



## Restricted Breathing Enclosures

Custom designed and built enclosures for Zone 2 applications

CE 0518  II 3 G EEx nR II T6



### Restricted Breathing EEx nR Enclosure

#### ■ OVERVIEW

Restricted Breathing is a method of construction of enclosure such that the possibility of entry of a surrounding explosive gas atmosphere is reduced to a low level. This protection technique may be used in a Zone 2 classified location where explosive atmospheres are present in abnormal conditions only for short periods (typically less than 10 hours per year).

#### ■ RESTRICTED BREATHING CONCEPT

The principle of the restricted breathing concept is that the Expo Enclosure is manufactured to include a very high level of sealing. This limits the possible entry of flammable gas or vapor. The technique ensures the cumulative concentration within the enclosure does not exceed the Lower Explosive Limit for the gas or vapor concentration. This is the case even over a long period of time compared with the possible duration of the presence of gas or vapor in the external atmosphere.

#### ■ FEATURES

- Unlimited enclosure size & configuration
- 316L Stainless steel construction (Painted mild (carbon) steel optional)
- All external fasteners in stainless steel
- Access plates
- Viewing windows
- Operator interfaces: keyboards, pointing devices, pushbuttons, lamps
- Passive operation, no external electrical control system or air supply required
- ATEX Category 3 certified with your equipment installed inside.

#### ■ APPLICATION OF THE TECHNIQUE

The technique can be used to protect equipment which may spark in normal operation or which has localized high temperature components. However, the equipment installed within the enclosure must not be capable of changing the internal temperature in the enclosure by more than 10°C.

The Expo EEx nR Enclosure is appropriately sized to ensure that this cannot occur based on the electrical and operational characteristics of the installed apparatus and the thermal characteristics of the enclosure design. Tests are performed on the completed assembly to verify the conditions so that the certification may be completed.

The EEx nR enclosure design parameters have been approved by a Notified Body and meet the requirements of the harmonized European Standards EN 50014 and EN 50021.

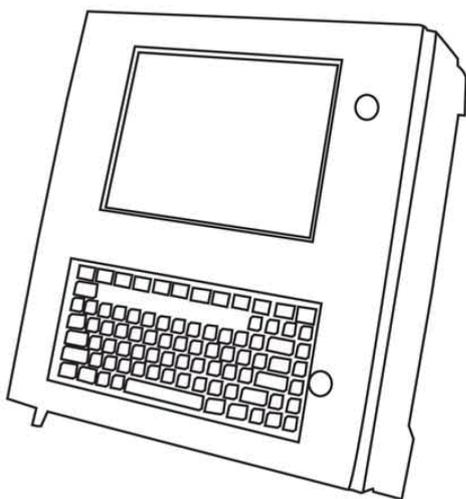
Expo designs and manufactures the enclosures to suit the equipment being housed, and can include practical features such as windows, access plates, and operating devices. In order to ensure continued high integrity of the equipment, connections are normally made through factory sealed cables or cable bushes.



ISO 9001



## Technical Specification EEx nR Restricted Breathing Enclosures



### ENCLOSURE DESIGN OPTIONS

- Access plates on any face of the enclosure
- Polycarbonate viewing windows
- Pushbuttons, lamps, indicators
- Operator keyboards, full function QWERTY or numeric input only
- Operator force mouse RS232 / PS2 compatible
- External electrical EEx e junction boxes for site connections.  
These are utilised so that the integrity of the restricted breathing enclosure is not impaired.
- Internal equipment mounting: chassis plates, mounting bosses, 19" rack mounts
- External enclosure mounting: free standing, wall lugs, plinths, lifting eyes

### TYPICAL INSTALLED APPARATUS

- Displays: CRT's, TFT's, LCD's, HMI's
- Electronic control modules, computers, PLC's
- Measurement instruments
- Cameras
- Radio / telecommunication devices

### COMMON SPECIFICATION & OPTIONS

#### Housing material & finish

Stainless Steel 316L, non-reflective orbital brush finish

#### Dimensions

Unlimited. The minimum size will be determined by the power dissipation of the equipment to be installed within the enclosure and the ability of the enclosure to maintain a maximum 10°C temperature rise.

#### Configuration

Custom designed & built to suit each individual application.

Sloping desk sections, access plates, windows, control devices, internal & external mounting methods may all be included to suit both the installed equipment and the site conditions.

#### Standards

BS EN 50021:1999 (EEx nR) Electrical apparatus for potentially explosive atmospheres -

Type of protection "n"

ATEX Directive 94/9/EC (ATEX 100A)

#### Approval

Expo Technologies offer a Restricted Breathing enclosure fitted with your apparatus that conforms to the requirements of the above referenced standards and protection techniques. The Expo Technologies enclosure will have the specific approval code:

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#### Temperature

-20 to +40°C

#### Environmental protection

Minimum IP65

#### Examples:

Height mm	450	800	1800
Width mm	450	500	1200
Depth mm	150	300	800
Maximum power W	30	75	440
Approximate weight empty kg	11.00	27.00	148.00
Typical application	Remote TFT monitor	PC workstation	Switchgear rack