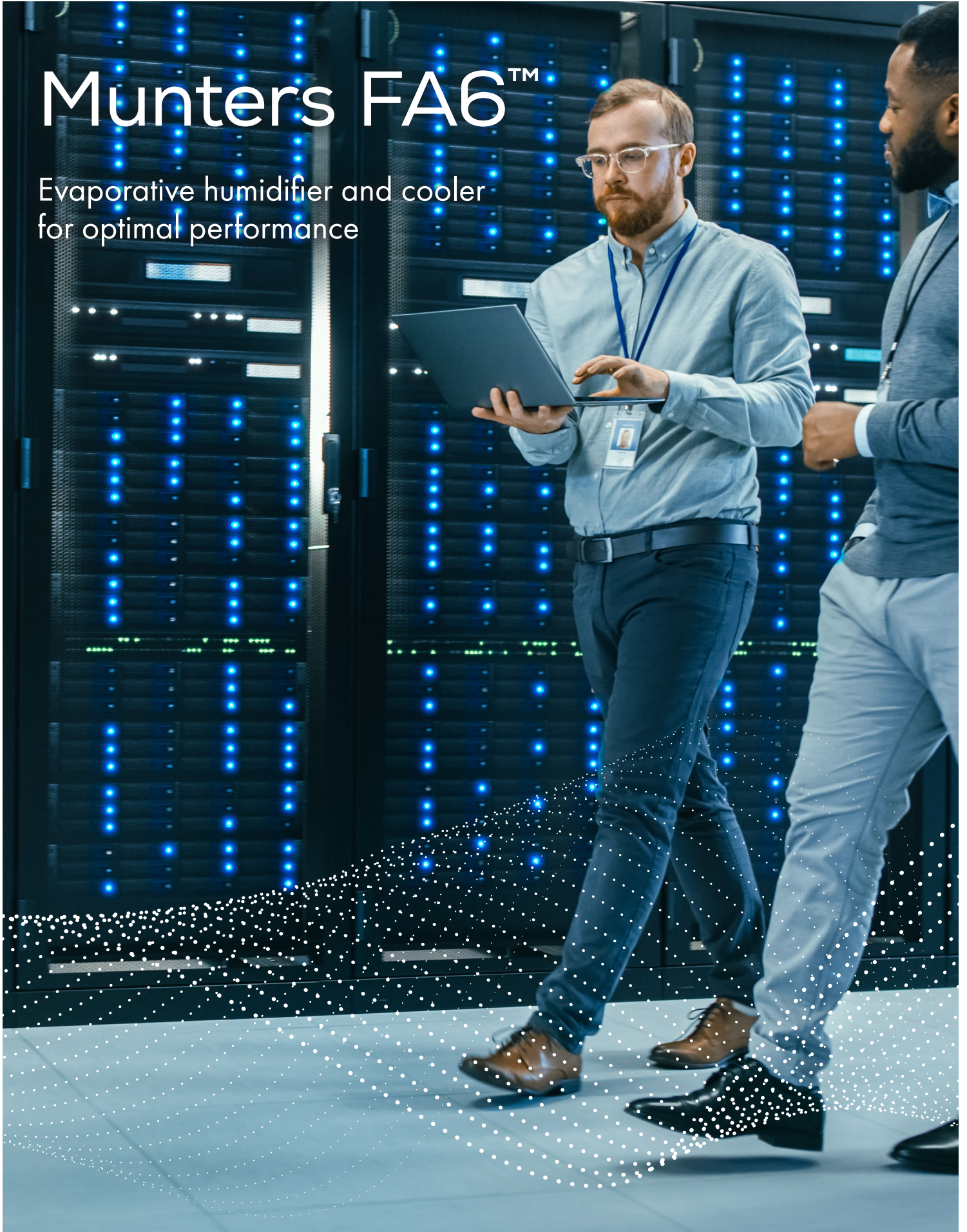


Munters FA6™

Evaporative humidifier and cooler
for optimal performance



Energy saving humidification and cooling

Munters FA6 units have been designed to offer the best evaporative cooling and humidification solution for a wide range of industrial applications.

At the heart of the solution is our unique, class leading GLASdek™ GX40 media, which is ceramic coated, highly efficient and fireproof. The media is housed in reinforced steel, making the solution robust and easy to install and service.

The FA6 is a high performance, low operating cost solution which is available in a wide range of sizes designed for integration into air-handling systems within both residential and industrial buildings.

Performance

- Very low pressure drop and energy consumption
- Superb controllability typically down to $\pm 2-5\%$
- No risk of over-saturation
- High efficiency: 65%, 85% and 95%
- Includes GLASdek™ GX40, the non-combustible cooling media

Service and reliability

- Low maintenance requirements and running costs
- Can be cleaned in place to extend service life
- No water treatment required, with tolerance of pH levels 3-11
- Reinforced steel frame for easy installation and optimal reliability

Regulatory compliance

- Fire-rated according to UL®900, ULC-S111 Class 1
- Fire-rated according to EN13501-1, Class A1
- Certification VDI 6022
- GREENGUARD Gold certified



Green Guardian Gold
Munters high performance EC Cool media is GreenGuard Gold certified and has been tested for emissions of more than 360 related chemicals to ensure they are non-hazardous.



Munters FA6





Munters FA6 – More than the sum of its parts

Munters FA6 is a modular cooling solution featuring our outstanding evaporative media within a unit built with efficiency and simplicity in mind.

The future of cooling and humidification

Many industries around the world rely on effective cooling and humidification, and Munters FA6 is the ideal solution. When it comes to climate control there are often compromises, whether that's cost, energy efficiency or performance, but the FA6 can offer optimal performance on all fronts.

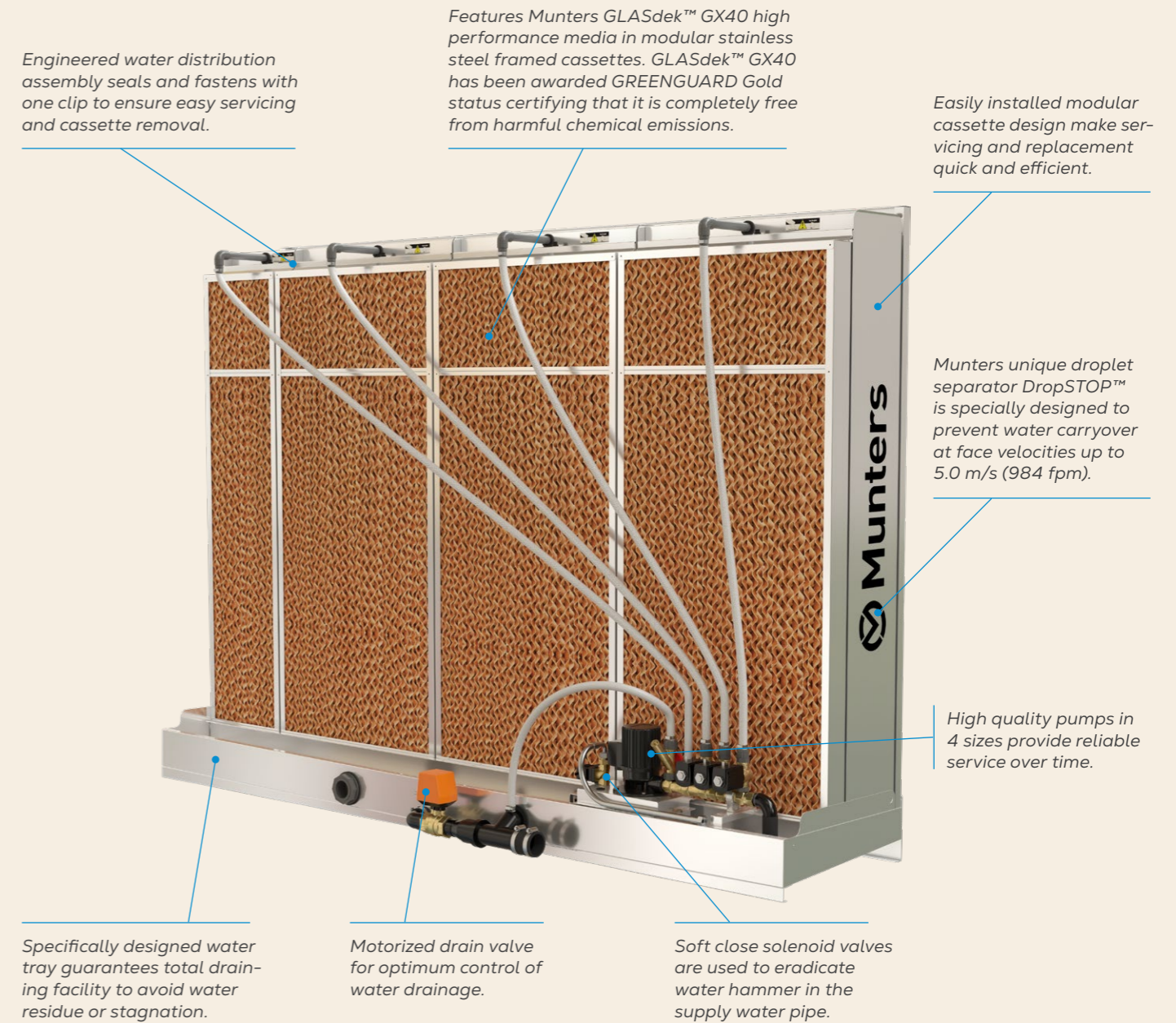
Our GLASdek™ GX40 media is the heart of the FA6 solution, and offers outstanding performance combined with unmatched safety and hygiene. It's robust enough to be cleaned in place and works efficiently with untreated water which reduces operating costs. All of this is housed in a specially designed frame built to enhance performance while simpli-

fying service and maintenance. FA6 is the optimal cooling and humidification solution, combining optimal performance, improved sustainability and low operating costs.

Optional enhancements

It's important that your cooling and humidification solution meets your specific needs. Munters offers a range of options to modify the FA6 to suit your requirements, including:

- Circulating and submersible UV-light disinfection systems depending on FA6 size
- Conductivity control
- Water level control (high/low/operating mode)
- Munters PLC control unit, including sequence of operation (SOO) with ModBus communication to BMS system as standard



Six reasons why FA6™ makes the sum greater than the parts

- **Optimal cooling**
FA6 is an ultra-low energy solution that only needs water and air. No chemicals are used in the system which is also free from carbon emissions.
- **Quickshift cassettes**
Easily installed modular cassette design makes servicing and replacement of GLASdek GX40 quick and efficient.
- **Low water consumption**
FA6 can be used with a circulating water system to minimize water consumption.
- **Compact and flexible**
FA6 is specially developed for flexible integration into any air handling system. Its compact design allows for space and cost savings.
- **Wide range of sizes**
FA6 comes in a wide range of standard sizes covering volumes from 0.5-40 m³/s (1000-85000 cfm).
- **Variety of standard options**
A number of options are available as standard to ensure the right solution. These include UV disinfection, different control systems, direct or circulating water options and many more.

FA6 product data

Technology basics

The heart of FA6 is a cassette made from inorganic non-combustible evaporative media – GLASdek™. Water is supplied to the top of the GLASdek evaporative media via a distribution header. The water flows down the corrugated surface of the media. As the warm, dry air passes through the media it evaporates a proportion of the water and thus produces cold, humidified air. The rest of the water assists in washing the media, and is drained back to the tank.

The energy that is needed for the evaporation is taken from the air itself. The air that leaves the humidifier is therefore humidified and cooled simultaneously without any external energy supply for the evaporation. This is in essence the adiabatic cooling process. It is very efficient, and the energy consumption is very low.

In most cases it allows the use of water straight from the tap with no need for water treatment (i.e. demineralisation plants). In cases with non-sufficient water quality, it may be necessary to add some water treatment. Minerals and pollutants stay behind in the GLASdek evaporative media to be washed away with the discharge water keeping the total adiabatic process pure.

Standard sizes

A, Width in mm [inches]	B, Height in mm [inches]								
	600 [3.6"]	900 [35.4"]	1200 [47.2"]	1500 [59.1"]	1800 [70.9"]	2100 [82.7"]	2400 [94.5"]	2700 [106.3"]	3000 [118.1"]
	m ³ /s [cfm]	m ³ /s [cfm]	m ³ /s [cfm]	m ³ /s [cfm]	m ³ /s [cfm]	m ³ /s [cfm]	m ³ /s [cfm]	m ³ /s [cfm]	m ³ /s [cfm]
600 [23.6"]	1.0 [2119]	2.0 [4240]	2.8 [5930]						
900 [35.4"]	1.6 [3390]	2.9 [6150]	4.2 [8900]						
1200 [47.2"]	2.1 [4450]	3.9 [8260]	5.6 [11900]						
1500 [59.1"]		4.9 [10380]	7.0 [14800]	9.0 [19100]	11.0 [19100]	13.0 [27500]	16.0 [33900]	18.0 [38100]	20.3 [43000]
1800 [70.9"]		5.8 [12290]	8.0 [17000]	11.0 [23300]	14.0 [29700]	16.0 [33900]	19.0 [40300]	22.0 [46600]	24.3 [51500]
2100 [82.7"]			10.0 [21200]	13.0 [27500]	16.0 [33900]	19.0 [40300]	22.0 [46600]	25.0 [52900]	28.4 [60200]
2400 [94.5"]			11.0 [23300]	15.0 [31800]	18.0 [38100]	22.0 [46600]	25.0 [52900]	29.0 [61400]	32.0 [67800]
2700 [106.3"]			12.0 [25430]	17.0 [36000]	20.0 [42400]	24.0 [50900]	28.0 [59300]	32.0 [67800]	36.5 [77300]
3000 [118.1"]			14.0 [29700]	19.0 [40300]	23.0 [48700]	27.0 [57200]	32.0 [67800]	36.0 [76300]	40.6 [86000]

C=630 mm (24.8") for 65–85% efficiency, C=730 mm (28.7") for 95% efficiency.

Design

FA6 consists of one or more media cassettes supported by a rigid frame and a water tank made from stainless steel EN 1.4301 (AISI 304). The cassettes are made from GLASdek GX40 evaporative media and protected by stainless steel casings. On top of each individual cassette is a distribution header that supplies the cassette with water and fixes it to the frame.

The water supply to the headers can come from a circulation pump or directly from the mains.

Water systems

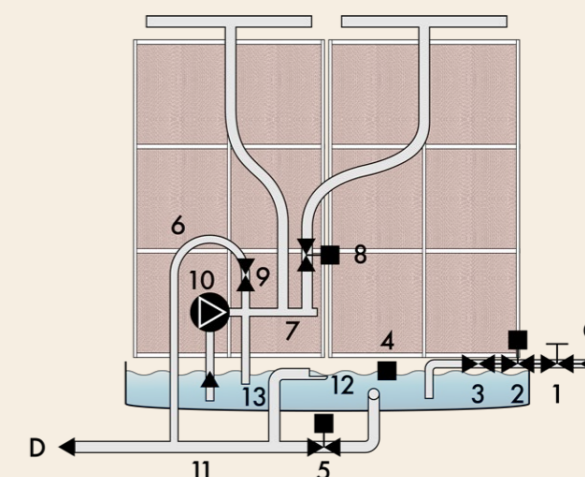
Circulating water systems are most commonly used due to the low water consumption. Direct water systems are commonly used when the water quality is too poor for circulating systems or when the humidifiers' annual operation time is short. Without sufficient water quality, it may be necessary to add a water treatment.

1. Circulating water system

The reservoir is filled with cold water from the mains, and a float valve maintains the water level. When there is a humidity demand, the pump starts and circulates water over the cassettes via the distribution headers. Mains water will contain a certain amount of minerals and salts, the concentration of which varies from place to place. During the evaporation, only pure water vapor is released to the air stream. The minerals and salts remain in the water and are returned to the reservoir.

A proportion of the water in the reservoir is continually drained and replaced with fresh water to control the mineral concentration.

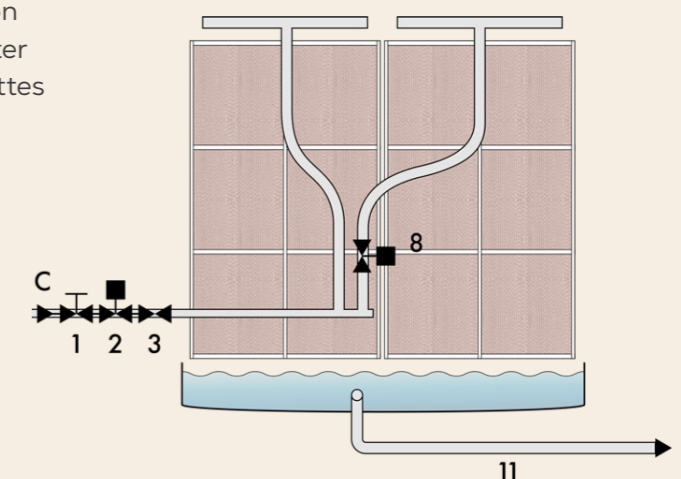
- C Water supply
- D Drain
- 1. Shut off valve
- 2. Solenoid valve
- 3. Constant flow valve
- 4. Water level switch
- 5. Motorized drain valve
- 6. Bleed-off
- 7. Water distribution from pump
- 8. Solenoid valve for stage control
- 9. Bleed-off valve
- 10. Distribution pump
- 11. Drain pipe
- 12. Overflow drain
- 13. Blow down pipe



2. Direct water system

When there is a humidity or cooling demand, the mains water is supplied directly to the distribution headers via constant-flow valves. The excess water that is not used for evaporation cleans the cassettes before being discharged.

- C Water supply
- D Drain
- 1. Shut off valve
- 2. Solenoid valve
- 3. Constant flow valve
- 8. Solenoid valve for stage control
- 11. Drain pipe



Wide range of sizes

FA6 comes in a wide range of standard sizes that conform to all typical air handling unit dimensions. The individual units cover air volumes from 0.5–40 m³/s (1000–85000 cfm). For very large air volumes a combination of units is selected in order to achieve the desired size. Sizes can be modified upon request. Selecting the optimal size is easy with the FA6 Dimensioning Program and on-line technical support.



High performance

Cooling power specified per m^2 s (ft^2/s) surface area at 5.0 m/s (984 fpm) and 95% humidification efficiency.

FA6 can be ordered with three different humidification efficiencies 65, 85 and 95%. The choice of humidification efficiency depends on the control method and the cooling and/or humidity demand of the application.

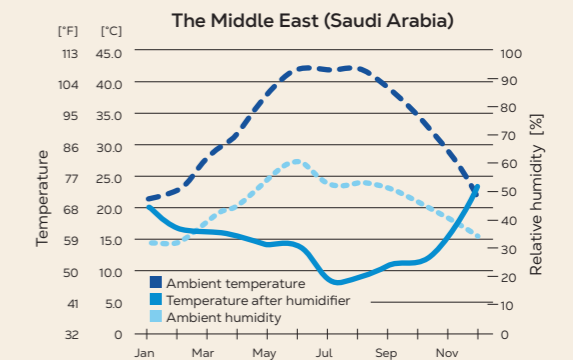
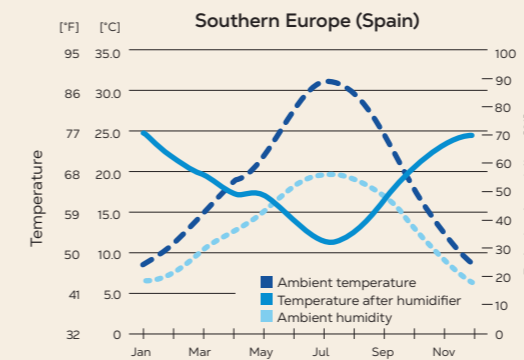
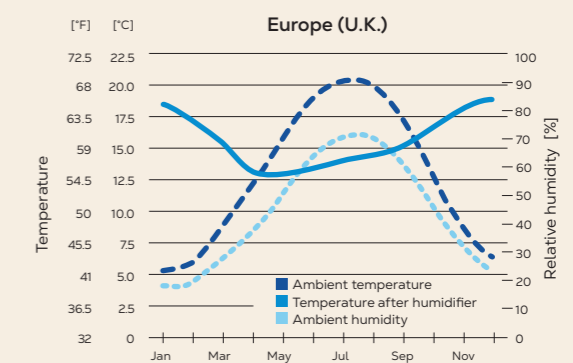
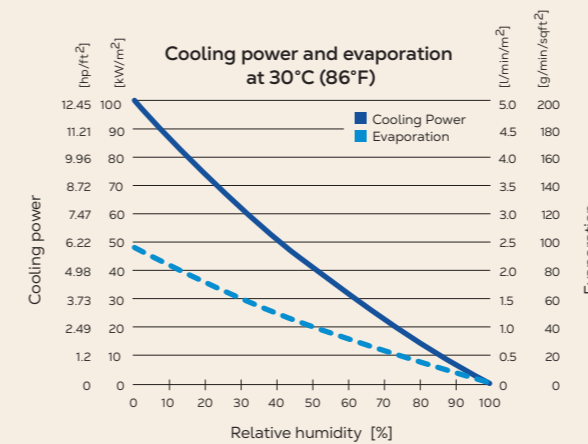
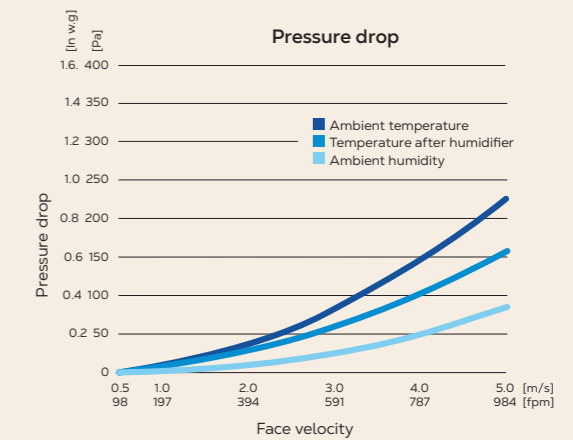
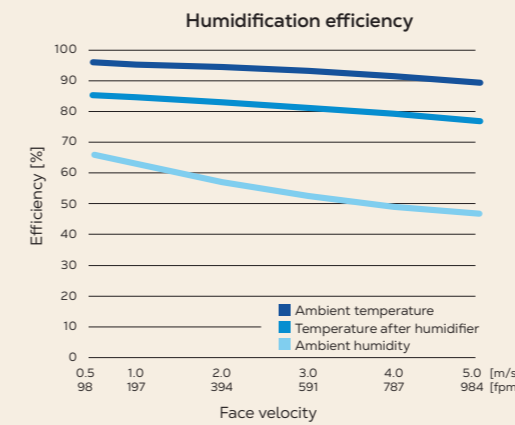
DropSTOP (droplet separator) is recommended for face velocities over 4.0 m/s (787 fpm). The maximum face velocity is 5.0 m/s (984 fpm).

Cooling power

The adiabatic cooling process is often used to eliminate or reduce the load on cooling equipment during the summer. The FA6 can be used as a direct cooler – cooling and humidifying the supply air, or as an indirect cooler in conjunction with a heat recovery rotor – cooling the supply air without adding any humidity.

GX40 evaporative media

- Regulatory compliance
- Fired-rated according to ULR900, ULC-S111 Class 1
- Fire-rated according to EN13501-1, Class A1
- Certification VDI 6022
- No risk of oversaturation



Evaporative cooling from ambient conditions. Based on average daytime climate condition data.

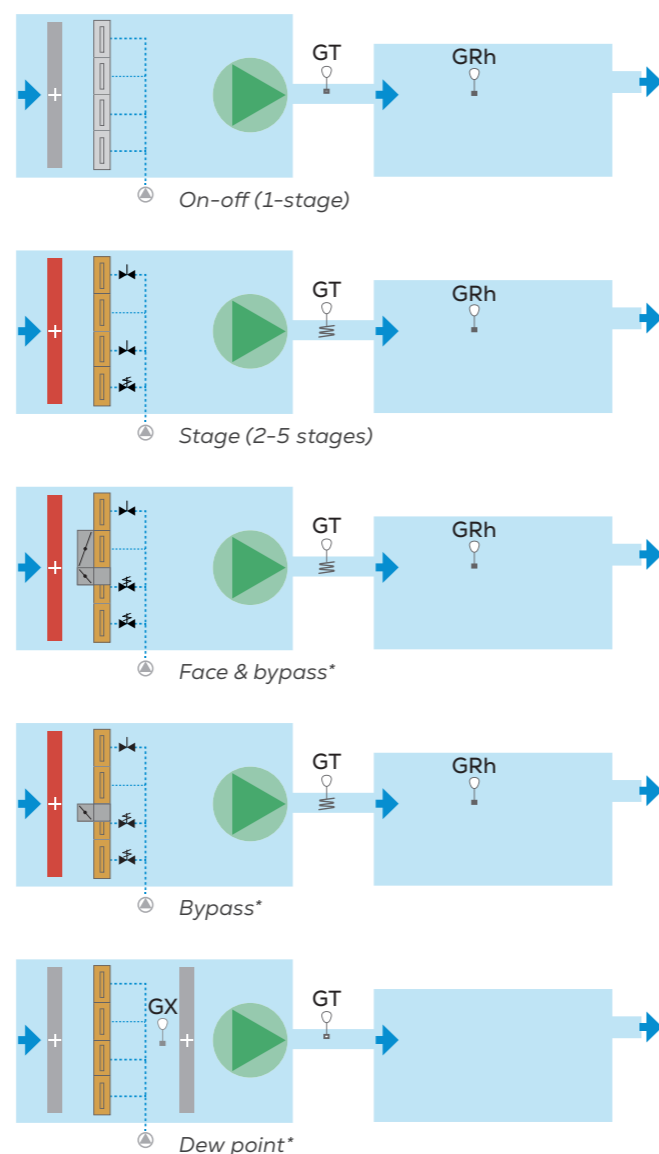
Munters has made every attempt to ensure the accuracy and reliability of the information provided. However, the information is provided "as is" without warranty of any kind. Munters does not accept any responsibility or liability for the accuracy, content, completeness, legality, or reliability of the information contained.

Control options

The FA6 can be easily controlled to address even the most demanding conditions. The choice of control method depends mainly on the application and the desired accuracy of the system. The controls vary from the simple on-off control with a typical accuracy of $\pm 10\%$ RH to the infinitely variable face and by-pass control with a typical accuracy of $\pm 2\%$ RH.

Simple to install

The FA6 is easy to install and easy to configure into both existing and new HVAC systems. Electricity (230/400 V, 50 Hz) (115/1/60 Hz) water supply (1-10 bar (750-7500 mmHG)) (22-145 psi) and drainage are all that is needed. Due to its high performance and compact design it is the ideal replacement for older, less efficient humidifiers/coolers.



*) Available for customized designs only.
Not included in the order code.



Example of an FA6 installation in a section of an airhandling unit



Optional equipment

To adapt the FA6 to the specific demands of different applications Munters offers a full range of accessories.

1. Droplet separators are used to eliminate the risk of carry-over due to high air velocities or turbulent airflow. They are very easy to install and do not change the FA6 humidifier's space requirement. Separators are recommended for all installations with a face velocity over 4.0 m/s (787 fpm).
2. Stage control consists of solenoid valves that control the water supply to individual cassettes. The valves enable the humidifier/cooling unit to be operated in 2-5 stages to suit a variable humidity demand (availability subject to size).
3. The FA6cc, Clean Concept is a bolt on enhancement for the FA6 Humidifier/Cooler that enables circulating water models to operate at optimum hygiene levels. It also incorporates BMS connections and alarms to increase the operational safety. The FA6cc is designed to exceed current legislation in relation to the control of bacteria in water systems in many countries - e.g. ACOP L8 in the U.K.
 - 3.1 FA6cs, Conductivity System enables conductivity controlled bleed-off. The system reduces water consumption.
 - 3.2 FA6uv, Ultra Violet Sterilisation System with intensity sensing.
4. Custom designed units can be supplied upon request.



Tested and certified

- FA6 humidifier/cooler is manufactured in accordance with the following Harmonized European standards and technical specifications:
- EN 60204-1 edition 3 Safety of machinery, electrical equipment of machines.
- EN 61000-6-3 edition 1 Electromagnetic compatibility EMC Emissions standard for Residential, commercial and light industrial environments.
- EN 61000-6-3/A11 Electromagnetic compatibility EMC Emissions standard for Residential, commercial and light industrial environments.
- EN 61000-6-1 Electromagnetic compatibility EMC Emissions standard for Residential, commercial and light industrial environments.
- All components comply with UL1995 standard.

It agrees, with the limitations that have been stipulated for machines, with the most important health and safety requirements of Machinery Directive 2006/42/EG and furthermore 2004/108/EC with

guideline for Electromagnetic compatibility. It is certified according to VDI 6022 (German, HVAC Hygiene Standard). More over the FA6 evaporative humidifier / cooler has been rigorously tested by the Central Department for Hospital Hygiene at the Medical Faculty of RWTH in Aachen, Germany. According to the results there were no aerosols containing legionella identified, nor were legionella pneumophilia passed any other way into the air even at very high concentrations of legionella in the circulating water and very high air velocities. The tests were performed both in vitro and in vivo.

Comments

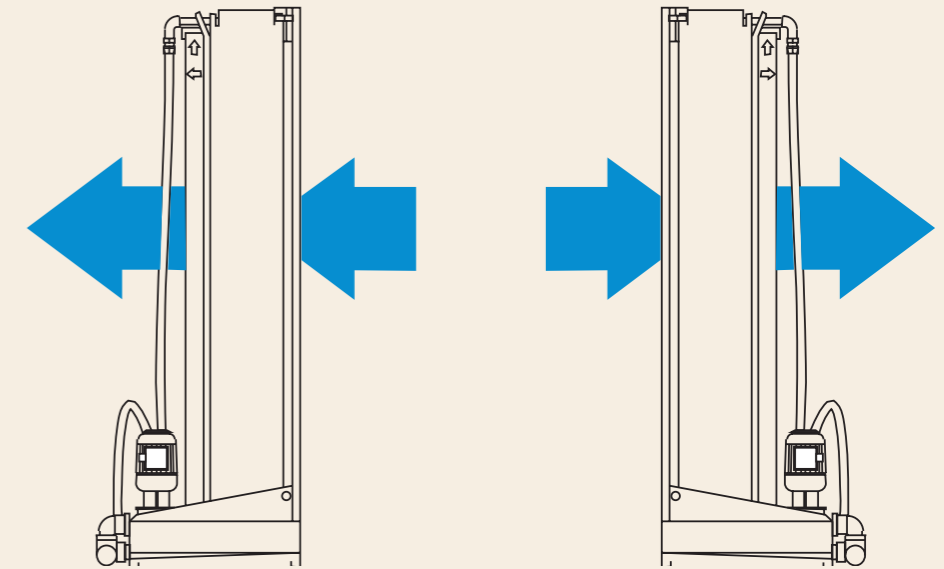
FA6 sizes width or height starting with the 2100 are delivered disassembled. The delivery does not include water filter or water trap. *When the number of steps=1, no solenoid valve is included. In the case of more steps than one, the number of solenoid valves depends on the number of cassettes in the humidifier. Munters will provide you with full details.

How to select FA6

Selection of the right FA6 is easy with the FA6 Technical manual or the FA6 Dimensioning Program. All you need to know are the following parameters:

- Air volume
- Duct dimensions or the cross-section of the AHU
- Design conditions
- Required control accuracy
- Type of application
- Required air conditions

You are always welcome to contact your nearest Munters sales office for assistance.

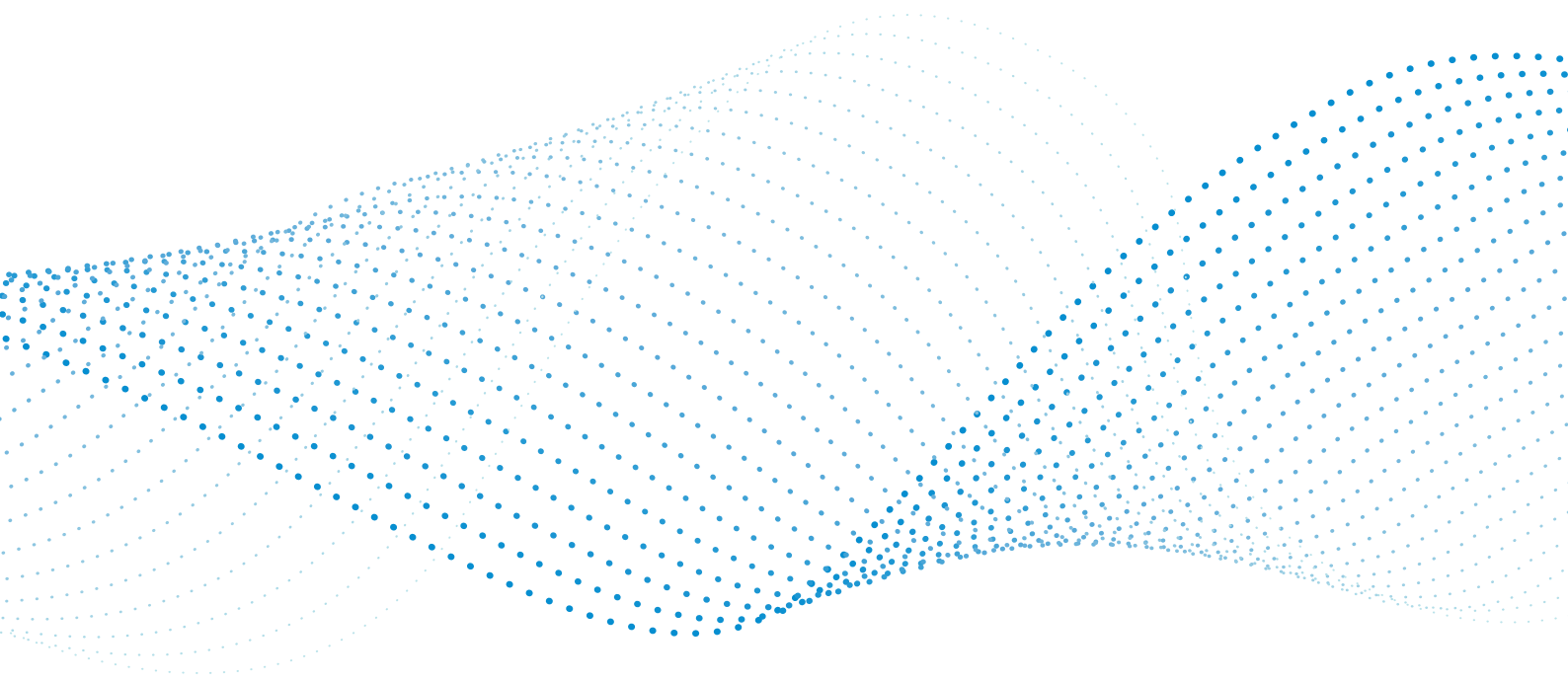


Service and pipe connection side

Humidifier/Cooler FA6-XX - XXX - XXX - XX - X - X

- **Code for humidification efficiency** _____
65=65%, 85=85%, 95=95%
- **Code for width, mm** (see table page 4) _____
- **Code for height, mm** (see table page 4) _____
- **Code for water system** _____
C= Circulating water, D=Direct water, CS=Face and bypass
1-5=Number of stages (see page 6)*
- **Code for droplet separator** _____
0=Without, 1=With
- **Code for service and pipe connection side** _____
L=Left, R=Right

E.g. FA6-85-120-090-C1-0-L



Munters is a global leader in energy-efficient air treatment and climate solutions. Using innovative technologies, Munters creates the perfect climate for customers in a wide range of industries.

Munters has been defining the future of air treatment since 1955. Today, around 4,000 employees carry out manufacturing and sales in more than 30 countries.

For more information, please visit www.munters.com