

Permeation based Calibrator



Introduction

The principle of the Perm-Calibrator is permeation. Permeation (lat.: permeare = percolate, penetrate) describes the process of penetration of a substance through a solid material, driven by the force of a chemical potential gradient like a pressure or a concentration difference. Without any external influence the substance which permeates, moves always into the direction of the lower concentration. By using a tube made from any polymer like PP, PTFE, PE, filled with a liquid or gaseous substance the wall of the tube acts as the solid material, the membrane, which is penetrated. Since one can imagine this as a penetration molecule by molecule, the process is very stable, reproducible and can be controlled with an extremely high precision just by varying a small amount of parameters. This principle is used for setting up the calibrator to the usage of the customer on site.

Solution

IUT Technologies' Perm-Calibrator offers a reliable and easy to operate calibrator. The calibrator offers an excellent price and performance ratio which makes it an alternative for replacements of much more expensive calibrators. Our calibrator has solid-state electronics and just a few moving parts which lowers the maintenance time significant and thus offers a high up time. Additionally the running costs are lower compared to other calibrators. Because the calibrator doesn't need vacuum pumps and carrier gas. In order to provide an optimal solution for each application, a wider variety of permeation tubes are available.

Due to its different enclosures the calibrator can easily implemented into different locations and production processes, whether it is a 19" rack-mounted system or a NEMA 4X wall-mounted system with the option for ex-proof areas.

The Perm-Calibrator can be equipped with one (1) or two (2) ovens. The system can be set up with a dilution of two stages for the one (1) oven option and with a one (1) stage dilution for the two (2) ovens.

Specifications

Perm-Calibrator

Description Permeation based Calibrator

Option 1 Channel or 2 Channels

Operating Specification

Operating ambient Temperature 19" Housing: 15 °C - 30 °C (+59 °F - 122 °F)
NEMA 4X Housing: -40 °C - 50 °C (-40 °F - 122 °F)

Output Integrated graph. display, LAN, 1 fault relay, 1 RS 232

Maintenance Rate 1x yearly service recommended (Permeation tubes / MFC check)

Analyzer Physical Specification

Dimensions 19" Housing: 483 (W) x 198 (H) x 600 mm (D) (19 x 7.8 x 23.6 inch)
NEMA 4X Housing: 500 (W) x 500 (H) x 210 mm (D) (19.7 x 19.7 x 8.3 inch)

Weight 19" Housing: 17 kg (1 Channel) (37.5 lbs)
25 kg (2 Channels) (55.1 lbs)
NEMA 4X Housing: 25 kg (1 Channel) (55.1 lbs)
33 kg (2 Channels) (72.8 lbs)

Utility Requirements

Power supply 100 - 240 VAC; 50/60 Hz; 5-3 A

Avg. power consump. 30 W (1 Channel) 55 W (2 Channels)

Peak power consump. 100 W (1 Channel) 220 W (2 Channels)

Features

- Long-term-stability and reliability
- Solid-state electronics and few moving parts
- Low Maintenance Time - High Up Time
- No vacuum pumps and carrier gas required