Installation and Service Instructions

for use by heating contractor

Vitotronic 300, Type GW6B
Weather-compensated boiler and heating circuit control unit
in single boiler or multi boiler systems

VITOTRONIC 300, GW6B

Certified as a component part for Viessmann boilers

Product may not be exactly as shown

IMPORTANT

Read and save these instructions for future reference.

5700 297 - 05 12/2016

Please file in Service Binder

Safety, Installation and Warranty Requirements

Please ensure that these instructions are read and understood before commencing installation. Failure to comply with the instructions listed below and details printed in this manual can cause product/property damage, severe personal injury, and/or loss of life. Ensure all requirements below are understood and fulfilled (including detailed information found in manual subsections).

- **Product documentation**
  Read all applicable documentation before commencing installation. Store documentation near boiler in a readily accessible location for reference in the future by service personnel.

  ▶*For a listing of applicable literature, please see section entitled "Important Regulatory and Safety Requirements".*

- **Licensed professional heating contractor**
  The installation, adjustment, service and maintenance of this equipment must be performed by a licensed professional heating contractor.

  ▶*Please see section entitled "Important Regulatory and Installation Requirements".*

- **Advice to owner**
  Once the installation work is complete, the heating contractor must familiarize the system operator/ ultimate owner with all equipment, as well as safety precautions/requirements, shutdown procedure, and the need for professional service annually before the heating season begin.

- **Warranty**
  Information contained in this and related product documentation must be read and followed. Failure to do so renders the warranty null and void.

⚠ WARNING

Installers must follow local regulations with respect to installation of carbon monoxide detectors. Follow the Viessmann maintenance schedule of the boiler contained in this manual.

Operating and Service Documentation

It is recommended that all product documentation such as parts lists, operating and service instructions be handed over to the system user for storage. Documentation is to be stored near boiler in a readily accessible location for reference by service personnel.

Product Information

Vitotronic 300, Type GW6B
For installation in or mounting on Viessmann boilers only.
Applicable to the following control units

Order No. 7554895□□□□□□□□
Serial No. 7554895□□□□□□□□

About these Instructions

Take note of all symbols and notations intended to draw attention to potential hazards or important product information. These include "WARNING", "CAUTION", and "IMPORTANT". See below.

WARNING

Indicates an imminently hazardous situation which, if not avoided, could result in loss of life, serious injury or substantial product/property damage.

▶ *Warnings draw your attention to the presence of potential hazards or important product information.*

CAUTION

Indicates an imminently hazardous situation which, if not avoided, may result in minor injury or product/ property damage.

▶ *Cautions draw your attention to the presence of potential hazards or important product information.*

IMPORTANT

▶ *Helpful hints for installation, operation or maintenance which pertain to the product.*

▶

▶ *This symbol indicates that additional, pertinent information is to be found.*

▶ *This symbol indicates that other instructions must be referenced.*

For your Safety

⚠ CAUTION

Follow these safety instructions closely to avoid the risk of injury and damage to property.

- **Operation**
  Before operating the boiler, make sure you fully understand its method of operation. Your heating contractor should always perform the initial start-up and explain the system. Any warranty is null and void if these instructions are not followed.
- **Flue gas smell**
  - Deactivate heating equipment.
  - Open windows and doors.
  - Inform your heating contractor.
- **Working on the equipment**
  All personnel working on the equipment or the heating system must have the proper qualifications and hold all necessary licenses. Ensure main power to equipment, heating system, and all external controls has been deactivated. Close main gas supply valve. Take precautions in all instances to avoid accidental activation of power during service work.
- **Dangerous conditions**
  - Deactivate main power immediately.
  - Close gas supply valve.
- **Maintenance and cleaning**
  Regular inspection and service by a qualified heating contractor is important to the performance of the boiler. Neglected maintenance impacts on warranty; regular inspection ensures clean, environmentally friendly and efficient operation. We recommend a maintenance contract with a qualified heating contractor.
- **Technical documentation**
  - Installation Instruction and Service Instructions
  - Operating Instructions and User's Information Manual

Additional applicable literature:
- Accessory manuals

If you smell gas

- Don't smoke! Don't use naked flames or cause sparks (e.g. by switching lights or electrical appliances on and off)
- Open windows and doors
- Close the gas shut-off valve
- Inform your heating engineers/service contractors from outside the building
- Observe the safety regulations of your gas supply company (see gas meter) and those of your heating engineers (see start-up or instruction report).

In emergencies

- Immediately switch off the power supply, e.g. at the separate fuse or power supply disconnect switch (unless there is a smell of gas).
- Close the shut-off valves in the oil pipes or close the gas shut-off valve, whichever applicable.
- Use suitable extinguishers in the event of fire.

Installation of additional components

The installation of additional components which have not been tested together with the boiler can adversely affect the function and performance of the boiler.
Our warranty does not cover and we accept no liability for damage attributable to the installation of such components.

Boiler room conditions

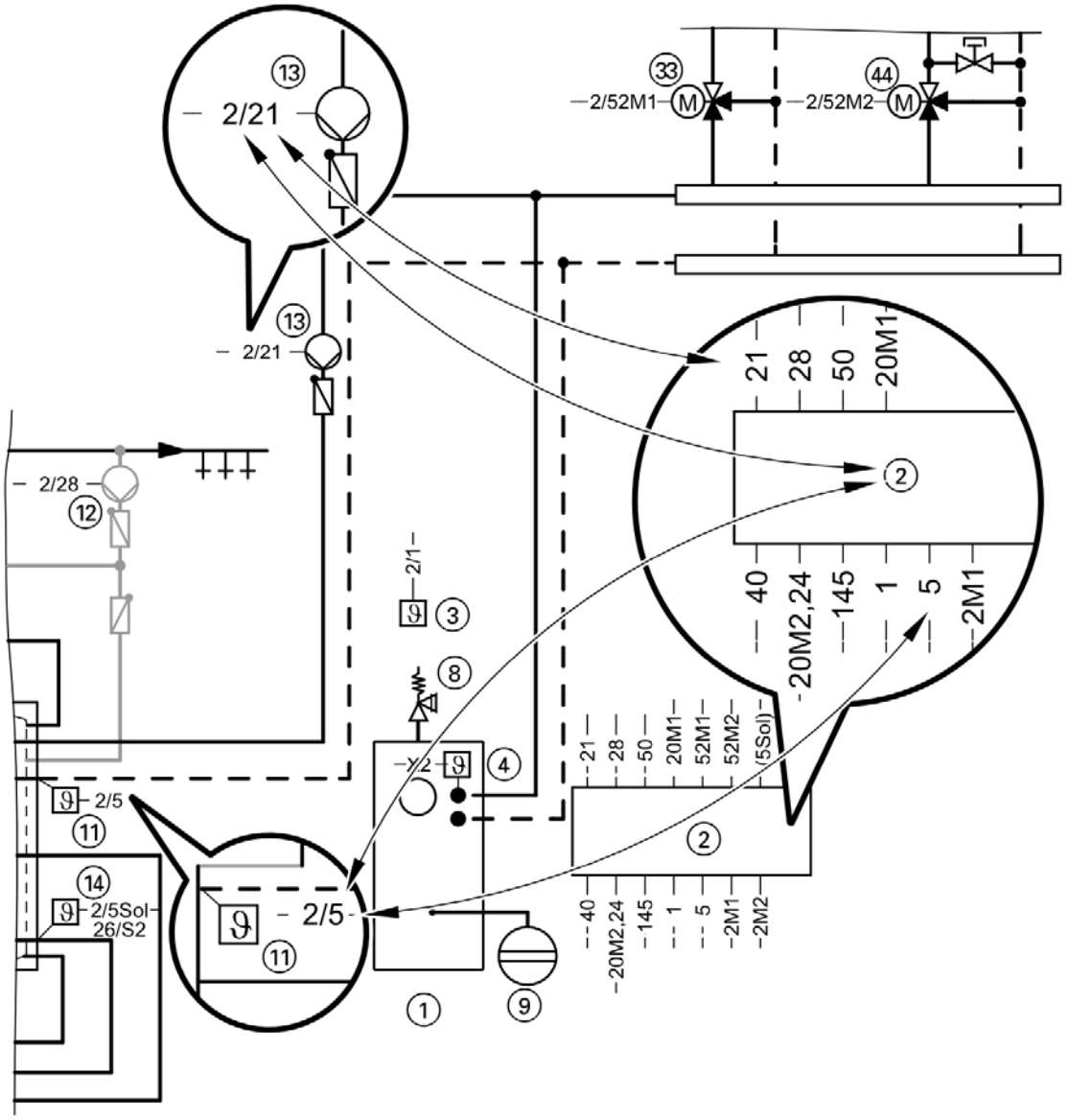
- Do not use a room in which the air is polluted by halogenated hydro-carbons (e.g. as contained in aerosols, paints, solvents and cleaning agents)
- Do not use a room subject to high levels of dust
- Do not use a room subject to permanently high humidity
- The room should be frost-protected
- Max. ambient temperature 95°F (35°C).
- Provide good ventilation and do not close or obstruct vents (if installed).

This symbol indicates a reference to other instructions which must be observed.

Overview of System Example

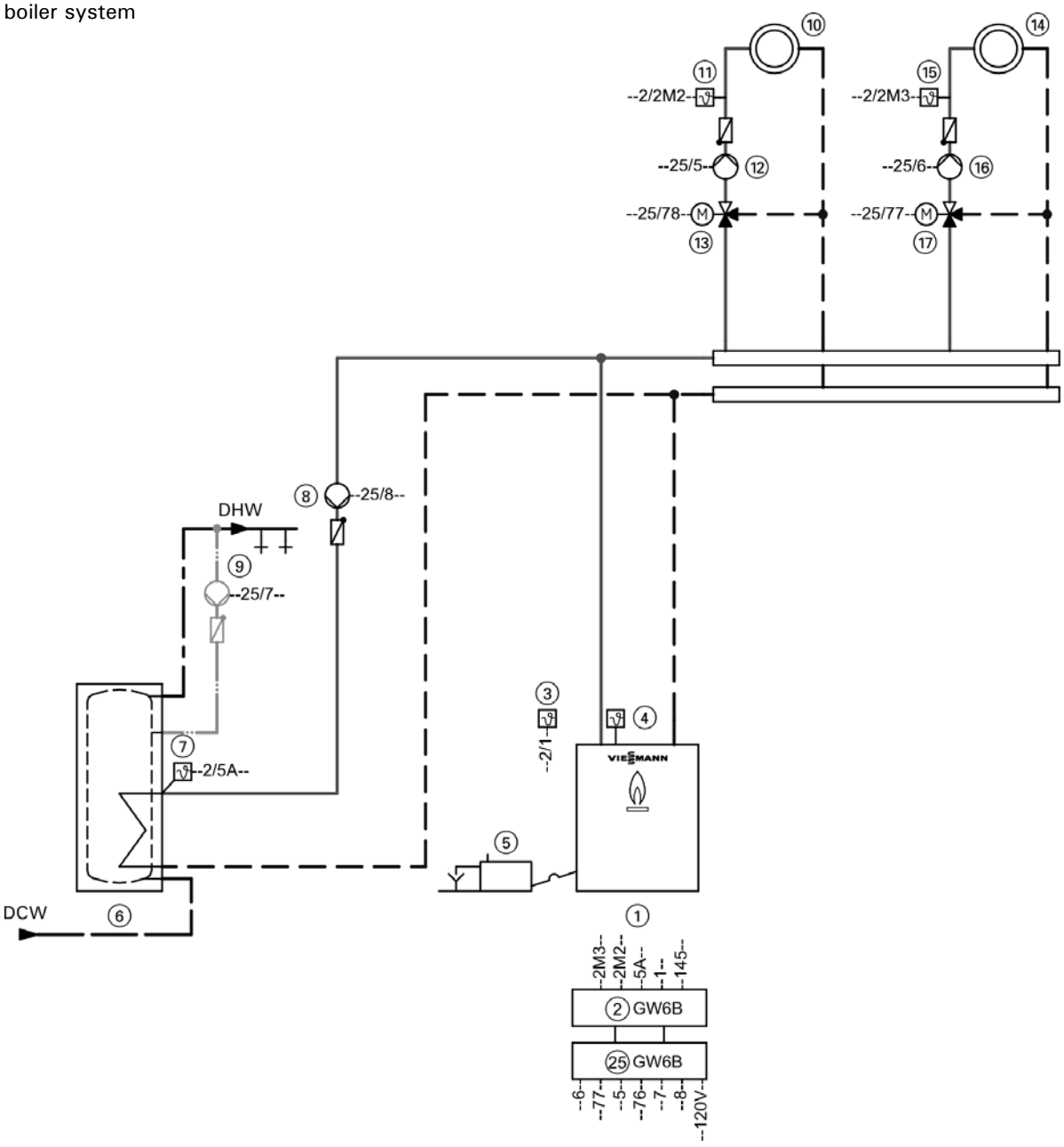
- This system example is merely a GENERIC LAYOUT and must therefore be checked on site for completeness and function.
- The heating circuits must be regulated by an external control unit.
- Connect three-phase consumers via additional contactors.

Designations in the System Example



System Examples

ID: 4800078_1407_01
Single boiler system



Note: This schematic is a general example without shutoff valves or safety equipment. This does not replace the need for local engineering.

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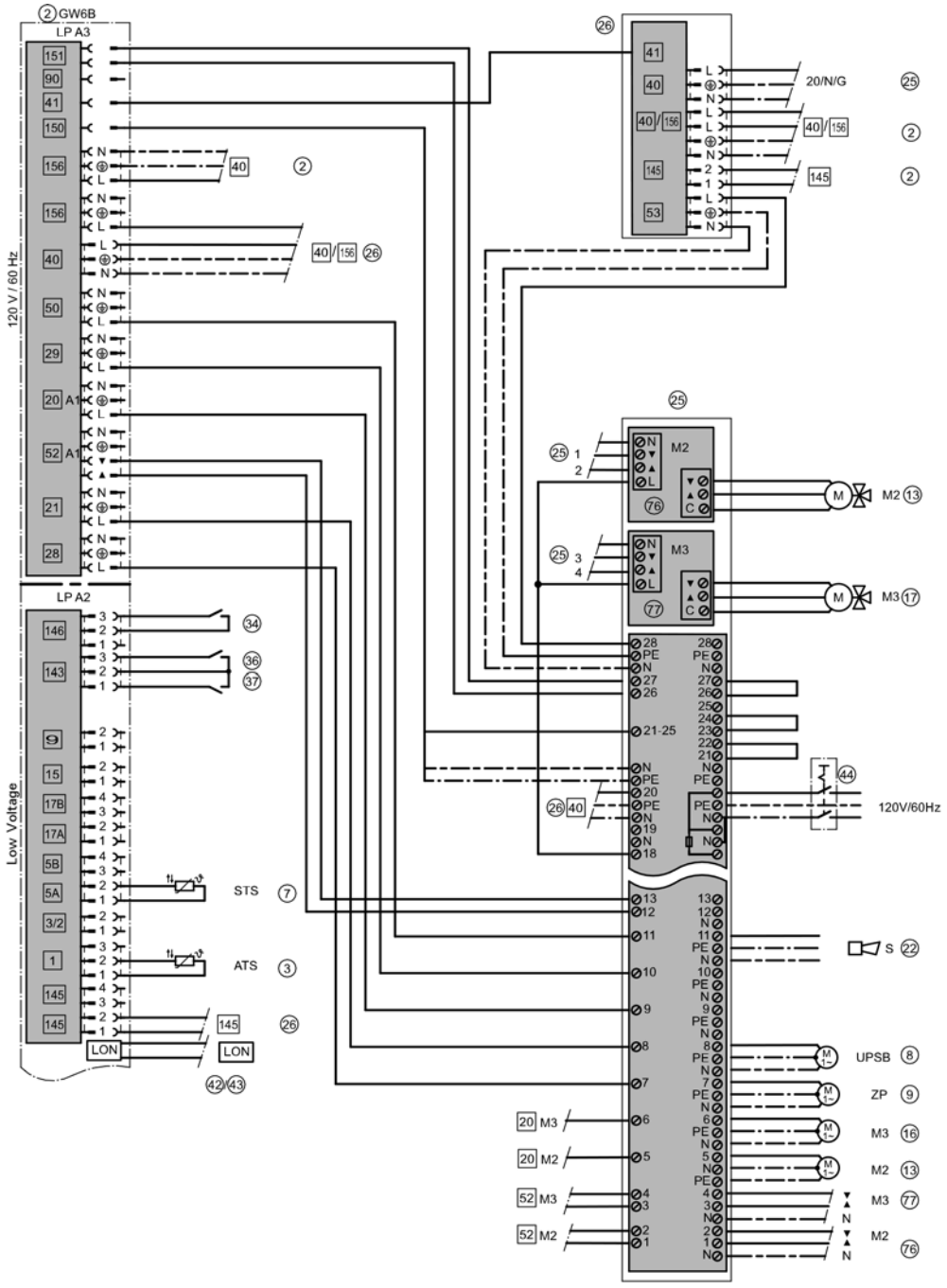
System Examples *(continued)*

Required Devices

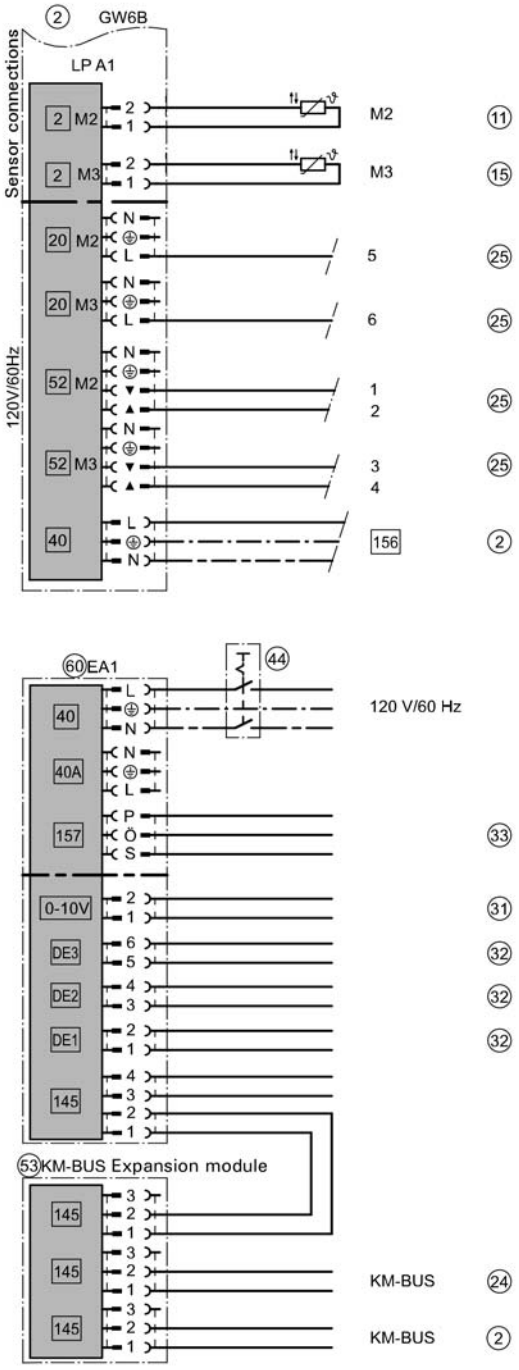
ID: 4800078_1407_01

Position	Equipment
①	Boiler
②	Vitotronic 300 GW6B
③	Outdoor temperature sensor ATS
④	Boiler temperature sensor KTS (connection to burner control)
⑤	Neutralization system
㉕	Junction box
㉖	Burner base
㊹	Power switch
⑥	DHW
⑦	DHW tank temperature sensor STS delivered with Vitotronic 300
⑧	DHW pump UPSB
⑨	DHW re-circulation pump ZP
⑩	Heating circuit I
⑫	Heating circuit M2 (heating circuit I)
⑬	Mixing valve M2 (heating circuit I)
⑪	Strap-on temperature sensor
	and
⑬	Mixing Valve Actuator M2 (heating circuit I)
⑯	Mixing valve adapter 24V
⑭	Heating circuit II
⑯	Heating circuit M3 (heating circuit II)
⑰	Mixing valve M3 (heating circuit II)
⑮	Strap-on temperature sensor
	and
⑰	Mixing valve actuator M3 (heating circuit II)
㊼	Mixing valve adapter 24V
	Accessories
㉒	Compiled fault output
㉔	Vitotrol 200A or Vitotrol 300A
㉚	Extension EA1:
㉛	1 analog input (0 to 10V) - Specification of the boiler water temperature setpoint
㉜	3 digital inputs - Separated External switch the operating status for heating circuits 1 to 3 switchable (with control for weather-compensated operation) - External blocking with collective fault - Error messages - Brief operation DHW re-circulation pump (for weather-compensated control units)
㉝	1 switching output (floating changeover contact)- Control system pump to a substation - Signal reduced mode for one heating circuit external hook
㉞	- External demand
㊱	- External blocking / mixer to close
㊲	- External heating program changeover / mixer on site
④	KM BUS distributor, with several KM BUS participants KM BUS subscriber: - Extension EA1 - Vitotrol 200A, 300A
㊶	LON communication module to communicate with the following components:
㊷	Vitotronic 200-H (for controlling additional heating circuits)
㊸	Vitocom 100, type LAN1 with communication module
㊹	Power switch on site / main disconnect

System Examples *(continued)*



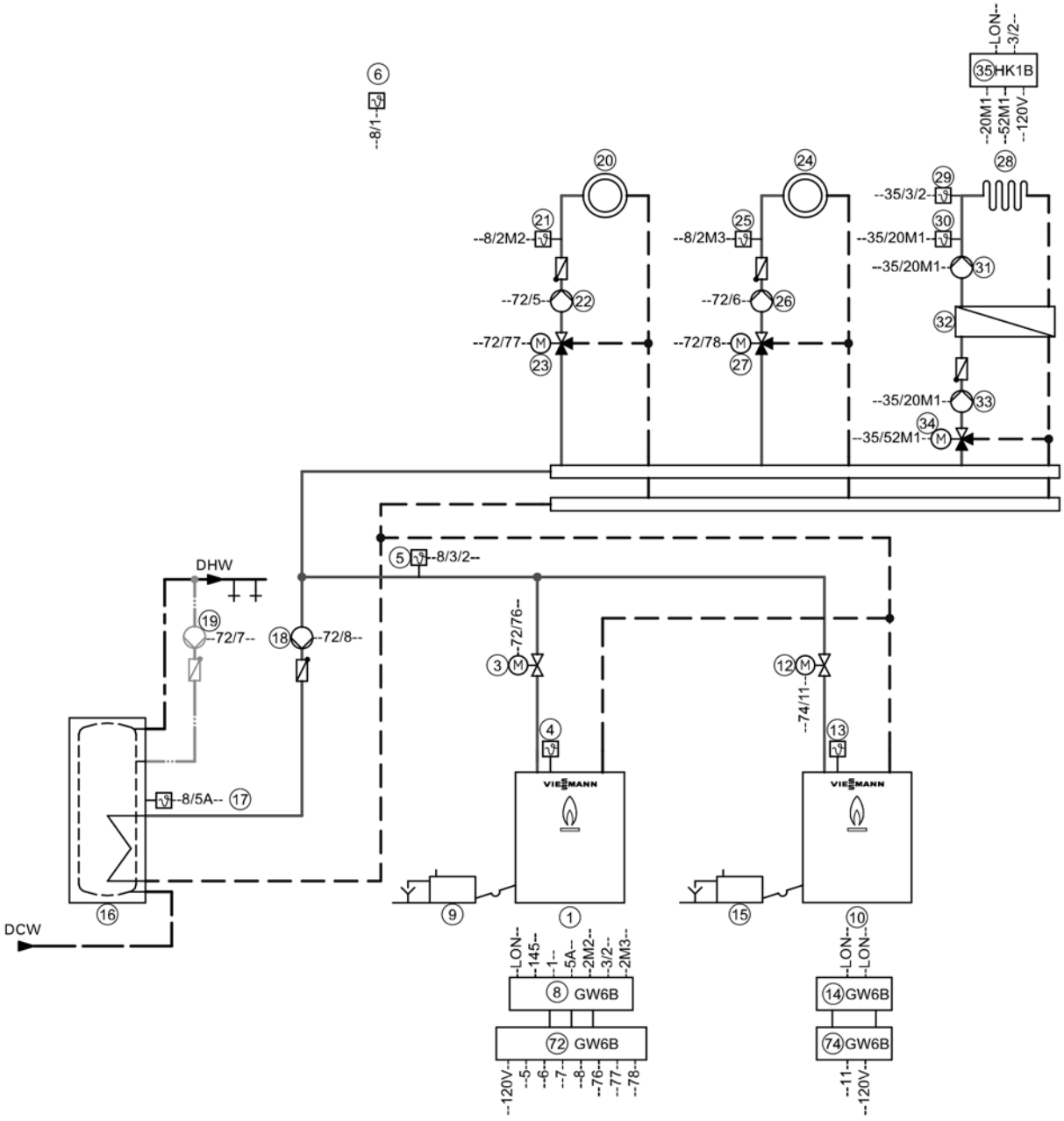
System Examples *(continued)*



ID: 4800078_1407_01		
Group	Coding address	Function
General	00:8	Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (circuit 3) DHW heating

System Examples *(continued)*

ID: 4800061_1407_01
Multi boiler system



Note: This schematic is a general example without shutoff valves or safety equipment. This does not replace the need for local engineering.

System Examples *(continued)*

Required Devices

ID: 4800061_1407_01

Position	Equipment
①	Boiler 1
②	Flue gas damper (for boiler I)
③	Isolation valve
④	Boiler temperature sensor KTS (connection to burner control)
⑤	Common supply temperature sensor
⑥	Outdoor temperature sensor ATS
⑧	Vitotronic 300 GW6B
⑨	Neutralization system
㊺	Power switch
㉜	Junction box
㉝	Burner base
㊻	Mixing valve adapter 24V
⑩	Boiler II
⑫	Isolation valve
⑪	Mixing valve adapter 24V
⑬	Boiler temperature sensor KTS (connection to burner control)
⑭	Vitotronic 300 GW6B
⑮	Neutralization system
㊺	Power switch
㉞	Junction box
㉟	Burner base
㊾	Flue gas damper (for boiler II)
⑯	DHW
⑰	DHW tank temperature sensor STS delivered with Vitotronic 300
⑱	DHW pump UPSB
⑲	DHW re-circulation pump ZP
⑳	Heating circuit I
㉒	Heating circuit pump M2 (heating circuit I)
㉓	Mixing valve M2 (heating circuit I)
㉑	Strap-on temperature sensor
	and
㉓	Mixing valve actuator M2 (heating circuit I)
㊼	Mixing valve adapter 24V
㉔	Heating circuit II
㉖	Heating circuit pump M3 (heating circuit II)
㉗	Mixing valve M3 (heating circuit II)
㉕	Strap-on temperature sensor
	and
㉗	Mixing valve actuator M3 (heating circuit II)
㊽	Mixing valve adapter 24V
㉘	Heating circuit III (low-temperature heating circuit)
㉝	Heating circuit pump M1 (heating circuit III)
㉞	Mixing valve M1 (heating circuit III)
㉙	Strap-on temperature sensor
	and
㉞	Mixing valve actuator M1 (heating circuit III)
㉟	Vitotronic 200-H HK1B
	and
	LON communication module for Pos. 35
	and
	LON connecting cable

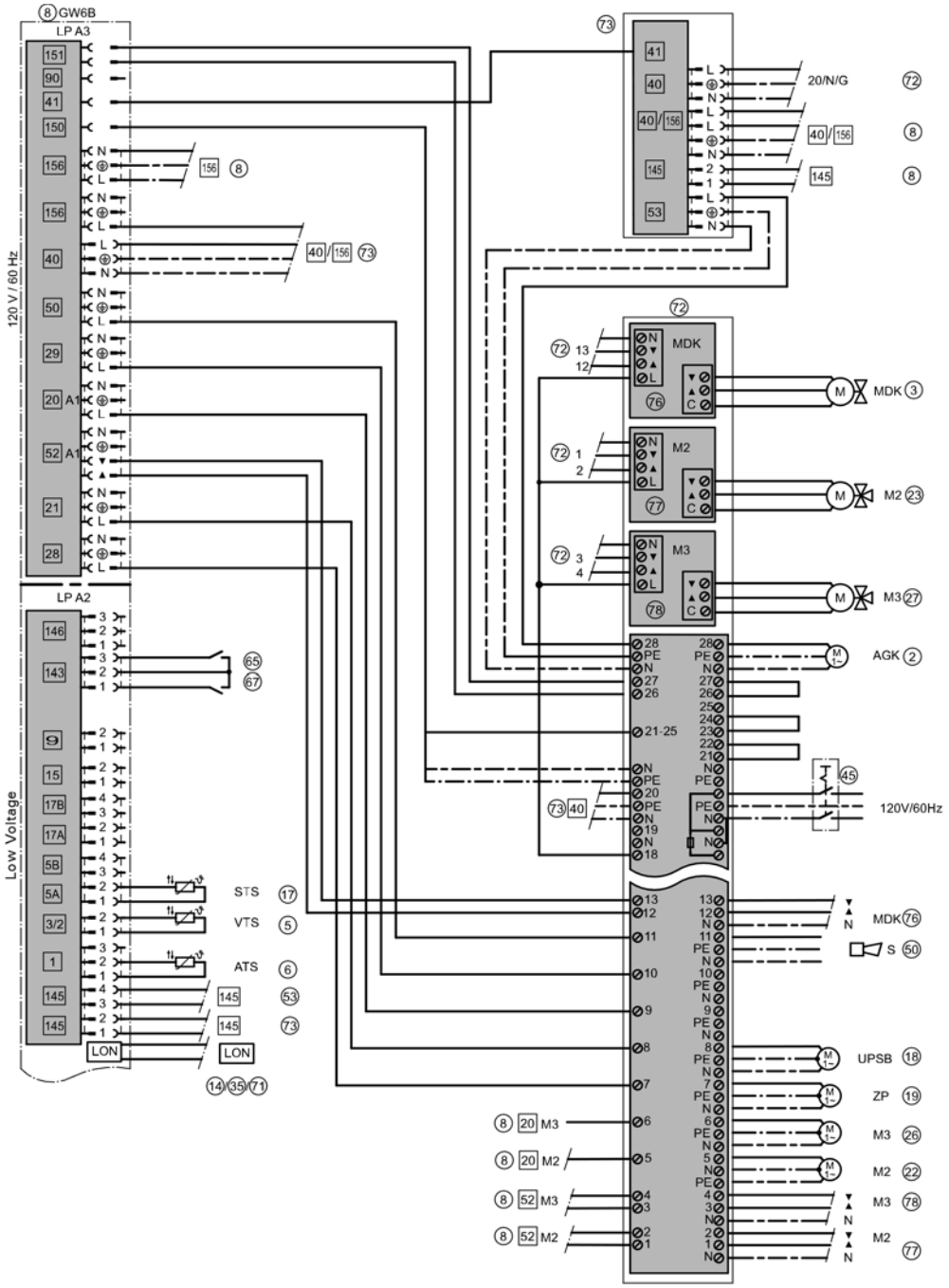
System Examples *(continued)*

Required Devices

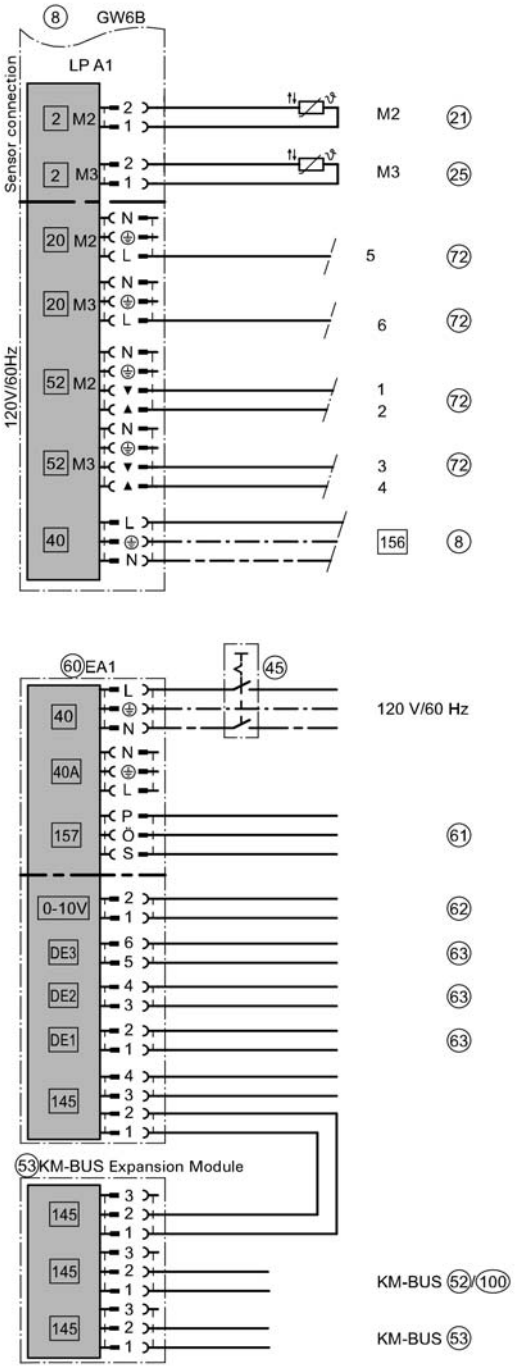
ID: 4800061_1407_01

Position	Equipment
㊱	Outdoor temperature sensor ATS (ATS-value can be taken from Vitotronic 300 GW6B master and cascade
	or
㉘	Heating circuit III (underfloor heating)
㉙	Supply temperature sensor M1 (circuit III) delivery Pos. 35
㉞	Mixing valve M1 (heating circuit III)
	or
㉙	Strap-on temperature sensor
	and
㉞	Mixing Valve Actuator M1 (heating circuit III)
㉟	Vitotronic 200-H HK1B
	and
㊵	LON communication module for Pos. 35
	and
	LON connecting cable
㊱	Outdoor temperature sensor ATS (ATS-value can be taken from Vitotronic 300 GW6B master and cascade
㉚	Temperature monitor as Maximum temperature limiter for underfloor heating - Immersion thermostat or - Contact thermostat
㉛	Heating circuit M1 (secondary)
㉝	Heating circuit pump M1 (primary)
㊺	Power switch on site / main disconnect
	Accessories for boilers
㊴	Maximum pressure SDB
㊵	Minimum pressure switch or limiter SDB
㊶	Water level (Low water cutoff) WB
㊽	External blocking / Boilers
㊾	Switch on boiler as the last in a row
	Accessories
㊿	Compiled Fault Output
㊿㉒	Vitotrol 200A or Vitotrol 300A
㊿㉓	KM BUS subscriber: - Extension EA1, AM1 - Vitotrol 200A, 300A
㊿㉚	Extension EA1:
㊿㉛	1 switching output (floating changeover contact) - Control system pump to a substation - Signal reduced mode for one heating circuit
㊿㉜	1 analog input (0 to 10V) - Specification of the boiler water temperature setpoint
㊿㉝	3 digital inputs
	- Separated External switch the operating status for heating circuits 1 to 3 switchable (with control for weather-compensated operation) - External blocking with collective fault - Error messages - Brief operation DHW re-circulation pump (for weather-compensated control units)
㊿㉝	External hook-up - Switch on boiler as the last boiler - External blocking
㊿㊼	KM BUS distributor, with several KM BUS participants
㊿㊵	LON communication module to communicate with the following components:
㊿㊺	Vitotronic 200-H (for controlling other heating circuits)
㊿㊶	Vitocom 100, type LAN1 with communication module

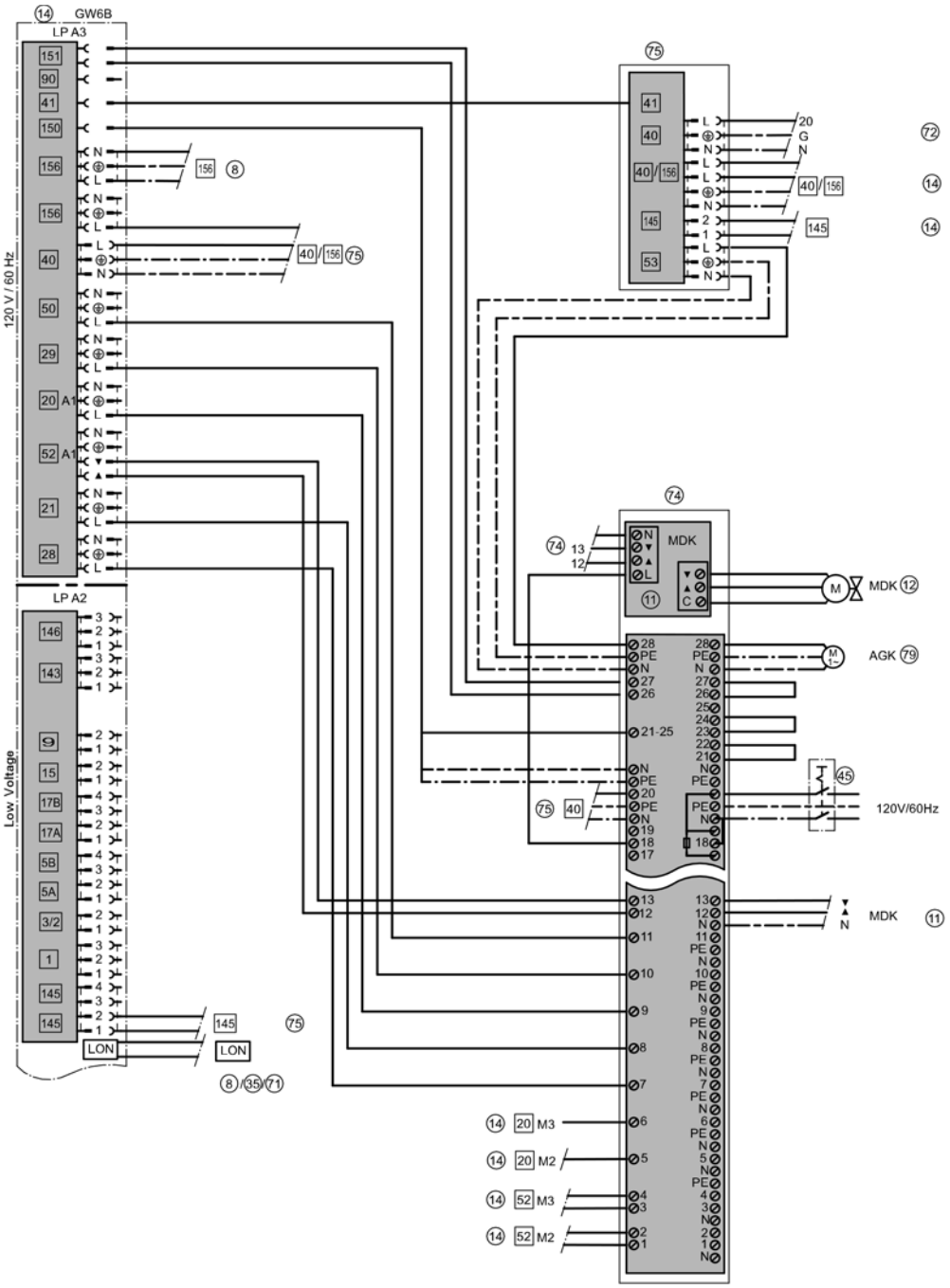
System Examples *(continued)*



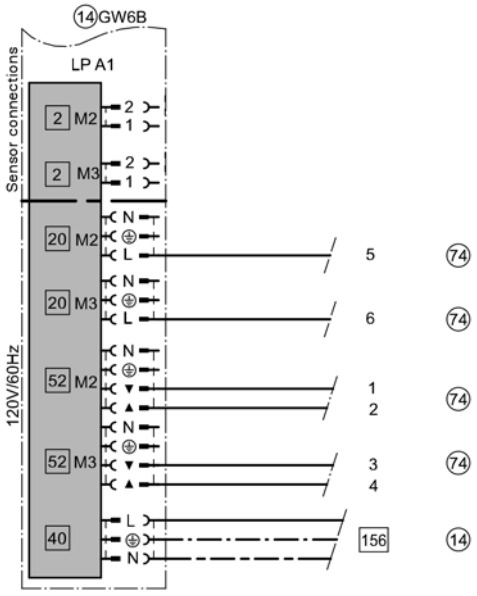
System Examples *(continued)*



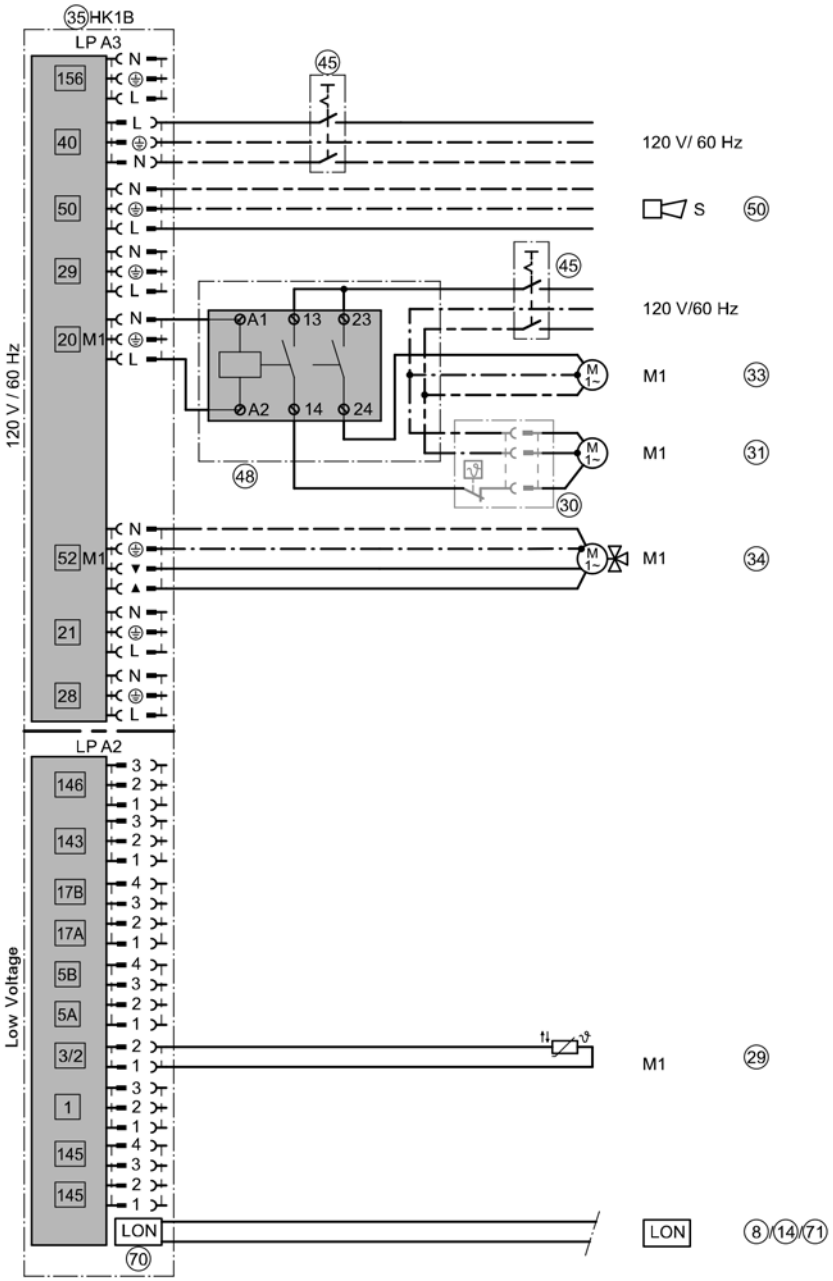
System Examples *(continued)*



System Examples *(continued)*



System Examples *(continued)*



System Examples *(continued)*

ID: 4800061_1407_01		
coding addresses Vitotronic 300, type GW6B; Lead boiler / Pos. 8		
Group	Coding address	Function
General System Layout	00:8	Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (circuit 3) DHW heating
Cascade Number of boilers in cascade	35:2	Number of boilers connected in the heating system
Cascade Boiler rotation	38:1	Boiler rotation - Monthly
coding addresses Vitotronic 300 Type GW6B Pos. 14		
General LON Participant Number	77:2	LON Participant Number
Boiler Boiler number in multiboiler system	07:2	Boiler number in multiboiler system
coding addresses Vitotronic 200-H, type HK1B / Pos. 35		
General	81:3	The control unit receives time
General	97:1	Control unit receives the outdoor temperature

Overview of Electrical Connections

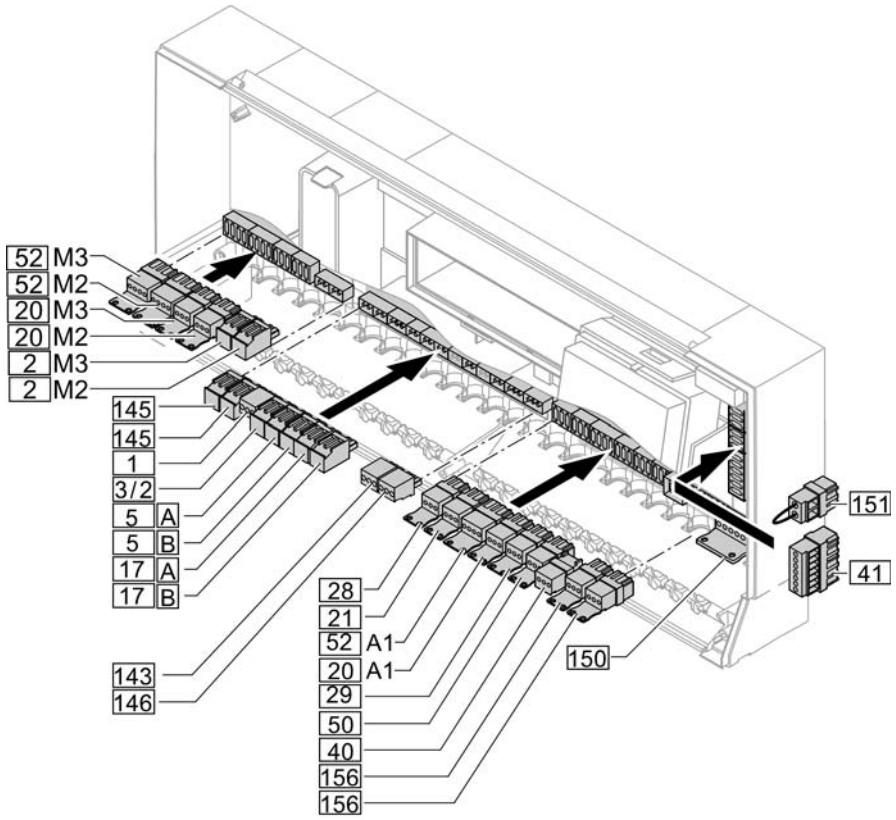
WARNING

Incorrect wiring can lead to serious injury from electrical current and result in appliance damage.

IMPORTANT

Electronic assemblies can be damaged by static loads. Prior to commencing work, touch an grounded object such as a heating or water pipe to discharge static load.

- Route low voltage leads and line voltage cables separately.
- Strip the insulation from the cables as close to the terminals as possible, and bundle tightly to the corresponding terminals.
- Secure cables with cable ties.



Connections on the low voltage PCB

Plug	Component	Single boiler system	Multi boiler system	
		Single boiler control unit	Cascade control unit	Lag boiler control unit
1	Outdoor temperature sensor	X	X	--
3/2	Common supply temperature sensor	--	X	--
5 A	DHW tank temperature sensor	X	X	--
5 B	DHW tank temperature sensor (bottom) in a tank loading system	X	X	--
17 A	Return temperature sensor T1	X	X	X
17 B	Temperature sensor tank loading system	X	X	--

Overview of Electrical Connections *(continued)*

Connections on the low voltage PCB *(continued)*

Plug	Component	Single boiler system	Multi boiler system	
		Single boiler control unit	Cascade control unit	Lag boiler control unit
[143].1/[143].2	External operating program changeover	X	--	--
	External "mixing valve open"	X	--	--
	External blocking boiler	--	--	X
[143].2/[143].3	External blocking boiler	X	--	--
	Start the boiler externally as the last one in the boiler sequence	--	--	X
	External "mixing valve close"	X	--	--
[145]	KM BUS participant (accessory), e.g. EA1 extension	X	X	X
[146].2/[146].3	External demand via switching contact	X	X	--
LON	LON communication module for data exchange between control units, Vitocom and Vitogate	X	X	X

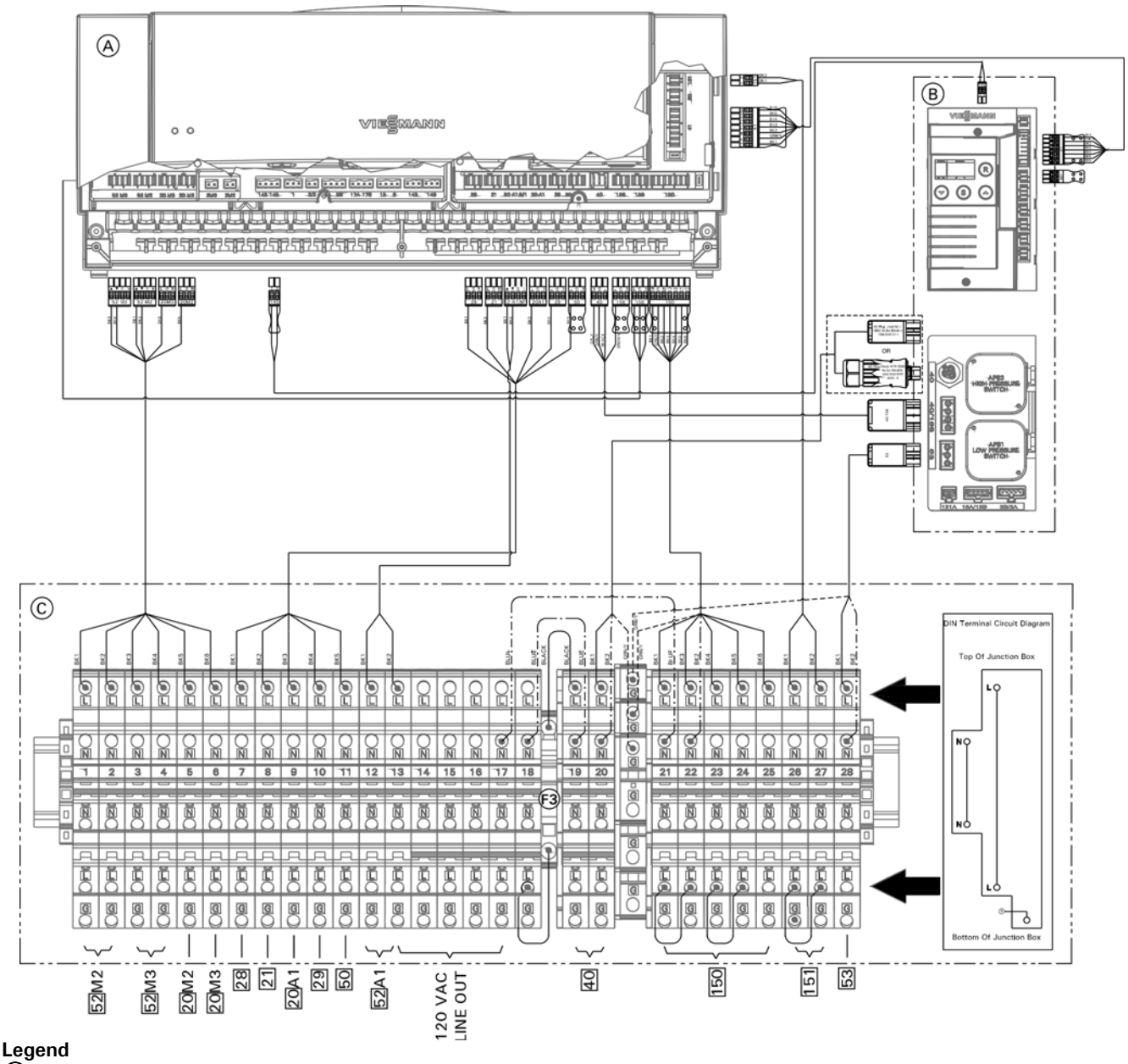
PCB connections 120V~

Plug	Component	Single boiler system	Multi boiler system	
		Single boiler control unit	Cascade control unit	Lag boiler control unit
[20]A1	Heating circuit pump for heating circuit A1 (high temp.) or Primary pump, tank loading system	X	X	--
[21]	DHW pump or tank loading pump, tank loading system	X	X	--
[28]	DHW recirculation pump	X	X	--
[29]	Boiler pump or system pump	--	X	X
[40]	Power supply	X	X	X
[41]	Burner	X	X	X
[50]	Central fault message	X	X	X
[52]A1	Motorized isolation valve	--	X	X
	Motor, 3-way mixing valve, tank loading system	X	X	--
[150]	External safety equipment	X	X	X
	Provisional burner operation	X	X	X
[156]	Power supply for accessories	X	X	X

Connections on extension for heating circuit with mixing valve HC2/M2, HC3/M3

Plug	Component	Single boiler system	Multi boiler system	
		Single boiler control unit	Cascade control unit	Lag boiler control unit
[2] M2/M3	Supply temperature sensor	X	X	--
[20] M2/M3	Heating circuit pump	X	X	--
[52] M2/M3	Mixing valve motor	X	X	--

Overview of Electrical Connections *(continued)*



Legend

Ⓐ	Vitotronic control
Ⓑ	Burner base
Ⓒ	DIN rail (located in junction box)
52 M2	Mixing valve heating circuit M2
52 M3	Mixing valve heating circuit M3
20 M2	Pump heating circuit M2
20 M3	Pump heating circuit M3
28	DHW recirculation pump
21	DHW pump
29	Boiler pump
20 A1	High temperature heating circuit pump
52 A1	Mixing valve, tank loading system
50	Compile fault output
40	Main power supply
150	Safety circuit connections
151	Safety circuit connections
53	Flue gas damper
Ⓕ3	Fuse 250VAC 6.3A

Rated pump and compile fault output 2A~

Note: Maximum output 6FLA shared between all mixing valve, pump and compile fault outputs.

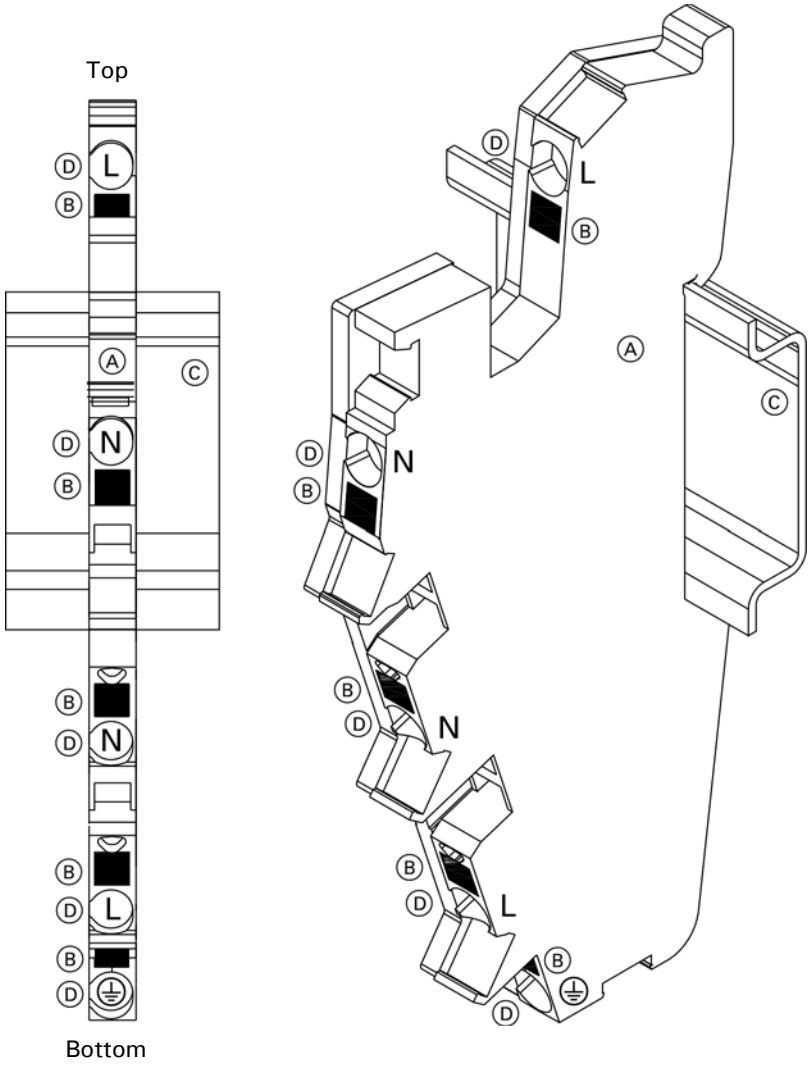
Note: The 120VAC line out terminals are still live even when the control is switched off.

Overview of Electrical Connections *(continued)*

Note: The DIN terminals can be used with solid, stranded or stranded with ferrule termination. The ferrule will help to prevent 'fraying' of the stranded wires during installation.

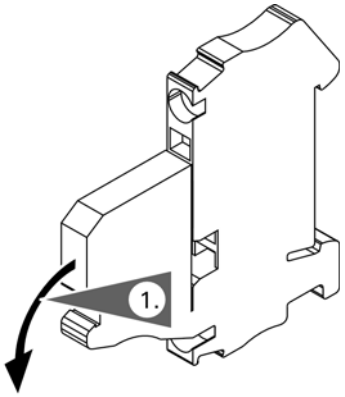
Specific connections are detailed throughout the manual, refer to the appropriate section prior to making any connections.

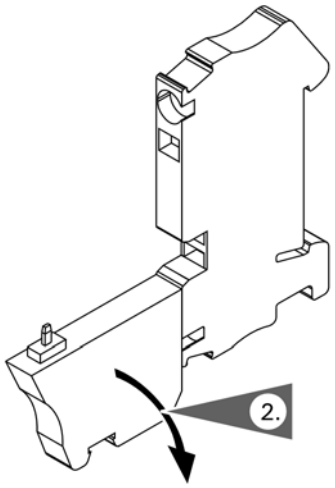
The junction box terminals include a L, N terminal connection orientated at the top of the junction box which is pre-wired to the cable harness set, which is used to connect the Vitotronic control and Burner Base to the junction box. The L,N,G terminals orientated at the bottom of the junction box are used to for connections to external equipment (ie. Pumps, mixing valves, etc). The individual terminals are a 'push-in' design, meaning to install or release a wire, the orange button must be pushed in (refer to image below for location of orange buttons denoted by Ⓑ), prior to installing or removing any wires to the terminal.

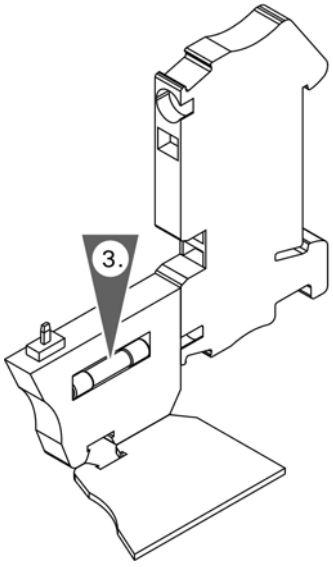


Legend
Ⓐ DIN terminal (typical)
Ⓑ Push-in button
Ⓒ DIN rail (typical)
Ⓓ Terminal insertion point
Note: Max. wire gauge 12AWG
Min. wire gauge 26AWG

Overview of Electrical Connections *(continued)*







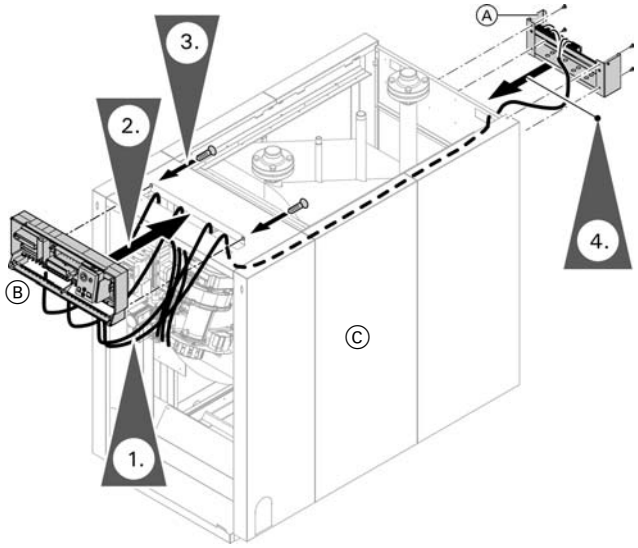
Accessing the DIN rail mounted fuse (F3)

A DIN rail mounted fuse block provides protection to the 120V line out connections as shown on page 23.

When fuse (F3) requires replacement, the fuse can be accessed as shown.

1. Flip down the front portion of the DIN rail mounted fuse block.
2. Flip down the front side cover of the DIN rail mounted fuse block.
3. Replace fuse.
4. Return the DIN rail mounted fuse block back to the original position..

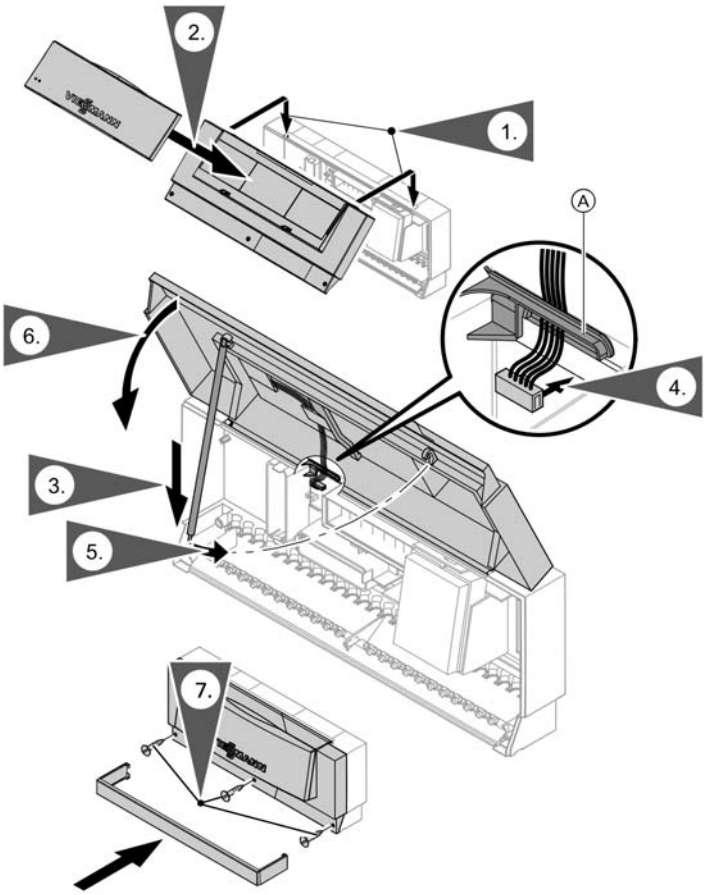
Boiler Control and Junction Box



1. Install the junction box to the rear panel either right or left. Secure the junction box with four 4.8 mm metal screws.
2. Route cables from control through the opening in the control panel. Guide the cables to the junction box through the opening in the rear panel and along the top rail to the control. Secure all cables to the rail with cable ties.
   Note: Never allow cables to come in contact with hot metal components.
3. Mount the control to the top front panel.
4. Secure the control to the top front panel with screws.
   Note: Screws to secure control are included in control's shipping box.

Legend
Ⓐ Junction box
Ⓑ Vitotronic control
Ⓒ Vitocrossal 200 CM2 boiler

Mounting the Control Unit



Legend
Ⓐ Cable retaining tab

Note: Route the ribbon cable through retainer Ⓐ.

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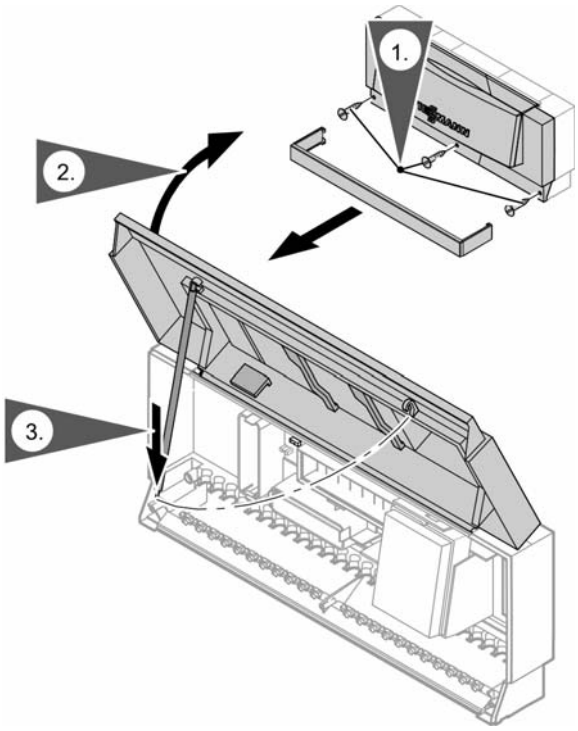
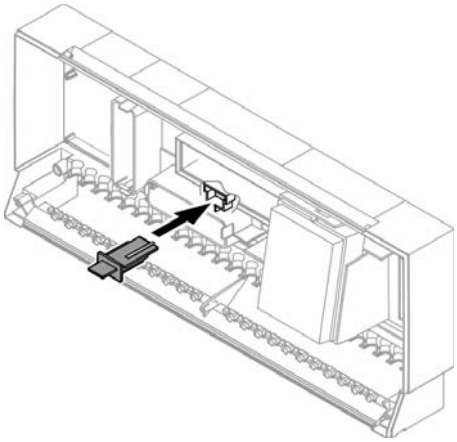
Opening the Control Unit



Plugging in the Boiler Coding Card

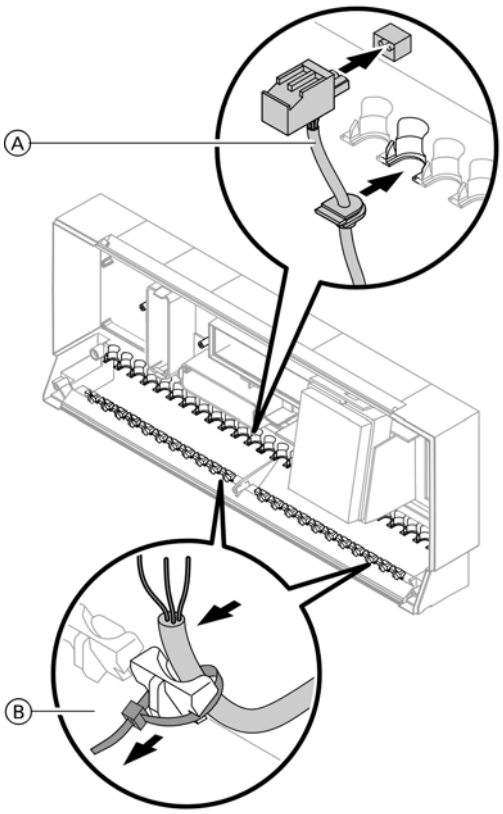


Only use the boiler coding card supplied with the boiler junction box.

Insert the boiler coding card into slot “X7”, through the recess in the cover.

Coding card #	Part #
1042	7841507

Inserting Cables and Applying Strain Relief

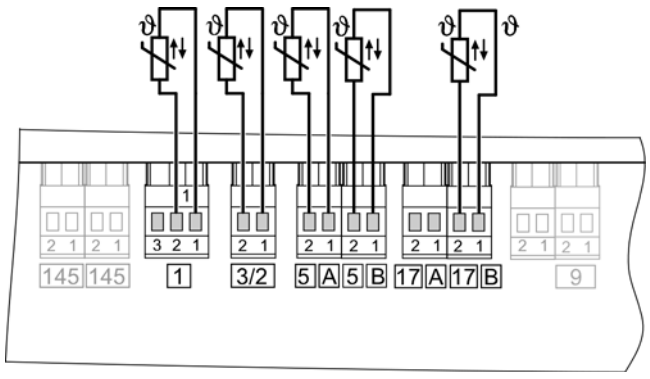


Legend

Ⓐ Cables with moulded strain relief
Ⓑ On-site cables; strip up to 4 in. (100 mm) insulation

- Control unit fitted on the boiler:
  Route cables from below through the front panel of the boiler into the wiring chamber of the control unit.

Connecting Sensors



Outdoor temperature sensor connection

2 wire cable, 18 AWG for a maximum length of 120 ft (36 m)

Connections on the low voltage PCB

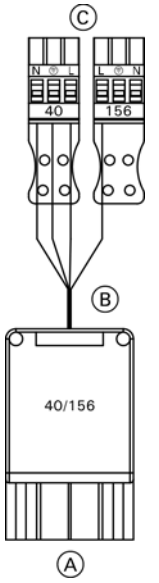
Plug	Component
1	Outdoor temperature sensor
3/2	Common supply temperature sensor
5 A	Tank temperature sensor
5 B	Tank temperature sensor (bottom) in a tank loading system
17 A	Return temperature sensor T1
17 B	Temperature sensor tank loading system

Outdoor temperature sensor

Fitting location for outdoor temperature sensor

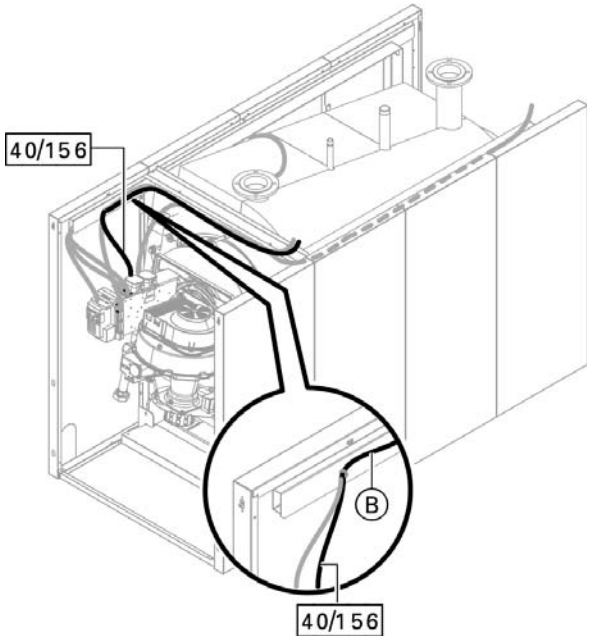
- North or north-westerly wall, 6 to 8 ft (2 to 2.5 m) above ground level; in multi storey buildings, in the upper half of the second floor.
- Not above windows, doors or ventilation outlets.
- Not immediately below balconies or gutters.
- Never paint over.

Control Power Supply



Legend

Ⓐ To the burner base unit
Ⓑ Connecting cable
Ⓒ To the Vitotronic control



Connecting the power supply to the Vitotronic control

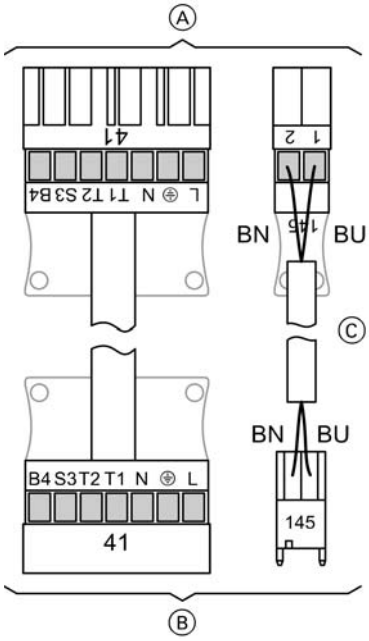
For burner base unit, see boiler service instructions

Insert plug 40/156 into the corresponding plug of the burner base.

Route beneath the top Ⓑ rail in a bundle using plug-in cable retainers.

Connect plugs 40 and 156 to the corresponding plugs in the Vitotronic control unit.

Connecting the Burner



Legend

Ⓐ To the Vitotronic control
Ⓑ To the burner (burner control unit)
Ⓒ KM BUS cable

The burner cables are included in the standard boiler delivery.

Max. power consumption 3A.

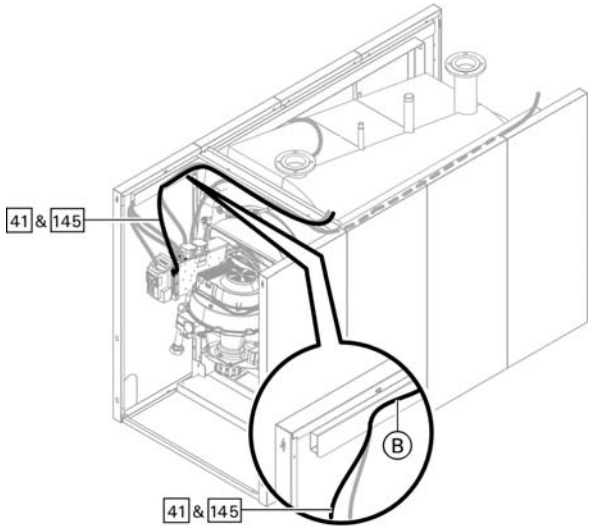
Terminal codes

L1 Phase via external safety equipment (if installed) to the burner
⏚ Ground conductor to burner
N Neutral conductor to burner
T1 120V~ from burner control unit
T2 Base load demand
S3 Connection for burner fault
B4 Connection for hours run meter

Insert plug 41 and 145 into the corresponding plug of the burner control.

Route beneath the top Ⓑ rail in a bundle using plug-in cable retainers.

Connect plugs 41 and 145 to the corresponding plugs in the Vitotronic control unit.



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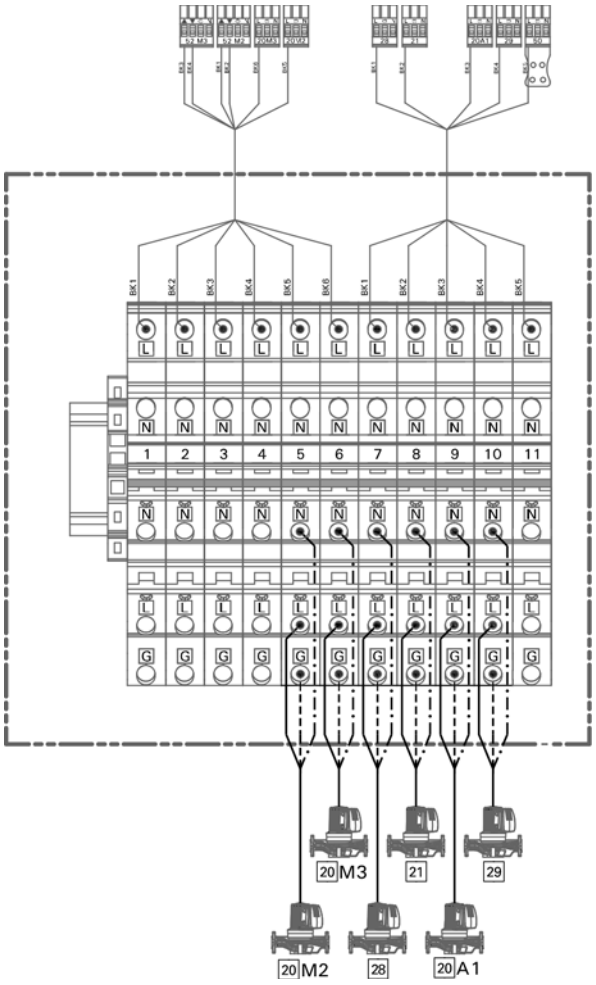
Connecting Pumps



Legend

Ⓐ Pumps
Ⓑ To the control unit

Rated voltage	120V~
Rated current Max.	2A~

Note: Maximum output 6FLA shared between all 120V outputs.

Pumps 120V

Available pump connections

20 A1 Heating circuit 1 pump
20 M2 Heating circuit 2 pump
20 M3 Heating circuit 3 pump
21 DHW pump
28 DHW recirculation pump
29 Boiler pump

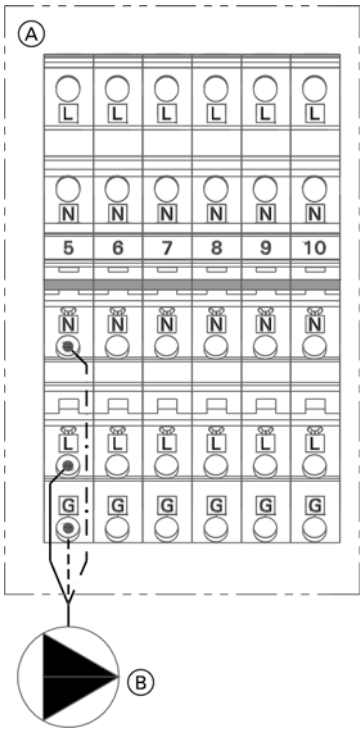
Available connections

Connections on extension for heating circuit with mixing valve HC2/M2, HC3/M3

Plug	Terminal	Component
20 M2	5 L, N, G	Heating circuit pump
20 M3	6 L, N, G	Heating circuit pump

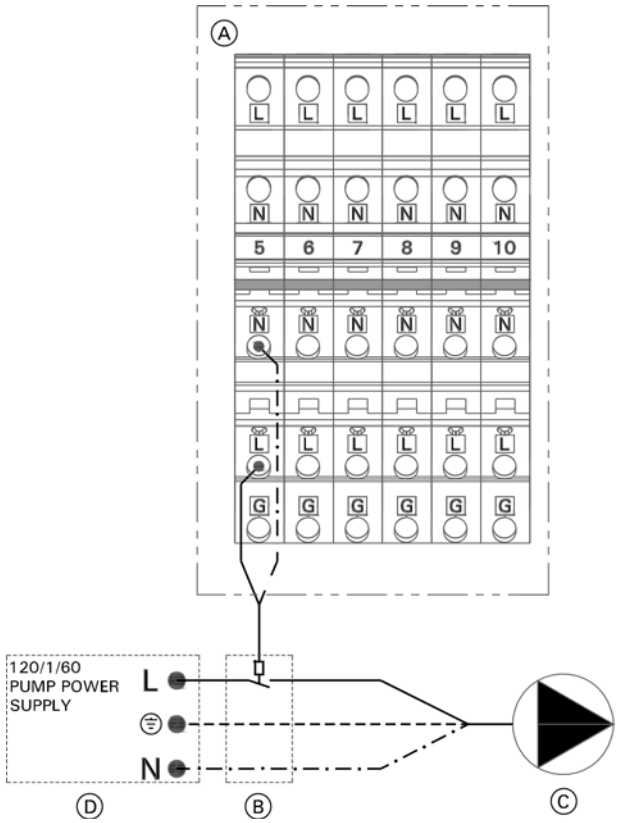
Connections on the PCB 120V~		
20 A1	9 L, N, G	Heating circuit pump for heating circuit A1 or Primary pump, tank loading system
21	8 L, N, G	DHW pump
28	7 L, N, G	DHW recirculation pump
29	10 L, N, G	boiler pump, system pump

Connecting Pumps *(continued)*



120V pumps with an amperage draw of < 2FLA

Ⓐ DIN rail (located in the junction box)
Ⓑ Pump



120V pumps with an amperage draw of > 2FLA

Contactor specification 120VAC 1A

Ⓐ DIN rail (located in the junction box)
Ⓑ Contactor/relay (field supplied)
Ⓒ Pump
Ⓓ Power supply w/disconnect and protection

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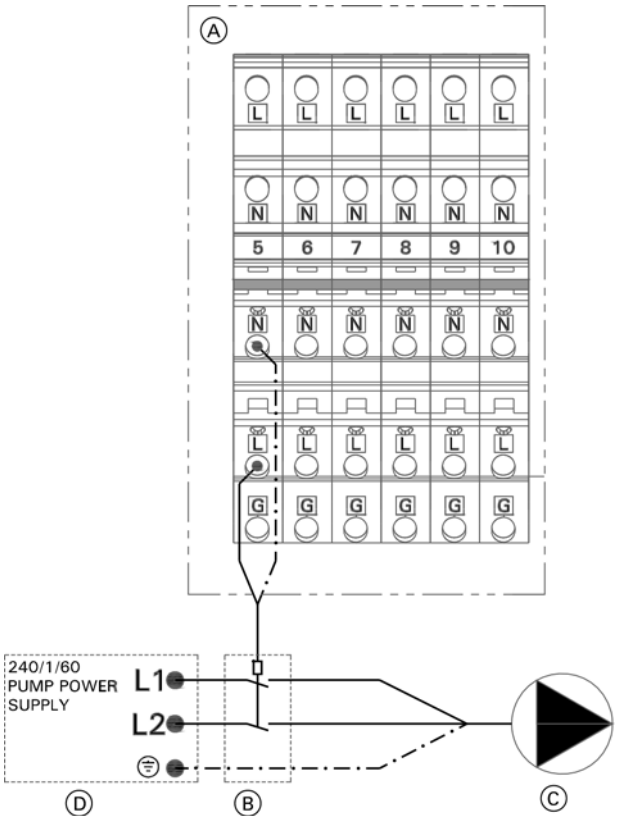
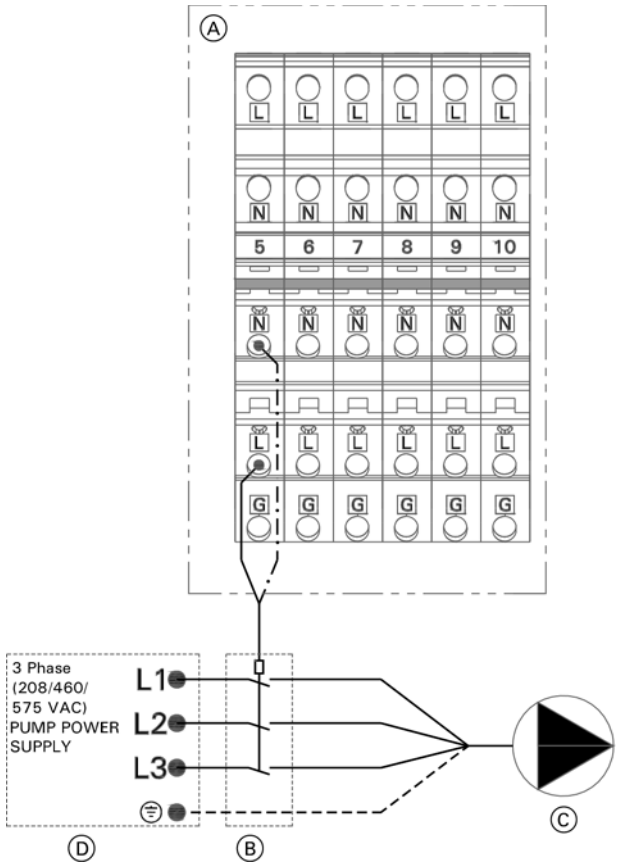
Connecting Pumps *(continued)*



240V pumps

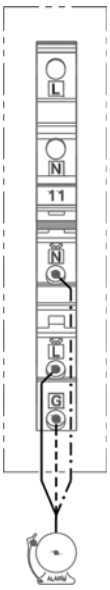
Contactor specification 120VAC 1A
Ⓐ DIN rail (located in the junction box)
Ⓑ Contactor/relay (field supplied)
Ⓒ Pump
Ⓓ Power supply w/disconnect and protection



208/460/575V 3 phase pumps

Contactor specification 120VAC 1A
Ⓐ DIN rail (located in the junction box)
Ⓑ Contactor/relay (field supplied)
Ⓒ Pump
Ⓓ Power supply w/disconnect and protection

Connecting a Central Fault Message Facility



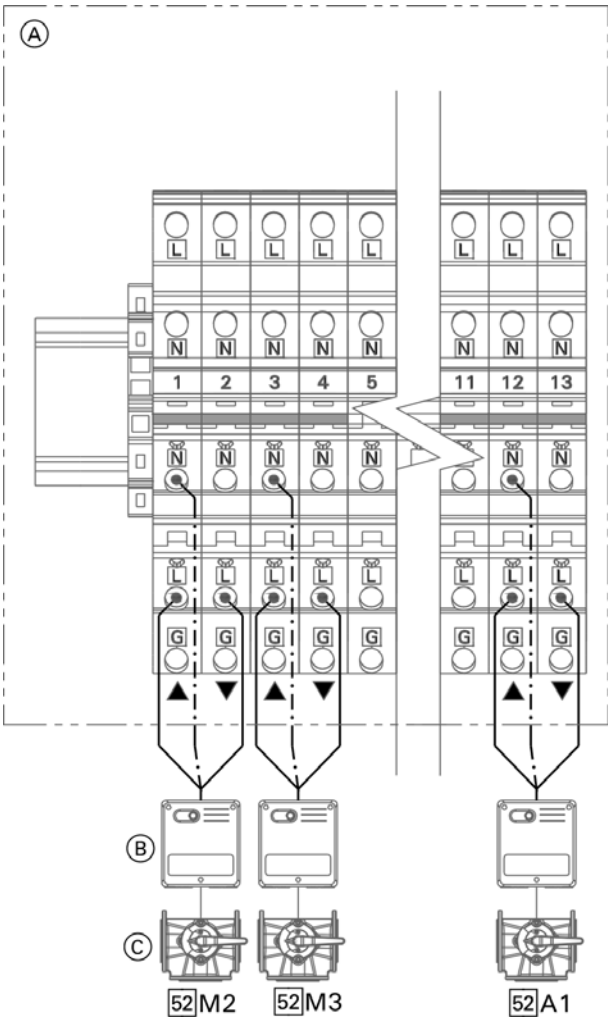
Plug [50] (terminal 11 - L, N, G)

Note: On lag boilers, output [50] will only be switched in the case of faults on that boiler.

Rated voltage	120V~
Rated current Max.	2A~

Note: Maximum output 6 FLA shared between all 120V outputs

Connecting Actuators



1. Disconnect power to control.
2. Connect valve actuator wires to the DIN as shown (based on desired functionality).

Available connections

[52] A1 Motor for motorized boiler isolation valve or 3-way mixing valve, tank loading system
[52] M2 For heating circuit 2
[52] M3 For heating circuit 3

Rated voltage	120V~
Rated current Max.	0.1~/ output

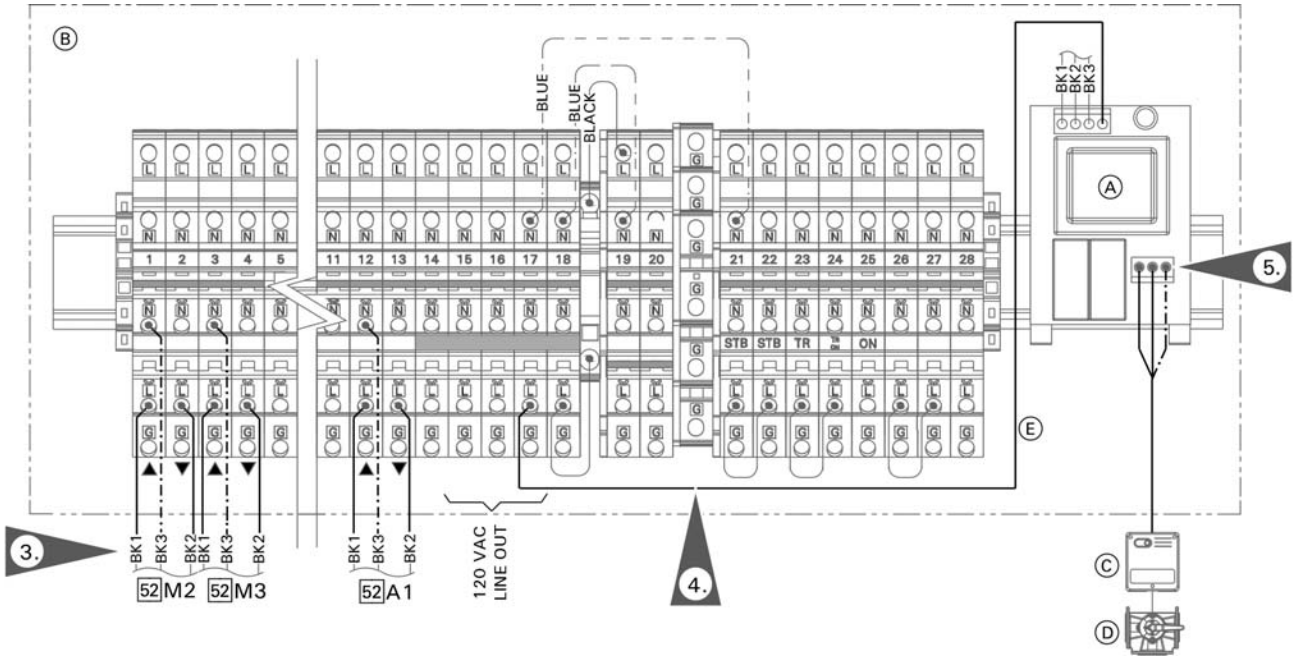
Motor runtime for boiler isolation valve: 5 to 199 sec. selected via coding address “40”.

Motor runtime for 3-way mixing valve: 10 to 255 sec, adjustable via coding addresses “6a” in the”DHW”group, “c3” in the heating circuit 2 group and “c3” in the heating circuit 3 group.

Plug	DIN terminals
52A1	12 (L, N)
	13 (L)
52M2	1 (L, N)
	2 (L)
52M3	3 (L, N)
	4 (L)

Legend
Ⓐ DIN Rail (in junction box)
Ⓑ 120V Valve Actuator
Ⓒ Valve

Connecting Actuators *(continued)*



Legend
Ⓐ 24V Mixing Valve Adaptor
Ⓑ DIN Rail (in junction box)
Ⓒ 24V Valve Actuator
Ⓓ Valve
Ⓔ 120V power to the mixing valve adaptor

24V Valve Adaptor

Rated voltage:	24 VAC
Rated current:	max. 0.15 FLA

Available connections

52 A1 Motor for motorized boiler isolation valve or 3-way mixing valve, tank loading system
52 M2 For heating circuit 2
52 M3 For heating circuit 3

Motor runtime for boiler isolation valve: 5 to 199 sec. selected via coding address “40”.

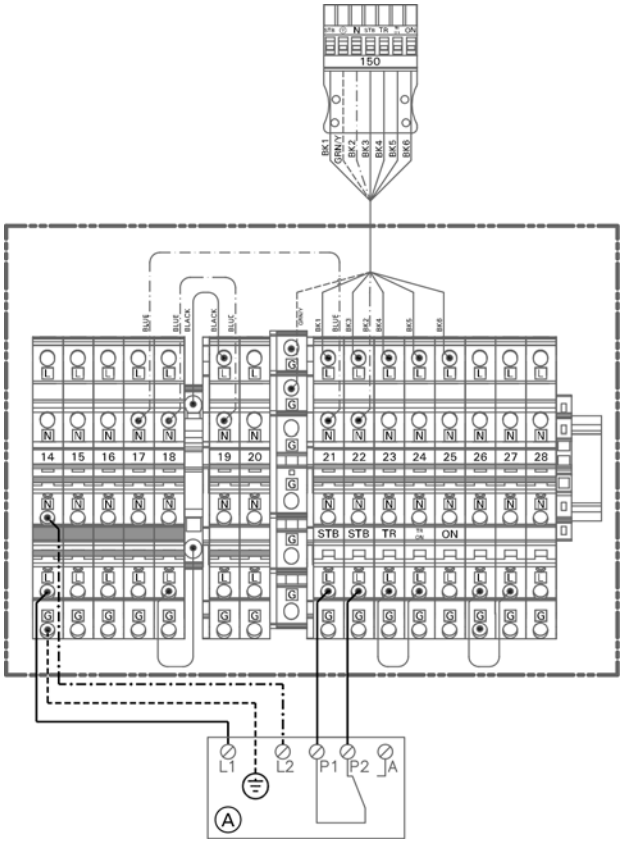
Motor runtime for 3-way mixing valve: 10 to 255 sec, adjustable via coding addresses “6a” in the”DHW”group, “c3” in the heating circuit 2 group and “c3” in the heating circuit 3 group.

1. Disconnect power to control.
2. Remove plug connect 52 from cables BK1, BK2 and BK3 of the 24V valve adaptor
3. Connect BK1, BK2 and BK3 to DIN terminals for desired valve application. Refer to the chart below.
4. Connect black wire Ⓔ of the mixing valve adaptor to an available terminal 14-17 on the DIN rail.
5. Connect valve actuator wires to the adaptor terminals as shown in image above.

Refer to the mixing valve adaptor Installation Instructions for additional information.

Plug	DIN terminals
52A1	12 (L, N)
	13 (L)
52M2	1 (L, N)
	2 (L)
52M3	3 (L, N)
	4 (L)

Connection of Low Water Cut-off Device



1. Remove jumper between terminals 21(L) and 22(L).
2. Make connection for switching contact at terminal (LWCO) 21(L) and 22(L).
3. Power supply for low water cut-off device made at an available terminal 14, 15, 16 or 17 (L, N, G)

⚠ CAUTION

The diagram shown is only a simplified conceptual drawing of a typical low water cut off (LWCO) device. Refer to the manual specific to the device for interconnection details.

Legend

150 Connection for external equipment.
Ⓐ Low water cut-off (typical)

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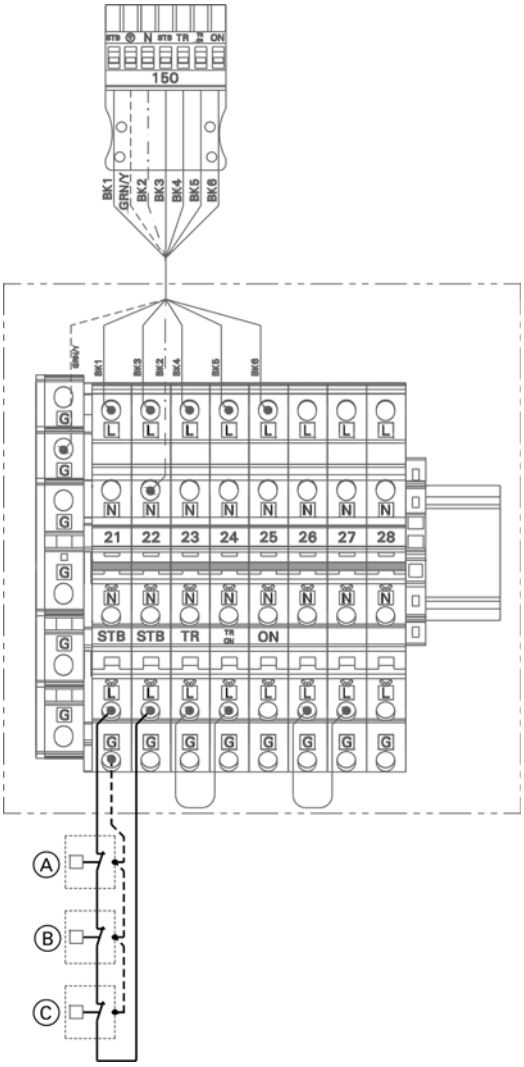
Connecting External Safety Equipment



Legend
Ⓐ Low water indicator, minimum pressure limiter
Ⓑ Maximum pressure limiter
Ⓒ Further safety equipment

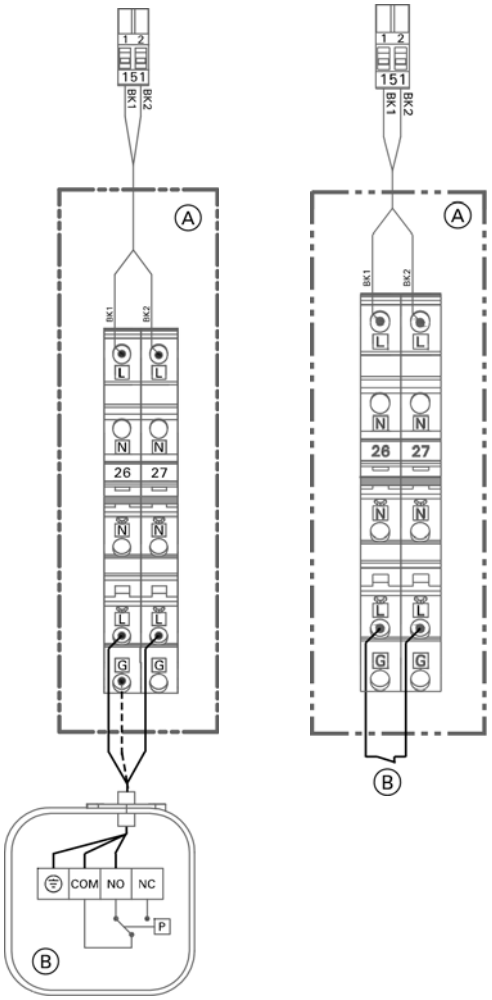
Note: Periphery equipment attached to the [150] plug must be operated on a normally closed circuit.

Connection at plug [150].

Note: 'Live' contacts lead to short circuits or phase failure. The external connection must be potential-free.

1. Remove jumper from terminals 21(L) and 22(L).
2. Make connection of the safety equipment to 21(L) and 22(L).

Connections to Terminal 151



Low gas pressure switch/external shut-off

1. Remove jumper between terminals 26 (L) and 27(L).
2. Connect auxiliary low gas pressure switch or external shut-off (dry contact) to terminals 26 (L) and 27(L).

WARNING

The terminals should be used for safety switch-off purposes only (e.g. through a high limit thermostat). During switch-off, there is no frost protection of the heating system and the boiler is not kept at the minimum boiler water temperature.

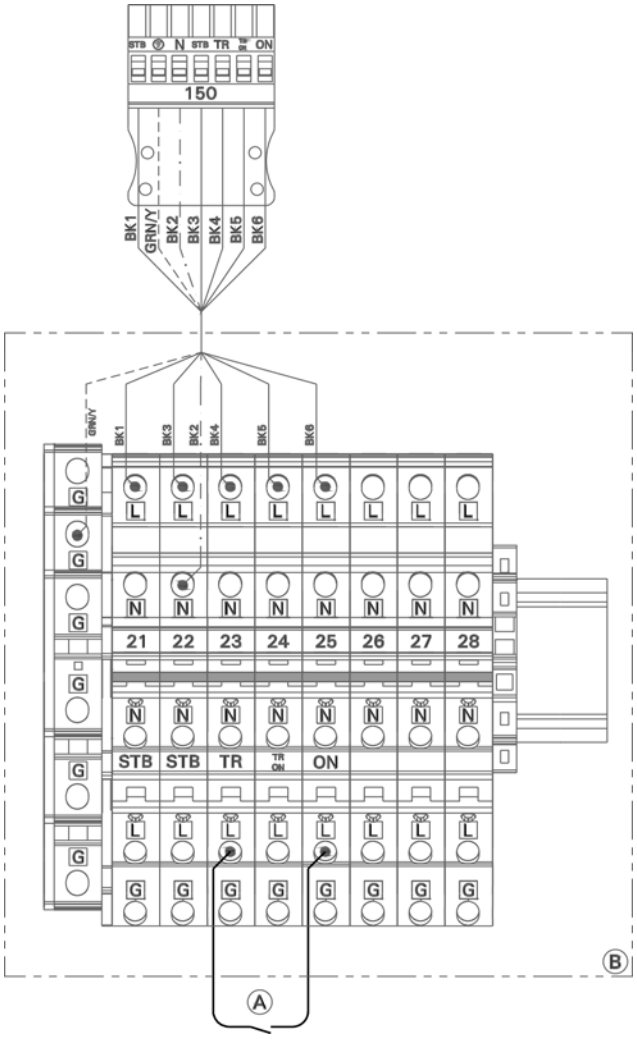
Note: The heating system has no frost protection while it is blocked. The boiler is not held at the lower boiler water temperature.

Refer to the low gas pressure switch Installation Instructions

Legend

Ⓐ DIN rail (junction box)
Ⓑ Auxiliary low gas pressure switch or external shut-off (dry contact)

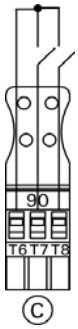
Provisional Burner Operation



Remove jumper across terminals 23 (L) and 24 (L) (not shown) and connect terminals 23 (L) and 25 (L) external control via dry contact (heat demand on close). Upon heat demand the boiler will maintain low fire until modulation is externally controlled through BMS.

Legend

Ⓐ Dry contact between terminal 23 (TR) and terminal 25 (ON)
Ⓑ DIN rail (located in junction box)



T6 - Common
T7 - Modulating Down
T8 - Modulating Up

External modulation via 90 plug (dry contact for modulation) terminal closure T6 and T8 will drive burner modulation up and terminal closure T6 and T7 will drive modulation down.

Note: Only one contact will be closed at a time. Both contacts open will hold modulation.

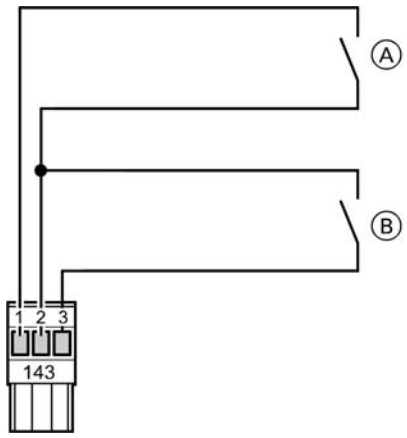
Temperature control is now limited by the electronic high limit setting in the burner control.

Refer to the “combustion controller” group in coding for adjustment to maximum boiler water temperature.

Legend

Ⓒ To burner interface

Blocking the Boiler Externally/Adding to the Boiler Sequence



Only for lag boilers
Connection on plug 143

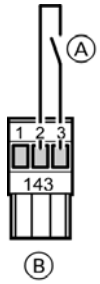
Note: 'Live' contacts lead to short circuits or phase failure. The external connection must be potential-free.

Legend
Ⓐ Blocking the boiler externally
Ⓑ Start the boiler externally as the last one in the boiler sequence

Contact	Closed	Open
Ⓐ 143.1/143.2	■ The boiler is blocked and has been removed from the boiler sequence. ■ The motorized isolation valve closes and the boiler circuit pump stops. ■ The other boilers provide the required heating. **Note:** If all boilers are blocked or there is no other boiler ready for operation, then there will be no frost protection for the heating system.	The boiler is integrated into the current boiler sequence.
Ⓑ 143.2/143.3	This boiler is moved from the current position in the boiler sequence and started as the last boiler in the sequence.	The boiler is integrated into the current boiler sequence.

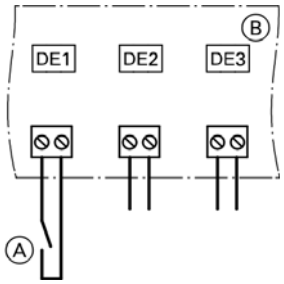
External Blocking via Switching Contact

Plug 143.2/143.3



Legend
Ⓐ Floating contact
Ⓑ Plug 143 of the control unit

EA1 extension



Legend
Ⓐ Floating contact
Ⓑ EA1 extension

Only for single boiler and cascade control units

Connection options:

- Plug 143.2/143.3

Note: In the case of cascade control units make the connection on the EA1 extension.

- EA1 extension (accessory, see page 122)

Contact closed:

- Single boiler system
  The boiler is shut down.
- Multi boiler system
  Controlled shutdown of the burners on each boiler. Any connected circuit or system pump is stopped. Shut-off devices are closed.

Note: The heating system has no frost protection while it is blocked.

Connection

Note: 'Live' contacts lead to short circuits or phase failure.

The external connection must be potential-free.

Coding

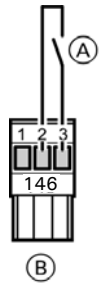
Plug 143
With coding "99" set in the "General" group determine what the input should influence.

Note: Never adjust coding "99:0" in a cascade control unit.

EA1 extension
Set "5d" (DE1), "5e" (DE2) or "5f" (DE3) in the "General" group to 3 or 4.

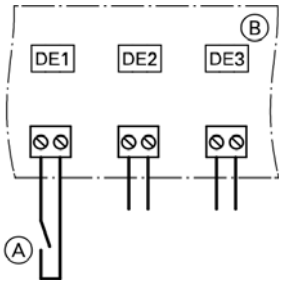
External Demand via Switching Contact

Plug 146.2/146.3



Legend
Ⓐ Floating contact
Ⓑ Plug 146 of the control unit

EA1 extension



Legend
Ⓐ Floating contact
Ⓑ EA1 extension

Only for single boiler and cascade control units

Connection options:
- Plug 146.2/146.3
- EA1 extension (accessory, see page 122)

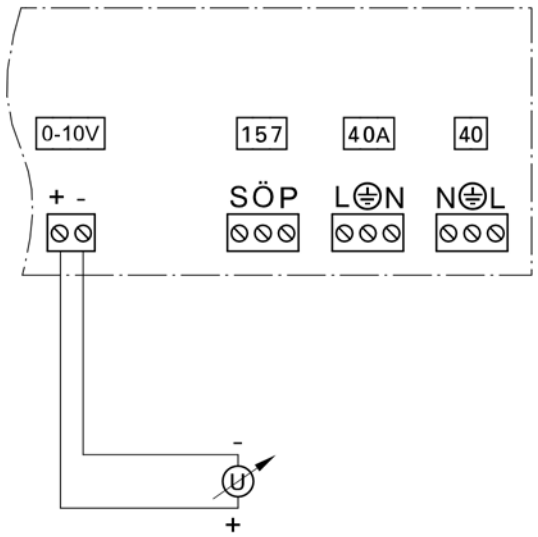
Contact closed:
- Single boiler system
  The burner is switched ON subject to load. The boiler heats to the set boiler water temperature selected in coding “9b” in the “General” group.
  Limiting the boiler water temperature by means of the set boiler water temperature and the electronic maximum limit of the boiler water temperature (coding “06” in the “Combustion Controller” group)
- Multi boiler system
  The burners in each boiler are switched ON subject to load. They heat to the set supply temperature selected in coding “9b” in the “General” group.
  Limiting the supply temperature by means of the set supply temperature and the electronic maximum limit of the supply temperature (coding “37” in the “Cascade” group)

Connection
Note: ‘Live’ contacts lead to short circuits or phase failure.
The external connection must be potential-free.

Coding
Plug 146
No coding change required

EA1 extension
Set “5d” (DE1), “5e” (DE2) or “5f” (DE3) in group “General” to 2.

External Demand via 0 –10V Input



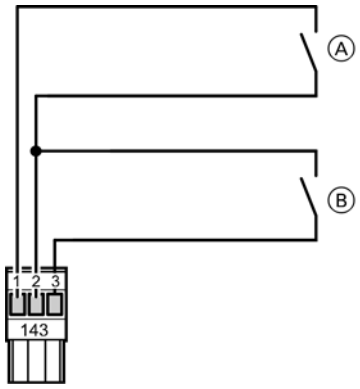
Connection at input 0 – 10V to EA1 extension (accessory, see page 122).

Note: Ensure DC separation between the ground conductor and the negative pole of the on-site voltage source.

0 –1V ≙ No default set supply temperature
1V ≙ Set value 50°F (10°C)
10V ≙ Set value 212°F (100°C)
Observe coding “1E” in the “General” group.

Optional setting range
0 –1V ≙ No default set supply temperature
1V ≙ Set value 86°F (30°C)
10V ≙ Set value 248°F (120°C)
Observe coding “1E” in the “General” group.

External “Mixing Valve Closed”/”Mixing Valve Open”



Connection on plug 143.
Note: ‘Live’ contacts lead to short circuits or phase failure. The external connection must be potential-free.

Coding

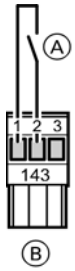
External “mixing valve open”
With coding “9a” in the “General”group assign the function to the heating circuits.

External “mixing valve close”
With coding “99” in the “General” group assign the function to the heating circuits.

Legend
Ⓐ External “mixing valve open” (floating contact)
Ⓑ External “mixing valve close” (floating contact)

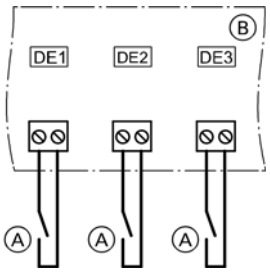
External Operating Program Changeover

Plug [143]



Legend
Ⓐ Floating contact
Ⓑ Plug [143] of the control unit

EA1 extension
The changeover can be achieved separately for heating circuits 1 to 3.



Legend
Ⓐ Dry contact (potential free)
Ⓑ EA1 extension

Only for single boiler and cascade control units

Connection options:
- Plug [143].1/[143].2

Note: In the case of cascade control units make the connection on the EA1 extension.

- EA1 extension (accessory, see page 122)

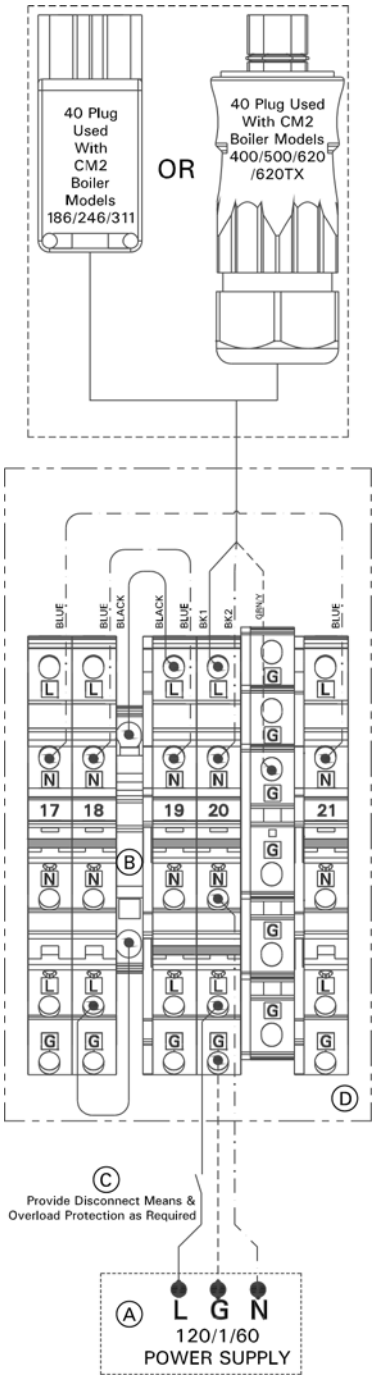
Connection
Note: 'Live' contacts lead to short circuits or phase failure. The external connection must be potential-free.

Preselected operating program (Contact open)		**Coding**	**Changed operating program (Contact closed)**
⏻	Central heating OFF/ DHW OFF	"d5:0" in the "Heating circuit ..." group (Factory set condition)	Constant operation with reduced room temperature/ DHW heating OFF
or 🚰	Central heating OFF/ DHW heating ON	"d5:1" in the "Heating circuit ..." group	Constant operation with standard room temperature, DHW heating in accordance with coding "64" in the "DHW" group
or 🚰	Central heating ON/ DHW heating ON		

Coding
Plug [143]
This function can be assigned to the heating circuits at coding "91" in the "General" group.
Note: Never adjust coding "91:0" in a cascade control unit.

EA1 extension
Set "5d" (DE1), "5e" (DE2) or "5f" (DE3) in group "General" to 1.
This function can be assigned to the heating circuits at coding "d8" in the "Heating circuit..." group.

Power Supply



WARNING

The control must be grounded.
Ensure that 'L', 'N' and 'G' are not interchanged.

WARNING

Incorrectly executed electrical installations can lead to injuries from electrical current and result in appliance damage.

IMPORTANT

Electrical installations must comply with the latest edition of:

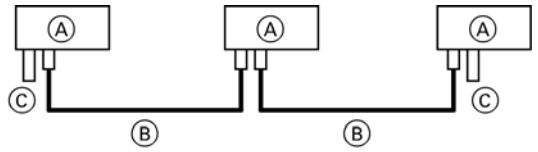
- **In the U.S.A., the National Electrical Code (NEC), ANSI/NFPA 70 and any other state, local codes and/or regulations.**
- **In Canada, the Canadian Electrical Code (CEC), CSA C22.1 Part 1 and any other province, territory, local codes and/or regulations.**

Legend

Ⓐ Power supply 120V~
CM2 - 186, 246, 311 (12 Amps - full load amperage)
CM2 - 400, 500, 620 and 620TX (20 Amps - full load amperage)
Ⓑ Fuse 250VAC 6.3A
Ⓒ Mains isolator, (on-site)
Ⓓ Boiler junction box

Making the LON Connection

Connection with Viessmann LON cable

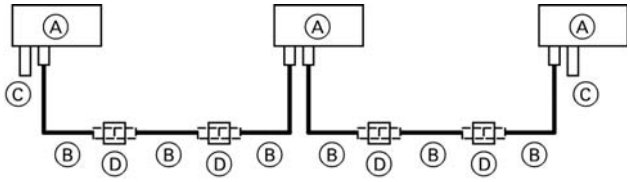


The line may be up to ≤ 23 ft. (7 m) long

Legend

Ⓐ Control unit or Vitocom
Ⓑ LON cable, 23 ft. (7 m) long
Ⓒ Terminal end resistor

Connection with Viessmann LON cable and coupling



Installation spacing 23 to 69 ft. (7 to 21 m)

Legend

Ⓐ Control unit or Vitocom
Ⓑ LON cable, 23 ft. (7 m) long
Max. 3 cables between 2 appliances
Ⓒ Terminal end resistor
Ⓓ LON coupling

The Viessmann LON is designed for "Line" BUS topology with a terminator at both ends (accessories).
Further information can be found in the "Viessmann LON manual"; see www.viessmann.de/lon.
The transfer distances for LON are subject to the electrical properties of the respective cable. For this reason, only use the stated cable types. Use only one cable type within one LON.

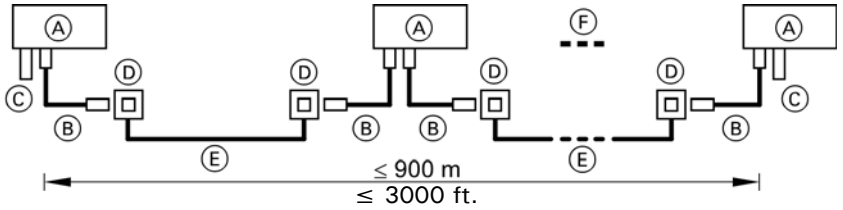
Cable types (on site):

- 2-core cable, CAT5, screened
- JY(St)Y 2 x 2 x 0.8 mm (telephone cable)

Observe the cabling requirements for the operation of the LON interface FTT 10-A (see www.echelon.com).
All Viessmann appliances are connected with RJ45 connectors. The Viessmann LON always requires the cores "1" and "2" and the screen. The cores are interchangeable.

Making the LON Connection *(continued)*

Connection with LON cable, on-site cable and LON junction box

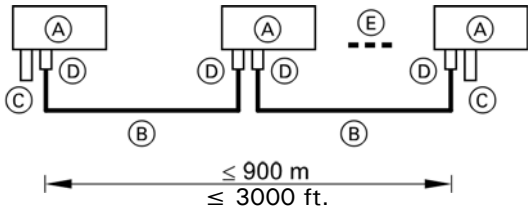


The line may be up to ≤ 3000 ft. (900 m) (with LON junction boxes)

Legend

Ⓐ Control unit or Vitocom
Ⓑ LON cable, 23 ft. (7 m) long
Ⓒ Terminal end resistor
Ⓓ LON sockets
Ⓔ On-site cable
Ⓕ Up to 30 participants

Connection with on-site cable and LON plug

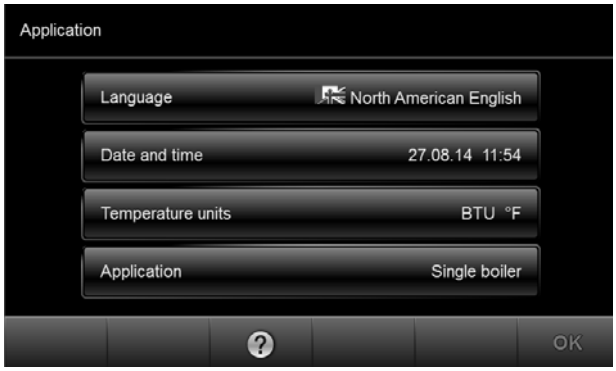


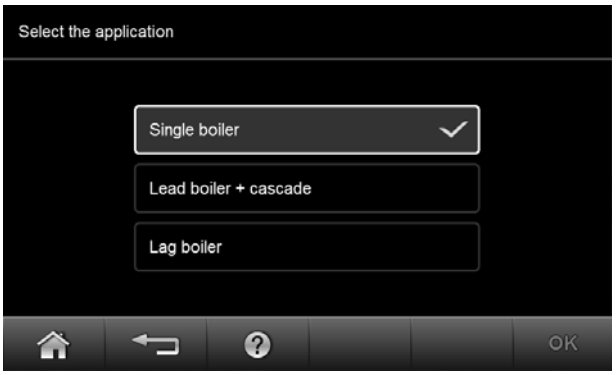
The line may be up to ≤ 3000 ft. (900 m)
(with LON plug)

Legend

Ⓐ Control unit or Vitocom
Ⓑ On-site cable
Ⓒ Terminal end resistor
Ⓓ LON plug
Ⓔ Up to 30 participants

Commissioning the System





Single boiler
Weather-compensated single boiler system capable of controlling DHW production and space heating of one high temperature heating loop and 2 low temperature heating loops with mixing valves.

Lead boiler and cascade
Lead boiler cascade control in a multiboiler system capable of cascading a maximum of 8 x GW6B equipped CM2 series boilers. This boiler is responsible for generating system and boiler setpoints, capable of DHW production and space heating of one high temperature heating loop and 2 low temperature heating loops complete with mixing valves.

Lag boiler
Lag to the lead boiler/cascade control and operates on setpoints generated by the lead boiler/cascade.

1. Turn ON the ON/OFF switch on all control units.
   The commissioning assistant starts automatically.
2. Make required settings:
   - "Language"
   - "Date / Time"
   - "Temperature units"
3. Tap "Application" and select the required application.
   - 'single boiler'
   - 'lead boiler and cascade'
   - 'lag boiler'
4. Confirm with OK until symbol and "Setup" appear.
5. Important coding can be set during commissioning (see the following table). For this tap "Yes".

   Note: Flue gas damper coding address 0a is factory defaulted to 0a:1 (with flue gas damper) in all applications (single boiler, lead boiler + cascade and lag boiler).
   If a flue gas damper is not used with the boiler, the coding address must be adjusted to 0a:0.
   If the coding address is not adjusted through the commissioning assistant at the boiler control, then the burner will check for the presence of a flue gas damper and then the functionality of the flue gas damper can only be adjusted through the burner control.

   Refer to the burner section of the CM2 Service Instructions

   Tap "No" if no further settings are to be made.
6. Confirm with OK.
   - Single boiler system
     The standard menu appears.
   - Multi boiler system
     The default display will appear.

   Refer to the Operating Instructions

Note: If commissioning was unsuccessful, the following fault symbol ⚠ appears in the footer.
Tap and check the fault messages.
- 'single boiler'
- 'lead boiler + cascade'
- 'lag boiler'

If the Vitocrossal 200 CM2 boiler is operated in a multiple boiler application, a fault message will be displayed during initial start-up, which indicates that the boiler controller commissioning process is not yet completed.
Please acknowledge this message and complete the commissioning process.

Commissioning the System *(continued)*

Coding are show in the "Setup" menu in the following order:

Function	Group	Coding
"Max operational output"	"Combustion controller"	02
"Gas type"		03
"Altitude"		04
"Design"		0a
"System design"	"General"	00
"Consecutive boiler number in multi boiler systems"	"Boiler"	07
"Number of boilers connected to the cascade" "Cascade"	"Cascade"	35
"LON participant number"	"General"	77
"Control strategy"	"Cascade"	3c

Adjusting Coding

Single boiler system

Check all addresses on Coding level 1 and set if required.
Check the following coding on Coding level 2 and set if required.
For steps and overviews on coding, see chapter "Coding".

Function	Group	Coding
"Connection at plug 20A1"	"General"	4c
"With LON communication module" (control unit is fault manager)	"General"	79
"Viessmann system number"	"General"	98
"With LON communication module: Monitoring LON participants"	"General"	9c

Multi boiler system

Check all addresses on Coding level 1 and set if required.
Check the following coding on Coding level 2 and set if required.
For steps and overviews on coding, see chapter "Coding".

Function	Group	Coding
On all control units		
"Single boiler and multi boiler system"	"Boiler"	01
"Connection at plug 29"	"General"	4d
"Viessmann system number"	"General"	98
"With LON communication module: Monitoring LON participants"	"General"	9c
Only on cascade control units		
"Connection at plug 20A1"	"General"	4c
"Connection at plug 29"	"General"	4d
"Connection at plug 52A1"	"General"	4e
"With LON communication module" (control unit is fault manager)	"General"	79
"Central control of heating circuits"	"General"	7a
"Viessmann system number"	"General"	98
"With LON communication module: Monitoring LON participants"	"General"	9c
"Permanent last boiler"	"Cascade"	3a
"Permanent lead boiler"	"Cascade"	39
"Storage tank heating, hysteresis"	"DHW"	55

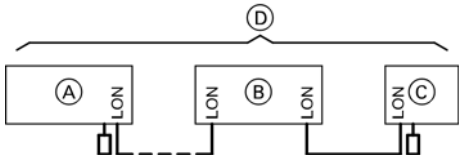
Connecting the Control Unit to the LON

- The LON communication module is factory installed.
- Vitotronic 200-H:
  The LON communication module (accessories) must be fitted.

Refer to the Installation and Service Instructions for Vitotronic 200-H

- Within one LON, the same participant number must not be allocated twice.
- Within one LON, the system number (coding “98” in the “General” group) must always be the same.
- Only one control unit may be programmed as fault manager.
- The data transfer via LON can take several minutes.

Example of a single boiler system with Vitotronic 200-H and Vitocom



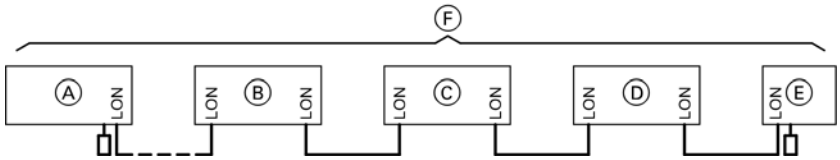
Ⓐ Single boiler control unit
Ⓑ Vitotronic 200-H
Ⓒ Vitocom
Ⓓ LON

All coding in the table are listed in the "General" group.

Ⓐ	Ⓑ	Ⓒ
Participant no. 1, Coding “77:1”	Participant no. 10, Coding “77:10”	Participant no. 99
Control unit is fault manager, Coding “79:1”	Control unit is not fault manager, Coding “79:0”	Appliance is fault manager
Control unit transmits the time, Coding “7b:1”	Control unit receives the time, Set coding “81:3”	Device receives the time
Control unit sends outdoor temperature, Coding “97:2”	Control unit receives outdoor temperature, Set coding “97:1”	--
Viessmann system number, Coding “98:1”	Viessmann system number, Coding “98:1”	--
LON participant fault monitoring, Coding “9c:20”	LON participant fault monitoring, Coding “9c:20”	--

Connecting the Control Unit to the LON *(continued)*

Example of a multi boiler system



Ⓐ Lag boiler control unit
Ⓑ Lag boiler control unit
Ⓒ 'Lead boiler cascade' control unit
Ⓓ Vitotronic 200-H
Ⓔ Vitocom
Ⓕ LON system

Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
Multi boiler system Set coding "01:2" in the "Boiler" group	Multi boiler system Set coding "01:2" in the "Boiler" group	Multi boiler system Set coding "01:2" in the "Boiler" group	--	--
Boiler number 3 Set coding "07:3" in the "Boiler" group	Boiler number 2 Set coding "07:2" in the "Boiler" group	Boiler number 1 Set coding "07:1" in the "Boiler" group	--	--
--	--	Number of connected boilers Set coding "35:1" to "35:8" in the "Cascade" group	--	--
Participant no. 3. Coding "77:3" in the "General" group	Participant no. 2. Set coding "77:2" in the "General" group	Participant no. 1. Coding "77:1" in the "General" group	Participant no. 10. Coding "77:10" in the "General" group	Participant no. 99
Control unit is not fault manager. Coding "79:0" in the "General" group	Control unit is not fault manager. Coding "79:0" in the "General" group	Control unit is fault manager. Coding "79:1" in the "General" group	Control unit is not fault manager. Coding "79:0" in the "General" group	Appliance is fault manager
--	--	Control unit transmits the time. Coding "7b:1" in the "General" group	The control unit receives the time. Set coding "81:3" in the "General" group	Device receives the time
--	--	The control unit sends the outdoor temperature. Coding "97:2" in the "General" group	The control unit receives the outdoor temperature. Set coding "97:1" in the "General" group	--
Viessmann system number, Coding "98:1" in the "General" group.	Viessmann system number, Coding "98:1" in the "General" group.	Viessmann system number, Coding "98:1" in the "General" group.	Viessmann system number, Coding "98:1" in the "General" group.	--
LON participant fault monitoring Coding "9c: 20" in the "General" group	LON participant fault monitoring Coding "9c: 20" in the "General" group	LON participant fault monitoring Coding "9c: 20" in the "General" group	LON participant fault monitoring Coding "9c: 20" in the "General" group	--

Connecting the Control Unit to the LON *(continued)*

Carrying out a LON participant check

The participant check is used to test communication with the system devices connected to the fault manager.

Preconditions:

- The control unit must be programmed as fault manager (coding "79:1" in the "General" group).
- The LON participant no. must be programmed in all control units.
- The LON participant list in the fault manager must be up to date.

From the home screen tap the following buttons:

1. "Menu"
2. "Service"
3. Enter "viservice" password.
4. "Service functions"
5. "LON participant check"
   The list of all connected LON participants appears.
6. Select participant and start participant check with "OK".
   "Participant ..." appears on the display" Check running".

Note: During the participant check, the display for the relevant participant flashes for approx. 1 min. and displays "Wink".

- Successfully tested participants are designated with "OK".
- Unsuccessfully tested participants are designated with "Subscribe ... Check not OK".
  Update the participant list with "New list" in order to carry out another participant check.

Setting the Boiler Sequence at the Cascade Control Unit

Boiler sequence subject to the coding set in the "Cascade" group and internal control calculations:

Function	Coding
"Lead boiler or boiler sequence changeover"	38
"Permanent lead boiler"	39
"Permanent last boiler"	3a
"ECO threshold boiler"...	41 to 44, 65, 6f, 74, 7d

- Every boiler can be blocked or enabled subject to outdoor temperature by means of the ECO threshold.
- The ECO threshold has no effect if a boiler is required to achieve the set supply temperature in the case of enabled boilers failing.
- At least the lead boiler remains in operation when all boilers in a system would otherwise be blocked via the ECO threshold.

Tap the following buttons:

1. "Menu"
2. "Boiler sequence"
3. Select the required boiler sequence and confirm with "OK".

Carrying Out an Actuator Test

From the home screen tap the following buttons:

1. "Menu"
2. "Service"
3. Enter "viservice" password.
4. "Actuator test"

Note: Before an actuator is selected, all actuators are switched to zero volt.

The actuators listed in the table can be tested at the relay outputs subject to system equipment level and control unit configuration (single or multi boiler system).

Display		Explanation
"All actuators"	OFF	All actuators have been switched off.
"Output 20"	ON	Actuator at output [20] A1
"Output 52"	Open	Actuator at output [52] A1
"Output 52"	Neutral	Actuator at output [52] A1
"Output 52"	Close	Actuator at output [52] A1
"DHW tank primary pump"	ON	Actuator at output [21]
"DHW circ pump"	ON	Actuator at output [28]
"Output 29"	ON	Actuator at output [29]
"Central fault message"	ON	Central fault message facility at output [50]
"Htg circ pump HC2"	ON	Actuator at output [20] M2
"Mixing valve HC2"	Open	Actuator at output [52] M2
"Mixing valve HC2"	Close	Actuator at output [52] M2
"Htg circ pump HC3"	ON	Actuator at output [20] M3
"Mixing valve HC3"	Open	Actuator at output [52] M3
"Mixing valve HC3"	Close	Actuator at output [52] M3
"EA1 output 1"	ON	Contact "P - S" on plug [157] of EA1 extension closed.
"AM1 output 1"	ON	Actuator at output A1
"AM1 output 2"	ON	Actuator at output A2
"Solar circuit pump"	ON	"Solar circuit pump" On Solar circuit pump at output [24] at solar control module, type SM1
"Solar circ pump min"	ON	"Solar circ pump min" On Solar circuit pump at output [24] at solar control module, type SM1 set to min. speed.
"Solar circ pump max"	ON	"Solar circ pump min" On Solar circuit pump at output [24] at solar control module, type SM1 set to max. speed.
"SM1 output 22"	ON	Actuator at output [22] at solar control module type SM1

Information regarding the mixing valve motor rotational direction.
The supply temperature must rise when the mixing valve opens.
If the temperature drops, either the motor is turning in the wrong direction or the mixing valve set is incorrectly fitted (observe the mixing valve installation instructions).

Checking Sensors

From the home screen tap the following buttons:

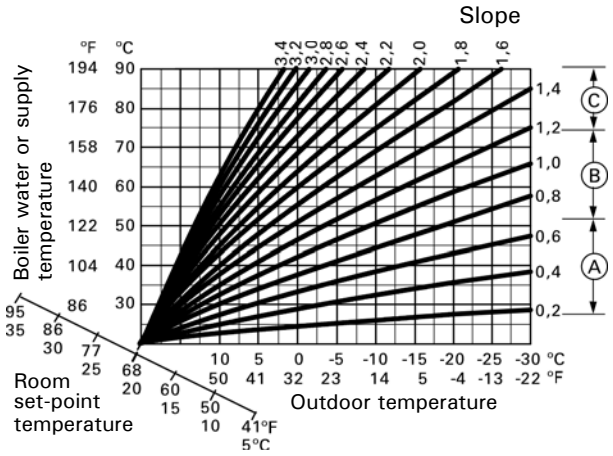
1. "Menu"
2. "Service"
3. Enter "viservice" password.
4. "Diagnosis"
5. Select group.
6. Scan actual temperature of the relevant sensor.

Adjusting the Heating Curve

Only for single boiler and cascade control units
The heating curves represent the relationship between the outdoor temperature and the boiler water or supply temperature.
Simplified: The lower the outdoor temperature, the higher the boiler water or supply temperature.
The boiler water or supply temperature in turn affects the room temperature.

Settings in the factory set condition:

- Slope = 1.4
- Shift = 0



For outdoor temperature 7°F (−14°C)

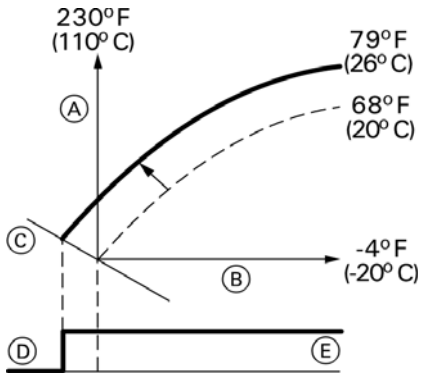
Legend

Ⓐ Underfloor heating system, slope 0.2 to 0.8
Ⓑ Low temperature heating system, slope 0.8 to 1.6
Ⓒ Heating systems with a boiler water temperature in excess of 167°F (75°C), slope greater than 1.6

5700 297 - 05

Adjusting the Heating Curve *(continued)*

Standard set room temperature



Adjustment of the standard set room temperature from 68 to 79°F (20 to 26°C)

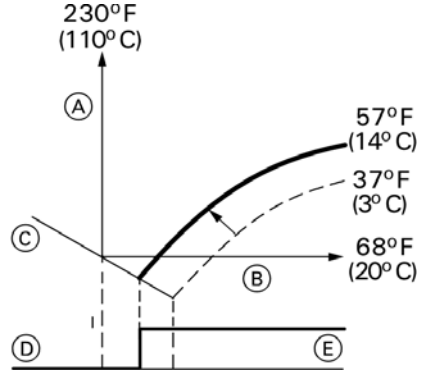
Legend
Ⓐ Boiler water temperature or supply temperature
Ⓑ Outdoor temperature
Ⓒ Set room temperature
Ⓓ Heating circuit pump “Off”
Ⓔ Heating circuit pump “On”

Selecting the set room temperature
Individually adjustable for each heating circuit.
The heating curve is offset along the set room temperature axis. With the heating circuit pump logic function enabled, the curve modifies the starting and stopping characteristics of the heating circuit pump.

Changing the standard set room temperature

Refer to the Operating Instructions

Reduced set room temperature



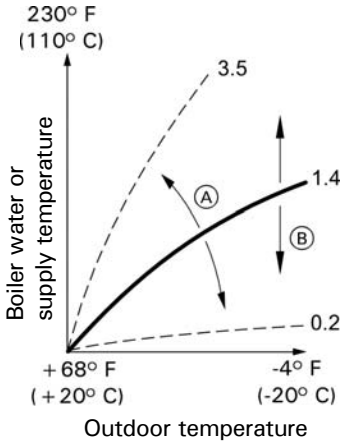
Adjustment of the reduced set room temperature from 37 to 52°F (3 to 14°C)

Legend
Ⓐ Boiler water temperature or supply temperature
Ⓑ Outdoor temperature
Ⓒ Set room temperature
Ⓓ Heating circuit pump “Off”
Ⓔ Heating circuit pump “On”

Changing the standard set room temperature

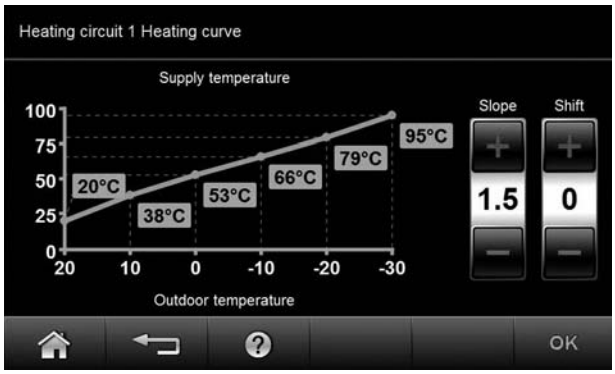
Refer to the Operating Instructions

Adjusting the Heating Curve *(continued)*



Legend

Ⓐ Changing the slope
Ⓑ Changing the shift (vertical parallel offset of the heating curve)



Changing the slope and shift

Individually adjustable for each heating circuit.

From the home screen tap the following buttons:

1. Tap “Menu”.
2. “Heating circuit 1”, “Heating circuit 2” or “Heating circuit 3” as the required heating circuit
3. Heating.
4. “Heating curve”
5. +/– for the required value for “Slope” or “Shift”
6. Tap OK to confirm

Example: Heating curve setting with slope 1.5:

Calling up the Service Menu

From the home screen tap the following buttons:

1. "Menu"
2. "Service"
3. Enter "viservice" password.
4. Select the required menu range.

Note: In the "Diagnosis" menu area submenus are shown subject to control unit, e.g. "Cascade" will only be shown for a cascade control unit.

"Service main menu"		
	"Diagnosis"	
		"General"
		"Cascade"
		"DHW"
		"Heating circuit 1/2/3"
		"Solar energy"
		"Short query"
		"Reset data"
	"Actuator test"	
	"System configuration"	
		"Coding level 1"
		"Coding level 2"
	"History of faults"	
	"Service functions"	
		"LON participant check"
		"System log"
		"Vitocom PIN input"
	"Startup"	
		"The heating system is reset to the factory state"
	"Change passwords"	
		"Service level"
		"Coding level 2"
		"Reset all passwords"
	"Exit service"	

Note:
- "Coding level 2" is only displayed if this level has been enabled: Enter "viexpert" password.
- Tap to return to the "Service main menu"

Leaving the Service Menu

From the service main menu tap the following buttons:

1. "Exit service"
2. Confirm "Terminate service?" with OK.

Note: The system exits the service menu automatically after 30 min.

Change Passwords

In the factory set condition, the following passwords have been assigned:

- "viservice" for access to the "Service main menu"
- "viexpert" for access to "Coding level 2"

From the home screen tap the following buttons:

1. "Menu"
2. "Service"
3. Enter "viservice" password.
4. "Change passwords"
5. "Service level" or "Coding level 2"
6. Enter current password.
7. Confirm with OK.
8. Enter new password.
9. Tap OK twice

Resetting all Passwords to Factory Settings

From the home screen tap the following buttons:

1. Request the master password from the Technical Service at the Viessmann Group.
2. "Menu"
3. "Service"
4. Enter "viservice" password.
5. "Change passwords"
6. "Reset all passwords"
7. Enter master password. This must be requested from the service hotline.
8. Confirm twice with OK.

Scanning Operating Data

Operating data can be scanned in various areas (see “Diagnosis” on page 54).
Operating data on heating circuits with mixing valves and a solar thermal system can only be scanned if the relevant components are installed in the system.
For further information on operating data, see chapter “Brief scan”.

Note: “- - -” appears on the display if a scanned sensor is faulty.

From the home screen tap the following buttons:

1. “Menu”
2. “Service”
3. Enter “viservice” password.
4. “Diagnosis”
5. Select required group, e.g. “General”.

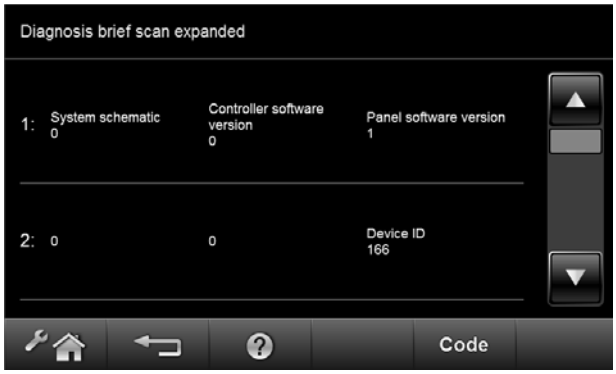
Resetting Operating Data

Saved operating data (e.g. hours run) can be reset to 0. The value "Dampened outdoor temp" is reset to the actual value.

From the home screen tap the following buttons:

1. "Menu"
2. "Service"
3. Enter "viservice" password.
4. "Diagnosis"
5. "Reset data"
6. Select required value or "All details".

Brief Scan



From the home screen tap the following buttons:

1. "Menu"
2. "Service"
3. Enter "viservice" password.
4. "Diagnosis"
5. "Short query"
6. "Code" An overview of brief scans appears with 11 lines and 6 fields. ▲/▼ for the required brief scan in line with the following tables.

	1	2	3	4	5	6
1:	System schemes 01 to 10		Control unit software version		Software version, programming unit	
2:	0	0	0		Appliance identification CU-ID	
3:	0	0	Number of KM BUS participants		Software version Solar control module type SM1	
4:	0	0	0	0	0	0
5:	0	0	0	0	Software version, AM1 extension	Software version, EA1 extension
6:	Connection on plug 143.1/2 0: Contact open 1: Contact closed	Connection on plug 143.2/3 0: Contact open 1: Contact closed	0	0	0	0
7:	LON subnet address/system number		LON node address Connection on plug 143.2/3		0	0
8:	SNVT config. 0: Auto 1: Tool	Software version Communic. coproc.	Neuron Chip Software version		Participant number	
	Heating circuit HC1		**Heating circuit HC2**		**Heating circuit HC3**	
9:	Remote control 0: Without 1: Vitotrol 200A 2: Vitotrol 300A	Software version Remote control	Remote control 0: Without 1: Vitotrol 200A 2: Vitotrol 300A	Software version Remote control	Remote control 0: Without 1: Vitotrol 200A 2: Vitotrol 300A	Software version Remote control
10:	0	0	0	0	0	0
11:	0	0	Software version, extension for heating circuits 2 and 3 with mixing valve	0	Software version, extension for heating circuits 2 and 3 with mixing valve	0
	Note: The displays in fields 3 and 5 are the same.					

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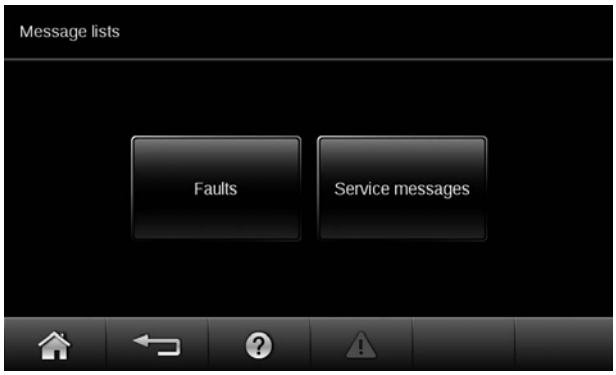
Maintenance Display



Set limits in coding “21” and “23” in the “Boiler” group. Once these values have been reached, “Service” and symbol appear on the display.

Tap the following buttons:

1. “Confirm” The footer shows ⚠.
2. ⚠

Note: After tapping ⚠ the following will be displayed if your heating system has several fault messages simultaneously:

3. “Service messages”
   The service messages appear yellow in a list.

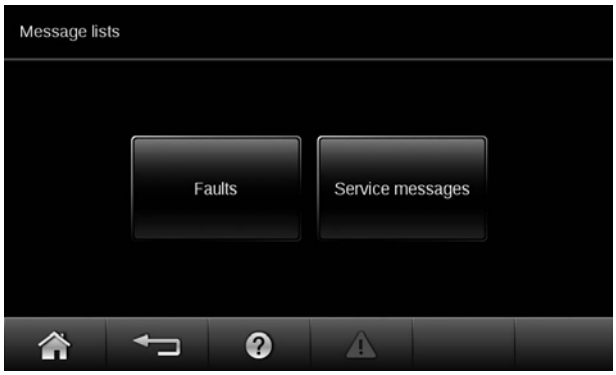
After maintenance has been carried out

Note: If a service is carried out prematurely, set coding “24:1” in the “Boiler” group to “24:0”. The selected maintenance coding for hours run and time intervals restart at 0.
If coding “24” is not reset, “Service” will be displayed again on the following Monday.

From the home screen tap the following buttons:

1. “Menu”
2. “Service”
3. Enter “viservice” password.
4. “Service functions”
5. “Reset service” The set service coding for hours run and interval restart at 0 and coding “24” in the “Boiler” group is set to “24:0”.

Fault Display



In the event of a fault, the red fault display flashes at the control unit. The display shows symbol ⚠ and "Fault".

Note: If a central fault message facility is connected, this is started.

For an explanation of fault messages, see chapter "Fault messages".

Acknowledge fault display

Tap "Close". The footer shows ⚠.

Note: Any connected central fault message facility stops. If an acknowledged fault is not remedied, the fault message will be re-displayed the following day at 07:00 am (07:00 h), and the fault message facility restarts.

Calling up acknowledged fault messages

Tap the following buttons:

1. ⚠

Note: After tapping ⚠ the following will be displayed if your heating system has several fault messages simultaneously:

2. "Faults" The fault messages appear in red and in chronological order in a list.

Calling up fault codes from the fault memory (fault history)

The 10 most recent faults (including those remedied) are saved and can be scanned. Faults are sorted by date.

From the home screen tap the following buttons:

1. "Menu"
2. "Service"
3. Enter "viservice" password.
4. "History of faults"
5. Call up further information in the relevant fault with **?**.
6. Tap "Reset" to delete the list.

Boiler System Fault Codes

Displayed fault code	System characteristics	Cause	Measures
0f	Control mode.	Service "0f" is only displayed in the fault history.	Service required **Note:** After servicing, set code "24:0".
10	Operates as if the outdoor temperature was 32°F (0°C).	Short circuit, outdoor temperature sensor.	Check outdoor temperature sensor (see page 121).
18	Operates as if the outdoor temperature was 32°F (0°C).	Lead break, outdoor temperature sensor.	Check outdoor temperature sensor (see page 121).
20	Standalone control unit without supply temperature sensor (possibly supply temperature not high enough)	Short circuit, common supply temperature sensor	Check the supply temperature sensor (see page 121).
28	Standalone control unit without supply temperature sensor (possibly supply temperature not high enough)	Lead break, common supply temperature sensor	Check the supply temperature sensor (see page 121).
30	■ With DHW tank: DHW pump ON, boiler is maintained at set tank temperature. ■ Without DHW tank: Boiler is regulated by the temperature controller.	Short circuit, boiler water temperature sensor	Check boiler water temperature sensor.
38	■ With DHW tank: DHW pump ON, boiler is maintained at set tank temperature. ■ Without DHW tank: Boiler is regulated by the temperature controller.	Lead break, boiler water temperature sensor	Check boiler water temperature sensor.
40	Mixing valve is being closed.	Short circuit, supply temperature sensor, heating circuit with mixing valve M2 (heating circuit 2).	Check supply temperature sensor (see page 121).
44	Mixing valve is being closed.	Short circuit, supply temperature sensor, heating circuit with mixing valve M3 (heating circuit 3).	Check supply temperature sensor (see page 121).
48	Mixing valve is being closed.	Lead break, supply temperature sensor, heating circuit with mixing valve M2 (heating circuit 2).	Check supply temperature sensor (see page 121).
4c	Mixing valve is being closed.	Lead break, supply temperature sensor, heating circuit with mixing valve M3 (heating circuit 3).	Check supply temperature sensor (see page 121).

Boiler System Fault Codes *(continued)*

Displayed fault code	System characteristics	Cause	Measures
50	Tank loading pump on: DHW temperature target = set supply temperature Priority control is cancelled. or With tank loading system: Tank heating is started and stopped via tank temperature sensor 2.	Short circuit, tank temperature sensor 1	Check tank temperature sensor (see page 121).
51	With tank loading system: Tank heating is started and stopped via tank temperature sensor 1.	Short circuit, DHW tank temperature sensor 2.	Check the DHW tank temperature sensor (see page 121).
52	Control mode	Short circuit, supply temperature sensor low loss header.	Check supply temperature sensor (see page 121).
58	Tank loading pump on: DHW temperature target = set supply temperature Priority control is cancelled. or With tank loading system: Tank heating is started and stopped via tank temperature sensor 2.	Lead break, DHW tank temperature sensor 1.	Check DHW tank temperature sensor (see page 121).
59	With tank loading system: Tank heating is started and stopped via tank temperature sensor 1.	Lead break, DHW tank temperature sensor 2.	Check DHW tank temperature sensor (see page 121).
5a	Control mode	Lead break, low loss header supply temperature sensor.	Check supply temperature sensor (see page 121). Without supply temperature sensor: Set code “52:0” in the “General” group.
60	Boiler with maximum temperature, no output reduction, mixing valve return temperature control open	Short circuit, temperature sensor 17 A.	Check temperature sensor (see page 121).
68	Boiler with maximum temperature, no output reduction, mixing valve return temperature control open	Lead break, temperature sensor 17 A.	Check temperature sensor (see page 121). Without temperature sensor: Set coding “4a:0” in the “General” group.

Boiler System Fault Codes *(continued)*

Displayed fault code	System characteristics	Cause	Measures
70	Shunt pump constantly ON. With tank loading system: close 3-way mixing valve; no DHW heating	Short circuit, temperature sensor 17 B.	Check temperature sensor (see page 121).
78	Shunt pump constantly ON With tank loading system: close 3-way mixing valve; no DHW heating	Lead break, temperature sensor 17 A.	Check temperature sensor (see page 121). Without temperature sensor: Set code “4b:0” in the “General” group.
90	Control mode	Short circuit, temperature sensor 7 connection at solar control module, type SM1.	Check temperature sensor 7 (see separate installation and service instructions).
91	Control mode	Short circuit, temperature sensor 10, connection at solar control module, type SM1.	Check temperature sensor 10 (see separate installation and service instructions).
92	No solar DHW heating.	Short circuit, collector temperature sensor, connection of temperature sensor 6 at solar control module, type SM1 or sensor at S1 of the Vitosolic.	Check sensor at the solar control unit (see separate installation and service instructions).
93	Control mode.	Short circuit, temperature sensor, connection at S3 of the Vitosolic.	Check sensor at the solar control unit (see separate installation and service instructions).
94	No solar DHW heating.	Short circuit, DHW tank temperature sensor, connection of temperature sensor 5 at solar control module, type SM1 or sensor at S2 of the Vitosolic.	Check sensor at the solar control unit (see separate installation and service instructions).

Boiler System Fault Codes *(continued)*

Displayed fault code	System characteristics	Cause	Measures
98	Control mode	Lead break, temperature sensor [7], connection at solar control module, type SM1.	Check temperature sensor [7] (see separate installation and service instructions). Check coding address “20” in the “Solar” group.
99	Control mode	Lead break, temperature sensor [10], connection at solar control module, type SM1.	Check temperature sensor [10] (see separate installation and service instructions). Check coding address “20” in the “Solar” group.
9a	No solar DHW heating.	Lead break, collector temperature sensor, connection of temperature sensor [6] at solar control module, type SM1 or sensor at S1 of the Vitosolic.	Check sensor at the solar control unit (see separate installation and service instructions).
9b	Control mode	Lead break, temperature sensor, connection to S3 of the Vitosolic.	Check sensor at the solar control unit (see separate installation and service instructions).
9c	No solar DHW heating.	Lead break, DHW tank temperature sensor, connection of temperature sensor [5] at solar control module, type SM1 or sensor at S2 of the Vitosolic.	Check sensor at the solar control unit (see separate installation and service instructions).
9e	Control mode	No supply rate in solar circuit or flow rate too low, or temperature limiter has responded.	Check solar circuit. Acknowledge fault message (see separate installation and service instructions).
9f	Control mode	Fault, solar control module, type SM1 or Vitosolic Displayed if a fault occurs at these devices that has no fault message in the Vitotronic.	Check solar control unit (see separate installation and service instructions).
a7	Control mode	Programming unit fault	Replace the programming unit.
aa	Controlled operation	Configuration error:	If installed remove [17][A] sensor, set coding address “4A:0” and “Od:0”
ab	Control mode, DHW tank may be cold	Tank loading system configuration fault: Coding “55:3” in the “DHW” group has been set, but plug [17][B] is not plugged in and/or codes “4c:1” and “4e:2” in the “General” group have not been set.	Insert plug [17][B] and check codes.

Boiler System Fault Codes *(continued)*

Displayed fault code	System characteristics	Cause	Measures
b1	Control mode	Communication error, programming unit	Check connections, and replace the programming unit if required.
b5	Control mode	Internal fault	Check PCB is plugged in correctly.
b6	Constant mode	Invalid hardware recognition	Check coding address “92” in the “General” group; ■ 161: Single boiler system ■ 190: Cascade control unit ■ 166: Lag boiler control unit **Note:** Coding “8a:176” in the “General” group must be set in order for coding “92” to be able to be displayed.
b7	Boiler water temperature control	Coding card fault	Plug in or replace the boiler coding card (see page 25).
ba	Mixing valve close	Communication error, PCB, extension for heating circuits 2 and 3 with mixing valve.	Check that the PCB and ribbon cable are plugged in correctly, and replace PCB if required.
bc	Control mode without remote control.	Communication error, Vitotrol remote control unit, heating circuit without mixing valve A1 (heating circuit 1).	Check connections, lead (see separate installation and service instructions) and coding address “a0” in the “Heating circuit...” group.
bd	Control mode without remote control	Communication error, Vitotrol remote control unit, heating circuit with mixing valve M2 (heating circuit 2)	Check connections, lead (see separate installation and service instructions) and coding address “a0” in the “Heating circuit...” group.
be	Control mode without remote control	Communication error, Vitotrol remote control unit, heating circuit with mixing valve M3 (heating circuit 3)	Check connections, lead (see separate installation and service instructions) and coding address “a0” in the “Heating circuit...” group.
bf	Control mode No communication via LON	Incorrect LON communication module.	Replace LON communication module.
c1	Boiler cools down	External safety equipment at plug 150.	Check connection and external safety equipment (see page 36 and 37)
c2	Control mode	Lead break, KM BUS to solar control module, type SM1 or Vitosolic.	Check KM BUS cable and appliance. Without solar control unit: Set code “54:0” in the “General” group.

Boiler System Fault Codes *(continued)*

Displayed fault code	System characteristics	Cause	Measures
c3	Control mode	Communication error, AM1 extension	Check connections. Without AM1 extension: Set coding “32:0” in the “General” group.
cF	Control mode No communication via LON, boiler at a configerable temperature set point	Communication error, control unit LON communication module.	Check LON communication module and replace if required. If no LON communication module is installed, set code “76:0” in the “General” group.
d3	Control mode	Communication error, extension EA1.	Check connections (see page 122). Without extension EA1: Set code “5b:0” in the “General” group.
d4	Boiler cools down	MCB F2 has responded.	Check MCB F2 and jumper on plug 151.
d6	Control mode	Input DE1 at extension EA1 reports a fault.	Remove fault at appliance concerned.
d7	Control mode	Input DE2 at extension EA1 reports a fault.	Remove fault at appliance concerned.
d8	Control mode	Input DE3 at extension EA1 reports a fault.	Remove fault at appliance concerned.
da	Control mode without room influence.	Short circuit, room temperature sensor, heating circuit without mixing valve A1 (heating circuit 1).	Check room temperature sensor (see page 121).
db	Control mode without room influence	Short circuit, room temperature sensor, heating circuit with mixing valve M2 (heating circuit 2).	Check room temperature sensor (see page 121).
dc	Control mode without room influence.	Short circuit, room temperature sensor, heating circuit with mixing valve M3 (heating circuit 3).	Check room temperature sensor (see page 121).
dd	Control mode without room influence.	Lead break, room temperature sensor, heating circuit without mixing valve A1 (heating circuit 1).	Check room temperature sensor (see page 121).
de	Control mode without room influence.	Lead break, room temperature sensor, heating circuit with mixing valve M2 (heating circuit 2).	Check room temperature sensor (see page 121).
df	Control mode without room influence.	Lead break, room temperature sensor, heating circuit with mixing valve M3 (heating circuit 3).	Check room temperature sensor (see page 121).

Burner Fault Codes

Displayed fault code	System characteristics	Cause	Measures
d1	Boiler cools down	Burner fault	Check the burner.
d5	Boiler ramps to the electronic maximum boiler water temperature limit.	No communication between boiler circuit and cascade control unit	Check communication by means of a participant check.
E1	Burner control unit in a fault state.	Valve 1 not tight / gas pressure switch 2 does not open.	Check setting of gas pressure switch 2; check connecting cable; replace gas valve.
E2	Burner control unit in a fault state.	Valve 2 not tight; gas pressure switch 2 does not close.	Check setting of gas pressure switch 2; check connecting cable; replace gas valve.
	Shortage of gas to gas pressure switch 2; valve leak test.	Gas valve does not open; gas valve leaking; gas pressure switch 2 faulty.	Replace gas valve.
E3	Burner control unit in a fault state.	Lead break, strapping plug [47].	Check strapping plug [47].
E4	Burner shuts down	Multiple detection of undervoltage with return and renewed undervoltage.	Check the power supply.
E5	Burner control unit in a fault state.	Internal fault of the burner control unit and during test of ionization input.	Replace burner control unit.
EE	Burner control unit in a fault state.	Internal error in feedback from gas safety valves; output relay does not respond.	Reset burner control unit; replace burner control unit.
EF	Burner control unit in a fault state.	Internal error in feedback from gas safety valves; output relay does not respond.	Reset burner control unit; replace burner control unit.
E0	Operation according to internal burner control unit defaults.	Communication error, burner control unit.	Check plug and KM BUS to burner control unit.
F1	Burner control unit in a fault state; system cools down.	Flue gas excess temperature; excessive gas throughput.	Wait until temperature falls below the permissible flue gas temperature. Reset burner control unit. Check water level; check heat exchanger surfaces for contamination; check CO_2 setting; set gas throughput according to rated heating output of boiler (for connection values, see boiler service instructions).
F2	Burner control unit in a fault state; system cools down.	Excessive boiler water temperature.	Wait until temperature falls below the permissible boiler water temperature. Reset burner control unit.
F3	Ionization flame monitor reports faulty flame signal during start-up or after the post-purge.	Gas valve not gas tight (gas is escaping and burning); incorrect coding card.	Check ionization path; replace coding card; replace gas valve.

Burner Fault Codes *(continued)*

Displayed fault code	System characteristics	Cause	Measures
F4	No flame formation during safety time; ionization flame monitor reports no flame signal.	Ionization electrode incorrectly adjusted; ionization electrode not plugged in. Ground leakage of electrode or cable.	Insert plug of ionization electrode; check cables; adjust ionization electrode (see boiler service instructions)
	No flame formation during safety time; ionization flame monitor reports no flame signal.	Ignition electrodes incorrectly adjusted, electrodes grounded, faulty ignition unit, faulty burner control unit.	Adjust ignition electrodes (see boiler service instructions); replace ignition unit; replace burner control unit.
	No flame formation during safety time; ionization flame monitor reports no flame signal.	Insulation body of ignition or ionization electrode cracked.	Replace ignition or ionization electrode
	Poor start-up characteristics; rotary damper does not close.	Servomotor faulty, servomotor connecting cable faulty, output relay faulty (burner control unit).	Replace connecting cable; replace servomotor; replace burner control unit.
	Flame does not build during the safety time, no signal captured by the ionization flame monitor.	Incorrect gas type selected.	Select gas type (see boiler service instructions).
	Flame does not build during the safety time, no signal captured by the ionization flame monitor.	Gas valve does not open.	Check connecting cable; check gas valve and replace if required.
	Flame does not build during the safety time, no signal captured by the ionization flame monitor.	Combustion characteristics not ideal.	Adjust the burner (see boiler service instructions); if necessary also adjust the setting screws when the burner is off to be able to start the burner).
F5	Air pressure switch shows no air pressure, fan not running.	Air pressure switch is faulty, incorrectly connected or incorrectly set.	Replace air pressure switch, connect or set correctly.
	Air pressure switch switches off during operation.	Flue gas back pressure; condensate banked up; air pressure switch hose faulty; connecting hose leaking.	Remove flue gas back pressure; check if condensate banked up; reset burner control unit; replace hose.
F6	Gas pressure switch notifies no gas pressure.	Gas shut-off valve closed; gas pressure switch faulty; multiple problems with gas supply.	Open gas shut-off valve; check gas flow pressure; replace gas filter if required; reset burner control unit; replace gas valve.
F7	Fan pressure is produced during the air pressure switch idle state check.	Wind influence on fan.	Check the flue draught (chimney)
	Air pressure switch contact is not in the idle state.	Air pressure switch faulty.	Replace the air pressure switch.
F8	Flame extinguishes during operation.	Incorrect gas type selected.	Select gas type (see boiler service instructions).
	Flame extinguishes during operation.	Burner gauze assembly faulty.	Check burner gauze assembly; replace if damaged.
	Flame extinguishes during operation.	Combustion characteristics not ideal.	Adjust burner (see boiler service instructions).

Burner Fault Codes *(continued)*

Displayed fault code	System characteristics	Cause	Measures
F9	Fan not running; fan speed not reached.	Fan faulty; cables are faulty or broken.	Check cables and replace the fan if required
	Status duration too long, fan ramp-up.	Internal fault; fan cannot reach its set value.	Replace fan or burner control unit.
	Varying fan speed	Fan faulty, cable 100 A faulty or broken. Check cable 100 A; check external power supply; replace the cable or fan; remove foreign bodies.	Check cable; replace cable 100 A or fan.
	No fan feedback.	Fan faulty, external fan power supply not connected or faulty cable 100 A or cable broken, fan blocked (poss. by foreign bodies).	Check cable 100 A; check external power supply; replace cable or fan; remove foreign bodies.
Fa	Fan runs without demand; burner control unit in a fault state.	Fan does not reach idle state, cable 100 A faulty, fan faulty, faulty burner control unit.	Fan subject to wind influence, check flue outlet and fan, replace cable 100 A, replace fan, replace burner control unit.
Fd	Burner control unit in a fault state; system cools down; burner control unit locked out.	Burner control unit in a fault state.	Read off fault at the burner control unit display and programming unit (boiler service instructions).
80	Burner control unit in a fault state; system cools down; burner control unit locked out.	Short circuit, boiler water temperature sensor, burner control unit.	Check lead and dual sensor; replace sensor if required.
81	Burner control unit in a fault state.	Sensor drift, boiler water temperature sensor, burner control unit.	Check lead and dual sensor; replace sensor if required.
82	Burner control unit in a fault state; system cools down; burner control unit locked out.	Short circuit, flue gas temperature sensor (A or B), burner control unit.	Check lead and sensors (A or B), replace sensor if required.
83	Burner control unit in a fault state.	Sensor drift, flue gas temperature sensor (A or B), burner control unit.	Check lead and sensors (A and B), replace sensor if required.
88	Burner control unit in a fault state.	Lead break, boiler water temperature sensor, burner control unit.	Check lead and dual sensor; replace sensor if required.
89	Burner control unit in a fault state.	Lead break, flue gas temperature sensor (A or B), burner control unit.	Check lead and sensors (A and B), replace sensor if required.
b8	Constant mode	Lead break, flue gas temperature sensor	Remove temperature sensor. Set code “1f:0” in the “Boiler” group.

Fault message to the burner control unit:

Refer to the Boiler Service Instructions

Note: If LON participant faults occur, “Fault participant” ... is displayed.

Boiler Water Temperature Control

Brief description

- The boiler water temperature is regulated by modulating the burner.
- The set boiler water temperature is determined from the following coding:
  - Set supply temperature of the heating circuits connected to the control unit and the heating circuits connected via the LON BUS
  - External demand
  - DHW temperature target
- When the DHW tank is heated, the default set boiler water temperature is 36°F (20 K) above the set DHW temperature (adjustable via coding “60” in the “DHW” group).

Emissions test function

In multi boiler systems, enable the emissions test function on all control units.

The following functions are activated:

- Burner start
- Starting all pumps

Note: Only the heating circuit pump is switched ON in the case of lag boiler control.

- Mixing valve remains set to control function
  Function duration < 30 min:
  The burner operates at 100% output until the temperature limiter in the burner control unit switches off. The burner then cycles, with 100% output, around the value at the temperature limiter.
  Function duration > 30 min (continuous):
  Boiler water temperature at max. set value, e.g. 194°F (90°C).
  The burner is operated in modulating mode.
  This prevents excessive cycling if emissions testing is carried out over an extended period.

Cascade Control Unit

Brief description

The supply temperature is regulated by starting or stopping the burners or by starting/stopping individual burner stages.

- Standalone control (see page 73)
- Sequential control (see page 73)
- Subject to system version, a difference is made between the condensing strategy (see page 74) and 2 conventional boiler strategies (see pages 75 and 76).

Cascade Control Unit *(continued)*

Set supply temperature

The set supply temperature is determined from the following coding:

- Set supply temperature of heating circuit without mixing valve A1 (heating circuit 1) and heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3).
- Set supply temperature of further consumers.
- DHW temperature target.
- External demands.

Upper control range limits:
Maximum system supply temperature limit (coding "37" in the "Cascade" group).
Lower control range limits:
Minimum system supply temperature limit (coding "36" in the "Cascade" group).

Standalone control

Note: Vitocrossal 200, type CM2, operate in parallel and with condensing strategy

Boilers connected in parallel	Boilers connected in series
■ Without and with supply temperature sensor (see the following table). ■ The cascade control specifies the set boiler water temperature for all currently active boilers. Every boiler control unit regulates to the specified set value. The following control strategies are available: ■ Condensing strategy (see page 77) ■ Conventional boiler strategy 1 (see page 79) ■ Conventional boiler strategy 2 (see page 79)	■ Without and with supply temperature sensor (see the following table). ■ The control strategy is set automatically to conventional boiler strategy 2, coding "3c:2" in the "Cascade" group (see page 79). ■ The cascade control specifies the set boiler water temperature for all currently active boilers. Every boiler control unit regulates to the specified set value. If the lead boiler (condensing boiler) does not achieve the specified set value, it will only act to control the return temperature of the conventional boiler downstream. The conventional boiler is started late and is also shut down late.

With supply temperature sensor	Without supply temperature sensor
Set coding "3b:1" or "3b:3" in the "Cascade" group. The control deviation is calculated from the set supply temperature and the actual supply temperature to determine the start and shutdown criteria.	Set coding "3b:0" or "3b:2" in the "Cascade" group. To determine the start and stop criteria, the control deviation is calculated from the set boiler water temperature and the estimated average actual boiler water temperature of the currently active boilers. Only boilers with open motorized isolation valves are taken into consideration.

Sequential control

- With supply temperature sensor.
- Set coding "3b:4" in the "Cascade" group.
- The control strategy is set automatically to conventional boiler strategy 2, coding "3c:2" in the "Cascade"group (see page 76).
- The cascade control unit regulates to the specified set supply temperature by stipulating the output for each individual boiler. The lead boiler can be operated in modulating mode. All other boilers are operated in two stages via a specified output (incl. modulating burners).

Cascade Control Unit *(continued)*

Control strategies

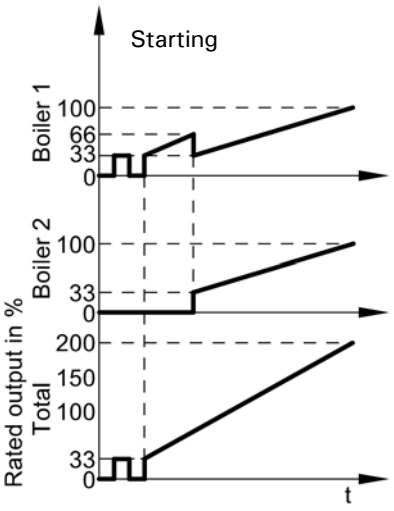
Condensing strategy

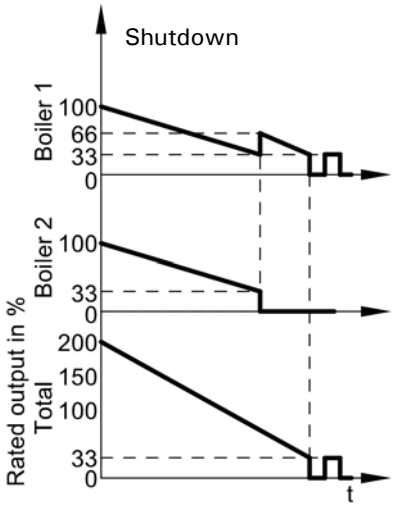
Benefit:
Optimum utilization of the condensing effect and long burner runtimes
Set coding “3c:0” in the “Cascade” group.
It is the aim of the condensing strategy to operate as many boilers as possible at the lowest output level.

- Starting criterion:
  An output statement causes the boilers to be started (coding “3d:1” in the “Cascade” group).
  An additional boiler will start if the current heat demand can also be covered by the currently active boilers plus the next boiler in the boiler sequence (see page 52).
- Shutdown criterion:
  The boilers are shut down via a shutdown integral. The shutdown criterion is met when the shutdown integral exceeds a limit set at coding “46” in the “Cascade” group and the boiler started last will be shut down.

Example (coding “3c:0” in the “Cascade” group)
Two-boiler system with modulating burners:

- Boiler 1: 100% rated heating output (base load set to 33%)
- Boiler 2: 100% rated heating output (base load set to 33%)





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Cascade Control Unit *(continued)*

Control strategies

Conventional boiler strategy 1

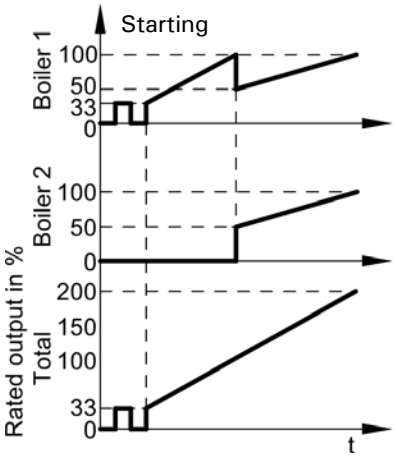
Benefit:
As few boilers as possible are active.
Set coding “3c:1” in the“Cascade” group.
Conventional boilers are preferably operated at their upper output range, to reliably prevent formation of condensate due to low return temperatures. An additional boiler will only be started if the maximum output of all currently active burners is insufficient to achieve the set supply temperature. A boiler will be shut down when the remaining boilers can achieve the required output on their own.

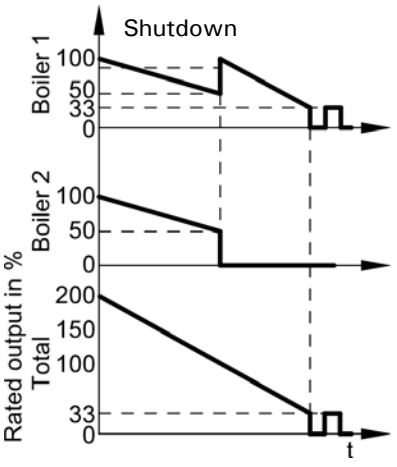
- Starting criterion:
  The boilers are started via a starting integral. The next boiler in the boiler sequence will be started if the value set in coding “45” in the “Cascade” group is exceeded (see page 52).
- Shutdown criterion:
  An output reduction causes the boiler to shut down (coding “3d:1” in the “Cascade” group). A boiler is shut down when the current heat demand can be covered without the boiler that was started last.

Example:
Two-boiler system with modulating burners:

- Boiler 1: 100% rated heating output (base load set to 33%)
- Boiler 2: 100% rated heating output (base load set to 33%)

Conventional boiler strategy 1 (coding “3c:1” in the “Cascade” group)





Cascade Control Unit *(continued)*

Control strategies

Conventional boiler strategy 2

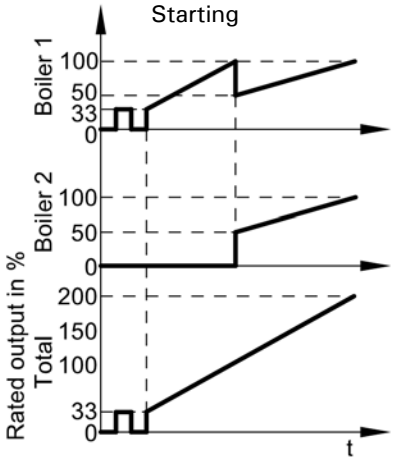
Benefit:
Long burner runtimes.
Coding “3c:2” in the “Cascade” group (factory set condition).
An additional boiler will only be started if the maximum output of all currently active burners is insufficient to achieve the set supply temperature.
A boiler will be shut down if the burners were ramped down to their minimum output because of a major negative control deviation and the output is still too high.

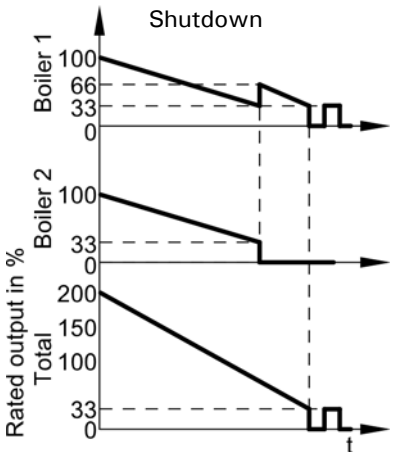
- Starting criterion:
  The boilers are started via a starting integral. The next boiler in the boiler sequence will be started if the value set in coding “45” in the “Cascade” group is exceeded (see page 52).
- Shutdown criterion:
  The boilers are shut down via a shutdown integral. The shutdown criterion is met when the shutdown integral exceeds a limit set at coding “46” in the “Cascade” group and the boiler started last will be shut down.

Example:
Two-boiler system with modulating burners:

- Boiler 1: 100% rated heating output (base load set to 33%)
- Boiler 2: 100% rated heating output (base load set to 33%)

Conventional boiler strategy 2 (coding “3c:2” in the “Cascade” group)





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Heating Circuit Control Unit

Only for single boiler and cascade control units

Brief description

- The control unit features control circuits for one heating circuit without mixing valve A1 (heating circuit 1) and two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3).
- The set supply temperature of each boiler is determined from the following coding:
  – Outdoor temperature
  – Set room temperature
  – Operating mode
  – Heating curve slope and shift
- The supply temperature of the heating circuit without mixing valve corresponds to the common system supply temperature.
- The supply temperature of the heating circuits with mixing valve is regulated by the stepped opening or closing of the mixing valves.
  The mixing valve motor control changes the actuating and pause times subject to the control differential (control deviation).

Functions

The heating circuit without mixing valve is subject to the boiler water temperature and its control range limits.
The heating circuit pump is the only actuator.
The supply temperature of the heating circuits with mixing valve is captured by the supply temperature sensor of the relevant heating circuit.

- Upper control limit:
  Electronic maximum supply temperature limit
  coding address “c6” in the “Heating circuit...” group.
- Lower control range limit:
  Electronic minimum supply temperature limit
  coding address “c5” in the “Heating circuit...” group.

Time program

The control unit switches over according to the time program. In the “Heating and DHW” operating program, the control unit switches between “Central heating with standard room temperature” and “Central heating with reduced room temperature”.
Every operating mode has its own set level.
4 time phases per day can be selected.

Outdoor temperature

A heating curve must be set for matching the control unit to the building and the heating system.
The heating curve characteristics determine the set boiler water temperature subject to outdoor temperature.
The control unit uses an average outdoor temperature. This comprises the actual and the adjusted outdoor temperature.

Room temperature

In conjunction with a remote control and room temperature hook-up (coding “b0” in the “Heating circuit...”) group:
Compared with the outdoor temperature, the room temperature has a greater influence on the set boiler water temperature (changed at coding “b2” in the “Heating circuit...” group).
In conjunction with heating circuits with mixing valve:
For control differentials (actual value deviation) above 4°F (2 K) room temperature, the influence can be increased further (coding “b6” in the “Heating circuit...” group):

- Quick heat-up
  The set room temperature must be raised by at least 4°F (2 K) by the following measures:
  – Enabling comfort mode
  – Changing from central heating with reduced temperature to central heating with standard temperature
  – Start optimization (coding “b7” in the “Heating circuit...” group) Quick heat-up will stop when the set room temperature has been reached.
- Quick setback
  The set room temperature must be reduced by at least 4°F (2 K) by the following measures:
  – Activating economy mode
  – Changing from central heating with standard temperature to central heating with reduced temperature
  – Shutdown time optimization (coding address “c1” in the “Heating circuit...” group)
  Quick setback ends when the set room temperature has been reached.

Heating Circuit Control Unit *(continued)*

DHW temperature
Priority control

- With priority control: (coding address “a2:2” in the “Heating circuit...” group):
  The set supply temperature will be adjusted to 32°F (0°C) during tank heating. The mixing valve closes and the heating circuit pump is switched off.
- Without priority control:
  The heating circuit control unit continues to operate with the same set value.
- With modulating priority control in conjunction with heating circuits with mixing valve:
  The heating circuit pump remains switched on.
  During tank heating the set supply temperature of the heating circuit will be reduced until the set boiler water temperature has been reached.
  The set supply temperature is determined from the following coding:
  – Outdoor temperature
  – Differential between the set and the actual boiler water temperature

– Heating curve slope and shift
– Set coding “a2” in the “Heating circuit...” group

Heating circuit pump logic – Economy circuits

The heating circuit pump is switched OFF [set supply temperature set to 32°F (0°C)] if one of the following criteria is met:

- The outdoor temperature selected in coding “a5” in the “Heating circuit...” group exceeds the set value.
- The adjusted outdoor temperature exceeds the value set in coding“a6” in the “Heating circuit...” group.
- The mixing valve has been attempting to close for more than 12 min. (mixing valve economy function, coding “a7” in the “Heating circuit...” group).
- The pump idle time selected in coding “a9” in the “Heating circuit ...” group is reached.
  Requirements:
  – There is no risk of frost.
  – Coding “b0” in the “Heating circuit...” group must be set to 0.

Note: If, during the pump idle time, the system is switched to heating mode or the set room temperature is increased, the heating circuit pump is switched ON,even if the time has not yet elapsed.

- The actual room temperature exceeds the value set in coding “b5” in the “Heating circuit ...” group.

System dynamics
The mixing valve control characteristics can be influenced at coding “c4” in the “Heating circuit...” group.

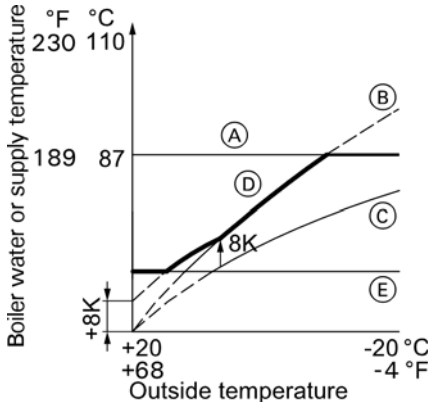
Central control

Coding “7a” in the “General” group enables you to program central control to one heating circuit.
The operating and holiday program then applies to all additional heating circuits of the system.
For these heating circuits, when the operating and holiday program is enabled,“Central control” is displayed.
Any holiday programs that may have been set will be deleted.
Party and economy modes cannot be enabled on all control units.

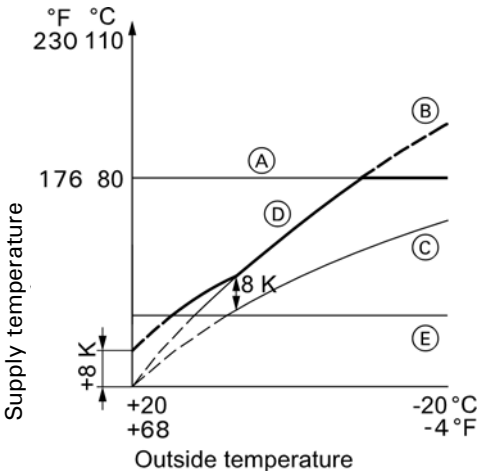
Frost protection

The supply temperature is held in accordance with the heating curve for the reduced set room temperature, but at least at 50°F (10°C).
A variable frost limit can be set in line with coding address “a3” in the “Heating circuit...” group.

Heating Circuit Control Unit *(continued)*



Legend
Ⓐ Max. boiler water temperature
Ⓑ Slope = 1.8 for heating circuit without mixing valve
Ⓒ Slope = 1.2 for heating circuit with mixing valve
Ⓓ Boiler water temperature [with a differential temperature = 15°F (8 K)]
Ⓔ Lower boiler water temperature, defaulted by the boiler coding card



Legend
Ⓐ Maximum supply temperature limit (coding “37” in the “Cascade” group)
Ⓑ Slope = 1.8 for heating circuit without mixing valve
Ⓒ Slope = 1.2 for heating circuit with mixing valve
Ⓓ Common supply temperature [at a differential temperature = 15°F (8 K)]
Ⓔ Lower common supply temperature

Supply temperature control single boiler control unit

Differential temperature:
The differential temperature can be set at coding “9f” in the “General”group, factory set condition: 15°F (8 K). The differential temperature is the minimum value by which the boiler water temperature should be higher than the highest currently required supply temperature of the heating circuit with mixing valve.

- System with only one heating circuit with mixing valve: The set boiler water temperature will be automatically regulated to 15°F (8 K) above the set supply temperature.
- System with heating circuit without mixing valve and heating circuit with mixing valve:
  The set boiler water temperature operates in accordance with its own heating curve. The differential temperature of 15°F (8 K) towards the set supply temperature is set at the factory.

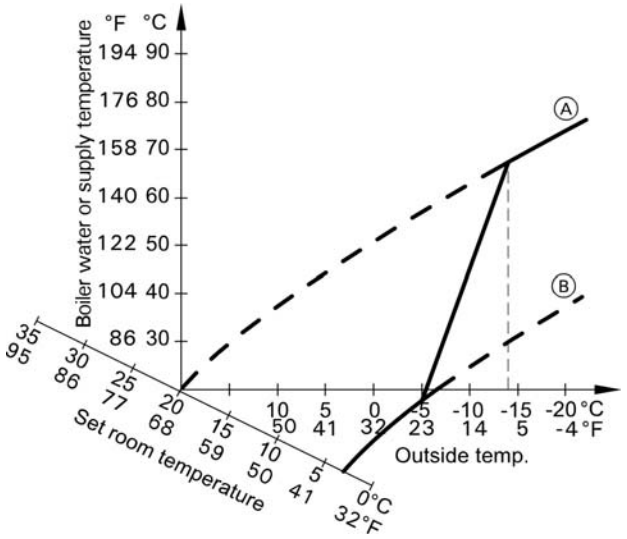
Supply temperature control cascade control unit

Differential temperature:
The differential temperature can be set at coding “9f” in the “General” group, factory set condition 15°F (8 K). The differential temperature is the value by which the common supply temperature should be higher than the highest currently required supply temperature of the heating circuit with mixing valve.

- System with only one heating circuit with mixing valve: The common set supply temperature is regulated automatically to 15°F (8 K) above the set supply temperature of the heating circuit with mixing valve.
- System with heating circuit without mixing valve and heating circuits with mixing valve:
  The common set supply temperature operates in accordance with its own heating curve. The differential temperature of 15°F (8 K) towards the set supply temperature of the heating circuits with mixing valve is set at the factory.

Heating Circuit Control Unit *(continued)*

Example using the settings in the factory set condition

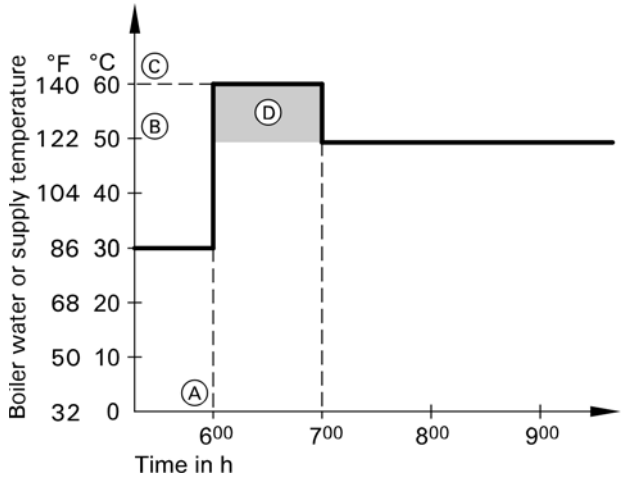


Legend

Ⓐ Heating curve for operation with standard room temperature

Ⓑ Heating curve for operation with reduced room temperature

Example using the settings in the factory set condition



Legend

Ⓐ Start of operation with standard room temperature

Ⓑ Set boiler water or supply temperature in accordance with the selected heating curve

Ⓒ Set boiler water or supply temperature in accordance with coding “fa”:
122°F (50°C) + 20% = 146°F (60°C)

Ⓓ Duration of operation with higher boiler water or set supply temperature in accordance with coding “fb”: 60 min

Raising the reduced room temperature

During operation with reduced room temperature, the reduced set room temperature can be automatically raised subject to the outdoor temperature.
The temperature is raised in accordance with the selected heating curve, but no higher than the set standard room temperature.
The outdoor temperature limits for the start and end of temperature raising can be set in coding “f8” and “f9” in the “Heating circuit...” group.

Reducing the heat-up time

During the transition from operation with reduced room temperature to operation with standard room temperature, the boiler water or supply temperature will be raised in accordance with the selected heating curve. The boiler water or supply temperature increase can be automatically raised.
The value and duration for the additional raising of the boiler water temperature or set supply temperature can be set in coding “fa” and “fb” in the “Heating circuit...” group.

Control sequence

Mixing valve circuit

The mixing valve motor will not be switched within the “neutral zone” ±2°F (±1 K).

Supply temperature drops
(Set value -2°F (–1 K)

The mixing valve motor receives the signal “mixing valve open”. The signal duration lengthens with an increasing control differential. The duration of pauses reduces with an increasing control differential.

Supply temperature rises
(set value +2°F (+1 K)

The mixing valve motor receives the signal “mixing valve close”. The signal duration lengthens with an increasing control differential. The duration of pauses reduces with an increasing control differential.

DHW Tank Temperature Control

Brief description

- The tank temperature control is a constant temperature control function. This is achieved by starting and stopping the DHW pump. The switching differential is ±5°F (±2.5 K).
- When the DHW tank is heated, a set supply temperature is specified that is 36°F (20 K) higher than the set DHW temperature (adjustable at coding "60" in the "DHW" group).

Functions

Time program

An automatic or an individual time program may be selected for DHW pump and the DHW recirculation pump. Compared with the heating circuit heatup phase, DHW heating starts 30 min earlier in automatic mode.
The individual time program enables up to 4 time phases per day to be set for DHW pump and the DHW recirculation pump for every day of the week.
All tank heating sequences will be completed independently of the time program.

In conjunction with coding "7f" in the "General" group

- Detached house
  Coding "7f:1":
  – Automatic mode
    The heating times for heating circuit 1 are applied to systems with two or three heating circuits.
  – Individual time program
    The time phases for DHW pump and the DHW recirculation pump have the same effect on all heating circuits.
- Apartment building
  Coding "7f:0":
  – Automatic mode
    For systems with two or three heating circuits, the heating times for the respective heating circuit will be applied.
  – Individual time program
    The time phases for DHW pump and the DHW recirculation pump can be adjusted individually for each heating circuit.

Priority control

- With priority control: (coding "a2:2" in the "Heating circuit..." group):
  The set supply temperature will be adjusted to 32°F (0°C) during tank heating. The mixing valve closes and the heating circuit pump is switched off.
- Without priority control:
  The heating circuit control unit continues to operate with the same set value.
- With modulating priority control in conjunction with heating circuits with mixing valve:
  The heating circuit pump remains switched on.
  During tank heating the set supply temperature of the heating circuit will be reduced until the set boiler water temperature has been reached.
  The set supply temperature is determined from the following coding:
  – Outdoor temperature
  – Differential between the set and the actual boiler water temperature
  – Heating curve slope and shift
  – Set coding "a2" in the "Heating circuit..." group

Frost protection

The DHW tank will be heated to 68°F (20°C) if the DHW temperature falls below 41°F (5°C).

Forth phase heating function
(auxiliary function for DHW heating)
This function is activated by providing a second set DHW temperature at coding "58" in the "DHW" group and activating the fourth DHW phase for DHW heating.

Set DHW temperature

The set DHW temperature can be adjusted between 50 and 140°F (10 and 60°C).
Coding "56" in the "DHW" group enables the set range to be extended to 203°F (95°C).
Coding "66" in the "DHW" group enables the set value of the programming unit and/or remote control Vitotrol 300 to be assigned.

DHW recirculation pump

This delivers hot water to the draw-off points at adjustable times. Four time phases can be selected at the control unit for every day.

DHW Tank Temperature Control *(continued)*

Auxiliary circuits

DHW heating in conjunction with the heating circuits can be disabled or enabled by changing over the operating program (see coding “d5” in the “Heating circuit...” group).

System with tank loading system

The above functions also apply in conjunction with tank loading systems.
Set the following coding:
“55:3” in the “DHW” group; “4c:1”,
“4e:2” in the “General” group.
The DHW tank is only reheated by the boiler if the temperature falls below this value.

System with solar control unit

A third set DHW temperature can be assigned at coding “67” in the “DHW” group.
The DHW tank is only reheated by the boiler if the temperature falls below this value.

Controlled sequence single boiler control

Coding “55:0” in the “DHW” group; tank heating

The DHW tank goes cold [set value -5°F (−2.5 K), adjustable via coding “59”]:

- The set boiler water temperature is set 36°F (20 K) higher than the set DHW temperature (adjustable via coding “60”).
- Pump on:
  - Starting the DHW pump is subject to boiler water temperature (coding “61:0”).
    The DHW pump starts when the boiler water temperature is 14°F (7 K) higher than the DHW temperature.
  - Starting the DHW pump for tank heating immediately (coding “61:1”).
    The DHW tank is hot [set value +5°F (+2.5 K)]:
- The set boiler water temperature is reset to the weather-compensated set value.
- Pump delay off:
  The DHW pump runs on after tank heating until one of the following criteria is met:
  - The differential between the boiler water temperature and the DHW temperature is less than 13°F (7 K).
  - The weather-compensated set boiler water temperature has been reached.
  - The set DHW temperature is exceeded by 10°F (5 K).
  - The set max. delay off time is reached (coding “62”).
- Without pump delay off (coding “62:0”).

Coding “55:1” in the “DHW” group; adaptive tank heating

With adaptive tank heating, the speed of the temperature rise during DHW heating is taken into account.
The DHW tank goes cold [set value -5°F (-2.5 K), adjustable via coding “59”]:

- The set boiler water temperature is set 36°F (20 K) higher than the set DHW temperature (adjustable via coding “60”).
- Pump on:
  - Starting the DHW pump is subject to boiler water temperature (coding “61:0”):
    The DHW pump starts when the boiler water temperature is 13°F (7 K) higher than the DHW temperature.
  - Starting the DHW pump immediately (coding “61:1”).

The DHW tank is hot:

- The control unit checks whether the boiler will still be required to supply heating energy after the tank has been heated up or whether residual boiler heat should be transferred to the DHW tank.
  Accordingly, the control unit determines the burner and DHW pump stop times to prevent the set DHW temperature being substantially exceeded after the tank has been heated up.

Coding “55:2” in the “DHW” group; tank temperature control with 2 tank temperature sensors

Tank temperature sensor 1 enables the DHW pump and is evaluated for stop conditions during the pump delay off time.
Tank temperature sensor 2:
Tank heating will start early if a lot of hot water is drawn off. Tank heating will terminate early if no hot water is drawn off.

DHW tank goes cold:

- Set value -5°F (−2.5 K), change at coding “59”
  or
- Actual DHW temperature at sensor 2 < set DHW temperature x factor for start time (adjustment at coding “69”)

The DHW tank is hot:

- set value 5°F (2.5 K)
  and
- Actual DHW temperature at sensor 2 > set DHW temperature x factor for stop time (adjustment at coding “68”)

DHW Tank Temperature Control *(continued)*

Coding “55:3” in the “DHW” group;
tank temperature control tank loading system

The DHW tank goes cold [set value -5°F (–2.5 K); change at coding “59”]:

- The set boiler water temperature is set 36°F (20 K) higher than the set DHW temperature (adjustable via coding “60”).
- The primary pump in the tank loading system starts.
- The 3-way mixing valve opens and then regulates to the specified set value.
- The DHW pump cycles (briefly switches on and off) until the set supply temperature has been reached [set DHW temperature +10°F (+5 K)].
  Then it runs constantly. If, during heating, the actual value falls below the required set temperature, the DHW pump will temporarily cycle again.

The DHW tank is hot:

- Tank temperature sensor 1:
  Actual value ≥ set value
  and
  Tank temperature sensor 2:
  Actual value > set value -3°F (–1.5 K):
- The set boiler water temperature is reset to the weather-compensated set value.
- The DHW pump stops immediately when the 3-way mixing valve is fully opened.
  or
- The DHW pump stops after expiry of the delay off time that is selected at coding “62”.

Controlled sequence cascade control

The following coding in the “DHW” group influence the controlled sequence.

Tank heating (coding “55:0”)

The DHW tank goes cold [set value -5°F (–2.5 K), adjustable via coding “59”]:

- The common set supply temperature is set 36°F (20 K) higher than the set DHW temperature (adjustable via coding “60”).

The DHW tank is hot [set value +5°F (+2.5 K)]:

- The common set supply temperature is returned to the set weather-compensated value.
- With pump delay off:
  The DHW pump runs on after tank heating until one of the following criteria is met:
  – The set DHW temperature is exceeded by 9°F (5 K).
  – The set max. delay off time is reached (coding “62”).
- Without pump delay off (coding “62:0”).

Adaptive storage tank heating enabled (coding “55:1”)

With adaptive tank heating, the speed of the temperature rise during DHW heating is taken into account.
The DHW tank goes cold [set value -5°F (–2.5 K), adjustable via coding “59”]:

- The common set supply temperature is set 36°F (20 K) higher than the set DHW temperature (adjustable via coding “60”).

The DHW tank is hot:

- The control unit checks whether the boiler will still be required to supply heating energy after the tank has been heated up or whether residual boiler heat should be transferred to the DHW tank.
  Accordingly, the control unit determines the burner and circulation pump stop times to prevent the set DHW temperature being substantially exceeded after the tank has been heated up.

DHW Tank Temperature Control *(continued)*

Storage tank temperature control with 2 temperature sensors (coding "55:2")

Tank temperature sensor 1 enables the DHW pump for tank heating and is evaluated for stop conditions during the pump delay off time.
Tank temperature sensor 2:
Tank heating will start early if a lot of hot water is drawn off. Tank heating will terminate early if no hot water is drawn off.

DHW tank goes cold:

- Set value -5°F (−2.5 K), adjustable via coding "59"
  or
- Actual DHW temperature at sensor 2 < set DHW temperature x factor for start time (adjustment at coding "69")

The DHW tank is hot:

- Set value +5°F (+2.5 K)
  and
- Actual DHW temperature at sensor 2 > set DHW temperature x factor for stop time (adjustment at coding "68")

Coding "55:3" in the "DHW" group;
tank temperature control tank loading system
The DHW tank goes cold [set value -5°F (−2.5 K), adjustable via coding "59"]:

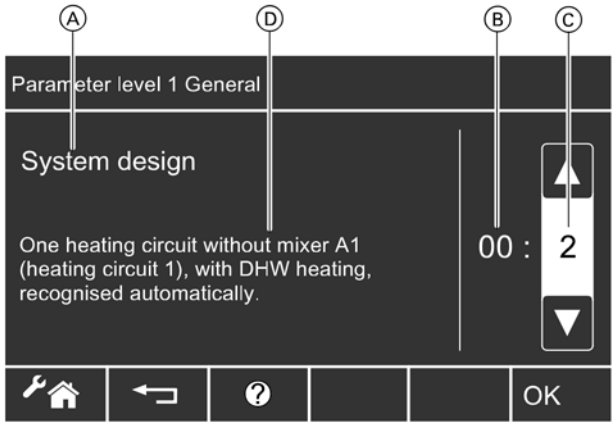
- The common set supply temperature is set 36°F (20 K) higher than the set DHW temperature (adjustable via coding "60").
- The primary pump in the tank loading system starts.
- The 3-way mixing valve opens and then regulates to the specified set value.
- The DHW pump cycles (briefly switches on and off) until the set supply temperature has been reached [set DHW temperature +9°F (+5 K)].
  Then it runs constantly.
  If, during heating, the actual value falls below the required set temperature, the circulation pump for tank heating will temporarily cycle again.

The DHW tank is hot:

- Tank temperature sensor 1:
  Actual value ≥ set value
  and
  Tank temperature sensor 2:
  Actual value > set value -3°F (-1.5 K):
- The common set supply temperature is returned to the set weather-compensated value.
- The DHW pump stops immediately when the 3-way mixing valve is fully opened.
  or
  The DHW pump stops after expiry of the delay off time that is selected at coding "62".

Calling up Coding Levels

Display for coding levels



Legend
Ⓐ Coding
Ⓑ Number of coding
Ⓒ Value of coding
Ⓓ Coding description

- Coding are split into the following groups:
  – "General"
  – "Combustion controller"
  – "DHW"
  – "Solar"
  – "Heating circuit 1/2/3"
  – "Boiler"
  – "Cascade"
  – "All coding"
  In this group, all coding in the coding levels are listed in ascending order (except the coding in the "Solar" group).
- Heating systems with one heating circuit without mixing valve and one or two heating circuits with mixing valve:
  In the following, the heating circuit without mixing valve is designated "Heating circuit 1" and the heating circuits with mixing valve as "Heating circuit 2" or "Heating circuit 3".
- The selected designation appears if the heating circuits have been designated individually.

From the home screen tap the following buttons:

1. "Menu"
2. "Service"
3. Enter "viservice" password.
4. "System coding"
5. "Coding level 1"
   or
   "Coding level 2":
   Enter "viexpert" password.
6. Select group.
7. Select coding.
8. "Edit"
9. ▲/▼ for the required value in line with the following tables.

Resetting Coding to their Factory Set Condition

From the home screen tap the following buttons:

1. "Menu"
2. "Service"
3. Enter "viservice" password.
4. "System coding"
5. "Coding level 1"
   or
   "Coding level 2":
   Enter "viexpert" password.
6. "Reset coding"

"General" Group

Coding

Coding in the factory set condition		Possible change	
System design			
00:1	System version 1: One heating circuit without mixing valve A1 (heating circuit 1), without DHW heating	00:2 to 00:10	For system schemes, see the following table:

Value address 00: ...	Description
2	One heating circuit without mixing valve A1 (heating circuit 1), with DHW heating; recognized automatically.
3	One heating circuit with mixing valve M2 (heating circuit 2), without DHW heating.
4	One heating circuit with mixing valve (heating circuit 2), with DHW heating
5	One heating circuit without mixing valve A1 (heating circuit 1), one heating circuit with mixing valve M2 (heating circuit 2), without DHW heating; recognized automatically.
6	One heating circuit without mixing valve A1 (heating circuit 1), one heating circuit with mixing valve M2 (heating circuit 2), with DHW heating; recognized automatically.
7	Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3), without DHW heating.
8	Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3), with DHW heating.
9	One heating circuit without mixing valve A1 (heating circuit 1), two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3), without DHW heating; recognized automatically.
10	One heating circuit without mixing valve A1 (heating circuit 1), two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3), with DHW heating; recognized automatically.

Coding in the factory set condition		Possible change	
Servomotor runtime			
40:...	Actuator runtime at plug 52A1.	40:5 to 40:199	Adjustable from 5 to 199 sec.
"Boiler circuit pump"			
53:1	With low loss header: Boiler circuit pump only runs on demand if the burner is operational (with delay off time)	53:0	Boiler circuit pump runs permanently - subject to warm weather shutdown
LON participant no.			
77:1	LON participant number.	77:1 to 77:99	Adjustable from 1 to 99: 1 = 'Single boiler' or 'lead boiler + cascade' 2 - 8 = Lag boiler 9 - 96 = Vitotronic 200-H 97 = Vitogate 300 98 = Vitogate 99 = Vitocom
"Detached house/apartment building"			
7f:1	Detached house	7F:0	Apartment building Separate adjustment of holiday program and time program for DHW heating possible.

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
"Automatic summer/wintertime changeover"			
81:1	Automatic summer/wintertime changeover.	81:0	Manual summer/wintertime changeover
		81:2	Do not adjust!
		81:3	With LON communication module: The control unit receives the time.
"Summer time starts: Month"			
82:3	March	82:1 to 82:12	January to December
"Summer time starts: Week of the selected month"			
83:2	Week 2 of the selected month	83:1 to 83:5	Week 1 to week 5 of the selected month
		83:6	83:6 Last week – 1 week
		83:7	83:7 Last week – 2 weeks
		83:8	83:8 Last week – 3 weeks
		83:9	83:9 Last week – 4 weeks
		83:10 to 83:14	Special function
"Summer time starts: Day of the selected week"			
84:7	Last Sunday of the selected month	84:1 to 84:7	Monday to Sunday.
"Wintertime starts: Month"			
85:11	November	85:1 to 85:12	January to December
"Wintertime starts: Week of the selected month"			
86:1	Week 1 of the selected month	86:1 to 86:5	Week 1 to week 5 of the selected month
"Wintertime starts: Day of the selected week"			
87:7	Last Sunday of the selected month	87:1 to 87:7	Monday to Sunday
"Operation enabled/blocked"			
8f:0	Do not adjust!	--	--
"Set supply temperature for external demand"			
9b:70	Set to 158°F (70°C)	9b:0 to 9b:127	Adjustable from 32 to 261°F (0 to 127°C) (limited by boiler specific coding)

"Combustion Controller" Group

Coding in the factory set condition		Possible change	
"Max operational output"			
02:100	100% of rated heating output	02:0 to 02:100	Adjustable from 0 to 100% (0% represents burner minimum firing rate)
"Gas type"			
03:0	Natural gas	03:1	LPG
"Altitude"			
04:0	LA: ≤ 1500 m	04:1	HA: > 1500 m
"Max boiler temperature"			
06:95	Set to 203°F (95°C)	06:5 to 06:127	Adjustable from 41 to 261°F (5 to 127°C)
"Integral threshold value of controller"			
08:30	Set to 30 Kmin	08:1 to 08:255	Adjustable from 1 to 255 Kmin
"Runtime optimization"			
09:1	Integral method	09:0	Minimum pause

"Boiler" Group

Coding in the factory set condition		Possible change	
"Single boiler and multi boiler system"			
01:2	Multi-boiler system with Viessmann-cascade or LON-cascade	01:1	Single boiler system
		01:3	Do not adjust!
"Consecutive boiler number in multi boiler systems"			
07:1	Consecutive boiler number in multi boiler systems	07:2 to 07:8	Adjustable from 1 to 8
"Flue gas temperature sensor"			
1f:0	Do not adjust!	--	--
"Service interval"			
21:0	No service interval (hours run) selected.	21:1 to 21:100	The number of hours run before the burner should be serviced is adjustable from 100 to 10000 h; 1 step ≙ 100 h
"Interval for service"			
23:0	No interval for service	23:1 to 23:24	Adjustable from 1 to 24 months.
"Service" display"			
24:0	No "Service" display	24:1	"Service" is displayed (the address is automatically set and must be manually reset after a service has been carried out).

"Cascade" Group

Coding in the factory set condition		Possible change	
"Number of boilers connected to the cascade"			
35:8	8 boilers	35:1 to 35:8	1 to 8 boilers
"Minimum system supply temperature limit"			
36:0	Electronic minimum system supply temperature limit set to 32°F (0°C).	36:1 to 36:127	Adjustable from 32 to 261°F (0 to 127°C) (only when operating with standard room temperature)
"Maximum system supply temperature limit"			
37:80	Electronic maximum system supply temperature limit set to 176°F (80°C).	37:20 to 37:127	Adjustable from 68 to 261°F (20 to 127°C) **Note:** Value must be lower than the lowest value of coding "06" in the "Combustion controller" group of every control unit.
"Lead boiler or boiler sequence changeover"			
38:0	No lead boiler or boiler sequence changeover (see function description in chapter "Cascade control")	38:1	Lead boiler changeover: Every first day of the month, the boiler with the shortest number of hours run by its burner becomes the lead boiler.
		38:2 to 38:200	Lead boiler changeover after 200 to 20,000 hours run 1 step ≙100 hours run
"Permanent lead boiler"			
39:0	No permanent lead boiler	39:1 to 39:8	Permanent lead boiler is boiler 1, 2, 3 or 8
"Permanent last boiler"			
3a:0	No permanent last boiler	3a:1 to 3a:8	Permanent last boiler is boiler 1, 2, 3 or 8
"Type of control"			
3b:1	Standalone parallel boiler circuit: With supply temperature sensor (see page 71)	3b:0	Standalone parallel boiler circuit: With supply temperature sensor (see page 73)
		3b:2	Standalone serial boiler circuit: Without supply temperature sensor (see page 73)
		3b:3	Standalone serial boiler circuit: With supply temperature sensor (see page 73)
		3b:4	Sequential control method with supply temperature sensor (see page 73)
"Control strategy"			
3c:0	Condensing strategy (see page 74)	3c:1	Conventional boiler strategy 1 (see page 75)
		3c:2	Conventional boiler strategy 2 (see page 76)
"Output statement"			
3d:1	Output statement for condensing strategy and conventional boiler strategy 1	3d:0	No output statement **Note:** Control only in accordance with conventional boiler strategy 2

"Cascade" Group *(continued)*

Coding in the factory set condition		Possible change	
"ECO threshold boiler 1"			
41:31	No ECO threshold boiler 1	41: – 30 to 41: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 2"			
42:31	No ECO threshold boiler 2	42: – 30 to 42: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 3"			
43:31	No ECO threshold boiler 3	43: – 30 to 43: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 4"			
44:31	No ECO threshold boiler 4	44: – 30 to 44: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"Start integral threshold"			
45:60	Set to 60 K x minute	45:1 to 45:255	Adjustable from 1 to 255 K x minute **Note:** A boiler or burner stage will shut down if this value is exceeded.
"Stop integral threshold"			
46:40	Set to 40 K x minute	46:1 to 46:255	Adjustable from 1 to 255 K x minute **Note:** A boiler or burner stage will shut down if this value is exceeded.
"Stop differential"			
47:15	Set to 15 K	47:2 to 47:30	Adjustable from 2 to 30 K **Note:** One boiler or one burner stage will be shut down if the actual supply temperature exceeds the set supply temperature by this value.
"ECO threshold boiler 5"			
65:31	No ECO threshold boiler 5	65: – 30 to 65: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 6"			
6F:31	No ECO threshold boiler 6	6F: – 30 to 6F: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 7"			
74:31	No ECO threshold boiler 7	74: – 30 to 74: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 8"			
7d:31	No ECO threshold boiler 8	7d: – 30 to 7d: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)

"DHW" Group

Coding in the factory set condition		Possible change	
"Storage tank heating, hysteresis"			
55:0	Tank heating hysteresis ± 2.5 K	55:1	Adaptive storage tank heating enabled (see page 82)
		55:2	Storage tank temperature control with 2 temperature sensors (see page 82).
		55:3	Storage tank temperature control, storage tank loading system (see page 83)
"For solar DHW heating: DHW temperature target"			
67:40	DHW setpoint temperature 104°F (40°C). Reheating is suppressed above the selected set temperature (DHW heating blocked by the boiler).	67:0 to 67:95	Adjustable from 32 to 203°F (0 to 95°C) (limited by boiler-specific coding)
"DHW recirculation pump"			
73:0	ON according to time program	73:1 to 73:6	"ON" from once per hour for 5 min up to 6 times per hour for 5 min during the time program.
		73:7	Permanently ON

"Solar" Group

Note: The "Solar" group is only displayed if a solar control module, type SM1, is connected.

Coding in the factory set condition		Possible change	
"Solar circuit pump speed control"			
02:0	Solar circuit pump is not speed controlled	02:1	Variable speed solar circuit pump with wave packet control
		02:2	Solar circuit pump speed controlled with PWM control
"Maximum storage tank temperature"			
08:60	DHW setpoint temperature (maximum tank temperature) 140°F (60°C)	08:10 to 08:90	Adjustable from 50 to 194°F (10 to 90°C)
"Stagnation time reduction"			
0a:5	Temperature differential for stagnation time reduction (reduction in the speed of the solar circuit pump to protect system components and heat transfer medium) 5 K.	0a:0	Stagnation time reduction disabled
		0a:1 to 0a:40	Temperature differential adjustable from 1 to 40 K
"Solar circuit flow rate"			
0f:70	Solar circuit flow rate at maximum pump speed 1.8 USG/min (7 L/min)	0f:1 to 0f:255	Adjustable from 0.02 to 6.7 USG/min (0.1 to 25.5 L/min), 1 step ≙ 0.02 USG/min (0.1 L/min).
"Extended control function"			
20:0	No extended control function enabled	20:1	Additional function for DHW heating
		20:2	Differential temperature control 2
		20:3	Differential temperature control 2 and auxiliary function
		20:4	Differential temperature control 2 for central heating backup
		20:5	Thermostat function
		20:6	Thermostat function and auxiliary function
		20:7	Solar heating via external heat exchanger without additional temperature sensor
		20:8	Solar heating via external heat exchanger with additional temperature sensor
		20:9	Solar heating of two DHW storage tanks [Solar heating of two DHW tanks]

"Heating Circuit ..." Group

Coding in the factory set condition		Possible change	
"Storage tank priority"			
a2:2	Tank priority control for heating circuit pump and mixing valve	a2:0	Without storage tank priority applicable to heating circuit pump and mixing valve
		a2:1	Storage tank priority only applicable to mixing valve
		a2:3 to a2:15	Modulating priority applies to mixing valves, i.e. the heating circuit receives a reduced amount of heat.
"Heating circuit pump logic function (economy control)"			
a5:5	With heating circuit pump logic function (economy control): heating circuit pump OFF when the outdoor temperature (OT) is 1 K higher than the set room temperature (RTset) OT > RTset +1 K	a5:0	Without heating circuit pump logic function
		a5:1 to a5:15	With heating circuit pump logic function: Heating circuit pump OFF, see the following table

Coding address a5:...	With heating circuit pump logic function: Heating circ pump OFF
1	OT > RTset + 5 K
2	OT > RTset + 4 K
3	OT > RTset + 3 K
4	OT > RTset + 2 K
5	OT > RTset + 1 K
6	OT > RTset
7 to 15	OT > RTset – 1 K OT > RTset – 9 K

Coding in the factory set condition		Possible change	
"Extended economy mode"			
a6:36	Extended economy mode disabled	a6:5 to a6:35	Extended economy mode enabled, i.e. the burner and heating circuit pump will stop and the mixing valve will be closed at a variable value, adjustable between 41 to 95°F (5 and 35°C) plus 2°F (1°C). The base value is the adjusted outdoor temperature. This value is based on the actual outdoor temperature and a time constant, which takes the cooling down of an average building into consideration.
"Mixing valve economy function"			
a7:0	Only for heating circuits with mixing valve: Without mixing valve economy function	a7:1	With mixing valve economy function: Heating circuit pump also OFF: ■ Mixing valve tries closing for more than 20 min Heating circuit pump ON: ■ Mixing valve in control mode ■ If there is a risk of frost

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"Heating Circuit ..." Group *(continued)*

Coding in the factory set condition		Possible change	
"Pump idle time"			
a9:0	Without pump idle time	a9:1 to a9:15	Pump idle time adjustable from 1 to 15. 1: Short idle time 15: Long idle time **Note:** The maximum idle time is 10 h. See page 78.
"Room temperature hook-up"			
b0:0	With remote control:*1 Heating mode/reduced mode: Weather-compensated	b0:1	Heating mode: Weather-compensated Reduced mode: with room temperature hook-up
		b0:2	Heating mode: with room temperature hook-up Reduced mode: Weather-compensated
		b0:3	Heating mode/reduced mode: with room temperature hook-up
"Room temperature-dependent heating circuit pump logic function"			
b5:0	With remote control:*1 No room temperature-dependent heating circuit pump logic function	b5:1 to b5:8	For heating circuit pump logic function, see the following table:

Coding address a5:...	With heating circuit pump logic function: Heating circ pump OFF	
1	RTactual > RTset + 5 K	RTactual > RTset + 4 K
2	RTactual > RTset + 4 K	RTactual > RTset + 3 K
3	RTactual > RTset + 3 K	RTactual > RTset + 2 K
4	RTactual > RTset + 2 K	RTactual > RTset + 1 K
5	RTactual > RTset + 1 K	RTactual > RTset
6	RTactual > RTset	RTactual > RTset – 1 K
7	RTactual > RTset – 1 K	RTactual > RTset – 2 K
8	RTactual > RTset – 2 K	RTactual > RTset – 3 K

Coding in the factory set condition		Possible change	
"Minimum supply temperature limit"			
c5:20	Electronic supply temperature minimum limit 68°F (20°C) (only for operation with standard room temperature)	c5:1 to c5:127	Adjustable from 34 to 261°F (1 to 127°C) (limited by boiler specific coding)
"Maximum supply temperature limit"			
c6:75	Electronic maximum supply temperature limit set to 167°F (75°C)	c6:10 to c6:127	Adjustable from 50 to 261°F (10 to 127°C) (limited by boiler specific coding)

*1 Only change the coding for the heating circuit without mixing valve A1 for boilers without lower temperature limit or for heating circuits with mixing valve if a remote control is connected to them.

"Heating Circuit ..." Group *(continued)*

Coding in the factory set condition		Possible change	
"External operating program changeover"			
d5:0	With external operating program changeover (observe setting of coding "5d", "5e", "5f" and "91" in the "General" group). Changeover "Constant central heating with reduced room temperature" or "Standby mode" (subject to set reduced room temperature)	d5:1	Changeover to "Constant operation with standard room temperature"
"EA1 extension: Operating program changeover"			
d8:0	No operating program changeover	d8:1	Operating program changeover via input DE1
		d8:2	Operating program changeover via input DE2
		d8:3	Operating program changeover via input DE3
"Time limit for comfort mode"			
f2:8	Time limit for comfort mode or external operating program changeover via push button: 8 h*2 **Note:** Observe setting of coding "5d", "5e", "5f" in the "General" group, as well as "d5" and "d8" in the "Heating circuit..." group.	f2:0	No time limit*2
		f2:1 to f2:12	Time limit adjustable from 1 to 12 h*2.
"Temperature limit for terminating reduced mode"			
f8:–5	Temperature limit for terminating reduced mode 25°F (–5°C), see example on page 80. Observe coding "a3".	f8:+10 to f8:–60	Adjustable from 50 to -76°F (+10 to –60°C)
		f8:–61	Function disabled
"Temperature limit for raising the reduced room temperature target"			
f9:–14	Temperature limit for raising the reduced room temperature target 7°F (–14°C), see example on page 80.	f9:+10 to f9:–60	Adjustable from 50 to -76°F (+10 to –60°C)
"Raising the set boiler water or supply temperature when changing from operation with reduced room temperature to operation with standard room temperature"			
fa:20	Raising the set boiler water or supply temperature when changing from operation with reduced room temperature to operation with standard room temperature by 20%. See example on page 80.	fa:0 to fa:50	Adjustable from 0 to 50%
"Duration for raising the set boiler water or supply temperature"			
fb:30	Duration for raising the set supply temperature (see coding "fa") 60 min. See example on page 80.	fb:0 to fb:150	Adjustable from 0 to 300 min

*2 In the "Heating and DHW" operating program, comfort mode ends automatically when the system changes over to operation with standard room temperature.

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"General" Group

Coding in the factory set condition		Possible change	
System design			
00:1	System version 1: One heating circuit without mixing valve A1 (heating circuit 1), without DHW heating	00:2 to 00:10	For system schemes, see the following table:

Value address 00: ...	Description
2	One heating circuit without mixing valve A1 (heating circuit 1), with DHW heating; recognized automatically.
3	One heating circuit with mixing valve M2 (heating circuit 2), without DHW heating.
4	One heating circuit with mixing valve (heating circuit 2), with DHW heating.
5	One heating circuit without mixing valve A1 (heating circuit 1), one heating circuit with mixing valve M2 (heating circuit 2), without DHW heating; recognized automatically.
6	One heating circuit without mixing valve A1 (heating circuit 1), one heating circuit with mixing valve M2 (heating circuit 2), with DHW heating; recognized automatically.
7	Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3), without DHW heating.
8	Two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3), with DHW heating.
9	One heating circuit without mixing valve A1 (heating circuit 1), two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3), without DHW heating; recognized automatically.
10	One heating circuit without mixing valve A1 (heating circuit 1), two heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3), with DHW heating; recognized automatically.

Coding in the factory set condition		Possible change	
"With EA1 extension: DHW recirculation pump runtime for brief operation"			
12:5	DHW recirculation pump runtime for brief operation: 5 min	12:1 to 12:60	Adjustable from 1 to 60 min
"With EA1 extension: Temperature demand"			
1e:0	Analog input 0-10V: Temperature demand from 32 to 212°F (0 to 100°C): 1V ≙ 50°F (10°C) 10V ≙ 212°F (100°C)	1E:1	Adjustable from 86 to 248°F (30 to 120°C): 1V ≙ 86°F (30°C) 10V ≙ 248°F (120°C)
2f:0	Do not adjust!	--	--
"AM1 extension"			
32:0	Without AM1 extension	32:1	With AM1 extension
"Function output A2 at AM1 extension"			
33:1	Heating circuit pump, heating circuit without mixing valve A1 (heating circuit 1)	33:0	DHW recirculation pump
		33:2	DHW loading pump

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
"Function output A1 at AM1 extension"			
34:1	Heating circuit pump, heating circuit without mixing valve A1 (heating circuit 1)	34:0	DHW recirculation pump
		34:2	DHW pump
"Servomotor runtime"			
40:125	Servomotor runtime at plug 52A1 125 sec	40:5 to 40:199	Adjustable from 5 to 199 sec.
"Sensor 17A"			
4a:0	Do not adjust!	--	--
"Sensor 17B"			
4b:0	No sensor 17 B installed	4b:1	Sensor 17 B installed (e.g. temperature sensor T2); automatic recognition.
"Connection at plug 20A1"			
4c:0	Connection on plug 20A1: Heating circuit pump	4c:1	Primary pump, tank loading system
"Connection at plug 29"			
4d:1	Connection at plug 29: Shunt pump	4d:0	Distribution pump
		4d:2	Boiler pump
		4d:3	Boiler pump with isolation valve function
"Connection at plug 52A1"			
4e:1	Motor for 3-way mixing valve for return temperature control	4e:0	Motorized isolation valve **Note:** Factory set condition for lag boilers
		4e:2	Motor for 3-way mixing valve, tank loading system
		4e:3	Mixing valve motor for heating circuit without mixing valve A1 (heating circuit 1)
"Delay off time, shunt or distribution pump"			
4f:5	Delay off time distribution pump 5 min	4f:0	No pump delay off
		4f:1 to 4f:60	Adjustable from 1 to 60 min
"Solar thermal system"			
54:0	Without solar thermal system	54:1	With Vitosolic 100; automatic recognition.
		54:2	Vitosolic 200; automatic recognition.
		54:3	With solar control module SM1, without auxiliary function; automatic recognition.
		54:4	With solar control module, type SM1, with auxiliary function, e.g. central heating backup; automatic recognition.
"EA1 extension"			
5b:0	Without EA1 extension	5b:1	With EA1 extension; automatic recognition.

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
"Function output 157 at EA1 extension"			
5c:0	Function output 157 at EA1 extension: Central fault message	5c:1	Feed pump
		5c:2	No function
		5c:3	Heating circuit pump, heating circuit without mixing valve A1 (heating circuit 1), switched to low speed (reduced mode).
		5c:4	Heating circuit pump, heating circuit with mixing valve M2 (heating circuit 2), switched to low speed (reduced mode).
		5c:5	Heating circuit pump, heating circuit with mixing valve M3 (heating circuit 3), switched to low speed (reduced mode).
"Function input DE1 at EA1 extension"			
5d:0	No function	5d:1	Operating program changeover
		5d:2	External demand with minimum set supply temperature. Set value adjustment at coding "9b" in the "General" group.
		5d:3	External blocking
		5d:4	External blocking with fault message
		5d:5	Fault message input.
		5d:6	Brief operation, DHW recirculation pump (push button function) Set DHW recirculation pump runtime at coding "12" in the "General" group.
"Function input DE2 at EA1 extension"			
5e:0		5e:1	Operating program changeover
		5e:2	External demand with minimum set supply temperature Set value adjustment at coding "9b" in the "General" group
		5e:3	External blocking
		5e:4	External blocking with fault message
		5e:5	Fault message input
		5e:6	Brief operation, DHW recirculation pump (push button function) Set DHW recirculation pump runtime at coding "12" in the "General" group.
"Function input DE3 at EA1 extension"			
5f:0	No function	5f:1	Operating program changeover
		5f:2	External demand with minimum set supply temperature Set value adjustment at coding "9b" in the "General" group.
		5f:3	External blocking
		5f:4	External blocking with fault message
		5f:5	Fault message input
		5f:6	Brief operation, DHW recirculation pump (push button function) Set DHW recirculation pump runtime at coding "12" in the "General" group.

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
"Delay off time for circulation pump, neutralizing system at output 1 at extension AM1"			
6c:0	Delay off time circulation pump neutralizing system: None	6c:1 to 6c:255	Adjustable from 1 to 255 sec
Delay off time for circulation pump, neutralizing system at output 2 at extension AM1"			
6d:0	Delay off time circulation pump neutralizing system: None	6d:1 to 6d:255	Adjustable from 1 to 255 sec
"Display correction for outdoor temperature"			
6e:50	No display correction for outdoor temperature	6e:0 to 6e:49	Display correction –5 K to Display correction –0.1 K
		6e:51 to 6e:99	Display correction +0.1 K to Display correction +4.9 K
"LON communication module"			
76:1	With LON communication module; automatic recognition. If no LON communication module is installed, set coding "76:0".	76:0	Without LON communication module
"LON participant number"			
77:1	LON participant number	77:2 to 77:99	LON participant number, adjustable from 1 to 99: 1 = 'Single boiler' or 'lead boiler + cascade' 2 - 8 = Lag boiler 9 - 96 = Vitotronic 200-H 97 = Vitogate 300 98 = Vitogate 99 = Vitocom
"LON communication"			
78:1	LON communication enabled	78:0	LON communication disabled
"With LON communication module"			
79:1	Control unit is fault manager	79:0	Control unit is not fault manager
"Central control of heating circuits"			
7a:0	Without central control of heating circuits	7a:1	With central control Heating circuit without mixing valve A1 (heating circuit 1)
		7a:2	Heating circuit with mixing valve M2 (heating circuit 2)
		7a:3	Heating circuit with mixing valve M3 (heating circuit 3)
"LON communication module: Time"			
7b:1	Control unit transmits the time.	7b:0	No time transmission
"Detached house/apartment building"			
7f:1	Detached house	7F:0	Apartment building Separate adjustment of holiday program and time program for DHW heating possible.
"Fault message"			
80:6	A fault message is issued if a fault occurs for at least 30 sec.	80:0	Immediate fault message.
		80:2 to 80:199	Adjustable from 10 to 995 sec, 1 step ≙ 5 sec.

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"General" Group *(continued)*

Coding in the factory set condition		Possible change	
"Automatic summer/wintertime changeover"			
81:1	Automatic summer/wintertime changeover	81:0	Manual summer/wintertime changeover
		81:2	Do not adjust!
		81:3	With LON communication module: The control unit receives the time.
"Summer time starts: Month"			
82:3	March	82:1 to 82:12	January to December
"Summer time starts: Week of the selected month"			
83:2	Week 2 of the selected month	83:1 to 83:5	Week 1 to week 5 of the selected month.
		83:6	Last week – 1 week
		83:7	Last week – 2 week
		83:8	Last week – 3 week
		83:9	Last week – 4 week
		83:10 to 83:14	Special function
"Summer time starts: Day of the selected week"			
84:7	Last Sunday of the selected month	84:1 to 84:7	Monday to Sunday
"Wintertime starts: Month"			
85:11	November	85:1 to 85:12	January to December
"Wintertime starts: Week of the selected month"			
86:1	Week 1 of the selected month	86:1 to 86:5	Week 1 to week 5 of the selected month
"Wintertime starts: Day of the selected week"			
87:7	Last Sunday of the selected month	87:1 to 87:7	Monday to Sunday
"Temperature displayed"			
88:0	Temperature unit °C (Celsius)	88:1	Temperature unit °F (Fahrenheit)
"Test display conditions"			
8a:175	Do not adjust!	--	--
"Identification KM bus combustion controller"			
8b:1	ID exists	8b:0	ID does not exist
"Operation enabled/blocked"			
8f:0	Do not adjust!	--	--
"Time constant for calculating adjusted outdoor temperature"			
90:36	Time constant 6 h	90:1 to 90:199	Fast (low values) or slow (high values) matching of the supply temperature, subject to the set value when the outdoor temperature changes 1 step ≙ 10 min

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
"Connection at terminals 1 and 2 in plug 143"			
91:0	Connection disabled (external operating program changeover)	91:1	Contact affects the following heating circuits: Heating circuit without mixing valve A1 (heating circuit 1)
		91:2	Heating circuit with mixing valve M2 (heating circuit 2)
		91:3	Heating circuit without mixing valve A1 (heating circuit 1) and heating circuit with mixing valve M2 (heating circuit 2)
		91:4	Heating circuit with mixing valve M3 (heating circuit 3)
		91:5	Heating circuit without mixing valve A1 (heating circuit 1) and heating circuit with mixing valve M3 (heating circuit 3)
		91:6	Heating circuit with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3)
		91:7	Heating circuit without mixing valve A1 (heating circuit 1) and heating circuits with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3)
"Central fault message during emissions test function/service display"			
93:0	Does not affect central fault	93:1	Affects central fault message
"Communication interface"			
95:0	Without Vitocom 100 communication interface	95:1	With Vitocom 100 communication interface; automatic recognition.
"Extension for heating circuits 2 and 3 with mixing valve"			
96:0	Without extension PCB for heating circuits 2 and 3	96:1	With extension PCB for heating circuits 2 and 3; automatic recognition
"With LON communication module: Outdoor temperature"			
97:2	The control unit sends the outdoor temperature to the Vitotronic 200-H.	97:0	The outdoor temperature of the sensor connected to the control unit is only utilized internally.
		97:1	The control unit receives the outdoor temperature from the Vitotronic 200-H.
"Viessmann system number"			
98:1	Viessmann system number in conjunction with monitoring of several systems within one LON system with Vitocom 300	98:1 to 98:5	Adjustable from 1 to 5

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
"Connection at terminals 2 and 3 in plug 143"			
99:0	Connection disabled	99:1	No function
		99:2	External "mixing valve close" Heating circuit with mixing valve M2 (heating circuit 2)
		99:3	No function
		99:4	External "mixing valve close" Heating circuit with mixing valve M3 (heating circuit 3)
		99:5	No function
		99:6	External "mixing valve close" Heating circuit with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3
		99:7	No function
		99:8	External blocking
		99:9	No function
		99:10	External blocking/external "mixing valve close" Heating circuit with mixing valve M2 (heating circuit 2).
		99:11	No function
		99:12	External blocking/external "mixing valve close" Heating circuit with mixing valve M3 (heating circuit 3)
		99:13	No function
		99:14	External blocking/external "mixing valve close" Heating circuit with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3)
		99:15	No function
"Connection at terminals 1 and 2 in plug 143 "			
9a:0	Connection disabled	9a:1	No function
		9a:2	External "mixing valve open" Heating circuit with mixing valve M2 (heating circuit 2)
		9a:3	No function
		9a:4	External "mixing valve open" Heating circuit with mixing valve M3 (heating circuit 3)
		9a:5	No function
		9a:6	External "mixing valve open" Heating circuit with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3)
		9a:7	No function
"Set supply temperature for external demand"			
9b:70	Set to 158°F (70°C)	9b:0 to 9b:127	Adjustable from 32 to 261°F (0 to 127°C) (limited by boiler specific coding).

"General" Group *(continued)*

Coding in the factory set condition		Possible change	
"With LON communication module: Monitoring LON participants"			
9c:20	Monitoring LON participants If there is no response from a participant after 20 min, the values specified inside the control unit are used. Only then will a fault message be issued.	9c:0	No monitoring.
		9c:5 to 9c:60	Time adjustable from 5 to 60 min.
"Differential temperature"			
9f:8	Differential temperature 8 K only in connection with heating circuit with mixing valve M2 (heating circuit 2) and M3 (heating circuit 3)	9f:0 to 9f:40	Adjustable from 0 to 40 K

"Combustion Controller" Group

Coding in the factory set condition		Possible change	
"Max operational output"			
02:100	100% of rated heating output	02:0 to 02:100	Adjustable from 0 to 100% (0% represents burner minimum firing rate)
"Gas type"			
03:0	Natural gas	03:1	LPG
"Altitude"			
04:0	LA: ≤ 1500 m	04:1	HA: > 1500 m
"Max boiler temperature"			
06:95	Set to 203°F (95°C)	06:5 to 06:127	Adjustable from 41 to 261°F (5 to 127°C)
"Integral threshold value of controller"			
08:30	Set to 30 Kmin	08:1 to 08:255	Adjustable from 1 to 255 Kmin
"Runtime optimization"			
09:1	Integral method	09:0	Minimum pause
"System design"			
0a:1	For boilers with flue gas damper	0a:0	For boilers without flue gas damper

"Boiler" Group

Coding in the factory set condition		Possible change	
"Single boiler and multi boiler system"			
01:2	Multi-boiler system with Viessmann-cascade or LON-cascade	01:1	Single boiler system
		01:3	Do not adjust!
"Consecutive boiler number in multi boiler systems"			
07:1	Consecutive boiler number in multi boiler systems	07:2 to 07:8	Consecutive boiler number ,in the case of multi boiler systems, adjustable from 1 to 8
"Therm Control"			
Od:0	Do not adjust!	Od:1	--
		Od:2	--
"Flue gas temperature sensor"			
1f:0	Do not adjust!	--	--
"Service interval"			
21:0	No service interval (hours run) selected.	21:1 to 21:100	The number of hours run before the burner should be serviced is adjustable from 100 to 10000 h; 1 step ≙ 100 h
"Interval for service"			
23:0	No interval for service.	23:1 to 23:24	Interval adjustable from 1 to 24 months.
"Service" display"			
24:0	No "Service" display.	24:1	"Service" display. The address is automatically set and must be manually reset after a service has been carried out.

"Cascade" Group

Coding in the factory set condition		Possible change	
"Number of boilers connected to the cascade"			
35:8	8 boilers	35:1 to 35:8	1 to 8 boilers
"Minimum system supply temperature limit"			
36:0	Set to 32°F (0°C)	36:1 to 36:127	Adjustable from 32 to 261°F (0 to 127°C) (only when operating with standard room temperature)
"Maximum system supply temperature limit"			
37:80	Set to 176°F (80°C)	37:20 to 37:127	Adjustable from 68 to 261°F (20 to 127°C) **Note:** Value must be lower than the lowest value of coding "06" in the "Combustion controller" group of every control unit.

"Cascade" Group *(continued)*

Coding in the factory set condition		Possible change	
"Lead boiler or boiler sequence changeover"			
38:0	No lead boiler or boiler sequence changeover; see function description in chapter "Cascade control"	38:1	Lead boiler changeover: Every first day of the month, the boiler with the shortest number of hours run by its burner becomes the lead boiler.
		38:2 to 38:200	Lead boiler changeover after 200 to 20,000 hours run 1 step ≙ 100 hours run
"Permanent lead boiler"			
39:0	No permanent lead boiler	39:1 to 39:8	Permanent last boiler is boiler 1, 2, 3, 4, 5, 6, 7 or 8
"Permanent last boiler"			
3a:0	No permanent last boiler	3a:1 to 3a:8	Permanent last boiler is boiler 1, 2, 3, 4, 5, 6, 7 or 8
"Type of control"			
3b:1	Standalone parallel boiler circuit: With supply temperature sensor (see page 73)	3b:0	Standalone parallel boiler circuit: Without supply temperature sensor (see page 73)
		3b:2	Standalone serial boiler circuit: Without supply temperature sensor (see page 73)
		3b:3	Standalone serial boiler circuit: With supply temperature sensor (see page 73)
		3b:4	Sequential control method with supply temperature sensor (see page 73)
"Control strategy"			
3c:0	Condensing strategy (see page 74)	3c:1	Conventional boiler strategy 1 (see page 75)
		3c:2	Conventional boiler strategy 2 (see page 76)
"Output statement"			
3d:1	Output statement for condensing strategy and conventional boiler strategy 1	3d:0	No output statement **Note:** Control only in accordance with conventional boiler strategy 2.
"System pump"			
3e:0	System pump will only run if there is a heat demand.	3e:1	System pump always runs; shutdown through "External blocking" signal.
"Tank priority control for system pump"			
3f:0	Without tank priority control for system pump	3f:1	With tank priority control for system pump
"ECO threshold boiler 1"			
41:31	No ECO threshold boiler 1	41:−30 to 41:+30	Adjustable from -22 to 86°F (−30 to +30°C)

"Cascade" Group *(continued)*

Coding in the factory set condition		Possible change	
"ECO threshold boiler 2"			
42:31	No ECO threshold boiler 2	42: – 30 to 42: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 3"			
43:31	No ECO threshold boiler 3	43: – 30 to 43: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 4"			
44:31	No ECO threshold boiler 4	44: – 30 to 44: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"Start integral threshold"			
45:60	Set to 60 K x minute	45:1 to 45:255	Adjustable from 1 to 255 K x minute **Note:** A boiler or burner stage will shut down if this value is exceeded.
"Stop integral threshold"			
46:40	Set to 40 K x minute	46:1 to 46:255	Adjustable from 1 to 255 K x minute **Note:** A boiler or burner stage will shut down if this value is exceeded.
"Stop differential"			
47:15	Set to 15 K	47:2 to 47:30	Adjustable from 2 to 30 K **Note:** One boiler or one burner stage will be shut down if the actual supply temperature exceeds the set supply temperature by this value.
"ECO threshold boiler 5"			
65:31	No ECO threshold boiler 5	65: – 30 to 65: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 6"			
6f:31	No ECO threshold boiler 6	6f: – 30 to 6f: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 7"			
74:31	No ECO threshold boiler 7	74: – 30 to 74: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)
"ECO threshold boiler 8"			
7d:31	No ECO threshold boiler 8	7d: – 30 to 7d: + 30	Adjustable from -22 to 86°F (– 30 to + 30°C)

"DHW" Group

Coding in the factory set condition		Possible change	
"Storage tank heating, hysteresis"			
55:0	Tank heating, hysteresis ± 2.5 K	55:1	Adaptive storage tank heating enabled (see page 82)
		55:2	Storage tank temperature control with 2 tank temperature sensors (see page 82)
		55:3	Storage tank temperature control, storage tank loading system (see page 83)
"DHW temperature target"			
56:0	Set DHW temperature adjustable from 50 to 140°F (10 to 60°C).	56:1	Adjustable from 50 to above 140°F (10 to above 60°C). **Note:** Observe the max. permissible DHW temperature.
"Additional function for DHW heating"			
58:0	Without additional function for DHW heating	58:10 to 58:60	Input of a second set DHW temperature; adjustable from 50 to 203°F (10 to 95°C) (observe coding "56").
"Tank heating: Set start point"			
59:0	Set start point −2.5 K Set stop point +2.5 K	59:1 to 59:10	Adjustable from 1 to 10 K below set value
"For DHW heating"			
5a:0	The set supply temperature is determined by the highest system supply temperature demand. Scan of the temperature in the "Diagnosis" menu, "General" ("Common demand temp.").	5a:1	The supply temperature target is determined by the DHW tank supply temperature demand. Scan of the temperature in the "Diagnosis" menu, "General" ("Common demand temp.").
"Boiler temperature during DHW heating"			
60:20	During DHW heating, the boiler water temperature is up to 20 K higher than the set DHW temperature.	60:10 to 60:50	The differential between the common supply temperature and the set DHW temperature is adjustable from 10 to 50 K.
"DHW pump"			
61:1	DHW pump starts immediately.	61:0	DHW pump starts subject to boiler temperature.
"DHW pump delay off"			
62:10	DHW pump with a delay off time of up to 10 min after tank heating	62:0	No DHW pump delay off
		62:1 to 62:15	Delay off time adjustable from 1 to 15 min
"In comfort mode and after external changeover to constant operation with the standard room temperature"			
64:2	Enable constant DHW heating and DHW pump "ON"	64:0	No DHW heating; DHW pump "OFF"
		64:1	DHW heating and DHW pump "ON" according to time program

"DHW" Group *(continued)*

Coding in the factory set condition		Possible change	
"Input of the set DHW temperature"			
66:4	At the programming unit of the control unit and all installed Vitotrol 300A remote controls	66:0	At the programming unit of the control unit
		66:1	At the programming unit of the control unit and remote control unit of the heating circuit without mixing valve A1 (heating circuit 1)
		66:2	At the programming unit of the control unit and remote control unit of the heating circuit with mixing valve M2 (heating circuit 2)
		66:3	At the programming unit of the control unit and remote control unit of the heating circuit with mixing valve M3 (heating circuit 3)
		66:5	At the remote control of the heating circuit without mixing valve A1 (heating circuit 1)
		66:6	At the remote control of the heating circuit with mixing valve M2 (heating circuit 2)
		66:7	At the remote control of the heating circuit with mixing valve M3 (heating circuit 3)
"For solar DHW heating: DHW temperature target"			
67:40	DHW setpoint temperature 104°F (40°C). Reheating is suppressed above the selected set temperature (DHW heating by the boiler only if solar energy is not sufficient).	67:0	No set value 3
		67:10 to 67:95	DHW setpoint temperature adjustable from 50 to 203°F (10 to 95°C) (limited by boiler-specific coding). Observe setting of coding "56".
"With 2 tank temperature sensors: Tank heating stop point"			
68:8	With 2 tank temperature sensors (coding "55:2"): Tank heating stop point at set value x 0.8	68:2 to 68:10	Factor adjustable from 0.2 to 1 1 step ≙ 0.1
"With 2 tank temperature sensors: Tank heating start point"			
69:7	With 2 tank temperature sensors (coding "55:2"): Tank heating start point at set value x 0.7	69:1 to 69:9	Factor adjustable from 0.1 to 0.9 1 step ≙ 0.1
"Runtime, actuator, mixing valve, heat exchanger set, Vitotrans 222"			
6A:75	Runtime, servomotor, mixing valve, heat exchanger set, Vitotrans 222, (80 and 120 kW): 75 sec	6A:10 to 6A:255	For heat exchanger set Vitotrans 222 (240 kW): set 113 sec. Runtime adjustable from 10 to 255 sec
"DHW recirculation pump"			
70:0	DHW recirculation pump "ON" according to time program when DHW heating is enabled	70:1	DHW recirculation pump "ON" according to time program
70:1	DHW recirculation pump "ON" according to time program	71:1	"OFF" during DHW heating to set value 1
		71:2	"OFF" during DHW heating to set value 1
72:0	DHW recirculation pump "ON" according to time program	72:1	"OFF" during DHW heating to set value 2
		72:2	"OFF" during DHW heating to set value 2
73:0	DHW recirculation pump "ON" according to time program	73:1 to 73:6	"ON" from once per hour for 5 min up to 6 times per hour for 5 min during the time program
		73:7	Constantly "ON"
75:0	DHW recirculation pump "ON" according to time program	75:1	DHW recirculation pump "OFF" during economy mode

"Solar" Group

Only in conjunction with solar control module, type SM1.

Coding in the factory set condition		Possible change	
"Differential between the actual DHW temperature and the start point for the solar circuit pump"			
00:8	Start temperature differential for solar circuit pump 8 K	00:2 to 00:30	Adjustable from 2 to 30 K
"Differential between the actual DHW temperature and the stop point of the solar circuit pump"			
01:4	Stop temperature differential for solar circuit pump 4 K	01:1 to 01:29	Adjustable from 1 to 29 K
"Solar circuit pump speed control"			
02:0	Solar circuit pump is not speed-controlled	02:1	Variable speed solar circuit pump with wave packet control
		02:2	Solar circuit pump speed controlled with PWM control
"Temperature differential between the collector temperature and actual DHW temperature"			
03:10	Temperature differential for the start of speed control 10 K	03:5 to 03:20	Adjustable from 5 to 20 K
"Controller amplification of the speed control"			
04:4	Controller amplification of the speed control 4%/K	04:1 to 04:10	Adjustable from 1 to 10%/K
"Minimum speed of the solar circuit pump"			
05:10	Minimum speed of the solar circuit pump 10% of the maximum speed	05:2 to 05:100	Adjustable from 2 to 100%
"Maximum speed of the solar circuit pump"			
06:75	Maximum speed of the solar circuit pump 75% of maximum possible speed	06:1 to 06:100	Adjustable from 1 to 100%
"Interval function of the solar circuit pump"			
07:0	Interval function of the solar circuit pump switched off	07:1	Interval function of the solar circuit pump switched on To capture the collector temperature more accurately, the solar circuit pump starts for short cycles.
"Maximum storage tank temperature"			
08:60	DHW setpoint temperature (maximum tank temperature) 140°F (60°C)	08:10 to 08:90	Adjustable from 50 to 194°F (10 to 90°C)
"Maximum collector temperature"			
09:130	Maximum collector temperature (to protect system components) 266°F (130°C)	09:20 to 09:200	Adjustable from 68 to 392°F (20 to 200°C)

"Solar" Group *(continued)*

Coding in the factory set condition		Possible change	
"Stagnation time reduction"			
0a:5	Temperature differential for reducing the stagnation time (reduction in solar circuit pump speed to protect system components and heat transfer medium) 5 K	0a:0	Stagnation time reduction disabled
		0a:1 to 0a:40	Adjustable from 1 to 40 K
"Frost protection function for solar circuit"			
0b:0	Frost protection function for solar circuit switched off	0b:1	Frost protection function for solar circuit switched on (not required with Viessmann heat transfer medium)
"Delta T monitoring"			
0c:1	Delta T monitoring switched on. No flow rate captured in the solar circuit, or flow rate too low.	0c:0	Delta T monitoring switched off
"Night circulation monitoring"			
0d:1	Night circulation monitoring switched on Unintentional flow in the solar circuit is captured (e.g. at night).	0d:0	Night circulation monitoring switched off
"Calculation of solar yield"			
0e:1	Heat statement in conjunction with Viessmann heat transfer medium	0e:2	Do not adjust!
		0e:0	No heat statement
"Solar circuit flow rate"			
0F:70	Solar circuit flow rate at maximum pump speed 1.8 USG/min (7 L/min)	0f:1 to 0f:255	Flow rate adjustable from 0.02 to 6.7 USG/min (0.1 to 25.5 L/min) 1 step ≙ 0.02 USG/min (0.1 L/min)
"Target temperature control"			
10:0	Target temperature control OFF (see coding address "11")	10:1	Target temperature control switched on
"Set solar DHW temperature"			
11:50	Set solar DHW temperature 122°F (50°C) ■ Target temperature control switched on (code "10:1"): Temperature at which the water in the DHW tank heated by solar energy is to be stratified. ■ Code "20:9" (heating of two DHW tanks) selected: When one DHW tank reaches its set DHW temperature, the second DHW tank is heated.	11:10 to 11:90	Adjustable from 50 to 194°F (10 to 90°C)
"Minimum collector temperature"			
12:20	Minimum collector temperature (minimum solar circuit pump start temperature) 68°F (20°C)	12:0	No minimum limit
		12:1 to 12:90	Adjustable from 34 to 194°F (1 to 90°C)

"Solar" Group *(continued)*

Coding in the factory set condition		Possible change	
"Extended control function"			
20:0	No extended control function enabled	20:1	Additional function for DHW heating
		20:2	Differential temperature control 2
		20:3	Differential temperature control 2 and auxiliary function
		20:4	Differential temperature control 2 for central heating backup
		20:5	Thermostat function
		20:6	Thermostat function and auxiliary function
		20:7	Solar heating via external heat exchanger without additional temperature sensor
		20:8	Solar heating via external heat exchanger with additional temperature sensor
		20:9	Solar heating of two DHW storage tanks [Solar heating of two DHW tanks]
"Start temperature differential for central heating backup"			
22:8	Start temperature differential with central heating backup 8 K (code "20:4" must be set)	22:2 to 22:30	Start temperature differential adjustable from 2 to 30 K
"Stop temperature differential for central heating backup"			
23:4	Stop temperature differential with central heating backup 4 K (code "20:4" must be set)	23:2 to 23:30	Stop temperature differential adjustable from 1 to 29 K
"Start temperature for thermostat function"			
24:40	Start temperature for thermostat function 104°F (40°C) (coding "20:5"or "20:6" must be set)	24:0 to 24:100	Adjustable from 0 to 100 K
"Stop temperature for thermostat function"			
25:50	Stop temperature for thermostat function 122°F (50°C) (coding "20:5"or "20:6" must be set)	25:0 to 25:100	Adjustable from 0 to 100 K.
"Priority for DHW storage tank 1"			
26:1	Priority for DHW storage tank 1 with cyclical heating (code "20:9" must be set)	26:0	Priority for DHW storage tank 1 without cyclical heating
		26:2	Priority for DHW storage tank 2 without cyclical heating
		26:3	Priority for DHW storage tank 2 with cyclical heating
		26:4	Alternate heating without priority for one of the DHW storage tanks
"Alternate heating time"			
27:15	Alternate heating time 15 min The DHW tank without priority is heated at most for the duration of the set cyclical heating duration if the DHW tank with priority is already heated up.	27:5 to 27:60	Adjustable from 5 to 60 min
"Alternate pause time"			
28:3	Alternate pause time 3 min After the selected cyclical heating duration for the DHW tank without priority has expired, the rise in collector temperature is captured during the cyclical pause time.	28:1 to 28:60	Adjustable from 1 to 60 min

"Heating Circuit ..." Group

Coding in the factory set condition		Possible change	
"Remote control"			
a0:0	Without remote control	a0:1	With Vitotrol 200, recognized automatically.
		a0:2	With Vitotrol 300 or Vitohome 300; recognized automatically.
"Only with Vitotrol 200"			
a1:0	All possible settings at the remote control can be accessed.	a1:1	Only comfort mode can be set at the remote control.
"Storage tank priority"			
a2:2	Tank priority for heating circuit pump and mixing valve.	a2:0	Without storage tank priority applicable to heating circuit pump and mixing valve
		a2:1	Storage tank priority only applicable to mixing valve
		a2:3 to a2:15	Modulating priority applies to mixing valves, i.e. the heating circuit receives a reduced amount of heat.
"Outdoor temperature: Heating circuit pump"			
a3:2	Outdoor temperature below 34°F (1°C): Heating circ pump switched on Outdoor temperature above 37°F (3°C): Heating circ pump switched off	a3:–9 to a3:15	Heating circuit pump ON/OFF (see the following table)

IMPORTANT

If a value below 34°F (1°C) is selected, there is a risk that pipes outside the thermal envelope of the house could freeze up.
Standby mode in particular should be taken into consideration, e.g. during holidays.

Coding address a3:...	Heating circuit pump	
	Heating circuit pump "ON"	**Heating circuit pump "OFF"**
-9	14°F (–10°C)	18°F (–8°C)
-8	16°F (–9°C)	19.5°F (–7°C)
-7	18°F (–8°C)	21°F (–6°C)
-6	19.5°F (–7°C)	23°F (–5°C)
-5	21°F (–6°C)	25°F (–4°C)
-4	23°F (–5°C)	27°F (–3°C)
-3	25°F (–4°C)	28.5°F (–2°C)
-2	27°F (–3°C)	30°F (–1°C)
-1	28.5°F (–2°C)	32°F (0°C)
0	30°F (–1°C)	34°F (+1°C)
1	32°F (0°C)	36°F (+2°C)
2 to 15	34°F (+1°C) to 57 F (+14°C)	27°F (+3°C) to 61°F (+16°C)

"Heating Circuit ..." Group *(continued)*

Coding in the factory set condition		Possible change	
"Frost protection"			
a4:0	With frost protection	a4:1	No frost protection; this setting is only possible if code a3:9 has been selected. **Note:** "Important" also coding address "a3".
"Heating circuit pump logic function (economy control)"			
a5:5	With heating circuit pump logic function (economy control): heating circuit pump OFF when the outdoor temperature (OT) is 1 K higher than the set room temperature (RTset) OT > RTset +1 K	a5:0	Without heating circuit pump logic function
		a5:1 to a5:15	With heating circuit pump logic function: Heating circuit pump OFF, see the following table

Coding address a5:...	With heating circuit pump logic function: Heating circuit pump "OFF"
1	OT > RTset + 5 K
2	OT > RTset + 4 K
3	OT > RTset + 3 K
4	OT > RTset + 2 K
5	OT > RTset + 1 K
6	OT > RTset
7 **to** **15**	OT > RTset – 1 K OT > RTset – 9 K

Coding in the factory set condition		Possible change	
"Extended economy mode"			
a6:36	Extended economy mode disabled	a6:5 to a6:35	Extended economy mode enabled, i.e. the burner and heating circuit pump will stop and the mixing valve will be closed at a variable value, adjustable between 41 to 95°F (5 and 35°C) plus 2°F (1°C). The base value is the adjusted outdoor temperature. This value is based on the actual outdoor temperature and a time constant, which takes the cooling down of an average building into consideration.
"Mixing valve economy function"			
a7:0	Only for heating circuits with mixing valve: Without mixing valve economy function	a7:1	With mixing valve economy function: Heating circuit pump also OFF: ■ Mixing valve tries closing for more than 20 min Heating circuit pump ON: ■ Mixing valve in control mode ■ If there is a risk of frost

"Heating Circuit ..." Group *(continued)*

Coding in the factory set condition		Possible change	
"Pump idle time"			
a9:0	Without pump idle time	a9:1 to a9:15	Pump idle time adjustable from 1 to 15. 1: Short idle time 15: Long idle time **Note:** The maximum idle time is 10 h. See page 78.
"Output reduction"			
aa:2	With output reduction through temperature sensor 17 A	aa:0	Without output reduction
		aa:1	No function.
"Room temperature hook-up"			
b0:0	With remote control:*1 Heating mode/reduced mode: Weather-compensated	b0:1	Heating mode: Weather-compensated Reduced mode: with room temperature hook-up
		b0:2	Heating mode: with room temperature hook-up Reduced mode: Weather-compensated
		b0:3	Heating mode/reduced mode: with room temperature hook-up
"Room influence factor"			
b2:8	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed:*1 Room influence factor 8	b2:0	Without room influence
		b2:1 to b2:31	Adjustable from 1 to 31
"Room control base value"			
b3:0	127°F (53°C)	b3:1	100°F (38°C)
"Room temperature-dependent heating circuit pump logic function"			
b5:0	With remote control:*1 No room temperature-dependent heating circuit pump logic function	b5:1 to b5:8	For heating circuit pump logic function, see the following table

Coding address b5:...	With heating circuit pump logic function:	
	Heating circuit pump "OFF"	**Heating circuit pump "ON"**
1	RTactual > RTset + 5 K	RTactual < RTset + 4 K
2	RTactual > RTset + 4 K	RTactual < RTset + 3 K
3	RTactual > RTset + 3 K	RTactual < RTset + 2 K
4	RTactual > RTset + 2 K	RTactual < RTset + 1 K
5	RTactual > RTset + 1 K	RTactual < RTset
6	RTactual > RTset	RTactual < RTset – 1 K
7	RTactual > RTset – 1 K	RTactual < RTset – 2 K
8	RTactual > RTset – 2 K	RTactual < RTset – 3 K

*1 Only change the coding for the heating circuit without mixing valve A1 for boilers without lower temperature limit or for heating circuits with mixing valve if a remote control is connected to them.

"Heating Circuit ..." Group *(continued)*

Coding in the factory set condition		Possible change	
"Quick heat-up/quick setback"			
b6:0	With remote control:*1 Without quick heat-up/quick setback	b6:1	With quick heat-up/quick setback (see function description on page 77)
"Start optimization"			
b7:0	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed:*1 Without start optimization	b7:1	With start optimization, max. heat-up time offset 2 h 30 min
		b7:2	With start optimization, max. heat-up time offset 15 h 50 min
"Heat-up gradient start optimization"			
b8:10	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed:*1 Heat-up gradient start optimization 10 min/K	b8:11 to b8:255	Adjustable from 11 to 255 min/K
"Learning start optimization"			
b9:0	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed:*1 Without learning start optimization	b9:1	With learning start optimization
"Shutdown time optimization"			
c0:0	With remote control:*1 Without shutdown time optimization	c0:1	With stop optimization, max. setback time offset 1 h
		c0:2	With stop optimization, max. setback time offset 2 h
"Stop optimization of setback time offset"			
c1:0	With remote control:*1 Without shutdown time optimization	c1:1 to c1:12	With stop optimization of setback time offset adjustable from 10 to 120 min. 1 step ≙ 10 min
"Learning shut-down time optimization"			
c2:0	With remote control:*1 Without learning shutdown time optimization	c2:1	With learning shut-down time optimization
"Mixing valve runtime"			
c3:125	Only for heating circuits with mixing valve: Mixing valve runtime 125 sec	c3:10 to c3:255	Adjustable from 10 to 255 sec
"System dynamics mixing valve"			
c4:1	System dynamics: Mixing valve control characteristics	c4:0 to c4:3	Controller responds too quickly (cycles between "Open" and "Closed"): Select a lower value. Controller responds too slowly (temperature is not held sufficiently): select a higher value.

*1 Only change the coding for the heating circuit without mixing valve A1 for boilers without lower temperature limit or for heating circuits with mixing valve if a remote control is connected to them.

"Heating Circuit ..." Group *(continued)*

Coding in the factory set condition		Possible change	
"Minimum supply temperature limit"			
c5:20	Electronic minimum supply temperature limit 68°F (20°C) (only when operating with standard room temperature)	c5:1 to c5:127	Adjustable from 34 to 261°F (1 to 127°C) (limited by boiler specific coding)
"Maximum supply temperature limit"			
c6:75	Electronic maximum supply temperature limit set to 167°F (75°C).	c6:10 to c6:127	Adjustable from 50 to 261°F (10 to 127°C) (limited by boiler specific coding)
"Room influence limit"			
c8:31	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed:*1 No room influence limit	c8:1 to c8:30	Adjustable from 1 to 30 K
"External operating program changeover"			
d5:0	With external operating program changeover (observe setting of coding "5d", "5e", "5f" and "91" in the "General" group). Changeover "Constant central heating with reduced room temperature" or "Standby mode" (subject to set reduced room temperature)	d5:1	Changeover to "Constant operation with standard room temperature"
"EA1 extension: Operating program changeover"			
d8:0	No operating program changeover	d8:1	Operating program changeover via input DE1
		d8:2	Operating program changeover via input DE2
		d8:3	Operating program changeover via input DE3
"Day temperature target"			
e1:1	With remote control: Set day value adjustable at the remote control from, 50 to 86°F (10 to 30°C)	e1:0	Adjustable from 37 to 73°F (3 to 23°C)
		e1:2	Adjustable from 63 to 99°F (17 to 37°C)
"Display correction of the actual room temperature"			
e2:50	With remote control: No display correction of the actual room temperature	e2:0 to e2:49	Display correction –5 K to Display correction –0.1 K
		e2:51 to e2:99	Display correction +0.1 K to Display correction +4.9 K

*1 Only change the coding for the heating circuit without mixing valve A1 for boilers without lower temperature limit or for heating circuits with mixing valve if a remote control is connected to them.

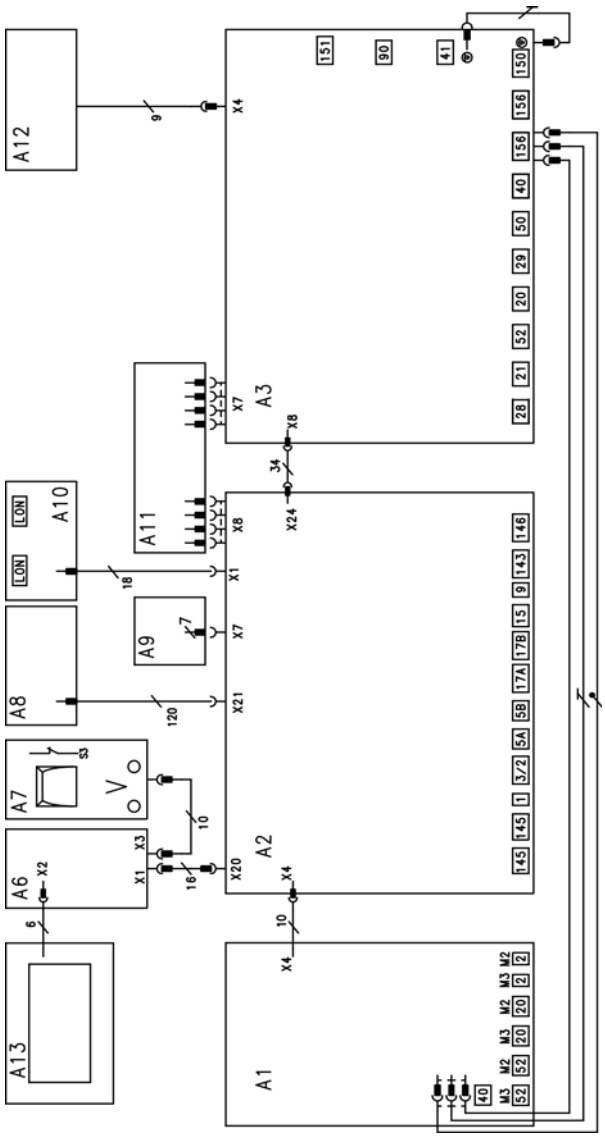
"Heating Circuit ..." Group *(continued)*

Coding in the factory set condition		Possible change	
"Time limit for comfort mode"			
f2:8	Time limit for comfort mode or external operating program changeover via pushbutton: 8 h*2 **Note:** Observe setting of coding "5d", "5e", "5f" in the "General" group, as well as "d5" and "d8" in the "Heating circuit..." group.	f2:0	No time limit*2
		f2:1 to f2:12	Time limit adjustable from 1 to 12 h*2.
"Temperature limit for terminating reduced mode"			
f8:–5	Temperature limit for terminating reduced mode 23°F (–5°C), see example on page 80. Observe coding "a3".	f8:+10 to f8:–60	Adjustable from 50 to -76°F (+10 to –60°C)
		f8:–61	Function disabled
"Temperature limit for raising the reduced room temperature target"			
f9:–14	Temperature limit for raising the reduced room temperature target 7°F (–14°C), see example on page 80.	f9:+10 to f9:–60	Limit for raising the set room temperature to the value selected for standard mode, adjustable from 50 to -76°F (+10 to –60°C).
"Raising the set boiler water or supply temperature when changing from operation with reduced room temperature to operation with standard room temperature"			
fa:20	Raising the set boiler water or supply temperature when changing from operation with reduced room temperature to operation with standard room temperature by 20%. See example on page 80.	fa:0 to fa:50	Adjustable from 0 to 50%
"Duration for raising the set boiler water or supply temperature"			
fb:30	Duration for raising the set supply temperature (see coding "fa") 60 min. See example on page 80.	fb:0 to fb:150	Adjustable from 0 to 300 min

*2 In the "Heating and DHW" operating program, comfort mode ends automatically when the system changes over to operation with standard room temperature.

Connection and Wiring Diagram

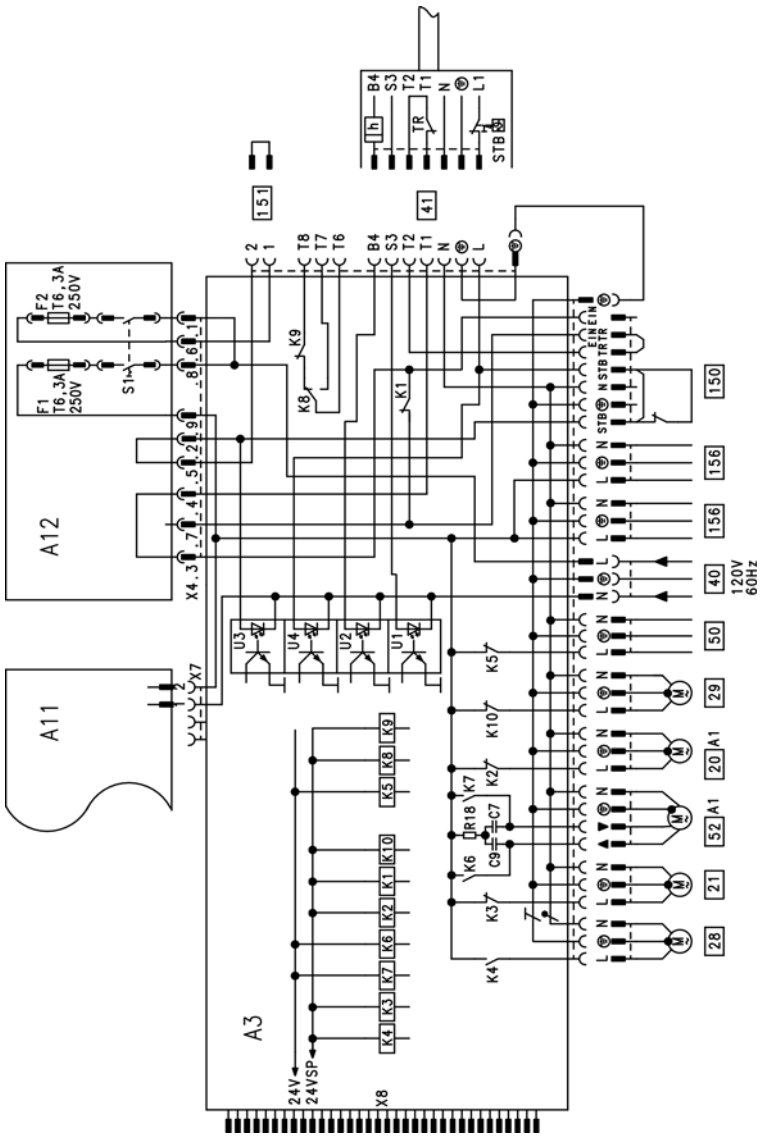
Overview



A1 PCB, extension for heating circuits 2 and 3 with mixing valve
A2 PCB, low voltage
A3 PCB 120V~
A6 Programming unit connection PCB
A7 Optolink PCB/emissions test switch
A8 PCB
A9 Coding card
A10 LON communication module
A11 Power supply unit PCB
A12 Programming unit ON/OFF switch
A13 Programming unit
X Electrical interfaces

Connection and Wiring Diagram *(continued)*

PCB 120V~

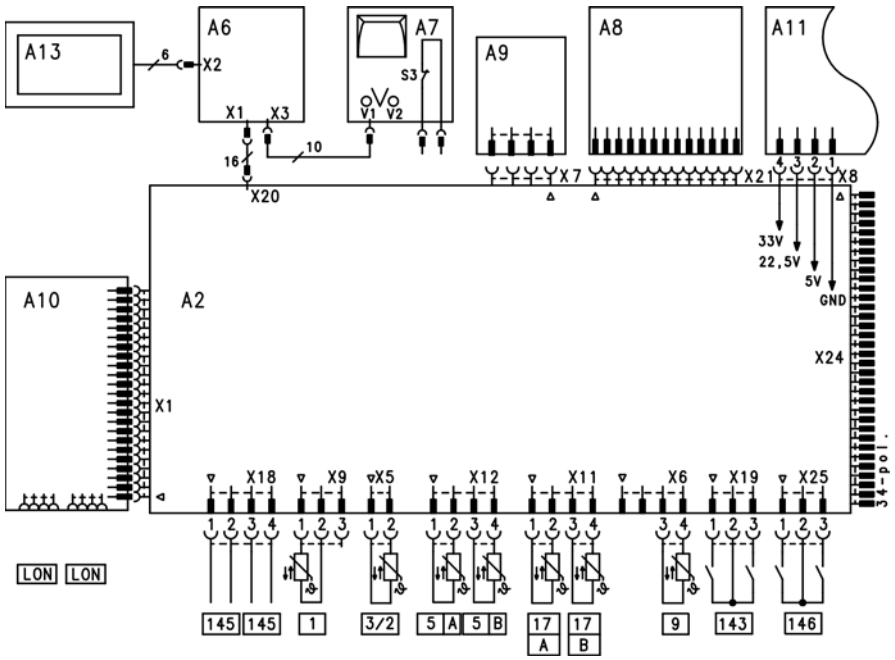


- 20 A1 Heating circuit pump
  or
  Primary pump, tank loading system
- 21 Circulation pump for tank heating (accessory)
- 28 DHW recirculation pump (on site)
- 29 Boiler circuit pump or distribution pump (on site)
- 40 Power supply, 120V/60 Hz
- 41 Burner
- 50 Output for central fault message
- 52 A1 Motor for 3-way mixing valve, tank loading system
- 150 External connections (remove jumper when connecting)
- 151 Safety chain (potential-free)
- 156 Power supply for accessories
- F MCB/fuse
- K2-K10 Relay
- S1 ON/OFF switch
- X Electrical interfaces

5700 297 - 05

Connection and Wiring Diagram *(continued)*

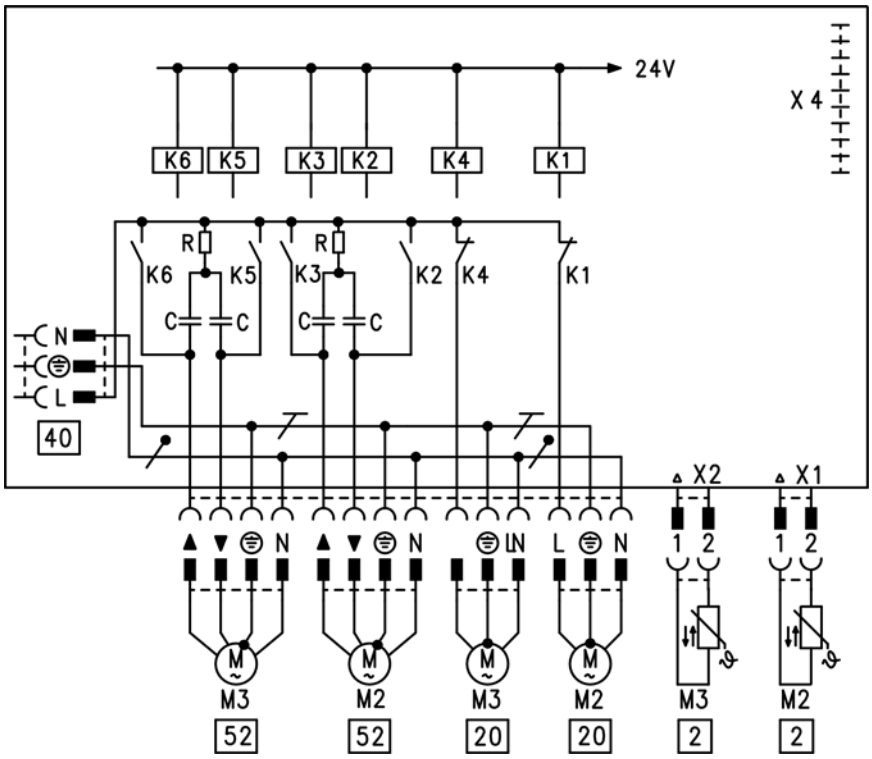
PCB, low voltage



1	Outdoor temperature sensor
3/2	Common system supply temperature
5 A	Tank temperature sensor
5 B	Tank temperature sensor 2 for tank loading system
17 A	Return temperature sensor
17 B	Temperature sensor tank loading system
143	External connections
145	KM BUS participants
146	External connections
LON	Connecting cable for data exchange (accessories)
S3	Emissions test switch
V1	Fault indicator (red)
V2	ON indicator (green)
X	Electrical interfaces

Mixing Valve Extension Circuits 2 & 3

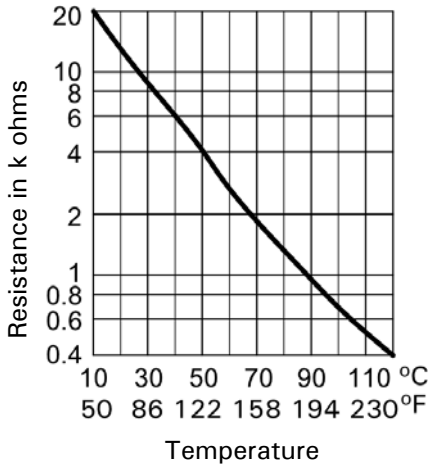
PCB, extension for heating circuits 2 and 3 with mixing valve



2	M2/M3	Supply temperature sensors
20	M2/M3	Heating circuit pumps
40		Power supply
52	M2/M3	Mixing valve motors
K1-K6		Relay
X		Electrical interfaces

Sensors

Viessmann NTC 10 kΩ (blue ID label)



Tank, supply and room temperature sensor

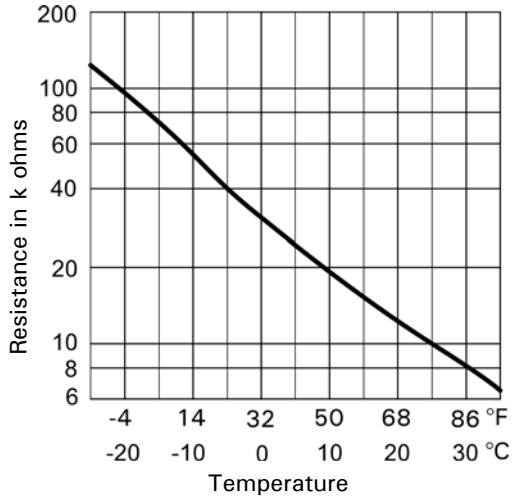
Note

- The supply temperature sensor can be used as a contact or immersion temperature sensor.
- The room temperature sensor is connected at terminals 3 and 4 in the Vitotrol 300.

Installation and service instructions Vitotrol 300

1. Pull corresponding plug.
2. Check the sensor resistance and compare it with the curve.
3. In the case of severe deviation, check the installation and replace the sensor if required.

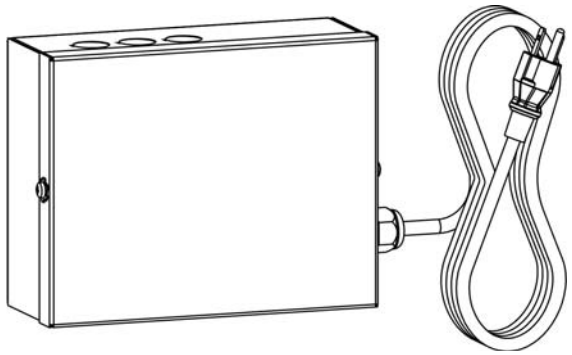
Viessmann NTC 10 kΩ



Outdoor temperature sensor

1. Pull plug [1].
2. Check the sensor resistance across plug terminals “1” and “2” and compare with the curve.
3. If the results are very different from the curve, disconnect the wires from the sensor and repeat the test on the sensor.
4. Depending on the result, replace the lead or the outdoor temperature sensor.

Extension EA1 Accessory (optional)



Digital data inputs DE1 to DE3

Functions:

- External heating program changeover, separate for heating circuits 1 to 3
- External blocking
- External blocking with fault message input
- External demand with minimum boiler water temperature
- Fault message input
- Brief operation of the DHW recirculation pump

When connecting external contacts, observe the requirements of safety category II, i.e. 8.0 mm air-gap and creep path or maintain a 2.0 mm insulation thickness against 'live' parts.

Input function assignment

Select the input functions by means of the following codes in the "General" group at the boiler control unit:

- DE1: Coding address "5d"
- DE2: Coding address "5e"
- DE3: Coding address "5f"

Assigning the heating program changeover function to the heating circuits

The allocation of the heating program changeover to the relevant heating circuit is selected via coding address "d8" in the "Heating circuit..." group:

- Code "d8:1": Changeover via input DE1
- Code "d8:2": Changeover via input DE2
- Code "d8:3": Changeover via input DE3

The effect of the heating program changeover is selected via coding address "d5" in the "Heating circuit..." group.

Duration of the heating program changeover

- Contact constantly closed:
  The changeover is active as long as the contact is closed.
- Contact only closed briefly via pushbutton:
  The changeover is enabled for the time selected in coding address "f2" in the "Heating circuit..." group.

DHW recirculation pump runtime for brief operation

The DHW recirculation pump can be started outside the times when it is enabled according to the time program.

The DHW recirculation pump is started by closing the contact at DE1, DE2 or DE3 by means of a pushbutton. The runtime is adjusted via coding address "3d" in the "General" group.

Analogue input 0–10V

The 0–10V hook-up provides an additional set boiler water temperature:

0–1V Is taken as "no default for set boiler water temperature".

Note: Ensure DC separation between the LV output and the ground conductor of the onsite voltage source.

Coding address "1e" in the "General" group:

- "1e:0" ≙ temperature demand adjustable in the range from 32 to 212°F (0 to 100°C) 1V ≙ 50°F (10°C) set value change 10V ≙ 212°F (100°C) set value change
- "1e:1" ≙ temperature demand adjustable in the range from 86 to 248°F (30 to 120°C) 1V ≙ 86°F (30°C) set value change 10V ≙ 248°F (120°C) set value change

Output 157

Connection of a central fault messaging facility or signalling reduced mode (reduction of the heating circuit pump speed).

Select the function of output 157 via coding address "5c" in the "General" group.

Refer to the EA1 module Installation Instructions

Parts List - Programming Module

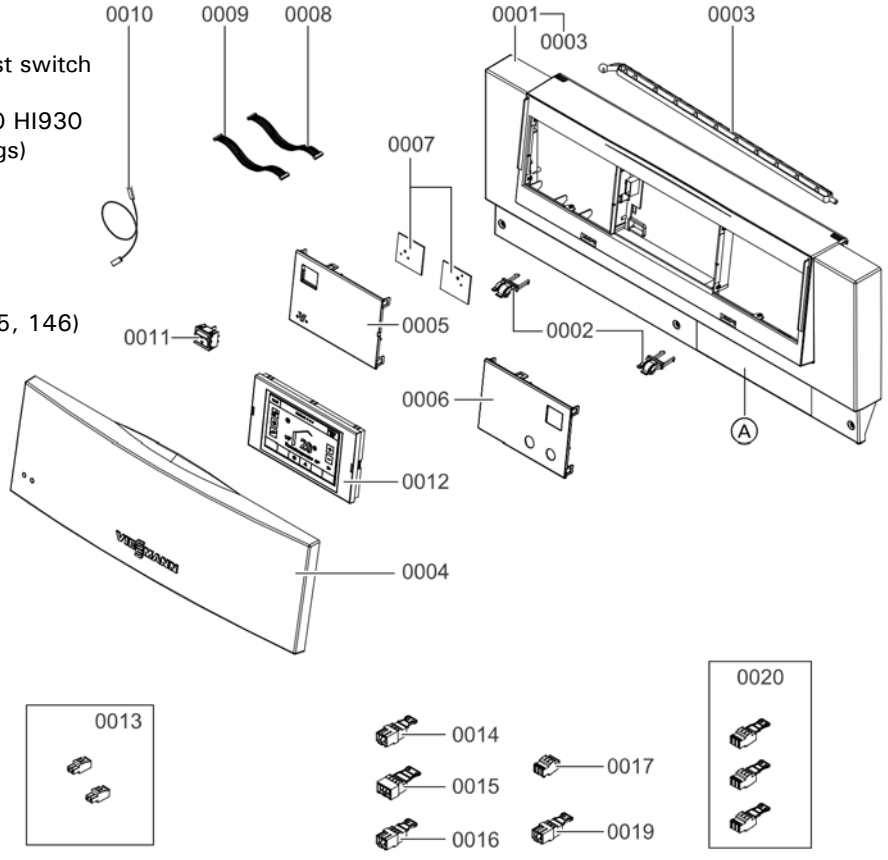
Part No. **Serial No.**
7554895 7554895□□□□□□□□□

Ordering Parts:
Please provide Serial Number A when ordering replacement parts. Order replacement components from your Viessmann distributor.

Parts for Operating Enclosure Assembly
0001 Housing, front with support arm
0002 Hinges for control housing (Set of 2)
0003 Support arm
0004 Flip-down cover
0005 Cover panel, left
0006 Cover panel, right (with 2 fuses)
0007 Circuit Boards (ETS/OptoLink, SA142/143)
0008 Flat cable, 10-pole
0009 Flat cable, 16-pole
0010 Connecting cable for emissions test switch
0011 Emissions test switch, 1-pole
0012 Programming unit, Vitotronic 200 HI930
0013 Accessory pack (low voltage plugs)
0014 3-Pole plug, male, #20 (Set of 3)
0015 4-Pole plug, #52 (Set of 3)
0016 3-Pole plug, #156 (Set of 3)
0017 3-Pole plug, #40 (Set of 3)
0019 3-Pole plug, #50 (Set of 3)
0020 Accessory pack (plugs #143, 145, 146)

Other Parts (not illustrated)
0100 Technical Literature Set
0101 Installation Instructions
0102 Operating Instructions
0103 Parts List
0104 Wiring Diagram

Ⓐ Rating plate with serial number

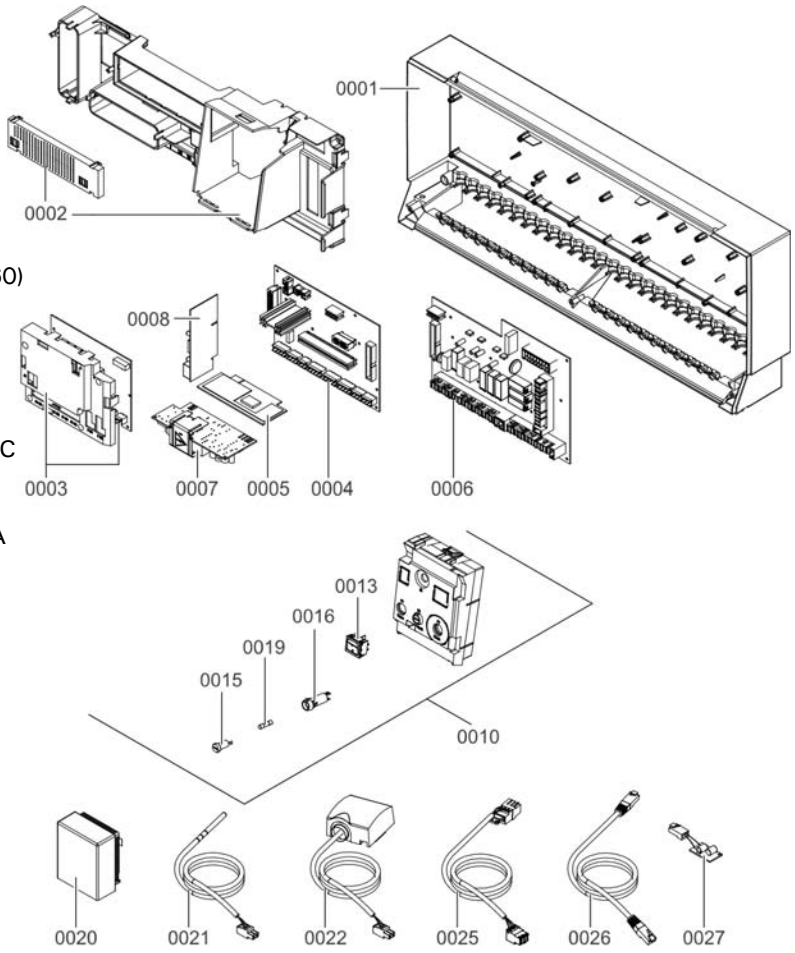


Parts List - Connection Module

Part No.	Serial No.
7554895	7554895□□□□□□□□

Parts for Connection Enclosure Assembly

0001	Housing, back
0002	Cover, motherboard
0003	Extension module for mixing valve 2 + 3
0004	Motherboard (low voltage, MB200)
0005	Circuit board (touch, CU102-A60)
0006	Motherboard (120/1/60, MB201)
0007	Circuit board (power supply, SP102)
0008	Circuit board (LON, IU100-B10)
0010	Control panel (without AHL + FHL, 120/1/60)
0013	On/off switch, 2-pole
0015	Fuse holder cover
0016	Fuse holder
0019	Fuse, T6.3A/250V (Set of 10)
0020	Outdoor temperature sensor, NTC
0021	DHW temperature sensor (immersion), NTC
0022	Supply/return temperature sensor (strap-on), NTC
0025	Connecting cable, HC-extension 156/40A
0026	LON connecting cable (7m), RJ45
0027	LON terminal end resistor (Set of 2)



Specification Vitotronic 300, GW6B

Rated voltage	120V~
Rated frequency	60 Hz
Rated current	12 A~
Power consumption	10 W
Permissible ambient temperature	- During operation 32 to 104°F (0 to +40°C) Installation in living spaces or boiler rooms (standard ambient conditions) - During storage and transport -4 to 149°F (−20 to +65°C)

Rated relay output breaking capacity

Plug	Component	Rated breaking capacity	Single boiler system	Multi boiler system	
			Single boiler control unit	Cascade control unit	Lag boiler control unit
20 A1	Heating circuit pump for heating circuit A1 or Primary pump, tank loading system	2A, 120V~	X	X	--
21	DHW pump (accessory)	2A, 120V~	X	X	--
28	DHW recirculation pump	2A, 120V~	X	X	--
29	Boiler circuit pump or Distribution pump	2A, 120V~	--	X	X
50	Central fault message	2A, 120V~	X	X	X
52 A1	Motorized isolation valve	0.1A, 120V~	--	X	X
	Motor, 3-way mixing valve, tank loading system		X	X	--
Total		Max. 6A, 120V~			

Quick Reference

°C	°F
-40	-40
-35	-31
-25	-13
-20	-4
-18	0
-16	+3
-14	+7
-12	+10
-10	+14
-9	+16
-8	+18
-7	+19
-6	+21
-5	+23
-4	+25
-3	+27
-2	+28
-1	+30
0	+32
+1	+34
+2	+36
+3	+37
+4	+39
+5	+41
+6	+43
+7	+45
+8	+46
+9	+48
+10	+50
+12	+54
+14	+57
+16	+61
+18	+64
+20	+68
+25	+77
+30	+86
+35	+95
+40	+104
+50	+122
+60	+140
+70	+158
+80	+176
+90	+194
+100	+212
+110	+230

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