

**Electronically controlled
instantaneous water heaters**



“Electric instant water heaters are the future!”



Made in Germany

In 1951, Claus-Holmer Gerdes started selling mini instant water heaters. Today, we are a second-generation, owner-operated mid-size company in the northern German Hanseatic city of Lüneburg. More than 200 employees are responsible for development, design, production and distribution of the energy-efficient hot water heaters with a high standard of quality. And all that under one roof!

Efficiency

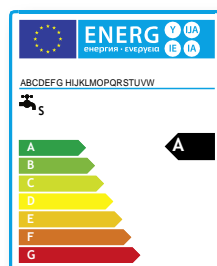
We are offering energy-efficient, decentralised hot water solutions. This also requires a high degree of flexibility to be able to offer individual solutions. And we are aiming for many goals: Conserving energy and water, convenience, hygiene, durable products, simple installation and operation, fast and reliable service. Of course, smart technology is a given.

Responsibility

At CLAGE, it is easy to notice personal responsibility because of our great passion for everything we do. The process from design to the finished product is quite sustainable and is continuously put to the test. We work according to the environmental management standard ISO 14001. And we even take it one step further because we aim to maintain the highest efficiency for our materials. The units are designed in such a way that many parts, e.g. heating cartridges, are exchangeable. This reduces waste and increases the product lifetime.

Specialist

As a specialist for decentralised warm water supply we offer a large product range with many individual solutions. As market leader in the mini instant water heater sector, we are committed to the constant search for new solutions and innovation in all areas of decentralised hot water preparation. That's why we were named Innovation Ambassador by the Chamber of Commerce and Industry.



Energy efficiency class A for all!



Advantages of electric instant water heaters



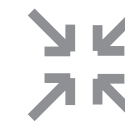
Hot water instantly
On demand and without waiting



Lowers operating costs
Save energy and water



Ideal temperature
Adjustable at the water heater



Save space
Compact dimensions



Short hot water paths
With less energy losses



Save water
No adding of cold water necessary



Environmentally friendly
Less water usage, less energy demand, less CO₂





More hygiene
Due to short water lines

Efficient solutions for every hot water situation

For washbasins  :

For kitchen sinks  :

For shower  and bath  :



E-mini instant water heater
M line

E-compact instant water heater
C line

E-comfort instant water heater
D line

For additional in-depth information, please visit our website: www.clage.com

Smart energy efficiency.



E-mini instant water heater MCX



Energy efficiency class



Our top-of-the-line E-mini instant water heater combines great functionality with sophisticated design. Its compact design allows for installation under any sink.

- > **Electronically controlled instant water heater** with a compact design for energy-efficient hot water supply of a sink or a staff kitchen
- > **The heating output is electronically controlled.** This provides an ideal hot water temperature without the need to add cold water at the tap.
- > **Touch button controls** with colour LEDs to set the outlet temperature to 35°C, 38°C or max. 45°C.
- > Connection kit (T-piece and flexible pressure hose) for an angle valve is included
- > **Accessory option:**
Wireless remote control FX
FX: Part no. 2400-26050 (product image on the DSX page)



Smart Control-ready

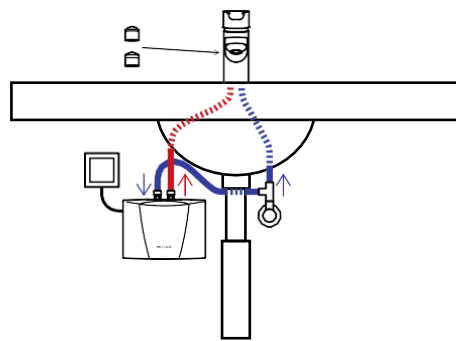


solar-ready, suitable for reheating *)



Optional wireless remote control

Example of a closed-outlet installation:



	MCX3	MCX4	MCX6	MCX7
Maximum operating pressure [MPa (bar)]:	1 (10)			
Water connections (thread connections):	G 3/4"			
Hot water output at $\Delta t = 25K^{1)}$ [l/min]:	2.0	2.5	3.3	3.7
Switch-on flow rate / max. flow rate ²⁾ [l/min]:	1.2 / 2.0	1.5 / 2.5	1.5 / 3.3	1.5 / 3.7
Nominal power rating [kW]:	3.5	4.4	5.7	6.5
Voltage [1~ / N / PE 220-240 V AC]:	☑ with plug ³⁾ ☑ Permanent connection			
Voltage [2~ / PE 400 V AC]:	☑ Per. con.			
Nominal current [A]:	15	19	25	16
Required cable diameter [mm ²]:	1.5	2.5	4.0	2.5
Protection class:	IP 25			
Specific water resistance at 15°C [Kcm] \geq :	1100	800	800	1100
Dimensions (height x width x depth) [cm]:	13.5 x 18.6 x 8.7			
Weight filled with water [kg]:	approx. 1.5			

*) Inlet temperature $\leq 70^\circ C$ 1) Temperature increase e.g. from 15°C to 40°C 2) Limited flow amount for optimal temperature increase by water flow adjustment. 3) Also available as type MCX3 (E) (part number 1500-15013) with power supply cable for permanent connection

Compact power, versatile use.



E-Compact instant water heater CEX



Energy efficiency class

Versatile E-compact instant water heater with medium power rating for a bathroom sink, a disposal sink or a single shower.

- > **Electronically controlled instant water heater** with compact design
- > **Push-button operation with LCD indicator** for precise temperature setting between 20°C and 60°C
- > Two programming buttons for individual pre-set temperatures, optional temperature limits as well as function indicators
- > **Adding cold water is no longer necessary**
- > Easy installation facilitated by **small dimensions** and external 1/2" water connectors for unvented or vented installation
- > With power cable for permanent electrical connection
- > **Accessory recommendation for shower use:**
Adjustable shower set CXH
CXH: Part no. 0300-0086
- > **Accessory option:**
Wireless remote control FX
FX: Part no. 2400-26050 (product image on the DSX page)



Smart Control-ready

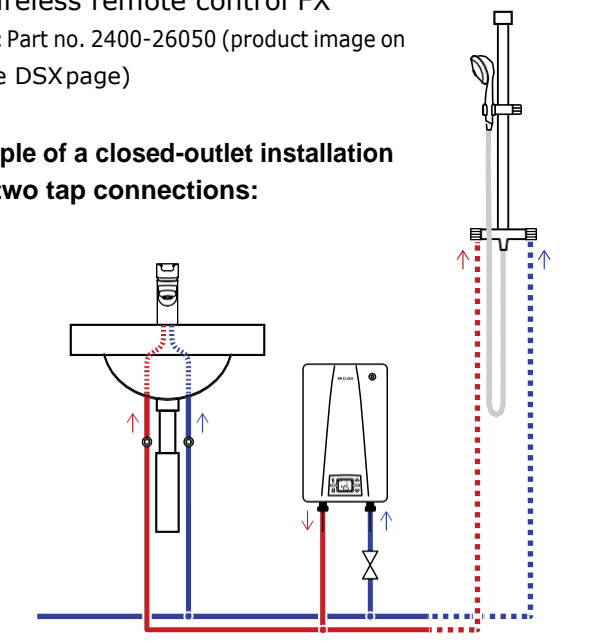


solar-ready, suitable for reheating *)



Optional wireless remote control

Example of a closed-outlet installation with two tap connections:



	CEX 9 (6.6 or 8.8 kW ⁵⁾)	CEX (11 or 13.5 kW ⁵⁾)
Maximum operating pressure [MPa (bar)]:	1 (10)	
Water connections (thread connections):	G 1/2"	G 1/2"
Hot water output at $\Delta t = 28K^{1)2)}$ [l/min]:	3.4	4.5 5.6 6.9 ³⁾
Switch-on flow rate / max. Flow rate ⁴⁾ [l/min]:	2 / 5	
Nominal power rating [kW]:	6.6	8.8 11.0 13.5
Voltage:	1~ / N / PE 220-240 V AC 3~ / PE 400 V AC	
Nominal current ²⁾ [A]:	29	38 16 20
Required cable diameter ²⁾ [mm ²]:	4-6	6 1.5 2.5
Protection class:	IP 24	
Specific water resistance at 15°C [Kcm] \geq :	1100 1100	
Dimensions (height x width x depth) [cm]:	29.4 x 17.7 x 10.8	
Weight filled with water [kg]:	approx. 2.7	

*) Inlet temperature $\leq 70^\circ C$ 1) Temperature increase e.g. from 12°C to 40°C 2) Depending on the selected power rating 3) Mixed water 4) Restricted flow for optimal temperature increase 5) With the Multiple Power System MPS®, the maximum power rating is set at the time of installation

Convenient under the kitchen sink.



E-compact instant water heater CDX-U

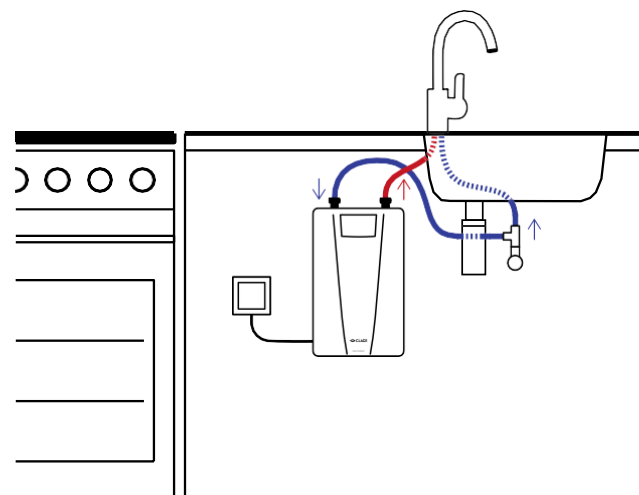


Energy efficiency class

Although this E-compact instant water heater has no user controls, it operates with reliable electronics. The heating power is controlled automatically depending on flow rate and inlet temperature. During daily use, the temperature is set at the tap.

- > **Electronically controlled undersink instant water heater** with compact design and without user controls
- > Automatic heating adjustment based on flow rate and inlet temperature
- > The maximum outlet temperature is factory-set to 50°C, **temperature setting as usual by mixing cold water at the tap**
- > Easy installation under the sink facilitated by **small dimensions** and external 3/8" water connectors for unvented and vented installation
- > With power cable for permanent electrical connection
- > **Accessory option:**
Load shedding module LAB
Allows the instant water heater to be operated along with the electric cooker at the cooker terminal outlet box.
LAB: Part no. 82260

Example of a closed-outlet installation:



	CDX 7-U	CDX 11-U
Maximum operating pressure [MPa (bar)]:	1 (10)	
Water connections (thread connections):	G 3/8"	
Hot water output at $\Delta t = 33\text{K}^{1)2)}$ [l/min]:	3.0	4.8
Switch-on flow rate / max. flow rate ³⁾ [l/min]:	2 / 5	
Nominal power rating [kW]:	6.9	11.0
Voltage [3~/PE 400 V AC]:	Permanent connection	
Nominal current [A]:	10	16
Required cable diameter [mm ²]:	1.5	
Protection class:	IP 24	
Specific water resistance at 15 °C [Kcm] \geq :	1000	
Dimensions (height x width x depth) [cm]:	29.4 x 17.7 x 10.8	
Weight filled with water [kg]:	approx. 2.7	

1) Temperature increase for example from 12°C to 45°C 2) Mixed water 3) Limited flow amount for optimal temperature increase.

High-tech for more hot water convenience.



E-comfort instant water heater DSX



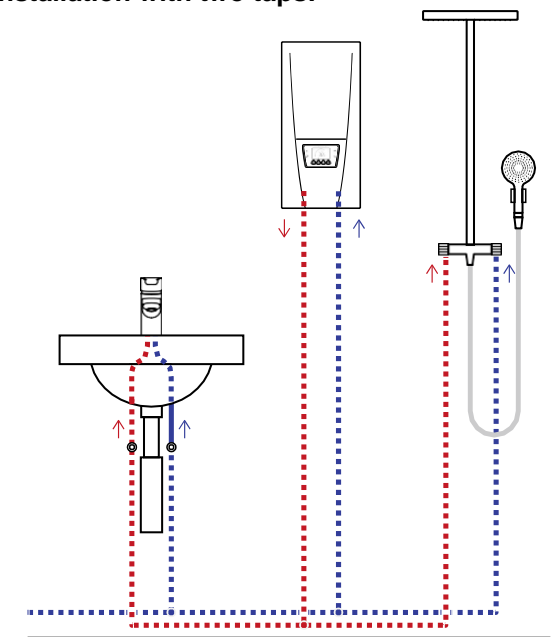
Energy efficiency class

- Smart Control -ready
- solar-ready, suitable for reheating *)
- Wireless remote control included

This top model of the electronic E-comfort instant water heaters offers high-end technology with an aesthetically pleasing design. One touch of a button and your water has the correct temperature. The multi-function display is colour-backlit depending on the temperature and offers comprehensive features such as an energy monitor.

- > **Fully electronically controlled high-tech instant water heater**
- > **Innovative multi-function colour display**
- > Energy efficiency monitor with plain text display
- > Four temperature memory buttons
- > **Always precise temperatures** between 20°C and 60°C with TWIN TEMPERATURE Control TTC® and SERVOTRONIC® **dynamic flow rate control**
- > With the Multiple Power System MPS®, the maximum power rating is set at the time of installation: 18, 21, 24 or 27 kW.
- > **Remote control module included**

Sample installation with two taps:



	DSX (with MPS: 18, 21, 24 or 27 kW adjustable)			
Maximum operating pressure [MPa (bar)]:	1 (10)			
Water connections (thread connections):	G 1/2"			
Hot water output at $\Delta t = 28\text{K}^{1)2)3)}$ [l/min]:	9.2	10.7	12.3	13.8
Switch-on flow rate / max. flow rate [l/min]:	2.5 / automatic			
Nominal power rating [kW]:	18	21	24	27
Voltage [3~/PE 400 V AC]:	Permanent connection			
Nominal current ³⁾ [A]:	26	30	35	39
Required cable diameter ³⁾ [mm ²]:	4	4	6 ⁴⁾	6
Protection class:	IP 25			
Specific water resistance at 15 °C [Kcm] \geq :	1100			
Dimensions (height x width x depth) [cm]:	46.6 x 23.1 x 9.7			
Weight filled with water [kg]:	approx. 4.2			

*) Inlet temperature $\leq 70^\circ\text{C}$ 1) Temperature increase e.g. from 12°C to 40°C 2) Mixed water 3) Depending on the selected power rating 4) Replacement of a 21 kW / 380 V unit: wire diameter 4 mm² can be used

Convenient,
economical
and reliable.



E-comfort instant water heater DEX



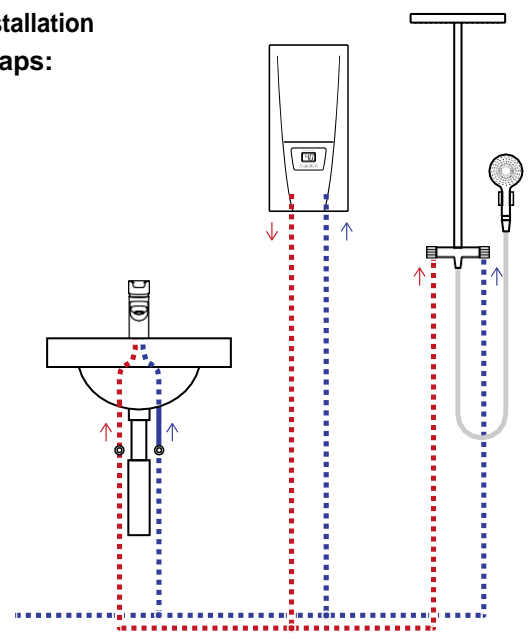
Energy efficiency class

The DEX has everything that makes an excellent electronic E-comfort instant water heater. The desired temperature can be selected directly and is easy to read on the large, back-lit LCD display.

- > **Electronically controlled E-comfort instant water heater**
- > **Large backlit LCD display** for temperature display
- > Two temperature memory buttons
- > **Precise temperatures** between 20 °C and 60 °C with TWIN TEMPERATURE Control TTC® up to the full rated power output (DEX 12 ≤ 55 °C)
- > With the Multiple Power System MPS®, the maximum power rating is set at the time of installation:
DEX 12: 8.8 or 11.5 kW 230 V
DEX: 18, 21, 24 or 27 kW 400 V
- > Remote control module available as accessory
- > **Accessory option:**
Wireless remote control FX
FX: Part no. 2400-26050 (product image on the DSX page)

- Smart Control -ready
- solar-ready, suitable for reheating *)
- Optional wireless remote control

Sample installation with two taps:



DEX 12 (8.8 or 12 kW) | DEX (18, 21, 24 or 27 kW)

Maximum operating pressure [MPa (bar)]:	1 (10)					
Water connections (thread connections):	G ½"					
Hot water output at Δt = 28 K ^{1) 2) 3)} [l/min]:	4.5	5.9	9.2	10.7	12.3	13.8
Switch-on flow rate / max. flow rate [l/min]:	2.5 / 5.0 ⁴⁾		2.5 / 8.0 ⁴⁾			
Nominal power rating [kW]:	8.8	11.5	18	21	24	27
Voltage:	1~/N/PE		3~/PE 400V AC			
	220-240V AC					
Nominal current ³⁾ [A]:	38	50	26	30	35	39
Required cable diameter ³⁾ [mm ²]:	10	4	4	4	6 ⁵⁾	6
Protection class:	IP 25					
Specific water resistance at 15 °C [Kcm] ≥ :	1300		1100			
Dimensions (height x width x depth) [cm]:	46.6 x 23.1 x 9.7					
Weight filled with water [kg]:	approx. 3.7					

*) Inlet temperature ≤ 70 °C 1) Temperature increase e.g. from 12 °C to 40 °C 2) Mixed water 3) Depending on the selected power rating 4) Restricted flow for optimal temperature increase 5) Replacement of a 21 kW / 380V unit: wire diameter 4mm² can be used

Saving energy
in the bathroom
is that simple!



E-comfort instant water heater DCX

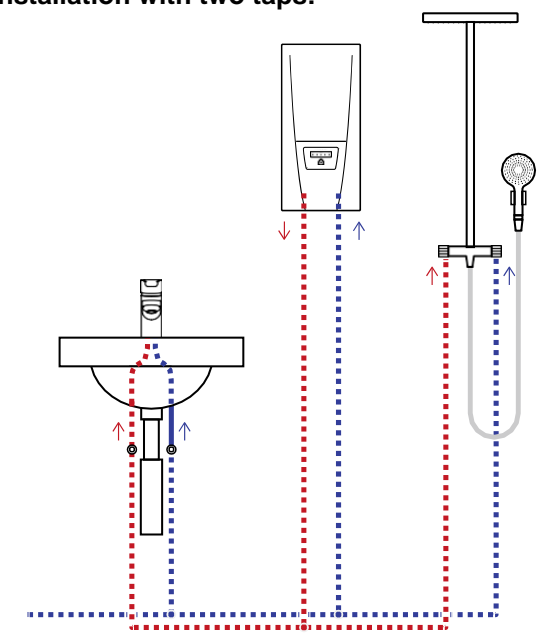


Energy efficiency class

The electronic E-comfort instant water heater DCX is designed for easy operation. With the touch of a button, one of five typical water temperatures can be selected. Each temperature is indicated by an easily understandable colour display.

- > **Electronically controlled instant water heater** with simple operation
- > One-button operation for fast and easy **five-level temperature selection**: 35 °C, 38 °C, 42 °C, 48 °C and 55 °C
- > Electronic safety system with air bubble detection, temperature and pressure shut-off
- > With the Multiple Power System MPS®, the maximum power rating is set at the time of installation:
DCX 13: 11 or 13.5 kW 400 V
DCX: 18, 21, 24 or 27 kW 400 V

Sample installation with two taps:



DCX 13 (11 or 13.5 kW) | DCX (18, 21, 24 or 27 kW adjustable)

Maximum operating pressure [MPa (bar)]:	1 (10)					
Water connections (thread connections):	G ½"					
Hot water output at Δt = 28 K ^{1) 2) 3)} [l/min]:	5.6	6.9	9.2	10.7	12.3	13.8
Switch-on flow rate / max. flow rate [l/min]:	2.0 / 5.0 ⁴⁾		2.5 / 8.0 ⁴⁾			
Nominal power rating [kW]:	11	13.5	18	21	24	27
Voltage [3~/PE 400V AC]:	Permanent connection					
Nominal current ³⁾ [A]:	16	20	26	30	35	39
Required cable diameter ³⁾ [mm ²]:	1.5	2.5	4	4	6 ⁵⁾	6
Protection class:	IP 25					
Specific water resistance at 15 °C [Kcm] ≥ :	1100					
Dimensions (height x width x depth) [cm]:	46.6 x 23.1 x 9.7					
Weight filled with water [kg]:	approx. 3.7					

1) Temperature increase e.g. from 12 °C to 40 °C 2) Mixed water 3) Depending on the selected power rating 4) Restricted flow for optimal temperature increase 5) Replacement of a 21 kW / 380V unit: wire diameter 4mm² can be used

The cost-effective alternative.



Electronic instant water heater DBX

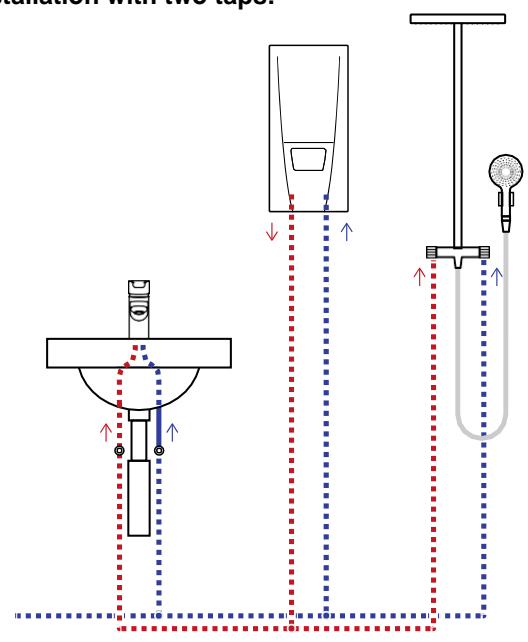


Energy efficiency class

The basic unit of our series of electronic instant water heaters comes without any user controls. That's why the DBX is surprisingly inexpensive.

- > **Electronically controlled basic instant water heater without user controls**
- > Automatic heating adjustment based on flow rate and inlet temperature, outlet temperature is factory-set to 50°C (adjustable internally)
- > Electronic safety system with temperature and pressure shut-off

Sample installation with two taps:



	DBX 18	DBX 21	DBX 24	DBX 27
Maximum operating pressure [MPa (bar)]:	1 (10)			
Water connections (thread connections):	G 1/2"			
Hot water output at $\Delta t = 28K^{1) 2)}$ [l/min]:	9.2	10.7	12.3	13.8
Switch-on flow rate / max. flow rate [l/min]:	2.5 / 7.0 ³⁾	2.5 / 8.0 ³⁾	2.5 / 9.0 ³⁾	2.5 / 9.0 ³⁾
Nominal power rating [kW]:	18	21	24	27
Voltage [3~/PE 400 V AC]:	Permanent connection			
Nominal current [A]:	26	30	35	39
Required cable diameter [mm ²):	4	4	4/6	6
Protection class:	IP 25			
Specific water resistance at 15°C [Kcm] \geq :	1300			
Dimensions (height x width x depth) [cm]:	46.6 x 23.1 x 9.7			
Weight filled with water [kg]:	approx. 3.7			

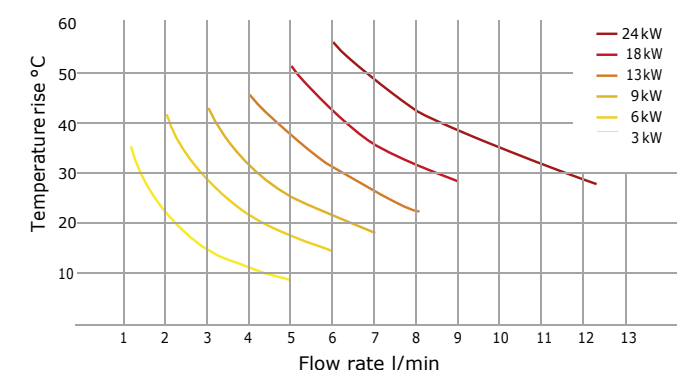
1) Temperature increase for example from 12°C to 40°C 2) Mixed water 3) Limited flow for optimal temperature increase

General data for water heating

POWER CONVERSION TABLE

220 V	230 V	240 V	380 V	400 V	415 V
3.2 kW	3.5 kW	3.8 kW	12.2 kW	13.5 kW	14.5 kW
4.0 kW	4.4 kW	4.8 kW	16.2 kW	18.0 kW	19.4 kW
5.2 kW	5.7 kW	6.2 kW	19.0 kW	21.0 kW	22.6 kW
6.0 kW	6.6 kW	7.2 kW	21.6 kW	24.0 kW	25.8 kW
8.0 kW	8.8 kW	9.6 kW	24.4 kW	27.0 kW	29.0 kW

INSTANTANEOUS PERFORMANCE CHART



INSTANTANEOUS PERFORMANCE CALCULATIONS

$$\text{Temperature rise [}^\circ\text{C]} = \frac{\text{Nominal power rating [kW]} \times 14.3}{\text{Flow per minute [litres]}}$$

$$\text{Flow per minute [litres]} = \frac{\text{Nominal power rating [kW]} \times 14.3}{\text{Temperature rise [}^\circ\text{C]}}$$

$$\text{Temperature rise [}^\circ\text{F]} = \frac{\text{Nominal power rating [kW]} \times 5.7}{\text{Flow per minute [gallons]}}$$

$$\text{Flow per minute [gallons]} = \frac{\text{Nominal power rating [kW]} \times 5.7}{\text{Temperature rise [}^\circ\text{F]}}$$

USEFUL FORMULAE

Time and rating calculations (excluding heat losses)

$$\begin{aligned} \text{Time to heat water [minutes]} &= \frac{\text{Litres} \times \text{Temperature rise [}^\circ\text{C]}}{\text{Nominal power rating [kW]} \times 14.3} \\ &= \frac{\text{Gallons} \times \text{Temperature rise [}^\circ\text{F]}}{\text{Nominal power rating [kW]} \times 5.7} \end{aligned}$$

$$\begin{aligned} \text{Nominal power rating required to heat water [kW]} &= \frac{\text{Litres} \times \text{Temperature rise [}^\circ\text{C]}}{\text{Time [minutes]} \times 14.3} \\ &= \frac{\text{Gallons} \times \text{Temperature rise [}^\circ\text{F]}}{\text{Time [minutes]} \times 5.7} \end{aligned}$$

MEAN TEMPERATURE OF MIXED WATER

$$\text{Mean temperature [}^\circ\text{C]} = \frac{(\text{Hot water [litres]} \times \text{Hot water temperature [}^\circ\text{C]}) + (\text{Cold water [litres]} \times \text{Cold water temperature [}^\circ\text{C]})}{\text{Hot water [litres]} + \text{Cold water [litres]}}$$

$$\text{Mean temperature [}^\circ\text{F]} = \frac{(\text{Hot water [gallons]} \times \text{Hot water temperature [}^\circ\text{F]}) + (\text{Cold water [gallons]} \times \text{Cold water temperature [}^\circ\text{F]})}{\text{Hot water [gallons]} + \text{Cold water [gallons]}}$$

PHYSICAL CONSTANTS

Temperature conversion:

$$\text{Temperature [}^\circ\text{C]} = (\text{Temperature [}^\circ\text{F]} - 32) \div 1.8$$

$$\text{Temperature [}^\circ\text{F]} = \text{Temperature [}^\circ\text{C]} \times 1.8 + 32$$

Volume conversion:

$$1 \text{ litre} = 0.22 \text{ Gallon (GB)}$$

$$0.27 \text{ Gallon (US)}$$

$$1 \text{ gallon (GB)} = 4.54 \text{ Litres}$$

$$1 \text{ gallon (US)} = 3.78 \text{ litres}$$

Pressure conversion:

$$1 \text{ bar} = 0.1 \text{ MPa}$$

$$= 14.5 \text{ psi}$$

$$= 100 \text{ kN/m}^2$$

$$1 \text{ ft head of water} = 0.434 \text{ psi}$$

$$1 \text{ m head of water} = 9.8 \text{ kN/m}^2$$

SITE REQUIREMENTS

- > Electric instantaneous water heaters may only be installed by a plumber and/or electrician.
- > The installation must comply with current IEC and national local regulations or any particular regulations, specified by the local electricity supply company.
- > The installation site must be free from frost at all times.
- > In order to avoid thermal losses, the distance between the instantaneous water heater and the tap connection should be as small as possible.
- > Material of water pipes must be stainless steel or copper. Plastic pipes may only be used if they conform to the relevant standard.
- > Best performance is guaranteed at a flow pressure between 2 and 4 bar (30–60 psi), avoiding the maximum pressure stated on the appliance rating plate.
- > Electrical water heaters must be connected to the protective earth conductor!
- > An all-pole disconnecting device (e.g. via fuses) with a contact opening width of at least 3 mm per pole should be provided at the installation end.
- > To protect the appliance, a fuse element must be fitted with a tripping current commensurate with the nominal current of the appliance.
- > For maintenance work, a shut-off valve should be installed in the supply line. The appliance must be accessible for maintenance work.



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