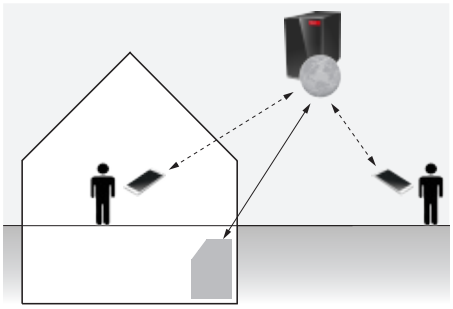
HovalConnect

HovalConnect enables access to specific functions of the TopTronic® E system via smartphone 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, 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:

Android

iOS

Designs

HovalConnect 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

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.

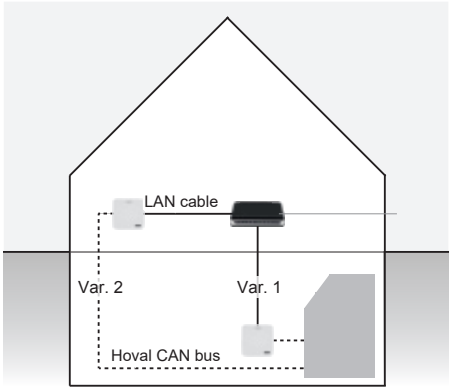
EnergyManager PV smart

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) int the basement.



Electrical power supply

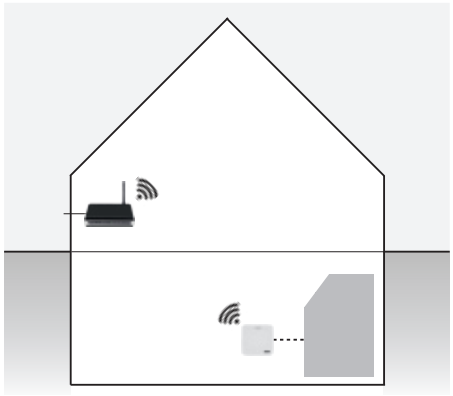
- Electrical power supply: 12 V DC 100 mA
- The electrical power supply is via the Hoval CAN bus, i.e. using the module reduces the max. number of (room) control modules that can be connected to the bus system.

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 transfer stations, 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

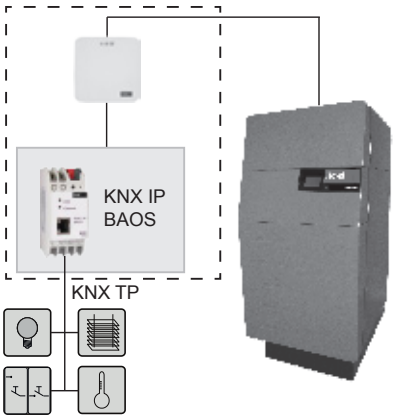
Delivery

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

Notice
If necessary, a compatible gateway can be offered for a BACnet application. However, the customer is responsible for the software implementation and realisation of the data points.

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

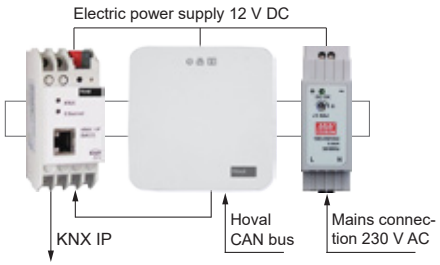
Use

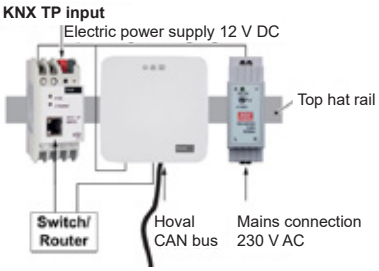
- Controller module for connecting the heat generator or TopTronic® E bus system to a building management system using KNX

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





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)		IP20
• 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		GW LAN, ModBus and OPC-UA: CAN bus, GW WLAN and KNX: power supply unit 12 V DC
• Power consumption		< 800 mW
Ethernet		
• 10BASE-T (10 Mbit/s)		
• Supported protocols: UDP/IP, TCP/IP, DHCP and static IP		

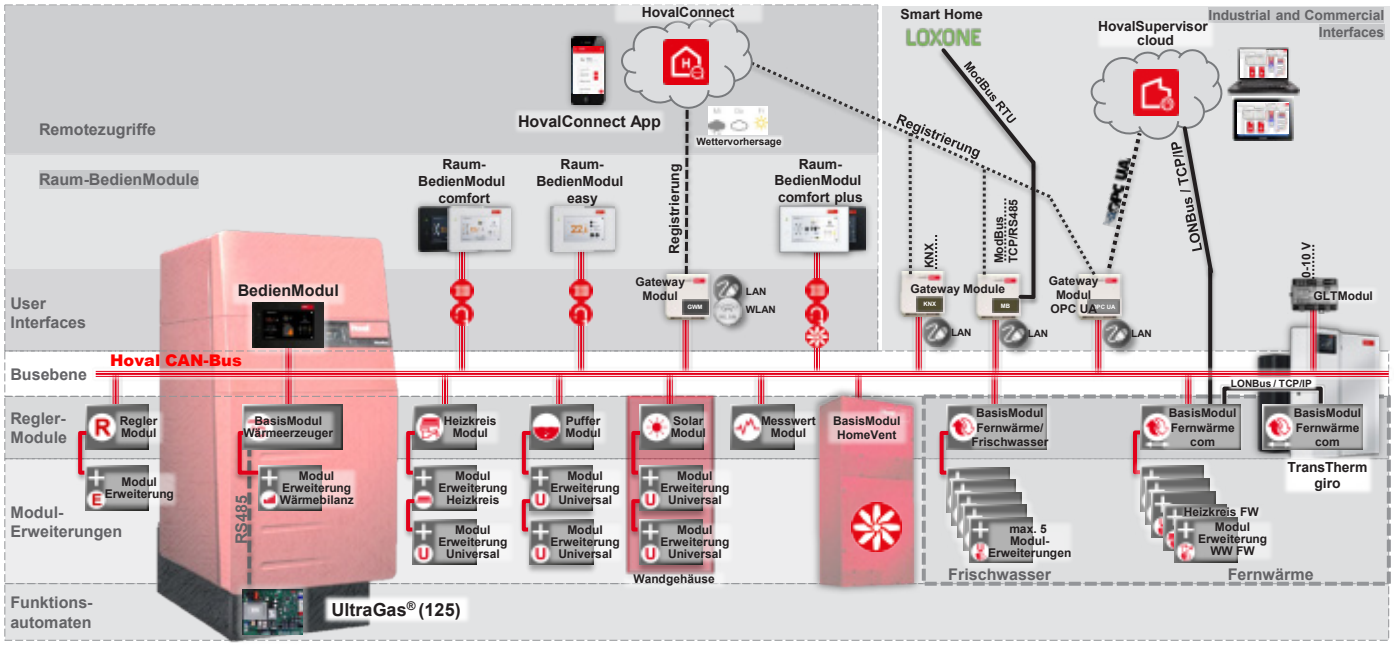
TopTronic® E

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)!



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

TopTronic® E / Heat generator	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	•	•		
UltraSource® T	installed	•	•		
Thermalia® comfort	installed	•	•		
Thermalia® twin	installed	•	•		
Thermalia® dual	installed	•	•		
BioLyt (13-43)	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	•	•	•	•
UltraOil® (16-80)	installed	•	•		
UltraOil® (110-300)	installed	•	•	•	
UltraOil® (320D-600D) (per boiler)	installed	•	•	•	
Max-3 (420-2700)	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!

TopTronic® E / Heat generator	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 S/RS	installed	•	•	•	•	•	•

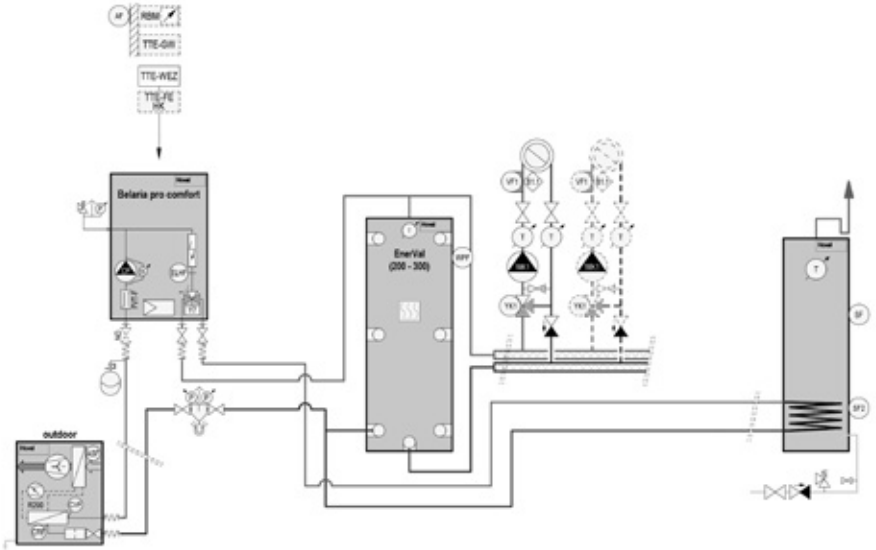
TopTronic® E / Calorifier charging module	Basic module district heating/ fresh water (TTE-FW)	Module expansion district heating (TTE-FE FW)	Module expansion district heating (TTE-FE FW)	Module expansion district heating (TTE-FE FW)
TransTherm® aqua L **TransTherm® aqua L-FW**	installed	no further modules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

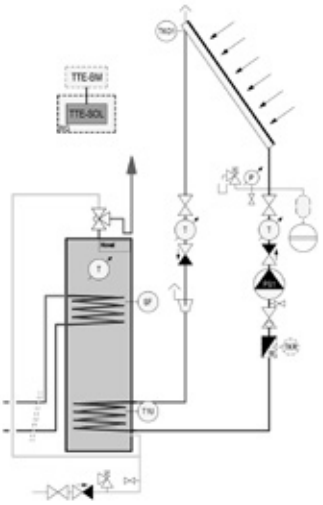
Sample order

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
BBALE030			

System	Solar collectors	Hot water Design/type Free-standing tank (2 coils)
BAAE020		





Designation		Part No.	Functions
TTE-WEZ	**TopTronic® E basic module heat generator**	installed	
TTE-SOL	**TopTronic® E solar module**	6037 058	• Controller module with integrated regulating functions for: - one/two circuit solar energy plants - integrated heat balancing - various additional functions
Optional			
RBM	**TopTronic® E room control module**		• Operation of the Hoval heating system from the living area
	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	
TTE-GW	**TopTronic® Gateway**		• App or browser access permits access to the TopTronic® E system
	HovalConnect LAN	6049 496	
	HovalConnect WLAN	6049 498	
TTE-FE HK	**TopTronic® E module expansion heating circuit**	6034 576	• 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

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.

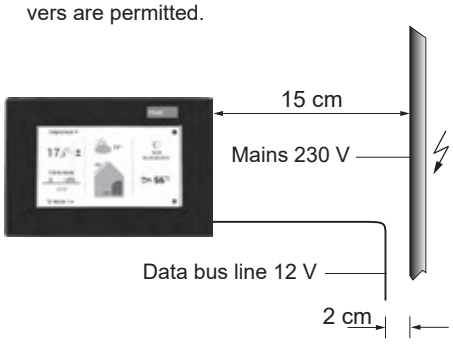


Fig. 1: Minimum distances for electrical installation

- 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.

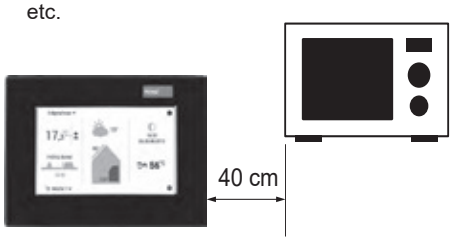
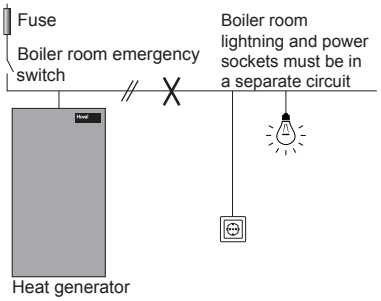


Fig. 2: Minimum distance from other electrical units

- 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)

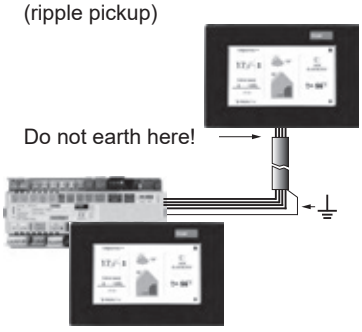


Fig. 4: One-sided earthing of the shielding

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!

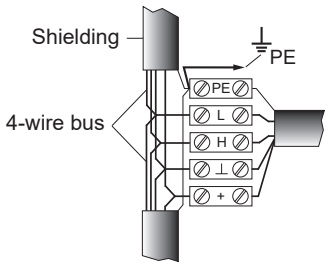


Fig. 5: Earthing for star-shaped data bus

- 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 mm² (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

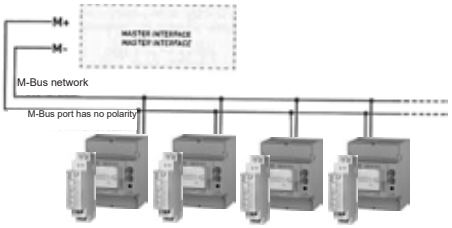
Notice
Engineering and additional measures for the Hoval CAN bus are mandatory for the following conditions:
- Solutions involving inter-building installations
- Cable lengths > 100 m in the building
- Stub lines/star cabling > 15 m
- Complex CAN bus topologies

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 mm². 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 ⅔ 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