TACOTHERM FRESH/DUAL NANO

GAS BOILER REPLACEMENT AND HEAT INTERFACE UNIT

ADVANTAGES

- Slimline design
- Large number of variants
- Preconfigured for simple installation
- On-demand, hygienic, decentralised DHW heating
- Reduction of stored DHW volume to a minimum
- Demand-driven calculation of energy costs
- Use as a gas boiler replacement unit (TacoTherm Fresh Nano)

Preconfigured heat interface unit in slimline design for preparation of potable hot water and apartment heating.

DESCRIPTION

This heat interface unit in the Nano series suits practically any installation situation thanks to its slimline design and versatile constructions. The unit is available as an individual fresh hot water module as well as with integrated panel heating manifold.
Various selectable hydraulic components ensure on-demand preparation of potable hot water, distribution of heat energy as well as demand-driven calculation of energy costs.

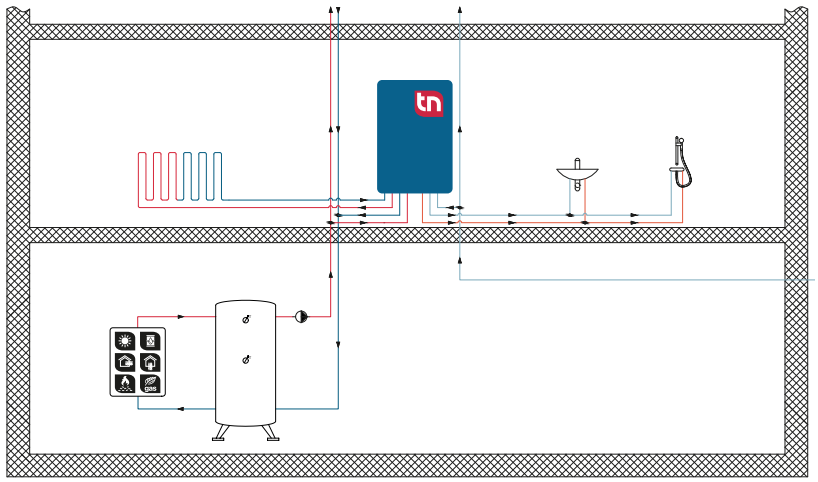
INSTALLATION

The TacoTherm Dual Nano heat interface unit is installed as the base station on a base plate. Models are available for flush or surface mounting.
The TacoTherm Fresh Nano fresh hot water station is available in the surface-mounted model with a high-quality device enclosure. This station is designed for replacement of gas boilers in addition to other applications.

OPERATION

The heat interface unit in the Nano series is designed for preparation of potable hot water and distribution of heat energy in multistory residential buildings. The primary energy supply is by means of a centralized storage tank, while the drinking water is heated on demand in the fresh hot water module in accordance with the continuous flow principle. In the case of the combination station, radiators or underfloor heating systems in the apartments are connected to the integrated connections. The combination station meets the heat requirement for the apartment in this way.
The heating flow temperature is regulated on a fixed-value or weather-controlled basis. Adjusting pieces are provided in the modules for on-site installation of heat meters and cold water meters.

SYSTEM/BASIC DIAGRAM



BUILDING CATEGORIES

- Apartment blocks
- Hotels and residential homes
- Industrial buildings

		TacoTherm Fresh Nano		TacoTherm Dual Nano	
		454 mm	490 mm	600 mm	715 mm
Use	Gas boiler replacement unit				
	Heat interface unit		■	■	■
Installation method	Base plate				
	Surface-mounted with varnished unit cover				
	Flush in cabinet				
Heat exchanger	Copper solder				
	Nickel solder				
	24 plates	■			
	40 plates (other sizes available on request)		*		
Fresh hot water station regulation	Proportional flow controller	■	■	■	■
	NovaMix Value mixing valve (secondary anti-scalding protection recommended)	■	■	■	■
	Standby module	■	■	■	■
	Circulating pump	External	External	External	■
Connections for primary, hot and cold water supply	Top				
	Bottom with connection rail				
	Bottom			■	■
Connection for apartment heat distribution (bottom)	Pipe connections 1" AG (outer thread)	■	■	■	■
	Panel heating manifold				
Heating control	Fixed-value controlled				
	Weather-controlled				
	Without mixing station				
Manifold options	Without actuator (manual adjustment)				
	TacoDrive actuator				
	Connector module for actuator			■	■
	Up to 8 heating circuits			■	
	9 – 10 heating circuits				
Hydronic balancing, primary side	Differential pressure controller				
	TacoSetter Inline				
Hydronic balancing, heating	Dyn. volume flow controller (PICV)				
	TacoSetter Inline	■	■		

KEY

■	Available for this type
⋯	Selectable components (either / or)
	Not available for this type
*	Available on request

NOTE

REQUIREMENTS FOR FLOW MEDIA

The stations heat interface units use a copper-soldered stainless steel plate heat exchanger as standard. It must be checked prior to use in the framework of system planning whether the issues of corrosion protection and scale formation have been sufficiently taken into account in accordance with DIN 1988200 and current potable water analyses according to DIN EN 8065.
See datasheet „Plate Heat Exchanger Requirements - Limit Values for Drinking Water Quality“.

SPECIFICATION TEXT

See www.taconova.com

TECHNICAL DATA FOR FRESH HOT WATER MODULE

General

- Max. operating temperature $T_{0\,max}$: 95 °C
- Max. operating pressure $P_{0\,max}$:
  - Primary: 3 bar
  - Secondary: 6 bar
- Dimensions on base plate:
  - Variant 1: W 435 mm × H 634 mm × D 132 mm
    * D 150 mm with differential pressure controller
  - Variant 2: W 490 mm × H 634 mm × D 132 mm
    * D 150 mm with differential pressure controller
  - Variant for gas boiler replacement and device enclosure:
    B 450 mm × H 635 mm × D 156 mm
- Weight (empty): 35 kg

Materials

- Plate heat exchanger (plates and connector pieces): copper soldered / nickel soldered
- Galvanized or varnished sheet steel housing according to model
- Pipes: DN 20 Stainless steel 1.4404
- Valve housing: Brass
- Seals: AFM34 (flat sealing)

Performance data

See design diagram

Flow media

- Heating water (VDI 2035; SWKI BT 102-01; ÖNORM H 5195-1)
- Cold water according to DIN 1988-200 and DIN EN 806-5

APPROVALS / CERTIFICATES

- Components in contact with potable water comply with UBA Evaluation Criteria 26/03/2018 and Directive (EU) 2015/1535

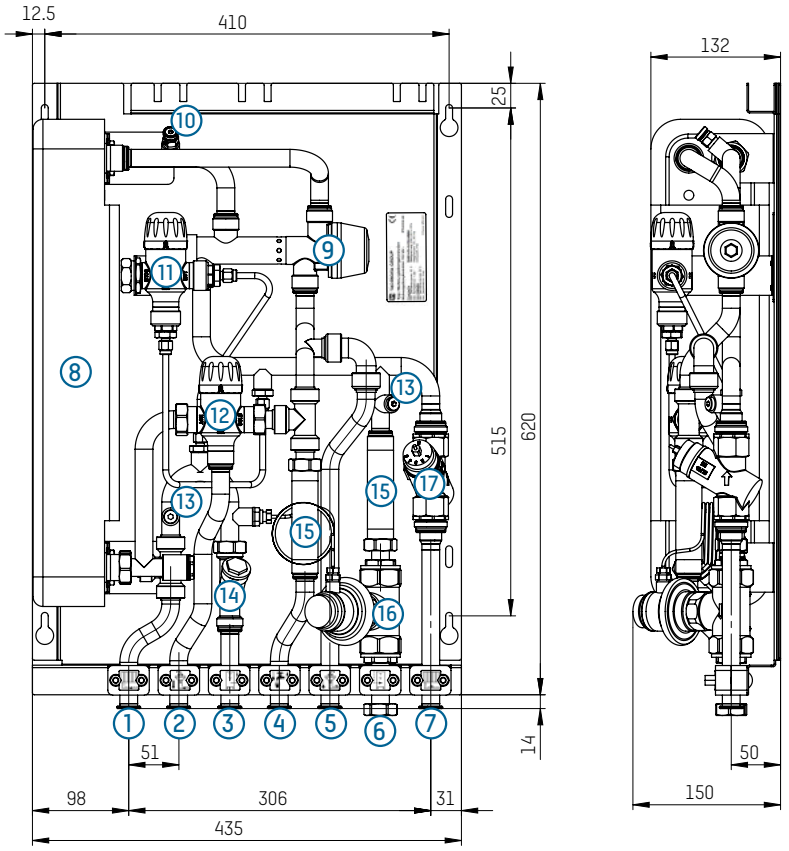
TYPE OVERVIEW

TacoTherm Fresh Nano | Fresh Hot Water Station *1)

Order no.	DN	Rp	Dispensing range *2)	Heat exchanger
276.1258.000	20	1" OT	up to 20 l/min (39KW)	Copper-soldered 24 plates

* 1) Any matching accessories required can be individually selected
* 2) Performance data for primary = flow 60 °C / Secondary = hot water 45 °C; Δp ≥ 300 mbar

DIMENSIONAL DRAWING



1 Connection for heat distribution on supply side
2 Connection for drinking water distribution (hot)
3 Primary connection for heat supply on supply side*
4 Connection for main supply line for drinking water*
5 Connection for drinking water distribution (cold)
6 Primary connection for heat supply on return side*
7 Connection for heat distribution on return side
8 Heat exchanger
9 Proportional flow controller
10 Venting
11 Standby module (optional)
12 NovaMix Value thermal mixing valve as anti-scald protection (optional, recommended)
13 Sensor seats
14 Dirt filter
15 Meter adjusting pieces
16 Dynamic differential pressure controller (optional)
17 Dynamic mass flow controller or TacoSetter Inline (optional)

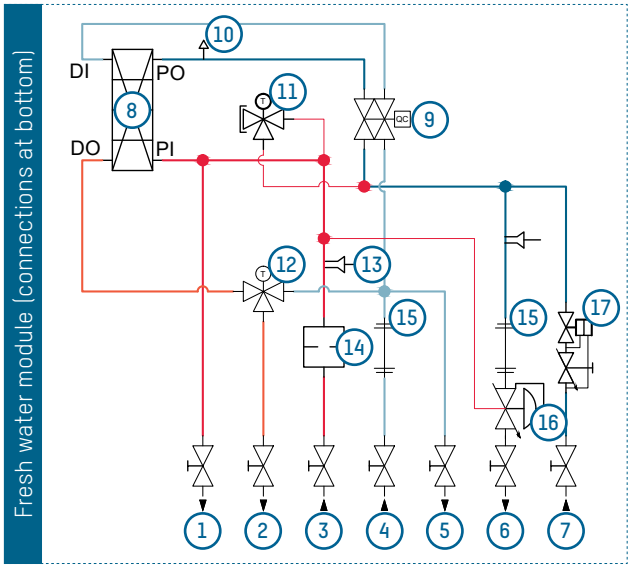
* top connection available optionally, see hydraulic diagram

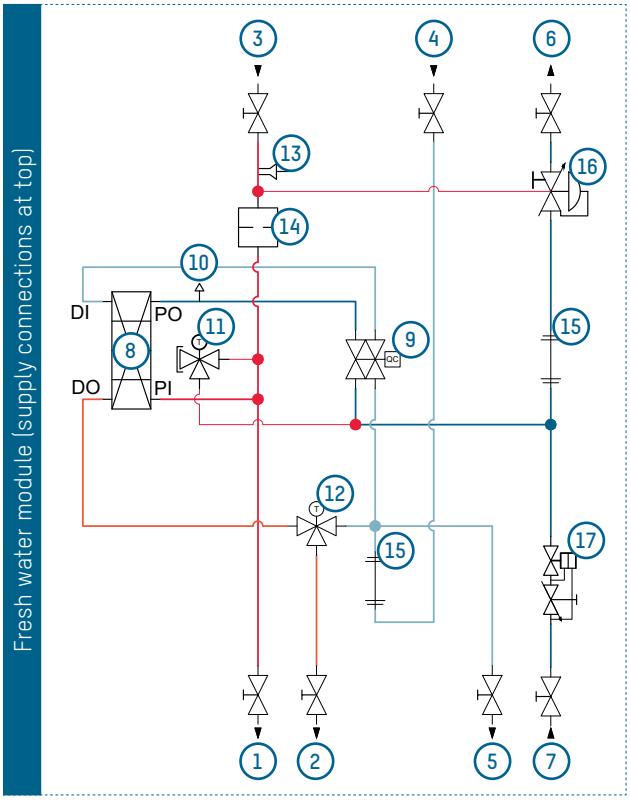
ACCESSORIES

CONNECTION RAIL WITH BALL VALVES FOR TACOTHERM FRESH NANO

Order no.	DN	Rp	Number of ball valves
296.3004.000	20	¾" IT × 1" OT	7

FLOW DIAGRAM





Key

1 Connection for heat distribution on supply side
2 Connection for drinking water distribution (hot)
3 Primary connection for heat supply on supply side
4 Connection for main supply line for drinking water
5 Connection for drinking water distribution (cold)
6 Primary connection for heat supply on return side
7 Connection for heat distribution on return side
8 Heat exchanger
9 Proportional flow controller
10 Venting
11 Standby module (optional)
12 Thermal mixing valve NovaMix Value as anti-scald protection (optional, recommended)
13 Sensor seats
14 Dirt filter
15 Meter adjusting pieces
16 Dynamic differential pressure controller (optional)
17 Dynamic mass flow controller (optional)

EXAMPLE OF INTERPRETING THE FLOW RATE AND PRESSURE LOSS DIAGRAMS

Given

- Hot water dispensing volume: 20 l/min
- Primary heating flow temperature: 65 °C
- Available differential pressure: 300 mbar

Sought

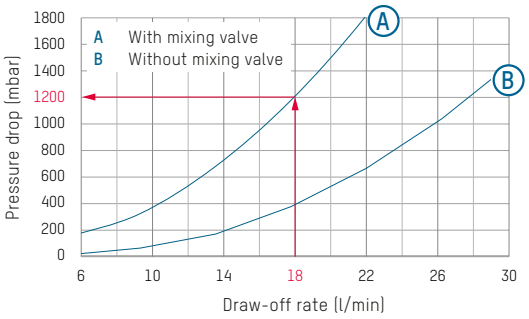
- Domestic hot water demand in l/h
- Pressure loss on secondary side
- Dispensing temperature Primary heating return temperature in °C
- Secondary pressure loss in mbar

Approach

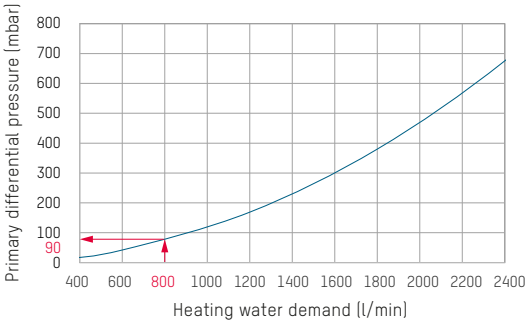
- In Diagram C) the hot water dispensing temperature of 45°C and the associated return temperature can be read for the given hot water dispensing volume of 20 l/min at the intersection point with the differential pressure of 300 mbar.
- Diagram A) shows the pressure loss in the system on the secondary side and Diagram E) shows a domestic hot water demand of 1150 l/h at the intersection point between the dispensing temperature and the 300 mbar differential pressure.

FLOW AND PRESSURE LOSS DIAGRAMS
PLATE HEAT EXCHANGER WITH 24 PLATES

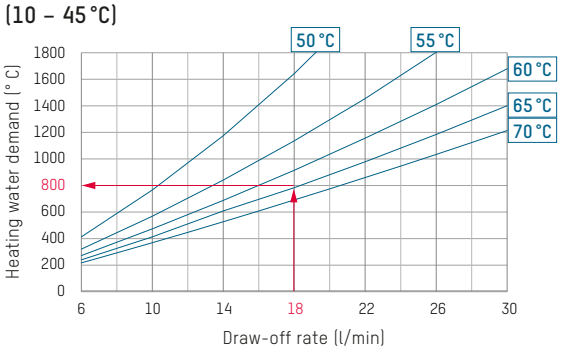
A) Secondary pressure drop



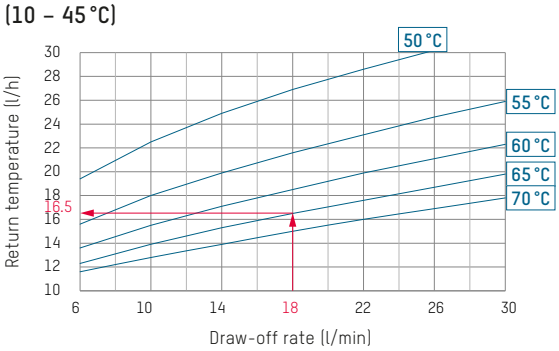
B) Heating water demand/primary differential pressure



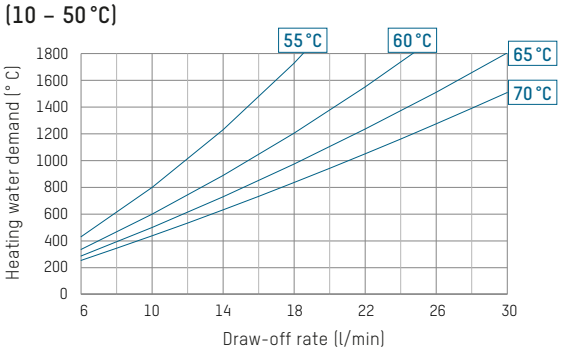
C) Heating water demand for heating DHW by 35 °C (10 – 45 °C)



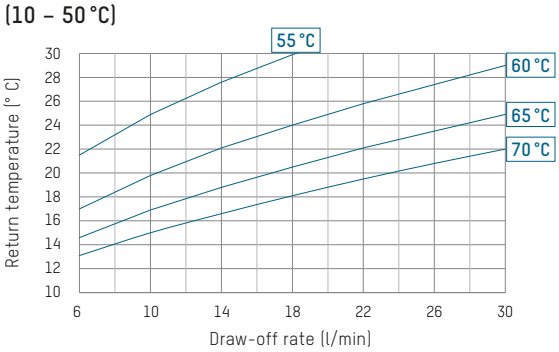
D) Return temperature with heating DHW by 35 °C (10 – 45 °C)



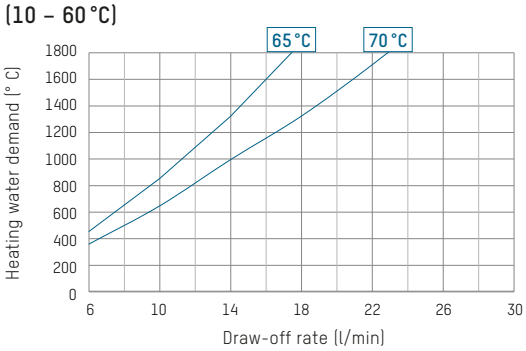
E) Heating water demand for heating DHW by 40 °C (10 – 50 °C)



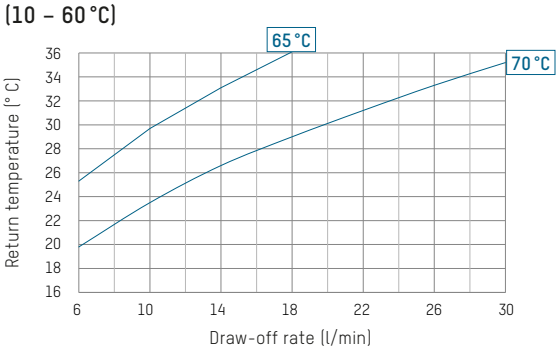
F) Return temperature with heating DHW by 40 °C (10 – 50 °C)



G) Heating water demand for heating DHW by 50 °C (10 – 60 °C)

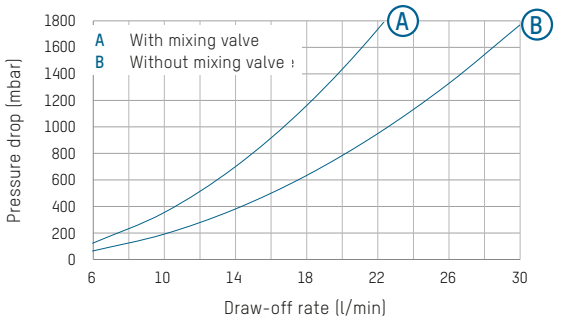


H) Return temperature with heating DHW by 50 °C (10 – 60 °C)

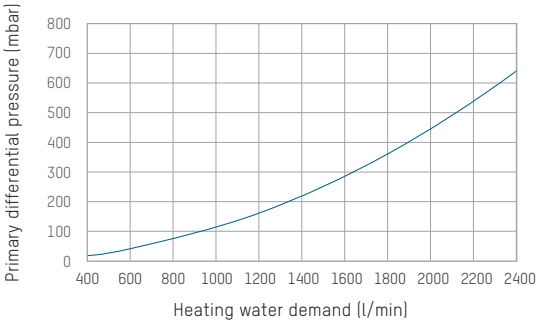


FLOW AND PRESSURE LOSS DIAGRAMS
PLATE HEAT EXCHANGER WITH 40 PLATES

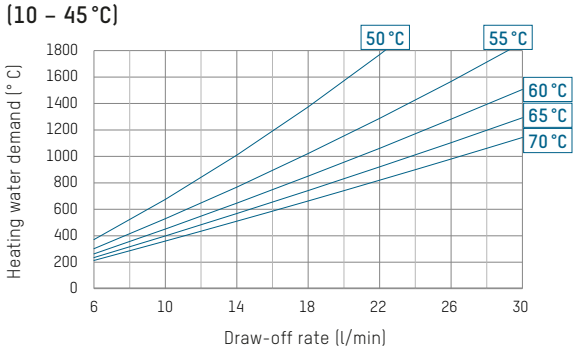
A) Secondary pressure drop



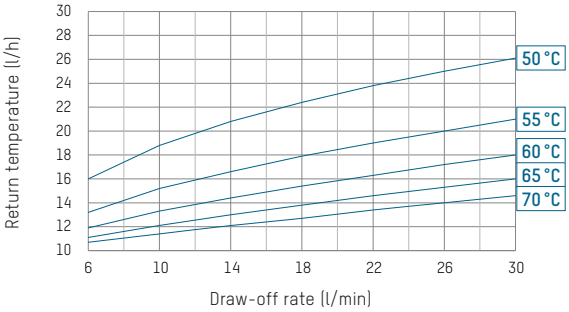
B) Heating water demand/primary differential pressure



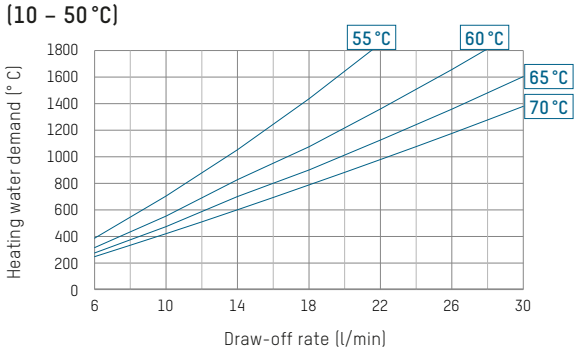
C) Heating water demand for heating DHW by 35 °C (10 – 45 °C)



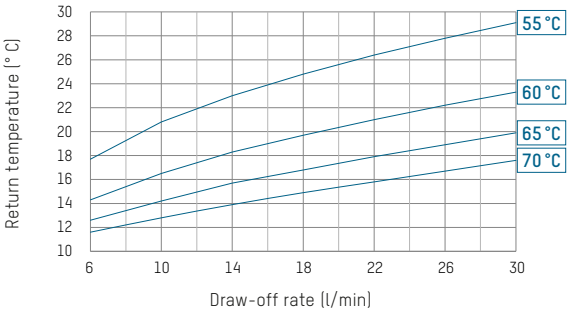
D) Return temperature with heating DHW by 35 °C (10 – 45 °C)



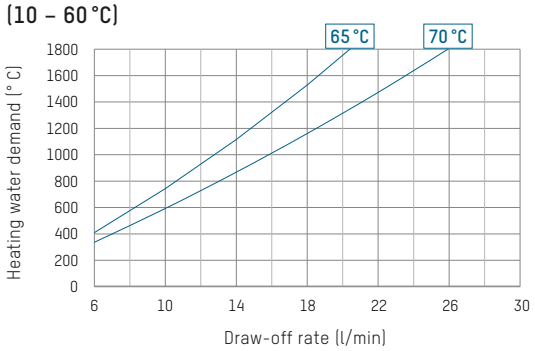
E) Heating water demand for heating DHW by 40 °C (10 – 50 °C)



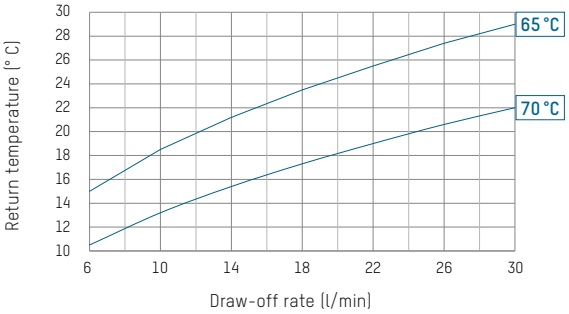
F) Return temperature with heating DHW by 40 °C (10 – 50 °C)



G) Heating water demand for heating DHW by 50 °C (10 – 60 °C)



H) Return temperature with heating DHW by 50 °C (10 – 60 °C)



SPECIFICATION TEXT

See www.taconova.com

TECHNICAL DATA FOR COMBINATION STATION

General

- Max. operating temperature $T_{0\,max}$:
  - Fresh water module: 95 °C
  - Heating manifold: 70 °C
- Max. operating pressure $P_{0\,max}$:
  - Primary: 3 bar
  - Secondary: 6 bar
- Weight (empty): 65 kg
- Dimensions in mounting frame
  - Variant with up to 8 heating circuits:
    W 634 × H 1273 (+ 90) × D 153 mm
  - Variant with up to 10 heating circuits:
    W 749 × H 1273 (+ 90) × D 153 mm

Materials

- Plate heat exchanger (plates and connector pieces): copper soldered / nickel soldered
- Galvanized or varnished sheet steel housing according to model
- Valve housing: Brass
- Pipes: DN 20 Stainless steel 1.4404
- Seals: AFM34 (flat sealing)

Features of heating module

- Circulating pump: Grundfos UPM 3 15-70 Hybrid
- Heating manifold 2 – 8 heating circuits (9 - 10 on request)
- Supply TopMeter
- Thermal actuators (optional)
- Fixed-value or weather-controlled heating module regulation

Performance data

See design diagram

Electrical connection data

- Mains voltage: 230 VAC ± 10 %
- Mains frequency: 50...60 Hz
- Power consumption: max. 4 – 60 W
- Protection type: IP 30

Flow media

- Heating water
  (VDI 2035; SWKI BT 102-01; ÖNORM H 5195-1)
- Cold water as per DIN 1988-200 and DIN EN 806-5

APPROVALS / CERTIFICATES

- Components in contact with potable water comply with UBA Evaluation Criteria 26/03/2018 and Directive (EU) 2015/1535

TYPE OVERVIEW

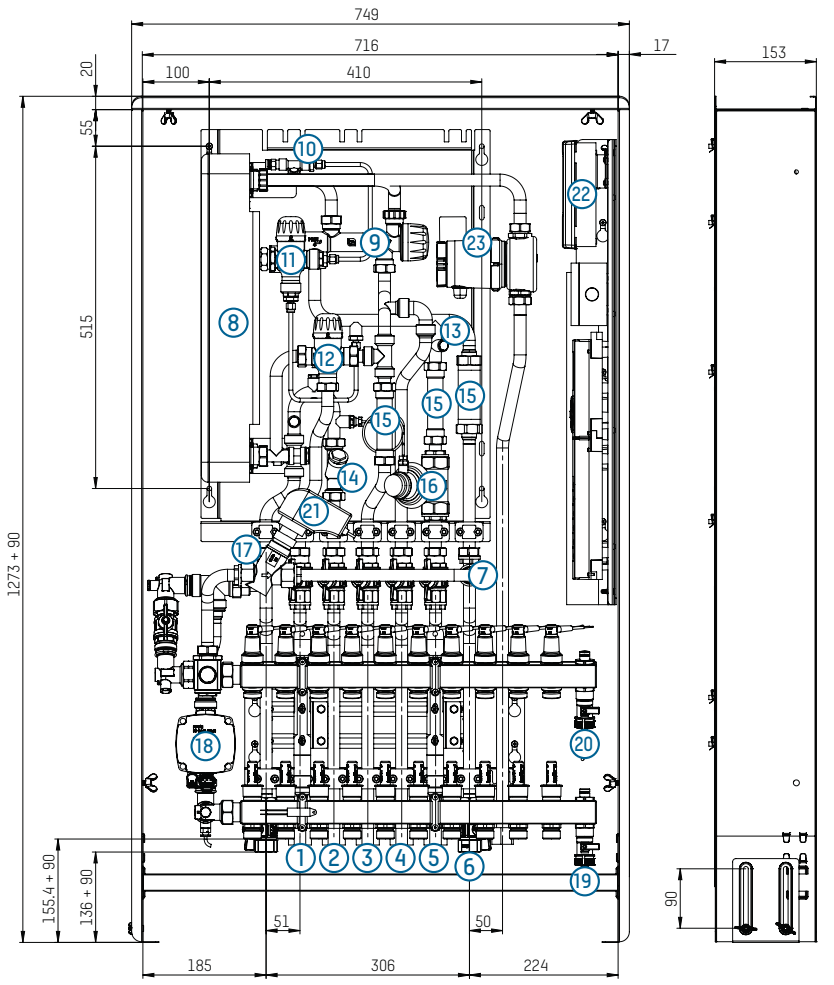
TacoTherm Dual Nano | Combination station with 10 heating circuits *1)

Order no.	DN	Rp	Dispensing range *2)	Heat exchanger
276.2571.137	20	¾" IT	up to 20 l/min (39KW)	Copper-soldered 24 plates

* 1) Any matching accessories required can be individually selected

* 2) Performance data for primary = flow 60 °C / Secondary = hot water 45 °C; Δp ≥ 300 mbar

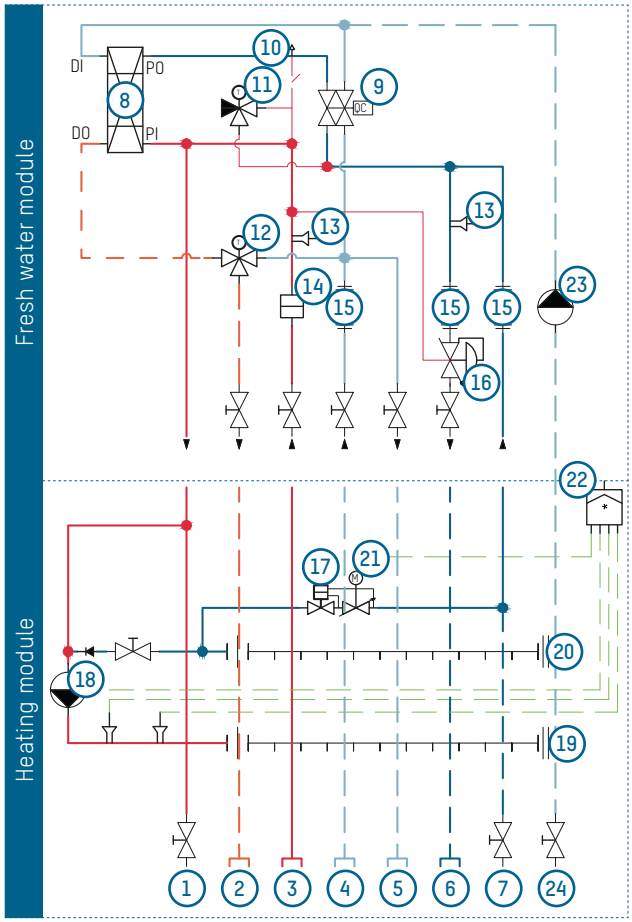
DIMENSIONAL DRAWING



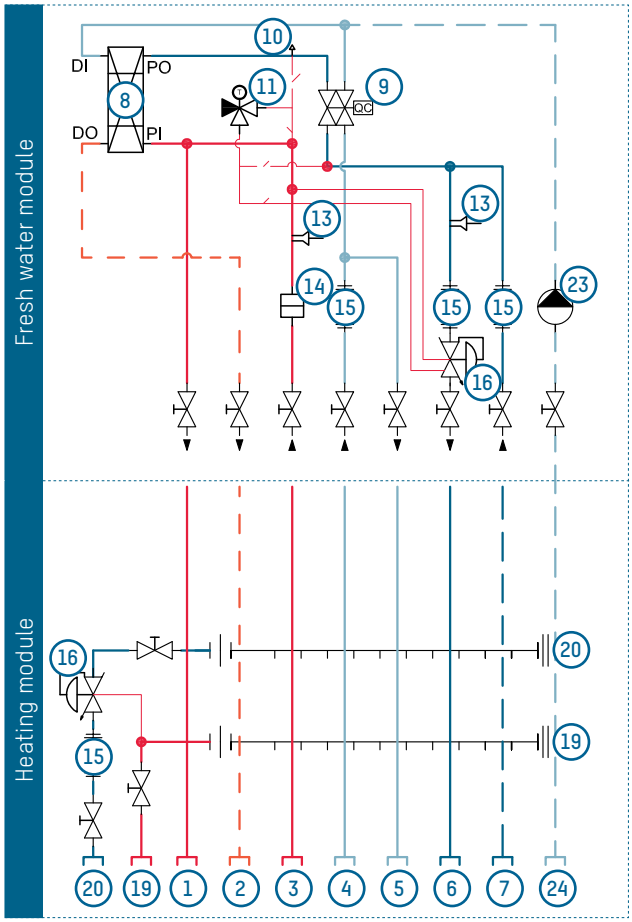
1 Connection for heat distribution on supply side
2 Connection for drinking water distribution (hot)
3 Primary connection for heat supply on supply side
4 Connection for main supply line for drinking water
5 Connection for drinking water distribution (cold)
6 Primary connection for heat supply on return side
7 Connection for heat distribution on return side
8 Heat exchanger
9 Proportional flow controller
10 Venting
11 Standby module (optional)
12 Thermostatic mixing valve NovaMix Value thermal as anti-scald protection (optional, recommended)
13 Sensor seats
14 Dirt filter
15 Meter adjusting pieces
16 Dynamic differential pressure controller (optional)
17 Dynamic mass flow controller (optional)
18 Circulating pump
19 Supply manifold bar with TopMeter
20 Return manifold bar with heating valves and actuators (optional)
21 Weather-controlled actuator (optionally fixed-value controlled)
22 Controller
23 Circulating pump

FLOW DIAGRAM

Heating control:
Fixed-value or weather-controlled
Connection for 2-pipe system



Heating control:
Fixed-value or weather-controlled
Connection for 4-pipe system



Key

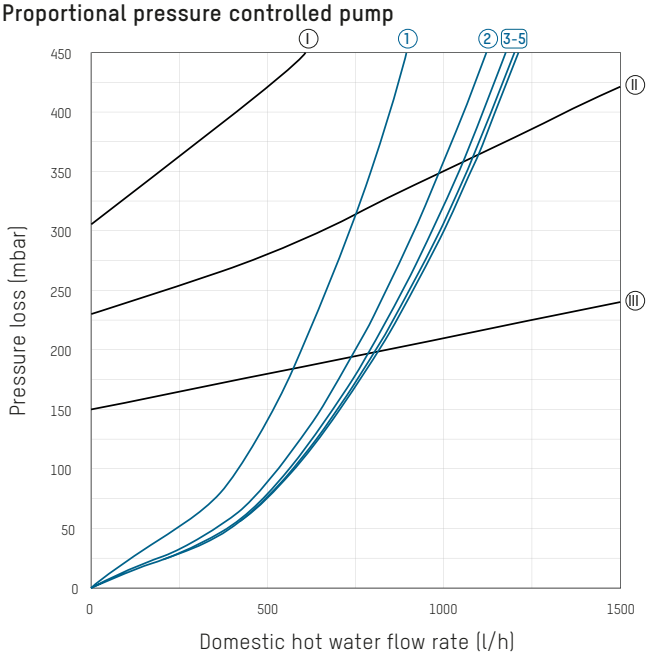
1 Connection for heat distribution on supply side
2 Connection for drinking water distribution (hot)
3 Primary connection for heat supply on supply side
4 Connection for main supply line for drinking water
5 Connection for drinking water distribution (cold)
6 Connection for heat distribution on return side
7 Primary connection for heat supply on return side
8 Heat exchanger
9 Proportional flow controller
10 Venting
11 Standby module (optional)
12 NovaMix Value thermal mixing valve as anti-scald protection (optional, recommended)
13 Sensor seats
14 Dirt filter
15 Meter adjusting pieces
16 Dynamic differential pressure controller (optional)
17 Dynamic mass flow controller (optional)
18 Circulating pump
19 Supply manifold bar with TopMeter
20 Return manifold bar with heating valves and actuators (optional)
21 Weather-controlled actuator (optionally fixed-value controlled)
22 Controller weather-controlled regulation
23 Circulating pump
24 Connection for circulating pump

FLOW, TEMPERATURE AND PRESSURE LOSS DIAGRAMS

See diagrams for TacoTherm Fresh Nano on Page 5 + 6

FLOW AND PRESSURE LOSS DIAGRAMS

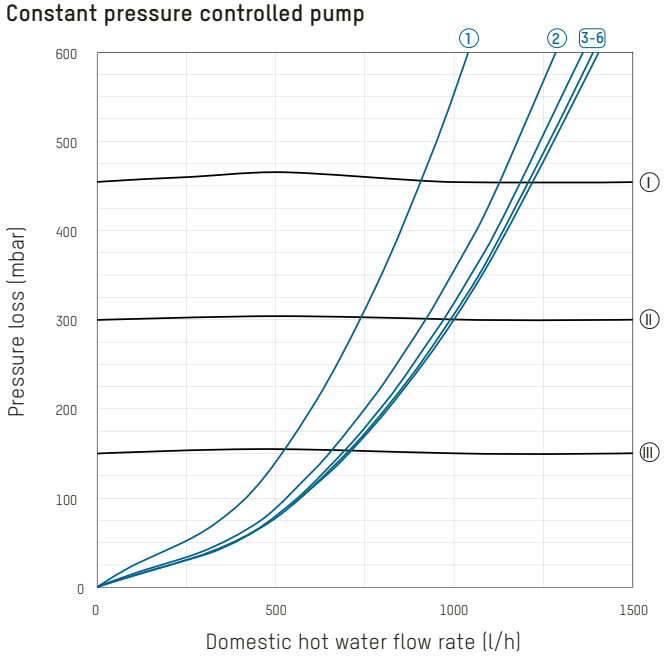
Proportional pressure controlled pump



Number of heating circuits
1 2
2 4
3 6
4 8
5 10

Pump characteristic Grundfos UPM
I 1
II 2
III 3

Constant pressure controlled pump



Number of heating circuits
1 2
2 4
3 6
4 8
5 10
6 12

Pump characteristic Grundfos UPM
I 1
II 2
III 3

EXAMPLE OF CALCULATING THE AVAILABLE PUMP HEAD FOR DESIGNING THE CONNECTED HEATING SURFACES

Given
- Required domestic hot water flow rate: 1000 l/h
- Panel heating manifold: 6 heating circuits

Sought
- Available pump head (a) of pump for heating surfaces to be connected
- Secondary pressure loss in mbar

Approach
- Characteristic 3 and a DHW flow rate of 1000 l/h gives rise to a manifold pressure loss of 150 mbar.
- Pump Position 7 and proportional pressure control gives rise to a max. pump pressure of 425 mbar

Result
- The available pump head (a) of 275 mbar is derived from the difference between the max. pump pressure (425 mbar) and the manifold pressure loss (150 mbar)

CONTACT AND FURTHER INFORMATION TACONOVA.COM

Taconova Group AG | Neunbrunnenstrasse 40 | CH-8050 Zürich | T +41 44 735 55 55 | F +41 44 735 55 02 | group@taconova.com
Taconova UK Ltd | 2a Baxter Road | Sheffield S6 1JF | England | T +44 (0) 114 231 3700 | adminuk@taconova.com | taconova.uk