



บริษัท เอดีดี เฟอร์เนส จำกัด

ADD FURNACE CO.,LTD.

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SIEMENS

7₁₀₅



Burner controls LME7...

The LME7... is a microprocessor-based burner control with matching system components for the control and supervision of forced draft burners of medium to high capacity.

The LME7... and this Data Sheet are intended for use by OEMs which integrate the burner controls in their products.

Use

LME7... are used for the startup and supervision of multistage or modulating forced draft burners and atmospheric gas burners in intermittent operation

The fuel-air ratio can be set either via an air damper actuator - acting on mechanical or pneumatic ratio control - or via pulse width modulated fans and pneumatic ratio control.

The flame supervision supervised with ionization probe, with UV flame detector QRA2..., QRA4.U, QRA10..., with photocell detector QRB... or blue flame detector QRC...

- Gas burner controls to EN298: 2003
- Oil burner controls to EN230: 2005
- For gas forced draft burners to EN676
- For oil burners with fan to EN267

Features

- Burner control
- BCI for connection a display or PC
- Lockout reset button (info button)
- 3 multi color signal lamp LED for operations and fault notifications
- Optional: Analog inputs for load controller DC 0...10 V, DC 0/4...20 mA, 0...135 Ω
- Connection for program module PME...
- Unit parameter adjustable either via display or PC software ACS410
- Optional: 3 x 7 segment display for fault and state information's and parameter display

Building Technologies Division
Industry Sector



Notes



Caution!

All safety, warning and technical notes given in the Basic Documentation of the LME7... (P7105) also apply to this document!

Standards and certificates



Conformity to EEC directives

- Electromagnetic compatibility EMC (immunity)
- Directives for gas-fired appliances
- Low-voltage directive

2004/108/EC
90/396/EEC
2006/95/EC



ISO 9001: 2010
Zert. 00739



ISO 14001: 2010
Zert. 38233



Identification code to EN 298 chapter 4

- PME71.401...: F M C L J N
- PME71.402...: F B C L J N
- PME71.901...: F M C L G N
- PME72.521...: F M L L X N
- PME72.541...: F B L L X N
- PME73.810...: F M C L J N
- PME73.820...: F M C L J N
- PME73.830...: F B C L J N
- PME73.840...: F B C L J N

Life cycle

Burner controls LME7... has a designed lifetime* of 250,000 burner startup 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 field). 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 the burner controls according to the manufacturer's Data Sheet and Basic Documentation. After reaching the designed lifetime in terms of the number of burner startup cycles, or the respective time of usage, the burner control is to be replaced by authorized personnel.

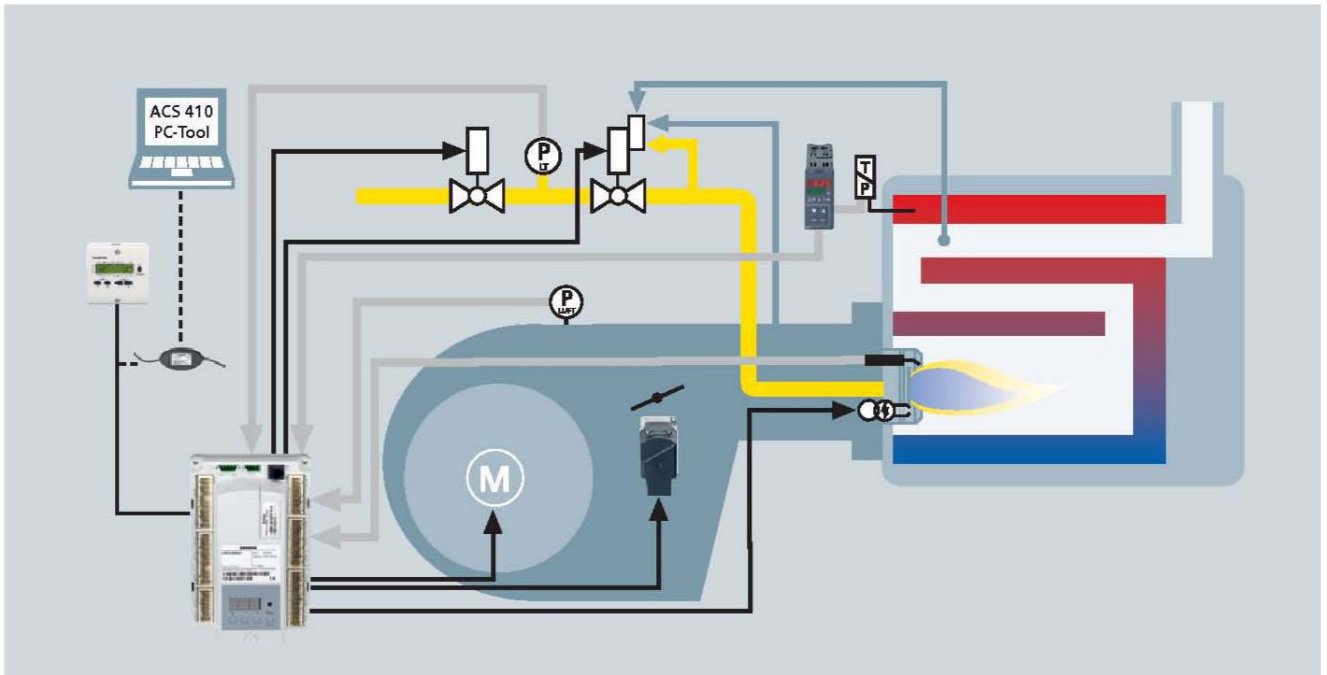
* The designed lifetime is not the warranty time specified in the Terms of Delivery

Supplementary documentation

Environmental Product Declaration LME...	E7105
Basic Documentation LME7...	P7105
Product Overview LME...	Q7101



System overview



The diagram shows the full scope of functions of the LME7... system. The correct functions are to be determined based on the respective execution / configuration.

Ordering

Burner controls

LME7...

Parameterized burner controls for the supervision of multi-stage or modulating oil gas / forced draft burners and atmospheric burners of medium to higher capacity, in intermittent operation. With controlled air damper control. Refer to Basic Documentation P7105



Type reference	LME71.000 A1	LME71.000 A2	LME72.000 A2	LME73.000 A1	LME73.000 A2
Mains voltage AC 120 V	X	---	---	X	---
Mains voltage AC 230 V	---	X	X	---	X
Pressure switch-min-gas / POC	X	X	X	X	X
Pressure switch valve proving	X	X	X	X	X
Air pressure switch	X	X	X	X	X
QRB... / QRC... / ionization probe	X	X	X	X	X
QRA2... / QRA4.U / QRA10...	X	X	---	X	X
Load controller analog input signal (0...10 V, 4...20 mA, 0...135 Ω)	X	X	---	X	X
Load controller input 3-position step input / 2-stage	X	X	X	X	X
Output actuator control	---	---	X	X	X
Input feedback for actuator with potentiometer 0...1 kΩ	---	---	---	X	X
Output PWM control	X	X	X	X	X
Internal LED 7-segment display	X	X	---	X	X
BC interface bus for AZL2...	X	X	X	X	X



Ordering (cont'd)

Program module

PME7...

Program module for LME7...

With program sequences oil or gas burners for LME7...

basic unit

Refer to Basic Documentation P7105



PME7... with mains voltage AC 120 V

Type reference	PME71.401 A1	PME71.402 A1	PME71.901 A1	PME73.81 0A1	PME73.820 A1	PME73.830 A1	PME73.840 A1
For operation with LME71.000A...	X	X	X	---	---	---	---
For operation with LME72.000A...	---	---	---	---	---	---	---
For operation with LME73.000A...	---	---	---	X	X	X	X
Gas program forced draft burner	X	X	X	X	X	X	X
Gas program atmospheric burner	---	---	---	---	---	---	---
1-stage / 2-stage or 1-stage modulating	X	X	X	X	X	X	X
Pilot burner intermittent / interrupt	---	X	---	---	---	X	X
Modulating via actuator (pneumatically, mechanical gas-air-ratio control	---	---	X	X	X	X	X
Actuator control via analog signal / 3-position step signal for actuator with potentiometer	---	---	---	X	---	X	---
3-position step signal for actuator without potentiometer	---	---	---	---	X	---	X
Control sequence programmable time	X	X	X	X	X	X	X
POC	X	X	---	X	X	X	X
Valve proving	---	---	X	X	X	X	X

PME7... with mains voltage AC 230 V

Type reference	PME71.401 A2	PME71.402 A2	PME71.901 A2	PME72.521 A2	PME72.541 A2	PME73.810 A2	PME73.820 A2	PME73.830 A2	PME73.840 A2
For operation with LME71.000A...	X	X	X	---	---	---	---	---	---
For operation with LME72.000A...	---	---	---	X	X	---	---	---	---
For operation with LME73.000A...	---	---	---	---	---	X	X	X	X
Gas program forced draft burner	X	X	X	X	X	X	X	X	X
Gas program atmospheric burner	---	---	---	---	---	---	---	---	---
1-stage / 2-stage or 1-stage modulating	X	X	X	X	X	X	X	X	X
Pilot burner intermittent / interrupt	---	X	---	---	X	---	---	X	X
Modulating via actuator (pneumatically, mechanical gas-air-ratio control	---	---	X	X	X	X	X	X	X
Actuator control via analog signal / 3-position step signal for actuator with potentiometer	---	---	---	---	---	X	---	X	---
3-position step signal for actuator without potentiometer	---	---	---	X	X	---	X	---	X
Control sequence programmable time	X	X	X	---	---	X	X	X	X
POC	X	X	---	X	X	X	X	X	X
Valve proving	---	---	X	---	---	X	X	X	X



Ordering (cont'd)

Display and operating units

AZL21.00A9

Display and operating unit, detached, choice of mounting methods, 8-digit LCD, 5 buttons, BCI for LME39... / LME7..., degree of protection IP40.
Refer to Data Sheet N7542



AZL23.00A9

Display and operating unit, detached, choice of mounting methods, 8-digit LCD, 5 buttons, BCI for LME39... / LME7..., degree of protection IP54.
Refer to Data Sheet N7542



AGV50.100

Signal cable for AZL2..., with RJ11 connector, cable length 1 m, pack of 10



Connector set for LME7...

AGG3.710

Connector set complete
RAST5 and RAST3,5
Single packs
Refer to object list C7105 (74 319 0642 0)

Example: X5-03

AGG3.720

10 standard connector set complete
RAST5 and RAST3,5
Packing in bags of 10 pieces each connector type.
Refer to object list C7105 (74 319 0642 0)



AGG3.730

50 standard connector set complete
RAST5 and RAST3,5
Packing in bags of 50 pieces each connector type.
Refer to object list C7105 (74 319 0642 0)



Ordering (cont'd)

Flame supervision

QRA2...

UV flame detector for the supervision of gas flames and yellow- / blue-burning oil flames and for ignition spark proving. Plastic insulated housing, metalized to prevent static charging caused by the air flow from the fan, lateral illumination.
Refer to Data Sheet N7712



QRA4.U

UV flame detector for the supervision of gas flames and yellow- / blue-burning oil flames and for ignition spark proving, metal housing, frontal illumination.
Refer to Data Sheet N7711



QRA10...

UV flame detector for supervision of gas flames and yellow- / blue-burning oil flames and for ignition spark proving. Die-cast aluminium housing with a 1 in. mounting coupling and connection facility for cooling air.
Refer to Data Sheet N7712



QRB...

Photo resistive detector for the supervision of oil flames in the visible light spectrum, plastic housing. Refer to Data Sheet N7716



QRC...

Blue-flame detector for the supervision of blue- and yellow-burning oil or gas flames, plastic housing. Refer to Data Sheet N7714

Frontal illumination:



Lateral illumination:





Ordering (cont'd)

Service tools

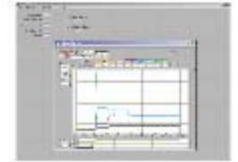
OCI410...

Interface between burner control and PC
Facilitates viewing, handling and recording setting parameters on site in connection with the ACS410 PC software.
Refer to Data Sheet N7615



ACS410

PC software for setting the parameters and for visualizing the burner controls
Refer to Software Documentation J7352



Actuators

SQN3...

Electromotoric actuators for use with air dampers and control valves of oil or gas burners of small to medium capacity.

Holding torque / running time 0,8 Nm / 4,5 s
up to 3 Nm / 30 s

Refer to Data Sheet N7808



SQN7...

Electromotoric actuators for air dampers and control valves of oil and gas burners of small to medium capacity.

Holding torque / running time 0,7 Nm / 4 s
up to 2,5 Nm / 30 s

Refer to Data Sheet N7804



SQM40... / SQM41...

Electromotoric actuators for air dampers and control valves of oil and gas burners of medium to high capacity, with UL-registered.

Holding torque / running time 5 Nm / 15 s
up to 10 Nm / 30 s

Refer to Data Sheet N7817



SQM5...

Electromotoric actuators for air dampers and control valves of oil and gas burners of medium to high capacity, with UL-registered.

Holding torque / running time 10 Nm / 15 s
up to 40 Nm / 60 s

Refer to Data Sheet N7815





Ordering (cont'd)

Accessories

KF8895.1A9

Test case for LME...

- For simulations of burner functions as startups, sequences of operations in connection with the specified burner controls
- For check and test purposes of burner controls
- For operation in laboratories by expert qualified personnel

Refer to User Manual U7993



AGV8895.01

Connection cable set for LME7..., consisting of:

AGV8895.01X1

Connection cable for mains potential



AGV8895.01X3

Connection cable for extra-low voltage, PELV



QPLx5...

The pressure switch is used for monitoring of gas or air pressure.

Refer to Data Sheet N7221



Dummy plug for RJ11

Dummy plug

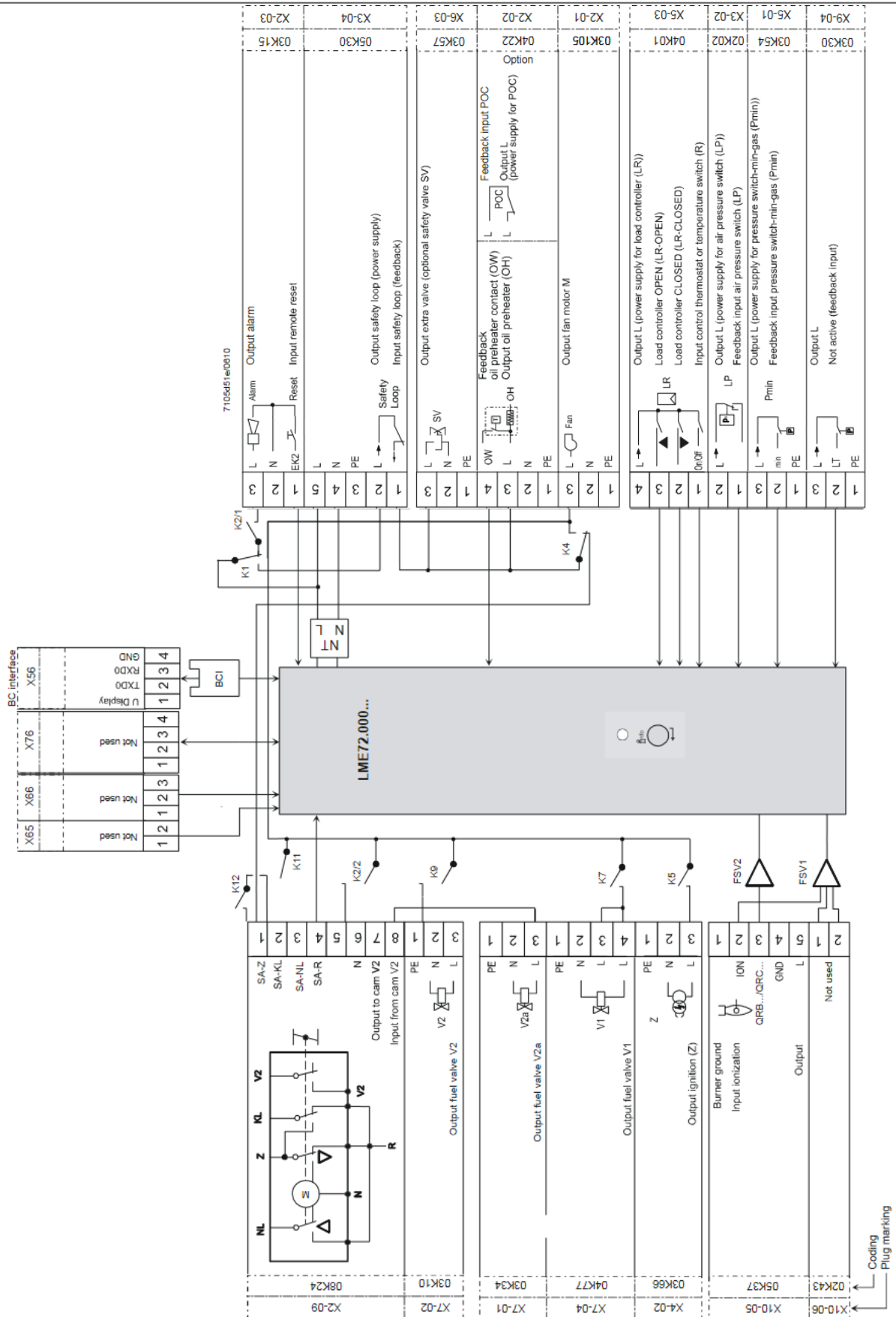
For 6-pole modulating connector (RJ11)

Supplier recommendation:

Molex, order number: 085 999 3256

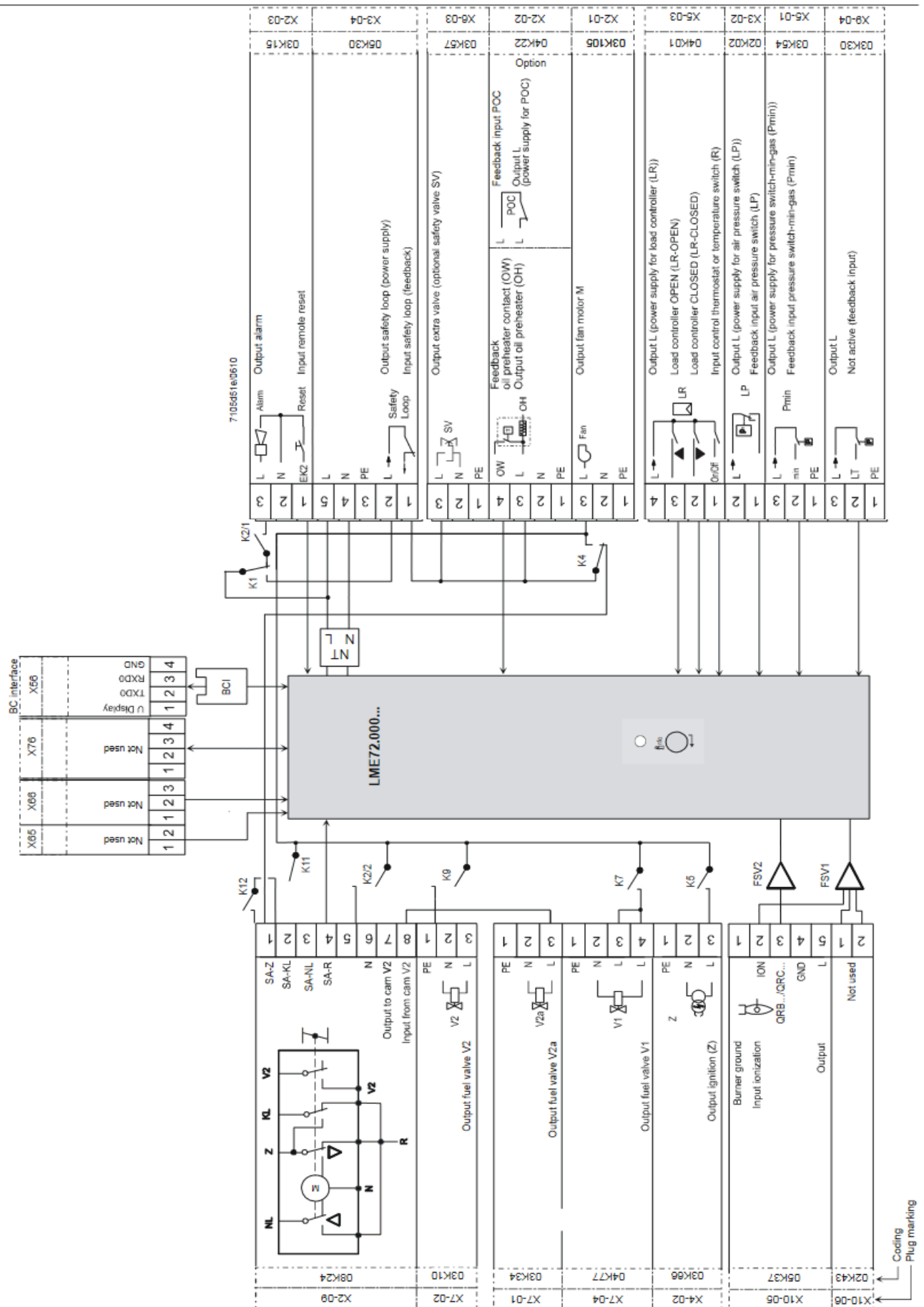


Connection diagram LME71...



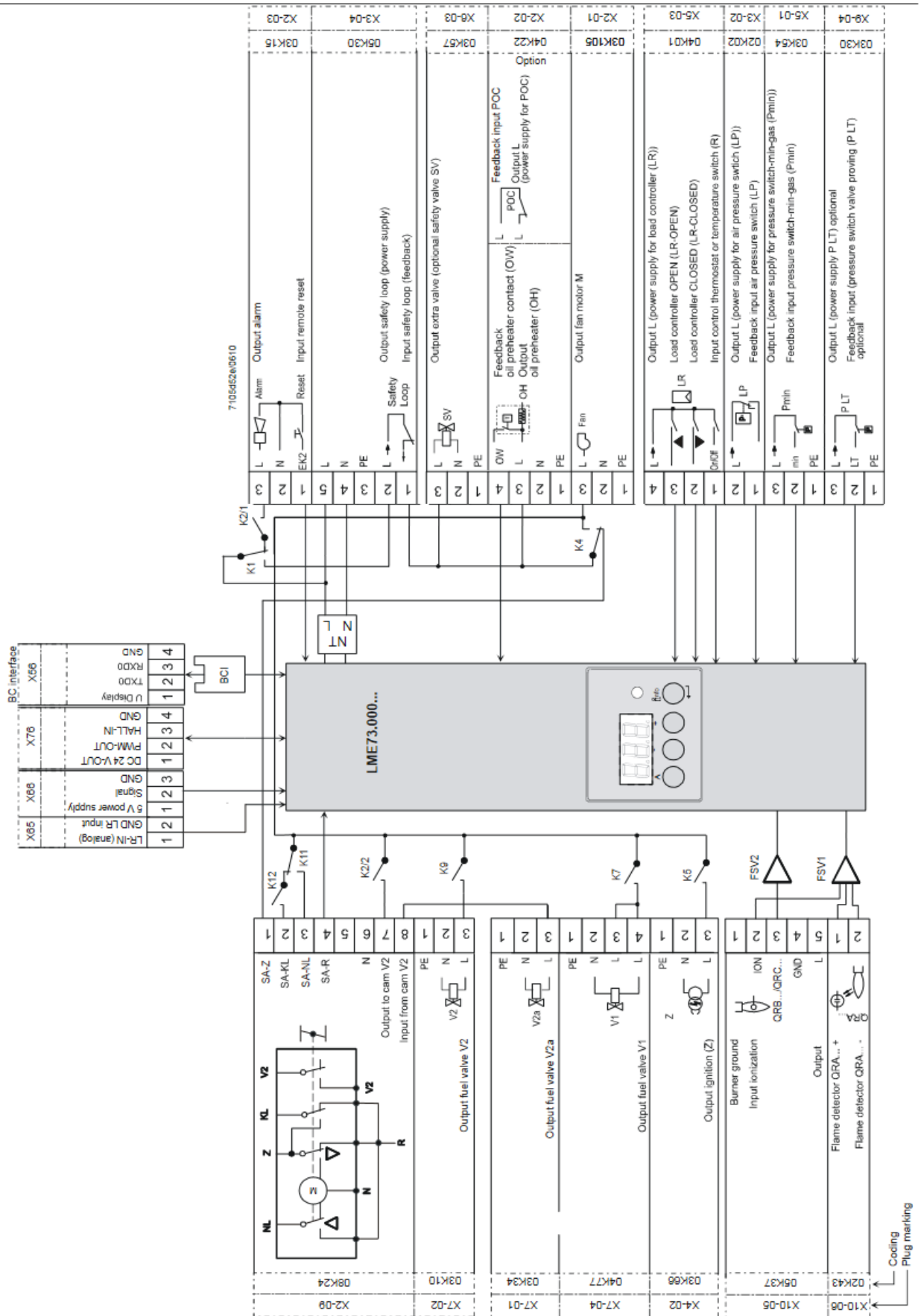


Connection diagram LME72...





Connection diagram LME73...





Technical data

LME7...

General

Mains voltage (UN)	AC 120 V	AC 230 V
Mains frequency	50 / 60 Hz ± 6 %	50 / 60 Hz ± 6 %
External primary fuse (Si)	Max. 6,3 A, slow	Max. 6,3 A, slow
Power consumption	<10 W, typical	<10 W, typical
Safety class	I with parts according to II and III to DIN EN 60730-1	
Degree of protection	IP00	
Perm. mounting position	Optional	
Weight	Approx. 490 g	

Terminal rating
«Inputs»

Under voltage

- Safety shutdown from the operating position takes place should mains voltage \leq AC 165 V
- Restart is initiated when mains voltage exceed \geq AC 195 V

State inputs, control thermostat, temperature switch, load controller, pressure switch, air pressure switch, actuator require mains-related input voltage

• Input currents and input voltages

- UeMax	UN +10 %	UN +10 %
- UeMin	UN -15 %	UN -15 %
- IeMax	1,5 mA	1 mA
- IeMin	0,8 mA	0,5 mA

• Transition / settling behavior / bounce

- Perm. bounce time of contacts when switching ON / OFF
- Max. 50 ms
(after the bounce time, the contact must stay closed op open)

• Logical voltage level

- ON	>AC 60 V	>AC 120 V
- OFF	<AC 40 V	<AC 80 V



Technical data (cont'd)

Terminal rating «Outputs»

Total contact loading

	AC 120 V	AC 230 V
• Rated voltage	AC 120 V	AC 230 V
• Unit input current X3-04 (total input current of all single components)	Max. 5 A	Max. 5 A

Individual contact loading:

Fan motor X2-01/3

	AC 120 V	AC 230 V
• Rated current	2 A (15A for max. 0.5s)	2 A (15 A max. 0.5 s)
• Power factor	$\text{Cos}\phi \geq 0.4$	$\text{Cos}\phi \geq 0.4$

Alarm output X2-03/3

	AC 120 V	AC 230 V
• Rated current	1 A	1 A
• Power factor	$\text{Cos}\phi > 0.6$	$\text{Cos}\phi > 0.6$

Ignition transformer X4-02/3

	AC 120 V	AC 230 V
• Rated current	2 A	2 A
• Power factor	$\text{Cos}\phi > 0.4$	$\text{Cos}\phi > 0.4$

Output K2/2 X2-09/7

	AC 120 V	AC 230 V
• Rated current	1 A	1 A
• Power factor	$\text{Cos}\phi > 0.4$	$\text{Cos}\phi > 0.4$

Fuel valve / pilot valve (PV) X7-01/3

	AC 120 V	AC 230 V
• Rated current	1 A	1 A
• Power factor	$\text{Cos}\phi > 0.4$	$\text{Cos}\phi > 0.4$

Fuel valve 1 (V1) X7-04/4 /

fuel valve 2 (V2) X7-02/3

	AC 120 V	AC 230 V
• Rated current		
- Valve proving inactive	2 A	2 A
- Valve proving active	1 A	1 A
• Power factor	$\text{Cos}\phi > 0.4$	$\text{Cos}\phi > 0.4$

Safety valve (SV) X6-03/3

	AC 120 V	AC 230 V
• Total current	1.5 A	1.5 A
• Power factor	$\text{Cos}\phi > 0.6$	$\text{Cos}\phi > 0.6$

Safety loop (SL) X3-04/2, safety valve

(SV) X6-03/3, POC X2-02/3

	AC 120 V	AC 230 V
• Total current	2 A	2 A
• Power factor	$\text{Cos}\phi > 0.4$	$\text{Cos}\phi > 0.4$

Actuators

Closed / ignition position / open X2-09/1, X2-09/2, X2-09/3

Rated current 0.1 A (at 1 mio. switching cycles)

Power factor $\text{Cos}\phi > 0.6$

Output K2/2 X2-09/7

AC 230 V 50 / 60 Hz

Rated current Max. 1 A

Power factor $\text{Cos}\phi > 0.4$

Feedback via input of cam V2, depending on the switching contact used in actuator X2-

09/8!

Cable lengths

• Mains supply line	Max. 100 m (100 pF/m)
• Display, BC interface	Max. 1 m (100 pF/m) (for use under the burner hood or in control panel) Max. 30 m (100 pF/m)
• Load controller (LR)	Max. 30 m (100 pF/m)
• Remote reset (lay separate cable)	Max. 30 m (100 pF/m)
• Fuel valves	Max. 30 m (100 pF/m)
• Other lines	Max. 30 m (100 pF/m)

Cross-sectional areas

The cross-sectional areas of the mains power lines (L, N, and PE) and the safety loop must be sized for rated currents according to the selected primary fuse. The cross-sectional areas of the other cables must be sized in accordance with the external unit fuse (max. 6.3 AT).

Min. cross-sectional area

0.75 mm²



Technical Data (cont'd)

Signal cable AGV50...
AZL2... → BC interface

Signal cable	Color white Unshielded Conductor 4 x 0.141 mm ² With RJ11 connector
Cable length AGV50.100	1 m
Supplier (alternative)	Recommendation: Hütter http://www.huetter.co.at/telefonkabel.htm
Location	Under the burner hood (arrangements for SKII EN 60730-1 additional required)

Environmental conditions

Storage	DIN EN 60721-3-1
Climatic conditions	Class 1K3
Mechanical conditions	Class 1M2
Temperature range	-40...+70 °C
Humidity	<95 % r.h.
Transport	DIN EN 60721-3-2
Climatic conditions	Class 2K3
Mechanical conditions	Class 2M2
Temperature range	-40...+70 °C
Humidity	<95 % r.h.
Operation	DIN EN 60721-3-3
Climatic conditions	Class 3K3
Mechanical conditions	Class 3M2
Temperature range	-40...+60 °C
Humidity	<95 % r.h.



Caution!
Condensation, formation of ice and ingress of water are not permitted!



Technical Data (cont'd)

Flame supervision
with ionization probe

No-load voltage at terminal ionization probe (ION) (X10-05 terminal 2)	AC 300 V
--	----------

**Caution!**

The ionization probe must be protected against electric shock hazard (risk of electric shock hazard)!

Short-circuit current	Max. AC 1 mA
Required detector current	Min. DC 1 μ A, display approx. 20 %
Possible detector current	Max. DC 40 μ A, display approx. 100%
Permissible length of detector cable (laid separately)	30 m (core-earth 100 pF/m)

Measuring circuit
for detector current
measurement

Ionization probe

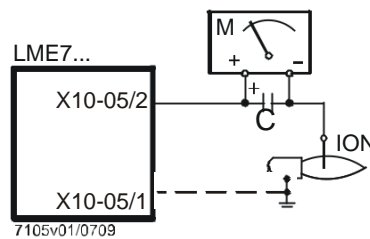


Fig. 1: Measuring circuit for ionization probe

Legend

C Electrolytic condenser 100...470 μ F; DC 10...25 V

ION Ionization probe

M Microammeter R_i max. 5,000 Ω

**Caution!**

Simultaneous operation of QRA... and ionization probe is not permitted!



Technical Data (cont'd)

Flame supervision with
QRA2... / QRA4.U /
QRA10...

Operation voltage	AC 280 V \pm 15 %
Required detector current	Min. 70 μ A
- In operation	
Possible detector current	
- In operation	Max. 700 μ A
Perm. length of detector cable	
- Normal cable, laid separately	Max. 100 m

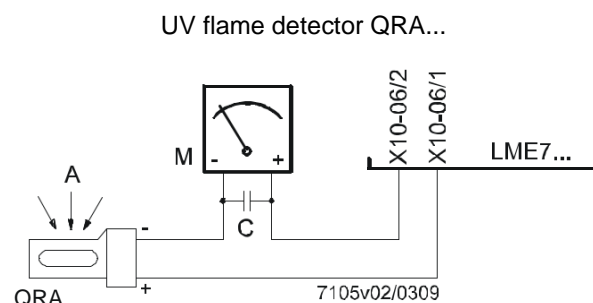
Measuring circuit for de-
tector current measure-
ment

Fig. 2: Measuring circuit for QRA...

Legend

- A Exposure to light
C Electrolytic condenser 100...470 μ F; DC 10...25 V
M Microammeter R_i max. 5,000 Ω

**Caution!**

- **Input QRA... is not short-circuit-proof!**
- **Short-circuit X10-06/2 against earth can destroy the QRA... input**
- **Simultaneous operation of QRA... and ionization probe is not permitted**

Flame supervision with
QRB...

No-load voltage at terminal QRB... (X10-05 terminal 3)	Approx. DC 5 V
Permissible length of QRB... detector ca- ble (laid separately)	3 m (core-core 100 pF/m)

Threshold values QRB... flame supervision with LME7...

Prevention of startup (extraneous light) with R_{QRB}	Approx. 400 k Ω , display ca. 14 %
Operation with R_{QRB}	Approx. 230 k Ω , display ca. 34 %
Short-circuit detection with R_{QRB}	<0.5 k Ω

A flame detector resistance of $R_F < 500 \Omega$ is identified as a short-circuit and leads to safety shutdown in operation, like in the case of loss of flame.



Technical Data (cont'd)

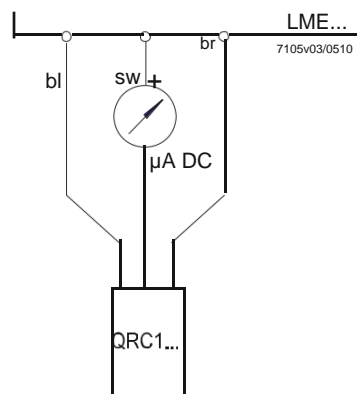
Flame supervision
with QRC...

Required detector current (with flame)	Min. 70 μ A
Possible detector current (without flame)	Max. 5,5 μ A
Perm. detector current with flame (typical)	Max. 100 μ A

The values given in the table above only apply under the following conditions:

- Mains voltage AC 120 V / AC 230 V
- Ambient temperature 23 °C

Prevention of startup (extraneous light) with IQRC	Approx. 10 μ A, display ca. 14 %
Operation with IQRC	Approx. 20 μ A, display ca. 34 %

Measuring circuit
for detector current
measurement

Legend

- μ A DC DC microammeter with an internal resistance of $R_i = \text{max. } 5\text{k}\Omega$
- bl Blue
- sw Black
- br Brown

As an alternative to detector current measurement, the OCI410 / ACS410 diagnostics tool can be used. In that case, the DC microammeter is not required.



บริษัท เอดีดี เฟอร์เนส จำกัด

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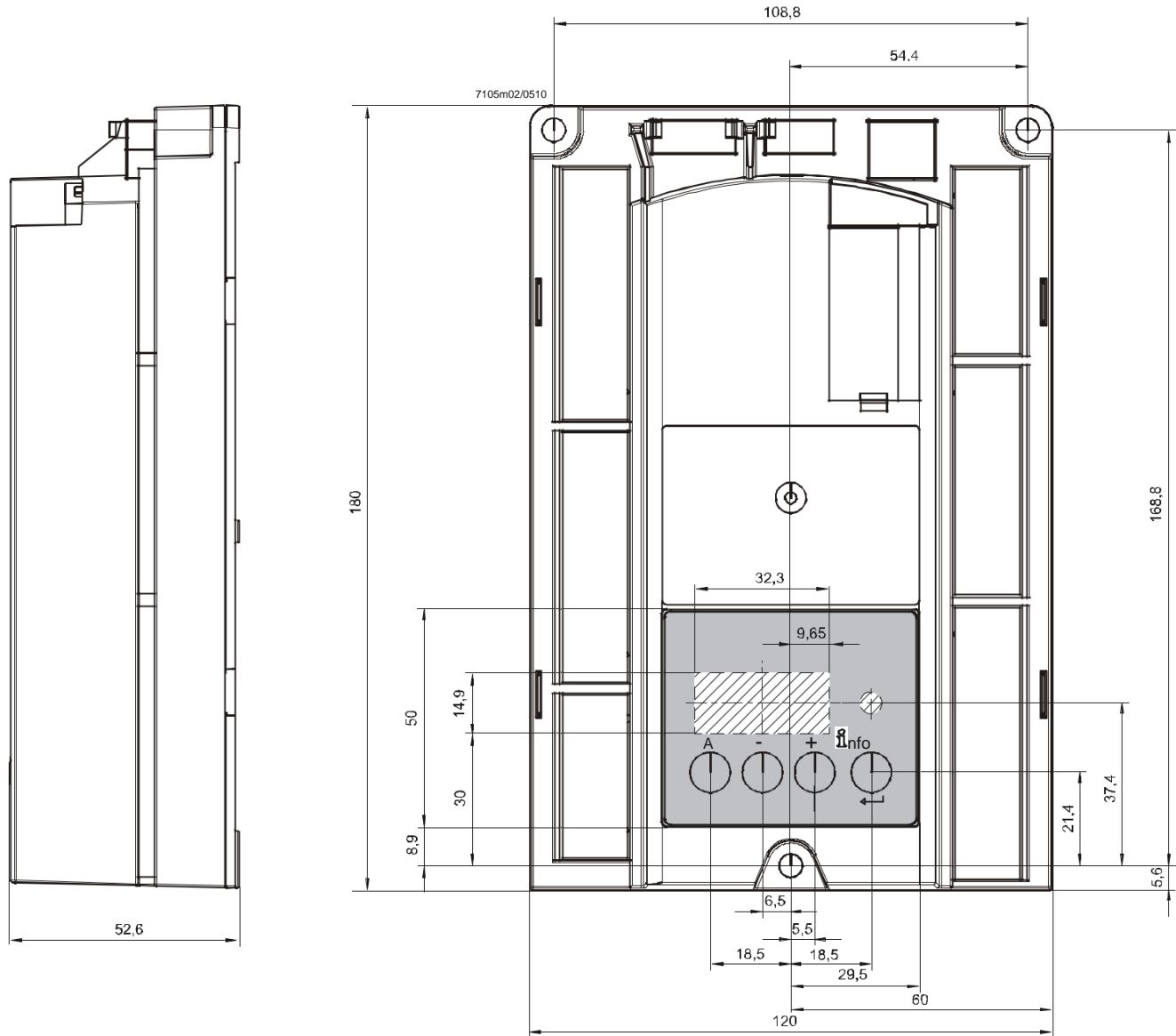
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https://www.add-furnace.com E-mail: sales@add-furnace.com

Dimensions

Dimensions in mm

LME7...



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Subject to change!