

**Export operating data via Modbus – Ecocontrol**

for Ecocontrol boiler control unit



**Export operating data via Modbus – Ecocontrol**



## Safety instructions

### Safety instructions



Please follow these safety instructions closely to prevent accidents and material losses.

#### Safety instructions explained



##### **Danger**

This symbol warns against the risk of injury.



##### **Please note**

This symbol warns against the risk of material losses and environmental pollution.

##### **Note**

*Details identified by the word "Note" contain additional information.*

#### Target group

These instructions are exclusively intended for qualified contractors.

- Work on the refrigerant circuit may only be carried out by authorised refrigeration engineers.
- Work on electrical equipment may only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

#### Regulations to be observed

- National installation regulations
- Statutory regulations for the prevention of accidents
- Statutory regulations for environmental protection
- Codes of practice of the relevant trade associations
- Relevant country-specific safety regulations

#### Safety instructions for working on the system

##### Working on the system

- Isolate the system from the power supply, e.g. by removing the separate fuse or by means of a mains isolator, and check that it is no longer live.

##### **Note**

*In addition to the control circuit there may be several power circuits.*



##### **Danger**

Contact with live components can result in severe injuries. Some components on PCBs remain live even after the power supply has been switched off.

Prior to removing covers from the appliances, wait at least 4 minutes until the voltage has completely dropped out.

- Safeguard the system against reconnection.
- Wear suitable personal protective equipment when carrying out any work.



##### **Danger**

Hot surfaces and fluids can lead to burns or scalding.

- Before maintenance and service work, switch OFF the appliance and let it cool down.
- Never touch hot surfaces on the appliance, fittings or pipework.



##### **Please note**

Electronic assemblies can be damaged by electrostatic discharge.

Prior to commencing work, touch earthed objects such as heating or water pipes to discharge static loads.

##### Repair work



##### **Please note**

Repairing components that fulfil a safety function can compromise the safe operation of the system.

Replace faulty components only with genuine Viessmann spare parts.

##### Auxiliary components, spare and wearing parts



##### **Please note**

Spare and wearing parts that have not been tested together with the system can compromise its function. Installing non-authorised components and making non-approved modifications or conversions can compromise safety and may invalidate our warranty.

For replacements, use only original spare parts supplied or approved by Viessmann.

**Safety instructions** (cont.)**Safety instructions for operating the system****What to do if water escapes from the appliance****Danger**

If water escapes from the appliance there is a risk of electrocution.

Switch OFF the heating system at the external isolator (e.g. fuse box, domestic distribution board).

**Danger**

If water escapes from the appliance there is a risk of scalding.

Never touch hot heating water.

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## Description

The Ecocontrol boiler control unit can be extended with an optional Modbus module. This extension module enables data communication between the boiler control unit and a higher ranking control unit via a TCP/IP interface.

For a detailed description of the Modbus protocol, see [www.modbus.org](http://www.modbus.org).

## Boiler control unit Modbus address

The IP address of the boiler control unit can be set at the programming unit.

### Factory settings

<b>IP address</b>	172.168.50.5
<b>Subnet mask</b>	255.255.255.0

## Modbus function codes

Modbus distinguishes between several function codes. The boiler control unit can only process function codes 03 and 16 (register only, no coils).

Function code		Description
0x03	Read Holding Registers	Reading one or more registers
0x16	Write Single Register	Writing one register

### Note

*Depending on the system configuration, not all data points may be available.*

## Vitoflex 300-UF data point list

### Vitoflex 300-UF set values

Data point number	Data point	Resolution	Minimum value	Maximum value	Length
0	Flow temperature	0.1 °C	750	950	2 bytes
1	Return temperature	0.1 °C	650	800	2 bytes
2	Residual oxygen content, flue gas	0.1 %	40	180	2 bytes

### Vitoflex 300-UF actual values

Data point number	Data point	Resolution	Length
151	Flow temperature	0.1 °C	2 bytes
152	Flow temperature (calculated)	0.1 °C	2 bytes
153	Return temperature	0.1 °C	2 bytes
154	Return temperature (calculated)	0.1 °C	2 bytes
156	Valve opening for return temperature raising	0.1 %	2 bytes
157	Flue gas temperature	0.1 °C	2 bytes
158	Residual oxygen content	0.1 %	2 bytes
159	Residual oxygen content (calculated)	0.1 %	2 bytes
160	Feed temperature	0.1 °C	2 bytes
161	Speed, flue gas fan	0.1 %	2 bytes
163	Boiler output	0.1 %	2 bytes
164	Default output	0.1 %	2 bytes
167	Internal use	0.1 %	2 bytes
168	Internal use	0.1 %	2 bytes
169	Speed, feed	0.1 %	2 bytes
173	Status	See page 7	2 bytes
174	Hours run, load	1 h	2 bytes
175	Software version	0.00	2 bytes
177	Not assigned	1 h	2 bytes
186	Recirculation damper	0.1 %	2 bytes
187	Fresh air damper	0.1 %	2 bytes
188	Hours run, maintaining	1 h	2 bytes
189	Hours run, standby	1 h	2 bytes
190	Speed, secondary air fan	0.1 %	2 bytes
191	Speed, secondary air fan (calculated set value)	0.1 %	2 bytes
192	Speed, primary air fan	0.1 %	2 bytes
193	Speed, primary air fan (calculated set value)	0.1 %	2 bytes
194	Speed, recirculation fan	0.1 %	2 bytes
195	Speed, recirculation fan (calculated set value)	0.1 %	2 bytes
196	Vacuum pressure (calculated set value)	0.1 Pa	2 bytes

**Vitoflex 300-UF actual values** (cont.)

Data point number	Data point	Resolution	Length
197	Combustion chamber temperature	1 °C	2 bytes
199	Vacuum pressure	0.1 Pa	2 bytes
399 – 400	Faults 1	See page 7	4 bytes
401 – 402	Faults 2	See page 8	4 bytes
403 – 404	Warnings 1	See page 8	4 bytes
437 – 438	Bit pattern 1	See page 9	4 bytes
439 – 440	Bit pattern 2	See page 10	4 bytes
457 – 467	Heating water buffer cylinder Data points for cylinder management	See page 10	2 bytes
468 – 473	Heating water buffer cylinder Data points for boiler sequence control	See page 10	2 bytes

**Status (data point 173)**

Data point content Value	Description
0	Boiler off
2	Flushing combustion chamber
3	Filling fuel hopper
4	Filling screw conveyor
5	Filling combustion chamber
6	Ignition
7	Load operation
8	Maintaining
9	Running screw conveyor until empty
10	Burnout
11	Emergency burnout
12	Emergency mode
13	Standby
15	Relay test
16	Cleaning

**Faults 1 (data point 399 – 400)**

Data point content Bit	Description
1	High limit safety cut-out (STB)
2	Low water indicator
3	Water pressure
4	Inverter, flue gas fan
5	Repeating heat-up
6	Combustion chamber positive pressure
7	High limit safety cut-out, fuel store

## Vitoflex 300-UF data point list

### Faults 1 (data point 399 – 400) (cont.)

Data point content Bit	Description
8	Flue gas damper sticking
9 – 32	Not assigned

### Faults 2 (data point 401 – 402)

Data point content Bit	Description
1	Emergency stop switch activated
2	Carbon monoxide (CO)/carbon dioxide (CO <sub>2</sub> )
3	Thermal contact, boiler circuit pump
4	Not assigned
5	Thermal contact, infeed grate
6	Overfilling/extinguishing
7	Level, extinguishing water container
8	Feed warm
9	Shut-off gate valve sticking
10	Rotational direction reversal, rotary lock valve
11	Light barrier, firebed
12	Material shortage
13	Light barrier, feed
14 – 17	Not assigned
18	Motor overload relay, feed
19	Burn-back
20	Limit switch, conveyor device
21	Motor overload relay, conveyor device
22	Frequency converter, recirculation fan
23	Frequency converter, primary air fan
24	Frequency converter, secondary air fan
25 – 32	Not assigned

### Warnings 1 (data point 403 – 404)

Data point content Bit	Description
1	Runtime, ash removal
2	Residual oxygen (O <sub>2</sub> ) control
3	Feed warm
4	Return temperature raising, manual mode
5	Feed, manual mode
6	Not assigned
7	Internal use
8	CAN, charging
9	Not assigned
10	Motor overload relay, ash removal



**Warnings 1 (data point 403 – 404) (cont.)**

Data point content Bit	Description
11	Internal use
12	Internal use
13	Combustion chamber door open
14	Bottom combustion chamber sensor faulty
15	Internal use
16	Ash container removed
17	Pressure switch, extinguishing water device
18 – 32	Internal use

**Bit pattern 1 (data point 437 – 438)**

Data point content Bit	Description
1	Light barrier: Firebed
2	Internal use
3	Motor: Ash removal
4	Motor: Ascending ash screw conveyor
5	Motor: Infeed grate
6	Ignition: Fan
7	Ignition: Heating
8	Internal use
9	Motor: Flue gas fan
10	Internal use
11	Motor: Feed screw conveyor
12	Light barrier: Feed screw conveyor
13	Internal use
14	Thermal contact: Motor infeed grate
15	Float switch: Extinguishing water container
16	Light barrier: Ash removal
17	High limit safety cut-out: Boiler
18	Low water indicator
19	Water pressure
20	Motor overload relay: Ash removal
21	Motor overload relay: Conveyor devices
22	Limit switch: Conveyor devices
23	Internal use
24	Internal use
25	Temperature level, hydraulics, push floor
26	Temperature level, hydraulics, silo cover
27	Motor: Boiler circuit pump
28	Thermal contact: Boiler circuit pump
29	External demand
30	Motor: Control panel fan

## Vitoflex 300-UF data point list

### Bit pattern 1 (data point 437 – 438) (cont.)

Data point content Bit	Description
31	Internal use
32	Motor: Recirculation fan/ventilation air fan

### Bit pattern 2 (data point 439 – 440)

Data point content Bit	Description
1	Motor: Primary air fan
2	Internal use
3	Motor: Secondary air fan
4	Internal use
5	Pressure switch, combustion chamber
6	Internal use
7	Power supply, Lambda probe transducer
8	High limit safety cut-out, fuel store
9	Internal use
10	Proximity switch, ash container
11	Boiler operating message
12	Emergency stop switch
13	Sensor: Carbon monoxide (CO)/carbon dioxide (CO <sub>2</sub> )
14	Switch, extinguishing water pressure
15 – 32	Not assigned

### Heating water buffer cylinder, actual values

Data point number	Data points for cylinder management	Resolution	Length
457	Heating water buffer cylinder sensor B 28.1 temperature	0.1 °C	2 bytes
458	Heating water buffer cylinder sensor B 28.2 temperature	0.1 °C	2 bytes
459	Heating water buffer cylinder sensor B 28.3 temperature	0.1 °C	2 bytes
460	Heating water buffer cylinder sensor B 28.4 temperature	0.1 °C	2 bytes
461	Heating water buffer cylinder sensor B 28.5 temperature	0.1 °C	2 bytes
467	Outside temperature sensor	0.1 °C	2 bytes

Data point number	Data points for boiler sequence control	Resolution	Length
468	Heating water buffer cylinder sensor B 28.1 temperature	0.1 °C	2 bytes
469	Heating water buffer cylinder sensor B 28.2 temperature	0.1 °C	2 bytes
470	Heating water buffer cylinder sensor B 28.3 temperature	0.1 °C	2 bytes
471	Heating water buffer cylinder sensor B 28.4 temperature	0.1 °C	2 bytes
472	Heating water buffer cylinder sensor B 28.5 temperature	0.1 °C	2 bytes
473	Outside temperature sensor	0.1 °C	2 bytes

### Vitoflex 300-RF set values

Data point number	Data point	Resolution	Minimum value	Maximum value	Length
0	Flow temperature	0.1 °C	750	950	2 bytes
1	Return temperature	0.1 °C	650	800	2 bytes
2	Residual oxygen content, flue gas	0.1 %	40	180	2 bytes
19	Minimum system temperature Available	1	0	1	2 bytes
20	Minimum system temperature Set temperature	0.1 °C	500	900	2 bytes

### Vitoflex 300-RF actual values

Data point number	Data point	Resolution	Length
151	Flow temperature	0.1 °C	2 bytes
152	Flow temperature (calculated)	0.1 °C	2 bytes
153	Return temperature	0.1 °C	2 bytes
154	Return temperature (calculated)	0.1 °C	2 bytes
156	Valve opening for return temperature raising, actual value	0.1 %	2 bytes
157	Flue gas temperature	0.1 °C	2 bytes
158	Residual oxygen content	0.1 %	2 bytes
159	Residual oxygen content (calculated)	0.1 %	2 bytes
160	Feed temperature	0.1 °C	2 bytes
161	Speed, flue gas fan	0.1 %	2 bytes
163	Output	0.1 %	2 bytes
164	Default output	0.1 %	2 bytes
167	Primary air damper	0.1 %	2 bytes
168	Secondary air damper	0.1 %	2 bytes
169	Speed, feed	0.1 %	2 bytes
173	Status	See page 12	2 bytes
174	Hours run, load	1 h	2 bytes
175	Software version	0.00	2 bytes
177	Oil/gas hours run	1 h	2 bytes
399 – 400	Faults 1	See page 12	4 bytes
401 – 402	Faults 2	See page 12	4 bytes
403 – 404	Warnings 1	See page 13	4 bytes
437 – 438	Bit pattern 1	See page 13	4 bytes
439 – 440	Bit pattern 2	See page 14	4 bytes
457 – 467	Heating water buffer cylinder Data points for cylinder management	See page 15	2 bytes
468 – 473	Heating water buffer cylinder Data points for boiler sequence control	See page 15	2 bytes

## Vitoflex 300-RF data point list

### Status (data point 173)

Data point content Value	Description
0	Boiler off
1	Zeroing air dampers
2	Flushing combustion chamber
3	Filling fuel hopper
4	Filling screw conveyor
5	Filling combustion chamber
6	Ignition
7	Load operation
9	Running screw conveyor until empty
10	Burnout
13	Standby
14	Pressure-jet oil burner in operation
15	Relay test
16	Cleaning

### Faults 1 (data point 399 – 400)

Data point content Bit	Description
1	High limit safety cut-out (STB)
2	Low water indicator
3	Water pressure
4	Inverter, flue gas fan
5	Repeating heat-up
6	Not assigned
7	High limit safety cut-out, fuel store
8	Flue gas damper sticking
9	Overfilling/extinguishing
10 – 32	Not assigned

### Faults 2 (data point 401 – 402)

Data point content Bit	Description
1	Emergency stop switch activated
2	Carbon monoxide (CO)/carbon dioxide (CO <sub>2</sub> )
3	Thermal contact, boiler circuit pump
4	Rotary fan
5	Thermal contact, infeed grate
6	Internal use
7	Level, extinguishing water container
8	Feed warm
9	Shut-off gate valve sticking
10	Rotational direction reversal, rotary lock valve

**Faults 2 (data point 401 – 402) (cont.)**

Data point content Bit	Description
11	Light barrier, firebed
12	Material shortage
13	Light barrier, feed
14	Overfilling/extinguishing
15 – 17	Not assigned
18	Motor overload relay, feed
19	Burn-back
20	Limit switch, conveyor device
21	Motor overload relay, conveyor device
22 – 32	Not assigned

**Warnings 1 (data point 403 – 404)**

Data point content Bit	Description
1	Runtime, ash removal
2	Residual oxygen (O <sub>2</sub> ) control
3	Feed warm
4	Return temperature raising, manual mode
5	Feed, manual mode
6	Not assigned
7	Internal use
8	CAN, charging
9	Not assigned
10	Motor overload relay: Ash removal
11	Internal use
12	Internal use
13 – 16	Internal use
17	Pressure switch, extinguishing water device
18 – 32	Not assigned

**Bit pattern 1 (data point 437 – 438)**

Data point content Bit	Description
1	Light barrier: Firebed 1
2	Light barrier: Firebed 2
3	Motor: Ash removal
4	Motor: Ascending ash screw conveyor
5	Motor: Infeed grate
6	Ignition: Fan
7	Ignition: Heating
8	Motor: Rotary fan
9	Motor: Flue gas fan

## Vitoflex 300-RF data point list

### Bit pattern 1 (data point 437 – 438) (cont.)

Data point content Bit	Description
10	Pressure-jet oil burner on boiler
11	Motor: Feed screw conveyor
12	Light barrier: Feed screw conveyor
13	Thermal contact: Motor rotary fan
14	Thermal contact: Motor infeed grate
15	Float switch: Extinguishing water device
16	Light barrier: Ash removal
17	High limit safety cut-out: Boiler
18	Low water indicator
19	Water pressure
20	Motor overload relay: Ash removal
21	Motor overload relay: Conveyor devices
22	Limit switch: Conveyor devices
23	Internal use
24	Internal use
25	Temperature level, hydraulics, push floor
26	Temperature level, hydraulics, silo cover
27	Motor: Boiler circuit pump
28	Thermal contact: Boiler circuit pump
29	External demand
30	Motor: Control panel fan
31	Internal use
32	Internal use

### Bit pattern 2 (data point 439 – 440)

Data point content Bit	Description
1 – 6	Internal use
7	Power supply, Lambda probe transducer
8	High limit safety cut-out, fuel store
9	Internal use
10	Internal use
11	Boiler operating message
12	Emergency stop switch
13	Sensor: Carbon monoxide (CO)/carbon dioxide (CO <sub>2</sub> )
14	Switch, extinguishing water pressure
15 – 32	Not assigned

### Heating water buffer cylinder, actual values

Data point number	Data points for cylinder management	Resolution	Length
457	Heating water buffer cylinder sensor B 28.1 temperature	0.1 °C	2 bytes
458	Heating water buffer cylinder sensor B 28.2 temperature	0.1 °C	2 bytes
459	Heating water buffer cylinder sensor B 28.3 temperature	0.1 °C	2 bytes
460	Heating water buffer cylinder sensor B 28.4 temperature	0.1 °C	2 bytes
461	Heating water buffer cylinder sensor B 28.5 temperature	0.1 °C	2 bytes
467	Outside temperature sensor	0.1 °C	2 bytes

Data point number	Data points for boiler sequence control	Resolution	Length
468	Heating water buffer cylinder sensor B 28.1 temperature	0.1 °C	2 bytes
469	Heating water buffer cylinder sensor B 28.2 temperature	0.1 °C	2 bytes
470	Heating water buffer cylinder sensor B 28.3 temperature	0.1 °C	2 bytes
471	Heating water buffer cylinder sensor B 28.4 temperature	0.1 °C	2 bytes
472	Heating water buffer cylinder sensor B 28.5 temperature	0.1 °C	2 bytes
473	Outside temperature sensor	0.1 °C	2 bytes

## Change log

### Vitoflex 300-UF data point list

Valid from software version	Details of changes made	Data list	Data point	Print date of service instructions
ETV 2.05.18	Data points extended	Faults 2	401 – 402	10/2018
	Data points edited	Warnings 1	403 – 404	10/2018

### Vitoflex 300-RF data point list

Valid from software version	Details of changes made	Data list	Data point	Print date of service instructions
ETV 2.05.18	Data points extended	Faults 2	401 – 402	10/2018
	Data points edited	Warnings 1	403 – 404	10/2018

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