

ODORANT INJECTION SYSTEM

Dosaodor DO200



Dosaodor DO200

Description

The Dosaodor DO200 is a Smart odorant system for natural gas, that injects odorant proportional to the flow rate of the gas in transit. The Dosaodor DO200 is completely configurable and can interface with remote monitor and control system. The system can be configured to use redundant injectors and/or emergency absorption system.

The equipment consists of an injection panel to be installed in the hazardous area and a control panel to be installed in the safe area, interconnected by electric cables.

The injection panel is made of stainless steel, without a painted finish, or screen printing as odorizing liquids are aggressive. Before any scheduled or unplanned maintenance, the system can be cleaned from odorant by performing a simple procedure that push the odorant inside the injection panel into the main odorant tank. This allows the operator to perform the maintenance in an easier and safer way.

The system ensures the dosing rate while keeping the desired odorant concentration level steady with over the entire flow range of the system, even when the flow is extremely variable and extremely low. This particular feature guarantees high safety within the sphere of the natural gas distribution for public use. In fact, by maintaining a constant level of odorant concentration not matter what the gas flow rate, any leakage of gas can clearly be identified reducing the possibility of accidents.

In addition to this, recorded reports of the gas volumes, and the quantity of odorant emitted, allow gas grid operators the data for confirming the correct operation of the gas systems.

Benefits

- **Operational safety**
- **Extreme reliability**
- **Easier maintenance**
- **Ease of use**
- **Results certainty**



Control Panel



Injection Panel

Operation

The system does not use any dosing pumps to inject the odorant liquid in the downstream pipelines, it uses the natural gas differential pressure, which is always present between the upstream and downstream sections of a reduction and metering gas station (minimum 1 bar) and an electrically controlled panel unit certify according to the ATEX international directive.

In case 1 bar differential pressure is not present, it can be used methane or nitrogen cylinder pack to inject the odorant liquid downstream

A pressure differential level transmitter measures in real time the quantity of liquid injected into the pipe, while the control panel automatically adjust the dosing rate depending on the odorant quantity injected, measured by the level transmitter, compared to the instant natural gas flow rate (measured by a flow meter, or sent by a flow computer) ensuring great system reliability and overall accuracy.

The same differential pressure transmitter measures in real time the odorant level from the main tank, allowing an easily planning of the refill activities, without the need to install an additional level transmitter to the existing tank.

Optionally the injection panel can be equipped with two injection valves, one for high (H) and one for low (L) flow rates. The system can automatically switches between the injector valves based on the programmed data and current flow rate.

The Dosaodor DO200 system complies to UNI-CIG 9463.

In case of failure of the main injection unit, the emergency operating mode is automatically activated, which may consist of the absorption system or from a second Dosaodor DO200 system (Master Slave system).

Absorption System

The absorption type backup system is constituted by a pneumatic valve actuated by a solenoid valve, both installed on the piping spool between the odorant tank and the main gas line, downstream the ΔP valve.

When the absorption system is activated, the pneumatic valve actuated by the solenoid valve opens ensuring gas flow through the odorant tank, due to the differential pressure created on the gas main line by a dedicated valve (butterfly or ball valve depending on the operating pressures of the reducing station).

The gas, being in contact with the surface of the odorant liquid inside the tank, gets soaked with the same liquid, going back to the main line properly odorized.

The regulation of the gas flow is performed through the needle valve installed on the tank.

The setting of the absorption system is fixed; it is therefore necessary to modify it in case of a change in the operating conditions.

The absorption system tank is also used as service tank for the main injection system, ensuring, during normal functioning, the feeding of liquid to the injection panel.



Compact Solutions on Skid

Dosaodor DO200

The following accessories are installed on the tank:

- Level indicator
- Inlet needle valve
- Outlet valve
- Odorant loading valve
- Tank pressure gauge
- Liquid feeding assembly to the injection panel
- Collection basin

Double Injection System

As emergency system, instead of the absorption system, a second Dosaodor DO200 (Master / Slave system) can be foreseen.

In this configuration, instead of one injection panel, two identical ones (Master / Slave) will be installed; in case of malfunctioning of the main panel, the second one will be activated and will work in the same way.

The selection between Master or Slave system is done through a switch: Dosaodor DO200 A or Dosaodor DO200 B.

Both systems will have dedicated power feeding.



Technical Specifications

Control Panel

<ul style="list-style-type: none">• Cabinet material / Protection degree• Installation• Power Requirements• Consumption• Electromagnetic interferences• Operating temperature• Humidity• Installation site• Dimensions	Resin / IP55 Wall 24 Vdc 100-240 Vac 50/60 Hz 120 W @ 24 Vdc Compliant to 89/336/CE 0 +40 °C 10% - 90% not condensate Safe Area (not classified) 640 x 430 x 250 mm (h x l x p)
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Input signals

<ul style="list-style-type: none">• Level measurement• Instant analog flow rate from Flow Computer (or from flow meter)• Instant pulse flow rate from Flow Computer (or from flow meter)• Cylinders pressure measurement (optional)	Analog 4 – 20 mA (Exd) Analog 4 – 20 mA Pulse Analog 4 – 20 mA (Exd)
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Output signals

<ul style="list-style-type: none">• Loading solenoid valve• Low dosing solenoid valve• High dosing solenoid valve• Pressurization solenoid valve• Absorption control solenoid valve	24 Vdc (Exe) 24 Vdc (Exe) 24 Vdc (Exe) 24 Vdc (Exe) 24 Vdc (Exe)
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Communication ports

- 1 RS232 UART port (5 pin connector)
- 2 USB 2.0 ports (Type A)
- 1 Ethernet RJ45 port

Display

<ul style="list-style-type: none">• TFT LCD capacitive 7" Touchscreen• Password	Default/programmable
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Operating mode

- Automatic - Excluded

Remote communication

- Gateway 4G (optional)

Communication protocol

- MODBUS RTU/TCP

Remote management software

- Integrated web server

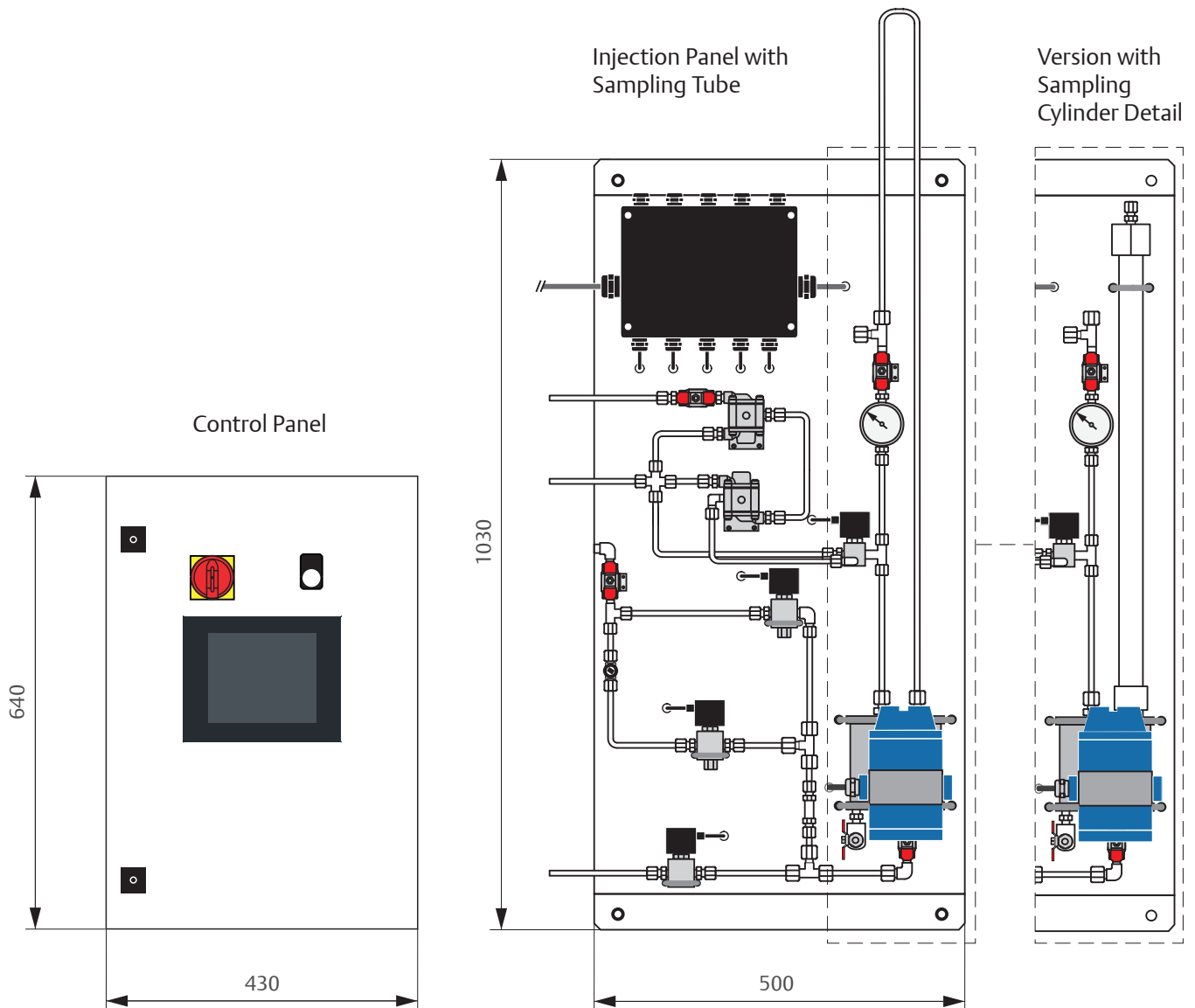
Dosaodor DO200

Technical Specifications

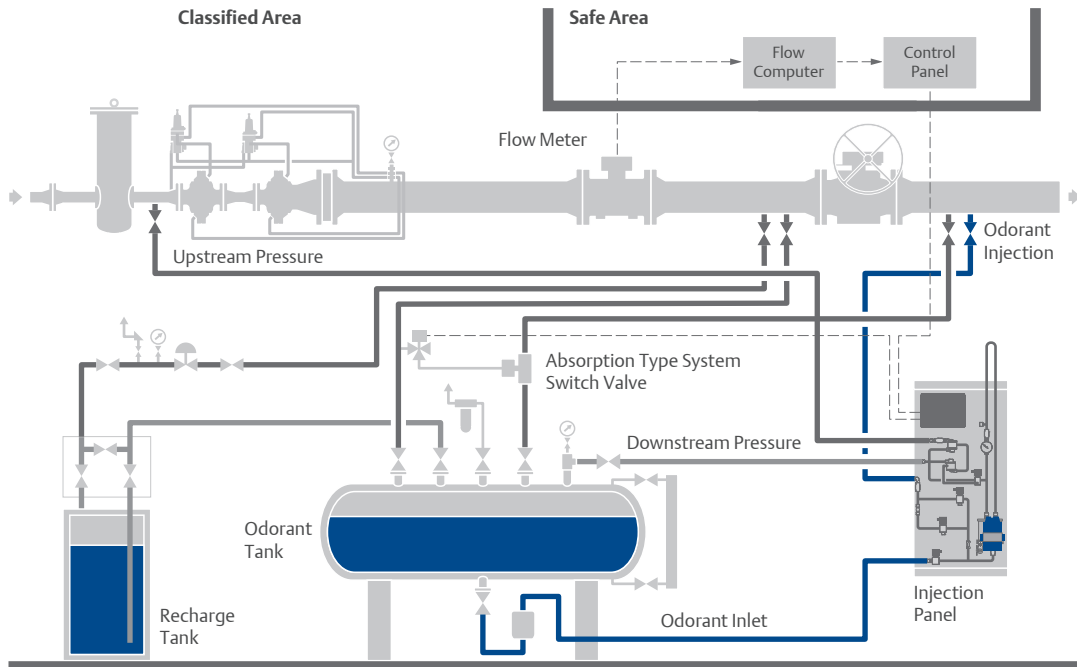
Injection Panel

- Material: Stainless Steel
- Liquid odorants: THT/Mercaptans
- Installation: Wall or floor (optional)
- Maximum feeding pressure: 100 barg
- Working Temperature: -10 +60 °C
- Dimensions: 1030 x 500 x 300 mm (h x l x p)
- Sampling cylinder: Optional, refer to Emerson offices for proper application
- Weight: 30 kg
- Classification: Atex Certification Ex e (Solenoid Valve and Junction Box), Ex D Flame proof (DP level transmitter)

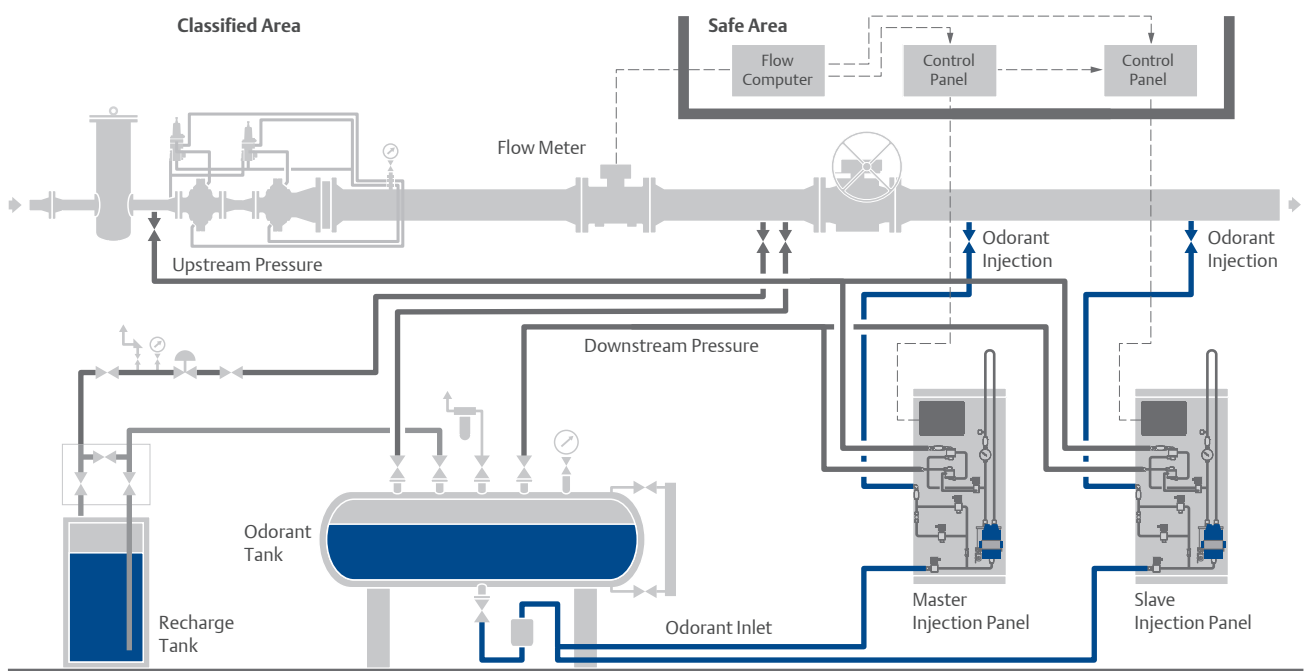
Overall Dimensions mm



Installation Schematic with Absorption Type Secondary Unit



Installation Schematic with Double Injection Master - Slave System



✉ Webadmin.Regulators@emerson.com

🔍 Tartarini-NaturalGas.com

📘 Facebook.com/EmersonAutomationSolutions

🌐 LinkedIn.com/company/emerson-automation-solutions

🐦 Twitter.com/emr_automation

Emerson Automation Solutions

Americas

McKinney, Texas 75070 USA

T +1 800 558 5853

+1 972 548 3574

Europe

Bologna 40013, Italy

T +39 051 419 0611

Asia Pacific

Singapore 128461, Singapore

T +65 6777 8211

Middle East and Africa

Dubai, United Arab Emirates

T +971 4 811 8100

Emerson Process Management s.r.l.

Emerson Automation Solutions - Stabilimento di/Site of: Castel Maggiore - Bologna

Sede Legale/Legal Entity: Piazza Meda 5, 20121 Milano, Italy

Sede Amministrativa/Administrative Headquarters: OMT Tartarini, Via Clodoveo Bonazzi 43, 40013 Castel Maggiore (Bologna), Italy

C.F. - P.I. e R.I. di MI 13186130152 - REA di MI/n.1622916

Direz. e Coord. (art. 2497 bis CC): EMERSON ELECTRIC CO. St. Louis (USA) Socio Unico

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