SIEMENS

Presentation example PME7

Presentation example LME7

PME71.401Ax

Program module for burner control LME71.000Ax

User Documentation

Application:

- 1-stage or 2-stage, direct ignited forced draft burners
- E.g. for burners to EN 676

The PME7 and this User Documentation are intended for use by OEMs which integrate the LME7 with PME7 in their products.

☞ Note!
This documentation is only valid together with LME7 Basic Documentation (P7105)!

Software version V02.03

Smart Infrastructure

CC1A7105.3en
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Contents

1 Supplementary documentation

Product type	Designation	Type of documentation	Documentation number
LME	Burner control	Environmental Product Declaration	E7105 *)
PME	Program module	Environmental Product Declaration	E7105.1 *)
LME7	Burner control	Product Range Overview	N7105
LME	Burner control	Environmental Product Declaration	Q7101
LME7	Burner control	Data Sheet	P7105

*) On request only

Note
This document only refers to the product type – not the *product designation*. See the table below for details.

Product type	Product designation
ACS410	PC software
AZL2	Display and operating unit
ION	Ionization probe
LME7	Burner control
QRA	UV flame detector
QRB	Photo resistive detector
QRC	Blue-flame detector
PME7	Program module

2 Warning notes

Warning!
The safety, warning and technical notes given in the Basic Documentation on the LME7 (P7105) apply fully to the present document also!

To avoid injury to persons, damage to property or the environment, the following warning notes must be observed!

The LME7 are safety devices! Do not open, interfere with or modify the unit. Siemens does not assume responsibility for damage resulting from unauthorized interference!

Warning!
On the OEM access level of the LME7, it is possible to make parameter settings that differ from application standards. When setting the parameters, it is important to ensure that the application will run safely in accordance with legal requirements. Failure to observe this information poses a risk of damaging the safety functions.

Warning!
Risk of damage to the switching contacts!
If the external primary fuse (Si) is blown due to overload or short-circuit at the terminals, the LME7 must be replaced.

3 Typographical conventions

Safety notes

This User Documentation contains notes which must be observed to ensure your personal safety and to protect the product and the connected equipment.
The instructions and notes are highlighted by warning triangles or a hand symbol and are presented as follows, depending on the hazard level:

⚠	**Warning**	means that death, severe personal injury or substantial damage to property **can** occur if adequate precautionary measures are not taken
☞	**Note**	draws your attention to **important information** on the product, on product handling, or to a special part of the documentation

Qualified personnel

Only **qualified staff** are allowed to install and operate the equipment. Qualified staff in the context of the safety-related notes contained in this document are persons who are authorized to commission, ground and tag devices, systems and electrical circuits in compliance with established safety practices and standards.

Correct use

Note the following:

The device may only be used on the applications described in the technical documentation and only in connection with devices or components from other suppliers that have been approved or recommended by Siemens.

The product can only function correctly and safely if shipped, stored, set up and installed correctly, and operated and maintained as specified.

4 Program sequence PME71.401Ax

→ For fuel trains **G**

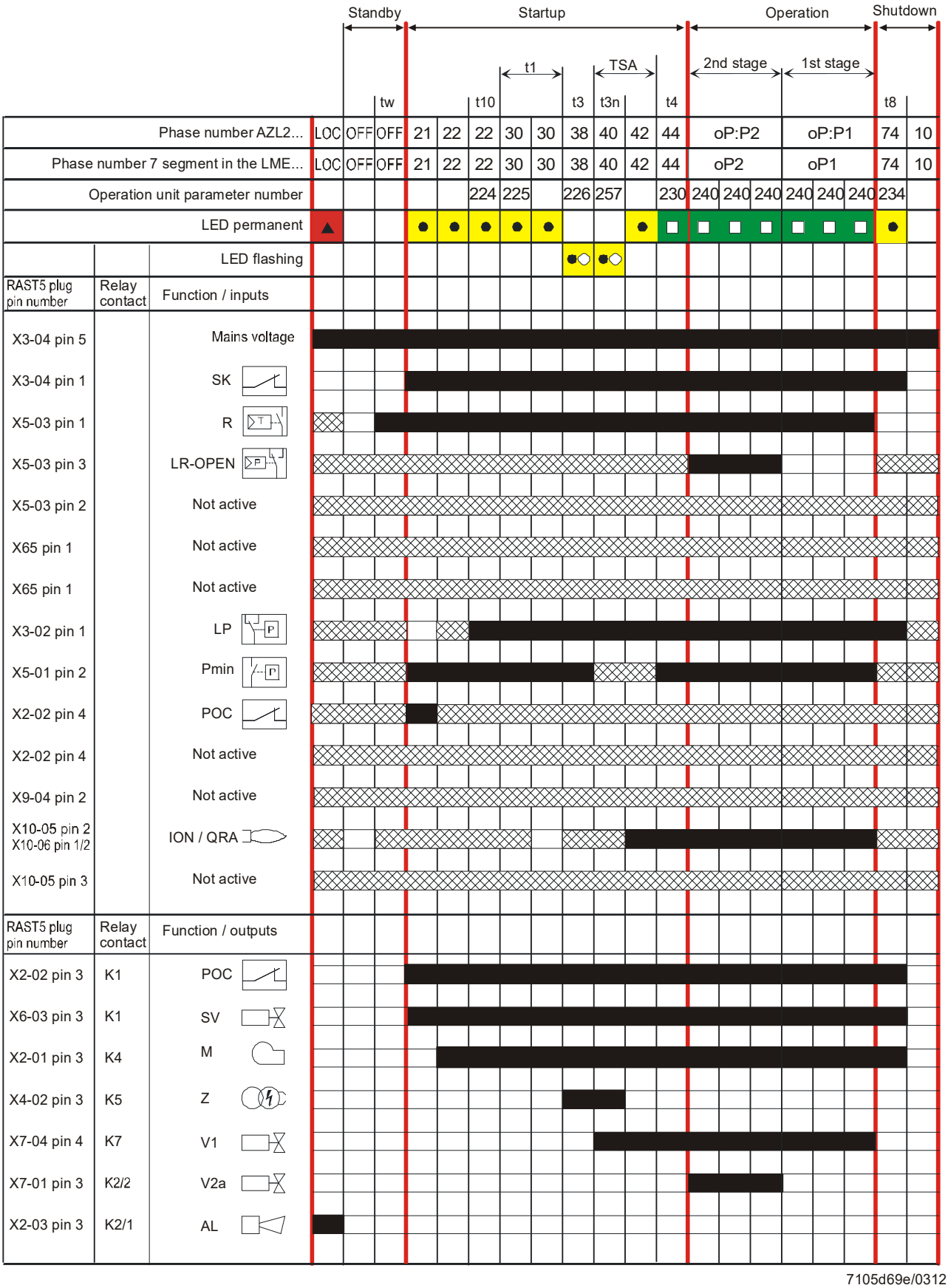

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Figure 1: Program sequence for fuel trains **G**

5 List of phase display

Phase number of display		LED	Function
7-segment	AZL2		
LOC	LOC	Red	Lockout phase
Standby			
OFF	OFF	OFF	Standby, waiting for heat request
P08	Ph08	OFF	Power ON/test phase (e.g. detector test)
Startup			
P21	Ph21	Yellow	Safety valve ON, air pressure switch in no-load position Test if POC closed (timeout/lockout after 5 seconds)
P22	Ph22	Yellow	Part 1: Fan motor ON Part 2: Specified time air pressure switch Message (timeout), stabilization air pressure switch
P30	Ph30	Yellow	Part 1: Prepurge time without extraneous light test Part 2: Prepurging with extraneous light test (2.1 seconds)
P38	Ph38	Yellow	Preignition time
P40	Ph40	Yellow flashing	Postignition time
P42	Ph42	Green	Flame detection
P44	Ph44	Green	Interval: End of safety time and load controller release
Operation			
oP1	oP:P1	Green	Operation (first stage)
oP2	oP:P2	Green	Operation (second stage)
Shutdown			
P10	Ph10	OFF	Home run
P74	Ph74	Yellow	Postpurge time
Safety shutdown phases			
P01	Ph01	Yellow / red	Under voltage / over voltage
P02	Ph02	Yellow	Safety shutdown (e.g. open safety loop) → Non-volatile lockout
P04	Ph04	Green / red	Extraneous light in standby
P90	Ph90	Yellow	Gas pressure switch-min open → safety shutdown and start prevention

6 Fuel trains (examples)

6.1 Gas direct ignition (G), 1-stage

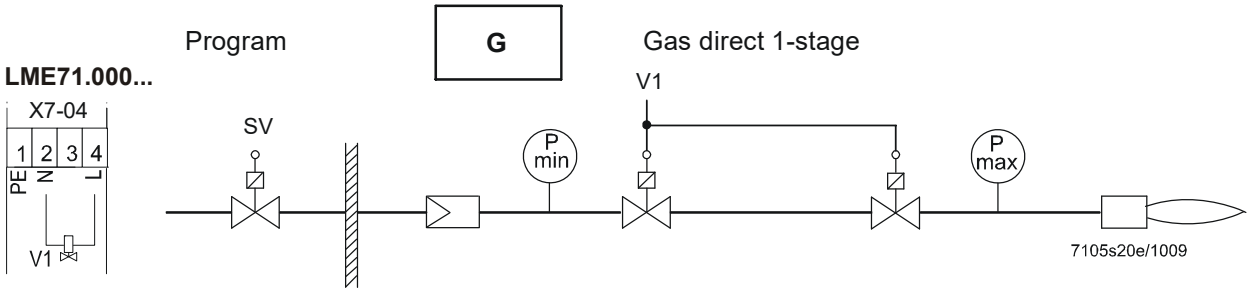

Figure 2: Fuel train gas direct ignition (G), 1-stage

6.2 Gas direct ignition (G), 2-stage

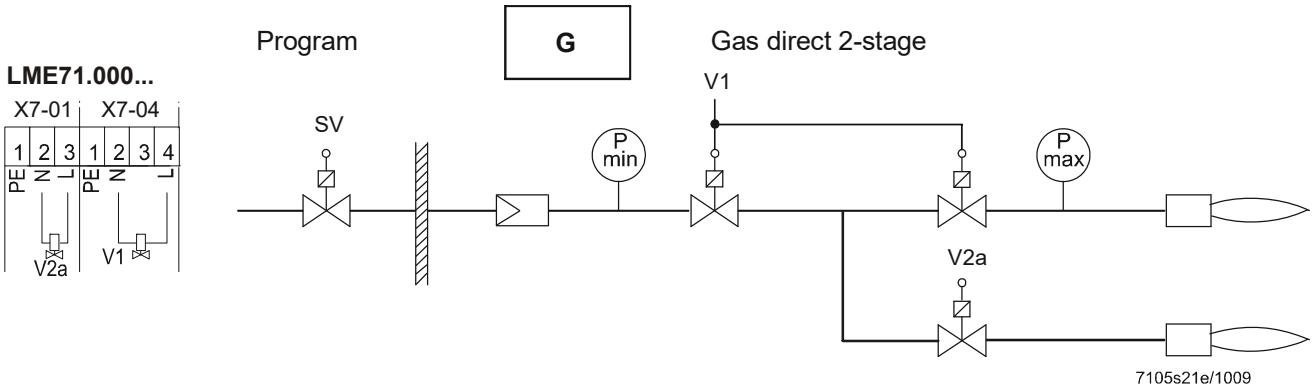

Figure 3: Fuel train gas direct ignition (G), 2-stage

7 Input gas pressure switch-min

Behavior in the event gas pressure switch-min fails (terminal X5-01 pin 2 and 3)

If gas pressure switch-min fails, safety shutdown is triggered and startup prevented until gas pressure switch-min closes again. During start prevention, the yellow LED is lit and the safety circuit is active. The LME7 is in phase 90.

8 Time table and settings

Type	Times in seconds										
PME71.401Ax	tw	TSA max.	t1 P225 min.	t3 P226 min.	t3n P257 approx.	t4 P230 min.	t8 P234 min.	t10 P224 approx.	1)	2)	3)
Requirements	2.5	3	30	2	2.5	8	0	15	---	---	---
Factory setting	---	t3n+0.45	29.106+2.1	2.058	2.205+0.3	8.232	0	13.818	---	---	---
Max.	2.5	14	1237+2.1	37.485	13.23+0.3	74.97	1237	13.818	1	0.45	0.45
Min.	---	---	0+2.1	1.029	0+0.3	3.234	0	0	0.3	0.3	---
Step size	---	---	4.851	0.147	0.147	0.294	4.851	0.254	---	---	---

Parameter number	Function	Factory setting
240	Restart in the event of loss of flame during operation 0 = none 1 = none 2: 1 x restart	0

Legend

tw	Waiting time
TSA	Safety time
t1	Prepurge time
t3	Preignition time
t3n	Postignition time parameter 257 +0.3 seconds
t4	Interval: End of safety time - load controller release
t8	Postpurge time
t10	Specified time air pressure switch message (timeout)

1)	Reaction time to a change of signal by the air pressure switch contact (opens) and flame-out response time in the event of loss of flame
2)	Reaction time to a change of signal by the inputs (e.g. pressure switch-min)
3)	Flame detection time

9 Inputs and outputs / internal connection diagram

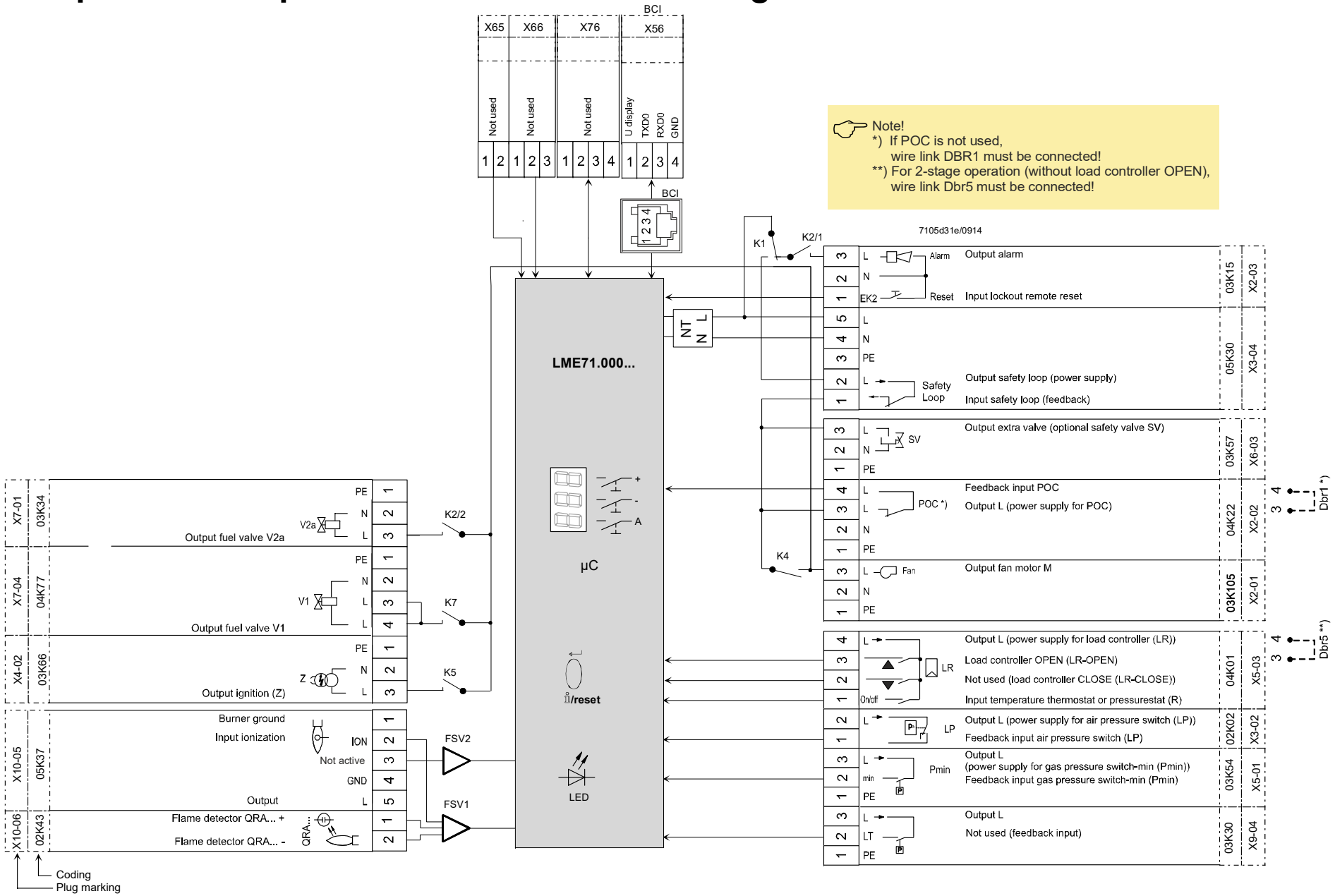

Figure 4: Inputs and outputs / internal connection diagram

10 Parameter list (AZL2)

Abbreviations for password level:	
HF	Heating engineer
OEM	Manufacturer of the original product

Parameter number	Parameter	Edit	Value range Min.	Value range Max.	Increment	Factory setting	Password level reading from level	Password level writing from level
000	**Internal parameter**							
41	Heating engineer (HF) password (4 characters)	Edit	xxxx	xxxx	---	---	---	OEM
42	OEM's password (5 characters)	Edit	xxxxx	xxxxx	---	---	---	OEM
60	Backup/restore	Edit	---	---	---	---	---	SO
100	**General**							
102	Identification date	Read only	---	---	---	---	Info	---
103	Identification number	Read only	0	9999	1	0	Info	---
113	Burner identification	Edit	x	xxxxxxxx	1	---	Info	SO
140	Mode display for the 7-segment display 1 = standard (program phase) 2 = flame 1 (QRA/ION) 3 = flame 2 (QRB/QRC) ⇨ not used 4 = active power (power value)	Edit	1	4	1	1	SO	SO
164	Number of startups resettable	Resettable	0	999999	1	0	Info	Info
166	Total number of startups	Read only	0	999999	1	0	Info	---
170.00	Switching cycles relay contact K12	Read only	0	99999999	1	0	Info	---
170.01	Switching cycles relay contact K11	Read only	0	99999999	1	0	Info	---
170.02	Switching cycles relay contact K2	Read only	0	99999999	1	0	Info	---
170.03	Switching cycles relay contact K1	Read only	0	99999999	1	0	Info	---
171	Signaling of “Switching cycle exceeded” for one of the relay contact counters (parameters 170.00 to 170.03) → not active	Read only	0	99999999	1	1000000	Info	---
200	**LME7 burner control**							
224	Specified time air pressure switch	Edit	0 s	13.818 s	0.294 s	13.18 s	SO	OEM
225	Prepurge time +2.1 seconds	Edit	0 s	1237 s	4.851 s	29.106 s	SO	OEM
226	Preignition time	Edit	1.029 s	37.485 s	0.147 s	2.058 s	SO	OEM
230	Interval (t4): End of safety time - load controller release	Edit	3.234 s	74.97 s	0.294 s	8.232 s	SO	OEM
234	Postpurge time	Edit	0 s	1237 s	4.851 s	0	SO	OEM
240	Restart in the event of loss of flame during operation 0: None 1: None 2: 1 x restart	Edit	0	2	1	0	SO	OEM
257	Postignition time +0.3 seconds	Edit	0 s	13.23 s	0.147 s	2.205 s	SO	OEM

Parameter number	Parameter	Edit	Value range Min.	Value range Max.	Increment	Factory setting	Password level reading from level	Password level writing from level
700	**Error history**							
701	Current error: 00: Error code 01: Startup meter reading 02: HMI phase 03: Power value	Read only	 2 0 --- 0%	 255 999999 --- 100%	 1 1 --- 1	---	Service	---
702	Latest error in the history 00: Error code 01: Startup meter reading 02: HMI phase 03: Power value	Read only	 2 0 --- 0%	 255 999999 --- 100%	 1 1 --- 1	---	Service	---
• • •								
711	Oldest error in the history 00: Error code 01: Startup meter reading 02: HMI phase 03: Power value	Read only	 2 0 --- 0%	 255 999999 --- 100%	 1 1 --- 1	---	Service	---
900	**Process data**							
936	Normalized speed	Read only	0%	100%	0,01%	---	Service	---
951	Mains voltage	Read only	0 V	LME71.000A1: 175 V LME71.000A2: 350 V	1 V	---	Service	---
954	Flame intensity	Read only	0%	100%	1%	---	Service	---

11 Error code list

Error code		Clear text	Possible cause
AZL2	**LED display** (alternating)		
Loc: 2	Loc 2	No establishment of flame at the end of safety time	• Faulty or soiled fuel valves • Defective, soiled or incorrectly connected flame detector • Poor adjustment of burner, no fuel • Faulty ignition equipment
Loc: 3	Loc 3	Air pressure faulty (air pressure switch welded in no-load position, decrease to specified time (air pressure switch flame-on response time)	Air pressure switch faulty • Loss of air pressure signal after specified time • Air pressure switch has welded in no-load position
Loc: 4	Loc 4	Extraneous light	Extraneous light during burner startup
Loc: 5	Loc 5	Air pressure faulty, air pressure switch welded in working position	Time supervision air pressure switch • Air pressure switch has welded in working position
Loc: 7	Loc 7	Loss of flame	Too many losses of flame during operation (restart limitation) • Faulty or soiled fuel valves • Faulty or soiled flame detector • Poor adjustment of burner
Loc: 8	Loc 8	Free	Free
Loc: 9	Loc 9	Free	Free
Loc: 10	Loc 10	Non-volatile lockout with alarm output switched on at terminal X2-03 pin 3 (fault lamp ON)	Wiring error or internal error, other errors
Loc: 10	Loc 10	Non-volatile lockout with alarm output switched off at terminal X2-03 pin 3 (fault lamp OFF)	Output contact error (welded contact of an output relay)
Loc: 14	Loc 14	POC error	Error valve closure control POC
Loc: 22	Loc 22	Safety loop open	• Gas pressure switch-max open • Safety limit thermostat cut out
Loc: 138	Loc 138	Restore process successful	Restore process successful
Loc: 139	Loc 139	No PME7 detected	No PME7 plugged in
Loc: 167	Loc 167	Manual locking	Manual locking
Loc: 206	Loc 206	AZL2 incompatible	Use the latest version

Error code		Clear text	Possible cause
AZL2	**LED display** (alternating)		
rSt Er1	rSt Er1	Error in compatibility between PME7 and LME7 during restore process	Program sequence of PME7 does not match the LME7
rSt Er2	rSt Er2	Error in compatibility between PME7 and LME7 during restore process	LME7 hardware does not match the PME7
rSt Er3	rSt Er3	Error during restore process	• PME7 faulty • PME7 removed during restore process
bAC Er3	bAC Er3	Error in compatibility between PME7 and LME7 during backup process	Program sequence of PME7 does not match the LME7
Err PrC	Err PrC	Error in PME7	• Data content of the PME7 defective • No PME7 plugged in

12 Legend

AL	Alarm device
 /reset (EK1)	Lockout reset button (info button)
EK2	Remote lockout reset button
FSV	Flame signal amplifier
ION	Ionization probe
Kx	Relay contact
LED	3-color signal lamp
LP	Air pressure switch
LR	Load controller
LR-OPEN	Load controller OPEN position
LR-CLOSED	Load controller CLOSED position
M	Fan motor
NT	Power supply unit
Pmax	Pressure switch-max
Pmin	Pressure switch-min
POC	Valve closure control (proof of closure)
QRA	Flame sensor
R	Control thermostat or pressurestat
SK	Safety Loop
SV	Safety valve
V1	Fuel valve
V2a	Fuel valve
Z	Ignition transformer
	Input/output signal 1 (ON)
	Input/output signal 2 (OFF)
	Permissible signal 1 (ON) or 0 (OFF)

13 List of figures

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