems as well as in screws.	  The sensor is made in a cylindrical housing with a diameter of 80mm (the sensor is supplied with a mounting kit). The sensor's sensor surface is made concave in the form of the surface of a round cylinder, and the radius of this cylinder is selected according to the customer's requirements, which makes it possible to install the sensor on the cylindrical wall of a twin-shaft mixer or inside the pipe of the sampling system. The sensor head is made of corrosion-resistant hardened steel.
30	Moisture analyzer FIZEPR-SW100. **17.21**	Measurements of bulk, paste-like materials in cylindrical sampling systems	 Sensor is made as a 50 mm diameter piston. Allowable piston load – 5000 N

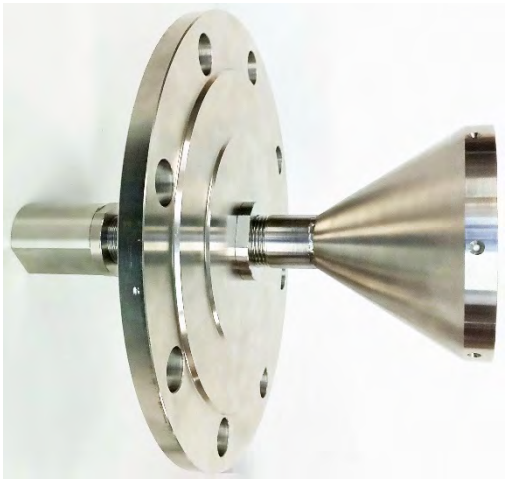
31	Moisture analyzer FIZEPR-SW100. **17.8**	Control of water content in concrete mixture inside concrete mixing machines, control of material moisture inside hoppers, on a conveyor belt	  Sensor 108 mm in diameter (supplied with a fixing set). Sensor head is replaceable and made of corrosion-resistant hardened steel.
31.1	Replaceable sensor head. FIZEPR-SW100. **17.81**	Replaceable sensor head for FIZEPR-SW100.**17.8** moisture meter sensor replacement in case of abrasive wear	 Replaceable sensor head for FIZEPR-SW100.**17.8** moisture meter sensor is made of corrosion-resistant hardened steel.
32	Moisture analyzer FIZEPR-SW100. **17.12**	Control of water content in concrete mixture inside concrete mixing machines, control of bulk material moisture inside hoppers, and on a conveyor belt (sand, coal, carnallite).	 Sensor 108 mm in diameter (supplied with a fixing set). Sensor head is covered with an abrasion-resistant disk (plate) made of corundum ceramics. Sensor design feature: the user can replace the ceramic disk without assistance.

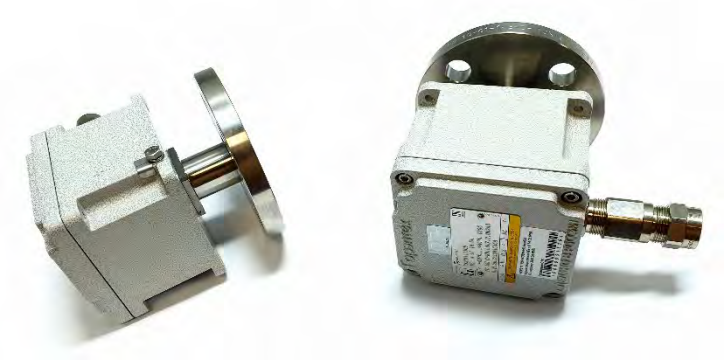
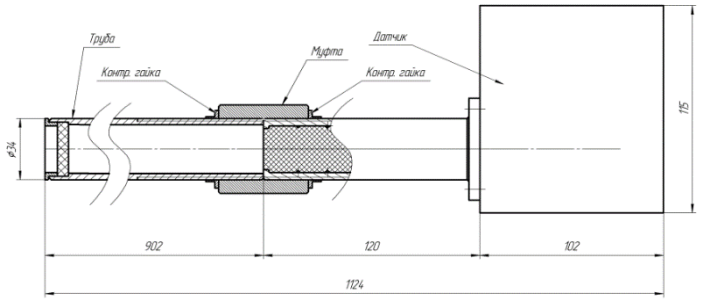
32.1	Replaceable ceramic disk FIZEPR-SW100. **17.121**	Replaceable ceramic disk made of corundum for FIZEPR-SW100.**17.12** sensor		Replaceable ceramic disk made of corundum for FIZEPR-SW100.**17.12** sensor Replacement is quite easy and takes a few minutes. In order to replace the disk, unscrew sensor cover with a FIZEPR-SW100.**17.122** key tool**.**
32.2	Wrench tool FIZEPR-SW100. **17.122**	Cover removal/installation tool for ceramic disk replacement.		Wrench tool used to unscrew sensor cover for FIZEPR-SW100.**17.121** ceramic disk replacement.
Laboratory moisture analyzers (moisture meters) FIZEPR-SW100.30.x				
33	Moisture analyzer FIZEPR-SW100. **30.2**	Laboratory measurements of bulk and paste-like materials (can also be used for control of liquid materials).		Sensor contains a 220 x 100 x 100 mm rectangular measuring cell with a probe. Volume of sample controlled – 2 l. Sensor is made of AISI 321 stainless steel.

34	Moisture analyzer FIZEPR-SW100. **30.26**	Laboratory measurements of bulk, paste-like and liquid materials featuring **high conductivity** (including salt solutions, etc.)	 Sensor contains a 220 x 100 x 100 mm rectangular measuring cell with a probe. Volume of sample controlled – 2 l. Probe is made of AISI 321 stainless steel.
35	Moisture analyzer FIZEPR-SW100. **30.261**	Laboratory measurements of bulk, paste-like and liquid materials featuring **high conductivity** (including salt solutions, etc.)	is  Sensor contains a 210 x 60 x 60 mm rectangular measuring cell with a cover. Volume of sample controlled – 0.7 l. Probe made of AISI 321 stainless steel.
36	Moisture analyzer FIZEPR-SW100. **30.1**	Laboratory measurements mostly of liquid materials	 Sensor contains a 46 mm diameter probe to make measurements in a standard 500 ml measuring cylinder (included in the scope of supply). Volume of sample controlled – 450 ml.

37	Moisture analyzer FIZEPR-SW100. **30.11**	Laboratory measurements mostly of liquid materials and measurements in tanks at different depths. Sensor is equipped with a coupling for mounting on the rod (pipe) with G1 male thread.		Sensor contains a 46 mm diameter probe to make measurements in a standard 500 ml measuring cylinder (included in the scope of supply). Volume of sample controlled – 450 ml.
Microwave barrier for level SIUR-03V2				
38	Microwave barrier for level SIUR-03V**2.4**	High-level limit control when filling silos, hoppers with bulk materials. Allowable temperature of barrier unit housings: -25…+85°C.		The signaling device consists of two blocks TM and RM installed on the walls of the bunker. The blocks are fastened to antennas (emitters) with cylindrical pipe thread 1″ (G1). Emitters are made of 120mm long steel AISI 321. Cases of blocks are tight, IP65. Cables are connected to the units through cable glands PG9 (for cables with an outer diameter of 4 - 8 mm).
39	Microwave barrier for level SIUR-03V**2.41**	High-level limit control when filling silos, hoppers with bulk materials. Allowable temperature of barrier unit housings: -45…+85°C.		

<table>
<tr><td>40</td><td>Microwave barrier for level SIUR-03V2.5</td><td>High-level limit control when filling silos, hoppers with bulk materials.
Allowable temperature of barrier unit housings:
-25…+85°C.</td><td rowspan="2"> 
The signaling device consists of two blocks TM and RM installed on the walls of the bunker. The blocks are fastened to radiators with G1 thread or using holes in the block bodies. Emitters are made of 120mm long steel AISI 321. Cases of blocks tight, IP66. Cables are connected to the blocks through KOB1M-type cable glands (under an armored cable with an outer diameter of 9-17 mm).</td></tr>
<tr><td>41</td><td>Microwave barrier for level SIUR-03V2.51</td><td>High-level limit control when filling silos, hoppers with bulk materials.
Allowable temperature of barrier unit housings:
-45…+85°C.</td></tr>
<tr><td>42</td><td>Microwave barrier for level SIUR-03V2.5M
(with an additional synchronization unit)</td><td>High-level limit control when filling silos, hoppers with bulk materials.
Allowable temperature of barrier unit housings:
-45…+85°C.</td><td> 
The alarm consists of two TM and RM blocks mounted on the walls of the hopper, and an additional SU synchronization unit. The TM and RM blocks are attached to the radiators with a G1 thread or using holes in the block housings. The emitters are made of 120mm long steel AISI 321. The block housings are sealed, IP66. The cables are connected to the blocks through 1 M cable hermetic leads (under an armored cable with an external diameter of 9 - 17mm). The alarm is characterized by increased sensitivity. The delivery package includes cables for connecting TM and RM blocks to the SU block.</td></tr>
</table>

43	A set of two horn antennas mounted on flanges	Permissible antenna heating temperature up to +400°C		Horn antennas, flanges (DN 150, PN10), G1 couplings and G1 control nuts are made of AISI 321 steel. Horn antennas are connected to the signal emitters by means of a coupling (threaded fitting) with a cylindrical pipe thread 1″ and are fixed with the help of edging (locking) nuts.
44	Microwave barrier for level SIUR-03V**2.6**	High-level limit control when filling silos, hoppers with bulk materials. Allowable temperature of barrier unit housings: -25…+85°C.		The alarm consists of two TM and RM blocks mounted on the walls of the hopper. The blocks are attached to the emitters using collet clamps or using holes in the block housings. The block housings are sealed, IP66. The emitters are 200...300mm long, with a diameter of Ø34 mm, made of AISI 321 steel. The cables are connected to the blocks through 1 M cable hermetic leads (under an armored cable with an external diameter of 9 -17mm).
45	Microwave barrier for level SIUR-03V**2.61**	High-level limit control when filling silos, hoppers with bulk materials. Allowable temperature of barrier unit housings: -45…+85°C.		

46	Microwave barrier for level SIUR-03V**2.7**	High-level limit control when filling silos, hoppers with bulk materials. Allowable temperature of barrier unit housings: -45…+85°C.	 The alarm consists of two TM and RM blocks mounted on the walls of the hopper. The antennas of the blocks are provided with flanges DN 40, PN10. The attachment of the receiver and transmitter blocks to the hopper is made by means of flanges. The block housings are sealed, IP66. The material of the antennas is steel AISI 321.
47	Set of two probe tubes	To ensure measurements at temperatures up to +400°C.	  A set of two probe tubes with a length of 700...900mm, made with a ceramic plug at the end. The pipes are connected to the signal emitters by means of a coupling (threaded fitting) with a cylindrical pipe thread 1″ (G1), the pipe material is steel AISI 321.

48	Set of two probe tubes	To ensure measurements at temperatures up to +400°C.	 A set of two probe tubes 370mm long, made with a ceramic plug at the end. The pipes are connected to the signal emitters by means of a coupling (threaded fitting) with a cylindrical pipe thread 1″ (G1), the pipe material is steel AISI 321. The peculiarity of this option: a G1 thread is made on a 250mm long pipe section, which allows fixing the pipe in the flange.
Additional equipment			
49	Converter AS4 by "Owen"		 USB – RS485 interface converter with galvanic isolation (powered from computer USB port)
50	Converter ACDR.426469.032 by NVP "Bolid"		 USB – RS485 interface converter with galvanic isolation (powered from computer USB port)

51	Measuring and regulating device TRM1 by "Owen"	  Digital indicator with a programmable device for discrete control of relay outputs
52	Digital operator panel SMI1-24 by "Owen"	 Data display panel with editing functions for distributed control systems in RS-485 network (Modbus RTU protocol)
53	Supply unit BP30B-D3-24 by "Owen"	 30 W supply unit. Output: 24V/1.25A. Input: 90...264VAC