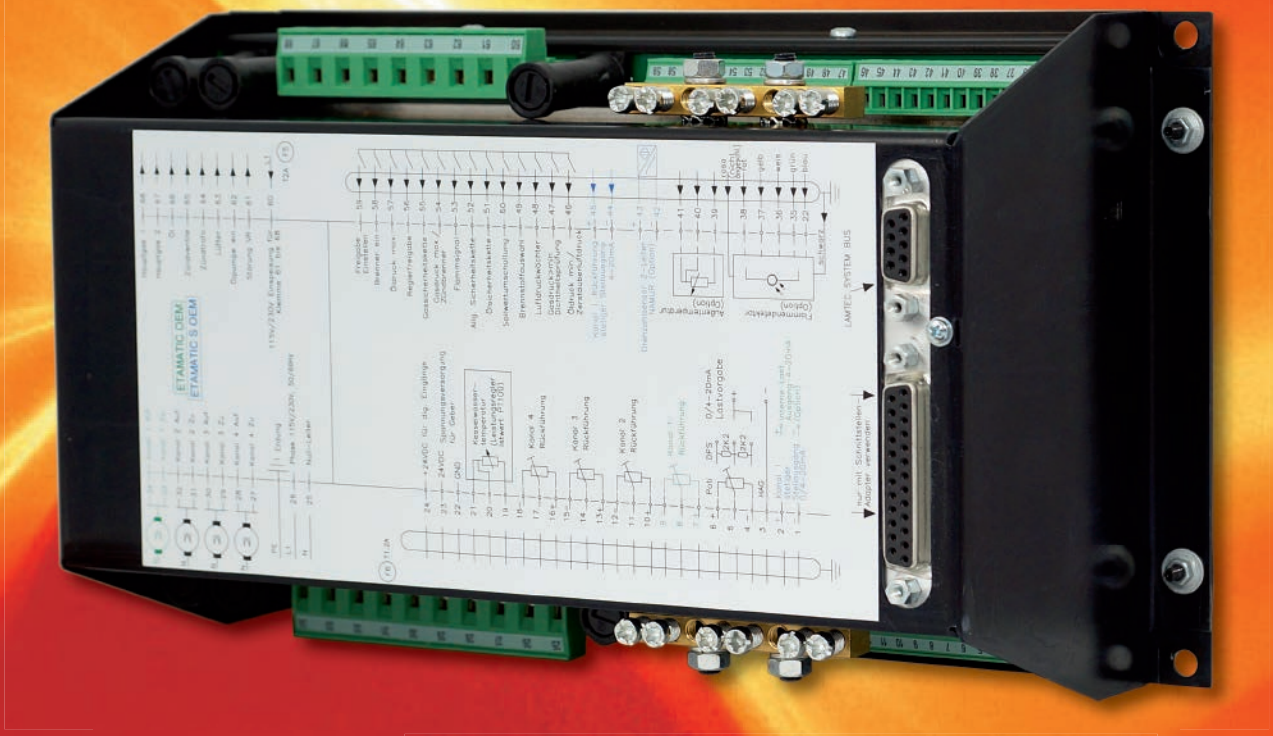




System Overview

ETAMATIC OEM
ETAMATIC S OEM

LAMTEC

Sensors and systems for combustion engineering

www.lamtec.de

Approvals.

EC 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

SIL 3

- DIN EN 61508 Parts 2+3

CE 0085 DVGW CERT

EC Type Examination Certificate

- EU/2009/142/EC
- DIN EN 298
- DIN EN 13611
- DIN EN 1643
- DIN EN 12067-2

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
- 2009/142/EC (Gas Appliances Directive)

EAC

apave

AGA

INNOVATIONSPREIS DER DEUTSCHEN GASWIRTSCHAFT 2004

LAMTEC ETAMATIC OEM – Everything you need to manage all aspects of your burner.

These days, combustion systems are expected to meet one requirement above all others: efficiency. And this demand no longer just applies to the technology itself, we also expect the installation, configuration and commissioning processes to be time and cost effective as well.

LAMTEC has found the ideal solution: The ETAMATIC OEM

As its name suggests (Eta is the seventh letter in the Greek alphabet and is used to measure efficiency in a number of technical fields), the ETAMATIC OEM focuses on improving effectiveness in all areas. All contained within one compact design, it has everything you need to manage all aspects of your burner.

It combines all the advantages of an electronic assembly along with up to four actuators and an electronic burner control unit. As the device also contains a power control unit, O_2 or CO controllers, valve leakage check tests and a flame monitoring system, this single device has everything you need to control and monitor your burner. You therefore only need one solution for almost all of your burner needs. Safety interlock chains, sensors and monitors are connected straight to the ETAMATIC OEM, significantly reducing the cost of additional relays and wiring. The ETAMATIC OEM has been specially designed for installation on the burner. Shorter wiring circuits help to save further costs. As such, the ETAMATIC OEM is particularly suited for use as a standard component in monoblock burners.

The compact design of the ETAMATIC OEM also offers significant advantages when it comes to commissioning the device. Less wiring and the standard operator interface help to reduce the likelihood of error from the start, while intelligent information displays make searching for errors even easier.

The ETAMATIC OEM comes with 4 three-point-step outputs or with a continuous output (for speed control) and 3 three-point-step outputs.

You can adjust the parameters for the burner sequencer and assembly to suit a wide range of combustion conditions. Separate settings can be made for oil and gas when deciding whether to start the burner with or without the pilot burner. The integrated valve leakage check can be run before ignition or after shutdown. When



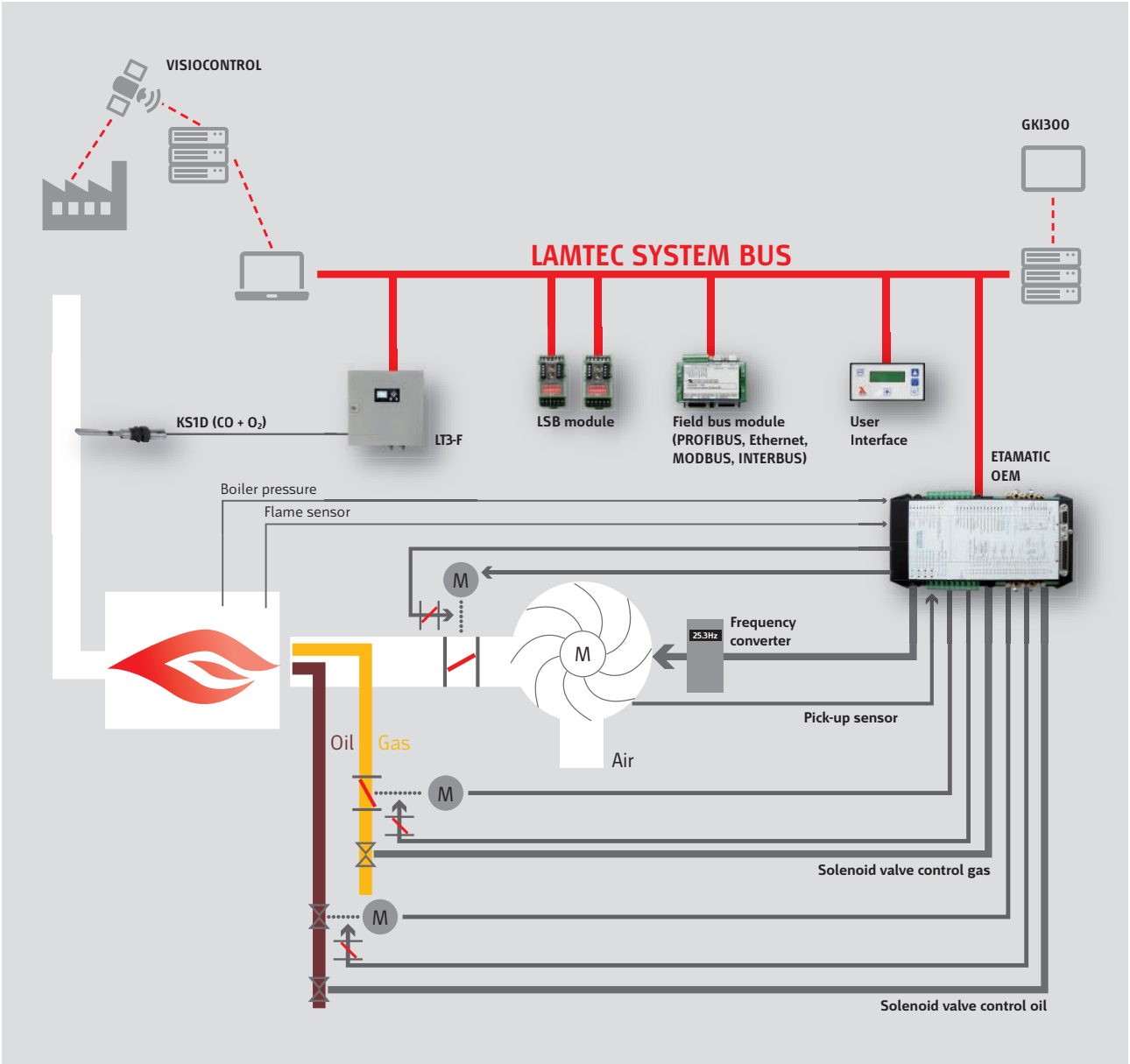
using gas, the burner can even be started without pre-purge in accordance with EN 676.

The set fuel/air curves can be shifted during operation using the integrated O_2 trim. This helps to counteract conditions that interfere with the combustion. And if gas is used as a fuel, there are even more options available:

Thanks to the LAMTEC CO controller, you can make sure your burner always runs as efficiently as possible.

Advantages:

- Compact burner control unit,
- Fail-safe electronic fuel/air ratio control with up to 4 actuators,
- Connection to control systems,
- Options to adjust setting s grafically on a PC,
- Integrated valve leakage check test,
- External current correction (heating value or temperature compensation),
- SIL 3 confirmed,
- Internal firing rate controller,
- CO/O_2 control for optimum combustion,
- Flame monitoring (optional),
- Mobile programming unit (optional).



Functions in the ETAMATIC OEM.

Notifications and error reports are displayed in plain text in the customer's own language using the customer customer interface connected to the LAMTEC SYSTEM BUS. Fuel-air curves can be adjusted using special computer software or on a separate hand-held programming unit. The device is fitted with its own running time meter that is able to measure the burner running time for gas and oil separately. The number of starts is also measured separately for each operating mode.

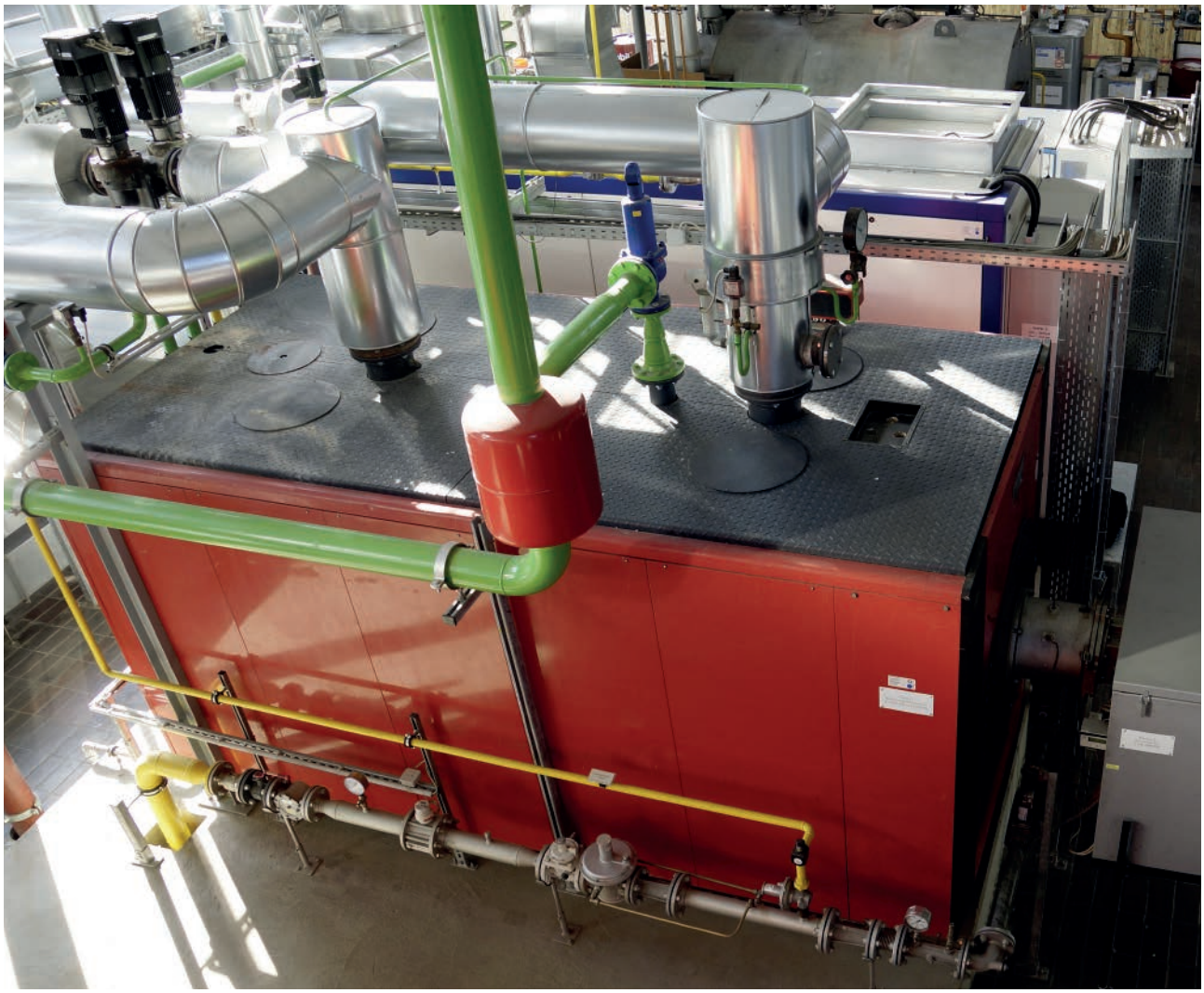
On request, the ETAMATIC OEM can also assume responsibility for regulating power in the burner. It also includes an external setpoint shift function (control dependent on atmospheric conditions) and a start-up control.

Every ETAMATIC OEM comes equipped with a connection to the LAMTEC SYSTEM BUS. The LAMTEC SYSTEM BUS connects all LAMTEC devices to one another using a quick and easy solution with no need for complicated wiring work. The separate and detachable customer display can also be connected to the bus solution.

The ETAMATIC OEM includes an O_2 trim software module and an optional CO/O_2 controller on request. When used in combination with the LT1/LT2 CO/O_2 measuring devices and connected via the LAMTEC SYSTEM BUS, your combustion system will always work at the ideal level, regardless of any external conditions such as temperature or air pressure. The ETAMTIC OEM is easy to combine with existing control technology. It “speaks” virtually all languages used by conventional fieldbuses. The ETAMATIC OEM is TÜV-tested and also meets all the relevant European standards and requirements for continuous operation.

For the commissioning engineer, a PC interface makes work on the ETAMATIC OEM even easier. Users can operate the device remotely from a laptop that they can also use to archive configurations and store curve data. If you ever need to replace the device, this solution means that the replacement will be ready to use in just a few seconds as the stored data simply needs to be imported to the new device.

Use of an industrial modem means that you can access data on the ETAMATIC OEM from your office as well. This means you don't actually have to be on site to detect the source of any errors.



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
Max. oil pressure			Ignition transformer
Setpoint changeover			Fan
Ignition flame signal/max. gas pressure			Oil pump "ON"
General safety chain			Fault in the ETAMATIC OEM
Oil safety chain			
Fuel selection			
Min. oil pressure/ atomiser pressure			
Valve leakage check test			
Air pressure monitor			
Channel 1 feedback (potentiometer, speed, current 4 ... 20mA)	**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 ... 20mA)	**Firing rate/ power controller specification**	**Firing rate/ power output**	Internal firing rate output (current)
Boiler temperature (Pt100)			
Correction/external temperature (current)			

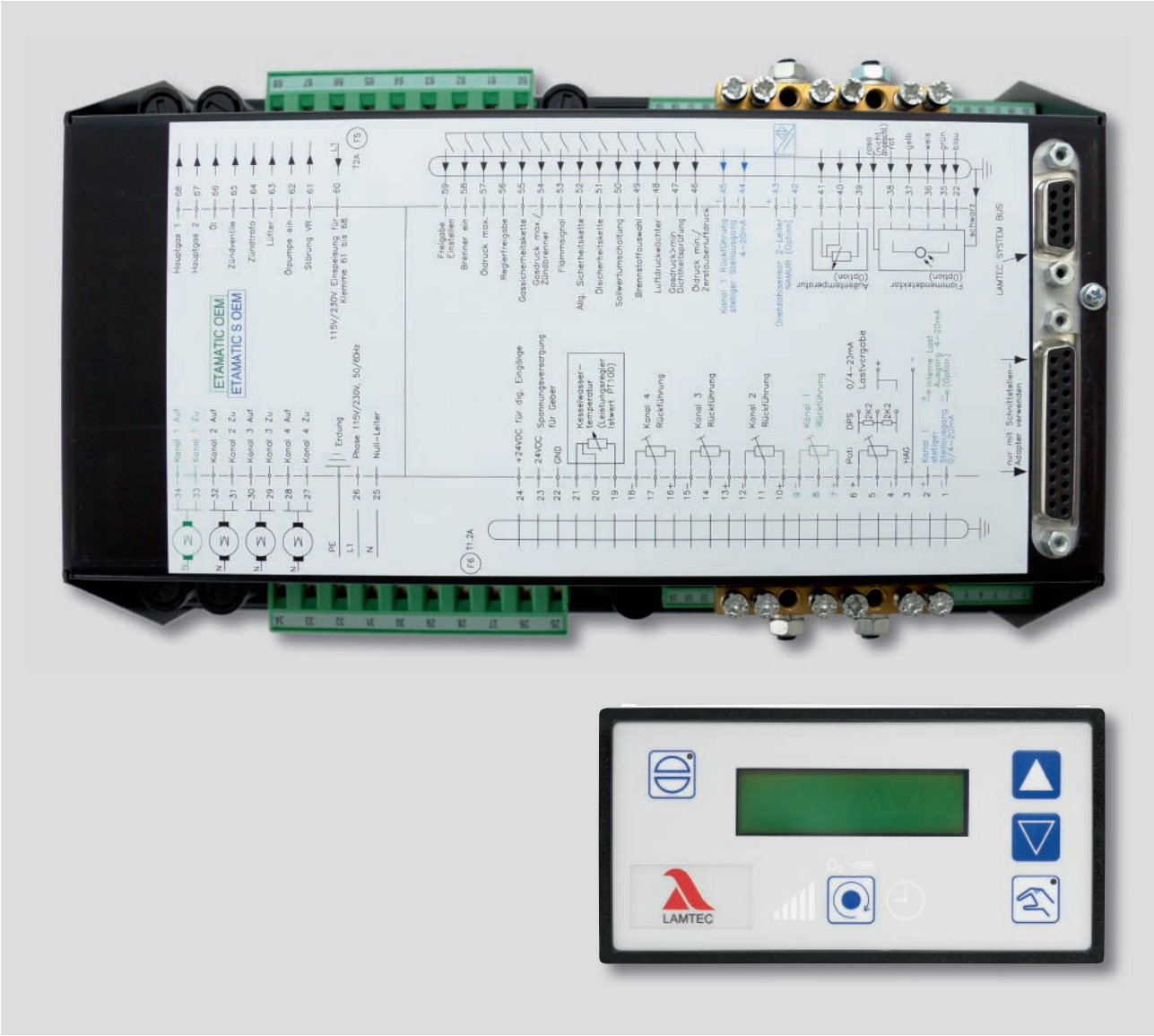
Digital (LSB)

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

Analogue (LSB)

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

Basic model.



ETAMATIC OEM: Rear view and front of the customer display.

The basic model of the LAMTEC ETAMATIC OEM can be configured using a hand-held programming unit or the PC interface via the LAMTEC SYSTEM BUS.

The ETAMATIC OEM has been especially designed for installation on a burner. Short wiring circuits also help to save time and effort. As such, the ETAMATIC OEM is particularly suited for use as a standard component in monoblock burners.

The customer display (see illustration) shows basic information and makes configuration even easier and clearer.

Optional components.

Programming unit

Because the ETAMATIC OEM does not come equipped with a front panel, it can be operated using the optional PC software or using a hand-held programming unit. A customer display can also be connected via LAMTEC SYSTEM BUS. The "Startup Manager" function also supports the commissioning engineer both during the initial installation of the burner and when adjusting the burner settings using the wizard.



Hand-held programming unit with Startup Manager.

LAMTEC SYSTEM BUS module

Every ETAMTIC OEM comes with a LAMTEC SYSTEM BUS-(LSB) interface. The LSB module is compatible across the LAMTEC range and enables users to connect LAMTEC devices to one another using a quick and easy solution that doesn't require a lot of wiring work. It also enables users to control fieldbus modules in a top hat rail mounting via an adjustable address so that the input status and modifications to the fieldbus can be forwarded.



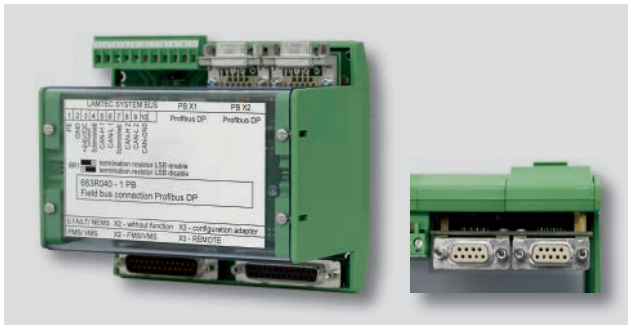
Analogue input/output.



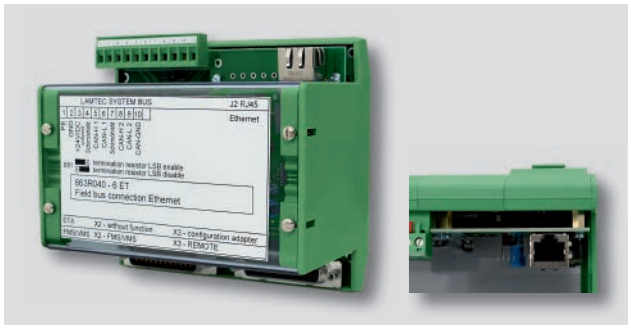
Digital input/output.

Control technology link-up

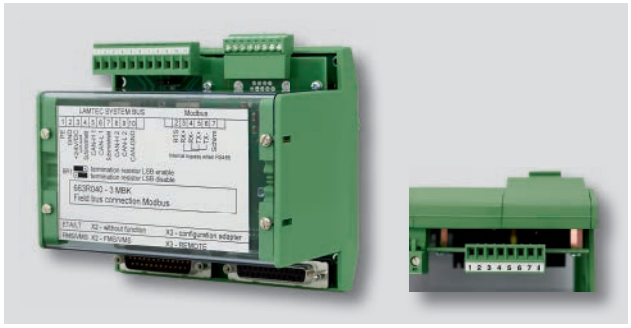
The ETAMTIC OEM is easy to combine with existing control technology. It “speaks” virtually all languages used by conventional fieldbuses. Connections for PROFIBUS-DP, TCP/IP (MODBUS TCP), MODBUS and INTERBUS-S are available as options (other bus systems on request).



PROFIBUS DP fieldbus.



Ethernet fieldbus.



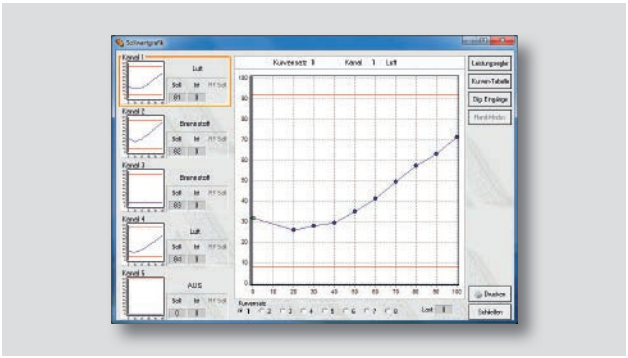
MODBUS fieldbus.



INTERBUS fieldbus.

PC interface (RS232)

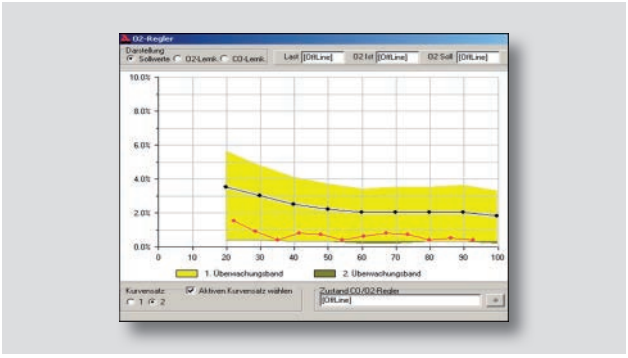
The PC interface makes working with the ETAMATIC OEM even more comfortable: The device can be operated remotely using a laptop. Set configurations and curve data can be archived – this backs up data so that it can be re-imported in the event of an emergency, enabling the device to be ready for operation again in just a few minutes. By using an industrial modem, you can check the status of the ETAMATIC from your office so that you can detect faults and their causes without having to be on-site.



Screenshot from Remote Software: Setpoint graph.

CO/O_2 controller

Combustion processes are subject to constant interference from changes in temperature, moisture levels, air pressure and changes to the quality of the fuel used (oil viscosity, gas fuel value). The CO/O_2 controller integrated into the ETAMATIC OEM helps to offset influences during ongoing operation (by shifting fuel-air curves). It includes a software module that we have developed specifically for combustion control. This module translates the precise values from our CO/O_2 measuring devices to automatically control the air supply as required in real time. For example, it automatically reduces the air supply until CO is produced. It is always able to detect CO/O_2, no matter how small the quantity is. The assembly then increases the air supply by one step and thus generates an individual operating curve in line with the local conditions with which the burner still just burns without CO. The system learns and improves almost automatically in a sustainable and fail-safe manner. This means that almost every combustion system will always run at the ideal combustion point.



Screenshot from Remote Software: O_2 trim.

Rotational speed sensor

There are two different speed sensors available for the ETAMATIC OEM. 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. This means that you can always find the right sensor for the design features in question. As the elements to be recorded are not always known, approximate values should be used for sizing the damping elements and selecting the appropriate sensor. Due to the variety of sensors that can be used, LAMTEC only offers one two-line and one three-line element. These have been selected to ensure that most measuring tasks can be covered with just these two elements. Please let us know if neither of these elements is suitable for a specific measuring task, we will be happy to find a solution.



Rotational speed sensor with 2 wires, Namur.



Rotational speed sensor with 3 wires.

Flame monitoring

The LAMTEC ETAMATIC OEM is available both with or without integrated flame monitors. Continuous and precise flame monitoring helps to ensure safety and efficiency. Of course, the key requirement here is the quick detection of switching between On and Off. The digital evaluation of the spectrum, frequency or intensity also helps to improve the combustion process. With the LAMTEC ETAMATIC OEM, you can therefore use leading, integrated flame monitoring technology with minimal investment – or simply connect an existing device to the corresponding terminal.



FFS07 flame sensor.



FFS08 flame sensor.

Actuating motor

With the aim of providing “one-stop source for all your needs”, LAMTEC also offers safety approved motors tried and tested for use with electronic systems to drive the flaps and control valves in your firing systems.

Of course, these motors also meet all safety requirements related to the use of tested potentiometers with an interlocking, form-fit connection. LAMTEC offers four types of standard motor: 6 Nm, 20 Nm, 30 Nm and 40 Nm, all at 60 Sec. runtime. In addition to these standard motors, we can also supply motors up to 200 Nm available with a range of different limit switches, potentiometers and runtimes. LAMTEC also offers other models for electronic manual adjustment, electronic control and special models.



Actuating motor.

Order information.

Burner controls ETAMATIC OEM/ETAMATIC S OEM basic model	
ETAMATIC OEM/ETAMATIC S OEM configuration	66301
Programming unit	
Hand-held programming unit with Startup Manager, for operation and programming, in a set, comprising: ■ Hand-held programming unit 663R0932V3.0, in the following languages: German, English or French, etc. ■ Connector cable type 663R0430 / 658R0426, total length 4 m	663R0932
Customer display ■ Installed on the burner ■ Detached control unit ■ Hand-held programming unit with commissioning wizard	663R0935
Graphical customer display for panel installation, comprising: ■ Graphical customer display, installed on 8.4" touch-screen panel PC ■ Panel installation fixing set	663R9041T
LSB data module VISIOCONTROL without I/O interfaces, without connector cable (1 required per FMS/VMS/ETAMATIC)	663R0411
LSB connector cable	663R0421N
Crossover cable F/UTP, Cat 5e, 2 m	663R0105

Additional modules	
LSB module with 4 analogue outputs (0 ... 10 VDC)	663R4025
LSB input module with 4 analogue inputs (0 ... 10 VDC)	663R4026
LSB output module with 4 digital outputs, floating	663R4027
LSB input module with 4 digital inputs 24 VDC	663R4028
LSB output module with 4 analogue outputs (0 ... 20 mA)	663R4029
Additional power pack for LSB modules	663R4024
Fieldbus module PROFIBUS DP, incl. LSB connector cable type 663R0421N, length 2 m	663R040-1PB
Fieldbus module MODBUS on terminals (RTU), incl. LSB connector cable type 663R0421N, length 2 m	663R040-3MBK
Fieldbus module Ethernet TCP/IP, incl. LSB connector cable type 663R0421N, length 2 m	663R040-6ET
Fieldbus module INTERBUS, incl. LSB connector cable type 663R0421N, length 2 m	663R040-5IB
Configuration adapter for fieldbus connection, only for setting the LSB range with fieldbus connection in combination with ETAMATIC "SLAVE correction forwarding"	663R0417
Rotational speed sensor, 2 wires, Namur	663R8101
Rotational speed sensor, 3 wires	663R8103
Flame monitoring device	
FFS07 flame sensor	659D21
Holder for FFS07	659S1500
FFS08 flame sensor	659D31
Holder for FFS08	659S0500
Actuating motors	
6 Nm	662R2127
20 Nm	662R2111
30 Nm	662R2112
40 Nm	662R2121
Technical documentation	
German manual	DLT2008DE
English manual	DLT2008EN
Other languages on request	

LAMTEC Meß- und Regeltechnik für Feuerungen GmbH & Co. KG
Josef-Reiert-Straße 26
D-69190 Walldorf
Telephone: +49 (0) 6227 6052-0
Fax: +49 (0) 6227 6052-57 **info@lamtec.de** **www.lamtec.de**

Print number: DLT2042-16-aEN-003
Printed in Germany | Copyright © 2016 LAMTEC