

Technical Data Manual



Vitotronic 200

Model KW2, Part No. Z001 230

For operation with modulating boiler water temperatures,
and single-stage, two-stage or modulating burners

With DHW tank temperature sensor and integrated
diagnostic system

Operating module with clear text LCD display

Remote control interface with room temperature sensor
(optional)

Viessmann quick-connect plug-in system



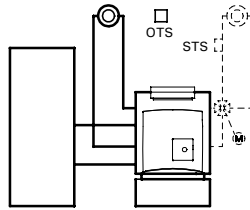
Product Information/Standard Equipment/ Application

Product Information

The benefits at a glance:

- **Easy and uniform operation:**
 - Different programming levels for system user and heating contractor.
 - **Large, clear text LCD display format** facilitates legibility of all data.
 - Illuminated operating mode and heating circuit keys.
 - Easy-to-program switching times.
 - Digital tracking of day and week. Programmed times for domestic hot water production and recirculation pump are adjusted automatically when heating program is altered.
 - **Plug & Work quick-connect system** for automatic sensor and system recognition and adaptation.
 - Automatic resetting to daylight savings time.
 - **Service interval display** for demand-related maintenance.
 - **Fuel consumption display.**
- Program selection for controlled **drying of concrete floor** in radiant floor heating application.
- **Short installation time**, start-up and maintenance due to Rast-5 connector system, plug-in function modules and integrated diagnostic system.

Vitotronic 200, Model KW2



- **Weather-responsive indoor/outdoor, digital boiler and heating system control:**
 - for heating systems with one boiler
 - for heating circuits without and heating circuits with a mixing valve
 - for single-stage, 2-stage and modulating burners
 - with DHW tank temperature sensor
 - with digital tracking of day and week
 - with separate switching times for room heating, domestic hot water heating and recirculation pump
 - with integrated diagnostic system

Standard Equipment

Vitotronic 200, Model KW2
(Part No. Z001 230)
with

- operating module with clear text LCD display
- outdoor temperature sensor
- boiler water temperature sensor
- DHW tank temperature sensor
- Power/Pump Module

For the heating circuit with a mixing valve, a mixing valve actuator accessory kit is required. Due to the low return water temperature of condensing boilers only 3-way mixing valves should be installed. The circulation pump with a flow check valve for DHW tank temperature control must be ordered separately.

Heating system with underfloor heating

The underfloor heating circuit requires an accessory kit for operation with a mixing valve.

A temperature control with high limit must be installed in the heating supply of the radiant floor heating application. The underfloor heating circuit must not be controlled by a remote control with room temperature sensor.

Application

In conjunction with the following Viessmann boilers
Boiler Model and Series

Boiler Model and Series	Fuel	Minimum boiler water temperature	
		without low limit	with low limit (average temp.)
Oil-fired hot water heating boiler with power burner Vitorond 200	Oil		104 °F/40 °C
Oil-/gas-fired hot water heating boiler with power burner Vitola 200	Oil/Gas	x	
Atmospheric gas-/propane-fired hot water heating boiler Vitogas 050, RS Series	Gas		120 °F/49 °C
Atmospheric gas-fired hot water heating boiler Vitogas 100, GS1 up to 240 MBH / 70 kW Vitogas 100, GS10 up to 380 MBH / 111 kW	Gas Gas		104 °F/40 °C 120 °F/49 °C

Structure and Operation

Modular structure

The complete control consists of a control base, control unit (electronic/operating modules) and a Power/Pump Module.

The control unit comprises:

Power on/off switch, an electronic high limit, a temperature gage and a low temperature control

- adjustable high limit
- fixed high limit

TUV test switch, override switch, buttons for:

- holiday program
- party and economy modes
- reduced operating mode temperature
- domestic hot water temperature
- programming of heating curves for boiler water temperature and/or mixing valve circuit temperature
- heating circuit selection, a selector knob for normal operating temperatures and a digital timer.

Heat-demand-controlled circuit pump and burner activation, adjusting of a variable temperature limit, pump cycling, integrated diagnostic system and flue gas monitoring in connection with flue gas temperature sensor (optional) and maintenance display.

Boiler-specific functions

The Vitotronic control modulates the boiler water temperature.

It gradually regulates the boiler water temperature (= the supply temperature of the direct-connected heating circuit) as well as the supply water temperature of a mixing valve circuit. The control contains an adaptive tank temperature control logic with priority switching (heat pump off, mixing valve closed).

An additional function for domestic hot water heating (short-term heating to an increased temperature) can be selected.

The Vitotronic 200 is an ideal control option for your heating system with mixing valve circuit. It is the perfect solution for your underfloor heating circuit with supply and return water temperature sensor or for controlled drying of a concrete floor.

Control characteristics

- Boiler circuit control unit (high temperature)
- Heating circuit control with mixing valve
Dead zone: ± 1.80 °F/1 °C
- Adjustable high limit factory default setting: 167 °F/75 °C
- Adjustment of the fixed high limit: 230 °F/110 °C adjustable to 212 °F/100 °C
- Adjustment range of heating curve:
Slope: 0.2 to 3.5
Shift: -23 °F to +72 °F/
-13 °C to +40 °C
- High limit: 68 to 266 °F/
20 to 130 °C
- Low limit: 34 to 261 °F/
1 to 127 °C
- Differential temperature for heating circuit with mixing valve: 0 to 72 °F/
0 to 40 °C
- Adjustment range for domestic hot water setpoint temperature:
50 to 140 °F/
10 to 60 °C adjustable to 50 to 203 °F/
10 to 95 °C

Technical data

- Rated voltage: 120 VAC
- Rated frequency: 60 Hz
- Rated current: 6 A
- Power consumption: 5 W
- Maximum ambient temperature
- at operation: 32 to 104 °F/
0 to 40 °C (in rooms and installation sites with normal ambient conditions)
- when storing or transporting: -4 to +149 °F/
-20 to +65 °C

Relay output rating in conjunction with a Power/Pump Module:

- Heating circuit pumps: 3 FLA/120 VAC ^{*1}
- DHW tank heating circulation pump: 3 FLA/120 VAC ^{*1}
- Domestic hot water recirculation pump: 3 FLA/120 VAC ^{*1}
- Mixing valve actuator: 0.1 FLA/120 VAC ^{*1}
Operating time approx. 2 minutes
- Burner plug 41: 2 FLA/120 VAC
- 2-stage burner plug 90 ^{*2}: 0.5 FLA/120 VAC
- Total: max. 12 A/120 VAC

^{*1}Total 12 A/120 VAC

^{*2}Available only with extension module for 2-stage burner (included in boiler package).

Boiler coding card

Adapts the control to the specific boiler model being used (included in boiler package).

Connections

- Sensors, burner and Power/Pump Module are connected to the back of the control unit via system plugs.
- Pumps, power supply and mixing valve are connected to the Power/Pump Module via screw terminals or system plugs.

Operating unit

- With digital timer
- Clear text LCD display
- Temperature and fault display
- Coding via display of operating unit
- All adjustments and basic coding information in clear text format.

Structure and Operation

Structure and Operation (continued)

Digital timer of operating unit

A digital timer with day and week feature, calendar, automatic resetting to daylight savings time and automatic functions for domestic hot water heating and recirculation pump.

Time, day and standard switching times for room heating, domestic hot water heating and domestic hot water recirculation pump are factory preset (individually programmable), max. four time switch intervals programmable per day.

Shortest interval: 10 minutes

Power reserve: 5 years

Adjusting the operating system

All operating programs feature freeze-up protection ^{*1} for the heating system. With the program selector buttons the following can be selected:

- heating and domestic hot water
- domestic hot water only
- standby operation

^{*1} See Freeze-up Protection Function below.

Freeze-up protection function

The freeze-up protection function is - activated when the outside temperature drops to +34 °F/1 °C.

The freeze-up protection function activates the circulation pumps and keeps the boiler water temperature at the reduced operation setpoint level, at a minimum temperature of approx. 68 °F/20 °C (for heating boilers with low limit the respective temperature will be maintained).

- deactivated when the outside temperature exceeds +37 °F/3 °C.

When the freeze-up protection function is deactivated, heating boiler and circulation pumps are turned off.

Summer economy mode

(Domestic hot water heating only, program selector switch "☀")

The burner only activates if domestic hot water needs to be produced (as required by DHW setpoint).

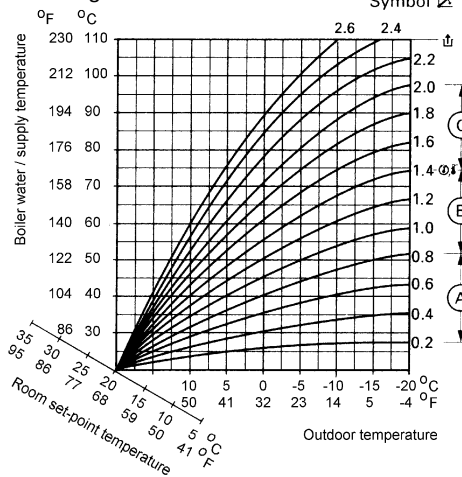
Heating curve adjustment

The weather-responsive Vitotronic 200 regulates the boiler water temperature (= supply water temperature of the heating circuit without mixing valve) and the supply temperature of the heating circuit with a mixing valve.

The required supply temperature for a certain room temperature depends on the heating system and the insulation of the building in question.

The adjustment of both heating curves individually allows for the boiler water temperature and the supply temperature of the mixing valve circuit to be adjusted to the respective conditions.

Heating curves:

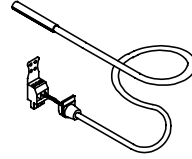


- (A) Low temperature heating system, e.g. radiant floor heating
- (B) Medium temperature heating system, e.g. cast iron radiation, staple-up radiant floor heating
- (C) High temperature heating system, e.g. fintube radiation, fan coils

The maximum boiler water temperature is restricted by both the adjustable high limit and the electronic maximum temperature limit.

The supply water temperature cannot exceed the boiler water temperature.

Boiler water temperature sensor



Cable length 5.2 ft./1.6 m, ready to plug in.

- Maximum ambient temperature
- at operation: 32 to 266 °F/
0 to 130 °C
 - when storing or transporting: -4 to +158 °F/
-20 to +70 °C

Outdoor temperature sensor



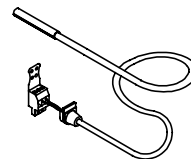
Installation site:

- North or northwest side of building
- 6.6 to 8.2 ft./2 to 2.5 m above ground, for multi-storey buildings mount sensor on upper half of second storey.

Connection:

- 2-wire cable, cable length 115 ft./35 m with a wire size of min. AWG 16 copper.
 - the cable to the outdoor sensor must not be laid near line voltage wiring (120/240 V).
- Maximum ambient temperature at operation, when storing or transporting:
- 40 to +158 °F/
- 40 to +70 °C

Domestic hot water tank temperature sensor



Cable length 19 ft./5.8 m, ready to plug in.

- Maximum ambient temperature
- at operation: 32 to 194 °F/
0 to 90 °C
 - when storing or transporting: -4 to +158 °F/
-20 to +70 °C

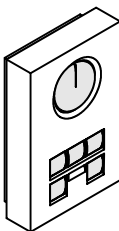
Accessories

Note on the room temperature sensing function (RS function) *1 when using a remote control

Due to the slow response of the underfloor heating, the RS function must not influence the underfloor heating circuit.

For heating boilers with a low limit, the RS function must not influence the heating circuit without a mixing valve.

Vitotrol 200,
Part No. 7133 378



The Vitotrol 200 remote control takes care of the room temperature setpoint adjustment at normal operation and determines the heating program from any given room. The Vitotrol 200 features illuminated heating program selector buttons as well as a party and an economy button. Fault messages are displayed on the boiler control. A remote control can be connected for each heating circuit.

WS function *2: Allows for installation at any given place in the building.
RS function *1: The remote control is to be installed on an inside wall of the main living area, across from radiators, but not on shelves, in niches, in the close vicinity of doors or heat sources of any kind (e.g. direct sunlight, fireplace, TV, etc.). The installed sensor measures room temperature and, if necessary, takes corrective action and initiates fast heat-up at the outset of the heating operation (if coded).

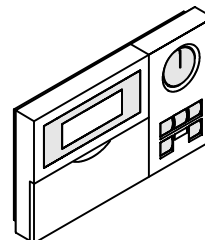
- Connection:
- 2-wire cable, cable length max. 164 ft./50 m (also for the connection of several remote controls).
 - The cable must not be placed together with line voltage wiring.
 - Low voltage plug is included.

Rated voltage: 33 VAC
 Rated current: 10 mA
 Power consumption: 3.3 W
 Maximum ambient temperature
 - at operation: 32 to 104 °F/
 0 to 40 °C
 - when storing or transporting: -4 to +149 °F/
 -20 to +65 °C

Adjustment range of room temperature setpoint:
 50 to 86 °F/
 10 to 30 °C
 adjustable to
 37 to 73 °F/
 3 to 23 °C
 or
 63 to 99 °F/
 17 to 37 °C

Adjustment of the room temperature setpoint at reduced operation takes place at the Vitotronic 200.

Vitotrol 300,
Part No. 7133 382



The Vitotrol 300 remote control takes care of the room temperature setpoint adjustment at normal and reduced operation for the heating program, switching times for room heating, domestic hot water heating and the domestic hot water recirculation pump. The Vitotrol 300 features illuminated heating program selector buttons, a party and an economy button, an automatic reset function to daylight savings time, buttons for the holiday program, day of the week and time.

WS function *2: Allows for installation at any given place in the building.
RS function *1: The remote control is to be installed on an inside wall of the main living area, across from radiators, but not on shelves, in niches, in the close vicinity of doors or heat sources of any kind (e.g. direct sunlight, fireplace, TV, etc.). The installed sensor measures room temperature and, if necessary, takes corrective action and initiates fast heat-up at the outset of the heating operation (if coded).

- Connection:
- 2-wire cable, cable length max. 164 ft./50 m (also for the connection of several remote controls).
 - The cable must not be placed together with line voltage wiring.
 - Low voltage plug is included.

Rated voltage: 33 VAC
 Rated current: 10 mA
 Power consumption: 3.3 W
 Maximum ambient temperature
 - at operation: 32 to 104 °F/
 0 to 40 °C
 - when storing or transporting: -4 to +149 °F/
 -20 to +65 °C

Adjustment range of room temp. setpoint:
 - at normal operation: 50 to 86 °F/
 10 to 30 °C
 adjustable to
 37 to 73 °F/
 3 to 23 °C
 or
 63 to 99 °F/
 17 to 37 °C
 - at reduced operation: 37 to 99 °F/
 3 to 37 °C

Accessories

Accessories (continued)

Room temperature sensor,
Part No. 7133 379



A separate room temperature sensor as an addition to the Vitotrol 200 or 300; to be used when the Vitotrol 200 or 300 remote controls cannot be placed in the main living area or in a position suitable for monitoring the room temperature. The room temperature sensor must be installed on an inside wall of the main living area, across from radiators, but not on shelves, in niches or in the close vicinity of doors or heat sources of any kind (e.g. direct sunlight, fireplace, TV, etc.).

The room temperature sensor is to be connected with the Vitotrol 200 or 300.
Connection:

- 2-wire cable with a wire diameter of AWG 16 copper.
- Cable length between control unit, remote control and room temperature sensor must not exceed 115 ft./35 m.
- Cable must not be placed together with line voltage wiring.

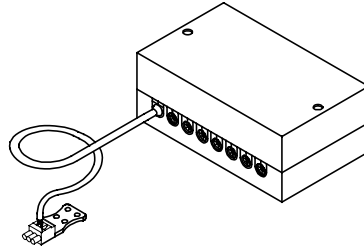
Maximum ambient temperature

-at operation: 32 to 104 °F/
0 to 40 °C

-when storing
or transporting:

-4 to +149 °F/
-20 to +65 °C

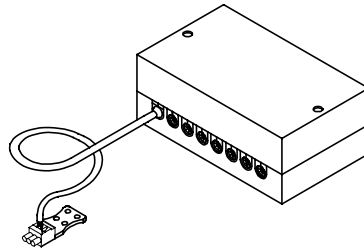
KM-BUS Expansion Module,
Part No. 7133 393



With cable (10 ft./3 m long) and low voltage plug.

To connect up to 6 devices to the single KM-BUS connection of the boiler control (Vitotrol, Switching Module-V etc.).

Switching Module-V,
Part No. 7133 387



With cable (10 ft./3 m long) and low voltage plug.

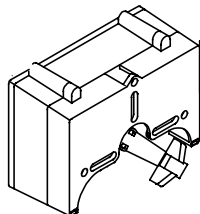
With the Switching Module-V the following additional functions are feasible:

- external burner activation upon heat demand (influences burner, possible pumps and mixing valves), e.g. pool heating, ventilation equipment etc.
- external disabling of burner
- remote switching of heating/operating program, separate for each heating circuit
- external error message input
- output of error message (SPDT contact)
- connection for short-term operation of domestic hot water recirculation pump (e.g. by external button)

Accessories (continued)

Mixing valve actuator accessory kit,
Part No. 7133 390
consisting of a mixing valve actuator and
supply temperature sensor (strap-on
sensor)

Mixing valve actuator



The mixing valve actuator is to be installed directly onto the Viessmann ¾ to 2 ½" mixing valve.

The mixing valve actuator is a bi-directional, single-phase, synchronous motor with gear system and two limit switches.

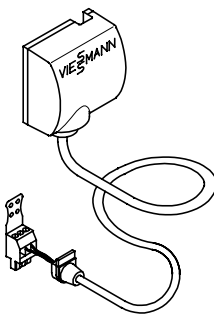
Rated voltage: 120 VAC
Rated frequency: 60 Hz
Power consumption: 4 W

Maximum ambient temperature
– at operation: 32 to 104 °F/
0 to 40 °C

– when storing
or transporting: –4 to +149 °F/
0 to 65 °C

Torque: 3 Nm
Operating time
for 90° ✕: 2 minutes

Strap-on sensor (included with mixing
valve actuator accessory kit),
Part No. 7133 895



To determine the supply temperature of the mixing valve circuit. Installed with a strapping band. Cable length 19 ft./5 m, ready to plug in.

Maximum ambient temperature
– at operation: 32 to 212 °F/
0 to 100 °C
– when storing
or transporting: –4 to +158 °F/
–20 to +70 °C

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