

System Overview

BurnerTronic BT300 BT320 ... BT341



Sensors and systems for combustion engineering

www.lamtec.de

Approvals.



**EU Type Examination Certificate (Module B)
according to Directive 2014/68/EU**

- DIN EN 298
- DIN EN 13611
- DIN EN 1643
- DIN EN 12067-2
- ISO 23552-1
- DIN EN 50156-1, No. 10.5



**CE 0085
EU Type Examination Certificate
EU/2016/426/EC**

- DIN EN 298
- DIN EN 13611
- DIN EN 1643
- DIN EN 12067-2



SIL3

- DIN EN 61508 Part 1-7 (BT331, BT341)



- ANSI/UL 1998
- ANSI/UL372
- UL 353
- CAN/CSA-C22.2 NO. 199



- AS 4625 - 2008
- EN 298 - 2012



EC Declaration of Conformity

- 2014/35/EU (Low Voltage Directive)
- 2014/30/EU (EMC Directive)
- 2014/68/EU (Pressure Equipment Directive Cat. 4 Mod.) B+D
- (EU) 2016/426 Regulation on appliances burning gaseous fuels (GAR)

Maintain flexibility with the LAMTEC BurnerTronic BT300 Burner Control System.

The LAMTEC BurnerTronic BT300 offers a flexible and affordable Burner Control System that considerably increases burner efficiency.

The BurnerTronic BT300 offers a modular platform for modern burner control design. Optional expansion modules enable systems to be individually configured to meet individual application requirements.

The LAMTEC BurnerTronic BT300 Burner Control System combines the benefits of an electronic fuel/air ratio controller with an electronic burner control unit. Up to three motorised actuators can be assigned to modulate air and fuel drives with the option of an additional module to add variable speed drive control for the combustion air fan. Additional modules are available for fieldbus interfacing, load control and dual fuel operation. All modules communicate on the LAMTEC SYSTEM BUS (LSB).

The BurnerTronic BT300 includes many standard burner functions as standard, these include: integrated valve proving, flame monitoring, exhaust gas recirculation and operating hours and system start-up counters. Oxygen trim, CO control, load control and dual fuel functionality are all available options that are used to further enhance system benefits, flexibility and efficiency. The BurnerTronic BT300 is particularly suited for use on monobloc burners.

Cost-saving installation

The BurnerTronic BT300 was designed to be mounted directly on the burner. Short wiring routes and pre-wired or 'plug and socket' motors significantly reduce installation time and reduce potential wiring errors. The Burner-



BT320 mounted on a burner.

Tronic BT300 can meet most burner control applications and is scalable allowing modules, such as VSD fan control and CO/H₂ control, to be added later to enhance functionality when requirements change.

The compact and modular architecture of the BurnerTronic BT300 minimises potential hardware faults during the commission phase. Should a fault occur, concise messages are displayed on the UI300 HMI to help locate and diagnose the error quickly and efficiently. The UI300 HMI has been designed using innovative and intuitive symbols to guide users through all aspects of commissioning, maintenance and normal operation.

Technical data

The fuel/air ratio curves and operating parameters are set and adjusted using either the UI300 HMI or LAMTEC's LSB Remote Software. To reduce the emission of harmful NO_x, a composite duct can be configured as an exhaust gas recirculation. The fuel/air ratio can be optimised to compensate for combustion variables by implementing oxygen trim or CO control to ensure the burner operates to its maximum possible efficiency.

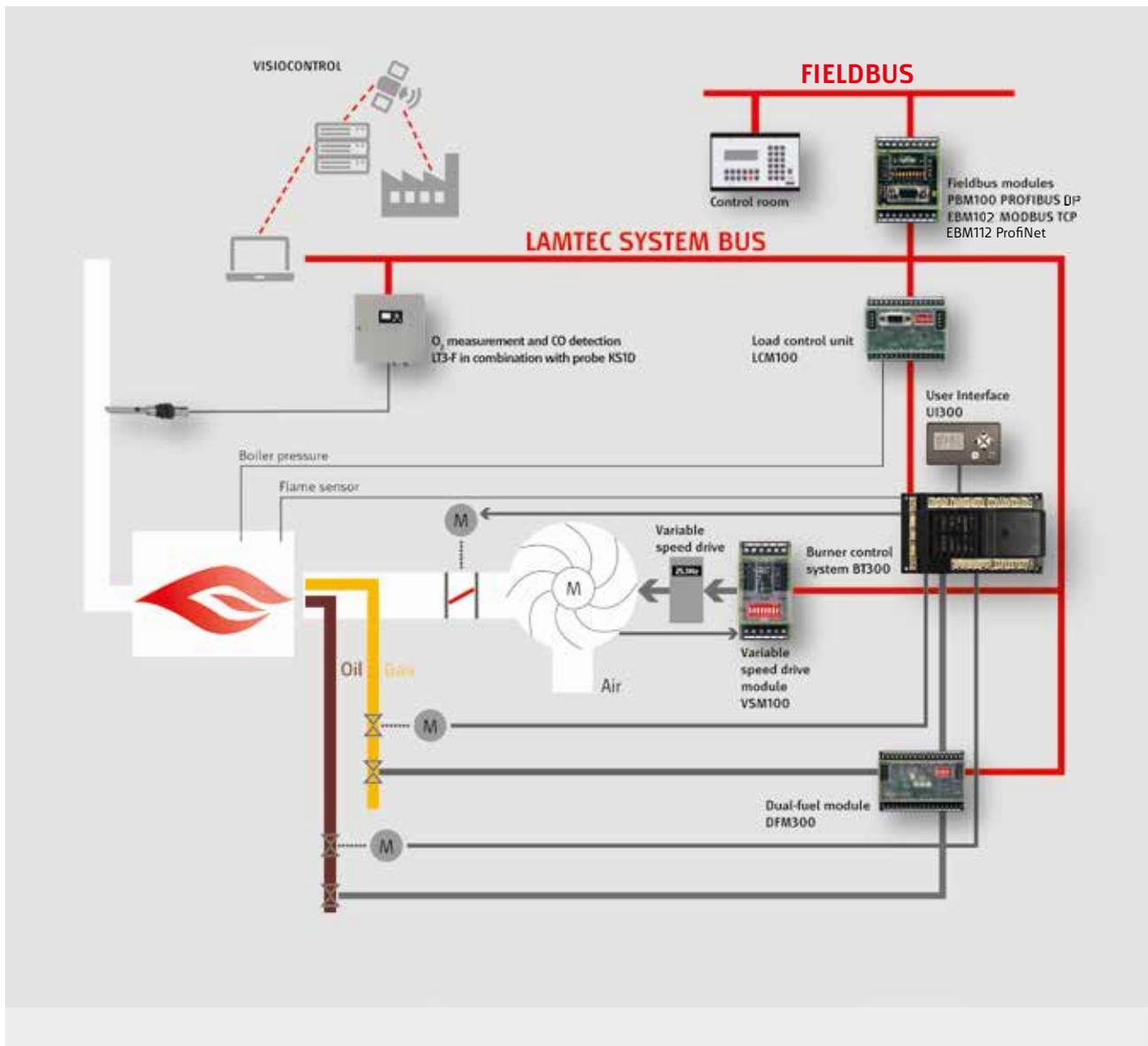


BT320 mounted on a burner.

The burner and fuel/air ratio controller can be adjusted for a wide range of combustion tasks by setting parameters. In the case of BurnerTronic BT300, oil and gas can be set to start with and without a pilot burner. The integrated valve proving system can be run before ignition or after the shutdown of the burner. In the case of operation with gas, starting without pre-purge is possible in accordance with EN676.

Advantages:

- Modular combustion management
- 3-channel fuel/air ratio control
- Exhaust gas recirculation
- Optional control of the combustion air fan speed
- Optional CO/H₂ controller for combustion optimisation
- Integrated flame monitor and valve proving system
- Easy parameter setting using symbol based interface



Overview of functions for BT340/341.

Basic Device.



BurnerTronic BT300 and User Interface.

The LAMTEC BurnerTronic BT300 burner control system is available in five different versions:

BurnerTronic BT320:

- 2 motorised control outputs
- 1 analogue control output 0 - 10 V, 0/4 - 20 mA for speed control of the combustion air fan via VSM100 (optional)
- Intermittent operation

BurnerTronic BT330:

- 3 motorised control outputs
- 1 analogue control output 0 - 10 V, 0/4 - 20 mA for speed control of the combustion air fan via VSM100 (optional)
- Suitable for continuous operation when used in combination with an approved flame sensor

BurnerTronic BT331:

Functions as BT330, but also with the following approvals:

- DIN EN 61508:2002 Parts 1-7 for SIL 3
- Performance Level PLE according to DIN EN ISO 13849-1

BurnerTronic BT335:

- 3 motorised control outputs
- Simple dual-fuel operation oil/gas without DFM300
- 1 analogue control output 0 - 10 V, 0/4 - 20 mA for speed control of the combustion air fan via VSM100 (optional)
- Suitable for continuous operation when used in combination with an approved flame sensor

BurnerTronic BT340:

- 3 motorised control outputs
- Oil-gas or gas-gas dual-fuel operation via DFM300
- 1 analogue control output 0 - 10 V, 0/4 - 20 mA for speed control of the combustion air fan via VSM100 (optional)
- Suitable for continuous operation when used in combination with an approved flame sensor

BurnerTronic BT341:

Functions as BT340, but also with the following approvals:

- DIN EN 61508:2002 Parts 1-7 for SIL 3
- Performance Level PLE according to DIN EN ISO 13849-1

Optional components.

LCM100 load control module

The LCM100 adds load control functionality to the BurnerTronic BT300. In addition the module includes:

- An integrated 24Vdc power supply that can be used to power external sensors and BurnerTronic expansion modules
- A gateway interface for connection to LSB devices
- A 4-20mA output to retransmit the current burner output
- Digital pulse counter inputs for interfacing to fuel meters
- 3x PT100/PT1000 inputs for the measurement of boiler, outdoor and flue gas temperatures

The LCM100 offers internal PID control of temperature using PT100 or PT1000 sensors or pressure using a 4-20mA pressure sensor. Should load control not be required the burner firing rate can be controlled from an external source using a 4-20mA, 0-10Vdc or three-point step (TPS) input signal.

It is possible to switch between 2 programmed set-points using a digital 24Vdc input. The LCM100 also offers outside air compensation whereby the process temperature set-point is reset against ambient temperature conditions.



LEM100 expansion module for LSB

The LEM100 expansion module is an affordable alternative to the LCM 100 if the BurnerTronic is to be connected to the LAMTEC SYSTEM BUS (LSB). LEM100 adds an LSB interface (CAN) to BurnerTronic. At the same time, LEM100 electrically isolates the BurnerTronic out-



put and the connected modules from each other. The LEM requires a separate SELV 24Vdc power supply.

VSM100 variable speed module

The optional VSM100 variable speed module allows the combustion air fan to be controlled by the BurnerTronic over the LAMTEC SYSTEM BUS (LSB). The speed of the combustion air fan can be modulated over the entire firing range. The benefits include reduced electricity consumption, reduced wear on the fan motor and less noise in the boiler house.



Fieldbus modules PBM100 - PROFIBUS DP module, MODBUS TCP EBM102 and PROFINET EBM112

The PBM100 and EBM100 fieldbus modules enable the BurnerTronic BT300 to integrate with process automation and building management systems. The benefits of fieldbus communications include:

- Fast and precise transmission of processor values
- Direct reading of inputs and outputs
- Remote-controlled fuel switchover
- Back-up controller function
- Remote-controlled activation and deactivation of the burner
- Remote diagnosis through a readout of the fault history
- Reduced wiring requirements



PBM100 - PROFIBUS module.

EBM102 - MODBUS TCP module.



EBM112 ProfiNet module.

DFM300 dual-fuel module

The DFM300 dual-fuel module is an expansion module that enables operation of dual-fuel burners (oil/gas or gas/gas) in combination with BurnerTronic BT340. Depending on the selected fuel, DFM300 switches the valve outputs and the ignition transformer output of the BurnerTronic to the ignition elements for the selected fuel.

The DFM300 can also switch over the “burner safety chain” input of the BurnerTronic. In the process, the safety chain components of the currently inactive fuel

(e.g., oil pressure monitor during gas operation) remains ready for operation. The DFM300 dual-fuel module is connected to BurnerTronic via the LAMTEC SYSTEM BUS



Order information.

BurnerTronic BT300 series - basic unit	
BT320 with up to two actuators, for intermittent operation only, 230 VAC	667R1320-1
BT330 with up to three actuators, continuous operation, 230 VAC	667R1330-1
BT330 with up to three actuators, continuous operation, 115 VAC	667R1331-1
BT331 with up to three actuators, continuous operation, 230 VAC, with SIL approval	667R1330-2
BT331 with up to three actuators, continuous operation, 115 VAC, with SIL approval	667R1331-2
BT335 with up to three actuators, continuous operation, for dual-fuel burner without DFM300, 230 VAC	667R1335-1
BT335 with up to three actuators, continuous operation, for dual-fuel burner without DFM300, 115 VAC	667R1335-2
BT340 with up to three actuators, continuous operation, 2 fuels, convertible, for dual-fuel burner, 230 VAC, in combination with DFM300	667R1340-1
BT340 with up to three actuators, continuous operation, 2 fuels, convertible, for dual-fuel burner, 115 VAC, in combination with DFM300	667R1341-1
BT341 with up to three actuators, continuous operation, 2 fuels, convertible, for dual-fuel burner, 230 VAC, in combination with DFM300, with SIL approval	667R1340-2
BT341 with up to three actuators, continuous operation, 2 fuels, convertible, for dual-fuel burner, 115 VAC, in combination with DFM300, with SIL approval	667R1341-2
User interface	
UI300-V2 - user interface with graphic display, in panel housing “standard”,incl. connecting cable	667R0100-1
UI300-V2- user interface with graphic display, in panel housing “standard”,incl. connecting cable, IP41, UL approved	667R0100-2
UI300-LSB - user interface with graphic display, in panel housing “standard”,incl. connecting cable, IP41, UL approved, for LSB Bus	667R0120-1
Cover for UI300 and UI400 to achieve protection class IP65, incl. fixing nuts	668R0320
Plug sets	
Complete plug set for BT300, glow wire-resistant according to IEC60335-1, unassembled, screw connection, connectable conductor cross-section max. 2.5 mm ²	667R0900-2
Additional modules	
LCM100 load control unit expansion module (incl. LSB interface and 24V power supply)	667R0500-1
LEM100 - LSB expansion module	667R0400-1
Connecting cable BT300 X31 for LCM100/LEM100	667P0515
VSM100 load module “standard design” (requires LCM100)	667R0200-1
DFM300 expansion module for dual-fuel burner for BT34x 230 VAC	667R0600-1
DFM300 expansion module for dual-fuel burner for BT34x 115 VAC	667R0600-2
RAST5 adapter module for DFM, screw terminals to RAST5	667R0620-1

PBM100 field bus module PROFIBUS DP	667R0700-1
EBM102 field bus module MODBUS TCP	667R0725-1
EBM112 field bus module PROFINET 2 Port	667R0740-1
Flame monitor	
KLC1000 UV flame monitor for oil, gas, and combination burners, radial viewing angle	667R0800-1
KLC2002 UV flame monitor for oil flames during intermittent burner operation, axial viewing angle	667R0810-1
KLC angle adapter for KLC2002 radial viewing angle	667R0811-1
Fastening flange 7 mm for KLC	667R0812-1
Connecting line for KLC 1000 mm, angular plug	667R0813-1000
Actuators	
Actuator 0.8 Nm, IP40 protection class, ambient temperature -20°C - +60°C, condensation not allowed, 90° actuation range, 0.1° resolution/step, synthetic gearbox, without connecting cable	662R5500-0
Connecting cable for actuator 662R5500-0, cable length 100 cm long	662R5590/100
Connecting cable for actuator 662R5500-0, cable length 150 cm long	662R5590/150
Connecting cable for actuator 662R5500-0, cable length 300 cm long	662R5590/300
Connection cable for actuator 662R500X-0, cable length 1,000 cm	662R5592/1000
Actuator 1.2 Nm, protection class IP54, 90° actuating range, 0.1° resolution/step, metal gearbox, cable length 1.5 m	662R5001-1
Actuator 1.2 Nm, protection class IP54, 90° actuating range, 0.1° resolution/step, metal gearbox, plug	662R5001-0
Actuator 3 Nm, protection class IP54, 90° actuating range, 0.1° resolution/step, metal gearbox, cable length 1.5 m	662R5003-1
Actuator 3 Nm, protection class IP54, 90° actuating range, 0.1° resolution/step, metal gearbox, plug	662R5003-0
Actuator 9 Nm, protection class IP54, 90° actuating range, 0.1° resolution/step, metal gearbox, plug, with spring pre-tensioning	662R5009-0
Connecting cable for actuator 662R500X-0, 1.5 m long	662R5591/150
Connecting cable for actuator 662R500X-0, 3.0 m long	662R5591/300
Software	
LSB remote software for BT300, incl. LSB service adapter, USB/CAN module, and connecting cable	667R0300-1
Technical documentation	
German operating manual	DLT1201DE
English operating manual	DLT1201EN
Other languages on request	



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