

**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: Precise steam flow on demand.



**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

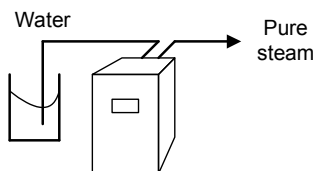
**Technology**

- 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 (°C)	100...200	100...400	
Pressure	0...15 bar abs		

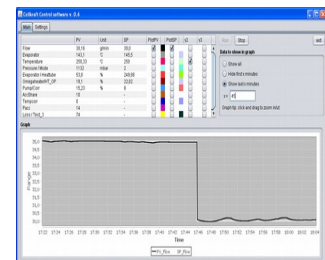
**Display**

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.



**Software**

The unit can be controlled and monitored by a downloadable software.



**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.

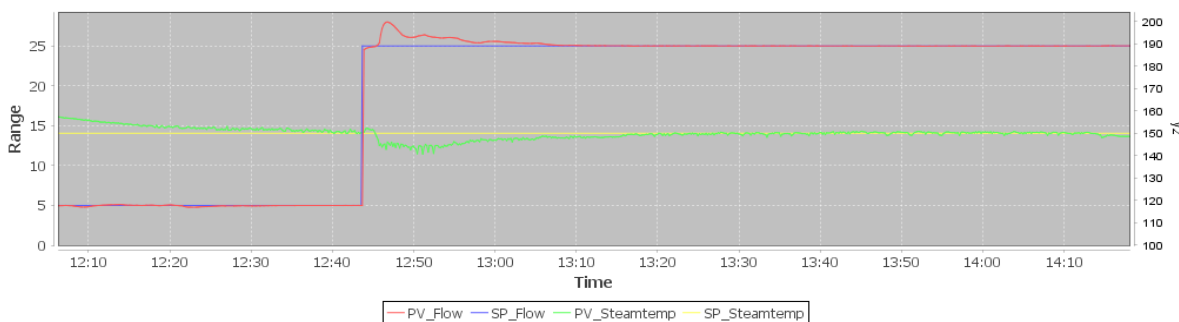


Technical data

	E-1500	E-3000	E-6000
<b>Steam flow</b>			
Control range (g/min)*	0...25	0...50	0...100
Minimum stable flow (g/min)	0.5	1	2
Flow accuracy (steady state)	±1 % of Full Scale ± 1 % of Present Value		
Transient accuracy (<15 min after setpoint change)	± 5% of Full Scale		
<b>Steam temperature</b>			
Range (optional)	100...200 °C	100...200 (400) °C	
Accuracy	±2 °C		
<b>Steam pressure</b>			
Pressure	1...6 bar(a) or free def. between 0 (vacuum)...15 bar(a)		
<b>Liquid supply</b>			
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...5 bar(g)		
<b>General</b>			
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		
<b>Mechanical</b>			
WxHxD standard bench top version	191.6x353x331 mm	281x471x391 mm	281x471x391 mm
WxHxD wall mount version	500x500x300 mm		
Weight	Approx 9 kg	Approx 20 kg	Approx 23 kg
Liquid inlet	Swagelok® 6 mm. At request 1/4"		
Steam outlet	Swagelok® 6 mm At request: 1/4"	Swagelok® 12 mm At request: 1/2"	
<b>Power and signals</b>			
Power	208-230 V single phase, 50-60 Hz		400 VAC 3 Phase+N+PE, 50-60 Hz**
Fuse	10 amp	16 amp	
Remote control digital (optional)	Standard: Modbus TCP (At request: Modbus RTU, RS 232, RS 485) Open source Java-based software included.		
Remote control analogue (optional)	4...20 mA		

\* At >220 VAC. Below this voltage max capacity is reduced. \*\* US version: 208 VAC (L to L), 50-60 Hz, three phase+ground.

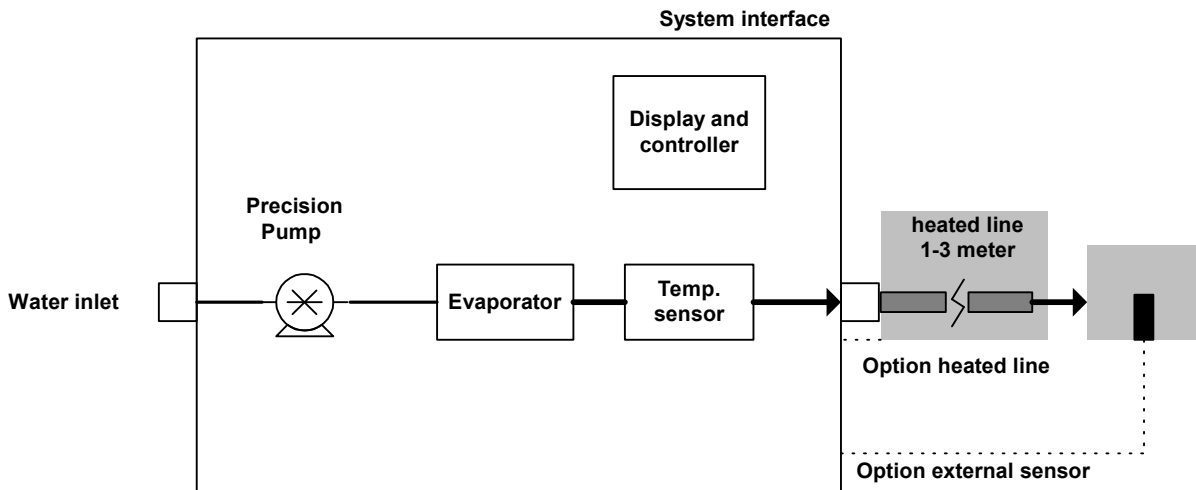
Accuracy, dynamics and stability



Flow change from 5 g/min to 25 g/min at temperature setpoint of 150 °C.

Accurate • Easy to use • Reliable

**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 +/- 1 % of full scale +/- 1 % of set value at steady state. During the non-steady state period 0-15 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.

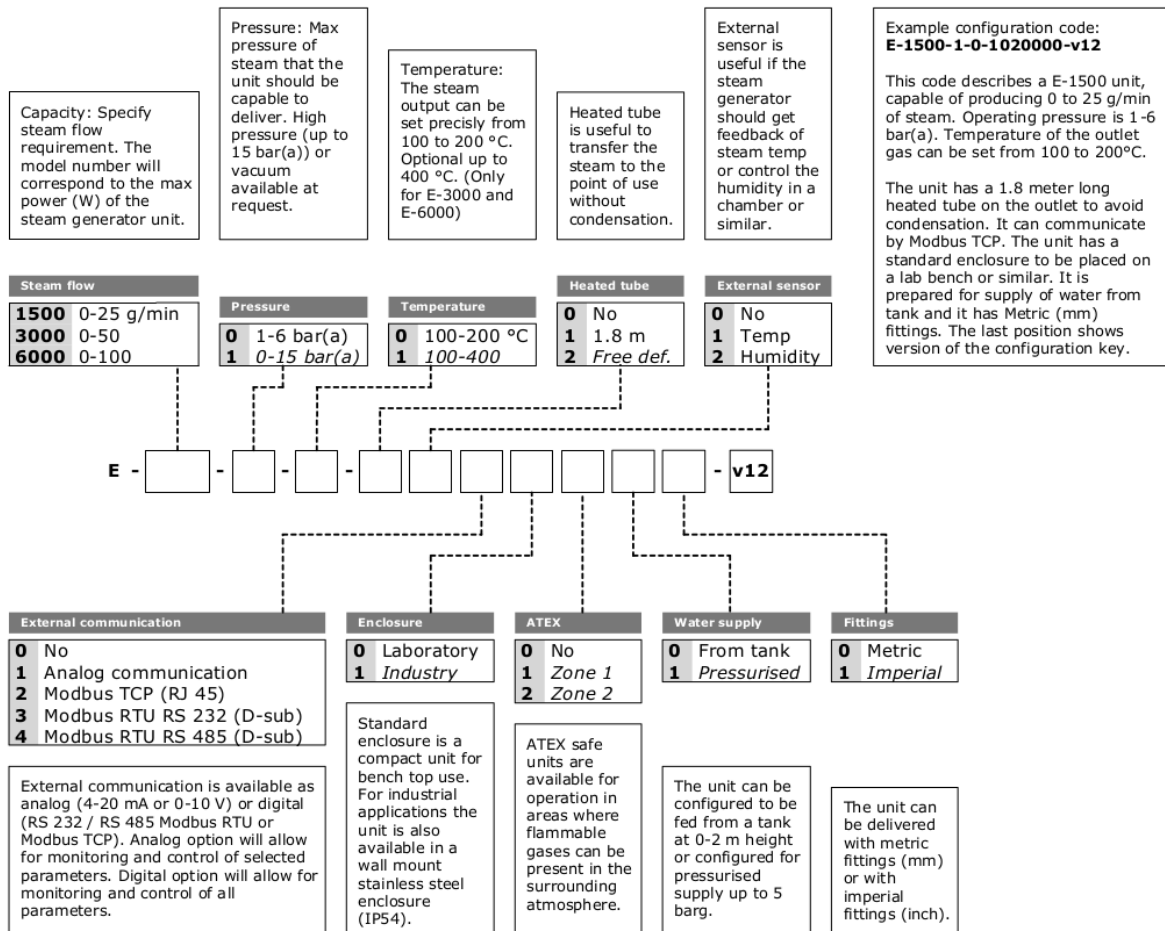
**Easy installation and operation**

All fittings and sockets are on the rear panel. 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 or the program for remote control to set the flow rate and temperature you like. The Precision evaporator will instantly start to tune to the set flow of steam.



Rear panel of E-1500.

**Product configuration code**



**Contact**

Anders Ocklind  
+46 8 673 19 14  
anders.ocklind@cellkraft.se

Joakim Nordlund  
+46 8 673 19 15  
joakim.nordlund@cellkraft.se

Cellkraft AB  
Lilla Frescativägen 4A  
SE-114 18 Stockholm  
Sweden

www.cellkraft.se

Cellkraft reserves the right to change data in this document. Data is binding only after contractual agreement with Cellkraft.

Sep-21 ver: Eng. E.33