System overview

Burner Control FA1

LAMTEC

Sensors and systems for combustion engineering

www.lamtec.de

Approvals.

EC Type Examination Certificate (Module B)
according to Directive 97/23/EC

- DIN EN 298:2004
- DIN EN 1643:2001
- DIN EN 230:2005
- DIN EN 60730-2-5
- DIN EN 12067-2:2004
- DIN EN 50156-1:2005, point 10.5

SIL3

- DIN EN 61508 Parts 2+3

CE 0085

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

- 2006/95/EC (Low Voltage Directive)
- 2004/108/EC (EMC Directive)
- 97/23/EC (Pressure Equipment Directive Cat. 4 Mod.) B+D
- 2009/142/EC (Gas Appliances Directive)

An efficient solution for burner management: LAMTEC Burner Control FA1.

Compact, ready-to-use and universally compatible: The LAMTEC Burner Control FA1: the ideal solution for cost-effective burner control.

The LAMTEC Burner Control FA1 brings together all the key characteristics of a state-of-the-art burner management system. As well as a compact design, it also features an impressive array of basic functions, a universally compatible design and a practical remote diagnosis function.

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. The engineers at LAMTEC had all of these criteria in their sights when they developed the Burner Control FA1.

Compact and versatile

The first thing you notice about the Burner Control FA1 is its impressive compact design. However, despite its compact size, it still contains all the components needed to control all aspects of a modern burner. For our customers, this means that the Burner Control FA1 can be configured to suit a wide range of combustion conditions. On request, the Burner Control FA1 can assume responsibility for regulating power in the burner.

For example, its versatile functions enable you to choose whether the pilot burner is used when starting the burner system or not. This function can also be adjusted separately for oil and gas. A number of flexible settings are also available for the integrated leakage tests, enabling users to decide whether it should be run before ignition or once the burner has been switched off. When using gas, the burner can even be started without pre-ventilation in accordance with EN 676.

The most basic version of the Burner Control FA1 contains an external setpoint shift function (control dependent on atmospheric conditions) and a start-up control as standard. Further standard features include a running time meter that is able to measure the burner running time and number of starts for gas and oil separately.

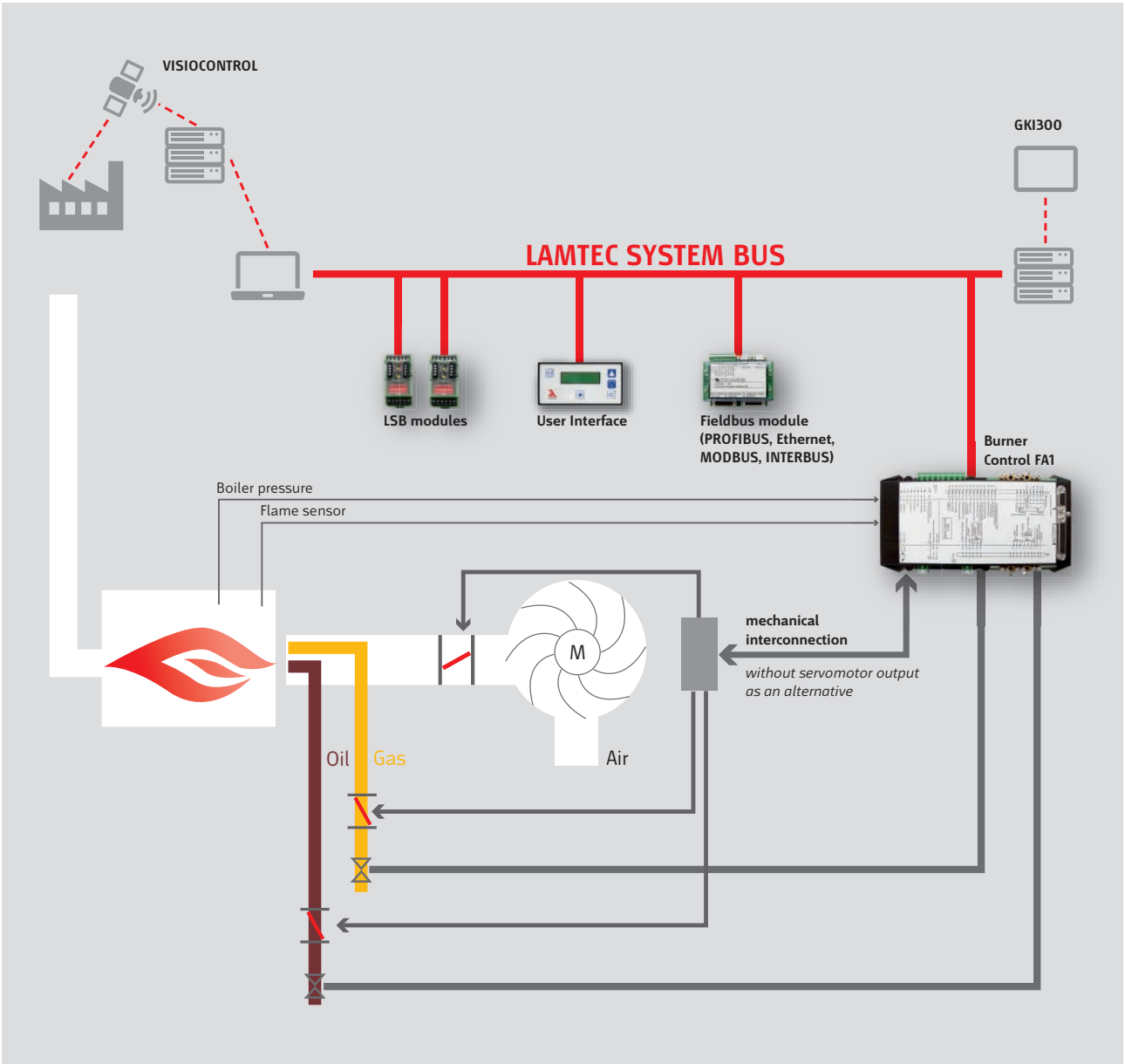
Lower costs for installation, maintenance and repairs

The Burner Control FA1 has been designed to provide users with maximum flexibility. It is easy to add to your existing control solutions thanks to its ability to “speak” nearly every language used by conventional fieldbuses. The integrated control output for mechanical or pneumatic assemblies provides added flexibility. Because it was developed with practicality in mind, the Burner Control FA1 reduces the operating costs for installing, configuring and commissioning your combustion sytem.

The integrated diagnosis function and intuitive menu also play a direct role in reducing maintenance and repair costs. Users no longer need to spend precious time analysing error codes as messages and faults are dis-

Advantages:

- Compact burner control unit,
- Fail-safe burner sequencer including an actuator,
- Connection to control systems,
- Options to adjust graph settings on a PC,
- Integrated valve leakage test,
- External current correction (heating value or temperature compensation),
- SIL 3 confirmed,
- Internal firing rate controller,
- Flame monitoring (optional),
- Mobile programming unit (optional).



Functions in the FA1.

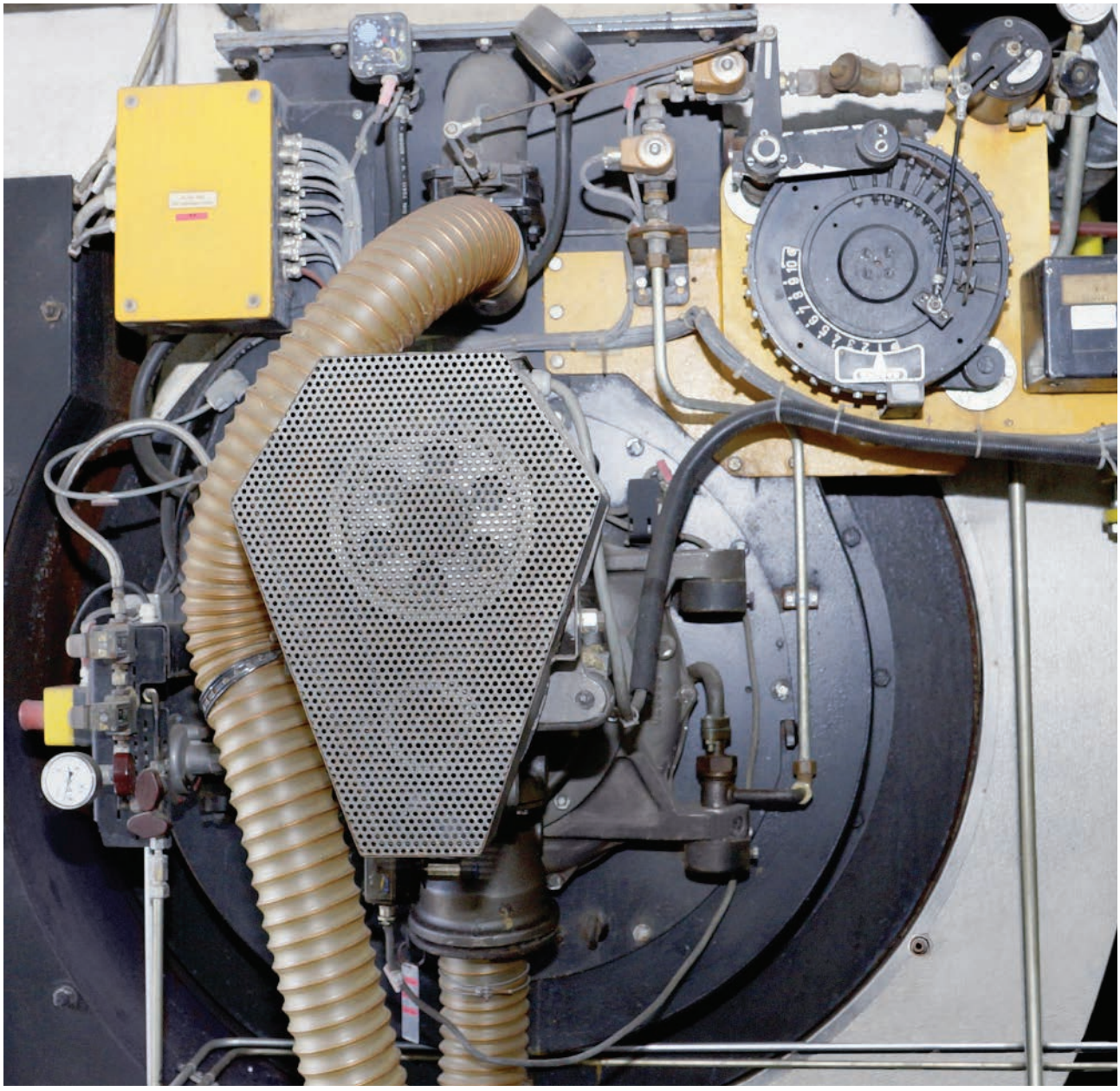
played as full text in their native language. Thanks to the customer display using the LAMTEC SYSTEM BUS, users can adjust the language settings in a matter of moments.

A practical PC interface also makes working with the Burner Control FA1 even easier. For example, users are able to check the status of their Burner Control FA1 online. In the event of an error in the burner control system, you can even use a modem to take action without needing to be on site yourself. As well as using your PC to control and operate the Burner Control FA1, you can also use it to archive any pre-set configurations and curve data for safe storage. Should you then need to replace the Burner Control at any time, the replacement controller will be ready-to-use in just a few seconds.

Technical data

The basic version of the Burner Control FA1 includes a connection to the LAMTEC SYSTEM BUS as standard. The pre-configured LAMTEC SYSTEM BUS enables users to connect all of their LAMTEC devices. This helps to reduce operating costs as devices can now be connected without the need for long-winded and complicated wiring work. You can even use this flexible solution to connect the separate customer display to the overall system, helping to save further costs.

The fact that the Burner Control FA1 has been checked by TÜV goes without saying. It also meets all applicable European standards and the requirements for continuous operation.



Inputs.

Outputs.

Inputs		Outputs	
Burner "ON"	**Digital inputs 24 VDC**	**Burner sequencer/ valve actuation**	Main gas 1
Flame signal with alternative direct link-up of flame sensors (FFS07 or FFS08)		**Depending on power supply**	Main gas 2
Gas safety interlock chain			Oil
Suppress pre-ventilation			Ignition valves
Max. oil pressure			Ignition transformer
Acknowledgement of high firing rate			Fan
Ignition flame signal/max. gas pressure			Oil pump "ON"
General safety interlock chain			Fault FA1
Oil safety interlock chain			
Fuel selection			
Acknowledgement of ignition position/atomiser pressure/Min. oil pressure			
Valve leakage test			
Air pressure monitor			
Channel 1 feedback (potentiometer, speed, current 4 ... 20 mA)	**Feedback signals from the actuators**	**Activation of the actuator**	Channel 1 (DPS or current)
		Information output	Burner in operation
			Pre-ventilation active
External firing rate setting (potentiometer, DPS, current 4 ... 20 mA)	**Firing rate/ power regulator specification**	**Firing rate/ power output**	Internal firing rate output (current)
Boiler temperature (Pt100)			
Correction/external temperature (current)			

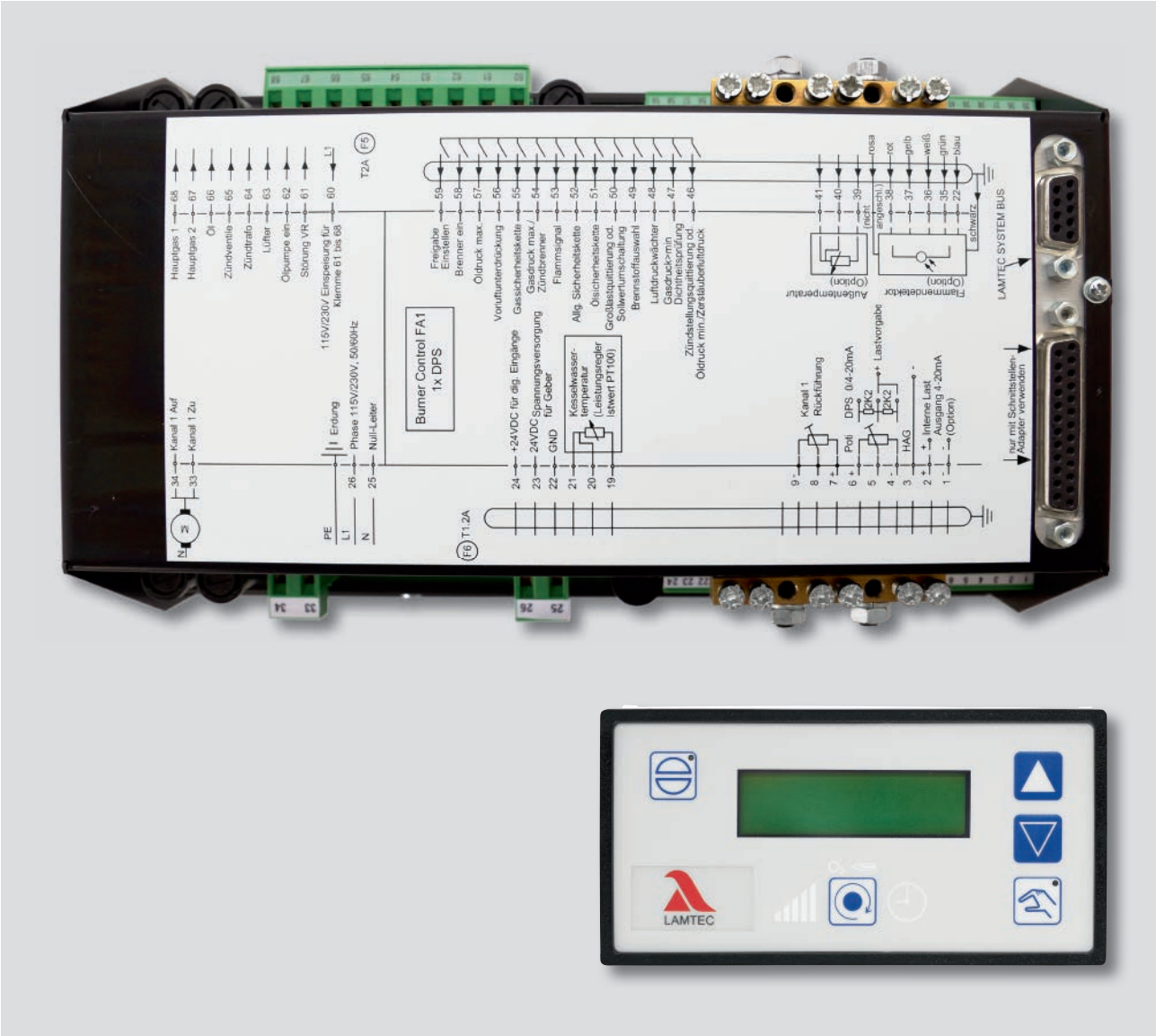
Digital (LSB)

Standby mode	**Selection of additional BUS signal inputs LSB module and fieldbus (Ethernet, PROFIBUS, 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			Mechanical interconnection output information: *Ignition position reached – high firing rate reached*
Fault release			

Analogue (LSB)

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

Basic model.



Burner Control FA1: Rear view and front of the customer display.

The basic model of the LAMTEC Burner Control FA1 can be configured using a hand-held programming unit or the PC interface via the LAMTEC SYSTEM BUS.

The Burner Control FA1 has been especially designed for installation on a burner. Short wiring runs also help to save time and effort. As such, the Burner Control FA1 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 Burner Control FA1 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 that shows information for the customer 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

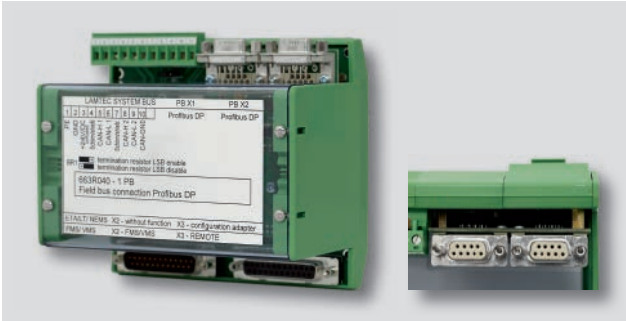
Every Burner Control FA1 comes with an LAMTEC SYSTEM BUS interface. The LSB module is compatible across the entire LAMTEC range and enables users to connect LAMTEC devices to one another using a quick and easy solution that doesn't require a lot of wiring work. It also enables users to control fieldbus 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.

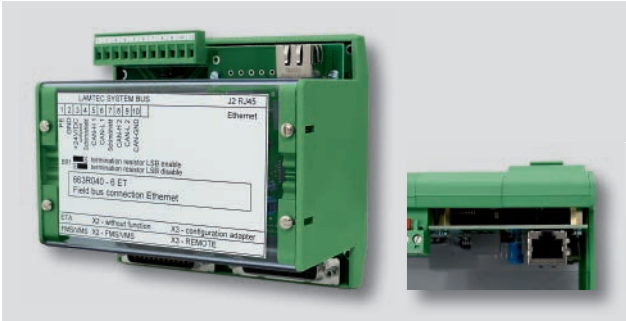
Digital input/output.

Control technology link-up

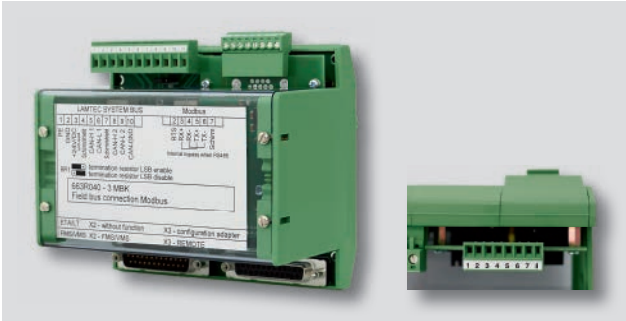
The Burner Control FA1 is easy to combine with existing control technology. It “speaks” virtually all languages used by conventional fieldbuses. Connections for PROFIBUS-DP, TCP/IP (MODBUS TCP), MODBUS and INTERBUS-S are available as options (other bus systems on request).



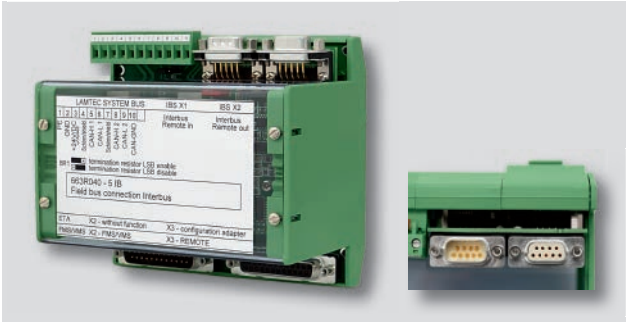
PROFIBUS DP fieldbus.



Ethernet fieldbus.



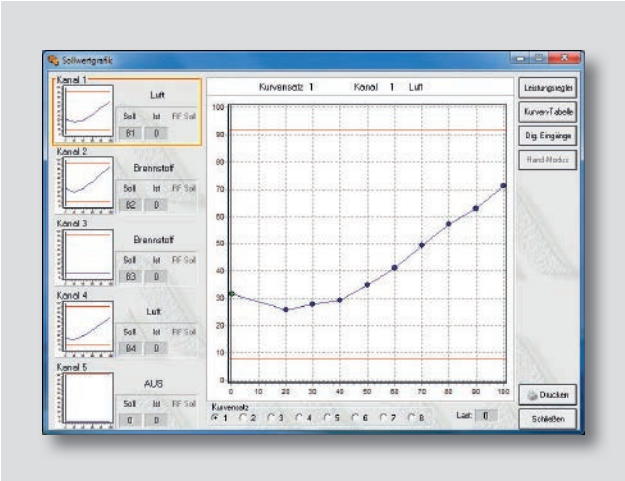
MODBUS fieldbus.



INTERBUS fieldbus.

PC interface (RS232)

The PC interface makes working with the Burner Control FA1 even easier: 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 Burner Control FA1 from your office so that you can detect faults and their causes without having to be on-site.



Screenshot from Remote Software: Setpoint graph.

Rotational speed sensor

There are two different speed sensors available for the Burner Control FA1. 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 a two-line and a 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 Burner Control FA1 is available with and 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 Burner Control FA1, 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 combustion 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 Control FA1 basic model	
Burner Control FA1 configuration	670R0
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 Burner Control FA1)	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
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 operating instructions	DLT6701DE
English operating instructions	DLT6701EN
Other languages on request	

LAMTEC Meß- und Regeltechnik für Feuerungen GmbH & Co. KG
Wiesenstraße 6
D-69190 Walldorf
Telephone: +49-6227-6052-0
Fax: +49-6227-6052-57 **info@lamtec.de** **www.lamtec.de**

Print No. DLT6703-15-aEN-001