Friwa
domestic hot water systems

Product range Friwa

Technical data and product information

Product range Friwa

FriwaMini FriwaMega

Friwa modules heat domestic water comfortably and hygienically operating on the principle of a flow-type water heater.
Other than in conventional domestic hot water tanks, domestic water as food is not used for energy storage and is not stored as domestic hot water for hours or days. An efficient plate heat exchanger heats it when necessary.
The energy necessary for hygienically heating the domestic hot water comes from a buffer tank which can be heated via various systems.

Using efficient plate heat exchangers makes it possible to consistently have low return temperatures, thus increasing the efficiency of systems such as condensing boilers, heat pumps and solar thermal installations.

Advantages of the PAW domestic hot water modules:

- Use in combination with heat pumps possible
- Optional circulation
- Wide range of possibilities due to great efficiency across the board
- Faster response time thanks to a special control algorithm, greater comfort
- Ideal connection to the building control system via Modbus protocol
- Optional internet module for system monitoring and parametrisation
- Easy cascadability of the modules due to premounted pipe sets
- High energy use due to high-efficiency pumps
- Special heat exchangers for different water qualities (more information on page 9.)

Dimensioning product range Friwa Domestic hot water technology

The performance of Friwa primarily depends on the temperature in the buffer tank, which delivers the energy to heat up the DHW. The demand of hot water depends on the flow and the number of consumers. In larger apartment buildings a statistic distribution of withdrawals can be detected. The following table shows a basic overview of the application range of Friwa module variants. More detailed output capacity tables can be found on page 16.

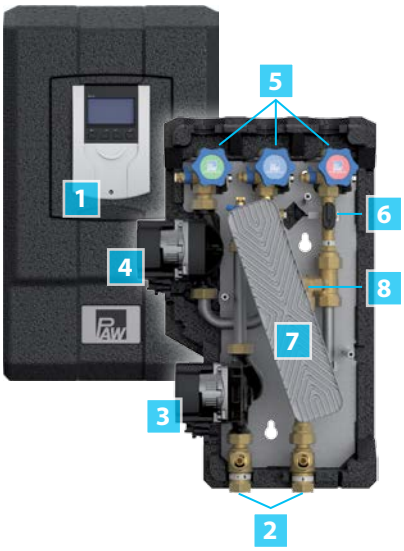
Housing unit	70 °C / 60 °C / 10 °C	70 °C / 45 °C / 10 °C ***	52 °C / 60 °C / 10 °C ***
Single-family house	FriwaMini	FriwaMini	FriwaMini
Two-family house	FriwaMidi	FriwaMidi	FriwaMidi
3	FriwaMidi	FriwaMidi	FriwaMidi
5	FriwaMidi	FriwaMidi	FriwaMidi
10	FriwaMidi	FriwaMidi	FriwaMidi
15	FriwaMaxi	FriwaMidi	FriwaMaxi
20	FriwaMaxi	FriwaMidi	FriwaMaxi
30	2x FriwaMidi	FriwaMaxi	2x FriwaMidi
50	FriwaMega	2x FriwaMidi	FriwaMega
70	2x FriwaMaxi	FriwaMega	2x FriwaMaxi
100	2x FriwaMega	2x FriwaMaxi	2x FriwaMega
150	3x FriwaMaxi	3x FriwaMaxi	3x FriwaMega
200	4x FriwaMega	4x FriwaMega	–

*** During operation, a DHW temperature below 60 °C does not accord to DVGW 551 (German association for gas and water). The compliance with water quality standards must be observed.

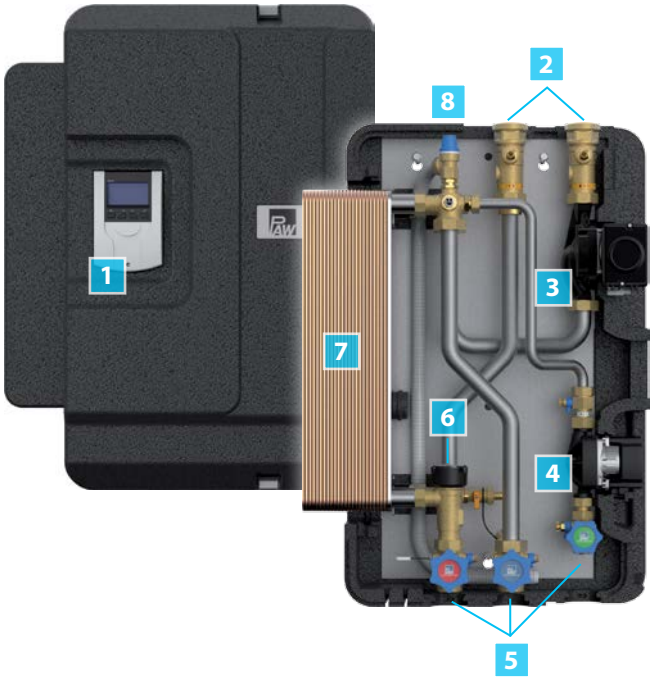
70 °C / 60 °C / 45 °C Flow temperature 70 °C / Storage tank 60 °C, hot water = 45 °C, cold water = 10 °C
Basis of calculation is the DHW demand of max. 12 l/min and the simultaneity factor according to DIN 4708

Components Friwa stations
Mini, Midi, Maxi, Mega

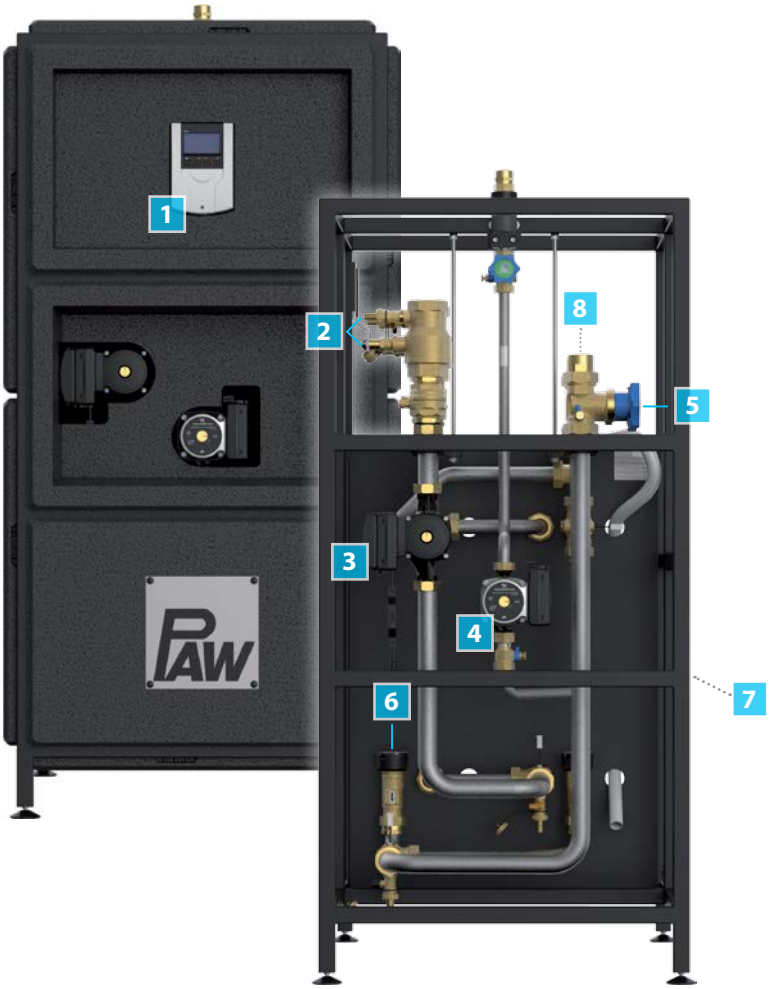
FriwaMini



FriwaMidi/Maxi



FriwaMega



1 Friwa controler FC3.10
with connection to the building control system and optional internet module

2 Shut-off valve
ball valve with integrated check valve

3 Primary pump
high-efficiency pump

4 Circulation pump
high efficiency pump: optional for Mini, Midi, Maxi and Mega

5 Piston valves
maintenance free and service-friendly

6 Flow rate measurement device
Measuring range
Mini: 2 – 40 l/min
Midi: 1 – 50 l/min
Maxi: 1 – 80 l/min
Mega: 1 – 130 l/min

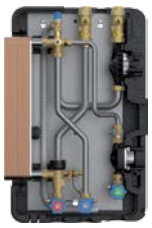
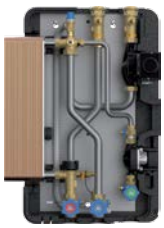
7 Heat exchanger
highly efficient plate heat exchanger. Coated / premium version optionally available for special water qualities. For further information on the product, see page 9.

8 Pressure relief valve
Integrated pressure relief valve, 10 bars

Product range Friwa: Individual models

Product range Friwa

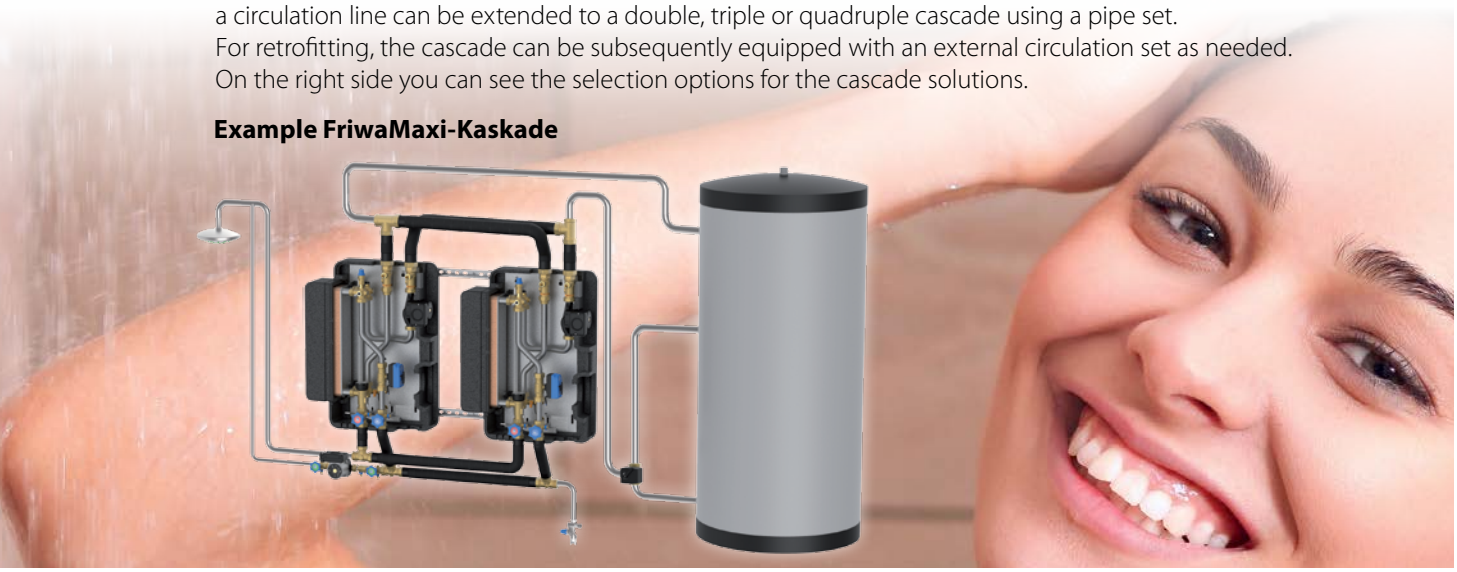
The Friwa product range can be adapted to almost every individual demand for domestic hot water from the FriwaMini in the single-family house to the FriwaMega in the hotel industry, any withdrawal flow rate can be covered comfortably.

Overview Friwa modules and equipment				
Station/type	**FriwaMini**	**FriwaMidi**	**FriwaMaxi**	**FriwaMega**
Range of application*	up to 29 l/min	up to 50 l/min	up to 77 l/min	up to 123 l/min
Basic module without circulation	6401510	6405510	6406510	6407510
	6401530 (coated heat exchanger)	6405530 (coated heat exchanger)	6406530 (coated heat exchanger)	6407530 (coated heat exchanger)
Module with circulation (internal)**	6401515	6405515	6406515	6407515
	6401535 (coated heat exchanger)	6405535 (coated heat exchanger)	6406535 (coated heat exchanger)	6407516 (coated heat exchanger)
				6407535
				6407536 (coated heat exchanger)
				

Product range Friwa: Cascade solutions

The product range comprises not only the modules Midi, Maxi and Mega, but also cascades.
To cover larger withdrawal flow rates, like in the hotel industry or in hospitals, the basic module without a circulation line can be extended to a double, triple or quadruple cascade using a pipe set.
For retrofitting, the cascade can be subsequently equipped with an external circulation set as needed.
On the right side you can see the selection options for the cascade solutions.

Example FriwaMaxi-Kaskade



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Cascade solutions
Selection table

Module and pipe set necessary for double cascade				
Example:	2x  Basic module	+  Pipe set for cascade	+  Return distribution set	+  Circulation line
Basic modules	/	2x 6405510	2x 6406510	2x 6407510
		2x 6405530 (coated heat exchanger)	2x 6406530 (coated heat exchanger)	2x 6407530 (coated heat exchanger)
Pipe set for cascade	/	64042942	64042952	1x 64042962
Return distribution set	/	6404242	6404242	6404244
Optional: circulation line	/	6404136GH7	6404136GH7	6404136GH7
		6404136GH10	6404136GH10	6404136GH10
			6404136GH12	6404136GH12

Module necessary for triple cascade***				
Example:	3x  Basic module	+  Accessory kit for cascade	+  Return distribution set	+  Circulation line
Basic modules	/	3x 6405510	3x 6406510	3x 6407510
		3x 6405530 (coated heat exchanger)	3x 6406530 (coated heat exchanger)	3x 6407530 (coated heat exchanger)
Pipe set for cascade	/	64042631	64042731	Pipe set to be obtained by the customer
Return distribution set	/	6404242	6404242	6404244
Optional: circulation line	/	6404136GH7	6404136GH7	6404136GH7
		6404136GH10	6404136GH10	6404136GH10
		6404136GH12	6404136GH12	6404136GH12

Module necessary for quadruple cascade***				
Example:	4x  Basic module	+  Accessory kit for cascade	+  Return distribution set	+  Circulation line
Basic modules	/	4x 6405510	4x 6406510	4x 6407510
		4x 6405530 (coated heat exchanger)	4x 6406530 (coated heat exchanger)	4x 6407530 (coated heat exchanger)
Pipe set for cascade	/	64042641	64042741	2x 64042962
Return distribution set	/	6404242	6404242	6404244
Optional: circulation line	/	6404136GH7	6404136GH7	6404136GH7
		6404136GH10	6404136GH10	6404136GH10
		6404136GH12	6404136GH12	6404136GH12

Other equipment	see page 9	see page 11	see page 13	see page 15

***Range of application at performance indicator 1 (LK 1, as per SPF test procedure): storage tank 60 °C, hot water = 45 °C, cold water = 10 °C**
**Friwa modules can be equipped subsequently with internal circulation lines - see equipment
*** The cascade solution is available on request; / = not possible

Function overview controller
Domestic hot water technology

Controller FC3.10 for DHW modules

- for FriwaMini up to 29 l/min (as per SPF LK 1*)
- for FriwaMidi up to 50 l/min (as per SPF LK 1*)
- for FriwaMidi-Kaskade up to 100 l/min (as per SPF LK 1*)
- for FriwaMaxi up to 77 l/min (as per SPF LK 1*)
- for FriwaMaxi-Kaskade up to 154 l/min (as per SPF LK 1*)
- for FriwaMega up to 123 l/min (as per SPF LK 1*)
- for FriwaMega-Kaskade up to 246 l/min (as per SPF LK 1*)

The controller FC3.10 sets the hot water temperature of the Friwa module via the rotation speed control of the primary pump. During operation, a special algorithm adjusts the control functions even faster to the given system conditions.

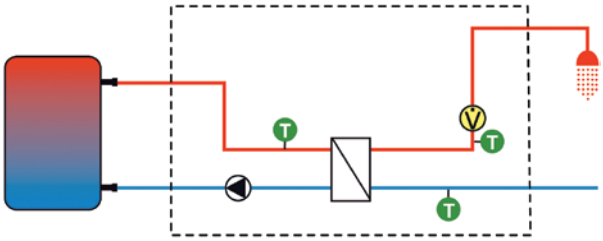
As additional functions, the controller performs the circulation control and the switching of the return distribution valve. Different circulation modes are possible which can be adapted to the system requirements.

An optionally available internet module allows a monitoring and parametrisation of the system.
The connection to the building control system is established via the Modbus protocol.

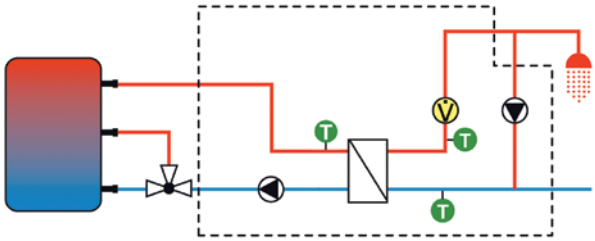
Function overview controller FC3.10

Display	graphically animated LCD display
Operation	4 (5) push buttons
Relay outputs	2 x 230 V, semiconductor relays 1 x 230 V, switching relay 1 x SELV (max. 24 V), potential-free relay 2 x PWM signal for speed control
Inputs	5 x Pt1000
Flow rate sensors	yes
Heat quantity balancing	yes
Circulation (time-controlled / temperature-controlled / impulse driven)	yes
Return distribution	yes

Preset systems:



Friwa basic system



Friwa basic system with circulation and return distribution

* Indication of performance as per SPF test procedure, LK 1 = performance indicator 1, at a set domestic hot water temperature of 45 °C, at a primary flow temperature of 60 °C

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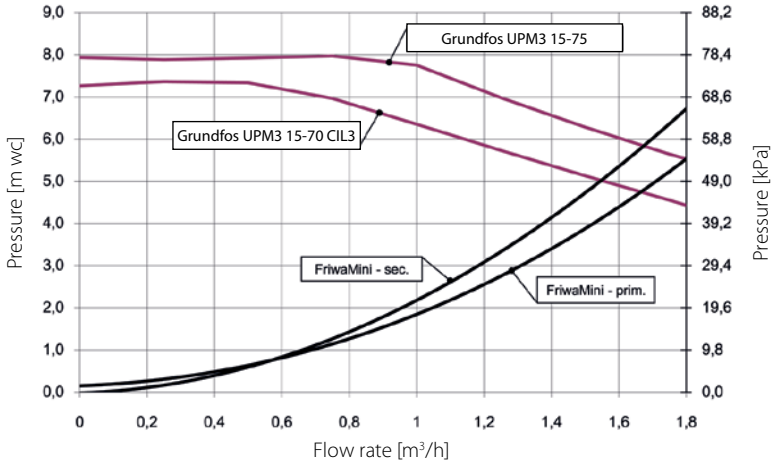
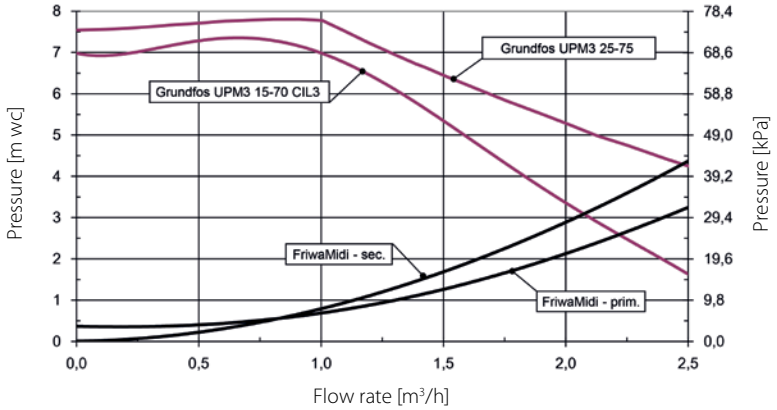
Dimensioning product range Friwa
Differential pressure diagrams

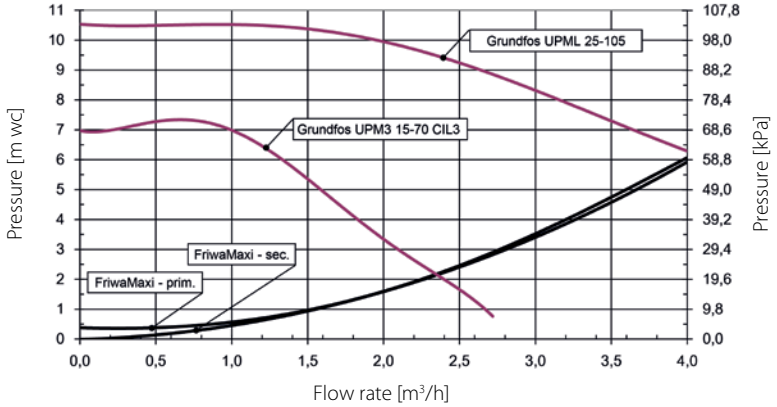
FriwaMini
up to 29 l/min



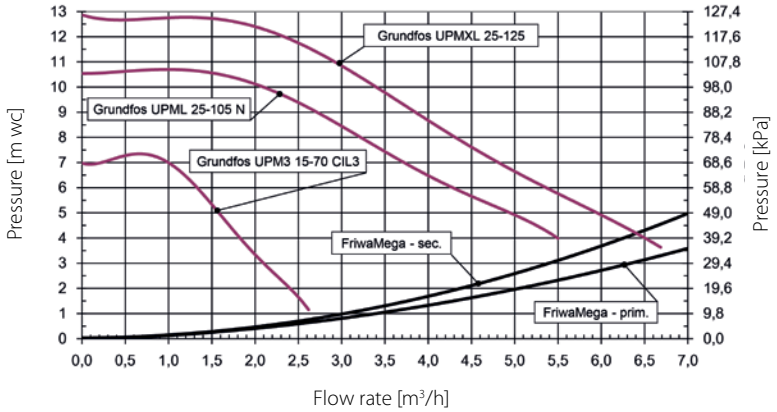
FriwaMidi
up to 50 l/min



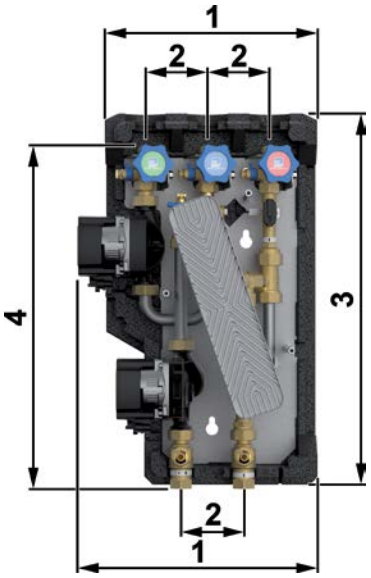
FriwaMaxi
up to 77 l/min



FriwaMega
up to 123 l/min



FriwaMini
up to 29 l/min (according to SPF LK 1)*



without circulation **with circulation**

Application range

- Domestic hot water preparation operating on the principle of a flow-type water heater

The CE-conformity of the module has been certified according to DIN EN 60335 and SVGW / ACS.

Application range

- combined with thermal solar installations,
- in systems with a solid fuel boiler, oil or gas boiler,
- for the connection to a buffer tank

*For information on **design data**, see page 2 as well as 16 to 19.

Operating data

Max. pressure	prim.: 3 bars, sec.: 10 bars
Maximum operating temperature	95 °C
Min. flow rate	2 l/min
Max. flow rate as per SPF LK 1*	29 l/min
Transmission performance 1 as per SPF LK 1*	65 kW

Technical data

Equipment		**Dimensions**		**Materials**	
Check valve	primary: 1 x 200 mm wc	Nominal diameter	DN 25 (½")	Valves and fittings	Brass
Circulation line	optional	Connections	Prim.: ¾" int. thread Sec.: ¾" ext. thread, flat sealing	Gaskets	AFM34/EPDM
Heat exchanger	32 plates, type E8ASH			Insulation	EPP
Sensors	2 x Pt1000 1 x VFS 2-40 l/min	Circulation line	1" ext. thread	Heat exchanger	Solder: Copper Plates + connecting pieces: Stainless steel coating (optional): based on silica
		(1) Width	309 mm / 345 mm		
Controller	FC3.10	(2) Centre distance, prim.	90 mm		
		(2) Centre distance, sec.	90 mm		
		(3) Height	539 mm		
		(4) Installation length	494 mm		
		Depth	314 mm		

FriwaMini
Mounting example

Mounting example: FriwaMini without circulation, with safety group for domestic hot water tank

Mounting example: FriwaMini with circulation, return distribution set, withdrawal valve, safety group for domestic hot water tank

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FriwaMini
Order data

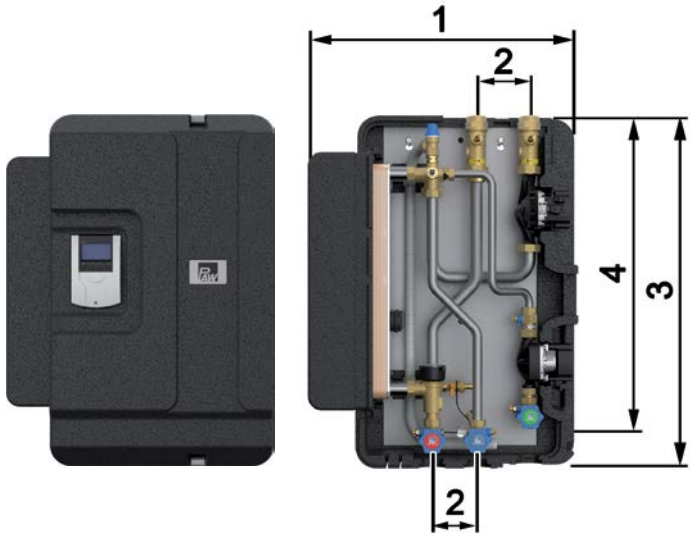
FriwaMini - DN 15 (½")	Item no.
FriwaMini without circulation	
prim.: Grundfos UPM3 15-75 FlowEstim.	**6401510**
FriwaMini with circulation	
prim.: Grundfos UPM3 15-75 FlowEstim., sec.: Grundfos UPM3 15-70 CIL3	**6401515**
FriwaMini without circulation, heat exchanger coated	
prim.: Grundfos UPM3 15-75 FlowEstim.	**6401530**
FriwaMini without circulation, heat exchanger coated	
prim.: Grundfos UPM3 15-75 FlowEstim., sec.: Grundfos UPM3 15-70 CIL3	**6401535**

Accessories		Item no.
	**Return distribution set, 1" int. thread** 3-way valve with actuator, Kvs value: 11 for FriwaMini	**640425**
	**Safety group for domestic hot water tank** Safety group for hot water storage tank, with shut off and adjustable check valve. For horizontal installation. With seat made of stainless steel. Brass housing. Chromed. Certified according to EN 1487. Opening pressure 7 bars, max. power 10 kW	**563907**
	**Withdrawal valve** Flame-treated valves for sterile withdrawal of water. For the subsequent installation inside the Friwa module, on each piston valve of the domestic hot water circuit.	**640422**

Coated heat exchanger – Premium variant

- ✓ Sealed surface with thin film coating
- ✓ Designed for drinking water applications
- ✓ Additional corrosion protection in case of special water qualities
- ✓ Reduced deposit formation
- ✓ Diffusion barrier
- ✓ Greater durability and therefore longer service life
- ✓ Greater reliability of the system
- ✓ Smaller maintenance cost
- ✓ Thermal and hydraulic performance of the heat exchanger are retained

FriwaMidi
up to 50 l/min (according to SPF LK 1)*



Application range

- Domestic hot water preparation operating on the principle of a flow-type water heater

The CE-conformity of the module has been certified according to DIN EN 60335 and SVGW / ACS.

Application range

- combined with thermal solar installations,
- in systems with a solid fuel boiler, oil or gas boiler,
- for the connection to a buffer tank,
- up to 200 l/min as the quadruple cascade (as per SPF LK 1*)

*For information on **design data**, see page 2 as well as 16 to 19.

Operating data

Max. pressure	prim.: 3 bars, sec.: 10 bars
Maximum operating temperature	95 °C
Min. flow rate	2 l/min
Max. flow rate as per SPF LK 1*	50 l/min
Transmission performance 1 as per SPF LK 1*	121 kW

Technical data

Equipment		Dimensions		Materials	
Check valve	primary: 2 x 400 mm wc	Nominal diameter	DN 20 (¾")	Valves and fittings	Brass
Circulation line	optional	Connections	Prim.: 1½" ext. thread Sec.: 1" ext. thread	Gaskets	AFM34/EPDM
Heat exchanger	40 plates, type B25			Insulation	EPP
Sensors	primary: 1x Pt1000 secondary: 2x Pt1000 1 x flow meter	Circulation line	1" ext. thread	Heat exchanger	Solder: Copper Plates + connecting pieces: Stainless steel coating (optional): based on silica
		(1) Width	602 mm		
Controller	FC3.10	(2) Centre distance, prim.	120 mm		
		(2) Centre distance, sec.	100 mm		
		(3) Height	795 mm		
		(4) Installation length	711 mm / 757 mm		
		Depth	298 mm		

FriwaMidi
Mounting example

FriwaMidi with circulation

Cascade with 2 basic modules and pipe set for cascade

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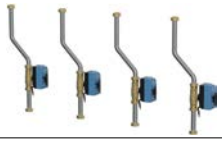
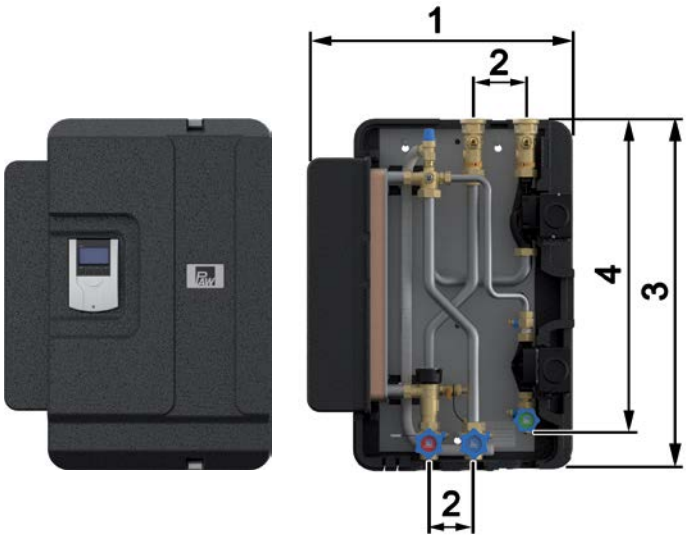
FriwaMidi
Order data

FriwaMidi – DN 20 (¾")	Item no.
FriwaMidi, without circulation	
prim.: Grundfos UPM3 25-75 FlowEstim.	**6405510**
FriwaMidi, without circulation	
prim.: Grundfos UPM3 25-75 FlowEstim., sec.: Grundfos UPM3 15-70 CIL3	**6405515**
FriwaMidi, without circulation, heat exchanger coated	
prim.: Grundfos UPM3 25-75 FlowEstim.	**6405530**
FriwaMidi, with circulation, heat exchanger coated	
prim.: Grundfos UPM3 25-75 FlowEstim., sec.: Grundfos UPM3 15-70 CIL3	**6405535**

Accessories		Item no.
	**Circulation set for internal retrofitting (FriwaMidi/Maxi)** - with high-efficiency pump Grundfos UPM3 15-70 CIL3 - with piston valve and non-return valve Connection: 1" external thread	**640412**
	**Return distribution set 1¼" internal thread** 3-way valve with actuator, setting time for 90°: 18 sec., Kvs value: 15 for FriwaMidi, tank heat transfer module Midi	**640423**
	**Withdrawal valve** Flame-treated valves for sterile withdrawal of water. For the subsequent installation inside the Friwa module, on each piston valve of the domestic hot water circuit.	**640422**
	**Pipe set for FriwaMidi-Kaskade, 2-fold** Insulated pipe set for cascading of two Friwa modules (item no. 6405510). - with two 2-way valves for switching - with mounting rail for an easy wall assembly	**64042942**
	**Pipe set for FriwaMidi-Kaskade, 3-fold** Pipe set for the cascading of three Friwa modules (item no. 6405510) - with three 2-way valves for switching	**64042631**
	**Pipe set for FriwaMidi-Kaskade, 4-fold** Pipe set for the cascading of four Friwa modules (item no. 6405510) - with four 2-way valves for switching	**64042641**
	**Return distribution set 1½" internal thread** 3-way valve with actuator, setting time for 90°: 35 sec., Kvs value: 25 for FriwaMidi/Maxi-Kaskade, FriwaMega	**6404242**
	**Circulation set for Friwa-Kaskade (Midi, Maxi, Mega)** - with high-efficiency pump Grundfos UPM3 15-70 CIL3 - with piston valves, non return valve and drain valve Connection: 1" external thread	**6404136GH7**
	Circulation set for Friwa-Kaskade (Midi, Maxi, Mega) - with high-efficiency pump Grundfos UPML 25-105 N - with piston valves, non return valve and drain valve Connection: 1½" external thread	**6404136GH10**

FriwaMaxi
up to 77 l/min (according to SPF LK 1)*



Application range

- Domestic hot water preparation operating on the principle of a flow-type water heater

The CE-conformity of the module has been certified according to DIN EN 60335 and SVGW / ACS.

Application range

- combined with thermal solar installations,
- in systems with a solid fuel boiler, oil or gas boiler,
- for the connection to a buffer tank,
- up to 308 l/min as the quadruple cascade (as per SPF LK 1)*

*For information on **design data**, see page 2 as well as 16 to 19.

Operating data

Max. pressure	prim.: 3 bars, sec.: 10 bars
Maximum operating temperature	95 °C
Min. flow rate	2 l/min
Max. flow rate as per SPF LK 1*	77 l/min
Transmission performance 1 as per SPF LK 1*	187 kW

Technical data

Equipment

Check valve	primary: 2 x 400 mm wc
Circulation line	optional
Heat exchanger	60 plates, type B25
Sensors	primary: 1x Pt1000 secondary: 2x Pt1000 1 x flow meter
Controller	FC3.10

Dimensions

Nominal diameter	DN 25 (1")
Connections	prim.: 2" ext. thread sec.: 1¼" ext. thread
Circulation line	1" ext. thread
(1) Width	602 mm
(2) Centre distance, prim.	120 mm
(2) Centre distance, sec.	100 mm
(3) Height	795 mm
(4) Installation length	711 mm / 769 mm
Depth	298 mm

Materials

Valves and fittings	Brass
Gaskets	AFM34/EPDM
Insulation	EPP
Heat exchanger	Solder: Copper Plates + connecting pieces: Stainless steel coating (optional): based on silica

FriwaMaxi
Mounting example

FriwaMaxi with circulation

Cascade with 2 basic modules and pipe set for cascade

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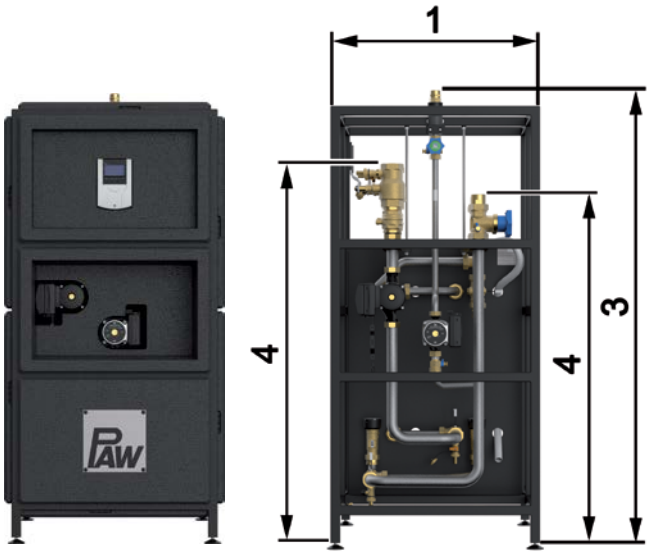
FriwaMaxi
Order data

FriwaMaxi DN 25 (1")	Item no.
FriwaMaxi, without circulation	
prim.: Grundfos UPML 25-105 FlowEst.	**6406510**
FriwaMaxi, with circulation	
prim.: Grundfos UPML 25-105 FlowEst., sec.: Grundfos UPM3 15-70 CIL3	**6406515**
FriwaMaxi, without circulation, heat exchanger coated	
prim.: Grundfos UPML 25-105 FlowEst.	**6406530**
FriwaMaxi, with circulation, heat exchanger coated	
prim.: Grundfos UPML 25-105 FlowEst., sec.: Grundfos UPM3 15-70 CIL3	**6406535**

Accessories		Item no.
	**Circulation set for internal retrofitting (FriwaMidi/Maxi)** - with high-efficiency pump Grundfos UPM3 15-70 CIL3 - with piston valve and non-return valve Connection: 1" external thread	**640412**
	**Return distribution set 1¼" internal thread** 3-way valve with actuator, setting time for 90°: 35 sec., Kvs value: 16 for FriwaMaxi, tank heat transfer module Maxi	**640424**
	**Withdrawal valve** Flame-treated valves for sterile withdrawal of water. For the subsequent installation inside the Friwa module, on each piston valve of the domestic hot water circuit.	**640422**
	**Pipe set for FriwaMaxi-Kaskade, 2-fold** Insulated pipe set for cascading of two Friwa modules (item no. 6406510). - with two 2-way valves for switching - with mounting rail for an easy wall assembly	**64042952**
	**Pipe set for FriwaMaxi-Kaskade, 3-fold** Pipe set for the cascading of three Friwa modules (item no. 6406510) - with three 2-way valves for switching	**64042631**
	**Pipe set for FriwaMaxi-Kaskade, 4-fold** Pipe set for the cascading of four Friwa modules (item no. 6406510) - with four 2-way valves for switching	**64042641**
	**Return distribution set 1½" internal thread** 3-way valve with actuator, setting time for 90°: 35 sec., Kvs value: 25 for FriwaMidi/Maxi-Kaskade, FriwaMega	**6404242**
	**Circulation set for Friwa-Kaskade (Midi, Maxi, Mega)** - with high-efficiency pump Grundfos UPM3 15-70 CIL3 - with piston valves, non return valve and drain valve Connection: 1" external thread	**6404136GH7**
	Circulation set for Friwa-Kaskade (Midi, Maxi, Mega) - with high-efficiency pump Grundfos UPML 25-105 N - with piston valves, non return valve and drain valve Connection: 1½" external thread	**6404136GH10**
	Circulation set for Friwa-Kaskade (Maxi, Mega) - High-efficiency pump Grundfos UPML 25-125 N - with piston valves, non return valve and drain valve Connection: 1½" external thread	**6404136GH12**

FriwaMega
up to 123 l/min (according to SPF LK 1)*



Application range

- Domestic hot water preparation operating on the principle of a flow-type water heater

The CE-conformity of the module has been certified according to DIN EN 60335 and SVGW / ACS.

Application range

- combined with thermal solar installations,
- in systems with a solid fuel boiler, oil or gas boiler,
- for the connection to a buffer tank,
- up to 492 l/min as the quadruple cascade (as per SPF LK 1)*

*For information on **design data**, see page 2 as well as 16 to 19.

Operating data

Max. pressure	prim.: 3 bars, sec.: 10 bars
Maximum operating temperature	95 °C
Min. flow rate	4 l/min
Max. flow rate as per SPF LK 1*	123 l/min
Transmission performance 1 as per SPF LK 1*	300 kW

Technical data

Equipment

Check valve	primary: 2 x 450 mm wc
Circulation line	optional
Heat exchanger	2 x 60 plates, type B25
Sensors	primary: 1x Pt1000 secondary: 2x Pt1000 2 x flow meter
Controller	FC3.10

Dimensions

Nominal diameter	DN 32 (1¼")
Connections	prim.: 1½" int. thread sec.: 1½" ext. thread
Circulation line	1" ext. thread 1¼" ext. thread
(1) Width	660 mm
(2) Centre distance, prim.	158 mm
(2) Centre distance, sec.	158 mm
(3) Height	1499 mm
(4) Installation length	1107 mm / 1205 mm
Depth	920 mm

Materials

Valves and fittings	Brass
Gaskets	AFM34/EPDM
Insulation	EPP
Heat exchanger	Solder: Copper Plates + connecting pieces: Stainless steel coating (optional): based on silica

FriwaMega
Mounting example

FriwaMega with circulation

Cascade with 2 basic modules, pipe set for cascade and circulation set

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FriwaMega
Order data

FriwaMega - DN 32 (1¼")	Item no.
FriwaMega, with circulation	
prim.: Grundfos UPMXL GEO 25-125 FlowEstim.	**6407510**
FriwaMega, with circulation	
prim.: Grundfos UPMXL GEO 25-125 FlowEstim., sec.: Grundfos UPML 25-105 N	**6407515**
FriwaMega, with circulation	
prim.: Grundfos UPMXL GEO 25-125 FlowEstim., sec.: Grundfos UPM3 15-70 CIL3	**6407516**
FriwaMega, without circulation, heat exchanger coated	
prim.: Grundfos UPMXL GEO 25-125 FlowEstim.	**6407530**
FriwaMega, with circulation, heat exchanger coated	
prim.: Grundfos UPMXL GEO 25-125 FlowEstim., sec.: Grundfos UPML 25-105 N	**6407535**
FriwaMega, with circulation, heat exchanger coated	
prim.: Grundfos UPMXL GEO 25-125 FlowEstim., sec.: Grundfos UPM3 15-70 CIL3	**6407536**

Accessories	Item no.
Circulation set for internal retrofitting (FriwaMega)	**6404134GH7**
- with high-efficiency pump Grundfos UPM3 15-70 CIL3 - with piston valve and non-return valve Connection: 1" external thread	
Circulation set for internal retrofitting (FriwaMega)	**6404135GH10**
- with high-efficiency pump Grundfos UPML 25-105 N - with piston valve and non-return valve Connection: 1¼" external thread	
Withdrawal valve	**640422**
Flame-treated valves for sterile withdrawal of water. For the subsequent installation inside the Friwa module, on each piston valve of the domestic hot water circuit.	
Return distribution set 1½" internal thread	**6404242**
3-way valve with actuator, setting time for 90°: 35 sec., Kvs value: 25 for FriwaMidi/Maxi-Kaskade, FriwaMega	
Return distribution set, 2" int. thread	**6404244**
3-way valve with actuator, setting time for 90°: 35 sec., Kvs value: 40 for FriwaMega-Kaskade	
Pipe set for FriwaMega-Kaskade, 2-fold	**64042962**
Insulated pipe set for cascading of two Friwa modules (item no. 6407510). - with two 2-way valves for switching	
Pipe set for FriwaMega-Kaskade, 4-fold	**2x 64042962**
Please order 2x 64042962 for a 4-fold FriwaMega-Kaskade	
Circulation set for Friwa-Kaskade (Midi, Maxi, Mega)	**6404136GH7**
- with high-efficiency pump Grundfos UPM3 15-70 CIL3 - with piston valves, non return valve and drain valve Connection: 1" external thread	
Circulation set for Friwa-Kaskade (Midi, Maxi, Mega)	**6404136GH10**
- with high-efficiency pump Grundfos UPML 25-105 N - with piston valves, non return valve and drain valve Connection: 1½" external thread	
Circulation set for Friwa-Kaskade (Maxi, Mega)	**6404136GH12**
- High-efficiency pump Grundfos UPML 25-125 N - with piston valves, non return valve and drain valve Connection: 1½" external thread	

Output capacity table
FriwaMini

Temperature storage tank	Hot water temperature set on the controller	Maximum output capacity* of the Friwa	Transfer capacity	Tank volume required for one litre of warm water	for inlet temperature of 10 °C (cold water temperature) - maximum withdrawal quantity** at the mixing valve at				Temperature of return to the storage tank
					40 °C	**45 °C**	50 °C	**55 °C**	
45 °C	40 °C	17 l/min	36 kW	1.8 litres	/	/	/	/	24 °C
50 °C	40 °C	24 l/min	51 kW	1.3 litres	/	/	/	/	22 °C
	45 °C	**16 l/min**	**40 kW**	**1.9 litres**	19 l/min	/	/	/	**27 °C**
55 °C	40 °C	30 l/min	64 kW	1.0 litre	/	/	/	/	20 °C
	45 °C	**23 l/min**	**56 kW**	**1.4 litres**	26 l/min	/	/	/	**24 °C**
	50 °C	**16 l/min**	**44 kW**	**2.0 litres**	21 l/min	**18 l/min**	/	/	**29 °C**
60 °C	40 °C	36 l/min	76 kW	0.9 litre	/	/	/	/	20 °C
	45 °C	**28 l/min**	**69 kW**	**1.1 litres**	32 l/min	/	/	/	**23 °C**
	50 °C	**22 l/min**	**60 kW**	**1.5 litres**	28 l/min	**24 l/min**	/	/	**26 °C**
	55 °C	**15 l/min**	**48 kW**	**2.1 litres**	22 l/min	**19 l/min**	17 l/min	/	**32 °C**
65 °C	40 °C	42 l/min***	88 kW	0.6 litre	/	/	/	/	19 °C
	45 °C	**33 l/min**	**81 kW**	**0.9 litre**	38 l/min	/	/	/	**22 °C**
	50 °C	**27 l/min**	**74 kW**	**1.2 litres**	35 l/min	**30 l/min**	/	/	**25 °C**
	55 °C	**21 l/min**	**65 kW**	**1.5 litres**	30 l/min	**26 l/min**	23 l/min	/	**29 °C**
	60 °C	15 l/min	52 kW	2.1 litres	24 l/min	**21 l/min**	18 l/min	**16 l/min**	35 °C
70 °C	40 °C	42 l/min***	88 kW	0.5 litre	/	/	/	/	19 °C
	45 °C	**38 l/min**	**93 kW**	**0.8 litre**	44 l/min	/	/	/	**21 °C**
	50 °C	**31 l/min**	**87 kW**	**1.0 litre**	41 l/min	**35 l/min**	/	/	**24 °C**
	55 °C	**25 l/min**	**79 kW**	**1.2 litres**	37 l/min	**32 l/min**	28 l/min	/	**27 °C**
	60 °C	20 l/min		1.6 litres	33 l/min	**28 l/min**	24 l/min	**22 l/min**	31 °C
75 °C	40 °C	42 l/min***	88 kW	0.5 litre	/	/	/	/	18 °C
	45 °C	**42 l/min*** **	**102 kW**	**0.6 litre**	49 l/min	/	/	/	**20 °C**
	50 °C	**36 l/min**	**99 kW**	**0.9 litre**	47 l/min	**40 l/min**	/	/	**23 °C**
	55 °C	**29 l/min**	**92 kW**	**1.1 litres**	44 l/min	**37 l/min**	32 l/min	/	**26 °C**
	60 °C	24 l/min	84 kW	1.3 litres	40 l/min	**34 l/min**	30 l/min	**26 l/min**	29 °C
80 °C	40 °C	42 l/min***	88 kW	0.4 litre	/	/	/	/	18 °C
	45 °C	**42 l/min*** **	**102 kW**	**0.5 litre**	49 l/min	/	/	/	**20 °C**
	50 °C	**40 l/min**	**111 kW**	**0.8 litre**	52 l/min	**45 l/min**	/	/	**22 °C**
	55 °C	**33 l/min**	**105 kW**	**0.9 litre**	50 l/min	**42 l/min**	37 l/min	/	**25 °C**
	60 °C	28 l/min	98 kW	1.1 litres	46 l/min	**39 l/min**	34 l/min	**31 l/min**	28 °C
85 °C	40 °C	42 l/min***	88 kW	0.4 litre	/	/	/	/	18 °C
	45 °C	**42 l/min*** **	**102 kW**	**0.5 litre**	49 l/min	/	/	/	**20 °C**
	50 °C	**42 l/min*** **	**117 kW**	**0.6 litre**	56 l/min	**47 l/min**	/	/	**21 °C**
	55 °C	**37 l/min**	**117 kW**	**0.8 litre**	55 l/min	**47 l/min**	41 l/min	/	**24 °C**
	60 °C	32 l/min	110 kW	1.0 litre	52 l/min	**45 l/min**	39 l/min	**35 l/min**	26 °C
90 °C	40 °C	42 l/min***	88 kW	0.4 litre	/	/	/	/	18 °C
	45 °C	**42 l/min*** **	**102 kW**	**0.4 litre**	49 l/min	/	/	/	**19 °C**
	50 °C	**42 l/min*** **	**117 kW**	**0.5 litre**	56 l/min	**47 l/min**	/	/	**21 °C**
	55 °C	**41 l/min**	**128 kW**	**0.6 litre**	61 l/min	**52 l/min**	45 l/min	/	**23 °C**
	60 °C	35 l/min	122 kW	0.9 litre	58 l/min	**50 l/min**	43 l/min	**38 l/min**	25 °C
95 °C	40 °C	42 l/min***	88 kW	0.3 litre	/	/	/	/	17 °C
	45 °C	**42 l/min*** **	**102 kW**	**0.4 litre**	49 l/min	/	/	/	**19 °C**
	50 °C	**42 l/min*** **	**117 kW**	**0.5 litre**	56 l/min	**47 l/min**	/	/	**20 °C**
	55 °C	**42 l/min*** **	**132 kW**	**0.6 litre**	63 l/min	**53 l/min**	47 l/min	/	**22 °C**
	60 °C	38 l/min	134 kW	0.8 litre	64 l/min	**54 l/min**	47 l/min	**42 l/min**	24 °C

* the maximum output capacity depends on the pressure drop on the primary side
** the maximum withdrawal quantity at the mixing valve depends on the length and the insulation of the pipes
*** maximum flow rate: 42 l/min, with pressure drop of the Friwa of 1000 mbars (higher values are for hydraulic reasons only partly possible, measuring limit of the flow rate sensor ~42 l/min)

Example: the temperature in the storage tank (primary) is 65 °C and the hot water temperature set on the controller is 50 °C (secondary):
- with 65 °C in the storage tank a maximum of 27 litres of domestic water / minute can be heated to 50 °C
- this withdrawal corresponds to a performance of 74 kW
- to produce 1 litre (100 litres) of warm water there must be - 1.2 litres (120 litres) with 65 °C in the buffer tank
- 27 litres of warm water/minute with 50 °C can be mixed with cold water (10 °C) to obtain 30 litres/minute with 45 °C - the primary return temperature for a withdrawal of 27 litres of warm water/minute is about 25 °C

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Output capacity table
FriwaMidi

Temperature storage tank	Hot water temperature set on the controller	Maximum output capacity* of the Friwa	Transfer capacity	Tank volume required for one litre of warm water	for inlet temperature of 10 °C (cold water temperature) - maximum withdrawal quantity** at the mixing valve at				Temperature of return to the storage tank
					40 °C	**45 °C**	50 °C	**55 °C**	
45 °C	40 °C	34 l/min	71 kW	1.2 litres	/	/	/	/	20 °C
50 °C	40 °C	44 l/min	92 kW	0.9 litre	/	/	/	/	18 °C
	45 °C	**32 l/min**	**79 kW**	**1.3 litres**	37 l/min	/	/	/	**22 °C**
55 °C	40 °C	53 l/min	111 kW	0.8 litre	/	/	/	/	16 °C
	45 °C	**42 l/min**	**102 kW**	**1.0 litre**	48 l/min	/	/	/	**19 °C**
	50 °C	**31 l/min**	**87 kW**	**1.3 litres**	41 l/min	**35 l/min**	/	/	**24 °C**
60 °C	40 °C	61 l/min	128 kW	0.7 litre	/	/	/	/	15 °C
	45 °C	**50 l/min**	**121 kW**	**0.8 litre**	58 l/min	/	/	/	**17 °C**
	50 °C	**40 l/min**	**111 kW**	**1.0 litre**	53 l/min	**45 l/min**	/	/	**21 °C**
	55 °C	**30 l/min**	**95 kW**	**1.4 litres**	45 l/min	**39 l/min**	34 l/min	/	**27 °C**
65 °C	40 °C	65 l/min***	135 kW	0.6 litre	/	/	/	/	14 °C
	45 °C	**57 l/min**	**138 kW**	**0.7 litre**	66 l/min	/	/	/	**16 °C**
	50 °C	**47 l/min**	**131 kW**	**0.9 litre**	62 l/min	**53 l/min**	/	/	**19 °C**
	55 °C	**39 l/min**	**120 kW**	**1.1 litres**	57 l/min	**49 l/min**	43 l/min	/	**23 °C**
	60 °C	30 l/min	103 kW	1.4 litres	49 l/min	**42 l/min**	37 l/min	**33 l/min**	29 °C
70 °C	40 °C	65 l/min***	135 kW	0.5 litre	/	/	/	/	13 °C
	45 °C	**64 l/min**	**155 kW**	**0.7 litre**	74 l/min	/	/	/	**15 °C**
	50 °C	**54 l/min**	**149 kW**	**0.8 litre**	71 l/min	**61 l/min**	/	/	**17 °C**
	55 °C	**45 l/min**	**141 kW**	**0.9 litre**	67 l/min	**57 l/min**	50 l/min	/	**20 °C**
	60 °C	37 l/min	129 kW	1.1 litres	62 l/min	**53 l/min**	46 l/min	**41 l/min**	24 °C
75 °C	40 °C	65 l/min***	135 kW	0.5 litre	/	/	/	/	12 °C
	45 °C	**65 l/min*** **	**158 kW**	**0.6 litre**	75 l/min	/	/	/	**14 °C**
	50 °C	**60 l/min**	**166 kW**	**0.7 litre**	79 l/min	**68 l/min**	/	/	**16 °C**
	55 °C	**51 l/min**	**159 kW**	**0.8 litre**	76 l/min	**65 l/min**	57 l/min	/	**19 °C**
	60 °C	43 l/min	151 kW	1.0 litre	72 l/min	**61 l/min**	54 l/min	**48 l/min**	22 °C
80 °C	40 °C	65 l/min***	135 kW	0.5 litre	/	/	/	/	12 °C
	45 °C	**65 l/min*** **	**158 kW**	**0.5 litre**	75 l/min	/	/	/	**13 °C**
	50 °C	**65 l/min**	**181 kW**	**0.6 litre**	87 l/min	**74 l/min**	/	/	**15 °C**
	55 °C	**57 l/min**	**176 kW**	**0.7 litre**	84 l/min	**72 l/min**	63 l/min	/	**17 °C**
	60 °C	49 l/min	169 kW	0.8 litre	81 l/min	**69 l/min**	60 l/min	**54 l/min**	20 °C
85 °C	40 °C	65 l/min***	135 kW	0.4 litre	/	/	/	/	12 °C
	45 °C	**65 l/min*** **	**158 kW**	**0.5 litre**	75 l/min	/	/	/	**13 °C**
	50 °C	**65 l/min*** **	**181 kW**	**0.6 litre**	86 l/min	**74 l/min**	/	/	**14 °C**
	55 °C	**62 l/min**	**192 kW**	**0.7 litre**	92 l/min	**79 l/min**	69 l/min	/	**16 °C**
	60 °C	54 l/min	187 kW	0.8 litre	89 l/min	**76 l/min**	67 l/min	**59 l/min**	18 °C
90 °C	40 °C	65 l/min***	135 kW	0.4 litre	/	/	/	/	11 °C
	45 °C	**65 l/min*** **	**158 kW**	**0.5 litre**	75 l/min	/	/	/	**12 °C**
	50 °C	**65 l/min*** **	**181 kW**	**0.5 litre**	86 l/min	**74 l/min**	/	/	**14 °C**
	55 °C	**65 l/min*** **	**203 kW**	**0.6 litre**	97 l/min	**83 l/min**	72 l/min	/	**15 °C**
	60 °C	59 l/min	203 kW	0.7 litre	97 l/min	**83 l/min**	73 l/min	**65 l/min**	17 °C
95 °C	40 °C	65 l/min***	135 kW	0.4 litre	/	/	/	/	11 °C
	45 °C	**65 l/min*** **	**158 kW**	**0.4 litre**	75 l/min	/	/	/	**12 °C**
	50 °C	**65 l/min*** **	**181 kW**	**0.5 litre**	86 l/min	**74 l/min**	/	/	**13 °C**
	55 °C	**65 l/min*** **	**203 kW**	**0.6 litre**	97 l/min	**83 l/min**	72 l/min	/	**15 °C**
	60 °C	63 l/min	219 kW	0.7 litre	105 l/min	**90 l/min**	78 l/min	**70 l/min**	16 °C

* the maximum output capacity depends on the pressure drop on the primary side
** the maximum withdrawal quantity at the mixing valve depends on the length and the insulation of the pipes
*** maximum flow rate: 65 l/min, with pressure drop of the Friwa of 1000 mbars (higher values are for hydraulic reasons only partly possible, measuring limit of the flow rate sensor ~133 l/min)

Example: the temperature in the storage tank (primary) is 65 °C and the hot water temperature set on the controller is 50 °C (secondary):
- with 65 °C in the storage tank a maximum of 47 litres of domestic water / minute can be heated to 50 °C
- this withdrawal corresponds to a performance of 131 kW
- in order to obtain 1 litre (or 100 litres) of hot water with a temperature of 50 °C, the buffer tank has to contain 0.9 litre (or 90 litres) with a temperature of 65 °C
- 47 litres of warm water/minute with 50 °C can be mixed with cold water (10 °C) to obtain 53 litres/minute with 45 °C - the primary return temperature for a withdrawal of 47 litres of warm water/minute is about 19 °C

Output capacity table
FriwaMaxi

Temperature storage tank	Hot water temperature set on the controller	Maximum output capacity* of the Friwa	Transfer capacity	Tank volume required for one litre of warm water	for inlet temperature of 10 °C (cold water temperature) - maximum withdrawal quantity** at the mixing valve at				Temperature of return to the storage tank
					40 °C	**45 °C**	50 °C	**55 °C**	
45 °C	40 °C	52 l/min	109 kW	1.2 litres	/	/	/	/	20 °C
50 °C	40 °C	69 l/min	143 kW	0.9 litre	/	/	/	/	18 °C
	45 °C	**50 l/min**	**122 kW**	**1.3 litres**	58 l/min	/	/	/	**22 °C**
55 °C	40 °C	82 l/min	172 kW	0.8 litre	/	/	/	/	16 °C
	45 °C	**65 l/min**	**158 kW**	**1.0 litre**	75 l/min	/	/	/	**19 °C**
	50 °C	**48 l/min**	**135 kW**	**1.3 litres**	64 l/min	**55 l/min**	/	/	**24 °C**
60 °C	40 °C	88 l/min***	183 kW	0.7 litre	/	/	/	/	15 °C
	45 °C	**77 l/min**	**187 kW**	**0.8 litre**	89 l/min	/	/	/	**17 °C**
	50 °C	**62 l/min**	**172 kW**	**1.0 litre**	82 l/min	**70 l/min**	/	/	**21 °C**
	55 °C	**47 l/min**	**147 kW**	**1.4 litres**	70 l/min	**60 l/min**	52 l/min	/	**26 °C**
65 °C	40 °C	88 l/min***	183 kW	0.6 litre	/	/	/	/	14 °C
	45 °C	**88 l/min**	**214 kW**	**0.7 litre**	102 l/min	/	/	/	**16 °C**
	50 °C	**73 l/min**	**203 kW**	**0.9 litre**	96 l/min	**83 l/min**	/	/	**19 °C**
	55 °C	**60 l/min**	**186 kW**	**1.1 litres**	89 l/min	**76 l/min**	66 l/min	/	**22 °C**
	60 °C	46 l/min	**160 kW**	1.4 litres	76 l/min	**65 l/min**	57 l/min	**51 l/min**	28 °C
70 °C	40 °C	88 l/min***	183 kW	0.5 litre	/	/	/	/	14 °C
	45 °C	**88 l/min*** **	**214 kW**	**0.6 litre**	102 l/min	/	/	/	**15 °C**
	50 °C	**83 l/min**	**230 kW**	**0.8 litre**	109 l/min	**94 l/min**	/	/	**17 °C**
	55 °C	**70 l/min**	**218 kW**	**0.9 litre**	104 l/min	**89 l/min**	78 l/min	/	**20 °C**
	60 °C	58 l/min	200 kW	1.1 litres	95 l/min	**82 l/min**	71 l/min	**63 l/min**	24 °C
75 °C	40 °C	88 l/min***	183 kW	0.5 litre	/	/	/	/	13 °C
	45 °C	**88 l/min*** **	**214 kW**	**0.6 litre**	102 l/min	/	/	/	**14 °C**
	50 °C	**88 l/min*** **	**244 kW**	**0.7 litre**	116 l/min	**100 l/min**	/	/	**16 °C**
	55 °C	**79 l/min**	**246 kW**	**0.8 litre**	117 l/min	**100 l/min**	88 l/min	/	**18 °C**
	60 °C	67 l/min	233 kW	1.0 litre	111 l/min	**95 l/min**	83 l/min	**74 l/min**	21 °C
80 °C	40 °C	88 l/min***	183 kW	0.4 litre	/	/	/	/	13 °C
	45 °C	**88 l/min*** **	**214 kW**	**0.5 litre**	102 l/min	/	/	/	**14 °C**
	50 °C	**88 l/min*** **	**244 kW**	**0.6 litre**	116 l/min	**100 l/min**	/	/	**15 °C**
	55 °C	**87 l/min**	**272 kW**	**0.7 litre**	130 l/min	**111 l/min**	97 l/min	/	**17 °C**
	60 °C	75 l/min	262 kW	0.8 litre	125 l/min	**107 l/min**	93 l/min	**83 l/min**	20 °C
85 °C	40 °C	88 l/min***	183 kW	0.4 litre	/	/	/	/	12 °C
	45 °C	**88 l/min*** **	**214 kW**	**0.5 litre**	102 l/min	/	/	/	**13 °C**
	50 °C	**88 l/min*** **	**244 kW**	**0.6 litre**	116 l/min	**100 l/min**	/	/	**15 °C**
	55 °C	**88 l/min*** **	**274 kW**	**0.7 litre**	131 l/min	**112 l/min**	98 l/min	/	**16 °C**
	60 °C	83 l/min	289 kW	0.8 litre	137 l/min	**118 l/min**	103 l/min	**92 l/min**	18 °C
90 °C	40 °C	88 l/min***	183 kW	0.4 litre	/	/	/	/	12 °C
	45 °C	**88 l/min*** **	**214 kW**	**0.5 litre**	102 l/min	/	/	/	**13 °C**
	50 °C	**88 l/min*** **	**244 kW**	**0.5 litre**	116 l/min	**100 l/min**	/	/	**14 °C**
	55 °C	**88 l/min*** **	**274 kW**	**0.6 litre**	131 l/min	**112 l/min**	98 l/min	/	**15 °C**
	60 °C	88 l/min	305 kW	0.7 litre	146 l/min	**125 l/min**	109 l/min	**97 l/min**	17 °C
95 °C	40 °C	88 l/min***	183 kW	0.4 litre	/	/	/	/	12 °C
	45 °C	**88 l/min*** **	**214 kW**	**0.4 litre**	102 l/min	/	/	/	**13 °C**
	50 °C	**88 l/min*** **	**244 kW**	**0.5 litre**	116 l/min	**100 l/min**	/	/	**14 °C**
	55 °C	**88 l/min*** **	**274 kW**	**0.6 litre**	131 l/min	**112 l/min**	98 l/min	/	**15 °C**
	60 °C	88 l/min***	305 kW	0.7 litre	146 l/min	**125 l/min**	109 l/min	**97 l/min**	16 °C

* The maximum output capacity depends on the pressure drop on the primary side Assumption: 1 mWS
In cases higher pressure drops, the maximum output capacity drops accordingly.
** the maximum withdrawal quantity at the mixing valve depends on the length and the insulation of the pipes
*** maximum flow rate: 88 l/min, with pressure drop of the Friwa of 1000 mbars (higher values are for hydraulic reasons only partly possible, measuring limit of the flow rate sensor ~133 l/min)

Example: the temperature in the storage tank (primary) is 65 °C and the hot water temperature set on the controller is 50 °C (secondary):
- with 65 °C in the storage tank a maximum of 73 litres of domestic water / minute can be heated to 50 °C
- this withdrawal corresponds to a performance of 203 kW
- in order to obtain 1 litre (or 100 litres) of hot water with a temperature of 50 °C, the buffer tank has to contain 0.9 litre (or 90 litres) with a temperature of 65 °C
- 73 litres of warm water/minute with 50 °C can be mixed with cold water (10 °C) to obtain 83 litres/minute with 45 °C - the primary return temperature for a withdrawal of 73 litres of warm water/minute is about 19 °C

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Output capacity table
FriwaMega

Temperature storage tank	Hot water temperature set on the controller	Maximum output capacity* of the Friwa	Transfer capacity	Tank volume required for one litre of warm water	for inlet temperature of 10 °C (cold water temperature) - maximum withdrawal quantity** at the mixing valve at				Temperature of return to the storage tank
					40 °C	**45 °C**	50 °C	**55 °C**	
45 °C	40 °C	85 l/min	178 kW	1.2 litres	/	/	/	/	19 °C
50 °C	40 °C	111 l/min	230 kW	0.9 litre	/	/	/	/	17 °C
	45 °C	**82 l/min**	**199 kW**	**1.2 litres**	95 l/min	/	/	/	**21 °C**
55 °C	40 °C	130 l/min***	271 kW	0.8 litre	/	/	/	/	15 °C
	45 °C	**105 l/min**	**254 kW**	**1.0 litre**	122 l/min	/	/	/	**18 °C**
	50 °C	**79 l/min**	**220 kW**	**1.3 litres**	105 l/min	**90 l/min**	/	/	**23 °C**
60 °C	40 °C	130 l/min***	271 kW	0.7 litre	/	/	/	/	14 °C
	45 °C	**123 l/min**	**300 kW**	**0.8 litre**	143 l/min	/	/	/	**16 °C**
	50 °C	**100 l/min**	**278 kW**	**1.0 litre**	133 l/min	**114 l/min**	/	/	**19 °C**
	55 °C	**77 l/min**	**240 kW**	**1.3 litres**	115 l/min	**98 l/min**	86 l/min	/	**25 °C**
65 °C	40 °C	130 l/min***	271 kW	0.6 litre	/	/	/	/	13 °C
	45 °C	**130 l/min*** **	**316 kW**	**0.7 litre**	151 l/min	/	/	/	**15 °C**
	50 °C	**117 l/min**	**325 kW**	**0.9 litre**	156 l/min	**133 l/min**	/	/	**17 °C**
	55 °C	**96 l/min**	**301 kW**	**1.0 litre**	144 l/min	**123 l/min**	108 l/min	/	**21 °C**
	60 °C	75 l/min	261 kW	1.3 litres	125 l/min	**107 l/min**	94 l/min	**83 l/min**	27 °C
70 °C	40 °C	130 l/min***	271 kW	0.5 litre	/	/	/	/	12 °C
	45 °C	**130 l/min*** **	**316 kW**	**0.6 litre**	151 l/min	/	/	/	**14 °C**
	50 °C	**130 l/min*** **	**361 kW**	**0.8 litre**	173 l/min	**148 l/min**	/	/	**16 °C**
	55 °C	**112 l/min**	**358 kW**	**0.9 litre**	168 l/min	**143 l/min**	125 l/min	/	**19 °C**
	60 °C	94 l/min	324 kW	1.1 litres	155 l/min	**133 l/min**	116 l/min	**103 l/min**	22 °C
75 °C	40 °C	130 l/min***	271 kW	0.5 litre	/	/	/	/	11 °C
	45 °C	**130 l/min*** **	**316 kW**	**0.6 litre**	151 l/min	/	/	/	**13 °C**
	50 °C	**130 l/min*** **	**361 kW**	**0.7 litre**	173 l/min	**148 l/min**	/	/	**15 °C**
	55 °C	**126 l/min**	**393 kW**	**0.8 litre**	189 l/min	**161 l/min**	141 l/min	/	**17 °C**
	60 °C	108 l/min	374 kW	0.9 litre	180 l/min	**153 l/min**	134 l/min	**119 l/min**	20 °C
80 °C	40 °C	130 l/min***	271 kW	0.4 litre	/	/	/	/	11 °C
	45 °C	**130 l/min*** **	**316 kW**	**0.5 litre**	151 l/min	/	/	/	**12 °C**
	50 °C	**130 l/min*** **	**361 kW**	**0.6 litre**	173 l/min	**148 l/min**	/	/	**14 °C**
	55 °C	**130 l/min*** **	**406 kW**	**0.7 litre**	195 l/min	**166 l/min**	145 l/min	/	**16 °C**
	60 °C	121 l/min	419 kW	0.8 litre	201 l/min	**172 l/min**	150 l/min	**134 l/min**	18 °C
85 °C	40 °C	130 l/min***	271 kW	0.4 litre	/	/	/	/	11 °C
	45 °C	**130 l/min*** **	**316 kW**	**0.5 litre**	151 l/min	/	/	/	**12 °C**
	50 °C	**130 l/min*** **	**361 kW**	**0.6 litre**	173 l/min	**148 l/min**	/	/	**13 °C**
	55 °C	**130 l/min*** **	**406 kW**	**0.7 litre**	195 l/min	**166 l/min**	145 l/min	/	**14 °C**
	60 °C	130 l/min***	451 kW	0.8 litre	216 l/min	**185 l/min**	162 l/min	**144 l/min**	17 °C
90 °C	40 °C	130 l/min***	271 kW	0.4 litre	/	/	/	/	10 °C
	45 °C	**130 l/min*** **	**316 kW**	**0.5 litre**	151 l/min	/	/	/	**11 °C**
	50 °C	**130 l/min*** **	**361 kW**	**0.5 litre**	173 l/min	**148 l/min**	/	/	**12 °C**
	55 °C	**130 l/min*** **	**406 kW**	**0.6 litre**	195 l/min	**166 l/min**	145 l/min	/	**14 °C**
	60 °C	130 l/min***	451 kW	0.7 litre	216 l/min	**185 l/min**	162 l/min	**144 l/min**	15 °C
95 °C	40 °C	130 l/min***	271 kW	0.4 litre	/	/	/	/	10 °C
	45 °C	**130 l/min*** **	**316 kW**	**0.4 litre**	151 l/min	/	/	/	**11 °C**
	50 °C	**130 l/min*** **	**361 kW**	**0.5 litre**	173 l/min	**148 l/min**	/	/	**12 °C**
	55 °C	**130 l/min*** **	**406 kW**	**0.6 litre**	195 l/min	**166 l/min**	145 l/min	/	**13 °C**
	60 °C	130 l/min***	451 kW	0.6 litre	216 l/min	**185 l/min**	162 l/min	**144 l/min**	14 °C

* The maximum output capacity depends on the pressure drop on the primary side
** the maximum withdrawal quantity at the mixing valve depends on the length and the insulation of the pipes
*** maximum flow rate: 88 l/min, with pressure drop of the Friwa of 1000 mbars (higher values are for hydraulic reasons only partly possible, measuring limit of the flow rate sensor ~133 l/min)

Example: the temperature in the storage tank (primary) is 65 °C and the hot water temperature set on the controller is 50 °C (secondary):
- with 65 °C in the storage tank a maximum of 117 litres of domestic water / minute can be heated to 50 °C
- this withdrawal corresponds to a performance of 325 kW
- in order to obtain 1 litre (or 100 litres) of hot water with a temperature of 50 °C, the buffer tank has to contain 0.9 litre (or 90 litres) with a temperature of 65 °C
- 117 litres of warm water/minute with 50 °C can be mixed with cold water (10 °C) to obtain 133 litres/minute with 45 °C - the primary return temperature for a withdrawal of 117 litres of warm water/minute is about 17 °C

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