



air humidification systems  
isothermal humidification



ultimateSAM  
energy-efficient steam  
dispersion system



# Steam distributor for short non-wetting distances

Significant energy savings by minimizing condensation and heat loss in the AHU/duct.

Uses steam from a pressurized distribution system or from a humidifier.

- precision, aseptic humidification, with a short not-wetting distance (even less than 0.5 m/1.6 ft);
- suitable for steam flow-rates from 44 to 2447 lbs/hr and pressure from 0 to 58 psig.



## Short not-wetting distance

Holes set out along the entire height of the upright pipes deliver steam uniformly, ensuring a very short non-wetting distance.

## Hygiene and materials

ultimateSAM is made from AISI 304 steel, with some components made from PPS (Ryton), a material with a continuous operating temperature of 220 °C / 428 °F, plus high temperature silicone gaskets (max 150 °C / 300 °F) not in contact with steam, and EPDM gaskets when in contact with steam.

## Adaptability

ultimateSAM can be made to measure:

- multi-pipe versions (SAB\*/SAT\*) from 450x600 mm to 3000x3100 mm in 152 mm steps (from 18"x24" to 120"x120" in 6" steps);
- single horizontal pipe versions (SA0\*) from 503 mm to 2175 mm (total length) in 152 mm steps / from 19" to 86" in 6" steps

## Precision

ultimateSAM can be purchased with valves featuring electric actuators for precise modulation of the steam delivered into the AHU/duct.



### Energy efficiency

ultimateSAM maximizes energy. Insulated models minimize heat gain and condensate formation.



### Precision

ultimateSAM is suitable for precision humidification, guaranteed by uniform steam distribution in the AHU/duct and modulating valves.

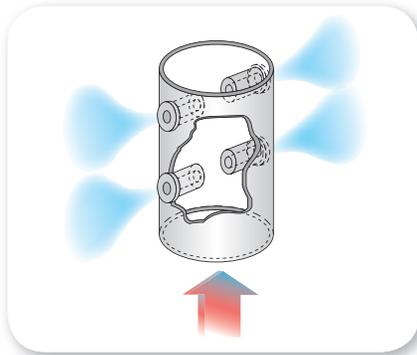


### Short not-wetting distance

ultimateSAM minimizes steam absorption distance thanks to uniform distribution along the entire height of the uprights.

## Nozzles

To achieve a very short not-wetting distance and ensure only dry steam is delivered into the AHU/duct, the uprights and pipes (AISI 304) have nozzles (Ryton - PPS) that take steam from the inside of the pipe, away from the wall where condensate may form.



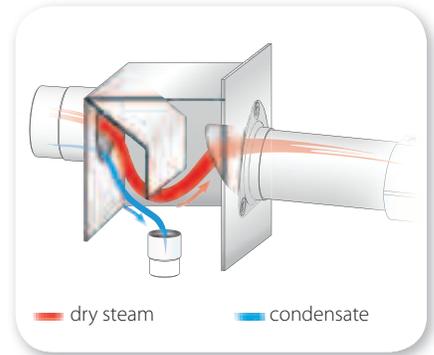
## Pipe insulation

The uprights and pipes can be ordered with air-cushion insulation. An AISI 304 steel structure isolates the steam pipe from direct contact with the air in the AHU/duct, thus achieving a 30% reduction in condensate formation.

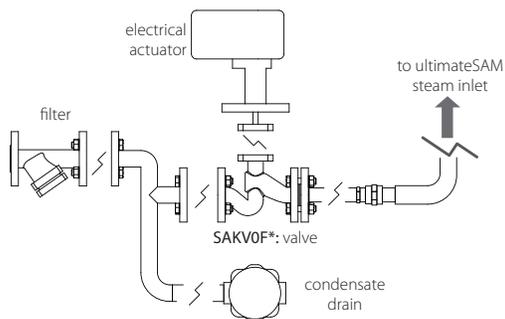
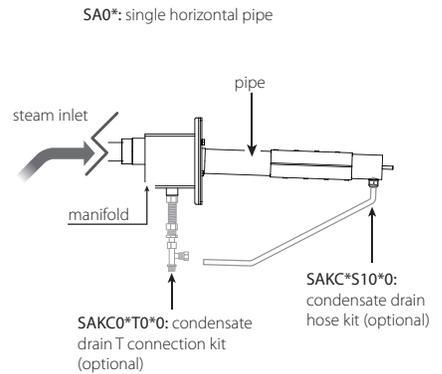
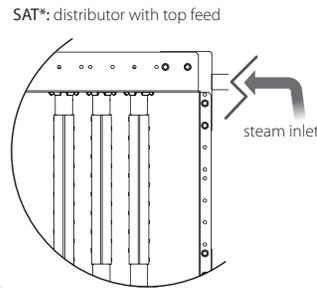
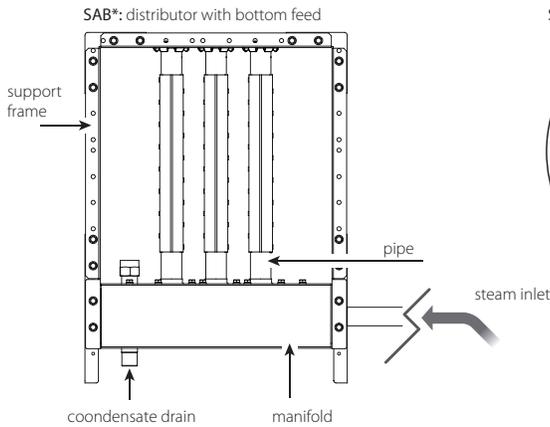


## Condensate separator manifold for SA0\* single pipe models

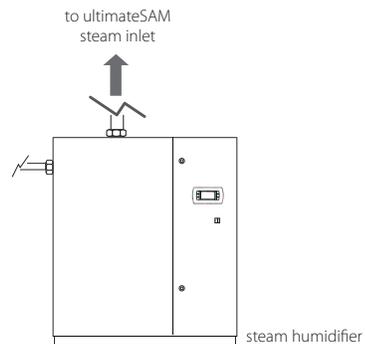
On single pipe versions the manifold also acts as a condensate separator. The louver ensures that the steam follows a specific path, separate from any condensate, which is drained through the discharge terminal. Only dry steam enters the distribution pipes.



## OVERVIEW DRAWING ultimateSAM

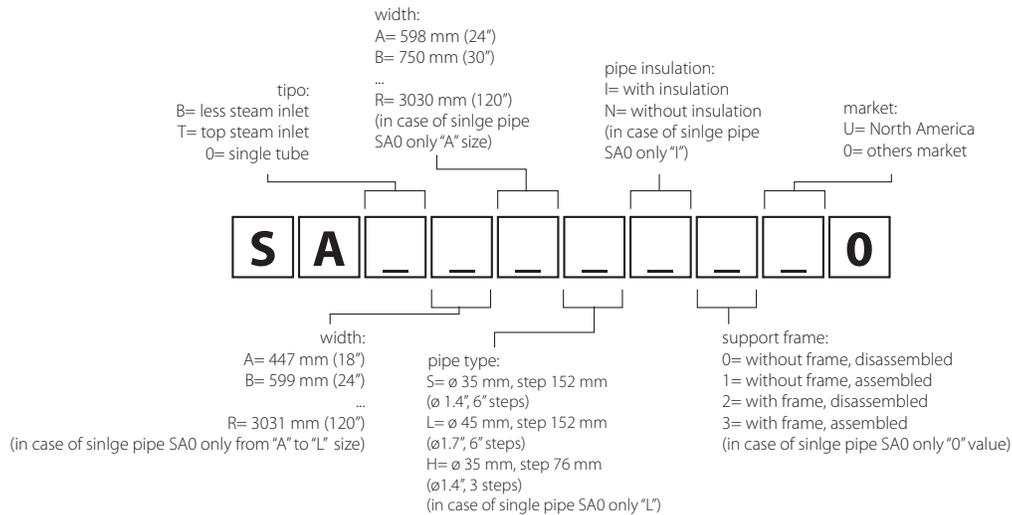


application with steam under pressure



application with steam at atmospheric pressure

## Unit code



## Technical specifications

Model	Description	Steam flow-rate 0 to 4 bar g / 0 to 58 PSi <sub>g</sub> (kg/h / lbs/hr)	Dimensions W x H[mm/inch]
SA0*	Single pipe version	Atmospheric pressure (humidifier): 20-50 / 44-110 Pressurized: 20-140 / 44-309	From 503 mm to 2175 mm (total length) in 152 mm steps / from 19" to 86" in 6" steps
SAB*	Multi-pipe version with bottom steam feed	20-370 / 44-814	From 447 x 598 mm to 3031 x 3030 mm in 152 mm steps (18" x 24" to 120" x 120" in 6" steps)
SAT*	Multi-pipe version with top steam feed	60-1100 / 132-2440	From 447 x 749 mm to 3031 x 3181 mm in 152 mm steps (18" x 30" to 120" x 125" in 6" steps)

ultimateSAM single-pipe can be ordered with insulated uprights, featuring a cushion of air that reduces both heat gain (around 1-2 °C / 2-4 °F) and condensate formation (at most around 5% of rated capacity). Insulated models have nozzles inserted in the uprights to ensure only dry steam is delivered into the air. Single-pipe non-insulated models are also available at a more competitive cost.

The single pipe models are insulated, with the nozzles inserted directly into the pipes; the inlet manifold also acts as a condensate separator and is fitted with discharge terminal.

### Accessories

- modulating valves with electric actuators and automatic safety closing in the event of power failures
- stainless steel steam inlet connections
- Y filters on steam line
- condensate separators and drains
- condensate drain hose (for single pipe models (SA0\*))
- "T" connection for condensate drain out of the AHU/duct (for single pipe models (SA0\*))
- double-pipe connections (for single pipe models (SA0\*))
- wall cover kit for the AHU (for single pipe models (SA0\*))

### Spare parts:

- steam distribution pipes for both multi-pipe and single pipe models
- horizontal distribution manifolds for multi-pipe models and condensate separator manifold for the single pipe models.
- parts of the metal support structure: top and bottom support, side shoulders, corners, gaskets

### Headquarters ITALY

**CAREL INDUSTRIES HQs**  
Via dell'Industria, 11  
35020 Brugine - Padova (Italy)  
Tel. (+39) 0499 716611  
Fax (+39) 0499 716600  
carel@carel.com

### Sales organization

CAREL Asia - [www.carel.com](http://www.carel.com)  
CAREL Australia - [www.carel.com.au](http://www.carel.com.au)  
CAREL China - [www.carel-china.com](http://www.carel-china.com)  
CAREL South Africa - [www.carelcontrols.co.za](http://www.carelcontrols.co.za)  
CAREL Deutschland - [www.carel.de](http://www.carel.de)  
CAREL France - [www.carelfrence.fr](http://www.carelfrence.fr)  
CAREL Iberica - [www.carel.es](http://www.carel.es)

CAREL HVAC/R Korea - [www.carel.com](http://www.carel.com)  
CAREL Russia - [www.carelrussia.com](http://www.carelrussia.com)  
CAREL India - [www.carel.in](http://www.carel.in)  
CAREL Sud America - [www.carel.com.br](http://www.carel.com.br)  
CAREL U.K. - [www.careluuk.co.uk](http://www.careluuk.co.uk)  
CAREL U.S.A. - [www.carelusaa.com](http://www.carelusaa.com)

### Affiliates

CAREL Czech & Slovakia - [www.carel-cz.cz](http://www.carel-cz.cz)  
CAREL Korea (for retail market) - [www.carel.co.kr](http://www.carel.co.kr)  
CAREL Ireland - [www.carel.com](http://www.carel.com)  
CAREL Thailand - [www.carel.co.th](http://www.carel.co.th)  
CAREL Turkey - [www.carel.com.tr](http://www.carel.com.tr)