RIZUR
GROUP OF COMPANIES

# CONCISE CATALOGUE OF INDUSTRIAL EQUIPMENT


RIGID AND SOFT ENCLOSURES
PRE-INSULATED TUBING BUNDLES
FLOW AND MEASURE MONITOR EQUIPMENT
SIGHT FLOW INDICATORS
FITTINGS AND PIPING INSTALLATIONS
JUNCTION BOXES
CONTAINER TYPE MOBILE BUILDINGS
TURN-K SOLUTIONS FOR OIL&GAS INDUSTRY

2022/23

# Reinforced fiberglass enclosures RizurBox-C

Reinforced fiberglass enclosures RizurBox-C are manufactured according to TS-3442-001-12189681-2014 and are designed to place control-monitor communication devices (pressure sensors, flowmeters, level gauges, network devices, check valves etc.) both in outdoor and indoor areas. Rigid enclosures RizurBox-C are designed to protect equipment against low temperatures, condensation, dust, chemicals, physical damages, unauthorized access, theft and so on.

Field of application - explosion hazardous zones in indoor and outdoor areas in accordance with specified marking, requirements, relevant industrial safety guidelines that manufacturer recommends.

All enclosures are made from in-flammable materials, which has all the necessary certificates.

| | |
|---|---|
| Installation area | general industrial areas/explosion-hazardous zones B-1a and B-1r according to PUE ch. 7.3 |
| Ingression protection | IP54, IP65, IP66 |
| Operating temperature | from -60 to +70 °C<br>from -70 to +70 °C (with additional flex ible elastomeric foam insulation with alluminized coaing) |
| Resistivity | to oil products; to chemical environments; to UV-radiation |
| Wall thickness | from 20 to 40 mm (till 100 mm on request) |
| Fiberglass thickness | from 2 to 4 mm (depending on the model) |
| Thermal conductivity | 0,03 W/(m·K) |
| Fittings materials (locks,hinges) | stainless steel |
| Surface electric resistivity (antistatic) | not more than $10^9$ Ohm |
| Explosion protection type (with heating: explosion-proof heater, heating section) | II Gb II C T6...T3 X; 1Ex eb IIC T6…T3 Gb X; 1Ex eb mb IIC T6…T3 Gb X; 1Ex db eb IIC T6…T3 Gb X; 1Ex db eb mb IIC T6…T3 Gb X ; 1Ex db eb IIB T6…T3 Gb X; 1Ex db eb mb IIB T6…T3 Gb X (Depending on type of used heater and thermoregulator) |
| Explosion protection marking (heated by water/steam) | II Gb IIC T3...T6 X or II Gb IIB T3...T6 X |
| Color | RAL 7035, light-grey / any color (depending on the order) |
| Warranty period | 12 months (24/36 months depending the order) |
| Average operation time | over 15 years |

| Heating box RizurBox-C with diagonal opening | Heating boxes with diagonal opening and pallete | Heating box RizurBox-C with classic opening | Heating box RizurBox-C of CASE type | Heating box RizurBox-C of MULTI type |
|---|---|---|---|---|
|  |  |  |  |  |

| Heating boxes horizontally split | Heating boxes vertically split | Heating boxes with full access to equipment | Heating boxes modular with one door | Heating boxes modular with two doors |
|---|---|---|---|---|
|  |  |  |  |  |

# Protective metal heating boxes RizurBox-M

Protective heating boxes RizurBox-M are manufactured in accordance with TS-3442-001-12189681-2014 and are designed to enclose equipment (pressure transmitter, flowmeters, level gauges, network devices, check valves, etc) both in outdoor and indoor zones. RizurBox-M heating boxes are designed to protect equipment against low temperatures, condensation precipitation, dust, chemicals, physical damages, unauthorized access, theft, etc. Field of application - explosion hazardous outdoor and indoor zones in accordance with specified markings, requirements, relevant industrial safety guidelines that manufacturer recommends.

All heating boxes are made from inflammable material, which has all the necessary certificates. Heating boxes RizurBox-M are welded metal heating boxes, which are made using qualitative and technological equipment. Depending on its dimensions and intended use the box can be with supporting frame and frameless. In frameless heating box the load of equipment is distributed among the walls.

Supporting frames are usually made from profiled pipes steel construction or integrated load frame.

To ensure easy mounting the box can be supplied with pipe stands or other mounting elements, that "NPO RIZUR" manufacturers according to Customer's requirements and according to drawings. According to the requirements, the box also can be supplied with heaters, including explosion-proof heaters, thermoregulators and heating cables.

| | |
|---|---|
| Installation area | general industrial areas/explosion-hazardous zones B-1a and B-1r according to PUE ch. 7.3 |
| Ingress protection | IP54, IP65, IP66 |
| Operating temperature | from -60 to +70 °C<br>from -70 to +100 °C (on request) |
| Wall thickness | from 10 to 50 mm (depending on the model) |
| Metal thickness | from 1,2 to 2 mm (depending on the model) |
| Thermal oncductivity | 0,03 W/(m·K) |
| Fittings material (locks, hinges) | zinc plated steel, stainless steel |
| Surface resistance (antistatic agent) | not more than $10^9$ Ohm |
| Maintained interior temperature | from -40 to +100 °C (depending on the heater type) |
| Explosion protection marking (with electrical heating: ex-proof heater, heating section) | II Gb II C T6...T3 X; 1Ex eb IIC T6…T3 Gb X; 1Ex eb mb IIC T6…T3 Gb X; 1Ex db eb IIC T6…T3 Gb X; 1Ex db eb mb IIC T6…T3 Gb X ; 1Ex db eb IIB T6…T3 Gb X; 1Ex db eb mb IIB T6…T3 Gb X (Depending on the heater and thermoregulator type) |
| Explosion protection marking (water/steam heating) | II Gb IIC T3...T6 X or II Gb IIB T3...T6 X |
| Color | dark-grey (antique silver) / any color (on request) |
| Warranty period | 12 months (24/36 months on request) |
| Average operating time | over 10 years |

| Heating box RizurBox-M-RK with classical opening | Heating box RizurBox-M-RD with diagonal opening | Heating box RizurBox-M-RV with vertical opening | Heating box RizurBox-M-RG with horizontal opening |
|---|---|---|---|
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# Soft enclosures RIZUR for EC&I and equipment

Heat-insulated soft enclosures RIZUR are manufactured in compliance with TR CU 012/2011. Depending on design and used materials, soft enclosures RIZUR are designed to protect from environmental impacts, high temperatures, to reduce heat loss, also to maintain required air temperature or the temperature of the heated facility surface, to provide equipment's operability when used at low temperatures, such equipment as: EC&I, shut-off and control valves, driven equipment and PCS elements.

The soft enclosures are wildly used in oil and gas facilities in northern areas as the most economic and high-quality solution for equipment heating.

| | |
|---|---|
| Ingression protection | IP54 |
| Outer layer material | flame-resistant antistatic PVC; fiberglass with double-side coating; silica fabric |
| Inner layer material / tightening sleeves | fiberglass with double-side silicone coating |
| Insulation mateerial | flexible elastomeric foam, polyethene foam, nonwoven mineral insulant |
| Threads material | lavsan/kevlar |
| Closing/fixation system | flame-resistant frostproof Velcro tape + stainless steel oval ring |
| Total wall thickness | from 10 to 100 mm (depending on the model) |
| Air temperature during operation | -70. . . .+70°C (till +700°C for heat-insulated enclosures) |
| Miantained temperature | +20...+35°C (-40. . . +110 °C with thermoregulator) |
| Explosion protection marking | 1Ex eb mb IIC T4 Gb X / II Gb II C T6...T3 X / IIGb IIC |
| Warranty period | 12 months(24/36 months on request) |
| Average operating time | over 7 years |

# Soft enclosures RIZUR for tube fittings

Heat-insulated soft enclosures RIZUR are manufactured to provide heatinsulation of hot surfaces, to protect stuff against burns and to minimize heat loss. Soft enclosures RIZUR are manufactured as a dismountable multilayered construction, that allows its multiple use and quick and easy assembling/disassembling and access to such services as inspection, repairs, diagnostics and replacement of soft enclosure. The construction is designed to provide tight fit of the enclosure for covered surface.

Safety soft enclosures RIZUR are used to provide heat-insulation for flanges, pipe sections, shutters, valves, filters, disk shutter, flanged ball valve, non-return flanged valves and other kinds of shutoff and regulating valves.

| | |
|---|---|
| Ingression protection | IP54 |
| Outer layer material | flame-resistant antistatic PVC; fiberglass with double-side coating; silica fabric |
| Inner layer material / tightening sleeves | fiberglass with double-side silicone coating |
| Insulation material | flexible elastomeric foam, polyethene foam, nonwoven mineral insulant |
| Threads material | lavsan/kevlar |
| Closing/fixation system | flame-resistant frostproof Velcro tape + stainless steel oval ring |
| Total wall thickness | from 10 to 100 mm (depending on the model) |
| Air temperature during operation | -70. . . .+70°C (till +700°C for heat-insulated enclosures) |
| Miantained temperature | +20...+35°C (-40°C. . . +110 °C with thermoregulator) |
| Explosion protection marking | 1Ex eb mb IIC T4 Gb X / II Gb II C T6...T3 X / IIGb IIC |
| Warranty period | 12 months(24/36 months on request) |
| Average operating time | over 7 years |

# Pre-insulated impulse tubes and tubing bundles RIZURPAK

Pre-insulated impulse tubes and tubing bundles RIZURPAK are manufactured according to TS-3464-010-12189681-2013 and are designed to protect impulse tubes and tubes of small diameter against freezing, condensation, aggressive environmental conditions, failure of production facilities and increase medium viscosity, due to the impact of low temperatures. Field of application – explosion hazardous indoor and outdoor zones in accordance with specified marking, requirements, relevant industrial safety guidelines that manufacturer recommends. Operation safety of pre-insulated impulse tubes and tubing bundles RIZURPAK at explosion hazardous zones is confirmed by Customs Union Certificate of Conformity "On safety of equipment to be operated in explosion hazardous areas" No TCRUC-RU.MH04.B.00125.

Compared with the traditional methods of heating and protection of small diameter tubes, heat-insulation and heating system RIZURPAK doesn't need any technical service, guarantees consistent quality and ensures time and mounting devices economy. In RIZURPAK heat-insulation and heating system are used only high-quality materials. Elastomeric covering are free of halogens, which in turn eliminates the possibility of chloride release, which corrosively affects on stainless steel tubes. Used coverings are resistant to mechanical damages and chemical influence, also has a wide range of operating temperatures. RIZURPAK system mounting can be performed during low temperatures till -40°Ñ.

RIZURPAK can be used as an impulse tube for pressure sensors, industrial analysis system, chromatographic analysis.

OOO NPO RIZUR suggests a complex solution on mounting and protecting of equipment, which are made on the basis of pre-insulated tubes and tubing bundles RIZURPAK, reinforced fiberglass enclosures, metal heating boxes RizurBox, soft enclosures RIZUR, heaters RIZUR-TERM.

| RIZURPAK-E | RIZURPAK-L | RIZURPAK-H | RIZURPAK-S | RIZURPAK-J |
|---|---|---|---|---|
|  |  |  |  |  |

| | |
|---|---|
| Coating | Thermoplastic polyether urethane elastomer, stabilized by hydrolitic method:<br>• free of halogens;<br>• resistant to abrasive effect;<br>• resistant to UV radiation;<br>• keeps flexibility during low temperatures |
| Insulation | Non-hygroscopic fiberglass |
| Temperature of RIZURPAK-L, -H, -S, -J | Maximal temperature of technological tube 204°C |
| Temperature of RIZURPAK-E<br>(All tracing has a copper shield and outer covering) | Constant temperature: 121°C (high-temperature) / 65°C (low-temperature) Temporary temperature: 250°C (high-temperature) / 85°C (low-temperature) Maximal temperature of tracing: T3 class, 230°C / T6 class, 85°C |
| Installation area | general industrial areas/explosion-hazardous zones B-1a and B-1r according to PUE ch. 7.3 |
| Resestivity | to oil products /to chemical environments/ to UV radiation |
| Explosion protection marking of RIZURPAK-E | 1 Ex s IIC T6. . .T4 Gb X (on request 1 Ex s IIC T3. . .T1 Gb X) |
| Explosion protection marking of RIZURPAK-L/-H/-S/-J | II Gb IIC T6. . .T4 X (on request II Gb IIC T3. . .T1 X) |
| Ingress ptotection | IP67 according to GOST 14254-96 |
| Minimum ambient temperature during installation | -40°C |
| Temperature range during operation: | -70... +405 °C (depending on temperature class) |
| Maximal surface temperature | +60° C |
| Supply Voltage of RIZURPAK-E | 230 V |
| Coating color | any (in default black) |
| Warranty period | 12 months (24/36 months on request) |
| Average operaion time | over 20 years |

# Explosion-proof heaters RIZUR-TERM

Explosion-proof heaters RIZUR-TERM manufactured in accordance with TS-3442-001-12189681-2014 and, depending on the configuration meet the requirement of TR CU 012/2011, GOST IEC 60079-1-2011 as electric equipment with explosion protection type "explosion-proof enclosures "d" or acc.to GOST R MEK 60079-18-2012 as electric equipment of high reliability with explosion protection type "compound sealing "m". Explosion-proof heaters RIZUR-TERM are designed to maintain required temperature in heated area, protect from cold and/or from condensation during negative temperatures, save metrological characteristics of heated equipment in explosion hazardous and general industrial zones. Heater RIZUR-TERM consists of section-shaped radiator, made from aluminum alloy or from two aluminum plane (RIZUR-TERM-P) of ceramic or nickel-chromium electric heating element, that is located inside of the radiator (between planes), thermosensor, junction box, cable, thermal control unit. Protection from surface, corresponding to the nominal power of heat generation, as well as by an added temperature sensor, that maintain and control temperature of heaters outer surfaces and outer control unit, that controls the work of the inner thermosensor and maintain required air temperature.

Heaters RIZUR-TERM are designed in the following configurations: F – maintaining of constant air temperature from +10 till +20˚C without changing any temperature settings; S – maintaining of constant air temperature from -40˚ till +50˚C, with an indication light for visual control of heater work without changing any temperature settings; A – maintaining of constant air temperature from -40 till +50˚C, with an indication light for visual control of heater work, with possibility of changing temperature settings in a maintained temperature range; AR - maintaining of constant air temperature from -40 till +50˚C, with LED screen for remote control of heater by RS-485 interface, with possibility of changing temperature settings in a maintained temperature range, this allows to choose the heater for small areas (soft enclosures, heating boxes, jackets, etc.), for instruments and equipment (ATMs, turnpikes, etc.), as well as for rooms (block-boxes, stocks, workshops, gas distribution substations, boiler rooms, etc.).

| | |
|---|---|
| Installation area | general industrial areas/explosion-hazardous zones B-1a and B-1r according to PUE ch. 7.3 |
| Explosion protection type | 1Ex db IIC (T6...T3) Gb X / 1Ex mb IIC (T6...T3) Gb X |
| Heating element power capacity | from 10 till 6000 W |
| Power supply voltage | 230 (±15%) V / 380 (±15%) V |
| Heater surface temperature | +80...+100°C / -40. . .+110°C, increment 1°C (with digital thermoregulator RIZUR) |
| Temperature maintained in the box | +10...+20°C (with thermoregulator on the basis of bimetallic thermostat);<br>-40. . .+100°C, ncrement 1°C (with digital thermoregulator RIZUR) |
| Ingress protection | IP54 / IP67 / IP68 |
| Electric strength of insulation | min 1500 V |
| Resistance of insulation | min 20 MOhm |
| Warranty period | 24 months |
| Average operating time | over 10 years |

| RIZUR-TERM-M 230 V | RIZUR-TERM-B 230 V | RIZUR-TERM-B 380 V | RIZUR-TERM-P 230 V |
|---|---|---|---|
|  |  |  |  |

# Explosion-proof heaters RIZUR-OShA-R, RIZUR-OUR, RIZUR-OUR-PL, RIZUR-ONP

Explosion-proof heaters RIZUR-OShA-R, RIZUR-OUR, RIZUR-OUR-PL, RIZUR-ONP are manufactured by LLC NPO RIZUR, according to the TS-3442-001-12189681-2014 and meet the requirements of TR CU 012/2011, GOST R MEK 60079-7-2012 and GOST R MEK 6007-18-2012 as electric equipment of high ex-protection "compound sealing "m" and are marked according to the manufacturer's reference and emergency shut-off temperature 1ExmbIICT6...T3GbX.

Safety of heaters operating at explosion-hazardous areas is confirmed by the Customs Union's Certificate of conformity, "On safety of equipment operating in explosive areas" EAEC RU C-RU.HB82.B.00035/22. Explosion-proof heaters RIZUR-OShA-R are designed for heating and maintenance of required temperature in jackets, heating boxes, block-boxes, rooms with equipment, that requires a specific temperature mode for continuous and reliable operation, etc. Heaters for RIZUR-OUR and RIZUR-OUR-PL for EC&I are intended for devices where condensate moisture, such as hoar in the form of frost or ice appear inside at negative temperatures preventing the successful operation of the EC&I equipment, electronic devices, and LCD-elements. Explosion-proof heaters RIZUR-ONP can be used for oil heating at the exit out of the well in the winter season, as well as for local heating of the freezing parts of the industrial pipelines, e.g. in the places of valves, pipe valves, etc. used in fuel-power complexes, oil, gas, chemical, and other branches of the industry.

| | |
|---|---|
| Installation area | general industrial areas/explosion-hazardous zones B-1a and B-1r according to PUE ch. 7.3 |
| Explosion protection marking | 1Ex mb IIC T6...T3 Gb X |
| Heating element capacity | from 4 to 2000W |
| Power supply | 230 (±15%) V |
| Temperature on heater's surface | +90...+100°C / -30. . .+90°C, increment1°C (with digital thermoregulator RIZUR) |
| Temperature maintained in the box | +10...+20°C (with thermoregulator on the basis of bimetallic thermostat);<br>-40. . .+50°C, increment 1°C (with digital thermoregulator produced by LLC NPO RIZUR) |
| Ingress protectioon | IP54 / IP66 / IP67 |
| Electric strength of the insulation | min 1500 V |
| Insulation resistance | min 20 MOhm |
| Warranty period | 24 months |
| Average operaton time | over 10 years |

# General purpose industrial grade heaters for control cabinets RIZUR-OShA-IP20, RIZUR-OShA-IP20 with ventilator

Heaters for control cabinets RIZUR-OShA-IP20 (budget version) are designed for use outside of hazardous areas. Heating element – ceramic heater. The heater is mounted in place with mounting brackets that are in the scope of supply (DIN rail or screw-type fittings). In case there's a need for temperature maintenance in the set range, then it's best to use thermoregulators along with the heater (can be included in the scope of supply).

| | |
|---|---|
| Installation area | general industrial areas |
| Heating element capacity | from 50 to 250 W |
| Heater weight | from 0,78 to 2,51 kg |
| Power supply | 230 (±15%) V |
| Electric strength of the insulation | min 1500 V |
| Insulation resistance | min 20 MOhm |
| Fastening types | screw-type / DIN-rail |
| Warranty period | 24 months |
| Average operaton time | over 10 years |

# Explosion-proof digital thermoregulator RIZUR-DCS-2

The RIZUR-DCS-2 explosion-proof digital thermoregulator manufactured by OOO «NPO RIZUR» complies with Technical regulations TS-3442-001-12189681- 2014, meets the requirements of TR CU 012-2011, GOST R MEK 60079-11-2010, GOST IEC 60079- 1-2011 standards for electric equipment with explosion protection type "Flameproof Enclosure "(d)", "Intrinsically Safe Circuit"(i)". Thermoregulators are designed for use of electrical equipment in ex-hazardous areas, the heater is certified for use in ex-areas of internal and external facilities and has 1Ex db [ia IIC Ga] IIB T6 Gb X. RIZUR-DCS-2 is supplied together with digital temperature sensors RIZUR-DT with 0Ex ia IIC T6 Ga X explosion protection marking.

Safety of the digital thermoregulator at explosion-hazardous areas is proved by the Customs Union's Certificate of conformity, «On safety of equipment operating in explosive areas» EAEC RU C-RU.HB82.B.00035/22.

| | |
|---|---|
| Installation area | general industrial areas/explosion-hazardous zones B-1a and B-1r according to PUE ch. 7.3 |
| Explosion protection marking | 1Ex db [ia IIC Ga] IIB T6 Gb X |
| Display | LED |
| Control buttons | Reed (local control by magnet) |
| Interface protocol | Modbus RTU |
| Heater surface temperature | -30. . .+110°C, increment 1°C |
| Temperature maintained in the box | -40. . .+110°C, increment 1°C |
| Total capacity of connected actuators | from 5 Вт to 5 000 W |
| Power consumption | 5 W |
| Supply voltage | 230 (±15%) V |
| Warranty period | 24 months |
| Average operation time | over10 years |

# Explosion-proof digital thermoregulator RIZUR-TB-DCS

Thermoregulator RIZUR-TB-DCS is manufactured on the basis of digital control system. The controller module consists of microcontroller, that is controlled by software, and an external digital sensor of ambient temperature. The software and hardware solution ensure high accuracy of the temperature maintained in the heated space, within the accuracy of 1˚C. the set temperature is programmed on the manufacturer's site, as specified in the customer's inquiry for/ ordering code. For indicating of the increasing/decreasing temperature the thermoregulator RIZUR-TB-DCS has additional relay outputs and also, depending on the configurations, analog output signal 4-20 mA. The thermoregulator body performs the functions of a junction box, where inside of the body there is a terminal block and also the body has explosion-proof cable glands for connecting heaters, power cables and temperature gauges.

| | |
|---|---|
| Installation area | general industrial areas/explosion-hazardous zones B-1a and B-1r according to PUE ch. 7.3 |
| Explosion protection marking | 1Ex db [ia IIC Ga] IIC T6 Gb X |
| Temperature regulating | Digital control system |
| Connected heating element capacity | till 5000 W |
| Voltage | 230 (±15%) V<br>24 / 36-48 V DC/DA (on request) |
| Ambient temperature | -60 . . . +50°C |
| Heater surface maintained temperature | -30 . . . +90°C, increment 1°C |
| Temperature maintained in the box | -40 . . . +50°C, increment 1°C |
| Ingress protection | IP67 |
| Signals of reaching max permissible temperature values | Relay, «dry» contact, 1À |
| Warranty period | 24 months |
| Average operating time | Over 15 years |

# Bypass level gauges RIZUR-NBK

Bypass level gauges RIZUR-NBK are used for continuous measurement/indication of the liquid upper level or interface level of two liquid media in tanks. RIZUR-NBK is designed to control the level of liquids in open or closed tanks, including the ones under pressure, in processing units at industrial facilities of chemical, petrochemical, pharmaceutical, food and other industries. It can also be used as an indicator of liquid presence/ absence at a predetermined height of the tank. Bypass level gauge RIZUR-NBK can be used both indoors and outdoors in a wide range of climatic conditions.

The operating principle of RIZUR-NBK is based on the law of interconnected vessels – the level of liquid in the bypass column is equal to the level of the measured liquid in the tank. A float with a built-in magnet moves along with the liquid level inside the column. By means of a magnetic field in a non-contact manner the float changes the position (turns) of one or a group of vertically arranged magnetic rollers or transmits information about the current level to some other control unit.

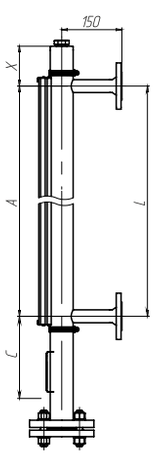
Bypass level gauge RIZUR-NBK is a simple and reliable solution for measuring and displaying of liquid levels in large and small tanks.

Usually bypass level gauges RIZUR-NBK are attached to the side wall of the tank. If necessary, the connecting elements of the bypass gauge can be located on the side, top or bottom. Variants with different types of process connection are available: flange, outer/inner thread, sleeve nut, welding sleeve, etc.

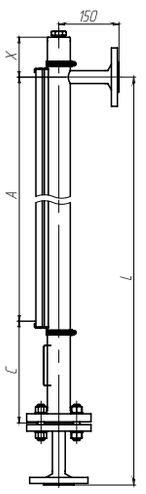
| | Bypass level gauges RIZUR-NBK side mounted | Over-head bypass level gauges RIZUR-NBK |
|---|---|---|
| Measuring range | 150...6000 mm | 150...6000 mm |
| Minimum medium density | 450 kg/m$^3$ (depending on pressure and temperature) | 600 kg/m$^3$ (depending on pressure and temperature) |
| Maximum process pressure | 16 MPa (specify at the me of the order)<br>40 MPa when *t* till 100 °C and density min 775 kg/m$^3$<br>25 MPa when *t* till 200 °C and density min 775 kg/m$^3$ | 2,0 MPa (specify at the me of the order) |
| Material | SS 12X18H10T (AISI 321), 10X17H13M2T (316 Ti), other types of SS, polypropylene, PVC, titanium alloy other material acc.to order | SS 12X18H10T (AISI 321), 10X17H13M2T (316 Ti), other types of SS, polypropylene, PVC, titanium alloy other material acc. to order |
| Process tempeature | -196...+425 °C | -196...+425 °C |
| Process connection | flange, thread, welded | DN80...250 (depending on measured medium density) |
| Ingress protection | IP65 or IP67 | IP65 or IP67 |
| Ambient temperature | -60...+60 °C | -60...+60 °C |
| Explosion marking | II Gb IIC T6...T1 X | II Gb IIC T6...T1 X |

## Side mounting

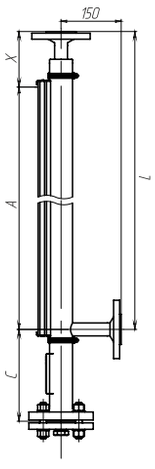
Design variant «side-side»



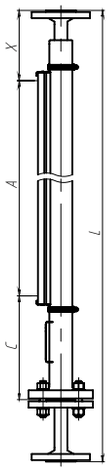

Design variant «side-bottom»



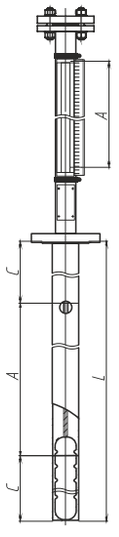

Design variant «top-side»




Design variant «top-bottom»




## Over-head mounting




**Note:**

X and C minimal values are calculated by the manufacturer and depend on measured liquid parameters and process conditions.

By default, over-head RIZUR-NBK is produced with still pipe. The level gauge can be made without a still pipe for the purpose of cost reduction. This requirement must be specified at order placement.

A - measuring range
L - distance between connection point centers
X, C - «dead zones», unmeasured areas

# Bypass glass level gauge RIZUR-NBK-GLASS

Bypass level gauges RIZUR-NBK-GLASS are used for continuous measurement and display of liquid level in tanks. RIZUR-NBK-GLASS is designed to control the level of liquids in open or closed tanks, including the ones under pressure, as an indicator of liquid presence (absence) at a predetermined height of the tank. The equipment also can be used both indoor and outdoor in a wide range of climatic conditions at industrial facilities of chemical, petrochemical, pharmaceutical, food and other industries. The operating principle of RIZUR-NBK-GLASS is based on the law of interconnected vessels – the level in the glass column is equal to the level of the measured liquid in the tank. Bypass glass level gauges RIZUR-NBK- GLASS are a simple and reliable solution for liquid level indica on in large and small tanks.

Usually, bypass glass level gauges RIZUR-NBK-GLASS are installed on a tank wall. If necessary, the mounting elements of the bypass level gauge can be located at the top or distanced to a side.

LLC NPO RIZUR produces several types of bypass glass level gauges: RIZUR-NBK-GLASS-K with quartz tube; RIZUR-NBKGLASS-P luminate and non-luminate type with plane water-gauge unruffled glasses (Duren's glasses), or plane water-gauge ruffled glasses (Klinger's glasses); RIZUR-NBK-GLASS-S with quartz tubes or borosilicate glass.

| | RIZUR-NBK-GLASS-S | RIZUR-NBK-GLASS-P | RIZUR-NBK-GLASS-K |
|---|---|---|---|
| Hardware material | 12X18H10T (AISI 321)<br>10X17H13M2 (analog AISI 316Ti)<br>08X18H10 (analog AISI 304) | 12X18H10T (AISI 321)<br>10X17H13M2 (analog AISI 316Ti)<br>08X18H10 (analog AISI 304)<br>other materials in acc.with Customer | 12X18H10T (AISI 321)<br>10X17H13M2 (analog AISI 316Ti)<br>08X18H10 (analog AISI 304)<br>other materials in acc.with Customer |
| Glass type | quartz tube/<br>borosilicate tube | borosilicate glass<br>(can be in luminated or nonluminated configuration) | quartz tube<br>borosilicate tube |
| Maximum process temperature | +200 °C | +280 °C | +300 °C |
| Process pressure | 0,6 MPa<br>1 MPa<br>1,6 MPa | 0,6 MPa/ 1,0 MPa/ 1,6 MPa/2,5 MPa/<br>4,0 MPa/ 6,3 MPa<br>Can be till 10 and 16 MPa<br>configurations on request | 0,6 MPa<br>1,0 MPa<br>1,6 MPa<br>2,5 Mpa |
| Process connection | flange / thread/<br>welded / slip nut | flange / thread/<br>welded / slip nut | flange / thread/<br>welded / slip nut |
| Ventil/drainage hole | plug/needle valve/<br>flange/no holes | plug/needle valve/<br>flange/no holes | plug/needle valve/<br>flange/no holes |
| Operating temperature | -60...+80 °C | -60...+80 °C | -60...+80 °C |

Advantages of bypass level gauges RIZUR-NBK-GLASS: various designs of materials, also for aggressive media; long service life, simplicity of design, ease of cleaning and maintenance. Bypass level gauges of the RIZUR-NBK-GLASS series have all the necessary certificates and comply with Russian and international standards.

| RIZUR-NBK-GLASS-K | RIZUR-NBK-GLASS-S | RIZUR-NBK-GLASS-P1 | RIZUR-NBK-GLASS-P2 |
|---|---|---|---|
|  |  |  |  |

# Bypass chamber for level meters RIZUR-KBU

Bypass chamber (for level meters) RIZUR-KBU are used in cases when there is no possibility to install different types of level gauges and switches in tanks. RIZUR-KBU is designed for level meters installation.

The operating principle of RIZUR-KBU is the following: bypass chamber and tank, that are connected with the help of flange, thread or by welding, which forms an interconnected vessel. Due to this connection, the liquid level in the bypass chamber is equal to the liquid level in the main tank. Some types of level meters, level gauges and other equipment can be mounted on the bypass chamber. LLC NPO RIZUR has developed various sets of bypass chambers with different types of connections for various pressures and liquids.

RIZUR-KBU is designed in accordance with Customer's drawings and according to T-MM-04-06 – album of internal typical drawings, that defines the unity of technical solutions for buoyancy level transmitter. There are also components for mounting of bypass chamber produced by NPO RIZUR.

| | |
|---|---|
| Bypass chamber and flange material | Steel / 09Г2С / 12Х18Н10Т(AISI 321) / AISI 304 and others |
| Bypass chamber diameter | DN50 / DN65 / DN80 / DN100 / DN150 (chamber wall width depends upon the process temperature) |
| RIZUR-KBU operational range | from 100 to 25000 mm (If length is more than 5000 mm then the split-type construction is used) |
| Process tempeature | -196... + 500 ℃ |
| Ambient temperature | -60... +85 ℃ |
| Nominal pressure | from - 0,1 to 42 MPa |
| Process connection | Flange acc/to GOST 12815-80, GOST-33259-2015, EN1092-1, DIN 2526, ANSI/ASMEB16.5<br>Welded - welded neck flanges<br>Thread - metric (I), pipe straight head (G) or pipe taper thread (NPT) |
| Mounting type | Side-side/side-bottom and others upon a special inquiry |
| Vent / Drainage | Plugs/valves/flanges/welded neck flanges |

# Flow indicator RIZUR-VIP

Flow indicator RIZUR-VIP is a simple and reliable equipment for visual monitoring and flow control, presence/absence of liquid-sutured, semi-transparent, colored, gas medias. Sight flow indicators are used at steampipes and pipe installations, factories, concerns of oil-refining, chemical, food, cellulose and paper and other industries. Sight flow indicators RIZUR-VIP are designed to for the sight flow control, as well as quantity and quality of the medium of liquid, gas and corrosive medias in systems.

The sight flow indicators consist of bode, that can be made by stainless steel, carbon steel, brass, crude iron materials; and inspection window from tempered, borosilicate or quartz glass.

There is an inspection window on the flow indicator body, inside of which there is one of the elements that reacts to the flow. Recognition of the controlled environment, the visibility of its movement in a distance is provided by a damper (blade), impeller (rotor) or balls. At the moment the medium passes through the flow, the damper deflects, the rotor rotates, the balls move.

Through the inspection window, visual two-way control of the observed environment is carried out: innage, color, density, the presence of impurities in the liquid. The sight flow differs in mechanisms located inside of the glass, methods of connection to the process, and housing configurations. LLC NPO RIZUR offers ATK sight flows and special RIZUR-VIP versions in accordance with the customer's requirements.

| RIZUR-VIP-1 | RIZUR-VIP-3 | RIZUR-VIP-5 | RIZUR-VIP-6 | RIZUR-VIP-7 | RIZUR-VIP-8 |
|---|---|---|---|---|---|
|  |  |  |  |  |  |

# Ultrasonic level switch RIZUR-900

Ultrasonic level switches RIZUR-900 are designed to control the level of liquids in open or closed tanks, including the ones under pressure in processing units at industrial facilities of chemical, petrochemical, pharmaceutical, food and other industries. It can also be used as an indicator of liquid presence (absence) at predetermined height of the tank.

Ultrasonic level switches RIZUR-900 produced by LLC NPO RIZUR can be used in systems of automatic control, regulation and management of technological objects, in other automation units. Also, it can be used in cleaning and filtering systems, in tanks with cooling and lubricating liquids, in pump protection systems, as well as in the food industry in contact with food products.

RIZUR-900 is a unique in price and quality as an alternative to the outdated level control relays, e.g., ROS 101(I), ROS 102(I), UZS, ROS-400, ROS-501(I), etc., and expensive foreign level switches, e.g., Liquiphant, SITRANS, Optiswitch and other float, electro-contact, vibrating and optical switches. Turbulent wind flow and external vibrations doesn't affect to the work of RIIZUR-900. This level switches have an increased strength.

| | |
|---|---|
| Materials in contact with the media | SS 12X18H10T (AISI 321) / 10X17H13M2T (316 Ti) |
| Controlled medium temperature | - 60...+150 °C / -196...+350 °C / -196...+500 °C |
| Controlled medium pressure | 6 MPa / 10 MPa / 16 MPa / 25 MPa / 35 MPa / 45 MPa<br>0,3 MPa (for flexible sensitive element) |
| Minimum medium density | 300 kg/m$^3$ |
| Accuracy, no more than | 2 mm |
| Number of level points | till 8 |
| Tripping delay | 1 sec / 3 sec / 10 sec / 30 sec |
| Operating supply voltage | 24 V or acc.to «Namur» standard |
| Output signal | Dry contact DPDT / SPDT 4...20 mA two-wire circuit / NAMUR/<br>8...16 mA two-wire circuit / 7...14 mA two-wire circuit |
| Ambient temperature | -55 . . . +60 °C (the range can be extended up to -63 . . . +80 on request) |
| Ingress protection | IP 65 / IP67 / IP68 |
| Explosion protection type | 0Ex ia IIC T6... T5 Ga X / 1Ex db IIC T6... T5 Gb X / no explosion protection |
| Switch orientation during installation | Any kind |
| Number of cable glands | 1 or 2 (customized) |
| Average operation time | 20 years |

One ultrasonic level switch RIZUR-900 can control up to 8 liquid level points. For rigid sensitive element maximal length is 6000 mm, for flexible one till 20 m. Vibrations and suspended solids doesn't affect to the work of RIZUR-900.

In accordance with the instruction manual, with the help of the magnet, it's possible to: change the switch delay time; inverse the output signal; inverse the relay.

It is possible to install the ultrasonic level switch RIZUR-900 on the top of tank, on the side wall, including the ones with "L"-type sensitive element, mounting on level tank. Besides, it is possible to install the switch for protection from "dry run".

# Vibration level switch RIZUR-500

Vibration level switches RIZUR-500 are designed to control the level of liquids, also, signaling its presence/absence at industrial facilities of chemical, petrochemical, pharmaceutical, food and other industries. The equipment is used in open or closed tanks, including the ones under pressure in processing units. The device is used: in pipelines (in order to protect the pumps from drainage); in containers with various liquids; in tanks with cooling and lubricating fluids; in cleaning and filtering systems.

Vibration level switch RIZUR-500 can be installed in both horizontal and vertical positions. Depending on configuration, level switch can have output signal – "dry contact" or "current loop". In the version with the output signal "dry contact", the switch is equipped by two relays. Working parameters of the relay are discussed when ordering: one relay is triggered by the liquid level, and the second by the presence of adhesion, the presence of self-diagnosis errors or power failure; both relays work on liquid level. In the version with the output signal "current loop", when ordering, you can specify any operating levels of the "current loop" current within 4 ... 20mA (7 ... 14mA, 8 ... 16mA, etc.).

| | |
|---|---|
| Materials in contact with the controlled media | 12X18H10T (on request) |
| Controlled medium temperature | -50...+150 °C |
| Controlled medium pressure | 1 MPa / 6 MPa |
| Minimum controlled medium density | 500 kg/m$^3$ |
| Tripping delay | 1 sec / 3 sec / 10 sec / 30 sec |
| Operating supply voltage | 24 V |
| Ingress protection | IP65 / IP67 / IP68 |
| Connection sizes | thread (min G3/4) / flange (min DN25) |
| Explosion protection type | 0Ex ia IIC T6...T5 Ga X / 1Ex db IIC T6...T5 Gb X / 1Ex ib IIC T6...T5 Gb X / Ex ia IIIC T85°C...T95°C Da X / No explosion protection |
| Average operation time | 15 years |

# Magnetic float level switches RIZUR-MG and RZIUR-M-V

Magnetic float level switches are produced in two design versions: RIZUR-M-G (horizontal mounting) and RIZUR-M-V (vertical mounting). Equipment is designed for liquid level control in open and close tanks, including those under pressure, that are used in the industrial facilities. They can also be used as an indicator of presence (absence) of the controlled liquid in the required amount at a specified tank height. Media controlled: water, petroleum products, oils and other liquids. Immersed part of RIZUR-M-V is a rod on which a float is located at a certain point (or several floats at different points). Immersed part of RIZUR-M-G is a horizontal float fixed on a special axis.

| | Magnetic float level switch RIZUR-MG | Magnetic float level switch RIZUR-MV |
|---|---|---|
| |  |  |
| Number of level points | 1 | till 8 |
| Minimum controlled medium density | 750 kg/m$^3$ | 700 kg/m$^3$ |
| Process connection | thread (min G2) / flange (min DN80) | thread (min M32) / flange (min DN32) |
| Housing material | aluminum, SS | |
| Materials in contact with the controlled media | 12X18H10T / 304 / AISI 321 | |
| Controlled medium temperature | -60... +150 °C | |
| Controlled medium pressure | 1 MPa / 2,5 MPa | |
| Ambient temperature | -60... +50 °C | |
| Ingress protection | IP65, IP66, IP67 | |
| Explosion protection type | No explosion protection / 0 Ex ia IIC T6 Ga X / 1 Ex db IIC T6 Gb X | |
| Average operation time | 10 years | |

# Conductometric level switch RIZUR-300-RI of split-type version

Level switches RIZUR-300 manufactured by NPO RIZUR are intended for measuring conductive liquids within prescribed limits. RIZUR-300 is also used to regulate the level of produced water and to notify decrease of its quantity below the permissible norm. The devices can be used in hazardous areas of premises and process units.

Conductometric level switches RIZUR-300-RI of split version consists of an electronic module which is a transmitting transducer, and sensors, which include a block with a threaded fitting and a sensitive element immersed in the controlled environment. RIZUR-300-RI can control up to 6 independent channels, that allows to control the media in one or several installations. The device, when the electrical circuit is closed or opened by an electrically conductive working medium, converts the electrical resistance between the electrode and the vessel wall into a relay signal.

| | |
|---|---|
| Level switch insulator material | silicone (standard) / fluorineplastic / polyetheretherketone / ceramic |
| Sensitive elements material | 12X18H10T (on request) |
| Controlled medium temperature | -40... +100 °C (silicone) / -100... +250 °C (PEEK) |
| Controlled medium pressure | 1 MPa / 2,5 MPa |
| Sensitive elements configuration design | founding core: from 0,1 to 2,5 m (on request till 5 m ) / rope: from 1 to 22 |
| Supply voltage | 230 V (+10%/-15%), 50 Hrz ± 2% |
| Explosion protection type | No explosion protection / 1 Ex ib IIC T6 Gb X |
| Output signal | relay "dry contact" |
| Current power, not more than | 2,5 V·A |
| Average operating time | 7 years |

# Conductometric level switch RIZUR-300-MB of monoblock version

Level switches RIZUR-300-MB of monoblock version consist of body and coupling rod with sensitive elements placed on it, the number of which depends on the number of required control points. RIZUR-300-MB can have up to 10 independent channels, which allow to control the media in one installation. RIZUR-300-MB devices are used in various industries at technological installations, in systems and automation devices.

The level switch is mounted in the tank and when the coupling rod is immersed in the investigated medium, measure the level. The work is based on the conductometric method. The electronic module generates an excitation signal between each point of the sensing element and the device body (the metal wall of the tank). When an electrically conductive medium touches the sensitive element, a weak electric current arises, recorded by the electronic module, which, in accordance with the preset response time and sensitivity settings, controls the output relay.

| | |
|---|---|
| Body material | Aluminum alloy / 12X18H10T / AISI321 |
| Materials in contact with the controlled media | 12X18H10T / AISI321 / 10X17H13M2T / PEEK |
| Sensitive element length | 50…3 000 mm |
| Ambient temperature | -40…+60 °C / -60…+75 °C (with soft enclosure) |
| Controlled media temperature | -40…+150 °C |
| Controlled media pressure | 2,5 MPa |
| Supply voltage | 24 V |
| Relay action adjustable delay | 1 sec / 3 sec / 10 sec / 30 sec (other variants on request) |
| Explosion protection type | 0 Ex ia IIC T6 Ga X / 1 Ex db IIC T6...T5 Gb X / no explosion protection |
| Ingress protection | IP 65 / IP67 / IP68 |
| Device mounting position | vertical/horizontal(1 control point) |
| Average operating time | 15 years |

# Guided radar level transmitter RIZUR-1300

RIZUR-1300 is a guided radar level transmitter manufactured by LLC NPO RIZUR, with a wide range of applications in chemical, metallurgical, and all the branches of fuel industry: petroleum, gas, electric power, coal, peat. Guided radar level transmitter uses the technology of impulse reflectometry. Electric impulses, generated by the equipment, spread through the probe reaching the interface level and reflect back to the circuitry which then calculates the medium level between the impulses sent and the impulses reflected.

Transmitter converts calculated distance to analog output signal 4. . .20 mA, also, gives a discrete signal about reaching the signalization level.

Guided radar level transmitter is the best choice when for highly reliable level measurement and a great alternative for the traditional measuring principles such as ultrasonic, capacitive, conductive, displacer, float and hydrostatic.

The transmitter stably operates in almost all liquids and solids regardless of the changes in the measured medium parameters, such as density, conductivity, temperature, and pressure. Adverse conditions, such as turbulence or vapor, do not affect the accuracy or reliability of the transmitter.

The device is applicable in all types of processes and has stable characteristics in media with low dielectric constant, such as oils and hydrocarbons.

Guided radar level transmitter has few limitations in mounting — it can be mounted in small tanks, tall and narrow nozzles. Complex construction or presence of protrusions inside the vessel in close proximity to the transmitter do not affect the accuracy or reliability of the transmitter. But, depending on the structure and quantity of the vapor, indirect echoes and signal absorption are possible. Guided radar level transmitter RIZUR-1300 is certified in accordance with TR CU 012/2011 and can be used in explosion hazardous zones.

| | |
|---|---|
| Body material | aluminum alloy / stainless steel |
| Output signal | 4-20mA, analog, 4-wire system / digital output open collector PNP |
| Accuracy | 0,03% of the measured value, but no more than 3 mm |
| Repaeatability | < 2 m |
| Response time | 0,5 sec |
| Supply voltage | 24 V |
| Current consumption | < 50 мА when 24 V |
| Ingress protection | IP 65/ IP67 / IP68 |
| Explosion protection type | 1Ex db IIC T6 Gb X / no explosion protection |

RIZUR-1300 has three different probe types: single rod, wire rope, and coaxial probe. The single rod probe is recommended for installations in liquids, bypass chambers, and stilling wells, which together with the rod probe operate as a big coaxial probe. The wire rope probe is recommended for both solid and liquid media, including those in tall tanks and places with limited space for installation. The coaxial probe is not susceptible to any external conditions and objects outside its tube which would otherwise cause disturbances in the signal. This construction makes the coaxial probe the ideal solution for reliable measurement under almost any operational conditions. An extended temperature option, -195°C to +250°C, is available on request for the single rod and coaxial probe. For chemically aggressive and corrosive media there's also a single rod probe made of chemically resistant materials.

| | Rod probe | Wire rope probe | Coaxial probe |
|---|---|---|---|
| Probe material | stainless steel AISI 321 | stainless steel AISI 321 | stainless steel AISI 321 |
| Probe length | 500... 3 000 mm | 2 500... 30 000 mm | 500... 6 000 mm |
| Top inactive area | ≥200 mm | ≥200mm | ≥200 mm |
| Bottom inactive area | ≥80 mm | ≥150 mm | ≥80 mm |
| Max probe load | 6 Nm (lateral loas) | 5 kN (tensile load) | 100 Nm (lateral loas) |
| Probe diameter | 8 mm | 4 m; counterweight 22 mm | 40 m |
| Ambient temperature | −40... +80 °C<br>−60... +85 °C(with soft and rigid enclosures) | −40... +80 °C<br>−60... +85 °C(with soft and rigid enclosures) | −40... +80 °C<br>−60... +85 °C (with soft and rigid enclosures) |
| Controlled media temperature | −40... +130 °C<br>(до +250 °C on request) | −40... +130 °C<br>(до +250 °C on request) | −40... +130 °C<br>(до +250 °C on request) |
| Controlled media pressure | -0,1...10 Mpa | -0,1...10 Mpa | -0,1...10 Mpa |

# Non-contact radar level transmitter RIZUR-2030

Non-contact radar level RIZUR-2030 is designed for measuring and indicating different types of liquids and solids. RIZUR-2030 is used in open, close tanks, including the ones that are under pressure at industrial facilities of chemical, petrochemical, pharmaceutical, food and other industries. RIZUR-2030 can be used in explosion hazardous zones where the formation of explosive mixtures of gases and vapors with air is possible.

Level transmitter RIZUR-2030 doesn't contact with controlled media, that's why can be used in a polluted media, as well as with media that require special sanitary conditions.

Changes in the parameters of the measured medium, such as density, electrical conductivity, temperature, pressure, viscosity doesn't affect on the work of device.

| | |
|---|---|
| Body material | aluminum alloy / stainless steel |
| Amplifier material | stainless steel |
| Max measurement range | 30 m |
| Top not measured level | 0,5 m |
| Operation process temperature | -60... +150 °C / -60... +250 °C |
| Operation pressure | 1 MPa / 4 MPa |
| Explosion protection | 0Ex ia IIC T6... T5 Ga X / 1Ex db IIC T6... T5 Gb X / no explosion protection |
| Output signal | 4-20 mA |
| Operating supply voltage | 24 V |
| Switch on time, not more than | 25 sec |
| Average operating time | 12 years |

# Non-contact ultrasonic level transmitter RIZUR-2090

Non-contact ultrasonic level transmitter RIZUR-2090 is designed for measuring and indicating different types of liquids and solids. RIZUR-2090 is used in open, close tanks, including the ones that are under pressure at industrial facilities of chemical, petrochemical, pharmaceutical, food and other industries.

RIZUR-2090 can be used in explosion hazardous zones where the formation of explosive mixtures of gases and vapors with air is possible.

Level transmitter RIZUR-2090 doesn't contact with controlled media, that's why can be used in a polluted media, as well as with media that require special sanitary conditions. Changes in the parameters of the measured medium, such as density, electrical conductivity, temperature, pressure, viscosity doesn't affect on the work of device.

| | | | |
|---|---|---|---|
| Pinger dimensions | Ø44x100 mm | Ø62x100 mm | Ø90x100 mm |
| Measurement range, not more than | 4 m | 8 m | 12 m |
| Body material | aluminum alloy | | |
| Pinger material | Polyamide 66 glass-filled | | |
| Operation process temperature | -40... +70 °C | | |
| Operation pressure | -0,02... 0,1 MPa | | |
| Output signal | 4-20 mA, current | | |
| Operating supply voltage | 24 V | | |
| Insulating resistance | min 20 MOhm | | |
| Switch on time, not more than | 15 sec | | |
| Current output action time | 15 sec | | |
| Overage operating time | 10 years | | |

# Explosion-proof junction boxes RIZUR-KS

Explosion-proof junction boxes (JB) RIZUR-KC are manufactured according to TS 27.12.31-001-27965004-2017 and are designed for the joint and distribution of power cables in the AC and DC circuits of the automation and telemechanic systems. Operational safety of RIZUR-KC junction boxes at the hazardous objects is confirmed by the conformity certificates EAEC RU C-RU.HB82.B.00100/22 of the Customs Union TR CU 012/2011 «Safety of equipment intended for use in explosive atmospheres». Explosion-proof junction boxes RIZUR-KC have a housing and a cover made of materials resistant to the negative impact of the environment and various chemicals, including hydrochloric acid and hydrogen sulphide vapor. RIZUR-KC sealing system has a labyrinth form and provides ingress protection IP65 and higher.

Inside the box, there're explosion-proof spring/screw/block-type terminals with either «e» or «ia» exprotection (depending on configuration). The box is equipped by cable glands for different types of cables that fix the cable and prevent the box from moisture and dust penetration. The number of cable glands and terminals, their dimensions and location are agreed upon with the manufacturer.

| | |
|---|---|
| Explosion protection marking | 1Ex eb IIC T6 Gb/Ex tb IIIC T80°C Db / 1Ex eb IIC T5 Gb/Ex tb IIIC T95°C Db / 1Ex eb IIC T4 Gb/Ex tb IIIC T130°C Db<br>1Ex db IIC T6 Gb/Ex tb IIIC T80°C Db / 1Ex db IIC T5 Gb/Ex tb IIIC T95°C Db / 1Ex db IIC T4 Gb/Ex tb IIIC T130°C Db<br>1Ex db IIB T6 Gb/Ex tb IIIC T80°C Db / 1Ex db IIB T5 Gb/Ex tb IIIC T95°C Db / 1Ex db IIB T4 Gb/Ex tb IIIC T130°C Db<br>0Ex ia IIC T6 Ga X, 1Ex ib IIC T6 Gb X / 2Ex ic IIC T6 Gc X |
| Ingress protection | IP65 / IP66 / IP67 IP68 |
| Nominal voltage | 380 V (other designs are possible upon an agreement with the manufacturer) |
| Nominal current, A (for a group of terminals) | 24 A (other designs are possible upon an agreement with the manufacturer) |
| Operating position | Any |
| Ambient temperature | -60 °C. . . .+85°C |
| Cable glands location | Upon the customer's specification (possible to supply just the housing without cable glands or terminals) |
| Housing dimensions | Depending on the design version of the junction box and the number of cable glands and terminals |

# Explosion-proof cable glands RIZUR-KVV

Cable glands RIZUR-KVV are manufactured according to TS 27.12.31-001-27965004-2017 and meets the requirements of GOST IEC 60079-1-2011, GOST 31610.7-2012/IEC 60079-7:2006, GOST 31610.11-2014 (IEC 60079-11:2011), GOST R MEK 60079-18-2012, GOST IEC 60079-31-2013, GOST 31610.0-2014 (IEC 60079-0:2011). Operational safety of RIZUR-KVV cable glands at the explosion hazardous facilities is confirmed by the conformity certificate EAEC RU C-RU.HB82.B.00100/22 of the Customs Union TR CU 012 2011 «Safety of equipment intended for use in explosive atmospheres».

RIZUR-KVV are designed for the sealing and fixation of cables with different kinds of isolation at the point of its entry into the electric and electrotechnical equipment. Cable glands RIZUR-KVV are used with all kinds of cables: electric, heating, telecommunicational, informational, etc. LLC NPO RIZUR manufacturers cable glands for both armored and non-armored cables, also in metal hose and without it. Explosion-proof cable glands RIZUR-KVV and accessories (adapters, plugs, and drain/vent valves) are manufactured from different materials: brass, nickel-plated brass, galvanized steel, stainless steel, anodized aluminum. Silicone rings of different diameters are used for the sealing. All of the goods with Exd marking have at least 5 full continuous turns of thread.

| | |
|---|---|
| Cable glands explosion protection marking | 1 Ex eb IIC Gb / Ex tb IIIC Db / 1Ex eb IIC Gb/1Ex db IIC Gb/Ex tb IIIC Db |
| Ingress protection | IP66 / IP67 / IP68 |
| Range of operating temperatures | от -60 °C до +80 °C (standard configuration)<br>от -65 °C до +110 °C (upon a customer's request) |
| Material | brass / nickel-plated brass / galvanized steel / stainless steel /<br>anodized aluminum |
| Connection thread type | M - metric (GOST 24705-2004)<br>R - taper pipe (GOST 6211-81)<br>G - cylinder pipe (GOST 6357-81)<br>NPT – inch conic (GOST 6111-52) |
| O-ring material | Silicone rubber |

# Explosion-proof and industrial luminaire RIZUR-LIGHT

Luminaries RIZUR-LIGHT are designed for lightening objects of different types. Explosion-proof LED luminaries RIZUT-LIGHT are used to illuminate premises, production workshops, open areas, including those that are located in explosion hazardous areas. The sealed housing prevents the ingress of gas, dust, vapors of flammable liquids. Luminaires are used in oil and gas, chemical, metallurgical, gas, mining, electrical power, aerospace and other industries.

RIZUR-LIGHT has a wide range of applications. Luminaries are used in: oil and gas platform, oil refineries, land drilling rig, power stations, airports, etc.; industrial and public buildings, office, residential premises, housing and communal services, warehouse complexes, workshops, workrooms, hangars, terminals, repair zones, shopping centers, transport and logistics centers, shops, entrances of apart houses, staircases, vestibules, basements and utility rooms , elevators, shopping malls garages, supermarkets, car washes, indoor and underground parking lots, transport depot premises, garages, warehouses, agricultural facilities - livestock farms and complexes, etc.; open areas: streets, courtyards, adjoining areas, gazebos, verandas; lighting of roads of all categories - highways, sidewalks, footpaths; parking lots, construction sites, parks, alleys, squares, etc.; also RIZUR-LIGHT luminaries are used for architectural illumination of buildings and structures.

Since 2014, NPO RIZUR started serial production of explosion-proof and general industrial LED luminaries RIZUR-LIGHT. Design developments are being improved. It is possible both standard production of LED luminaries for various purposes, and non-standard, based on the technical requirements of the customer.

| RIZUR-LIGHT-A | RIZUR-LIGHT-AM | RIZUR-LIGHT-DDU | RIZUR-LIGHT-KS-93 | RIZUR-LIGHT-KS-GB | RIZUR-LIGHT-F |
|---|---|---|---|---|---|
|  |  |  |  |  |  |

| | RIZUR-LIGHT-A | RIZUR-LIGHT-AM | RIZUR-LIGHT-DDU | RIZUR-LIGHT-KS-93 | RIZUR-LIGHT-KS-GB | RIZUR-LIGHT-F |
|---|---|---|---|---|---|---|
| Designation | to illuminate premises, production workshops, open areas, including those that are located in explosion hazardous areas | to illuminate industrial premises, production workshops, territories and open areas. Designed to work in explosion hazardous areas in accordance with explosion protection marking. | to illuminate warehouses and workshops, administrative and other agencies, shopping spaces, stock breeding complexes. | for using in oil and gas, chemical, metallurgical, gas, mining, electrical power and other industries, including emergency lights. | for using in oil and gas platform, oil refineries, land drilling rig, power stations, airports, etc. | used for illumination of buildings and landscapes, billboards, workshops, open and close territories, also as a LED supplementary lights. |
| Operating temperature, °C | - 60 . . . +40 | -60. . . +40 | -45 до +50 | -40...+50 | -40...+50 | −60. . . +40 |
| Explosion protection marking | 1Ex sb IIC T4. . . 6Gb | 1Ex sb IIC T4. . . 6Gb | 1Ex s IIC T5 Gb X | II Exd IIC T6 | II 2G Exd IIC T6 | general industrial areas |
| Color temperature, K | 4500-5000 | 5000 | 5000/4000 | 2700-6500 | 2700-6500 | 5000 |
| Body material | unit-cast aluminum | unit-cast aluminum | extruded aluminum section | unit-cast aluminum | unit-cast aluminum | unit-cast aluminum |
| Current capacity, not more than, W | 22/28 | 25/30/32/35/50/60/65/70 | 18/35/42/54/108 162/216 | 30/40/50/60/80/100/120/150 | 10/30/40/60/80/100/120/150/200 | 20/25/35 |

# Threaded and twist lock fittings for instrument pipe RizurLok

Fittings are connecting elements for pipes and equipment of different types. Fittings connect parts of pipes, redirect, divide the flow of the working medium, close the system, serve as adapters between elements with different diameters or made from different materials.

With the help of twist lock fittings, channels of various diameters, angular rotations, branches of pipelines of various purposes are joined. It is easy to attach fittings on one side and have various alignment options on the other side by gland nut. Squeezing is carried out under pressure, the result of what is strong connections.

The use of these fittings makes it possible to quickly dismantle the system, carry out repair and maintenance work.

When choosing tube twist lock fittings, the outer diameter of the pipe, nominal size, temperature and pressure of the operating medium should be taken into account.

Threaded fittings for instrument pipe RizurLok are supplied with different thread type needed to customer: M – metric (GOST 24705-2004), R – taper pipe (GOST 6211-81), G – cylinder type (GOST6357-81), BSSP – British standard pipe parallel thread, BSPT – British standard taper pipe thread. Fittings RizurLok are made from stainless steel 316, stainless steel 316L, stainless steel 321, brass, titanium alloy, Hastelloy and many other materials on customer's request. LLC NPO RIZUR production resources are able to produce twist lock and threaded fittings of different configuration within a short time. Among the main types of fittings, that RIZUR company produces, the most popular one are unions, nozzles, nipples, elbows, tees, crosses, adapters. Also, accessories for twist lock fittings: screws, front ring, seals, tube plugs.

| Unions RizurLok | Nozzles RizurLok | Nipples RizurLok | Elbows RizurLok | Tees RizurLok | Crosses RizurLok | Adapters RizurLok | Accessories RizurLok |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |

# Valve device assembly and valves RizurLok

Correct operation of pressure sensor is one of the main moments in technological process. The high-quality functioning of a particular system directly depends on reliable components. To connect devices to impulse lines, NPO RIZUR offers valve manifolds. They are used in systems of automatic regulation, control and monitoring of technological processes.

Using valve manifolds, the sensors and impulse lines are drained, the EC&I is connected. The options for their configuration are structurally different. Depending on handling problem, valves of different types are used. One-, two-, three-, five-valve valve manifolds of the RizurLok-BKN and RizurLok-2BM models are used in technological processes to connect to measuring lines in automatic regulation, monitoring and control systems of the following pressure sensors: expansion pressure, pressure surge sensor, absolute pressure gauge, vacuum gauge pressure. In addition, valve blocks of the RizurLok-BKN and RizurLok-2BM series are used for draining impulse lines, as well as for connecting EC&I.

These valve manifolds can be operated in contact with gas oxygen after special cleaning of the details, in that case the models are identified with the code "K". To ensure the reduction and smoothing of the pulsations of the operating medium, as well as to protect the devices from pneumatic and hydraulic shocks, a dampener is used to damp pressure pulsations. The dampener is used to measure the pressure of gas and liquid media. The needle valve is designed to smoothly measure the cross-section with a decrease and increase in the supply volume of the operating medium and ensure the tightness of the device. Pressure relief valves are used to reduce the inlet pressure to the required outlet and maintain that pressure permanently.

Multiport valves ensure flexible mounting of pressure transducers with no need for additional ports. Multiport valves are used in media with hydrogen sulfide in accordance with NACE MR0175. The compact design of the multiport valves requires minimal installation and operation space and also provides cost savings in terms of declining number of components and potential leak points. Distributive valves are designed for the target allocation of the flow of the operating medium in several pipelines. Nipples, located in the valve body carry out the flow direction. The check valve is designed to protect equipment, pipelines, pumps, pressure vessels that are under pressure, from media flow direction changing in the process system, as well as to limit the flow in case of partial destruction of the pipeline section. The drain valve is designed to drain the liquid and protect the pipeline systems from freezing. Dual relief valves are designed for mounting on pressure gauges, transmitters and alarms. The check valve poppet is used to prevent backflow of the medium in the pipeline. LLC NPO RIZUR manufactures and supplies valve manifolds and valves of any required types and configurations.

# Relocatable building of container and demountable types RIZUR

LLC NPO RIZUR manufacturers commercial mobile buildings (relocatable buildings, blockboxes, container units, mobile units) for oil and gas industry.

Mobile buildings RIZUR are designed for installation of engineering and technological equipment in them, as well as for organizing staff housing solution and conducting control and management activities.

For use on its own production, RIZUR company has developed a modulated structural system RIZUR based on a fitting cubic FK-190 RIZUR, linear elements with flanges, plate-by-plate wall panels SPPS RIZUR, cassette type heat- insulated panels RIZUR. Structures, elements, parts and their connections are unified for use in all types of mobile buildings manufactured by RIZUR.

Field joints and connections, details of fastening elements of inside engineering systems, furniture and equipment are quick-detachable and ensure the possibility of multiple installation and dismounting during buildings projected service life.

Constructive system allows to erect objects of rectangular, triangular, arched form.

Using modulated structural system RIZUR, mobile buildings are conditionally scaled from the size of a container to two-storey buildings up to 24 m long, up to 12 m wide and up to 10.8 m high. If it is necessary to expand the dimensions and capacity of the mobile building, unified structures are connected with reference to the existing working documentation.

For the installation of mobile buildings RIZUR on land plots, a building permit is not required, since these facilities are not permanent structures. When assembling and disassembling objects, a minimum of material-handling equipment is used. Any detail weighs no more than 55 kg. Mobile buildings RIZUR have high indicators in terms of strength, fire and industrial safety, vandal resistance, frost resistance, as well as high load bearing capacity of floors and coverings. The service life of mobile buildings RIZUR is at least 50 years. When designing and constructing mobile buildings, RIZUR company applies the principle of transition from complexity (large) to simplicity (small).

RIZUR company also produces:

sea containers for placing technological equipment, with the possibility of their joint use with standardized objects generally accepted throughout the world (in accordance with the overall and rigging requirements);

mobile units for their installation on the carriage frame. For the design of foundations for buildings, a construction task is drawn up (diagrams of points of support for foundations, loads, type of fastening to foundations, etc.). When relocating mobile buildings, foundation structures (road slabs, blocks, barrel) are taken out and moved along with the mobile building.

LLC NPO RIZUR manufactures mobile buildngs for various purposes and structural complexity: from inventory containers units BK-I RIZUR to prefabricated two-storey relocatable buildings MZ-SR RIZUR of large dimensions.

| Relocatable building model | Designation |
|---|---|
| Demountable relocatable building MZ-SR RIZUR | Automobile repair shop, works, garages, buildings; shopping facilities; village first aid station, offices, personal service facilities with high demands for the building strength class, fire and industrial safety of seismic stability. |
| Universal container unit BKU RIZUR | Placement of technological installations of devices, units with the help of which the complete or partial transformation of raw materials into products with high demands for the building strength class, fire and industrial safety, vandal resistance, frost resistance, seismic resistance, explosion resistance, stability, vibration resistance Placement of means of control and regulation of technological processes. |
| All-welded container unit BK-C RIZUR | Placement of diesel power plants of refrigeration equipment; equipment for power supply, water supply, gas supply, fire protection with high demands for the building strength class, fire and industrial safety, vandal resistance, vibration resistance. |
| Unified mobile unit VD-U RIZUR | Organization of conditions for temporary residence of people with multiple geographic movements. |
| Inventory container unit BK-I RIZUR | Temporary (seasonal) purpose, auxiliary use for people living or storage of material values during the construction of objects. |
| Sandqwich panel container unit BK-SP RIZUR | Placement of technological installations of devices, units, with the help of which the complete or partial transformation of raw materials into products is carried out. Placement of means of control and regulation of technological processes. |
| Pre-fabricated building from light guard group BZ-L RIZUR | Organization of storage of raw materials, materials, goods and end products. |

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