



# ICEMAN™

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The Iceman cometh! Here to address the unique requirements of moisture analysis in HFCs and refrigerants, the Iceman heralds the latest developments in MEECO's electrolytic technology. No stranger to refrigerants, MEECO has long served your market with its Moisture Mite and NEP-F devices. But today's alternative refrigerants call for the special temperature-controlled sample conditioning only the Iceman provides.

Regardless of the environment, hot or cold, the Iceman automatically provides optimal consistency of the sample gas temperature. It does so by integrating a vaporizing valve with two automatically controlled heaters and a temperature-sensing device. The overall design positions the heat exchanger to pre-condition the sample just before it reaches the sensor. In this way, you enjoy exceptional accuracy without the hassle and the potential for contamination associated with collecting grab samples.

Indeed, the Iceman, a portable device, works equally well in the field or in the lab. Its modular design and sturdy, non-corrosive NEMA 4X case lets you take it almost anywhere. The Iceman comes equipped with an internal 24 Vdc lead acid rechargeable battery, in addition to an external, universal power supply. Plus, the Iceman monitors continuously if you prefer a fixed location. It's also CE-marked, so you can use it throughout Europe.

Moreover, the IceMan features state-of-the-art electronics. Now, with the push of a button, you can choose to measure moisture in ppmV or ppmW. And, with the optional RS232 port, you can send data to a printer, a computer or other control device.

## APPLICATIONS

Refrigerant manufacturers and users.  
Fire extinguishers.  
Propellants in aerosol cans to replace CFCs.  
Air conditioners.  
Heat pumps.



## BENEFITS

❑ **Sample consistency.** Because today's alternative refrigerants require temperature stability to assure accurate moisture analysis, MEECO developed an effective means to pre-set and maintain sample temperature regardless of your environment. The externally mounted vaporizing valve utilizes a unique heat exchange system and ambient temperature to pre-flash the liquid refrigerant sample before it is introduced to the main body of the analyzer. The internal heater system insures only a vapor phase sample reaches the sensing cell.

❑ **On the Spot Analysis.** Portable and self-contained, the Iceman works where you are, with no need to carry samples back to the lab. Get an analysis in minutes right at the truck loading site. The integral digital display allows direct indication at point of use, as well as quick field configuration of control parameters. The unit also includes low battery indicator light.

❑ **Low Cost of Ownership.** The Iceman won't melt over time. Highly reliable, the Iceman has no consumables, and its sensor requires low-cost cleaning & resensitizing on a yearly basis, given typical usage. Plus, being based on an absolute technology frees you from costly, time consuming and often frustrating calibration versus a moisture standard.

❑ **Ease of Operation.** Just turn the Iceman on, connect the sample line and, with a simple adjustment of the external vaporizing valve, set your sample flow rate. Mode/Enter key, along with simple Up and Down keys, make using the

menu quick and simple. The Iceman will automatically provide a direct indication of the water vapor content of the gas and let you know when you reach a final value.

❑ **Communications Capabilities.** Every IceMan is equipped with a 0 to 1 Vdc analog output, scaleable using the front panel display and touch pad. An optional RS232 port lets you send readings to a printer, Distributed Control System, or other control device.

❑ **Real Versatility.** To switch gases, make a few simple set-up changes using the front panel key-pad and the convenient menu. No internal switch settings or hardware changes are required to use the IceMan with different CFC and HCFC refrigerants.

❑ **On-line Verification.** Use the simple Delta Flow procedure to quickly verify sensor linearity and performance on-line.

❑ **Approvals:** CE Mark

<b>Iceman™ Specifications</b>	
<b>User Interface:</b>	3-key touch pad
<b>Display:</b>	“1 line, 16 character alphanumeric LCD 3/8” high digits”
<b>Display Units:</b>	ppmV or ppmW (ppmW requires user input of molecular weight)
<b>Indicators:</b>	Stable value indication Low battery indication
<b>Power:</b>	Internal 24 Vdc lead acid rechargeable battery with a 2.6 amp hour rating External 24 Vdc power supply with universal input(unit operable while charging)
<b>Output Signal:</b>	Standard: 0 to 1 Vdc output into 10K ohms or greater Optional: Isolated RS232
<b>Inlet Pressure Range:</b>	20 to 100 psig
<b>Ambient Operating Temperature:</b>	-20°C to +60°C (-4°F to 140°F)
<b>Accuracy:</b>	±5% of reading or 0.4 ppm (Requires use of supplied burette or MEECO Veriflow™ to adjust the flow in accordance with sample gas)
<b>Range:</b>	0 to 1000 ppmV with 0.1 ppmV resolution
<b>Lower Detection Limit:</b>	1 ppmV
<b>Fittings and Connections:</b>	“1/8” Compression “
<b>Weight:</b>	approximately 19 lbs. (8.6 kgs)
<b>Flow Rate:</b>	Sample: 100 sccm Bypass: 1000 sccm Total: 1100 sccm
<b>Gas Compatibility:</b>	Consult Factory
<b>Material of Wetted Parts:</b>	Brass, Stainless Steel and PTFE

**The Trusted Name In Moisture Analysis.** Founded in 1948, MEECO specializes in moisture analyzers used in countless facilities around the world. We tackle the tough problems, such as natural gas pipelines, where instruments are often subject to physical abuse, corrosives and serious contaminants. In the gas industry, we're proud to report, the MEECO name is synonymous with moisture analysis.



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