

ETAMATIC V
ETAMATIC V S

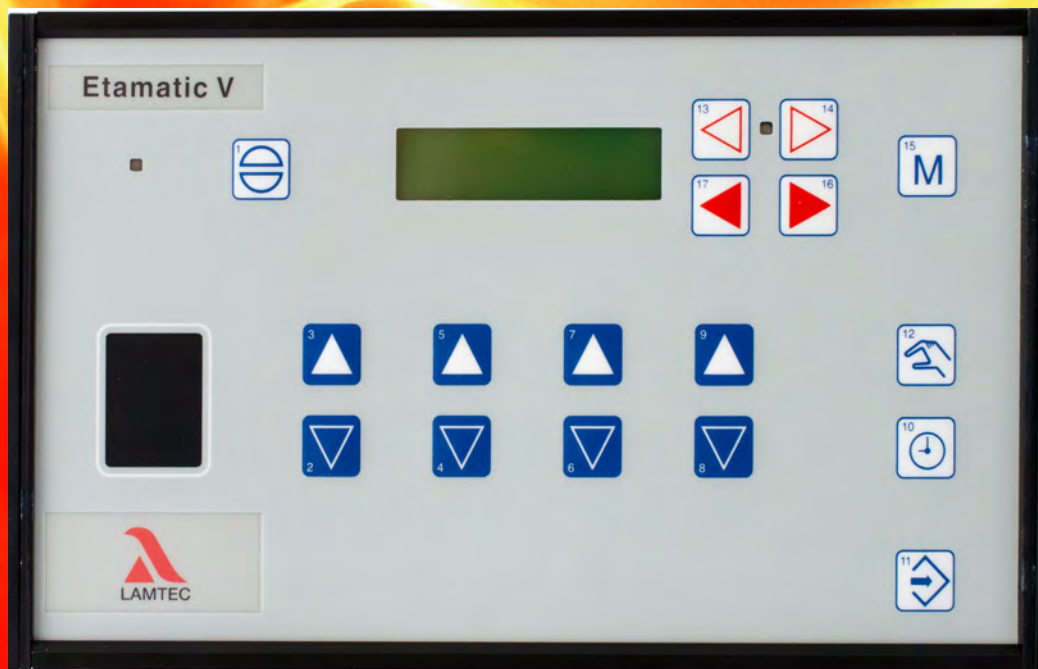


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1 General Information

1 General Information

1.1 Validity of these Instructions

These instructions apply to the following device(s): ETAMATIC V in any configuration.

These devices conform to the following standards and regulations:

- DIN EN 298: 2012-11
- DIN EN 1643: 2014-09
- DIN EN 13611:2011-12
- DIN EN 60730-2-5: 2015-10
- DIN EN 60730-1:2012-10
- 2014/35/EU Low Voltage Directive
- 2014/30/EU EMC-Directive
- 2014/68/EU Pressure Equipment Directive
- (EU) 2016/426 Gas Appliance Directive
- 2011/65/EU RoHS

Test symbols: CE-0085 AU 0207

The ETAMATIC V is a control unit for combustion systems.

NOTICE

Respect the national safety regulations and standards.

2 Safety

2.1 For Your Safety

The following symbols are used in this document to draw the user's attention to important safety information. They are located at points where the information is required. It is essential that the safety information is observed and followed, and that applies particularly to the warnings.

DANGER!

This draws the user's attention to imminent danger. If it is not avoided, it will result in death or very serious injury. The plant including its surroundings could be damaged.

WARNING!

This draws the user's attention to the possibility of imminent danger. If it is not avoided, it may result in death or very serious injury. The plant including its surroundings could be damaged.

CAUTION!

This draws the user's attention to the possibility of imminent danger. If it is not avoided, it may result in minor injuries. The plant including its surroundings could be damaged.

NOTICE

This draws the user's attention to important additional information about the system or system components and offers further tips.

The safety information described above is incorporated into the instructions.

Thus, the operator is requested to:

- 1 Comply with the accident prevention regulations whenever work is being carried out.
- 2 Do everything possible within his control to prevent personal injury and damage to property.

3 Description

3 Description

3.1 Life Cycle

ETAMATIC V has a designed lifetime of 250,000 burner start-up cycles, which, under normal operating conditions in heating mode, correspond to approx. 10 years of usage (starting from the production date given on the type plate).

This lifetime is based on the endurance tests specified in standard EN230/EN298 and the table containing the relevant test documentation as published by the European Association of Component Manufacturers (Afecon) (www.afecon.org).

The designed lifetime is based on use of BT300 according to the manufacturer's basic documentation. After reaching designed lifetime in terms of number of burner start-up cycles, or the respective time of usage, the BT300 must be replaced by authorized personnel.

3.2 Brief Description

The ETAMATIC V positions up to 4 actuators, according to freely programmable curves, in dependence on a reference input variable. The "V" version has 4 three-step positioning outputs and the "VS" variant has 3 three-step positioning outputs and a 4 - 20 mA output.

Examples of possible actuators:

- Combustion air valve
- Combustion air blower (ETAMATIC VS only)
- Fuel air valve
- Recirculation valve

Up to 20 points (usual 11) can be programmed per channel. The Display is relative between 0 and 999.

The ETAMATIC has a 25-pole Sub-D connector with serial interface for remote operation / remote display via a PC (Windows software available separately). Connections for Interbus-S, PROFIBUS-DP, CANopen, TCP/IP (Modbus TCP) and Modbus are available as optional equipment. Other BUS-systems available on enquiry. The connection of other plant components, e.g. fault signal systems and O₂ trim, is via the LAMTEC SYSTEM BUS interface to a 9-pole Sub-D connector.

Operation is via a front panel laminated keyboard. The parameters are displayed on a 2-row LCD screen.

Operation via PC software is described in a separate manual.

The ETAMATIC V continuously monitors its own functions and those of the connected control elements.

Unlike the ETAMATIC, the "V" version does not have a control unit, so the functions of the digital inputs and outputs differ from those described in the ETAMATIC basic documentation. This means that the "gas-tightness check" and "integral flame monitor" options available with the ETAMATIC cannot be used with the "V" version.

3 Description

External messages to the ETAMATIC V are supplied via potential free contacts or contact chains.

The following signals can be predefined:

- Burner on
- Pre-purge
- Flame signal (burner operating)
- Control enable
- Recirculation on
- Curve set selection
- Setpoint switchover (for firing rate controller)

230 V-outputs for the communication with the external control device (isolated contacts via relay module type 660R0027):

- error main processor
- error monitoring processor
- ignition position main processor
- ignition position monitoring processor
- indication: high firing rate

The integral firing-rate controller is built as a PID-controller with special functions for combustion engineering. You may use it as a set-value controller or controlled by atmospheric conditions.

The following signals may be provided:

- actual value (analogue) - (PT100 or 4 - 20 mA)
- outside temperature or another analogue signal for setpoint switching (only with controller controlled by atmospheric conditions) - (PT100, potentiometer, 0/4...20 mA)
- setpoint switching (via floating contact)

The release of the combustion with the firing-rate controller is carried out by an output at the ETAMATIC V. A digital signal is the output for activating a relay for the connection with a burner sequencer (floating contacts via relay module type 660R0027).

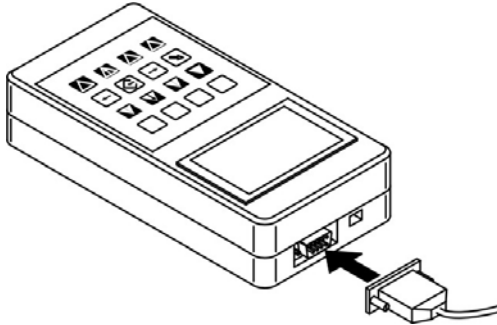
3 Description

Using the display- and operating unit

The display- and operating unit allows you to operate and program the ETAMATIC V without front panel.

Connecting the ETAMATIC V

The operating unit is to be connected by the 9-p Sub D plug with the ETAMATIC V. Use for it the provided lead with the type no. 663R0430. The data communication runs via the LAMTEC SYSTEM BUS. Alternatively the possibility exists to attach the operating unit at the cable of the customer interface. An adaptor cable is attached, with the type no. 6 63 R 0426. Pull the 6-pol. plugs at the customer interface off and put the adaptor cable on the 6-pol. plug.



3.3 Operating Description

Selection of a curve-set

First, a signal is given to terminal 58 (ETAMATIC V S) when the burner is to start. The mode indicator changes from "AU" to "BE". The flue gas damper runs "OPEN". Then the pre-ventilation signal is given. Continuous outputs run to the highest programmed point. Three-Point-step outputs receive a continuous "OPEN" signal and run to the limit switches.

The recirculation channels only start, when the signal is present at the terminal and the corresponding channel (mostly air damper) is open at 75%. If you do not want a delay of the recirculation damper, set a continuous signal to the recirculation terminal. In this case the delay of the recirculation damper occurs automatically. If all active channels have reached the highest point, the output closes the high firing rate terminals. The fuel channel runs to ignition position. The pre-purge time in the external burner sequence controller may start running.

After the end of the pre-purge period the air channels and the recirculation channels run to ignition position as well. After that, the signals ignition position HP and ignition position ÜP are fed and the output closes the terminals for "burner firing rate controller" and "actual value" on the relay module type 660R0027. The flue gas damper remains open or the flue gas fan remains at the highest speed.

The external burner sequence controller is now ready to start the ignition. After the ignition has completed the external burner sequence controller sets the flame signal (burner is running) to the ETAMATIC V.

3 seconds after ignition all channels are running to the programmed base firing rate position. The ETAMATIC V remains in base firing rate position until control release is set. After control release the device follows the input of the burner firing rate controller. After laps of the burner ON signal a shut-down occurs.

If you have configured „post-purge“ plus "flame signal" (burner is running), the air channels will open again for that period. The ETAMATIC V runs to mode „OFF“.

Starting without pre-purge

Even if the plant shall be started without pre-purge, the pre-purge signal has to be set for at least 3 seconds, the device switch to the next sequence and runs to ignition position.

Not before the pre-purge signal is pending for more than 10 seconds, the pre-purge has to be run to the end, i.e. the channels are running to their end position.

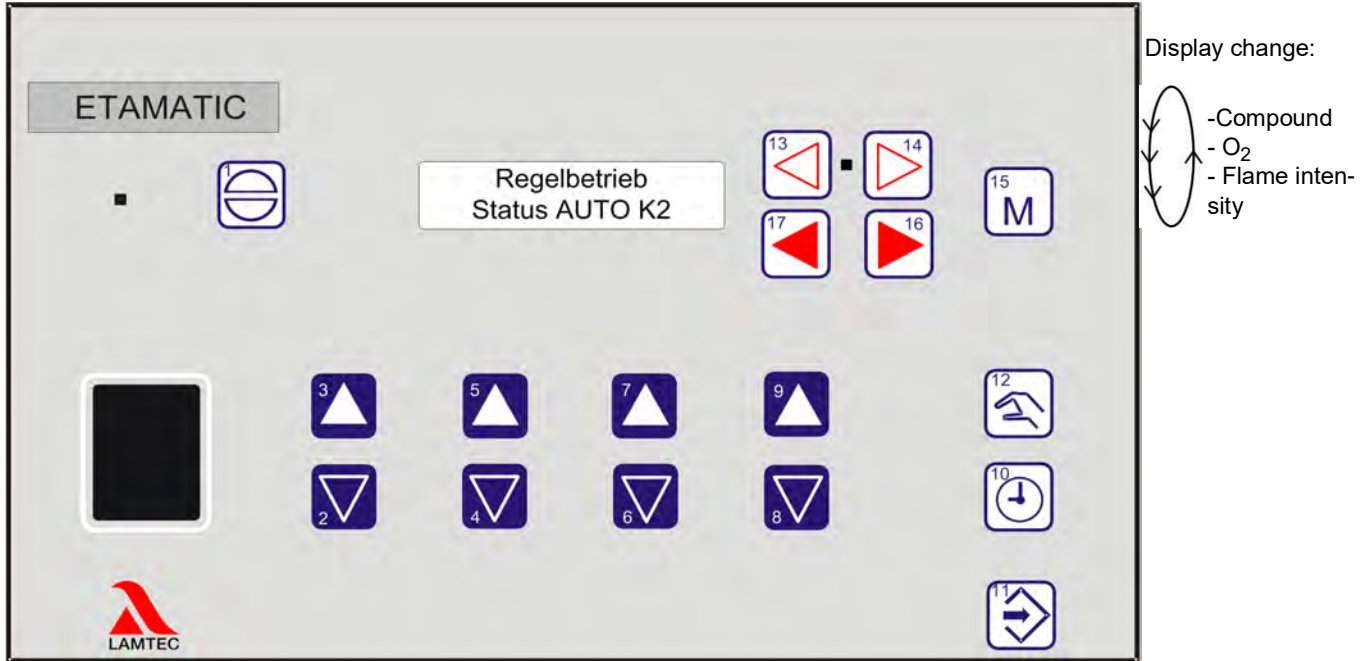
If the pre-purge signal is taken before all actuators are run their end position, this will be ignored and the actuators will be running to their end position anyway.

3 Description

3.4 Operator Device

Select operating modes: UEAN ↔ PARA ↔ O₂¹⁾ ↔ AUTO ↔ EINS ↔ SPLO

Select operating parameters: Status ↔ Firing rate rating ↔ Setpoint ↔ Actual value feedback ↔ Setpoint feedback²⁾ ↔ Digital inputs



* UEAN = Monitoring processor display

PARA = Parameter settings

AUTO = Automatic

EINS = Set

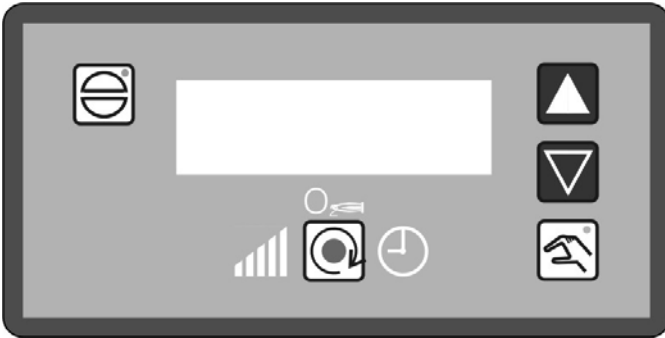
SPLO = Clear memory

1.) only if activated in parameter section






2.) only in ETAMATIC S OEM




3 Description

Customer Interface



Using the Keys

-  reset
-  firing-rate / fault history up
-  firing-rate / fault history down
-  manual mode ON / OFF
-  display change

-  - compound
-  -O₂*
-  -flame intensity**

Select operating modes:

UEAN ⇔ PARA ⇔ O₂* ⇔ AUTO ⇔ EINS ⇔ SPLO

Select operating parameters:

Status ⇔ Firing rate ⇔ Setpoint ⇔ Actual value feedback ⇔ Setpoint feedback** ⇔ digital inputs



UEAN
PARA
AUTO
EINS
SPLO

Display change
-compound
-O₂*
-flame intensity**

monitoring processor display
parameterisation
automatic
clear memory

* only available, if activated in the parameter section


** only available with ETAMATIC V / ETAMATIC V S the option "Integrated Flame Monitor"

4 Operation

4 Operation

4.1 Reading Faults


 Red fault LED is on
Press key 17 to get STATUS → display fault code

 Press key ENTER → Plain text message is shown on display (incl. output of running time counter)

NOTICE


Press key 16 for reading other display values at time of the fault. All display values are frozen.

4.2 Resetting Faults


 Press key RESET
Alternatively:
Use an external switch to send a short signal (min. 2 sec.) to terminal 57.
The error is cleared!

4.3 Recalling Fault History


The ETAMATIC V stores the last 10 faults with the associated data of the running time counter.
Requirement: ETAMATIC V must not be in fault condition.

 Press key 17 until the display shows "Status".

 Press key 3 → the display shows the last fault code

 Press key 11 (Enter) → the display shows the associated plain text and the running time hours.

 Press key 3 again → the display shows the last but one fault code.

 Press keys 3 and 2 to browse through the fault history.


NOTICE

If it is certain that the ETAMATIC V has carried a voltage at all times since the last fault, it is possible, that from the present output of the running time counter and the current time, to determine at which time the fault occurred.

4 Operation

4.4 What Happens if a Fault Occurs in the O₂ Controller?


In the event of a malfunction, the display shows a warning and the O₂ trim is deactivated. The specified base value "without control" (correction value at deactivated O₂ trim) or the one for "air deficiency" (correction value at air deficiency) is set. The display shows the running text "O₂ trim disturbed". The burner doesn't shut down. Set the selector switch to "Status" to call up the corresponding error code.


 Press key 11 ENTER → The display shows a plain text message about the cause of the error.

4.5 Resetting O₂ Errors

Each new burner start-up resets O₂ fault automatically. This is permissible, because a 100% O₂ measurement test is performed at each start-up. Manual resetting of O₂ fault is possible at any time, as follows:

 Press key RESET
ETAMATIC V in O₂ trim mode



 If not, switch over to O₂ trim mode
Press key 15 M once

 Press key ENTER and call up the cause of fault (mandatory!)

 Press key 7

4.6 Calling Fault History O₂ trim

 Switch over to fuel/air ratio control mode, if necessary press M.


  Use key 4 and 5 to browse the fault history.

Display:

1	147	1	000 487
↑	↑	↑	↑
current fault	internal firing rate	curve set	operating hours

The display hides the O₂ history automatically after 5 sec. O₂ trim faults, which last for more than 30 sec are stored. They are only stored in the EEPROM once the fault is cleared up or the ETAMATIC V leaves the operating mode or control or base firing rate.

4.7 How to switch the Display


 With key M you can switch between compound display, O₂ display (if activated), flame intensity and internal firing rate control (if activated).

NOTICE

Before setting the O₂ trim, the compound must be completely programmed.

4 Operation

4.8 Operation and Display of the O₂ Trim


 Press key 15 once, to switch the display to O₂-trim.

When you have switched to "Status", the display shows the O₂ actual value and O₂ setpoint value. The display shows the values in brackets, if O₂ trim is deactivated.

NOTICE

O₂ actual value and O₂ setpoint are only displayed, if O₂ trim or O₂ display are activated in parameter 896.


In automatic operation, the display switches during regular operation automatically to O₂ trim mode. However, it is always possible to switch the display over with key "M". The manually preselected setting only remains in force until the next switch to "Regular operation" or "Base firing rate operation", and then returns automatically to the base setting.


 Mode "O₂-trim": By pressing key "ENTER" (display in position "Status"), you can call up information texts (running texts)

4.9 Calling up O₂ Trim Text Messages

Switch display to O₂ trim


 press key "RESET"

 press key M

 press key "ENTER" to call up the text messages

 press key "ENTER" again → back

4.10 Displaying the Running Time Meter

 press key 10 → the display shows the running text of the following data successively:

Total running time
Running time on curve set 1
Starts on curve set

Running time on curve set 2
Starts on curve set 2

Running time on curve set 3*
Starts on curve set 3*

Running time on curve set 4*
Starts on curve set 4*

* if parameterised

4 Operation



The total of running times for curve set 1 and curve set 2 do not necessarily add up to the displayed total running time.

NOTICE


The total counter refers to the ETAMATIC V's running time. It starts timing as soon as the unit is connected to a voltage source (this also provides the basis for the fault history).

The individual running time counters refer to the burner's running time. They start timing as soon as the burner is in operation with the relevant curve set (flame signal is present).

4.11 Displaying Checksums and Safety Times

  Press keys 16 and 17 to select "setpoint feedback".

 Press key 11 ENTER.

 The following values are displayed one by one:

CRC 16 of the levels 0, 1 and 2: adjustable at commissioning time

4: adjustable by LAMTEC only


1st safety time oil in seconds

2nd safety time oil in seconds

1st safety time gas in seconds

2nd safety time gas in seconds

pre-purge time in seconds

 To exit, press the 1 RESET button

If you have changed parameters, reset the ETAMATIC V. Only a reset refreshes a checksum.

5 Internal Burner Firing Rate Controller

5 Internal Burner Firing Rate Controller

5.1 Purpose

The internal firing rate controller calculates the burner firing rate against a pre-defined setpoint value (e.g. as a function of temperature or pressure) by comparison with the actual value. This position will be transferred to the electronic fuel/air ratio control as a default value.

5.2 Brief Description

The integrated firing rate controller is a PID controller with special combustion engineering functions. You can use it as a fixed value control or as a control by atmospheric condition. The following signals can be preset:


- Actual value (temperature PT 100 max 320 °C or steam pressure)
- Outside temperature or another analog signal for setpoint shift (only on control by atmospheric condition). The ETAMATIC V must be equipped with the optional hardware for control by atmospheric condition.
- Setpoint switching (via floating contact). The burner firing rate controller releases the combustion internally.


Combustion is triggered internally by the power control unit.

5.3 Range Limits

You must set limit values in the parameters, switching the burner on and off. After a burner shut-down while actual temperature has not reached the switch-on threshold yet, a display will inform you that firing rate controller is refusing a start-up.

5.4 Moving Screen "Actual Temperature is too high"

 Press key 12 HAND to override this and start the ETAMATIC V, if the maximum temperature has not exceeded.

 Press key 12 HAND again to switch back to automatic mode.



NOTICE

The limit values should always be entered in the form of a difference from the setpoint value.



5.5 Enter Setpoint of Firing Rate Controller

Up to software version A3i1023 you can change the setpoint with parameter settings only. From software version A3i1023 on you can change the setpoint of the firing rate controller. This function works in case of running burner only.



- Display on firing rate rating

  Press key 9 and 6 simultaneously → the setpoint in the display is blinking.

5 Internal Burner Firing Rate Controller

  Use keys 4 and 5 to change the value.

 Press key 11 ENTER to confirm the new value

  Press keys 7 and 8 simultaneously to leave this mode without changes.

NOTICE

If you change the setpoint, regard that also the on and off switchpoints are shifted, because they were defined as difference value to the setpoint.

5.6 Thermostat and Control Range

The thermostat function switches the burner on and off on the basis of the temperature and/or pressure value, but only when burner is released by the start signal. The control range is formed by entering the controller setpoint value and the parameters P 802 (switch-on point), P803 (upper control range) and P 804 (burner OFF). The cut-off hysteresis is divided into 2 ranges. The first part lies above the setpoint and forms the upper control range. The second part lies below the setpoint and forms the lower control range.

The control range may lie asymmetrically around the setpoint.

The power control unit functions within the upper and lower control range according to its settings in the parameters and the default values.


If the actual value of the control unit reaches the shut-down range, the base firing rate request is emitted. If the control unit's setpoint exceed the shut-down range a control shut-off occurs. This is done by internal processing. If the actual value drops below the lower control range, a re-start can occur.



NOTICE


This function can replace the control thermostat, which is required on the plant.

It does not replace a safety thermostat.

5.7 Manual Control

 Press key MANUAL to move the regular firing rate input of the firing rate controller.

  Press the keys 2 and 3 to variegate the burner firing rate.

 Press key MANUAL again to cancel firing rate controller.

It is also possible to switch the ETAMATIC V to "Manual Control" with the terminals. By short-circuiting the Pt100 signal (e.g. bridge terminal 19 and 20) the burner firing rate controller is switched off. The fuel/air ratio controller then directly follows the input at the default firing rate input. The display shows LE instead of HA.

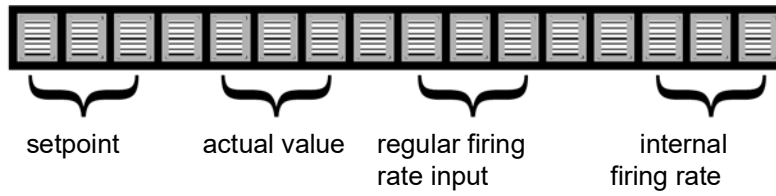
NOTICE

Only use manual control while monitoring the system.

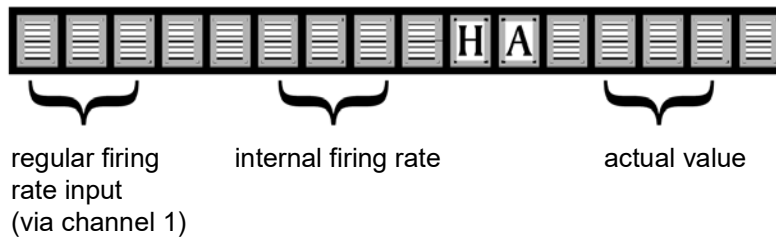
5 Internal Burner Firing Rate Controller

5.8 Meaning of the Display

Display in "FIRING RATE" switch position



Display in mode "MANUAL"



6 Appendix

6.1 Mode Abbreviations Used



Fig. 6-1 Status display at customer interface



Fig. 6-2 Display at programming unit

Short text	Description
BE	→ READY (signal on terminal 58)
ZÜ	→ IGNITION POSITION or IGNITION
EZ	→ SETTING/IGNITION position (same as IGNITION, but ETAMATIC V on SETTING)
GL	→ BASE FIRING RATE
EG	→ SETTING/BASE FIRING RATE" (as BASIC FIRING RATE, but ETAMATIC V on SETTING)
NA	→ POST-PURGE
AU	→ BURNER OFF (no signal present)
EL	→ SETTING
SL	→ CLEAR MEMORY
EV	→ SETTING/PRE-PURGE" (as "PRE-PURGE", but ETAMATIC V on SETTING)
ES	→ SETTING/CONTROL (as AUTOMATIC but ETAMATIC V on SET)
ST	→ FAULT
VO	→ PRE-PURGE
HA or Hand	→ MANUAL MODE (burner efficiency may be adjusted manually)
no display	→ Burner set to AUTOMATIC during OPERATION
LE	→ EXTERNAL FIRING RATE (firing rate controller disabled by digital input)
C	Optimisation with increasing firing rate
c	Optimisation with decreasing firing rate

6.2 Fault Codes

NOTICE

The LAMTEC burner controls use different methods to detect fault messages between main processor and watchdog processor:

BT300/ETAMATIC/FMS/VMS/FA1:

The bus transmission does not generally use different fault numbers to distinguish between watchdog processor and main processor faults. In order to distinguish the main processor fault messages from the watchdog processor fault messages, an offset of 10000 is added to the watchdog processor faults. The main processor fault message H002 becomes the watchdog processor fault message U10002.

CMS:

CMS allocates different fault numbers to main processor and watchdog processor faults. An offset is not necessary.

Fault Code No.	Restart according to		Description
	TRD	EN676	
001	0	3	Ignition flame does not appear.
002	0	0	parasitic light failure
003	0	3	Flame fault during ignition
004	1	1	Flame fault during operation
005	0	3	Flame signal does not appear during 1st safety time
006	0	3	Flame signal goes out during stabilising time
007	0	3	The flame signal extinguishes during the first safety time
008	0	0	The flame signal extinguishes during the second safety time
009	0	0	Flame signal does not appear during safety time
010	0	0	Flame signal goes out immediately after ignition
141	0	0	Potentiometer faulty, feedback changing too quickly: channel 1
142	0	0	Potentiometer faulty, feedback changing too quickly: channel 2
143	0	0	Potentiometer faulty, feedback changing too quickly: channel 3
144	0	0	Potentiometer faulty, feedback changing too quickly: channel 4
161	>88	3	Monitoring direction of rotation: channel 1
162	>88	3	Monitoring direction of rotation: channel 2
163	>88	3	Monitoring direction of rotation: channel 3
164	>88	3	Monitoring direction of rotation: channel 4
171	>88	3	Dead band over range too long: channel 1
172	>88	3	Dead band over range too long: channel 2
173	>88	3	Dead band over range too long: channel 3
174	>88	3	Dead band over range too long: channel 4
181	>88	3	Dead band under range too long: channel 1
182	>88	3	Dead band under range too long: channel 2
183	>88	3	Dead band under range too long: channel 3
184	>88	3	Dead band under range too long: channel 4
191	1	1	1st monitoring band over range too long: channel 1
192	1	1	1st monitoring band over range too long. Channel: 2

6 Appendix

Fault Code No.	Restart according to		Description
	TRD	EN676	
193	1	1	1st monitoring band over range too long. Channel: 3
194	1	1	1st monitoring band over range too long. Channel: 4
201	1	1	1st monitoring band under range too long. Channel: 1
202	1	1	1st monitoring band under range too long. Channel: 2
203	1	1	1st monitoring band under range too long. Channel: 3
204	1	1	1st monitoring band under range too long. Channel: 4
211	0	0	2nd monitoring band over range too long. Channel: 1
212	0	0	2nd monitoring band over range too long. Channel: 2
213	0	0	2nd monitoring band over range too long. Channel: 3
214	0	0	2nd monitoring band over range too long. Channel: 4
221	0	0	2nd monitoring band under range too long. Channel: 1
222	0	0	2nd monitoring band under range too long. Channel: 2
223	0	0	2nd monitoring band under range too long. Channel: 3
224	0	0	2nd monitoring band under range too long. Channel: 4
231	>88	3	Fuel/air ratio control blocked: channel 1
232	>88	3	Fuel/air ratio control blocked: channel 2
233	>88	3	Fuel/air ratio control blocked: channel 3
234	>88	3	Fuel/air ratio control blocked: channel 4
320	1	1	Broken wire at correction input
321	1	1	Broken wire at feedback channel 1
322	1	1	Broken wire at feedback channel 2
323	1	1	Broken wire at feedback channel 3
324	1	1	Broken wire at feedback channel 4
351	1	1	Different status of ignition position relay
360	0	0	Shut down from O ₂ controller (1) or CO controller (2) :
S362	1	1	Carry out burner servicing
363	1	1	permissible O ₂ value was fallen below
371	0	0	Output for internal firing rate faulty
392	0	0	Remote not responding (time-out)
393	0	0	Remote shut down triggered.
451	1	1	Ignition position was left in ignition mode. Channel: 1
452	1	1	Ignition position was left in ignition mode. Channel: 2
453	1	1	Ignition position was left in ignition mode. Channel: 3
454	1	1	Ignition position was left in ignition mode. Channel: 4
542	0	0	TRIAC selftest : main gas 1 is currentless
543	0	0	TRIAC selftest: main gas 2 is currentless
544	0	0	TRIAC selftest : oil pump is currentless
545	0	0	TRIAC selftest : oil valve is currentless
546	0	0	TRIAC selftest : Ignition transformer is currentless
547	0	0	TRIAC selftest : ignition valve is currentless
550	0	0	Oil fuel blocked because a required solenoid valve is not connected
551	0	0	Gas fuel blocked because a required solenoid valve is not connected

6 Appendix

Fault Code No.	Restart according to		Description
	TRD	EN676	
600	0	0	Programme check time of sequencer expired.
601	0	0	Leak check fault: gas pressure still applied.
602	0	0	Leak check fault: gas pressure missing.
603	0	0	Vent gas line manually.
605	>88	3	Oil pressure < min !!!
606	1	1	Gas > min appears in oil operation.
608	0	0	Boiler safety chain dropping.
609	1	1	Gas safety chain dropping.
610	>88	3	Oil safety chain dropping.
611	>88	3	Gas pressure too low
612	1	0	Gas pressure too high.
613	0	0	Air pressure signal missing.
616	1	1	Ignition flame goes out in standby operation
617	1	1	Continuous ignition flame goes out under operation
623	0	0	Atomizer switch-ON-pre-period not kept
624	>88	3	Oil pressure too low
625	>88	3	Oil pressure too high
626	>88	3	Atomizer air pressure too low
702	0	0	Flame signal appears during pre-ventilating.
711	0	0	Illegal operating mode change
713	0	0	Incorrect signal combination in operating mode AU
714	0	0	Incorrect signal combination in operating mode BE
715	0	0	Incorrect signal combination in operating mode VO
716	0	0	Incorrect signal combination in operating mode ZP
717	0	0	Incorrect signal combination in operating mode ZU
719	0	0	Fuel valves open too long without flame
720	0	0	Ignition transformer switched on too long
721	0	0	Ignition valve open too long
723	0	0	Ignition process taking too long
724	0	0	Gas valves open when burning oil
725	0	0	Oil valves open when burning gas
726	0	0	Main gas 2 open without main gas 1
727	0	0	Main gas 1 illegally open
728	0	0	Main gas valves and ignition valve open too long
729	0	0	Ignition process taking too long (without pilot burner)
731	0	0	Ignition valve opened without ignition burner
732	0	0	Incorrect signal combination during operation
733	0	0	Incorrect signal combination after operation
734	0	0	Pre-ventilating time not complied with
736	0	0	Leak check: both gas valves open
737	0	0	Seal tightness check: Main Gas 2 delayed for too long at deactivation.
738	0	0	Leak check: main gas 2 missing
739	0	0	Seal tightness check: Main Gas 2 open for too long.

6 Appendix

Fault Code No.	Restart according to		Description
	TRD	EN676	
740	0	0	Seal tightness check: Main Gas 1 leaky.
741	0	0	Seal tightness check: Main Gas 1 open for too long.
742	0	0	Seal tightness check: Main Gas 2 leaky.
743	0	0	Flame monitoring: flame after-burn too long
744	0	0	Flame monitoring: flame on again
745	0	0	Programme check time exceeded.
747	0	0	Leak check: ventilating into boiler not allowed
750	0	0	Shut-down on faults via bus.
751	>88	3	No data transfer via the bus (time-out).
764	1	1	CO-Controller, internal fault no. -
889	0	0	Time interval between remote-fault-resets is too short.
904	1	1	Error in reference of firing rate
911	1	1	Error in reference, channel: 1
912	1	1	Error in reference, channel: 2
913	1	1	Error in reference, channel: 3
914	1	1	Error in reference, channel: 4
921	0	0	Relay driver self-test : output terminal 11 or 66 (ETAMATIC) faulty.
922	0	0	Relay driver self-test : output terminal 16 or 65 (ETAMATIC) faulty.
923	0	0	Relay driver self-test : output terminal 43 or 68 (ETAMATIC) faulty.
924	0	0	Relay driver self-test : output terminal 67 faulty
925	0	0	Relay driver self-test : output terminal 45 faulty.
926	0	0	Relay driver self-test : output terminal 68 or 61 (ETAMATIC) faulty.
927	0	0	Relay driver self-test : output terminal 36 (ETAMATIC K202) faulty.
929	0	0	Relay driver self-test : output terminal 76 faulty
930	0	0	Relay driver self-test : Output K203 defect.
931	0	0	Relay driver self-test : Output K201 defect.

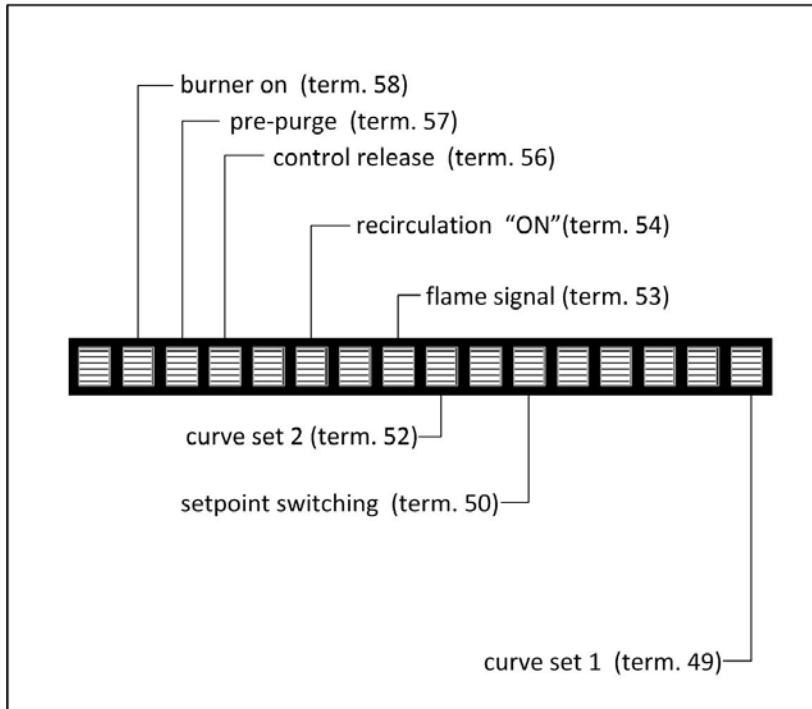
NOTICE

In case of a fault message occurring which is not mentioned in this fault code list please refer to the burner manufacturer or commissioner of the plant.

6.3 Calling Up the Condition of the Digital Inputs

→ ← Switch to "digital inputs" with keys 16 and 17

Meaning of the digital inputs of the ETAMATIC V



↑ = Signal applies
— = Signal does not apply

6 Appendix

6.4 Back View

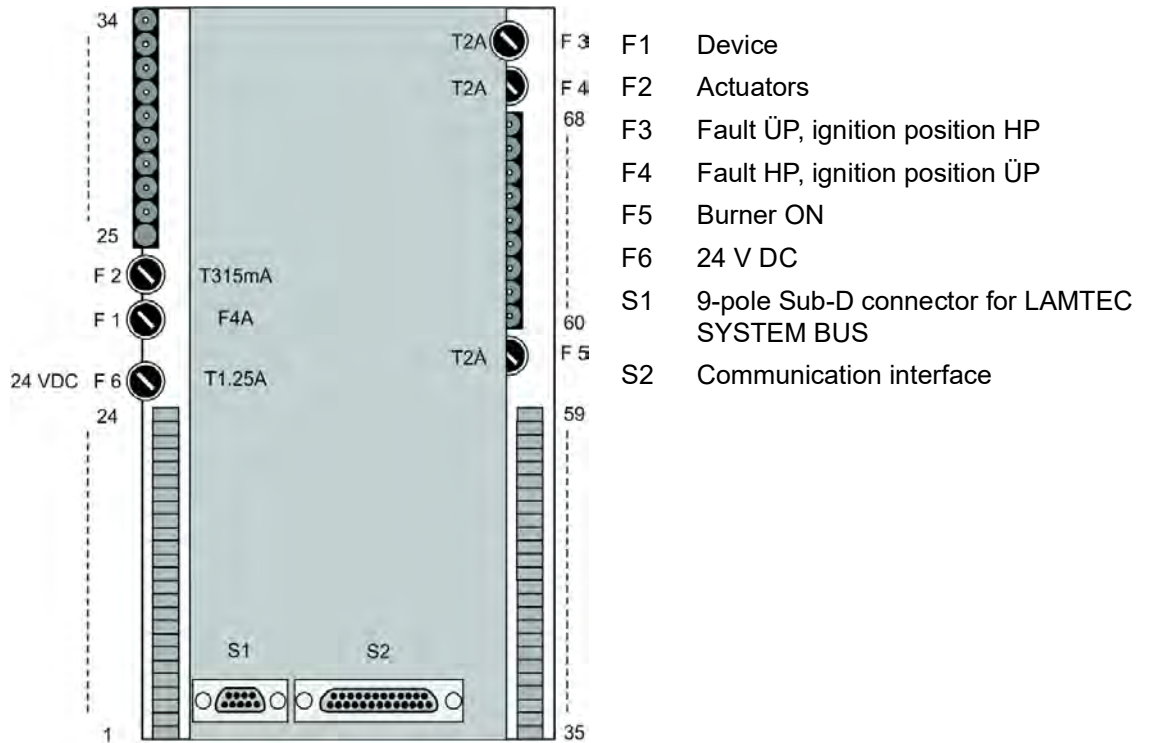


Fig. 6-3 Back view ETAMATIC V

NOTICE

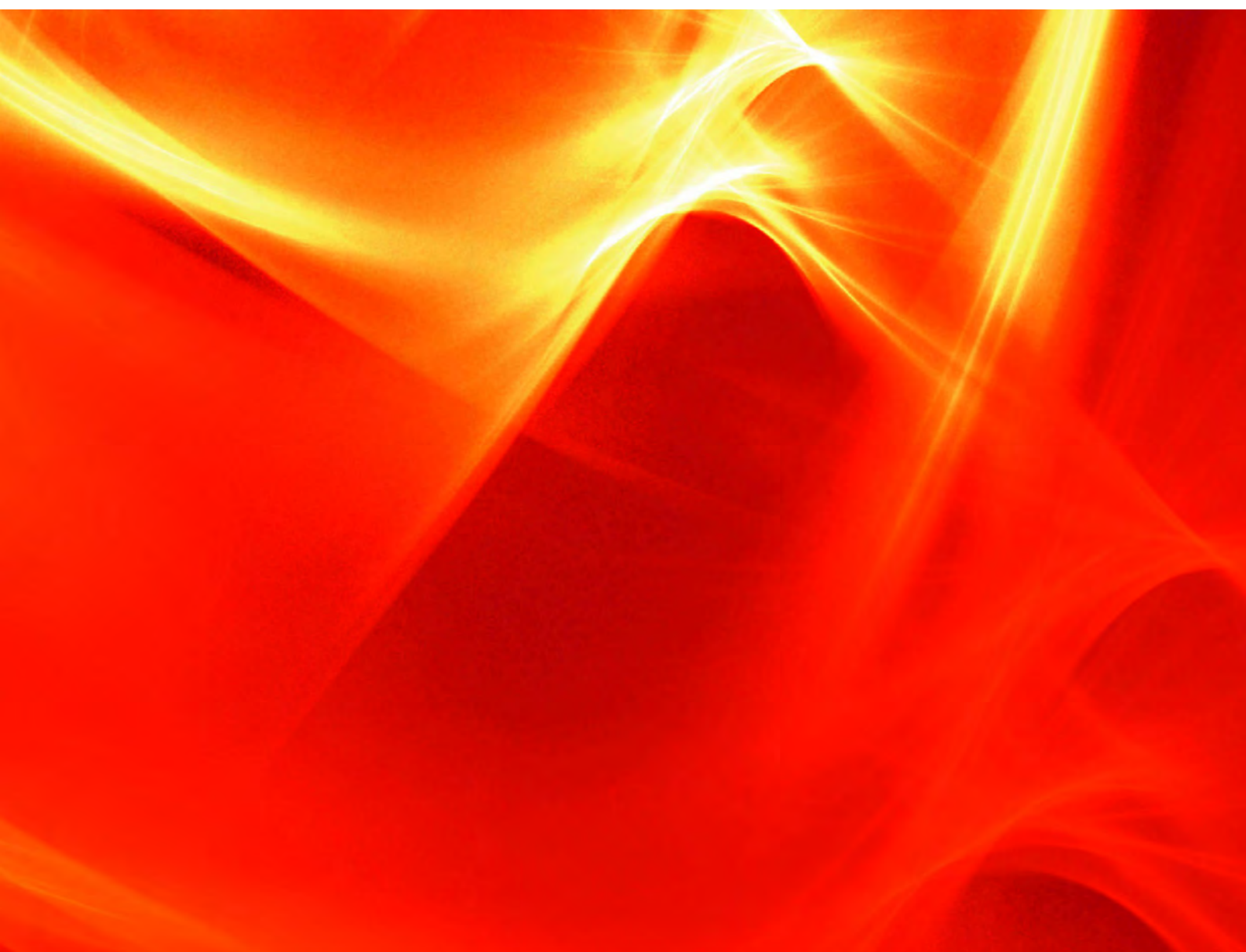
PC connection only possible via LAMTEC interface adapter!

NOTICE

When replacing fuses F3, F4, F5, the following specifications must be observed:

- 2 A slow
- High breaking capacity according to IEC 60127-2, Sheet 5: 1500A @ 250VAC
- Melting Integral $I^2t < 40 \text{ A}^2\text{s}$
- e.g. Littelfuse 0215002.(M)XP

Fuses that fulfill these requirements are ceramic tube fuses with the marking T2AH 250V.



The information in this publication is subject to technical changes.



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