3.1 Application example 1

Application example 1 – Single boiler system with Vitorond 200 boiler and shunt pump for raising the return temperature

System:
Single boiler system with:
- Vitorond 200 (125 to 500 kW)
- Vitoronic 200 (type GW1)
or
- Vitoronic 300 (type GW2)
or
- Vitoronic 100 (type GC1) with
  Vitocontrol control panel and integrated weather-compensated Vittotronic 333 (type MW1S) control unit
or
- Vitoronic 100 (type GC1) and external weather-compensated control unit
- shunt pump.

Possible applications:
Heating systems with distributor installed close to the boiler. The boiler water volume flow must be able to be reduced.

Function description:
The temperature sensor T2 activates the shunt pump if the actual temperature falls below the required minimum return temperature. If the minimum return temperature is not reached even if the return temperature is raised, the volume flow must be reduced by at least 50% via temperature sensor T1.

Size the shunt pump to approx. 30% of the total throughput capacity of the boiler.

If it is not possible to reduce the boiler water volume flow, e.g. in older systems, we would recommend the application examples on pages 20, 22, 28 and 30.

Advantages:
You will not need any costly boiler circuit pump or mixing valve to raise the return temperature.
The boiler receives optimum protection when using Vitoronic 300 (type GW2) or if the heating circuits are controlled via a connected Vitoronic 050. No additional protective measures are required on site.

Equipment required
(For standard systems – equipment with additional system modules, see Vitotec 2 folder)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Number</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boiler with Vitotronic</td>
<td>1</td>
<td>as per price list</td>
</tr>
<tr>
<td>2</td>
<td>Return temperature raising facility up to 270 kW for installation on the boiler connection set, comprising: connection pipes, check valve, shut-off valves, control unit connectors, 2 temperature sensors (T1 and T2) incl. sensor well</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- incl. Wilo shunt pump</td>
<td>1</td>
<td>2001 908</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
<td>7450 642</td>
</tr>
<tr>
<td></td>
<td>- incl. Grundfos shunt pump</td>
<td>1</td>
<td>7450 641</td>
</tr>
<tr>
<td>3</td>
<td>Temperature sensor T2</td>
<td>1</td>
<td>on site</td>
</tr>
<tr>
<td></td>
<td>- contact temperature sensor</td>
<td></td>
<td>7450 642</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
<td>7450 641</td>
</tr>
<tr>
<td></td>
<td>- immersion temperature sensor (incl. sensor well)</td>
<td>1</td>
<td>7450 650</td>
</tr>
<tr>
<td>4</td>
<td>Shunt pump</td>
<td>1</td>
<td>as per price list</td>
</tr>
<tr>
<td>5</td>
<td>Temperature sensor T1</td>
<td></td>
<td>7450 650</td>
</tr>
<tr>
<td></td>
<td>- contact temperature sensor</td>
<td>1</td>
<td>as per price list</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
<td>7450 642</td>
</tr>
<tr>
<td></td>
<td>- immersion temperature sensor (incl. sensor well)</td>
<td>1</td>
<td>7450 641</td>
</tr>
<tr>
<td>6</td>
<td>Expansions for heating circuits with mixer in conjunction with Vitoronic 300 (type GW2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- extension kit for one heating circuit with mixer</td>
<td>1 or 2</td>
<td>as per price list</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
<td>7450 650</td>
</tr>
<tr>
<td></td>
<td>- mixer motor for flanged mixer and plug-in connector</td>
<td>1 or 2</td>
<td>7450 642</td>
</tr>
<tr>
<td></td>
<td>and</td>
<td></td>
<td>7450 641</td>
</tr>
<tr>
<td></td>
<td>- contact temperature sensor</td>
<td>1 or 2</td>
<td>7450 642</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
<td>7450 641</td>
</tr>
<tr>
<td></td>
<td>- immersion temperature sensor (incl. sensor well)</td>
<td>1 or 2</td>
<td>7450 641</td>
</tr>
</tbody>
</table>

(see price list for further heating circuit control units)
Installation diagram

1. Outside temperature sensor*1
2. M2 Flow temperature sensor mixer*2
3. M3 Flow temperature sensor mixer*2
4. Boiler temperature sensor
5. DHW cylinder temperature sensor (accessory for Vitotronic 100)
6. Temperature sensor T1
7. Temperature sensor T2
8. M2 Heating circuit pump mixer*2
9. M3 Heating circuit pump mixer*2
10. A1 Closing the mixer with external heating circuit control units
11. Circulation pump for DHW cylinder heating
12. DHW circulation pump*1
13. Shunt pump
14. Mains connection, 230 V~/50 Hz
15. Install the mains isolator in accordance with regulations
16. Burner (1st stage)
17. M2 Mixer motor*2
18. M3 Mixer motor*2
19. Burner (2nd stage/modulation)
20. External hooking up
21. External hooking up
22. See from page 34

*1 Only for Vitotronic 200 and 300.
*2 Only for Vitotronic 300.
3.1 Application example 2

Application example 2 – Single boiler system with Vitorond 200 boiler and shunt pump and three-way mixer for raising the return temperature

System:
Single boiler system with
- Vitorond 200 (125 to 860 kW)
- Vitotronic 200 (type GW1)
  or
  Vitotronic 300 (type GW2)
  or
  Vitotronic 100 (type GC1)
  with Vitocontrol control panel and integrated weather-compensated
  Vitotronic 333 (type MW1S) control unit
  or
  Vitotronic 100 (type GC1) and external
  weather-compensated control unit
- shunt pump
- three-way mixer.

Possible applications:
Heating systems where downstream heating circuits cannot be controlled, e.g. older heating systems or nurseries.

System-specific coding
Change "0C" to "1" – system with constant return temperature raising.

Function description:
The temperature sensor T2 activates the shunt pump if the actual temperature falls below the required minimum return temperature. If this does not achieve the required minimum return temperature, the three-way mixer is closed in proportion via temperature sensor T1, and therefore safeguards the minimum return temperature.

Advantages:
Proportional return temperature raising to protect the boiler. A boiler circuit pump is not required.

Boilers are protected against return temperatures which are too low, independent of the downstream heating circuits.

Equipment required
(For standard systems – equipment with additional system modules, see Vitotec 2 folder)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Number</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boiler with Vitotronic</td>
<td>1</td>
<td>as per price list</td>
</tr>
<tr>
<td>2</td>
<td>Shunt pump</td>
<td>1</td>
<td>on site</td>
</tr>
<tr>
<td>3</td>
<td>Three-way mixer</td>
<td>1</td>
<td>as per price list</td>
</tr>
</tbody>
</table>
| 4    | Temperature sensor T1
  - contact temperature sensor
  or
  - immersion temperature sensor (incl. sensor well) | 1 | 7450 642 |
| 5    | Temperature sensor T2
  - contact temperature sensor
  or
  - immersion temperature sensor (incl. sensor well) | 1 | 7450 641 |
| 6    | Expansions for heating circuits with mixer in conjunction with Vitotronic 300 (type GW2)
  - extension kit for one heating circuit with mixer
  or
  - mixer motor for flanged mixer and plug-in connector
  and
  - contact temperature sensor
  or
  - immersion temperature sensor (incl. sensor well) | 1 or 2 | as per price list |

(see price list for further heating circuit control units)
3.1 Application example 2

Installation diagram

Plug-in connector
1 Outside temperature sensor*1
2 M2 Flow temperature sensor mixer*2
3 M3 Flow temperature sensor mixer*2
4 Boiler temperature sensor
5 DHW cylinder temperature sensor (accessory for Vitotronic 100)
17 A Temperature sensor T1
20 M2 Heating circuit pump mixer*2
21 M3 Heating circuit pump mixer*2
28 Circulation pump for DHW cylinder heating
29 DHW circulation pump*1
30 Shunt pump
31 Electrical mains connection, 230 V~/50 Hz
32 Install the mains isolator according to local regulations
41 Burner (1st stage)
42 A1 Mixer motor return temperature raising facility
50 M2 Mixer motor*2
52 M3 Mixer motor*2
90 Burner (2nd stage/modulation)
143 External hooking up
146 External hooking up see from page 34

A Heating circuit with mixer
B Domestic hot water cylinder

*1 Only for Vitotronic 200 and 300.
*2 Only for Vitotronic 300.
3.1 Application example 3

Application example 3 – Multi-boiler system with Vitorond 200 boilers and with shunt pumps for raising the return temperature of each boiler

System:

Multi-boiler systems with
- Vitorond 200 (125 to 500 kW)
- Vitotronic 100 (type GC1) for every boiler in the multi-boiler system and
- Vitotronic 333 (type MW1), one for the whole multi-boiler system
or
- Vitotronic 100 (type GC1) for every boiler in the multi-boiler system with Vitocontrol control panel and integrated weather-compensated Vitotronic 333 (type MW1S) control unit
or
- external weather-compensated cascade control unit with DHW cylinder thermostat
- Vitotronic 050
- shunt pumps.

Possible applications:
Heating systems with distributor installed close to the boiler. The boiler water volume flow will be reduced via the motorised butterfly valves.

System-specific coding

On every Vitotronic 100
As delivered condition:
T1 activates the motorised butterfly valves
Changeover:
T1 changes boiler circuit control unit: change "0C" to "3" – butterfly valve activates acc. to temperature;
change "0D" to "1" – T1 controls the heating circuit control mixer.

Function description:

The temperature sensor T2 activates the shunt pump if the actual temperature falls below the required minimum return temperature. If the minimum return temperature is not reached even if the return temperature is raised, the volume flow must be reduced by at least 50% via temperature sensor T1, via the butterfly valve or the heating circuit control units.

The boiler receives optimum protection when using Vitotronic 333, or if the heating circuits are controlled via a connected Vitotronic 050. No additional on-site protective measures are required.

Advantages:

You will not require any costly boiler circuit pump or mixing valve to raise the return temperature.

Equipment required
(For standard systems – equipment with additional system modules, see Vitotec 2 folder)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Number</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boiler with Vitotronic 100 and Vitotronic 333</td>
<td>1</td>
<td>as per price list</td>
</tr>
<tr>
<td>2</td>
<td>Boiler with Vitotronic 100</td>
<td>1 to 3</td>
<td>as per price list</td>
</tr>
</tbody>
</table>
| 3    | Expansions for heating circuits with mixer in conjunction with Vitotronic 333 and Vitotronic 050  
- extension kit for one heating circuit with mixer  
or  
- mixer motor for flanged mixer and plug-in connector  
and  
- contact temperature sensor  
or  
- immersion temperature sensor (incl. sensor well) | correps. heating circuits | 7450 650 |
|      |                                                                              |        | as per price list |
|      |                                                                              | correps. heating circuits | 7450 642 |
|      |                                                                              |        | as per price list |
|      |                                                                              | correps. heating circuits | 7450 641 |
| 4    | Vitotronic 050 (communication module LON required)                          | correps. heating circuits | as per price list |
| 5    | Temperature sensor T2                                                        | 1 to 4 | 7450 642          |
|      | - contact temperature sensor                                                |        |                   |
|      | or                                                                           | 1 to 4 | 7450 641          |
|      | - immersion temperature sensor (incl. sensor well)                          |        |                   |
| 6    | Temperature sensor T1                                                        | 1 to 4 | 7450 642          |
|      | - contact temperature sensor                                                |        |                   |
|      | or                                                                           | 1 to 4 | 7450 641          |
|      | - immersion temperature sensor (incl. sensor well)                          |        |                   |
| 7    | Shunt pump                                                                  | 1 to 4 | on site           |
| 8    | Motorised butterfly valve                                                   | 1 to 4 | on site           |
**Installation diagram**

- **Plug-in connector**
  - 1. Outside temperature sensor*¹
  - 2. Flow temperature sensor
  - M2: Flow temperature sensor mixer*¹
  - M3: Flow temperature sensor mixer*¹
  - 3. Flow temperature sensor
  - 4. Vitotronic 050
  - 5. Boiler temperature sensor
  - 6. DHW cylinder temperature sensor*¹
  - A: Temperature sensor T1
  - B: Temperature sensor T2
  - M2: Heating circuit pump mixer*¹
  - M3: Heating circuit pump mixer*¹
  - 20: Heating circuit pump Vitotronic 050
  - 21: Circulation pump for DHW cylinder heating*¹
  - 28: DHW circulation pump*¹
  - 40: Shunt pump
  - Electrical mains connection, 230 V~/50 Hz
  - Install the mains isolator according to local regulations
  - Burner (1st stage)
  - Motorised butterfly valve
  - M2: Mixer motor*¹
  - M3: Mixer motor*¹
  - M1: Mixer motor Vitotronic 050
  - Burner (2nd stage/modulation)
  - External hooking up
  - External hooking up see from page 34
  - LON: Connection LON-BUS (free connection with terminal resistor)

*¹Only for Vitotronic 333.

**Legend**
- A: Heating circuit with mixer
- B: Domestic hot water cylinder

---

**Notes:**
- Install the mains isolator according to local regulations.
- External hooking up see from page 34.
3.1 Application example 4

Application example 4 – Multi-boiler system with Vitorond 200 boilers with distribution pump and low-pressure distributor

System:
Multi-boiler systems with
- Vitorond 200 (125 to 860 kW)
- Vitotronic 100 (type GC1) for every boiler in the multi-boiler system and
- Vitotronic 333 (type MW1), one for the whole multi-boiler system or
- Vitotronic 100 (type GC1) for every boiler in the multi-boiler system with Vitotronic control panel and integrated weather-compensated Vitotronic 333 (type MW1S) control unit or
- external weather-compensated cascade control unit with DHW cylinder thermostat
- Vitotronic 050
- Distributor pump
- Low-pressure distributor.

Possible applications:
If the distributor is located in remote sub-stations (> 20 m). The heating system volume flow must be able to be reduced.

System-specific coding
On Vitotronic 333
change “4D” to “0” – use the plug-in connector for the distributor pump.
On every Vitotronic 100
change “0D” to “1” – T1 regulates the heating circuit control unit.

Function description:
If the actual temperature falls below the required minimum return temperature, temperature sensor T1 reduces or closes the mixer.
Size the distributor pump to 110% of the total throughput capacity of the heating system.
The boiler receives optimum protection when using Vitotronic 333, or if the heating circuits are controlled via a connected Vitotronic 050. No additional protective measures are required on site.
If the heat transfer to the heating circuits cannot be reduced, e.g. in older systems, we would recommend that the boiler is connected in accordance with the application examples on pages 28 and 30.

Advantages:
You will not need costly mixing valves to raise the return temperature.

Equipment required
(For standard systems – equipment with additional system modules, see Vitotec 2 folder)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Number</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boiler with Vitotronic 100 and Vitotronic 333</td>
<td>1</td>
<td>as per price list</td>
</tr>
<tr>
<td>2</td>
<td>Boiler with Vitotronic 100</td>
<td>1 to 3</td>
<td>as per price list</td>
</tr>
</tbody>
</table>
| 3    | Expansions for heating circuits with mixer in conjunction with Vitotronic 333 and Vitotronic 050  
- extension kit for one heating circuit with mixer  
or mixer motor for flanged mixer and plug-in connector  
and  
- contact temperature sensor  
or  
- immersion temperature sensor (incl. sensor well) |       | 7450 650 |
| 4    | Vitotronic 050 (communication module LON required) |       | as per price list |
| 5    | Temperature sensor T1  
- contact temperature sensor  
or  
- immersion temperature sensor (incl. sensor well) | 1 to 4 | 7450 642 |
| 6    | Distributor pump | 1      | on site |
| 7    | Motorised butterfly valve | 1 to 4 | on site |

Wiring diagram
Wiring for reducing the volume flow via temperature sensor T1 in heating systems with heating circuit control units which are not connected to the boiler control unit via the LON BUS.
Coding required at every Vitotronic 100: change “4C” to “2” – use the plug-in connector A1 to close the downstream mixer.

Advantages:
You will not need costly mixing valves to raise the return temperature.
3.1 Application example 4

Installation diagram

Plug-in connector
1. Outside temperature sensor*1
2. Flow temperature sensor
3. Flow temperature sensor
4. Flow temperature sensor
5. Boiler temperature sensor
6. DHW cylinder temperature sensor
7. Burner (1st stage)
8. Motorised butterfly valve
9. Mains connection, 230 V~/50 Hz
10. Connection LON-BUS (free connection with terminal resistor)

Legend:
- Outside temperature sensor
- Flow temperature sensor
- Flow temperature sensor
- Flow temperature sensor
- Boiler temperature sensor
- DHW cylinder temperature sensor
- Burner (1st stage)
- Motorised butterfly valve
- Mains connection, 230 V~/50 Hz
- Connection LON-BUS (free connection with terminal resistor)

*1 Only for Vitotronic 333.
3.1 Application example 5

Application example 5 – Multi-boiler system with Vitorond 200 boilers with distributor pump and injection circuit

System:

Multi-boiler systems with

- Vitorond 200 (125 to 860 kW)
- Vitotronic 100 (type GC1) for every boiler in the multi-boiler system and
  Vitotronic 333 (type MW1), one for the whole multi-boiler system or
  Vitotronic 100 (type GC1) for every boiler in the multi-boiler system with Vitosoft control panel and integrated weather-compensated
  Vitotronic 333 (type MW1S) control unit or
  external weather-compensated cascade control unit with DHW cylinder thermostat
- Vitotronic 050
- Distributor pump
- Injection circuit.

Possible applications:

If the distributor is located in remote sub-stations (＞20 m), and the heating circuits require heat immediately after a demand is present, e.g. blown air-heaters.

The heat transfer to the heating circuits must be able to be reduced.

System-specific coding

On Vitotronic 333:

change “4D” to “0” – use the plug-in connector [sL] for the distributor pump.

On every Vitotronic 100:

change “0D” to “1” – T1 regulates the heating circuit control unit.

Function description:

If the actual temperature falls below the required minimum return temperature, temperature sensor T1 reduces or closes the mixer in proportion.

Size the distributor pump to 110% of the total throughput capacity of the heating system.

The injection circuit provides heat at the consumers immediately upon demand.

For this purpose, the three-way mixer will be controlled.

If the heat transfer to the heating circuits cannot be reduced, e.g. in older systems, we would recommend that the boiler is connected in accordance with the example on page 28.

Advantages:

You will not need any shunt pumps or costly mixing valve to raise the return temperature.

The boiler receives optimum protection when using Vitotronic 333 (type MW1), or if the heating circuits are controlled via a connected Vitotronic 050. No additional protective measures are required on site.

Wiring diagram

Wiring for reducing the volume flow via temperature sensor T1 in heating systems with heating circuit control units which are not connected to the boiler control unit via the LON BUS.

Coding required at every Vitotronic 100:

change "4C" to "2" – use the plug-in connector [sÖ]

on site

Equipment required

(For standard systems – equipment with additional system modules, see Vitotec 2 folder)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Number</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boiler with Vitotronic 100 and Vitotronic 333</td>
<td>1</td>
<td>as per price list</td>
</tr>
<tr>
<td>2</td>
<td>Boiler with Vitotronic 100</td>
<td>1 to 3</td>
<td>as per price list</td>
</tr>
<tr>
<td>3</td>
<td>Expansions for heating circuits with mixer in conjunction with Vitotronic 333 and Vitotronic 050</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>– extension kit for one heating circuit with mixer</td>
<td>1 to 4</td>
<td>7450 650</td>
</tr>
<tr>
<td></td>
<td>– mixer motor for flanged mixer and plug-in connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>– contact temperature sensor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>– immersion temperature sensor (incl. sensor well)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Vitotronic 050 (communication module LON required)</td>
<td></td>
<td>as per price list</td>
</tr>
<tr>
<td>5</td>
<td>Temperature sensor T1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>– contact temperature sensor</td>
<td>1 to 4</td>
<td>7450 642</td>
</tr>
<tr>
<td></td>
<td>– immersion temperature sensor (incl. sensor well)</td>
<td>1 to 4</td>
<td>7450 641</td>
</tr>
<tr>
<td>6</td>
<td>Distributor pump</td>
<td>1</td>
<td>on site</td>
</tr>
<tr>
<td>7</td>
<td>Motorised butterfly valve</td>
<td>1</td>
<td>on site</td>
</tr>
</tbody>
</table>
3.1 Application example 5

Installation diagram

Plug-in connector

1. Outside temperature sensor
2. Flow temperature sensor
3. Flow temperature sensor
4. Flow temperature sensor
5. Boiler temperature sensor
6. DHW cylinder temperature sensor

17. Temperature sensor T1
18. Heating circuit pump mixer
19. Heating circuit pump mixer
20. Heating circuit pump
21. Circulation pump for DHW cylinder heating
22. DHW circulation pump
23. Distributor pump
24. Electrical mains connection, 230 V~/50 Hz
25. Install the mains isolator according to local regulations

A. Heating circuit with mixer
B. Injection circuit
C. DHW cylinder

*1 Only for Vitotronic 333.
3.1 Application example 6

Application example 6 – Multi-boiler system with Vitorond 200 boilers and three-way mixing valve for raising the return temperature

System:
Multi-boiler systems with
- Vitorond 200 (125 to 860 kW)
- Vitotronic 100 (type GC1) for every boiler in the multi-boiler system
and
Vitotronic 333 (type MW1), one for the whole multi-boiler system
or
Vitotronic 100 (type GC1) for every boiler in the multi-boiler system with Vitocore control panel and integrated weather-compensated
Vitotronic 333 (type MW1S) control unit
or
external weather-compensated cascade control unit with DHW cylinder thermostat
- Vitotronic 050
- three-way mixing valve for raising the return temperature.

Possible applications:
e.g. older heating systems and/or systems where downstream heating circuits cannot be controlled.

System-specific coding
on every Vitotronic 100
change “0C” to “1” – system with constant return temperature control for every boiler.
change “4D” to “2” – use the plug-in connector for the boiler circuit pump.

Function description:
If this does not achieve the required minimum return temperature, temperature sensor T1 closes the three-way mixing valve in proportion and therefore ensures the boiler protection.
Boiler and downstream heating circuits are hydraulically coupled together.
The flow temperature is controlled by the common temperature sensor.

Advantages:
Proportional return temperature raising to protect the boiler.
Boilers are protected against return temperatures which are too low, independent of the downstream heating circuits.

Equipment required
(For standard systems – equipment with additional system modules, see Vitotec 2 folder)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Number</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boiler with Vitotronic 100 and Vitotronic 333</td>
<td>1</td>
<td>as per price list</td>
</tr>
<tr>
<td>2</td>
<td>Boiler with Vitotronic 100</td>
<td>1 to 3</td>
<td>as per price list</td>
</tr>
<tr>
<td>3</td>
<td>Expansions for heating circuits with mixer in conjunction with Vitotronic 333 and Vitotronic 050 extension kit for one heating circuit with mixer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>or mixer motor for flanged mixer and plug-in connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and contact temperature sensor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>or immersion temperature sensor (incl. sensor well)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Vitotronic 050 (communication module LON required)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Temperature sensor T1 contact temperature sensor</td>
<td>1 to 4</td>
<td>7450 642</td>
</tr>
<tr>
<td></td>
<td>or immersion temperature sensor (incl. sensor well)</td>
<td>1 to 4</td>
<td>7450 641</td>
</tr>
<tr>
<td>6</td>
<td>Three-way mixing valve</td>
<td>1 to 4</td>
<td>on site</td>
</tr>
<tr>
<td>7</td>
<td>Boiler circuit pump</td>
<td>1 to 4</td>
<td>on site</td>
</tr>
</tbody>
</table>
Installation diagram

Plug-in connector

1. Outside temperature sensor*1
2. Flow
   Flow temperature sensor
   common heating system flow*1
2. M2
   Flow temperature sensor
   mixer*1
2. M3
   Flow temperature sensor
   mixer*1
2. M4
   Flow temperature sensor
   Vitotronic 050
3. Boiler temperature sensor
4. DHW cylinder temperature sensor*1
5. LON

A
17. Temperature sensor T1
20. M2
20. M3
20. A heating circuit pump mixer*1
20. A heating circuit pump mixer*1
20. A heating circuit pump
21. Vitotronic 050
28. Circulation pump for DHW
28. Cylinder heating*1
28. DHW circulation pump*1
28. Distributor pump
40. Electrical mains connection,
230 V~/50 Hz
40. Install the mains isolator
   according to local regulations
41. A Burner (1st stage)
42. A Three-way mixing valve
43. A1
43. M2
43. M3
44. A Mixer motor*1
44. A Mixer motor*1
44. A Mixer motor Vitotronic 050
45. Burner (2nd stage/modulation)
46. External hooking up
46. External hooking up
LON
LON
Connection LON-BUS (free
connection with terminal
resistor)

A
Heating circuit with mixer
B
Domestic hot water cylinder

*1 Only for Vitotronic 333.
3.1 Application example 7

Application example 7 – Multi-boiler system with Vitorond 200 boiler with low-loss header and three-way mixing valve for raising the return temperature

System:

Multi-boiler system with
- Vitorond 200 (125 to 860 kW)
- Vitotronic 100 (type GC1) for every boiler in the multi-boiler system and
- Vitotronic 333 (type MW1), one for the whole multi-boiler system or
- Vitotronic 100 (type GC1) for every boiler in the multi-boiler system with Vitocontrol control panel and integrated weather-compensated Vitotronic 333 (type MW1S) control unit or
- external weather-compensated cascade control unit with DHW cylinder thermostat
- Vitotronic 050
- Three-way mixing valve for raising the return temperature
- Low loss header.

Possible applications:
For example, older systems or systems where the hydraulic conditions cannot be clearly defined and/or systems where downstream heating circuits cannot be controlled.

Equipment required
(For standard systems – equipment with additional system modules, see Vitotec 2 folder)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Number</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boiler with Vitotronic 100 and Vitotronic 333</td>
<td>1</td>
<td>as per price list</td>
</tr>
<tr>
<td>2</td>
<td>Boiler with Vitotronic 100</td>
<td>1 to 3</td>
<td>as per price list</td>
</tr>
<tr>
<td>3</td>
<td>Expansions for heating circuits with mixer in conjunction with Vitotronic 333 and Vitotronic 050 – extension kit for one heating circuit with mixer</td>
<td></td>
<td>7450 650</td>
</tr>
<tr>
<td></td>
<td>or – mixer motor for flanged mixer and plug-in connector</td>
<td></td>
<td>as per price list</td>
</tr>
<tr>
<td></td>
<td>and – contact temperature sensor</td>
<td></td>
<td>7450 642</td>
</tr>
<tr>
<td></td>
<td>or – immersion temperature sensor (incl. sensor well)</td>
<td></td>
<td>7450 641</td>
</tr>
<tr>
<td>4</td>
<td>Vitotronic 050 (communication module LON required)</td>
<td></td>
<td>as per price list</td>
</tr>
<tr>
<td>5</td>
<td>Temperature sensor T1 – contact temperature sensor or – immersion temperature sensor (incl. sensor well)</td>
<td>1 to 4</td>
<td>7450 642</td>
</tr>
<tr>
<td>6</td>
<td>Three-way mixing valve</td>
<td>1 to 4</td>
<td>on site</td>
</tr>
<tr>
<td>7</td>
<td>Boiler circuit pump</td>
<td>1 to 4</td>
<td>on site</td>
</tr>
<tr>
<td>8</td>
<td>Low loss header</td>
<td>1</td>
<td>on site</td>
</tr>
</tbody>
</table>

Function description:
If the actual temperature falls below the required minimum return temperature, temperature sensor T1 closes the three-way mixing valve in proportion and therefore ensures the boiler protection.

The flow temperature is controlled by the temperature sensor of the low-loss header.

System-specific coding
on every Vitotronic 100 change "0C" to "1" – system with constant return temperature raising for every boiler.
change "4D" to "2" – use the plug-in connector for the boiler circuit pump.

Please note:
Size the boiler circuit pump for each boiler so that their volume flow is at least as large as the max. total heating circuit volume flow.
Recommendation: 110 %

Advantages:
Boiler and downstream heating circuits are hydraulically coupled together.
Proportional return temperature raising to protect the boiler.
Boilers are protected against return temperatures which are too low, independent of the downstream heating circuits.
### 3.1 Application example 7

**Installation diagram**

**Plug-in connector**

1. **Outside temperature sensor**
   - Temperature sensor T1
2. **Flow**
   - Heating circuit pump mixer
3. **M2**
   - Heating circuit pump mixer
4. **M3**
5. **Flow temperature sensor**
   - Vitotronic 050
6. **Flow temperature sensor**
   - DHW circulation pump
7. **Boiler temperature sensor**
   - Distributor pump
8. **DHW cylinder temperature sensor**
   - Electrical mains connection, 230 V~/50 Hz
9. **Burner (1st stage)**
   - Install the mains isolator according to local regulations
10. **Burner (2nd stage/modulation)**
11. **Mixer motor**
12. **Mixer motor**
13. **External hooking up**
14. **External hooking up**
15. **Connection LON-BUS (free connection with terminal resistor)**

**Symbols**

- **A**: Heating circuit with mixer
- **B**: Domestic hot water cylinder

*Only for Vitotronic 333.*
3.2 Domestic hot water heating with cylinder loading system

The Viessmann cylinder loading system is a combination of a Vitocell-L DHW cylinder and a Vitotrans 222 heat exchanger set. The cylinder loading system for DHW heating is a preferred choice for:

- large storage capacities with offset loading and drawing times, e.g. water is drawn off in bursts at schools, sports centres, hospitals, army camps, social buildings, etc.
- heating circuits requiring a low return temperature or those where the return temperature is limited, e.g. for district heating or condensing boilers. The high DHW spread leads to a low return temperature on the primary side; this brings advantages through high condensation rates when utilising condensing technology.
- short-term peak loads, i.e. high draw-off rates and various re-heat times, e.g. domestic hot water heating in swimming pools, sports facilities, industrial companies, etc.
- limited space as the cylinder loading system can transmit a high output. The cylinder loading system can be controlled by Vitotronic 100, 200, 300, 333 or 050.

Please note:

The cylinder loading system can be controlled by Vitotronic 100, 200, 300 or 333. If these control units are not available, or if there are several cylinder loading systems, control can be achieved via a mixer control through Vitotronic 050 (type HK1W, HK1S, HK3W or HK3S). Order an additional DHW cylinder temperature sensor if the cylinder loading system is controlled by a Vitotronic 100, type GC1 or Vitotronic 050.

In multi-boiler systems, the cylinder loading systems are controlled by Vitotronic 333.
3.2 Domestic hot water heating with cylinder loading system

Notes regarding the application examples (chapter 3.1)

Application example 1

Sensor input B is used to control the Vitotrans 222 heat exchanger set. Therefore, the shunt pump must be controlled by a separate thermostat (see the drawing).

Application example 2

A separate Vitotronic 050 must be used for controlling the Vitotrans 222 heat exchanger set. The Vitotronic boiler control unit affects the constant return temperature control.

Application examples 3 to 7 (multi-boiler systems)

The Vitotrans 222 heat exchanger set is controlled by Vitotronic 333.
3.3 Installation notes

Connection of an on-site control unit to Vitotronic 100 (type GC1) in single boiler systems

Operation with a two-stage burner

Volt-free contacts of the overriding control unit:

External load-dependent switch-on

2nd burner stage ON

1st burner stage ON

Settings on Vitotronic 100
The high limit safety cut-out settings and other settings depend on the system equipment and the safety equipment acc. to DIN 4751-2.

<table>
<thead>
<tr>
<th></th>
<th>120 °C</th>
<th>100 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>High limit safety cut-out</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control thermostat</td>
<td>110 °C</td>
<td>87 °C</td>
</tr>
<tr>
<td>Coding for the electronic maximum temperature limiter of Vitotronic 100</td>
<td>105 °C</td>
<td>85 °C</td>
</tr>
<tr>
<td>Code &quot;06&quot; open</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum temperature of the on-site control unit</td>
<td>100 °C</td>
<td>80 °C</td>
</tr>
</tbody>
</table>

External load-dependent switch-on
The burner is shut down, subject to load, when the volt-free contact between terminals "2" and "3" at plug-in connector closes. The boiler will be constantly operated at the set temperature.

The boiler water temperature is limited via the maximum set boiler water temperature or via the mechanical thermostat.

The set value is adjusted via code "9B".

Switch on 1st burner stage:
Contact at terminals "1" and "2" of plug-in connector [143]

Contact closed:
The 1st burner stage is switched on. The 2nd burner stage is switched on only to maintain the minimum temperature. The boiler water temperature is limited by the electronic maximum temperature limiter (see Vitotronic 100 service instructions), if it is set below that of the mechanical thermostat "R".

Contact open:
The 1st burner stage is switched off.

Required changeover on Vitotronic 100 (see service instructions):

Single boiler systems:
Code "01" to "1" (as delivered condition)

The DHW cylinder thermostat activates when the DHW cylinder temperature sensor is connected.
The boiler water temperature must be set to the lower value (see operating conditions, page 3).
The boiler minimum temperature is maintained (see operating conditions, page 3).

Switch on 1st and 2nd burner stage:
Contact at terminals "2" and "3" of plug-in connector [143]

Contact closed:
Both burner stages are switched on. The boiler water temperature is limited by the electronic maximum temperature limiter if it is set below that of the mechanical thermostat "R".
The 2nd burner stage is switched off 2 K sooner.

Contact open:
The 1st and 2nd burner stages are switched off.
3.3 Installation notes

Operation with a modulating burner in single boiler systems

Contacts of the overriding control unit with modulating controller:
- External load-dependent switch-on
- 1st burner stage (base load) ON
- Modulation controller:
  - Reduce burner output
  - Increase burner output

Connection modulating burner:
- 1st burner stage [A] from Vitotronic 100
- plug-in connector [B] from Vitotronic 100 via the modulating controller (on site) to the plug-in connector [C] on the burner.
- adjust the minimum temperature at the overriding control unit with the modulation controller to 5 K higher than the lower boiler water temperature; see operating conditions.

Code "01" to "1" (as delivered condition)
The DHW cylinder thermostat activates when the DHW cylinder temperature sensor is connected.
The boiler water temperature must be set to the lower value (see operating conditions, page 3). The boiler minimum temperature is maintained (see operating conditions, page 3).

External load-dependent switch-on
The burner is shut down, subject to load, when the volt-free contact between terminals "2" and "3" at plug-in connector [146] closes. The boiler will be constantly operated at the set temperature.

The boiler water temperature is limited via the maximum set boiler water temperature or via the mechanical thermostat.
The set value is adjusted via code "9B".

Switch on 1st burner stage
Contact at terminals "1" and "2" of plug-in connector [143]

Contact closed:
The 1st burner stage is switched on. The full load is switched on only to maintain the minimum temperature.
The boiler water temperature is limited by the electronic maximum temperature limiter (see Vitotronic 100 service instructions), if it is set below that of the mechanical thermostat [Q].

Contact opened:
The 1st burner stage is switched off.

Settings on Vitotronic 100
The high limit safety cut-out settings and other settings depend on the system equipment and the safety equipment acc. to DIN 4751-2.

<table>
<thead>
<tr>
<th>Setting</th>
<th>120 °C</th>
<th>100 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>High limit safety cut-out</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control thermostat</td>
<td>110 °C</td>
<td>87 °C</td>
</tr>
<tr>
<td>Coding for the electronic maximum temperature limiter of Vitotronic 100 Code &quot;06&quot; open</td>
<td>105 °C</td>
<td>85 °C</td>
</tr>
<tr>
<td>Maximum temperature of the on-site modulation controller</td>
<td>100 °C</td>
<td>80 °C</td>
</tr>
</tbody>
</table>
3.3 Installation notes

Connection of an on-site control unit to Vitotronic 100 (type GC1) in multi-boiler systems

Operation with a two-stage burner

Volt-free contacts of the overriding control unit:

Enable boiler, open or close the butterfly valve

2nd burner stage ON

1st burner stage ON

Required changeover on Vitotronic 100 (see service instructions):

Change code “01” to “3”

The connections on plug-in connectors [143] and [146] are required when connecting an external control unit. The DHW cylinder temperature and the load-dependent cascade control must be controlled by an external control unit.

Please note:
An “enable boiler” contact is obligatory for multi-boiler systems. This contact must always be closed on the lead boiler.

Settings on Vitotronic 100
The high limit safety cut-out settings and other settings depend on the system equipment and the safety equipment acc. to DIN 4751-2.

<table>
<thead>
<tr>
<th>Setting</th>
<th>120 °C</th>
<th>100 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>High limit safety cut-out</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control thermostat</td>
<td>110 °C</td>
<td>87 °C</td>
</tr>
<tr>
<td>Coding for the electronic maximum temperature limiter of Vitotronic 100</td>
<td>105 °C</td>
<td>85 °C</td>
</tr>
<tr>
<td>Code “06” open</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum temperature of the on-site control unit</td>
<td>100 °C</td>
<td>80 °C</td>
</tr>
</tbody>
</table>

Enable boiler, butterfly valve:
Contact at terminals “2” and “3” of plug-in connector [146]

Contact closed:
Initially, the pre-heat function for lag boilers is activated (see Vitotronic 100 service instructions). After the pre-heat function has expired, the boiler minimum temperature will be maintained, and the burner stages can be controlled externally.

Contact open:
The butterfly valve is closed after approx. 5 minutes (see Vitotronic100 service instructions). Burner stages cannot be switched on externally; a minimum temperature will not be maintained.

Switch on 1st burner stage:
Contact at terminals “1” and “2” of plug-in connector [143]

Contact closed:
The 1st burner stage is switched on. The 2nd burner stage is switched on only to maintain the minimum temperature. The boiler water temperature is limited by the electronic maximum temperature limiter (see Vitotronic 100 service instructions) if it is set below that of the mechanical thermostat “R”.

Contact open:
The 1st burner stage is switched off.

Switch on 1st and 2nd burner stage:
Contact at terminals “2” and “3” of plug-in connector [143]

Contact closed:
Both burner stages are switched on. The boiler water temperature is limited by the electronic maximum temperature limiter if it is set below that of the mechanical thermostat “R”. The 2nd burner stage is switched off 2 K sooner.

Contact open:
The 1st and 2nd burner stages are switched off.
### Operation with a modulating burner in multi-boiler systems

Contacts of the overriding control unit with modulating controller:

- Enable boiler, open or close the butterfly valve
- 1st burner stage (base load) ON
- Modulation controller:
  - Reduce burner output
  - Increase burner output

Connection modulating burner:
- 1st burner stage [A] of Vitotronic 100
- adjust the minimum temperature at the overriding control unit with the modulation controller to 5 K higher than the lower boiler water temperature, see operating conditions.

**Required changeover on Vitotronic 100**
(see service instructions):

- Change code "01" to "3".
- Code "02: 1" must remain set.

The connections on plug-in connectors [A143] and [A146] are required when connecting an external control unit. The DHW cylinder temperature and the load-dependent cascade control must be controlled by an external control unit.

**Please note:**
An "enable boiler" contact is obligatory for multi-boiler systems.
This contact must always be closed on the lead boiler.

#### Enable boiler, butterfly valve:
Contact at terminals "2" and "3" of the plug-in connector [A146]

Contact closed:
Initially, the pre-heat function for lag boilers is activated (see Vitotronic 100 service instructions).
After the pre-heat function has expired, the boiler minimum temperature will be maintained, and the burner stages or the modulation can be controlled externally.

Contact opened:
The butterfly valve is closed after approx. 5 minutes (see Vitotronic 100 service instructions).
Burner stages cannot be switched on externally; a minimum temperature will not be maintained.

#### Switch on 1st burner stage:
Contact at terminals "1" and "2" of plug-in connector [A143]

Contact closed:
The 1st burner stage is switched on. The full load is switched on only to maintain the minimum temperature.
The boiler water temperature is limited by the electronic maximum temperature limiter (see Vitotronic 100 service instructions), if it is set below that of the mechanical thermostat [D1].
Contact opened:
The 1st burner stage is switched off.

#### Settings on Vitotronic 100
The high limit safety cut-out settings and other settings depend on the system equipment and the safety equipment acc. to DIN 4751-2.

<table>
<thead>
<tr>
<th>Setting</th>
<th>High Limit Safety Cut-Out</th>
<th>Control Thermostat</th>
<th>Coding for Electronic Maximum Temperature Limiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>High limit safety cut-out</td>
<td>120 °C</td>
<td>110 °C</td>
<td>105 °C</td>
</tr>
<tr>
<td>Control thermostat</td>
<td>100 °C</td>
<td>87 °C</td>
<td>85 °C</td>
</tr>
<tr>
<td>Coding for electronic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>maximum temperature limiter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitotronic 100 Code &quot;06&quot;</td>
<td>100 °C</td>
<td>100 °C</td>
<td></td>
</tr>
<tr>
<td>Maximum temperature of the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>on-site modulation controller</td>
<td>80 °C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.3 Installation notes

Connection options for Vitotronic 100, 200, 300 and 333

External load-dependent switch-on

When the volt-free contact between terminals “2” and “3” at plug-in connector [146] closes, the boiler burner and possibly the burners of other boilers (in case of Vitotronic 333) may be switched on, depending on load.

The boiler water temperature is limited via the maximum set boiler water temperature or via the mechanical thermostat.

The set value is adjusted via code “9B”.

External blocking or mixer “Closed”

The burner is shut down or the mixer is closed when the volt-free contact between terminals “2” and “3” at plug-in connector [143] closes.

The boiler is excluded from the sequential control, the associated pumps are switched off and the shut-off equipment is closed.

Please note: The frost protection of the boiler or heating circuit is no longer effective during the controlled shut-down or when the mixer “closes”, i.e. the lower boiler water temperature and flow temperatures are no longer maintained.

You can pre-select via code “99”, for which circuits input [143] will be effective. When the contact “External blocking” is closed on Vitotronic 333 and if the code is set to “99 : 8” to “99 : 15”, all heating circuits are blocked.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>“0”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“1”</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“2”</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>“3”</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>“4”</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>“5”</td>
<td></td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>“6”</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>“7”</td>
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<td></td>
<td>x</td>
</tr>
<tr>
<td>“8”</td>
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<td>“11”</td>
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<td>“13”</td>
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</tr>
<tr>
<td>“14”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“15”</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

Burner “off”

Heating circuit 1 (mixer circuit M1)

Heating circuit 2 (mixer circuit M2)

Heating circuit 3 (mixer circuit M3)
3.3 Installation notes

Change of external heating program/mixer open
Also applicable to Vitotronic 050

The manually pre-selected heating program can be changed or the connected mixer can be opened via the volt-free plug-in connector [14] terminals “1” and “2”.

<table>
<thead>
<tr>
<th>Manually pre-selected heating program (heating program with open contact)</th>
<th>Code 2 enables changes after</th>
<th>Changed heating program Changes can be made in all listed heating programs (heating program with closed contact)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø or Central heating off/hot water off</td>
<td>D5 : 0 (“as delivered” condition)</td>
<td>↔ ø Central heating off/hot water off</td>
</tr>
<tr>
<td>ø or Central heating off/hot water on</td>
<td>D5 : 1</td>
<td>↔ Hard Central heating constantly on/DHW on</td>
</tr>
<tr>
<td>III ø Central heating on/hot water on</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Code “91” enables the external heating program to be allocated to the individual heating circuits:

<table>
<thead>
<tr>
<th>Code “91”</th>
<th>Heating circuit 1 (mixer circuit M1 or directly connected heating circuit A1)</th>
<th>Heating circuit 2 (mixer circuit M2)</th>
<th>Heating circuit 3 (mixer circuit M3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“0”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“1”</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“2”</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“3”</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“4”</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>“5”</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>“6”</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>“7”</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

External mixer open

Code “9A” enables the external function “Mixer open” to be allocated to the individual heating circuits:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>“0”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“1”</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“2”</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“3”</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“4”</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>“5”</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>“6”</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>“7”</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
3.3 Installation notes

External changeover of stepped/modulating burners

Connect the volt-free contact to terminals “1” and “2” of plug-in connector 146.

Contact open: mod. operation
Contact closed: two-stage operation
With code 1 the burner must be set to modulate (code “02: 2”).

Please note:
When scanning the burner version, modulation appears even after an external changeover (no re-writing).

External connections to Vitotronic 200, 300 and 333

143

1 2 3

146

1 2 3

External load-dependent switch-on
Changeover stepped/modulating (only for Vitotronic 200 and 300)
External blocking/close mixer
Change of external heating program/mixer open
3.3 Installation notes

**Blocking the boiler**
Connect the volt-free contact to terminals "1" and "2" of plug-in connector [143].

Contact closed:
The boiler is blocked.
It is taken out of the boiler sequence, i.e. the butterfly valve or the three-way mixing valve is closed for constant return temperature control and the shunt or boiler circuit pumps are switched off. The other boilers must provide the required heating.

⚠️ Safety instruction
The heating system is no longer protected against frost if all boilers are blocked or there are no other available boilers.

Contact open:
The boiler is reinstated into the current boiler sequence.

**Start boiler as the last one in the boiler sequence**
Connect the volt-free contact to terminals "2" and "3" of plug-in connector [143].

Contact closed:
The boiler is started as the last one in the boiler sequence.
The heat demand of the heating system is being met by the other boilers. This boiler is started if the other boilers do not provide sufficient heat.

Contact open:
The boiler is reinstated into the current boiler sequence.

**External connections to Vitotronic 100 (type GC1) when operating in conjunction with Vitotronic 333 (types MW1 or MW1S)**

![Diagram of volt-free contacts]

**Plug-in adaptor for external safety equipment**
Several additional pieces of safety equipment may be connected:
- Low water indicator
- Minimum pressure limiter
- Maximum pressure limiter
- Additional high limit safety cut-out
- 3 external fault messages (e.g. pump or neutralisation system).

The plug-in adaptor enables faults to be displayed at the respective control unit and the transfer via communication equipment to mobile phones, fax or a control centre.
The respective fault can be displayed in plain text.
3.4 Hooking up on-site control devices via LON BUS

Vitotronic control units are equipped with an open standard interface, i.e. the LON BUS (Local Operating Network). This universal, de-centralised network for automated building management systems not only allows communication between Vitotronic control units, but also the hooking up of on-site systems and devices by various manufacturers.

It enables, for example, individual room control units or building management systems to be directly connected to Vitotronic control units. Further modifications, expansions and maintenance work can be carried out at any time and with systems running.