



# Iceman™

## For HFCs and Refrigerants

Industrial Gas

Electronic Gas

Natural Gas

Medical & Aviation

Aerospace & Military

Glove Box

Specialty Gases

The **Iceman** is designed to address the unique requirements of moisture analysis in today's environmentally safe hydrofluorocarbons and refrigerants. These challenges include maintaining high boiling-point gases in gas phase and dealing with instability of moisture levels due to their chemical nature.

This is achieved by integrating a vaporizing valve with two automatically controlled heaters and a temperature sensing device. The design positions a heat exchanger to precondition the sample just before entering the sensor. This assures exceptional accuracy without the potential for contamination associated with collecting multiple grab-samples.

### **Iceman** Key Features Include:

- ☑ **Applications:** Refrigerant manufacturers and users, fire extinguishers, aerosol can propellants, air conditioners and heat pumps. In recent years certain refrigerants have been more widely used in semiconductor manufacture as etchants and for other specialized purposes. Refrigerants have also found a role as a heat-exchange medium in geo-thermal power generation.
- ☑ **Units of Measure:** Field selectable choices of ppmV, ppmW, °C or °F dewpoint.
- ☑ **Absolute Measurement:** Freedom from inherent drift, hence no need for external calibration.
- ☑ **Sample Conditioning:** Thermodynamic preconditioning of the sample gas for consistency and accuracy.
- ☑ **Easy to Use:** Microprocessor-driven, this instrument is user-friendly and simple to operate. Just turn the **Iceman** on, connect the sample line and, with a simple adjustment of the external vaporizing valve, set your sample flow rate.
- ☑ **Portable:** Indeed, the **Iceman**, a portable device, works equally well in the field or in the lab. Its modular design and sturdy, corrosion-resistant NEMA 4X case lets you take it almost anywhere. The **Iceman** comes equipped with an internal 24 VDC acid rechargeable battery, in addition to an external, universal power supply.
- ☑ **On-Line Verification:** Use of a simple Delta Flow procedure quickly verifies the sensor linearity and performance while in use.
- ☑ **Approvals:** CE marked.

# Iceman



## Specifications:

Detection Limit (LDL):	1 ppmV with 0.1 ppmV resolution
Operating Range:	0-1,000 ppmV
Accuracy:	±5% of reading or 0.4 ppmV, whichever is greater (requires use of supplied burette)
Inlet Pressure:	20-100 psig (1.4 – 6.9 barg)
Gas Connections:	1/8" compression
Ambient Conditions:	-20°C to +60°C (-4°F to +140°F), maximum 80% RH non-condensing
Flow Rate:	1.1 slpm total (100 sccm sample + 1,000 slpm bypass)
Display Options (Units)	ppmV, ppmW, °C or °F dewpoint, field selectable
Signal Output:	0-1 VDC (standard) RS-232 isolated (optional)
Alarms:	Two (2) user-adjustable moisture levels
Electrical:	Internal: 24 VDC lead-acid rechargeable battery with 2.6 AH capacity External: Optional 24 VDC power supply with universal input (unit is operable while charging)
User Interface/Display:	1-line, 16-character alphanumeric LCD, 3/8" high
Weight:	19 lbs. (8.6 kg)
Dimensions (H x W x D):	11.5" H x 10.61" W x 6.25" D (29.2 cm H x 26.9 cm W x 15.87 cm D)
Wetted Parts:	Brass, Stainless Steel, and PTFE. Consult factory for gas compatibilities
Approvals:	CE Certification
Housing:	NEMA 4X

**Service with a Big Smile** 😊: The **Iceman** comes with a full one-year Certificate of Calibration. The cell can easily be replaced in the field, with no need to disconnect the unit from the sample stream! Also, spare cells now have a one-year storage life if kept in their sealed shipment bags.