

# QPREX SERIES

Ex p PRESSURIZED CABINETS



# Ex p SOLUTION INTRODUCTION

## QPREX PRESSURIZED CABINETS

Over the years, TECHNOR ITALSMEA experts have gathered substantial expertise in manufacturing of complete system automation solutions for hazardous areas.

This know-how is the basis of the development of reliable and cost effective solutions, such as the QPREX series.

QPREX is a new pressurized cabinet system, suitable for zone 1, 2, 21 and 22, made by **TECHNOR ITALSMEA** using Ex p type of protection and realized in compliance with IEC/EN 60079-2 standard.



### **BENEFITS of the QPREX solution:**

#### **Non-Ex electrical equipment can operate in hazardous areas:**

Commercial electrical apparatus of all sorts can be fitted into pressurized cabinets. So QPREX pressurized cabinets can contain non-Ex certified equipment such as transformers, electronic equipment, test & measurement instruments, HMI's etc.

#### **Keeping your electronic devices in ideal working conditions:**

Thanks to the continuous flow of purging gas, QPREX pressurized cabinets prevent the buildup of heat and moisture around the fitted equipment, thus increasing their life span.

#### **Scalable solution to accommodate also large equipment:**

QPREX products are a modular solution which allows the manufacturing of customized (any dimensions) cabinets with a volume up to 10m<sup>3</sup>.

#### **Quick access for easy opening and maintenance:**

When the doors open, the system disconnects the power. When the doors are closed again, after the purging cycle, the system will re-start automatically.



# Ex p SOLUTION APPLICATIONS

FOR WHICH APPLICATIONS AN Ex p PROTECTION MODE IS RECOMMENDED

Chemical, pharmaceutical, oil & gas industries require more and more often panels for complex automation functions to be installed in hazardous (potentially explosive) areas.

The scalability, safety and low-maintenance of Ex p cabinets guarantee the ideal solution.

QPREX cabinets are available in stainless steel AISI316L (ideal for extremely corrosive atmospheres), stainless steel AISI304 or painted galvanized steel (Sendzimir type) with a 3 mm thickness.

The Ex p type of protection is divided into 3 levels of protection: pxb, pyb and pzc :

## **Ex px b**

reduce the internal volume from Zone 1 to Safe Area: so non-Ex components can be fitted inside the pressurized enclosure.

## **Ex py b**

reduce the internal volume from Zone 1 to Zone 2: only components which have been certified (at least) for Zone 2 can be fitted inside the pressurized enclosure.

## **Ex pz c**

reduce the internal volume from Zone 2 to Safe Area: so non-Ex components can be fitted inside the pressurized enclosure.

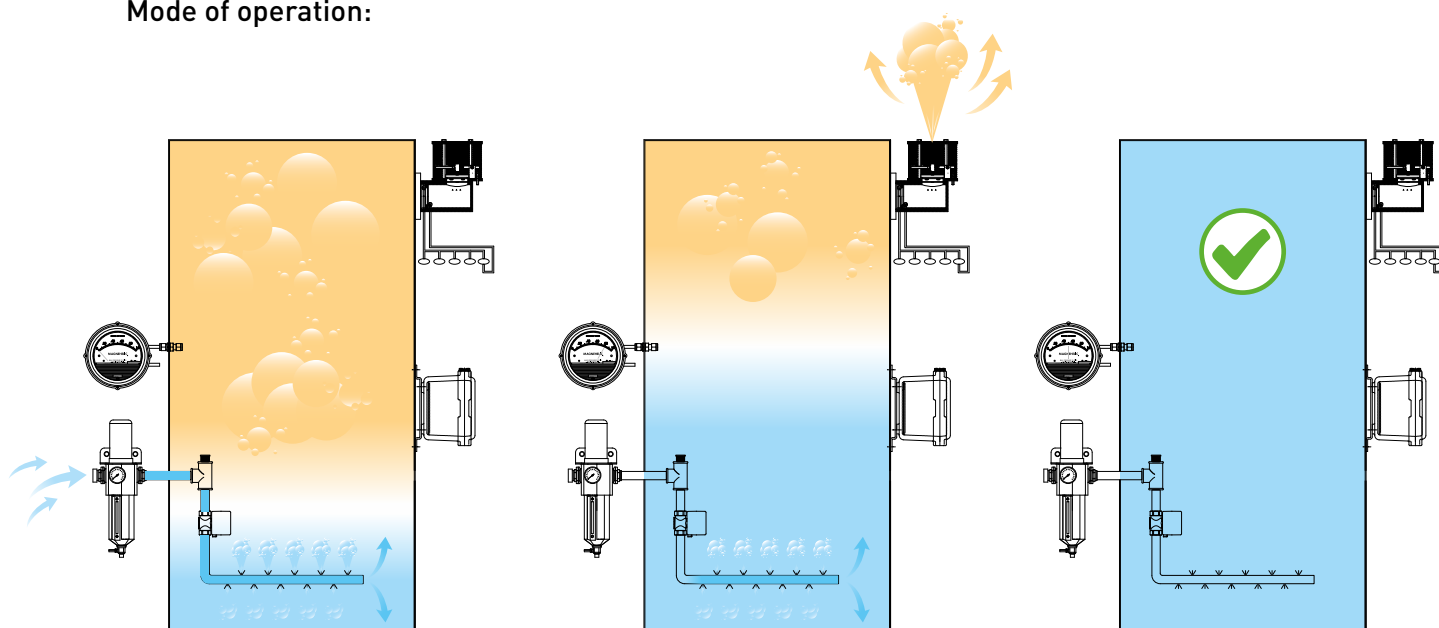
# TECHNOLOGY AND SOLUTIONS

## PRINCIPLE OF PRESSURIZATION

A level of pressure higher than atmospheric pressure is generated in a sealed enclosure containing electrical apparatus. The higher pressure inside the enclosure ensures that it is not possible for explosive gases and vapours, usually present in a hazardous area, to penetrate the enclosure from outside.

This means that a safe area is created inside the enclosure in which a non-explosive-proof electrical apparatus can be installed and operated safely. Depending on leakage amount, inner overpressure is maintained either with or without a continuous flow of a non-explosive gas such as pure air or inert gas.

### Mode of operation:



#### Pressurization phase

Pure air or inert gas is injected into the cabinet and the internal pressure in the enclosure rises.

#### Purging phase

Once the overpressure reaches the defined value, the air outlet valve opens thus purging the enclosure from potentially explosive gases.

#### Operating condition

The internal overpressure with clean air or inert gas prevents the inflow of explosive atmosphere.

### QPREX cabinet is certified to host also gas analyzers!

Thanks to the continuous purging of the cabinet, which makes hazardous and potentially explosive gases diluted and completely harmless, QPREX is certified to host also gas analyzers which may release dangerous gases after analysis.



# TWO QPREX VERSIONS

TO FIT DIFFERENT INSTALLATION ZONES

**QPREX solution is available in the following two versions :**

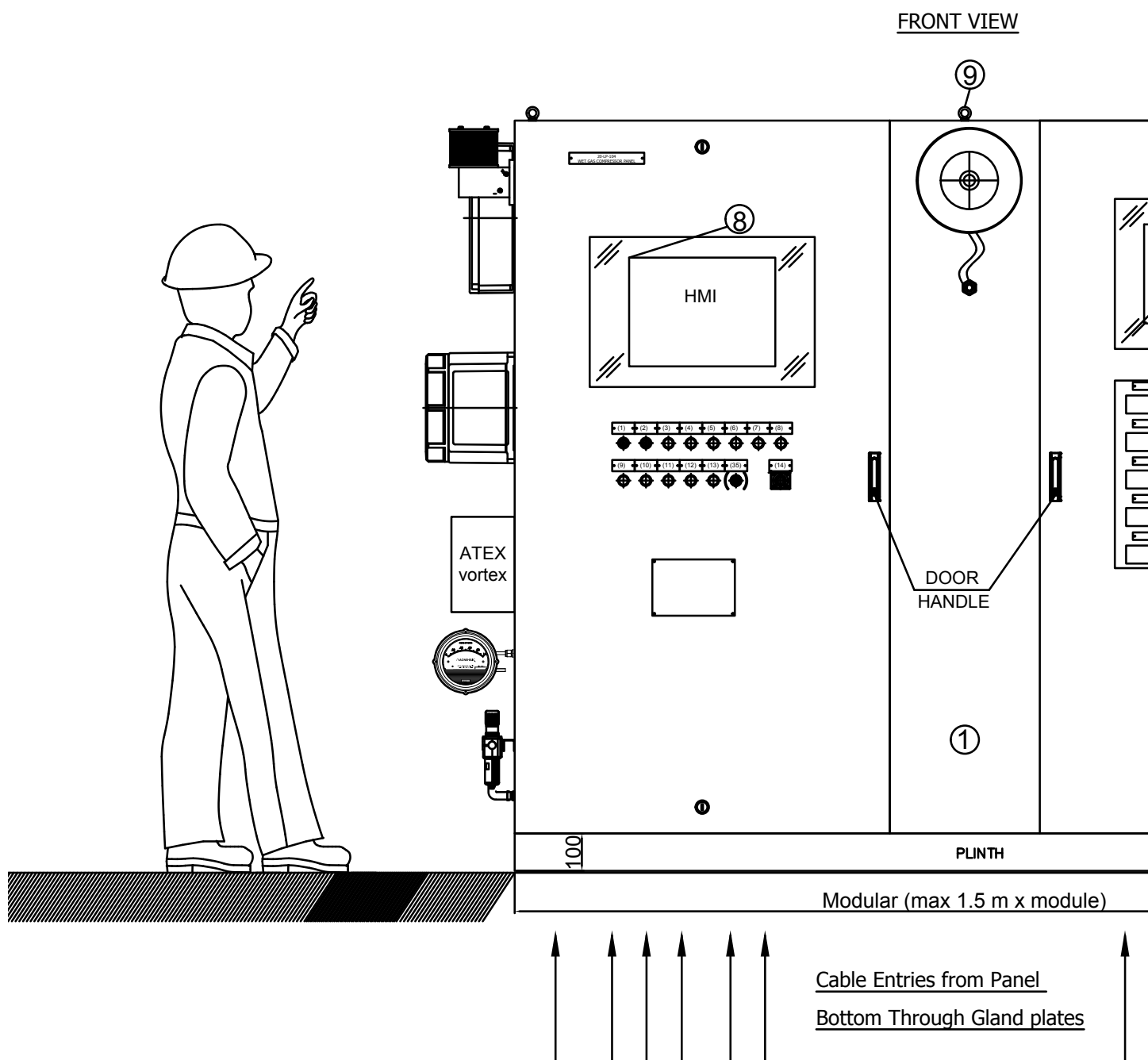
- QPREX1 suitable for installation in Zone 1-21
- QPREX2 suitable for installation in Zone 2-22

The purge/pressurization system type TEX1 & TEX2 are used to control and verify the minimum overpressure, to perform the purging of the enclosure, to control the purging and pressurization alarm and to control the power supply interlock for all the electrical apparatus installed inside the pressurized cabinet.



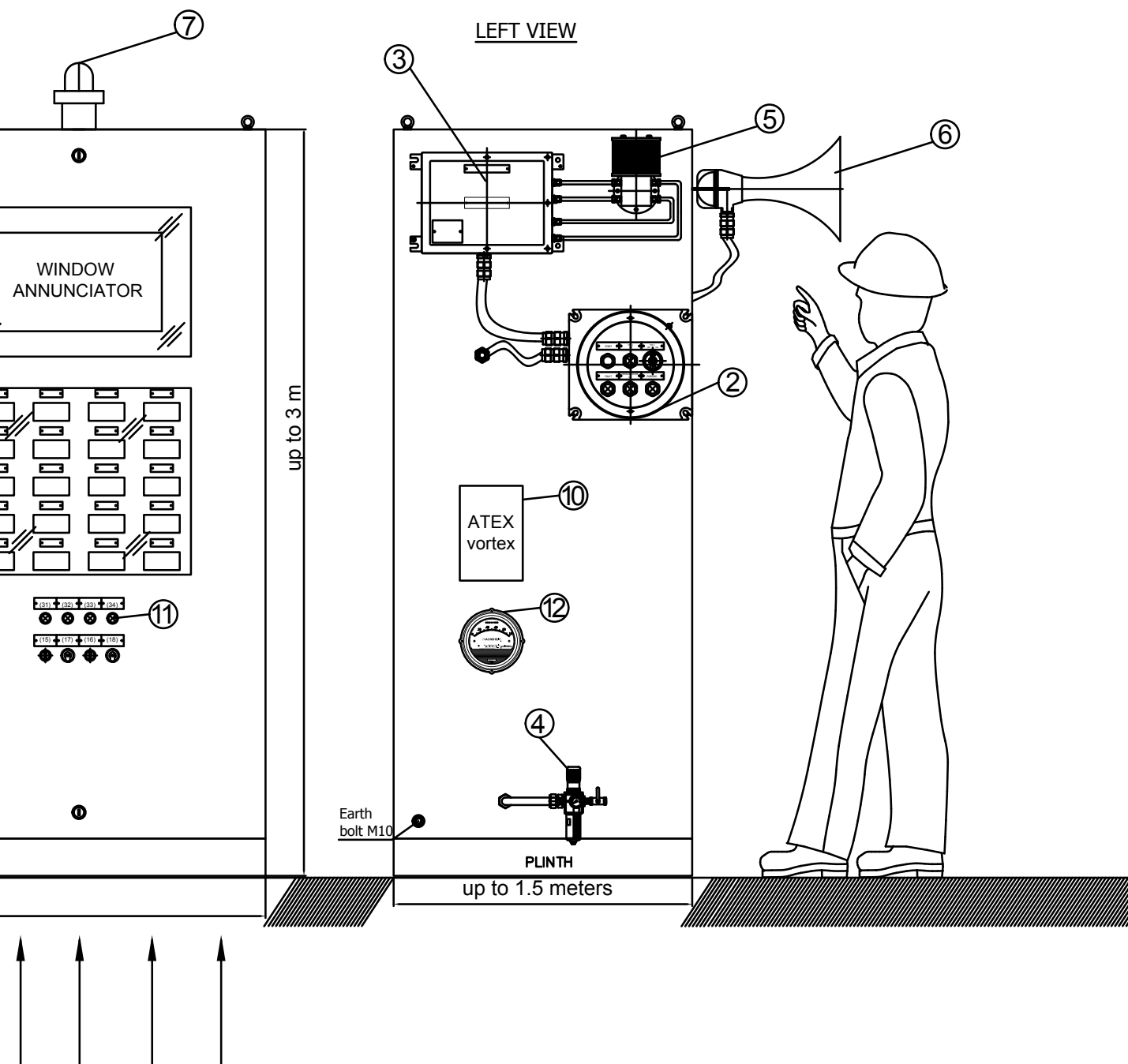
# QPREX AT A GLANCE

## OVERVIEW OF THE MAIN COMPONENTS OF QPREX SOLUTION



Note: the above image is for illustrative purpose only. QPREX solutions are always made upon customer requirements.

ITEM	DESCRIPTION	Q.TY	NOTE/MAT.
1	stainless steel AISI316L ENCLOSURE	1	QPREX
2	TEX1/TEX2 BOX (INCOMING + BARRIER BOX)	1	GUB-06/QL
3	AISI316L/GRP ENCLOSURE (PRESSURE SWITCH BOX)	1	SB/AQ-AR
4	PRESSURE CONTROL SYSTEM (AIR INLET 1/2" NPT)	1	-
5	RELIEF VALVE	1	-



ITEM	DESCRIPTION	
6	EXPLOSION PROOF WARNING SIREN	OPTIONAL ACCESSORIES
7	EXPLOSION PROOF VISUAL SIGNAL	
8	WINDOWS FOR HMI (TOUCH IN ZONE2)	
9	EYE BOLTS FOR TRANSPORTATION	
10	VORTEX + VORTEX AIR FILTER	

ITEM	DESCRIPTION	
11	KEYBOARD/JOYSTICK/OPERATORS	OPTIONAL ACCESSORIES
12	PRESSURE GAUGE	
	AIR CONDITIONER	
	HEATERS	
	GLAND PLATE FOR INCOMING CABLES	

# QPREX1

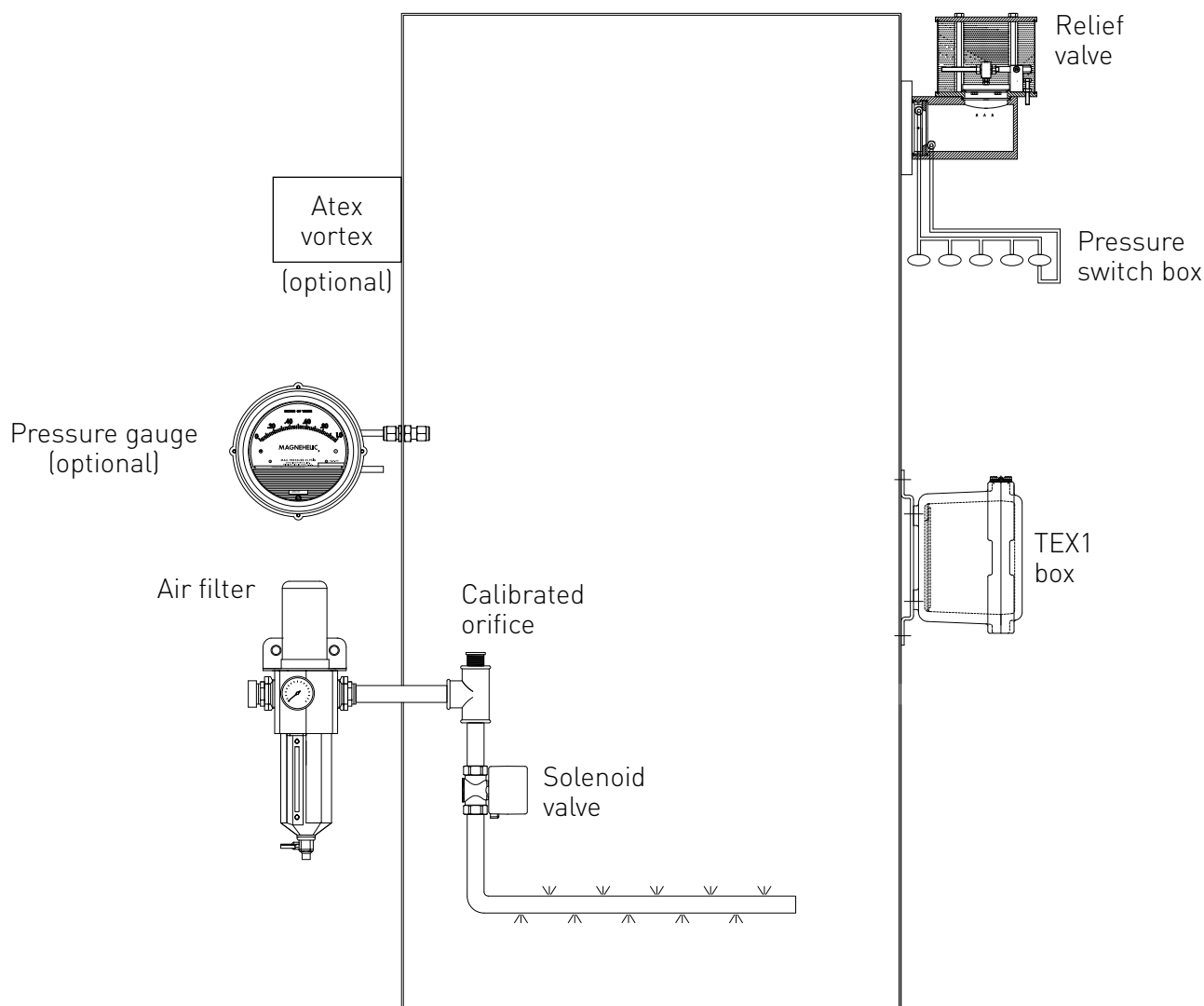
## THE SOLUTION FOR INSTALLATION IN ZONE 1-21

QPREX1 is **TECHNOR ITALSMEA** Ex p solution suitable for Zone 1-21 and has SIL 2 Safety Integrity Level.

Panel is composed by a cabinet QPREX and a pressurization system type TEX1.

### → TEX1 includes:

- Double Minimum Pressure switch, able to detect a minimum pressure inside cabinet and to transmit the signal to control logic;
- Double Differential pressure switch able to detect the difference of pressure between inside and outside the cabinet;
- Work (minimum) pressure switch;
- Junction box containing the control logic and contactors;
- Relief valve;
- Calibrated orifice;
- Solenoid valve for compressed air (normal close);
- Air filter and lubrication.





# QPREX2

## THE SOLUTION FOR INSTALLATION IN ZONE 2-22

QPREX2 is **TECHNOR ITALSMEA** Ex p solution suitable for Zone 2-22.

Panel is composed by a QPREX cabinet and a TEX2 type pressurization system.

→ **TEX2 includes:**

- Minimum Pressure switch, able to detect a minimum pressure inside the cabinet and to transmit the signal to the control logic;
- Differential pressure switch able to detect the difference of pressure between inside and outside the cabinet;
- Junction box containing the control logic and contactors;
- Relief valve;
- Calibrated orifice;
- Solenoid valve for compressed air (normal open);
- Air filter and lubrication.



# QPREX ACCESSORIES

QPREX series cabinets can be equipped with different accessories to ensure the operability of electrical equipment fitted into them, also in harsh environmental conditions.

## Vortex Cooler



Cooling Capacity:  
1500 btu/h, 2500 btu/h, 5000 btu/h

### NOTE:

Vortex for Zone 1 is certified T3  
with ambient temperature range of +10°C/+80°C

Vortex for Zone 2 is certified T4  
with ambient temperature range of -20°C/+80°C

## Atex-certified anticondensation heaters



### NOTE:

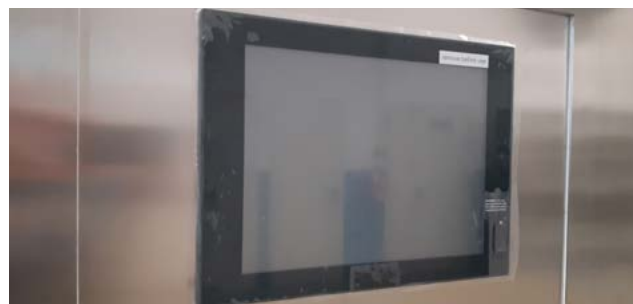
With Air Conditioner, minimum panel depth is  
800mm.

Air conditioner supply includes a drain system for  
condensation.

## Atex-certified operators for cabinet's door



## Atex-certified monitor with touchscreen



## Air conditioning system



**SAFE zone**  
(inside QPREX  
cabinet)

**ATEX zone 1**  
(outside QPREX  
cabinet)

# TECHNICAL FEATURES

## QPREX cabinet

Materials: stainless steel AISI316L, stainless steel AISI304, painted Sendzimir steel

Thickness: 3mm

Dimensions:

- Volume: from 0,6m<sup>3</sup> to 10m<sup>3</sup>
- Standard Height: 1400mm; 1700mm; 2000mm
- Standard Width: 1000mm; 1500mm; 2000mm; ...
- Standard Depth: 600mm; 800mm; 1000mm
- Standard dimension for 0,6m<sup>3</sup>:  
1000x1000x600 mm
- Others dimension: upon request

Approvals (U component certificate): ATEX, IECEx

Category: G; GD

Gas Group: IIC

Temperature class: T6; T5; T4

Ambient temperature: -50°C/+60°C

Electrical Data:

- Maximum controlled power: 1250kVA
- Maximum controlled voltage: 24kVac – 1500Vdc
- Maximum controlled current: 1000A
- Controlled Frequency: [0-1000]Hz

## With TEX1 pressurization system

Approvals: ATEX, IECEx for Zone 1-21 (SIL 2)

Category: G; GD

Gas Group: IIC, or IIB+H2; or IIB

Temperature class: T5; T4

Ambient temperature:

- 0°C/+55°C for standard version
- -20°C/+55°C for low temperature version

## With TEX2 pressurization system

Approvals: ATEX, IECEx for Zone 2-22

Category: G; GD

Gas Group: IIC, or IIB+H2, or IIB

Temperature class: T5; T4

Ambient temperature:

- -20°C/+55°C for standard version
- -40°C/+55°C for low temperature version



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