

# BBT-DDT

## Pressure and temperature sensors with self-contained power supply

Monitoring of operating parameters at gas facilities, hydraulic and pneumatic systems, water treatment and heat supply systems, boiler automation, water utility automation and heating points where increased accuracy of pressure measurement is required.



is a measuring tool



Universal OPC UA server for integration  
into SCADA systems



### Autonomy options

**Battery life up to 5 years** (depending on the frequency of measurements and data transfer)

**The guaranteed number of data transfer sessions** to the information collection server is **5,000, 7,500, 10,000**

Possibility of **charging the internal battery** by the service department

### Main characteristics

Data transfer to the collection server using **GPRS/NB-IoT** technology

**Measurement of absolute pressure** of media neutral to stainless steel AISI 316L (AISI 304S) (gases, steam, water, slightly aggressive liquids)

Permissible **overload 1.5 Rmax**

**Degree of protection** of the case - **IP66**

**Controlled parameters:**

- pressure, measuring accuracy 1% (optional  $\pm 0.05\%$ )
- temperature, measurement accuracy  $\pm 1^\circ\text{C}$  (optional  $\pm 0.1^\circ\text{C}$ )



## Monitoring of parameters of resource supply networks

### Online monitoring and alarm notifications

The sensor will reliably inform you about the **state of pressure and temperature** in the resource supply networks.

The measured data, according to a given schedule, are automatically transmitted via a **GSM communication channel** to a secure collection server.

The device receives from the server the setpoint values (**pressure and temperature ranges**), when they are exceeded, the dispatcher receives an interactive message and must take actions in accordance with the regulations.

The system keeps a **record of all events** and actions taken.

### Easy installation and use of the sensor

Structurally, the device is made in a single housing, in which the sensitive element and the electronic conversion unit are located.

Installation of the device is carried out **similarly to the installation of a conventional pressure gauge**.

Thanks to its compact and robust design, as well as the **explosion-proof body** (EX device version), the sensor can be used in difficult and hazardous environments.

#### Additional options:

For an **extraordinary communication session**, the BBT-DDT can be additionally equipped with:

- magnetic sensor
- explosion-proof limit switch



#### Measuring ranges:

- Overpressure ranges:  
0 - 5 кPa  
0 - 40 кPa
- Absolute pressure ranges:  
0 - 160 кPa  
0 - 400 кPa  
0 - 600 кPa  
0 - 1.0 MPa  
0 - 1.6 MPa  
0 - 2.5 MPa  
0 - 4.0 MPa
- Temperature range:  
-40 °C...+ 85 °C





## Extensive customization options and convenient data analysis

### Customizable device settings

The dispatcher configures for each device the **frequency of measurements, the schedule for transferring data to the server, and the boundary values** for out-of-order data transfer.

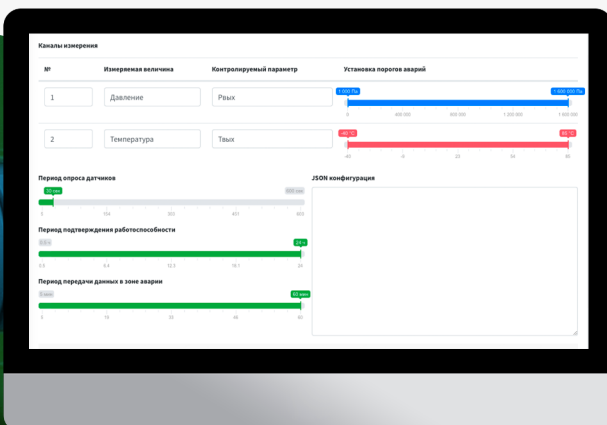
For each channel, you can set the minimum and maximum alarm threshold.

### Secure server for data collection and processing

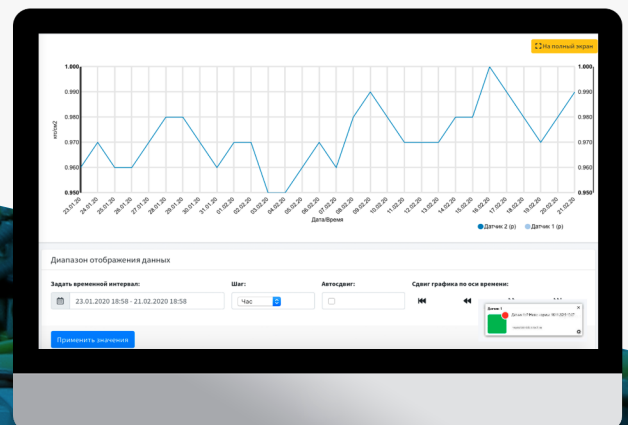
The data collection and processing server is implemented on the basis of the **Unix/Linux platform**, certified according to the security requirements for operating systems.

Server software is provided free of charge for the entire period of operation of the devices.

There is no need to purchase additional licenses.



Device Settings Screen



View Graphs and Notifications

 open source



PostgrePro

## Universal OPC UA server and SCADA client

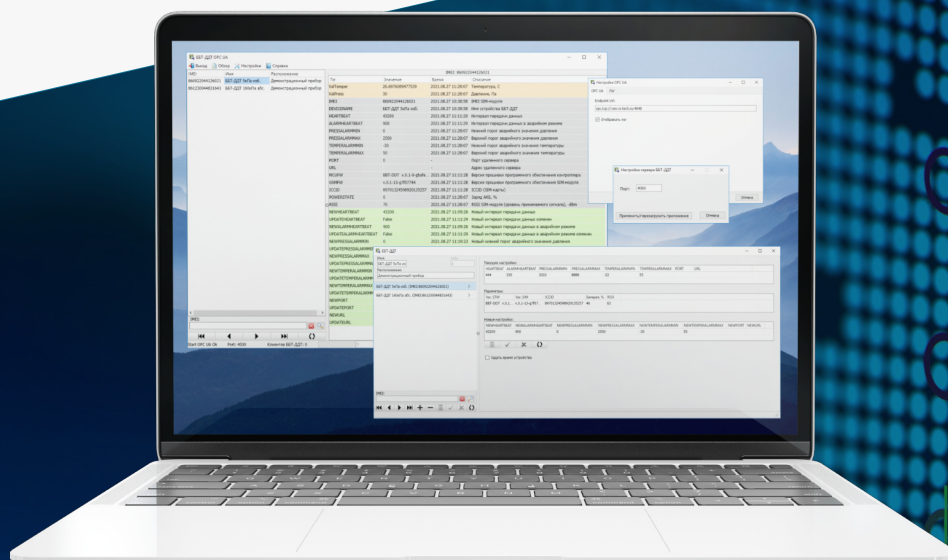
Our customers have the opportunity to receive data through a **cross-platform OPC UA server** using a SCADA client.

The developed universal OPC UA server supports the entire line of manufactured self-powered pressure and temperature sensors BBT-DDT.

OPC UA (Unified Architecture) is a modern standard that describes data transmission in industrial networks. It provides **secure and reliable communication** between devices, while being hardware- and platform-independent, which allows data exchange between devices with different operating systems.

Data exchange occurs through binary structures and XML documents. In addition to the client/server model, a publisher/subscriber model is also available. In addition, the standard defines a **mechanism to support redundancy** (if one client becomes unavailable, another one will replace it) and quickly restore communication in the event of a failure.

Data transfer occurs via the transport protocol TCP, HTTP/SOAP or HTTPS. Instead of access control mechanisms, OPC UA implements **support for digital certificates** and the ability to encrypt transmitted data.



 **OPC UA**

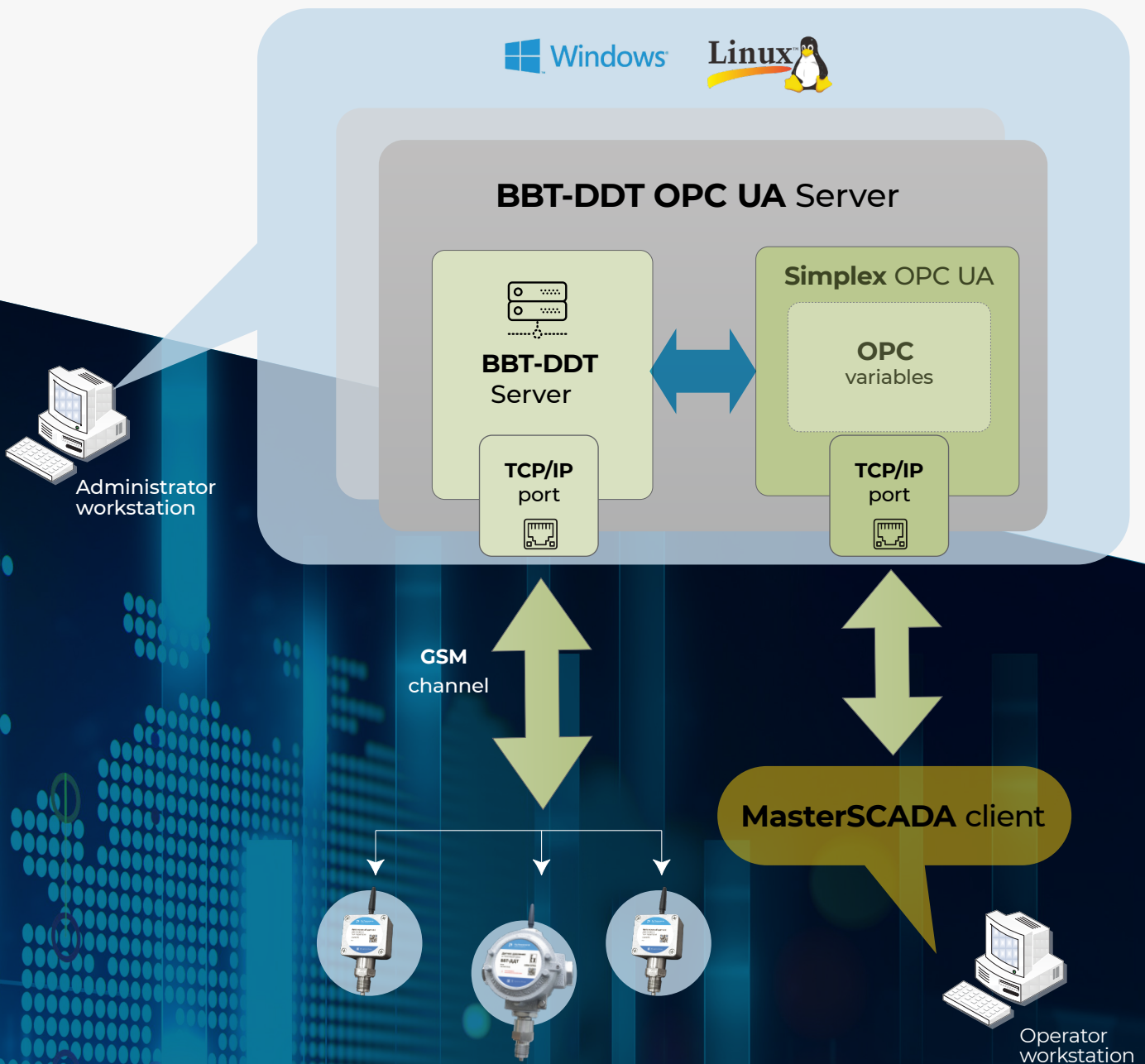




Pressure and temperature sensors with self-powered BBT-DDT, according to a given schedule, transmit measured pressure and temperature values to the server via **GPRS/NB-IoT** channel.

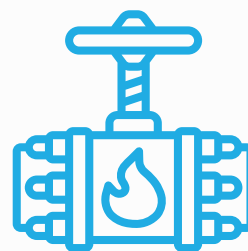
The block diagram of the operation of the OPC UA server components, as well as interaction with external devices and SCADA clients, is presented below:

Using the SCADA client through the OPC UA server, the system operator **manages the adjustable parameters** (alarm thresholds, polling period, operability confirmation period, period of data transmission in the accident zone) of BBT-DDT self-powered pressure and temperature sensors.



## Gas transportation system

Application of self-powered pressure and temperature sensors BBT-DDT in gas supply systems



Pressure and temperature control

- Pressure control at any point in the gas transportation system
- Monitoring the gas temperature in the gas supply system
- Forecasting the situation with pressure / flow throughout the gas supply chain (especially relevant for low gas pressure)



Equipment operation control

- Control of the work of GDS



Tightness control

- Checking the tightness of GDS sections



Intervention control and loss reduction

- Control of interventions (illegal tie-ins)



Accident prevention

- Control over the set pressure / temperature values and prevention of emergency situations





## Storage and sale of liquefied gas

Application of self-powered pressure and temperature sensors  
BBT-DDT in LNG storage systems



Pressure and temperature control

- Pressure control in reservoirs, containers, cisterns, gas holders
- Monitoring the operation of LPG reducers
- Forecasting and timely supply of liquefied gas to autonomous gasification facilities



Tightness control

- Checking the tightness of tanks, containers, cisterns, gas holders



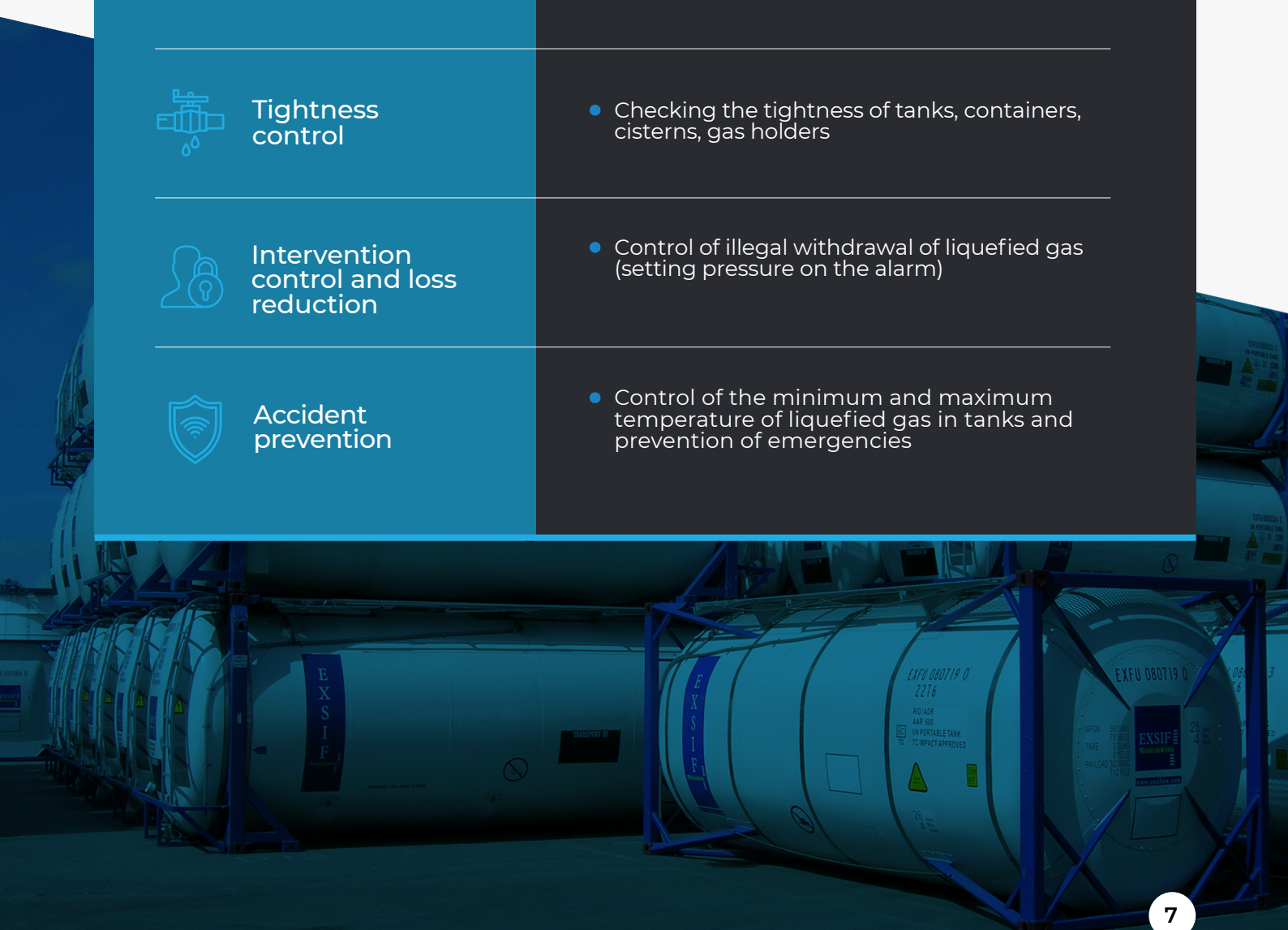
Intervention control and loss reduction

- Control of illegal withdrawal of liquefied gas (setting pressure on the alarm)



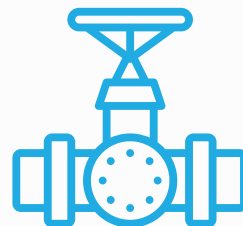
Accident prevention

- Control of the minimum and maximum temperature of liquefied gas in tanks and prevention of emergencies



## Water supply

Application of autonomous pressure and temperature sensors BBT-DDT in water supply systems



### Pressure and temperature control

- Pressure control in central manifolds
- Setting up and adjusting pumping stations
- Hydraulic calculation of the water supply system, control of water hammer and accidents



### Equipment operation control

- Monitoring water temperature in water pipelines, monitoring insulation at low temperatures



### Tightness control

- Monitoring the tightness of sections of collectors and pipes



### Intervention control and loss reduction

- Control of interventions (illegal tapings)



### Accident prevention

- Control and prevention of emergency situations





## Generation and supply of coolant

Application of autonomous pressure and temperature sensors BBT-DDT in heat supply systems



Pressure and temperature control

- Monitoring coolant pressure (water, steam) in the heating system
- Coolant temperature control
- Calculation of thermal power through supply and return channels



Monitoring equipment operation

- Search for heat losses and leaks



Control interventions and reduce losses

- Control of interventions (illegal tappings)



Accident Prevention

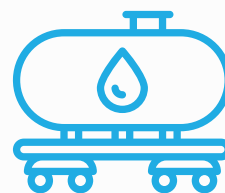
- Monitoring and prevention of emergency situations (maximum and minimum pressure, maximum and minimum coolant temperature)



- Temperature range:  
-40 °C...+ 135 °C  
(Optional)

## Transportation and processing of petroleum products

Application of pressure and  
temperature sensors with autonomous  
power supply BBT-DDT in the oil  
and gas industry



**Pressure and  
temperature  
control**

- Pressure control in tanks, containers, tanks, columns
- Temperature control in tanks, containers, tanks, columns
- Monitoring the operation of equipment during extraction, production and pumping of petroleum products



**Equipment  
operation control**

- Optimization of fuel temperature at gas stations (in fuel reheating systems)



**Tightness  
control**

- Control of fuel level during storage through pressure at the lowest point of the tank (container)



**Intervention  
control and loss  
reduction**

- Monitoring leaks in oil pipelines



**Accident  
prevention**

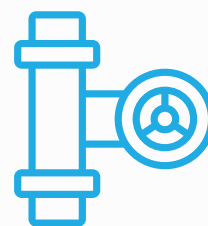
- Control and prevention of emergency situations





## Drains and water disposal

Application of pressure and temperature  
sensors with autonomous power supply  
BBT-DDT in wastewater systems



Pressure and  
temperature  
control

- Pressure monitoring in wastewater collectors
- Temperature control in sewers (freezing)



Equipment  
operation control

- Forecasting and analysis of problem areas of wastewater systems, identification of sewer contamination



Accident  
prevention

- Control and prevention of emergency situations



# All-in-one standalone control solution



For **gas distribution** networks\*

\* Ex version for explosive atmospheres



For **LNG storage** systems



For **water supply** networks



For **heating** networks



Transportation of **petroleum products**



Effluent and **wastewater**





Other **technological processes\***

\* Maximum measurement accuracy


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