E-Series

Do you search for a ready-to-use unit to produce a precise and adjustable flow of steam? The E-series precision generator delivers pure steam at the set flow rate and temperature.

The unit is fully automatic and easy to use. It is a unique tool for use in laboratory and industry.

Advantages

Pure steam – no vector gas
Flow control 0 to 100%
Pressurised steam
Superheated steam
Rapid change of flow
Start-up time 5 min
Light and compact
Silent
Maintenance-free
Fully automatic and safe

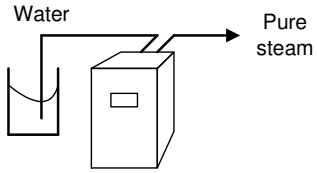
Technology

Micro processor controlled
Long-life heating element
Overheating protection
CE compliance

Applications

Lab bench steam generation
Sterilisation
Fuel cell development
Fuel processor development
Tube furnaces
Chamber furnaces

Principle

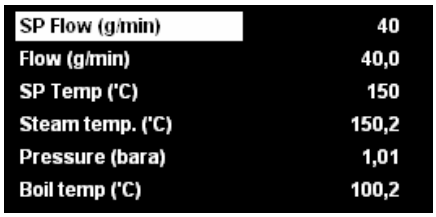


Capacity

Model	E-1500	E-3000	E-6000
Steam flow (g/min)	0…25	0…50	0…100
Temperature	100…300 °C		
Pressure	0…15 bar(a))		

Display

The front panel display will give information about the produced steam flow. The E-Series can control the flow rate and temperature. The pressure is monitored.



Industrial version

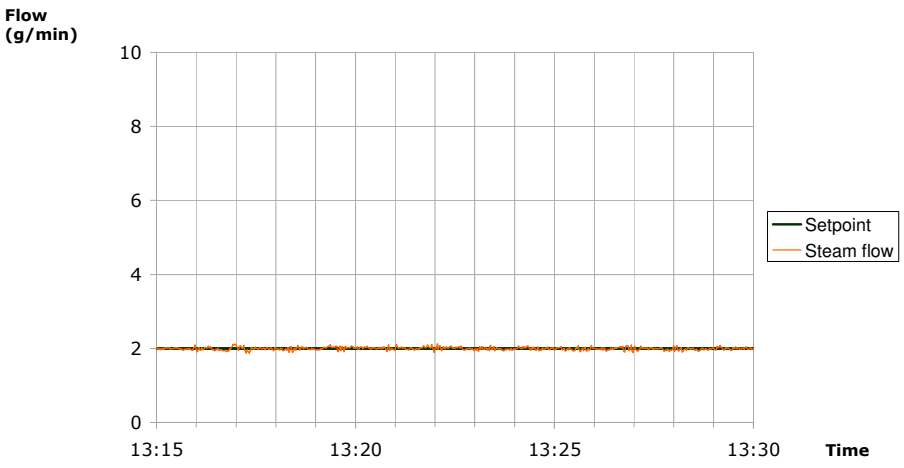
The E-series is available in a version with wall mount stainless steel enclosure. This version can also be offered with ATEX classification. The entire product can be produced according to GMP standards and further requests.

Technical data

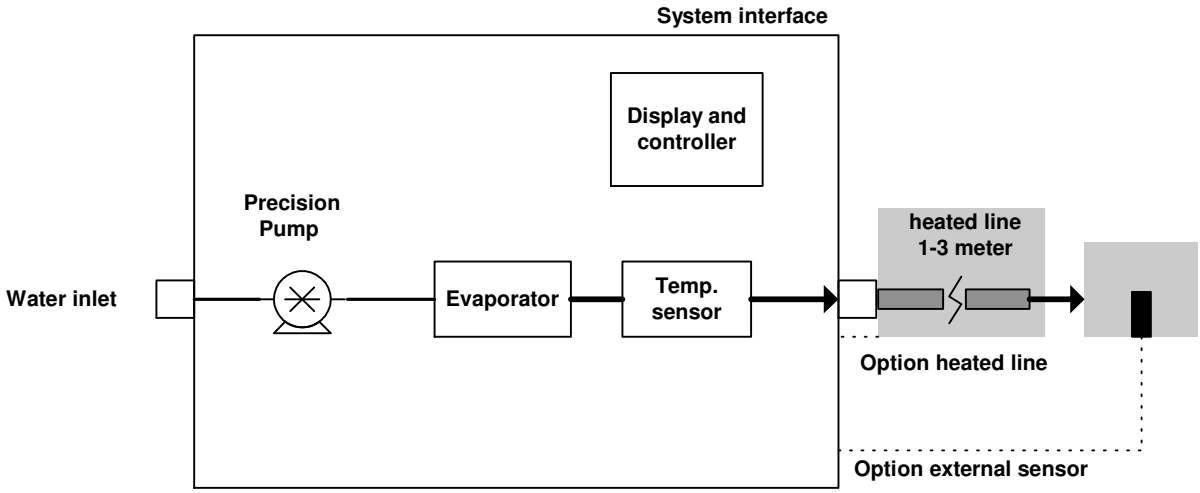
	E-1500	E-3000	E-6000
Steam flow			
Control range (g/min)	0…25	0…50	0…100
Minimum stable flow (g/min)	0.5	1	2
Flow accuracy	± 2% of Full Scale at steady state (<30 min after setpoint change)		
Transient accuracy	± 5% of Full Scale after setpoint change		
Steam temperature			
Range (optional)	100…200 (300) °C		
Accuracy	±2 °C		
Steam pressure			
Pressure	0.8…1.2 bara (atm), 1…6 bar(a) or free def. between 0 (vacuum)…15 bar(a)		
Liquid supply			
Water quality	Deionised or distilled (max 10µS / cm)		
Suction capacity of inlet water	1 m		
Pressure of inlet water	Atm (1-2 m water column recommended)		
Pressure of inlet water (option)	0…4 bar(g)		
General			
Power	1500 W	3000 W	6000 W
Ambient temperature in use	+5… +45 °C		
Ambient temperature storage	-40… +60 °C		
Start-up time	5 min		
Wetted materials	PTFE, Stainless steel, (PEEK, EPDM)		
Certification	CE certified		
Mechanical			
WxHxD	191.6x353x331 mm	281x471x391 mm	281x471x391 mm
Weight	Approx 9 kg	Approx 20 kg	Approx 23 kg
Liquid inlet	6 mm or ¼" Swagelok®		
Steam outlet	6 mm or 1/4" Swagelok®	12 mm or 1/2" Swagelok®	
Power and signals			
Power	208-230 V single phase, 50-60 Hz		400 or 480 VAC three phase, 50-60 Hz
Fuse	10 amp	16 amp	
Remote control digital (optional)	RS 232 / RS 485 Modbus RTU or Modbus TCP Open source Java-based software included.		
Remote control analogue (optional)	0…10 V, 0…5 V, 0…20 mA or 4…20 mA.		

Accuracy and stability

The graph shows the setpoint and the process value of steam flow rate for an E-1500 unit.



System design



Precision pump

The steam flowrate is controlled by controlling the water supply to the evaporator by a precision pump. The pump works with high resolution and high stability which ensures precisely adjustable steam flow and high repeatability. The electrical power required for the evaporation process is precisely measured and the evaporated amount of water is calculated. This flow monitoring principle is independent of back-pressure and gives an accurate measurement of the steam flow. The accuracy of flow control is +/- 2 % of full scale at steady state of the evaporator power. During the non-steady state period 0-30 min after setpoint change the accuracy is +/- 5% of FS.

Evaporator

The evaporator is the core of the unit. It instantly produces steam at the same rate as the water is supplied.

Heated output tube

A heated flexible tube for the output gas facilitates condensation free transfer of the humid gas from the humidifier. The temperature of the output tube is controlled from the front panel. This option is recommended to guarantee droplet free output at low flows.

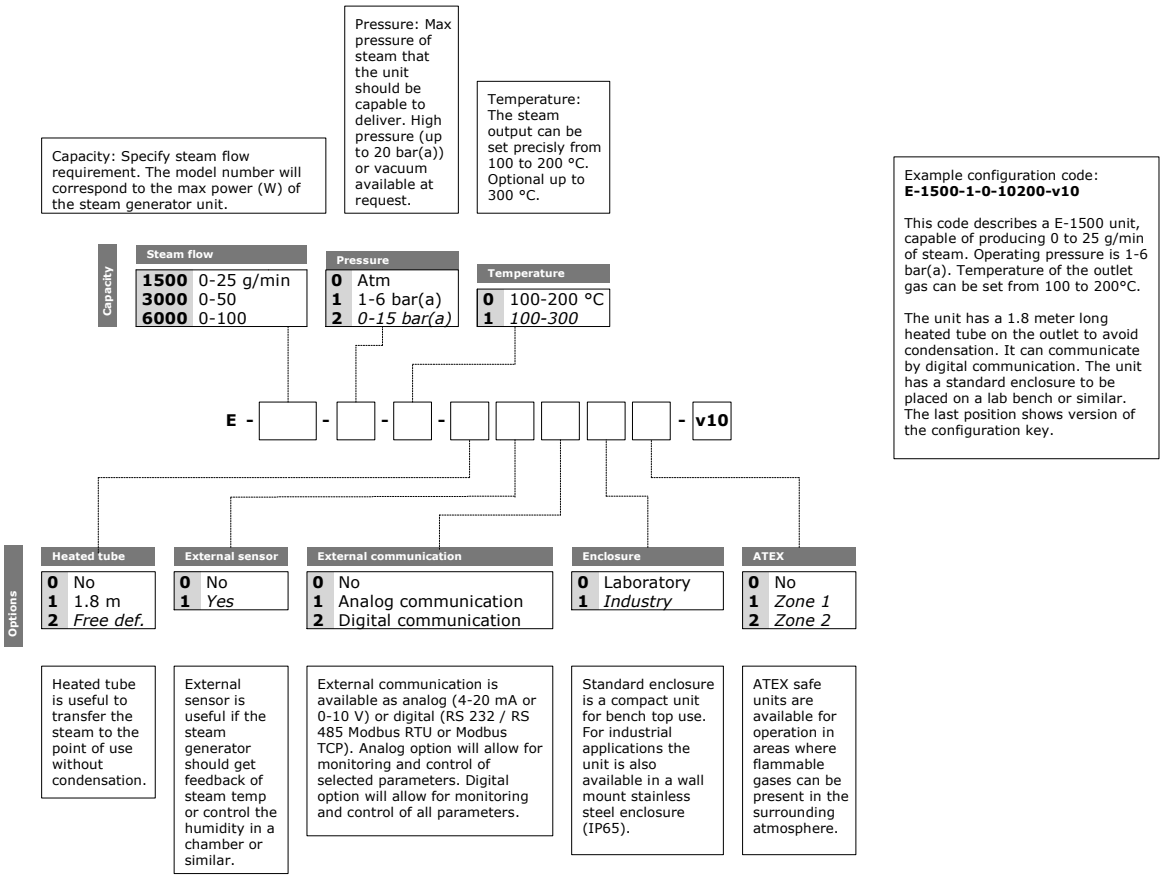
External sensor

The unit can be equipped with an external temperature or humidity sensor. In this way the unit can be used to control the steam temp at a point downstream the unit or to control the humidity of a test chamber by adding steam so that the setpoint humidity is reached.

Easy installation and operation

Put the suction tube in a tank of water. Plug in the power. Turn the unit on. Start-up time is 5 min. Use the panel buttons to set the flow rate and temperature you like. The Precision evaporator will instantly start to tune to the set flow of steam.

Product configuration code



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