

Data sheet

ThermoDual®-FLS-COMBI

**General description/
Application**


Domestic hot water provision by instantaneous heater is an efficient and hygienic optimal solution. Hot water is not stored and will be produced only on request. Thus, low temperatures in drinking water can be reduced to a necessary minimum.

Habits for bacteria, such as legionella are virtually non-existent. If the conditions for connection of these systems are given (sufficiently high capacity on heating side to cover peak load) or buffer tanks is present, these systems can be used unrestricted. Significant advantages of the system are:

- no storage of drinking water
- efficient cooling of the primary media
- optimum use of energy
- independent choice of different energy sources
- at any time sufficiently high domestic hot water temperature, that fulfils all hygienic requirements
- low space requirement
- lime scale is largely avoided

**Maximum operating
parameters**

Primary	
Maximum permissible supply temperature, primary	90°C
Maximum permissible operating pressure, primary	10 bar(g)
Rated pressure, primary	PN10
Secondary	
Maximum permissible temperature, secondary	90°C
Maximum permissible operating pressure, secondary	10 bar(g)
Minimum required pressure (static), water supply	1,0 bar(g)
Rated pressure, secondary	PN10
Mains power supply / maximum power consumption	230V AC / 4,0 A

Materials

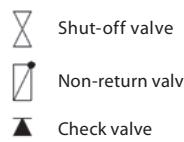
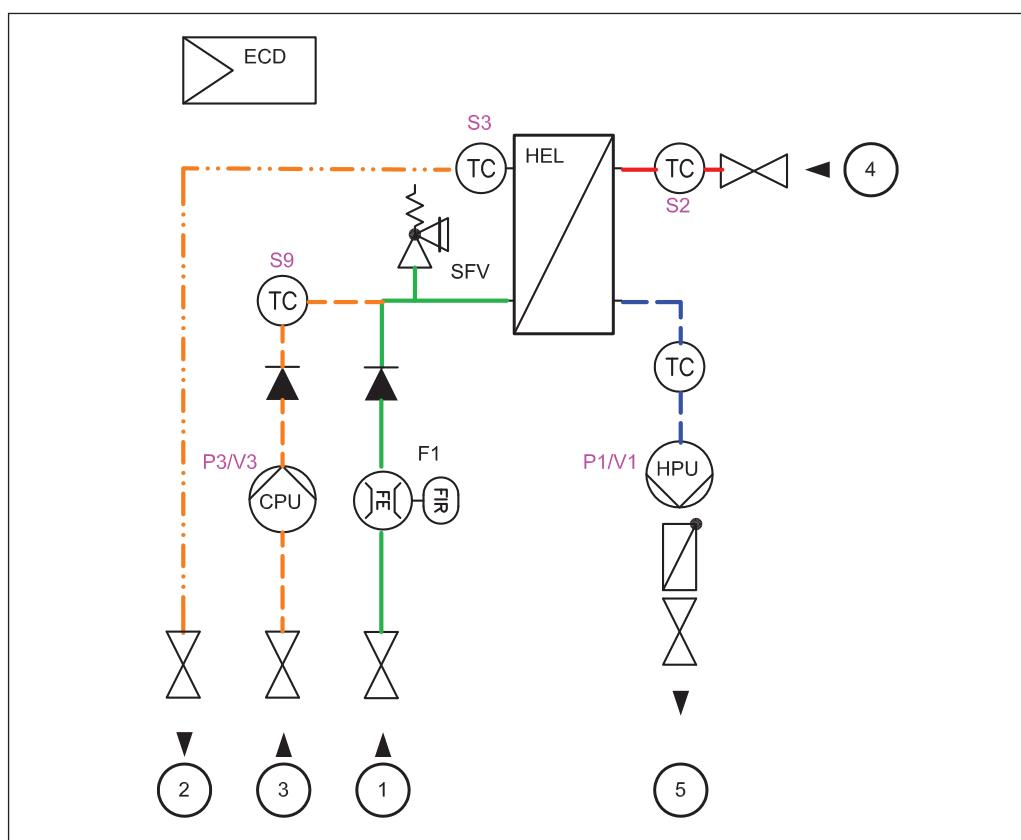
Pipes, fittings, flanges, valves (domestic side)	1.4571, bronze or brass as per DIN EN 1982, also considering DIN 50930-06 and UBA guidelines
ditto (heating side)	P235GH-TC1, CuSn5Pb5Zn5-C (RG-5), ST37.0
Heat exchanger	1.4404 with Cu solder
Insulation	Hardcover EPP $\lambda=0.036$ W/mK (100%ENEV)

Code numbers

Capacity [kW]	Code no.
	Pump control (PWM control signal)
70	004X1538
130	004X1539
175	004X1540
245	004X1541

Note:

Version without own electronic controller and terminal block for devices on request.

Circuit diagram


HEL Heat exchanger
 HPU Heating pump
 CPU Circulation pump
 SFV Safety valve
 ECD Electronic domestic hot water controller (ECL310 / P318.10)

(F1) F1: Flow sensor

- (1) Domestic water (cold)
- (2) Domestic hot water (hot network)
- (3) Circulation (inlet)
- (4) Heating supply
- (5) Heating return

(TC) Sensors (general: direct, immersion, surface)
 "S2": with designation as for controller

Technical data

Typ ThermoDual®	Capacity [kW]	FR _p (70->25°C) [m ³ /h]	Pump dpr [kPa]	FR _{DW} (10->60°C) [m ³ /h]	DW dp [kPa]	FR _C (55->60°C) [m ³ /h]	C dpr* [kPa]
FLS-COMBI 70	70	1,34	55	1,2	15	1,0	20
FLS-COMBI 130	130	2,5	35	2,23	25	1,5	35
FLS-COMBI 175	175	3,35	25	3,0	24	2,0	25
FLS-COMBI 245	245	4,47	55	4,20	38	2,0 .. 3,0	60 .. 32

FR: Flow rate p: primary dpr: Remaining pump head dp: Pressure loss DW: Domestic water C: Circulation * (maximal possible)

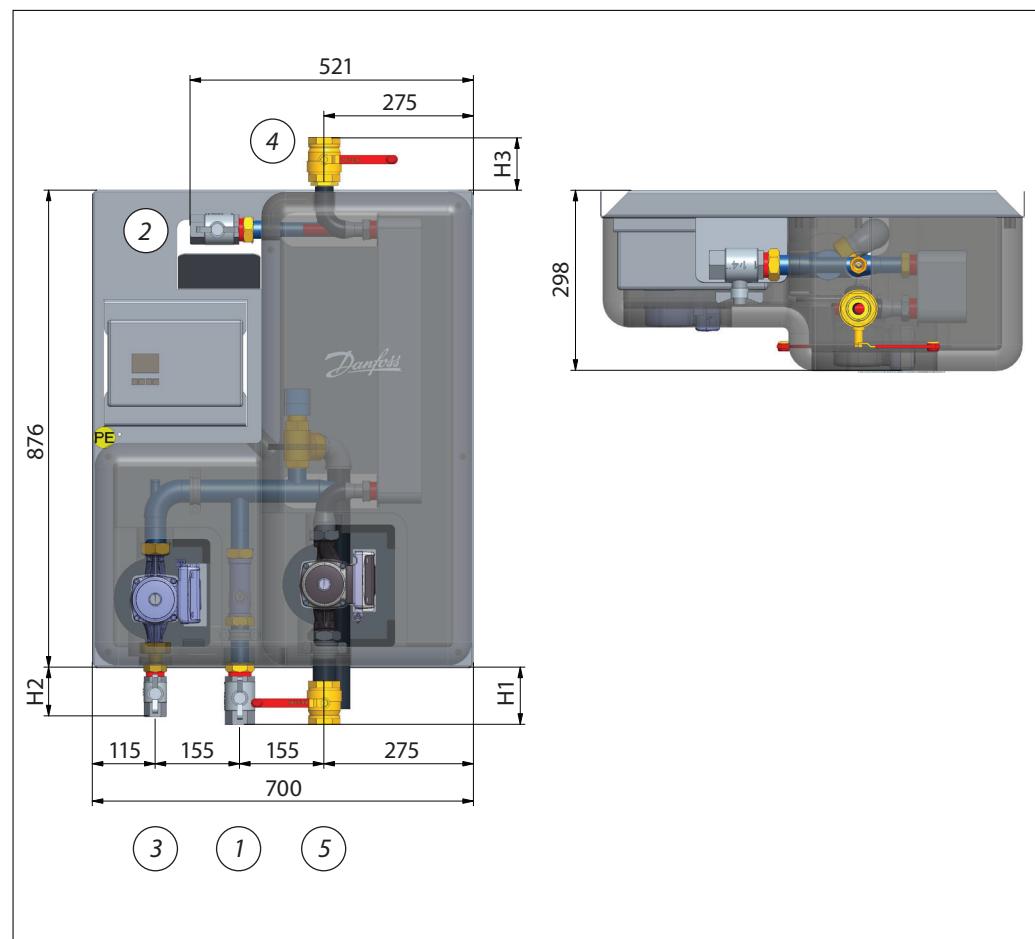
Function

Flow systems provide heated domestic water when requested. By a heat exchanger (HEL), the cold water flowing into connection (1) will be heated up to set point and provided to the consumer at the connection (2). The electronic controller (ECD) is measuring the relevant temperatures and controls the target values that are held constant in all operating conditions. This is i.e. achieved by influencing the speed of the heating pump (HPU), so that the outlet temperature always matches the specified value. Short-term peaks in consumption are registered at the flow sensor to intervene quickly and avoid large temperature fluctuations. The cooled- circulation water from the network (connection 3) is constantly heated in heat exchanger (HEL), even in times of draw-off, reheated and the temperature control (sensor) in the amount of the controlled circulation pump (CPU) influenced so that only the necessary amount flows to maintain constant power set point.

The capacity for the peak load is to ensure either by buffering heating water in a tank (BTA) or there must be a sufficiently large connection value available. The Recharging of a buffer (e.g. from a boiler) can a requisition (sensor / switch contact) on controller (ECD) using an on-site charging pump (LPU). The operation of the system by a controlled heating pump (HPU) is only possible without differential pressure between the connections (4) and (5).

Dimensions

Type ThermoDual®	Connections			H1 [mm]	H2 [mm]	H3 [mm]	Weight [kg]
	DW C/H	Circ.	HTG (DN) SL, RL				
	1/2 G ISO	3 G ISO	4/5 PN10 Rp				
FLS-COMBI 70	1" I	1" I	1 1/4"	90	90	70	31
FLS-COMBI 130	1" I	1" I	1 1/4"	90	90	70	34
FLS-COMBI 175	1 1/4" I	1" I	1 1/4"	105	90	96	36
FLS-Combi 245	1 1/4" I	1" I	1 1/4"	105	90	96	40



Datenblatt

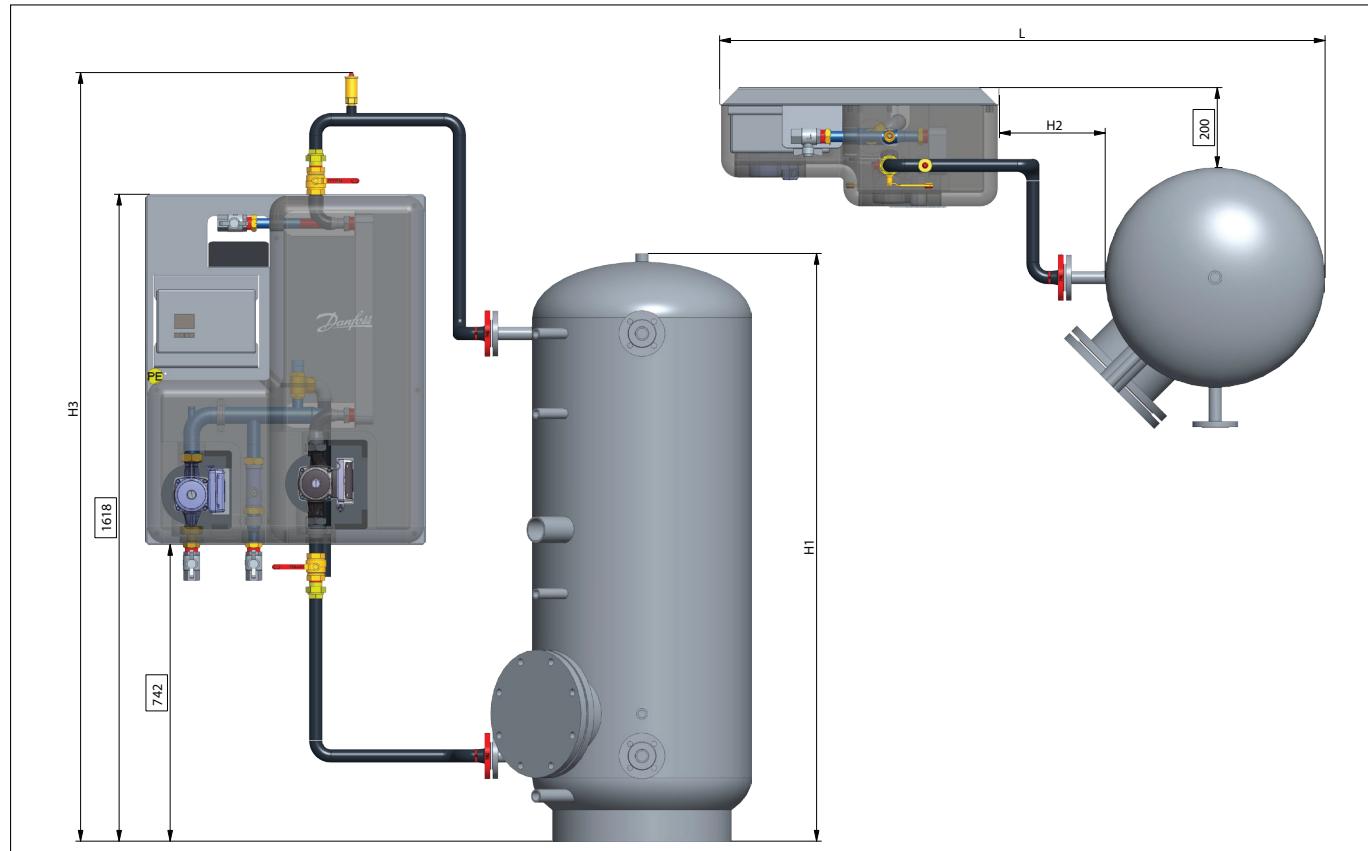
ThermoDual®-FLS-COMBI

Accessories

Heating buffer storage tank, standing model,
Charging-/Discharging Connections as flange
connection Type: PSS

Pipe set for simple connection between system
and buffer

System		Buffer			Pipe set		Dimensions			
Type	Code	Type	Volume [l]	Code	Type	Code	H1 [mm]	H2 [mm]	H3 [mm]	L [mm]
FLS-Combi 70	004X1538	PSS 300	300	640U4984	FLS 70 + PSS 300	146B2450	1450	265	1923	1515
FLS-Combi 70	004X1538	PSS 500	500	640U4985	FLS 70/130 + PSS 500	146B2451	1860	325	2024	1625
FLS-Combi 130	004X1539	PSS 500	500	640U4985	FLS 70/130 + PSS 500	146B2451	1860	325	2024	1625
FLS-Combi 130	004X1539	PSS 750	750	640U4986	FLS 130 + PSS 750	146B2452	1870	325	2024	1775
FLS-Combi 175	004X1540	PSS 750	750	640U4986	FLS 175/245 + PSS 750	146B2453	1870	325	2063	1775
FLS-Combi 175	004X1540	PSS 1000	1000	640U4987	FLS 175/245 + PSS 1000	146B2454	1910	345	2095	1892
FLS-Combi 245	004X1541	PSS 750	750	640U4986	FLS 175/245 + PSS 750	146B2453	1870	325	2063	1775
FLS-Combi 245	004X1541	PSS 1000	1000	640U4987	FLS 175/245 + PSS 1000	146B2454	1910	345	2095	1892



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