

## Basic modules

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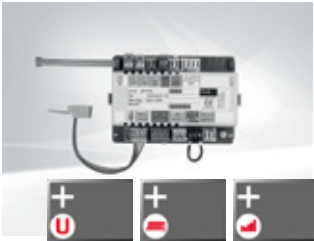
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Hoval TopTronic® E module expansions

- Heating circuit
- Heat balancing
- Universal

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Hoval TopTronic® E module expansions district heating

- Heating circuit
- Hot water
- Universal

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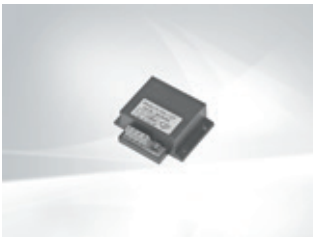
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Hoval energy/  
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Heating/hot water circuits



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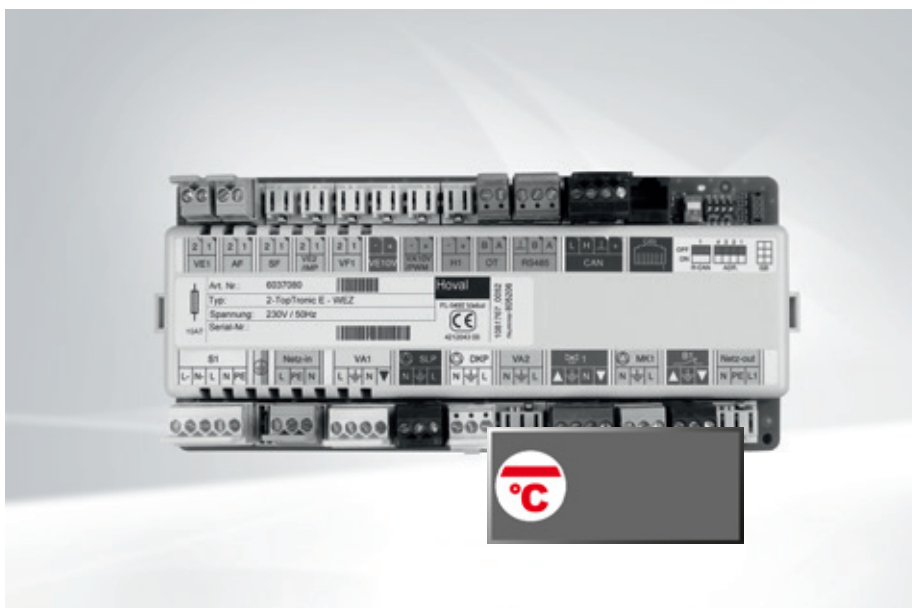


## TopTronic® E basic module heat generator

- Controller module for controlling heat generators and the associated consumers with integrated control functions for:
  - Heat generator management
  - Add. heat generator management
  - Cascade management
  - 1 heating/cooling circuit without mixer
  - 1 heating/cooling circuit with mixer
  - 1 hot water charging circuit
  - Various additional functions
- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Update capability of the controller software
- Time and date via integrated RTC, multi-year spring reserve
- Fine fuse 10 A
- Controller module suitable for cabinet installation thanks to ability to install on DIN rail 35 x 15 x 2.2 mm
- Expansion possibilities via Hoval CAN bus:
  - max. 16 controller modules in the bus system
  - Cascade connection of 8 different heat generators possible
  - can be extended to up to 48 heating circuits

### Notice

Operation of the controller module is generally via the TopTronic® E control module installed in the heat generator!  
In a standalone application, the control module for operating the basic module heat generator must be ordered separately!



### Notice

Max. 1 module expansion can be connected.



TopTronic® E  
module expansion  
heating circuit



TopTronic® E  
module expansion  
heat balancing



TopTronic® E  
module expansion  
Universal

### Inputs and outputs

- Communication to an extremely wide range of automatic function units (oil, gas, HP, biomass) via RS485 interface
- OpenTherm interface for connecting an automatic gas firing unit
- 0-10 V input, e.g. for connecting to heat zone control systems
- 0-10 V or PWM output for controlling a variable-speed pump or for connecting an additional heat generator via 0-10 V interface (e.g.: solid-fuel boiler, etc.)
- Connection of a flow rate sensor (pulse sensor), e.g. for heat metering at the heat generator, on the heating circuit or with hot water
- 230 V 3-point output, e.g. for controlling the mixer
- 230 V output, e.g. for controlling the recirculation pump
- 230 V optocoupler input connected in series to the variable 230 V output, e.g. for connecting a flow temperature guard for monitoring underfloor heating systems
- Variable inputs and outputs:
  - variable 230 V output plus continuous phase (e.g.: connection of a HW gate)
  - variable 230 V output (e.g.: connection of the direct circuit pump)
  - extra-low voltage output (12 V) (e.g. controlling a signal LED)
  - variable input for connection of a sensor
  - variable input for connection of a sensor or pulse sensor
- Connection plug for simple connection of a main switch

### Option

- Can be expanded by max. 1 module expansion (expansion of the inputs/outputs):
  - Module expansion heating circuit (1 heating/cooling circuit with/without mixer) or
  - Module expansion heat balancing (heat balancing in the heating system) or
  - Module expansion Universal (various special functions)

### Functions

- Simple configuration and parameter setting of the plant by predefined hydraulic and function applications
- Weather-supported flow temperature controller for cooling operation with or without room influence taking account of building characteristics and switch-on optimisation
- Optimisation of the heating circuit flow temperatures and improvement in the room climate taking account of the weather forecast (only possible in combination with HovalConnect)
- Different basic programs (week programs, economy mode, holiday until, etc.) can be defined for each heating/cooling circuit plus ability to activate manual operation (construction site mode)
- Separate switching time programs for each heating/cooling circuit as well as for hot water with
  - 2 individually preset week programs comprising
    - 5 different - individually preset - day programs with
    - 6 switching points per day

- Different temperatures can be set for each switching cycle
- Various functions for hot water:
  - Selection of different basic programs (week programs, economy mode, holiday until, etc.)
  - various operating modes (e.g. accumulator priority or parallel mode)
  - adjustable storage tank pump post-operation
  - Storage tank discharge protection
  - Limiting and protection functions
- Definable switching times for recirculation pump control
- Automatic changeover of summer/winter time
- Heating characteristic adaptation possible for each individual heating circuit
- Screed drying function for underfloor heating
- Requirement contact for constant requirements (ventilation, swimming pool, ...)
- Modem switching function
- Free timer switch channel
- Pump anti-blocking protection
- Frost protection function
- Heat balancing for heat generator, heat circuit or hot water
- Plant flow control (3-point mixer for controlling the plant reference temperature)
- Cleaning and maintenance function
- Smart Grid functions
- Optimum adaptation of the control characteristics for various heat generators
- Integration of an additional heat generator via 0-10 V or switching contact

- Cascade management that is activated following the combination with other basic modules (up to 8 heat generators)
- Definition of priorities for switching over between heating, cooling and hot water operation
- Operating hours and pulse counter
- Heat generator forced removal
- Constant return increase
- Minimum value override
- Emission measurement with adjustable duration
- Collective fault message output
- Output of the current temperature or current output via 0-10 V possible
- Thermostat function for bivalent plants
- Self-test with error diagnosis and error memory
- Relay test for each output can be activated separately
- Functions that can be implemented with module expansions:
  - Heating/cooling circuits without mixer
  - Heating/cooling circuits with mixer or hot water charging circuits
  - Various additional functions

#### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 1 module expansion can be connected)!

#### Delivery

- TopTronic® E basic module heat generator
- 2 mounting clips for DIN rail attachment
- 1 outdoor sensor AF/2P/K
- 1 immersion sensor TF/2P/5/6T/S1, L = 5.0 m with plug
- 1 contact sensor ALF/2P/4/T/S1, L = 4.0 m with plug
- Basic plug set for basic module
  - Plug for buffer storage pump (SLP), direct circuit pump (DKP), mixer circuit pump (MK1), mixer (YK1), flow temperature guard (B1), variable output (VA1)
  - 2 plugs for sensor (AF/SF)
  - Various plugs for internal wiring (mains in, mains out, connection of automatic firing device, bus connector RS485, bus connector OpenTherm, CAN bus)

#### Notice

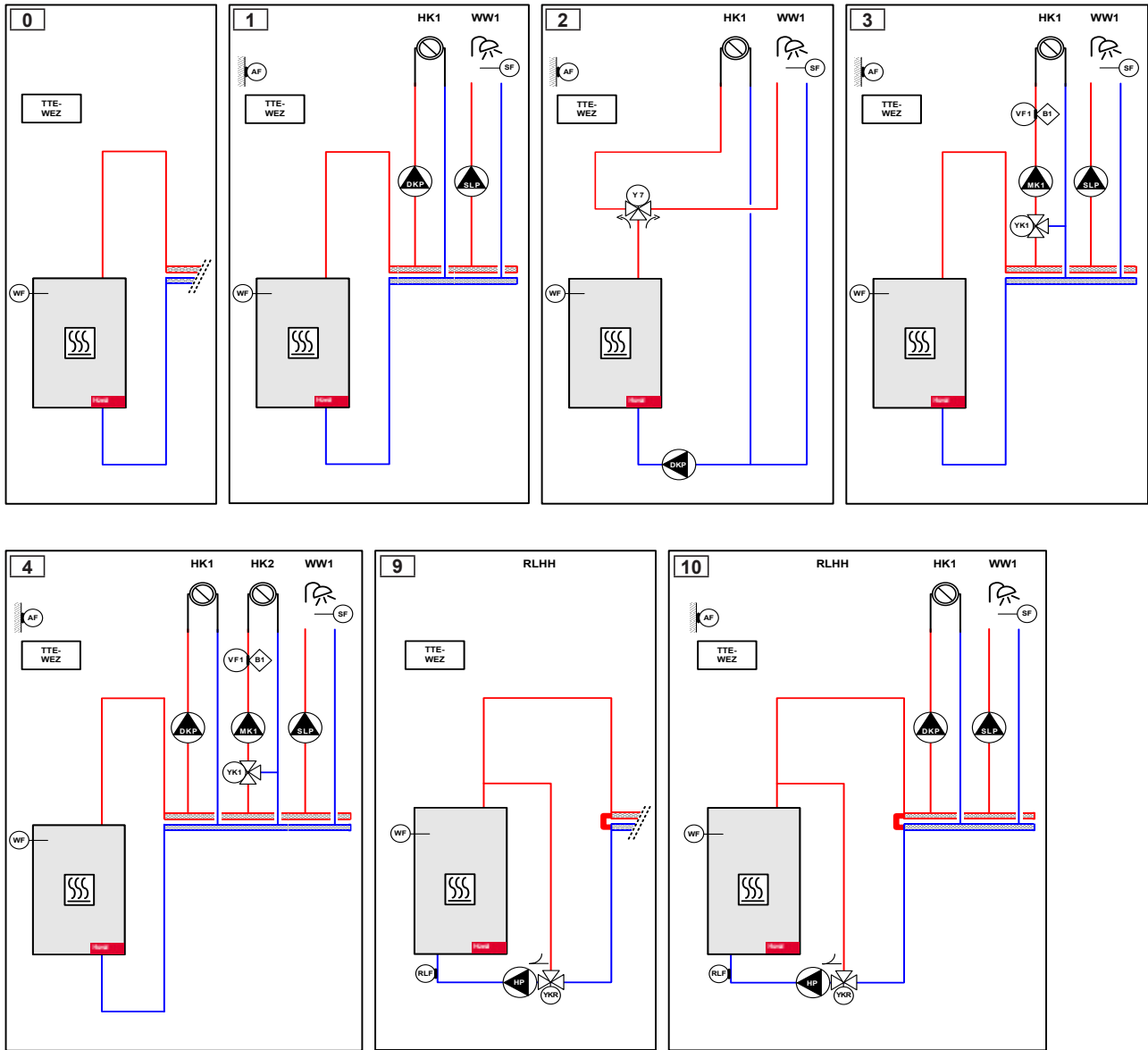
The supplementary plug set may have to be ordered to implement functions differing from the standard!

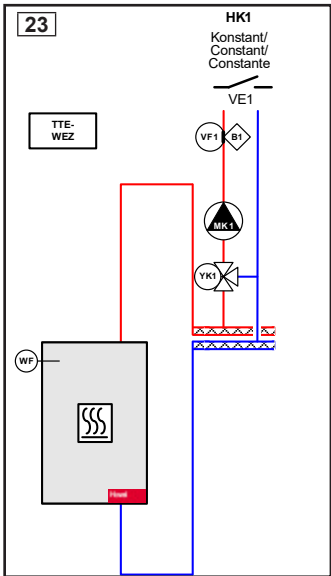
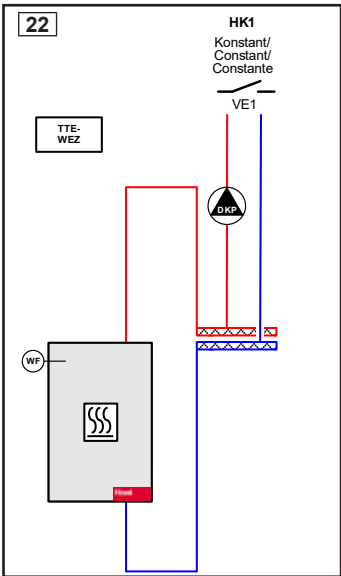
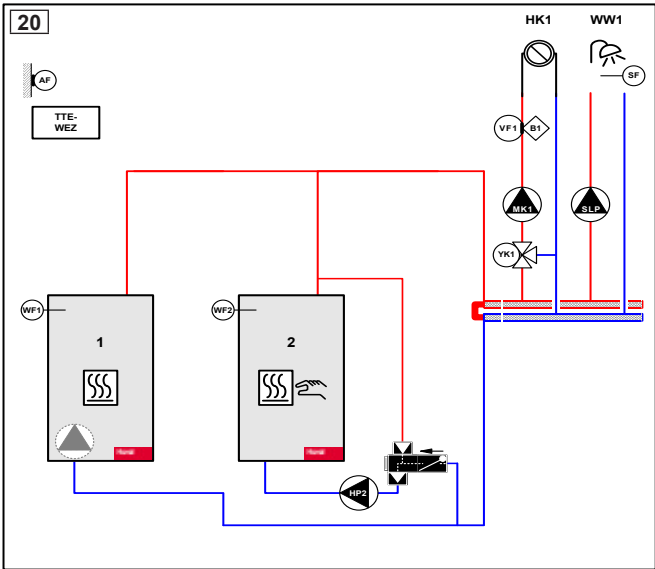
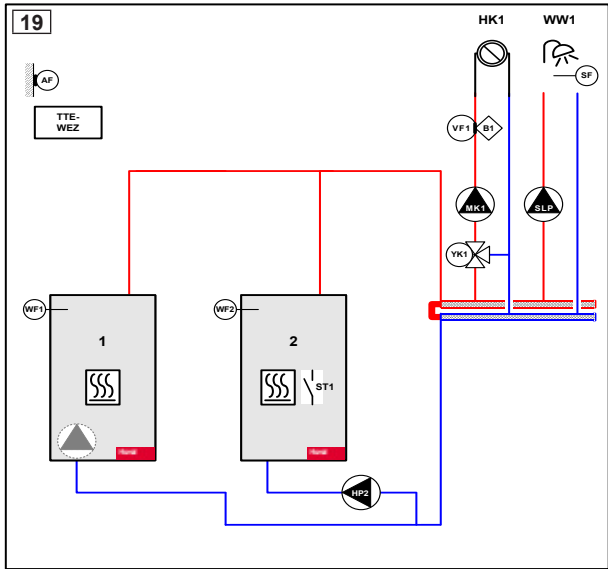
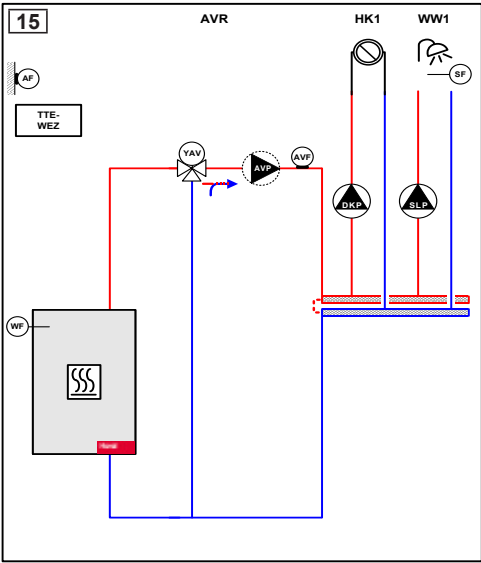
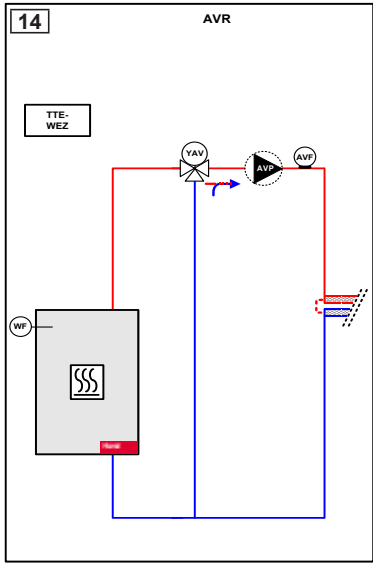
#### Use

- Heat generator with automatic function device fitted
  - Connection either via the RS485, OpenTherm or 0-10 V interface
  - Automatic firing units can be configured with 1/2-stage or modulating
- Heat pump systems with active/passive cooling function
- Control for multiple heat generator systems by integrated cascade management
- Control of an additional heat generator by release contact (solid-fuel boiler), 0-10 V temperature request or 0-10 V output requirement
- For room heating/cooling and hot water charging circuit
- For optimisation of the room climate by control algorithm taking account of the weather forecast (only possible in combination with HovalConnect)
- Upstream control for technical systems such as ventilation, air conditioning systems, etc. or also for heating zone control systems
- For decentralised assembly - remote from the control module - directly at the sensors and actuators:
  - Installation in wall casing/control panel
  - Connection to the operating unit via Hoval CAN bus
- With significant expansion capability by controller modules via the Hoval CAN bus
- For flexible integration of heat generators in modern communication systems via different interfaces
- For remote connection of heat generators via HovalConnect

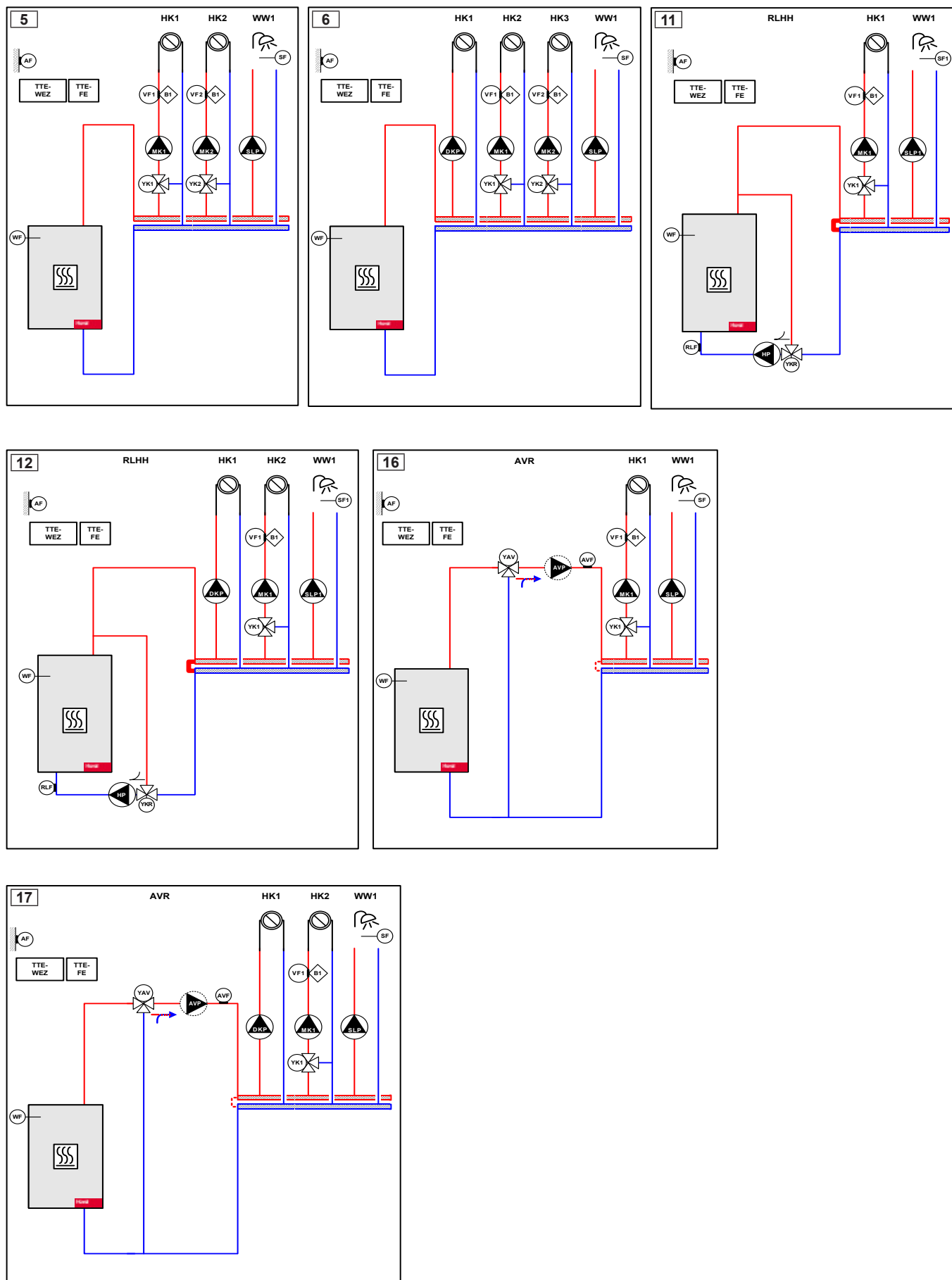
Functions that can be implemented  
TopTronic® E basic module heat generator

TTE-WEZ	1 heat generator	1 heat generator with return temperature control	1 additional heat generator	Plant flow control	1 direct heating circuit	1 mixed heating circuit	2 mixed heating circuits	1 calorifier	1 calorifier with change-over unit
Hydr. 0	•								
Hydr. 1	•				•			•	
Hydr. 2	•				•				•
Hydr. 3	•					•		•	
Hydr. 4	•				•	•		•	
Hydr. 5	•						•	•	
Hydr. 6	•				•		•	•	
Hydr. 9		•							
Hydr. 10		•			•			•	
Hydr. 11		•				•		•	
Hydr. 12		•			•	•		•	
Hydr. 14	•			•					
Hydr. 15	•			•	•			•	
Hydr. 16	•			•		•		•	
Hydr. 17	•			•	•	•		•	
Hydr. 19	•		•						
Hydr. 20	•		•			•		•	
Hydr. 22	•				•				
Hydr. 23	•					•			

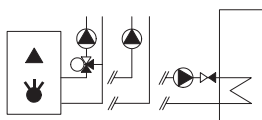




## TopTronic® E basic module heat generator and 1 module expansion



## TopTronic® E basic module



### TopTronic® E basic module heat generator TTE-WEZ

Controller module for control of heat generators and the corresponding consumers with integrated control functions for:

- Heat generator management
- Additional heat generator management
- Cascade management
- 1 heating/cooling circuit without mixer
- 1 heating/cooling circuit with mixer
- 1 hot water charging circuit
- var. additional functions

Consisting of:

- Fitting accessories
- 1 outdoor sensor AF/2P/K
- 1 immersion sensor TF/2P/5/6T/S1  
L = 5.0 with plug,
- 1 contact sensor ALF/2P/4/T/S1  
L = 4.0 m with plug,
- Basic plug set for basic module

#### Notice

If the basic module is used without Hoval heat generator then a TopTronic® E control module must be ordered separately!

#### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 1 module expansion can be connected)!

#### Notice

To implement functions differing from the standard the supplementary plug set may have to be ordered!



### Supplementary plug set

for TTE-WEZ heat generator

Consisting of RAST 5 mating plugs for connecting further sensors and actuators on the basic module heat generator.

The controller module is already equipped with a basic plug set, the supplementary plug set is required for advanced functions.

Consisting of:

- plug for 230 V output (VA2)  
(variable output)
- plug for sensor (VE2) (variable input)
- plug for 0-10 V input (VE10V)
- plug for 0-10 V/PWM output (VA10V)
- plug for low-voltage output (H1)

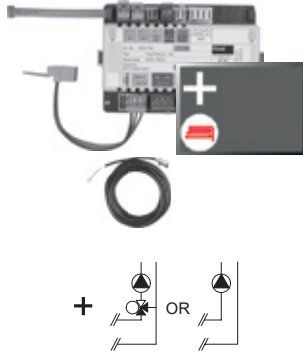
## Part No.

6037 053

6034 499



## TopTronic® E module expansions for TopTronic® E basic module heat generator



**Max. 1 module expansion can be connected.**

### TopTronic® E module expansion heating circuit TTE-FE HK

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

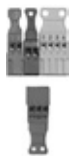
- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer

Consisting of:

- Fitting accessories
- 1 contact sensor  
ALF/2P/4/T, L = 4.0 m
- Basic plug set FE module

### Notice

To implement functions differing from the standard the supplementary plug set may have to be ordered!



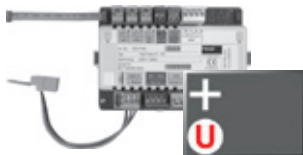
### Supplementary plug set for controller modules and module expansion TTE-FE HK

Consisting of RAST 5 mating plugs for connecting further sensors and actuators on the controller module or on the module expansion.

The controller module is already equipped with a basic plug set, the supplementary plug set is required for advanced functions.

Consisting of:

- Plug for mains out (230 V)
- Plug for sensor (VE3)  
(variable input)
- Plug for 0-10 V input (VE10V)
- Plug for flow rate sensor input  
(FVT)



### TopTronic® E module expansion Universal TTE-FE UNI

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

Consisting of:

- Fitting accessories
- Plug set FE module

### Notice

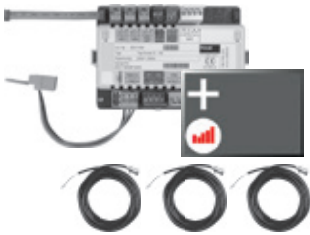
Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

## Part No.

6034 576

6034 503

6034 575



**TopTronic® E module expansion heating circuit incl. energy balancing**

TTE-FE HK-EBZ

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer incl. energy balancing in each case

Consisting of:

- Fitting accessories
- 3 contact sensors ALF/2P/4/T, L = 4.0 m
- Plug set FE module

**Notice**

The continuous flow sensor set must be ordered as well.

**Sets flow rate sensor**

- Used in combination with the module expansion heat balancing or var. controller modules for heat metering
- Flow sensor supplies the current flow rate as well as the current temperature to the measuring point

Consisting of:

- flow rate sensor
- connection cable
- RAST 5 plug for connecting to TopTronic® E



**Plastic housing**

Unit of measure	Connection	Flow rate l/min
DN 8	G 3/4"	0.9-15
DN 10	G 3/4"	1.8-32
DN 15	G 1"	3.5-50
DN 20	G 1 1/4"	5-85
DN 25	G 1 1/2"	9-150

6038 526  
6038 507  
6038 508  
6038 509  
6038 510



**Brass housing**

Unit of measure	Connection	Flow rate l/min
DN 10	G 1"	2-40
DN 32	G 1 1/2"	14-240
DN 40	G 2"	22-380

6042 949  
6042 950  
6055 092

**Further information**

See "Hoval TopTronic® E module expansions" chapter

**TopTronic® E controller modules, control/room control modules, HovalConnect, wall casing, sensor**  
see separate chapter

**Part No.**

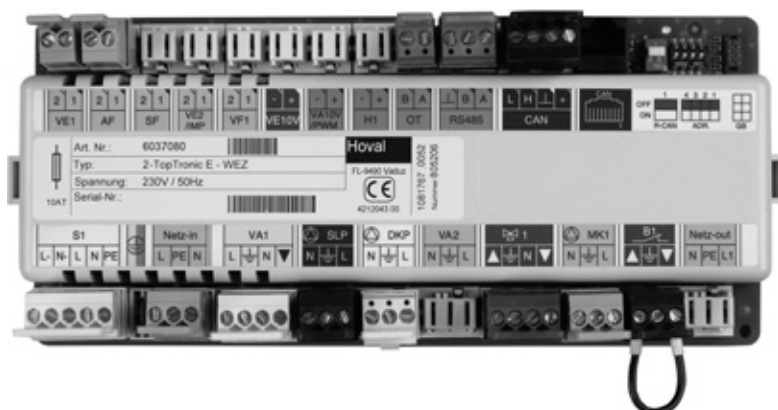
6037 062

## TopTronic® E basic module heat generator

Type		TTE-WEZ
• Max. Power supply		230 V AC +6/-10 %
• Frequency	Hz	50-60
• Max. power consumption incl. bus supply, module expansions, approx.	W	18.9
• Min. power consumption (only basic module)	W	0.8
• Max. power consumption (only basic module)	W	7.8
• Fuse		T 10 A H 250 V
<b>Output (low voltage)</b>		
• Electromechanical relays		7
<b>Output (extra-low voltage)</b>		
• Signal output PWM or 0-10 V		1
<b>Switching capacity</b>		
• Electromechanical relays	A	3
<b>Input (low voltage)</b>		
• Optocoupler input		1
<b>Inputs (extra-low voltage)</b>		
• Input 0-10 V		1
• Inputs sensors		4
• Inputs flow rate sensor		0
• Pulse input (can be switched over to sensor)		1
• Voltage measuring circuit, with protective isolation 2.9 kV	V	15
<b>Expansion (module expansion)</b>		
• Max. number		1
<b>Casing</b>		
• Installation		Top hat rail mounting
• Dimensions (W x H x D) incl. plug	mm	230 x 100 x 75
• Ambient temperature (during operation)	°C	0...50
• Humidity (in operation), non-condensing	% RH	20...80
• Storage temperature	°C	-20...60
<b>Bus system (Hoval CAN bus)</b>		
• Capacity		max. 4 control modules/3 control modules + 1 gateway
• Bus supply		yes
• Bus line		4-wire bus
• Max. bus length twisted, shielded	m	100 (greater distances possible with engineering of additional measures)
• Min. line cross-section	mm²	0.5
• Cable type (recommended)		JY-(ST) 2 x 2 x 0.8
<b>Other bus interfaces</b>		
		Internal unit bus (master)
		RS485
		OpenTherm (< 30 m)
<b>Miscellaneous</b>		
• Spring reserve		approx. 10 years, battery buffered
• Type of protection		IP 20
• Protection class		I – EN 60730
• Plug types		RAST 5 (coloured, coded)

## Electrical connection

TopTronic® E basic module heat generator





## TopTronic® E basic module district heating/fresh water com IP

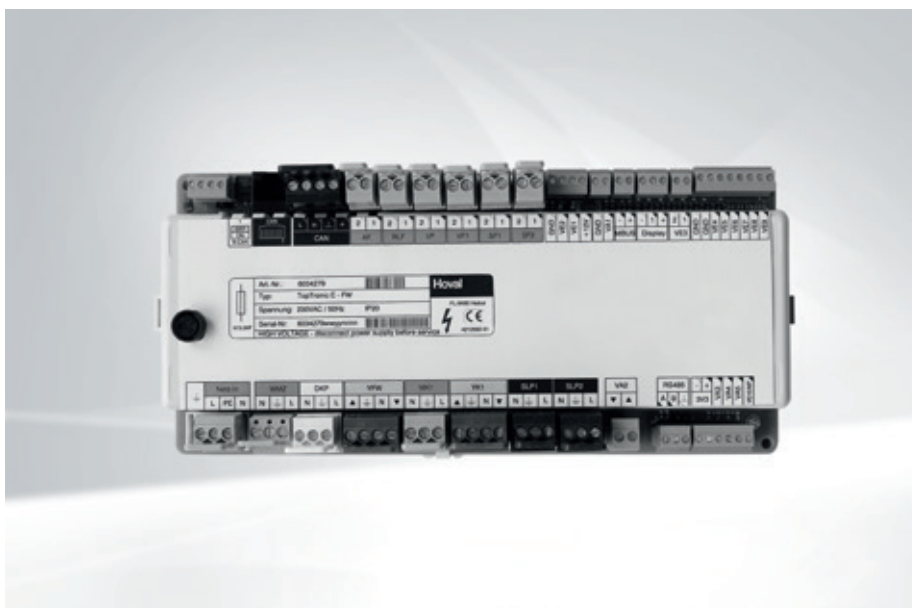
- Controller module for controlling district heating systems in non-communicative and IP-communicative networks (for the latter, a separately available Ethernet connection is required). Control of the associated consumers with integrated functions for:
  - Primary valve control
  - Cascade management
  - 1 heating circuit with mixer
  - 1 Heater circuit without mixer
  - 1 hot water charging circuit
  - Various additional functions
- Connection technology partially executed as plug-in screw terminals in coded RAST 5 design as well as conventional plug-in screw terminal technology
- Update capability of the controller software
- Time and date via integrated RTC, multi-day spring reserve via capacitor
- Fine fuse 5 A
- Controller module suitable for cabinet installation thanks to ability to install on DIN rail 35 x 15 x 2.2 mm or 35 x 7.5 x 2.2 mm
- Multiple expansion possibilities via Hoval CAN bus:
  - max. 16 controller modules in the bus system
  - Cascade connection with up to 8 different heat generators possible
  - Cascade connection with up to 10 different transfer stations possible
  - can be extended to up to 48 heating circuits

### Notice

Operation of the controller module is generally via the TopTronic® E control module installed in the heat generator or in the station! If the control module is used without Hoval heat generator, the control module for operating the basic module district heating/fresh water and a wall casing must be ordered separately!

### Inputs and outputs

- 230 V 3-point output for activating the primary valve or pilot control of a buffer storage solution
- 230 V 3-point output, e.g. for controlling the mixer
- 230 V output, e.g. for controlling the recirculation pump
- 230 V continuous phase, e.g. for supplying the heat meter
- Volt-free contact for outputting an alarm message
- 0-10 V input, e.g. for connecting to heating zone control systems or for integrating and additional heat generator via 0-10 V interface or switching contact (e.g.: solid-fuel boiler, etc.)
- 0-10 V or PWM output for controlling a variable-speed pump
- 0-10 V outputs for controlling continuous valves (e.g. for a primary valve and a mixing circuit valve)
- Variable inputs and outputs:
  - 230 V output, e.g. for controlling the direct circuit pump, feed pump
  - 230 V output, e.g. for controlling the buffer storage pump
  - 230 V output, e.g. for controlling the recirculation pump



### Notice

Max. 5 module expansions can be connected, of these, max. 3 module expansions heating circuit district heating

- 2 analogue inputs 4-20 mA/0-10 V for reference value specification
- 1 analogue output 4-20 mA
- M-Bus interface for reading out heat meters (max. 16 M-Bus participants)

### Option

- Can be expanded by max. 5 module expansions (expansion of the inputs/outputs), of these, max. 3 module expansions heating circuit district heating:
  - Module expansion heating circuit district heating (1 heating circuit with/without mixer) or
  - Module expansion hot water district heating (1 hot water charging circuit) or
  - Module expansion Universal district heating (various special functions)

### Functions

- Weather-supported flow temperature controller for heating operation with or without room influence taking account of building characteristics and switch-on optimisation
- Optimisation of the heating circuit flow temperatures and improvement in the room climate taking account of the weather forecast (only possible in combination with HovalConnect)
- Different basic programs (week programs, economy mode, holiday until, etc.) can be defined for each heating circuit plus ability to activate manual operation (construction site mode)
- Separate switching time programs for each heating circuit as well as for hot water with



TopTronic® E module expansion heating circuit district heating



TopTronic® E module expansion hot water district heating



TopTronic® E module expansion Universal district heating

- 2 individually preset week programs comprising
  - 5 different - individually preset - day programs with
  - 6 switching points per day
- Different temperatures can be set for each switching cycle
- Various functions for hot water:
  - Selection of different basic programs (week programs, economy mode, holiday until, etc.)
  - various operating modes (e.g. accumulator priority or parallel mode)
  - Buffer storage circuit on the primary or secondary side
  - adjustable loading criteria (e.g.: adjustable loading times, under-shooting the minimum nominal value, etc.)
  - adjustable switch-off criteria (e.g. achieving the setpoint valve, achieving the lower sensor setpoint value, etc.)
  - adjustable loading block (if the loading flow temperature is too low, the setpoint temperature is not reached, differential temperature-dependent solar circuit control)
- Definable switching times for recirculation pump control
- Automatic changeover of summer/winter time
- Heating characteristic adaptation possible for each individual heating circuit
- Screed drying function for underfloor heating
- Requirement contact for constant requirements (ventilation, swimming pool, etc.)
- Modem switching function
- Pump anti-blocking protection

- Frost protection function
- Cascade management that is activated following the combination with other basic modules (up to 8 heat generators)
- Cascade connection of 10 district heating stations in master/slave combination possible
- Definition of priorities for switching over between heating and hot water operation
- Operating hours and pulse counter
- Electronic output power limit by heat meter
- Outside temperature-dependent return limitation
- Reduction characteristic curve for network protection
- Integrated event memory
- Buffer storage circuit can be connected on the primary or secondary side of the heat exchanger
- Warm water input circuit
- Self-test with error diagnosis and error memory
- Relay test for each output can be activated separately
- Zero passage circuit  
The TopTronic® E basic module district heating/fresh water has a special zero passage circuit of the fitted relays. This is used for reducing the load on the switching contacts, and thus increases the service life of the relays
- Functions that can be implemented with module expansions:
  - Heating circuit without mixer
  - Heating circuit with mixer or
  - hot water charging circuits
  - Various additional functions

#### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 5 module expansions can be connected)!

#### Use

- Control of district heating stations or other transfer stations (buffer storage solutions) in a very wide power range
- Control for multiple heat generator/district heating systems by integrated cascade management:
  - 10 district heating stations by master/slave connection or
  - 8 different heat generators
- For room heating and hot water charging circuit
- For optimisation of the room climate by control algorithm taking account of the weather forecast (only possible in combination with HovalConnect)
- Upstream control for technical systems such as ventilation, air conditioning systems, etc. or also for heating zone control systems
- For decentralised assembly - remote from the control module - directly at the sensors and actuators:
  - Installation in wall casing/control panel
  - Connection to the operating unit via Hoval CAN bus
- With significant expansion capability by controller modules via the Hoval CAN bus
- For flexible integration of heat generators in modern communication systems via different interfaces
- For remote connection of heat generators via HovalConnect

#### Delivery

- TopTronic® E basic module district heating/fresh water com IP
- 2 mounting clips for DIN rail attachment
- 1 outdoor sensor AF/1.1P/K
- 1 immersion sensor TF/1.1P/2.5/6T, L = 2.5 m
- 1 contact sensor ALF/1.1P/2.5/T, L = 2.5 m
- Complete plug set for district heating module

#### Notice

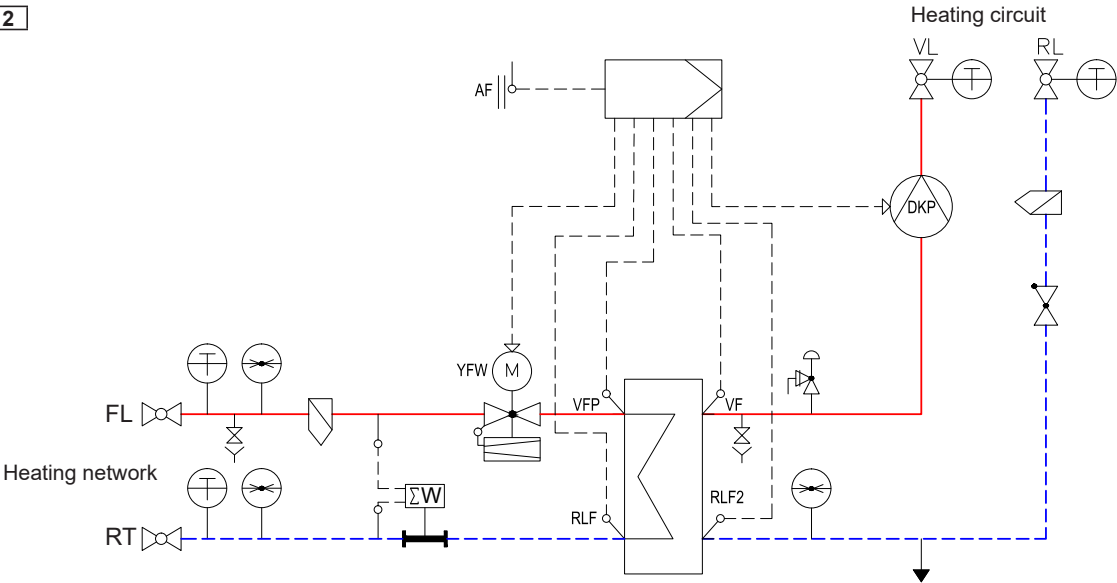
The supplementary plug set may have to be ordered to implement functions differing from the standard!

Functions that can be implemented

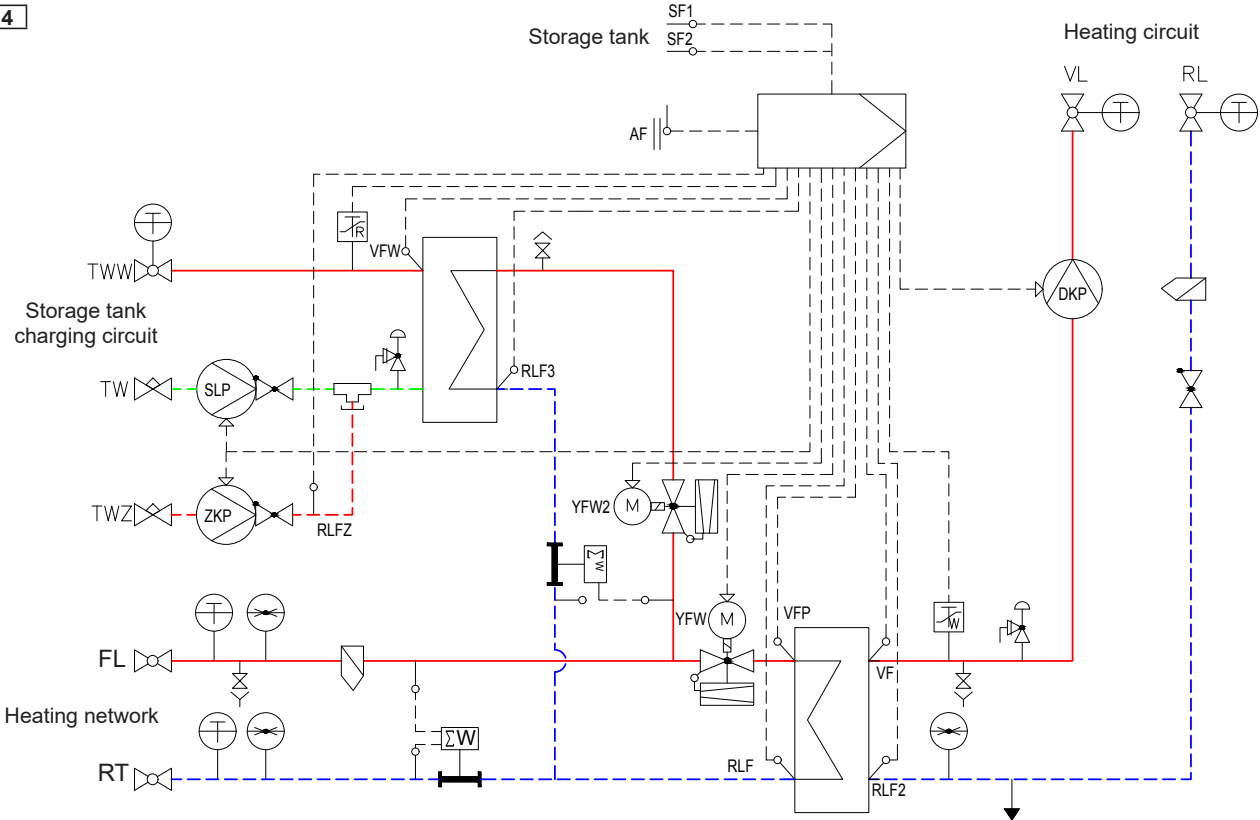
TopTronic® E basic module district heating/fresh water com IP and district heating com

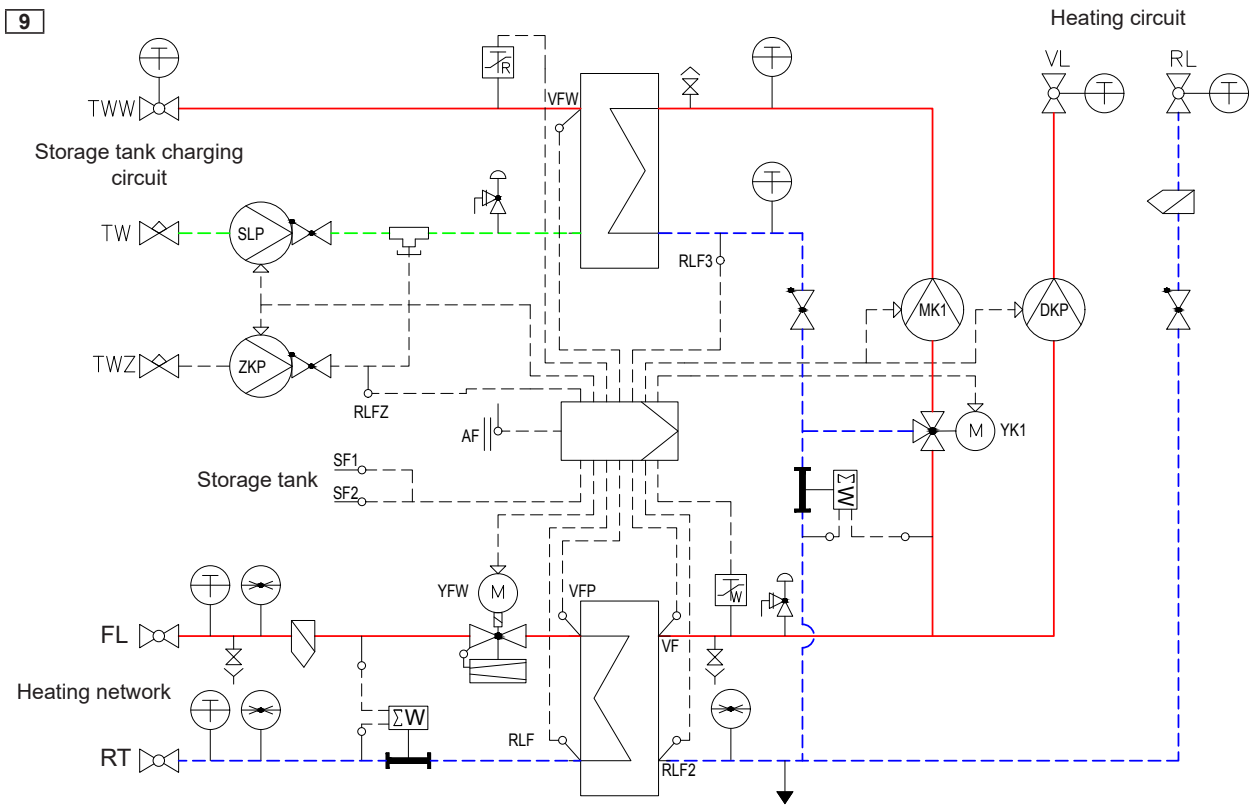
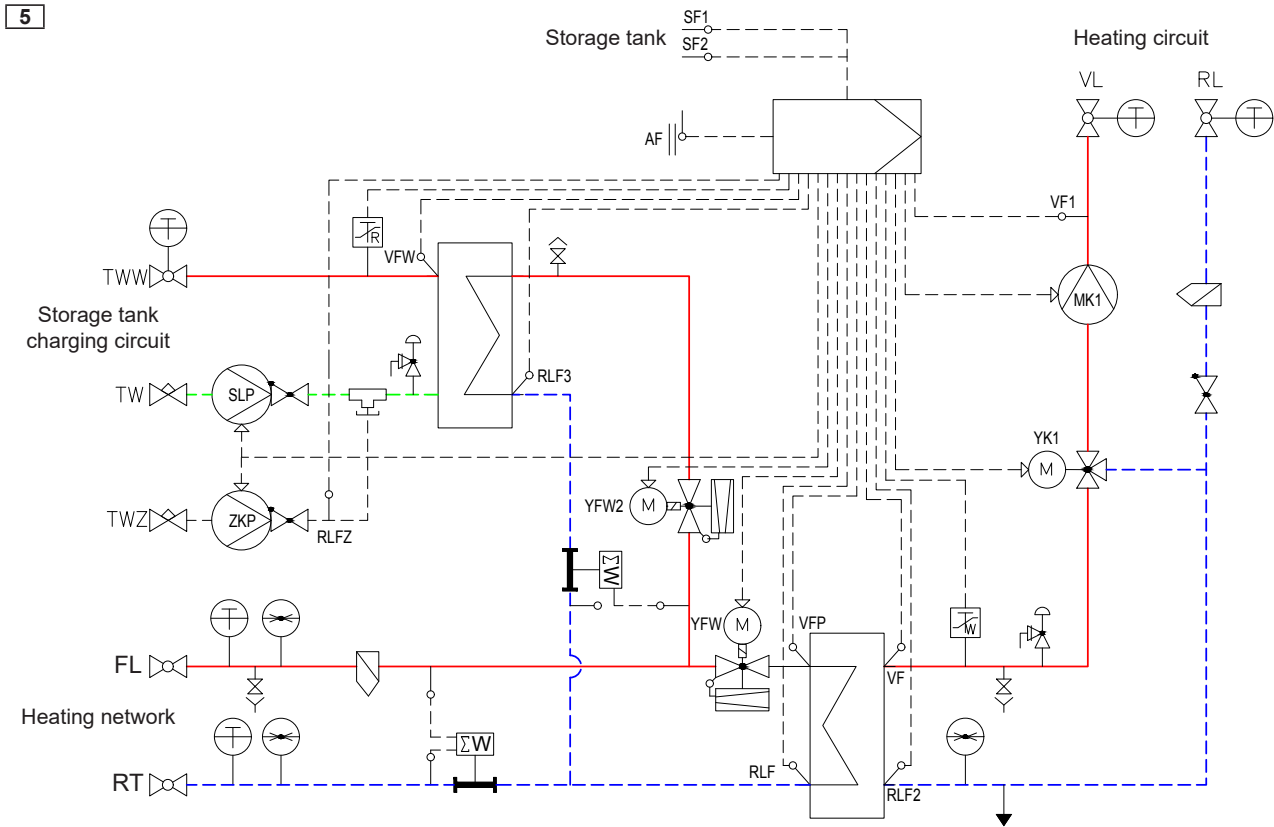
TTE-FW com IP/ FW com	1 heat exchanger	1 direct heating circuit	1 mixed heating circuit	2 mixed heating circuit	1 hot water charging circuit direct primary	1 hot water charging circuit direct secondary	1 DHW mixing charging circuit secondary
Hydr. 2	•	•					
Hydr. 4	•	•			•		
Hydr. 5	•		•		•		
Hydr. 9	•	•					•
Hydr. 11	•		•				•
Hydr. 12	•	•				•	
Hydr. 13	•		•			•	
Hydr. 15	•	•	•				
Hydr. 25	•	•	•			•	
Hydr. 26	•	•	•				•
Hydr. 27	•		•	•		•	
Hydr. 28	•		•	•			•

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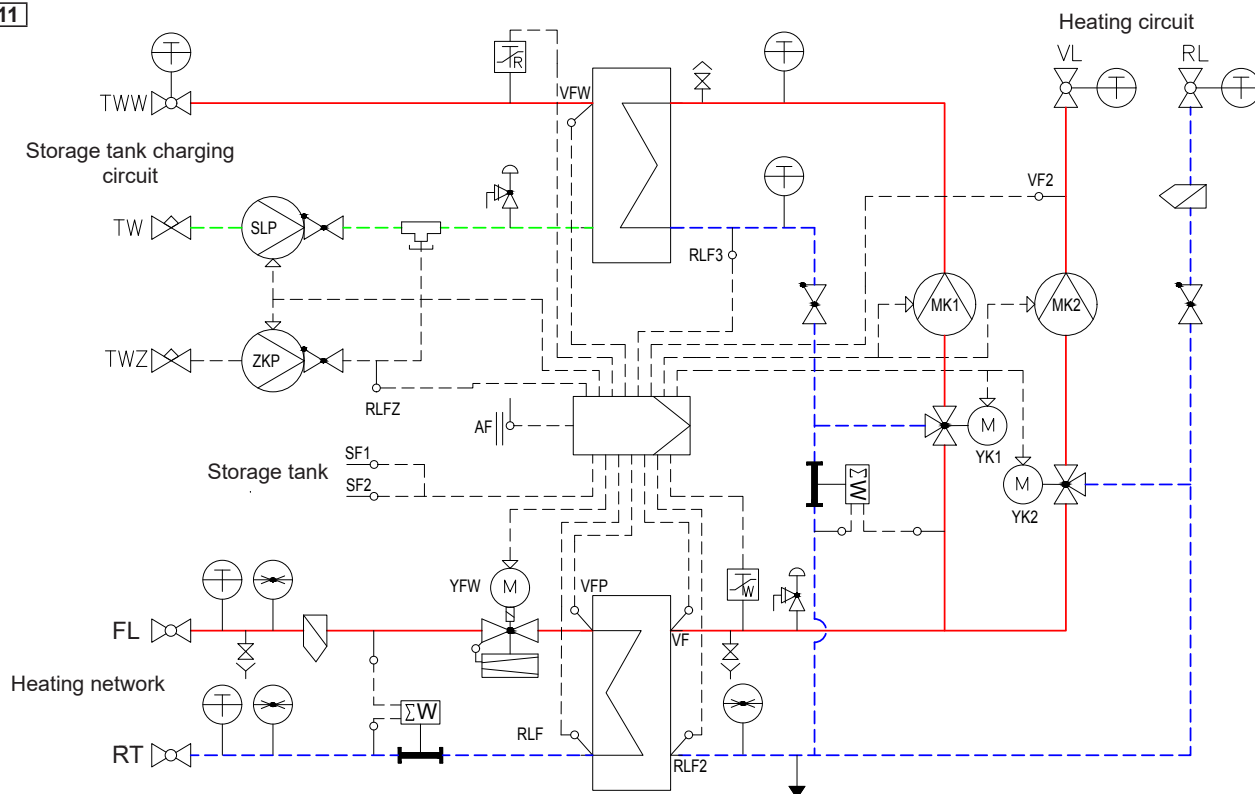
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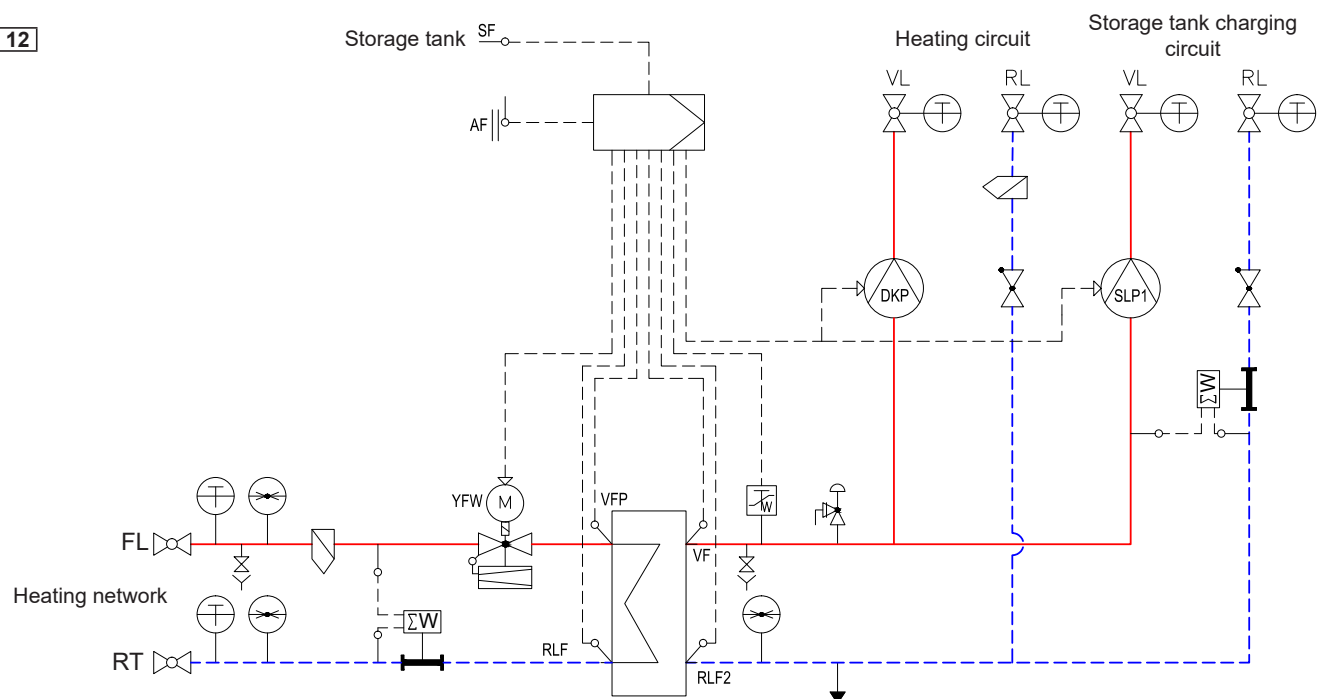




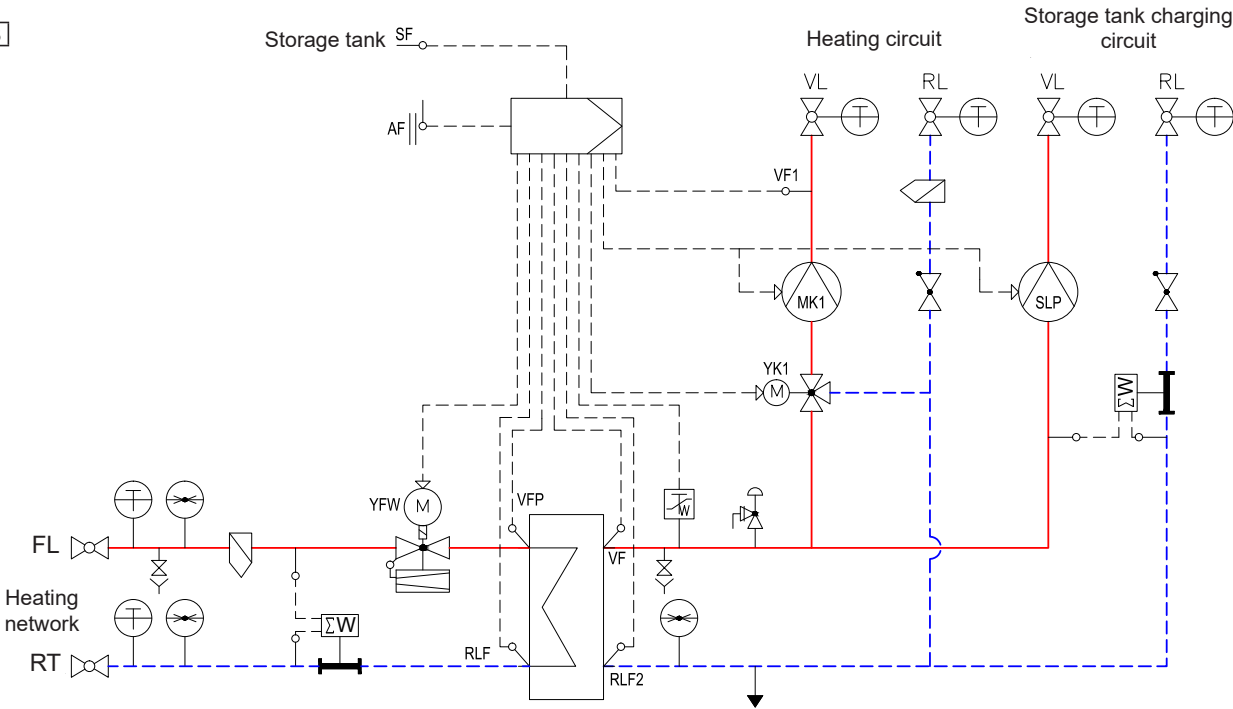
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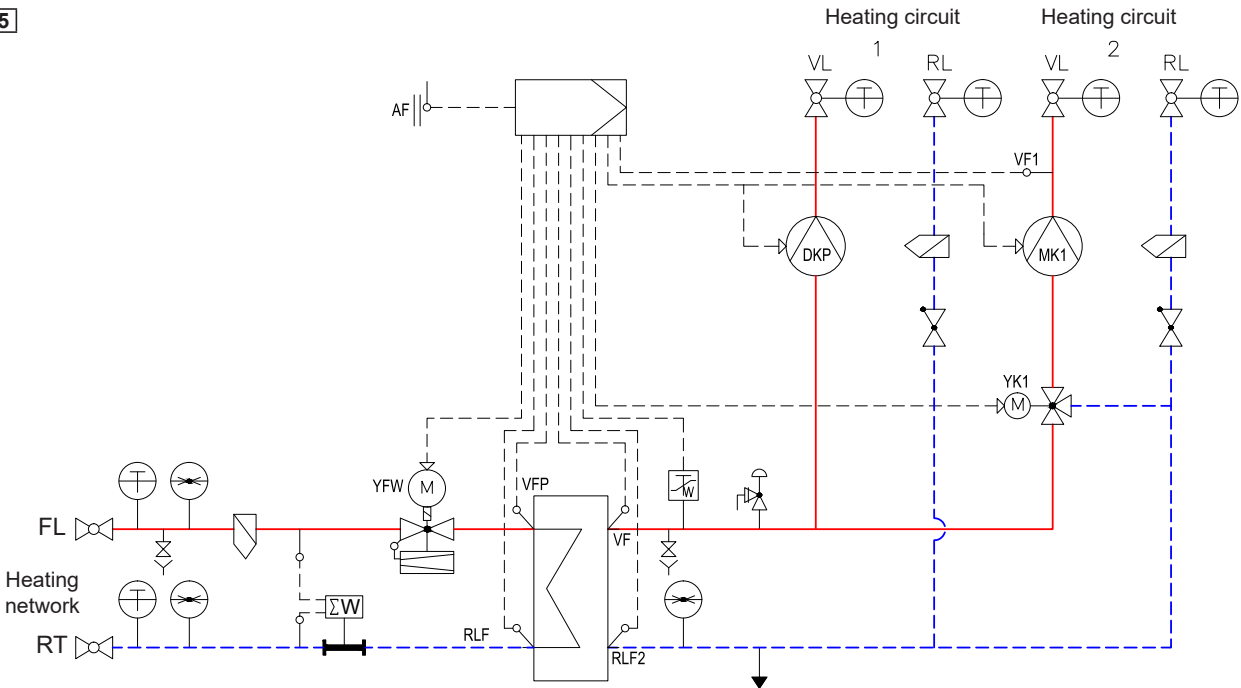
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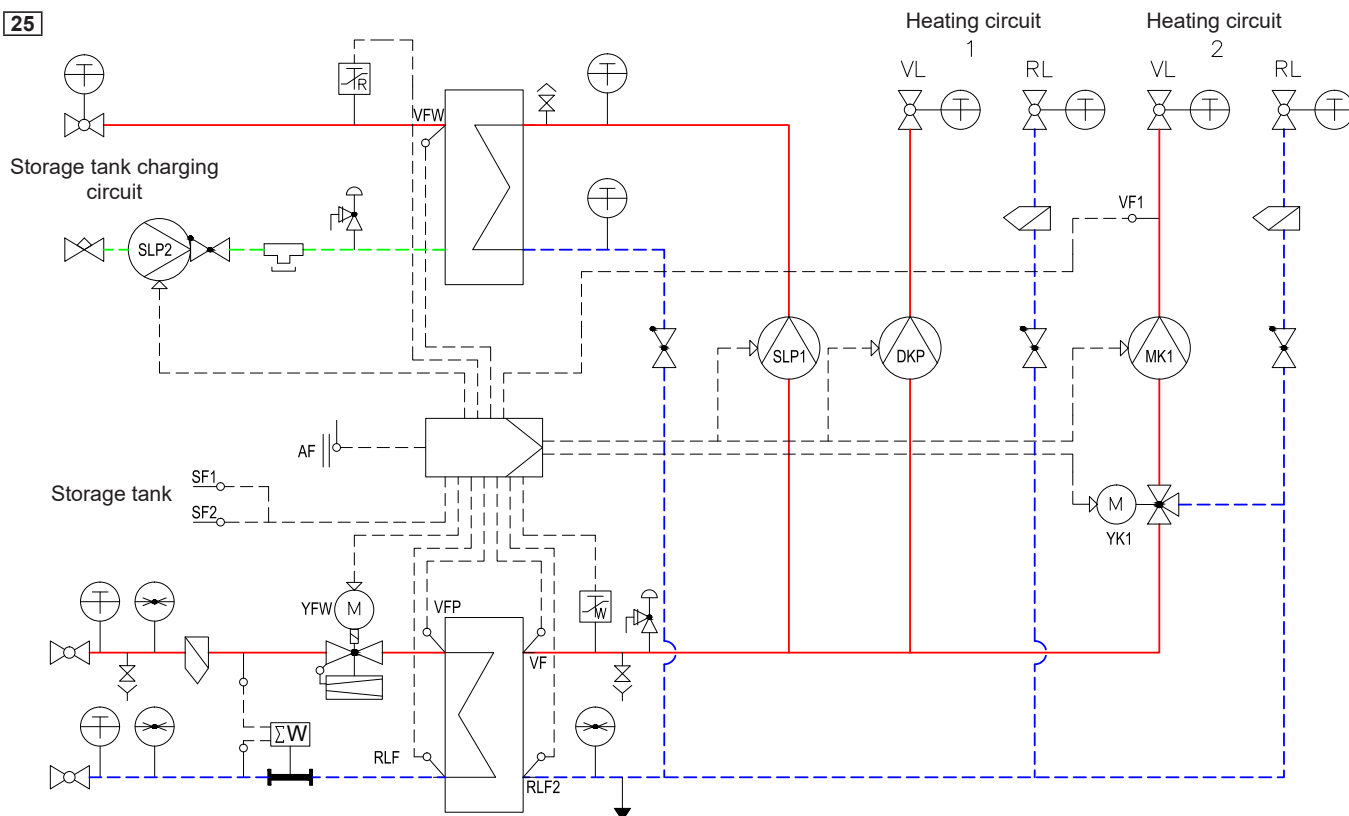
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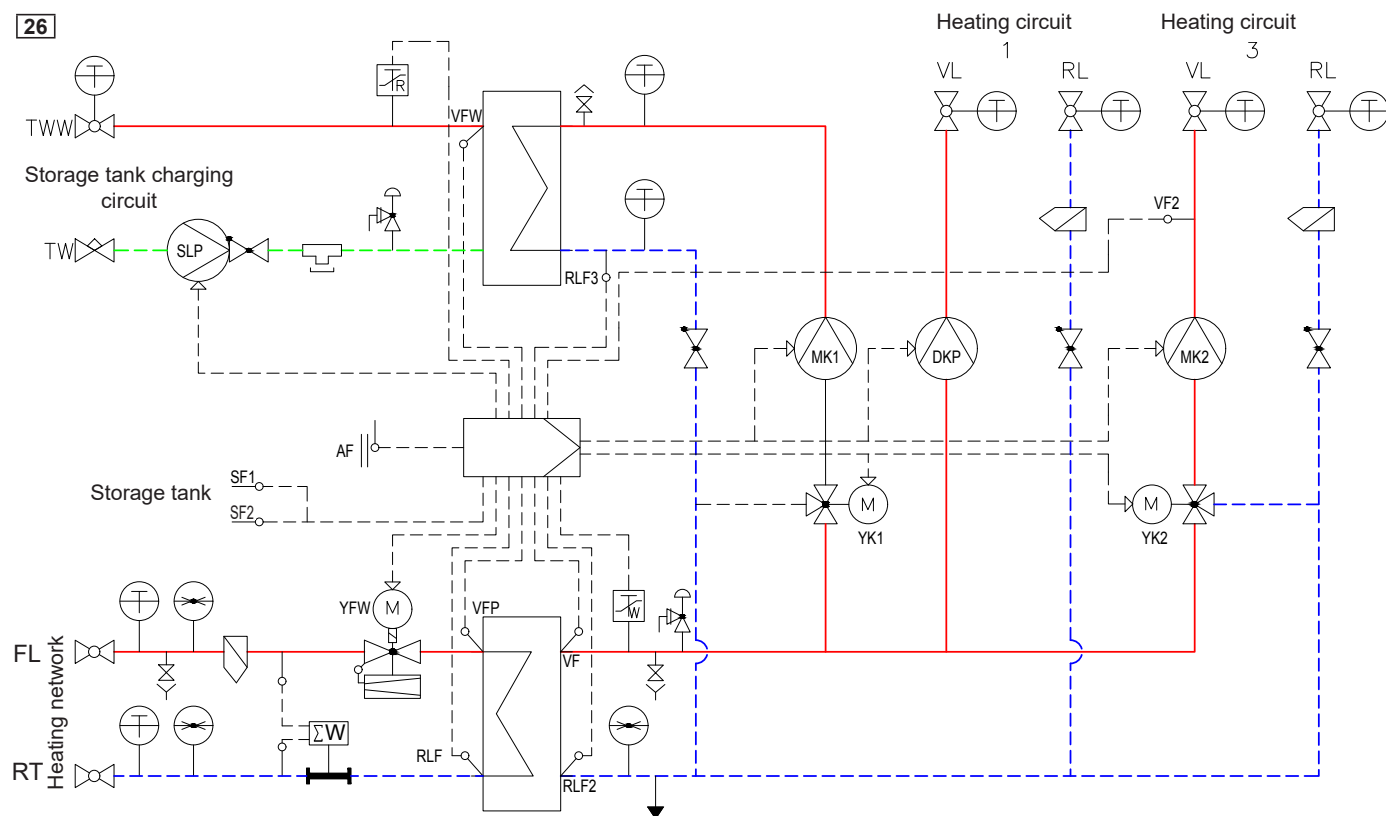
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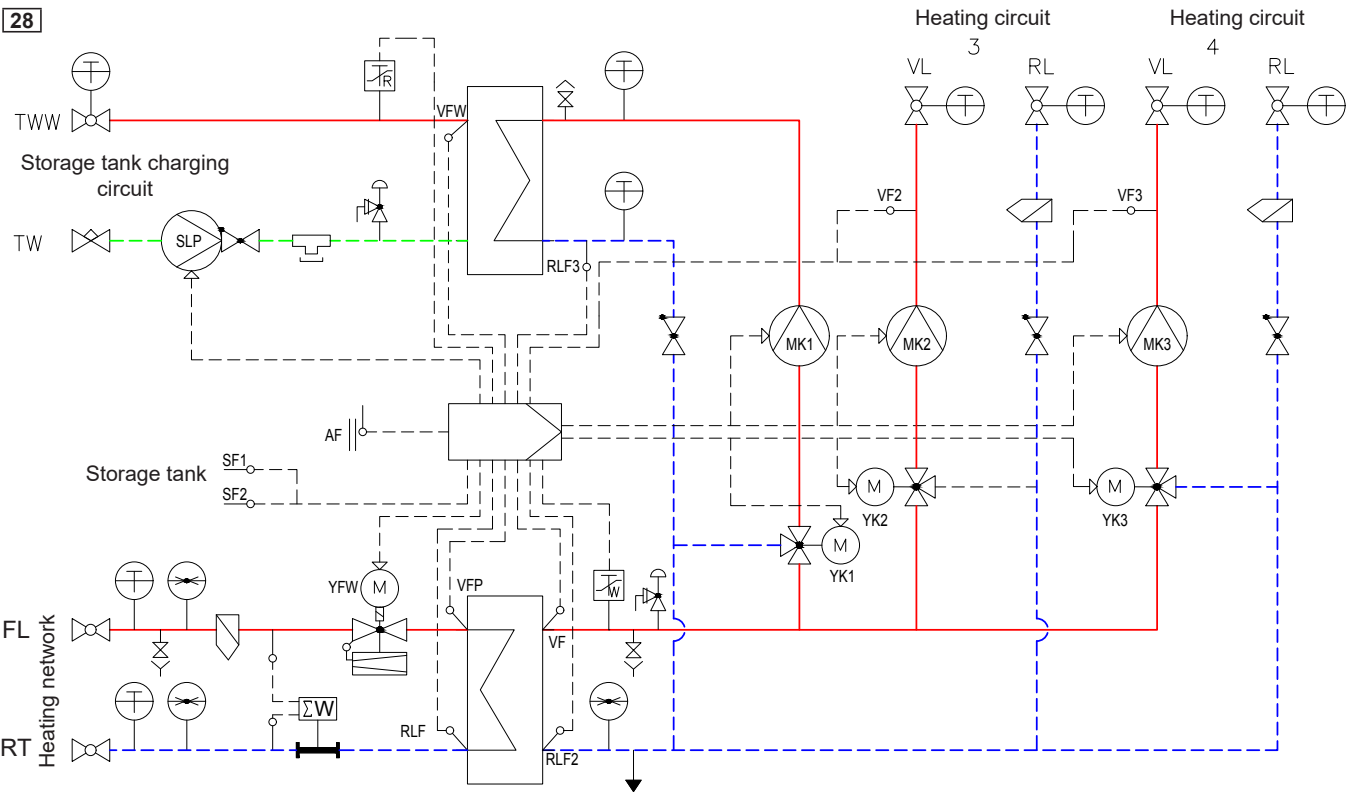
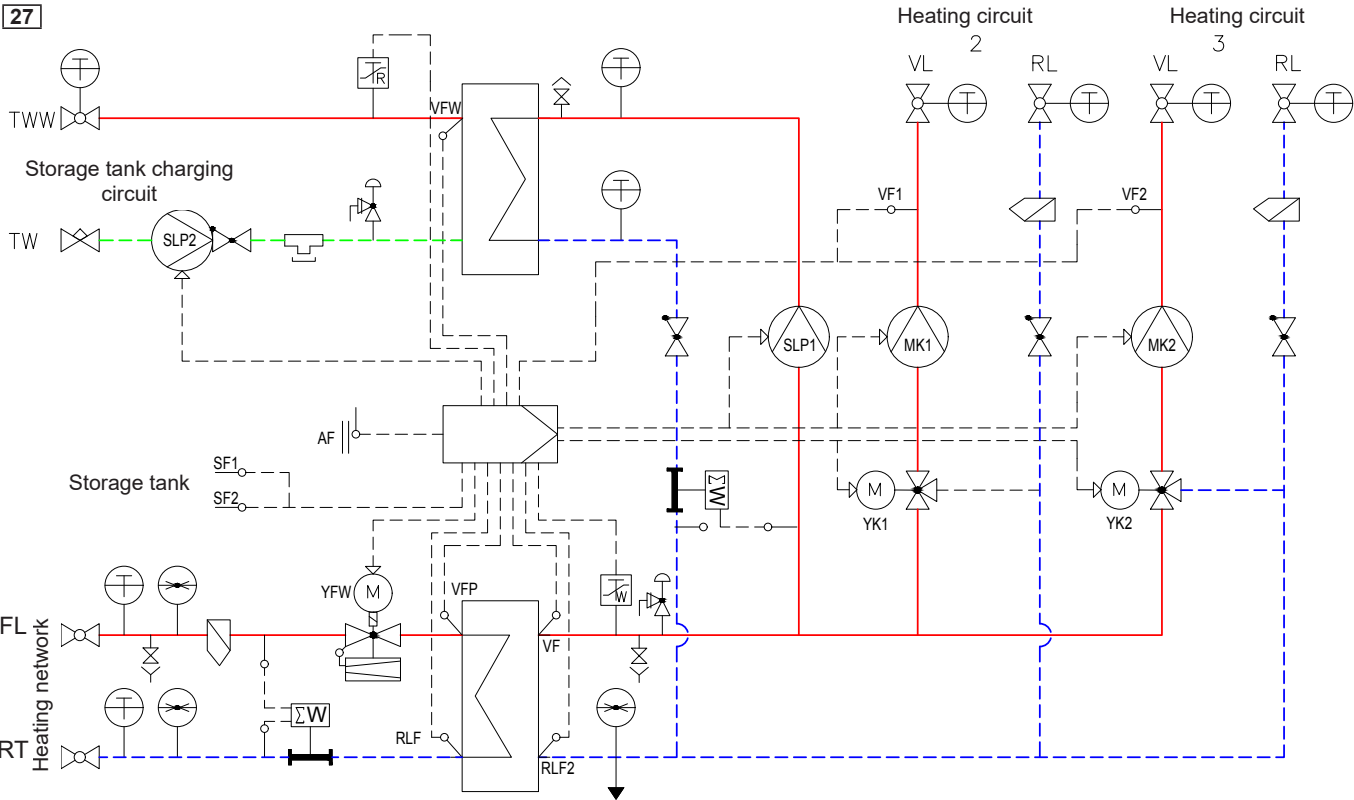


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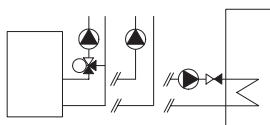


26





## TopTronic® E basic module



### TopTronic® E basic module district heating/fresh water TTE-FW com IP

Controller module for controlling district heating systems in non-communicative and IP-communicative networks (for the latter, a separately available Ethernet connection is required) and the associated consumers with integrated control functions for:

- Primary valve control
- Cascade management
- 1 heating circuit without mixer
- 1 heating circuit with mixer
- 1 hot water charging circuit
- various additional functions

Consisting of:

- Fitting accessories
- 1 outdoor sensor AF/1.1P/K
- 1 immersion sensor TF/1.1P/2.5/6T  
L = 2.5 m
- 1 contact sensor ALF/1.1P/2.5/T  
L = 2.5 m
- Plug set for fresh water module

#### Notice

If the basic module is used without Hoval heat generator then a TopTronic® E control module must be ordered separately!

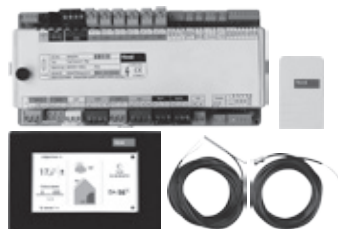
#### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 5 module expansions can be connected)!

## Part No.

6059 489

## TopTronic® E district heating controller set



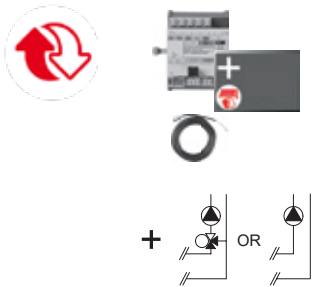
### TopTronic® E IP communicative district heating controller set

Consisting of:

- TopTronic® E basic module district heating/fresh water com IP
- TopTronic® E control module black
- Plug set for DH module
- Outdoor sensor AF/1.1P/K
- Immersion sensor TF/1.1P/2.5/6T,  
L = 2.5 m
- Contact sensor ALF/1.1P/2.5/T,  
L = 2.5 m

6059 490

TopTronic® E module expansions  
for TopTronic® E basic module  
district heating/fresh water com IP



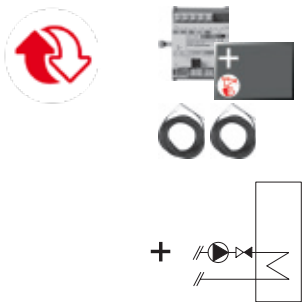
Max. 5 module expansions can be connected, of these, max. 3 module expansions heating circuit district heating

TopTronic® E module expansion  
district heating circuit TTE-FE HK FW

Expansion to the inputs and outputs of a controller module (basic module district heating/fresh water, basic module district heating com) for carrying out various functions. Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

- Consisting of:
- Fitting accessories
  - Ribbon cable for connecting the device bus to the controller module,
  - Connection set for connecting the controller module to the mains voltage,
  - 1 x contact sensor ALF/1.1P/2.5/T L = 2.5 m,
  - Plug set - district heating expansion

6038 119



TopTronic® E module expansion  
hot water district heating TTE-FE WW FW

Expansion to the inputs and outputs of the basic module district heating/fresh water or basic module district heating com for implementing a hot water circuit.

- Consisting of:
- fitting accessories
  - 2 immersion sensors TF/1.1P/2.5/6T, L = 2.5 m

6038 120



TopTronic® E module expansion  
Universal district heating TTE-FE UNI FW

Expansion to the inputs and outputs of the basic module district heating/fresh water or basic module district heating com for implementing various functions.

- Consisting of:
- Fitting accessories

6038 117

Notice

Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

Further information

See "Hoval TopTronic® E module expansions district heating" chapter

TopTronic® E controller modules,  
control/room control modules,  
HovalConnect, wall casing, sensor  
see separate chapter

## TopTronic® E basic module district heating/fresh water com IP

Type		TTE-FW
• Power supply max.		230 V AC +6/-10 %
• Frequency	Hz	50-60
• Max. power consumption incl. bus supply, module expansions, approx.	W	18.3
• Min. power consumption	W	0.7
• Max. power consumption	W	5.4
• Fuse		F 5 A H 250 V
<b>Output (low voltage)</b>		
• Electromechanical relays		9
<b>Output (extra-low voltage)</b>		
• Signal output PWM or 0-10 V		4
<b>Switching capacity</b>		
• Electromechanical relays	A	5
<b>Input (low voltage)</b>		
• Optocoupler input		0
<b>Inputs (extra-low voltage)</b>		
• Input 0-10 V		4
• Inputs sensors		11
• Inputs flow rate sensor		0
• Pulse input		1
<b>Expansion (module expansion)</b>		
• Max. number		5
(of these, max. 3 module expansions heating circuit district heating)		
<b>Casing</b>		
• Installation		Top hat rail mounting
• Dimensions (W x H x D) incl. plug	mm	250 x 120 x 75
• Ambient temperature (during operation)	°C	0...50
• Humidity (in operation), non-condensing	%, RH	20...80
• Storage temperature	°C	-20...60
<b>Bus system (Hoval CAN bus)</b>		
• Capacity		max. 4 control modules/3 control modules + 1 gateway
• Bus supply		yes
• Bus line		4-wire bus
• Max. bus length twisted, shielded	m	100 (greater distances possible with engineering of additional measures)
• Min. line cross-section	mm²	0.5
• Cable type (recommended)		JY-(ST) 2 x 2 x 0.8
<b>Other bus interfaces</b>		Internal unit bus (master) M-Bus (Master) RS485 TCP/IP optional
<b>Miscellaneous</b>		
• Spring reserve		approx. 96 hours (supercapacitor)
• Schutzart		IP 20
• Protection class		I – EN 60730
• Plug types		RAST 5 (coloured, coded), alternative plug-in terminal technology

## Electrical connection

TopTronic® E basic module district heating/fresh water com IP







## TopTronic® E basic module district heating com

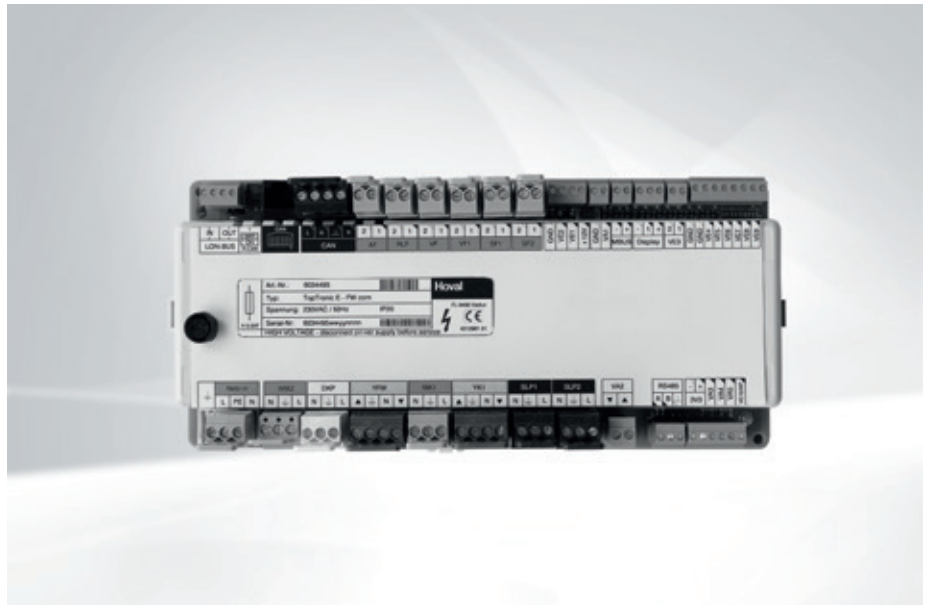
- Controller module for controlling district heating systems in communicative networks (communication interface for management system) and the corresponding consumers with integrated control functions for
  - Primary valve control
  - Cascade management
  - 1 heating circuit with mixer
  - 1 heating circuit without mixer
  - 1 hot water charging circuit
  - Various additional functions
- Connection technology partially executed as plug-in screw terminals in coded RAST 5 design as well as conventional plug-in screw terminal technology
- Update capability of the controller software
- Time and date via integrated RTC, multi-day spring reserve via capacitor
- Microfuse 5 A
- Controller module suitable for cabinet installation thanks to ability to install on DIN rail 35 x 15 x 2.2 mm or 35 x 7.5 x 2.2 mm
- Multiple expansion possibilities via Hoval CAN bus:
  - max. 16 controller modules in the bus system
  - Cascade connection with up to 8 different heat generators possible
  - Cascade connection with up to 10 different transfer stations possible
  - can be extended to up to 48 heating circuits

### Notice

Operation of the controller module is generally via the TopTronic® E control module installed in the heat generator!  
If the controller module is used without Hoval heat generator then the control module for operating the basic module district heating com and a wall casing with control module cut-out must be ordered separately!




### Inputs and outputs

- 230 V 3-point output for activating the primary valve or pilot control of a buffer storage solution
- 230 V 3-point output, e.g. for controlling the mixer
- 230 V output, e.g. for controlling the recirculation pump
- 230 V continuous phase, e.g. for supplying the heat meter
- Volt-free contact for outputting an alarm message
- 0-10 V input, e.g. for connecting to heating zone control systems or for integrating and additional heat generator via 0-10 V interface or switching contact (e.g.: solid-fuel boiler, etc.)
- 0-10 V or PWM output for controlling a variable-speed pump
- 0-10 V outputs for controlling continuous valves (e.g. for a primary valve and a mixing circuit valve)
- Variable inputs and outputs:
  - 230 V output, e.g. for controlling the direct circuit pump, feed pump
  - 230 V output, e.g. for controlling the storage tank charging pump
  - 230 V output, e.g. for controlling the recirculation pump



### Notice

Max. 5 module expansions can be connected to the TopTronic® E basic module, thereof max. 3 module expansions for heating circuits district heating (i.e. max. 4 mixer circuits, 1 direct heating circuit). However, a maximum of 4 control modules can be installed per basic module district heating. This means that not every heating circuit can be equipped with a control module! Room control is possible only for the direct and 2 mixed heating circuits. In the master/slave group, an additional mixer circuit with room control function can be used on the slave controller. If further heating circuits with control modules are required, heating circuit/hot water modules can also be combined with the basic module district heating (max. 48 heating circuits).

-  TopTronic® E module expansion Heating circuit district heating
-  TopTronic® E Module expansion hot water district heating
-  TopTronic® E module expansion Universal district heating

### Option

- Can be expanded by max. 5 module expansions (expansion of the inputs/outputs), thereof max. 3 module expansions heating circuit district heating:
  - Module expansion heating circuit district heating (1 heating circuit with/without mixer) or
  - Module expansion hot water district heating (1 hot water charging circuit) or
  - Module expansion Universal district heating (various special functions)
- Can be expanded with various accessories:
  - Ethernet connection TTE-FW com
  - Repeater TTE-FW com LON-Bus
  - Router TTE-FW com CAN bus
  - Data socket 13-pin TTE-FW com LON-Bus and lightning protection
  - various software licences for HovalSupervisor
  - various services for HovalSupervisor

### Functions

- Update capability of the controller software via central data network
- 100 % parameter setting capability of the complete controller via the HovalSupervisor central management system
- Weather-supported flow temperature controller for heating operation with or without room influence taking account of building characteristics and switch-on optimisation
- Optimisation of the heating circuit flow temperatures and improvement in the room climate taking account of the weather forecast (only possible in combination with HovalConnect)
- Different basic programs (week programs, eco mode, holiday, etc.) can be defined for each heating circuit plus ability to activate manual operation (construction site mode)
- Separate switching time programs for each heating circuit as well as for hot water with
  - 2 individually preset week programs comprising
  - 5 different - individually preset - day programs with
  - 6 switching points per day
- Different temperatures can be set for each switching cycle

- Various functions for hot water:
  - Selection of different basic programs (week programs, eco mode, holiday, etc.)
  - various operating modes (e.g. accumulator priority or parallel mode)
  - Buffer storage circuit on the primary or secondary side
  - adjustable loading criteria (e.g.: adjustable loading times, undershooting the minimum nominal value, etc.)
  - adjustable switch-off criteria (e.g. achieving the setpoint value, achieving the lower sensor setpoint value, etc.)
  - adjustable loading block (if the loading flow temperature is too low, the setpoint temperature is not reached, differential temperature-dependent solar circuit control)
- Definable switching times for recirculation pump control
- Automatic changeover of summer/winter time
- Heating characteristic adaptation possible for each individual heating circuit
- Screed drying for underfloor heating
- Requirement contact for constant requirements (ventilation, swimming pool, ...)
- Modem switching function
- Pump anti-blocking protection
- Frost protection function
- Cascade management that is activated following the combination with other basic modules (up to 8 heat generators)
- Cascade connection of 10 district heating stations in master/slave combination possible
- Definition of priorities for switching over between heating and hot water operation
- Operating hours and pulse counter
- Electronic output power limit by heat meter
- Outdoor temperature-dependent return limitation
- Reduction characteristic curve for network protection
- Integrated event memory
- Buffer storage circuit can be connected on the primary or secondary side of the heat exchanger
- Warm water input circuit
- Self-test with error diagnosis and error memory
- Relay test for each output can be activated separately
- Zero passage circuit
 

The TopTronic® E basic module district heating com has a special zero passage circuit of the fitted relays. This is used for reducing the load on the switching contacts, and thus increases the service life of the relays.
- Functions that can be implemented with module expansions:
  - heating circuit without mixer
  - heating circuit with mixer or
  - hot water charging circuits
  - various additional functions

#### Application

- Control of district heating stations or other transfer stations (buffer storage solutions) in a very wide power range
- Control for multiple heat generator/district heating systems by integrated cascade management:
  - 10 district heating stations by master/slave connection or
  - 8 different heat generators
- Flexible connection to the management system
- For room heating and hot water charging circuit
- For optimisation of the room climate by control algorithm taking account of the weather forecast (only possible in combination with HovalConnect)
- Upstream control for technical systems such as ventilation, air conditioning systems, etc. or also for heating zone control systems
- For decentralised assembly - remote from the control module - directly at the sensors and actuators:
  - Installation in wall casing/control panel
  - Connection to the operating unit via Hoval CAN bus
- With significant expansion capability by controller modules via the Hoval CAN bus
- For flexible integration of heat generators in modern communication systems via different interfaces
- For remote connection of heat generators via HovalConnect

#### Delivery

- TopTronic® E basic module district heating com
- 2 mounting clips for DIN rail attachment
- 1 outdoor sensor AF/1.1P/K
- 1 immersion sensor TF/1.1P/2.5/6T, L = 2.5 m
- 1 contact sensor ALF/1.1P/2.5/T, L = 2.5 m
- Complete plug set for district heating module

#### Functions that can be implemented

see TopTronic® E basic module district heating/fresh water/hydraulic applications

#### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 5 module expansions can be connected)!

## TopTronic® E basic module



### TopTronic® E basic module district heating com TTE-FW com

Controller module for controlling district heating systems in communicative networks (communication interface to the I&C system) and the corresponding consumers with integrated control functions for:

- primary valve control
- cascade management
- 1 heating circuit without mixer
- 1 heating circuit with mixer
- 1 hot water charging circuit
- various additional functions

Consisting of:

- Fitting accessories
- 1 outdoor sensor AF/1.1P/K,
- 1 immersion sensor TF/1.1P/2.5/6T  
L = 2.5 m,
- 1 contact sensor ALF/1.1P/2.5/T  
L = 2.5 m,
- Plug set for district heating module

#### Notice

If the basic module is used without Hoval heat generator then a TopTronic® E control module must be ordered separately!

#### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 5 module expansions can be connected)!

## Part No.

6034 570

## TopTronic® E district heating controller set



### TopTronic® E communicative district heating controller set

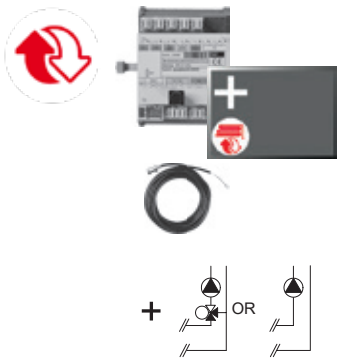
Consisting of:

- TopTronic® E basic module district heating com,
- TopTronic® E control module black, plug set for DH module,
- fresh air sensor AF/1.1P/K,
- immersion sensor TF/1.1P/2.5/6T,  
L = 2.5 m,
- contact sensor ALF/1.1P/2.5/T,  
L = 2.5 m

6038 524

TopTronic® E module expansions  
for TopTronic® E basic module district  
heating com

Part No.



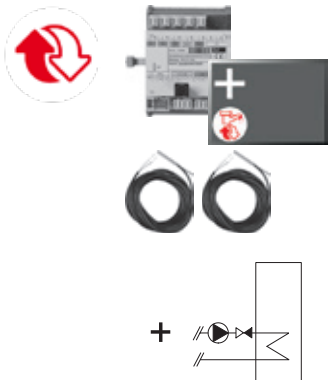
Max. 5 module expansions can be connected, thereof max. 3 module expansions heating circuit district heating

TopTronic® E module expansion  
district heating circuit TTE-FE HK FW

Expansion to the inputs and outputs of a controller module (basic module district heating/fresh water, basic module district heating com) for carrying out various functions. Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

- Consisting of:
- Fitting accessories
  - Ribbon cable for connecting the device bus to the controller module,
  - Connection set for connecting the controller module to the mains voltage,
  - 1 x contact sensor ALF/1.1P/2.5/T L = 2.5 m,
  - Plug set - district heating expansion

6038 119



TopTronic® E module expansion  
hot water district heating TTE-FE WW FW

Expansion to the inputs and outputs of the basic module district heating/fresh water or basic module district heating com for implementing a hot water circuit.

- Consisting of:
- fitting accessories
  - 2 immersion sensors TF/1.1P/2.5/6T, L = 2.5 m

6038 120



TopTronic® E module expansion  
Universal district heating TTE-FE UNI FW

Expansion to the inputs and outputs of the basic module district heating/fresh water or basic module district heating com for implementing various functions.

- Consisting of:
- Fitting accessories

6038 117

Further information

See "Hoval TopTronic® E module expansions" chapter

Notice

Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.



#### Ethernet connection

- TopTronic® E district heating com R2
- Communications module expansion for TopTronic® E basic module district heating com
- TCP/IP interface for communication with the HovalSupervisor management system
- Top hat rail mounting directly adjacent to the basic module
- Connection to the basic module via Ribbon cable
- Dimensions (L x W x H): 96 x 48 x 42.3

#### Notice

An industrial Ethernet switch is available in the "Accessories" section for professional connection of several Ethernet links.



#### TopTronic® E district heating com LON-Bus repeater

- Repeater as electrical signal booster of the LON-Bus network
- Used for boosting the range of the signal when there are long distances between the control centre and the individual TopTronic® E basic module district heating com controller modules
- Positioning of the repeaters depending on the data network (routing type, cable type, length, etc.) at different positions in the network
- Electrical power supply 230 V AC
- Dimensions (L x W x H): 71 x 92 x 60

#### Notice

After 5 repeaters, a router must be used for boosting the signal. Article on request.



#### Router TopTronic® E district heating com TTE-FWR - CAN bus

- Interface between the Hoval LON-Bus network and HovalSupervisor
- Interface between the Hoval TCP/IP network and HovalSupervisor
- Serves as a physical interface between the data stream of the district heating network and e.g a master computer with TCP/IP interface
- Possibility of connecting differential pressure sensors
- variable inputs 0-10 V or 0/4-20 mA
- Router can be installed in control panel with DIN-rail mounting
- Temperature and pressure control for up to five strands or 5 heating circuits
- Dimensions (L x W x H): 355 x 120 x 75

TopTronic® E control module black for operating the router (optional) and mating connector set must be ordered separately.

#### Part No.

6057 388

2045 034

6047 303



**Data socket TopTronic® E district heating com**

**LON-Bus and lightning protection**

- Data socket for connecting the telecommunication cable at the building connection
- Connection must be made according to the appropriate applicable regulations
- Data sockets must also be installed with dummy connections
- 1 input block 13-pin
- 2 output blocks each 13-pin
- 2 outputs 3-pin

for controller and repeater

- Wet room socket IP55

Dimensions (L x W x H):

180 x 140 x 75

incl. 10 stepped nipples

**TopTronic® E controller modules, Room control modules, HovalConnect, wall casings, sensors**  
see separate chapters

**Part No.**

2061 738

TopTronic® E basic module district heating com

Type		TTE-FW com
• Power supply max		230 V AC +6/-10 %
• Frequency	Hz	50-60
• Max. power consumption incl. bus supply, module expansions, approx.	W	18.3
• Min. power consumption	W	0.7
• Max. power consumption	W	5.4
• Fuse		F 5 A H 250 V
<b>Output (low voltage)</b>		
• Electromechanical relays		9
<b>Output (extra-low voltage)</b>		
• Signal output PWM or 0-10 V		4
<b>Switching capacity</b>		
• Electromechanical relays	A	5
<b>Input (low voltage)</b>		
• Optocoupler input		0
<b>Inputs (extra-low voltage)</b>		
• Input 0-10 V		4
• Inputs sensors		11
• Inputs flow rate sensor		0
• Pulse input		1
<b>Expansion (module expansion)</b>		
• Max. number (thereof max. 3 module expansions heating circuit district heating)		5
<b>Casing</b>		
• Installation		Top hat rail mounting
• Dimensions (W x H x D) incl. plug	mm	250 x 120 x 75
• Ambient temperature (during operation)	°C	0...50
• Humidity (in operation), non-condensing	%, RH	20...80
• Storage temperature	°C	0...50
<b>Bus system (Hoval CAN bus)</b>		
• Capacity		Max. 4 control modules/3 control modules + 1 gateway
• Bus supply		yes
• Bus line		4-wire bus
• Bus length max twisted, shielded	m	100 (greater distances possible with engineering of additional measures)
• Line cross-section	mm²	0.5
• Cable type (recommended)		JY-(ST) 2 x 2 x 0.8
<b>Other bus interfaces</b>		Internal unit bus (master) M-Bus (master) LON (slave, encrypted) RS485 TCP/IP optional
<b>Miscellaneous</b>		
• Spring reserve		Approx. 96 hours (supercapacitor)
• Type of protection		IP 20
• Protection class		I – EN 60730
• Plug types		RAST 5 (coloured, coded), alternative plug-in terminal technology

Electrical connection

TopTronic® E basic module district heating com







## TopTronic® E heating circuit/ hot water module

- Controller module for controlling consumers with integrated control functions for:
  - 1 heating/cooling circuit with mixer or
  - 1 heating/cooling circuit without mixer or
  - 1 hot water charging circuit
  - Various additional functions
- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Update capability of the controller software
- Time and date via integrated RTC, multi-year spring reserve
- Fine fuse 10 A
- Controller module suitable for cabinet installation thanks to ability to install on DIN rail 35 x 15 x 2.2 mm
- Expansion possibilities via Hoval CAN bus:
  - max. 16 controller modules in the bus system
  - max. 16 heating circuit/hot water modules in the bus system



### Notice

Operation of the controller module is generally via the TopTronic® E control module installed in the heat generator!  
If the control module is used without Hoval heat generator, the control module for operating the heating circuit/domestic hot water module and a wall casing with control module cut-out must be ordered separately!

### Notice

Max. 2 module expansions can be connected.



TopTronic® E  
module expansion  
heating circuit

TopTronic® E  
module expansion  
Universal

### Inputs and outputs

- 3 variable sensor inputs:
  - 2 x variable input for connection of a sensor
  - 1 x variable input for connection of a sensor or pulse sensor
- 0-10 V input, e.g. for connecting to heat zone control systems
- 0-10 V or PWM output for controlling a variable-speed pump
- Connection of a flow rate sensor (or pulse sensor), e.g. for heat metering at the heat generator or with hot water
- Variable 230 V 3-point output, e.g. for controlling the mixer
- Variable 230 V output, e.g. for controlling the recirculation pump
- 230 V optocoupler input connected in series to the variable 230 V output, e.g. for connecting a flow temperature guard for monitoring underfloor heating systems

### Option

- Can be expanded by max. 2 module expansions (expansion of the inputs/outputs):
  - Module expansion heating circuit (1 heating/cooling circuit with/without mixer) or
  - Module expansion Universal (various special functions)

### Functions

- Simple configuration and parameter setting of the plant by predefined hydraulic and function applications
- Weather-supported flow temperature controller for cooling operation with or without room influence taking account of building characteristics and switch-on optimisation

- Optimisation of the heating circuit flow temperatures and improvement in the room climate taking account of the weather forecast (only possible in combination with HovalConnect)
- Different basic programs (week programs, economy mode, holiday until, etc.) can be defined for each heating/cooling circuit plus ability to activate manual operation (construction site mode)
- Separate switching time programs for each heating/cooling circuit as well as for hot water with
  - 2 individually preset week programs comprising
    - 5 different - individually preset - day programs with
    - 6 switching points per day
- Different temperatures can be set for each switching cycle
- Various functions for hot water:
  - Selection of different basic programs (week programs, economy mode, holiday until, etc.)
  - various operating modes (e.g. accumulator priority or parallel mode)
  - adjustable storage tank pump post-operation
  - Storage tank discharge protection
  - Limiting and protection functions
- Definable switching times for recirculation pump control
- Automatic changeover of summer/winter time
- Heating characteristic adaptation possible for each individual heating circuit
- Screed drying function for underfloor heating
- Requirement contact for constant requirements (ventilation, swimming pool, etc.)
- Modem switching function
- Free timer switch channel

- Pump anti-blocking protection
- Frost protection function
- Heat balancing for heat circuit or hot water
- Plant flow control (3-point mixer for controlling the plant reference temperature)
- Thermostat function
- Self-test with error diagnosis and error memory
- Relay test for each output can be activated separately
- Functions that can be implemented with module expansions:
  - Heating/cooling circuits without mixer
  - Heating/cooling circuits with mixer or
  - hot water charging circuits

### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 2 module expansions can be connected)!

### Use

- For room heating/cooling or hot water charging circuit
- For optimisation of the room climate by control algorithm taking account of the weather forecast (only possible in combination with HovalConnect)
- Upstream control for technical systems such as ventilation, air conditioning systems, etc. or also for heating zone control systems

- For decentralised assembly - remote from the control module - directly at the sensors and actuators (regulating armature located a long way away):
  - Installation in wall casing/control panel
  - Connection to the operating unit via Hoval CAN bus
- With significant expansion capability by controller modules via the Hoval CAN bus
- For flexible integration in modern communication systems via different interfaces
- For remote connection via HovalConnect

#### Delivery

- TopTronic® E heating circuit/hot water module incl. 2 x mounting clips for DIN rail attachment
- DIN rail with fitting accessories
- 2 immersion sensors TF/2P/5/6T, L = 5.0 m
- 1 contact sensor ALF/2P/4/T, L = 4.0 m
- Basic plug set for controller module
  - Mains in
  - Plug for 230 V output (VA3)  
(direct circuit pump, mixer circuit pump)
  - Plug for 2 x 230 V output (mixer) (VA1/VA2)
  - Plug for optocoupler input (SK-VA3)  
(flow temperature guard)
  - 2 plugs for sensor (VE1/VE2)
  - Plug for 0-10 V or PWM output (VA10 V)
  - Plug for Hoval CAN bus

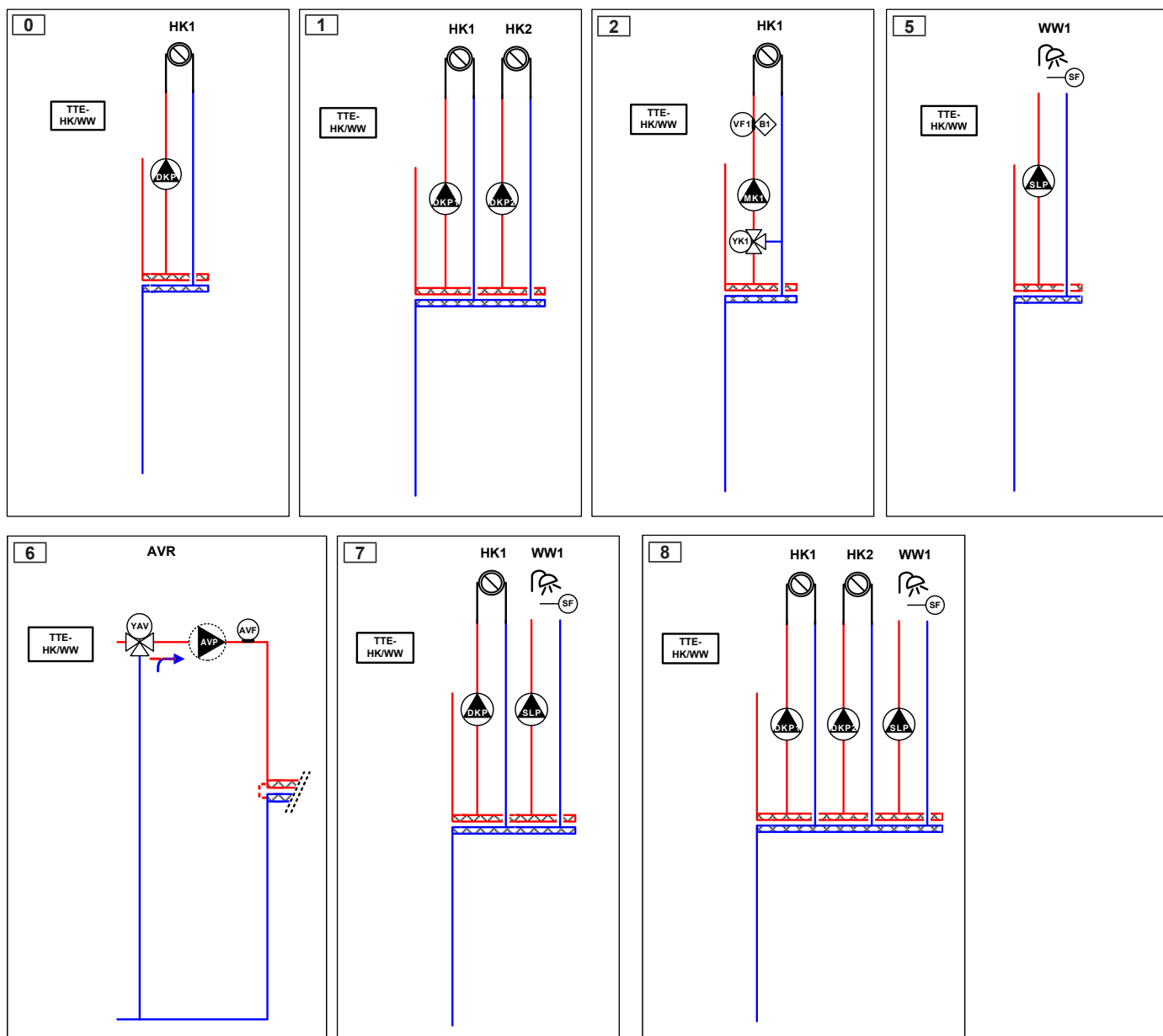
#### Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!

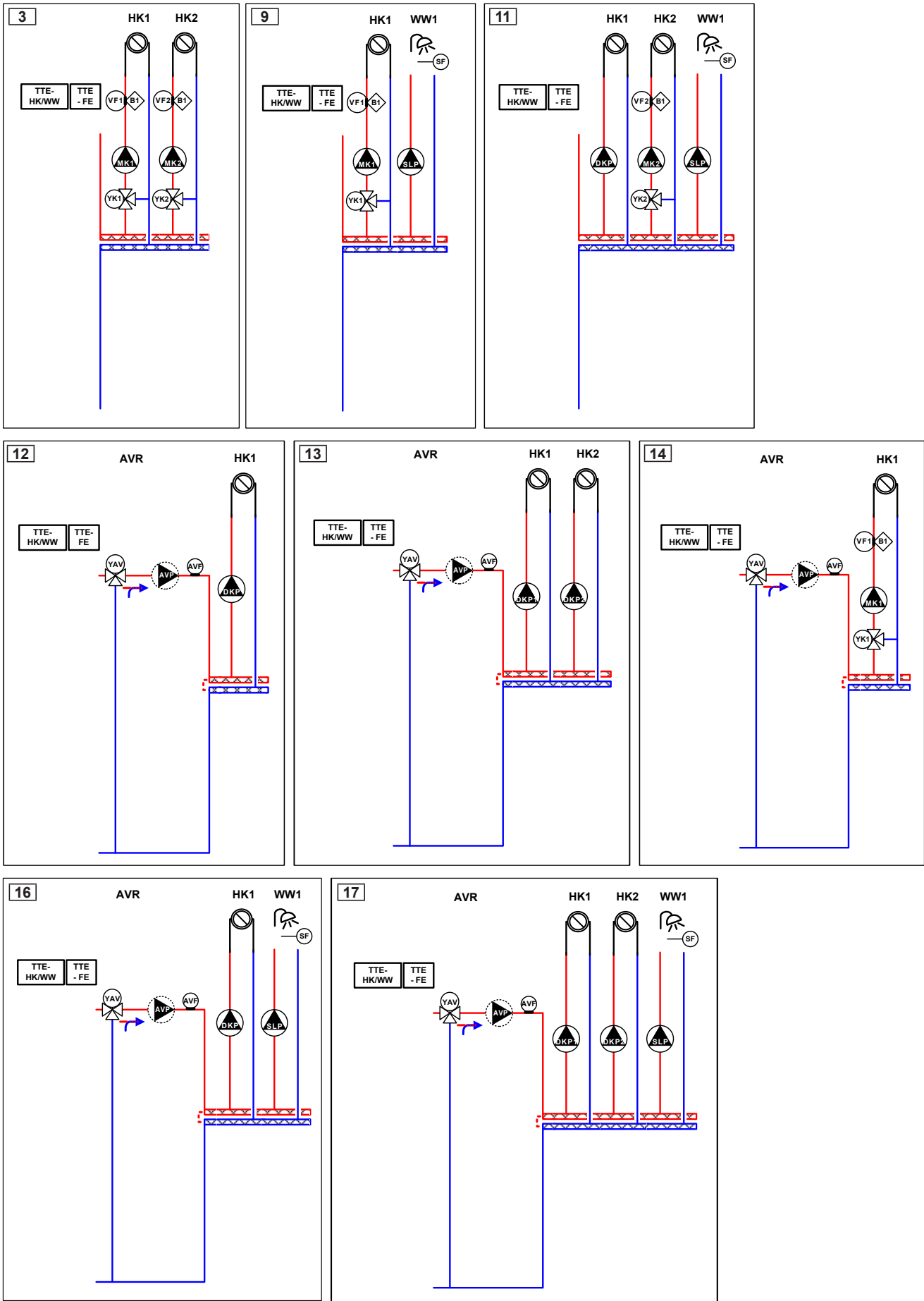
# Functions that can be implemented

TopTronic® E heating circuit/hot water module

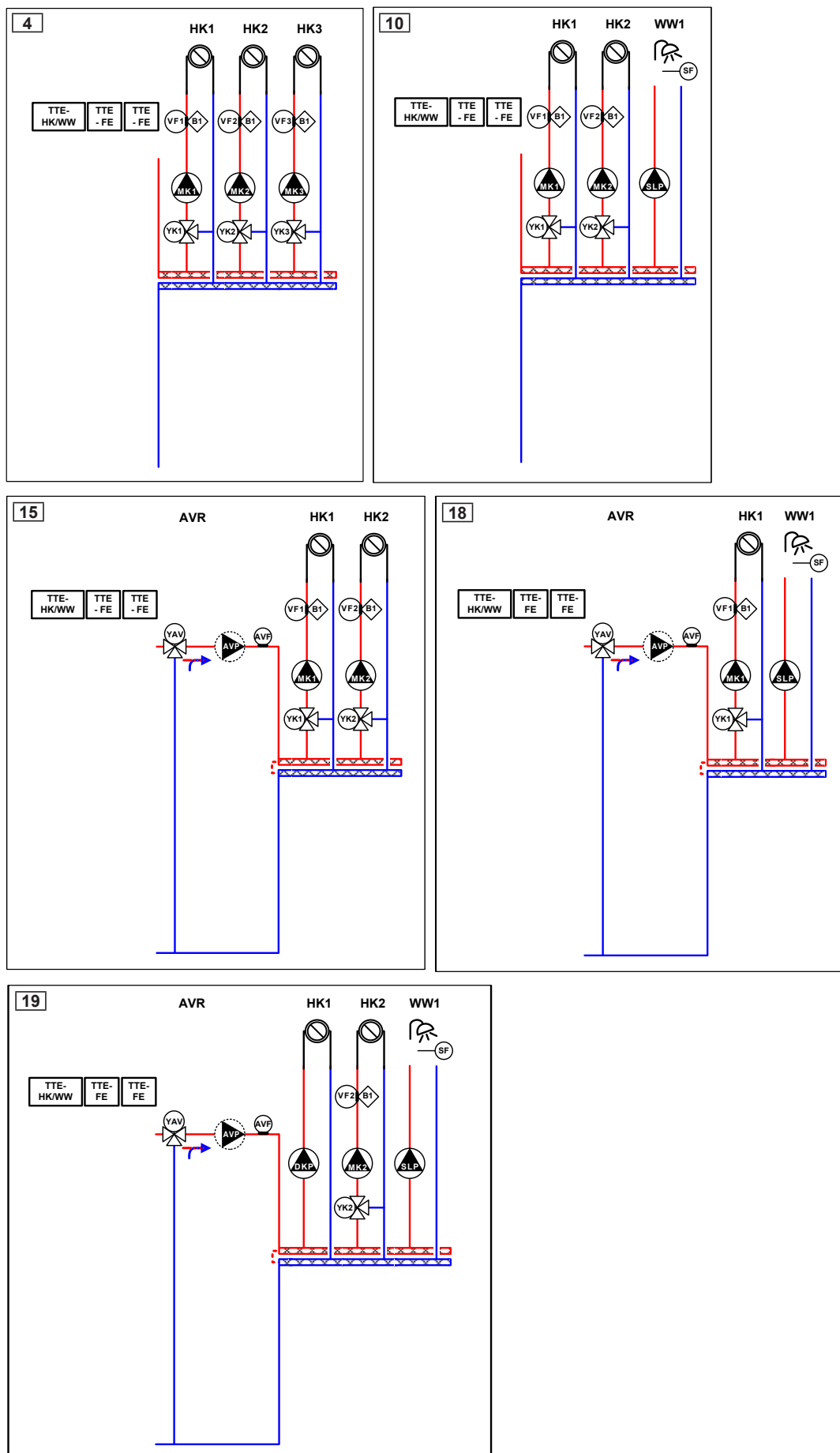
TTE-HK/WW	Plant flow control	1 direct heating circuit	2 direct heating circuits	1 mixed heating circuit	2 mixed heating circuits	3 mixed heating circuits	1 calorifier
Hydr. 0		•					
Hydr. 1			•				
Hydr. 2				•			
Hydr. 3					•		
Hydr. 4						•	
Hydr. 5							•
Hydr. 6	•						
Hydr. 7		•					•
Hydr. 8			•				•
Hydr. 9				•			•
Hydr. 10					•		•
Hydr. 11		•		•			•
Hydr. 12	•	•					
Hydr. 13	•		•				
Hydr. 14	•			•			
Hydr. 15	•				•		
Hydr. 16	•	•					•
Hydr. 17	•		•				•
Hydr. 18	•			•			•
Hydr. 19	•	•		•			•



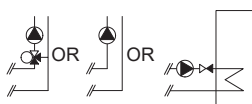
TopTronic® E heating circuit/hot water module and 1 module expansion



## TopTronic® E heating circuit/hot water module and 2 module expansions



## TopTronic® E controller module



### TopTronic® E heating circuit/hot water module TTE-HK/WW

Controller module for controlling consumers with integrated control functions for:

- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer or
- 1 hot water charging circuit
- various additional functions

Consisting of:

- Fitting accessories
- 2 x immersion sensor TF/2P/5/6T, L = 5 m
- 1 contact sensor ALF/2P/4/T, L = 4 m
- Basic plug set for controller module

#### Notice

If the controller module is used without Hoval heat generator then a TopTronic® E control module must be ordered separately!

#### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 2 module expansions can be connected)!

#### Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!



### Supplementary plug set for controller modules and module expansion TTE-FE HK

Consisting of RAST 5 mating plugs for connecting further sensors and actuators on the controller module or on the module expansion.

The controller module is already equipped with a basic plug set, the supplementary plug set is required for advanced functions.

Consisting of:

- Plug for mains out (230 V)
- Plug for sensor (VE3) (variable input)
- Plug for 0-10 V input (VE10V)
- Plug for flow rate sensor input (FVT)

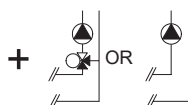
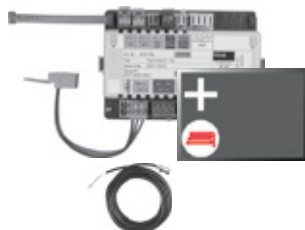
## Part No.

6034 571

6034 503

## TopTronic® E module expansions for TopTronic® E heating circuit/hot water module

**Max. 2 expansions can be connected.**



### TopTronic® E module expansion heating circuit TTE-FE HK

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer

Consisting of:

- Fitting accessories
- 1 contact sensor ALF/2P/4/T, L = 4.0 m
- Basic plug set FE module

#### Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!



### Supplementary plug set for controller modules and module expansion TTE-FE HK

Consisting of RAST 5 mating plugs for connecting further sensors and actuators on the controller module or on the module expansion.

The controller module is already equipped with a basic plug set, the supplementary plug set is required for advanced functions.

Consisting of:

- Plug for mains out (230 V)
- Plug for sensor (VE3) (variable input)
- Plug for 0-10 V input (VE10V)
- Plug for flow rate sensor input (FVT)



### TopTronic® E module expansion Universal TTE-FE UNI

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

Consisting of:

- Fitting accessories
- Plug set FE module

#### Further information

See "Hoval TopTronic® E module expansions" chapter

**TopTronic® E controller modules,  
control/room control modules,  
HovalConnect, wall casing, sensor**  
see separate chapter

## Part No.

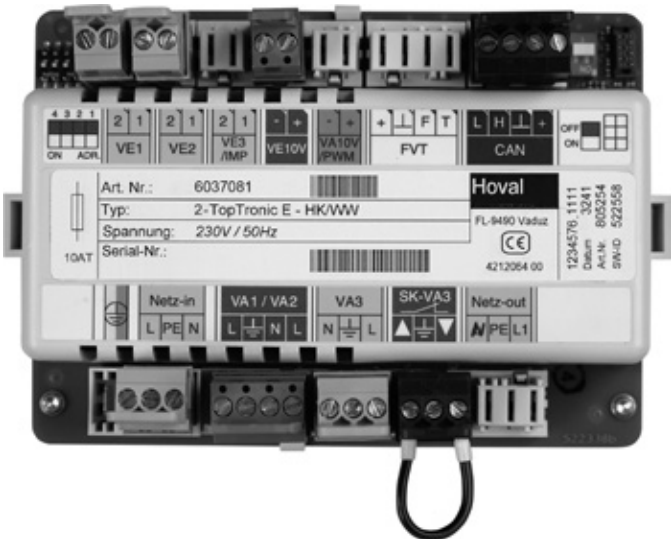
6034 576

6034 503

6034 575

TopTronic® E heating circuit/hot water module

Type		TTE-HK/WW
• Power supply max		230 V AC +6/-10 %
• Frequency	Hz	50-60
• Max. power consumption incl. bus supply, module expansions, approx.	W	18.9
• Min. power consumption	W	0.8
• Max. power consumption	W	7.8
• Fuse		T 10 A H 250 V
<b>Output (low voltage)</b>		
• Electromechanical relays		3
<b>Output (extra-low voltage)</b>		
• Signal output PWM or 0-10 V		1
<b>Switching capacity</b>		
• Electromechanical relays	A	3
<b>Input (low voltage)</b>		
• Optocoupler input		1
<b>Inputs (extra-low voltage)</b>		
• Input 0-10 V		1
• Inputs sensors		2
• Inputs flow rate sensor		1
• Pulse input (can be switched over to sensor)		1
• Voltage measuring circuit, with protective isolation 2.9 kV	V	15
<b>Expansion (module expansion)</b>		
• Max. number		2
<b>Casing</b>		
• Installation		Top hat rail mounting
• Dimensions (W x H x D) incl. plug	mm	150 x 100 x 75
• Ambient temperature (during operation)	°C	0...50
• Humidity (in operation), non-condensing	%, RH	20...80
• Storage temperature	°C	0...50
<b>Bus system (Hoval CAN bus)</b>		
• Capacity		Max. 4 control modules/3 control modules + 1 gateway
• Bus supply		yes
• Bus line		4-wire bus
• Bus length max twisted, shielded	m	100 (greater distances possible with engineering of additional measures)
• Line cross-section	mm²	0.5
• Cable type (recommended)		JY-(ST) 2 x 2 x 0.8
<b>Other bus interfaces</b>		Internal unit bus (master)
<b>Miscellaneous</b>		
• Spring reserve		approx. 10 years, battery buffered
• Type of protection		IP 20
• Protection class		I – EN 60730
• Plug types		RAST 5 (coloured, coded)



**Electrical connection**  
TopTronic® E heating circuit/hot water module



## TopTronic® E solar module

- The controller module is suitable for use as differential temperature control, control of thermal solar plants, for heating process water and/or heating support.
- The controller module contains predefined hydraulic applications for different applications or plants.
- The solar yield calculation calculates the current output, the split yield in kWh as well as the total yield in MWh.
- Controller module with integrated regulating functions for:
  - One/two circuit solar energy plants
  - integrated heat balancing
  - Various additional functions
- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Update capability of the controller software
- Time and date via integrated RTC, multi-year spring reserve
- Fine fuse 10 A
- Controller module suitable for cabinet installation thanks to ability to install on DIN rail 35 x 15 x 2.2 mm
- Expansion possibilities via Hoval CAN bus:
  - max. 16 controller modules in the bus system
  - max. 16 solar modules in the bus system

### Notice

Operation of the controller module is generally via the TopTronic® E control module installed in the heat generator!  
If the control module is used without Hoval heat generator, the control module for operating the solar module and a wall casing with control module cut-out must be ordered separately!



### Notice

Max. 2 module expansions can be connected.



TopTronic® E  
module expansion  
Universal



TopTronic® E  
module expansion  
Universal

### Inputs and outputs

- 3 variable sensor inputs:
  - 2 variable inputs for connection of a sensor
  - 1 variable input for connection of a sensor or pulse sensor
- 0-10 V input
- 0-10 V or PWM output for controlling a variable-speed pump
- Connection of a flow rate sensor (or pulse sensor), e.g. for heat metering
- Variable 230 V 3-point output
- Variable 230 V output, e.g. for controlling a solar charging pump
- 230 V optocoupler input connected in series to the variable 230 V output

### Option

- Can be expanded by max. 2 module expansions (expansion of the inputs/outputs):
  - Module expansion Universal

### Functions

- Simple configuration and parameter setting of the plant by predefined hydraulic and function applications
- 41 pre-programmed basic variants
- Differential temperature control
- Integrated solar yield calculation
- Storage tank cascade with up to 4 consumers
- Loading and unloading function for buffer
- Cooling down function
- Overheating and frost protection
- Forced energy/high-temperature discharge
- Collector cascade with up to 2 collector fields
- Charging via plate heat exchanger
- Heat exchanger cascade
- Additional functions, e.g. recharging function, recirculation pump, etc.
- Start help function
- Consumer loading with type selection
- High temperature discharge
- Fault reporting output
- Return flow increase
- Forced energy/high-temperature discharge on storage tank or buffer maximum temperature

- Relay test for each output can be activated separately
- Self-test with error diagnosis and error memory
- Functions that can be implemented with module expansions:
  - Multi-circuit solar plants with up to 4 consumers
  - 2 collector fields
  - misc. application functions acc. to heating system diagrams

### Notice

Depending on the complexity of the corresponding system hydraulics, module expansions are required for using the listed functions (max. 2 module expansions can be connected!)

**Use**

- Control of thermal solar plants with differential temperature control for heating process water and/or heating support
- For one/two-circuit solar plants with varying complexity with integrated heat balancing
- For decentralised assembly - remote from the control module - directly at the sensors and actuators (solar regulating armature located a long way away):
  - Installation in wall casing/control panel
  - Connection to the operating unit via Hoval CAN bus
- With significant expansion capability by controller modules via the Hoval CAN bus
- For flexible integration in modern communication systems via different interface modules
- For remote connection via HovalConnect

**Delivery**

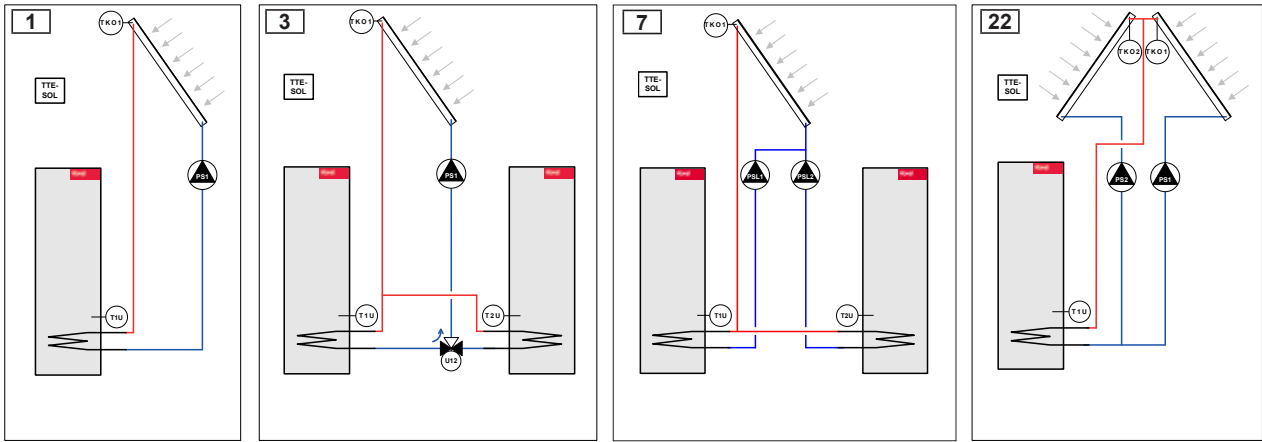
- TopTronic® E solar module incl. 2 mounting clips for DIN rail attachment
- DIN rail with fitting accessories
- 1 immersion sensor TF/2P/5/6T, L = 5.0 m
- 1 collector sensor TF/1.1P/2.5S/5.5T, L = 2.5 m
- Basic plug set for controller module
  - Mains in
  - Plug for 230 V output (VA3)
  - Plug for 2 230 V outputs (VA1/VA2)
  - Plug for optocoupler input (SK-VA3)
  - 2 plugs for sensor (VE1/VE2)
  - Plug for 0-10 V output (VA10V/PWM)
  - Plug for Hoval CAN bus

**Notice**

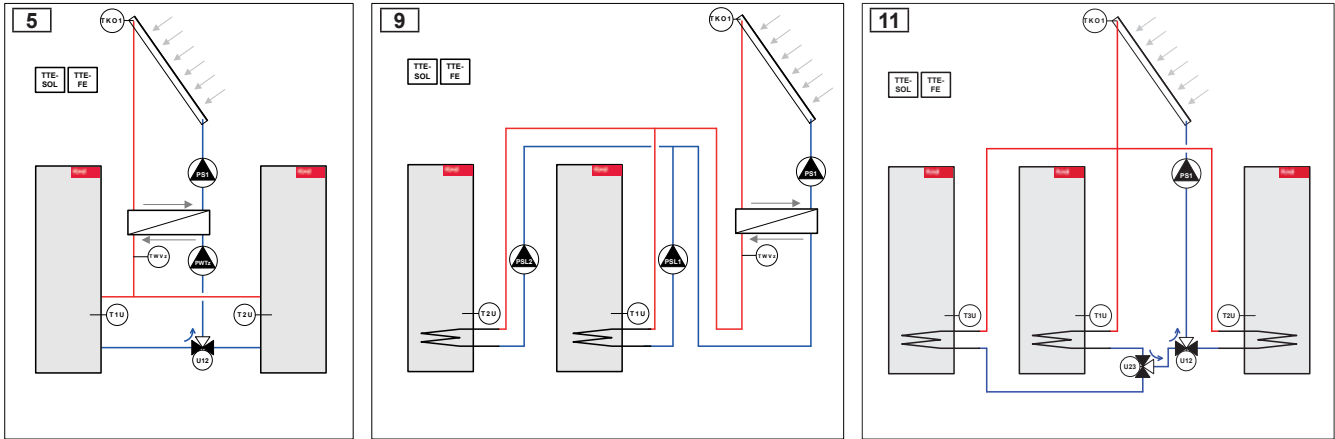
The supplementary plug set may have to be ordered to implement functions differing from the standard!

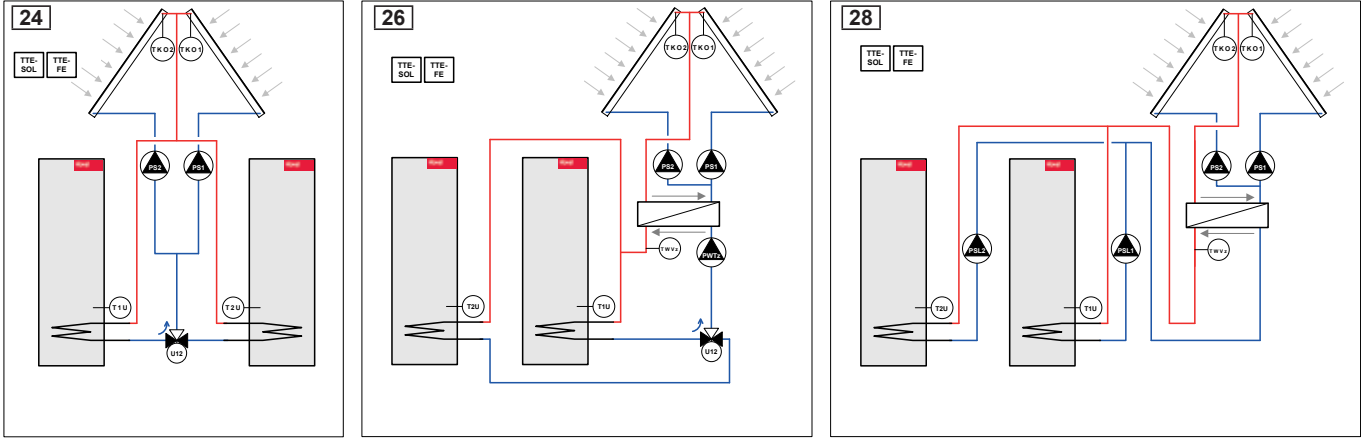
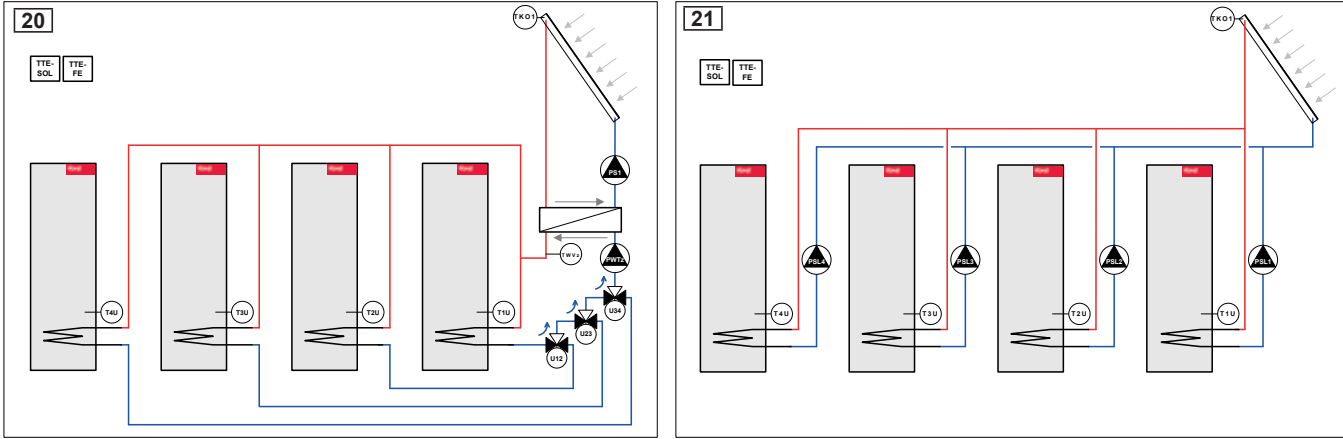
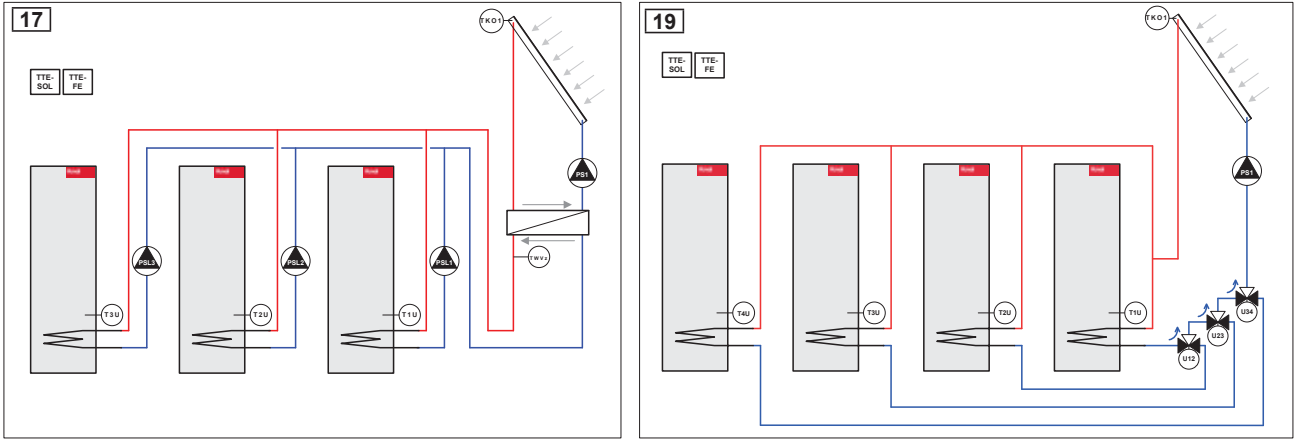
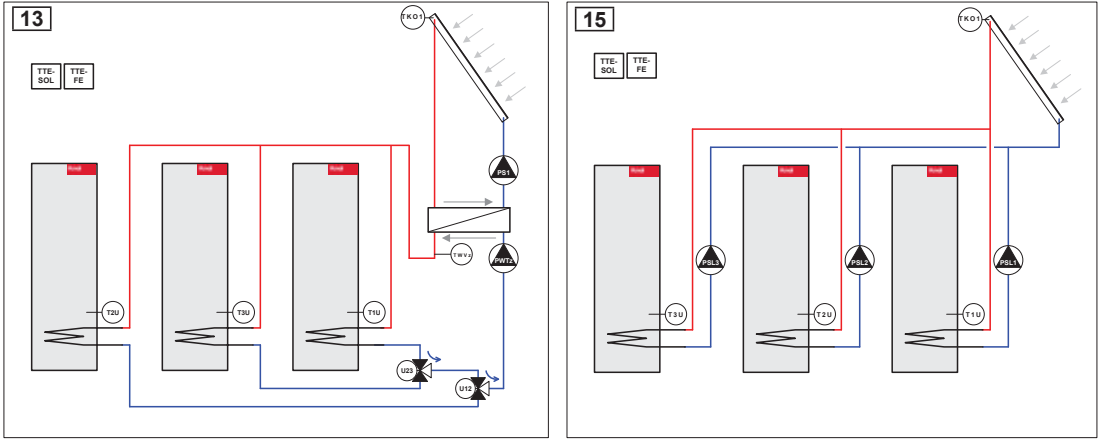
Functions that can be implemented  
TopTronic® E solar module

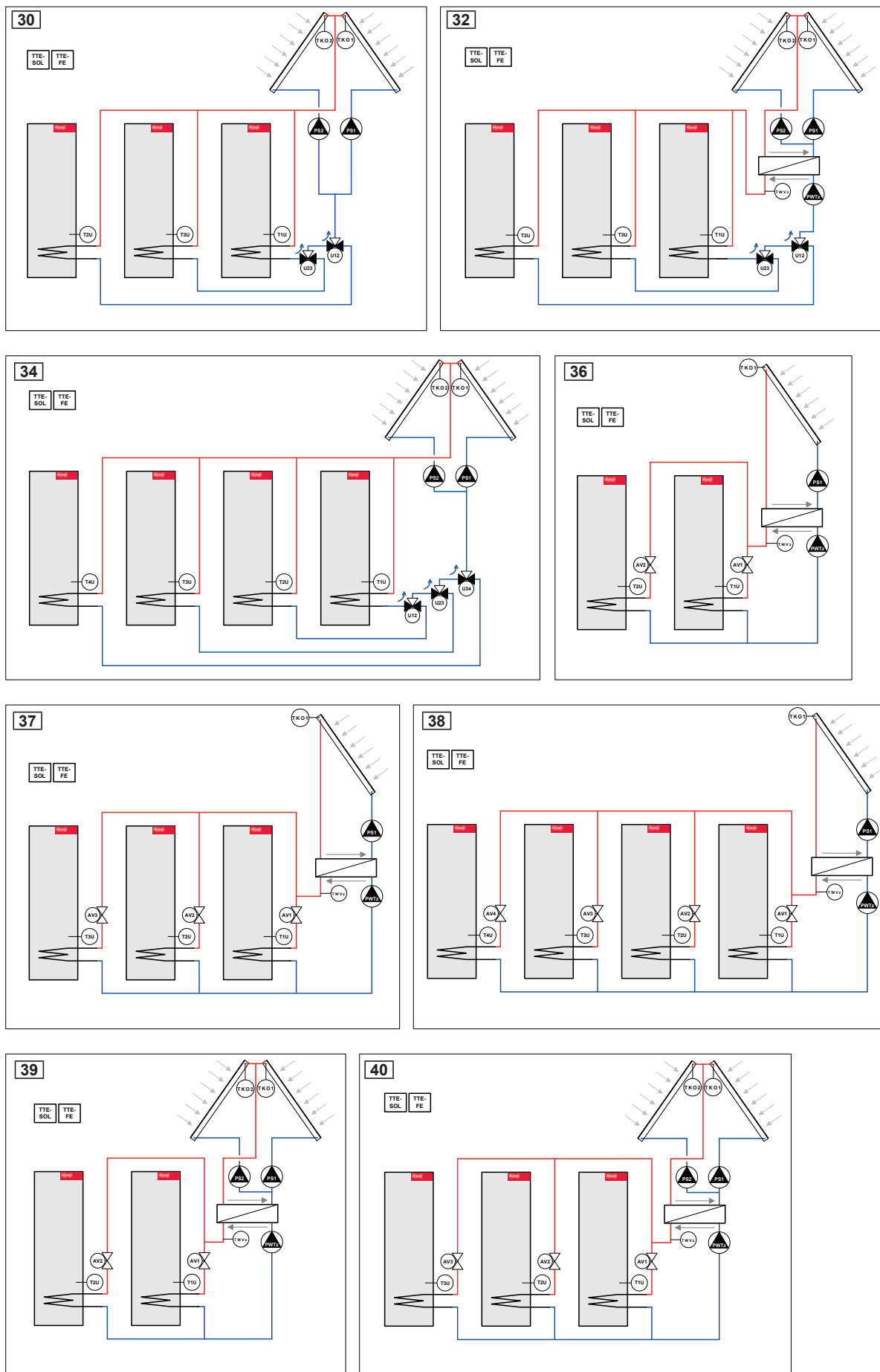
TTE-SOL	1 collector	2 collectors	Ext. HE	1 consumer	2 consumers	3 consumers	4 consumers	Change-over unit	Shut-off unit
Hydr. 1	•			•					
Hydr. 3	•			•	•			•	
Hydr. 5	•		•	•	•			•	
Hydr. 7	•		•	•	•				
Hydr. 9	•		•	•	•				
Hydr. 11	•			•	•	•		•	
Hydr. 13	•		•	•	•	•		•	
Hydr. 15	•			•	•	•			
Hydr. 17	•		•	•	•	•			
Hydr. 19	•			•	•	•	•	•	
Hydr. 20	•		•	•	•	•	•	•	
Hydr. 21	•			•	•	•	•		
Hydr. 22		•		•					
Hydr. 24		•		•	•			•	
Hydr. 26		•	•	•	•			•	
Hydr. 28		•	•	•	•				
Hydr. 30		•		•	•	•		•	
Hydr. 32		•	•	•	•	•		•	
Hydr. 34		•		•	•	•	•	•	
Hydr. 35		•	•	•	•	•	•	•	
Hydr. 36	•		•	•	•				•
Hydr. 37	•		•	•	•	•			•
Hydr. 38	•		•	•	•	•	•		•
Hydr. 39		•	•	•	•				•
Hydr. 40		•	•	•	•	•			•
Hydr. 41		•	•	•	•	•	•		•



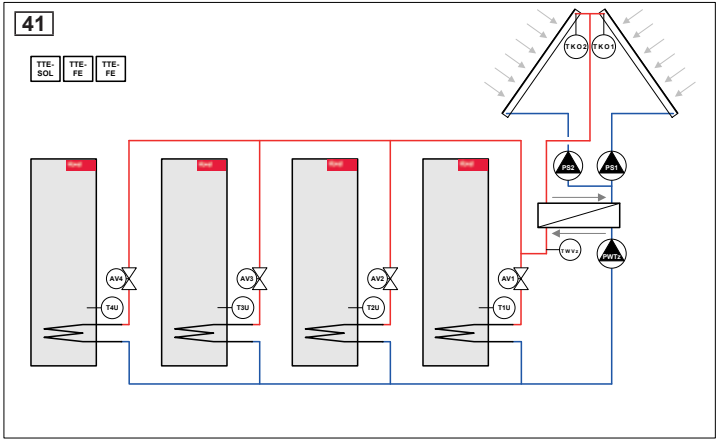
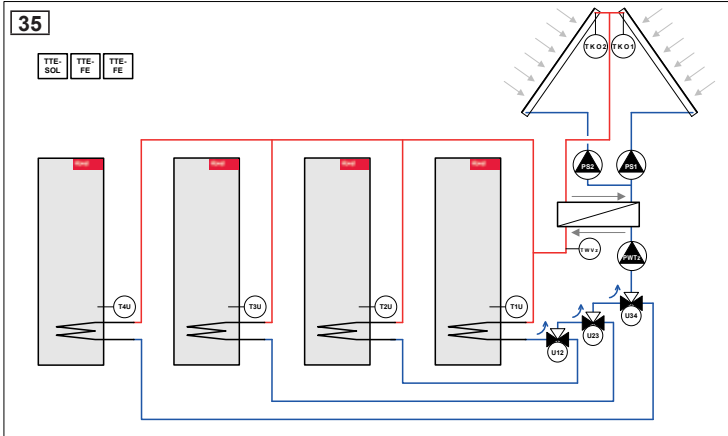
TopTronic® E solar module and 1 module expansion



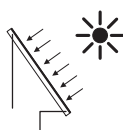




TopTronic® E solar module and 2 module expansions



## TopTronic® E controller module



### TopTronic® E solar module TTE-SOL

The controller module is suitable for use as temperature differential control, control of thermal solar plants, for heating process water and/or heating support.

Controller module with integrated control functions for

- solar circuit
- collector cascade
- storage tank cascade with up to 4 consumers
- consumer loading, with type selection
- temperature differential control
- loading and unloading function for additional/reserve buffer tank
- Integrated solar yield calculation

Consisting of:

- Fitting accessories
- 1 immersion sensor TF/2P/5/6T, L = 5 m
- 1 collector sensor TF/1.1P/2.5S/5.5T L = 2.5 m
- Basic plug set for controller module

#### Notice

In a standalone application, the control module for operating the solar module and a wall casing must be ordered separately!

#### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 2 module expansion can be connected)!

#### Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!



### Supplementary plug set for controller modules and module expansion TTE-FE HK

Consisting of RAST 5 mating plugs for connecting further sensors and actuators on the controller module or on the module expansion.

The controller module is already equipped with a basic plug set, the supplementary plug set is required for advanced functions.

Consisting of:

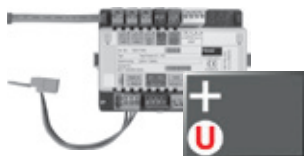
- Plug for mains out (230 V)
- Plug for sensor (VE3) (variable input)
- Plug for 0-10 V input (VE10V)
- Plug for flow rate sensor input (FVT)

## Part No.

6037 058

6034 503

## TopTronic® E module expansion for TopTronic® E solar module



**Max. 2 expansions can be connected.**

### TopTronic® E module expansion

#### Universal TTE-FE UNI

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

Consisting of:

- Fitting accessories
- Plug set FE module

#### Notice

Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

#### Further information

See "Hoval TopTronic® E module expansions" chapter

**TopTronic® E controller modules,  
control/room control modules,  
HovalConnect, wall casing, sensor**  
see separate chapter

## Part No.

6034 575



TopTronic® E solar module

Type		TTE-SOL
• Power supply max		230 V AC +6/-10 %
• Frequency	Hz	50-60
• Max. power consumption incl. bus supply, module expansions, approx.	W	18.9
• Min. power consumption	W	0.8
• Max. power consumption	W	7.8
• Fuse		T 10 A H 250 V
<b>Output (low voltage)</b>		
• Electromechanical relays		3
<b>Output (extra-low voltage)</b>		
• Signal output PWM or 0-10 V		1
<b>Switching capacity</b>		
• Electromechanical relays	A	3
<b>Input (low voltage)</b>		
• Optocoupler input		1
<b>Inputs (extra-low voltage)</b>		
• Input 0-10 V		1
• Inputs sensors		2
• Inputs flow rate sensor		1
• Pulse input (can be switched over to sensor)		1
• Voltage measuring circuit, with protective isolation 2.9 kV	V	15
<b>Expansion (module expansion)</b>		
• Max. number		2
<b>Casing</b>		
• Installation		Top hat rail mounting
• Dimensions (W x H x D) incl. plug	mm	150 x 100 x 75
• Ambient temperature (during operation)	°C	0...50
• Humidity (in operation), non-condensing	%, RH	20...80
• Storage temperature	°C	0...50
<b>Bus system (Hoval CAN bus)</b>		
• Capacity		Max. 4 control modules/3 control modules + 1 gateway
• Bus supply		yes
• Bus line		4-wire bus
• Bus length max twisted, shielded	m	100 (greater distances possible with engineering of additional measures)
• Line cross-section	mm²	0.5
• Cable type (recommended)		JY-(ST) 2 x 2 x 0.8
<b>Other bus interfaces</b>		Internal unit bus (master)
<b>Miscellaneous</b>		
• Spring reserve		approx. 10 years, battery buffered
• Type of protection		IP 20
• Protection class		I – EN 60730
• Plug types		RAST 5 (coloured, coded)

Electrical connection

TopTronic® E solar module





## TopTronic® E buffer module

- Controller module with integrated regulating functions for:
  - Heating buffer management or
  - Cooling buffer management
  - Various additional functions
- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Update capability of the controller software
- Time and date via integrated RTC, multi-year spring reserve
- Fine fuse 10 A
- Controller module suitable for cabinet installation thanks to ability to install on DIN rail 35 x 15 x 2.2 mm
- Expansion possibilities via Hoval CAN bus:
  - max. 16 controller modules in the bus system
  - max. 2 buffer modules
  - max. 1 active heating buffer and max. 1 active cooling buffer function



### Notice

Operation of the controller module is generally via the TopTronic® E control module installed in the heat generator!  
If the control module is used without Hoval heat generator, the control module for operating the buffer module and a wall casing with control module cut-out must be ordered separately!

### Notice

Max. 2 module expansions can be connected.



TopTronic® E  
module expansion  
Universal



TopTronic® E  
module expansion  
Universal

### Inputs and outputs

- 3 variable sensor inputs:
  - 2 variable inputs for connection of a sensor
  - 1 variable input for connection of a sensor or pulse sensor
- 0-10 V input, e.g. for setpoint connection
- 0-10 V or PWM output for controlling a variable-speed pump
- Connection of a flow sensor (or pulse sensor)
- Variable 230 V 3-point output
- Variable 230 V output, e.g. for controlling a buffer charging pump
- 230 V optocoupler input connected in series to the variable 230 V output

### Option

- Can be expanded by max. 2 module expansions (expansion of the inputs/outputs):
  - Module expansion Universal

### Functions

- Simple configuration and parameter setting of the plant by predefined hydraulic and function applications
- Heating buffer loading controls:
  - 1 or 2 buffer sensors
  - Stratified charge mixing valve with separate buffer loading sensor
  - Modulating buffer charging pump (0-10 V/PWM) constant or  $\Delta$  T-controlled
- Heating buffer discharge control with
  - 1 buffer sensor
  - Changeover element or discharging mixer valve with separate buffer discharging sensor
- Cooling buffer loading control with 1 or 2 cooling buffer sensors
- External requirement contacts for constant requirement
- External requirement contacts for reference value increase/reduction for implementing tariff charging, Smart Grid, etc.
- Separate differential controls and thermostat functions for changeover in multiple buffer applications
- Pump anti-blocking protection
- Heat quantity balancing
- Buffer charging or buffer discharging
- Relay test for each output can be activated separately
- Self-test with error diagnosis and error memory
- Thermostat function
- Functions that can be implemented with module expansions:
  - misc. special functions acc. to heating system diagrams

### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 2 module expansions can be connected)!

### Use

- For energy management of heating and cooling buffers in simply and complex heating systems
- For optimising the energy efficiency of the overall system by various functions such as tariff charging, Smart Grid function, etc.
- For decentralised assembly - remote from the control module - directly at the sensors and actuators (buffer storage tank located a long way away)
  - Installation in wall casing/control panel
  - Connection to the operating unit via Hoval CAN bus
- With significant expansion capability by controller modules via the Hoval CAN bus
- For flexible integration in modern communication systems via different interfaces
- For remote connection via HovalConnect

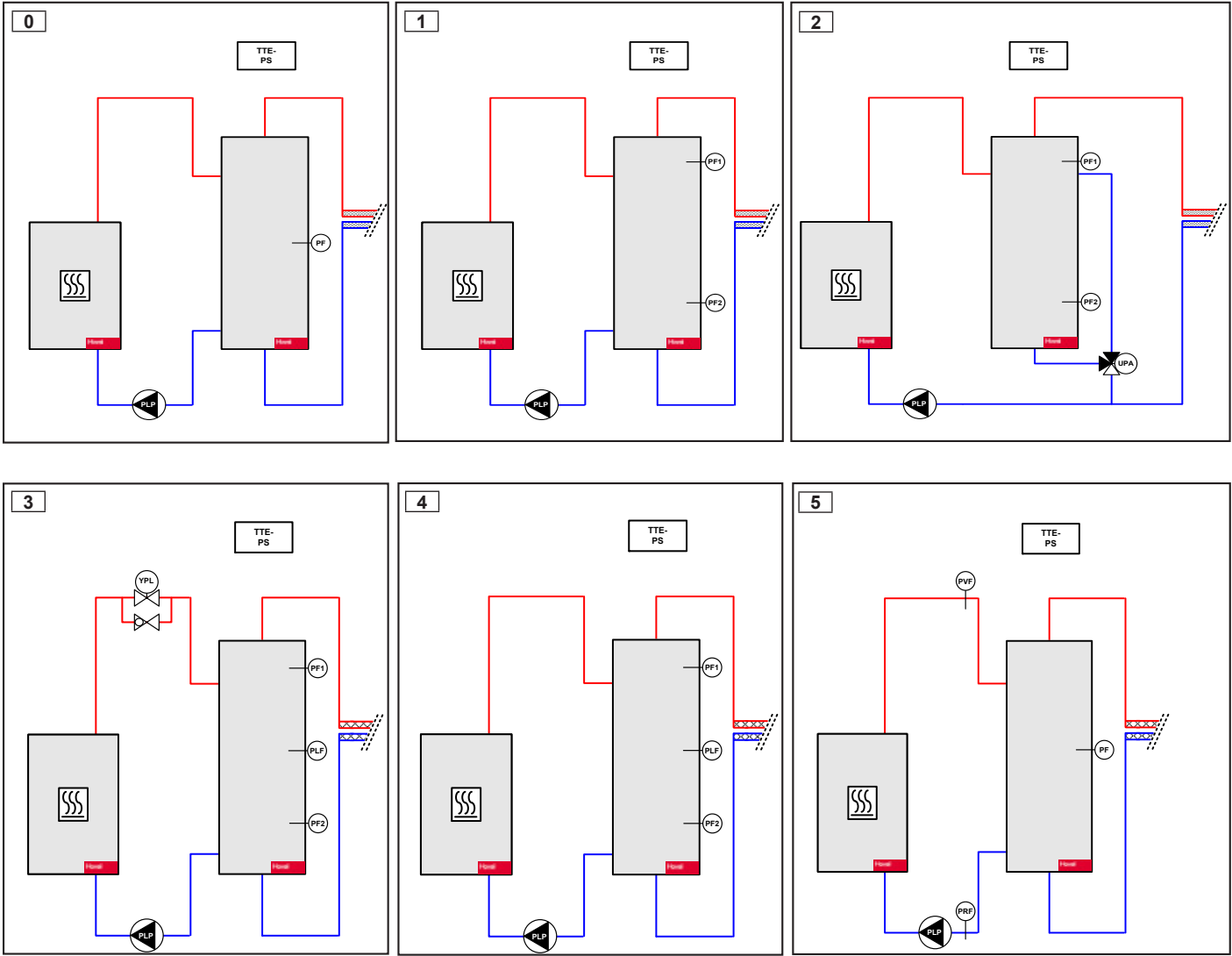
#### Delivery

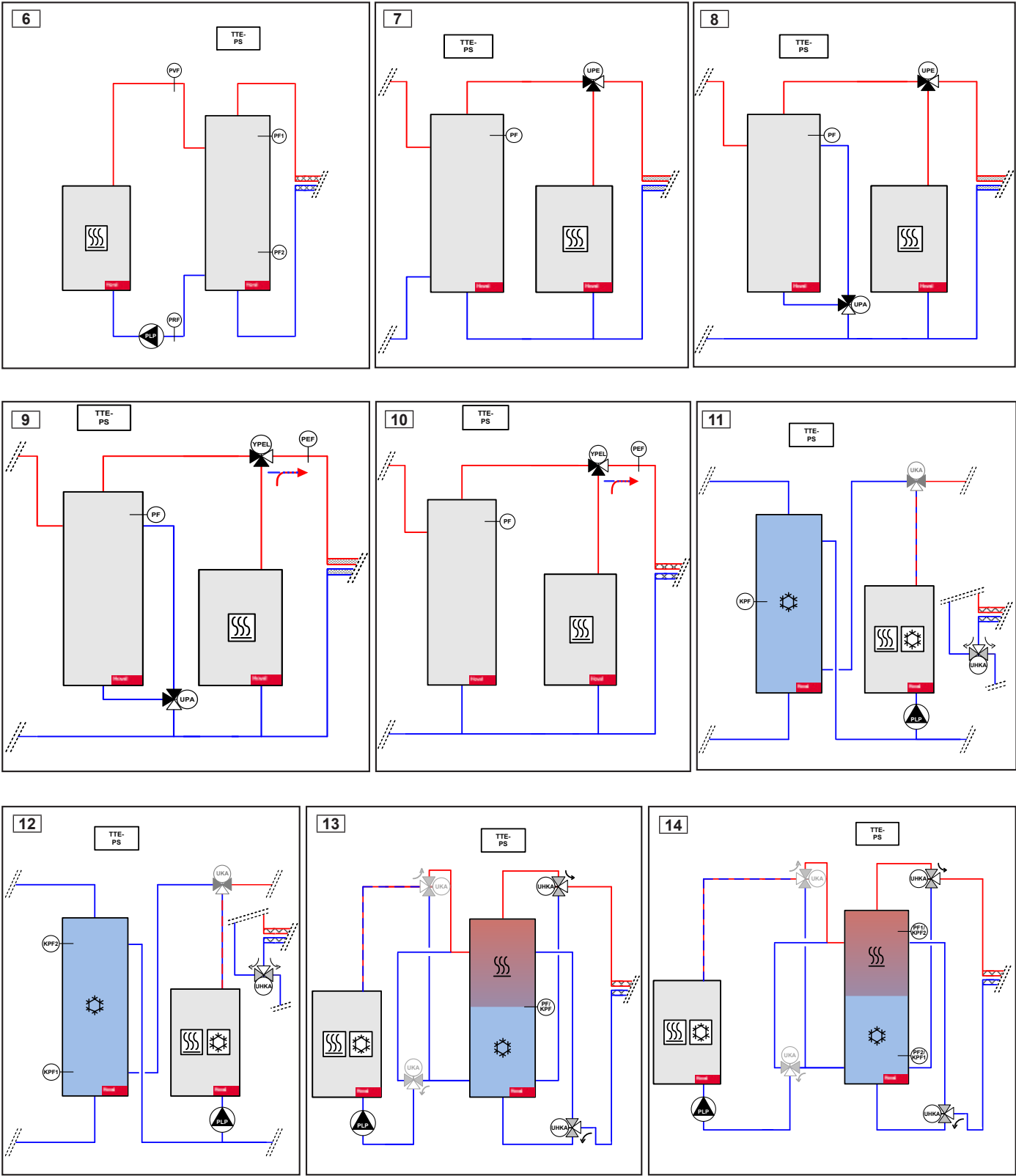
- TopTronic® E buffer module incl.  
2 x mounting clips for DIN rail attachment
- DIN rail with fitting accessories
- 2 x immersion sensor TF/2P/5/6T, L = 5.0 m
- Basic plug set for controller module
  - Mains in
  - Plug for 230 V output (VA3) (direct circuit pump, mixer circuit pump)
  - Plug for 2 x 230 V output (mixer) (VA1/VA2)
  - Plug for optocoupler input (SK/VA3) (flow temperature controller)
  - 2 x plug for sensor (VE1/VE2)
  - Plug for 0-10 V or PWM output (VA10V)
  - Plug for Hoval CAN bus

#### Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!

TTE-PS	Heating buffer charging control					Heating buffer charging control			Cooling buffer charging control	
	1 buffer sensor	2 buffer sensors	Charging mixing valve	Modulating charging pump constant	$\Delta T$	Change-over unit	Discharging mixer	Buffer start-up release	1 buffer sensor	2 buffer sensors
Hydr. 0	•									
Hydr. 1		•						•		
Hydr. 2		•								
Hydr. 3		•	•							
Hydr. 4		•		•						
Hydr. 5	•				•					
Hydr. 6		•			•					
Hydr. 7						•				
Hydr. 8						•		•		
Hydr. 9							•	•		
Hydr. 10							•			
Hydr. 11									•	
Hydr. 12										•
Hydr. 13	•								•	
Hydr. 14		•								•





## TopTronic® E controller module



### TopTronic® E buffer module TTE-PS

Controller module with integrated control functions for:

- heating buffer management or
- cooling buffer management
- var. additional functions

Consisting of:

- Fitting accessories
- 2 immersion sensors TF/2P/5/6T L = 5 m
- Basic plug set for controller module

#### Notice

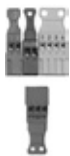
If the controller module is used without Hoval heat generator then a TopTronic® E control module must be ordered separately!

#### Notice

Depending on the complexity, module expansions are required for using the listed functions (max. 2 module expansions can be connected)!

#### Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!



### Supplementary plug set for controller modules and module expansion TTE-FE HK

Consisting of RAST 5 mating plugs for connecting further sensors and actuators on the controller module or on the module expansion.

The controller module is already equipped with a basic plug set, the supplementary plug set is required for advanced functions.

Consisting of:

- Plug for mains out (230 V)
- Plug for sensor (VE3) (variable input)
- Plug for 0-10 V input (VE10V)
- Plug for flow rate sensor input (FVT)

## Part No.

6037 057

6034 503

**TopTronic® E module expansion**  
for TopTronic® E buffer module



**Max. 2 expansions can be connected.**

**TopTronic® E module expansion**  
**Universal TTE-FE UNI**

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

Consisting of:

- Fitting accessories
- Plug set FE module

**Notice**

Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

**Further information**

See "Hoval TopTronic® E module expansions" chapter

**TopTronic® E controller modules, control/room control modules, HovalConnect, wall casing, sensor**  
see separate chapter

**Part No.**

6034 575

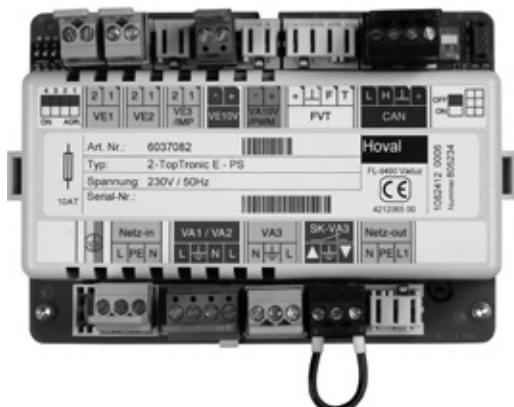


## TopTronic® E buffer module

Type		TTE-PS
• Power supply max		230 V AC +6/-10 %
• Frequency	Hz	50-60
• Max. power consumption incl. bus supply, module expansions, approx.	W	18.9
• Min. power consumption	W	0.8
• Max. power consumption	W	7.8
• Fuse		T 10 A H 250 V
<b>Output (low voltage)</b>		
• Electromechanical relays		3
<b>Output (extra-low voltage)</b>		
• Signal output PWM or 0-10 V		1
<b>Switching capacity</b>		
• Electromechanical relays	A	3
<b>Input (low voltage)</b>		
• Optocoupler input		1
<b>Inputs (extra-low voltage)</b>		
• Input 0-10 V		1
• Inputs sensors		2
• Inputs flow rate sensor		1
• Pulse input (can be switched over to sensor)		1
• Voltage measuring circuit, with protective isolation 2.9 kV	V	15
<b>Expansion (module expansion)</b>		
• Max. number		2
<b>Casing</b>		
• Installation		Top hat rail mounting
• Dimensions (W x H x D) incl. plug	mm	150 x 100 x 75
• Ambient temperature (during operation)	°C	0...50
• Humidity (in operation), non-condensing	% RH	20...80
• Storage temperature	°C	0...50
<b>Bus system (Hoval CAN bus)</b>		
• Capacity		Max. 4 control modules/3 control modules + 1 gateway
• Bus supply		yes
• Bus line		4-wire bus
• Bus length max twisted, shielded	m	100 (greater distances possible with engineering of additional measures)
• Line cross-section	mm <sup>2</sup>	0.5
• Cable type (recommended)		JY-(ST) 2 x 2 x 0.8
<b>Other bus interfaces</b>		Internal unit bus (master)
<b>Miscellaneous</b>		
• Spring reserve		approx. 10 years, battery buffered
• Type of protection		IP 20
• Protection class		I – EN 60730
• Plug types		RAST 5 (coloured, coded)

## Electrical connection

TopTronic® E buffer module





TopTronic® E measuring module

- Controller module with M-Bus interface for reading out heat, gas and electricity meters (max. 16 M-Bus meters)
- Counter values can be used in different functions in the controller system, and displayed
- Voltage: 12 V DC 120 mA
- Type of protection: IP20
- Connection technology executed as plug-in screw terminals
- Update capability of the controller software
- Controller module suitable for cabinet installation by ability to install on DIN rail 35 x 15 x 2.2 mm or 35 x 7.5 x 2.2 mm
- Many possible uses via the Hoval CAN bus

Notice

Operation of the controller module is generally via the TopTronic® E control module installed in the heat generator!

Inputs and outputs

- M-Bus interface for reading out max. 16 M-Bus meters

Notice

If an electrical power supply is required for the M-Bus meter, it is not provided by the TopTronic® E measuring module.



Use

- For accommodating different M-Bus-capable meters in the bus system

Notice

Electrical power supply via the Hoval CAN bus, i.e. using the measuring module reduces the max. number of room control modules that can be connected to the bus system! List of compatible M-Bus devices see chapter "Energy/heat quantity balancing".

Delivery

- TopTronic® E measuring module incl. 2 x mounting clips for DIN rail attachment
- Plug set for controller module
  - Plug for M-Bus
  - Plug for Hoval CAN bus
- DIN rail with fitting accessories

■ Part numbers

TopTronic® E controller module



**TopTronic® E measuring module TTE-MWA**  
Controller module with M-Bus interface for reading out heat meters (max. 16 M-Bus participants)

- Consisting of:
- Fitting accessories
  - Plug set for controller module

Part No.

6034 574

TopTronic® E measuring module

Type		TTE-MWA
• Power supply max		12 V DC +6/-10 %
• Min. power consumption	W	0.6
• Max. power consumption	W	< 2.5
<b>Casing</b>		
• Installation		DIN rail mounting
• Dimensions (W x H x D) incl. plug	mm	70 x 92 x 35
• Ambient temperature (during operation)	°C	0...50
• Humidity (in operation), non-condensing	% RH	20...80
• Storage temperature	°C	0...50
<b>Bus system (Hoval CAN bus)</b>		
• Capacity		120 mA, > 120 mA external lectrical power supply required, depending on the M-Bus terminal units
• Bus supply		No
• Bus line		4-wire bus
• Bus length max twisted, shielded	m	100 (greater distances possible with engineering of additional measures)
• Line cross-section	mm²	0.5
• Cable type (recommended)		JY-(ST) 2 x 2 x 0.8
<b>M-Bus interface</b>		
• M-Bus voltage	V	30
• Transfer rate	baud	300 to 2400
• Electrical isolation		No
• Capacity		maximum 16 terminal units (standard loads 1.5 mA each)
• M-Bus protocol		according to list of Hoval documentation
• Max. bus length twisted, shielded		500 m with line cross section 0.8 mm²
• Min. line cross-section	mm²	0.8
<b>Miscellaneous</b>		
• Type of protection		IP 20
• Protection class		II – EN 60730
• Plug types		Plug-in terminal technology

Electrical connection

TopTronic® E measuring module



## TopTronic® E module expansion heating circuit

- Expansion to the inputs and outputs of a TopTronic® E basic module heat generator or the heating circuit/hot water module for implementing the following functions:
  - 1 heating/cooling circuit without mixer or
  - 1 heating/cooling circuit with mixer
- Max. 1 module expansion possible per basic module heat generator
- Max. 2 module expansions per heating circuit/hot water module possible
- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Connection to basic module using ribbon cable and mains connector set (max. distance between basic module and module expansion 10 cm)
- Controller module suitable for cabinet installation (mounting on DIN rail 35 x 15 x 2.2 mm)
- Protection via the basic module (10 A microfuse)

### Notice

Module expansions must be installed directly next to the controller module!

### Inputs and outputs

- 3 variable sensor inputs:
  - 2 variable inputs for connection of a sensor
  - 1 variable input for connection of a sensor or pulse sensor
- 0-10 V input, e.g. for connecting to heat zone control systems
- 0-10 V or PWM output for controlling a variable-speed pump
- Connection of a flow rate sensor (or pulse sensor), e.g. for heat metering at the heating circuit
- Variable 230 V 3-point output, e.g. for controlling the mixer
- Variable 230 V output, e.g. for controlling the recirculation pump
- 230 V optocoupler input connected in series to the variable 230 V output, e.g. for connecting a flow temperature guard for monitoring underfloor heating systems

### Functions

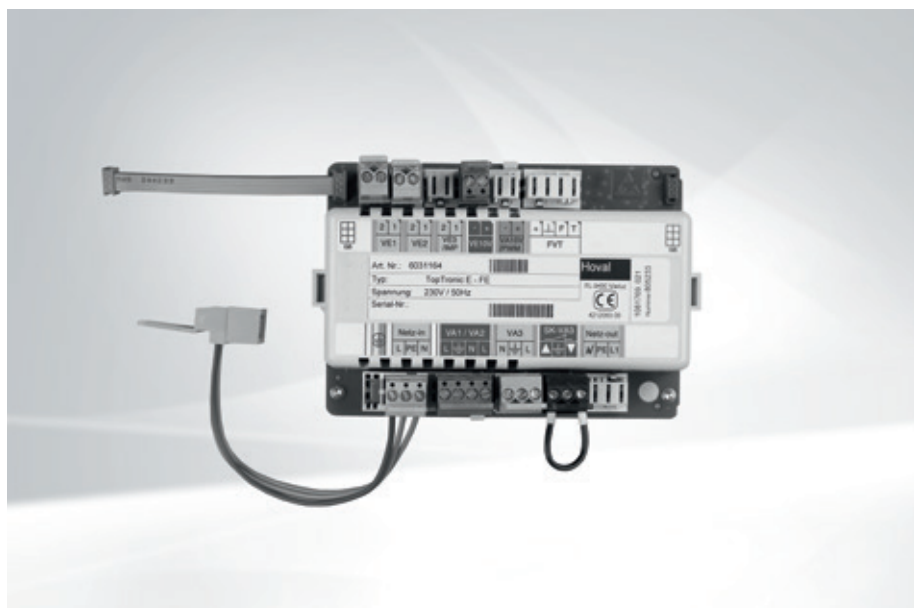
- Refer to the product description of the controller module to which the module expansion is attached to find which functions can be implemented

### Use

- For expanding the functions on the connected controller module
- Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented

### Delivery

- TopTronic® E module expansion
- DIN rail with fitting accessories
- Ribbon cable for connecting the device bus to the controller module
- Connection set for connecting the controller module to the mains voltage
- 1 contact sensor ALF/2P/4/T, L = 4.0 m
- Basic connector set for module expansions
  - Plug for 230 V output (VA3) (direct circuit pump, mixer circuit pump)
  - Plug for 2 230 V outputs (mixer) (VA1/VA2)



TopTronic® E module expansion heating circuit



TopTronic® E module expansion heat balancing



TopTronic® E module expansion Universal

- Plug for optocoupler input (SK-VA3) (flow temperature controller)
- 2 plugs for sensor (VE1/VE2)
- Plug for 0-10 V or PWM output (VA10V)

### Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!

- Controller module suitable for cabinet installation (mounting on DIN rail 35 x 15 x 2.2 mm)
- Protection via the basic module (10 A microfuse)

### Notice

Module expansions must be installed directly next to the controller module!

## TopTronic® E module expansion heat balancing

- Expansion to the inputs and outputs of a TopTronic® E basic module heat generator for implementing the following function
  - Calculation of the total energy consumption
  - Calculation of the heat generator energy for heating
  - Calculation of the heat generator energy for hot water
- Max. 1 module expansion possible per TopTronic® E basic module heat generator
- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Connection to basic module using ribbon cable and mains connector set (max. distance between basic module and module expansion 10 cm)

### Inputs and outputs

- 3 variable sensor inputs
  - 2 variable inputd for connection of a sensor
  - 1 variable input for connection of a sensor or pulse sensor
- 0-10 V input
- 0-10 V or PWM output
- Connection of a flow rate sensor (vortex or pulse sensor), e.g. for heat metering
- Variable 230 V 3-point output
- Variable 230 V output
- 230 V optocoupler input connected in series to the variable 230 V output

### Functions

- Refer to the product description of the controller module to which the module expansion is attached to find which functions can be implemented

#### Use

- For expanding the functions on the connected controller module
- Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented

#### Delivery

- TopTronic® E module expansion
- DIN rail with fitting accessories
- Ribbon cable for connecting the device bus to the controller module
- Connection set for connecting the controller module to the mains voltage
- 3 contact sensors ALF/2P/4/T, L = 4.0 m
- Complete plug set for module expansions

#### Notice

Flow rate sensor DN 8-32 must be ordered separately (depending on the maximum output to be measured)

### TopTronic® E module expansion

#### Universal

- Expansion to the inputs and outputs of a TopTronic® E basic module heat generator or a controller module (heating circuit/hot water module, solar module, buffer module) for implementing various functions
- Max. 1 module expansion possible per TopTronic® E basic module heat generator
- Max. 2 module expansions per heating circuit/hot water module, solar module, buffer module possible

- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Connection to controller module using ribbon cable and mains connector set (max. distance between basic module and module expansion 10 cm)
- Controller module suitable for cabinet installation (mounting on DIN rail 35 x 15 x 2.2 mm)
- Protection via the basic module (10 A microfuse)

#### Notice

Module expansions must be installed directly next to the controller module!

#### Inputs and outputs

- 3 variable sensor inputs:
  - 2 variable inputs for connection of a sensor
  - 1 variable input for connection of a sensor or pulse sensor
- 0-10 V input
- 0-10 V or PWM output for controlling a variable-speed pump
- Connection of a flow sensor (or pulse sensor)
- Variable 230 V 3-point output
- Variable 230 V output
- 230 V optocoupler input connected in series to the variable 230 V output

#### Functions

- Refer to the product description of the controller module to which the module expansion is attached to find which functions can be implemented

#### Use

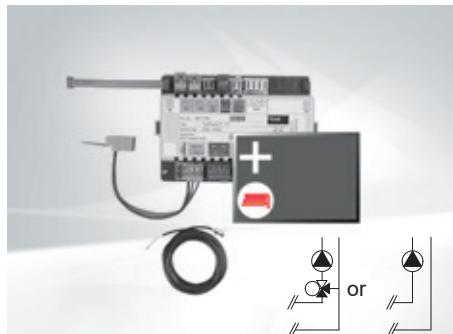
- For expanding the functions on the connected controller module
- Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented

#### Delivery

- TopTronic® E module expansion
- DIN rail with fitting accessories
- Ribbon cable for connecting the device bus to the controller module
- Connection set for connecting the controller module to the mains voltage
- Complete plug set for module expansion

## TopTronic® E module expansions

Heating circuit, heat balancing, Universal



### TopTronic® E module expansion heating circuit TTE-FE HK

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer

Consisting of:

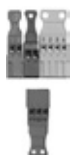
- Fitting accessories
- 1 contact sensor

ALF/2P/4/T, L = 4.0 m

- Basic plug set FE module

#### Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!



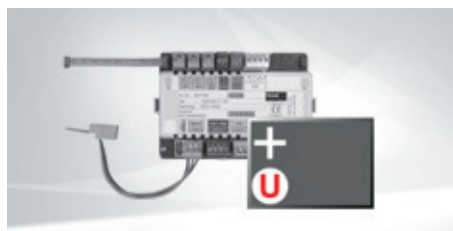
### Supplementary plug set for controller modules and module expansion TTE-FE HK

Consisting of RAST 5 mating plugs for connecting further sensors and actuators on the controller module or on the module expansion.

The controller module is already equipped with a basic plug set, the supplementary plug set is required for advanced functions.

Consisting of:

- Plug for mains out (230 V)
- Plug for sensor (VE3) (variable input)
- Plug for 0-10 V input (VE10V)
- Plug for flow rate sensor input (FVT)



### TopTronic® E module expansion Universal TTE-FE UNI

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

Consisting of:

- Fitting accessories
- Plug set FE module

#### Notice

Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

## Part No.

6034 576

6034 503

6034 575



**TopTronic® E module expansion heating circuit incl. energy balancing**

TTE-FE HK-EBZ  
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:

- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer incl. energy balancing in each case

Consisting of:  
- Fitting accessories  
- 3 contact sensors ALF/2P/4/T, L = 4.0 m  
- Plug set FE module

**Notice**

The continuous flow sensor set must be ordered as well.

**Sets flow rate sensor**

- Used in combination with the module expansion heat balancing or var. controller modules for heat metering
- Flow sensor supplies the current flow rate as well as the current temperature to the measuring point

Consisting of:  
- flow rate sensor  
- connection cable  
- RAST 5 plug for connecting to TopTronic® E



**Plastic housing**

Unit of measure	Connection	Flow rate l/min
DN 8	G 3/4"	0.9-15
DN 10	G 3/4"	1.8-32
DN 15	G 1"	3.5-50
DN 20	G 1 1/4"	5-85
DN 25	G 1 1/2"	9-150

6038 526  
6038 507  
6038 508  
6038 509  
6038 510



**Brass housing**

Unit of measure	Connection	Flow rate l/min
DN 10	G 1"	2-40
DN 32	G 1 1/2"	14-240
DN 40	G 2"	22-380

6042 949  
6042 950  
6055 092

**Part No.**

6037 062



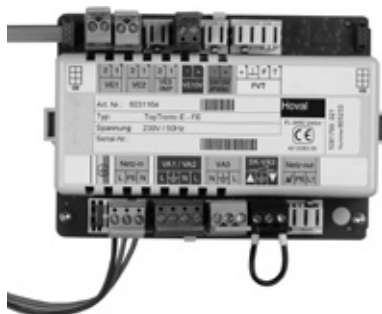
## TopTronic® E module expansions

Heating circuit, heat balancing, universal

Type	TTE-FE HK / TTE-WMZ/EBZ / TTE-FE UNI	
• Power supply max		230 V AC +6/-10 %
• Frequency	Hz	50-60
• Min. power consumption	W	0.2
• Max. power consumption	W	1.8
• Fuse		none - protection via controller module
<b>Output (low voltage)</b>		
• Electromechanical relays		3
<b>Output (extra-low voltage)</b>		
• Signal output PWM or 0-10 V		1
<b>Switching capacity</b>		
• Electromechanical relays	A	3
<b>Input (low voltage)</b>		
• Optocoupler input		1
<b>Inputs (extra-low voltage)</b>		
• Input 0-10 V		1
• Inputs sensors		2
• Inputs flow rate sensor		1
• Pulse input (can be switched over)		1
• Voltage measuring circuit, with protective isolation 2.9 kV	V	15
<b>Expansion (module expansion)</b>		
• Max. number		-
<b>Casing</b>		
• Installation		Top hat rail mounting
• Dimensions (W x H x D) incl. plug	mm	150 x 100 x 75
• Ambient temperature (during operation)	°C	0...50
• Humidity (in operation), non-condensing	% RH	20...80
• Storage temperature	°C	0...50
<b>Other bus interfaces</b>		Internal unit bus (slave)
<b>Miscellaneous</b>		
• Type of protection		IP 20
• Protection class		I – EN 60730
• Plug types		RAST 5 (coloured, coded)

## Electrical connection

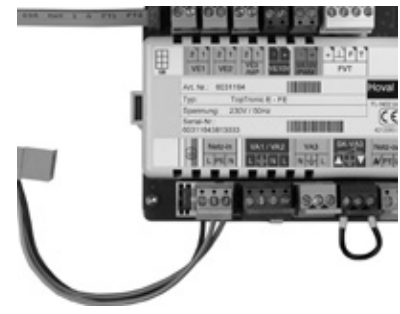
TopTronic® E module expansions



TopTronic® E module expansion  
heating circuit



TopTronic® E module expansion  
heat balancing



TopTronic® E module expansion  
Universal

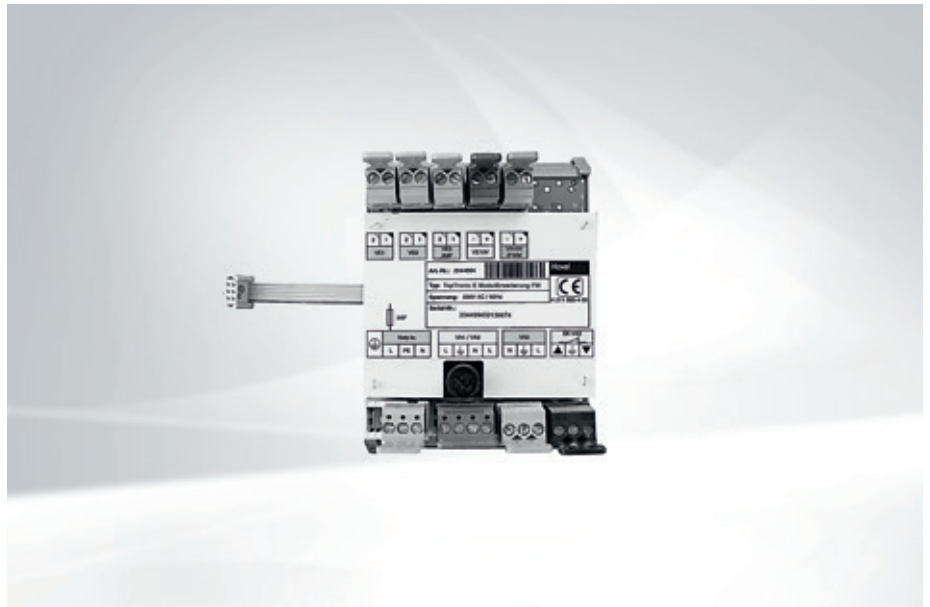


### TopTronic® E module expansion heating circuit district heating

- Expansion to the inputs and outputs of a basic module (basic module district heating/ fresh water, basic module district heating com) for carrying out various functions
  - 1 heating circuit without mixer
  - 1 heating circuit with mixer
- Max. 5 module expansions possible per basic module
- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Ribbon cable for connecting the device bus to the controller module
- Controller module suitable for cabinet installation (mounting on DIN rail, dimensions of controller module W x H x D 93 x 125 x 95 mm)
- Protection via the basic module

#### Notice

Module expansions must be installed directly next to the controller module!



#### Inputs and outputs

- 3 variable sensor inputs
  - 2 variable inputs for connection of a sensor
  - 1 variable input for connection of a sensor or pulse sensor
- 0-10 V input
- 0-10 V output for controlling a continuous valve (e.g. mixing circuit valve)
- Variable 230 V 3-point output, e.g. for controlling the mixer
- Variable 230 V output, e.g. for controlling the recirculation pump
- 230 V optocoupler input connected in series to the variable 230 V output, e.g. for connecting a flow temperature guard for monitoring underfloor heating systems

#### Functions

- Refer to the product description of the controller module to which the module expansions are attached to find which functions can be implemented

#### Use

- For expanding the functions on the connected controller module
- Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented

#### Delivery

- TopTronic® E module expansion district heating
- DIN rail with fitting accessories
- Ribbon cable for connecting the device bus to the controller module
- Connection set for connecting the controller module to the mains voltage
- 1 contact sensor ALF/1.1P/2.5/T, L = 2.5 m
- Basic plug set for module expansion district heating
  - Mains\_in
  - Plug for 230 V output (direct circuit pump, mixer circuit pump)
  - Plug for 2 230 V outputs (mixer)
  - Plug for optocoupler input (flow temperature controller)
  - 2 plugs for sensor
  - Plug for 0-10 V input

#### Notice

The supplementary plug set may have to be ordered to implement functions differing from the standard!

### TopTronic® E module expansion hot water district heating

- Expansion to the inputs and outputs of a TopTronic® E basic module district heating/ fresh water, district heating com for implementing a hot water circuit
- Max. 5 module expansions per TopTronic® E basic module district heating/fresh water, district heating possible
- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Connection to basic module using ribbon cable
- Controller module suitable for cabinet installation (mounting on DIN rail 93 x 125 x 95 mm)
- Protection via the basic module

#### Notice

Module expansions must be installed directly next to the controller module!



TopTronic® E  
module expansion  
heating circuit district heating



TopTronic® E  
module expansion  
hot water district heating



TopTronic® E  
module expansion  
Universal district heating

#### Inputs and outputs

- 3 variable sensor inputs:
  - 2 variable inputs for connection of a sensor
  - 1 variable input for connection of a sensor or pulse sensor
- 0-10 V input
- Variable 230 V 3-point output
- Variable 230 V output, e.g. for controlling the hot water pump
- 230 V optocoupler input connected in series to the variable 230 V output

#### Functions

- Refer to the product description of the controller module to which the module expansion is attached to find which functions can be implemented

#### Use

- For expanding the functions on the connected controller module
- Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented

#### *Delivery*

- TopTronic® E module expansion district heating
- DIN rail with fitting accessories
- Ribbon cable for connecting the device bus to the controller module
- Connection set for connecting the controller module to the mains voltage
- 2 immersion sensors TF/1.1P/2.5/6T, L = 2.5 m
- Basic plug set for module expansion district heating
  - Mains\_in
  - Plug for 230 V output (direct circuit pump, mixer circuit pump)
  - Plug for 2 230 V outputs (mixer)
  - Plug for optocoupler input (flow temperature controller)
  - 2 plugs for sensor
  - Plug for 0-10 V input

#### **Notice**

The supplementary plug set may have to be ordered to implement functions differing from the standard!

#### **Functions**

- Refer to the product description of the controller module to which the module expansion is attached to find which functions can be implemented

#### **Use**

- For expanding the functions on the connected controller module
- Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented

#### *Delivery*

- TopTronic® E module expansion district heating
- DIN rail with fitting accessories
- Ribbon cable for connecting the device bus to the controller module
- Connection set for connecting the controller module to the mains voltage
- Complete plug set for module expansions

### **TopTronic® E module expansion**

#### **Universal district heating**

- Expansion to the inputs and outputs of a basic module district heating or a basic module district heating/fresh water for implementing various functions
- Max. 5 module expansions are possible per basic module
- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Connection to controller module using ribbon cable
- Controller module suitable for cabinet installation (mounting on DIN rail, dimensions of controller module W x H x D 93 x 125 x 95 mm)
- Protection via the basic module

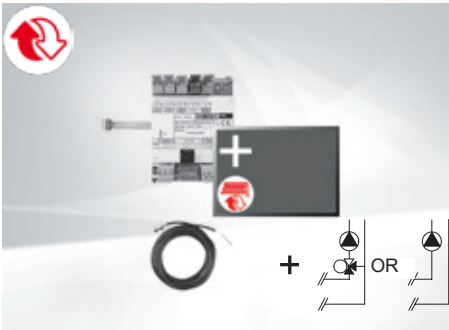
#### **Notice**

Module expansions must be installed directly next to the controller module!

#### *Inputs and outputs*

- 3 variable sensor inputs:
  - 2 variable inputs for connection of a sensor
  - 1 variable input for connection of a sensor or pulse sensor
- 0-10 V input
- 0-10 V output for controlling a continuous valve (e.g. mixing circuit valve)
- Variable 230 V 3-point output
- Variable 230 V output
- 230 V optocoupler input connected in series to the variable 230 V output

**TopTronic® E module expansions**  
Heating circuit, hot water,  
Universal district heating

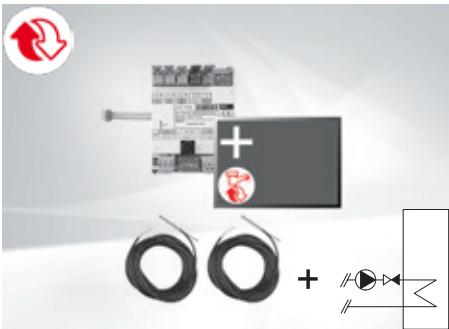


**TopTronic® E module expansion  
district heating circuit TTE-FE HK FW**  
Expansion to the inputs and outputs  
of a controller module (basic module  
district heating/fresh water, basic  
module district heating com) for  
carrying out various functions.  
Refer to the Hoval System Technology  
to find which functions and hydraulic  
arrangements can be implemented.

- Consisting of:
- Fitting accessories
  - Ribbon cable for connecting the  
device bus to the controller module,
  - Connection set for connecting the  
controller module to the mains voltage,
  - 1 x contact sensor ALF/1.1P/2.5/T  
L = 2.5 m,
  - Plug set - district heating expansion

Part No.

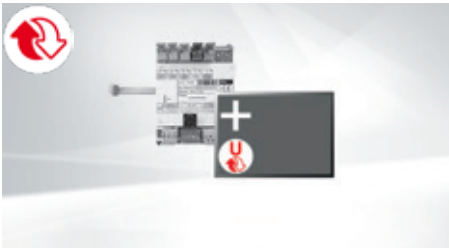
6038 119



**TopTronic® E module expansion  
hot water district heating TTE-FE WW FW**  
Expansion to the inputs and outputs of  
the basic module district heating/fresh  
water or basic module district heating  
com for implementing a hot water  
circuit.

- Consisting of:
- fitting accessories
  - 2 immersion sensors TF/1.1P/2.5/6T,  
L = 2.5 m

6038 120



**TopTronic® E module expansion  
Universal district heating TTE-FE UNI FW**  
Expansion to the inputs and outputs of  
the basic module district heating/fresh  
water or basic module district heating  
com for implementing various functions.

- Consisting of:
- Fitting accessories

6038 117

**Notice**  
Refer to the Hoval System Technology to find  
which functions and hydraulic arrangements  
can be implemented.

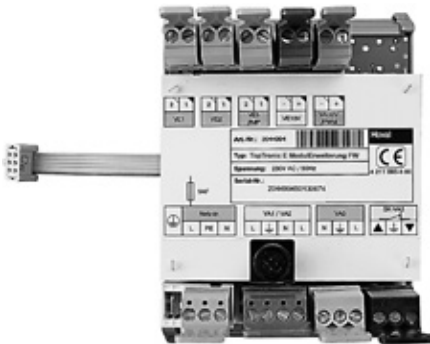
TopTronic® E module expansions district heating

Heating circuit direct heating circuit, hot water direct heating, universal district heating

Type	TTE-FE FW HK / TTE-FE FW WW / TTE-FE FW UNI	
• Power supply max		230 V AC +6/-10 %
• Frequency	Hz	50-60
• Min. power consumption	W	1.6
• Max. power consumption	W	1.8
• Fuse		F 5 A H 250 V
Output (low voltage)		
• Electromechanical relays		3
Switching capacity		
• Electromechanical relays	A	5
Input (low voltage)		
• Optocoupler input		-
Inputs (extra-low voltage)		
• Input 0-10 V		1
• Inputs sensors		3
• Pulse input (can be switched over)		-
Expansion (module expansion)		
• Max. number		-
Casing		
• Installation		Top hat rail mounting
• Dimensions (W x H x D) incl. plug	mm	95 x 125 x 95
• Ambient temperature (during operation)	°C	0...50
• Humidity (in operation), non-condensing	% RH	20...80
• Storage temperature	°C	0...50
Other bus interfaces		Internal unit bus (slave)
Miscellaneous		
• Type of protection		IP 10
• Protection class		II – EN 60730
• Plug types		RAST 5 (coloured, coded)

Electrical connection

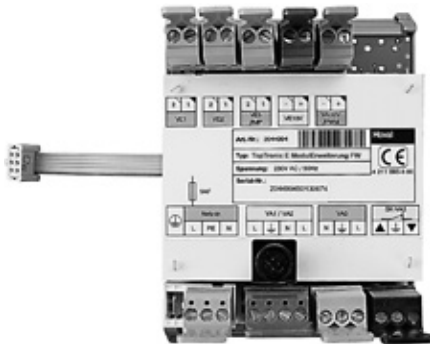
TopTronic® E module expansions



TopTronic® E module expansion  
heating circuit district heating



TopTronic® E module expansion  
hot water district heating



TopTronic® E module expansion  
Universal district heating

## Digital products - overview

Hoval offers suitable digital products for remote access to the system for different customer groups.

With HovalConnect, Hoval offers simple and intuitive solutions for end customers, providing a clear possibility for operating their systems.

Furthermore, Hoval offers its customers almost unlimited possibilities through open interfaces and cooperation arrangements such as with the smart home system manufacturer Loxone; these make it possible for them to intelligently and profitably network Hoval plants through building automation, see the Loxone description. Appropriate additional components (gateways) may be required for this purpose.

## HovalConnect

Access to specific functions of the TopTronic® E system via smartphone app for end users.

- Simplified operation of various functions via smartphone from home or while travelling
- High data security by encryption of communication between the plant and Hoval server
- Simple changing of the required heating circuit temperature/domestic hot water temperature, or programs
- Simple selection of the ventilation programs
- With the help of HovalConnect, extensive weather data is obtained via the Internet
- This allows the use of various, innovative functions, such as the detailed display of the weather forecast, a predictive adjustment of the flow temperature ("Energy Centre" function) or the EnergyManager PV smart.
- Triggering alarms in case of faults on the heating system
- Energy accounting for graphical representation of a system's solar data and heat quantity metering

● included    ○ optional    □ limited

## HovalConnect

HovalConnect	
<b>Costs</b>	
One-time license costs	●
Recurrent subscription costs	
<b>Customer segment</b>	
Private customers	●
Commercial customers	
<b>General</b>	
Several languages	●
User management/User roles	□
Project/system subdivision	□
Global search	●
Data recording	□
Geo map views with live data	
Geo map heatmaps	
Online weather data display	●
Alarm management	□
Log (who did what & when)	
Custom menu	
Backup management	
Write/read data points (parameter-tree)	
System visualisation	
<b>Installation and access</b>	
Browser-based/mobile-ready (responsive web design)	
Native mobile app	●
Cloud installation	●
On-premises installation	
<b>E-mail notifications</b>	●
Alarms (time & group-controlled)	□
Reports	
<b>Dashboard</b>	●
Global dashboards	
Project-related dashboards	
Customer administration	
System management	
<b>Data export</b>	
CSV	
XML	
JSON	
REST API	
<b>Administration/monitoring</b>	
Communication monitoring	
System status	
Backup status	
Database status	
<b>Connectivity</b>	
<b>HovalConnect</b>	●
HovalConnect LAN gateway module	●
HovalConnect WLAN gateway module	●
HovalConnect Modbus gateway module	●
HovalConnect KNX gateway module	●
<b>CS (Configured Solution)</b>	
Gateway module OPC UA (CAN2OPC)	●
<b>ES (Engineered Solution)</b>	
Hoval Beckhoff PLC (VPN)	
Modbus TCP (VPN)	
MQTT	
OPC UA	
OPC (VPN)	
BACnet (VPN)	
CAN bus (VPN)	
KNX (VPN)	
Siemens S5/S7 (VPN)	
EtherNet/IP (VPN)	
REST-APIs	

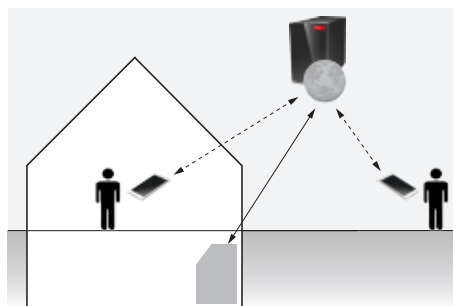


## HovalConnect

HovalConnect enables access to specific functions of the TopTronic® E system via smart-phone app.

### Added value for plant owner

- Simplified operation of various functions via smartphone from home or while travelling
- High data security by encryption of communication between the plant and Hoval server.
- With the help of HovalConnect, extensive weather data is obtained via the Internet.
- This allows the use of various, innovative functions, such as a predictive adjustment of the flow temperature ("Energy Centre" function) or the EnergyManager PV smart.
- Simple changing of the required heating circuit temperature/domestic hot water temperature, or programs
- Simple selection of the ventilation programs
- Triggering alarms in case of faults on the heating system (e-mail, push notification)
- Energy accounting for graphical representation of a plant's solar data and heat quantity metering
- Up to 4 heating circuits/domestic hot water circuits (basic module TTE FW) or 5 heating circuits/domestic hot water circuits (basic module TTE H-Gen) can be operated



## Access to HovalConnect

The app can be downloaded free of charge via the Apple App Store for iOS devices and via the Google Play Store for Android devices.

- Minimum requirements of the smartphone operating system (last version and 2 versions previous to that):
  - Android
  - iOS

## Connection of HovalConnect

- The heating system / TopTronic® E is connected to the Internet either via a LAN cable or a WLAN-enabled gateway
  - Simple installation and configuration of the gateway
  - Customer creates his/her personal account on the Hoval server and registers his/her plant
- One gateway is required/authorised per Hoval bus system
- Update capability of the gateway software
- Gateway is either mounted on the wall or placed on a surface without mounting
- Type of protection: IP20



## EnergyManager PV smart

If the HovalConnect gateway is used together with a Hoval heat pump (TopTronic® E required), the free EnergyManager PV smart feature is available. This allows the heat pump to be operated preferentially at times of higher solar radiation. The feature uses online weather data on the current solar radiation for this purpose and can be adjusted by means of an associated threshold value. The self-consumption of electricity from an existing photovoltaic plant is thus increased and the purchase of grid electricity is reduced. This results in a lasting and significant cost-saving potential without further investment costs for the customer.

## Notice

A heat pump can be controlled with the EnergyManager PV smart. No other consumers can be controlled.

**HovalConnect demo version**

Download the HovalConnect app from the app store of your choice (Apple App Store or Google Play Store) or take a picture of the QR code below with your smartphone and a QR code-enabled app to gain an insight into the demo version of HovalConnect:



## Designs

## HoyalConnect LAN

- The heating system is connected to the Internet by cable.

### Delivery

- Gateway
- Wall mounting adapter white
- License for HoValConnect
- Cover for Gateway
- Fitting accessories for covering the gateway

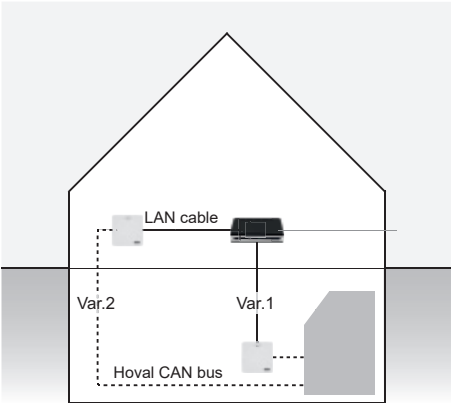
## HovalConnect WLAN

- Version same as HovalConnect LAN. Connection is wireless via WLAN, however.

### Delivery

- Gateway
- Wall mounting adapter white
- License for HovalConnect WLAN antenna (matching Gateway)
- Cover for Gateway
- Fitting accessories for covering the gateway
- Mains adapter 12 V/6 W with cable, L = 1800 mm

HovalConnect



2 installation possibilities of the Gateway:  
Var. 1: Installation in the basement, i.e.  
LAN cable to the router  
Var. 2: Installation in the living area, i.e.  
4-wire cable (Hoval CAN bus) into  
the basement

**Notice**  
Please be sure to observe the specifications  
in the **Engineering** section!

HovalConnect LAN

- HovalConnect enables access to specific functions of the TopTronic® E system via smartphone app
- Simplified operation of various functions via smartphone from home or while travelling
- LAN interface for connecting the Gateway to the router of the home network

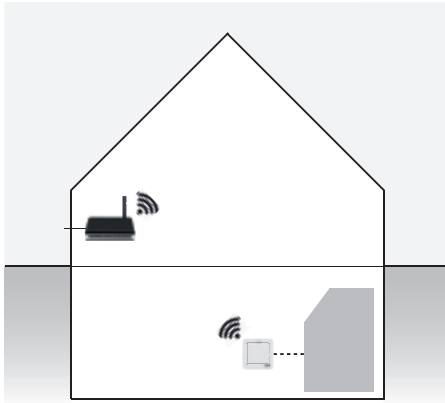
- Consisting of:
- Gateway
  - wall-mounting adapter white
  - licence for HovalConnect
  - cover for Gateway
  - fitting accessories for covering the Gateway

Part No.

6049 496

## Part No.

6049 498

**Notice**

Please be sure to observe the specifications in the **Engineering** section!

**HovalConnect WLAN**

- HovalConnect enables access to specific functions of the TopTronic® E system via smartphone app
- Simplified operation of various functions via smartphone from home or while travelling
- LAN interface or WLAN interface for connecting the Gateway to the router of the home network

## Consisting of:

- Gateway
- wall-mounting adapter white
- licence for HovalConnect
- WLAN antenna (matching Gateway)
- cover for Gateway
- fitting accessories for covering the Gateway
- Mains adapter 12 V/6 W with cable, L = 1800 mm



#### Mains adapter for Gateway

- Plug-in mains adapter for external power supply of the Gateway required if the device is not powered via the Hoval CAN bus
- Supply via the Hoval CAN bus unless the max. number of control modules is exceeded
- For the WLAN version, the electrical power supply must be provided via the supplied mains adapter
- Connection to Gateway via a DC plug 5.5 x 2.1 x 10 mm I/O 100-240 V AC/12 V DC 1A
- Only required as spare part.

#### Top hat rail mounting set incl. top hat rail for Gateway

For mounting the Gateway in the heat generator, in a wall casing or in a control panel

Consisting of:

- Top hat rail with fixing accessories
- Top hat rail mounting adapter

#### Part No.

2076 328

6035 800

**HovalConnect - Gateway****Casing**

• Mounting		Top hat rail mounting
• Dimensions LAN/WLAN (W x H x D), (incl. top-hat rail 42 mm)	mm	100 x 100 x 27
• Dimensions Modbus (W x H x D) (terminal block incl. top-hat rail 55 mm)	mm	155 x 100 x 47
• Dimensions KNX (W x H x D), (incl. top-hat rail 68 mm)	mm	160 x 100 x 53
• Material		plastic
• Weight (approx.) LAN/WLAN	g	150
• Weight (approx.) Modbus	g	500
• Weight (approx.) KNX	g	500

**Electrical safety**

• Protection type (according to EN 60529)	IP 20
• Complies with EN 50491-3	
• Safety extra-low voltage	SELV 24 V DC

**EMC requirements**

- Complies with EN 61000-6-2, EN 61000-6-3, EN 50491-5-1, EN 50491-5-2 and EN 50491-5-3
- According to EMC Directive (residential and functional building)

**Ambient conditions**

• Ambient temperature (during operation)	°C	0...45
• Storage temperature	°C	-20...60
• Humidity (in operation)	%, RH	20...80

**Power supply**

• External supply	LAN gateway: CAN bus WLAN gateway: mains adapter 12 V DC Modbus gateway: CAN bus KNX gateway: mains adapter 12 V DC
• Power consumption	< 800 mW

**Ethernet**

- 10BaseT (10Mbit/s)
- Supported protocols: UDP/IP, TCP/IP, DHCP and static IP

## General information

One gateway is required per Hoval bus system.

### Attention

The gateway must be installed in an easily accessible place outside the plant so that the colour codes of the front LEDs can be read easily (e.g. wall installation).

## Activation

Each gateway must be approved by Hoval. The owner's e-mail address must be provided for this purpose. This owner's e-mail address must then also be used for registration on HovalConnect so that the plant can be accessed.

## Internet access

Internet access is required for installation (broadband Internet connection with min. 512 kbps and public IPv4). If necessary, the corresponding ports must be enabled in the customer's firewall. (For more details, refer to the commissioning instructions and the assembly instructions). The monthly data volumes can be from 150 to 300 MB.

## Fault messages

An e-mail alarm by HovalConnect does not replace a fault monitoring system in case of critical applications.

## EnergyManager PV smart

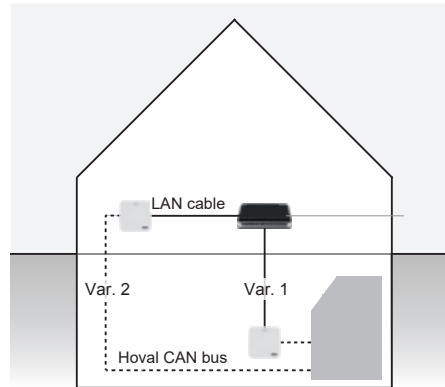
The EnergyManager PV smart uses online weather data as the basis for energy management and does not communicate with inverters or any installed electricity meters. This means it is compatible with every PV plant. It exclusively controls the operation of the heat pump and does not offer any interfaces for other consumers.

### Notice

No connection to Smart Home systems is possible with HovalConnect LAN/WLAN. Please provide HovalConnect KNX or HovalConnect Modbus for this purpose. HovalConnect Modbus is suitable for connection to a building management system or an external energy management system.

## HovalConnect LAN

- Var. 1, installation of the gateway in the basement via a LAN cable to the router or
- Var. 2, installation in the living area via a 4-wire cable (Hoval CAN bus) into the basement.



## Electrical power supply

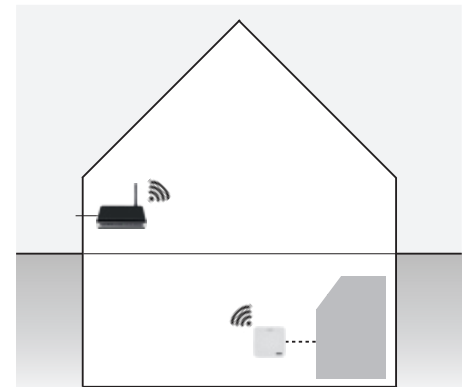
- Electrical power supply: 12 V DC 100 mA
- The electrical power supply is via the Hoval CAN bus, i.e. using the module reduces the max. number of (room) control modules that can be connected to the bus system.

## Top hat rail mounting

The top hat rail mounting set must be ordered separately if, as an exception, a LAN gateway has to be installed in the control panel.

## HovalConnect WLAN

- The heating system is connected to the home network via a WLAN-capable gateway.
- Take account of maximum WLAN range of the router!



## Electrical power supply

- Electrical power supply: 12 V DC 200 mA
- The electrical power supply must not be provided via the Hoval CAN bus, but must be guaranteed via a power supply unit (included in the scope of delivery).

### Attention

Only the LAN version allows a power supply via the Hoval CAN bus.

## WLAN connection

All of the following requirements must be met in order for HovalConnect to function without problems:

- Frequency band only 2.4 GHz
- Minimum signal strength -60 dBm
- Encryption only WPA or WPA2 (only PSK method)
- Only characters from the ASCII character set for the PSK

Hoval strongly recommends checking the WLAN signal strength directly at the gateway (e.g. using a corresponding smartphone application).

### Attention

The gateway must never be installed in the heat generator or in a control panel.

## HovalConnect Modbus

- Communication module for data exchange from Hoval TopTronic® E control systems with building management systems, external energy management or Smart Home systems, via Modbus TCP or Modbus RS485
- 1 Modbus module per cascade group required
- Refer to the data point table for data points and addressing
- Voltage: 12 V DC 100 mA
- Type of protection: IP20
- Connection is made, for one thing, either using RJ12 (Modbus RS485) or, for another, using a supplied connection cable via RJ45 plug connections (Modbus TCP)
- Update capability of the controller software
- Device suitable for cabinet installation by ability to install on DIN rail 35 x 15 x 2.2 mm or 35 x 7.5 x 2.2 mm

### Notice

Electrical power supply via the Hoval CAN bus, i.e. using the module reduces the max. number of room control modules that can be connected to the bus system!

### Inputs and outputs

- RJ12 plug connection for connecting to Modbus RS485
- RJ45 plug connection for connecting to Modbus TCP
- Connection to Hoval CAN bus via terminals or RJ45
- Terminals for connection to Modbus RS485

## Use

- Controller module for connecting plants with TopTronic® E (heat generators, cascades, district heating systems, comfort ventilation) to a higher-level building management system
- For self-consumption optimisation in connection with external energy management or for integration into a Smart Home via Modbus RS485 or Modbus TCP

### Notice

The HovalConnect Modbus Gateway can be connected to HovalConnect - see necessary specifications in the description of the "HovalConnect" chapter

### Delivery

- Gateway Modbus incl. mounting cover for DIN rail attachment
- DIN rail with fitting accessories
- Connection cable for connecting to Modbus RS485
- Licence for HovalConnect

## ■ Part No.



### HovalConnect Modbus

Communication module for data exchange from Hoval TopTronic® E control systems with building management systems, external energy management or Smart Home systems, via Modbus TCP or Modbus RS485

- HovalConnect enables access to specific functions of the TopTronic® E system via smartphone app
- Simplified operation of various functions via smartphone from home or while travelling

### Delivery

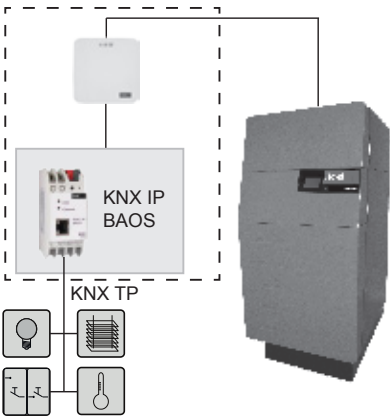
- Gateway Modbus TCP/RS485 incl. mounting cover for DIN rail attachment
- top hat rail with fitting accessories
- Licence for HovalConnect

## Part No.

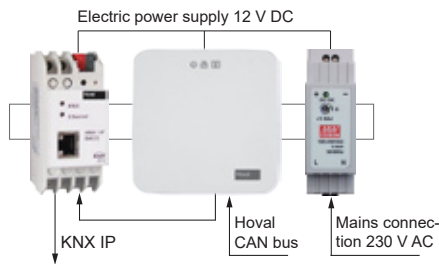
6049 501

HovalConnect KNX

- Communication module for data exchange from Hoval TopTronic® E control systems with building management systems via KNX TP



- Gateway module KNX consisting of
  - Coupling module
  - Gateway KNX
  - Mains adapter



KNX bus connection

- 1 HovalConnect KNX Gateway is required per Hoval bus system
- Refer to the data point table for data points and addressing
- Voltage: 230 V AC
- Power consumption: approx. 1 W
- Type of protection: IP20
- Connection made via terminals (mains voltage, KNX TP)
- Operating elements: teach-in button for KNX
- Display elements:
  - Teach-in LED (red)
  - LED indicator (green) for KNX
  - LED indicator (green) for LAN
- Device suitable for cabinet installation by ability to install on DIN rail 35 x 15 x 2.2 mm or 35 x 7.5 x 2.2 mm

Use

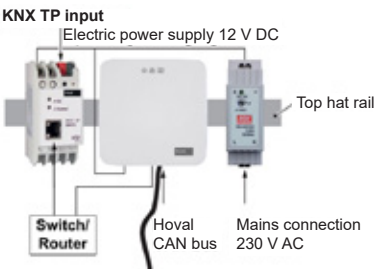
- Controller module for connecting the heat generator or TopTronic® E bus system to a building management system using KNX

Notice

The gateway KNX can be connected to HovalConnect - see necessary specifications in the description of the "HovalConnect" chapter

Delivery

- Gateway KNX incl. mounting cover for DIN rail attachment
- Coupling module to KNX twisted pair
- Mains adapter
- DIN rail with fitting accessories
- Licence for HovalConnect



■ Part No.



HovalConnect KNX

Communication module for data exchange from Hoval TopTronic® E control systems with building management systems via Modbus KNX TP

- HovalConnect enables access to specific functions of the TopTronic® E system via smartphone app
- Simplified operation of various functions via smartphone from home or while travelling

Delivery

- Gateway KNX incl. mounting cover for DIN rail attachment
- coupling module on KNX twisted part
- power supply unit
- top hat rail with fitting accessories
- Licence for HovalConnect

Part No.

6049 593



## Loxone

Control your Hoval heating system with TopTronic® E via the HovalConnect Modbus gateway also with your Loxone smart home system. The Hoval heating system can be controlled with the Modbus gateway both for Modbus RTU and via TCP and thus perfectly integrated into the Loxone system.

# LOXONE

### Modbus templates

Modbus templates for the Loxone configuration program Loxone Config are available on the Loxone Library ([library.loxone.com](http://library.loxone.com)). These save you some configuration effort and time-consuming research work.

The Modbus templates are available for both Hoval heat generators and Hoval residential ventilation systems (HomeVent®).

- Hoval heat generator



- Hoval residential ventilation (HomeVent®)



### Advantages of the integrated Hoval/Loxone system

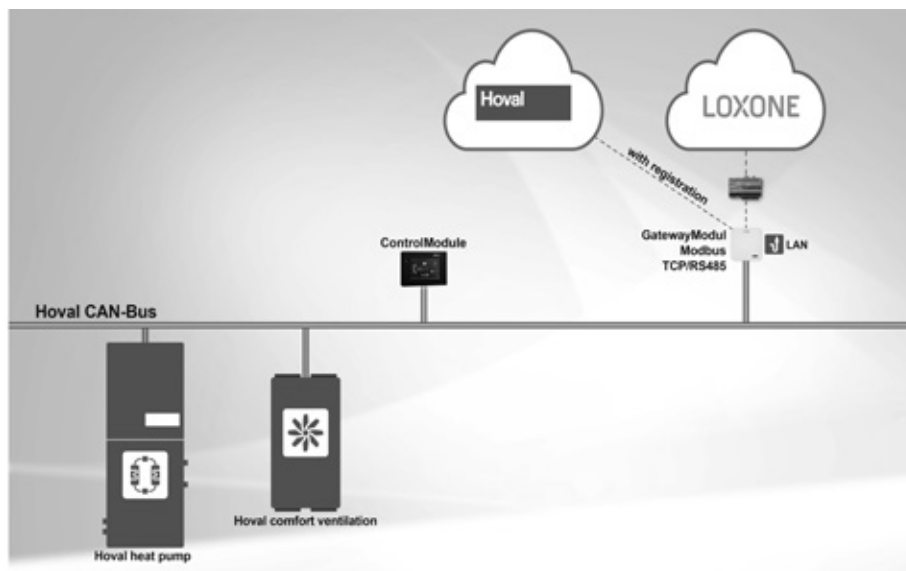
There are numerous advantages if you combine your Hoval system with Loxone. A more detailed description of the use cases, as well as implementation instructions, can be found in the *Excel file* in the *Additional Downloads* section of the *Loxone Library* web pages linked above for the Modbus templates.

### Advantages for heat generators

- One of the advantages is the combination of the Hoval heating circuit control with the convenient Loxone individual room control. You benefit from lower energy consumption due to lower average flow temperatures and the prevention of overheating of your rooms.
- If you have a Hoval heat pump with cooling function, you can also use the intelligent combination for the individual room control of the cooling.
- Your Hoval system with heat pump can also be combined with the Loxone Energy Manager and a photovoltaic system. Surplus electricity from a photovoltaic system is stored in hot water tanks, buffer tanks or in the room via a temperature increase. This thermal energy storage makes it possible to use energy when it is available, thus saving money. This is also possible in summer in cooling mode, slightly lowering the temperature in the buffer storage tank and/or in the room here.

### Advantages of residential ventilation (HomeVent®)

- The Hoval HomeVent® system can be combined with the Loxone indoor climate sensor very advantageously. This results in a high-quality ventilation system with even more intelligent control mechanisms.
- It is possible to place one room climate sensor in one ventilation zone (e.g. in the most important room) or several room climate sensors (e.g. in each room).
- If there are several room climate sensors in a ventilation zone, the ventilation can be based on the room with the highest CO<sub>2</sub> concentration. It is also possible that ventilation is increased if several rooms have a higher CO<sub>2</sub> concentration. This allows for more comfortable and demand-oriented ventilation.
- Hoval HomeVent® in combination with ventilation dampers: in rooms with increased CO<sub>2</sub> concentration, Loxone can control ventilation dampers (e.g. with a 0-10 V control) and open them further. The Hoval HomeVent® system automatically adjusts the flow rate to the damper positions. This enables even more targeted ventilation, which further increases comfort and further reduces energy consumption for ventilation.
- HomeVent® can support building air conditioning in summer by cooling with ambient air. Ventilation is increasingly activated when the colder fresh air can be used to cool the rooms, e.g. at night. The comfort plus room control module must also be used when integrating the HomeVent® into a Loxone Smart Home.





### TopTronic® E control module black

- Colour touchscreen 4.3 inch with black high-gloss trim
- Resolution: 480 x 320
- Connection to the Hoval bus system via RJ45 plug connection or plug terminals (max. 0.75 mm<sup>2</sup>)
- Flat design with flexible installation options
- Installation
  - in the control panel of the heat generator
  - in the Hoval wall casing
  - in the front of the control panel
  - on the wall with surface mounting frame (deep control module incl. frame approx. 25 mm)
  - on the wall using wall mounting plate with concealed sockets (deep control module incl. mounting plate approx. 12 mm)

#### Notice

Supplied accessories for installation of device in the front of the control panel. Take account of additional accessories for alternative installation!

- Commissioning wizard for simple configuration and parameter setting of the plant
- Operation of all controller modules connected to the bus system (basic, solar, buffer module, etc.)
- Emission measurement and manual mode
- LED for displaying the current system status
- Automatic dimming depending on the ambient light
- User-friendly user interface and menu system
- Activation of functions and display texts depending on the user level
- Plant-specific naming of heating and hot water circuits possible
- Display of all information in plain text and in different languages
- Display of detailed plant information
- Extensive fault message management by plain text and categories
- Service and maintenance function
- Operating mode selection incl. configurable week and day programs
- Operation of all heating and hot water circuits connected to the bus system
- Rights management for heating and hot water circuits incl. activation of the common operating mode
- Efficient control of the heating installation by simple working with day programs
- Analysis function (outside temperature, room temperature, solar yield curves, etc.)
- Customer-specifically configurable start screen for displaying
  - Time and date
  - Lunar phase
  - Heat generator temperature
  - Hot water temperature
  - Active day and basic program incl. temperature profile
  - Output and consumption of a heating/hot water circuit or of the heat generator (possible in combination with flow rate sensors)
  - Collector temperature (in combination with solar module)

### TopTronic® E control module



### TopTronic® E room control modules



easy white



comfort white



comfort black

- Display of the current weather or weather forecast (only possible in combination with HovalConnect)

#### Delivery

- TopTronic® E control module black
- Clamping device control module
- Clamping device adapter control module
- CAN cable RJ45/RAST 5, L = 5 m

### TopTronic® E room control module

- Colour touchscreen 4.3 inch with high-gloss trim
  - Room control module easy white
  - Room control module comfort either white or black
- Resolution: 480 x 320
- Connection to the Hoval bus system via RJ45 plug connection or plug terminals (max. 0.75 mm<sup>2</sup>)
- Installation on the wall
  - with a surface mounting frame (deep room control module incl. frame approx. 25 mm)
  - with a wall mounting plate with concealed sockets (deep room control module incl. mounting plate approx. 12 mm)
- Optimum mounting height in the room: 1500-1600 mm
- LED for displaying the current system status
- Automatic dimming depending on the ambient light
- User-friendly user interface and menu system
- Plant-specific naming of heating and hot water circuits possible
- Display of all information in plain text and in different languages

- Display of detailed plant information
- Extensive fault message management by plain text and categories
- Service and maintenance function
- Operating mode selection incl. configurable week and day programs
- Room sensor installed

#### Delivery

- TopTronic® E room control module
- Surface-mounted assembly frame
- Design frame
- Wall mounting adapter
- Assembly material

#### TopTronic® E room control module easy white

- Room control module can only be allocated to a heating circuit
- Software with reduced range of functions for simple operation of the room temperature and selection of the basic program without problems

#### TopTronic® E room control module white or black

- Operation of all heating and hot water circuits connected to the bus system
- Rights management for heating and hot water circuits incl. activation of the common operating mode
- Efficient control of the heating installation by simple working with day programs
- Analysis function (outside temperature, room temperature, solar yield curves, etc.)
- Selection between different start-up screens possible during commissioning
- Customer-specifically configurable start screen for displaying
  - Time and date
  - Lunar phase
  - Heat generator temperature
  - Hot water temperature
  - Active day and basic program incl. temperature profile
  - Output and consumption of a heating/hot water circuit or of the heat generator (possible in combination with flow rate sensors)
  - Collector temperature (in combination with solar module)
- Display of the current weather or weather forecast (only possible in combination with HovalConnect)

#### Notice

The TopTronic® E room control module in white or black must be used to operate the Hoval HomeVent® comfort ventilation. For details, see "Comfort Ventilation".

## TopTronic® E control module



### Notice

Take account of additional accessories for alternative installation!

### TopTronic® E control module black with 4.3" colour touchscreen

For operation of all controller modules connected to the bus system (basic, solar, buffer modules etc.)  
Connection to the Hoval bus system via RJ45 plug connection or via plug terminals (max. 0.75 mm<sup>2</sup>), flat design with flexible installation option

Installation:

- in control panel of the heat generator
- in the Hoval wall casing
- in the control panel front, black high-gloss cover, customer-specific configurable start screen,

Display of current weather or weather forecast (only possible in combination with HovalConnect)

Consisting of:

- TopTronic® E control module black
- Clamping device set control module
- RJ45-RAST 5 CAN cable, L = 500

## Part No.

6043 844

## TopTronic® E room control modules



### Notice

Take account of additional accessories for alternative installation!

### TopTronic® E room control module easy white with 4.3" colour touchscreen

Room control module for one heating circuit

Software with reduced function range for simple operation of the room temperature and trouble-free choice of basic programme

Optimum mounting height: 1500-1600 mm

For installation on the wall

- with a surface-mounted assembly frame (depth room control module incl. frame approx. 25 mm)
- with a wall mounting plate for concealed sockets

(depth room control module incl. mounting plate approx. 12 mm),

Connection to the Hoval bus system via RJ45 plug connection or via plug terminals (max. 0.75 mm<sup>2</sup>), white high-gloss cover

Consisting of:

- TopTronic® E room control module white
- Surface-mounted assembly frame white
- Designer frame white
- Wall mounting adapter
- Fitting accessories

6037 071


**Notice**

Take account of additional accessories for alternative installation!

**TopTronic® E room control module comfort white with 4.3" colour touchscreen**

Operation of all heating and hot water circuits connected to the bus system, Customer-specific configurable start screen,

Display of current weather or weather forecast (only possible in combination with HovalConnect), Efficient control of the heating system by simple working with day programmes, Analysis function (outdoor temperature, room temperature, solar yield curves etc.)

Optimum mounting height: 1500-1600 mm

For installation on the wall

- with a surface-mounted assembly frame (depth room control module incl. frame approx. 25 mm)

- with a wall mounting plate for concealed sockets

(depth room control module incl. mounting plate approx. 12 mm),

Connection to the Hoval bus system

via RJ45 plug connection or via plug terminals (max. 0.75 mm<sup>2</sup>),

white high-gloss cover

Consisting of:

- TopTronic® E room control module white
- Surface-mounted assembly frame white
- Designer frame white
- Wall mounting adapter
- Fitting accessories


**Notice**

Take account of additional accessories for alternative installation!

**TopTronic® E room control module comfort black with 4.3" colour touchscreen**

Operation of all heating and hot water circuits connected to the bus system, Customer-specific configurable start screen,

Display of current weather or weather forecast (only possible in combination with HovalConnect), Efficient control of the heating system by simple working with day programmes, Analysis function (outdoor temperature, room temperature, solar yield curves etc.)

Optimum mounting height: 1500-1600 mm

For installation on the wall

- with a surface-mounted assembly frame (depth room control module incl. frame approx. 25 mm)

- with a wall mounting plate for concealed sockets

(depth room control module incl. mounting plate approx. 12 mm),

Connection to the Hoval bus system

via RJ45 plug connection or via plug terminals (max. 0.75 mm<sup>2</sup>),

black high-gloss cover

Consisting of:

- TopTronic® E room control module black
- Surface-mounted assembly frame white
- Designer frame black
- Wall mounting adapter
- Fitting accessories

**Part No.**

6037 069

6037 070

## Accessories

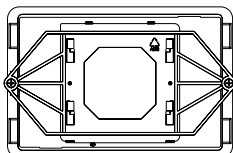


### Enhanced language package TopTronic® E

one SD card required per control module

Consisting of the following languages:  
HU, CS, SL, RO, PL, TR, ES, HR, SR,  
JA, DA

6039 253



### Clamping device set for control module

Can be used for mounting the  
control module

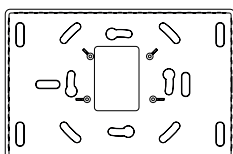
- in the Hoval wall casing
- in front of the control panel,  
cut-out 136 x 88 mm with a material  
thickness of 0.5-6 mm,
- connection to the Hoval bus system  
either via RJ45 plug connection or  
via plug-in terminals (max. 0.75 mm<sup>2</sup>)

6041 812

Consisting of:

- clamping device
- clamping device adapter for 138 x 92 mm  
(wall casing) material thickness  
(0.5–3 mm)

Included in the scope of delivery for the  
TopTronic® E control module.



### On-wall mounted installation frame black

Can be used for on-wall mounting of the  
control module/room control module  
black, depth of control module incl.  
on-wall mounted installation frame  
approx. 25 mm, colour matt black,  
connection to the Hoval bus system  
by RJ45 plug connection or plug-in  
terminals (max. 0.75 mm<sup>2</sup>)

6035 797

Consisting of:

- On-wall mounting frame black
- fixing accessories incl. screws for  
locking the control module

Included in the scope of delivery for the  
TopTronic® E control module.



### Wall installation adapter

Can be used for wall installation of the  
control module/room control module  
black or white, very flat design possible  
depth of control module incl. on-wall  
mounted installation frame is only  
13 mm, use requires an existing  
in-wall socket or connection to the  
Hoval bus system is by plug-in  
terminals (max. 0.75 mm<sup>2</sup>)

2053 488

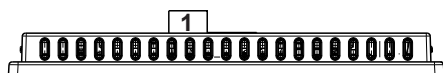
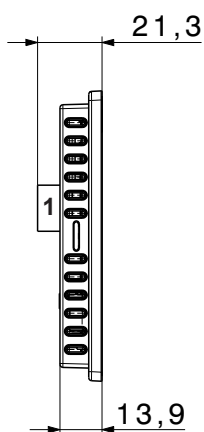
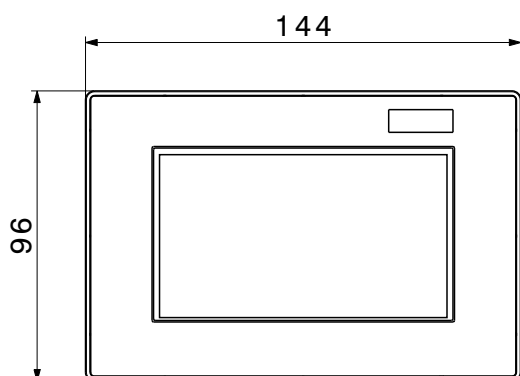
Included in the scope of delivery for the  
TopTronic® E control module.

## TopTronic® E control module / room control module

- Connection to the Hoval bus system via RJ45 plug connection or plug terminals (max. 0.75 mm<sup>2</sup>)
- Resolution: 480 x 320
- Voltage: 12 V DC 100 mA
- Humidity (in operation): 20...80 % RH, non-condensing

### ■ Dimensions

## TopTronic® E control module / room control module (Dimensions in mm)



- 1 Removable RJ45 plug connection  
Alternative: plug terminal (max. 0.75 mm<sup>2</sup>)

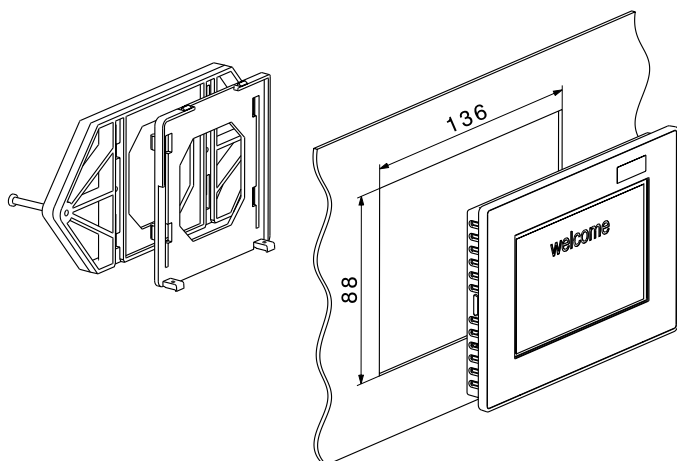


## TopTronic® E control module / room control module

Installation

### Installation in control panel

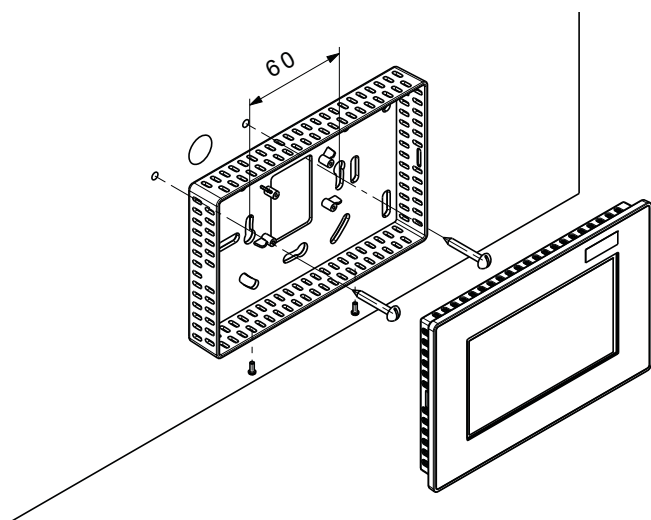
(Clamping device is Included in the scope of delivery for the control module)  
(Dimensions in mm)



- Cut-out: 136 x 88 mm
- Material thickness: 0.5-6 mm
- Connection to the Hoval bus system either via RJ45 plug connection or plug terminals (max. 0.75 mm<sup>2</sup>)

### Wall mounting with surface-mounting frame

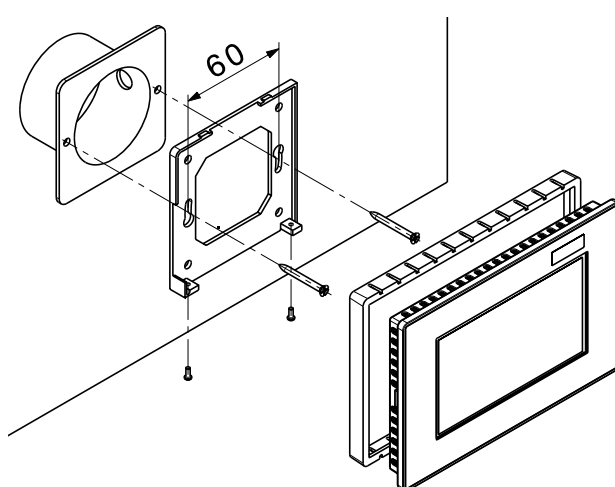
(Surface-mounting frame is included in the scope of delivery for the room control modules)  
(Dimensions in mm)



### Wall mounting with wall mounting plate with concealed sockets

(Wall mounting plate is included in the scope of delivery for the room control modules)

- Connection to the Hoval bus system via RJ45 plug connection or plug terminals (max. 0.75 mm<sup>2</sup>)
- (Dimensions in mm)





### Industrial mobile data router

- Router for connecting a HovalConnect gateway or an Ethernet connection TopTronic® E district heating com to the Internet, via LAN or WLAN
- For mounting in a control panel (when using WLAN, it is essential to use an aerial extension cable)
- For installation in a control panel
- Configuration via web server
- 2G/3G/4G-LTE mobile data technology
- Version with sturdy metal casing
- Dimensions: L x W x H: 93 x 90 x 27 mm
- Connections:
  - 2 SMA antenna connections for mobile radio
  - 1 SMA antenna connection for WLAN
  - 2 x 10/100 Mbit Ethernet
  - 2 SIM card slots

### Delivery

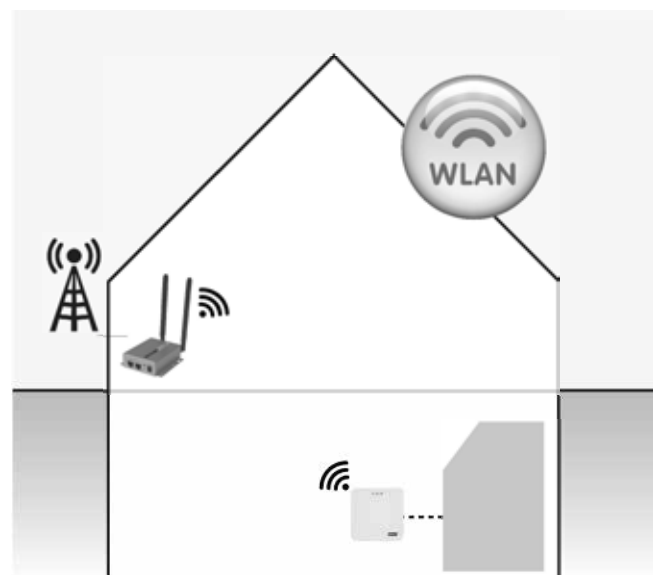
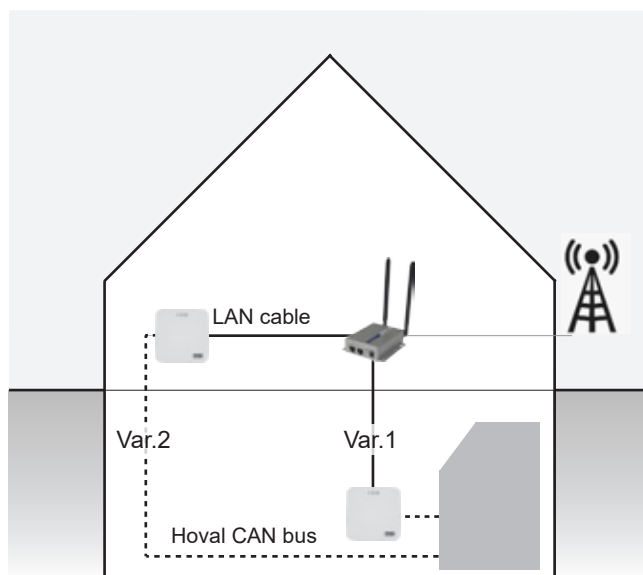
- Router
- 2 LTE tilt-and-swivel antennas for direct router mounting
- 1 WLAN tilt-and-swivel antenna for direct router mounting
- Plug-in power supply Top hat rail mounting clips
- 1 x 1.5 m Ethernet cable

### Notice

SIM card (micro) is not supplied and must be provided by the customer. Telephone network or provider can be selected as required. See HovalConnect engineering for the minimum requirements for HovalConnect.



### Suitable for HovalConnect LAN & HovalConnect WLAN



Industrial mobile data router



**Industrial mobile data router**  
Industrial router for connecting the HovalConnect gateway or Ethernet TopTronic® E district heating com to the Internet via LAN/WLAN  
For control panel mounting, metal casing  
Without SIM card, free choice of phone network  
Configuration via web server  
Connections:  
2 x 10/100Mbit Ethernet, 2 x simcard slot  
SMA connections: 2 x mobile data, 1 x WLAN  
Consisting of:  
- Fitting accessories  
- Aerials: 2 x LTE, 1 x WLAN  
- Plug-in power supply

Part No.

2076 329



**Cellular antenna (2G/3G/4G-LTE/5G-ready)**  
for installation outdoors or indoors.  
Consisting of:  
2G/3G/4G-LTE/5G-ready antenna,  
5 m antenna cable with SMA-male plug,  
incl. metal mounting bracket.  
Frequencies:  
- 617-960/1710-6000 MHz  
- 698-960 MHz: 2 dBi max. gain  
- 1710-2700 MHz: 3.5 dBi max. gain  
- 3400-3800 MHz: 5 dBi max. gain  
- 4900-6000 MHz: 7 dBi max. gain  
Antenna length: approx. 82 mm  
Total height incl. mounting bracket:  
164 mm  
Diameter: approx. 48 mm  
Temperature range: -40 °C to +85 °C

2078 889

For each router, an external omnidirectional antenna should be used which is suitable either for control panel mounting or mounting on a wall with metal brackets.



**Antenna extension cable - 5 m**  
Connections: SMA-male to SMA-female  
Cable type: HDF-195  
Cable length: 5 metres  
To avoid excessive signal attenuation, only one extension cable should be used.

2073 750



**Antenna extension cable - 10 m**  
Connections: SMA-male to SMA-female  
Cable type: HDF-195  
Cable length: 10 metres  
To avoid excessive signal attenuation, only one extension cable should be used.

2073 751

## Mobile data router

The mobile data router is used for connecting a HovalConnect gateway or an Ethernet connection TopTronic® E district heating com to the Internet and is provided for use in boiler rooms (control panel with top hat rail). The connection is established via the mobile data network, in which case the telephone network or provider can be selected as required (depending on the SIM card used).

### Notice

The SIM card (micro) is not supplied with the device and must be provided separately. For the connection of a HovalConnect Gateway, a tariff with at least around 150-300 MB/month must be provided (deviations possible depending on the size of the plant, equipment such as M-Bus meters and usage behaviour). The data consumption of an TopTronic® E district heating com Ethernet connection is very high and can vary greatly (this must be determined on a case-by-case basis).

### Notice

It is recommended for the router to be extended with an omnidirectional antenna and, if necessary, an extension cable from the accessories and for this antenna to be mounted outdoors. In this case, one of the enclosed antennas should be used indoors as the 2nd antenna. The antenna connection to the outside is labelled "Main". When extending antenna cables, it is important to note that each additional meter of cable also attenuates the signal. Therefore, extensions should be handled with care.

### Notice

The strength of the mobile signal must be checked in advance at the planned location of the router aerial (e.g. using a mobile phone or a suitable app).

### Dimensions

- L x W x H: 93 x 90 x 27 mm

### Delivery

- Router
- 2 LTE tilt-and-swivel antennas for direct router mounting
- 1 WLAN tilt-and-swivel antenna for direct router mounting
- Plug-in power supply DC 5 V/2 A
- Top hat rail mounting clips
- RJ45 cable 1 x 1.5 m

### Technical data

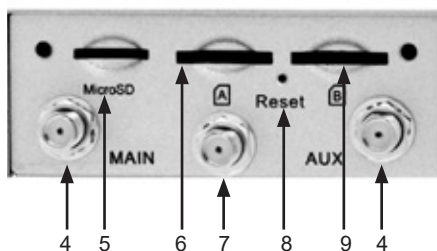
- Mobile data technology: 2G/3G/4G-LTE
- Frequenzen:
  - LTE: 800/900/1800/2100/2300/2600 MHz,
  - UMTS: 850/900/1900/2100 MHz,
  - GPRS/EDGE: 850/900/1800/1900 MHz
- WLAN: 11N (2.4 GHz) WiFi Uplink
- Voltage supply range: 5 to 18 V DC
- Configuration: web server
- DHCP server
- Firewall / NAT
- IPSec, PPTP, L2TP, GRE, OpenVPN, DMVPN, L2TP over IPSec

### Connections

- 2 x SMA antenna connection for mobile radio
- 1 x SMA antenna connection for WLAN
- 2 x 10/100 Mbit Ethernet
- 2 x SIM card slots

### Ambient conditions:

- Temperature range between -30 °C and +70 °C
- Humidity: 10 % to 95 % (non-condensing)
- Type of protection: IP30



- 1 LAN1/WAN
- 2 LAN2
- 3 Plug-in power supply
- 4 Cellphone aerial
- 5 MicroSD
- 6 SIM-A
- 7 WLAN aerial
- 8 Reset-Button
- 9 SIM-B

### Omnidirectional antenna (2G/3G/4G-LTE/5G-ready)

- Frequencies: 698-960 / 1710-2700 MHz
- 2 dBi max gain @ 698-960 MHz
- 4 dBi max gain @ 1710-2700 MHz
- Antenna length: approx. 82 mm
- Total height including mounting bracket: 164 mm
- Diameter: approx. 48 mm
- Temperature range: between -40 °C and +80 °C

### Antenna extension cable

- Cable type: Low-Loss HDF195
- Attenuation at 1 GHz: approx. 0.36 dB per metre
- Connector type: SMA-male / SMA-female



**Industrial Ethernet switch**

- The Ethernet switch is used for connecting several Ethernet devices with an Internet access and is provided for use in boiler rooms. These devices are, for example, HovalConnect gateways or Ethernet connections TopTronic® E district heating com.
- For connection to the Internet, the Ethernet switch can be connected to an industrial mobile router or another router provided by the customer.
- The power supply must be provided via an existing control panel power supply unit and must be wired in advance by the customer.
- No configuration is necessary for the Ethernet connections, the connection is plug-and-play. If required, the existing relay output can be used for recording fault messages.
- 5-port unmanaged Ethernet switch for connecting up to four Ethernet devices to one Internet access point.
- For top hat rail mounting in a control panel
- Version with sturdy metal casing

**Dimensions**

- L x W x H: 95 x 30 x 120 mm

**Connections**

- 5 x RJ45 10/100 Mbit Ethernet
- 2 x 12-48 V DC voltage supply (redundant)
- 1 relay output for fault messages

**Delivery**

- Ethernet switch
- Top hat rail clip
- Quick reference guide

**Notice**

There is no power supply unit in the scope of delivery, the power supply must be provided via an existing control panel power supply unit. The wiring must be carried out on site in advance.



Ethernet Switch



**Industrial Ethernet switch**

5-port unmanaged Ethernet switch for connecting up to four Ethernet devices to one Internet access point.

Consisting of:

- Ethernet switch
- Top hat rail clip
- Quick reference guide

The power supply is not included and must be provided via an existing control panel power supply unit.

**Part No.**

2078 819

Industrial Ethernet switch

Ambient conditions		
• Type of protection		IP 30
• Humidity (non-condensing)	%	10...95
• Temperature range	°C	-10...60
• Standard IEEE		802.3, 802.3u, 802.3x
• LAN		10/100Base-T (X)
• Transmission distance	m	up to 100
• Transmission speed	MBps	up to 100
• Power consumption	W	2.88
• MTBF (Mean Time Between Failures)	h	388 566
Integrated cross-polarity and surge voltage protection		
Certifications		
• Safety		UL 60950
• EMI		CE, FCC Class A
• EMS		EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, shock load IEC 60068-2-27, free fall IEC 60068-2-32, vibration IEC 60068-2-6
Connections		
		5 x RJ45 10/100 Mbit Ethernet 2 x 12-48 V DC power supply (redundant) 1 relay output for fault messages
• Dimensions (L x W x H)	mm	95 x 30 x 120



### BMS module 0-10 V/ OT - OpenTherm TopGas® (building management system)

- BMS module for linking to the Hoval TopGas® comfort, TopGas® classic, TopGas® (35-120) by connecting the control voltage (0-10 V).

#### Functions

- Interface converts the 0-10 V signal into a reference temperature value or a reference output value for controlling a TopGas®
- Specification of the reference temperature to the Hoval TopGas® condensing gas boiler
- Specification of the reference output to the Hoval TopGas® condensing gas boilers
- The type of control of the Hoval TopGas® can be configured by the DIP switches.



#### ■ Part No.



*Only in combination with  
TopGas® comfort, TopGas® classic,  
TopGas® (35-120)  
(OpenTherm bus)*

#### **BMS module 0-10 V/OT - OpenTherm (building management system)**

no control unit TopTronic® E or RS-OT  
necessary

power supply via OT bus

Temp. control external with 0-10 V

0-1.0 V no request

1.0-9.5 V .....0-100 °C

Cannot be installed in boiler control  
panel:

- TopGas® classic (12-30)

Can be installed in boiler control  
panel:

- TopGas® classic (35-120),

- TopGas® comfort

#### Part No.

6016 725

## BMS module 0-10 V / OT - OpenTherm (building master control system)

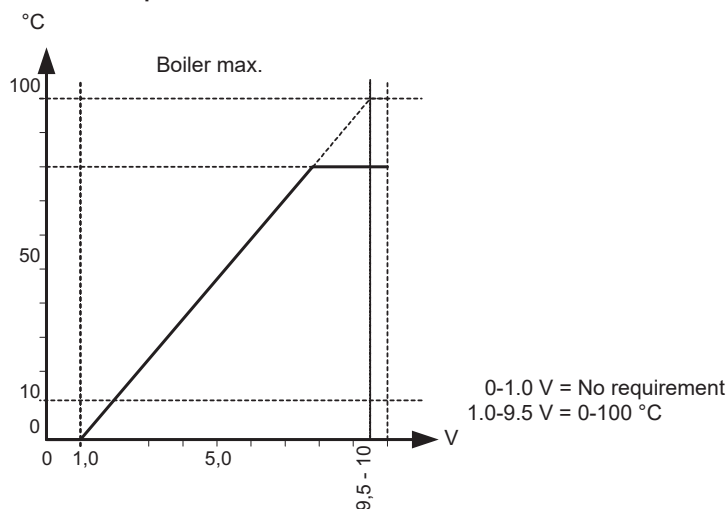
Only in combination with TopGas® comfort,  
TopGas® classic, TopGas® (35-60)  
(OpenTherm bus)

- Dimensions: L x W x H  
68 x 45 x 23 mm
- Electrical power supply: via the  
OT bus

### Temperature control

- DIP switch 1 = OFF
- Module converts an input signal at the input into a heat generator reference value.
- The signal conversion follows a straight line.  
1.0 V = 0 °C to 9.5 V = 100 °C.
- Voltages below 1.0 V: no heat request

### External temperature control with 0-10 V



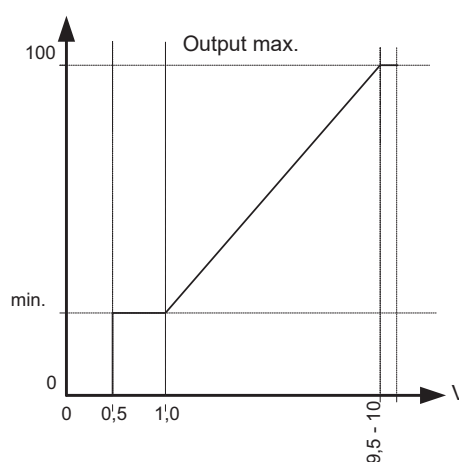
### Output control

- DIP switch 1 = ON
- The module converts an input signal at the input into an output reference value.
- Limitation to the maximum flow temperature reference value

It is possible to differentiate between four different areas:

- 0-0.5 V No heat request
- 0.5-1 V Minimum output
- 1-9.5 V Output depending on 0-10 V signal
- 9.5-10 V Maximum output

### Output control



### TopTronic® E BMS module 0-10 V

- BMS module for linking to the Hoval CAN bus system for the following functions:
  - Connecting a control voltage (0-10 V) for specifying a reference temperature value to the heat generator or to the heat generator cascade or
  - Connecting a control voltage (0-10 V) for specifying a reference output value to an individual heat generator
- Temperature specification for heating, hot water and also cooling operation possible (module expansion may be required)
- Output specification for heating and cooling operation possible
- Configurable characteristics for connecting temperature or output (see diagrams below)
- Connection technology executed as plug-in screw terminals in coded RAST 5 design
- Update capability of the controller software
- Time and date via integrated RTC, multi-year spring reserve
- Fine fuse 10 A
- Controller module suitable for cabinet installation by ability to install on DIN rail 35 x 15 x 2.2 mm

#### Inputs and outputs

- 3 variable sensor inputs
  - for heating / cooling change-over
  - for connecting information sensors
  - for connecting a reference value increase or reduction in the system
  - 1 x variable input for connection of a sensor or pulse sensor
- 0-10 V input for connecting the reference temperature/output value
- The connection to a flow rate sensor or a pulse sensor is not possible.
- Variable 230 V 3-point output, e.g. for outputting a reference value detection function for heating, hot water and cooling operation
- Variable 230 V output, e.g. for outputting an alarm message

#### Option

- Can be expanded by max. 2 module expansions (expansion of the inputs/outputs):
  - Module expansion Universal (connection of separate reference temperature values)

#### Use

- For connecting the heat generator or the heat generator cascade to a higher-level building management system using 0-10 V

#### Delivery

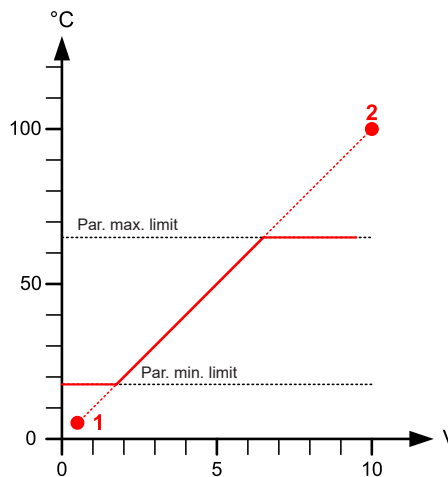
- TopTronic® E BMS module 0-10 V incl. 2 x mounting clips for DIN rail attachment
- DIN rail with fitting accessories
- Complete plug set for controller module

#### Example for temperature requirement

0-0.5 V = OFF = No requirement

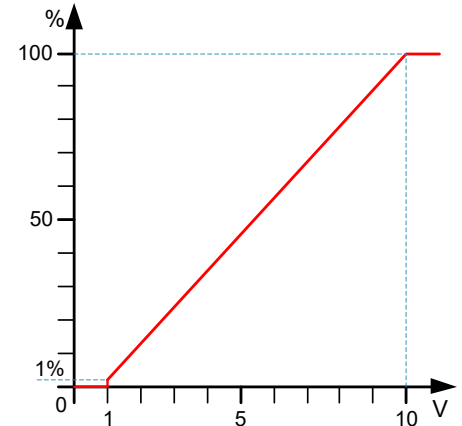
0.5-10 V = 5-100 °C

The reference flow value is limited by the programmed min./max. limit.



#### Input signal output requirement

Using the 0-10 V characteristic curve, an output is read in by means of linear conversion. The characteristic curve is set on the points {1 V, 1 %} and {10 V, 100 %}.



Voltages between 0 V and 0.9 V are interpreted as "OFF". No requirement is transferred.

#### Voltages

0-0.9 V heat generator off

1-10 V heat generator required approx.

1 % to 100 % output, voltage produces reference output

#### Notice

A separate set value specification for heating and hot water is recommended. Therefore, a module expansion Universal is required in addition to the BMS module.

#### Part No.



### TopTronic® E GLT module 0-10 V

Communication module for connecting the heat generator or the heat generator cascade to a higher-level building management system using 0-10 V.

Consisting of:

TopTronic® E building management module 0-10 V incl. 2 mounting clips for top hat rail attachment  
Complete plug set for controller module,  
top hat rail with fitting accessories

#### Part No.

6034 578



## Hoval TopTronic® E wall casings

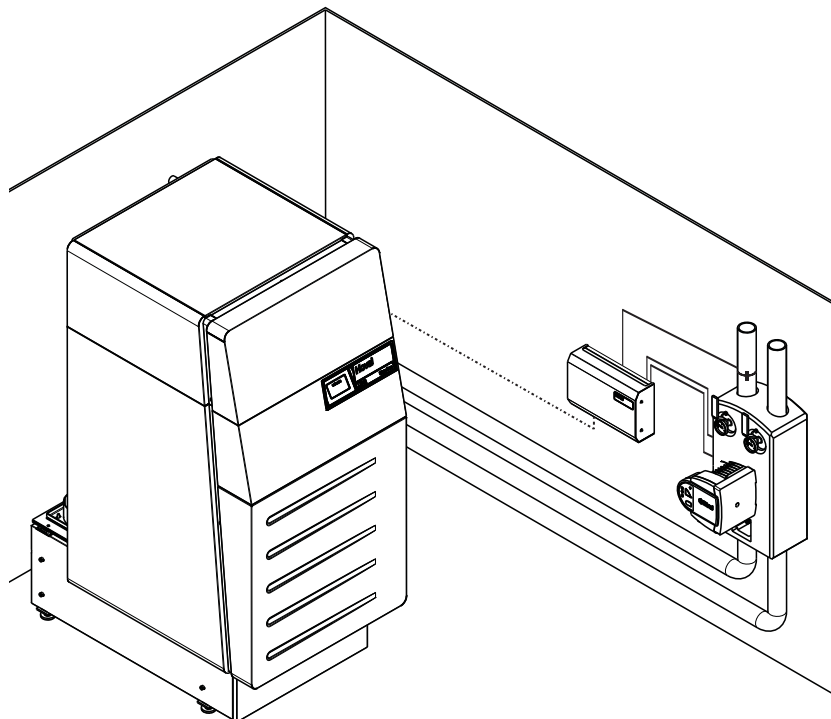
- Reduction in the wiring complexity on site thanks to installing the controller module directly at the sensors and actuators (e.g.: regulating armature)
- Flexible connection possibilities due to available cable introductions at the top and at the bottom
- Strain relief by cable ties and fastening points
- Material: powder-coated metal sheet
- Colour: flame red (RAL 3000)

### Delivery

- Wall casing incl. built-in DIN rail
- Cable tie for strain relief
- Fastening material

### On site

- Wiring between wall casing and calorifier according to diagram



## ■ Part No.

## Hoval TopTronic® E wall casings



### Wall casing small WG-190

- Suitable for installing a controller module/basic module
- Operation of the controller module for control purposes using the control module in the heat generator
- No installation of the TopTronic® E control module possible
- Dimensions: 190 x 230 x 102 (L x W x H)
- Protection class: IP20

#### Consisting of:

- small wall casing incl. built-in top hat rail
- cable ties for strain relief
- fixing accessories

6052 983



### Wall casing medium WG-360

- Suitable for installing
  - 1 basic module w/o module expansion or
  - 1 controller module plus 1 module expansion or
  - 2 controller modules
- Operation of the controller module for control purposes using the control module in the heat generator
- No installation of the TopTronic® E control module possible
- Dimensions: 360 x 230 x 102 (L x W x H)
- Protection class: IP20

#### Consisting of:

- medium wall casing incl. built-in top hat rail
- cable ties for strain relief
- fixing accessories

6052 984


**Wall casing medium with control module cut-out WG-360 BM**

- TopTronic® E control module for the controller module can be installed in the wall casing
- Suitable for installation of
  - 1 basic module w/o module expansion or
  - 1 controller module plus module expansion or
  - 2 controller modules
- Suitable for renovation works or for stand-alone systems, i.e. controller functioning independently from the heat generator (autonomous heating circuit control, solar plant, etc.)
- Dimensions: 360 x 230 x 102 (L x W x H)
- Protection class: IP20

Consisting of:

- medium wall casing with control module cut-out incl. built-in top hat rail
- cable ties for strain relief
- fixing accessories

**Part No.**

6052 985


**Wall casing compact with control module cut-out WG-360-3 BM**

- Suitable for the installation of
  - 1 basic module plus 1 module expansion or
  - 1 basic module plus 1 controller module or
  - 2 controller modules plus 1 module expansion or
  - 1 controller module plus 1 module expansion or
  - 3 controller modules
- Operation of the controller module for control purposes using the control module in the heat generator
- No installation of the TopTronic® E control module possible
- Dimensions: 360 x 300 x 102 (L x W x H)
- Protection class: IP20

Consisting of:

- Wall casing compact incl. built-in top hat rail
- Cable tie for strain relief
- Fastening material

6052 988

## Part No.


**Wall casing large WG-510**

- Suitable for installing
  - 1 basic module plus 1 module expansion or
  - 1 basic module plus 1 controller module or
  - 2 controller modules plus 1 module expansion or
  - 1 controller module plus 2 module expansions or
  - 3 controller modules
- Operation of the controller module for control purposes using the control module in the heat generator
- No installation of the TopTronic® E control module possible
- Dimensions: 510 x 230 x 102 (L x W x H)
- Protection class: IP20

## Consisting of:

- large wall casing incl. built-in top hat rail
- cable ties for strain relief
- fixing accessories

6052 986


**Wall casing large with control module cut-out WG-510 BM**

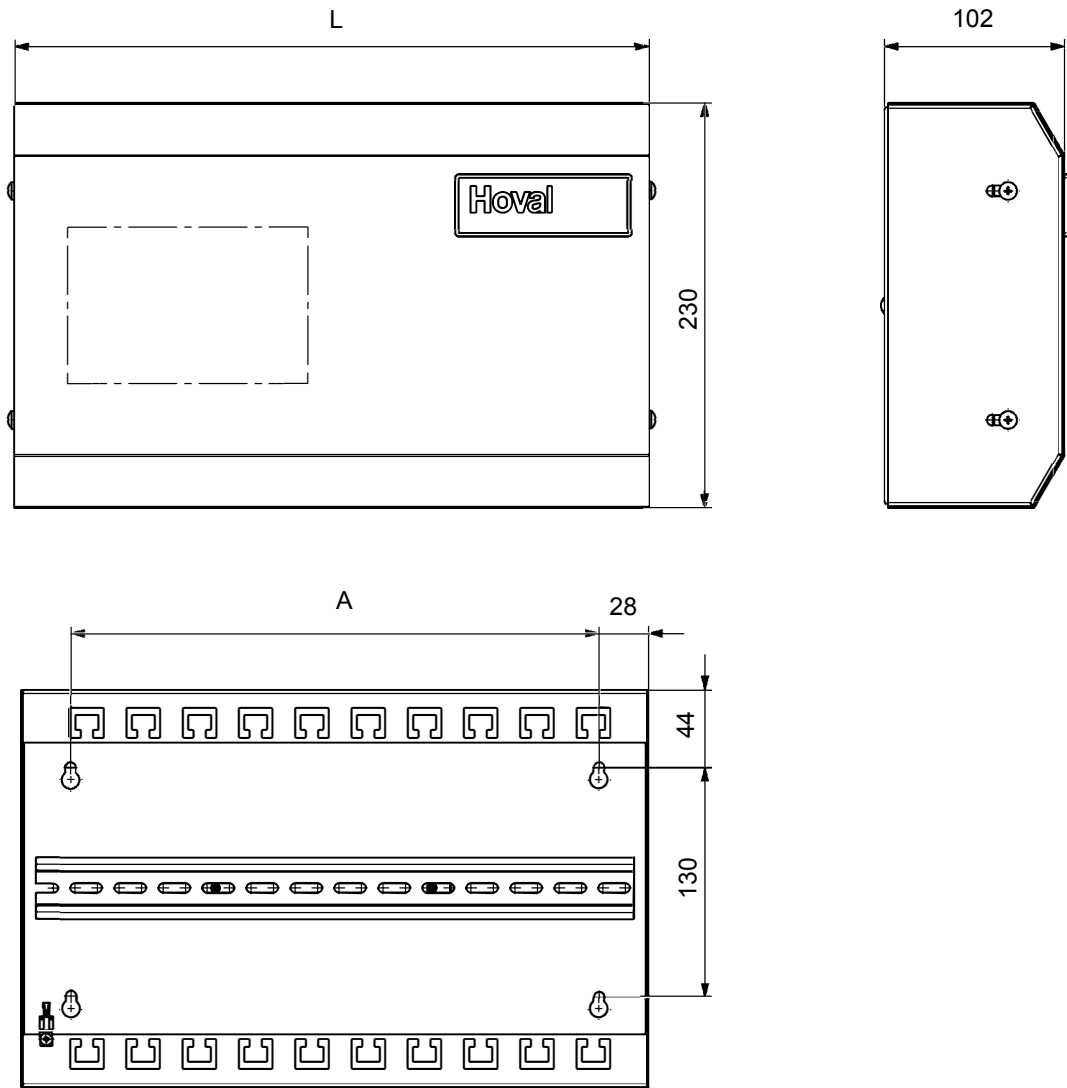
- TopTronic® E control module for the controller module can be installed in the wall casing
- Suitable for installing
  - 1 basic module plus 1 module expansion or
  - 1 basic module plus 1 controller module or
  - 2 controller modules plus 1 module expansion or
  - 1 controller module plus 2 module expansions or
  - 3 controller modules
- Dimensions: 510 x 230 x 102 (L x W x H)
- Protection class: IP20

## Consisting of:

- large wall casing incl. built-in top hat rail
- cable ties for strain relief
- fixing accessories

6052 987

TopTronic® E wall casing  
(Dimensions in mm)



Wall casing	L	A
WG-190	190	130
WG-360	360	300
WG-360 BM	360	300
WG-510	510	300
WG-510 BM	510	300



## Part No.


**Single thermostat with setting in the casing**

15-95 °C externally visible setting in the casing, immersion depth 100/150 mm  
Differential gap 6 K, splash water-protected polymer casing, nickel-plated brass immersion sleeve with thread seal G 1/2", max. operating pressure 10 bar.  
1 changeover contact max. 6 A (ind.) at 230 V

**Single thermostat - immersion depth 100 mm  
RAKTW.1000B**

6010 081

**Single thermostat - immersion depth 150 mm  
RAKTW.1000S**

6010 082


**Clamp-on flow temperature controller  
RAK-TW1000S**

15-95°C, setting (visible from the outside) inside the housing cover, with tensioning band

242 902


**Calorifier thermostat control  
TW 12**

Universal thermostat controller for thermostatic pump charge demand, setting in casing, visible from outside.  
15-95 °C, switching difference 6 K, capillar length 700 mm  
incl. fastening material for Hoval calorifier, can be used with integrated immersion sleeve

6010 080


**Double thermostat ATH-22**

Usable as minimal thermostat flow to open the loading pump.  
Usable as maximal thermostat to limit the flow.  
Bottom part of the casing made of die-cast aluminium with plastic cover, with rigid shaft  
1 separate temperature adjustment each in the casing  
Type of protection IP54  
Switching capacity: 230 V/10 A cos=1  
Control range 1.2: 0 °C ... +100 °C  
Switching differential 1.2: 3-4 % of the scale range  
Immersion sleeve: G 1/2", L = 150 mm, D = 15 mm  
Immersion sleeve brass nickel-plated  
Version according to DIN EN 14597

2054 650


**Flue gas thermostat AGT 519**

Switching temperature 80 °C (switching differential approx. 15 K)  
1 switchover contact 10 A at 230 V/50 Hz ohm resistive load  
Simple screw fastening on flue gas pipe, with 2 m connecting cable.  
Tested according to DIN 3440

641 256


**Temperature controller LAE LTR-5TSRE**

Electronic 2 point temperature controller  
-50...+150 °C  
switching interval 1-25 K  
1 switchover contact  
cable sensor 2 m/Ø 0.7 mm

2004 485

Sensors for heating technology



**Outdoor sensor AF/2P/K**  
for TopTronic® E controller modules/  
module expansions except for basic  
module district heating/fresh water or  
basic module district heating com,  
terminal connection, sensor may already  
be included in scope of delivery of  
the heat generator, dimensions  
(H x W x D): 80 x 50 x 28 mm, sensor  
characteristics: KTY 81-210 (type 0),  
application temperature: -50...+80 °C,  
protection class: IP x 4,  
Including fitting accessories

2055 889



**Contact sensor**  
for TopTronic® E controller modules/  
module expansions with exception of  
basic module district heating/fresh  
water or basic module district heating  
com  
Dewpoint-proof  
Operating temperature: -35...105 °C  
Protection class: IP67

Type	Length [m]	Accessories
ALF/2P/2/T/K	L = 2.0	incl. connection box
ALF/2P/4/T	L = 4.0	-
ALF/2P/4/T/S1	L = 4.0	incl. plug

2056 800  
2056 775  
2056 801



**Immersion sensor**  
for TopTronic® E controller modules/  
module expansions with exception of  
basic module district heating/fresh  
water or basic module district heating  
com  
Dewpoint-proof  
Sensor sleeve diameter: 6 x 50 mm  
Operating temperature: -20...105 °C  
Protection class: IP67

Type	Length [m]	Accessories
TF/2P/2.5/6T	L = 2.5	-
TF/2P/2.5/6T/S1	L = 2.5	incl. plug
TF/2P/2.5S/6T silicone	L = 2.5	-
TF/2P/5/6T	L = 5.0	-
TF/2P/5/6T	L = 5.0	incl. plug

2056 789  
2056 790  
2056 787  
2055 888  
2056 788



**Immersion sensor TF/12N/2.5/6T,  
L = 2.5 m**  
for gas boiler with RS-OT  
Cable length: 2.5 m  
Sensor sleeve diameter: 6 x 50 mm,  
dewpoint-proof,  
operating temperature: -20...105 °C,  
protection class: IP67

2056 791

## Sensors for heating technology



**Flue gas temperature sensor TF/1.1P/5/4/B, L = 5.0 m**  
for TopTronic® E controller modules/  
module expansions with exception of  
basic module district heating/fresh  
water or basic module district heating com  
Cable length: 5 m without plug  
Sensor sleeve diameter: 4 x 200 mm  
dewpoint-proof  
Sensor characteristics: PT1000  
Operating temperature: -20...105 °C  
Protection class: IP67  
Supplied with fastening flange  
and screws

2056 794



**Collector sensor TF/1.1P/2.5S/5.5T**  
L = 2.5 m silicone  
for TopTronic® E solar module,  
solar controllers ESR  
collector sensor for solar plants,  
cable length: 2.5 m (silicone) without  
plug  
sensor sleeve diameter: 6 x 50 mm,  
dewpoint-proof,  
sensor characteristics: PT1000,  
operating temperature: -50...200 °C,  
protection class: IP65

2056 776



**Ground water immersion sensor TF/1.1P/5S/5T/H-WP L = 5 m silicone**  
Ground water sensor for heat pumps,  
Cable length: 5 m (silicone)  
without plug  
Sensor sleeve diameter: 5 x 60 mm  
Unaffected by condensation  
Sensor characteristic: PT1000  
Circuit board construction  
Double-curved contact-pressure spring  
Operating temperature: -50...200 °C  
Protection class: IP65

6048 378

## Sensors for district heating


**Outdoor sensor AF/1.1P/K**

for TopTronic® E basic module district heating/fresh water or basic module district heating com  
Sensor for district heating application (PT1000)  
Terminal connection  
Sensor may already be included in scope of supply of heat generator  
Dimensions (H x W x D),: 80 x 50 x 28 mm  
Operating temperature: -50...+80°C  
Protection class: IP x4  
Incl. fitting accessories

2056 774


**Immersion sensor TF/1.1P/2.5/6T, L = 2.5 m FW**

for TopTronic® E basic module district heating/fresh water, basic module district heating com  
Sensor for district heating applications (PT1000)  
Cable length: 2.5 m without plug (plug supplied with controller module/module expansion)  
Sensor sleeve diameter: 6 x 50 mm  
Dewpoint-proof  
Sensor may already be included in scope of supply of heat generator/controller module/module expansion  
Operating temperature: -50...105 °C  
Protection class: IP67

2056 777


**Contact sensor ALF/1.1P/2.5/T, L = 2.5 m**

for TopTronic® E basic module district heating/fresh water or basic module district heating com  
Sensor for district heating applications (PT1000)  
Cable length: 2.5 m without plug (plug supplied with controller module/module expansion)  
Dewpoint-proof  
Sensor may already be included in scope of supply of heat generator/controller module/module expansion  
Operating temperature: -50...105 °C  
Protection class: IP67

2056 778



#### Fast sensor PT1000

with short response time e.g. for use in combination with speed control and instantaneous calorifiers with screw connection G 1/2" incl. assembly instructions

Sensor characteristics: PT1000  
Cable length: 2 m  
Cable diameter: 4 mm



#### Clamp connectors

for the extension of sensor lines



#### Bivalent switch 1-piece

Can be used universally (incl. cooling enable, heating circuit enable, heat generator lock, etc.) Can be used in bivalent systems for priority switchover between heat generators Can be installed in TopTronic® E control panel, max. 2 bivalent switches can be installed at the same time Voltage: 230 V



#### Bivalent switch 2-piece

Can be used universally with two functions (incl. cooling enable, heating circuit enable, heat generator lock, etc.) Priority switchover between heat generators Can be installed in TopTronic® E control panel 2-part switch for 2 functions, max. 1 bivalent switch can be installed Voltage: 230 V

#### Part No.

6058 451

2037 954

2056 858

2061 826

## Hoval system components


**System unit SB-K5 - TTE**

For operation of external constant temperature/request/minimum value operation (ventilation/swimming pool, etc.).

Without casing.

Consisting of

- Relay R1K
- support/snap track (8 cm)
- incl. fixing accessories for installation in boiler controllers
- RAST 5 plug 2-pin, green, wired
- RAST 5 plug 2-pin, yellow

**Part No.**

6038 550


**System component SB-K6**

For combination of external calorifier demand with thermostat

Without casing

Consisting of:

- relay R1K
- support/snap track (8 cm)
- incl. fastenings for installation in boiler controller
- RAST 5 plug – 2 pin, green, wired

6013 067


**System component SB-R1K (relay)**

For universal implementation

Relay with switchover contact 230 V/10 A

Without casing

Consisting of:

- relay R1K
- support/snap track (8 cm)
- incl. fastenings for installation in boiler controller

6013 064


**System module SB-R1K 16A (relay)**

For universal application

Contact material AgSnO<sub>2</sub>

Relay with changeover contact

230 V/16 A

Without casing

Consisting of:

- Relay R1K
- Mounting/snap-on rail (8 cm)
- incl. fastening material for installation in boiler controller

6050 604


**System component SB-R3K 16 A (relay)**

for universal use without casing

Improved contact material AgSnO<sub>2</sub>

Relay with 3 switchover contacts

max. 400 V/16 A, control voltage 230 V

Without housing

Consisting of:

- relay R3K
- support/snap track (8 cm)
- incl. fastenings for installation in boiler controller
- Control voltage 230 V

6044 844

## Hoval system components


**System module SB-Y10 24 V (mains supply)**

For universal application  
(e.g. mains supply  
for 24 V actuators)  
Mains adapter 230 V AC/24 V DC 0.63 A  
Without casing  
Consisting of:  
- Mains adapter 230 V AC/24 V DC 0.63 A  
- 3 modular terminal blocks  
- 2 RAST 5 plugs  
(2-pin blue, 3-pin green) wired up  
- Mounting/snap-on rail (8 cm)  
- incl. fastening material for  
installation in boiler controller

6050 603



**System module SB-SM-BZ1**  
for passing on a volt-free  
operating and fault message.  
(for 1-stage/modulating H-Gens)  
Without casing  
- 2 relays R1K  
- Mounting/snap-on rail (8 cm)  
- incl. fastening material for  
installation in boiler controllers

6048 055



**System module SB-SM-BZ1-2**  
for passing on a volt-free  
operating and fault message.  
(for 2-stage H-Gens)  
Without casing  
- 3 relays R1K  
- Mounting/snap-on rail (8 cm)  
- incl. fastening material for  
installation in boiler controllers

6048 056



**System casing 182 mm - universal**  
Simple universal casing for installation  
of system modules or a controller  
module, if accommodating in the  
heat generator is not possible.  
Dimensions (H x W x D): 182 x 180 x 111 mm  
Colour: light grey  
Consisting of:  
- Top hat rail 180 mm  
- 6 x diaphragm lead-throughs M20

6038 551



**System casing 254 mm - universal**  
Simple universal casing for installation  
of system modules or a controller  
module (1 x basic module heat  
generator or 1 x controller module), if  
accommodating in the heat generator  
is not possible.  
Dimensions (H x W x D):  
254 x 180 x 111 mm  
Colour: light grey  
Consisting of:  
- Top hat rail 250 mm  
- 10 x diaphragm lead-throughs M 20

6038 552





Balancing valve TN

- As a line balancing and shut-off valve with direct indication of the set flow rate on the sight glass
- Automatically blocking bypass routed parallel to the main flow, with measuring and indication section
- Measuring section with float and counter-spring
- Materials
  - Housing components: brass
  - Interior components: stainless steel, brass and polymer
  - Sight glass: borosilicate
  - Seals: EPDM
  - Internal thread (Rp) acc. to DIN 2999/ISO 7



Size	Measuring range l/min
DN 20	2-12
DN 20	8-30
DN 25	10-40
DN 32	20-70

Flow rate sensor set

- Flow rate sensor according to the principle of the Kármán vortex street
- Used for limiting the heat quantity in conjunction with the heat balancing module expansion or various controller modules
- Flow rate sensor supplies the current flow rate as well as the current temperature at the measuring point
- No moving parts, therefore insensitive to dirt build-up
- Low pressure drop
- High accuracy
- Can be used up to 125 °C



Plastic housing	
Size	Flow rate l/min
DN 8	0.9-15
DN 10	1.8-32
DN 15	3.5-50
DN 20	5-85
DN 25	9-150



Brass housing	
Size	Flow rate l/min
DN 10	2-40
DN 32	14-240
DN 40	22-400



Solar balancing valve with bypass

As a line balancing and shut-off valve with direct indication of the set flow rate on the sight glass. Maximum operating temperature 185 °C

Size	Measuring range l/min	Connection Rp x Rp	kvs m³/h
DN 20	2-12	¾" x ¾"	2.2
DN 20	8-30	¾" x ¾"	5.0
DN 25	10-40	1" x 1"	8.1
DN 32	20-70	1¼" x 1¼"	17.0

Part No.

2038 034  
2038 035  
2038 036  
2038 037

Sets flow rate sensor

- Used in combination with the module expansion heat balancing or var. controller modules for heat metering
- Flow sensor supplies the current flow rate as well as the current temperature to the measuring point

Consisting of:

- flow rate sensor
- connection cable
- RAST 5 plug for connecting to TopTronic® E



Plastic housing

Unit of measure	Connection	Flow rate l/min
DN 8	G ¾"	0.9-15
DN 10	G ¾"	1.8-32
DN 15	G 1"	3.5-50
DN 20	G 1¼"	5-85
DN 25	G 1½"	9-150

6038 526  
6038 507  
6038 508  
6038 509  
6038 510



Brass housing

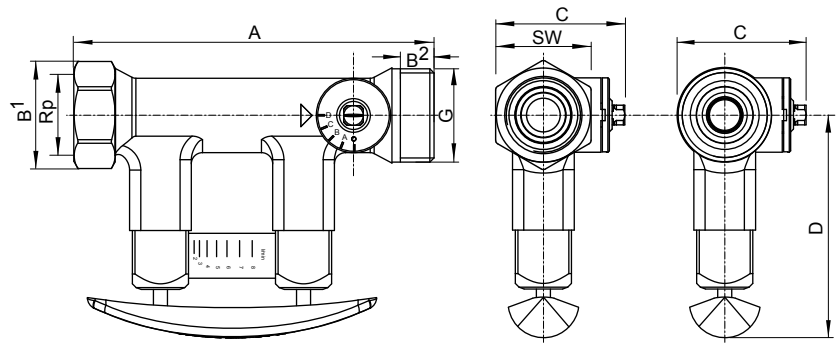
Unit of measure	Connection	Flow rate l/min
DN 10	G 1"	2-40
DN 32	G 1½"	14-240
DN 40	G 2"	22-400

6042 949  
6042 950  
6055 092

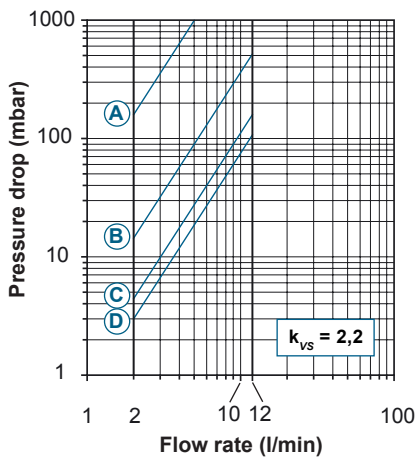
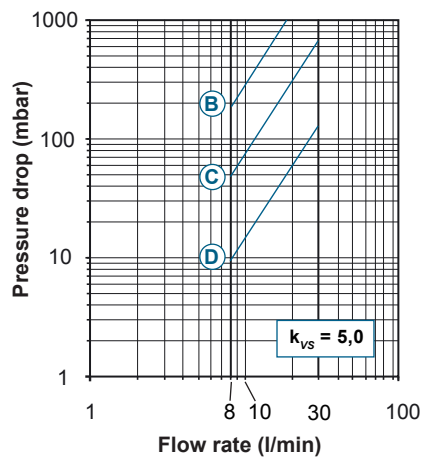
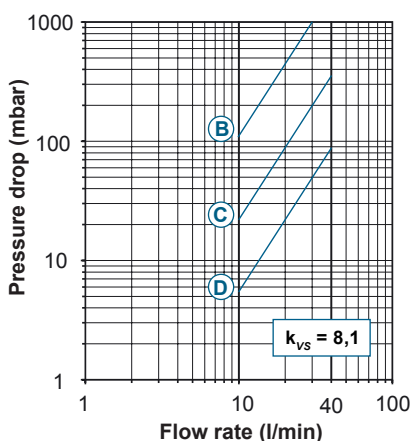
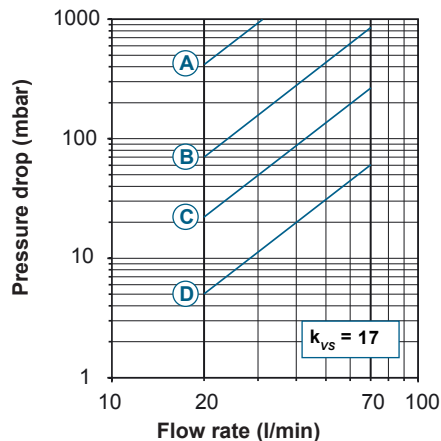
**Balancing valve TN**

(Dimensions in mm)

- Type DN 20 -  $\frac{3}{4}$ ", DN 20 -  $\frac{3}{4}$ ", DN 25 - 1", DN 32 -  $1\frac{1}{4}$ "
- Connections
  - DN 20 - Rp  $\frac{3}{4}$ " x Rp  $\frac{3}{4}$ "
  - DN 20 - Rp  $\frac{3}{4}$ " x Rp  $\frac{3}{4}$ "
  - DN 25 - Rp 1" x Rp 1"
  - DN 32 - Rp  $1\frac{1}{4}$ " x Rp  $1\frac{1}{4}$ "
- Measuring accuracy  $\pm 10\%$  of the display value
- Kvs values
  - 2.2 m<sup>3</sup>/h
  - 5.0 m<sup>3</sup>/h
  - 8.1 m<sup>3</sup>/h
  - 17.0 m<sup>3</sup>/h
 at viscosity 1 mm<sup>2</sup>/s
- Measuring ranges
  - 2-12 l/min
  - 8-30 l/min
  - 10-40 l/min
  - 20-70 l/min
- In conjunction with sealing plugs  
Max. operating temperature 185 °C

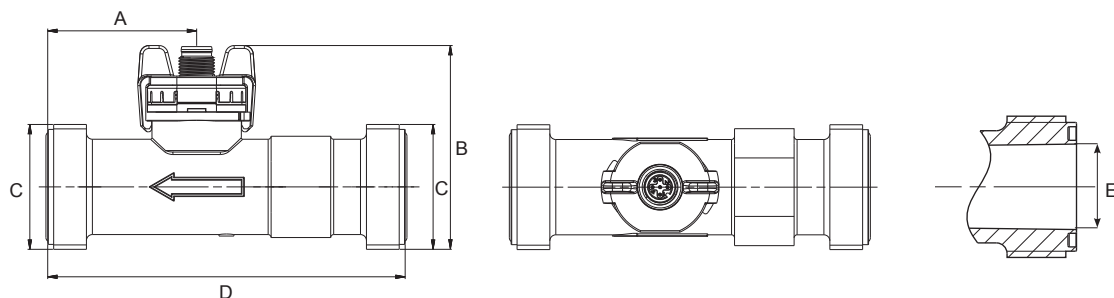
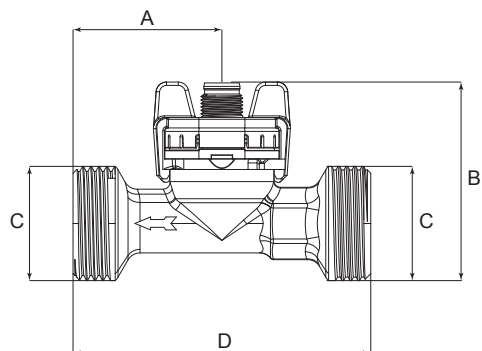


DN	A	B1	C	D	SW	Rp
20	129	39	46	79	34	$\frac{3}{4}$ "
25	152	47	58	82	41	1"
32	161	56	65	84	49	1"

**Pressure drop curves****DN 20 - Rp  $\frac{3}{4}$ " x Rp  $\frac{3}{4}$ " - 2-12 l/min****A-D** Valve position**DN 20 - Rp  $\frac{3}{4}$ " x Rp  $\frac{3}{4}$ " - 8-30 l/min****B-D** Valve position**DN 25 - Rp 1" x Rp 1" - 10-40 l/min****B-D** Valve position**DN 32 - Rp  $1\frac{1}{4}$ " x Rp  $1\frac{1}{4}$ " - 20-70 l/min****A-D** Valve position

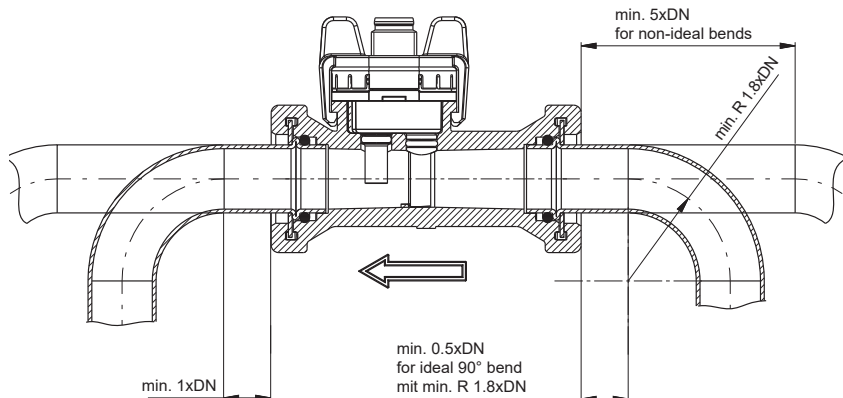
**Hoval flow rate sensor sets**

(Dimensions in mm)

**Plastic housing****Brass housing**

DN	A	B	C	D	E
8	48.2	55.7	G 3/4"	86	11.5
10	39.5	54.1	G 3/4"	90	11.5
15	41.6	59.5	G 1"	97	16.0
20	42.6	65.8	G 1 1/4"	117	20.0
25	56.0	71.3	G 1 1/2"	132	26.0

DN	A	B	C	D
10	43	57.3	G 1"	86
32	50	74.9	G 1 1/2"	134
40	67.3	83.6	G 2"	110

**Dimensions of installation section****Application conditions**

- Temperature
  - Media < +125 °C
  - Surroundings -15 ... +85 °C
  - Storage -30 ... +85 °C
- Maximum pressure at media temperature
  - over the life-time 12 bar at +40 °C
  - over the life-time 6 bar at +100 °C
  - for 600 hours 4 bar at +125 °C
  - for 2 hours 4 bar at +140 °C
  - maximum test pressure 18 bar at +40 °C
- Cavitation

The following equation applies in order to avoid cavitation:  $P_{\text{abs outlet}} / P_{\text{difference}} > 5.5$

**Pressure drop  
Plastic housing**

	Flow rate l/min			Flow rate l/h			Pressure drop mbar		
	min.	mid.	max.	min.	mid.	max.	min.	mid.	max.
DN 8	0.9	7	15	54	420	900	1	42	190
DN 10	1.8	15	32	108	900	1920	1	50	230
DN 15	3.5	25	50	210	1500	3000	1	42	170
DN 20	5.0	38	85	300	2280	5100	1	37	180
DN 25	9.0	70	150	540	4200	9000	1	45	210

**Brass housing**

	Flow rate l/min			Flow rate l/h			Pressure drop mbar		
	min.	mid.	max.	min.	mid.	max.	min.	mid.	max.
DN 10	2	20	40	120	1200	2400	1	90	360
DN 32	14	120	240	840	7200	14400	1	36	140
DN 40	22	200	400	1320	12000	24000	1	70	360

**SHARKY 775**  
**Ultrasound compact heat meter**

Compact heat meter consisting of ultrasound heat meter and calculation unit.

*Ultrasound heat meter*

- The heat meter measures the flow rate statically using the ultrasound measurement principle.
- The meter is characterised by long-term stability for energy measurements with maximum measurement accuracy.
- Insensitive to dirt build-up
- Any installation position (exceptions see "Technical data")
- Sizes DN 15 to DN 100
- Nominal flow rates 1.5-60 qp
- Media temperature 5-130 °C
- Temperature sensor PT500, firmly connected with the calculation unit

*Calculation unit*

- Electronic calculation unit with 8-digit LCD display
- 3.6 V DC battery power supply or 230 V AC (50-60 Hz) mains supply
- The calculation unit is removable and can be mounted on the wall as on-wall version
- Temperature sensor PT500, firmly connected with the calculation unit
- Temperature measuring range 1...180 °C
- The consumption values measured by the meter can be read out on the meter on site.
- Mains supply version with integrated M-Bus module for connecting to the TopTronic® E basic module district heating or to the TopTronic® E measuring module

*Application*

- For collection of all payroll-relevant data for measurement of the energy consumption in heating and/or refrigeration plants

*On site*

- Installation of the calculation unit directly onto the volume measuring unit or the wall



**Threaded version**

Connection size	Nominal flow rate qp m³/h
R ¾"	1.5
R 1"	2.5
R 1¼"	6.0
R 2"	10

**Flange version**

Connection size	Nominal flow rate qp m³/h
DN 50	15
DN 65	25
DN 80	40
DN 100	60

**Approval**

MID (DE-10-MI004-PTB013) and PTB K 7.2

## Heat meter SHARKY 775

**Ultrasound compact heat meter SHARKY 775**

- Flow rate measurement using the ultrasound measurement principle
- Calculation unit for compact and wall installation
- Two temperature sensors, firmly connected with the calculation unit
- The consumption values measured by the meter can be read out on the meter on site.
- Mains supply version with integrated M-Bus module for connecting to the TopTronic® E basic module district heating or to the TopTronic® E measuring module

**Heat meter with external thread**

without screw connections (max. 150 °C, PN 25)

Connection size	Nominal flow rate	Install. length	kvs value	Sensor value	Sensor cable length	
	m <sup>3</sup> /h	mm		m <sup>3</sup> /h	m	
<i>Battery power supply without M-Bus</i>						
R ¾"	1.5	110	5.48	M10 × 1 <sup>1)</sup>	2	2047 509
R 1"	2.5	130	7.91	M10 × 1 <sup>1)</sup>	2	2047 511
R 1¼"	6.0	260	16.8	2 x ½"×85 <sup>2)</sup>	3	2059 660
R 2"	10	300	26.73	2 x ½"×85 <sup>2)</sup>	3	2059 661

*Mains supply incl. M-Bus*

R ¾"	1.5	110	5.48	M10 × 1 <sup>1)</sup>	2	2047 512
R 1"	2.5	130	7.91	M10 × 1 <sup>1)</sup>	2	2047 513
R 1¼"	6.0	260	16.8	2 x ½"×85 <sup>2)</sup>	3	2047 516
R 2"	10	300	26.73	2 x ½"×85 <sup>2)</sup>	3	2047 517

**Heat meter with flange connection**

without counter flanges (max. 150 °C, PN 25)

Connection size	Nominal flow rate	Install. length	kvs value	Sensor value	Sensor cable length	
	qp					
	m <sup>3</sup> /h	mm		m <sup>3</sup> /h	m	
<i>Battery power supply without M-Bus</i>						
DN 50	15	270	40.09	2 x ½"×120 <sup>2)</sup>	3	2059 662
<i>Mains supply incl. M-Bus</i>						
DN 50	15	270	40.09	2 x ½"×120 <sup>2)</sup>	3	2047 518
DN 65	25	300	91.29	2 x ½"×120 <sup>2)</sup>	3	2047 519
DN 80	40	300	141.42	2 x ½"×120 <sup>2)</sup>	3	2047 520
DN 100	60	360	219.09	2 x ½"×120 <sup>2)</sup>	3	2047 522

<sup>1)</sup> Direct installation sensor<sup>2)</sup> Immersion sensor without immersion sleeve

Immersion sleeves must be ordered separately in the appropriate length.

## Accessories

**Immersion sleeve**  
with external thread

Connection size	Install. length mm
G ½"	40
G ½"	85
G ½"	120

## Part No.

2047 503  
2047 505  
2047 506

**Heat meter installation set**

Consisting of:

2 ball valves with union nut  
1 ball valve with sensor seat  
1 pipe nipple, galvanised

Ball valve Rp	Union nut Rp	Pipe nipple G	Install. length mm
¾"	¾"	¾"	110
¾"	1"	1"	130
1"	1¼"	1¼"	150

2073 104  
2073 105  
2073 106

Not suitable for installation in heating arma-  
ture groups.

**Heat meter accessories Diehl M. PT500**

Sensor pair PT500  
Sensor M10x1  
Cable lengths: 2.0 m  
Only needed as spare part

2059 953

**Mains adapter for calculation unit**

230 V AC voltage module  
Terminals suited for a cable  
with up to 2.5 mm²  
galvanic isolation  
Frequency 50 Hz  
soldered-in safety fuse (50 mA)  
The supply line must be secured with  
max. 6 A and be protected against  
manipulation  
Is needed as spare part or for  
converting battery meters to  
mains-supplied meters

2069 807

**M-Bus communication module**

M-Bus module standardised acc. to  
EN 1434-3 with 2-pin terminal with  
"24" and "25" connections  
reverse-polarity protected  
M-Bus supply via the meter  
Is needed as spare part  
or M-Bus upgrade of battery meters.  
Can also be used as 2nd module for  
additional M-Bus read-out  
(e.g. on site GLT)

2053 201

## Flow rate sensor

Connection size	R	Inches	$\frac{3}{4}$	1	1 $\frac{1}{4}$	2
Nominal flow rate	qp	m <sup>3</sup> /h	1.5	2.5	6	10
Nominal diameter	DN	mm	15	20	25	40
Installation length	L	mm	110	130	260	300
Starting value		l/h	2.5	4	10	20
Min. flow rate (DR 1:250)	qi	l/h	6	10	24	40 <sup>1)</sup>
Min. flow rate (DR 1:100)	qi	l/h	15	25	60	100
Max. flow rate	qs	m <sup>3</sup> /h	3	5	12	20
Overload value		m <sup>3</sup> /h	4.6	6.7	18.4	24
Operating pressure	PN	bar	16/25	16/25	16/25	16/25
Pressure drop with qp	$\Delta p$	mbar	120	100	128	140
Heat meter temp. range		°C	5 ... 130	5 ... 130	5 ... 150	5 ... 150
Kvs value ( $\Delta p = Q^2/Kvs^2$ )			5.48	7.91	16.77	26.73

Connection size	DN		50	65	80	100
Nominal flow rate	qp	m <sup>3</sup> /h	15	25	40	60
Nominal diameter	DN	mm	50	65	80	100
Installation length	L	mm	270	300	300	360
Starting value		l/h	40	50	80	120
Min. flow rate (DR 1:250)	qi	l/h	60 <sup>1)</sup>	100 <sup>1)</sup>	160	240 <sup>1)</sup>
Min. flow rate (DR 1:100)	qi	l/h	150	250	400	600
Max. flow rate	qs	m <sup>3</sup> /h	30	50	80	120
Overload value		m <sup>3</sup> /h	36	60	90	132
Operating pressure	PN	bar	16/25	16/25	16/25	16/25
Pressure drop with qp	$\Delta p$	mbar	140	75	80	75
Heat meter temp. range		°C	5 ... 150	5 ... 150	5 ... 150	5 ... 150
Kvs value ( $\Delta p = Q^2/Kvs^2$ )			40.09	91.29	141.42	219.09

<sup>1)</sup> Horizontal installation only

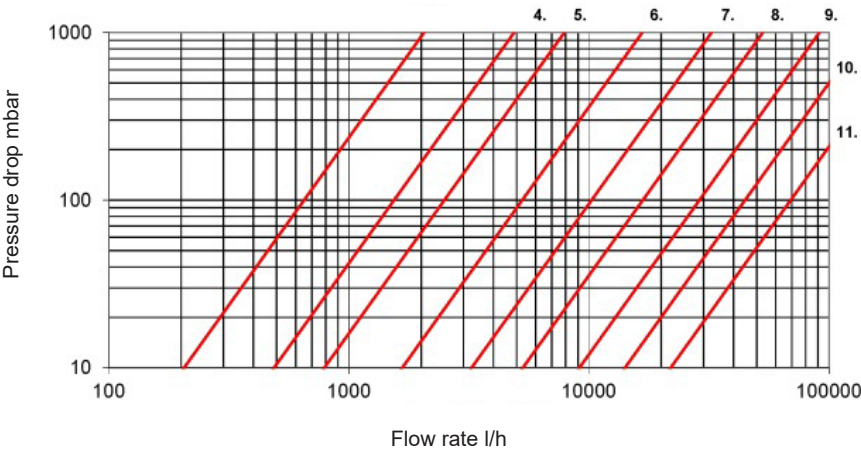


Pressure drop SHARKY 775

The pressure drop in a flow rate sensor is indicated as the maximum pressure drop with qp. According to EN 1434, the maximum pressure drop must not exceed 0.25 bar.

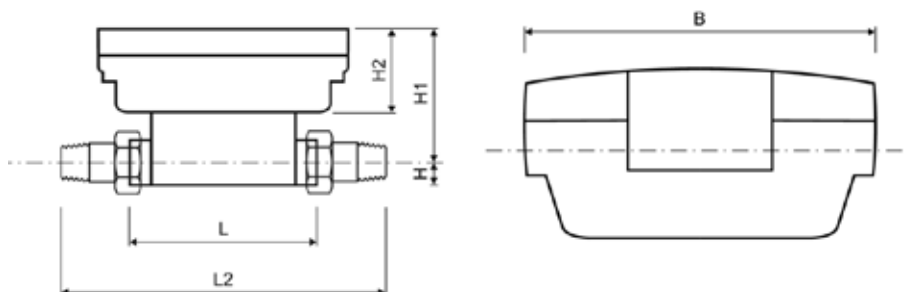
Curve	Nominal flow rate qp m³/h	Max. flow rate qs m³/h	Min. flow rate (DR 1:250) qi l/h	Min. flow rate (DR 1:100) qi l/h	Nominal diameter mm	Kvs value
4.	1.5	3.0	6	15	DN 15	5.48
5.	2.5	3.0	10	25	DN 20	7.91
6.	6	12	24	60	DN 25	16.77
7.	10	20	40 <sup>1)</sup>	100	DN 40	26.73
8.	15	30	60 <sup>1)</sup>	150	DN 50	40.09
9.	25	50	100 <sup>1)</sup>	250	DN 65	91.29
10.	40	80	160	400	DN 80	141.42
11.	60	120	240 <sup>1)</sup>	600	DN 100	219.09

<sup>1)</sup> Horizontal installation only

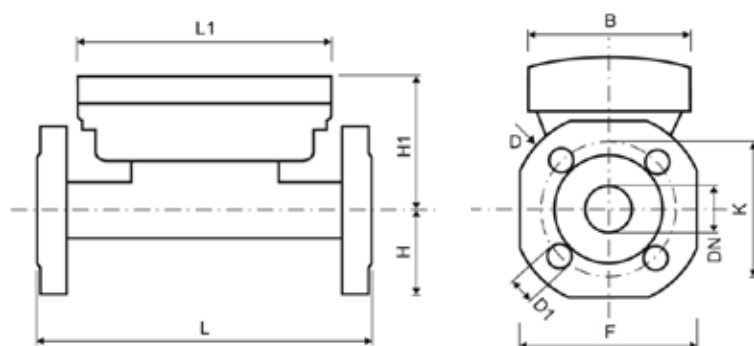


**SHARKY 775**

(Dimensions in mm)

**Threaded version**

Nominal flow rate	Nominal diameter	Installation length	Installation length with screw connection	Length calculation unit	Height	Height	Height calculation unit	Width calculation unit	Connection thread meter	Connection thread screw connection
qp m³/h	DN mm	L mm	L2 mm	L1 mm	H mm	H1 mm	H2 mm	B mm	F mm	D mm
1.5	15	110	190	150	14.5	82	54	100	G ¾ B	R ½
2.5	20	130	230	150	18	84	54	100	G 1 B	R ¾
6	25	260	380	150	23	88.5	54	100	G 1¼ B	R1
10	40	300	440	150	33	94	54	100	G 2 B	R 1½

**Flange version**

Nominal flow rate	Nominal diameter	Installation length	Length calculation unit	Height	Height	Height calculation unit	Width calculation unit	Flange dimensions	Flange diameter	Pitch circle diameter	Diameter	Number of flange drill holes
qp m³/h	DN mm	L mm	L1 mm	H mm	H1 mm	H2 mm	B mm	F mm	D mm	K mm	D1 mm	units
15	50	270	150	73.5	99	54	100	147	163	125	18	4
25	65	300	150	85	106.5	54	100	170	184	145	18	8
40	80	300	150	92.5	114	54	100	185	200	160	19	8
60	100	360	150	108	119	54	100	216	235	180 <sup>1)</sup> /190	19 <sup>1)</sup> /22	8

<sup>1)</sup> Values for PN 16 casing

**Electricity meter UEM40-2C**

- Single-phase electricity meter with integrated M-Bus communication
- Direct connection up to 40 A
- Fully bi-directional 4-quadrant measurements for all energies and outputs
- 1 DIN module compact size
- Quick installation
- Class B according to EN 50470-3 (MID)
- S0 output for energy pulse emission
- MID certification

**Electricity meter UEM80-D**

- Three-phase electricity meter with integrated M-Bus communication
- Direct connection up to 80 A
- Fully bi-directional 4-quadrant measurements for all energies and powers
- For 4-wire networks with balanced or unbalanced load
- Class B according to EN 50470-3 (MID)
- S0 output for energy pulse emission
- MID certification

**Electricity meter UEM1P5-D**

- Three-phase electricity meter with integrated M-Bus communication
- For 1 or 5 A current transformer
- Programmable current transformer ratio
- Fully bi-directional 4-quadrant measurements for all energies and powers
- For 3/4 wire networks with balanced or unbalanced load
- Class B according to EN 50470-3 (MID)
- S0 output for energy pulse emission
- MID certification

**Use**

- Measurement of the electrical energy
- Readout with TopTronic® E basic module district heating / MWA module
- Use/display/representation with HovalSupervisor

**Notice**

The installation must be carried out by a specialist according to the given regulations.

**Notice**

An M-Bus connection via the following is recommended:

- TopTronic® E measuring module (TTE-MWA)
  - TopTronic® E basic module district heating/fresh water (TTE-FW)
  - TopTronic® E basic module district heating com (TTE-FW com), although a connection via the pulse input (S0) of
  - TopTronic® E basic module heat generator (TTE-WEZ)
  - TopTronic® E basic module district heating/fresh water (TTE-FW)
  - TopTronic® E basic module district heating com (TTE-FW com)
- is also possible. When using the M-Bus connection, several data points are available, among others.

Electricity meters



**Electricity meter UEM40-2C M-Bus**  
MID 40 A/1 ph  
MID certification, EN 50470-3 class B  
Direct connection to 40 A, 230 V AC, 50 Hz  
Bidirectional 4 quadrant meter  
Size according to DIN, 1 HU  
LCD display with 7 characters  
M-Bus connection, S0 connection

2073 566



**Electricity meter UEM80-D M-Bus**  
MID 80A/3ph  
MID certification, EN 50470-3 class B  
Direct connection up to 80 A, 400 V AC, 50 Hz  
Bidirectional 4 quadrant meter  
Size according to DIN, 4 HUs  
Large LCD display with graphic symbols  
M-Bus connection, S0 connection

2073 565



**Electricity meter UEM1P5-D M-Bus**  
MID 6A/3ph  
MID certification, EN 50470-3 class B  
Converter 1-10 000 A/1|5 A, 400 V AC, 50 Hz  
Bidirectional 4 quadrant meter  
Size according to DIN, 4 HUs  
Large LCD display with graphic symbols  
M-Bus connection, S0 connection  
Current transformer CT PRO XT optional

2073 567

Notice

For three-phase current measurement, the UEM80-D direct connection meter is recommended for currents up to 80 A. For higher currents, the UEM1P5-D model with matching current transformer should be provided.

Accessories



**Current transformer CT PRO XT**

- Accessories for current transformer UEM1P5
- Through-hole current transformer
- Accuracy: class 1

Consisting of:

- Current transformer
- Sealed terminal cover
- Installation accessories
- Self-tapping screw M5

Nominal  
output (VA)

CT PRO XT 100 / 100A-5A
CT PRO XT 150 / 150A-5A
CT PRO XT 200 / 200A-5A

3
5
5

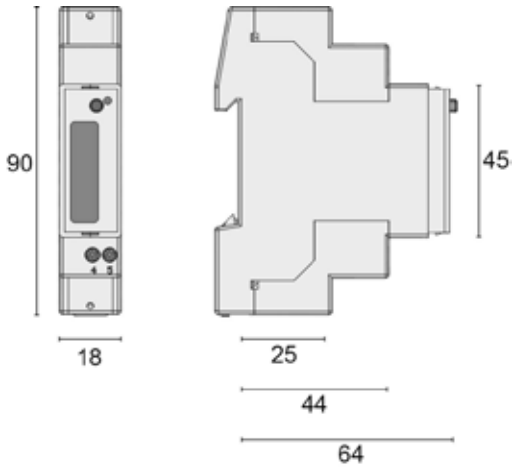
2074 378
2074 379
2074 380

Notice

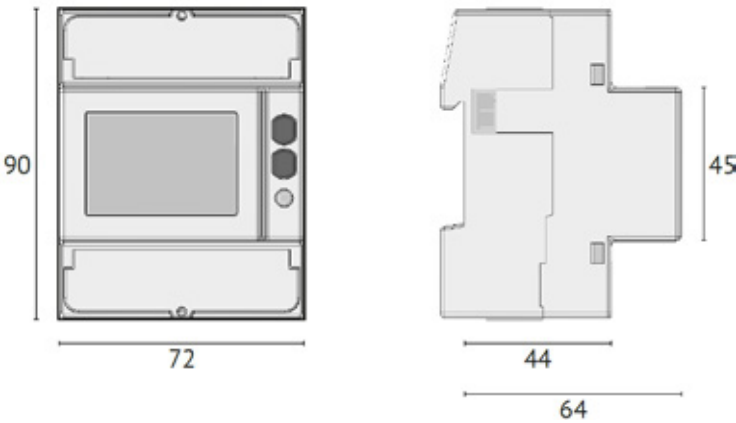
Required for measuring high currents and structurally difficult integration of a normal direct connection meter.

Type		UEM40-2C	UEM80-D	UEM1P5-D
<b>Auxiliary voltage</b>				
• Auxiliary voltage is taken from the measuring circuit				
• Nominal measurement voltage	%	±20	±20	±20
• Max. consumption (per phase) M-Bus model	W	1	0.5	1
• Nominal frequency	Hz	50/60	50/60	50/60
<b>Voltage (range) &amp; frequency</b>				
• Nominal values	V	230	3x230/400...3x240/415	3x230/400...3x240/415
	Hz	50/60	50/60	50/60
<b>Current</b>				
• Inrush current $I_{st}$	mA	20	20	2
• Minimum current $I_{min}$	mA	250	250	10
• Suppressed leakage current $I_{tr}$	mA	500	500	50
• Reference current $I_{ref}$ (Ib)	A	5	5	1
• Maximum current $I_{max}$	A	40	80	6
<b>Communication for M-Bus model</b>				
• Interface		wired (EN 1434-3)	wired (EN 1434-3)	wired (EN 1434-3)
• Protocol		M-Bus	M-Bus	M-Bus
• Communication speed	bps	300,2400,9600	300...38400	300...38400
• Unit load		1	1	1
<b>Accuracy</b>				
• Active energy class B according to			EN 50470-3 (MID)	
• Reactive energy class 2 according to			IEC/EN62053-23	
<b>S0 output (Passive opto-isolated)</b>				
• Max. values (according to Directive EN 62053-31)		27 V DC - 27 mA	27 V DC - 27 mA	27 V DC - 27 mA
• Meter constant	imp/kWh	1000	100	1000 > CT = 1...4
• The measuring unit (imp/kWh, imp/kvarh, imp/kVAh) changes according to the assigned meters (kWh, kvarh, kVAh)				200 > CT = 5...24
				40 > CT = 25...124
				8 > CT = 125...624
				1 > CT = 625...3124
				0.1 > CT = 3125...10000
• Pulse duration	ms	100 ±0.5	50 ±2 ON time min. 30 ±2 OFF time	50 ±2
<b>Tariff input</b>				
• Active opto-isolated		-	•	•
• Auxiliary voltage range for tariff 2	V AC-DC	-	80 ... 276	80 ... 276
<b>Test LED for measuring technology</b>				
• Meter constant	imp/kWh	5000	1000	10000
• Pulse duration	ms	4 ±0.1	10 ±2	10 ±2
<b>Ambient conditions</b>				
• Operating temperature range	°C	-25...+55	-25...+55	-25...+55
• Storage temperature range	°C	-40...+75	-25...+75	-25...+75
• Relative humidity (without condensation)	%	80	80	80
• Degree of protection - front side (only guaranteed if installed in a control panel with at least type of protection IP51)		IP51	IP51	IP51
• Terminal protection type		IP20	IP20	IP20

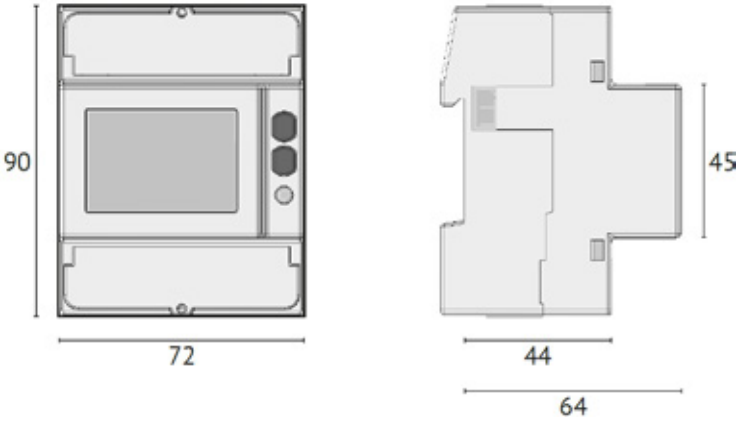
Electricity meter UEM40-2C  
(dimensions in mm)



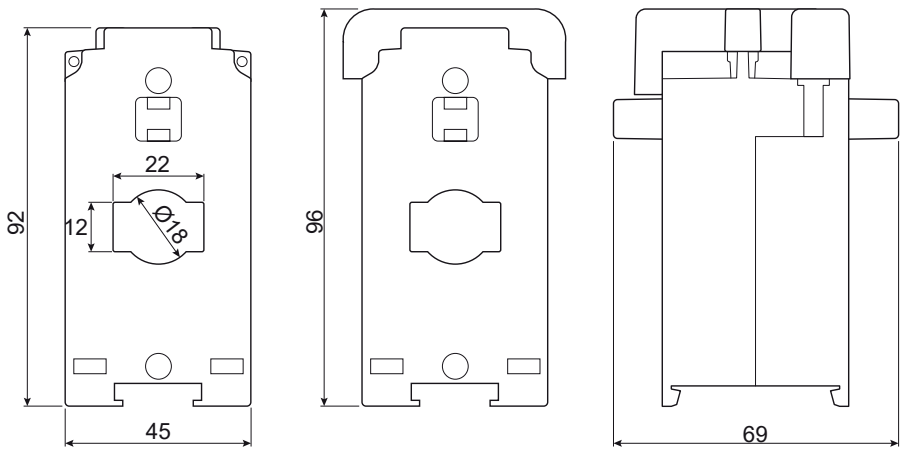
Electricity meter UEM80-D  
(Dimensions in mm)



Electricity meter UEM1P5-D  
(Dimensions in mm)



Current transformer CT PRO XT  
(Dimensions in mm)



Electrical connection UEM80-D

4-wire connection

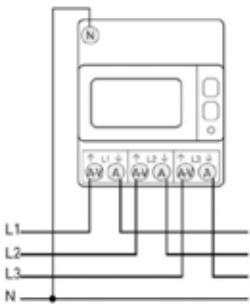


Fig. 01

M-Bus connection UEM40-2C

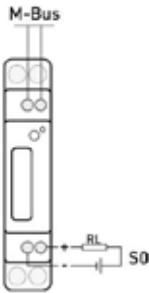


Fig. 04

Electrical connection UEM1P5-D

4-wire connection with measuring converter

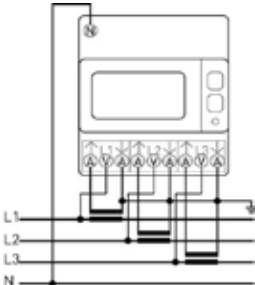


Fig. 02

M-Bus connection UEM80-D / UEM1P5-D

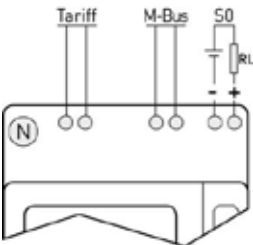


Fig. 05

M-Bus interface

The integrated M-Bus interface enables data to be read out according to the M-Bus compatibility list in the “Energy/heat balancing” chapter.

**Further information**  
see chapter “Energy/heat quantity balancing”

**Notice**  
It may be necessary to connect an MWA module to the TopTronic® system.

M-Bus connection UEM80-D / UEM1P5-D

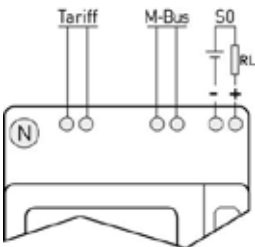


Fig. 03



[illegible]

2023/24

## Overview energy/heat quantity balancing

System	Consumer	Energy balancing (through-flow measuring method)		
		Easy		Premium (calibrated)
		up to ~50 kW per circuit	more than ~50 kW per circuit	
EBZ_010	1 heating circuit + hot water	Flow rate sensor (according to the principle of the Kármán vortex street)		
EBZ_020		Water meter (with pulse output)		
EBZ_030				M-Bus meter
EBZ_040	2 heating circuits + hot water	Water meter (with pulse output)		
EBZ_050				M-Bus meter
EBZ_060	3 heating circuits + hot water	Water meter (with pulse output)		
EBZ_070				M-Bus meter
additional heating/consumer circuits on request				

## Description of the system

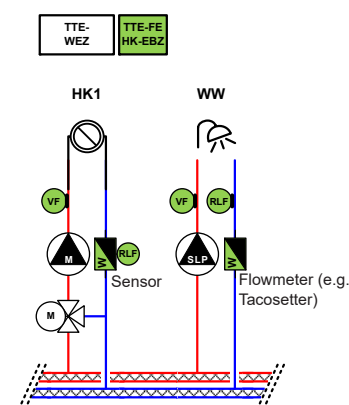
EBZ_010	1 heating circuit + hot water	up to ~50 kW per circuit
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Energy balancing for heating circuit by flow rate sensor

Energy balancing for domestic hot water using constant through-flow

## Components required:

- 1 x TopTronic® E basic module heat generator for controlling heating circuit 1 + hot water (usually installed in the heat generator)
- 1 x TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ (heating circuit 1)
- 1 x flow rate sensor set (for measuring flow rate heating circuit 1)
- 1 x balancing valve TN / flowmeter for setting the constant through-flow (for measuring hot water)



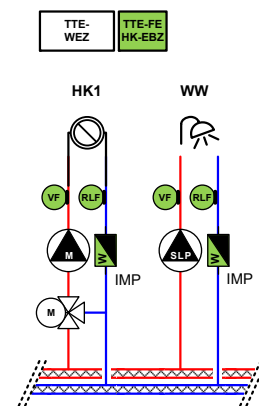
EBZ_020	1 heating circuit + hot water	up to and more than 50 kW per circuit
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Energy balancing for heating circuit by water meter with pulse output

Energy balancing for hot water by water meter with pulse output

## Components required:

- 1 x TopTronic® E basic module heat generator for controlling heating circuit 1 + hot water (usually installed in the heat generator)
- 1 x TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ (heating circuit 1)
- 2 x on-site water meters with pulse output (for heating circuit 1 + hot water, max. pulse value 10 ltr./pulse)



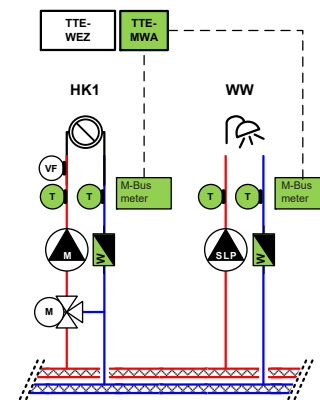
EBZ_030	1 heating circuit + hot water	calibrated measurement per circuit
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Calibrated energy balancing for heating circuit by M-Bus meter

Calibrated energy balancing for hot water by M-Bus meter

## Components required:

- 1 x TopTronic® E basic module heat generator for controlling heating circuit 1 + hot water (usually installed in the heat generator)
- 1 x TopTronic® E measuring module TTE-MWA
- 2 x M-Bus meter (for heating circuit 1 + hot water)



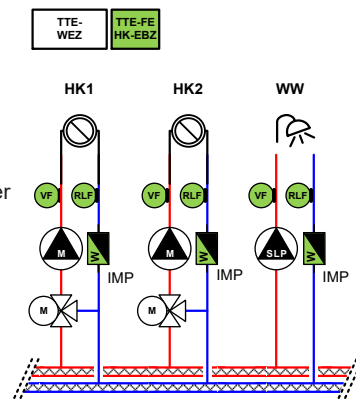
EBZ_040	2 heating circuits + hot water	up to/more than ~50 kW per circuit
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Energy balancing for heating circuits by water meter with pulse output

Energy balancing for hot water by water meter with pulse output

Components required:

- 1 x TopTronic® E basic module heat generator for controlling heating circuit 1 + hot water (usually installed in the heat generator)
- 1 x TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ (heating circuit 2)
- 1 x contact sensor (hot water return)
- 3 x on-site water meters with pulse output (for heating circuit 1 + heating circuit 2 + hot water, max. pulse value 10 ltr./pulse)



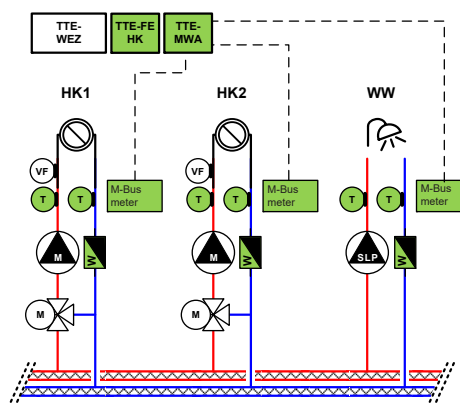
EBZ_050	2 heating circuits + hot water	calibrated measurement per circuit
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Calibrated energy balancing for heating circuits by M-Bus meter

Calibrated energy balancing for hot water by M-Bus meter

Components required:

- 1 x TopTronic® E basic module heat generator for controlling heating circuit 1 + hot water (usually installed in the heat generator)
- 1 x TopTronic® E module expansion heating circuit for controlling heating circuit 2
- 1 x TopTronic® E measuring module TTE-MWA
- 3 x M-Bus meter (for heating circuit 1 + heating circuit 2 + hot water)



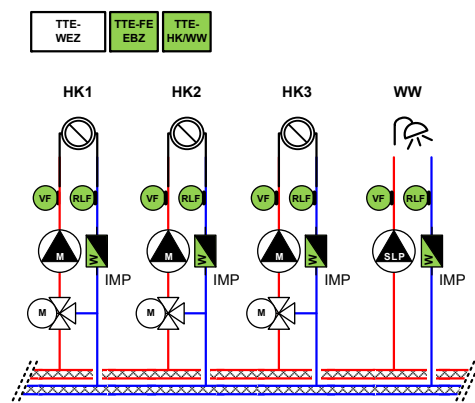
EBZ_060	3 heating circuits + hot water	up to/more than ~50 kW per circuit
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Energy balancing for heating circuits by water meter with pulse output

Energy balancing for hot water by water meter with pulse output

Components required:

- 1 x TopTronic® E basic module heat generator for controlling heating circuit 1 + hot water (usually installed in the heat generator)
- 1 x TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ (heating circuit 2)
- 1 x TopTronic® E heating circuit/hot water module for controlling heating circuit 3
- 2 x contact sensors (hot water return + heating circuit 3)
- 4 x on-site water meters with pulse output (for heating circuit 1 + heating circuit 2 + heating circuit 3 + hot water, max. pulse value 10 ltr./pulse)



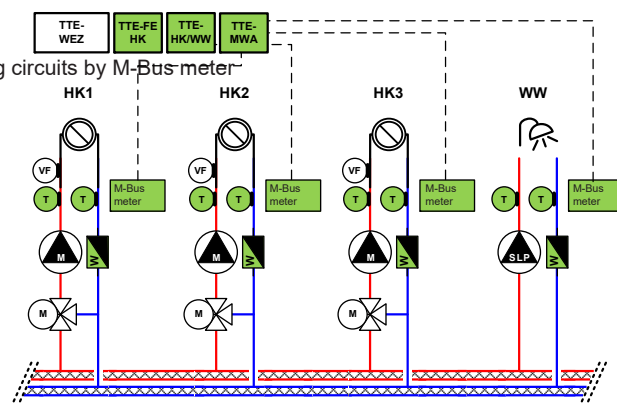
EBZ_070	3 heating circuits + hot water	calibrated measurement per circuit
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Calibrated energy balancing for heating circuits by M-Bus meter







Calibrated energy balancing for hot water by M-Bus meter

Components required:

- 1 x TopTronic® E basic module heat generator for controlling heating circuit 1 + hot water (usually installed in the heat generator)
- 1 x TopTronic® E module expansion heating circuit for controlling heating circuit 2
- 1 x TopTronic® E heating circuit/hot water module for controlling heating circuit 3
- 1 x TopTronic® E measuring module
- 4 x M-Bus meter (for heating circuit 1 + heating circuit 2 + heating circuit 3 + hot water)



Assignment heat meter - TopTronic® E modules

			Basic module district heating/fresh water district heating com TTE-FW / TTE-FW com	Controller module (solar, buffer, etc.) TTE-SOL / TTE-PS	Module expansion incl. energy balancing TTE-FE	Measuring module TTE-MWA
			1 x FVT / 16 x M-Bus 	Available inputs 1 x FVT / 1 x IMP 		16 x M-Bus 
Heat meter	FlowRotor 	FVT		•	•	
	Flow rate sensor set 	FVT	○	•	•	
	Heat meter 	M-Bus	•			•

○ Only with TransTherm® aqua F



## TopTronic® E

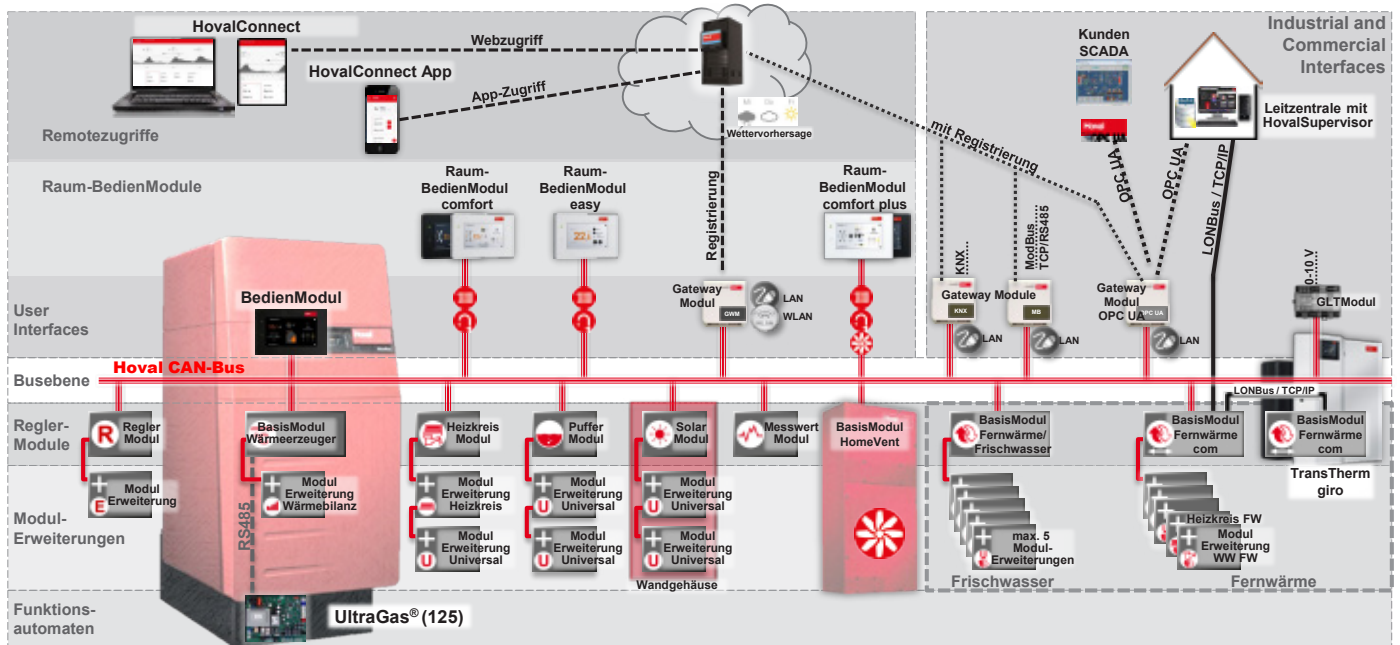
The TopTronic® E controller system is based on independent controller units (modules) that are connected together via the Hoval CAN bus. The individual modules are set using a central operating unit (master operation).

Max. 16 controller modules can be connected. Of these, max. 8 modules can be equipped as basic module heat generators (TTE H-Gen).

Max. 2 module expansions can be connected to the controller modules.

### Notice

Max. 1 module expansion can be connected to the basic module heat generator (TTE-WEZ)!



\*Hoval's new IoT platform, HovalConnect, will gradually replace the previous HovalDesk platform. Until the new platform is fully implemented, our customers can use the proven HovalDesk platform.

## Number of TopTronic® E modules that can be installed in the heat generator:

Heat generator \ TopTronic® E	Basic module heat generator (TTE-WEZ)	Heating circuit/hot water module (TTE-HK/WW) or buffer module (TTE-PS) or solar module (TTE-SOL) or module expansion (TTE-FE)*	Heating circuit/hot water module (TTE-HK/WW) or buffer module (TTE-PS) or solar module (TTE-SOL) or module expansion (TTE-FE)*	Heating circuit/hot water module (TTE-HK/WW) or buffer module (TTE-PS) or solar module (TTE-SOL) or module expansion (TTE-FE)*	Heating circuit/hot water module (TTE-HK/WW) or buffer module (TTE-PS) or solar module (TTE-SOL) or module expansion (TTE-FE)*
UltraSource® B	installed	•	•		
Belaria® comfort ICM	installed	•	•		
Belaria® pro	installed	•	•		
Belaria® twin I/IR	installed	•	•		
Belaria® twin A/AR (Electrical box option)	installed	•	•		
Belaria® dual AR (60) (Electrical box option)	installed	•	•		
UltraSource® T	installed	•	•		
Thermalia® comfort	installed	•	•		
Thermalia® twin	installed	•	•		
Thermalia® dual	installed	•	•		
BioLyt (13-43)	installed	•	•		
TopGas® comfort	(can be installed)				
TopGas® combi		no modules can be installed			
TopGas® classic (12-30)		no modules can be installed			
TopGas® classic (35-80)	(can be installed)				
TopGas® classic (100,120)	(can be installed)				
UltraGas® (15-100)	installed	•	•		
UltraGas® 2 (125-230)	installed	•	•		
UltraGas® 2 (300-500)	installed	•	•	•	
UltraGas® 2 (530-1550)	installed	•	•	•	•
UltraGas® 2 D (250-460) (per boiler)	installed	•	•		
UltraGas® 2 D (600-1000) (per boiler)	installed	•	•	•	
UltraGas® 2 D (1060-3100) (per boiler)	installed	•	•	•	•
MultiJet® (12,16)	installed	•	•		
UltraOil® (16-80)	installed	•	•		
UltraOil® (110-300)	installed	•	•	•	
UltraOil® (320D-600D) (per boiler)	installed	•	•	•	
Max-3 (420-6000)	installed	•	•	•	

**Notice**

Alternatively, there is room for other TopTronic® E modules which have dimensions that are the same as or smaller than the modules mentioned above.

\* Max. 2 module expansions can be connected to the controller modules.

**Exception:**

Max. 1 module expansion can be connected to the basic module heat generator!

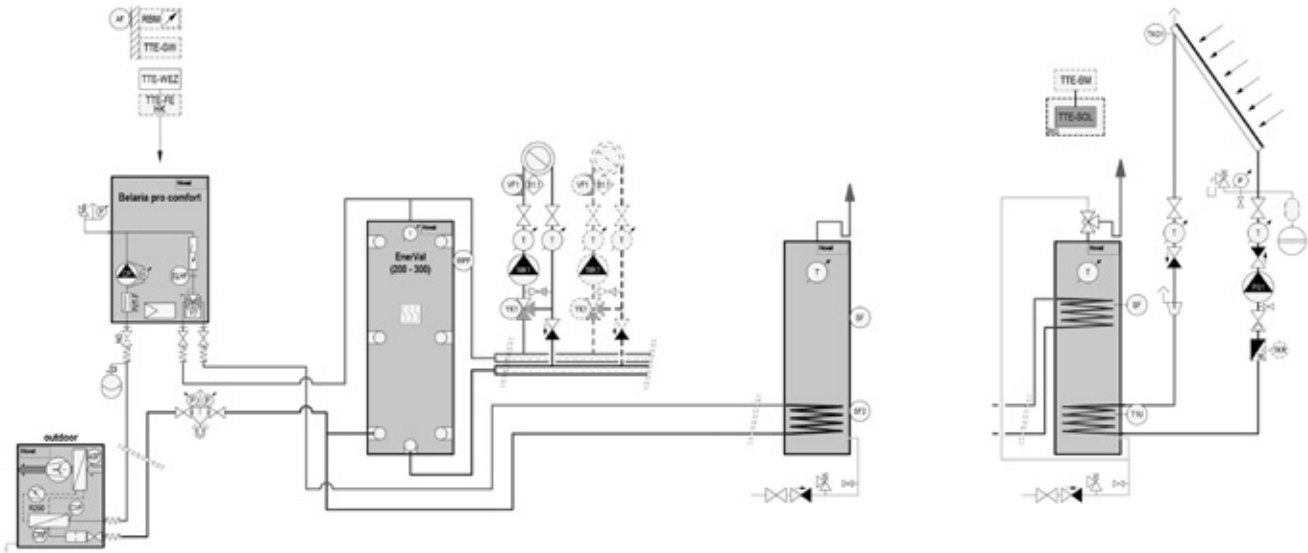
Heat generator \ TopTronic® E	Basic module district heating com (TTE-FW com)	Module expansion district heating (TTE-FE FW)	Module expansion district heating (TTE-FE FW)	Module expansion district heating (TTE-FE FW)	Module expansion district heating (TTE-FE FW)	Module expansion district heating (TTE-FE FW)	Ethernet connection
TransTherm® giro	installed	•	•				•
TransTherm® giro plus	installed						•
TransTherm® pro comfort	installed	no further modules can be installed					
TransTherm® pro S/RS	installed	•	•	•	•	•	•

Calorifier charging module \ TopTronic® E	Basic module district heating/ fresh water (TTE-FW)	Module expansion district heating (TTE-FE FW)	Module expansion district heating (TTE-FE FW)	Module expansion district heating (TTE-FE FW)
TransTherm® aqua L	installed	no further modules can be installed		
TransTherm® aqua F/FS	installed	no further modules can be installed		



Sample order  
TopTronic® E components

System	Belaria® pro comfort	Hot water Design/type Free-standing tank	Heating circuit assembly Connection type Calorifier before distributor 1 MC + 1-...MC	System	Solar collectors	Hot water Design/type Free-standing tank (2 coils)
BBALE030				BAAE020		



Designation	Part No.	Functions
<b>TTE-WEZ</b> TopTronic® E basic module heat generator	installed	
<b>TTE-SOL</b> TopTronic® E solar module	6037 058	<ul style="list-style-type: none"><li>• Controller module with integrated regulating functions for:<ul style="list-style-type: none"><li>- One/two circuit solar energy plants</li><li>- integrated heat balancing</li><li>- Various additional functions</li></ul></li></ul>
<i>Optional</i>		
<b>RBM</b> TopTronic® E room control module		<ul style="list-style-type: none"><li>• Operation of the Hoval heating system from the living area</li></ul>
TopTronic® E room control module easy white	6037 071	
TopTronic® E room control module comfort white	6037 069	
TopTronic® E room control module comfort black	6037 070	
<b>TTE-GW</b> TopTronic® Gateway		<ul style="list-style-type: none"><li>• App or browser access permits access to the TopTronic® E system</li></ul>
HovalConnect LAN	6049 496	
HovalConnect WLAN	6049 498	
<b>TTE-FE HK</b> TopTronic® E module expansion heating circuit	6034 576	<ul style="list-style-type: none"><li>• Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:<ul style="list-style-type: none"><li>- 1 heating/cooling circuit w/o mixer or</li><li>- 1 heating/cooling circuit with mixer</li></ul></li></ul>

**Further information**  
see separate chapter in the "Controls"  
chapter

## Safety measures for EMC-compliant installation

- Cables carrying mains voltage must be routed separately from sensor or data bus cables. A minimum distance of 2 cm between the cables must be observed. Cable crossovers are permitted.

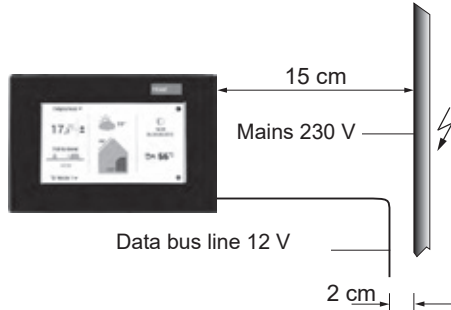


Fig. 1: Minimum distances for electrical installation

- In the case of controller modules with their own mains supply, it is imperative that cables carrying mains voltage are routed separately from sensor or data bus cables. If cable ducts are used, these must be provided with separator strips.
- When installing controller modules or room control modules, maintain a minimum clearance of 40 cm from other electrical devices with electromagnetic emissions, such as power contactors, motors, transformers, dimmers, microwave ovens and TV sets, loudspeakers, computers, mobile phones, etc.

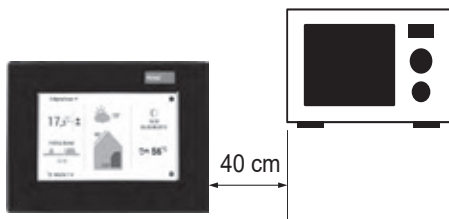
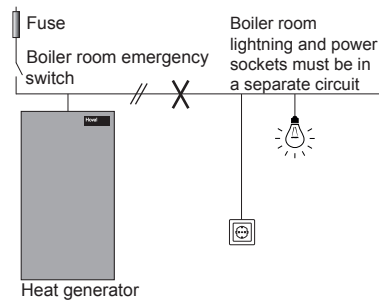


Fig. 2: Minimum distance from other electrical units

- Avoid unnecessary cable lengths, including in spare cables
- Coils of relays, contactors and other inductors in the panel, and possibly in the vicinity, must be connected. The connection can be made with RC elements, for example.
- Measures must be taken in the building and on electrical equipment to protect the devices against overvoltage caused by lightning strikes
- The mains connection for the heating system must be designed as an independent electrical circuit. Neither fluorescent lamps nor other sources of interference for the relevant machinery may be connected or capable of connection.



- Equipotential bonding must be established between the individual control components, control panels and the heating system
- Shielded cables must be used for the data cables.  
Recommended versions:  
J-Y(ST)Y 2 x 2 x 0.8 mm
- Shields of data cables, analog signal cables and power cables must be connected to earth over a large area with a highly conductive connection. The cable shields must be connected to a shield bar directly after the entry of the cable into the panel.
- Multiple earthing of a cable is not permitted (ripple pickup)

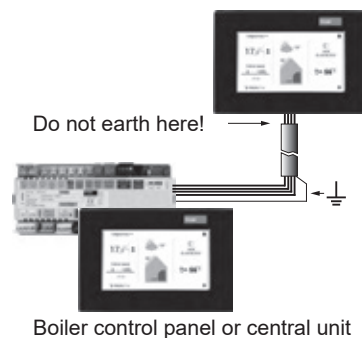


Fig. 4: One-sided earthing of the shielding

In the case of star-shaped data bus networks, double earthing is not permitted. The earthing must be effected one-sided at the star point!

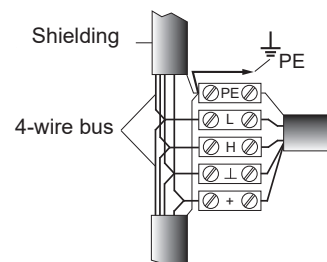


Fig. 5: Earthing for star-shaped data bus

- The outdoor sensor must not be fitted in the vicinity of transmitters and receivers (on garage walls near receivers for garage door openers, amateur radio antennae, radio alarm installations or in the immediate vicinity of large transmitters etc.).

## Maximum permitted cable lengths for cables carrying sensor and low voltage (without PWM):

- Min. 0.5 mm<sup>2</sup> (e.g. J-Y(ST)Y 2 x 2 x 0.8 mm)
- Max. permitted cable length: 50 m
- Max. PWM cable length according to pump specification

Longer connecting cables should be avoided because of the danger of radiated interference!

## Inter-building installations

- Inter-building installations and laying the bus line underground are not permitted without prior engineering and additional measures (see notice below).
- Where possible, avoid routing low-voltage and safety extra-low voltage cables (CAN bus line) in parallel in adjacent buildings (overbuildings) or through underground car parks. If this cannot be avoided, one or more of the following options should be selected to improve the decoupling:
  - Increase the spacing distance
  - Route cables in a metal cable tray or metal cable duct that is enclosed on all sides, and must be well earthed
  - Use high-quality twisted-pair cables
- Potential differences between CAN\_H, CAN\_L and ground must be kept low
- If there are higher potential differences, the frequency of errors will increase until the point when bus traffic is completely blocked

## Dangers with installation across buildings without engineering

- Increased susceptibility to interference, communication problems
- Voltage surge damage

## Notice

Engineering and additional measures for the Hoval CAN bus are mandatory for the following conditions:

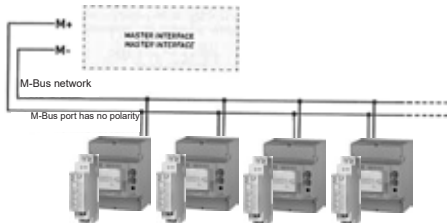
- Solutions involving inter-building installations
- Cable lengths > 100 m in the building
- Stub lines/star cabling > 15 m
- Complex CAN bus topologies

These measures must be planned in advance by professional Hoval project support and include additional components such as CAN bus repeaters or CAN fibre optic converters.

**To ensure correct electrical installation of unit connection and equipotential bonding (energy supply company and building installation), all applicable laws, regulations and standards must be complied with; in particular, the regulations of the responsible energy supply company. Common equipotential bonding must be carried out in accordance with the regulations and standards. The cable shield is not allowed to be used for equipotential bonding. The work is only allowed to be carried out by qualified specialist personnel. It is the responsibility of the electrician to ensure appropriate EMC installation.**

## M-Bus interface

The connection of the stations to the M-Bus is possible in line or star topology. The wiring among the stations should be carried out with a cable with a cross-section not less than 0.5 mm<sup>2</sup>. The use of a type J-Y(ST)Y n x 2 x 0.8 mm cable is recommended. The M-Bus cable is protected against reverse polarity, i.e. the wires can be swapped over.



## Weather sensor

- Install 2/3 of the way up the facade, not above windows or under porch roofs
- Place on the side of the building where the rooms important for measuring the temperature are located, as follows:

### Main rooms distributed

- Install the sensor on the north wall or the north-west corner

### South-facing main rooms

- Install the sensor on the west wall if there are thermal radiator valves, otherwise on the south wall

### East-facing main rooms

- Protect the sensor against the morning sunlight
- If the weather sensor is exposed to full sunlight for more than 2 hours, we recommend the sensor should be covered

## Room air sensor

- Place on an interior wall in the main occupied room. Do not expose to sunlight or effects of other heat sources (chimney wall, proximity to radiators, draughts, TV set, light source)
- Do not cover by furniture or curtains
- Approx. 1.6 m above the floor
- Seal the installation pipe to prevent draughts
- No thermostatic valves are allowed to be used in the same room

## Flow temperature sensor

- Mount on the heating flow. If the pump is in the flow, mount it immediately after the pump. If the pump is in the return, mount approx. 1.5 m after the mixing point.
- Mount the contact sensor on the bare metal flow pipe
- Attach the immersion sensor in a pipe bend so the immersion sleeve is pointing opposite to the flow

## Return temperature sensor

- Mount directly before the boiler return connection
- Mount the contact sensor on the bare metal pipe
- Attach the immersion sensor in a pipe bend so the immersion sleeve is pointing opposite to the flow

