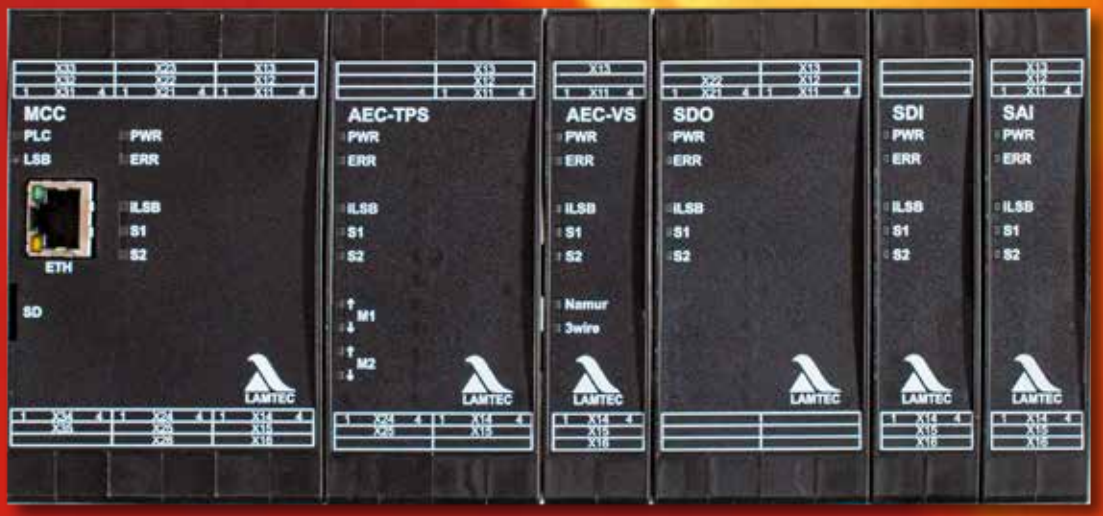
Combustion Made Simple



System Overview

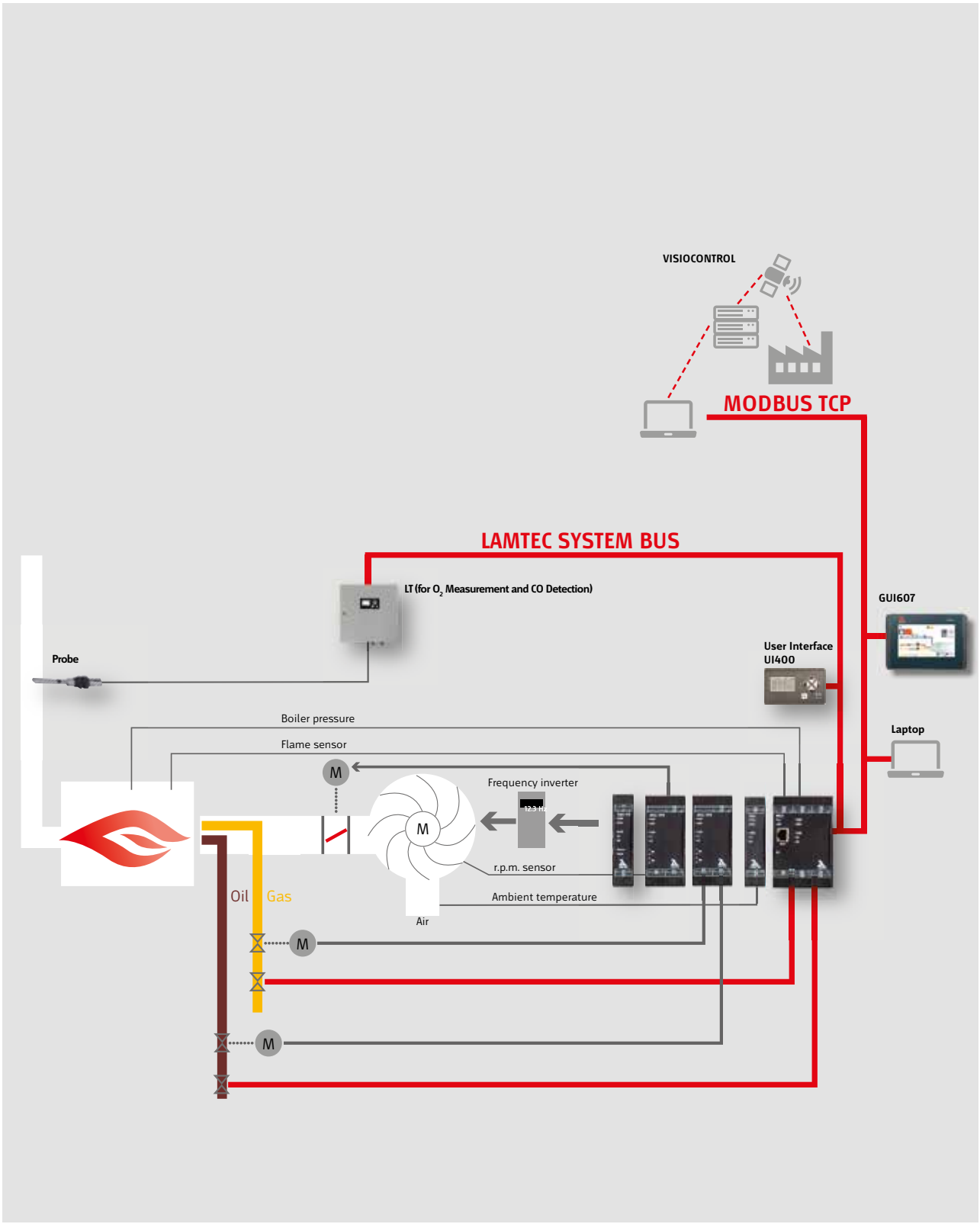
CMS Combustion Management System

LAMTEC

Sensors and systems for combustion engineering

www.lamtec.de

Function overview CMS.



The intelligent system of the future.

Advantages:

- Modular burner management
- Simple operation
- From basic to high end applications
- Freely configurable I/O (Inputs/Outputs)
- Language neutral by using symbols and graphics
- World wide approvals CE/UL/SIL 3
- CODESYS Soft-PLC integrated
- Visualisation when using GUI HMI options
- Integrated fault indicator system
- Fieldbus on-board
- Centralised or distributed module architecture
- Fixed ratio mixed combustion of up to 4 fuels possible

Technical Highlights:

- Up to 10 servo motors for electronic ratio control
- Up to 60 failsafe digital inputs
- Up to 41 failsafe digital outputs
- Up to 18 analogue inputs (alternatively up to 9 failsafe analogue inputs)
- Up to 16 curve sets
- 4 Fuel trains
- Up to 4 valve leakage tests
- 4 Correction inputs e.g. temperature compensation
- Fixed ratio mixed combustion for simultaneous combustion of up to 4 fuels
- Compliance with current safety requirements
- CO/H_2 Control for combustion optimisation
- Integrated flame monitoring (optical flame sensor or ionisation)
- Internet security (intrusion protection, data encryption)

Unlimited opportunities.

Maximise possibilities with CMS Combustion Management System

The full version of the LAMTEC CMS offers far more operational possibilities than current LAMTEC systems. For example, it is possible to connect multiple HMIs such as the UI400, GUI607 or alternative panels. The I/O extension modules allow large complex systems to be configured; up to 60 failsafe digital inputs and 41 failsafe digital outputs are available. A maximum of 10 output drives can be connected and configured; they are flexible and can include DPS three-point step servo motors, frequency inverters, 4 - 20 mA positioners or bus motors. Up to 18 analogue inputs for sensors to monitor and control temperatures and pressures. Feed forward control-can be included in systems as well as inputs to monitor pulsed outputs from steam and fuel flow meters etc.

GUI607 | MCC | 2x AEC-TPS* | 2x AEC-VS* | 6x SDI | 4x SDO | 3 x SAI | BLC** | AEC-ST*

*** Depending on the simultaneous use of AEC-TPS, AEC-VC and AEC-ST. A maximum of 10 actuators can be controlled.**

Combustion Management System – The Evolution of Combustion Management.

Whether it be a standard industrial combustion or complex process application, LAMTEC's revolutionary CMS Burner Management System sets new standards in control automation.

Modular: The CMS is simple and easily configured to meet a wide and varied range of application requirements from small industrial burners to large complex systems: everything can be controlled?. The CMS can control and address up to 10 combustion control elements,
60 failsafe digital inputs and 41 failsafe digital outputs. Modules can be distributed anywhere over a 100 m LSB LAMTEC SYSTEM BUS; this increases design flexibility.

Safety: Modules are connected by a failsafe LSB LAMTEC SYSTEM BUS. The CMS is approved in accordance with the following relevant standards for industrial combustion applications: EN298, EN12067-2, EN1643, UL, CSA, GL Marine Approval, SIL 3 according to EN61508.

Communications: The CMS uses MODBUS TCP as a standard interface. Additional fieldbus communications such as PROFINET, PROFIBUS DP and MODBUS RTU are also supported. PC software to support commissioning can be connected via Ethernet. The CMS is compatible with the current LAMTEC SYSTEM BUS (LSB) and can therefore seamlessly integrate with existing systems.

Simple: At LAMTEC, CMS stands for 'Combustion Made Simple'; underlining the intuitive graphic-based user interface. The CMS interface is an evolution of the BT300 operating philosophy. Working with the CMS is intuitive and easy to learn for everyone.

Burner with integrated UI400.

CMS modules installed in the control cabinet.

Customisable: The standard graphic user interfaces are the simple UI400 and the 7" GUI607 colour touchscreen. However, the CMS is very flexible with HMIs and both 10" (GUI610) and 15" (GUI15) colour touchscreen panels are also available for delivery. Furthermore, it is possible to connect additional HMIs to allow control at different site locations. This feature is also available when using OEM HMI solutions.

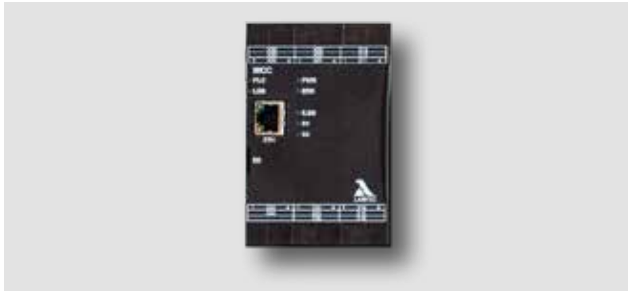
Versatile: Integrated Soft-PLC (CODESYS) for non-failsafe control assignments. Instead of using an additional separate PLC control system you can programme the internal CODESYS PLC with IEC 61131 standard. Inputs and outputs of the CMS that are not used can be assigned freely as desired. CODESYS also enables users to customise touchscreen HMIs to their own requirements.

Flexible: Inputs and outputs from the burner system can be freely assigned to the CMS modules. This feature enables users to design and configure the CMS to their individual application requirements. Spare I/O on the CMS modules can be assigned for use with the on-board CODESYS PLC. Single fuel, dual fuel and additional fuels can all be supported; safety chains or individual interlocks can also be assigned.

System Components.

Burner Module MCC

- Power supply 24 VDC
- 12 failsafe digital inputs
- 9 failsafe digital outputs
- Ethernet with MODBUS DP TCP
- CODESYS Soft-PLC integrated
- Available in 5 versions:
  Input 24 VDC / output 24 VDC
  Input 24 VDC / output 120 VAC
  Input 24 VDC / output 230 VAC
  Input 120 VAC / output 120 VAC
  Input 230 VAC / output 230 VAC
- Optionally available with input for ionisation sensor or optical flame scanner FFS07 / FFS08



Motor Module AEC-TPS

- Supports 2 x three-point step servo motors
- Compatible with LAMTEC TPS motors
- Position feedback by potentiometer 5 kΩ
- 2 versions: 120 VAC and 230 VAC
- Maximum of 5 AEC-TPS Modules in one system*

RPM Module AEC-VS

- 4 - 20 mA output for frequency inverter
- Alternatively 4 - 20 mA output for positioner
- R.P.M. sensor NAMUR, 3-wire sensor or 4 - 20 mA
- Digital output for 'Fan ON'
- Digital input for frequency inverter fault/status signal
- Maximum of 10 AEC-VS Modules per system*

***AEC-TPS and AEC-VS modules can be combined to control a maximum of 10 output channels for combustion control elements.**

PID controller: Developed with OSCAT
(Open Source Community for Automation Technology, www.oscat.de)

Failsafe Input Module SDI

- 8 failsafe digital inputs
- 3 Versions: 24 VDC, 120 VAC, 230 VAC
- Maximum of 6 SDI Modules per system

Failsafe Output Module SDO

- 8 failsafe digital outputs
- Maximum of 2 A per output
- 3 versions: 24 VDC, 120 VAC, 230 VAC
- Maximum of 4 SDO Modules per system

Analogue Input Module SAI

- 3 failsafe or 6 non-failsafe, analogue inputs or any combination of this, alternatively as 4 - 20 mA, Pt100, Pt1000
- Maximum of 3 SAI Modules per system

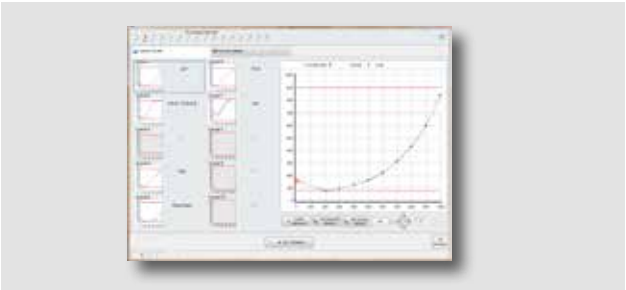
System Components.

Power supplies
- Input 110 V - 240 V, Output 24 VDC
- 15 W - 150 W
- DIN Rail mounting

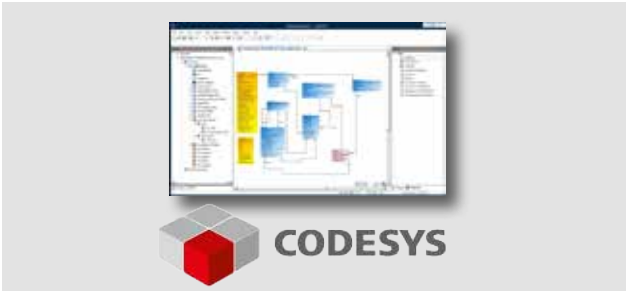
Display Module UI400
- Low cost HMI
- Graphic user interface
- Symbol based - language neutral
- Easy operation
- Connection by LAMTEC SYSTEM BUS (LSB)
- Distance between MCC up to 500 m

Display Module GUI6XX
- 7“, 10“ and 15“ touchscreen panel
- Graphic user interface
- Mostly language neutral
- Graphic plant display
- Can be used for CMS backup and restore
- Graphical display is adaptable to customer specifications
- Setup assistant
- Distance to MCC is unlimited (Ethernet)

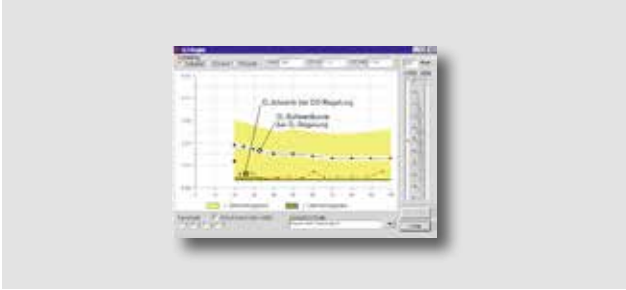
PC Software
- Software for complete configuration
- Backup and restore of settings
- Connection to CMS by Ethernet
- Printing of the wiring diagram
- Checklist for equipment test
- Parameter checking against standards



Soft-PLC
- Individual configuration of non-failsafe functions
- Integrated in MCC and GUI
- CODESYS standard software



CO/O_2 Control
- LAMTEC CO/H_2 Control connected by LSB
- Compatible with all LAMTEC combustion analysers by LSB - LT1, LT2, LT3 & LT3-F
- Increased combustion efficiency and emissions reduction
- Increased safety



Flame detection

- FFS07 / FFS08 are interfaced directly to MCC (optional)
- Direct connection for ionisation sensor
- Connection of compact flame scanner F200K and F300K by digital inputs
- Connection of up to 8 main flame scanners and one pilot flame scanner possible

Measuring systems

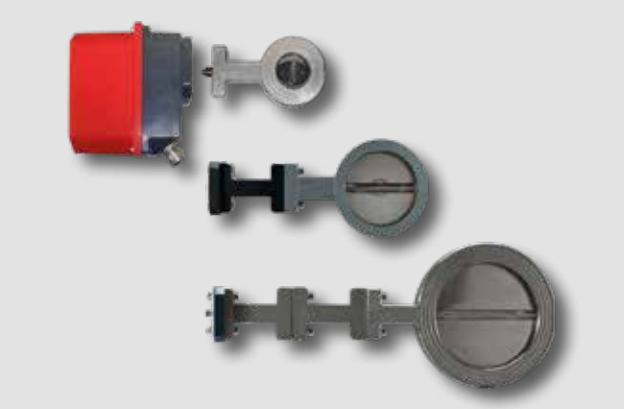
- All LAMTEC O_2/CO_e measuring systems can be connected to the CMS by LSB
- Increases safety and combustion efficiency

CMS Actuating motor

- 6 Nm - 180 Nm
- Maximum of 10 actuators per CMS system

Gas / Flue Gas / Air Dampers

- Can be mounted without mounting kit
- Aluminum / cast iron / stainless steel depending on application
- Available with and without sealing system



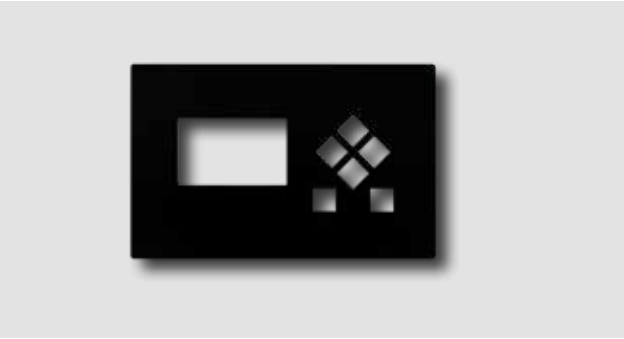
Fieldbus modules

- Interface to other Fieldbus systems
- Protocols available:
  - MODBUS DP TCP on-board
  - PROFIBUS DP
  - PROFINET

Cover IP65

Cover for UI400, delivery includes fixing nuts

- Cover to achieve protection class IP65



Functions at a glance.

Here you can discover the functions contained in the individual software packages:

FUNCTIONEN	Software package		
	Free	Service	Expert
Safe protected dataset	✔	✔	✔
Upload protected dataset	✔	✔	✔
Assign Remote	✔	✔	✔
Set date / time	✔	✔	✔
Replace module	✔	✔	✔
Open dataset in offline mode	✔	✔	✔
Read parameter	✔	✔	✔
Menu ‘Safety‘	✔	✔	✔
Curves, special points, view range limits	✔	✔	✔
Read CO/H_2 data	✔	✔	✔
Read history	✔	✔	✔
Read inputs / outputs, measuring values	✔	✔	✔
Manuel firing-rate pre-setting	✔	✔	✔
Firmware / SPS update	✔	✔	✔
Modify parameters		✔	✔
Dialogues in the menu ’Configuration’ with write access		✔	✔
Set curves, special points, range limits		✔	✔
Edit CO/H_2 curve		✔	✔
Cold check		✔	✔
Edit I/O matrix constants		✔	✔
Change password level 1		✔	✔
Change password level 2			✔
Compare data			✔
Modify customer abbreviations			✔
View hidden parameters of level 7			✔
View parameters / registers in variables higher than 2000			✔
Edit curve tables			✔
Debug mode			✔
Chart functions			✔
Edit offline module administration			✔

Notes.

Notes.

Notes.

Approvals.

CE 0085 DVGW CERT

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

EU Type Examination Certificate
- 2014/68/EU (Modul B)

SIL 3 Certificate

SIL3

- DIN EN 61508 parts 1-7

EAC

Eurasian Conformity
- TP TC 016/2011

EU Declaration of Conformity
- 2014/35/EU (Low Voltage Directive)
- 2014/30/EU (EMC Directive)
- 2014/68/EU (Pressure Equipment Directive Kat. 4 Mod. B+D)
- (EU) 2016/426 Gas Appliances Regulation

UL CERTIFIED SAFETY US CA MH48669

UL Listed
- ANSI/UL 60730-2-5
- CAN/CSA C22.2 No. 60730-2-5
- ANSI/UL 60730-1
- CAN/CSA-E60730-1

ZIM Zentrales Innovationsprogramm Mittelstand
Supported by: Federal Ministry for Economic Affairs and Energy
on the basis of a decision by the German Bundestag

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

LAMTEC

Publication no. DLT1230-24-EN-021
Printed in Germany | Copyright © 2024 LAMTEC