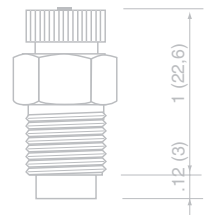
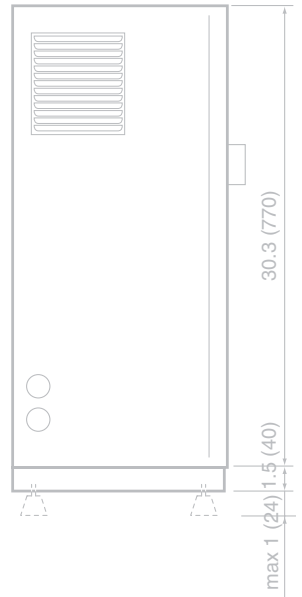




High pressure water  
atomizing humidifier

Energy saving!



**CAREL**  
Technology & Evolution



## **humiFog**

**Energy Saving:** with an electric power consumption of just 1.8 Watts/lb/hr (4 Watts/kg/h) of atomized water, **humiFog** represents the most economical solution for humidification systems. This new atomizing humidifier utilizes the energy of high-pressure water forced through unique stainless steel atomizing nozzles, to produce a very fine and uniform fog. The **humiFog** system uses a high pressure pump (1,000 psi) and does not require either the use of an air compressor or the installation of an air line. There are no reservoirs in the system, and the nozzles are sealed on shut down, preventing any chance for system contamination. When demineralized water is used, this is one of the purest forms of humidification available.





**humiFog**: energy saving!

**humiFog** introduces another, energy-efficient option, for adiabatic humidification. With its low operating cost and evaporative cooling savings, **humiFog** is clearly the energy use winner among humidifiers. The main applications for **humiFog** are: high capacity air handling units, such as are found in clean rooms, printing facilities and paint booths, as well as any application requiring evaporative cooling such as turbine cogeneration or indirect evaporative cooling. **humiFog** employs multi-staging to provide control of output to meet demand.



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## Multi-stage operation

Atomization uniformity over the whole AHU/duct cross-section is achieved by the use of multiple stainless steel manifolds that can be custom-made to fit the duct or AHU exactly. Using atomizing nozzles and blanks, manifolds may be assigned varying capacities to put the fog in the "sweet spot" of the air stream for best evaporation.

## Operating principle

In the **humiFog** system a high pressure piston pump pressurizes water to 1,080 psi (75 bar) and sends it to the atomizing manifolds where the water is torn apart into tiny droplets by centrifugal force as it exits the nozzles. These droplets create a man-made fog that will both cool the air and humidify it.



### Main pumping station

Available in stainless steel, **humiFog's** pumping stations are designed to operate well below their maximum output, thus extending the life of the pump and minimizing maintenance. Pressure and water flow are modulated according to staging and demand.



### Atomizing nozzles

The **humiFog** atomizing nozzles are constructed of stainless steel and are available in two capacities: 6 & 8 lbs/hr. Working on the centrifugal principle, they have no targets to drip or require adjustment. On shut down, a special internal valve closes the orifice to avoid dripping and prevent any ambient contamination. The nozzles are mounted uniformly in the distribution manifolds.



### Microprocessor control system

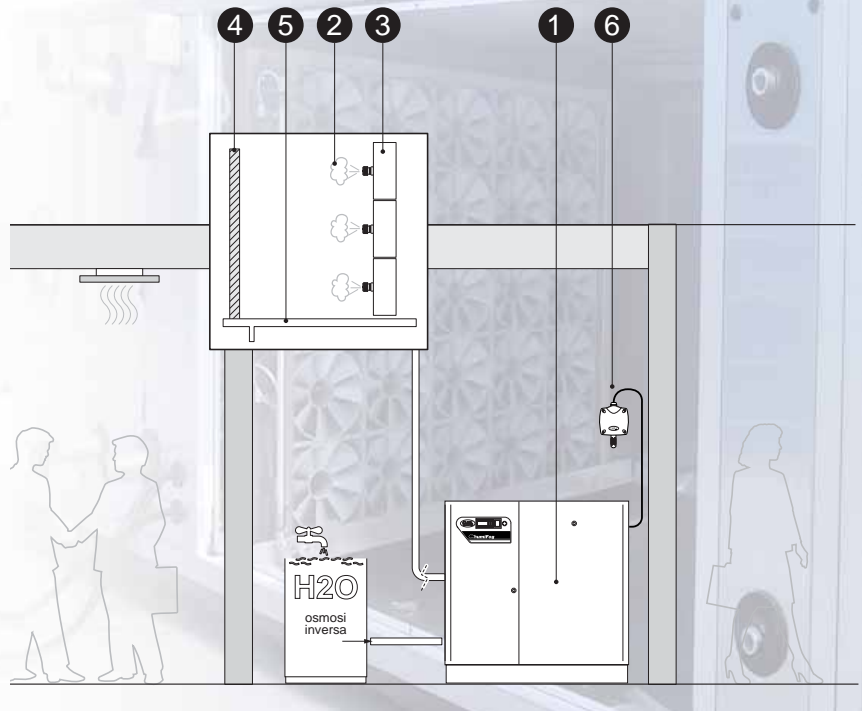
The **humiFog** system uses the new, advanced **humiControl**, which modulates water pressure and flow rate, and controls all functions of the system, constantly displaying operating conditions and alarms. Pumping stations are available with variable frequency drives for water flow modulation control, or with simple on/off staging control. In all cases, the control can be configured as stand-alone (using humidity sensors), or BAS controlled. An RS485 serial communications port allows total BAS communications if required.

# the components of the system

## Duct application

What really sets **humiFog** apart from the competition is the expertise behind it. Proper design and installation are 60% of the success or failure of any atomizing system. Personnel at Carel have been involved in atomization systems since 1978 - no one has more experience.

In the **humiFog** system, water is delivered at high pressure by a pumping station (1) to a rack of atomizing nozzles on manifolds (2). The percentage of fog absorbed depends on the temperature and air speed, as well as on the leaving relative humidity. A mist eliminator (4) must be employed to provide an absolute fog stop as well as provide a point where large droplets can be held in the air stream for more evaporation. Any droplets not evaporated are drained away from the drain pan (5) and are NOT recirculated. The control system monitors the relative humidity using a sensor (6), or receives a command signal from an external controller, and regulates pressure and flow of the atomized water by controlling the manifold solenoid valves as well as the pump VFD in modulating systems.



... energy saving!

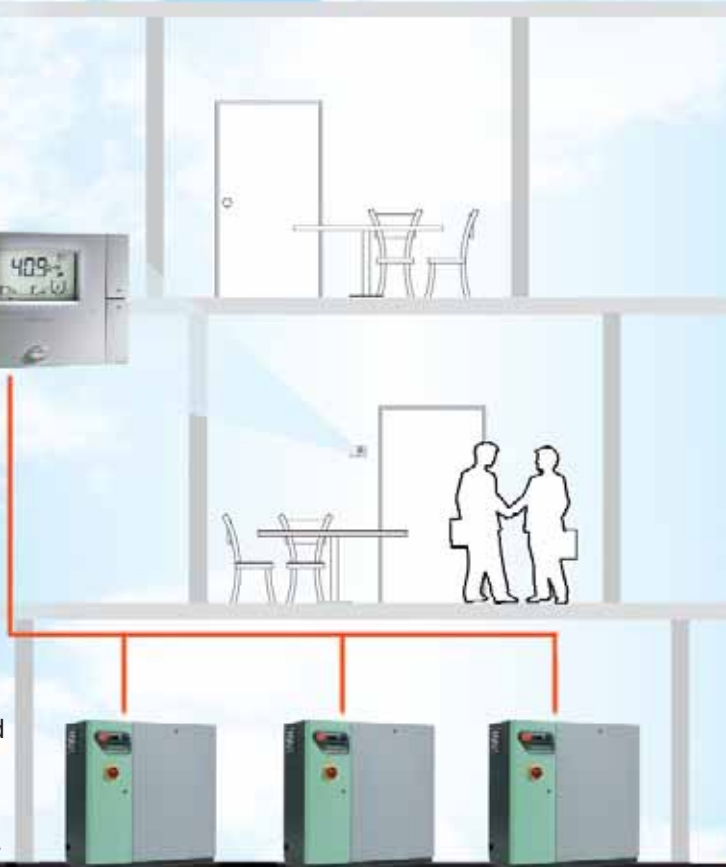


## Controllers and sensors

**humiFog** humidifiers can operate by on/off staging or proportional staging. In proportional operation, they can be controlled by a DDC signal or external humidity controller, OR they can be connected to humidity sensors and provide stand-alone control without the need for external controllers. Carel provides a complete selection of controls and sensors for On/Off or proportional operation.

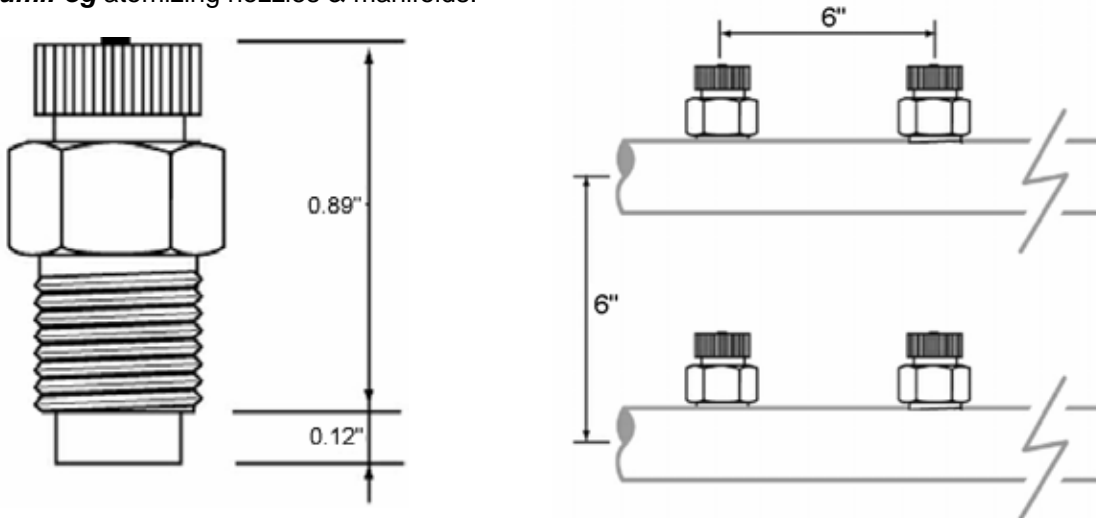
## Remote communications

The modulating versions also feature an RS485 serial interface for connection to supervisor and BAS systems, as well as to Carel's **humiVisor** remote terminal with graphic display, which allows local area networks of up to 4 different humidifiers (**humiSteam**, **gaSteam**, **humiFog**) to be created at distances of up to 3200 feet. **humiVisor** allows simple centralized management of all the units, with full graphic display of all operating parameters, alarms, and working curves.



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**humiFog** atomizing nozzles & manifolds:



Atomizing Nozzles	
13C470A013	Stainless steel atomizing nozzle, 6 lbs/hr @ 1000 psi
13C470A014	Stainless steel atomizing nozzle, 8 lbs/hr @ 1000 psi

Pumping Stations				
UA	072	H	D	001
<b>HumiFog</b>	<b>Pump capacity:</b> 072 = 158 lbs/hr 144 = 316 lbs/hr 216 = 475 lbs/hr 300 = 660 lbs/hr 420 = 924 lbs/hr 600 = 1320 lbs/hr 750 = 1650 lbs/hr 1K0 = 2200 lbs/hr 1K8 = 4000 lbs/hr 2K5 = 5500 lbs/hr	<b>Control type:</b> H Room On/Off Duct Moduating - DDC Duct Moduating - Stand-alone	<b>Volts/Phase</b> U = 208/1 D = 230/1 W = 208/3 K = 230/3 M = 460/3 N = 575/3	<b>Pump Type</b> 001 = stainless steel

A complete HumiFog system includes the atomizing nozzles on pre-manufactured manifolds, fittings, pumping station and controls.

Pumping stations may also drive multiple zones.

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