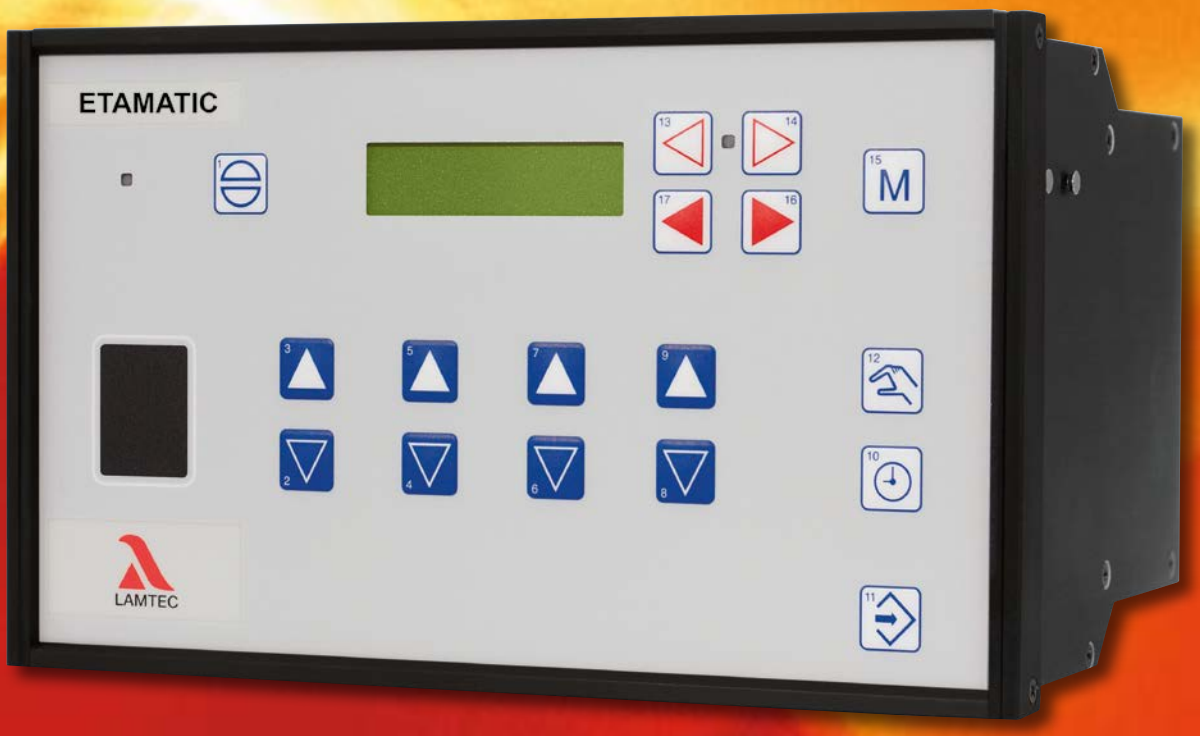


System Overview

ETAMATIC
ETAMATIC S

LAMTEC

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 1643
- DIN EN 230
- DIN EN 60730-2-5
- DIN EN 12067-2
- DIN EN 50156-1, point 10.5

SIL3

- DIN EN 61508 Parts 2+3

CE 0085

EU Type Examination Certificate

- (EU) 2016/426
- DIN EN 298
- DIN EN 13611
- DIN EN 1643
- DIN EN 12067-2

EU 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 Gas Appliances Regulation

INNOVATIONSPREIS DER DEUTSCHEN GASWIRTSCHAFT 2004

LAMTEC ETAMATIC – compact solution for multi-functional monoblock burner control.

All-in-one for simple integrated, coordinated electronic control and maximum efficiency: This is the LAMTEC ETAMATIC. It combines all the functions required for burner control in a compact housing.

These days combustion plants need to be three things: fail-safe, clean and effective – not just during ongoing operation, but also during setup and commissioning. This is why we developed the LAMTEC ETAMATIC burner control. The compact solution for combustion management combines the advantages of a electronic firing-rate control and burner control device with automatic power control, CO and O_2 optimisation as well as valve leakage and flame monitoring – in a single device. This does more than simply ensure the best possible coordination of the control, monitoring and test functions in a few simple steps.

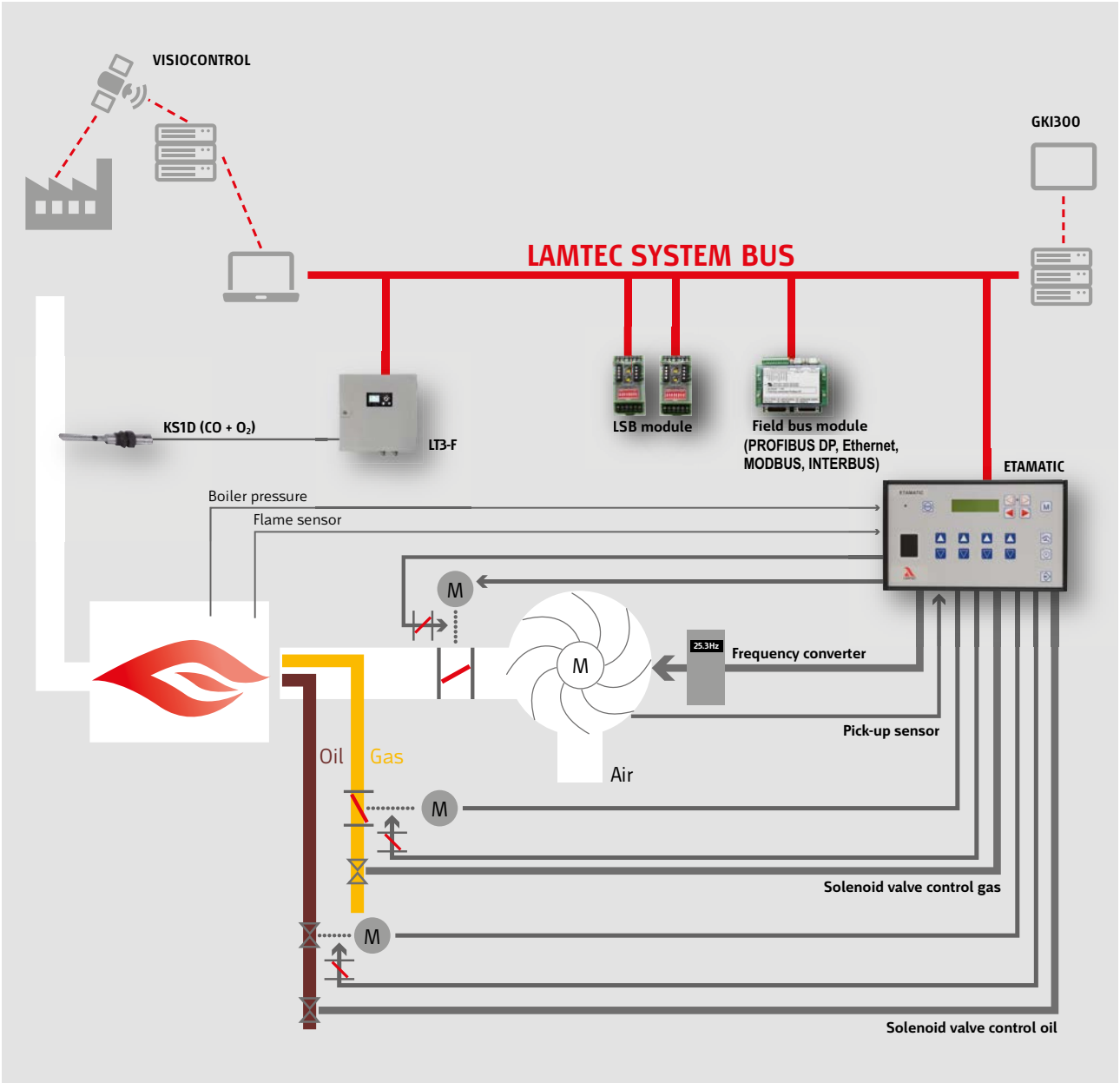
The compact design also reduces the cost of additional relays and wiring, making installation and commissioning simple and fail-safe. Safety chains, monitors and sensors are connected directly on the ETAMATIC via digital inputs. If desired, the ETAMATIC can house the entire control directly on the burner and still take advantage of bus networking and PC-based remote control, evaluation and documentation via defined interfaces.

This sees us once again demonstrating that LAMTEC delivers leading combustion technology for all kinds of tasks and applications.

"As the name suggests, effectiveness and simplicity in all areas is the main focus with the ETAMATIC: ETA and Automatia come from the Greek – in technology the letter stands for efficiency, and the other is the goddess of all that comes from itself."

Advantages:

- Compact burner control unit
- Failsafe electronic ratio control with up to 4 actuators
- Connection to control technology
- Settings can be made graphically via PC
- Integrated valve leakage test
- External current correction (heating value or temperature compensation)
- SIL 3 confirmed
- Internal firing rate controller
- CO/H_2 control for combustion optimisation
- Flame monitoring (optional)



Functional overview of ETAMATIC/ETAMATIC S.

Strong functions.

Electronic burner control
Burner sequencer and electronic ratio control can be adjusted for a wide range of combustion conditions by setting parameters. Starting with or without the pilot burner can be set separately for oil and gas. Starting without pre-purge is possible in accordance with EN676.

Fuel/air ratio control with up to 4 actuators
The ETAMATIC is available with 4 three-point step outputs or with 3 three-point step outputs and a continuous output (such as for speed control).

Firing rate controller
On request the ETAMATIC undertakes the firing rate controller of the burner. An internal firing rate controller allows up to two switchable set-points for temperature or pressure to be defined (e.g. for night-time reduction or heat-maintenance mode, external set-point shift (weather guidance) or start-up control), compare these with actual values and determine the burner firing rate position required to reach the set-points. The latter is then forwarded to the electronic ratio control as the target value. The firing rate controller can be used as a fixed value or weather-guided controller.

Valve leakage test
The integrated valve leakage test can be run before ignition or after shutdown.

Integrated start-up and operating hour counters
Start-up and operating hours counters count both the total start-ups and burner operating hours as well as for each operating mode (gas, oil) separately.

Inputs

Outputs

Burner “ON”	**Digital inputs 24 V**	**Burner sequencer/ valve actuation** **Depending on power supply**	Main gas 1
Flame signal with alternative direct link-up of flame sensors (FFS07 or FFS08)			Main gas 2
Gas safety chain			Oil
Control release			Ignition valves
Fault release			Ignition transformer
Set-point changeover			Fan
Pilot flame signal/ recirc ON			Oil pump “ON”
Safety chain			ETAMATIC fault
Oil safety chain			
Fuel selection			
Proof of ignition positiont			
Valve leakage test			
Air pressure monitor			
Channel 1 feedback (potentiometer, speed, current 4 ... 20 mA)	**Feedback signals from the actuators**	**Assembly/activation of the actuators (fuel/air ratio)**	Channel 1 (DPS or current)
Channel 2 feedback (potentiometer)			Channel 2 (DPS or current*) * via LSB module
Channel 3 feedback (potentiometer)			Channel 3 (DPS)
Channel 4 feedback (potentiometer)			Channel 4 (DPS)
External firing rate setting (potentiometer, DPS, current 4 ... 20 mA)	**Load/power regulator specification**	**Firing rate/ power output**	Internal firing rate output (current)
Boiler temperature (Pt100)			
Correction/external temperature (current)			

Digital (LSB)

Standby mode	**Selection of additional BUS signal inputs LSB module and fieldbus (Ethernet, PROFIBUS DP, MODBUS, INTERBUS)**	**Selection of additional BUS signal outputs LSB module and fieldbus (Ethernet, PROFIBUS DP, MODBUS, INTERBUS)**	Operating mode *Pre-purge – Ignition – Operation – Post-purge*
Continuous purge			Fuel operation
Recognition of high fire			Assembly output information: *Ignition position reached – High firing rate reached*

Analogue (LSB)

12 analogue inputs “Special activations” possible			O_2 actual value
			Channel 2 setpoint
			Flame intensity

Basic unit.

ETAMATIC front.

ETAMATIC rear.

The compact burner control unit itself forms the basis of the LAMTEC ETAMATIC. A control unit with a complete operating element allowing full parameterisation of a burner system. The password-protected menu offers all options for management of the access levels.

And of course, it can also be controlled via PC (PC interface on the rear of the unit).

Optional components.

LAMTEC SYSTEM BUS module

Each ETAMATIC comes with one LAMTEC SYSTEM BUS (LSB) interface. The LSB module compatibility across the range allows LAMTEC devices to be networked with one another – easy, fast and without a lot of wiring work. It is also possible to activate fieldbus modules in din rail mounting via an adjustable address to forward the input status conditions as well as modifications to the field-bus.

Analogue input/output.

Digital input/output.

Control technology link-up

The ETAMATIC can be very easily combined with existing control technology. It "speaks" virtually all languages of standard fieldbuses. Connections for PROFIBUS-DP, TCP/IP (MODBUS DP TCP), MODBUS DP and INTERBUS-S are available as options (other bus systems on request).

PROFIBUS DP fieldbus.

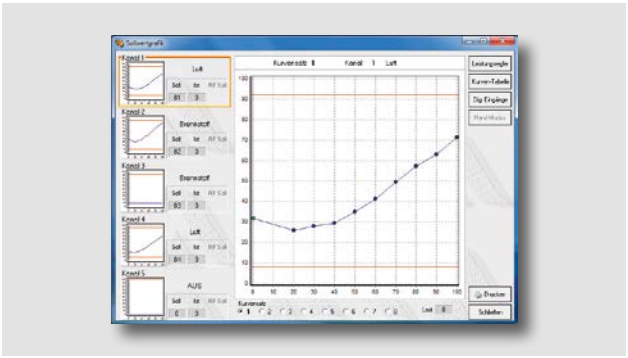
Ethernet fieldbus.

MODBUS DP fieldbus.

INTERBUS fieldbus.

PC interface (RS232)

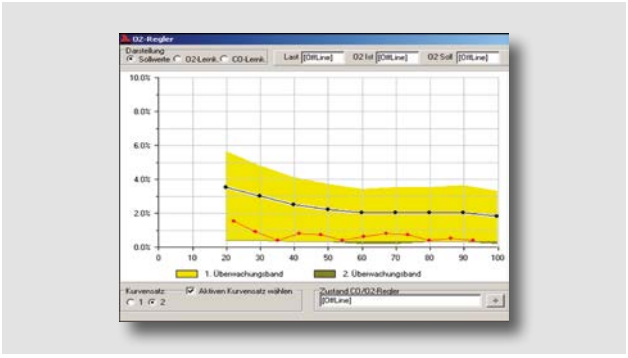
The PC interface makes working with the ETAMATIC even easier: The device can be operated remotely via notebook. The set configuration and the curve data can be archived – a data back-up that can be re-imported in the event of an emergency and then returned to operational readiness in just a few minutes. By using an industrial modem, the ETAMATIC can also be queried from your office so that you can detect faults and their causes, without having to be on-site.



Screenshot from PC Remote Software: Setpoint graphic.

CO/H_2 controller

Combustion processes are subject to continuous interference via changes in temperature, air humidity and pressure as well as the quality of the fuel (oil viscosity, gas fuel value). The CO/H_2 control integrated into the ETAMATIC helps to compensate for these influences during ongoing operation (shift in the assembly curves). It includes a software module that we are developing specifically for combustion control – and that the precise values from our CO/H_2 measuring devices are effectively translated in realtime into an automatic needs-based regulation of the air supply. This automatically reduces the air supply until CO is produced. Even the smallest quantities are detected. The assembly then increases the air supply by one step and thus determines an individual operating curve in line with the local conditions with which the burner still just burns without CO. The system learns and optimises effectively automatically – sustainably and in a fail-safe way – so that virtually any combustion system can be operated consistently at the optimal combustion point.



Screenshot from Remote Software: O_2 controller.

Speed sensor

There are two different speed sensors available for the ETAMATIC. The 663R8101 speed sensor is equipped with two-line technology and has a switching distance of 2 mm. The 663R8103 speed sensor is an inductive proximity switch with switch contact in three-line technology and has a switching distance of 4 mm. A correct sensor selection can always be made taking account of the design features. As the elements to be entered are not always known, proximity should be given for the sizing of the damping elements and the selection of the appropriate sensor. Due to the variety of sensors that can be used, LAMTEC only has a two-line and a three-line element in the range. These have been selected to cover most measuring tasks with just these two elements. If a specific measuring task cannot be implemented with these, simply ask us.

Speed sensor with 2 wires, Namur.

Speed sensor with 3 wires.

Flame monitoring

The LAMTEC ETAMATIC is available with or without integrated flame monitors. The continuous, precise monitoring of the flame ensures safety and efficiency. Naturally the key issue is the rapid detection of flame On/Off. In addition, the digital evaluation of the spectrum, frequency or intensity also helps to optimise the combustion process. With the ETAMATIC you can therefore fit leading, integrated flame monitoring technology with minimal investment – or connect an existing device to the corresponding terminal.

FFS07 flame scanner.

FFS08 flame scanner.

Actuating motor

To drive the flaps and control valves on your combustion systems, LAMTEC also offers safety approved motors, which are tried and tested in operation for the electronic ratio control in line with the concept of "everything from one source".

These motors naturally fulfil the safety requirements relating to the use of tested potentiometers with a coordinated perfect-fit connection. Four types of standard motors are available from LAMTEC: 6 Nm, 20 Nm, 30 Nm and 40 Nm, all at 60 seconds runtime. Alongside these standard types we can also supply motors up to 200 Nm with different equipment in terms of limit switches and potentiometers as well as different runtimes. LAMTEC also offers other types in electronic manual adjustment, electronic control and special types.

Actuating motor.

Notes.

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