

HygroMATIK®

member of CAREL group

CAREL

With flexibility and system
Electrode and heater type steam humidifiers

FlexLine

For industry, commerce,
culture and leisure





The HygroMatik FlexLine as a modular system

HIGH FLEXIBILITY IN AWARD-WINNING QUALITY



CUSTOM-MADE FOR EVERY AREA OF APPLICATION

The basic FlexLine model is the basis for all other configuration options. Thanks to its individual extension capability the FlexLine can be adapted to the requirements of different areas of application:

- Optimisation of the indoor climate in industrial, commercial, cultural and leisure facilities
- Autonomous control and stabilisation of air humidity in ventilation systems for industry and processes



FLEXIBILITY PAYS DIVIDENDS

The HygroMatik FlexLine represents a modern generation of steam humidifiers which consists of a basic model that can be expanded to create an individual humidification solution suitable for all requirements.

Advantages:

- Ease of installation by means of individual pre-configuration ex factory
- Expansion options for retrofitting
- You only invest in the functions you really need

In order to make this flexibility available to you quickly, we have developed a modular system. This was awarded in three categories and the FlexLine received the **Plus X Award**.

The HygroMatik FlexLine as a modular system

PERFECTLY CUSTOMIZED, OPTIMALLY EQUIPPED

OPTIMUM HUMIDIFICATION USING THE BEST METHODS

FlexLine is available as an electrode as well as a heater element humidifier – depending on your water quality and the required degree of control accuracy.



Replaceable stainless steel large area electrodes for different conductivities



Resistor type heater elements in highly corrosion-resistant alloy

ALWAYS THE CORRECT HUMIDIFICATION PERFORMANCE

Equip HygroMatik FlexLine with the power you need for optimum humidification. Performance classes with steam output from 10 lbs/h to 300 lbs/h are selectable in 6 housing sizes. In addition, individual performance adjustments can be programmed both at the factory and on site.



INTELLIGENT PROTECTION



MAXIMUM FLEXIBLE



MAXIMUM HYGIENE



LONG LIFE



COST SAVING



SUSTAINABLE

MANIFOLD OPTIONS FOR A HUMIDIFICATION SOLUTION THAT FITS PERFECTLY

Even the basic version of our FlexLine series is characterized by solid basic functions, long operating times and a long service life. But every installation is different, and so every project places unique requirements on the humidification solution. As an option, all FlexLine units can be customized at the factory **with over 100 additional function combinations** to meet the needs of the installation environment. Most FlexLine options can also be retrofitted or activated later. This means that you only invest in the humidifier version that you actually need. In addition, various protection and security functions can be installed and activated, e.g.

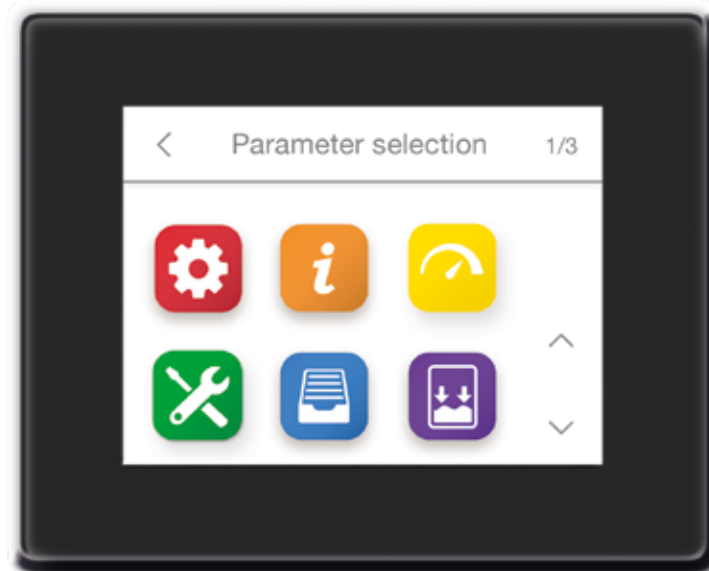
- HyFlush (cylinder flushing device)
- HyCool (integrated waste water cooling)
- Stub line flushing
- Communication via BACnet/Modbus
- Safety release on 12V / 24V / 230V
- Electrode version with demineralized water

This means that your system is optimally protected around the clock and you have less maintenance work. If needed, all options can be retrofitted. We are always pleased to provide advice.



Benefit from extensive functions

POWERFUL, SMART AND EFFICIENT



EXCELLENT EASE OF OPERATION

All HygroMatik FlexLine units are equipped with a capacitive 3.5" touch display. Operation and programming are selected via a flat and intuitive menu structure analogous to modern smartphone logic. In addition to this, subsequent software updates are quickly and easily possible via USB flash drive.

- At a glance comprehensible pictographs provide information on the operating condition
- Simple and fast navigation
- Information and system messages displayed as plain text
- Readout of service messages with date and time
- Integrated real-time clock
- Optional: Touch Control Remote – 3.5" display for external control (including housing for surface mounting)



Touch Control Remote
External capacitive 3.5" display



SMART CONTROL – POWERFUL AND QUICK RESPONSE

The control and regulation technology of FlexLine units provides extensive possibilities that are simple and easy to operate.

- **Numerous control and reporting functions** can be assigned to up to 11 relays depending on the unit
- Freely programmable, overload-protected **digital input**
 - » Load shedding: power limitation in the event of network overload or emergency power operation
 - » Blow-down on external request for specific operating conditions
 - » Stand-by mode: pre-heating by remote activation for a quick response time
- **Integrated communication** protocol: Modbus RTU or BACnet



COMPREHENSIVE SERVICE FUNCTIONS

We have equipped the HygroMatik FlexLine with intelligent service functions for operational safety. These provide a high level of safety, reliability, control and comfort.

- **Reliable:** Preventive maintenance through permanent monitoring and intelligent evaluation of operating parameters can avoid unplanned downtimes
- **Convenient:** Detailed messages enable deviations to be identified and rectified more quickly
- **Simple:** The diagnostic mode can be started directly via the touch display without commissioning the unit completely
- **Flexible:** Service intervals can be calculated by the unit according to time as well as the amount of steam produced

Optimized unit performance for efficient utilisation

HIGHLY EFFICIENT, EASY TO MAINTAIN

DEVELOPED FOR LONG LIFE

As with all our products, the HygroMatik FlexLine has been developed for an especially long life. The units feature technologies that not only reduce the amount of maintenance required, but also the wear of components. In addition, they are highly efficient with energy and resources.

- **Adjustable power limitation** from 25 - 100%
- **Adjustable load shedding** to temporarily adapt operation to the respective load conditions
- **Long-term continuous operation:** A robust base material provides our reusable cylinders with high temperature resistance and dimensional stability
- The **split cylinder** is easy to open and can be cleaned without using chemicals
- **Extremely durable:** All FlexLine cabinets are manufactured in corrosion-resistant stainless steel; the powder coating of the housing increases the lifespan and offers optimum work safety
- **Robust blowdown pump** for removing scale deposits to ensure long operating life cycles and minimal maintenance
- Highest safety standard for electrode steam humidifiers due to integrated **mechanical circuit breaker and mechanical safety temperature limiter** for heater type steam humidifiers
- Heater type steam humidifier with **capacitive proportional water level sensor** without wearing parts

When operated with **demineralized water**, the buildup of scale-forming deposits is reduced to a minimum, which allows for a significantly longer operating period between maintenance intervals. For the **electrode version**, the "Operation with demineralized water" option is required.



All in the
green zone

Robust and
durable cabinet

Reusable
steam cylinders

Long and flexible
service intervals

High resource
efficiency

Innovative configuration for individual applications

FLEXLINE FL-TPRO

PRECISE AND DURABLE



FLEXLINE FLH-TPRO

PRECISION IN PERFECTION

The HygroMatik **FlexLine FLH-TPRO** units are the solution for all applications in which constant humidification values are decisive for quality, for example the humidification of demanding production processes. Other common applications are test benches which require exact and constant reproducible ambient conditions for valid results.

The FlexLine FLH-TPRO offers all the advantages of FlexLine heater type steam humidifiers and supplements them with **increased control accuracy of up to +/- 0.75%**. To achieve this, the FlexLine FLH-TPRO is operated exclusively with demineralized water and therefore runs almost **maintenance-free and without interruption**.

The **3-fold solenoid valve** is responsible for the control accuracy of the precision control which ensures continuous and steady feeding of the water into the cylinder without interruption. The unit is also equipped with an **additional expansion board**.

Another important feature is the additional analogue input for connecting a **second humidity sensor**.

This enables **sliding maximum limitation**. This means that the steam output adapts smoothly to the maximum value and interruptions caused by switching off steam production are avoided.

Main board plus expansion board

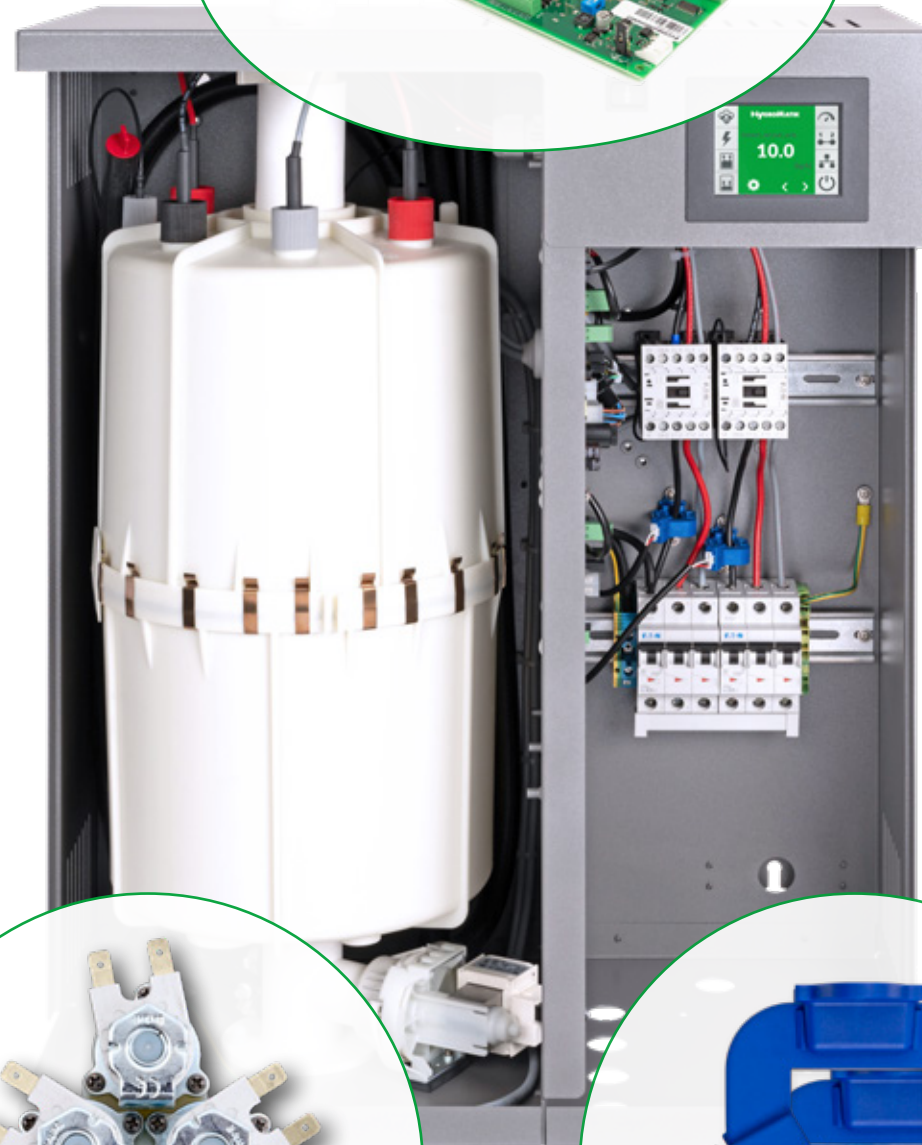
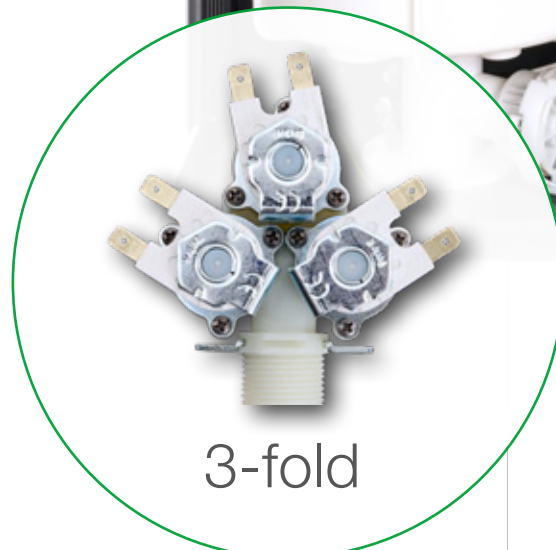
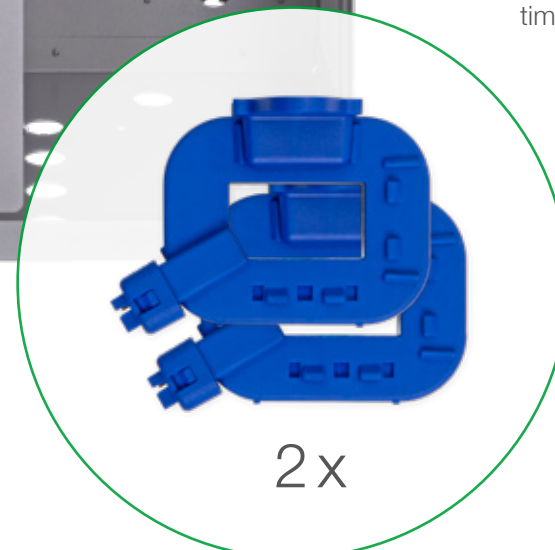


Image FlexLine FLE-TPRO



3-fold

Solenoid valve



2x

Ring transducer



FLEXLINE FLE-TPRO

LARGE PERFORMANCE RANGE - PRECISELY CONTROLLABLE

The **FlexLine FLE-TPRO** devices enable a wider range of steam output control. This makes the FlexLine FLE-TPRO particularly suitable for use in **test laboratories and simulation systems**.

The **second ring transducer and the additional expansion board** are responsible for the control accuracy of the precision control. The smallest electrically controllable output of the FlexLine humidifier is halved, thus **doubling the control accuracy** of the humidifier.

Larger humidifiers with 6 electrodes receive a controllable power reduction to reduce the surface load of the electrodes at low performance below 15% and at the same time double the control accuracy and the time between filling cycles.

The **FlexLine FLE-TPRO can also be equipped with the "Operation with demineralized water" option**. This FlexLine option uses a patented process to add the optimum amount of normal tap water to demineralized water, which ensures the conductivity required for stable operation. At the same time, however, the loss of hardness formers is reduced to a minimum, which enables a significantly longer operating time between maintenance.

With clear advantages

- Lower investment costs than when using heating elements
- Lower operating costs due to less wear and tear
- Lower maintenance costs and longer maintenance intervals
- Longer service life



FlexLine FLE (electrodes) technical data

A higher humidification performance is possible by connecting units together.

Electrical supply ⁽¹⁾	Type	FLE05	FLE10	FLE15	FLE20	FLE25	FLE30	FLE40	FLE50	FLE65	FLE80	FLE100	FLE130	
208-240 VAC / 1 / N / 50-60Hz	Steam output [kg/h]	4.2-4.8		7.8-9.0		16.6-19.2								
	Steam output [lbs/h]	9.2-10.6		17.2-19.8		36.5-42.3								
	Rated power [kW]	3.1-3.6		5.9-6.8		12.5-14.4								
	Rated current [A] ⁽²⁾	15		28.2		60								
208-240 VAC / 3 / 50-60Hz	Steam output [kg/h]	4.5-5.2	7.2-8.3	13.5-15.6		23.1-26.6	28.0-32.3	28.8-33.3	38.4-44.3		57.6-66.5	76.9-88.7		
	Steam output [lbs/h]	9.9-11.5	15.8-18.3	29.7-34.3		50.8-58.5	61.6-71.1	63.4-73.3	84.5-97.5		126.7-146.3	169.2-195.1		
	Rated power [kW]	3.4-3.9	5.4-6.2	10.2-11.7		17.3-20.0	21.0-24.2	21.6-24.9	28.8-33.3		2x21.6-24.9	2x28.8-33.3		
	Rated current [A] ⁽²⁾	9.4	15.0	28.2		48.0	58.2	60.0	80.0		2x60.0	2x80.0		
440-480 VAC / 3 / 50-60Hz	Steam output [kg/h]	4.8-5.2	9.6-10.4	14.3-15.6	19.1-20.8	23.9-26.1	28.7-31.3	38.3-41.8	47.9-52.2	62.2-67.8	76.5-83.3	95.7-104.0	124.0-135.0	
	Steam output [lbs/h]	10.6-11.4	21.2-22.9	31.5-34.3	42.0-45.8	52.6-57.4	63.1-68.9	84.3-92.0	105.4-114.8	136.8-149.2	168.3-183.7	210.5-228.8	272.8-297.0	
	Rated power [kW]	3.6-3.9	7.2-7.8	10.7-11.7	14.3-15.6	17.9-19.5	21.5-23.4	28.7-31.3	35.9-39.2	46.6-50.9	2x28.7 x 31.3	2x35.9-39.2	2x46.6-50.8	
	Rated current [A] ⁽²⁾	4.7	9.4	14.1	18.8	23.5	28.2	37.7	47.1	61.2	2x37.7	2x47.1	2x61.2	
575-600 VAC / 3 / 50-60Hz	Steam output [kg/h]	4.9-5.1	9.8-10.3	14.6-15.0	19.5-20.4	24.4-25.5	29.3-30.6	39.2-40.9	48.9-51.0	63.6-66.4	78.3-81.8	95.9-100.0	127.0-132.0	
	Steam output [lbs/h]	10.8-11.2	21.6-22.5	32.1-33.0	42.9-44.9	53.7-56.1	64.5-67.3	86.2-90.0	107.6-112.2	139.9-146.1	172.3-180.0	211.0-220.0	279.4-292.6	
	Rated power [kW]	3.7-3.8	7.4-7.7	11.0-11.4	14.7-15.3	18.3-19.1	22.0-23.0	29.4-30.7	36.7-38.2	47.7-49.8	2x29.4-31.7	2x36.0-37.5	2x47.7-49.8	
	Rated current [A] ⁽²⁾	3.7	7.4	11.0	14.7	18.4	22.1	29.5	36.8	47.9	2x29.5	2x36.1	2x47.9	
Number of cylinders	1								2					
Control type	FlexLine mainboard with capacitive 3.5" touch color display													
Internal control voltage	208-240V / 50-60Hz													
Steam hose connection [mm]	1 x DN 25 ID			1 x DN 40 ID			1 x DN 40 ID ⁽⁴⁾	2 x DN 40 ID		2 x DN 40 ID ⁽⁴⁾	4 x DN 40 ID			
Steam hose connection [in]	1 x 1 ID			1 x 1.6 ID			1 x 1.6 ID ⁽⁴⁾	2 x 1.6 ID		2 x 1.6 ID ⁽⁴⁾	4 x 1.6 ID			
Dimensions ⁽³⁾														
Height [mm/in]	535/21.1			695/27.4			750/29.5		785/30.9		750/29.5		785/30.9	
Width [mm/in]	460/18.1			540/21.3			580/22.8		640/25.2		1130/44.5		1170/46.1	
Depth [mm/in]	320/12.6			320/12.6			355/14.0		420/16.5		420/16.5		420/16.5	
Water installation	Tap water of varying qualities, 1 to 10 bar / 14.5 - 145 PSI, with 3/4" external thread													

FlexLine FLE-TPRO (electrodes) technical data

A higher humidification performance is possible by connecting units together.

FLE15-TPRO	FLE20-TPRO	FLE25-TPRO	FLE30-TPRO	FLE40-TPRO	FLE50-TPRO	FLE65-TPRO
13.3-15.4		16.6-19.2				
29.3-34.0		36.5-42.3				
10.2-11.5		12.5-14.4				
48		60				
13.5-15.6		23.1-26.6	28.0-32.3	28.8-33.3	38.4-44.3	
29.7-34.3		50.8-58.5	61.6-71.1	63.4-73.3	84.5-97.5	
10.2-11.7		17.3-20.0	21.0-24.2	21.6-24.9	28.8-33.3	
28.2		48.0	58.2	60.0	80.0	
14.3-15.6	19.1-20.8	23.9-26.1	28.7-31.3	38.3-41.8	47.9-52.2	62.2-67.8
31.5-34.3	42.0-45.8	52.6-57.4	63.1-68.9	84.3-92.0	105.4-114.8	136.8-149.2
10.7-11.7	14.3-15.6	17.9-19.5	21.5-23.4	28.7-31.3	35.9-39.2	46.6-50.9
14.1	18.8	23.5	28.2	37.7	47.1	61.2
14.6-15.0	19.5-20.4	24.4-25.5	29.3-30.6	39.2-40.9	48.9-51.0	63.6-66.4
32.1-33.0	42.9-44.9	53.7-56.1	64.5-67.3	86.2-90.0	107.6-112.2	139.9-146.1
11.0-11.4	14.7-15.3	18.3-19.1	22.0-23.0	29.4-30.7	36.7-38.2	47.7-49.8
11.0	14.7	18.4	22.1	29.5	36.8	47.9
1						
FlexLine mainboard Process with capacitive 3.5" touch colour display						
208-240V / 50-60Hz						
1 x DN 25 ID	1 x DN 40 ID			1 x DN 40 ID ⁽⁴⁾	2 x DN 40 ID	
1 x 1 ID	1 x 1.6 ID			1 x 1.6 ID ⁽⁴⁾	2 x 1.6 ID	
695/27.4						
540/21.3			750/29.5		785/30.9	
320/12.6			580/22.8		640/25.2	
320/12.6			355/14.0		420/16.5	
Tap water of varying qualities, 1 to 10 bar / 14.5 to 145 PSI, with 3/4" external thread						

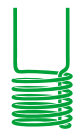
We reserve the right to make technical changes.

⁽¹⁾ Other voltages upon request.

⁽²⁾ FlexLine electrodes: 1.1-fold power consumption after full blowdown. Observe actuation characteristics of automatic circuit-breakers. If necessary, select the next higher circuit-breaker level.

⁽³⁾ External width and depth dimensions. Height including drainage nozzles.

⁽⁴⁾ Incl. Y-piece DN 40.



FlexLine FLH (heaters) technical data

A higher humidification performance is possible by connecting units together.

Electrical supply ⁽¹⁾	Type	FLH03	FLH06	FLH09	FLH15	FLH25	FLH30	FLH40	FLH50	FLH60	FLH80	FLH100	
208-240 VAC / 1 / N / 50-60Hz	Steam output [kg/h]	2.5-3.3	4.9-6.5										
	Steam output [lbs/h]	5.5-7.3	10.8-14.3										
	Rated power [kW]	1.8-2.4	3.7-4.9										
	Rated current [A] ⁽²⁾	8.8-10.2	17.7-20.4										
208-240 VAC / 3 / 50-60Hz	Steam output [kg/h]	2.5-3.3	4.9-6.5		12.2-16.6								
	Steam output [lbs/h]	5.5-7.3	10.8-14.3		26.8-36.5								
	Rated power [kW]	1.8-2.4	3.7-4.9		9.3-12.4								
	Rated current [A] ⁽²⁾	8.8-10.2	17.7-20.4		25.9-29.9								
440-480 VAC / 3 / 50-60Hz	Steam output [kg/h]		5.5-6.5	8.2-9.8	13.9-16.6	23.1-27.4	27.8-33.1	37.0-44.0	43.7-52.0	55.6-66.2	73.9-88.0	87.4-104.0	
	Steam output [lbs/h]		12.1-14.3	18.1-21.6	30.6-36.5	50.8-60.3	61.2-72.8	81.4-96.8	96.1-114.4	122.4-145.6	162.6-193.6	192.3-228.8	
	Rated power [kW]		4.1-4.9	6.2-7.3	10.4-12.4	17.3-20.6	20.9-24.8	27.7-33.0	32.8-39.0	2x20.9-24.8	2x27.7-33.0	2x32.8-39.0	
	Rated current [A] ⁽²⁾		9.4-10.2	14.0-15.3	13.7-14.9	22.7-24.8	27.4-29.9	36.4-39.7	43.0-46.9	2x27.4-29.9	2x36.4-39.7	2x43.0-46.9	
575-600 VAC / 3 / 50-60Hz	Steam output [kg/h]		4.6-5.0	6.8-7.4	11.5-12.6	19.1-20.8	23.1-25.1	30.7-33.4	38.3-41.7	46.2-50.2	61.3-66.8	76.5-83.3	
	Steam output [lbs/h]		10.1-11.0	15.0-16.3	25.3-27.7	42.0-45.8	50.8-55.2	67.5-73.5	84.3-91.7	101.6-110.4	134.9-147.0	174.2-189.6	
	Rated power [kW]		3.4-3.7	5.1-5.6	8.7-9.4	14.3-15.6	17.3-18.8	23.0-25.0	28.7-31.2	2x17.3-18.8	2x23.0-25.0	2x28.7-31.2	
	Rated current [A] ⁽²⁾		5.9-6.2	8.9-9.3	8.7-9.1	14.4-15.0	17.4-18.1	23.1-24.1	29.7-30.1	2x17.4-18.1	2x23.1-24.1	2x29.7-30.1	
Number of cylinders		1					2						
Control type		FlexLine mainboard with capacitive 3.5" touch color display											
Internal control voltage		208-240V / 50-60Hz											
Steam hose connection [mm]		1 x DN 25 ID		1 x DN 40 ID	1 x DN 40 ID ⁽⁴⁾	2 x DN 40 ID		2 x DN 40 ID ⁽⁴⁾	4 x DN 40 ID				
Steam hose connection [in]		1 x 1 ID		1 x 1.6 ID	1 x 1.6 ID ⁽⁴⁾	2 x 1.6 ID		2 x 1.6 ID ⁽⁴⁾	4 x 1.6 ID				
Dimensions ⁽³⁾		1			2			3			4		
Height [mm/in]		535/21.1			695/27.4			785/30.9			785/30.9		
Width [mm/in]		460/18.1			540/21.3			640/25.2			1170/46.1		
Depth [mm/in]		320/12.6			320/12.6			420/16.5			420/16.5		
Water installation		Demineralized water / cleaned condensate / partially softened water / tap water of varying qualities, 1 to 10 bar / 14.5 to 145 PSI, with 3/4" external thread											

FlexLine FLH-TPRO (heaters) technical data

A higher humidification performance is possible by connecting units together.

FLH03	FLH06	FLH09	FLH15	FLH25	FLH30	FLH40	FLH50
2.5-3.3	4.9-6.5						
5.5-7.3	10.8-14.3						
1.8-2.4	3.7-4.9						
8.8-10.2	17.7-20.4						
2.5-3.3	4.9-6.5		12.2-16.6				
5.5-7.3	10.8-14.3		26.8-36.5				
1.8-2.4	3.7-4.9		9.3-12.4				
8.8-10.2	17.7-20.4		25.9-29.9				
	5.5-6.5	8.2-9.8	13.9-16.6	23.1-27.4	27.8-33.1	37.0-44.0	43.7-52.0
	12.1-14.3	18.1-21.6	30.6-36.5	50.8-60.3	61.2-72.8	81.4-96.8	96.1-114.4
	4.1-4.9	6.2-7.3	10.4-12.4	17.3-20.6	20.9-24.8	27.7-33.0	32.8-39.0
	9.4-10.2	14.0-15.3	13.7-14.9	22.7-24.8	27.4-29.9	36.4-39.7	43.0-46.9
	4.6-5.0	6.8-7.4	11.5-12.6	19.1-20.8	23.1-25.1	30.7-33.4	38.3-41.7
	10.1-11.0	15.0-16.3	25.3-27.7	42.0-45.8	50.8-55.2	67.5-73.5	84.3-91.7
	3.4-3.7	5.1-5.6	8.7-9.4	14.3-15.6	17.3-18.8	23.0-25.0	28.7-31.2
	5.9-6.2	8.9-9.3	8.7-9.1	14.4-15.0	17.4-18.1	23.1-24.1	29.7-30.1
1							
FlexLine mainboard Process with capacitive 3.5" touch colour display							
208-240V / 50-60Hz							
1 x DN 25 ID		1 x DN 40 ID	1 x DN 40 ID ⁽⁴⁾	2 x DN 40 ID		2 x DN 40 ID	
1 x 1 ID		1 x 1.6 ID	1 x 1.6 ID ⁽⁴⁾	2 x 1.6 ID		2 x 1.6 ID	
1			2			3	
535/21.1		695/27.4		785/30.9			
460/18.1		540/21.3		640/25.2			
320/12.6		320/12.6		420/16.5			
Demineralized water, 1 to 10 bar / 14.5 to 145 PSI, with 3/4" external thread							

We reserve the right to make technical changes.

- (1) Other voltages upon request.
- (2) FlexLine electrodes: 1.1-fold power consumption after full blowdown. Observe actuation characteristics of automatic circuit-breakers. If necessary, select the next higher circuit-breaker level.
- (3) External width and depth dimensions. Height including drainage nozzles.
- (4) Incl. Y-piece DN 40.
- (5) Is achieved after 2-3 x absorption distance.

Comparison of equipment and options

	FlexLine heater	FlexLine FLH-TPRO
Control accuracy ⁽⁵⁾	Up to +/- 1 %	Up to +/- 0.75 %
Water quality	Demineralized water, cleaned condensate, partially softened water, tap water of different qualities	Demineralized water
SuperFlush	Integrated	Not necessary
Solenoid valve	1-fold to 3-fold	2-fold to 5-fold
Digital inputs (standard)	1	2
Analogue inputs (standard)	1	2
Optional relay functions	Up to 11	Up to 8



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