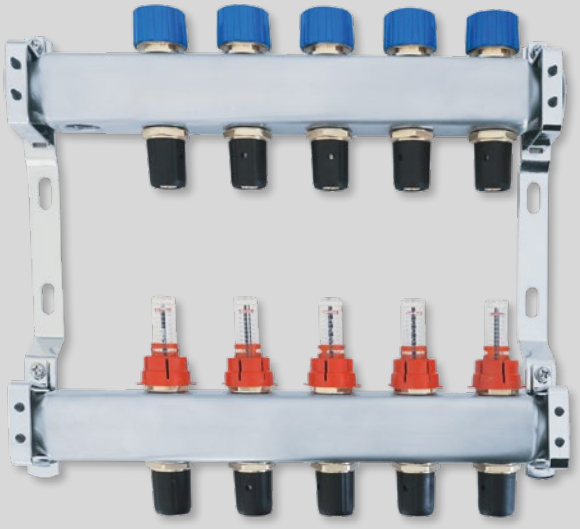
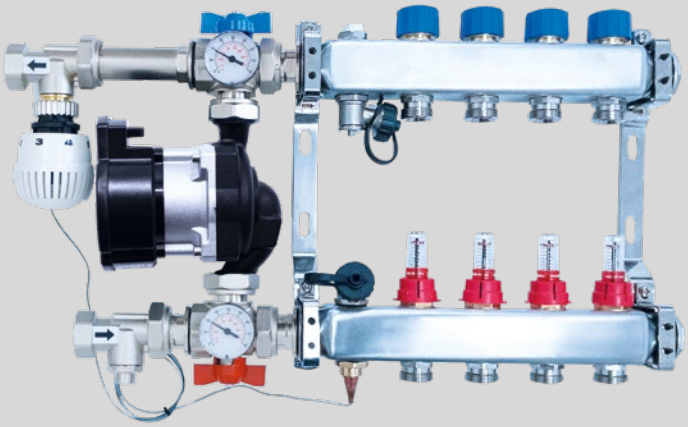
PRODUCT-
CATALOG 2023

STRASSHOFER®





valid after April 1st, 2023

www.strasshofer.de

- STAINLESS STEEL MANIFOLDS
- DHW STATIONS
- FRESH WATER STATIONS
- COMBINED HEATING MANIFOLDS
- RELATED ACCESSORIES

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About Strasshofer

Strasshofer with its brands **step a valve** and **TTS** Thermotechnik Strasshofer is one of the most innovative companies in the market.

For almost 50 years now we have been a sought-after supplier on the international markets for DHW stations, fresh water stations, heating manifolds and related accessories.

With a view to future requirements of the market we always offer innovative and durable products and successfully combine them with comprehensive services

A fair and communicative contact with business partners as well as with our employees, social commitment and the assumption of entrepreneurial responsibility defines our corporate philosophy.

We have been supplying high-quality heating technology and innovative domestic hot water preparation systems to national and international construction projects, renovations and refurbishments for almost 50 years.

In addition, we offer our customers and business partners our special know-how from the idea generation and product development to customer-specific product manufacturing — always paired with technical advice and support.

Partnership with our customers means for us:

- build and maintain long-term and trustful relationships with our customers
- deliver a high standard of quality and innovation
- provide individual, high-quality and long-lasting solutions to our customers
- provide a costumer service on a high level

We offer our customers and partners:

- professional technology and innovative products at competitive prices
- a high level of quality and know-how
- profound technical advice and support
- individual solutions with efficient systems and services

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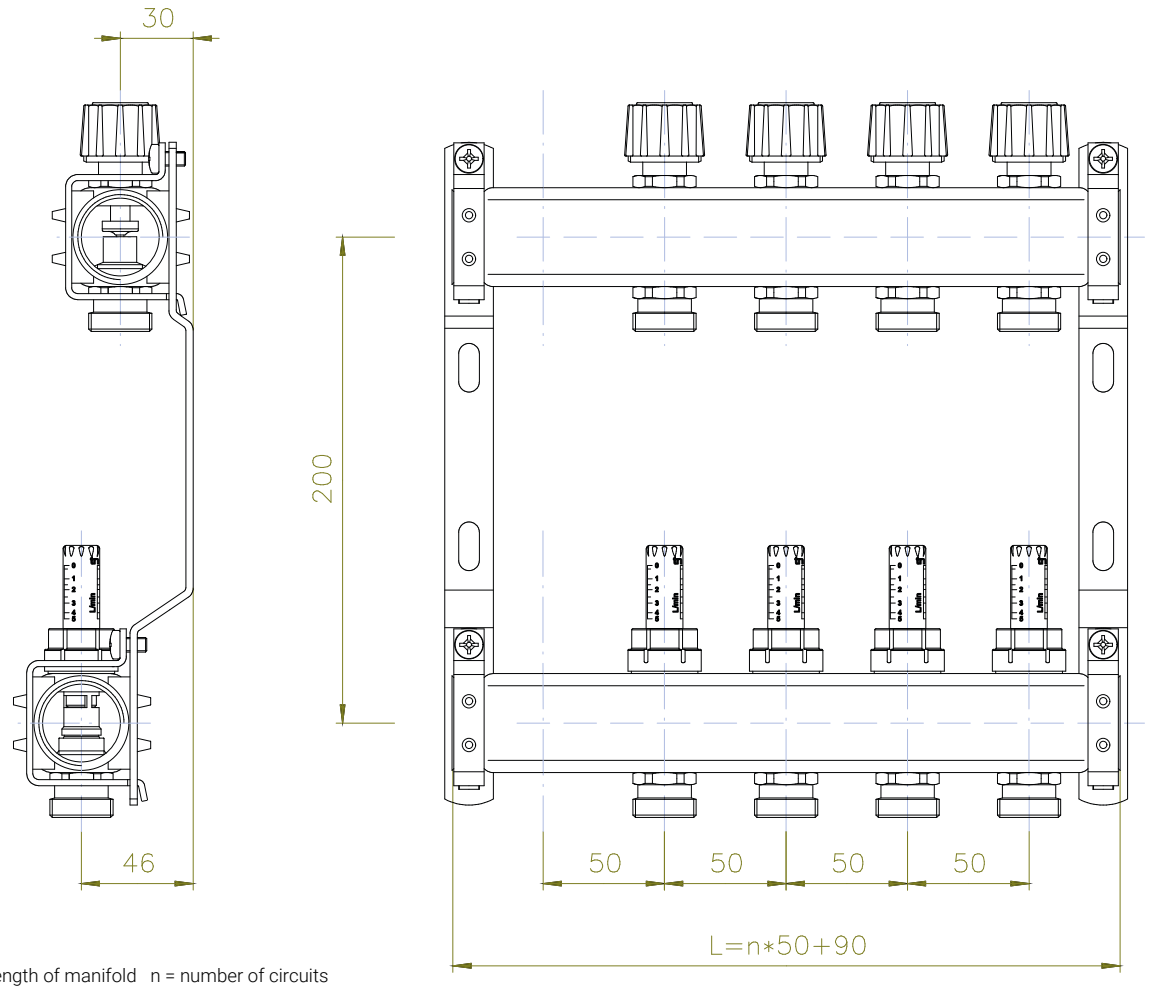
Floor heating manifold VA-FBif with flow meters

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN32 stainless steel profile, 1330 mm² cross sectional area
Connections:	1" female threads on both sides
Supply:	Flow meters
Return:	Integrated pre-settable valves • M30x1.5 mm connecting thread • with adjustment cap • actuators can be retrofitted • Kvs 2.74
Outlets:	¾" male threads with Eurocone, distance of 50 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	VA-FBif 2	190 mm	3702
3	VA-FBif 3	240 mm	3703
4	VA-FBif 4	290 mm	3704
5	VA-FBif 5	340 mm	3705
6	VA-FBif 6	390 mm	3706
7	VA-FBif 7	440 mm	3707
8	VA-FBif 8	490 mm	3708
9	VA-FBif 9	540 mm	3709
10	VA-FBif 10	590 mm	3710
11	VA-FBif 11	640 mm	3711
12	VA-FBif 12	690 mm	3712
13	VA-FBif 13	740 mm	3713
14	VA-FBif 14	790 mm	3714
15	VA-FBif 15	840 mm	3715

Included items: The set consists of a supply and a return bar. Each manifold bar is additionally delivered with two ½" female threads for vent valves and fill/drain valves. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels and installation/setting instructions.



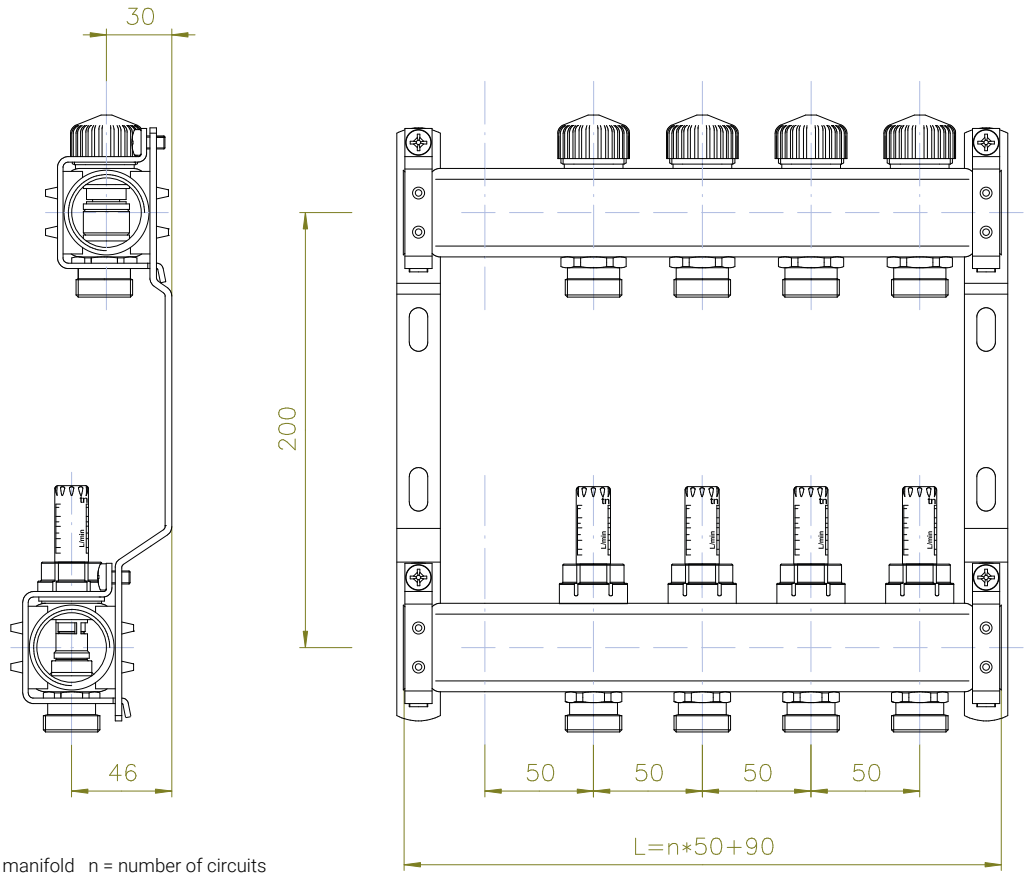
L = length of manifold n = number of circuits

Floor heating manifold DYNA-if with automatic flow control and flow indication

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN32 stainless steel profile, 1330 mm² cross sectional area
Connections:	1" female threads on both sides
Supply:	Flow indication 0-5.0 l/min
Return:	Pre-settable valves with integrated flow controller • automatic hydronic balancing • stepless flow adjustment of 30-300 l/h • differential pressure max. 60 kPA, min. 15 kPA (30-150 l/h) up to 20 kPA (150-300 l/h) • M30x1.5 mm connecting thread • with adjustment cap • actuators can be retrofitted
Outlets:	¾" male threads with Eurocone, distance of 50 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	DYNA-if 2	190 mm	3802
3	DYNA-if 3	240 mm	3803
4	DYNA-if 4	290 mm	3804
5	DYNA-if 5	340 mm	3805
6	DYNA-if 6	390 mm	3806
7	DYNA-if 7	440 mm	3807
8	DYNA-if 8	490 mm	3808
9	DYNA-if 9	540 mm	3809
10	DYNA-if 10	590 mm	3810
11	DYNA-if 11	640 mm	3811
12	DYNA-if 12	690 mm	3812
13	DYNA-if 13	740 mm	3813
14	DYNA-if 14	790 mm	3814
15	DYNA-if 15	840 mm	3815

Included items: The set consists of a supply and a return bar. Each manifold bar is additionally delivered with two ½" female threads for vent valves and fill/drain valves. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels and installation/setting instructions.



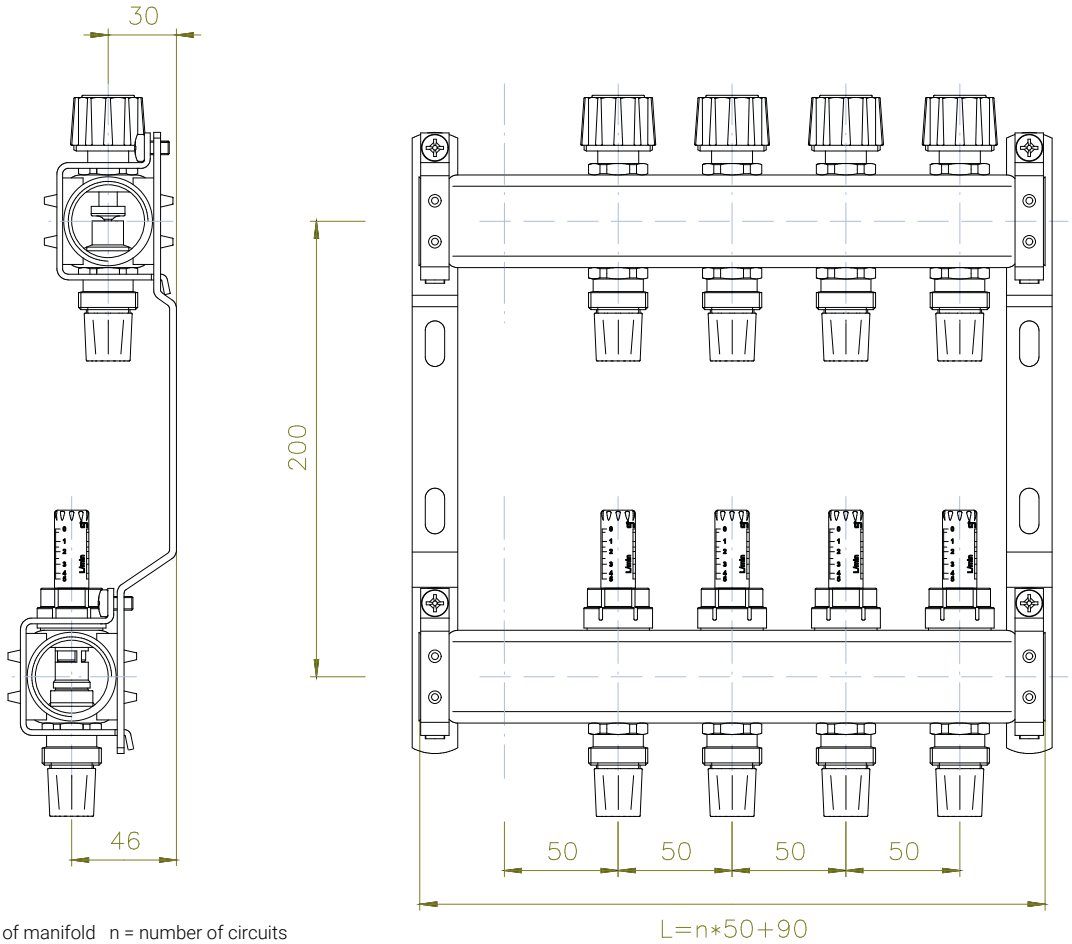
L = length of manifold n = number of circuits

Floor heating manifold with flow meters VA-Fix16

Specifications	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN32 stainless steel profile, 1330 mm² cross sectional area
Connections:	1" female threads on both sides
Supply:	Flow meters 0-5.0 l/min
Return:	Integrated pre-settable valves • M30x1.5 mm connecting thread • with adjustment cap • actuators can be retrofitted • Kvs 2.74
Outlets:	Certified plug-in technology for multi-layer pipe (DVGW/IMA) or plastic pipe 16x2.0 mm; distance of 50 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	VA-Fix16-2	190 mm	3102
3	VA-Fix16-3	240 mm	3103
4	VA-Fix16-4	290 mm	3104
5	VA-Fix16-5	340 mm	3105
6	VA-Fix16-6	390 mm	3106
7	VA-Fix16-7	440 mm	3107
8	VA-Fix16-8	490 mm	3108
9	VA-Fix16-9	540 mm	3109
10	VA-Fix16-10	590 mm	3110
11	VA-Fix16-11	640 mm	3111
12	VA-Fix16-12	690 mm	3112
13	VA-Fix16-13	740 mm	3113
14	VA-Fix16-14	790 mm	3114
15	VA-Fix-16-15	840 mm	3115

Included items: The set consists of a supply and a return bar. Each manifold bar is additionally delivered with two ½" female threads for vent valves and fill/drain valves. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels and installation/setting instructions.



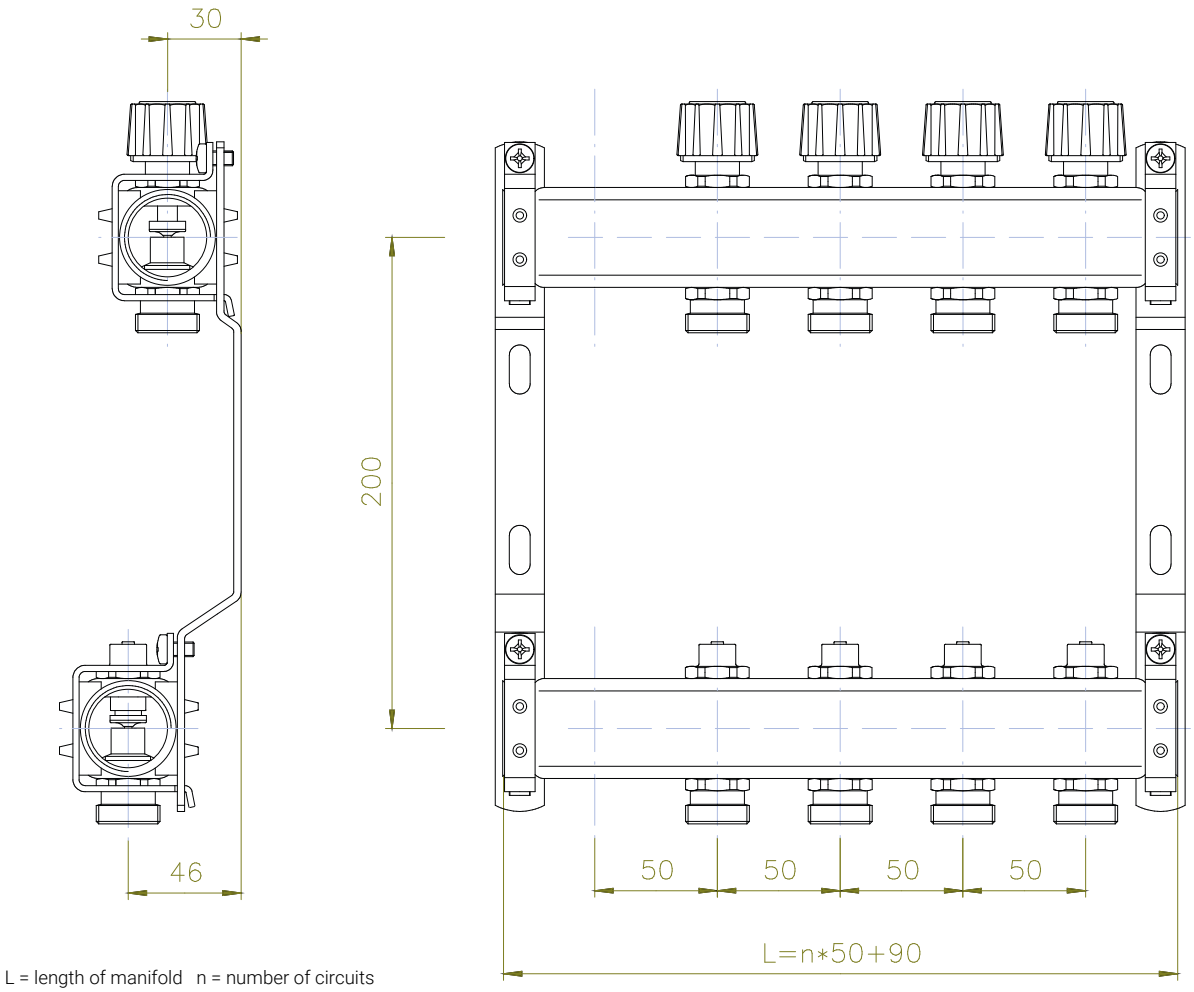
L = length of manifold n = number of circuits

Floor heating manifold VA-FBi with integrated valves

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN32 stainless steel profile, 1330 mm² cross sectional area
Connections:	1" female threads on both sides
Supply:	Integrated regulating and shut-off fittings
Return:	Integrated pre-settable valves • M30x1.5 mm connecting thread • with adjustment cap • actuators can be retrofitted • Kvs 2.74
Outlets:	¾" male threads with Eurocone, distance of 50 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	VA-FBi 2	190 mm	**3402**
3	VA-FBi 3	240 mm	**3403**
4	VA-FBi 4	290 mm	**3404**
5	VA-FBi 5	340 mm	**3405**
6	VA-FBi 6	390 mm	**3406**
7	VA-FBi 7	440 mm	**3407**
8	VA-FBi 8	490 mm	**3408**
9	VA-FBi 9	540 mm	**3409**
10	VA-FBi 10	590 mm	**3410**
11	VA-FBi 11	640 mm	**3411**
12	VA-FBi 12	690 mm	**3412**
13	VA-FBi 13	740 mm	**3413**
14	VA-FBi 14	790 mm	**3414**
15	VA-FBi 15	840 mm	**3415**

Included items: The set consists of a supply and a return bar. Each manifold bar is additionally delivered with two ½" female threads for vent valves and fill/drain valves. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels and installation/setting instructions.



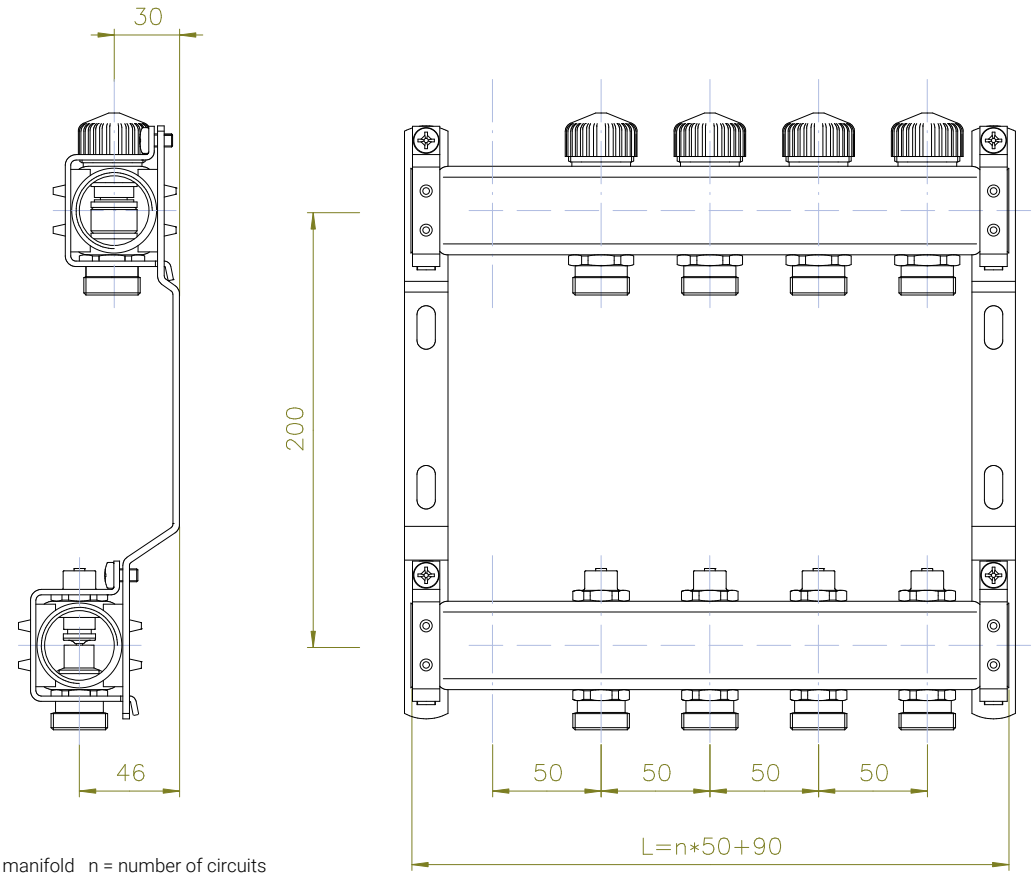
L = length of manifold n = number of circuits

Floor heating manifold DYNA-i with automatic flow control

Specifications	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN32 stainless steel profile, 1330 mm² cross sectional area
Connections:	1" female threads on both sides
Supply:	Integrated regulating and shut-off fittings
Return:	Pre-settable valves with integrated flow controller • automatic hydronic balancing • stepless flow adjustment of 30-300 l/h • differential pressure max. 60 kPA, min. 15 kPA (30-150 l/h) up to 20 kPA (150-300 l/h) • M30x1.5 mm connecting thread • with adjustment cap • actuators can be retrofitted
Outlets:	¾" male threads with Eurocone, distance of 50 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	DYNA-i 2	190 mm	**3102**
3	DYNA-i 3	240 mm	**3103**
4	DYNA-i 4	290 mm	**3104**
5	DYNA-i 5	340 mm	**3105**
6	DYNA-i 6	390 mm	**3106**
7	DYNA-i 7	440 mm	**3107**
8	DYNA-i 8	490 mm	**3108**
9	DYNA-i 9	540 mm	**3109**
10	DYNA-i 10	590 mm	**3110**
11	DYNA-i 11	640 mm	**3111**
12	DYNA-i 12	690 mm	**3112**
13	DYNA-i 13	740 mm	**3113**
14	DYNA-i 14	790 mm	**3114**
15	DYNA-i 15	840 mm	**3115**

Included items: The set consists of a supply and a return bar. Each manifold bar is additionally delivered with two ½" female threads for vent valves and fill/drain valves. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels and installation/setting instructions.



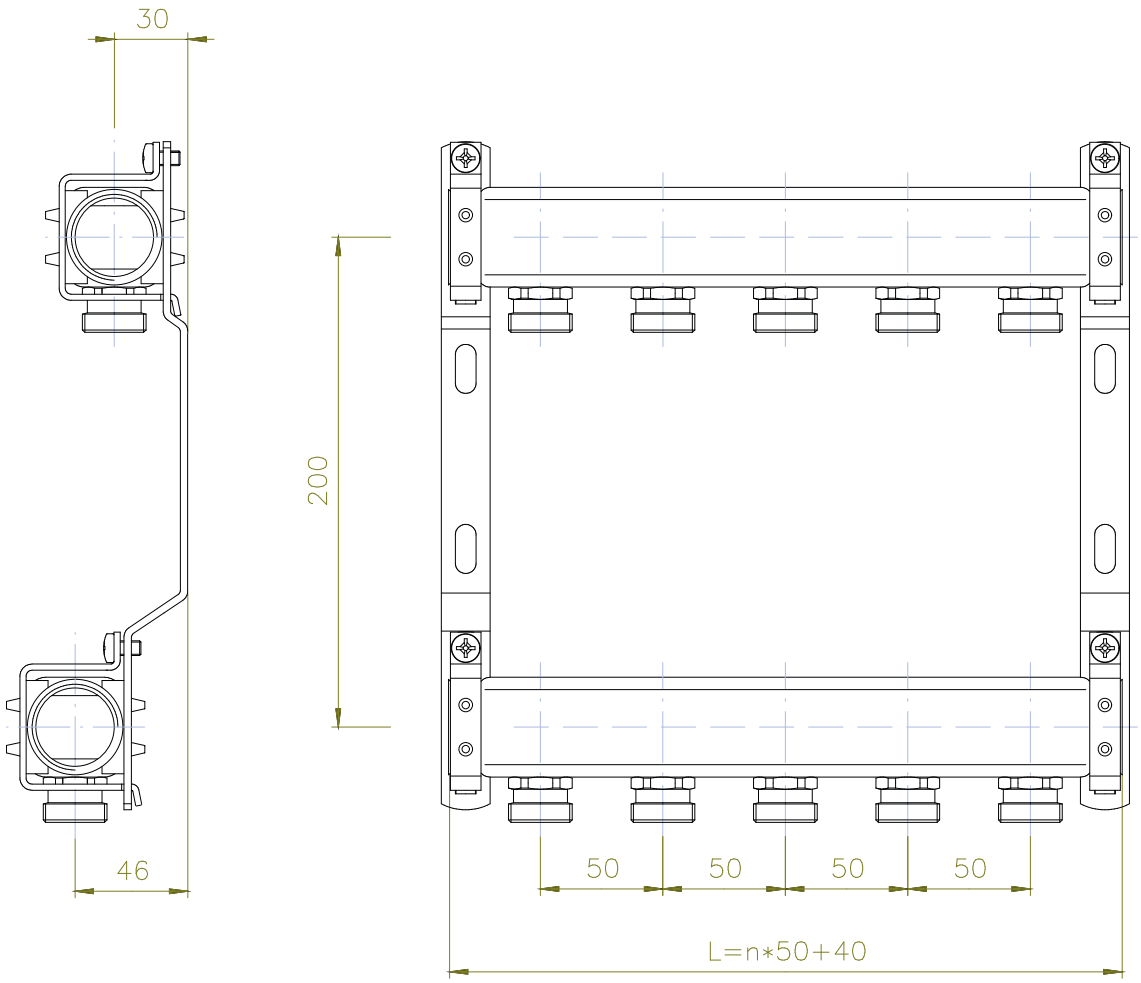
L = length of manifold n = number of circuits

Radiator manifold VA-HK with Eurocone nippels

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN32 stainless steel profile, 1330 mm² cross sectional area
Connections:	1" female threads on both sides
Supply:	¾" male threads with Eurocone
Return:	¾" male threads with Eurocone
Outlets:	Distance of 50 mm
Pressure stage/ system:	PN16 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	VA-HK 2	140 mm	**3402**
3	VA-HK 3	190 mm	**3403**
4	VA-HK 4	240 mm	**3404**
5	VA-HK 5	290 mm	**3405**
6	VA-HK 6	340 mm	**3406**
7	VA-HK 7	390 mm	**3407**
8	VA-HK 8	440 mm	**3408**
9	VA-HK 9	490 mm	**3409**
10	VA-HK 10	540 mm	**3410**
11	VA-HK 11	590 mm	**3411**
12	VA-HK 12	640 mm	**3412**
13	VA-HK 13	690 mm	**3413**
14	VA-HK 14	740 mm	**3414**

Included items: The set consists of a supply and a return bar. Each manifold bar is additionally delivered with two ½" female threads for vent valves and fill/drain valves. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels and installation/setting instructions.



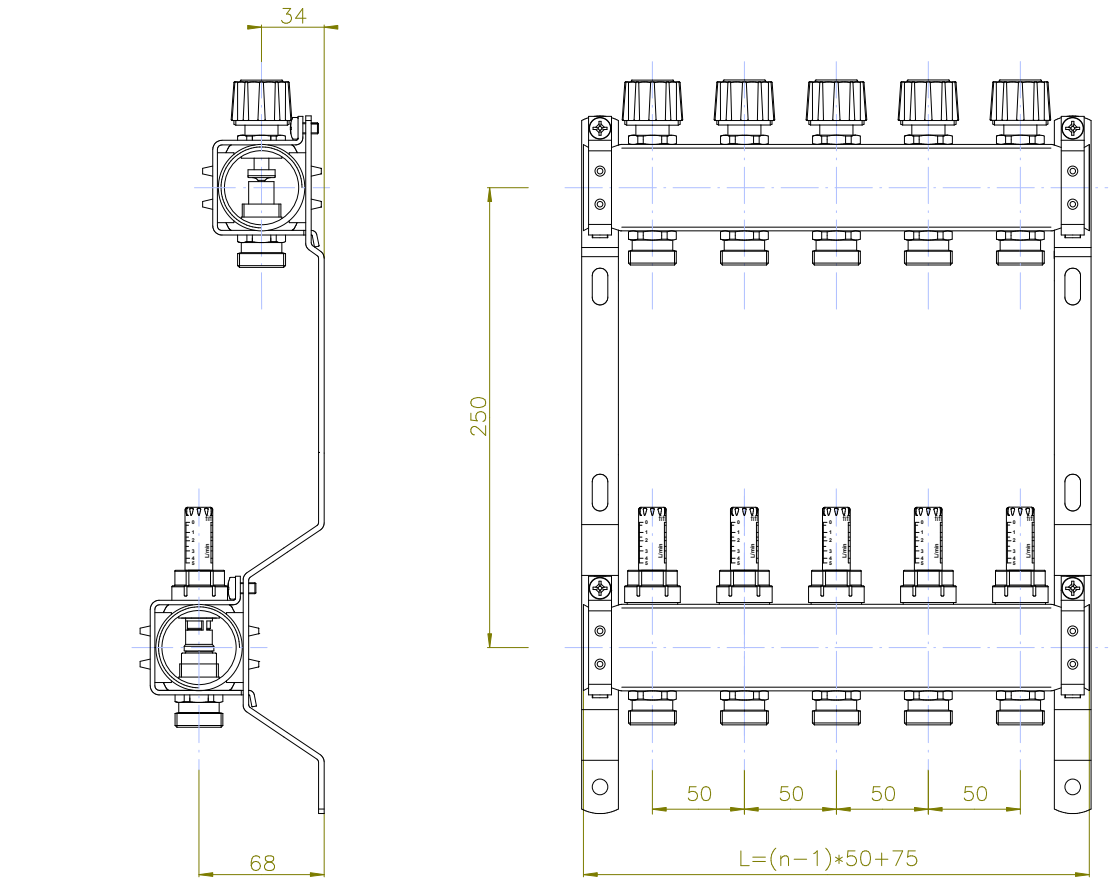
L = length of manifold n = number of circuits

Floor heating manifold L-FBif with flow meters

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN50 stainless steel profile, 1760 mm² cross sectional area
Connections:	1¼" female threads on both sides
Supply:	Flow meters
Return:	Integrated pre-settable valves • M30x1.5 mm connecting thread • with adjustment cap • actuators can be retrofitted • Kvs 2.74
Outlets:	¾" male threads with Eurocone, distance of 50 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	L-FBif 2	125 mm	3902
3	L-FBif 3	175 mm	3903
4	L-FBif 4	225 mm	3904
5	L-FBif 5	275 mm	3905
6	L-FBif 6	325 mm	3906
7	L-FBif 7	375 mm	3907
8	L-FBif 8	425 mm	3908
9	L-FBif 9	475 mm	3909
10	L-FBif 10	525 mm	3910
11	L-FBif 11	575 mm	3911
12	L-FBif 12	625 mm	3912
13	L-FBif 13	675 mm	3913
14	L-FBif 14	725 mm	3914
15	L-FBif 15	775 mm	3915
16	L-FBif 16	825 mm	3916
17	L-FBif 17	875 mm	3917
18	L-FBif 18	925 mm	3918

Included items: The set consists of a supply and a return bar. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels and installation/setting instructions.



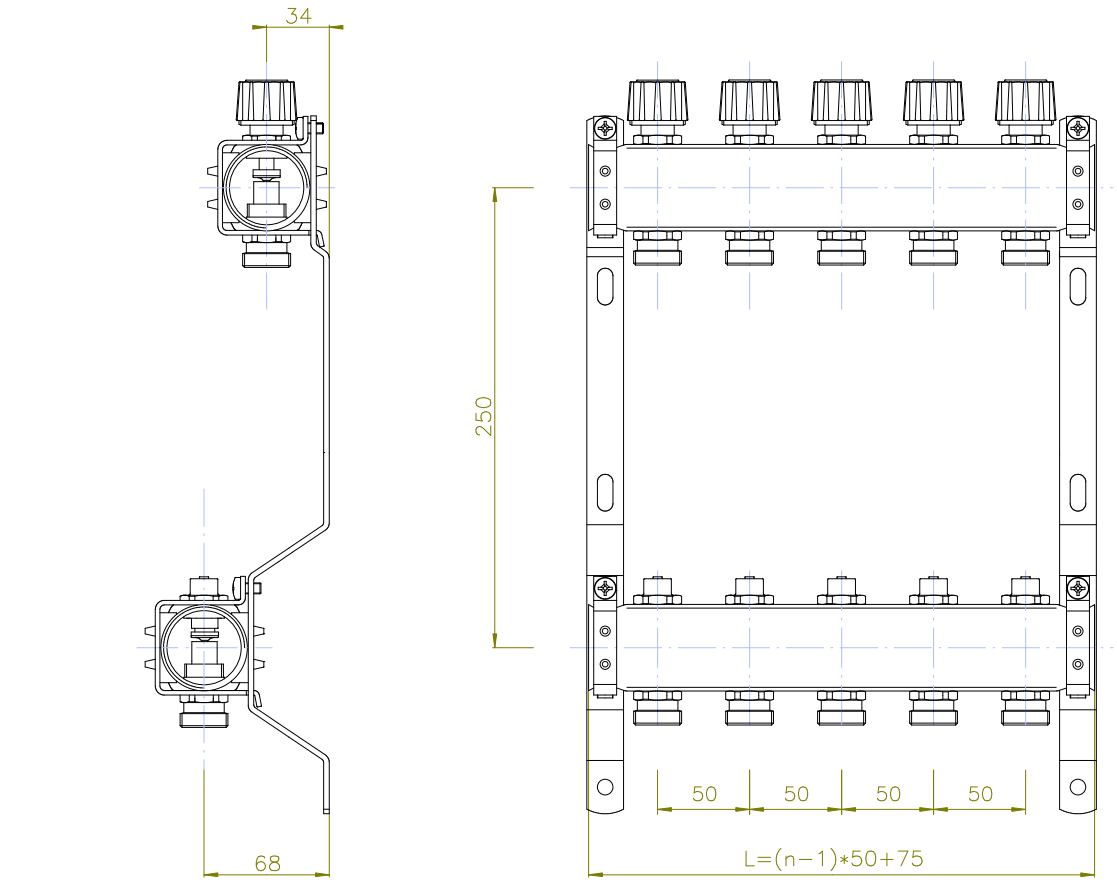
L = length of manifold n = number of circuits

Floor heating manifold L-FBi with integrated valves

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN50 stainless steel profile, 1760 mm² cross sectional area
Connections:	1¼" female threads on both sides
Supply:	Integrated regulating and shut-off fittings
Return:	Integrated pre-settable valves • M30x1.5 mm connecting thread • with adjustment cap • actuators can be retrofitted • Kvs 2.74
Outlets:	¾" male threads with Eurocone, distance of 50 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	L-FBi 2	125 mm	**3202**
3	L-FBi 3	175 mm	**3203**
4	L-FBi 4	225 mm	**3204**
5	L-FBi 5	275 mm	**3205**
6	L-FBi 6	325 mm	**3206**
7	L-FBi 7	375 mm	**3207**
8	L-FBi 8	425 mm	**3208**
9	L-FBi 9	475 mm	**3209**
10	L-FBi 10	525 mm	**3210**
11	L-FBi 11	575 mm	**3211**
12	L-FBi 12	625 mm	**3212**
13	L-FBi 13	675 mm	**3213**
14	L-FBi 14	725 mm	**3214**
15	L-FBi 15	775 mm	**3215**
16	L-FBi 16	825 mm	**3216**
17	L-FBi 17	875 mm	**3217**
18	L-FBi 18	925 mm	**3218**

Included items: The set consists of a supply and a return bar. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels and installation/setting instructions.



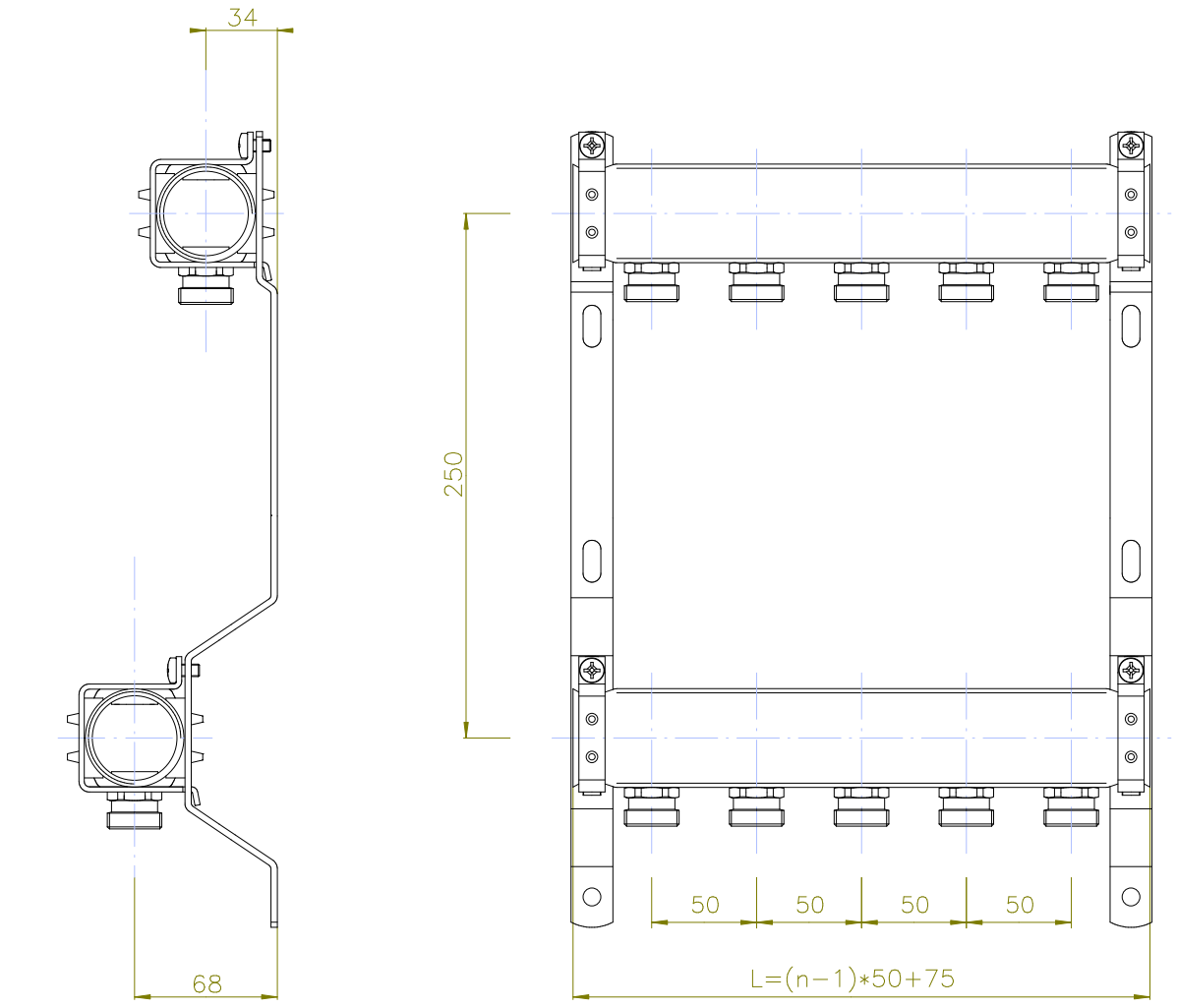
L = length of manifold n = number of circuits

Radiator manifold L-HK with Eurocone nippels

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN50 stainless steel profile, 1760 mm² cross sectional area
Connections:	1¼" female threads on both sides
Supply:	¾" male threads with Eurocone
Return:	¾" male threads with Eurocone
Outlets:	Distance of 50 mm
Pressure stage/ system:	PN16 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	L-HK 2	125 mm	**2802**
3	L-HK 3	175 mm	**2803**
4	L-HK 4	225 mm	**2804**
5	L-HK 5	275 mm	**2805**
6	L-HK 6	325 mm	**2806**
7	L-HK 7	375 mm	**2807**
8	L-HK 8	425 mm	**2808**
9	L-HK 9	475 mm	**2809**
10	L-HK 10	525 mm	**2810**
11	L-HK 11	575 mm	**2811**
12	L-HK 12	625 mm	**2812**
13	L-HK 13	675 mm	**2813**
14	L-HK 14	725 mm	**2814**

Included items: The set consists of a supply and a return bar. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels.



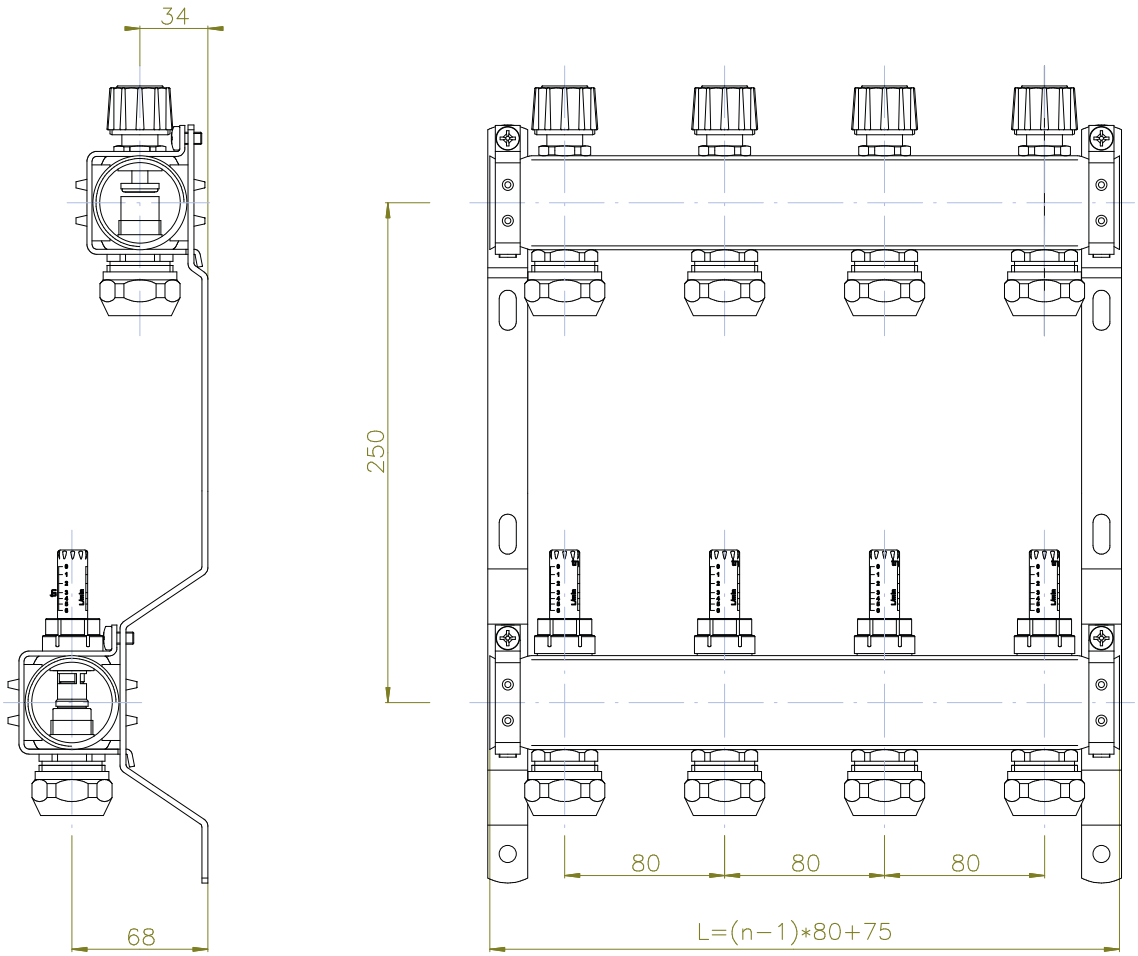
L = length of manifold n = number of circuits

Large-area manifold XL-FBif with flow meters

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN50 stainless steel profile, 1760 mm² cross sectional area
Connections:	1¼" female threads on both sides
Supply:	Flow meters
Return:	Integrated pre-settable valves • M30x1.5 mm connecting thread • with adjustment cap • actuators can be retrofitted • Kvs 3.9
Outlets:	Incl. plastic clamp fitting KS 25x2.3 mm, distance of: 80 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	XL-FBif 2	155 mm	**3602**
3	XL-FBif 3	235 mm	**3603**
4	XL-FBif 4	315 mm	**3604**
5	XL-FBif 5	395 mm	**3605**
6	XL-FBif 6	475 mm	**3606**
7	XL-FBif 7	555 mm	**3607**
8	XL-FBif 8	635 mm	**3608**
9	XL-FBif 9	715 mm	**3609**
10	XL-FBif 10	795 mm	**3610**
11	XL-FBif 11	875 mm	**3611**
12	XL-FBif 12	955 mm	**3612**
13	XL-FBif 13	1035 mm	**3613**
14	XL-FBif 14	1115 mm	**3614**

Included items: The manifold is supplied in connection for a plastic pipe (25x2.3 mm). The set consists of a supply bar and a return bar. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels.



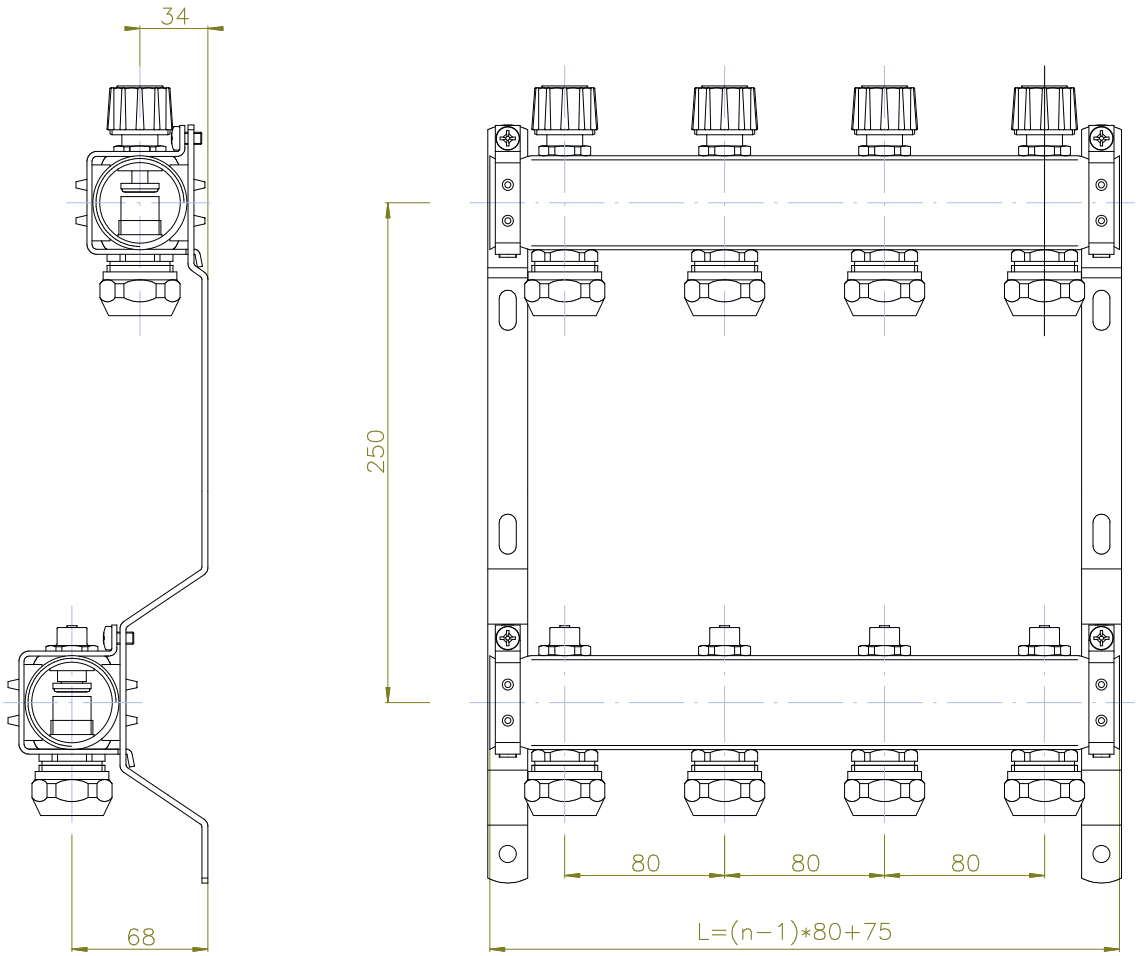
L = length of manifold n = number of circuits

Large-area manifold XL-FBi with integrated valves

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN50 stainless steel profile, 1760 mm² cross sectional area
Connections:	1¼" female threads on both sides
Supply:	Integrated regulating and shut-off fittings
Return:	Integrated pre-settable valves • M30x1.5 mm connecting thread • with adjustment cap • actuators can be retrofitted • Kvs 3.9
Outlets:	Plastic clamp fitting KS 25x2.3 mm, distance of: 80 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	XL-FBi 2	155 mm	**3302**
3	XL-FBi 3	235 mm	**3303**
4	XL-FBi 4	315 mm	**3304**
5	XL-FBi 5	395 mm	**3305**
6	XL-FBi 6	475 mm	**3306**
7	XL-FBi 7	555 mm	**3307**
8	XL-FBi 8	635 mm	**3308**
9	XL-FBi 9	715 mm	**3309**
10	XL-FBi 10	795 mm	**3310**
11	XL-FBi 11	875 mm	**3311**
12	XL-FBi 12	955 mm	**3312**
13	XL-FBi 13	1035 mm	**3313**
14	XL-FBi 14	1115 mm	**3314**

Included items: The manifold is supplied in connection for a plastic pipe (25x2.3 mm). The set consists of a supply bar and a return bar. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels.



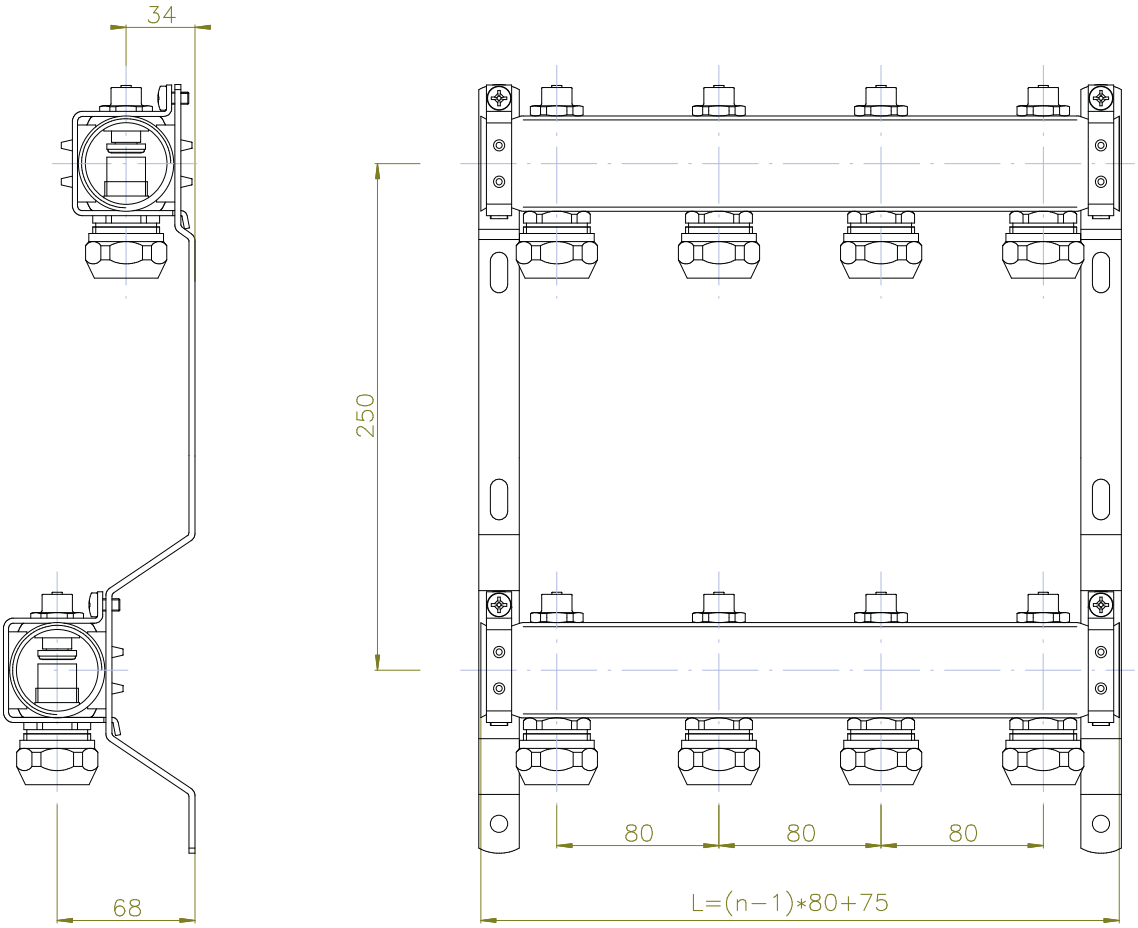
L = length of manifold n = number of circuits

Large-area manifold XL-HKi with integrated regulating fittings

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN50 stainless steel profile, 1760 mm² cross sectional area
Connections:	1¼" female threads on both sides
Supply:	Integrated regulating and shut-off fittings
Return:	Integrated regulating and shut-off fittings
Outlets:	Plastic clamp fitting KS 25x2.3 mm, distance of: 80 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	XL-HKi 2	155 mm	**2402**
3	XL-HKi 3	235 mm	**2403**
4	XL-HKi 4	315 mm	**2404**
5	XL-HKi 5	395 mm	**2405**
6	XL-HKi 6	475 mm	**2406**
7	XL-HKi 7	555 mm	**2407**
8	XL-HKi 8	635 mm	**2408**
9	XL-HKi 9	715 mm	**2409**
10	XL-HKi 10	795 mm	**2410**
11	XL-HKi 11	875 mm	**2411**
12	XL-HKi 12	955 mm	**2412**
13	XL-HKi 13	1035 mm	**2413**
14	XL-HKi 14	1115 mm	**2414**

Included items: The manifold is supplied in connection for a plastic pipe (25x2.3 mm). The set consists of a supply bar and a return bar. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels.



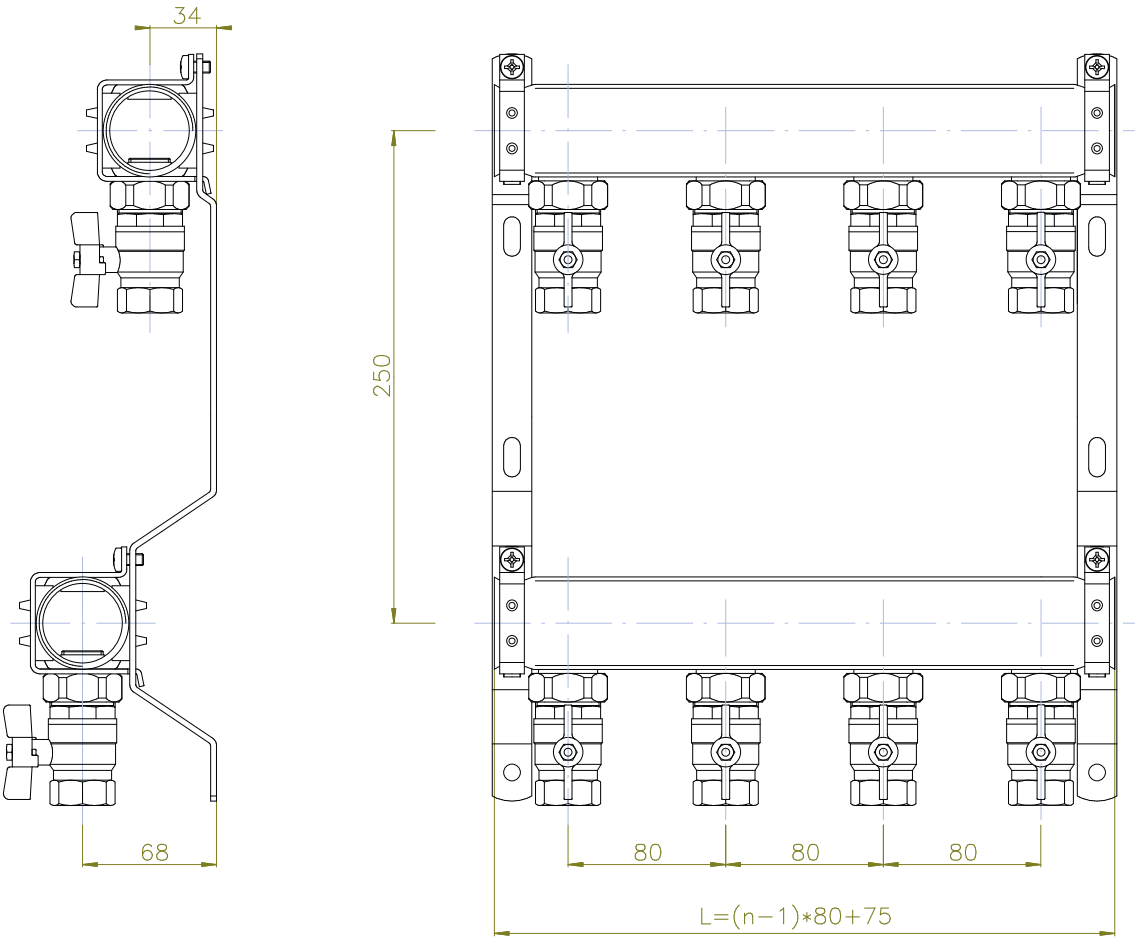
L = length of manifold n = number of circuits

Industrial manifold IN-KH with ball valves

Specifications	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN50 stainless steel profile, 1760 mm² cross sectional area
Connections:	1¼" female threads on both sides
Supply:	Ball valves DN20
Return:	Ball valves DN20
Outlets:	¾" female threads, distance of 80 mm
Pressure stage/ system:	PN16 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	IN-KH 2	155 mm	**2102**
3	IN-KH 3	235 mm	**2103**
4	IN-KH 4	315 mm	**2104**
5	IN-KH 5	395 mm	**2105**
6	IN-KH 6	475 mm	**2106**
7	IN-KH 7	555 mm	**2107**
8	IN-KH 8	635 mm	**2108**
9	IN-KH 9	715 mm	**2109**
10	IN-KH 10	795 mm	**2110**
11	IN-KH 11	875 mm	**2111**
12	IN-KH 12	955 mm	**2112**
13	IN-KH 13	1035 mm	**2113**
14	IN-KH 14	1115 mm	**2114**

Included items: The set consists of a supply and a return bar. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels.



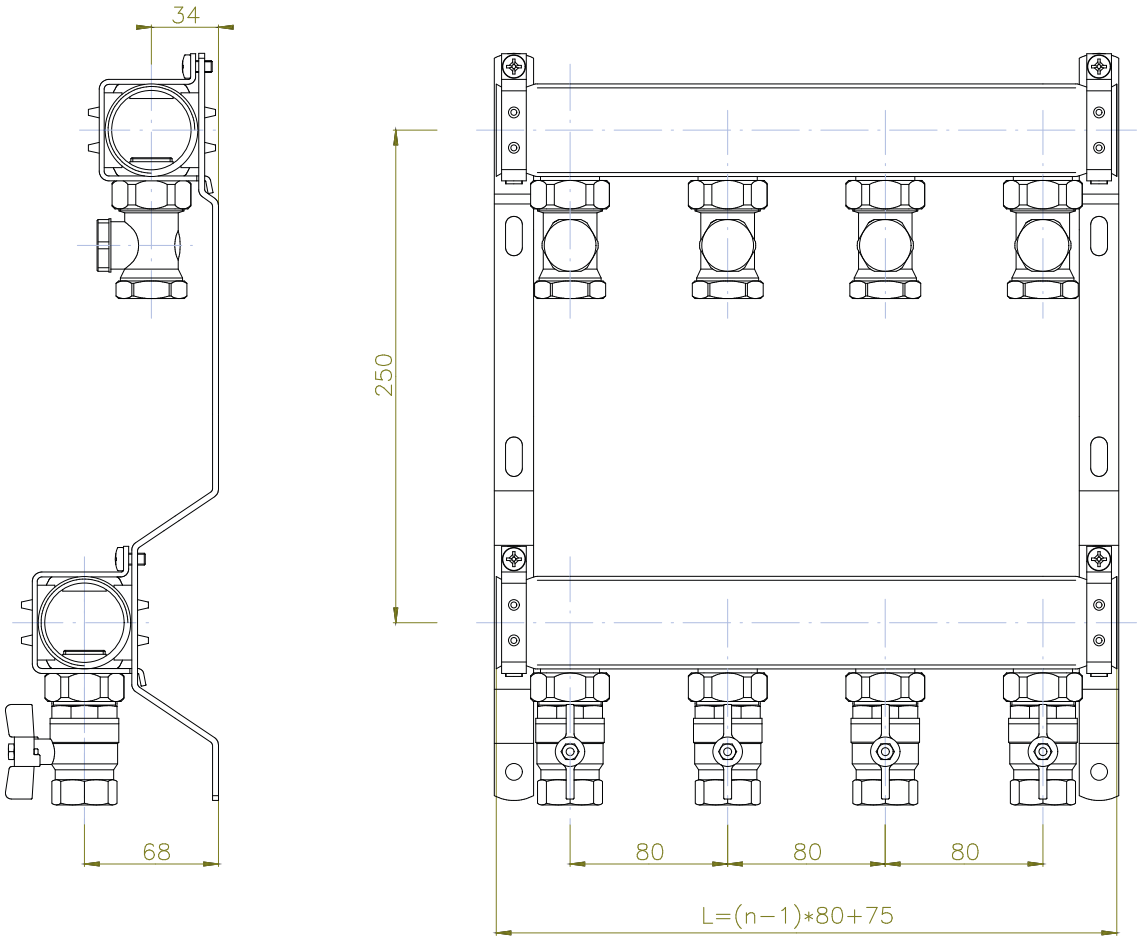
L = length of manifold n = number of circuits

Industrial manifold IN-KR with regulating fittings

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN50 stainless steel profile, 1760 mm² cross sectional area
Connections:	1¼" female threads on both sides
Supply:	Regulating fittings DN20
Return:	Ball valves DN20
Outlets:	¾" female threads, distance of 80 mm
Pressure stage/ system:	PN16 for heating systems with water quality according to VDI 2035

Circu.	Type	Length	Item no.
2	IN-KR 2	155 mm	**2202**
3	IN-KR 3	235 mm	**2203**
4	IN-KR 4	315 mm	**2204**
5	IN-KR 5	395 mm	**2205**
6	IN-KR 6	475 mm	**2206**
7	IN-KR 7	555 mm	**2207**
8	IN-KR 8	635 mm	**2208**
9	IN-KR 9	715 mm	**2209**
10	IN-KR 10	795 mm	**2210**
11	IN-KR 11	875 mm	**2211**
12	IN-KR 12	955 mm	**2212**
13	IN-KR 13	1035 mm	**2213**
14	IN-KR 14	1115 mm	**2214**

Included items: The set consists of a supply and a return bar. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels.



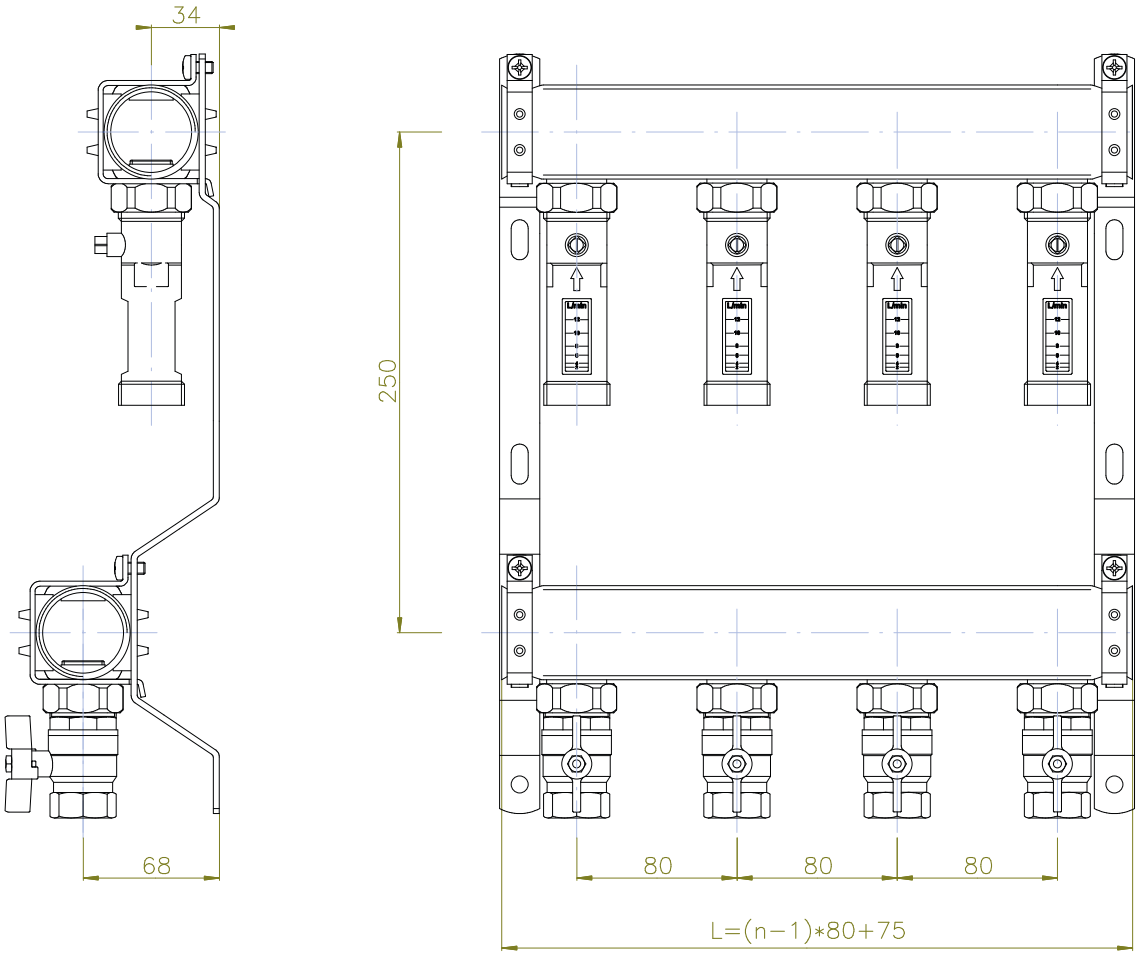
L = length of manifold n = number of circuits

Industrial manifold IN-KHF with flow meters

Specifications	
	
Manifold bar:	Stainless steel AISI 304
Dimensions:	DN50 stainless steel profile, 1760 mm² cross sectional area
Connections:	1¼" female threads on both sides
Supply:	Ball valves DN20
Return:	Flow meters 2-12.0 l/min
Outlets:	¾" female threads at supply, ¾" male threads at return, distance of 80 mm
Pressure stage/ system:	PN6 for heating systems with water quality according to VDI 2035

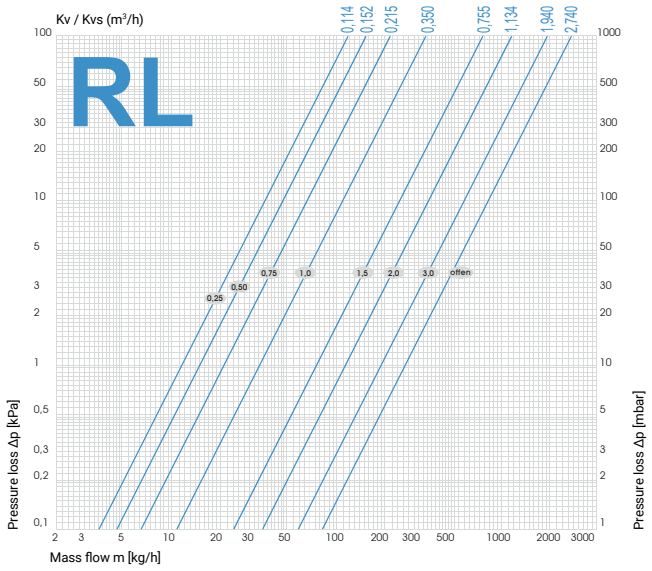
Circu.	Type	Length	Item no.
2	IN-KHF 2	155 mm	**2302**
3	IN-KHF 3	235 mm	**2303**
4	IN-KHF 4	315 mm	**2304**
5	IN-KHF 5	395 mm	**2305**
6	IN-KHF 6	475 mm	**2306**
7	IN-KHF 7	555 mm	**2307**
8	IN-KHF 8	635 mm	**2308**
9	IN-KHF 9	715 mm	**2309**
10	IN-KHF 10	795 mm	**2310**
11	IN-KHF 11	875 mm	**2311**
12	IN-KHF 12	955 mm	**2312**
13	IN-KHF 13	1035 mm	**2313**
14	IN-KHF 14	1115 mm	**2314**

Included items: The set consists of a supply and a return bar. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels.

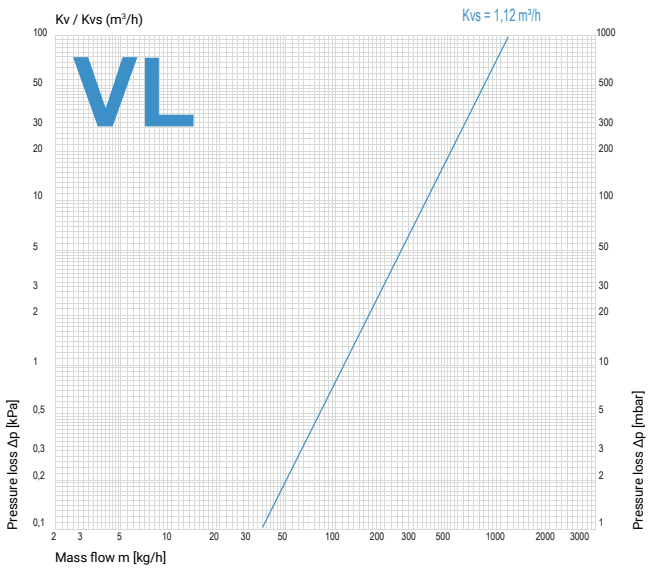


L = length of manifold n = number of circuits

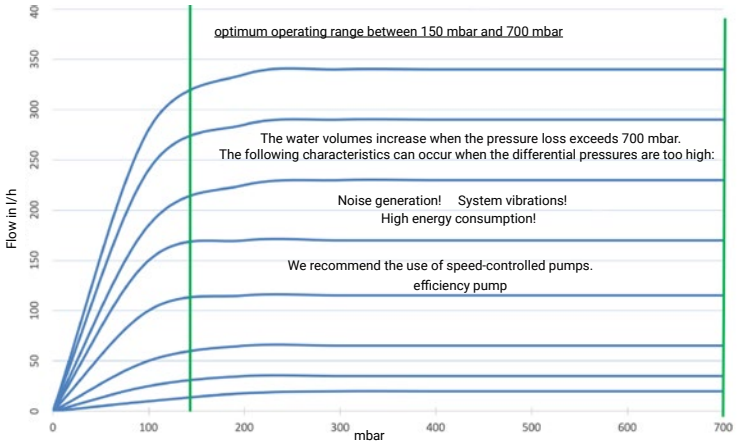
Pressure loss diagram VA-FBif

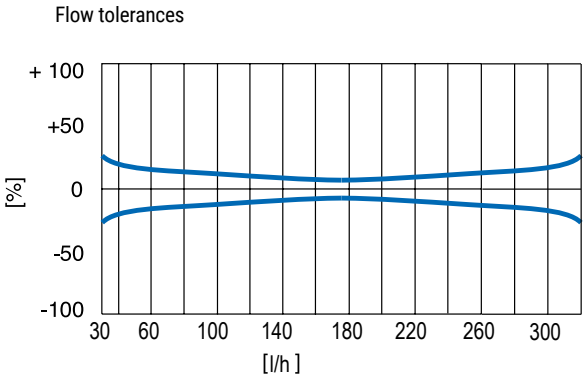


Pre-setting

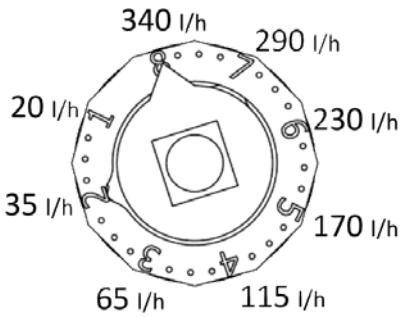


Flow range DYNA-if with VarioDP



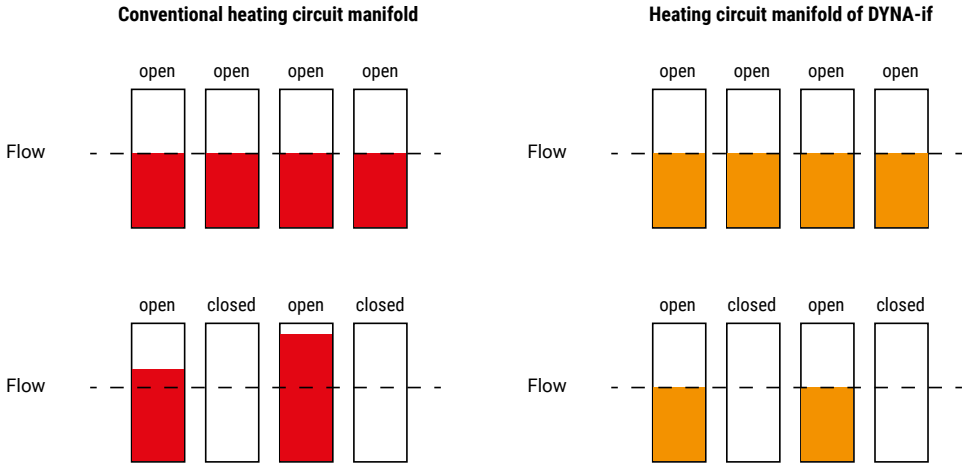


Setting	1	1.5	2	2.25	2.5	2.75	3	3.25	3.5
l/h	20	25	35	40	45	55	65	80	90
Setting	**3.75**	**4**	**4.25**	**4.5**	**4.75**	**5**	**5.25**	**5.5**	**5.75**
l/h	100	115	135	145	160	170	185	200	215
Setting	**6**	**6.25**	**6.5**	**6.75**	**7**	**7.25**	**7.5**	**7.75**	**8**
l/h	230	245	260	275	290	300	315	330	340



Advantages of the dynamic manifold DYNA-if

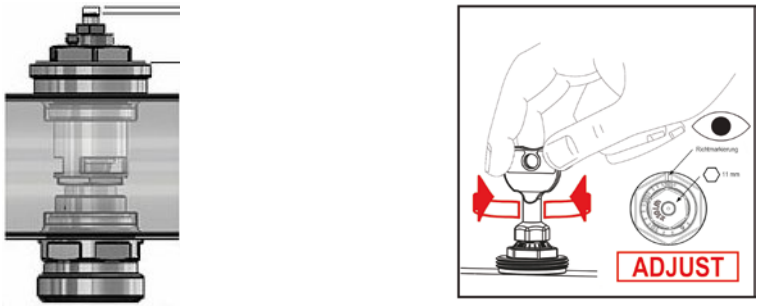
Constant flow rate, no matter how many heating circuits are open.



All hydraulic heating circuits in a system are interdependent. Therefore a change in flow of one circuit affects all of them, so that the oversupply in the heating circuits must be compensated. In contrast to conventional heating circuit manifolds which use throttle valves and flow indicators so set the required flow rates, the DYNA-if manifold automatically achieves hydraulic balancing with the help of a control pressure unit and maintains the pre-set flow rate.

This ensures a constant flow rate and avoids oversupply in particular heating circuits.

One-time adjustment is sufficient - no need for multiple time-consuming and costly system readjustments



Comfort and efficiency distinguish the DYNA-if from all other manifolds for floor heating.

The DYNA-if automatically regulates the flow in the supply bar for each particular heating circuit in a system. This ensures an optimal temperature distribution and guarantees that the hydraulic balancing is **done in just one turn**.

In most cases, a differential pressure regulator is no longer necessary.

Manifold cabinet TT-VS-110T / Depth 110 - 150 mm

D 110 mm

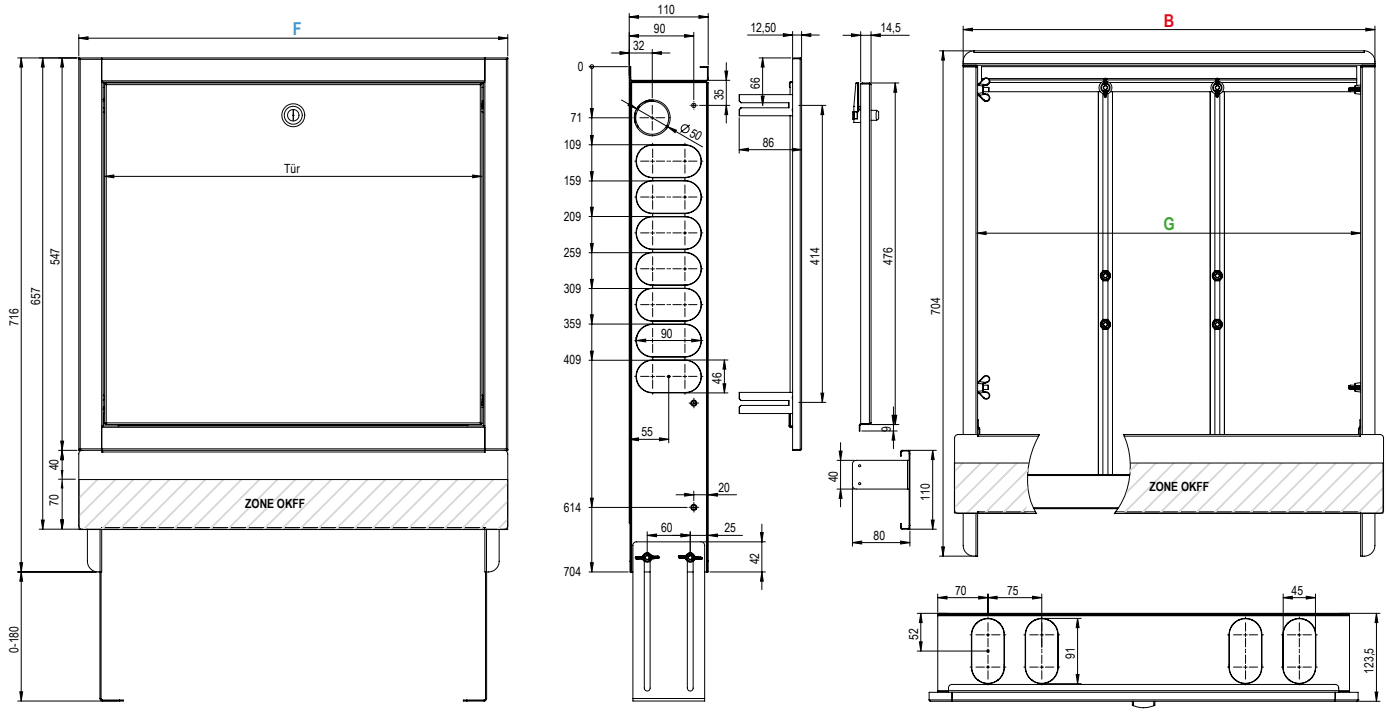
→ 110 mm ←

Specifications	
Mounting frame:	Steel plate, hot-dip galvanized
Front:	2-part, frame with removable door • depth-adjustable • white plastic-coated RAL 9016 • with cabinet lock
Depth:	**110 mm with stepless punchings**
Floor piece:	Depth-adjustable, white plastic-coated
Cabinet feet:	Reinforced steel, height-adjustable

Flush-mounted manifold cabinets TT-VS are packed 2-part in a carton.
The front can be stored safely until final assembly.
Including 2 manifold holding rails.

	Type	TT-VS 3/300	TT-VS 4/400	TT-VS 5/500	TT-VS 7/600	TT-VS 9/750	TT-VS 12/900	TT-VS 14/1050	TT-VS 17/1200	TT-VS 20/1500
B	**Width**	385 mm	435 mm	490 mm	575 mm	725 mm	875 mm	1025 mm	1175 mm	1475 mm
	Height	**700 - 800 mm**								
	Depth	**110 - 150 mm**								
F	**Front**	410 mm	460 mm	515 mm	600 mm	750 mm	900 mm	1050 mm	1200 mm	1500 mm
G	**Door**	340 mm	390 mm	445 mm	530 mm	680 mm	830 mm	980 mm	1130 mm	1430 mm
	Recess in mm	405x730	455x730	510x730	595x730	745x730	895x730	1045x730	1195x730	1495x730
	Item no.	**4503**	**4504**	**4505**	**4507**	**4509**	**4512**	**4514**	**4517**	**4520**

B = width of the mounting frame F = front G = door



Manifold cabinet TT-VS-80T / Depth 80 - 120 mm

D 80 mm

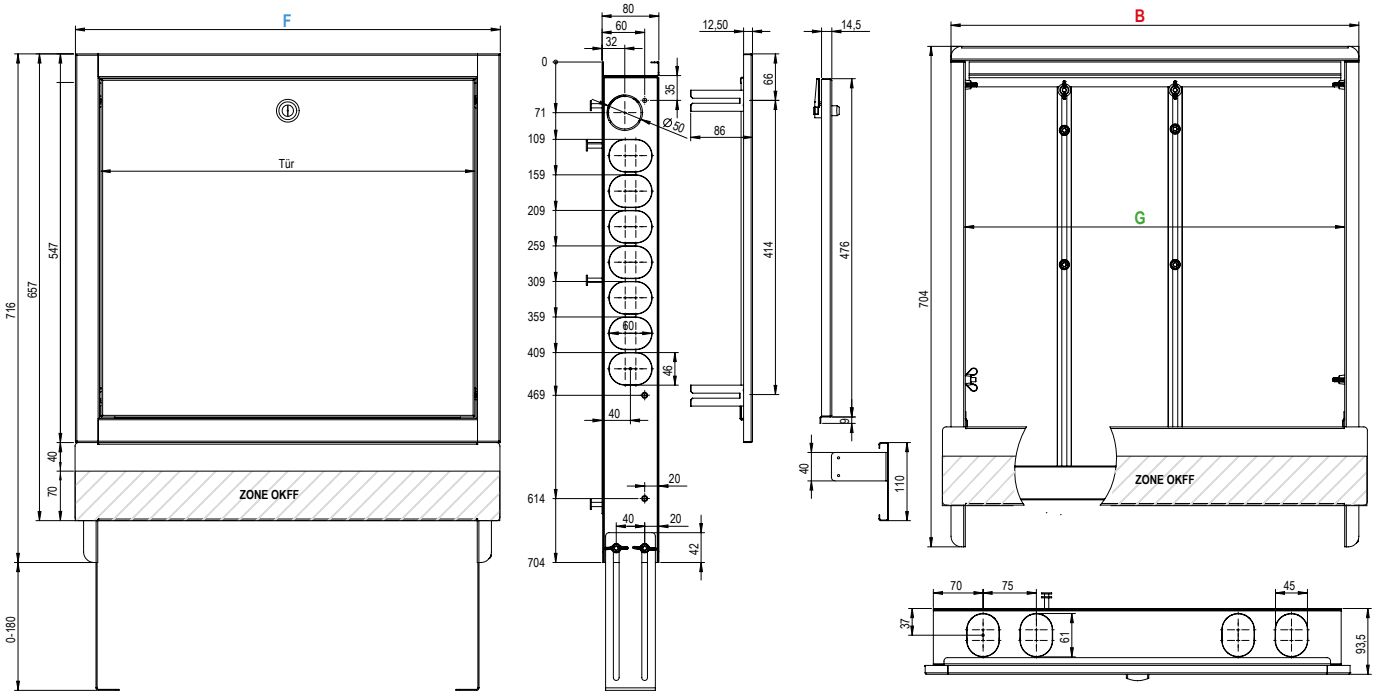
→ 80 mm ←

Specifications	
Mounting frame:	Steel plate, hot-dip galvanized
Front:	2-part, frame with removable door • depth-adjustable • white plastic-coated RAL 9016 • with cabinet lock
Depth:	**80 mm with stepless punchings**
Floor piece:	Depth-adjustable, white plastic-coated
Cabinet feet:	Reinforced steel, height-adjustable

Flush-mounted manifold cabinets TT-VS are packed 2-part in a carton.
The front can be stored safely until final assembly.
Including 2 manifold holding rails.

	Type	TT-VS 3/300	TT-VS 4/400	TT-VS 5/500	TT-VS 7/600	TT-VS 9/750	TT-VS 12/900	TT-VS 14/1050	TT-VS 17/1200	TT-VS 20/1500
B	**Width**	385 mm	435 mm	490 mm	575 mm	725 mm	875 mm	1025 mm	1175 mm	1475 mm
	Height	**700 - 800 mm**								
	Depth	**80 - 120 mm**								
F	**Front**	410 mm	460 mm	515 mm	600 mm	750 mm	900 mm	1050 mm	1200 mm	1500 mm
G	**Door**	340 mm	390 mm	445 mm	530 mm	680 mm	830 mm	980 mm	1130 mm	1430 mm
	Recess in mm	405x730	455x730	510x730	595x730	745x730	895x730	1045x730	1195x730	1495x730
	Item no.	**4603**	**4604**	**4605**	**4607**	**4609**	**4612**	**4614**	**4617**	**4620**

B = width of the mounting frame F = front G = door



Manifold cabinet TT-VS-A / Depth 140 mm

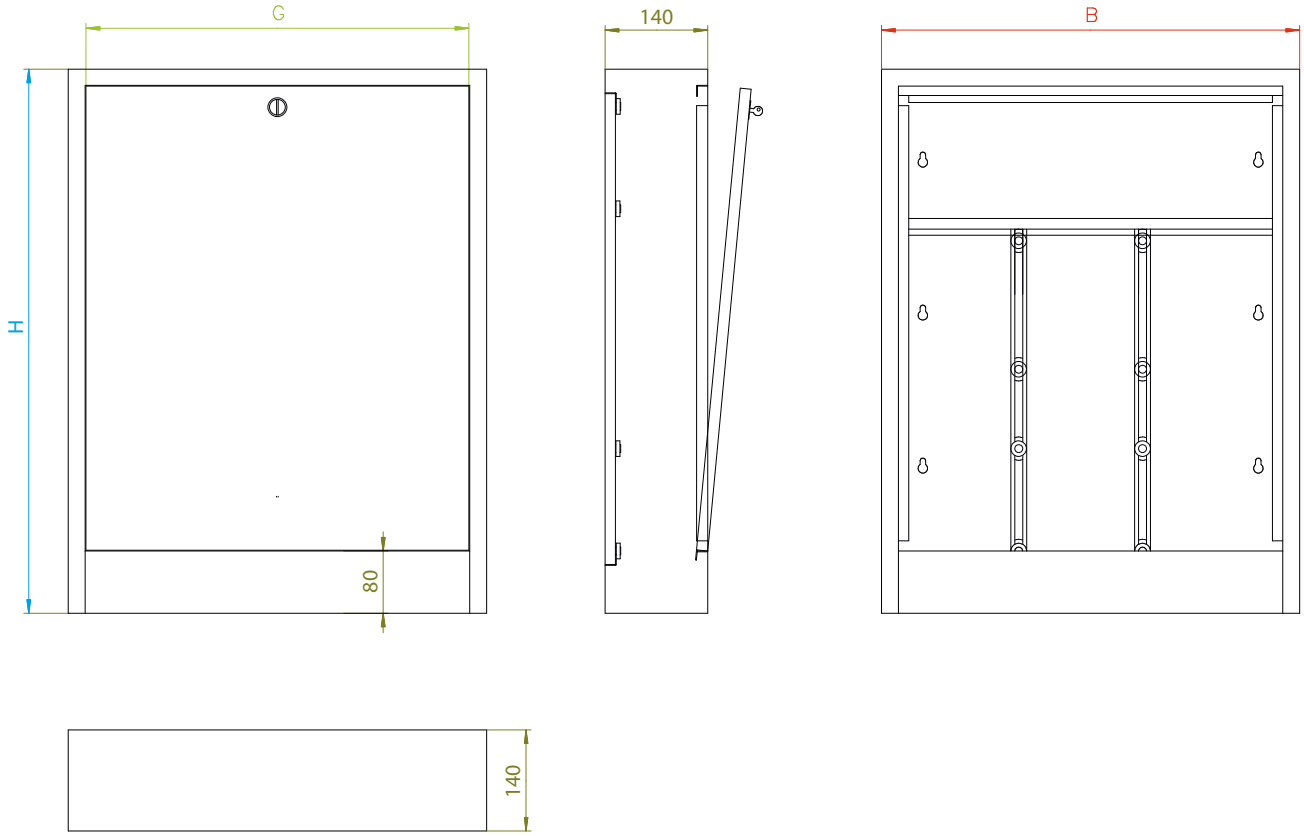
D 140 mm

Specifications	
Mounting frame:	Steel plate, hot-dip galvanized
Front:	3-part • removable from the back wall • white plastic-coated RAL 9016 • with cabinet lock
Depth:	**140 mm, plain - without punchings**
Floor piece:	Removable, white plastic-coated

Surface-mounted manifold cabinets TT-VS-A are constructed in several parts.
For easier assembly the housing can be separated from the back wall.
Including 2 manifold holding rails.

									extra high
	Type	**TT-VS-A 400**	**TT-VS-A 500**	**TT-VS-A 600**	**TT-VS-A 750**	**TT-VS-A 900**	**TT-VS-A 1050**	**TT-VS-A 1200**	**TT-VS-A 750 H**
B	**Width**	400 mm	450 mm	580 mm	730 mm	830 mm	1030 mm	1130 mm	730 mm
H	**Height**				**900 mm**				**1400 mm**
	Depth				**140 mm**				**140 mm**
G	**Door**	350 mm	400 mm	530 mm	680 mm	780 mm	980 mm	1080 mm	680 mm
	Item no.	**4704**	**4705**	**4707**	**4709**	**4712**	**4714**	**4717**	**4709H**

B = width of the mounting frame **G = door**



TYPE		300	400	500	600	750	900	1050	1200	1500
FLUSH	TT-VS	3/300	4/400	5/500	7/600	9/750	12/900	14/1050	17/1200	20/1500
SURFACE	TT-VS-A		400	500	600	750	900	1050	1200	

CONNECTION SET	CABINET TYPE	MOUNTED	CIRCUITS								
TT-AGEw 1" **Item no. 5002**	110T	xxxx104	2	3	4 - 5	6	7 - 9	10 - 12	13 - 15		
	80T	xxxx108									
	A	xxxx112		3	4 - 5	6 - 7	8 - 10	11 - 12	13 - 15		
TT-AGEw ¾" **Item no. 5022**	110T	xxxx103	2	3	4 - 5	6	7 - 9	10 - 12	13 - 15		
	80T	xxxx107									
	A	xxxx111		3	4 - 5	6 - 7	8 - 10	11 - 12	13 - 15		
TT-AGEs 1" **Item no. 5102**	110T	xxxx102	2	3	4	5	6 - 8	9 - 11	12 - 14		
	80T	xxxx106									
	A	xxxx110		3	4	5 - 6	7 - 8	9 - 11	12 - 14		
TT-AGEs ¾" **Item no. 5122**	110T	xxxx101	2	3	4	5	6 - 8	9 - 11	12 - 14		
	80T	xxxx105									
	A	xxxx109		3	4	5 - 6	7 - 8	9 - 11	12 - 14		
TT-WMZw ¾" **Item no. 5013**	110T	xxxx203			2	3 - 4	5 - 7	8 - 10	11 - 13		
	80T	xxxx207									
	A	xxxx211			2	3 - 5	6 - 8	9 - 10	11 - 13		
TT-WMZc ¾" **Item no. 5012**	110T					2	3 - 5	6 - 8	9 - 11	12 - 14	
	80T										
	A					2 - 3	4 - 6	7 - 8	9 - 11	12 - 14	
TT-WMZw 1"-110 **Item no. 5014**	110T	xxxx204				2 - 3	4 - 6	7 - 9	10 - 12	13 - 15	
	80T	xxxx208									
	A	xxxx212				2 - 4	5 - 7	8 - 9	10 - 12	13 - 15	
TT-WMZs ¾" **Item no. 5033**	110T	xxxx201		2	3	4 - 5	6 - 8	9 - 11	12 - 14		
	80T	xxxx205									
	A	xxxx209		2	3	4 - 6	7 - 9	10 - 11	12 - 14		
TT-WMZr ¾" **Item no. 5035**	110T			2	3	4 - 5	6 - 8	9 - 11	12 - 14		
	80T										
	A			2	3	4 - 6	7 - 9	10 - 11	12 - 14		
TT-WMZs 1"-110 **Item no. 5034**	110T	xxxx202		2	3	4 - 5	6 - 8	9 - 11	12 - 14		
	80T	xxxx206									
	A	xxxx210		2	3	4 - 6	7 - 9	10 - 11	12 - 14		

110T = flush-m., depth 110-150 mm
80T = flush-m., depth 80-120 mm
A = surface-m., depth 140 mm

pre-assembled manifold stations

manifold
3704

connection set
5002

manifold cabinet
4705

assembly
xxxx104 - xxxx210

manifold station
3704112

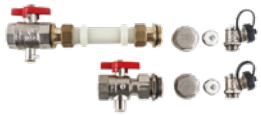
horizontal

Type	TT-AGEw 1"	TT-AGEw ¾"	TT-AGw 1"	TT-AGw ¾"
				
Length	105 mm	100 mm	105 mm	100 mm
Item no.	**5002**	**5022**	**5001**	**5011**
Included items:				
Horizontal primary block, consisting of two ball valves with detachable connection, two self-sealing vent valves, two self-sealing fill/drain valves (TT-AGEw only) and two self-sealing manifold end plugs.				
	2x ball valves 1" **2x** manifold end plugs 1" **2x** vent valves ½" **2x** fill/drain valves ½"	**2x** ball valves ¾" **2x** manifold end plugs 1" **2x** vent valves ½" **2x** fill/drain valves ½"	**2x** ball valves 1" **2x** manifold end plugs 1" **2x** vent valves ½"	**2x** ball valves ¾" **2x** manifold end plugs 1" **2x** vent valves ½"

vertical

Type	TT-AGEs 1"	TT-AGEs ¾"	TT-AGs 1"	TT-AGs ¾"
				
Length	150 mm	150 mm	150 mm	150 mm
Item no.	**5102**	**5122**	**5101**	**5111**
Included items:				
Vertical primary block, consisting of two ball valves with detachable connection (-long/short), two self-sealing vent valves, two self-sealing fill/drain valves (TT-AGEs only) and two self-sealing manifold end plugs.				
	2x ball valves 1" **2x** manifold end plugs 1" **2x** vent valves ½" **2x** fill/drain valves ½"	**2x** ball valves ¾" **2x** manifold end plugs 1" **2x** vent valves ½" **2x** fill/drain valves ½"	**2x** ball valves 1" **2x** manifold end plugs 1" **2x** vent valves ½"	**2x** ball valves ¾" **2x** manifold end plugs 1" **2x** vent valves ½"

horizontal

Type	TT-WMZw ¾"	TT-WMZc ¾"	TT-WMZw 1"-110	TT-WMZw 1"-130
				
Length	220 mm	280 mm	260 mm	290 mm
Item no.	**5013**	**5012**	**5014**	**5003**
Included items: horizontal heat meter installation kit for heat meter (up to 1.5 / 2.5 Qn). Return consisting of one / two ball valves with detachable connection and M10x1 connection for immersion sensor and meter fitting* (110 / 130 mm). Supply consisting of one ball valve including detachable connection with M10x1 connection for immersion sensor, two self-sealing vent valves ½", two self-sealing fill/drain valves ½" and two self-sealing manifold end plugs 1".				
Installation kit:				
Return:	**1x** ball valve ¾" M10 **1x** meter fitting* 110 mm **1x** screw fitting	**2x** ball valves ¾", **1x** with M10 **1x** meter fitting* 110 mm	**1x** ball valve 1" M10 **1x** meter fitting* 110 mm **1x** screw fitting	**1x** ball valve 1" M10 **1x** meter fitting* 130 mm **1x** screw fitting
Supply:	**1x** ball valve ¾" M10 **2x** vent valves ½" **2x** fill/drain valves ½" **2x** manifold end plugs 1"	**1x** ball valve ¾" M10 **2x** vent valves ½" **2x** fill/drain valves ½" **2x** manifold end plugs 1"	**1x** ball valve 1" M10 **2x** vent valves ½" **2x** fill/drain valves ½" **2x** manifold end plugs 1"	**1x** ball valve 1" M10 **2x** vent valves ½" **2x** fill/drain valves ½" **2x** manifold end plugs 1"

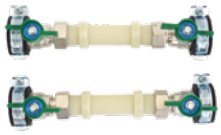
*** Meter fittings 110/130 mm made of plastic and are not suitable for permanent retention.**

vertical

Type	TT-WMZs ¾"	TT-WMZr ¾"	TT-WMZs 1"-110	TT-WMZs 1"-130
				
Length	170 mm	170 mm	170 mm	170 mm
Item no.	**5033**	**5035**	**5034**	**5023**
Included items: vertical heat meter installation kit for heat meter (up to 1.5 / 2.5 Qn). Return consisting of two ball valves (or 1x ball valve + regulating fitting) with detachable connection, one with M10x1 connection for immersion sensor and meter fitting* (110 / 130 mm). Supply consisting of angular connection and one ball valve including detachable connection and M10x1 connection for immersion sensor, two self-sealing vent valves ½", two self-sealing fill/drain valves ½" and two self-sealing manifold end plugs 1".				
Installation kit:				
Return:	**2x** ball valves ¾", **1x** with M10 **1x** meter fitting* 110 mm **1x** screw fitting	**1x** ball valve ¾" M10 **1x** circuit control fitting **1x** meter fitting* 110 mm **1x** screw fitting	**1x** ball valve ¾" **1x** ball valve 1" with M10 **1x** meter fitting* 110 mm **1x** screw fitting	**2x** ball valves 1", **1x** with M10 **1x** meter fitting* 130 mm **1x** screw fitting
Supply:	**1x** ball valve ¾" M10 **2x** vent valves ½" **2x** fill/drain valves ½" **2x** manifold end plugs 1"	**1x** ball valve ¾" M10 **2x** vent valves ½" **2x** fill/drain valves ½" **2x** manifold end plugs 1"	**1x** ball valve 1" M10 **2x** vent valves ½" **2x** fill/drain valves ½" **2x** manifold end plugs 1"	**1x** ball valve 1" M10 **2x** vent valves ½" **2x** fill/drain valves ½" **2x** manifold end plugs 1"

*** Meter fittings 110/130 mm made of plastic and are not suitable for permanent retention.**

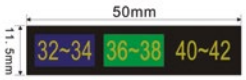
Accessories for manifold stations

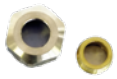
Type	TT-W2w	TT-W1w	TT-VÜS	TT-Manometer
				
Specifications:	**2x** universal fittings ¾" for surface water meters 110 mm incl. assembly material	**1x** universal fitting ¾" for surface water meters 110 mm incl. assembly material	VA-manifold overflow set - stepless adjustable 0.1/0.5 bar, with connecting pipe and connections. 2x manifold end plugs with 1" nut and double nipples 1"	**1x** manometer 0-6 bar, incl. reducer ½" x ¼"
Item no.	**5053100**	**5053099**	**5017**	**5016**

Accessories for manifold type L / XL / IN

Type	TT-K 1¼"	TT-ED 1¼"	TT-DONI 1¼"	TT-ES 1¼"
				
Specifications:	**2x** ball valves 1¼" with screw fittings	**2x** end plugs 1¼" with vent valves and fill/drain valves	**2x** double nippels 1¼"	**2x** plugs 1¼" and **2x** fill/drain valves ½"
Length:	110 mm	50 mm	40 mm	50 mm
Item no.	**5114**	**5115**	**5116**	**5117**

Accessories for manifold type VA

Type	TT-K 1"	TT-K ¾"	TT-TVR	TT-TH
				
Specifications:	**2x** ball valves 1" with thermometer connection	**2x** ball valves ¾" with thermometer connection	**2x** thermometer for ball valves with thermometer connection	**2x** adhesive thermometer 32 - 34 °C
Item no.	**5100**	**5200**	**5015**	**5005**

Type	TT-CU 12x1 - 15x1	TT-MKV 14x2 - 20x2	TT-KA	MS Flow meter Return
				
Specifications:	**1x** Eurocone compression fitting for copper pipe	**1x** Eurocone compression fitting for multi-layer pipe	**1x** closing cap ¾"	**1x** flow meter 0-2.4 l/min
Item no.	**5007121 - 5007151**	**5009142 - 5009202**	**5008**	**5138**

Type	TT-EZ	TT-Z	TT-E ½"	TT-DONI 1"
				
Specifications:	**2x** manifold end plugs 1" **2x** vent valves ½" **2x** fill/drain valves ½"	**2x** manifold end plugs 1" **2x** vent valves ½"	**2x** fill/drain valves ½"	**2x** double nippels 1" (self-sealing)
Item no.	**5402**	**5420**	**5401**	**5070**

Type	TT-EN 1"	TT-STO 1"	TT-EURO ¾"	TT-Y
				
Specifications:	**2x** manifold end plugs 1" x ½" x ½"	**1x** manifold end plug 1"	**1x** double nippels ¾" Eurocone	**1x** Y-connector
Length:	50 mm			
Item no.	**5400**	**5104**	**5028**	**5018**

Spare parts for manifold type VA

Type	TT-HA	VA-i	VA-i-m	VA-i-n
				
Specifications:	**1x** adjustment cap M30x1.5	**1x** pre-settable valve core	**1x** regulating and shut-off-insert	**1x** manifold nippel Eurocone for valve core/ regulating insert
Item no.	**5038**	**5130**	**5131**	**5132**

Type	VA Flow meter 2.5	VA Flow meter 5.0	VA Flow meter 8.0	VA-i-n-DFM
				
Specifications:	**1x** flow meter 0-2.5 l/min for supply	**1x** flow meter 0-5.0 l/min for supply	**1x** flow meter 0-8.0 l/min for supply	**1x** manifold nippel Eurocone for flow meter
Item no.	**5135**	**5133**	**5139**	**5134**

Spare parts for manifold type DYNA

Type	DYNA-i-IMI	DYNA-i-n-IMI
		
Specifications:	**1x** pre-settable valve core IMI	**1x** manifold nippel for valve DYNA-i-IMI
Item no.	**5147**	**5148**

Type	DYNA-i-DP	DYNA-i-n-DP
		
Specifications:	**1x** pre-settable valve core Vario DP	**1x** manifold nippel for valve DYNA-i-DP
Item no.	**5152**	**5153**

Compact regulation group TT-M with high-efficiency pump

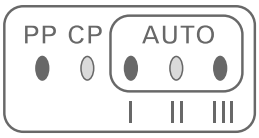
(Delivery includes only control group - without fixed-value controlling element)

Specifications	
Manifold connect.:	1" male threads for manifold type VA
Pump:	HE 15-60/130
Shut-off:	Ball valves DN25
Supply:	Regulating and shut-off fittings DN20
Return:	Pre-settable valve DN20 • M30x1.5 mm connecting thread • for thermostat TT-MTWZ-M • actuators can be retrofitted • Kvs 2.74
Connections:	¾" female threads
Length:	230 mm
Type:	TT-M
Item no.	**5210**

Compact regulation group TT-M for floor heating

on radiator heating circuit control. Consisting of suppyl and return valve, high-efficiency pump Type HE 15-60/130, two ball valves 1" and screw fittings for connection to the manifold. Safety temperature limiters (STB-A) and two thermometers for temperature control.

Packed in a box with assembly instructions.



Pump adjustment (ex works CP2)

Constant differential pressure (Δp-c):

Over the permitted flow rate range, the differential pressure set-point H is kept constant at the set differential pressure setpoint up to the maximum characteristic curve.
We recommend this control option for floor heating circuits.

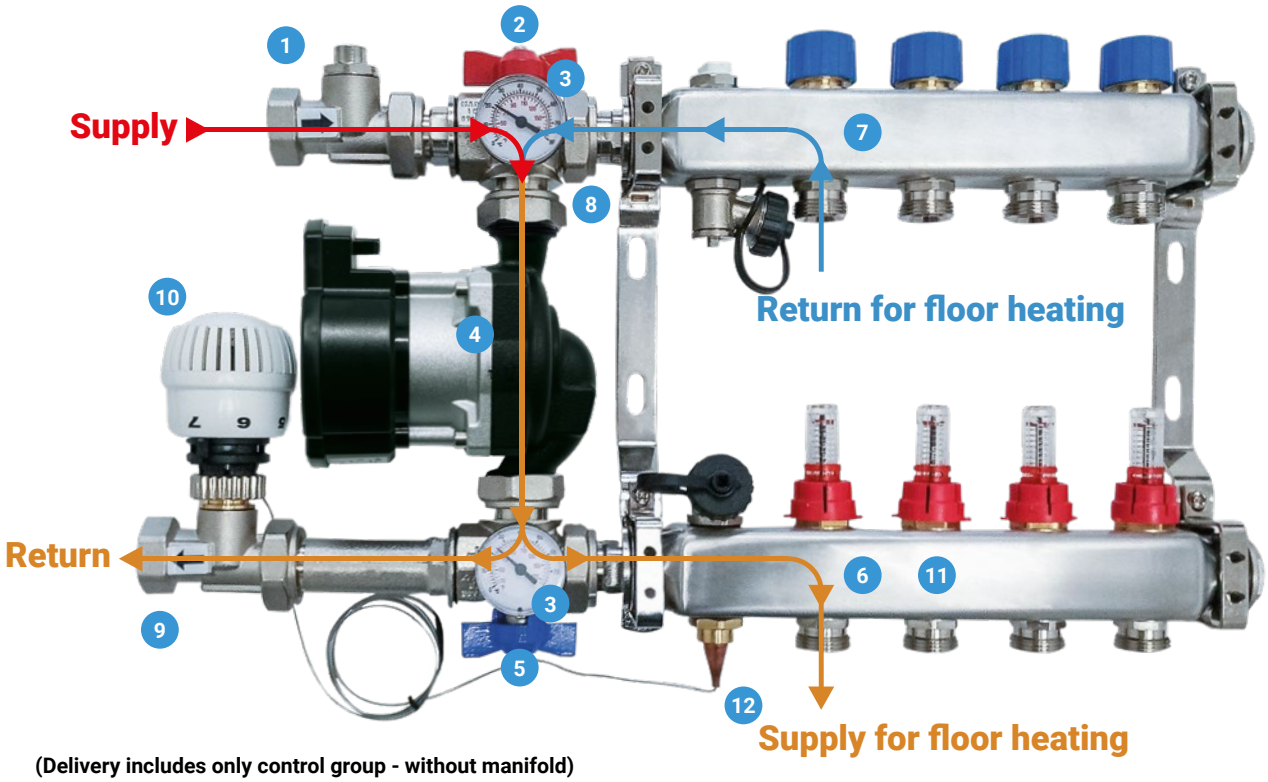
Hydraulic: active

Fixed-value controlling element TT-MTWZ-M (thermostat)

Temperature adjustment values						
Range	2	3	4	5	6	7
Temperature°C	20	30	40	50	60	70

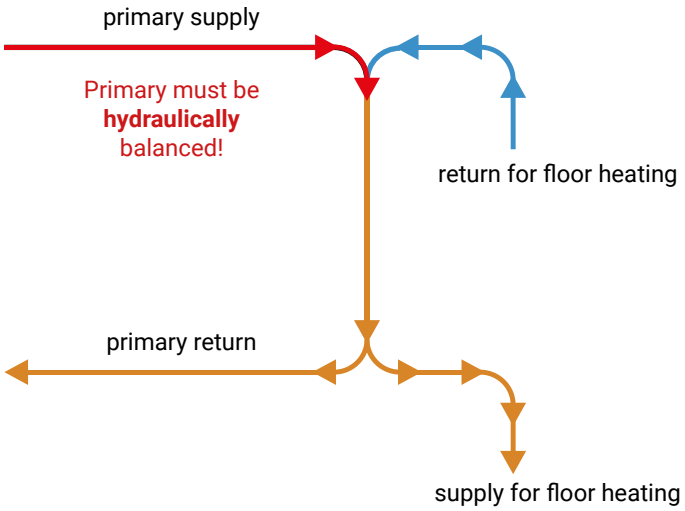
Type:	**TT-MTWZ-M**
Item no.	**3025602**

Thermostat with unmounted sensor for control group TT-M
Temperature range 20 - 70 °C
Connection with screwcap M30x1.5 mm,
incl. immersion unit and tensioning strap



(Delivery includes only control group - without manifold)

Flow paths **hydraulic: active**



Description	
1	Regulating and shut-off fitting DN20 - primary supply
2	Ball valve at supply
3	Thermometer
4	Heating pump
5	Ball valve at return
6	Supply for floor heating
7	Return for floor heating
8	Backflow preventer
9	Valve DN 20 - primary return
10	Thermostat TT-MTWZ-M
11	Assembly point STB-A
12	Immersion unit for fixed-value controlling element TT-MTWZ-M

Cabinet designs TT-M

TYPE		300	400	500	600	750	900	1050	1200	1500
FLUSH		TT-VS 3/300	TT-VS 4/400	TT-VS 5/500	TT-VS 7/600	TT-VS 9/750	TT-VS 12/900	TT-VS 14/1050	TT-VS 17/1200	TT-VS 20/1500
SURFACE			TT-VS-A 400	TT-VS-A 500	TT-VS-A 600	TT-VS-A 750	TT-VS-A 900	TT-VS-A 1050	TT-VS-A 1200	

CIRCUITS							
		2	3 - 4	5 - 7	8 - 10	11 - 13		

Compact regulation group TT-R2 with high-efficiency pump

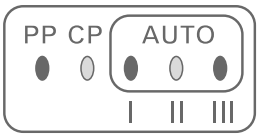
(Delivery includes only control group - without fixed-value controlling element)

Specifications	
Manifold connect.:	1" male threads for manifold type VA
Pump:	HE 15-60/130
Shut-off:	Ball valves DN25
Supply:	Regulating and shut-off fittings DN20
Return:	Pre-settable valve DN20 • M30x1.5 mm connecting thread • for thermostat TT-MTWZ-M • actuators can be retrofitted • Kvs 2.74
Connections:	¾" female threads
Length:	230 mm
Type:	TT-R2
Item no.	**5206**

Compact regulation group TT-R2 for floor heating

on radiator heating circuit control. Consisting of suppyl and return valve, high-efficiency pump Type HE 15-60/130, two ball valves 1" and screw fittings for connection to the manifold. Safety temperature limiters (STB-A) and two thermometers for temperature control.

Packed in a box with assembly instructions.



Pump adjustment (ex works CP2)

Constant differential pressure (Δp-c):

Over the permitted flow rate range, the differential pressure set-point H is kept constant at the set differential pressure setpoint up to the maximum characteristic curve.
We recommend this control option for floor heating circuits.

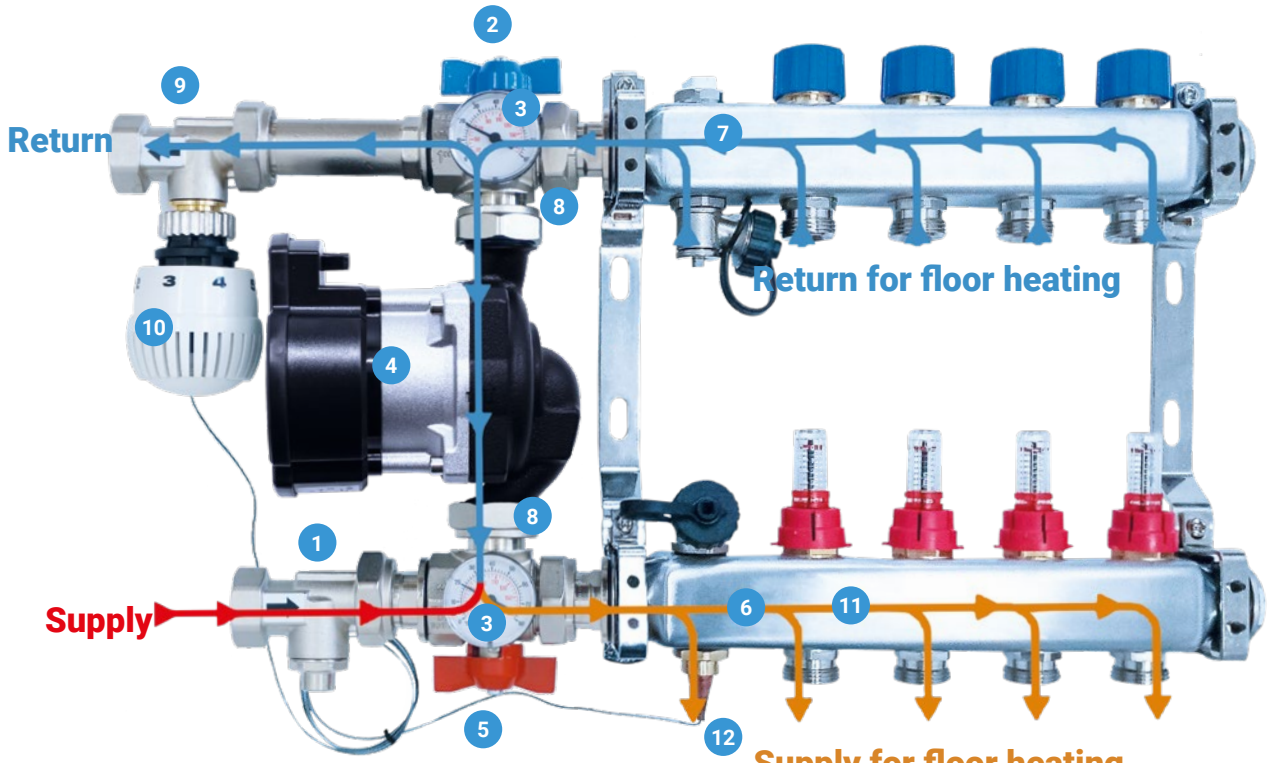
Hydraulic: passive

Fixed-value controlling element TT-MTWZ-M (thermostat)

Temperature adjustment values						
Range	2	3	4	5	6	7
Temperature°C	20	30	40	50	60	70

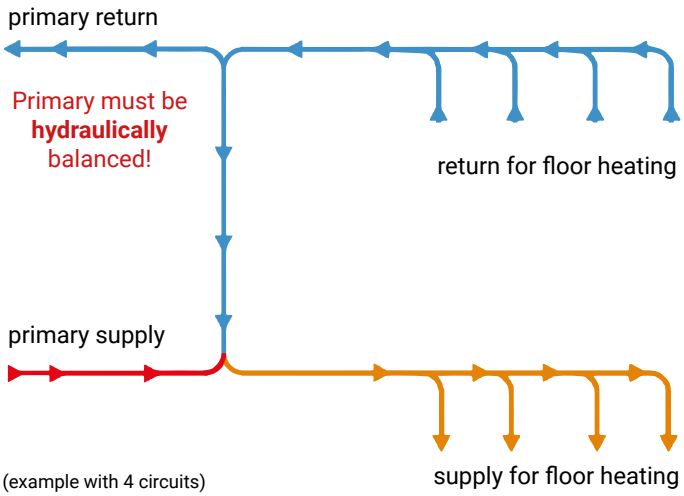
Type:	**TT-MTWZ-M**
Item no.	**3025602**

Thermostat with unmounted sensor for control group TT-R2
Temperature range 20 - 70 °C
Connection with screwcap M30x1.5 mm,
incl. immersion unit and tensioning strap



(Delivery includes only control group - without manifold)

Flow paths **hydraulic: passive**



(example with 4 circuits)

Description	
1	Regulating and shut-off fitting DN20 - primary supply
2	Ball valve at return
3	Thermometer
4	Heating pump
5	Ball valve at supply
6	Supply for floor heating
7	Return for floor heating
8	Backflow preventer (2x)
9	Valve DN 20 - primary return
10	Thermostat TT-MTWZ-M
11	Assembly point STB-A
12	Immersion unit for fixed-value controlling element TT-MTWZ-M

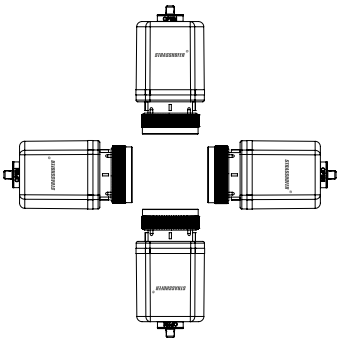
Cabinet designs TT-R2

TYPE		300	400	500	600	750	900	1050	1200	1500
FLUSH		TT-VS 3/300	TT-VS 4/400	TT-VS 5/500	TT-VS 7/600	TT-VS 9/750	TT-VS 12/900	TT-VS 14/1050	TT-VS 17/1200	TT-VS 20/1500
SURFACE			TT-VS-A 400	TT-VS-A 500	TT-VS-A 600	TT-VS-A 750	TT-VS-A 900	TT-VS-A 1050	TT-VS-A 1200	

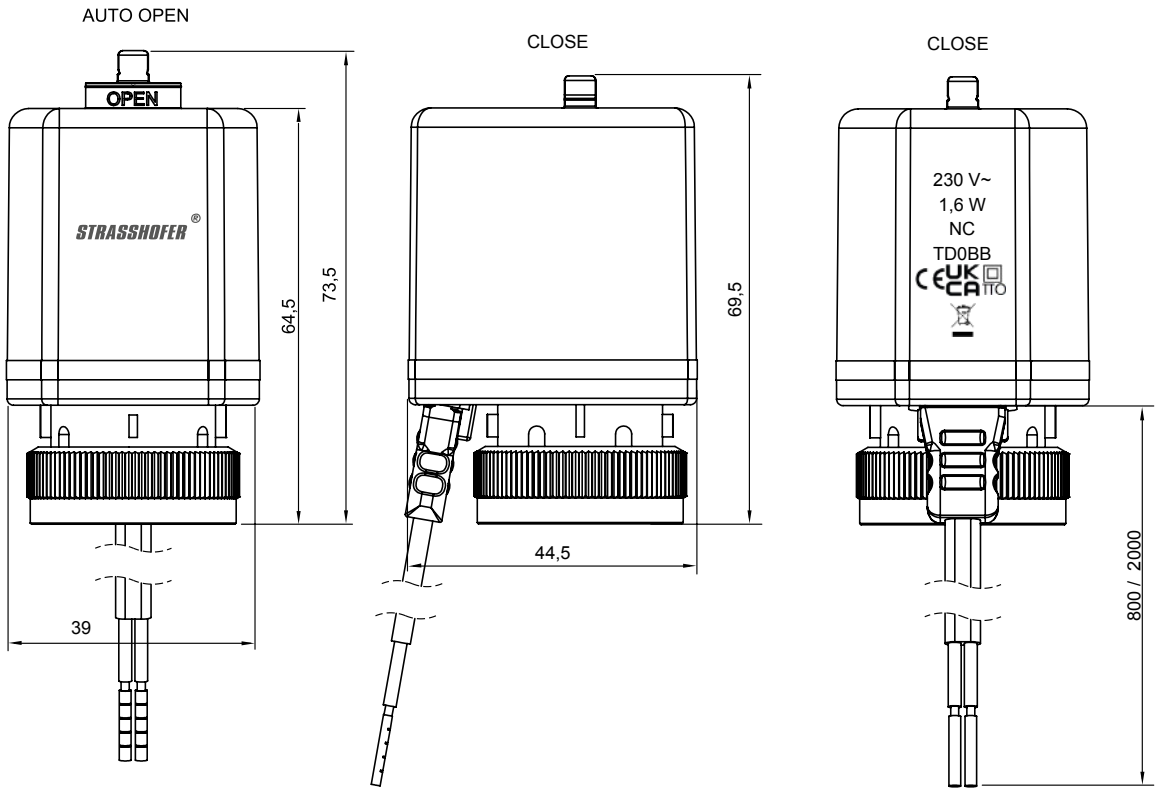
CIRCUITS							
		2	3 - 4	5 - 7	8 - 10	11 - 13		

Electrothermal actuator type eco-STA 230V

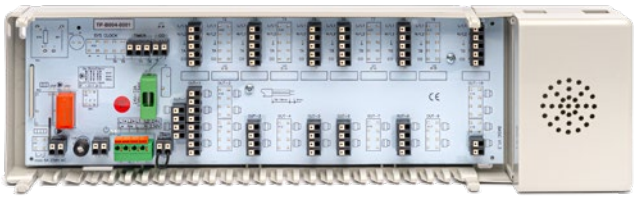
- clearly visible position indicator
- fast and safe assembly
- MANUAL OPEN function
- can be used in all mounting orientations



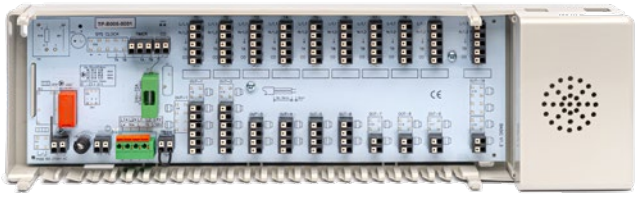
Specifications	eco-STA 230V	eco-STA-L 230V
Variant:	closed without power	closed without power
Voltage:	230V AC	230V AC
Operating performance:	230V : 1.6 W	230V : 1.6 W
Switch-on current:	300 mA at 230 V	300 mA at 230 V
Operating current:	8 mA at 230 V	8 mA at 230 V
Closing/Opening time:	ca. 170 sec	ca. 170 sec
Adjustment track:	4 mm	4 mm
Actuating power:	100 N	100 N
Media temperatures:	max. 100 °C	max. 100 °C
Storage temperature:	-25 °C to +60 °C	-25 °C to +60 °C
Environment temperature:	max. 60 °C	max. 60 °C
Safety class:	IP 63 / II	IP 63 / II
Pollution level:	II	II
CE conformity:	EN 60730	EN 60730
Cable type:	PVC, 2x 0.75 mm, Length 0.8 m, RAL 7035	PVC, 2x 0.75 mm, Length 0.8 m, RAL 7035
Valve fitting:	M30x1.5 mm	M30x1.5 mm
Housing material:	PE	PE
Housing color:	RAL 7035	RAL 7035
Overvoltage category:	II	II
Overvoltage resistance:	min. 2500 V according to EN 60730-1	min. 2500 V according to EN 60730-1
Ball-thrust test:	90 °C	90 °C
Cable length	0.8 m	2.0 m
Item no.	**1003**	**1003L**



Base stations type TT-KL



Type: TT-KL6

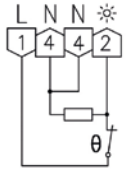


Type: TT-KL10

	TT-KL6-230 PM	TT-KL10-230 PM
Description:	To control the temperature of 6-10 zonen in houses and commercial buildings. Maximum connection of 15-18 thermal actuators and 6-10 room control units for floor heating systems. Packed in a cardboard box including rail or magnetic holder.	
Characteristics:	• connection of 6 thermostats • connection of 15 thermal actuators • 230 V power supply • grounding • connection to Pump 230V 6A • connection of temperature dew point limiter TBH protection • connection to CO(change over) signal generator • connection to external timer • versions with and without LED indicators	• connection of 10 thermostats • connection of 18 thermal actuators • 230 V power supply • grounding • connection to Pump 230V 6A • connection of temperature dew point limiter TBH protection • connection to CO(change over) signal generator • connection to external timer • versions with and without LED indicators

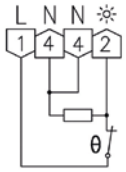
Specifications		
Input power:	max. 50VA	max. 50VA
Fuses:	T4AH (230V)	T4AH (230V)
Total power:	15 actuators: max. 36W (230V)	18 actuators: max. 36W (230V)
Safety class:	IP 20	IP 20
Working environment temperature:	0 - 50 °C	0 - 50 °C
Input temperature limiter / temperature dew point limiter:	Yes	Yes
Pump relays:	6A 200VA induction	6A 200VA induction
Direction of operation:	NC	NC
Max. room thermo-states:	6	10
Max. actuators:	15	18
Dimensions (BxHxT):	102 x 370 x 54 mm	102 x 370 x 54 mm
Item no.	**1011**	**1015**

Room thermostat type TT-RT, surface-mounted



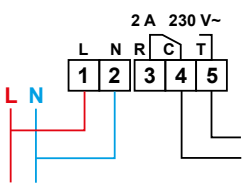
Specifications	
Housing color:	RAL 9010
Electronic connection:	screw clamps 0.33 mm² up to 1.5 mm²
Assembly:	surface-mounted / wall assembly (4 hole fixing on flush-mounted box)
Protection type:	IP 30
Safety and EMC:	according to DIN EN 60730
Max. switching current:	2 A
Range of adjustment:	1 - 6 (ca. 5 up to 30 °C)
Hysteresis:	ca. 0.5 K with a temperature change of max. 4 K / h
Operating voltage:	230 VAC, 50 Hz
Safety class:	II, after appropriate assembly
Item no.	**1100**

Room thermostat type TT-RTU, flush-mounted



Specifications	
Housing color:	RAL 9010
Electronic connection:	screw clamps
Assembly:	in flush-mounted unit (deep flush-m. unit recommended)
Protection type:	IP 30
Safety and EMC:	according to DIN EN 60730
Max. switching current:	10 A
Range of adjustment:	1 - 6 (ca. 5 up to 30 °C)
Hysteresis:	ca. 0.5 K with a temperature max. 4 K / h
Operating voltage:	230 VAC, 50 Hz
Safety class:	II, after appropriate assembly
Item no.	**1101**

Digitales room thermostat type TT-S 203



Specifications	
Display:	LCD
Protection type:	IP 30
Max. switching current:	2 A
Range of adjustment:	0 °C bis 40 °C, PI(-Regler)
Operating voltage:	230 VAC, 50 Hz
Energy efficiency class:	4
Dimensions (HxWxD):	104 x 80 x 35 mm
Menu:	• weekly program • automatic time change: summer/standard time • programmable absence due to integrated calendar • setting of 2 different target temperatures • choice of programming on a quarter-hourly, half-hourly or hourly basis
Item no.	**1202**

Weather-compensated mixer control type TT-MHCC with actuator

Specifications	
Housing color:	RAL 9003
Total sensor inputs:	4
Temperature sensor:	3
Remote controller:	1
Relay contact 230V:	3
0.10V or PWM output:	1
Programmable operating times per day:	3
Item no.	**1203000**

Full text menu
Clearly understandable, contextual help texts explain each setting value.

Multi-language
For clear communication, the user can choose between various menu languages.

Setup Wizard
Will guide you step-by-step through all the necessary settings, for quick and easy commissioning.

CAN bus
For using the MHCC as an additional module for a mixed heating circuit each or for connection to the building technology.

Graphic display
The display enables an animated visualization of the system, descriptive characteristic curves and energy statistics.

Modular design
The basic systems can be flexibly expanded by activating the additional functions using free relays.

Data logging
System data can be stored and analyzed via a micro SD card. (additional device required)

0...10V/PWM-Ausgänge
For modulating burner controll or rotational frequency control of high-efficiency or large pumps.

Network-compatible
Monitoring and remote controlling of the heating is possible via PC, smartphone and tablet. (additional device required)

PC simulation
Free Windows software simplifies training, functional testing and technical support.

Included items:

1x **external sensor TA 52** (PT 1000),
in weatherproof plastic housing

1x **pipe contact sensor TR/P4** (PT 1000),
cable length 2 m incl. clamp 32-50 mm

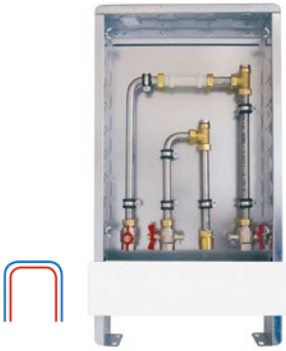
1x **electrothermal actuator 230V**
3-point control signal, cable length 1.5 m

Accessories for room controller type TT-RC21 for TT-MHCC

Specifications	
Item no.	**1203003**

The TT-RC21 room controller enables user-friendly influence on the heating from the living room. The slide switch is used to select the operating mode **„Continuous day“**, **„Continuous night“** or **„Automatic“**.
The set heating circuit characteristic curve on the controller is shifted in parallel via the rotary control. The integrated temperature sensor automatically readjusts the heating characteristic curve as needed depending on the living room temperature.

Decentralized heat interface stations for heat meter

Type	TT-WMZs	TT-WMZs-U	TT-WMZw
in manifold cabinet TT-VS 3/300 Dimensions see page 19			
Item no.	**5033021**	**5033022**	**5013021**
Included items:			
• in the heat meter supply: a ¾" ball valve with detachable connection as primary block • in the heat meter return: a universal fitting ¾" for heat meters up to 1.5 Qn, consisting of two ball valves ¾" with detachable connection and meter fitting* 110 mm			
Heat meter Return:	**2x** ball valves ¾", **1x** with M10 **1x** meter fitting* 110 mm **1x** screw fitting with vent valve ½"	**2x** ball valves ¾", **1x** with M10 **1x** meter fitting* 110 mm **1x** screw fitting with vent valve ½" **2x** stainless steel pipe 18x1 mm	**2x** ball valves ¾", **1x** with M10 **1x** meter fitting* 110 mm
Heat meter Supply:	**1x** ball valve ¾" M10 **1x** screw fitting with vent valve ½"	**1x** ball valve ¾" M10 **1x** screw fitting with vent valve ½" **2x** stainless steel pipe 18x1 mm	**1x** ball valve ¾" M10

*** Meter fittings 110 mm made of plastic and are not suitable for permanent retention.**

Isolation is available at an extra charge for all TT-WMZ with stainless steel piping.

Decentralized heat interface stations for heat meter and water meter

Type	TT-WMZs-WZ	TT-WMZs-WZs	TT-WMZw-WZ
in manifold cabinet TT-VS 3/300 Dimensions see page 19			
Item no.	**5033031**	**5033032**	**5013031**
Included items:			
• in the heat meter supply: a ¾" ball valve with detachable connection as primary block • in the heat meter return: a universal fitting ¾" for heat meters up to 1.5 Qn, consisting of two ball valves ¾" with detachable connection and meter fitting* 110 mm.			
Water meter fittings with two DVGW ball valves ¾" and meter fitting* 110 mm each			
Heat meter return:	**2x** ball valves ¾", **1x** with M10 **1x** meter fitting* 110 mm **1x** screw fitting with vent valve ½"	**2x** ball valves ¾", **1x** with M10 **1x** meter fitting* 110 mm	**2x** ball valves ¾", **1x** with M10 **1x** meter fitting* 110 mm
Heat meter supply:	**1x** ball valve ¾" M10 **1x** screw fitting with vent valve ½"	**1x** ball valve ¾" M10	**1x** ball valve ¾" M10
Water meter cold water:	**2x** DVGW ball valves ¾" **1x** meter fitting* 110 mm	**2x** DVGW ball valves ¾" **1x** meter fitting* 110 mm	**2x** DVGW ball valves ¾" **1x** meter fitting* 110 mm
W.M. warm water:	see water meter cold water	see water meter cold water	see water meter cold water

Type	TT-WMZs-WZ-U	TT-WMZs-WZ-UU	
in manifold cabinet TT-VS 5/500 (U) resp. TT-VS 9/750 (UU) Dimensions see page 19			
Item no.	**5013033**	**5013022**	
Included items:			
• in the heat meter supply: a ¾" ball valve with detachable connection as primary block • in the heat meter return: a universal fitting ¾" for heat meter up to 1.5 Qn, consisting of two ball valves ¾" with detachable connection and meter fitting* 110 mm.			
Water meter fittings with two DVGW ball valves ¾" and meter fitting* 110 mm each			
Heat meter return:	**2x** ball valves ¾", **1x** with M10 **1x** meter fitting* 110 mm **1x** screw fitting with vent valve ½" **2x** stainless steel pipes 18x1 mm	**2x** ball valves ¾", **1x** with M10 **1x** meter fitting* 110 mm **1x** screw fitting with vent valve ½" **2x** stainless steel pipes 18x1 mm	
Heat meter supply:	**1x** ball valve ¾" M10 **1x** screw fitting with vent valve ½" **2x** stainless steel pipes 18x1 mm	**1x** ball valve ¾" M10 **1x** screw fitting with vent valve ½" **2x** stainless steel pipes 18x1 mm	
Water meter cold water:	**2x** DVGW ball valves ¾" **1x** meter fitting* 110 mm	**2x** DVGW ball valves ¾" **1x** meter fitting* 110 mm **2x** stainless steel pipes 18x1 mm	
W.M. warm water:	see water meter cold water	see water meter cold water	

Water meter stations type TT-W-I with 1 ball valve per fitting

Included items:

Ready-to-connect, pre-assembled water meter stations for 1 or 2 surface water meters 80 / 110 mm up to 1.5 Qn, mounted in super-compact wall cabinet type SC, consisting of hot-dip galvanized mounting frame (through punchings on all sides it is useable in any direction) and two front variants.

TT-W1-I	TT-W2-I
1x universal WM fitting **1x** DVGW ball valve ¾" incl. WM connection **1x** meter fitting* 80 or 110 mm **1x** WM connection incl. transition ¾" female threads	**2x** universal WM fittings **2x** DVGW ball valves ¾" incl. WM connections **2x** meter fittings* 80 or 110 mm **2x** WM connections incl. transition ¾" female threads

WM = Water meter

Type TT-W2-I/80	For two surface water meter 80 mm, shut-off on one side	
	**Number of WM:**	**2**	**2**
	Fitting length:	**80 mm**	**80 mm**
	Front:	**White**	**Funk**
	Type:	W2-I/80-SCW	W2-I/80-SCK
	Cabinet type:	TT-SCW 220	TT-SCK 220
	WxHxD	220 x 220 x 90-120 mm	
	Item no.	**5073042**	**5073062**

Type TT-W1-I/80	For surface water meter 80 mm, shut-off on one side	
	**Number of WM:**	**1**	**1**
	Fitting length:	**80 mm**	**80 mm**
	Front:	**White**	**Funk**
	Type:	W1-I/80-SCW	W1-I/80-SCK
	Cabinet type:	TT-SCW 220	TT-SCK 220
	WxHxD	220 x 220 x 90-120 mm	
	Item no.	**5073041**	**5073061**

Type TT-W2-I/110	For two surface water meter 110 mm, shut-off on one side	
	**Number of WM:**	**2**	**2**
	Fitting length:	**110 mm**	**110 mm**
	Front:	**White**	**Funk**
	Type:	W2-I/110-SCW	W2-I/110-SCK
	Cabinet type:	TT-SCW 220	TT-SCK 220
	WxHxD	220 x 220 x 90-120 mm	
	Item no.	**5083042**	**5083062**

Type TT-W1-I/110	For surface water meter 110 mm, shut-off on one side	
	**Number of WM:**	**1**	**1**
	Fitting length:	**110 mm**	**110 mm**
	Front:	**White**	**Funk**
	Type:	W1-I/110-SCW	W1-I/110-SCK
	Cabinet type:	TT-SCW 220	TT-SCK 220
	WxHxD	220 x 220 x 90-120 mm	
	Item no.	**5083041**	**5083061**

White front: Steel plate, white, plastic-coated

Funk front: Steel plate, carrier frame with white plastic bezel

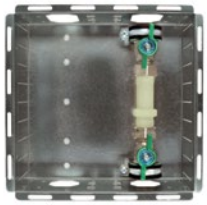
Water meter stations type TT-W-II with 2 ball valves per fitting

Included items:

Ready-to-connect, pre-assembled water meter stations for 1 or 2 surface water meters 80 / 110 mm up to 1.5 Qn, mounted in super-compact wall cabinet type SC, consisting of hot-dip galvanized mounting frame (through punchings on all sides it is useable in any direction) and two front variants.

TT-W1-II	TT-W2	TT-W1-Z / TT-W2-Z
1x universal WM fitting **2x** DVGW ball valves ¾" incl. WM connection **1x** meter fitting* 80 mm	**2x** universal WM fittings **4x** DVGW ball valves ¾" incl. WM connection **2x** meter fittings* 80 mm	**1x / 2x** universal WM fittings **2x / 4x** DVGW ball valves ¾" incl. WM connection **1x / 2x** meter fittings* 80 mm **1x** T-piece with circulation bend

Type TT-W2-II/80	For two surface water meter 80 mm, shut-off on one side	
	**Number of WM:**	**2**	**2**
	Fitting length:	**80 mm**	**80 mm**
	Front:	**White**	**Funk**
	Type:	W2-II/80-SCW	W2-II/80-SCK
	Cabinet type:	TT-SCW 220	TT-SCK 220
	WxHxD	220 x 220 x 90-120 mm	
	Item no.	**5063042**	**5063062**

Type TT-W1-II/80	For surface water meter 80 mm, shut-off on one side	
	**Number of WM:**	**1**	**1**
	Fitting length:	**80 mm**	**80 mm**
	Front:	**White**	**Funk**
	Type:	W1-II/80-SCW	W1-II/80-SCK
	Cabinet type:	TT-SCW 220	TT-SCK 220
	WxHxD	220 x 220 x 90-120 mm	
	Item no.	**5063041**	**5063061**

Type TT-W1-Z	For two surface water meter 80 mm, shut-off on one side, circulation **
	**Number of WM:**	**1**
	Fitting length:	**80 mm**
	Front:	**White**
	Type:	W1-Z/80-SCW
	Cabinet type:	TT-SCW 220
	WxHxD	220 x 220 x 90-120 mm
	Item no.	**5073043**

Type TT-W2-Z	For surface water meter 80 mm, shut-off on one side, circulation **
	**Number of WM:**	**1**
	Fitting length:	**80 mm**
	Front:	**White**
	Type:	W2-Z/80-SCW
	Cabinet type:	TT-SCW 330
	WxHxD	330 x 220 x 90-120 mm
	Item no.	**5073044**

*** Meter fittings 80/110 mm made of plastic and are not suitable for permanent retention.**
**** Assembly example with flow meter, which is not included in delivery.**

eco 25 for central drinking water heating using the flow principle

- with rotational frequency control
- inexpensive
- easy controlling
- low weight

Application:

Our eco 25 fresh water station heats up the drinking water centrally and it is distributed to the tapping points via the hot water pipe. A buffer tank is necessary so that a sufficient heating water volume flow is provided for heating up the drinking water. The drinking hot water is only heated on demand „Just in Time“. There is no storage of drinking hot water!

Domestic hot water (DHW) preparation:

The DHW is heated up in the flow principle only during demand via a **stainless steel plate heat exchanger**.
A special heat exchanger design enables high tapping capacities and a low return temperature to the buffer tank.

High-efficiency pump:

A **high-efficiency pump PWM** pumps the heating water volume flow from the buffer tank to the plate heat exchanger, which is necessary for heating.

Control function:

The central control element is the **speed-controlled regulation**. This guarantees a constant domestic hot water temperature.

Sensors:

Fast and very accurate control processes are made possible by the use of modern sensors. A **flow sensor based on the vortex principle** determines the flow rate and the hot water temperature.

Housing:

Stylish EPP isolation housing.

Specifications	
Connections:	**HS + HR at bottom, CW + DHW at right side**
Type:	**eco 25**
Item no.:	**1630008**
Dimensions (WxHxD):	285 x 365 x 138 mm
Weight:	7.2 kg

	Primary	Secondary
	Buffer tank	**Drinking water**
Pressure stage:	PN 6	PN 10
Temperature (temporary):	110 °C	75 °C
Connection dimensions:	DN 20	DN 20
Thread:	¾" screwcap	¾" screwcap

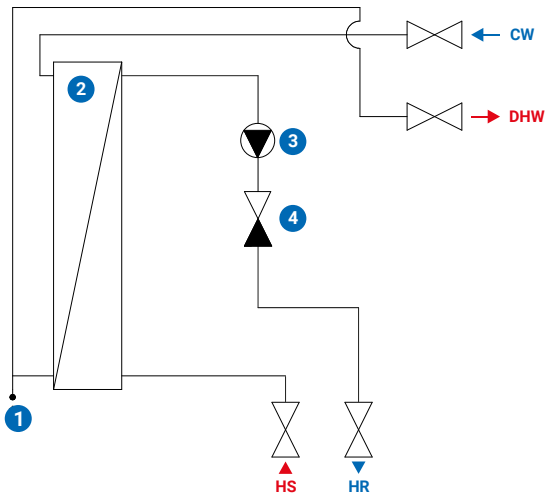
Performance data	PI1*	PI2*
HW performance:	61 kW	70 kW
Mass flow primary:	1424 kg/h (24.2 l/min)	1597 kg/h (27.3 l/min)
Supply temperature:	60 °C	70 °C
Return temperature:	23 °C	32 °C
CW/ HW temperature:	10 °C / 45 °C	10 °C / 60 °C
Tap performance:	25 l/min	20 l/min

Attention: Standard operation is guaranteed at 50 - 75 °C, if necessary install a pre-mixer

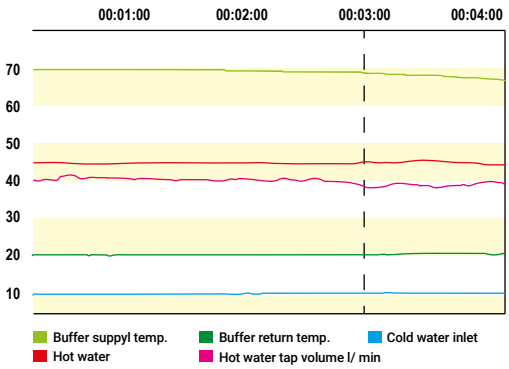
*** PI 1 = performance indicator 1**
at set hot water temperature 45 °C
at primary supply temperature 60 °C
at cold water temperature 10 °C

*** PI 2 = performance indicator 2**
at set hot water temperature 60 °C
at primary supply temperature 70 °C
at cold water temperature 10 °C

Specifications	
Handling:	• clearly readable, lighted LCD display with full text and graphic mode • internationally understandable due to up to 6 included languages • self-explanatory: The assigned commands are shown in the display directly above the espective enter key • easy and fast installation due to the integrated commissioning wizard
Operating type:	Fresh water control without circulation Fresh water control with circulation (optional)
Plate exchanger:	Stainless steel AISI 316, Copper soldered
Piping:	Stainless steel AISI 316, 18x1 mm
Pumps:	Heating pump HE 15-60/130 PWM 1 DHW circulation pump Z15 **(only for module Z1)**
Sensors:	HW temperature and volume flow: Sika VVX15 circulation temperature: plug-on sensor PT1000/B/2 with cable
Isoliation hous.:	EPP, black
Delivery:	Ready to plug in, wired and leak-tested with setting instructions and assembly accessories packed in a box

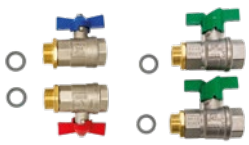


Performance chart: full load



1	Vortex sensor DHW + flow rate
2	Plate heat exchanger
3	Heating pump
4	Backflow preventer
DHW	Domestic hot water
CW	Cold water
HS	Heating supply
HR	Heating return

Options

Type	Module ball valves set eco 25	Module Z1 - circulation set eco 25	Module Pre-mixer
			
	Ball valve set DN 20 - ¾" for eco 25 (2x heating / 2x sanitary DVGW)	**External drinking water circulation** external circulation module Z1 for eco 25, incl. safety valve	**Pre-mixing set** Pre-mixing set for eco 25-, eco 40-, FW-E 40 series
Item no.	**1630009**	**1630010**	**1000132**

Note: When constructing a domestic hot water heating system you must observe the valid standards, the established rules of technology and the local regulations! Especially when operating a circulation system, the hygiene regulations according to DVGW worksheet W551 must be observed. Please check whether the use of a safety valve / expansion vessel in the circulation circuit is required for the specific system! The assembly of the safety valve and the required blow-out line must be realized by the customer.

eco 40 for central drinking water heating using the flow principle

- with rotational frequency control
- inexpensive
- easy controlling
- low weight

Application:

Our eco 40 fresh water station heats up the drinking water centrally and it is distributed to the tapping points via the hot water pipe. A buffer tank is necessary so that a sufficient heating water volume flow is provided for heating up the drinking water. The drinking hot water is only heated on demand „Just in Time“. There is no storage of drinking hot water!

Domestic hot water (DHW) preparation:

The DHW is heated up in the flow principle only during demand via a **stainless steel plate heat exchanger**.
A special heat exchanger design enables high tapping capacities and a low return temperature to the buffer tank.

High-efficiency pump:

A **high-efficiency pump PWM** pumps the heating water volume flow from the buffer tank to the plate heat exchanger, which is necessary for heating.

Control function:

The central control element is the **speed-controlled regulation**. This guarantees a constant domestic hot water temperature.

Sensors:

Fast and very accurate control processes are made possible by the use of modern sensors. A **flow sensor based on the vortex principle** determines the flow rate and the hot water temperature.

Housing:

Stylish EPP isolation housing.

Specifications	
Connections:	**HS + HR at bottom, CW + DHW at right side**
Type:	**eco 40**
Item no.:	**1630011**
Dimensions (WxHxD):	320 x 570 x 155 mm
Weight:	10.7 kg

	Primary	Secondary
	Buffer tank	**Drinking water**
Pressure stage:	PN 6	PN 10
Temperature (temporary):	110 °C	75 °C
Connection dimensions:	DN 25	DN 25
Thread:	1" screwcap	1" screwcap

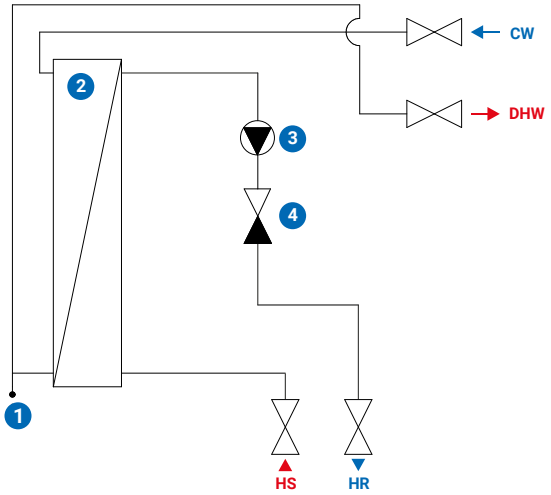
Performance data	PI1*	PI2*
HW performance:	90 kW	91 kW
Mass flow primary:	2163 kg/h (36.1 l/min)	2151 kg/h (35.85 l/min)
Supply temperature:	60 °C	70 °C
Return temperature:	24 °C	34 °C
CW/ HW temperature:	10 °C / 45 °C	10 °C / 60 °C
Tap performance:	37 l/min	26 l/min

Attention: Standard operation is guaranteed at 50 - 75 °C, if necessary install a pre-mixer

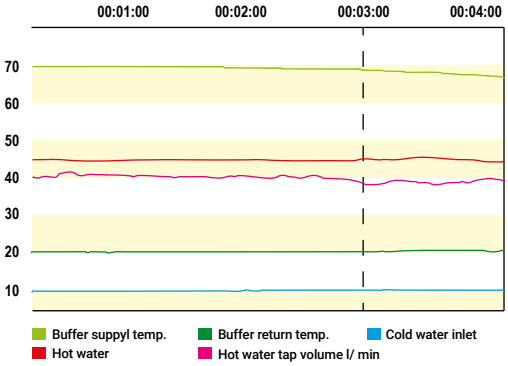
*** PI 1 = performance indicator 1**
at set hot water temperature 45 °C
at primary supply temperature 60 °C
at cold water temperature 10 °C

*** PI 2 = performance indicator 2**
at set hot water temperature 60 °C
at primary supply temperature 70 °C
at cold water temperature 10 °C

Specifications	
Handling:	• clearly readable, lighted LCD display with full text and graphic mode • internationally understandable due to up to 6 included languages • self-explanatory: The assigned commands are shown in the display directly above the espective enter key • easy and fast installation due to the integrated commissioning wizard
Operating type:	Fresh water control without circulation Fresh water control with circulation (optional)
Plate exchanger:	Long thermal length, low pressure loss Stainless steel AISI 316, Copper soldered
Piping:	Stainless steel AISI 316, 18x1 mm
Pumps:	Heating pump HE 15-60/130 PWM 1 DHW circulation pump HE-Z 15-7 RKC **(only for module Z2)**
Sensors:	HW temperature and volume flow: Sika VVX15 CW- / buffer- / circulation temperature: plug-on sensor PT1000/B/2 with cable
Isoliation hous.:	EPP, black
Delivery:	Ready to plug in, wired and leak-tested with setting instructions and assembly accessories packed in a box

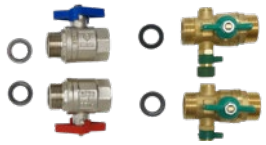


Performance chart: full load



1	Vortex sensor DHW + flow rate
2	Plate heat exchanger
3	Heating pump
4	Backflow preventer
DHW	Domestic hot water
CW	Cold water
HS	Heating supply
HR	Heating return

Options

Type	Module ball valve set eco 40	Module Z2 - circulation set eco 40	Module pre-mixer
			
	Ball valve set DN 25 - 1" for eco 40 (2x heating / 2x sanitary DVGW)	**External drinking water circulation** external circulation module Z2 for eco 40, incl. safety valve	**Pre-mixing set** Pre-mixing set for eco 25-, eco 40-, FW-E 40 series
Item no.	**1630012**	**1630013**	**1000132**

Note: When constructing a domestic hot water heating system you must observe the valid standards, the established rules of technology and the local regulations! Especially when operating a circulation system, the hygiene regulations according to DVGW worksheet W551 must be observed. Please check whether the use of a safety valve / expansion vessel in the circulation circuit is required for the specific system! The assembly of the safety valve and the required blow-out line must be realized by the customer.

FW-EZ 40 / FW-E 40 for central drinking water heating using the flow principle

- with high-efficiency pumps
- with high-quality sanitary circuit control valves
- all drinking water outlets upwards
- solid fitting units made of galvanized steel plate
- with meter fitting
- designed front
- cascades-able

Designed front

Application:

Our FW-EZ 40 / FW-E 40 fresh water station heats up the drinking water centrally and it is distributed to the tapping points via the hot water pipe. A buffer tank is necessary so that a sufficient heating water volume flow is provided for heating up the drinking water. The drinking hot water is only heated on demand „Just in Time“. There is no storage of drinking hot water!

Domestic hot water (DHW) preparation:

The DHW is heated up in the flow principle only during demand via a **stainless steel plate heat exchanger**.
A special heat exchanger design enables high tapping capacities and a low return temperature to the buffer tank.

High-efficiency pump:

A **high-efficiency pump PWM** pumps the heating water volume flow from the buffer tank to the plate heat exchanger, which is necessary for heating.

Control function:

The central control element is the **speed-controlled regulation**. This guarantees a constant domestic hot water temperature.

Sensors:

Fast and very accurate control processes are made possible by the use of modern sensors. A **flow sensor based on the vortex principle** determines the flow rate and the hot water temperature.

Housing:

Stylish EPP isolation housing.

Specifications		
Type:	**FW-EZ 40 / FW-E 40**	
Item no.:	**1610003 / 16100001**	
	Primary	**Secondary**
	Buffer tank	**Drinking water**
Pressure stage:	PN 6	PN 10
Max. temperature:	110 °C	75 °C
Connection dimensions:	DN 25	DN 20
Thread:	1" female threads	1" male threads
Dimensions (WxHxD):	480 x 675 x 240 mm	
Modules		
1000202	KF 30	Stainless steel PHE
1000132	Pre-mixer	Pre-mixing set

Performance data	PI1*	PI2*
HW performance:	100 kW	90 kW
Mass flow primary:	1769 kg/h	1745 kg/h
Supply temperature:	70 °C	60 °C
Return temperature:	22 °C	16 °C
CW/ HW temperature:	10 °C / 60 °C	10 °C / 45 °C
Tap performance:	28 l/min	36 l/min

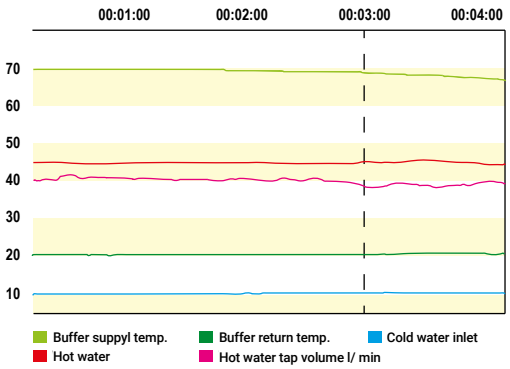
Attention: Standard operation is guaranteed at 50 - 75 °C, if necessary install a pre-mixer

*** PI 1 = performance indicator 1**
at set hot water temperature 45 °C
at primary supply temperature 60 °C
at cold water temperature 10 °C

*** PI 2 = performance indicator 2**
at set hot water temperature 60 °C
at primary supply temperature 70 °C
at cold water temperature 10 °C

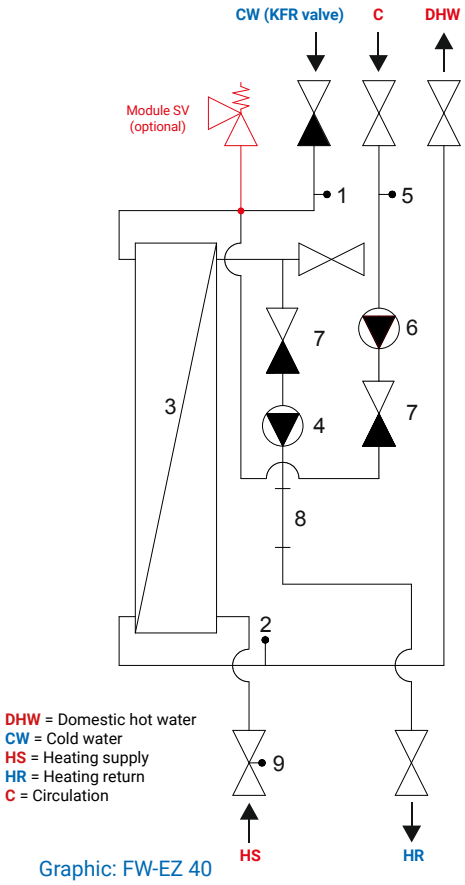
Specifications	
Handling:	• clearly readable, lighted LCD display with full text and graphic mode • internationally understandable due to up to 6 included languages • self-explanatory: The assigned commands are shown in the display directly above the espective enter key • easy and fast installation due to the integrated commissioning wizard
Operating type:	Fresh water control with circulation (FW-EZ-40) Fresh water control without circulation (FW-E-40)
Add. function:	Storage tank charging, cascade
Plate exchanger:	Long thermal length, low pressure loss Stainless steel AISI 316, Copper soldered
Piping:	Stainless steel AISI 316, 22x1 mm
Pumps:	Heating pump HE 15-60/130 PWM 1 DHW circulation pump HE-Z 15-7 PWM 2 **(only for FW-EZ-40)**
Sensors:	HW temperature and volume flow: Sika VVX15 CW- / buffer- / circulation temperature (FW-EZ40): plug-on sensor PT1000/B/2 with cable
Isoliation hous.:	EPP, black
Delivery:	Ready to plug in, wired and leak-tested with setting instructions and assembly accessories packed in a box

Performance chart: full load



FW-EZ 40 Item no. 1610003

FW-E 40 Item no. 1610001



Graphic: FW-EZ 40

Schematic	
1	Temperature sensor CW
2	Temperature and flow sensor based on the vortex principle
3	Plate heat exchanger
4	Heating pump
5	Temperature sensor C
6	Circulation pump (only for FW-EZ 40)
7	Backflow preventer
8	Fitting heat meter 130 mm
9	Direct measuring point heat meter

FW-D 40 for central drinking water heating using the flow principle

- with high-efficiency pumps
- with high-quality sanitary circuit control valves
- all drinking water outlets upwards
- solid fitting units made of galvanized steel plate
- with meter fitting
- designed front
- with variable return stratification

Designed front

Application:

Our FW-D 40 fresh water station heats up the drinking water centrally and it is distributed to the tapping points via the hot water pipe. A buffer tank is necessary so that a sufficient heating water volume flow is provided for heating up the drinking water. The drinking hot water is only heated on demand „Just in Time“. There is no storage of drinking hot water!

Domestic hot water (DHW) preparation:

The DHW is heated up in the flow principle only during demand via a **stainless steel plate heat exchanger**.
A special heat exchanger design enables high tapping capacities and a low return temperature to the buffer tank.

High-efficiency pump:

A **high-efficiency pump PWM** pumps the heating water volume flow from the buffer tank to the plate heat exchanger, which is necessary for heating.

Control function:

The central control element is the **speed-controlled regulation**. This guarantees a constant domestic hot water temperature.

Sensors:

Fast and very accurate control processes are made possible by the use of modern sensors. A **flow sensor based on the vortex principle** determines the flow rate and the hot water temperature. A fast and accurate **PT-1000 temperature sensor** detects the temperature of: heating return, cold water, buffer tank supply and circulation return.

Variable return stratification:

The heating return to the buffer tank is variably connected with an **integrated 3-way switching valve**. For higher return temperatures (e.g. longer circulation operation without tapping) the stratification in the buffer tank takes place centrally.In standard mode (when tapping), with a very low return temperature the stratification in the buffer tank occurs at the bottom. The stratification in the buffer tank is unaffected. The low buffer tank temperatures in the lower buffer tank area required for the solar yield are fully maintained!

Circulation:

A **drinking water high-efficiency circulation pump** is controlled by the electronic control system intelligently (according to pulse, time and temperature) and speed-controlled.

Housing:

Stylish **EPP isolation housing with designed front**.

Specifications		
Type:	**FW-D 40**	
Item no.:	**1610002**	
	Primary	**Secondary**
	Buffer tank	**Drinking water**
Pressure stage:	PN 6	PN 10
Max. temperature:	110 °C	75 °C
Connection dimensions:	DN 25	DN 20
Thread:	1" female threads	1" male threads
Dimensions (WxHxD):	480 x 675 x 240 mm	
Modules		
1000202	KF 30	Stainless steel PHE
1000132	Pre-mixer	Pre-mixing set

Performance data	PI1*	PI2*
HW performance:	100 kW	90 kW
Mass flow primary:	1769 kg/h	1745 kg/h
Supply temperature:	70 °C	60 °C
Return temperature:	22 °C	16 °C
CW/ HW temperature:	10 °C / 60 °C	10 °C / 45 °C
Tap performance:	28 l/min	36 l/min

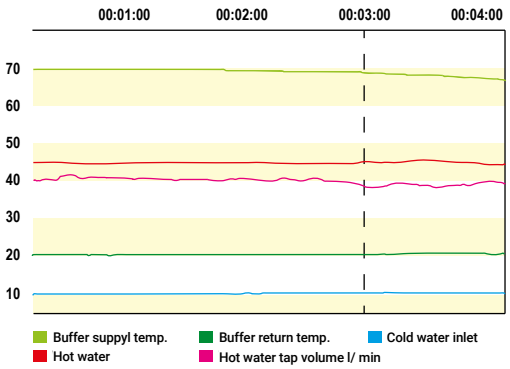
Attention: Standard operation is guaranteed at 50 - 75 °C, if necessary install a pre-mixer

*** PI 1 = performance indicator 1**
at set hot water temperature 45 °C
at primary supply temperature 60 °C
at cold water temperature 10 °C

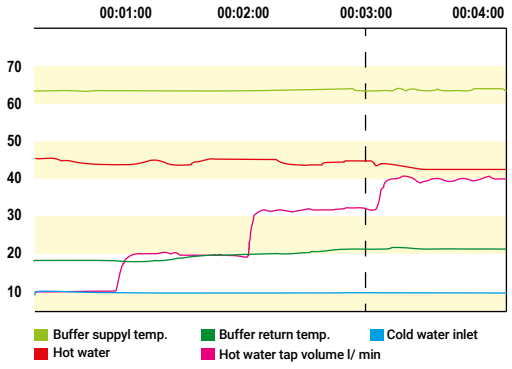
*** PI 2 = performance indicator 2**
at set hot water temperature 60 °C
at primary supply temperature 70 °C
at cold water temperature 10 °C

Specifications	
Handling:	• clearly readable, lighted LCD display with full text and graphic mode • internationally understandable due to up to 6 included languages • self-explanatory: The assigned commands are shown in the display directly above the espective enter key • easy and fast installation due to the integrated commissioning wizard
Operating type:	Fresh water control with circulation and variable storage stratification
Add. function:	Storage tank charging, cascade
Plate exchanger:	Long thermal length, low pressure loss Stainless steel AISI 316, Copper soldered
Piping:	Stainless steel AISI 316, 22x1 mm
Pumps:	Heating pump HE 15-60/130 PWM 1 DHW circulation pump HE-Z 15-7 PWM 2
3-way switching valve:	Honeywell DN20, extra short term
Sensors:	HW temperature and volume flow: Sika VVX15 HR- / CW- / buffer- / circulation temperature: plug-on sensor PT1000/B/2 with plug and cable
Isoliation hous.:	EPP, black
Delivery:	Pre-assembled, wired and leak-tested with setting instructions and assembly accessories packed in a box

Performance chart: full load

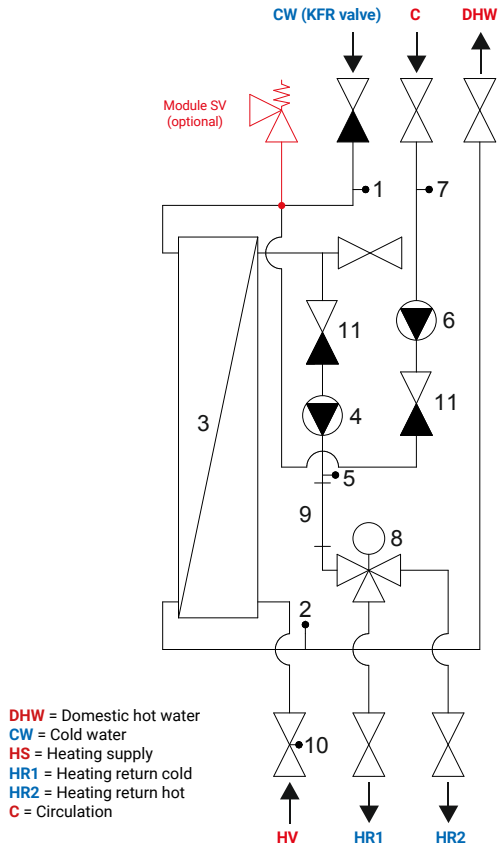


Performance chart: load change with increasing load



Additional information:

- solid fitting units made of galvanized steel plate
- with high-quality sanitary circuit control valves
- designed front
- all drinking water outlets upwards



Graphic: FW-D 40

Schematic

1	Temperature sensor CW
2	Temperature and flow sensor based on the vortex principle
3	Plate heat exchanger
4	Heating pump
5	Temperature sensor HR
6	Circulation pump
7	Temperature sensor C
8	3-way switching valve
9	Fitting heat meter 130 mm
10	Direct measuring point heat meter
11	Backflow preventer

FW-E 60 for central drinking water heating using the flow principle

- with high-efficiency pumps
- with high-quality sanitary circuit control valves
- all drinking water outlets upwards
- solid fitting units made of galvanized steel plate
- designed front
- cascade-able

Designed front

Application:

Our FW-E 60 fresh water station heats up the drinking water centrally and it is distributed to the tapping points via the hot water pipe. A buffer tank is necessary so that a sufficient heating water volume flow is provided for heating up the drinking water. The drinking hot water is only heated on demand „Just in Time“. There is no storage of drinking hot water!

Domestic hot water (DHW) preparation:

The DHW is heated up in the flow principle only during demand via a **stainless steel plate heat exchanger**.
A special heat exchanger design enables high tapping capacities and a low return temperature to the buffer tank.

High-efficiency pump:

A **high-efficiency pump PWM** pumps the heating water volume flow from the buffer tank to the plate heat exchanger, which is necessary for heating.

Control function:

The central control element is the **speed-controlled regulation**. This guarantees a constant domestic hot water temperature.

Sensors:

Fast and very accurate control processes are made possible by the use of modern sensors. A **flow sensor based on the vortex principle** determines the flow rate and the hot water temperature.

Housing:

Stylish **EPP isolation housing with designed front**.

Circulation modules Z3 / Z4 (optional):

A **drinking water high-efficiency circulation pump** is controlled by the electronic control system intelligently (according to pulse, time and temperature) and speed-controlled (integration on-site).

Specifications		
Type:	**FW-E 60**	
Item no.:	**1620001**	
	Primary	**Secondary**
	Buffer tank	**Drinking water**
Pressure stage:	PN 6	PN 10
Max. temperature:	110 °C	75 °C
Connection dimensions:	DN 32	DN 20
Thread:	1¼" female threads	1" male threads
Dimensions (WxHxD):	480 x 675 x 240 mm	
Modules		
1000203	KF 50	Stainless steel PHE

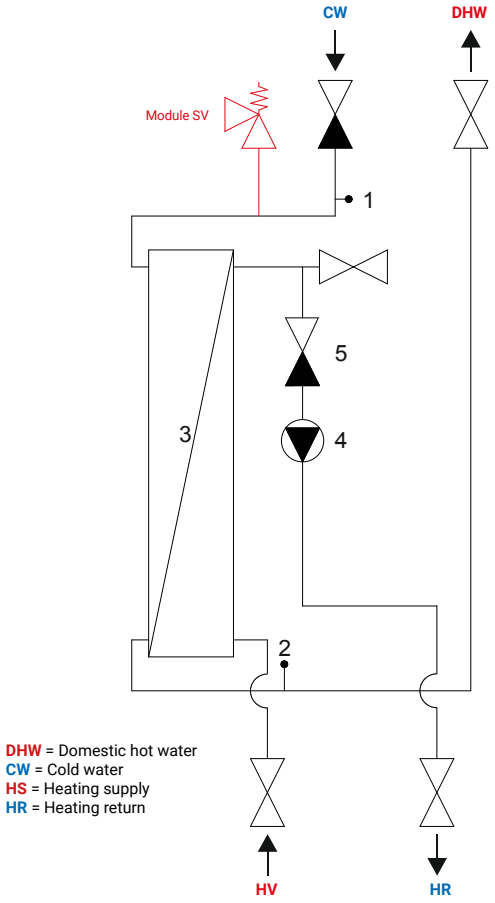
Performance data	PI1*	PI2*
HW performance:	150 kW	150 kW
Mass flow primary:	2628 kg/h	2922 kg/h
Supply temperature:	70 °C	60 °C
Return temperature:	21 °C	16 °C
CW/ HW temperature:	10 °C / 60 °C	10 °C / 45 °C
Tap performance:	42 l/min	61 l/min

Attention: Standard operation is guaranteed at 50 - 75 °C, if necessary install a pre-mixer

*** PI 1 = performance indicator 1**
at set hot water temperature 45 °C
at primary supply temperature 60 °C
at cold water temperature 10 °C

*** PI 2 = performance indicator 2**
at set hot water temperature 60 °C
at primary supply temperature 70 °C
at cold water temperature 10 °C

Specifications	
Handling:	• clearly readable, lighted LCD display with full text and graphic mode • internationally understandable due to up to 6 included languages • self-explanatory: The assigned commands are shown in the display directly above the espective enter key • easy and fast installation due to the integrated commissioning wizard
Operating type:	Fresh water control without circulation Fresh water control with external circulation Storage stratification (with external 3-way valve)
Add. function:	Storage tank charging, cascade
Plate exchanger:	Long thermal length, low pressure loss Stainless steel AISI 316, Copper soldered
Piping:	Stainless steel AISI 316, 28x1.5 mm / 22x1 mm
Pumps:	Heating pump HE-25-100/180 PWM 1
Sensors:	HW temperature and volume flow: Sika VVX20 HR- / CW- / buffer- / circulation temperature: temperature sensor PT1000/B/2 with cable
Isoliation hous.:	EPP, schwarz
Lieferung:	Pre-assembled, wired and leak-tested with setting instructions and assembly accessories packed in a box



Graphics: FW-E 60

Schematic	
1	Temperature sensor CW
2	Temperature and flow sensor based on the vortex principle
3	Plate heat exchanger
4	Heating pump
5	Backflow preventer

Options

Type	Module SV	Module Z3
		
	Drinking water safety valve DN15 with connection line 10 bar for FW-E/EZ/D 40 and FW-E 60	**External drinking water circulation** drinking water high-efficiency circulation pump HE-Z 15-7 PWM 2 with backflow preventer and 1" ball valve
Item no.	**1000131**	**1000125**

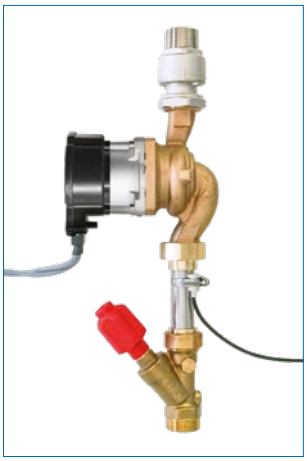
Example configuration of a 3-unit cascade				
	Type		**Quantity**	**Item no.**
1	FW-E 40	Fresh water station	3 x	1610001
2	Module Z3 / Z4	Drinking water circulation	1 x	1000125 / 1000126
3	FWK data cable	Connecting cable	2 x	1000127
4	MAG 20	Magnet valve ¾" - 230 V	3 x	1000130

FW-E 40
1610001

+

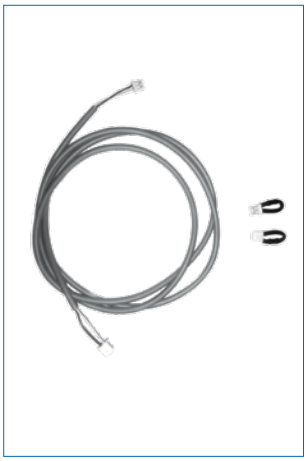
Module Z3 - HE-Z 15-7 PWM 2
1000125

or



Module Z4 - HE-Z 25/1-8 PWM 2
1000126

+

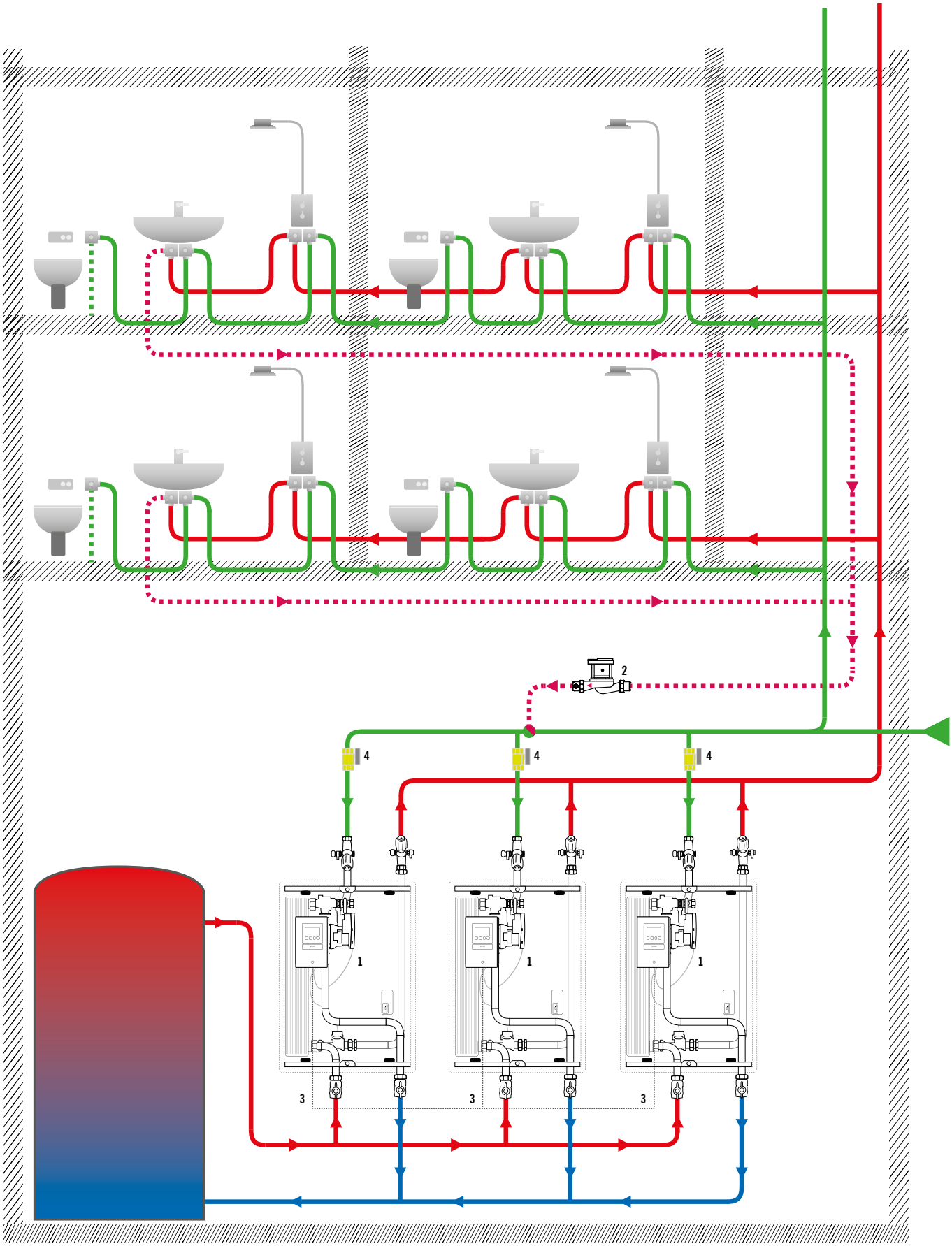


+

= cascade

Hot water – always fresh!

- **Higher operational safety**
- **Daily changing of the individual fresh water stations according to the „master/slave“ principle**


2
4
4
4
1
1
1
3
3
3

DHW station BM-T with step a valve technology

and microprocessor regulated controller

- DHW heating regulated by stepping motor valve using the flow principle
- temperature standby valve with integrated actuator
- cold water pipes insulated against heat input
- stainless steel piping 18x1 mm
- flat design in 110 mm

Analysis Drinking water stations/ DHW stations / Small systems
see pages 76-84

Drinking water heating using the flow principle:

The DHW is heated up in the flow principle only during demand via a stainless steel plate heat exchanger. A temperature and flow sensor based on the vortex principle determines the flow rate and the hot water temperature. The controller regulates the necessary heating energy for the plate exchanger via a **step a valve** stepper motor valve. The plate exchanger is not kept warm. This avoids unnecessary circulation loss and effectively prevents increased legionella formation.

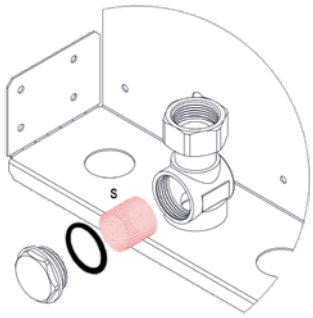
Controller	Customer menu (simple)	Mechanic menu (expert)
Display	Time & date	Measured values or hydraulic diagram
Settings	• time & date • summer time • nocturnal fall time for standby	• hot water temperature • standby temperature of the station • commissioning wizard • circulation mode (option)

Specifications		
	Heating primary	
	Buffer tank	Drinking water
Pressure stage:	PN 6	PN 10
Max. temperature:	90 °C	75 °C
Connection dimensions:	DN 25	DN 20
Thread:	1" female threads	¾" female threads
Dimensions (WxHxD):	**flush:** 435 x 800 x 110-150 mm / **surface:** 450 x 900 x 140 mm	
Recess dimens. (WxHxD):	**flush:** min. 455 x 805 x 112 mm	

Performance example heat exchanger				
DHW performance:	**M (36 kW)**		**XL (51 kW)**	
Supply / Return temperature primary:	60 / 21 °C	60 / 17 °C	60 / 21 °C	60 / 17 °C
CW inlet / DHW outlet temperature:	10 / 50 °C	10 / 45 °C	10 / 50 °C	10 / 45 °C
Max. DHW tapping volume:	13 l/min	15 l/min	18 l/min	21 l/min
DHW pressure loss:	155 mbar	200 mbar	210 mbar	280 mbar
Heating pressure loss *:	345 mbar	265 mbar	345 mbar	310 mbar
Flow primary:	840 l/h	720 l/h	1020 l/h	960 l/h

*** without heat meter** (at 2 bar CW pressure and 350 mbar heating)

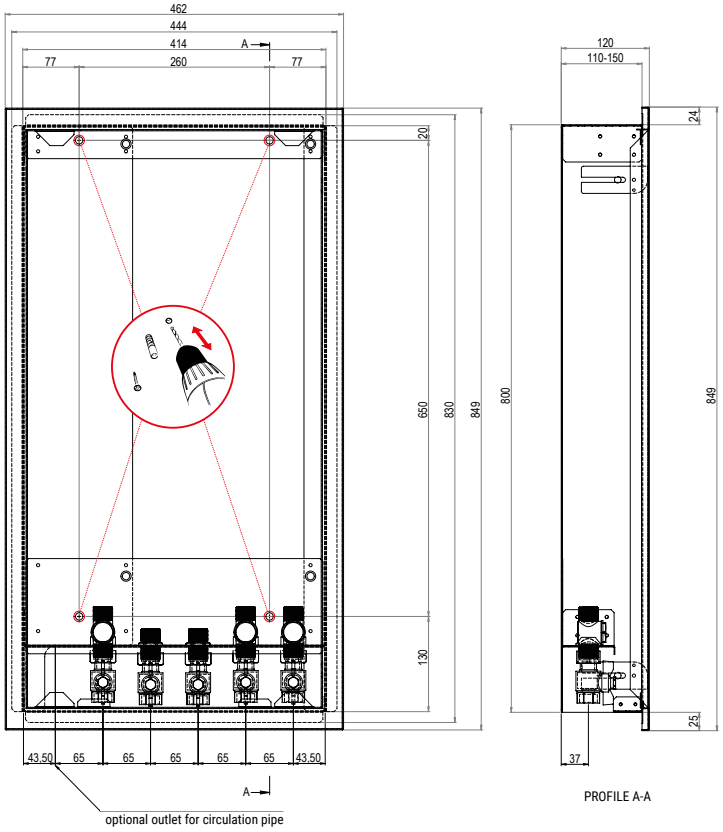
Accessories

Module S1 - strainer insert	Module W - water hammer damper	Module Z - circulation
		
Item no. 1000100	**Item no. 1000122**	**Item no. 1000107**
Sieve element (80 mbar pressure loss)	The water damper prevents water hammer and thus damage to components within the station. For example this is recommended for single-lever mixers or magnetic valves in drinking water installations.	Z15 drinking water circulation pump with backflow preventer allows an in-dwelling circulation. Completely mounted with stainless steel pipe 18x1mm. ⚠

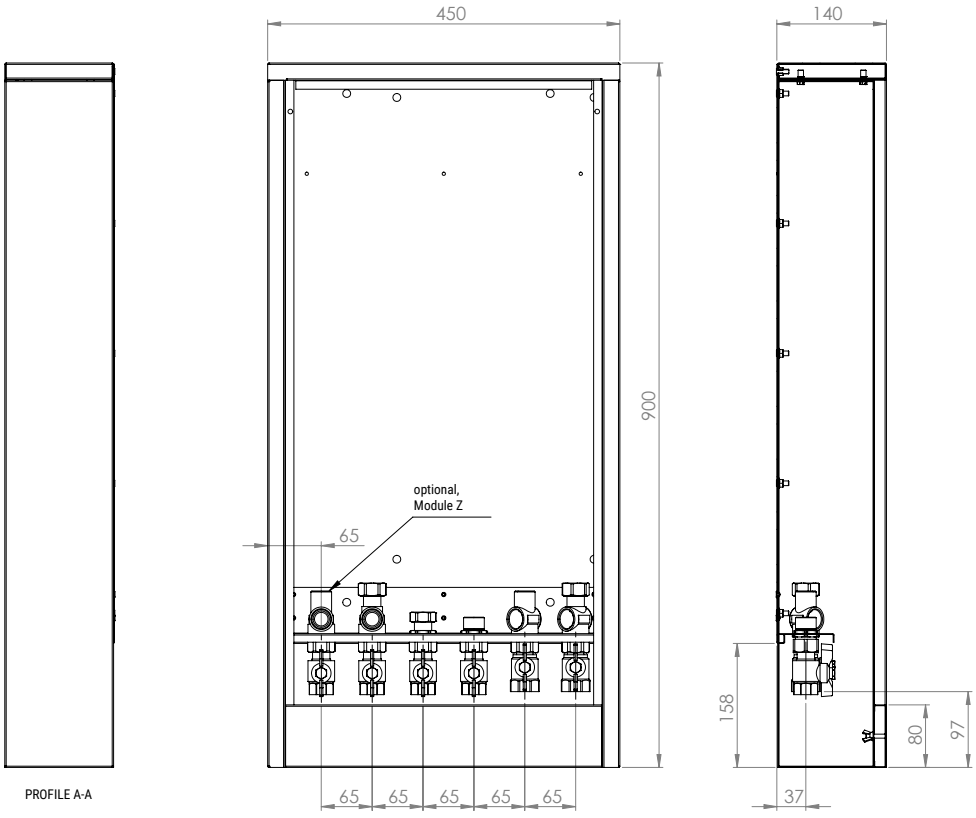
⚠ Note: When constructing a domestic hot water heating systems you must observe the valid standards, the established rules of technology and the local regulations! Especially when operating a circulation system, the hygiene regulations according to DVGW worksheet W551 musst be observed. DHW stations are small systems according to DVGW worksheet W551 if the pipe content in each drinking water pipe downstream of the station does not exceed 3 liters. Please check whether the use of a safety valve / expansion vessel in the circulation circuit is required for the specific system! The assembly of the safety valve and the required blow-out line must be realized by the customer.

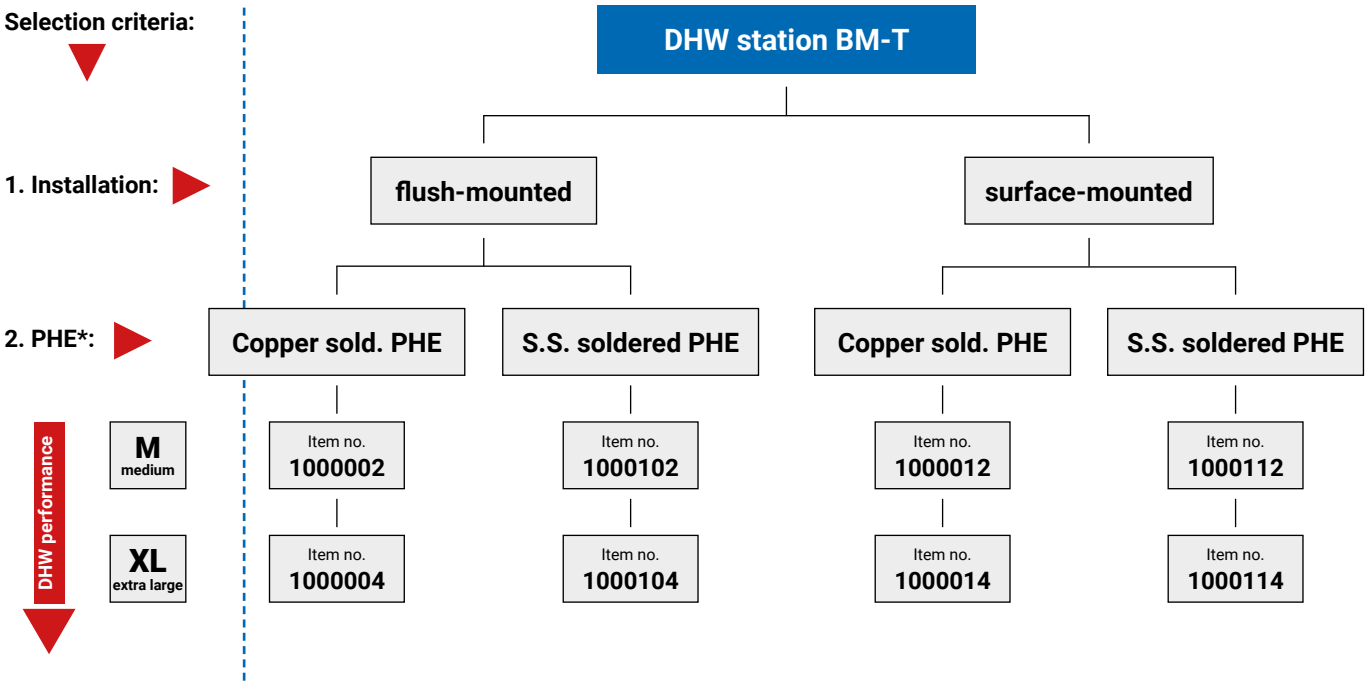
Module STV	Module D	Module ISO T
		
Item no. 1000116	**Item no. 1000105**	**Item no. 1000150**
A static volume flow controller installed in the primary return. (station outlet) - with temperature measuring boss DN 20, adjustment range up to 4860l/h, 5.10 Kvs	An externally adjustable dynamic volume flow controller combined with a differential pressure regulator, installed in primary return. (station outlet) - with temperature measuring boss - DN 15, adjustment range up to 1330l/h, 2.7 Kvs	Insulation cover for BM-T

Dimensions flush-mounted



Dimensions surface-mounted

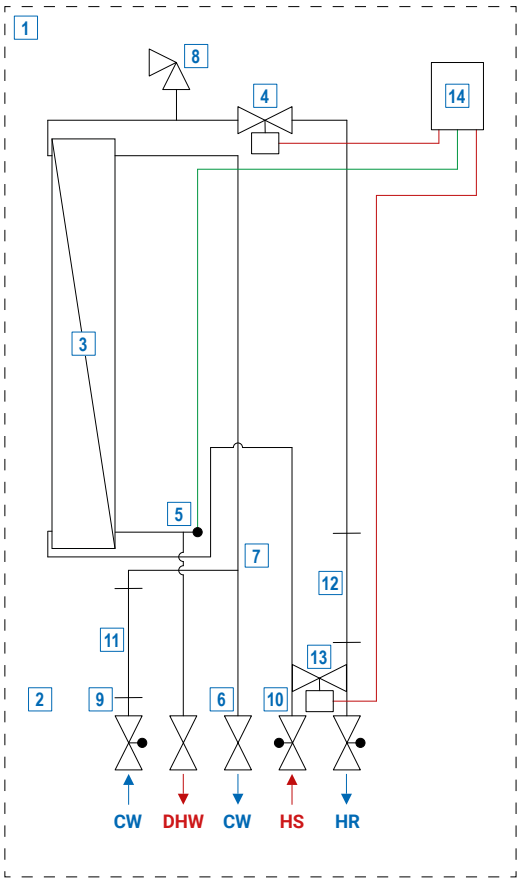




Example breakdown of the item no. PHE*: plate heat exchanger

Example:	DHW station type				Soldering material PHE	Installation	DHW performance
Item no.	1	0	0	0	0	0	4
					CU	FLUSH	XL

Schematic BM-T



1	Built-in cabinet
2	Connection rail with ball valves
3	Plate heat exchanger
4	**step a valve** stepper motor valve
5	Temperature and flow sensor based on vortex principle
6	Cold water outlet
7	Cold water maximum limiter (optional)
8	Venting and draining
9	Strainer insert CW (optional)
10	Strainer insert HS (optional)
11	Fitting cold water meter ¾" - 110 mm
12	Fitting hot water meter ¾" - 110 mm
13	Temperature standby valve (Bypass) with actuator
14	Controller

DHW station BM-WP 4 with step a valve technology

and microprocessor regulated controller

- DHW heating regulated by stepping motor valve using the flow principle
- temperature standby valve with integrated actuator
- cold water pipes insulated against heat input
- additional heating circuit with a heat meter fitting for floor heating manifold / radiator heating
- stainless steel piping 18x1 mm
- flat design in 130 mm

Analysis Drinking water stations/ DHW stations / Small systems
see pages 76-84

Drinking water heating using the flow principle:

The DHW is heated up in the flow principle only during demand via a stainless steel plate heat exchanger. A temperature and flow sensor based on the vortex principle determines the flow rate and the hot water temperature. The controller regulates the necessary heating energy for the plate exchanger via a **step a valve** stepper motor valve. The plate exchanger is not kept warm. This avoids unnecessary circulation loss and effectively prevents increased legionella formation.

4-pipes system:

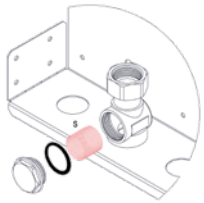
An extra heat meter fitting is integrated in the cabinet for recording the consumption of the floor heating / radiator heating.

Controller	Customer menu (simple)	Mechanic menu (expert)
Display	Time & date	Measured values or hydraulic diagram
Settings	• time & date • summer time • nocturnal fall time for standby	• hot water temperature • standby temperature of the station • commissioning wizard • circulation mode (option)

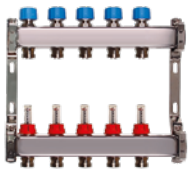
Specifications			
	Heating primary	Heating secondary	
	Buffer tank	Heating	Drinking water
Pressure stage:	PN 6	PN 6	PN 10
Max. temperature:	90 °C	60 °C	75 °C
Connection dimensions:	DN 25	DN 20	DN 20
Thread:	1" female threads	¾" female threads	¾" female threads
Dimensions (WxHxD):	**flush:** 710 x 1275-1375 x 130-180 mm / **surface:** 730 x 1400 x 140 mm		
Recess dimens. (WxHxD):	**flush:** min. 730 x 1310-1455 x 132 mm		

Performance example heat exchanger	
DHW performance:	**M (51 kW)**
Supply / Return temperature primary:	50 / 20 °C
CW inlet / DHW outlet temperature:	10 / 45 °C
Max. DHW tapping volume:	15 l/min
DHW pressure loss:	135 mbar
Heating pressure loss *:	350 mbar
Flow primary:	1100 l/h
*** without heat meter**	(at 2 bar CW pressure and 350 mbar heating)

Accessories

Module S1 - strainer insert	Module W - water hammer damper	Module Z - circulation
		
Item no. 1000100	**Item no. 1000122**	**Item no. 1000107**
Sieve element (80 mbar pressure loss)	The water damper prevents water hammer and thus damage to components within the station. For example this is recommended for single-lever mixers or magnetic valves in drinking water installations.	Z15 drinking water circulation pump with backflow preventer allows an in-dwelling circulation. Completely mounted with stainless steel pipe 18x1mm. ⚠

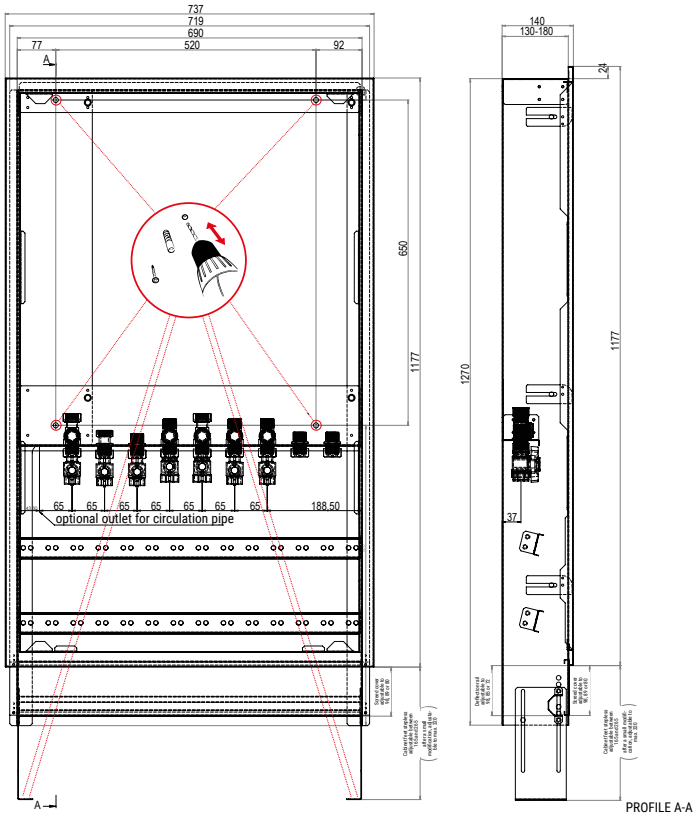
⚠ Note: When constructing a domestic hot water heating systems you must observe the valid standards, the established rules of technology and the local regulations! Especially when operating a circulation system, the hygiene regulations according to DVGW worksheet W551 musst be observed. DHW stations are small systems according to DVGW worksheet W551 if the pipe content in each drinking water pipe downstream of the station does not exceed 3 liters. Please check whether the use of a safety valve / expansion vessel in the circulation circuit is required for the specific system! The assembly of the safety valve and the required blow-out line must be realized by the customer.

Module STV	Floor heating manifold VA-FBif for 2-12 circuits	Electrothermal actuator eco-STA-L 230V
		
Item no. 1000116	**Item no. 3702 - 3712**	**Item no. 1003L**
A static volume flow controller installed in the primary return. (station outlet) - with temperature measuring boss DN 20, adjustment range up to 4860l/h, 5.10 Kvs	The set consists of a supply and a return bar. Each manifold bar is additionally delivered with two ½" female threads for vent valves and fill/drain valves. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels and installation/setting instructions.	For controlling the individual floor heating circuits on the VA-FBif manifold. ⚠

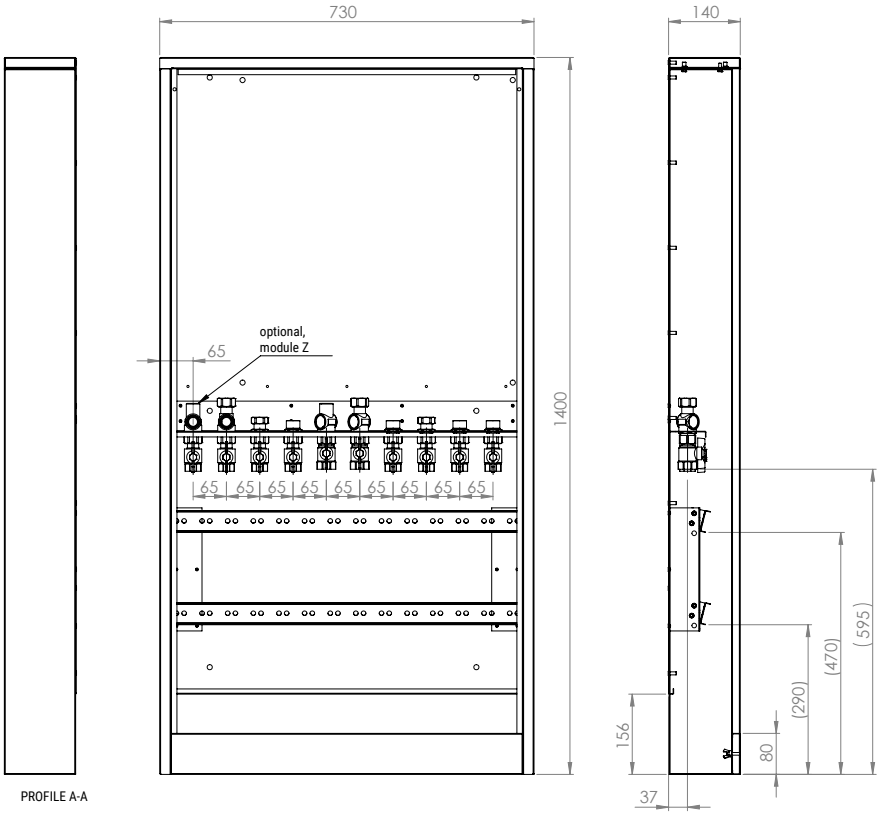
⚠ Note: Let us finish wiring the station for you! Your big advantage: No self-mounting on site necessary, no missing components, large selection of accessories. The station is delivered complete in a package with identification of the particular building project, floor and apartment. Special designs are possible upon customer request!

Module D	Module ISO WP	Module NE
		
Item no. 1000105	**Item no. 1000152**	**Item no. 1000160**
An externally adjustable dynamic volume flow controller combined with a differential pressure regulator, installed in primary return. (station outlet) - with temperature measuring boss - DN 15, adjustment range up to 1330l/h, 2.7 Kvs	Insulation cover for BM-WP	DHW heating using the flow principle with electrical reheating

Dimensions flush-mounted



Dimensions surface-mounted

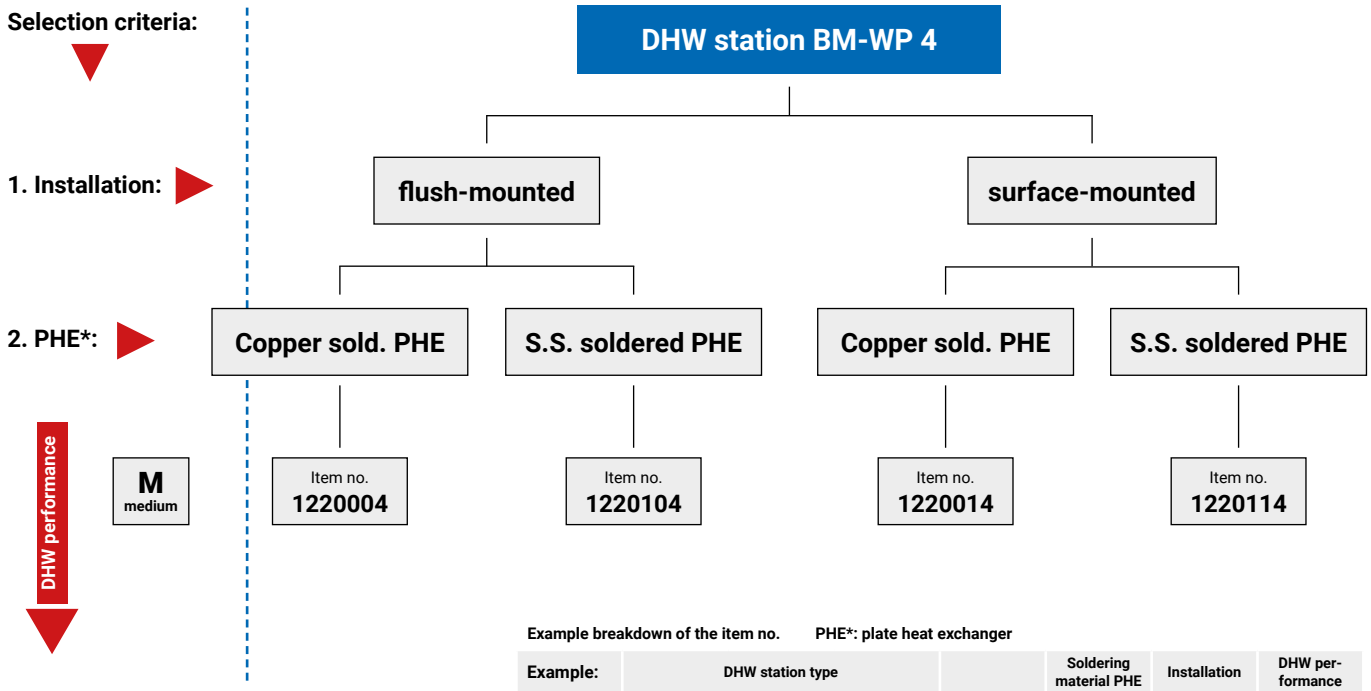


Selection criteria:

1. Installation:

2. PHE*:

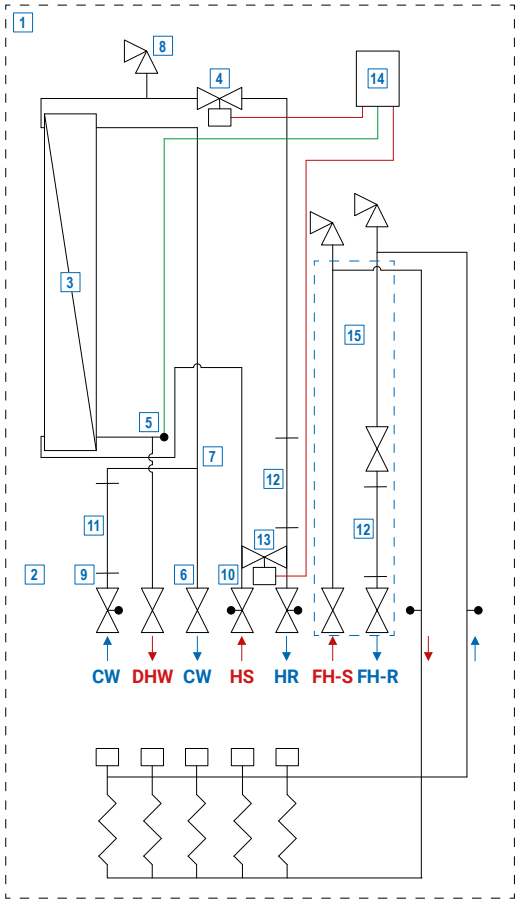
DHW performance



Example breakdown of the item no. PHE*: plate heat exchanger

Example:	DHW station type				Soldering material PHE	Installation	DHW performance
Item no.	1	2	2	0	0	0	4
					CU	FLUSH	XL

Schematic BM-WP 4



1	Built-in cabinet
2	Connection rail with ball valves
3	Plate heat exchanger
4	**step a valve** stepper motor valve
5	Temperature and flow sensor based on vortex principle
6	Cold water outlet
7	Cold water maximum limiter (optional)
8	Venting and draining
9	Strainer insert CW (optional)
10	Strainer insert HS (optional)
11	Fitting cold water meter ¾" - 110 mm
12	Fitting hot water meter ¾" - 110 mm
13	Temperature standby valve (Bypass) with actuator
14	Controller
15	Floor heating or radiator heating

Wohnungsstation BM-H mit step a valve Technologie

and microprocessor regulated controller

- DHW heating regulated by stepping motor valve using the flow principle
- temperature standby valve with integrated actuator
- cold water pipes insulated against heat input
- modular design - individually extendable with e.g. priority circuit, zone valve, secondary differential pressure module
- connection for unregulated heating
- stainless steel piping 18x1 mm
- flat design in 110 mm

Analysis Drinking water stations/ DHW stations / Small systems
see pages 76-84

Drinking water heating using the flow principle:

The DHW is heated up in the flow principle only during demand via a stainless steel plate heat exchanger. A temperature and flow sensor based on the vortex principle determines the flow rate and the hot water temperature. The controller regulates the necessary heating energy for the plate exchanger via a **step a valve** stepper motor valve. The plate exchanger is not kept warm. This avoids unnecessary circulation loss and effectively prevents increased legionella formation.

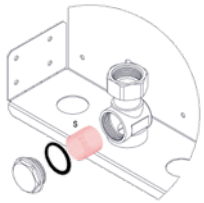
Controller	Customer menu (simple)	Mechanic menu (expert)
Display	Time & date	Measured values or hydraulic diagram
Settings	• time & date • summer time • nocturnal fall time for standby	• program selection: heating circuit unregulated • hot water temperature • htandby temperature of the station • commissioning wizard • circulation mode (option) • priority heating circuit (option)

Specifications			
	Heating primary	Heating secondary	
	Buffer tank	Heating	Drinking water
Pressure stage:	PN 6	PN 6	PN 10
Max. temperature:	90 °C	60 °C	75 °C
Connection dimensions:	DN 25	DN 20	DN 20
Thread:	1" female threads	¾" female threads	¾" female threads
Dimensions (WxHxD):	**flush:** 565 x 800 x 110-150 mm / **surface:** 580 x 900 x 140 mm		
Recess dimens. (WxHxD):	**flush:** min. 585 x 805 x 112 mm		

Performance example heat exchanger				
DHW performance:	**M (36 kW)**		**XL (51 kW)**	
Supply / Return temperature primary:	60 / 21 °C	60 / 17 °C	60 / 21 °C	60 / 17 °C
CW inlet / DHW outlet temperature:	10 / 50 °C	10 / 45 °C	10 / 50 °C	10 / 45 °C
Max. DHW tapping volume:	13 l/min	15 l/min	18 l/min	21 l/min
DHW pressure loss:	155 mbar	200 mbar	210 mbar	280 mbar
Heating pressure loss *:	345 mbar	265 mbar	345 mbar	310 mbar
Flow primary:	840 l/h	720 l/h	1020 l/h	960 l/h

*** without heat meter** (at 2 bar CW pressure and 350 mbar heating)

Accessories

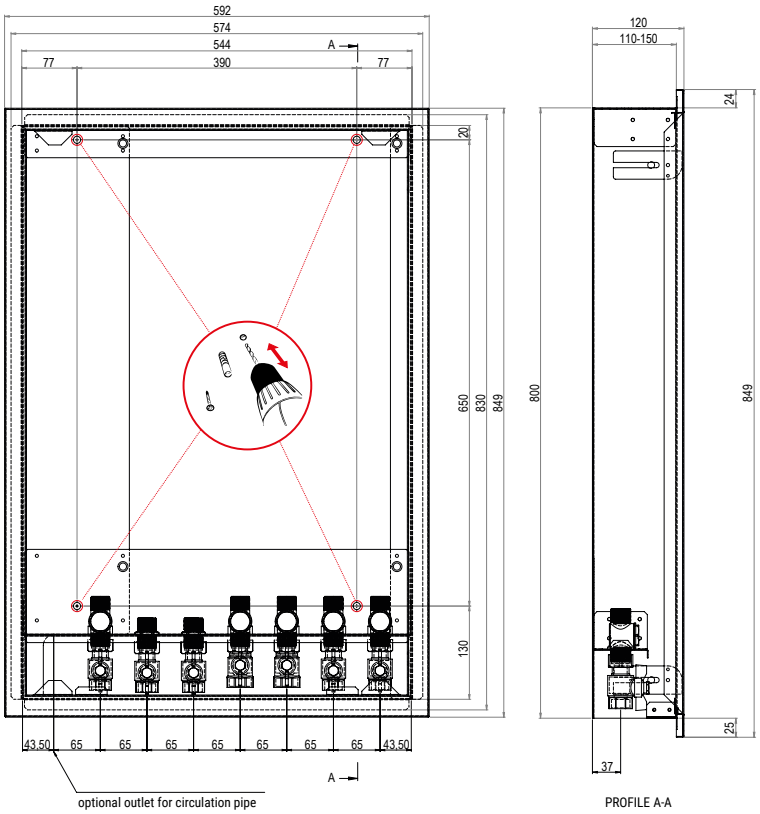
Module S1 - strainer insert	Module W - water hammer damper	Module Z - circulation
		
Item no. 1000100	**Item no. 1000122**	**Item no. 1000107**
Sieve element (80 mbar pressure loss)	The water damper prevents water hammer and thus damage to components within the station. For example this is recommended for single-lever mixers or magnetic valves in drinking water installations.	Z15 drinking water circulation pump with backflow preventer allows an in-dwelling circulation. Completely mounted with stainless steel pipe 18x1mm. ⚠

⚠ Note: When constructing a domestic hot water heating systems you must observe the valid standards, the established rules of technology and the local regulations! Especially when operating a circulation system, the hygiene regulations according to DVGW worksheet W551 musst be observed. DHW stations are small systems according to DVGW worksheet W551 if the pipe content in each drinking water pipe downstream of the station does not exceed 3 liters. Please check whether the use of a safety valve / expansion vessel in the circulation circuit is required for the specific system! The assembly of the safety valve and the required blow-out line must be realized by the customer.

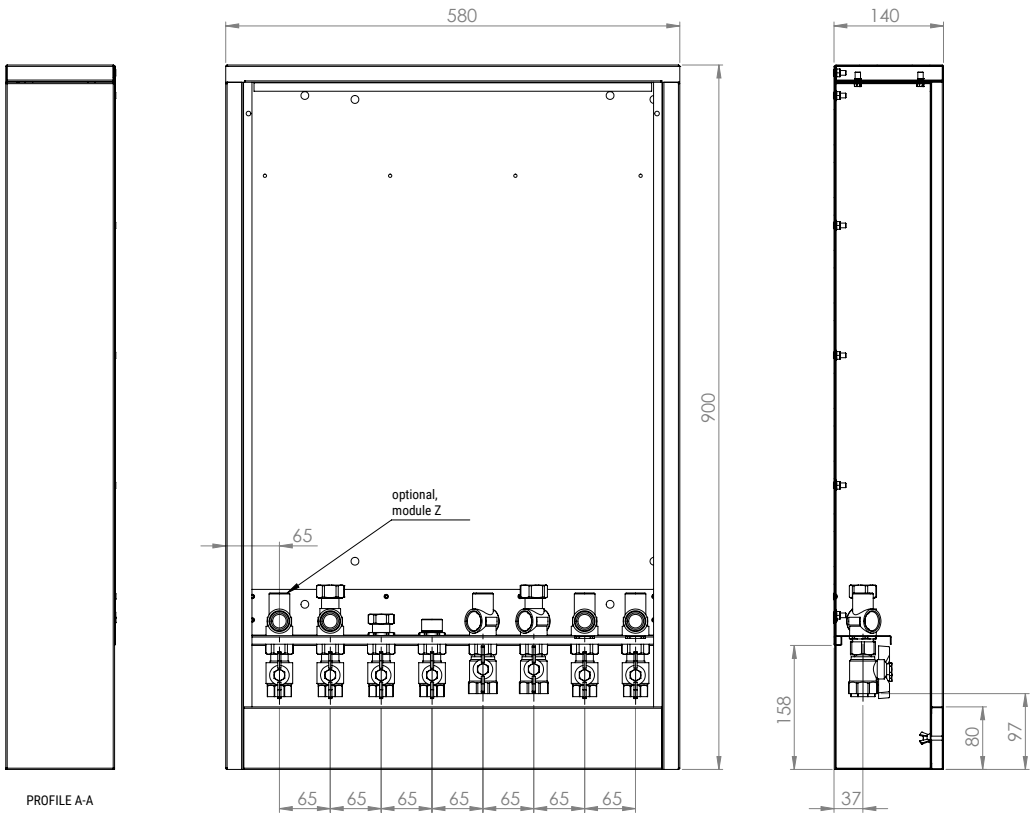
Module STV	Module D	Module D2 - Differential pressure regulator
		
Item no. 1000116	**Item no. 1000105**	**Item no. 1000117**
A static volume flow controller installed in the primary return. (station outlet) - with temperature measuring boss DN 20, adjustment range up to 4860l/h, 5.10 Kvs	An externally adjustable dynamic volume flow controller combined with a differential pressure regulator, installed in primary return. (station outlet) - with temperature measuring boss - DN 15, adjustment range up to 1330l/h, 2.7 Kvs	Differential pressure regulator auto combi to maintain the differential pressure under strong load changes. Stepless adjustable from 50 to 350 mbar, complete with connecting capillary tube 3 mm.

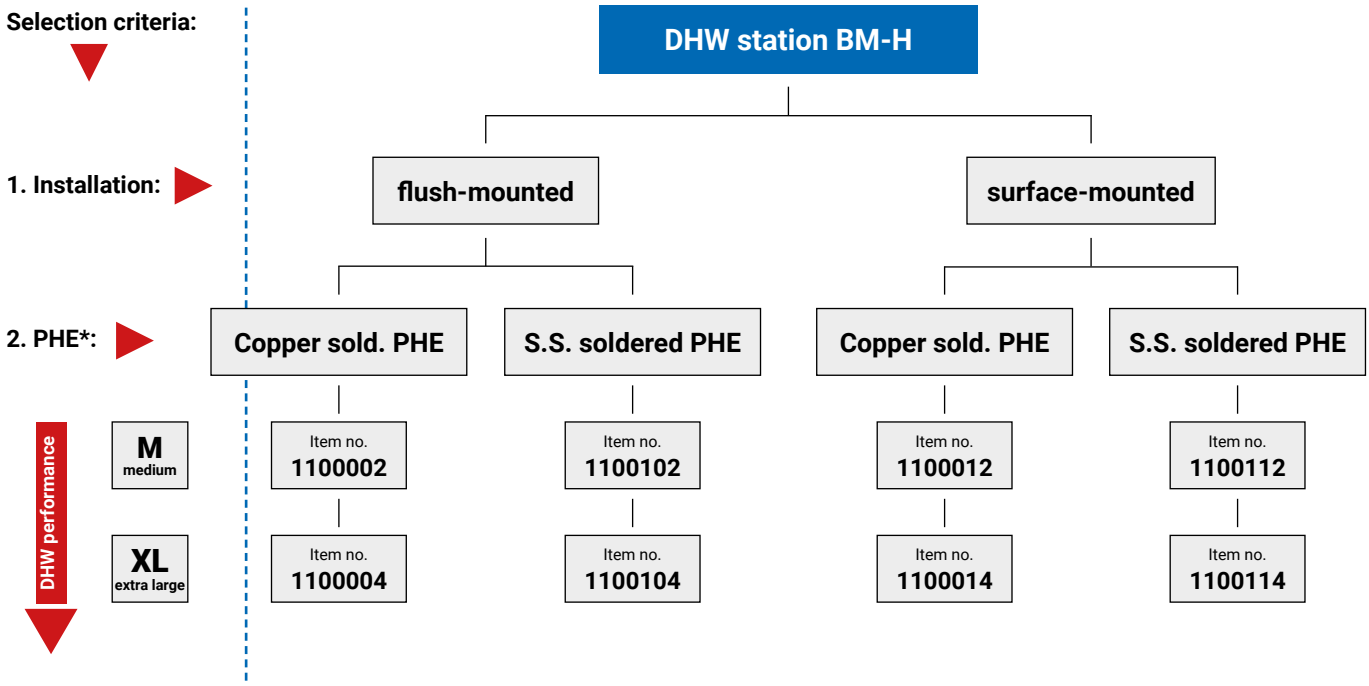
Module VOR	Module ZV - zone valve	Module ISO H
		
Item no. 1000121	**Item no. 1000120**	**Item no. 1000151**
DHW priority circuit mounted in secondary radiator circuit	Zone valve ½" with the possibility to assembly an actuator with M30x1.5 mm, mounted in the secondary heating circuit.	Insulation cover for BM-H

Dimensions flush-mounted



Dimensions surface-mounted

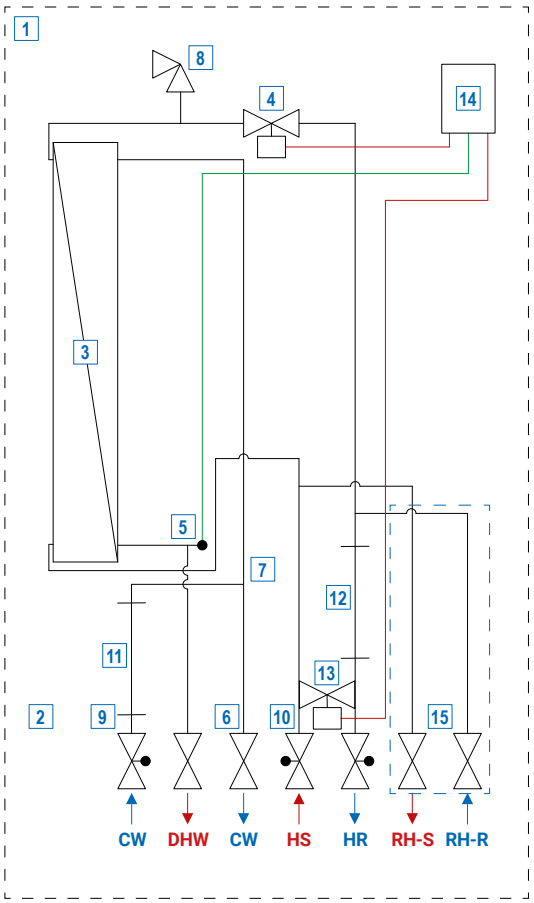




Example breakdown of the item no. PHE*: plate heat exchanger

Example:	DHW station type				Soldering material PHE	Installation	DHW performance
Item no.	1	1	0	0	0	0	4
					CU	FLUSH	XL

Schematic BM-H



1	Built-in cabinet
2	Connection rail with ball valves
3	Plate heat exchanger
4	**step a valve** stepper motor valve (drinking water)
5	Temperature and flow sensor based on vortex principle
6	Cold water outlet
7	Cold water maximum limiter (optional)
8	Venting and draining
9	Strainer insert CW (optional)
10	Strainer insert HS (optional)
11	Fitting cold water meter ¾" - 110 mm
12	Fitting hot water meter ¾" - 110 mm
13	Temperature standby valve (Bypass) with actuator
14	Controller
15	Floor heating or radiator heating

DHW station BM-HF with step a valve technology

and microprocessor regulated controller and an EnEV-compliant weather-compensated heating circuit controller

- DHW heating regulated by stepping motor valve using the flow principle
- incl. priority circuit for drinking water
- temperature standby valve with integrated actuator
- cold water pipes insulated against heat input
- regulated heating circuit, outdoor weather-compensated, EnEV-compliant
- possibility to use a central outdoor sensor solution via CAN bus
- unregulated heating circuit (option)
- stainless steel piping 18x1 mm
- flat design in 130 mm

Analysis Drinking water stations/ DHW stations / Small systems
see pages 76-84

Drinking water heating using the flow principle:

The DHW is heated up in the flow principle only during demand via a stainless steel plate heat exchanger. A temperature and flow sensor based on the vortex principle determines the flow rate and the hot water temperature. The controller regulates the necessary heating energy for the plate exchanger via a **step a valve** stepper motor valve. The plate exchanger is not kept warm. This avoids unnecessary circulation loss and effectively prevents increased legionella formation. The second **step a valve** stepper motor valve installed in the secondary outlet can be operated via the controller as an EnEV-compliant outdoor weather-compensated heating circuit control, fixed value control (setpoint) and as a domestic hot water priority circuit.

Controller	Customer menu (simple)	Mechanic menu (expert)
Display	Time & date	Measured values or hydraulic diagram
Settings	• time & date • summer time • nocturnal fall time for standby	• program selection: heating circuit unregulated (setpoint) • program selection: heating circuit weather-compensated (OTS) • hot water temperature • standby temperature of the station • commissioning wizard • circulation mode (option) • priority heating circuit (option)

Specifications

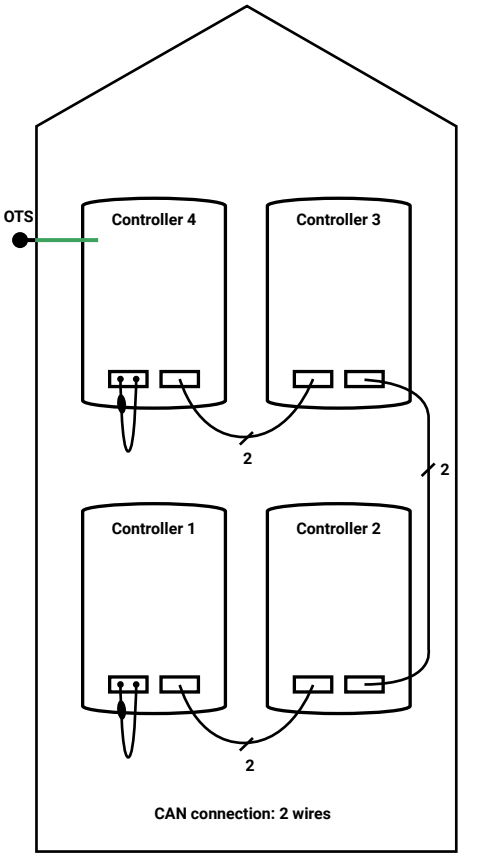
	Heating primary	Heating secondary	
	Buffer tank	Floor heating	Drinking water
Pressure stage:	PN 6	PN 6	PN 10
Max. temperature:	90 °C	60 °C	75 °C
Connection dimensions:	DN 25	DN 20	DN 20
Thread:	1" female threads	¾" female threads	¾" female threads
Dimensions (WxHxD):	**flush:** 710 x 800 x 130-180 mm / **surface:** 730 x 900 x 140 mm		
Recess dim. (WxHxD):	**flush:** min. 730 x 805 x 132 mm		

Performance example heat exchanger

DHW performance:	M (36 kW)		XL (51 kW)	
Supply / Return temperature primary:	60 / 21 °C	60 / 17 °C	60 / 21 °C	60 / 17 °C
CW inlet / DHW outlet temperature:	10 / 50 °C	10 / 45 °C	10 / 50 °C	10 / 45 °C
Max. DHW tapping volume:	13 l/min	15 l/min	18 l/min	21 l/min
DHW pressure loss:	155 mbar	200 mbar	210 mbar	280 mbar
Heating pressure loss *:	345 mbar	265 mbar	345 mbar	310 mbar
Flow primary:	840 l/h	720 l/h	1020 l/h	960 l/h

*** without heat meter** (at 2 bar CW pressure and 350 mbar heating)

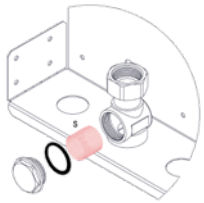
CAN bus connection for weather-compensated heating circuit



One outdoor temperature sensor (OTS) connection for multiple weather-compensated controllers.

Accessories

Module S1 - strainer insert



Item no. 1000100

Sieve element (80 mbar pressure loss)

Module W - water hammer damper

Item no. 1000122

The water damper prevents water hammer and thus damage to components within the station. For example this is recommended for single-lever mixers or magnetic valves in drinking water installations.

Module Z - circulation

Item no. 1000107

Z15 drinking water circulation pump with backflow preventer allows an in-dwelling circulation. Completely mounted with stainless steel pipe 18x1mm.

Note: When constructing a domestic hot water heating systems you must observe the valid standards, the established rules of technology and the local regulations! Especially when operating a circulation system, the hygiene regulations according to DVGW worksheet W551 musst be observed. DHW stations are small systems according to DVGW worksheet W551 if the pipe content in each drinking water pipe downstream of the station does not exceed 3 liters. Please check whether the use of a safety valve / expansion vessel in the circulation circuit is required for the specific system! The assembly of the safety valve and the required blow-out line must be realized by the customer.

Module STV

Item no. 1000116

A static volume flow controller installed in the primary return. (station outlet) - with temperature measuring boss DN 20, adjustment range up to 4860l/h, 5.10 Kvs

Module D

Item no. 1000105

An externally adjustable dynamic volume flow controller combined with a differential pressure regulator, installed in primary return. (station outlet) - with temperature measuring boss - DN 15, adjustment range up to 1330l/h, 2.7 Kvs

Module ZV - zone valve

Item no. 1000120

Zone valve ½" with the possibility to assembly an actuator with M30x1.5 mm, mounted in the secondary heating circuit.

Module HF

Item no. 1000123

Additional supply and return connection piping, each with a ¾" shut-off ball valve and strainer housing. The stainless steel piping is connected to the high-temperature outlets located in the station and the ball valves are integrated into the manifold.

Module ISO HF/F

Item no. 1000152

Insulation cover for BM-HF/F

Module AWH-BD

Item no. 1000118

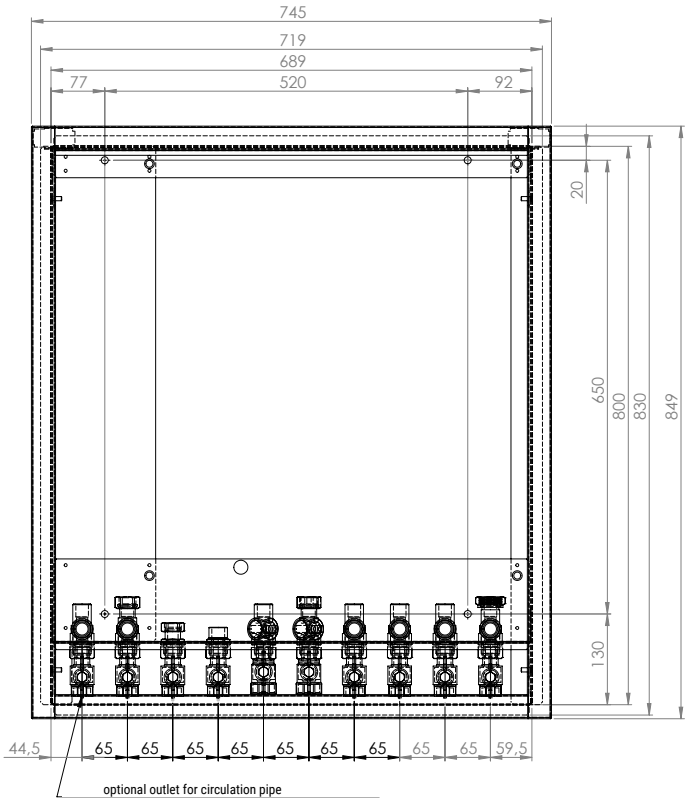
CAN bus socket for easy wiring of the CAN bus cable between the stations, for use with an external outdoor temperature sensor, incl. 1x end resistor

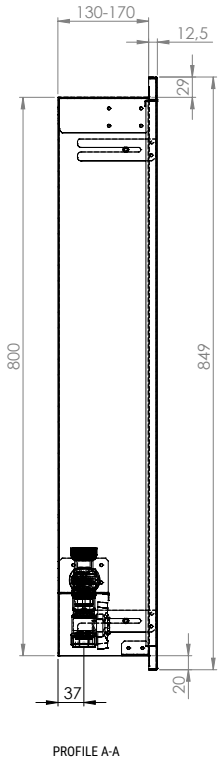
Module AWH-AF

Item no. 1000115

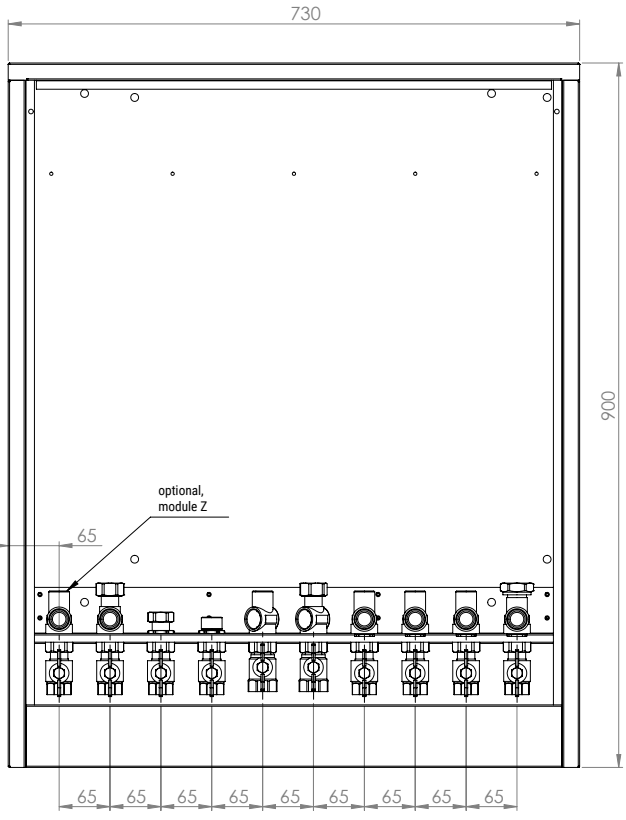
External outdoor temperature sensor for BM-HF, BM-F with weather-compensated heating circuit

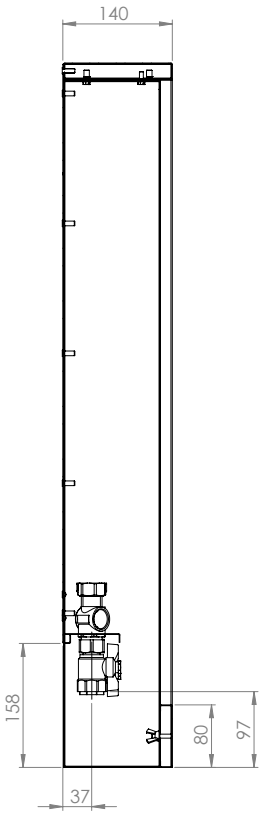
Dimensions flush-mounted





Dimensions surface-mounted



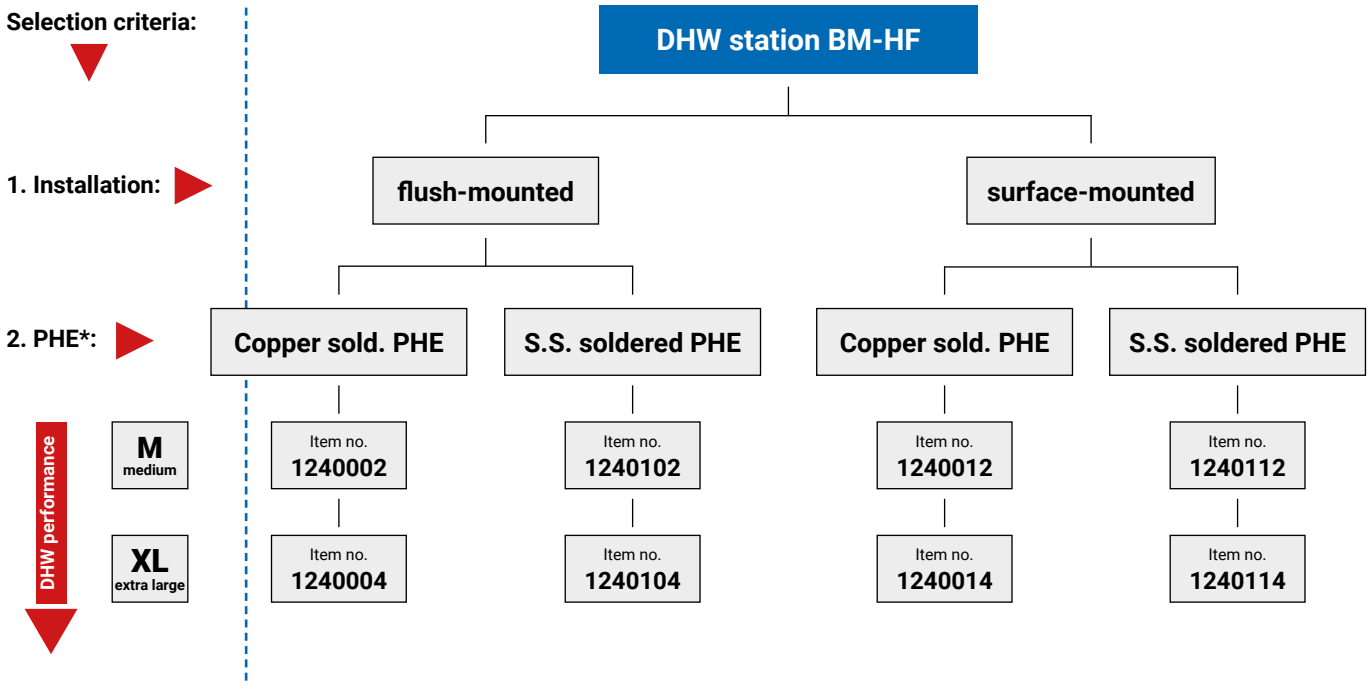


Selection criteria:

1. Installation:

2. PHE*:

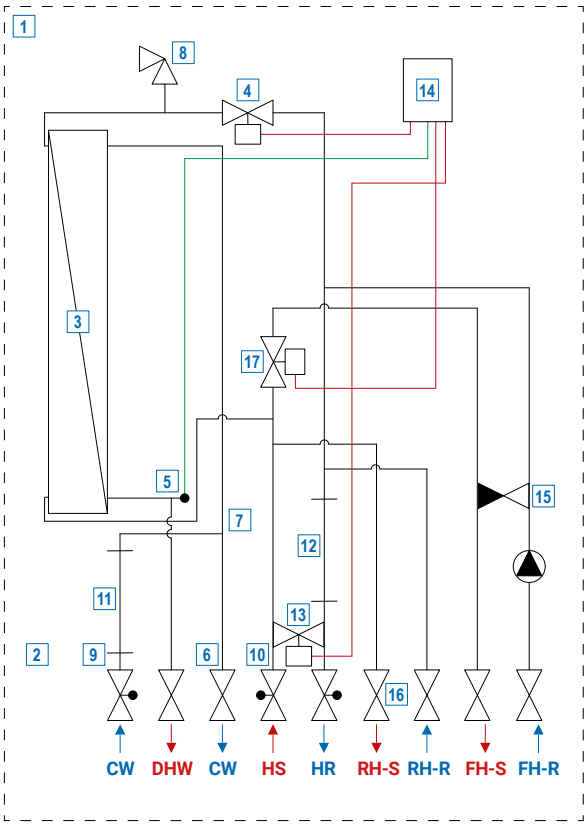
DHW performance



Example breakdown of the item no. PHE*: plate heat exchanger

Example:	DHW station type				Soldering material PHE	Installation	DHW performance
Item no.	1	2	4	0	0	0	4
					CU	FLUSH	XL

Schematic BM-HF



1	Built-in cabinet
2	Connection rail with ball valves
3	Plate heat exchanger
4	**step a valve** stepper motor valve (drinking water)
5	Temperature and flow sensor based on vortex principle
6	Cold water outlet
7	Cold water maximum limiter (optional)
8	Venting and draining
9	Strainer insert CW (optional)
10	Strainer insert HS (optional)
11	Fitting hot water meter ¾" - 110 mm
12	Fitting heat meter ¾" - 110 mm
13	Temperature standby valve (Bypass) with actuator
14	Controller
15	Floor heating control group (low-temperature NT)
16	Radiator exit (high-temperatur HT)
17	**step a valve** stepper motor valve (heating)

DHW station BM-F with step a valve technology

and microprocessor regulated controller and an EnEV-compliant weather-compensated heating circuit controller

- DHW heating regulated by stepping motor valve using the flow principle
- incl. priority circuit for drinking water
- temperature standby valve with integrated actuator
- cold water pipes insulated against heat input
- regulated heating circuit, outdoor weather-compensated, EnEV-compliant
- possibility to use a central outdoor sensor solution via CAN bus
- unregulated heating circuit (option)
- stainless steel piping 18x1 mm
- flat design in 130 mm

Analysis Drinking water stations/ DHW stations / Small systems
see pages 76-84

Drinking water heating using the flow principle:

The DHW is heated up in the flow principle only during demand via a stainless steel plate heat exchanger. A temperature and flow sensor based on the vortex principle determines the flow rate and the hot water temperature. The controller regulates the necessary heating energy for the plate exchanger via a **step a valve** stepper motor valve. The plate exchanger is not kept warm. This avoids unnecessary circulation loss and effectively prevents increased legionella formation. The second **step a valve** stepper motor valve installed in the secondary outlet can be operated via the controller as an EnEV-compliant outdoor weather-compensated heating circuit control, fixed value control (setpoint) and as a domestic hot water priority circuit.

Controller	Customer menu (simple)	Mechanic menu (expert)
Display	Time & date	Measured values or hydraulic diagram
Settings	• time & date • summer time • nocturnal fall time for standby	• program selection: heating circuit regulated (setpoint) • program selection: heating circuit weather-compensated (OTS) • hot water temperature • standby temperature of the station • commissioning wizard • circulation mode (option) • priority heating circuit (option)

Specifications

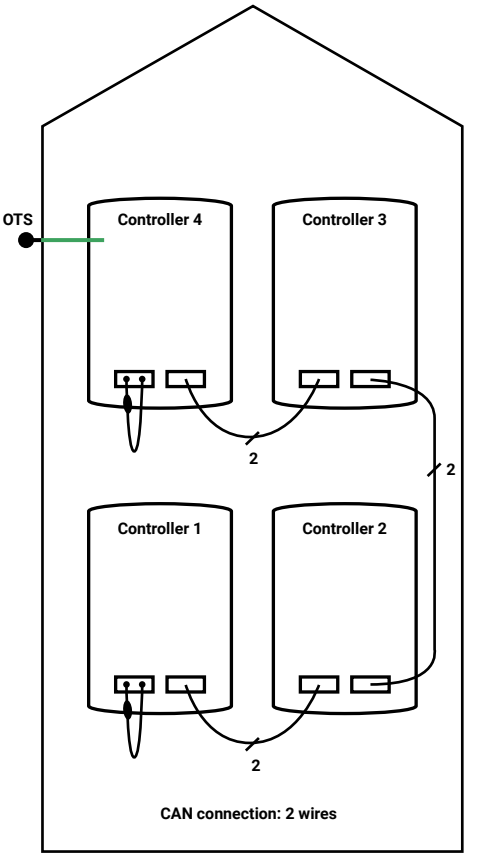
	Heating primary	Heating secondary	
	Buffer tank	Floor heating	Drinking water
Pressure stage:	PN 6	PN 6	PN 10
Max. temperature:	90 °C	60 °C	75 °C
Connection dimensions:	DN 25	DN 20	DN 20
Thread:	1" female threads	¾" female threads	¾" female threads
Dimensions (WxHxD):	**F:** 710 x 1275-1375 x 130-180 mm / **S:** 730 x 1400 x 140 mm		
Recess dim. (WxHxD):	**F:** min. 730 x 1310-1455 x 132 mm		

Performance example heat exchanger

DHW performance:	M (36 kW)		XL (51 kW)	
Supply / Return temperature primary:	60 / 21 °C	60 / 17 °C	60 / 21 °C	60 / 17 °C
CW inlet / DHW outlet temperature:	10 / 50 °C	10 / 45 °C	10 / 50 °C	10 / 45 °C
Max. DHW tapping volume:	13 l/min	15 l/min	18 l/min	21 l/min
DHW pressure loss:	155 mbar	200 mbar	210 mbar	280 mbar
Heating pressure loss *:	345 mbar	265 mbar	345 mbar	310 mbar
Flow primary:	840 l/h	720 l/h	1020 l/h	960 l/h

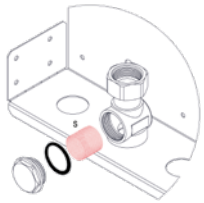
*** without heat meter** (at 2 bar CW pressure and 350 mbar heating)

CAN bus connection for weather-compensated heating circuit

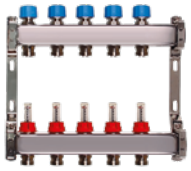


One outdoor temperature sensor (OTS) connection for multiple weather-compensated controllers.

Accessories

Module S1 - strainer insert	Module W - water hammer damper	Module Z - circulation
		
Item no. 1000100	**Item no. 1000122**	**Item no. 1000107**
Sieve element (80 mbar pressure loss)	The water damper prevents water hammer and thus damage to components within the station. For example this is recommended for single-lever mixers or magnetic valves in drinking water installations.	Z15 drinking water circulation pump with backflow preventer allows an in-dwelling circulation. Completely mounted with stainless steel pipe 18x1mm.

Note: When constructing a domestic hot water heating systems you must observe the valid standards, the established rules of technology and the local regulations! Especially when operating a circulation system, the hygiene regulations according to DVGW worksheet W551 musst be observed. DHW stations are small systems according to DVGW worksheet W551 if the pipe content in each drinking water pipe downstream of the station does not exceed 3 liters. Please check whether the use of a safety valve / expansion vessel in the circulation circuit is required for the specific system! The assembly of the safety valve and the required blow-out line must be realized by the customer.

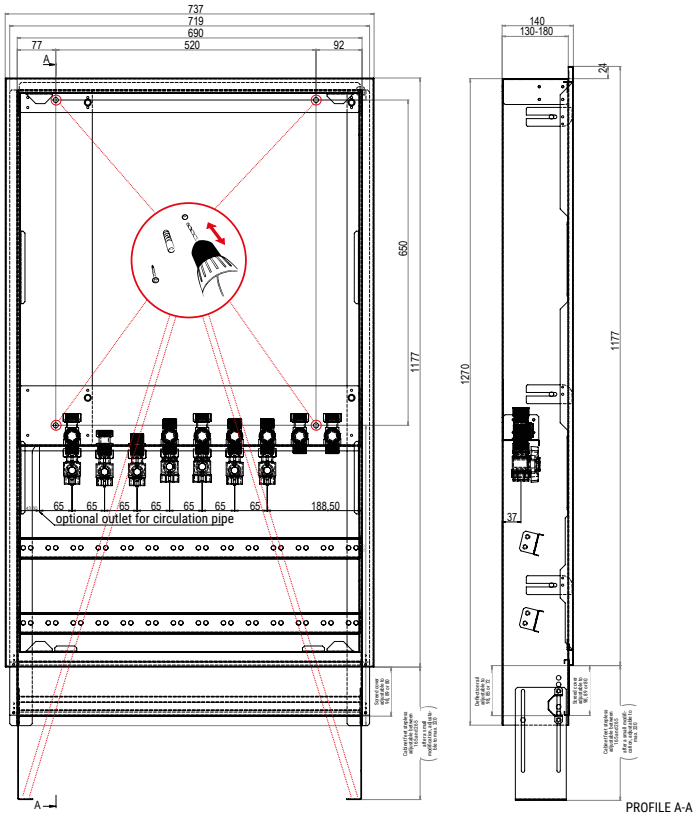
Module STV	Floor heating manifold VA-FBif for 2-12 circuits	Electrothermal actuator eco-STA-L 230V
		
Item no. 1000116	**Item no. 3702 - 3712**	**Item no. 1003L**
A static volume flow controller installed in the primary return. (station outlet) - with temperature measuring boss DN 20, adjustment range up to 4860l/h, 5.10 Kvs	The set consists of a supply and a return bar. Each manifold bar is additionally delivered with two ½" female threads for vent valves and fill/drain valves. The manifold is pre-assembled in soundproofed holders and packed in a cardboard box with identification labels and installation/setting instructions.	For controlling the individual floor heating circuits on the VA-FBif manifold.

Note: Let us finish wiring the station for you! Your big advantage: No self-mounting on site necessary, no missing components, large selection of accessories. The station is delivered complete in a package with identification of the particular building project, floor and apartment. Special designs are possible upon customer request!

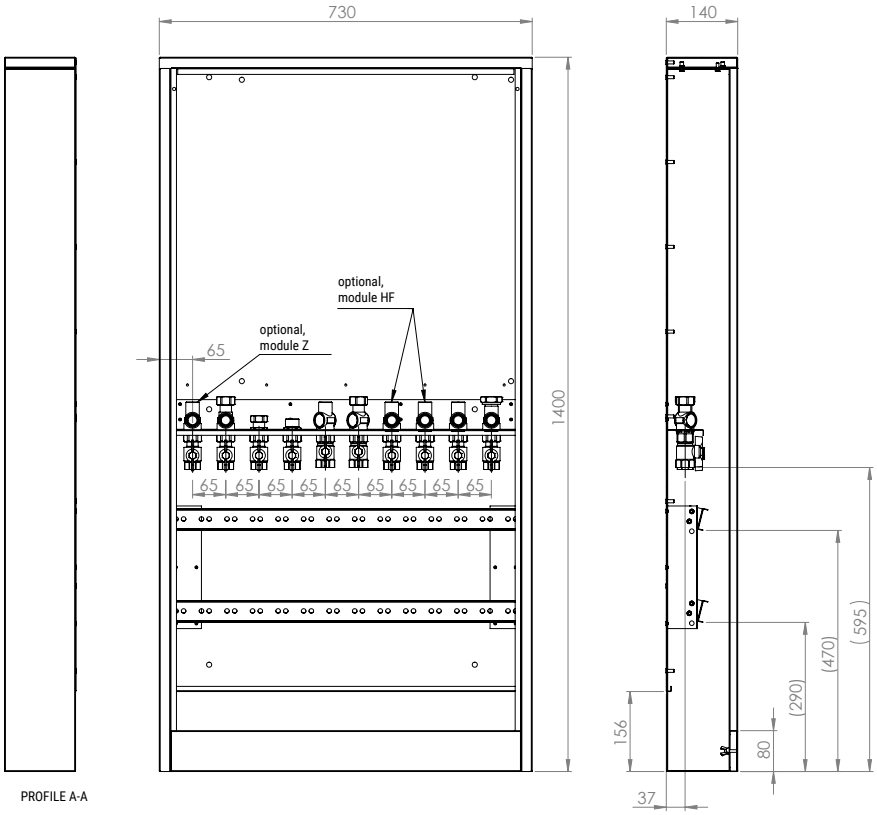
Module ZV - zone valve	Module HF	Module ISO HF/F
		
Item no. 1000120	**Item no. 1000123**	**Item no. 1000152**
Zone valve ½" with the possibility to assembly an actuator with M30x1.5 mm, mounted in the secondary heating circuit.	Additional supply and return connection piping, each with a ¾" shut-off ball valve and strainer housing. The stainless steel piping is connected to the high-temperature outlets located in the station and the ball valves are integrated into the manifold.	Insulation cover for BM-HF/F

Module AWH-BD	Module AWH-AF	Module D	Module NE
			
Item no. 1000118	**Item no. 1000115**	**Item no. 1000105**	**Item no. 1000160**
CAN bus socket for easy wiring of the CAN bus cable between the stations, for use with an external outdoor temperature sensor, incl. 1x end resistor	External outdoor temperature sensor for BM-HF, BM-F with weather-compensated heating circuit	An externally adjustable dynamic volume flow controller combined with a differential pressure regulator, installed in primary return. (station outlet) - with temperature measuring boss - DN 15, adjustment range up to 1330l/h, 2.7 Kvs	DHW heating using the flow principle with electrical reheating

Dimensions flush-mounted



Dimensions surface-mounted



Selection criteria:

1. Installation:

2. PHE*:

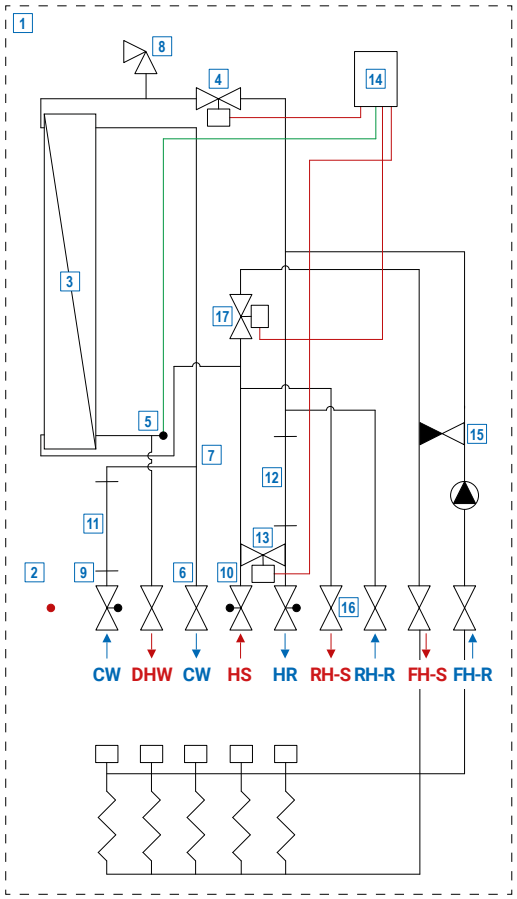
DHW station BM-F

1. Installation	2. PHE*	DHW performance	Item no.
flush-mounted	Copper sold. PHE	M medium	1200002
		XL extra large	1200004
	S.S. soldered PHE	M medium	1200102
		XL extra large	1200104
surface-mounted	Copper sold. PHE	M medium	1200012
		XL extra large	1200014
	S.S. soldered PHE	M medium	1200112
		XL extra large	1200114

Example breakdown of the item no. PHE*: plate heat exchanger

Example:	DHW station type				Soldering material PHE	Installation	DHW performance
Item no.	1	2	0	0	0	0	4
					CU	FLUSH	XL

Schematic BM-F



1	Built-in cabinet
2	Connection rail with ball valves
3	Plate heat exchanger
4	**step a valve** stepper motor valve (drinking water)
5	Temperature and flow sensor based on vortex principle
6	Cold water outlet
7	Cold water maximum limiter (optional)
8	Venting and draining
9	Strainer insert CW (optional)
10	Strainer insert HS (optional)
11	Fitting cold water meter ¾" - 110 mm
12	Fitting heat meter ¾" - 110 mm
13	Temperature standby valve (Bypass) with actuator
14	Controller
15	Floor heating control group (low-temperature NT)
16	Radiator exit (high-temperature HT) (optional)
17	**step a valve** stepper motor valve (heating)

Module NE - BM-F / BM-WP 4 with step a valve technology and electrical reheating

BM-F

BM-WP 4

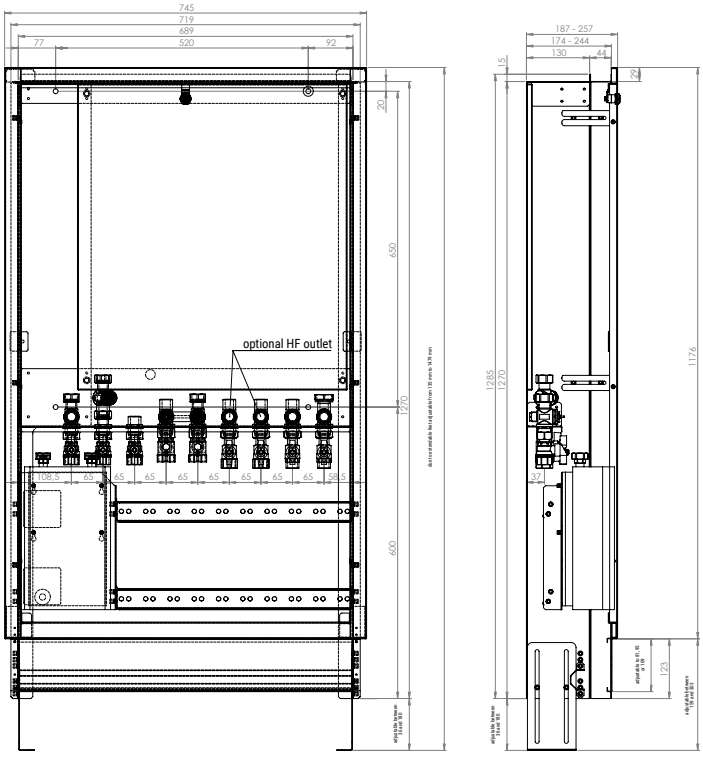
- decentralized drinking water heating using the flow principle with electrical reheating
- electronically controlled instantaneous water heater for reheating accurate to the degree, temperature setting 20 - 60 °C
- possibility of very low heating flow temperatures of 35 - 45 °C, therefore the heat pump has a good COP value
- installation depth: 175 mm
  only possible in flush-mounted cabinets

Drinking water heating using the flow principle and electrical reheating:

The DHW is heated up in the flow principle only during demand via a stainless steel plate heat exchanger as well as via the integrated electric instantaneous water heater.

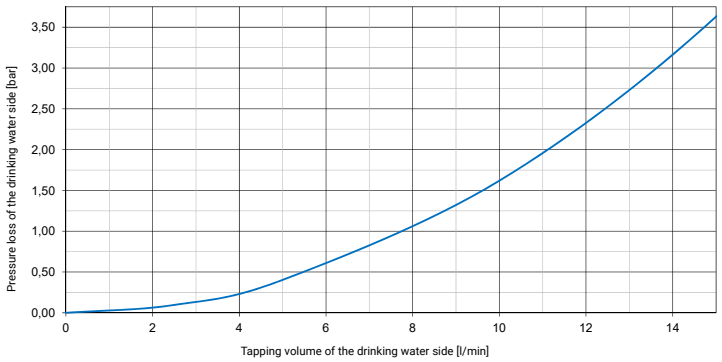
A temperature and flow sensor based on the vortex principle determines the flow rate and the hot water temperature. The controller regulates the necessary heating energy for the plate exchanger via a **step a valve** stepper motor valve for the first temperature rise of the drinking water. The electric instantaneous water heater can adjust the second temperature rise (the reheating) adequately to the desired tap temperature (40 - 60 °C) via the integrated electronic control.

After finishing the tapping process, the **step a valve** stepper motor valve is closed immediately and the instantaneous water heater stops reheating.



Specifications			
	Pre-heating	Electr. reheating	Mixing temperatur
Supply primary:	38 °C	-	-
Heating volume flow	831 l/h	-	-
Power:	17,4 kW	12,6 kW	-
DHW:	10,0 l/min	10,0 l/min	15,3 l/min
DHW temperature:	35 °C	53 °C	38 °C
DW temperature:	10 °C	35 °C	-
Total power:	-	30 kW	30 kW
Pressure stage: heating/sanitary:	PN 6 / PN 10		
Max. heating temperature:	90 °C		
Electr. connection for electr. IWM:	3 ~/ PE 400 V AC 20 A, 13,5 kW		
Cable profile minimum :	2,5 mm² at 13,5 kW		
Item no.	1000160		

Pressure loss on secondary side, BM- XL with module NE, (drinking water)



DHW station BM-H + Regulation group TT-R2

Example configuration				
	Type		**Quantity**	**Item no.**
1	BM-H	DHW station	1 x	see page 60 ff.
2	TT-R2 + VA-FBif	Regulation group, passive	1 x	see page 30/31

BM-H
see page 60 ff.

+

Regulation group TT-R2 + VA-FBif
see page 30/31

= BM-F
in split design

DHW station BM-H

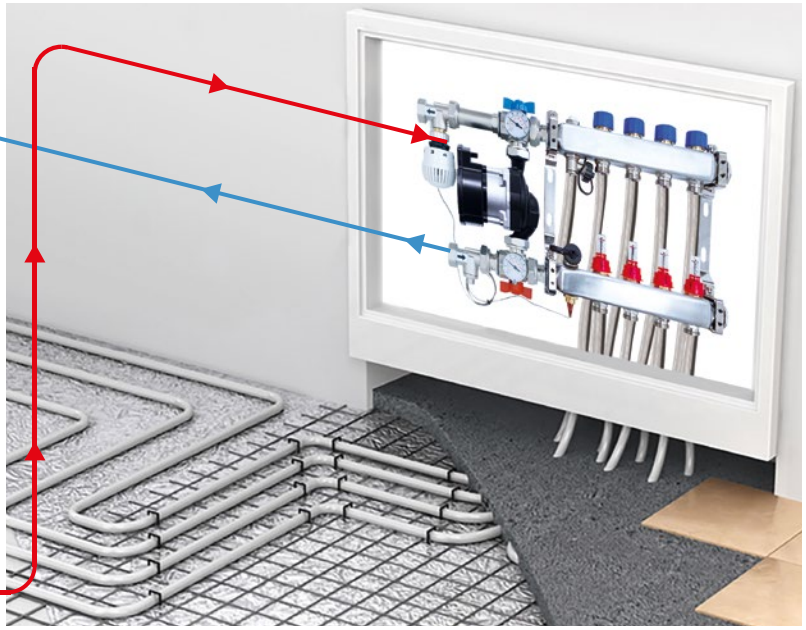
front-wall installation:

Can be installed close to the taps. This means less time waiting for hot water!

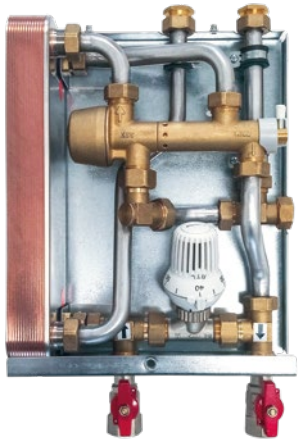
Regulation group TT-R2 + VA-FBif

e.g. installed in the hallway:

All rooms can be connected more effectively from a central point.



Mini fresh water station piccolo



- decentralized drinking water heating via a stainless steel-plate heat exchanger
- proportional flow controller PM without external energy
- atainless steel piping
- temperature standby valve

Application:

The piccolo mini fresh water station is used as a DHW station for multi-storey buildings and single-family houses.

Water heating using the flow principle:

The DHW is heated up in the flow principle only during demand via a stainless steel plate heat exchanger. In heating systems equipped with a buffer the heating water is pumped through the heat exchanger according to the pressure loss during the tapping process and with the help of a central, regulated circulation pump.

Control function:

The central control element is the proportional controller PM without external energy. It regulates the heating water volume flow that is required to heat up the drinking water. The adjustment lever on the proportional controller is used to set the DHW temperature. The temperature standby valve prevents stagnation in the supply line.

Specifications	
Type:	M / XL
Unit dimensions (WxHxD):	270 x 340 x 120 mm
Size with ball valves (WxHxD):	270 x 420 x 120 mm
Pressure stage:	Heating: PN6 / drinking water: PN 10
Supply temperature heating water:	max. 90 °C
Setpoint temperature drinking water:	30 - 60 °C
Cold water pressure:	2.0 bar
Connection Dimensions:	Heating: DN 20, ¾" female threads / drinking water: DN15/20, ½", ¾" female threads

Performance example heat exchanger				
DHW performance:	**M (36 kW)**		**XL (51 kW)**	
Supply / Return temperature primary:	60 / 30 °C		60 / 30 °C	
CW inlet / DHW outlet temperature:	10 / 50 °C	10 / 45 °C	10 / 50 °C	10 / 45 °C
Max. DHW tapping volume:	13 l/min	15 l/min	16.5 l/min	18.5 l/min
Pressure loss primary *:	20.3 kPA		17.4 kPA	
Flow primary:	875 l/h		1303 l/h	

*** without heat meter** (at 2 bar CW pressure and 350 mbar heating)

Included items	
Ball valves for supply and return	**DN 20 female threads**
Reducing insert CW and WW	¾" male threads x ½" female threads
Assembly set	

Selection criteria::

1. Installation:

2. PHE*:

DHW performance

M medium

XL extra large

Mini fresh water station piccolo

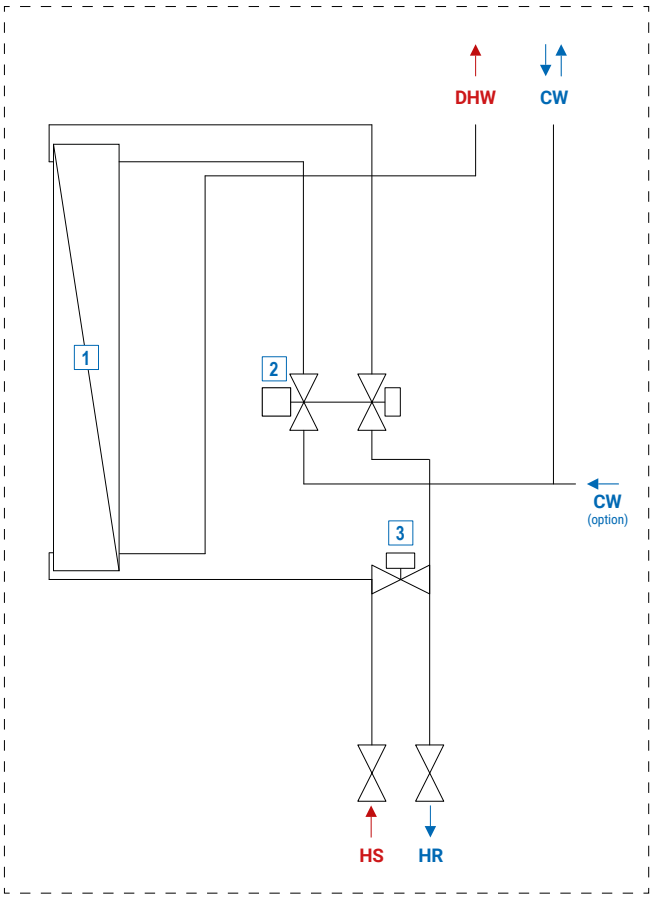
surface-mounted

Copper sold. PHE	S.S. soldered PHE
Item no. 1300012	Item no. 1300112
Item no. 1300014	Item no. 1300114

Example breakdown of the item no. PHE*: plate heat exchanger

Example:	DHW station type				Soldering material PHE	Installation	DHW performance
Item no.	1	3	0	0	0	1	4
					CU	SURFACE	XL

Schematic piccolo



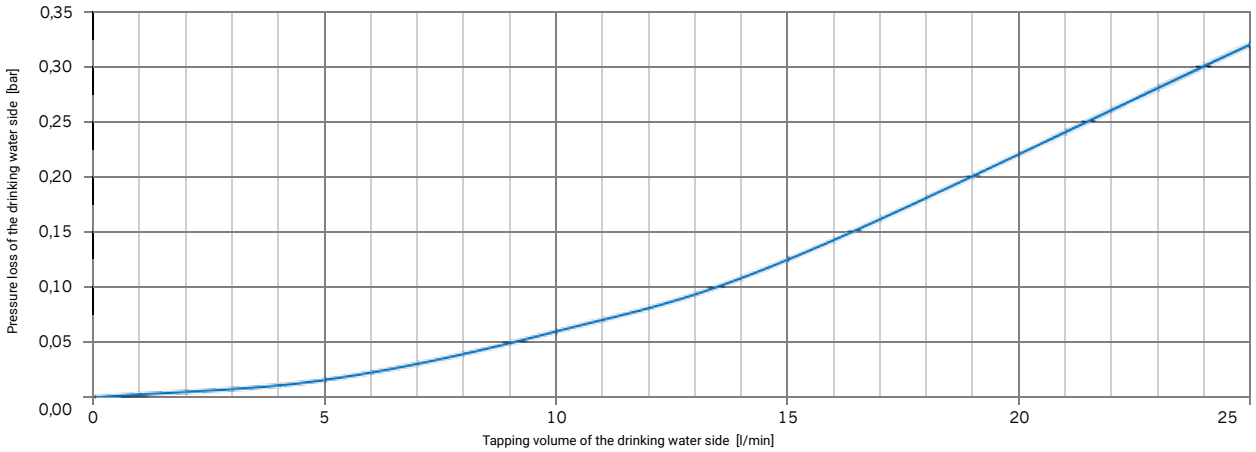
1 Plate heat exchanger

2 Proportional flow controller PM

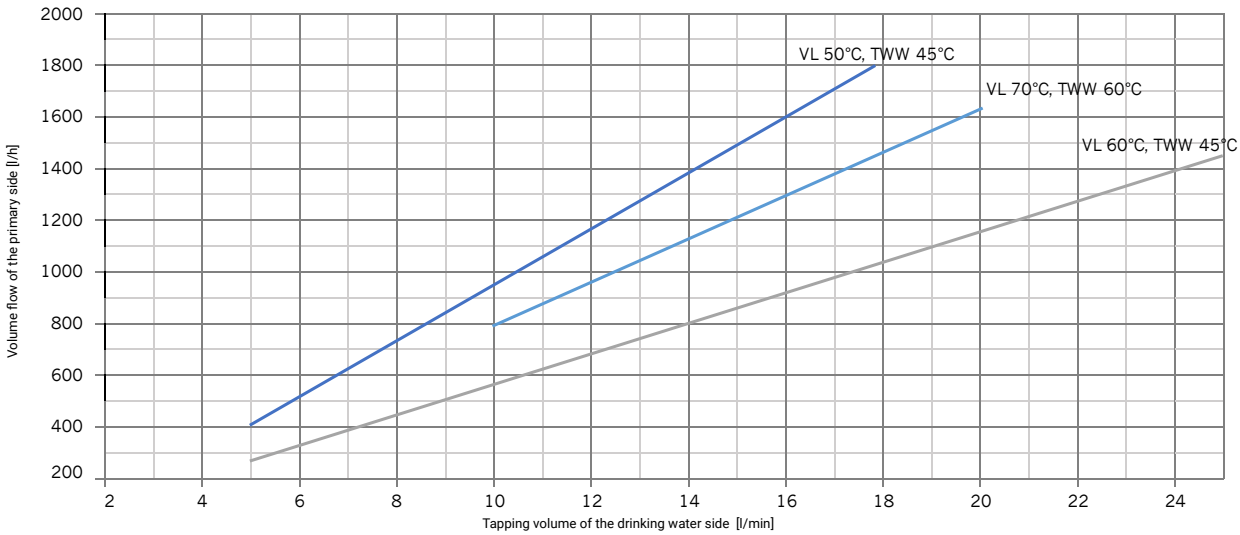
3 Temperature standby valve

Heating water volume flow for DHW heating eco 25

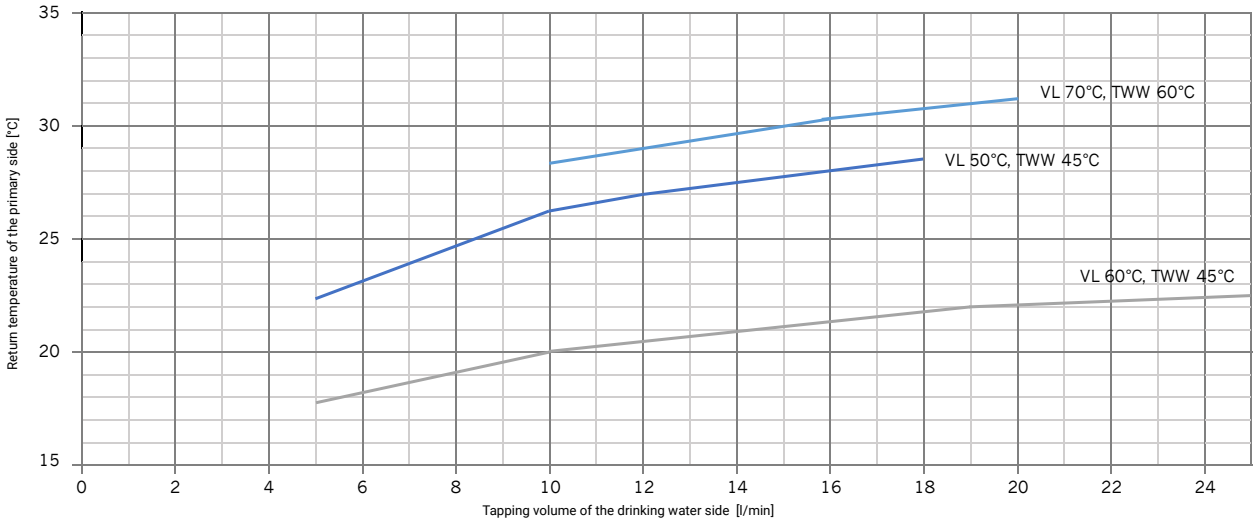
Pressure loss of the drinking water side eco 25 (secondary)



Volume flow at primary side at different supply temperatures for DHW heating

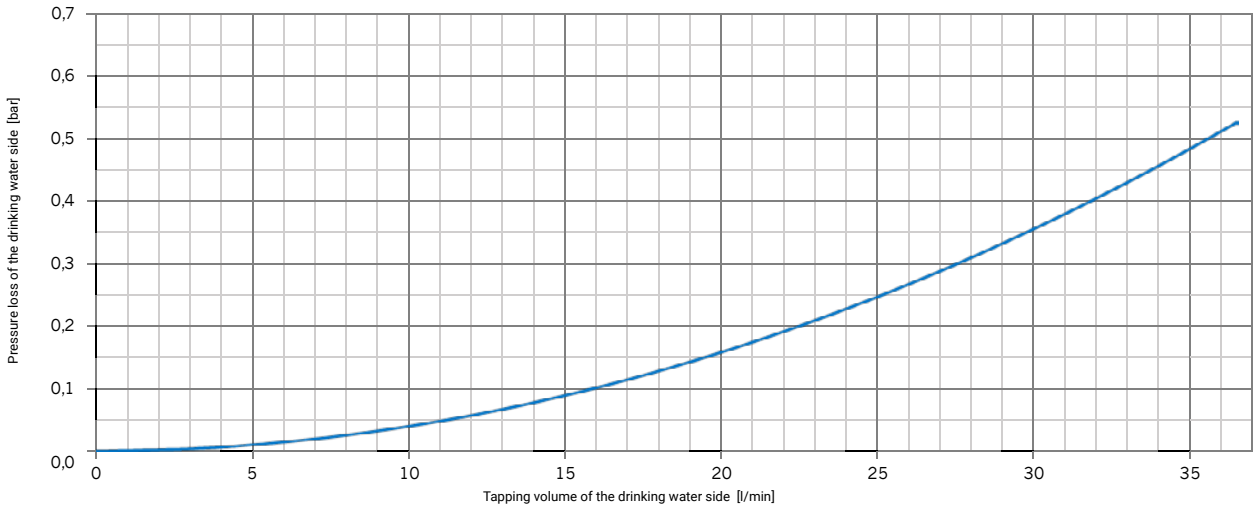


Return temperature at primary side at different supply temperatures for DHW heating (from 10 °C cold water)

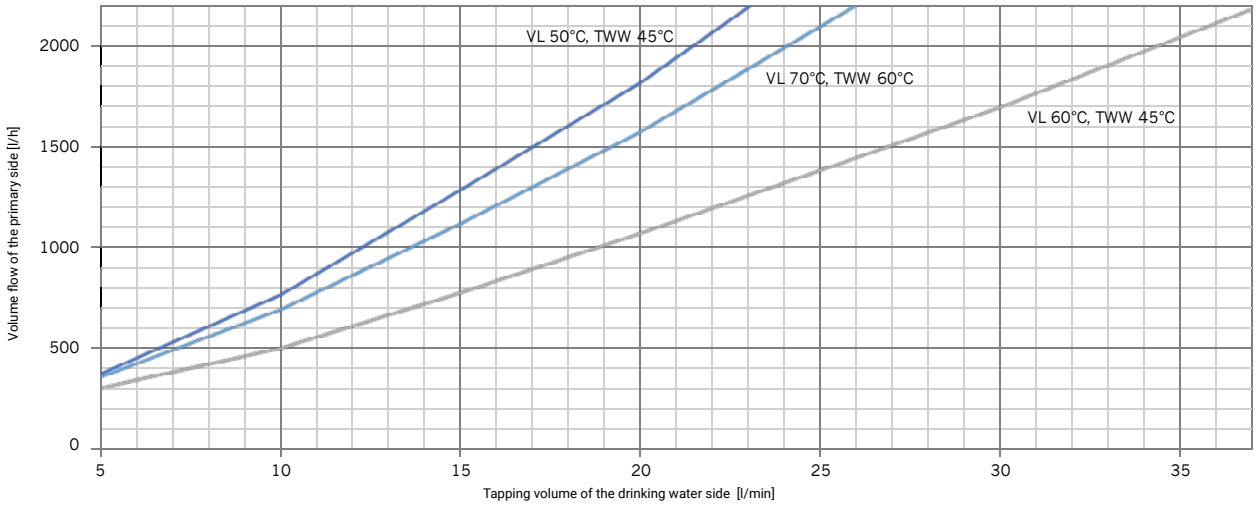


Heating water volume flow for DHW heating eco 40

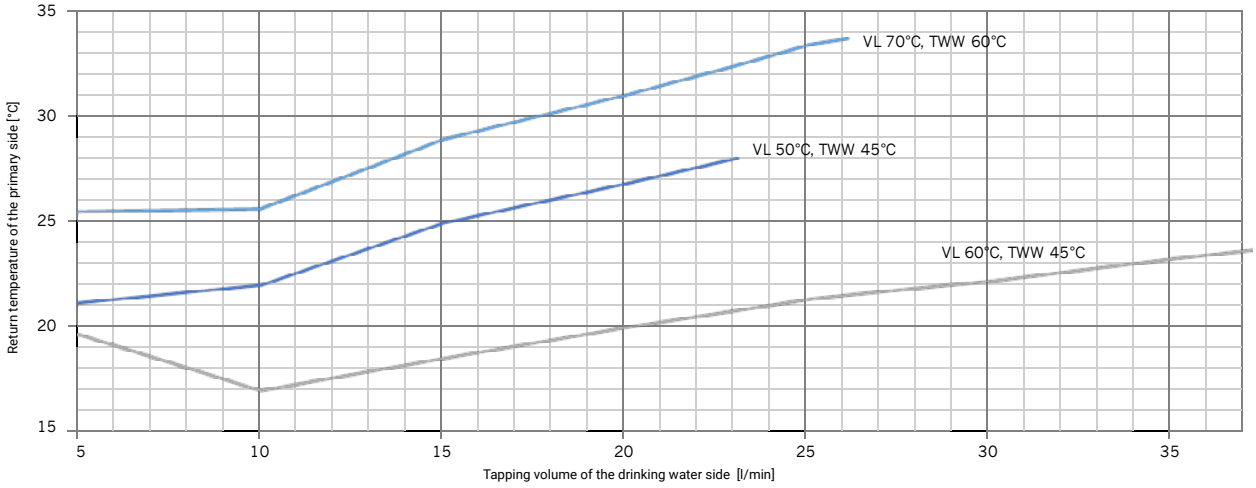
Pressure loss of the drinking water side eco 40 (secondary)



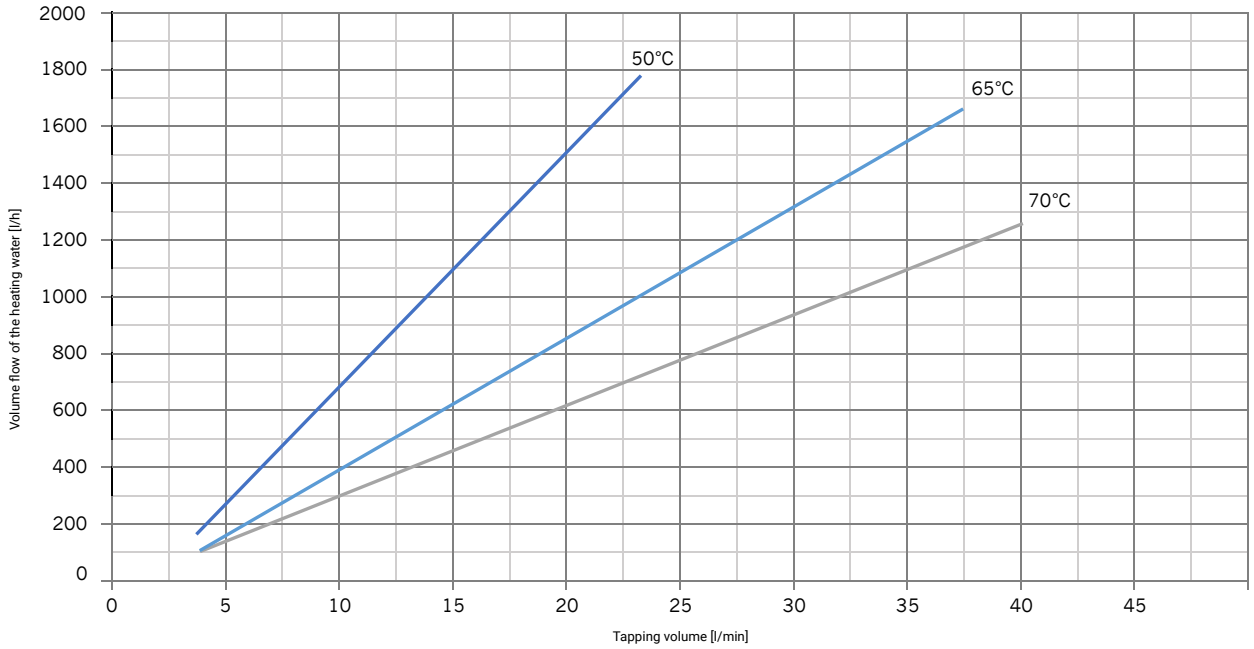
Volume flow primary side at different supply temperatures for DHW heating



Return temperature at primary side at different supply temperatures for DHW heating



Heating water volume flow for DHW heating FW-E 40 / EZ 40 / D 40



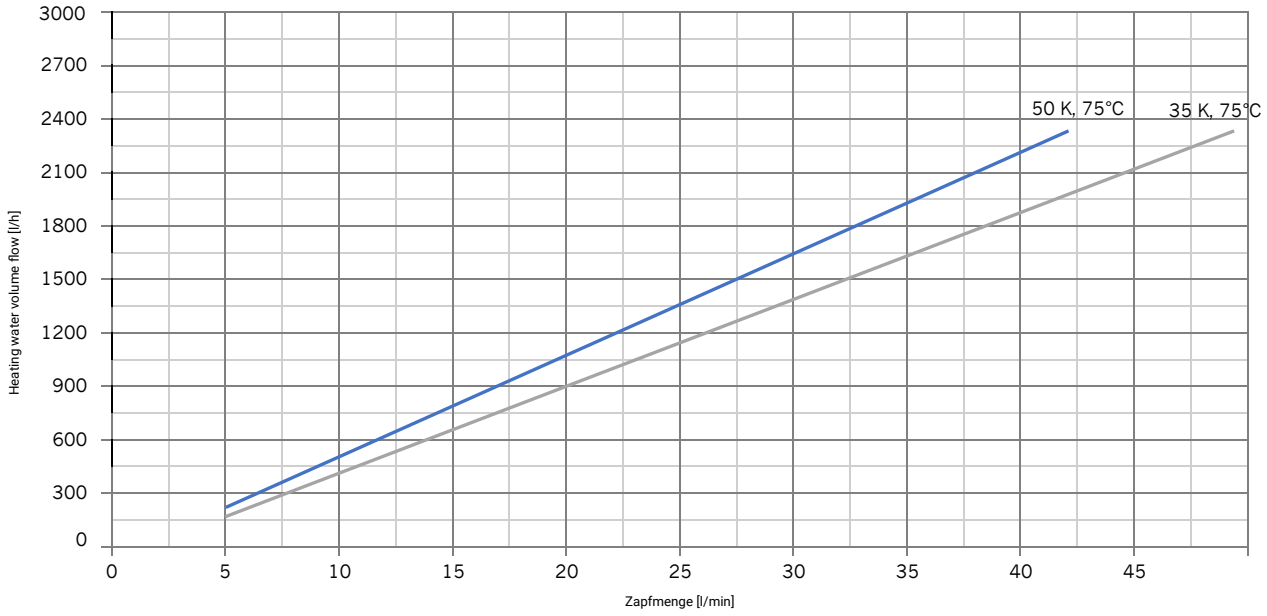
Required heating water volume flow for domestic hot water heating **by 35 K** (from 10 °C to 45 °C) depending on the primary supply temperature.

Supply temperature primary	50 °C
DHW tapping volume:	22 l/min
DHW heating:	35 K
Result:	**1665 l/h**

Supply temperature primary	65 °C
DHW tapping volume:	37.5 l/min
DHW heating:	35 K
Result:	**1665 l/h**

Supply temperature primary	80 °C
DHW tapping volume:	37.5 l/min
DHW heating:	35 K
Result:	**1177 l/h**

Heating water volume flow for DHW heating FW-E 60

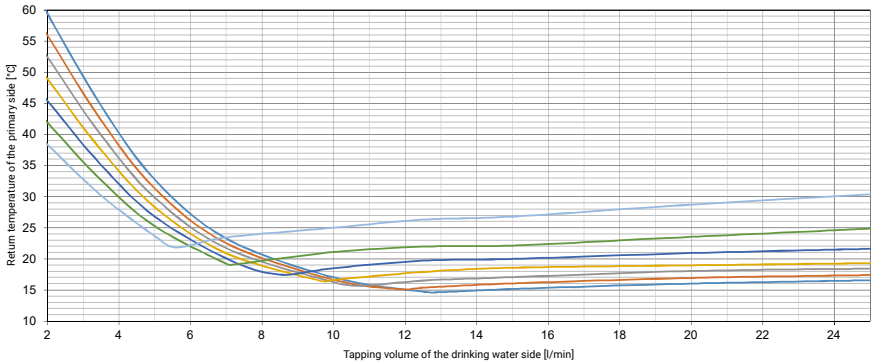


Required heating water volume flow for domestic hot water heating **by 35 K** (from 10 °C to 45 °C) and **by 50 K** (from 10 °C to 60 °C) depending on the primary supply temperature.

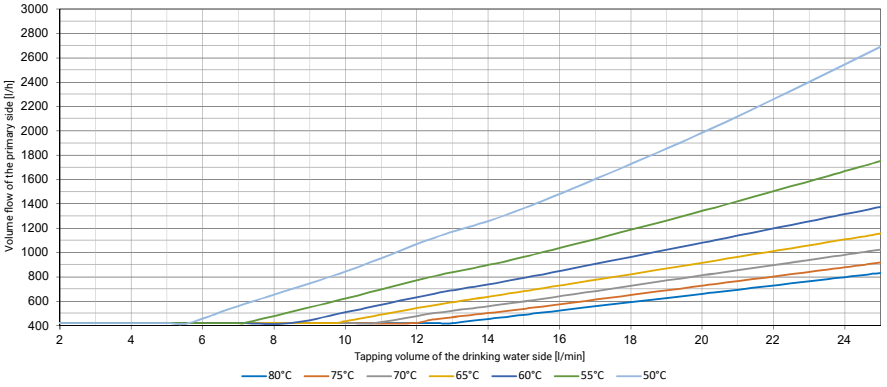
Heating water volume flow for DHW heating BM at 45 °C

Performance example heat exchanger size M at 45 °C

Return temperature of the primary side M at different supply temperatures
for the DHW heating from 10 °C to 45 °C

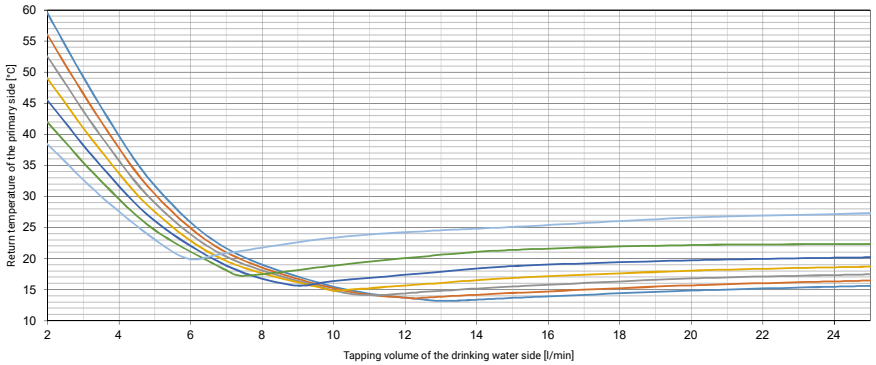


Volume flow of the primary side M at different supply temperatures
for the DHW heating from 10 °C to 45 °C

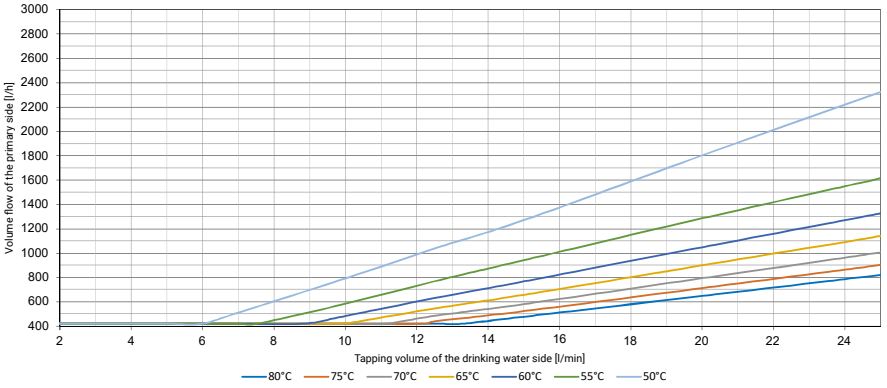


Performance example heat exchanger size XL at 45 °C

Return temperature of the primary side XL at different supply temperatures
for the DHW heating from 10 °C to 45 °C

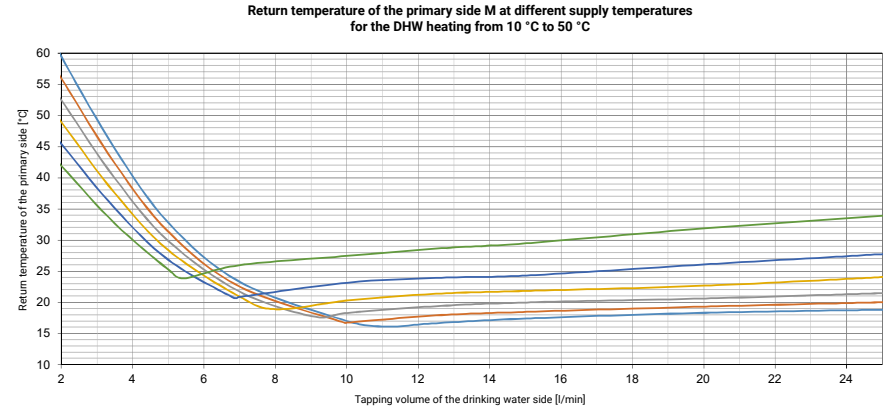


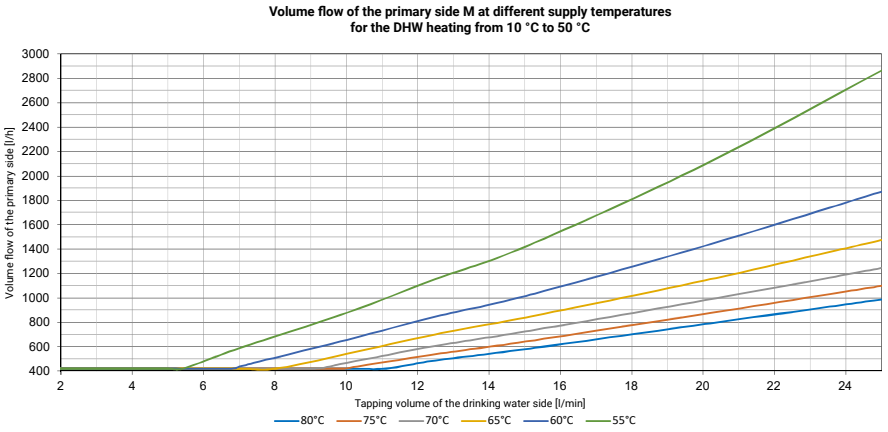
Volume flow of the primary side XL at different supply temperatures
for the DHW heating from 10 °C to 45 °C



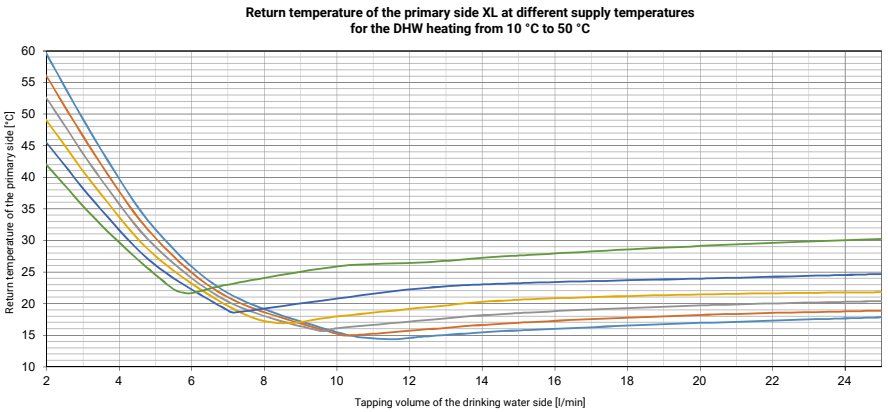
Heating water volume flow for DHW heating BM at 50 °C

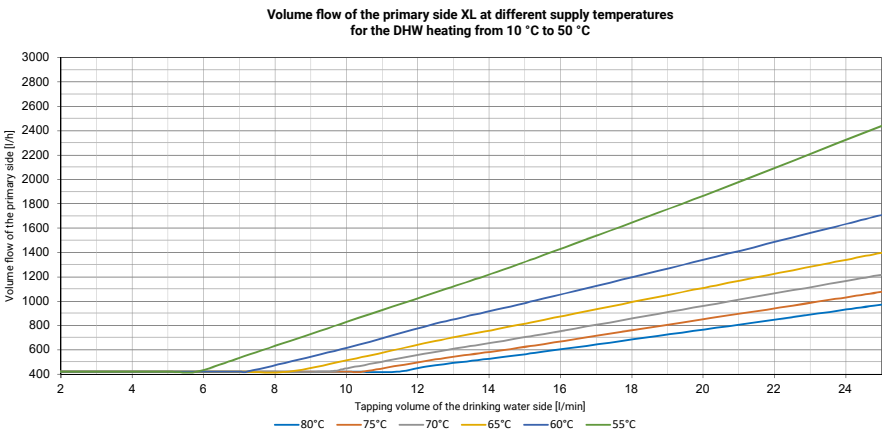
Performance example heat exchanger size M at 50 °C





Performance example heat exchanger size XL at 50 °C

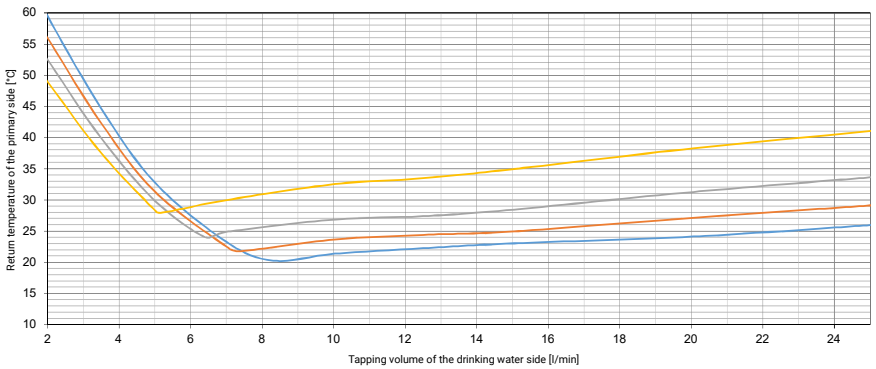




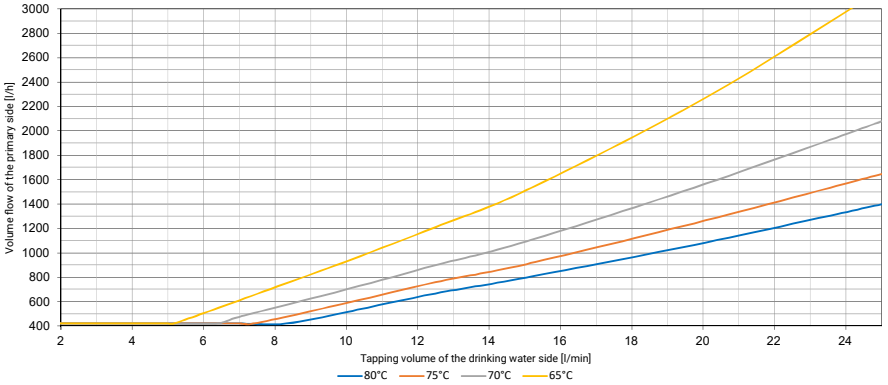
Heating water volume flow for DHW heating BM at 60 °C

Performance example heat exchanger size M at 60 °C

Return temperature of the primary side XL at different supply temperatures
for the DHW heating from 10 °C to 60 °C

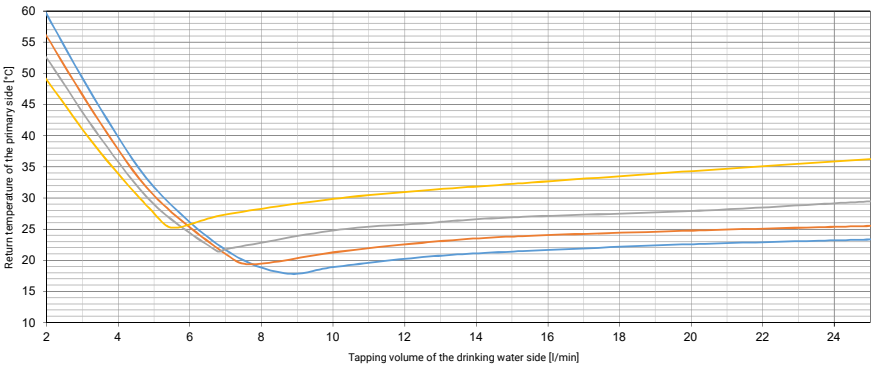


Volume flow of the primary side M at different supply temperatures
for the DHW heating from 10 °C to 60 °C



Performance example heat exchanger size XL at 60 °C

Return temperature of the primary side XL at different supply temperatures
for the DHW heating from 10 °C to 60 °C



Volume flow of the primary side XL at different supply temperatures
for the DHW heating from 10 °C to 60 °C

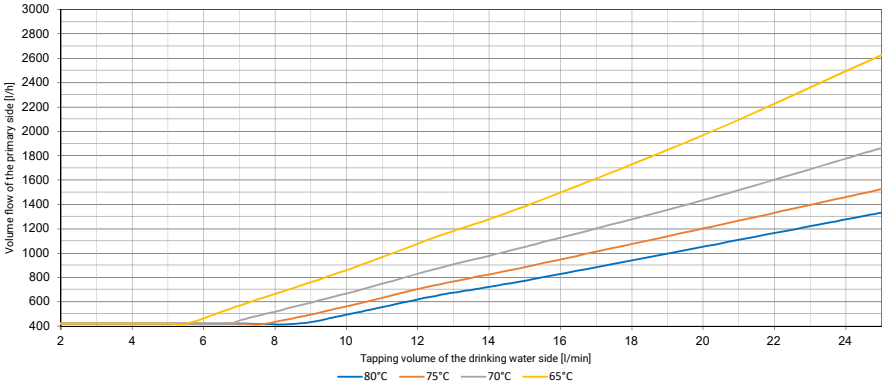
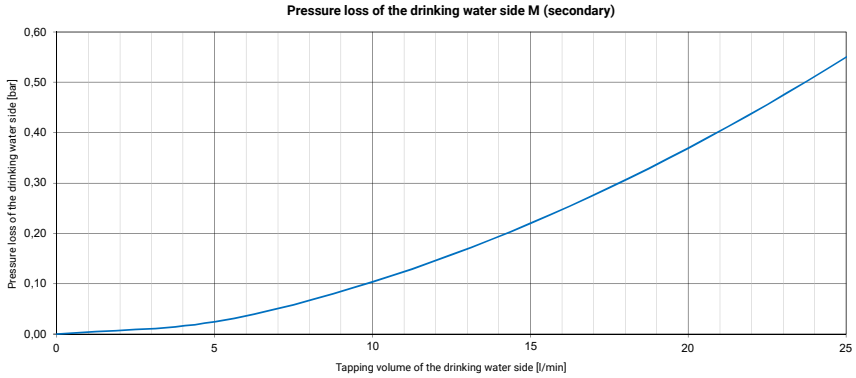


Table for pressure loss in heat exchanger size M



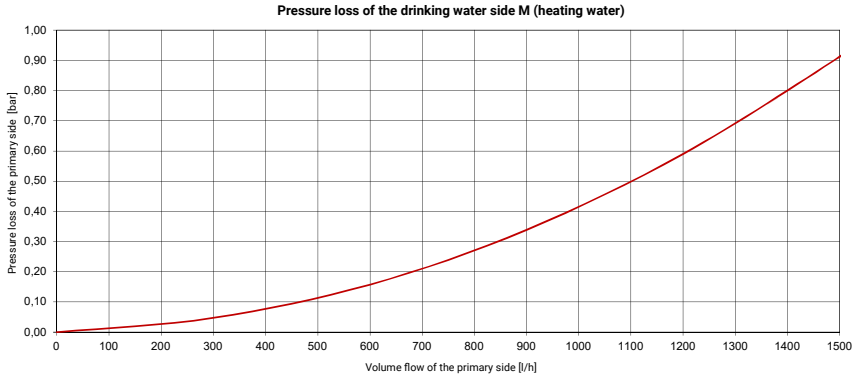
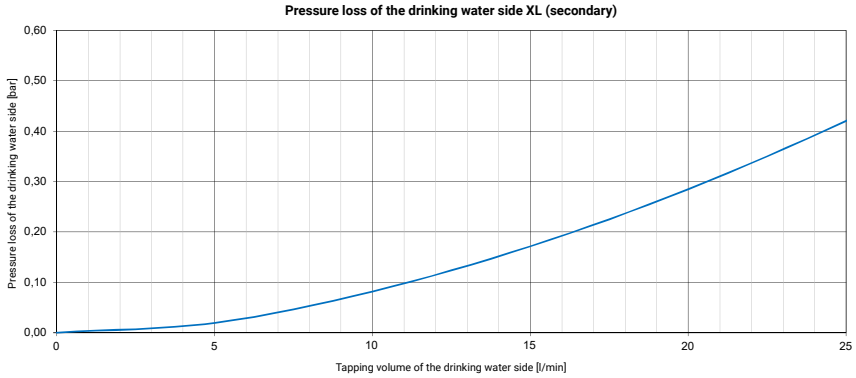
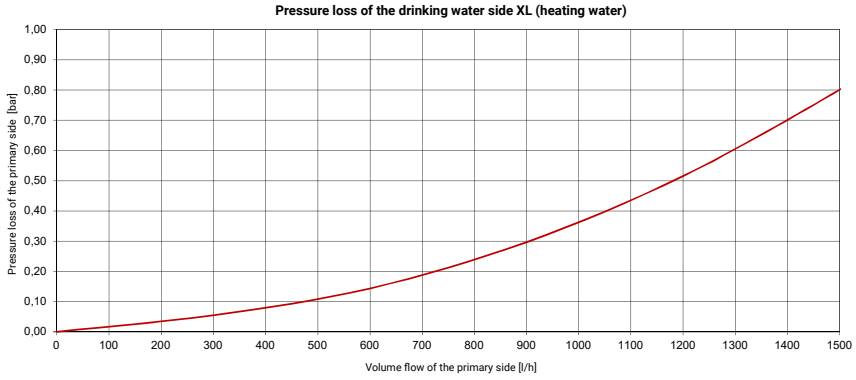
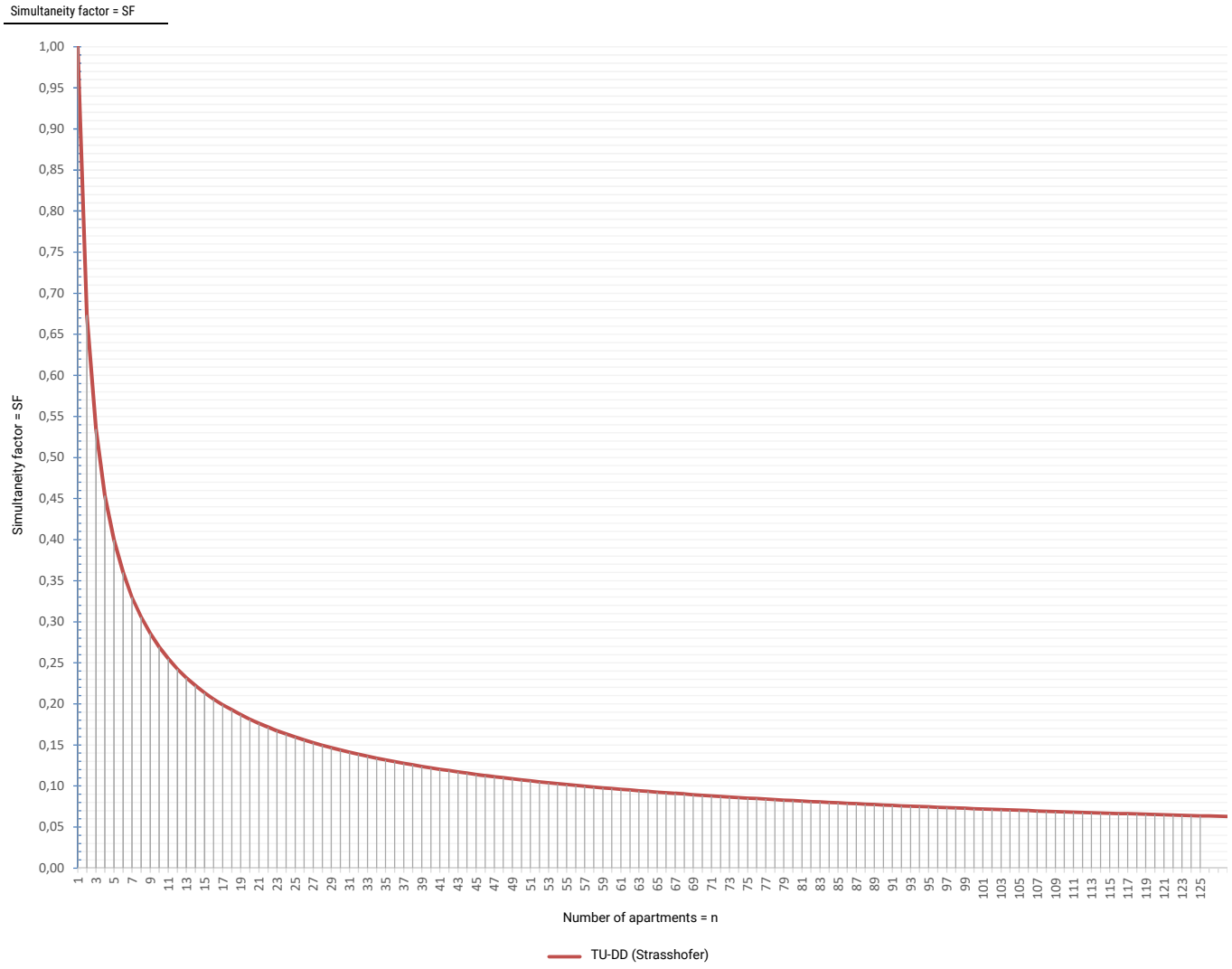


Table for pressure loss in heat exchanger size XL





Simultaneity table



Our simultaneity table corresponds to practice and is the result of current research.

Specifications BM series

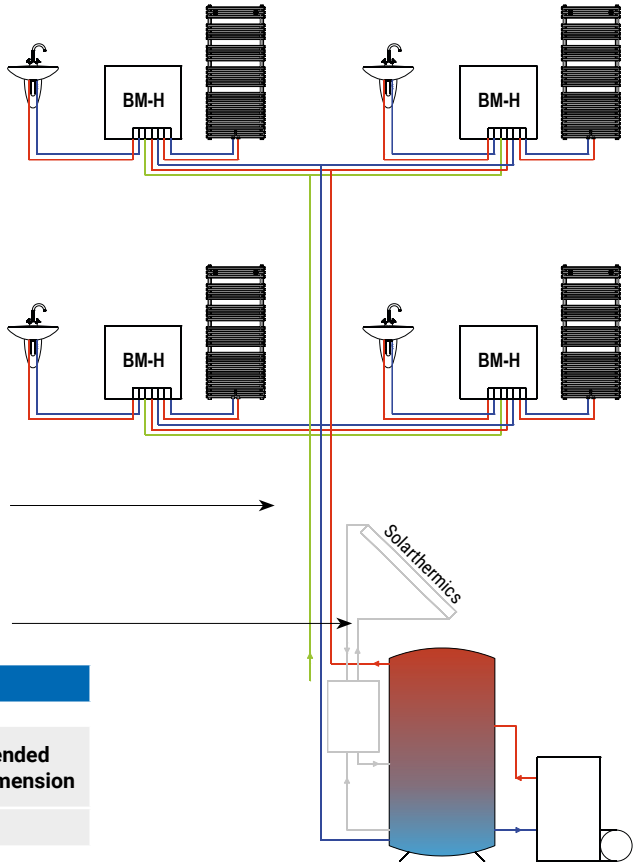
Performance example heat exchanger				
DHW performance:	**M (36 kW)**		**XL (51 kW)**	
Supply / Return temperature primary:	60 / 21 °C	60 / 17 °C	60 / 21 °C	60 / 17 °C
CW inlet / DHW outlet temperature:	10 / 50 °C	10 / 45 °C	10 / 50 °C	10 / 45 °C
Max. DHW tapping volume:	13 l/min	15 l/min	18 l/min	21 l/min
Pressure loss DHW:	155 mbar	200 mbar	210 mbar	280 mbar
Pressure loss heating *:	345 mbar	265 mbar	345 mbar	310 mbar
Flow primary:	840 l/h	720 l/h	1020 l/h	960 l/h

*** without heat meter**

(at 2 bar CW pressure and 350 mbar heating)

Calculation example:

House with 4 apartments equipped with DHW station BM-HM/UP



1. Calculation of simultaneity

Number of apartments		Simultaneity factor	apartments tapping at the same time
4	x	**0.4**	1.60 (~ **2**)

2. Heating water volume flow - Total - without priority switching!

	Number of apartments		Heating water volume flow	Total
DHW heating:	**2**	x	**720 l/h**	1440 l/h
Heating:	4	x	155 l/h	620 l/h
Total:				**2060 l/h**

3. Buffer tank dimensioning

Duration of tapping process		Heating water volume flow	Required 60 °C hot heating water	min. recommended buffer tank dimension
10 minutes	x	2060 l/h	344 l	**500 l ***

***for heaters (oil/gas/wood), for heat pump use x 2**

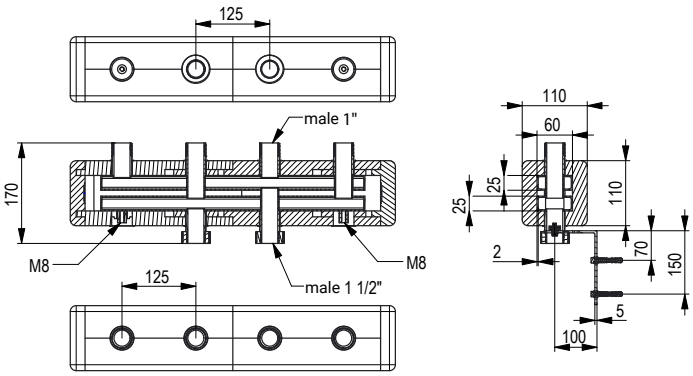
Buffer tank quick dimensioning / Small systems

Primary temperature	Number of apartments	1	2	3	4	5	6	7	8	9	10	15	30	45	60	75
50 °C	**Buffer tank**	350l	500l	750l	1000l	1500l	2000l	3000l	4000l							
65 °C	**Buffer tank**	350l	500l	750l	1000l	1500l	2000l	3000l	4000l							
80 °C	**Buffer tank**	350l	500l	750l	1000l	1500l	2000l									

Basis per apartment unit: tapping volume of 12 l/min at 45 °C, tapping duration of 10 min, for heaters (oil/gas/wood); for heat pump use x 2

Heating distributor UNI 60 - distribution chambers thermally separated

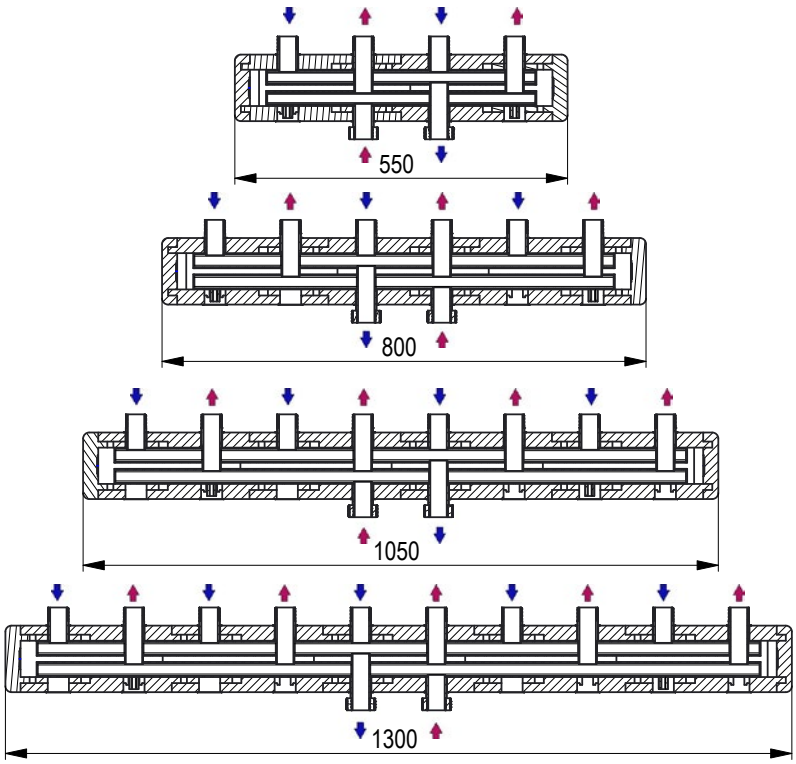
Specifications	
Distributor:	soldered steel construction
Heating water flow rate:	up to 3.3 m ³/h
Performance at:	75 kW at Delta-t = 20 °C
Connectors spacing:	125 mm
Connections:	on top, R 1" male threads
Boiler connection:	bottom, R 1½" male threads
Operating pressure:	4 bar
Max. operating temp.:	90 °C
Isolation:	EPP black
Isolation strength cover:	25 mm, EnEV compliant



Heating distributor:

- consisting of a supply and a return chamber
- outlet for heating groups on the top, boiler connection at the bottom
- primed and leak-tested at the factory
- pre-mounted isolation with labels for supply and return
- delivered in a box

Heating groups	Type	Length	Item no.
2	UNI 60/125-2	508 mm	**6102125**
3	UNI 60/125-3	758 mm	**6103125**
4	UNI 60/125-4	1008 mm	**6104125**
5	UNI 60/125-5	1258 mm	**6105125**



UNI 60/125-2
Item no. 6102125

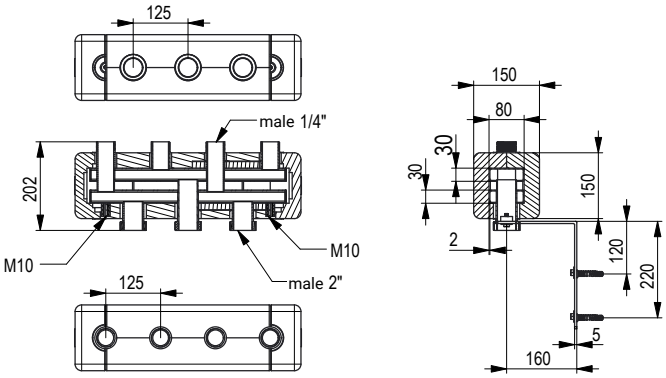
UNI 60/125-3
Item no. 6103125

UNI 60/125-4
Item no. 6104125

UNI 60/125-5
Item no. 6105125

Heating distributor UNI 80 - distribution chambers thermally separated

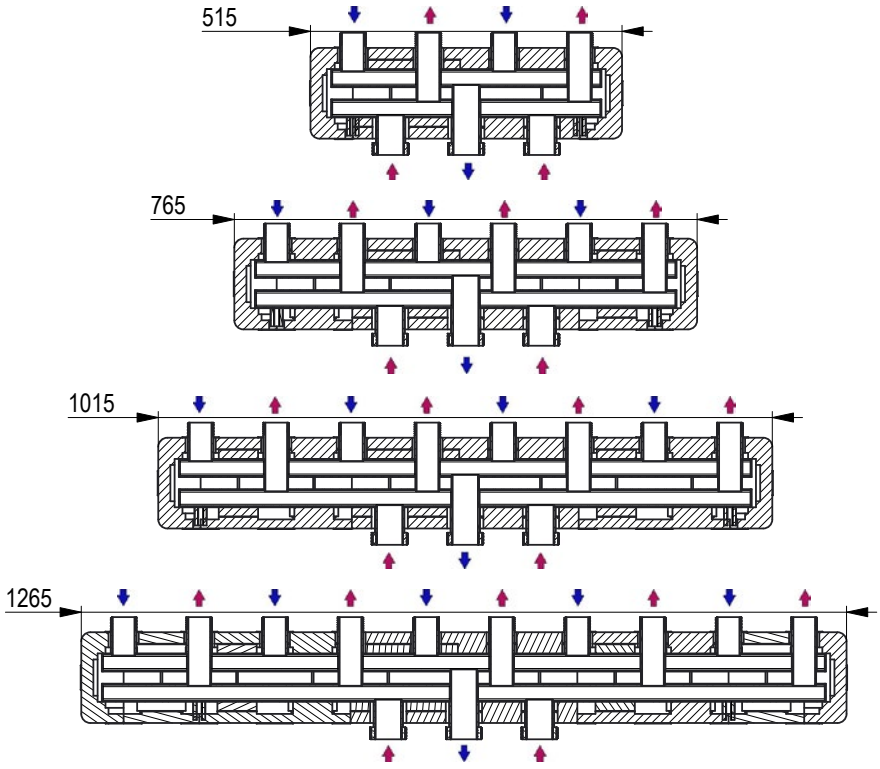
Specifications	
Distributor:	soldered steel construction
Heating water flow rate:	up to 7 m ³/h
Performance at:	170 kW at Delta-t = 20 °C
Connectors spacing:	125 mm
Connections:	on top, R 1¼" male threads
Boiler connection:	bottom, R 2" male threads
Operating pressure:	4 bar
Max. operating temp.:	90 °C
Isolation:	EPP black
Isolation strength cover:	35 mm, EnEV compliant



Heating distributor:

- consisting of a supply and a return chamber
- outlet for heating groups on the top, boiler connection at the bottom
- primed and leak-tested at the factory
- pre-mounted isolation with labels for supply and return
- delivered in a box

Heating groups	Type	Length	Item no.
2	UNI 80/125-2	515 mm	**7102200**
3	UNI 80/125-3	765 mm	**7103200**
4	UNI 80/125-4	1015 mm	**7104200**
5	UNI 80/125-5	1265 mm	**7105200**



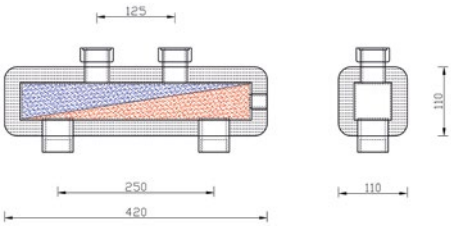
UNI 80/125-2
Item no. 7102200

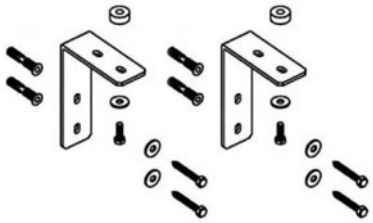
UNI 80/125-3
Item no. 7102300

UNI 80/125-4
Item no. 7102400

UNI 80/125-5
Item no. 7102500

Hydraulic compensator HW 60 / accessories





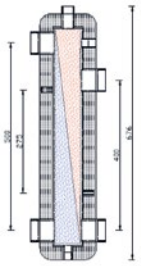
Hydraulic compensator HW 60	
Type:	HW 60
Heating water flow rate:	3.0 m³/h
Outlets:	1½" female threads / nut
Boiler connection:	1¼" female threads
Item no.	**9006240**

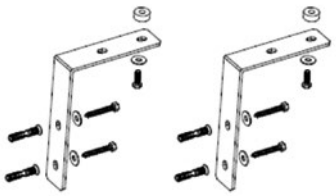
- horizontal compensator with a 60/60 mm exchange chamber made of soldered, black steel plate
- boiler connectors at a distance of 250 mm, the opposite connector at a distance of 125 mm
- 1x ½" closure for temperature sensor
- primed and leak-tested
- permissible operating pressure: 4 bar

Wall bracket set UNI / HW 60	
Type:	WK 60
PU:	Paar
Item no.	**6020001**

- wall bracket set made of galvanized steel
- length optionally for 100 mm or 150 mm
- delivery including screws, dowels and washers

Hydraulic compensator HW 80 / accessories





Hydraulic compensator HW 80	
Type:	HW 80
Heating water flow rate:	7.0 m³/h
Outlets:	2" male threads
Boiler connection:	2" male threads
Item no.	**9009340**

- horizontal compensator with a 80/80 mm exchange chamber made of soldered, black steel plate
- boiler connectors at a distance of 400 mm, the opposite connector at a distance of 500 mm
- 2x ½" closures for temperature sensors
- primed and leak-tested
- permissible operating pressure: 4 bar

Wall bracket set UNI / HW 80	
Type:	WK 80
PU:	Paar
Item no.	**7401001**

- wall bracket set made of galvanized steel
- length optionally for 160 mm or 200 mm
- delivery including screws, dowels and washers

The new drinking water ordinance - Duties of the building owners

The new drinking water ordinance

The long-awaited amendment to the drinking water ordinance came into force on January 1st, 2018.
This essentially transposed the amendments made to the European Drinking Water Directive in 2015 into national law.

The most significant changes

The main changes concern the introduction of so-called "Risikobasierten Anpassung der Probenahmeplanung (RAP)" as well as changes in performance characteristics for analytical methods. While the first point is particularly interesting for water suppliers the second point only concerns laboratories.

The building owner bears the responsibility!

Why was it necessary to amend the drinking water ordinance?

In Germany approximately 6,000 - 10,000 people get sick with Legionnaires' disease every year (experts assume that the estimated number of unreported cases is even higher). Legionella are among the most dangerous germs in drinking water.In small quantities these rod-shaped bacteria are a natural component of drinking water. But if the conditions in the drinking water network are ideal (e.g. in hot water storage tanks) they can multiply by leaps and bounds.

Due to the atomization during showering, the germs can be inhaled and cause Legionnaires' disease (a severe form of pneumonia that is potentially fatal).

Which systems are affected?

Owners of rented apartment buildings with more than 3 apartments equipped with showers (atomization!) and

- a storage volume of **> 400 liters** + a pipe capacity of **< 3 liters**
- a storage volume of **> 400 liters** + a pipe capacity of **> 3 liters**
- a storage volume of **< 400 liters** + a pipe capacity of **> 3 liters**

These are large systems according to the definition in DVGW worksheet W 551.
This also includes hotels, retirement homes, hospitals, swimming pools, facilities for sports and industry, as well as camp-sites.
The following two characteristics are always decisive: The volume of the drinking water storage tank and the pipe content!

What are the duties?

1. Duty of disclosure according to § 13 of the drinking water ordinance (TrinkwV)

The operation of such a system must be reported to the public health department.

2. Duty of inspection according to § 14 of the drinking water ordinance (TrinkwV)

The drinking water must be tested every 3 years. The inspection may only be carried out by a certified analyst. Suitable sampling points must be kept ready for the inspection. It is also necessary to enter the tenants' apartments because also the furthermost tap must be checked!

The samples must be submitted to a testing laboratory with accreditation according to § 15 Paragraph 4 drinking water ordinance (TrinkwV) 2001.

3. Special duties of disclosure and required actions according to § 16 of the drinking water ordinance (TrinkwV)

Should it be determined that the drinking water does not fulfill the chemical and microbiological requirements the owner must immediately implement remedial measures and inform the public health department!

If chemical disinfection is to be carried out by adding treatment substances, then the tenants must be notified in writing!

4. Duty to inform consumers according to § 21 of the drinking water ordinance (TrinkwV)

Landlords must send their tenants appropriate and updated informative material about the quality of the provided drinking water based on the results of the performed inspections.

Similarly, information from water suppliers must be made available to tenants.

„3-liter rule“ and DVGW worksheet W 551

Decentralized drinking water stations are small systems

Owners of rented apartment buildings with more than 3 apartments equipped with showers (atomization!) and a decentralized drinking water heating system are operators of small systems, because:

- there is no storage tank (= explicit **< 400 liters!**) + the pipe capacity is also **< 3 liters**!

These are small systems according to the definition in DVGW worksheet W 551.

Simplified, in ring systems the tapping point furthest away from the drinking water station can be used to determine the pipe capacity.

If the water volume in the flow path is less than or equal to 3 liters it can be assumed that the water volumes of the other flow paths located closer to the station are also less than or equal to 3 liters for the same pipe cross-section.

To calculate the pipe capacity for single-pipe systems, all flow paths must be added together.
Single-pipe systems with stagnant stubs are a hygiene risk and must be avoided.

Pipe capacity					
„3-liter rule“ for small systems					
Pipe dimension	**Pipe capacity**	**Max. length**	**Pipe dimension**	**Pipe capacity**	**Max. length**
12x1	0.079 l/m	37.97 m	**22x1**	0.314 l/m	9.55 m
15x1	0.133 l/m	22.56 m	**28x1.5**	0.491 l/m	6.11 m
18x1	0.201 l/m	14.93 m	**35x1.5**	0.804 l/m	3.73 m

Consumption recording in accordance with the German Heating Cost Ordinance (HeizkostenV)

The duty of consumption recording

The German Heating Cost Ordinance (HeizkostenV) is a legal decree that regulates the billing of costs for heating and hot water. When renting, the owner is obliged to record the proportional consumption for each individual tenant. Generally, this also applies to the condominium owners‘ associations according to the Condominium Act (WEG)!

Exceptions:

§ 2 Excluded are buildings with one or two apartments, where one of them is occupied by the landlord.

§ 11 and buildings

a) with a heating requirement of less than 15 kWh/m².

b) where the installation of consumption recording equipment, the recording of heat consumption or the distribution of the costs for heat consumption is not possible or only possible at disproportionately high costs. Disproportionately high costs exist if they cannot be recovered through the savings that can be achieved within 10 years.

With decentralized drinking water stations you get one central reading point for the recording of all consumptions!

The concept

+ Decentralized DHW heating

The DHW is heated up in the flow principle only during demand via a stainless steel plate heat exchanger. In heating systems equipped with a buffer the heating water is pumped through the heat exchanger with the help of a central, regulated circulation pump.

+ Radiator or floor heating connections integrated

A supply and return pipe is pre-installed in the drinking water station for the connection of the radiator.
For floor heating the manifold and the necessary control group for lower supply temperatures are integrated. The use of modern high-efficiency pumps in accordance with the ErP-Directive enables cost-effective and noise-free operation.

+ Central consumption recording

The universal fittings for heat meters and water meters allow a quick assembly and a quick replacement of the meters. Clear consumption recording at one point!

+ Low-maintenance

Our decentralized drinking water stations are low-maintenance*!
*should be subjected to a visual inspection on a regular basis

Modernization / Renovation

as a conversion system without drinking water storage tank for the:

- replacement of self-contained central gas heating (gas boilers)
- replacement of single-room furnaces (with connection to chimney or outside wall) (e.g. failure to achieve the values according to German Federal Immission Protection Ordinance (BimschV) rquired by the end of 2013)
- complete renovations

The heating water is heated up centrally. The primary rising pipe can be laid in the chimney, which is no longer necessary
The apartments do not require any major renovations because the drinking water stations can be connected to the apartment's internal mains system.

Calcification:

Above a DHW temperature of 60 °C the risk of calcification increases disproportionately and therefore such systems are economically unacceptable. Decentralized drinking water stations are operated close to the used temperature (e.g. 45 °C) and therefore do not calcify as quickly!

Energy efficiency:

In systems with hot water tanks, it is not very economical to maintain the temperature at approximately 60 °C right down to the last corner of the individual taps.

Scalding protection:

Drinking water storage tanks require temperatures of at least 60 °C at the tank outlet and 55 °C at the circulation connection as specified in DVGW worksheet W 551.

These high temperatures represent a considerable danger! Already after a contact time of 5 seconds with 60 °C hot water, adults suffer a third-degree burn! Children even after 1 second!

Some standards address this issue with the following recommendations:

DIN 1988-2

„allow withdrawal of more than 40 °C in the domestic area only after unlocking a safety lock"

DIN EN 806-2

„Systems for heating drinking water must be designed in such a way that the risk of scalding is minimized. In sensitive areas, the use of mixing devices is recommended. For hospitals, retirement homes and schools with a setting of 43 °C, for kindergartens and nursing homes with a setting of 38 °C."

Staying in the safe temperature range right away is the optimal solution using decentralized drinking water stations!

STRASSHOFER DHW stations BM-T / WP 4 / H / HF / F

+ DVGW-tested components:

The installed ball valves for drinking water are DVGW-tested.

+ UBA positive list:

The mounted fitting and stainless steel pipes are correspond to the UBA positive list.

+ AGFW pamphlets FW 520 part 1 and part 2:

All Strasshofer DHW stations are compliant with AGFW pamphlets part 1 and part 2!

+ step a valve technology:

A microprocessor regulated controller in combinatopn with a **step a valve** stepper motor valve replaces the previously used proportional controller for DHW stations and regulates the necessary heating energy for the plate exchanger via a **step a valve** stepper motor valve.

+ Plate exchanger:

We use only high-quality stainless steel plate exchangers which are suitable for heating drinking water. Optimal channel design guarantees a high heat transfer and prevents rapid calcification. For very low return temperatures use plate exchangers with high thermal length.

+ Piping:

Piping made of drinking water resistant stainless steel with crimped screw connections.

+ Modular design:

The stations can be perfectly customized to any kind of construction project thanks to their modular design.

+ Flat design:

The stations can be delivered flush-mounted and surface-mounted. The flush-mounted versions have a minimum depth of 110 mm to 130 mm and are therefore also suitable for installation in thin partitions!

economical

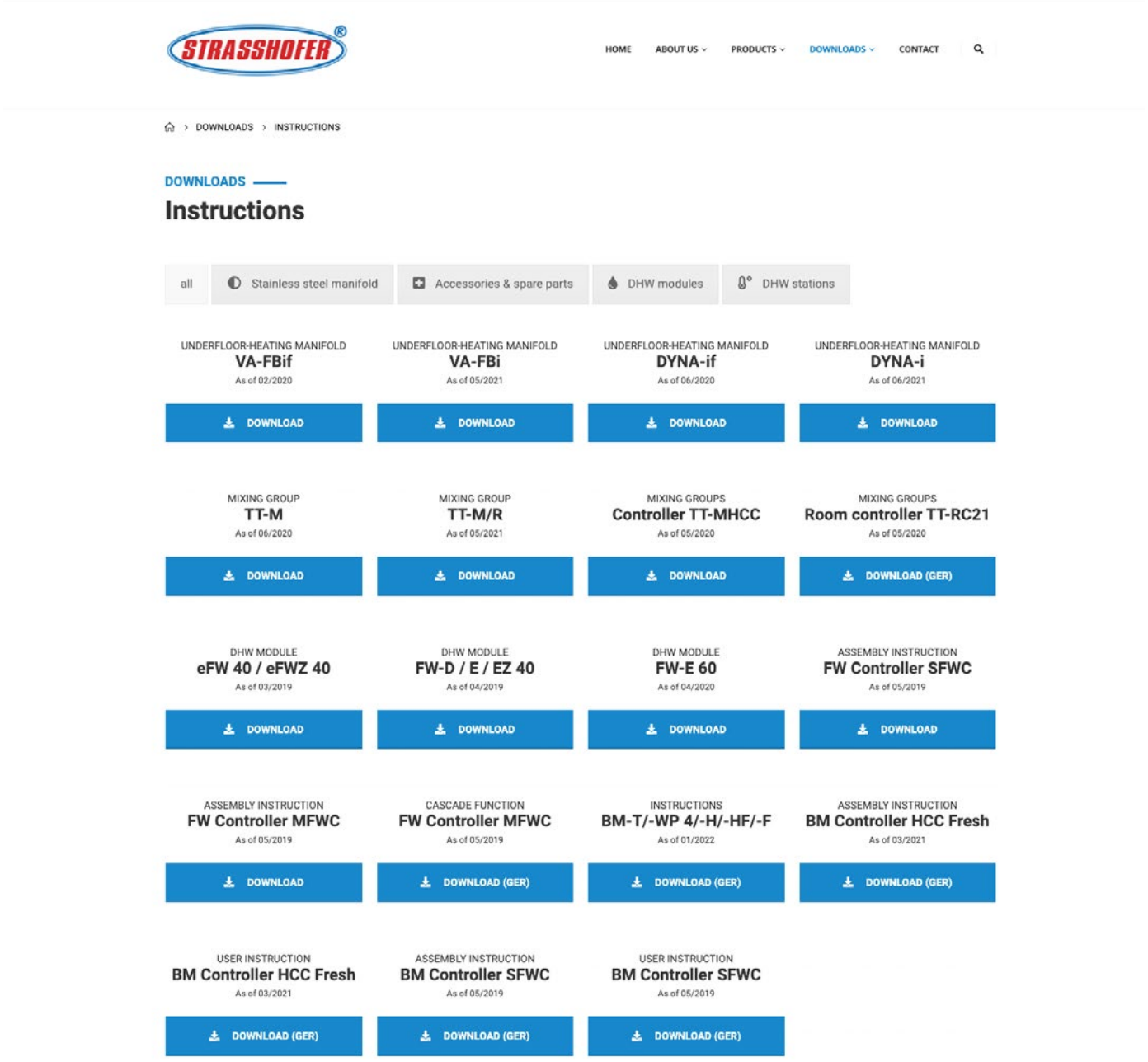
- low heating water return temperatures
- no storage losses
- operation in the calcification-free temperature range

healthy

- hygienic hot drinking water without provisioning
- reduced risk of legionella contamination or germination
- freshly heated drinking water

comfortable

- constant tap temperature even with variable buffer temperatures or tap volumes
- high tap volumes
- fast reaction speed



AGB - ALLGEMEINE LIEFER- UND GESCHÄFTSBEDINGUNGEN DER FIRMA STRASSHOFER GMBH

1. ALLGEMEINES

1.1 Für alle unsere Lieferungen, Leistungen und Angebote gelten ausschließlich die nachfolgenden AGB. Sie werden vom Auftraggeber mit Auftragserteilung anerkannt und gelten in der jeweiligen gültigen Fassung für die gesamte Dauer der Geschäftsverbindung.

1.2 Etwaigen abweichenden Bedingungen des Auftraggebers wird hiermit ausdrücklich widersprochen. Sie gelten auch bei Durchführung des Auftrages als nicht angenommen. Andere Vereinbarungen, Zusicherungen, Änderungen und Nebenabreden werden nur wirksam, wenn wir uns schriftlich damit einverstanden erklären.

1.3 Die vorliegenden AGB haben in jedem Fall Vorrang vor eventuellen Einkaufsbedingungen unserer Kunden.

2. ANGEBOTE

2.1 Alle mit unseren Vertretern getroffenen Vereinbarungen bedürfen zur Gültigkeit unserer schriftlichen Zustimmung.

2.2 Unsere Angebote sind kostenlos und beruhen auf der jeweils aktuellen Listenpreisliste.

2.3 Soweit nicht anders angegeben, halten wir uns an die in unseren Angeboten enthaltenen Listenpreise 30 Tage ab deren Datum gebunden.

3. AUFTRAGSBESTÄTIGUNG

3.1 Ein Vertrag - sofern der Käufer dies ausdrücklich verlangt - kann durch unsere schriftliche Auftragsbestätigung abgeschlossen werden. Der Inhalt dieser Auftragsbestätigung ist gleichzeitig Inhalt des Vertrages.

3.2 Im Übrigen wird eine Auftragsbestätigung nicht versandt, so dass der Vertrag durch Annahme des Inhalts der Lieferung / Empfang der Rechnung zustande kommt, wenn der Käufer den Kaufgegenstand nicht unverzüglich zurücksendet.

3.3 Nach Absendung der Auftragsbestätigung kann der erteilte Auftrag nur nach schriftlicher Anzeige geändert oder storniert werden.

4. LISTENPREISE

4.1 Alle Listenpreise verstehen sich in € (EURO), zuzüglich der zum Lieferungs- bzw. Leistungszeitpunkt geltenden gesetzlichen Mehrwertsteuer.

4.2 Es gelten die am Tag der Käufer-Bestellung gültigen Listenpreise, Multiplikatoren, Rabatte und Bedingungen.

5. RABATTE

5.1 Für Kleinstaufträge unter € 50,- können wir mit Rücksicht auf die Bearbeitungskosten keinen Rabatt gewähren.

6. ZAHLUNGSBEDINGUNGEN

6.1 Ein vereinbarter Skonto-Abzug gilt nur für Barzahlung, Nachnahme und Kontoüberweisung setzt pünktliche Erfüllung aller Verpflichtungen des Käufers voraus, dies gilt auch unter der Voraussetzung, dass der Kunde frühere Rechnungen beglichen hat.

6.2 Zahlung innerhalb von 30 Tagen nach Rechnungsdatum, rein netto.

6.3 Schecks und Wechsel werden nur erfüllungshalber und aufgrund besonderer Vereinbarung angenommen. Wechsel oder Schecks werden vorbehaltlich des Eingangs der Wertstellung des Tages gutgeschrieben, an welchem der Verkäufer endgültig über den Gegenwert frei verfügen kann. Sämtliche sich hieraus ergebenden Kosten und Auslagen gehen zu Lasten des Käufers.

6.4 Bei verspäteter Bezahlung behalten wir uns die Berechnung von gesetzlichen Verzugszinsen in Höhe von 8 % über dem jeweils gültigen Basiszinssatz vor. Es werden nur Zahlungen anerkannt, die an die jeweilige in der Rechnung bekannt gegebene Zahlstelle geleistet werden. Bei Banküberweisungen gilt die Zahlung erst dann als geleistet, wenn der Betrag unserem Konto unwiderruflich gutgebracht ist.

6.5 Überschreitungen des Zahlungstermines oder der Eintritt mangelnder Bonität des Bestellers sowie sonstige wichtige Gründe berechtigen uns zum Rücktritt vom Vertrag, ohne dass hierdurch ein Erfüllungs- oder Schadensersatzanspruch gegen uns begründet wird.

7. EIGENTUMSVORBEHALT UND SICHERUNGSRECHTE

7.1 Die gelieferte Ware bleibt unser Eigentum bis zur vollständigen Erfüllung aller Forderungen aus der Geschäftsverbindung mit dem Auftraggeber, einschließlich des Erlöschens aller Verbindlichkeiten aus Wechseln, die im Zusammenhang mit der Geschäftsverbindung begründet worden sind.

7.2 Dies gilt auch im Falle der Be- und Verarbeitung der Ware. Die Be- und Verarbeitung der Vorbehaltsware durch den Auftraggeber erfolgt für uns, ohne dass uns Verpflichtungen entstehen. Bei Be- und Verarbeitungen sowie Verbindung und Vermischung mit anderen, nicht dem Auftraggeber gehörender Waren, erwerben wir Miteigentum an der neuen Sache im Verhältnis des Rechnungswertes unserer Waren zu dem Wert der anderen Waren z. Zt. der Be- und Verarbeitung, Verbindung oder Vermischung. Der Auftraggeber verwahrt die neue Sache für uns unentgeltlich.

7.3 Der Auftraggeber darf die Vorbehaltsware nur mit unserer ausdrücklichen Zustimmung verpfänden oder zur Sicherung übereignen und nur im ordnungsgemäßen Geschäftsgang unter Weitergabe des Eigentumsvorbehalts veräußern. Der Auftraggeber tritt hiermit im Voraus bis zur vollständigen Tilgung aller unserer Forderungen aus Lieferungen und sonstigen Leistungen, die ihm aus der Veräußerung der Vorbehaltsware zustehenden Forderungen in voller Höhe mit den Nebenrechten an uns ab.

7.4 Der Auftraggeber bleibt zum Einzug dieser Forderungen berechtigt, so lange er seine Verpflichtungen uns gegenüber erfüllt und wir dem Einzug durch den Auftraggeber nicht widersprochen haben. Eingezogene Beträge sind an uns abzuführen, soweit Forderungen aus der Geschäftsverbindung des Auftraggebers mit uns fällig sind.

7.5 Wir sind verpflichtet, uns zustehende Sicherheiten auf Verlangen nach Wahl des Auftraggebers insoweit freizugeben, als sie unsere zu sichernden Forderungen um mehr als 25% übersteigen.

7.6 Bei drohender Zahlungseinstellung, Zahlungsunfähigkeit oder negativer Auskunft, die auf eine wesentliche Verschlechterung der Vermögenslage des Auftraggebers hindeuten, sind wir berechtigt, die Vorbehaltsware an uns zu nehmen. Der Auftraggeber erteilt hiermit unwiderruflich und unbedingt seine Zustimmung zur Herausgabe. Das gleiche gilt, wenn Zwangsvollstreckungen, Wechsel- oder Scheckproteste gegen den Auftraggeber vorkommen.

7.7 Bei Beeinträchtigung unserer Eigentumsrechte durch Dritte, insbesondere bei Beschlagnahme oder Pfändung der Ware, wird uns der Auftraggeber sofort unter Übersendung der ihm verfügbaren Unterlagen (z. B. Pfändungsprotokolle) benachrichtigen und den Dritten auf unsere Eigentumsrechte hinweisen. Der Auftraggeber ist verpflichtet, die uns durch Beeinträchtigung unserer Eigentumsrechte und erforderlichen Abwehrmaßnahmen entstehenden Kosten zu tragen.

7.8 Der Auftraggeber ist verpflichtet, bzw. wir sind berechtigt, Schuldnern des Auftraggebers die Abtretung von Forderungen anzuzeigen, wenn der Auftraggeber seine Verpflichtungen uns gegenüber nicht vertragsgemäß erfüllt.

8. VERSAND UND VERPACKUNG

8.1 Sofern keine anderen Vereinbarungen getroffen wurden, erfolgt die Lieferung zu Lasten des Käufers.

8.2 Unsere Preise verstehen sich einschließlich Kartonverpackung.

8.3 Teillieferungen sind zulässig.

8.4 Die Gefahr geht spätestens mit der Übergabe an einen Spediteur bzw. ordnungsgemäß ausgesuchten Verlader auf den Käufer über, und zwar auch dann, wenn Teillieferungen erfolgen. Verzögert sich der Versand in Folge von Umständen, die der Käufer zu vertreten hat, so geht die Gefahr vom Tage der Versandbereitschaft an auf den Käufer über.

8.5 Wir verpflichten uns, auf Anfrage und gegen Kostenübernahme des Käufers, nach schriftlicher Vereinbarung, die Ware vom Tage der Versandbereitschaft ab zu versichern.

8.6 Für Streckenlieferungen erheben wir eine Pauschale von € 10,-.

9. LIEFERTERMINE

9.1 Die Lieferzeit beginnt am Tage der Klarstellung sämtlicher Einzelheiten und Einigung über alle Bedingungen des Auftrages. Sie wird so bemessen, dass sie bei unbehindertem Gang der Fabrikation eingehalten werden kann.

9.2 Rohstoffmangel, Stromsperren, Streik oder durch höhere Gewalt verursachte Betriebsstörungen, sowohl im eigenen Betrieb, wie in fremden Werken, von denen die Herstellung abhängig ist, befreien uns von der Einhaltung bestimmter vereinbarter Lieferfristen und berechtigen uns, vom Auftrag ganz oder teilweise zurückzutreten.

10. GEWÄHRLEISTUNG

10.1 Bei rechtzeitiger Mitteilung von Beanstandungen hat der Auftraggeber die nachfolgenden Gewährleistungsrechte.

10.2 Sämtliche Erzeugnisse sind vor dem Versand sorgfältig geprüft. Wir haften für die Dauer von 2 Jahren nach Lieferung für Mängel an unseren Erzeugnissen, die auf fehlerhafte Konstruktion, Werkstoffe oder mangelhafte Bearbeitung zurückzuführen sind, durch Nacherfüllung oder Ersatzlieferung. Berechtigte Mängel, die sich erst nach Einbau unserer Erzeugnisse zeigen, werden von uns nach vorheriger Prüfung in angemessener Zeit beseitigt.

10.3 Zur Vornahme aller uns nach billigem Ermessen notwendig erscheinenden Nacherfüllungen und Ersatzlieferungen hat der Käufer nach Verständigung mit uns die erforderliche Zeit und Gelegenheit zu geben. Nur in dringenden Fällen der Gefährdung der Sicherheit und zur Abwehr unverhältnismäßig großer Schäden, wobei wir unverzüglich zu verständigen sind, oder, wenn wir mit der Beseitigung der Mängel - nach Fristsetzung durch den Käufer - in Verzug sind, hat dieser das Recht, den Mangel selbst oder durch Dritte beseitigen zu lassen und von uns Ersatz der notwendigen Kosten zu verlangen. An Teilen, die zum Zwecke des Austausches ausgebaut werden, erwerben wir Eigentum.

10.4 Für das Ersatzstück und die Nacherfüllung beträgt die Gewährleistungsfrist 1 Jahr, sie läuft mindestens aber bis zum Ablauf der ursprünglichen Gewährleistungsfrist für den Liefergegenstand.

10.5 Für weitere Ansprüche des Käufers, insbesondere Anspruch auf Ersatz von Schäden, die nicht an dem Liefergegenstand selbst entstanden sind, soweit gesetzlich zulässig, ausgeschlossen, natürliche Abnutzung, zweckentfremdeten Einbau oder Umwelteinflüsse entstanden sind, kommen wir nicht auf. Dies gilt für Schäden an Leib, Leben oder Gesundheit.

10.6 Änderungen der Konstruktion berühren das Vertragsverhältnis nicht.

11. MÄNGELRÜGEN

11.1 Der Auftraggeber verpflichtet sich, die einwandfreie Qualität unserer Lieferung bei Wareneingang ordentlich zu überprüfen.

11.2 Mängelrügen werden nach Erhalt unserer Lieferung anerkannt, wenn sie unverzüglich nach Eingang erhoben werden. Der Sachverhalt muss in Schriftform eingegangen sein. Beschädigungen und Verlust sind sofort der Güterabfertigung oder dem Transportunternehmen schriftlich unter Darlegung des Sachverhaltes zu melden.

12. RÜCKTRITTSRECHT UND SONSTIGE HAFTUNG

12.1 Der Käufer hat ein Rücktrittsrecht, wenn wir eine uns gestellte angemessene Nachfrist für die Nachbesserung oder Ersatzlieferung bezüglich eines von uns zu vertretenden Mangels im Sinne der Lieferbedingungen durch unser Verschulden fruchtlos verstreichen lassen. Das Rücktrittsrecht des Käufers besteht auch bei Unmöglichkeit oder Unvermögen der Nachbesserung oder Ersatzlieferung durch uns.

12.2 Die Haftung ist begrenzt auf Vorsatz oder grobe Fahrlässigkeit unsererseits. Dies betrifft grundsätzlich nicht Schäden an Leib, Leben und Gesundheit. Für mittelbare Schäden, die in keinerlei Sachzusammenhang zum Kaufgegenstand stehen, haften wir - außer wegen Vorsatz und grober Fahrlässigkeit - nicht.

13. RÜCKNAHME

13.1 Ordnungsgemäß gelieferte Waren werden nur nach vorher eingeholtem, schriftlichem Einverständnis und frei Haus Lieferung an unseren Sitz in unversehrtem Zustand angenommen.

13.2 Bei Sonderanfertigungen kann bestellte Ware nicht zurückgenommen werden.

13.3 Bei Gutschriften für zurückgenommene Ware ziehen wir eine 25%ige Wiedereinlagerungs- und Bearbeitungspauschale (bei vormontierten Baugruppen zusätzlich 15% für die Demontage) und, soweit frachtfrei geliefert, die Kosten für die Hinfracht ab.

14. MODELLÄNDERUNGEN

14.1 Alle Abbildungen in unseren Katalogen, Prospekten, Anzeigen usw. stellen keine zugesicherten Eigenschaften dar. Dies gilt auch für Maße und Gewichtsangaben in Angeboten, Prospekten, Katalogen usw.

14.2 Wir sind berechtigt, während der Lieferzeit ohne vorherige Ankündigung Konstruktions- und Formatänderungen, sowie Toleranzen, die lediglich eine Verbesserung darstellen am Vertragsgegenstand vorzunehmen, sofern diese nicht eine für den Auftraggeber unzumutbare Änderung beinhalten.

14.3 Bei Sonderanfertigungen, welche nach Muster, Modell oder nach Zeichnung erfolgen, behalten wir uns das Recht einer Mehr- oder Minderlieferung bis zu 5% der bestellten Stückzahl vor.

15. ZEICHNUNGEN UND MUSTER

15.1 Zeichnungen und Muster sowie andere Unterlagen, die nicht Teil des Kaufgegenstandes sind, bleiben unser Eigentum. Sie dürfen Dritten nur mit unserer Zustimmung zugänglich gemacht werden und sind auf Verlangen an uns zurückzugeben.

16. TEILNICHTIGKEIT

16.1 Sollten einzelne Bestimmungen insgesamt oder teilweise nichtig oder unwirksam sein, wird hierdurch die Wirksamkeit der übrigen Bestimmungen nicht berührt. Nichtige oder unwirksame Bestimmungen sind durch solche wirksame Regelungen zu ersetzen, die dem angestrebten wirtschaftlichen Zweck weitestgehend entsprechen.

17. ERFÜLLUNGSORT, GERICHTSSTAND UND ANWENDBARES RECHT

17.1 Erfüllungsort für Lieferungen und Zahlungen aller Art ist Reichenbach. Es gilt das Recht der Bundesrepublik Deutschland. Die Anwendung der einheitlichen Gesetze über den internationalen Kauf beweglicher Sachen und über den Abschluss von internationalen Kaufverträgen (z. B. UN-Kaufrecht) über bewegliche Sachen ist ausgeschlossen.

18. ONLINE-STREITBELEGUNG BEI VERBRAUCHERBESCHWERDEN ODR-VERORDNUNG NR. 524/2013

18.1 Die Europäische Kommission stellt eine Plattform zur Online-Streitbeilegung (OS) bereit.
Die Plattform finden Sie unter http://ec.europa.eu/consumers/odr/

Gerichtsstand im Verkehr mit Kaufleuten ist Reichenbach. Wir sind jedoch berechtigt, den Auftraggeber in jedem anderen gesetzlichen Gerichtsstand zu verklagen.

STRASSHOFER GMBH, Stand 04/2023