

LMV60.110A2

Burner management system for forced draft burners with the main functions:

- **Burner control**
- **Fuel-air ratio control**

Installation Guide

The LMV6 and this Installation Guide are intended for original equipment manufacturers (OEMs) using the LMV6 in or on their products.



Please note!

All the safety, warning, and technical notes given in the basic documentation for the LMV6 (P7560) also apply to this document in full. Failure to observe this poses a risk of damaging the safety functions and the risk of electric shock.

Supplementary documentation

Product type	Designation	Documentation type	Documentation number
LMV60.110A2	Burner management system	User Documentation	A7560.1
LMV6	Burner management system	Environmental Declaration	E7560 *)
LMV60.110A2	Burner management system	Parameter list and error code list	I7560
LMV60.110A2	Burner management system	Data Sheet	N7560
LMV60.110A2	Burner management system	Basic documentation	P7560
LMV6	Burner management system	Product Range Overview	Q7560

*) 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
AGG6.200A5	100 to 240 V~ power supply unit
AGG6.500	Shielding plate
AGG6.635	Ready-fitted CAN bus connecting cable
AGG6.641	CAN bus connecting cable
AGG9	Connector set
AZL66	Display and operating unit
LMV6	Burner management system
QRA2	UV flame detector
QRA2M	UV flame detector
QRA4	UV flame detector
QRA10	UV flame detector
SKPx5	Actuators
SQM45	Actuators
SQM46	Actuators
SQM47	Actuators
SQM48	Actuators
VGD	Double gas valves
VKP	Proportional controlling element

Contents

1	Installation notes	5
1.1	Electrical connection of the flame detectors	6
2	Assignment of connections	7
2.1	LMV60.110A2	7
2.2	Protection classes	8
2.2.1	LMV6	8
2.2.2	AGG6.200	9
3	Description of the terminals	10
3.1	LMV6	10
3.1.1	Terminal X11, X12	10
3.1.2	Terminal X51 / X52	11
3.1.3	Terminal X61 / X62 / X63 / X64	12
3.1.4	Terminal X71 / X72 / X73	13
3.1.5	Terminal X81 / X82 / X83 / X84	14
3.1.6	Terminal X91 / X92 / X93	15
3.2	AGG6.200A5	17
3.2.1	Terminal X13	17
3.2.2	Terminal X161	17
4	Block diagram inputs / outputs	18
5	AZL66 connection assignment	19
6	SQM4 connection assignment	19
7	AGG6.200A5 connection assignment	20
8	Earthing and shielding of the LMV6	21
8.1	Earthing	21
8.1.1	Protective earth (PE)	21
8.1.2	Functional earth (FE)	22
8.1.3	EMC-compliant wiring	23
8.1.4	Earthing and wiring of the LMV6	24
8.2	Earthing systems	27
8.2.1	TN earthing system	27
8.2.2	TT earthing system	27
8.3	Protective earth (PE) and functional earth (FE)	28
9	Ignition	29
9.1	2-pole ignition: Recommended	29
9.2	1-pole ignition: Not recommended	29
10	Wiring	32
11	LMV6 power supply	34
11.1	Example: "Operation with 3 actuators"	34
11.2	Cable types	35
12	Commissioning	36

12.1	Parallel operation	36
12.2	Variant for parallel operation	37
13	List of figures	38

1 Installation notes

- Always run the high-voltage ignition cables separately from the LMV6 and other cables while observing the greatest possible distances
- Do not mix up phase and neutral (midpoint) conductors
- Install switches, fuses, and grounding in accordance with local regulations
- The connection diagrams show the LMV6 with earthed neutral conductor. It is essential to ensure that local regulations are complied with (e.g., protection against electric shock)
- Do not exceed the maximum permissible current rating of the connection terminals
- Ensure that the electrical wiring inside the burner complies with national and local regulations
- Do not feed external mains voltage to the control outputs of the LMV6. When checking the functions of the burner components controlled by the LMV6 (fuel valves or similar), the LMV6 must not be connected to the burner components
- Mains power may only be supplied via *L* and *N*. There must be no difference in potential between the neutral conductor *N* and protective earth *PE*
- Circuit breakers should have a characteristic "C" when operated with the LMV6
- Make certain that strain relief of the connected cables is in compliance with the relevant standards (e.g., as per DIN EN 60730 and DIN EN 60335)
- Ensure that spliced wires cannot come into contact with neighboring connections. Use suitable ferrules. Failure to observe this information poses a risk of loss of safety functions and a risk of electric shock
- Unused connections on the LMV6 must be fitted with a corresponding AGG9 connector by the burner manufacturer
- The AGG9 connectors on the connection cables for the LMV6 may only be removed or replaced when the plant is shut down (all-pole disconnection)
- The connection between the SQM4 and the controlling elements for fuel and combustion air, as well as any additional controlling elements, must be form-fitted
- The AZL66 must be used in a dry and clean environment
- Check the connection cables for the supervision switch inputs (e.g., the air pressure switch) for signs of a short circuit

1.1 Electrical connection of the flame detectors

It is important to achieve practically disturbance-free and loss-free signal transmission:

- Never run the detector cable together with other cables
 - Line capacitance reduces the magnitude of the flame signal
 - Use a separate cable
- Observe the permissible detector cable lengths; refer to the *Technical data*
- The mains-powered ionization probe does not offer protection against electric shock hazards. Protection against accidental contact must be ensured. Failure to observe this information poses a risk of electric shock
- Position the ignition electrode and the ionization probe in such a way that the ignition spark cannot arc over to the ionization probe (risk of electrical overloads) and adversely affect the ionization supervision process
- Insulation resistance
 - Must be $> 50 \text{ m}\Omega$ between ionization probe and ground
 - Soiled detector holders reduce the insulation resistance, thus supporting creepage currents
- Earth the burner in compliance with the relevant regulations; earthing the boiler alone does not suffice

2.1 LMV60.110A2

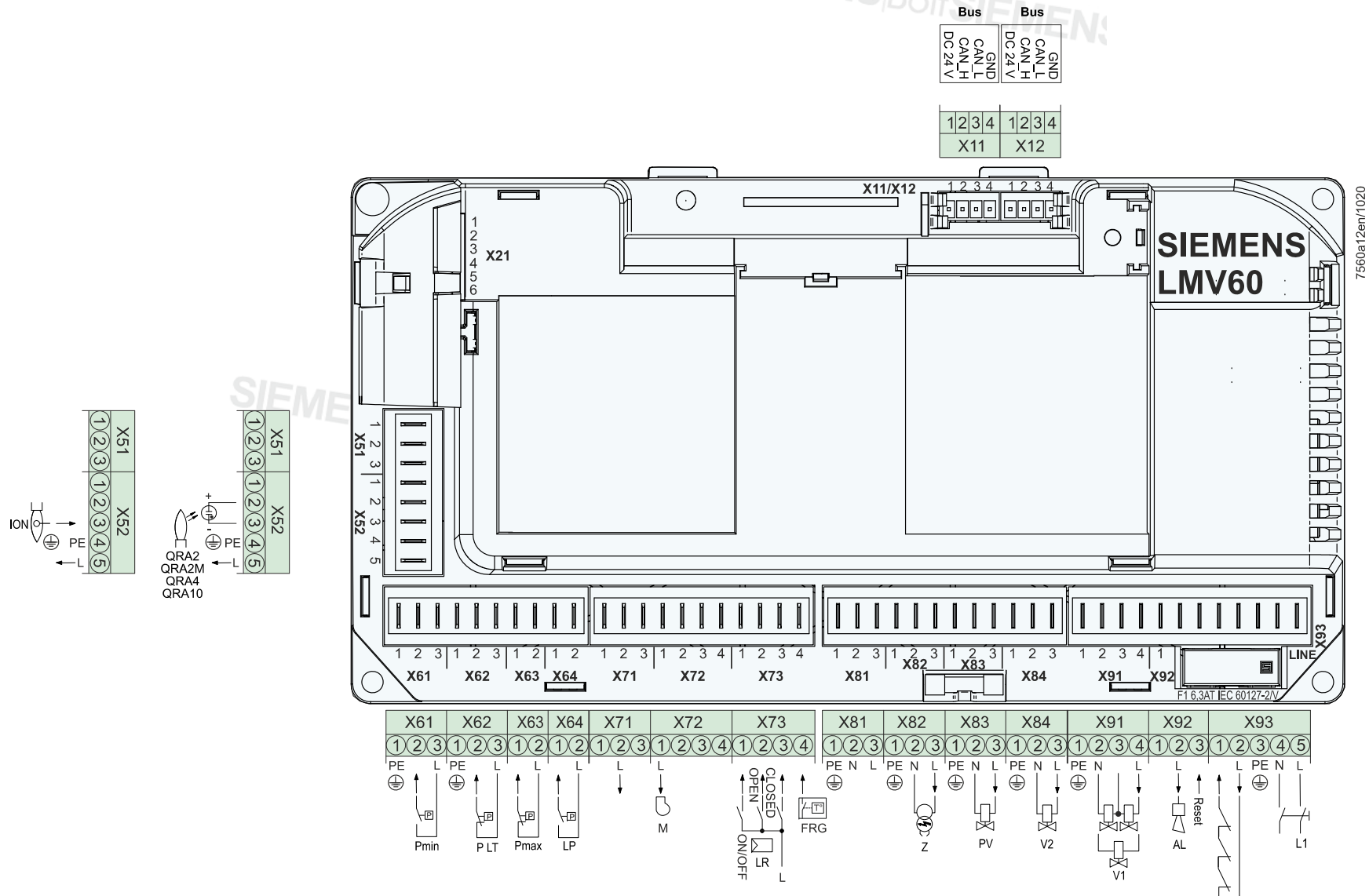


Figure 1: LMV60.110A2 connection assignment

2.2 Protection classes

2.2.1 LMV6

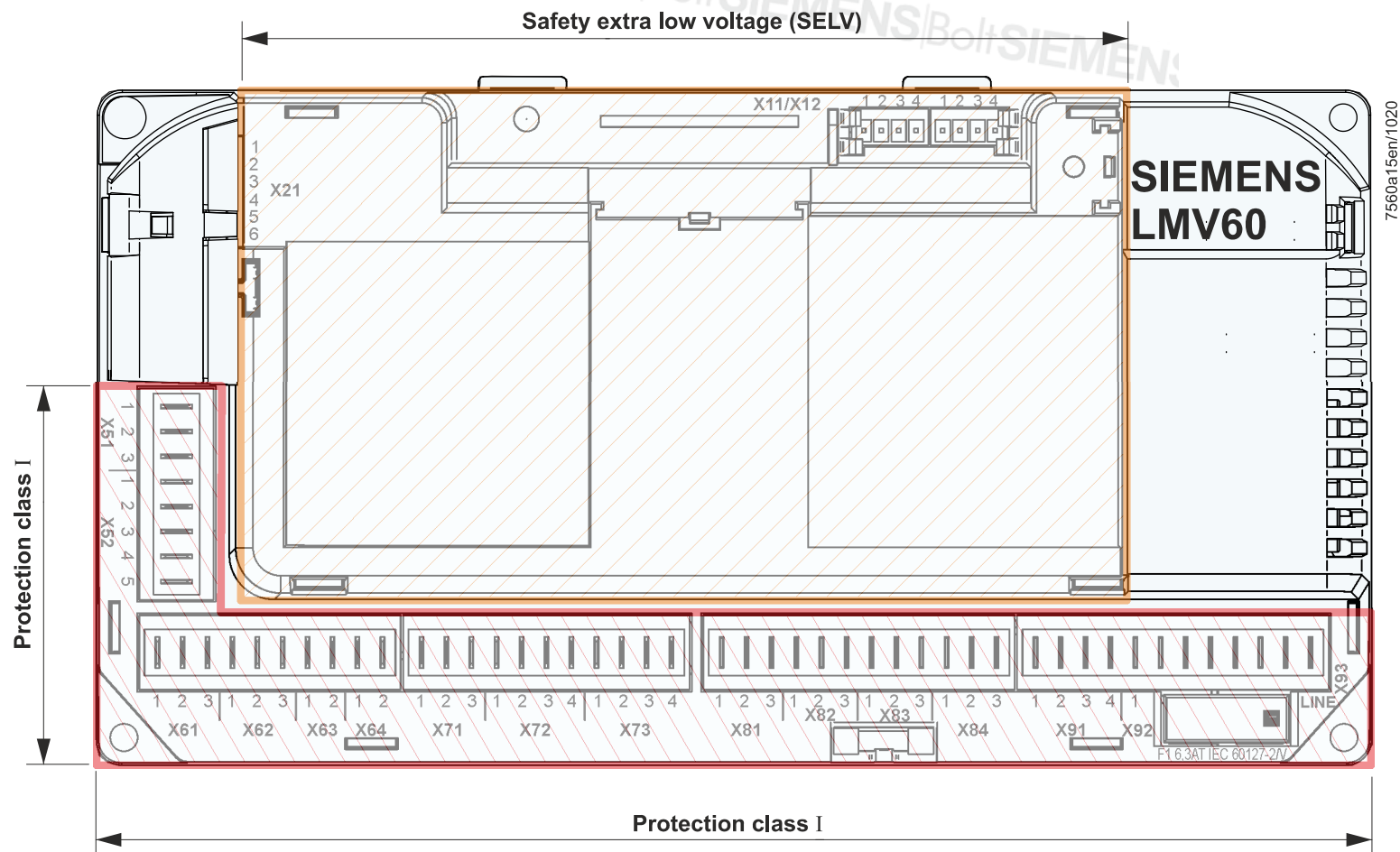


Figure 2: LMV6 protection classes



Please note!

Degree of protection IP40!

The LMV6 offers degree of protection IP00. The burner or boiler manufacturer must ensure degree of protection IP40 for the LMV6 in accordance with DIN EN 60529 through adequate installation.

2.2.2 AGG6.200

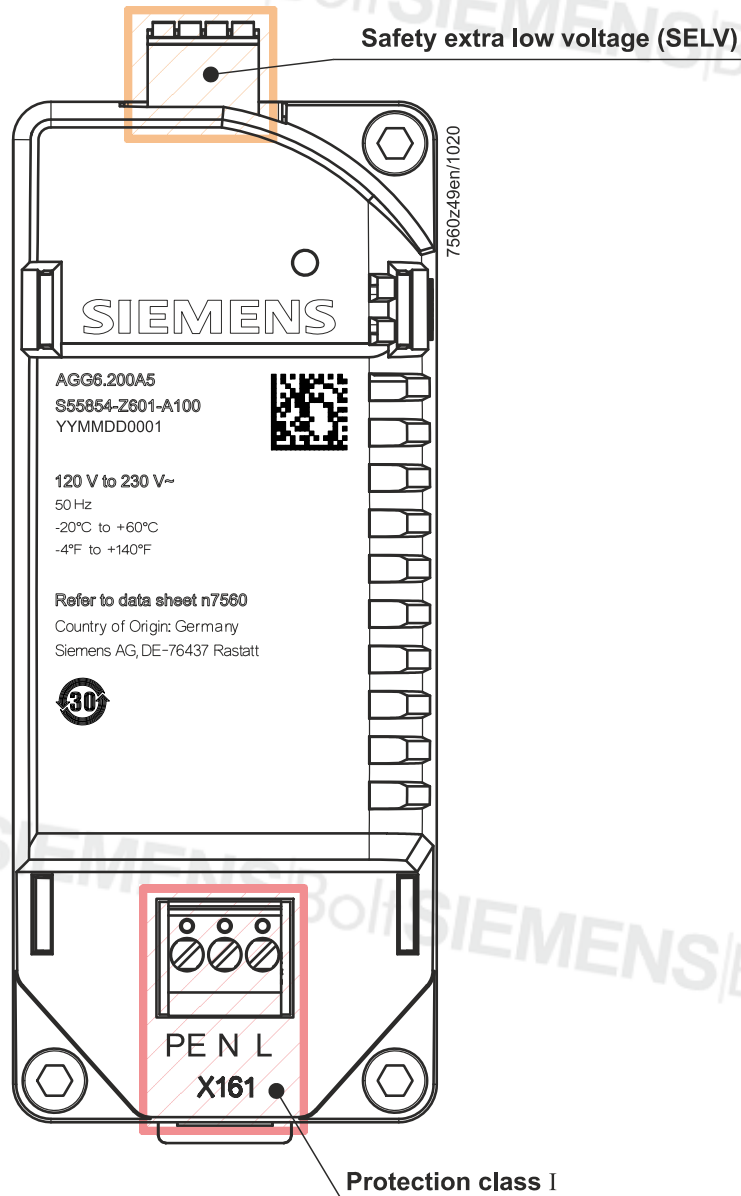


Figure 3: AGG6.200 protection classes



Please note!

Degree of protection IP40!

The AGG6.200 offers degree of protection IP00. The burner or boiler manufacturer must ensure degree of protection IP40 for the AGG6.200 in accordance with DIN EN 60529 through adequate installation.

3 Description of the terminals



Note!

AGG9 connector sets!

The AGG9 connectors of the connecting cables for the LMV6 may only be removed or replaced when the plant is shut down (all-pole disconnection)!

Key

Terminal	Terminal markings on LMV6 housing
Coding	Plug-in space coding
Type (ASN)	Product designation for 200 packaging units
Pin	Connection pin number
Input	Input terminals
Output	Output terminals
Function	Function description
Current	Maximum permissible current rating (refer to <i>Technical Data</i>)
Parameter	Parameter number impacting the function or behavior of the inputs/outputs

3.1 LMV6

3.1.1 Terminal X11, X12

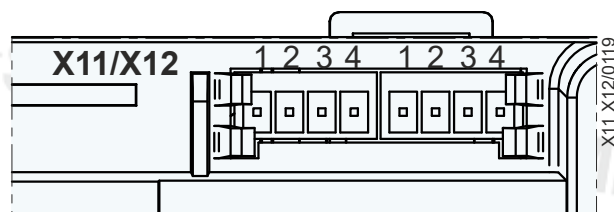


Figure 4: Description of terminal X11 / X12

Terminal	Coding	Type (ASN)	Pin	Input	Output	Function	Electrical limit value
X11	---		1	---	•	DC power supply for system components	24 V DC Approx. 24 V DC Max. 1.25 A
			2	---	•	Communication signal	CAN_H DC U ↔ 5 V, R _w = 120 Ω, Level according to ISO-DIS 11898
			3	---	•	Communication signal	CAN_L DC U ↔ 5 V, R _w = 120 Ω, Level according to ISO-DIS 11898
			4	---	•	Signal reference	GND ---
X12	---		1	---	•	DC power supply for system components	24 V DC Approx. 24 V DC Max. 1.25 A
			2	---	•	Communication signal	CAN_H DC U ↔ 5 V, R _w = 120 Ω, Level according to ISO-DIS 11898
			3	---	•	Communication signal	CAN_L DC U ↔ 5 V, R _w = 120 Ω, Level according to ISO-DIS 11898
			4	---	•	Signal reference	GND ---

3.1.2 Terminal X51 / X52

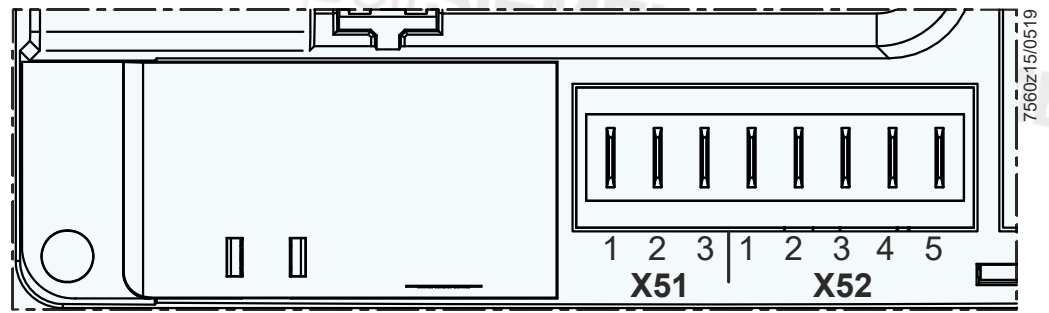


Figure 5: Description of terminals X51 / X52

Flame supervision with QRA2 / QRA4 / QRA10

Terminal	Coding	Type (ASN)	Pin	Input	Output	Function	Electrical limit value	Parameter
X51	03K80		1	---	---	---	---	---
			2	---	---	---	---	
			3	---	---	---	---	
X52	05K53		1	---	---	---	---	0901 0902 0903
			2	---	•	QRA+	---	
			3	•	---	QRA-	---	
			4	---	---	---	---	
			5	---	---	---	---	

Flame supervision with ionization probe

Terminal	Coding	Type (ASN)	Pin	Input	Output	Function	Electrical limit value	Parameter
X51	03K80		1	---	---	---	---	---
			2	---	---	---	---	
			3	---	---	---	---	
X52	05K53		1	---	---	---	---	0901 0902 0903
			2	---	---	---	---	
			3	•	---	Ionization probe feedback	I _{max} . 60 µA	
			4	---	---	---	---	
			5	---	---	---	---	

3.1.3 Terminal X61 / X62 / X63 / X64

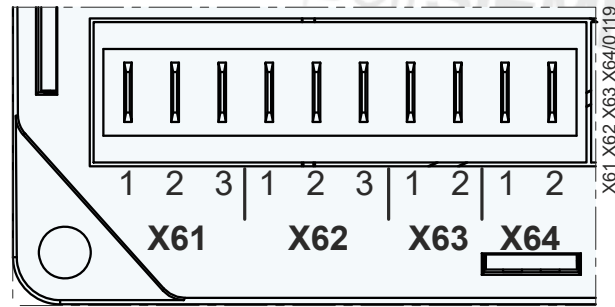


Figure 6: Description of terminal X61 / X62 / X63 / X64

Terminal	Coding	Type (ASN)	Pin	Input	Output	Function	Electrical limit value	Parameter
X61	03K54		1	---	---	Protective earth (PE)	---	1149
			2	•	---	Gas pressure switch-min	230 V~ +10% / -15% 50 Hz I _{max} 1.5 mA	
			3	---	•	Power supply	230 V~ +10% / -15% 50 Hz I _{max} 100 mA	
X62	03K31		1	---	---	Protective earth (PE)	---	1201 1202 1203 1204 1205
			2	•	---	Pressure switch valve proving	230 V~ +10% / -15% 50 Hz I _{max} 1.5 mA	
			3	---	•	Power supply	230 V~ +10% / -15% 50 Hz I _{max} 100 mA	
X63	02K43		1	•	---	Gas pressure switch-max	230 V~ +10% / -15% 50 Hz I _{max} 1.5 mA	
			2	---	•	Power supply	230 V~ +10% / -15% 50 Hz I _{max} 100 mA	
X64	02K02		1	•	---	Air pressure switch	230 V~ +10% / -15% 50 Hz I _{max} 1.5 mA	0920 1130
			2	---	•	Power supply	230 V~ +10% / -15% 50 Hz I _{max} 100 mA	

3.1.4 Terminal X71 / X72 / X73

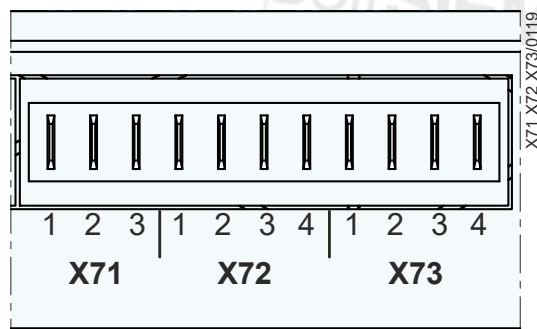


Figure 7: Description of terminal X71 / X72 / X73

Terminal	Coding	Type (ASN)	Pin	Input	Output	Function	Electrical limit value	Parameter
X71	03K48		1	•	---	---	---	---
			2	---	•	---	---	
			3	•	---	---	---	
X72	04K01		1	---	•	Fan	230 V~ +10% / -15% 50 Hz Imax 2 A	1102
			2	---	•	---	---	
			3	---	•	---	---	
			4	---	•	---	---	
X73	04K42		1	•	---	Load controller ON/OFF	230 V~ +10% / -15% 50 Hz	1701 1702 1705 1740 1750
			2	•	---	Load controller CLOSED	230 V~ +10% / -15% 50 Hz	
			3	•	---	Load controller OPEN	230 V~ +10% / -15% 50 Hz	
			4	•	---	Flue gas recirculation (FGR), thermostat contact	230 V~ +10% / -15% 50 Hz	

3.1.5 Terminal X81 / X82 / X83 / X84

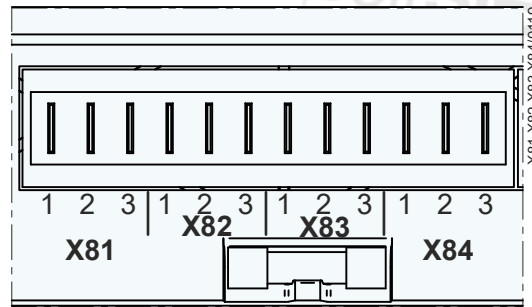


Figure 8: Description of terminal X81 / X82 / X83 / X84

Terminal	Coding	Type (ASN)	Pin	Input	Output	Function	Electrical limit value	Parameter
X81	03K30		1	---	---	Protective earth (PE)	---	---
			2	---	---	Neutral conductor (N)	---	
			3	---	•	---	---	
X82	03K66		1	---	---	Protective earth (PE)	---	1107
			2	---	---	Neutral conductor (N)	---	
			3	---	•	Ignition transformer	230 V~ +10% / -15% 50 Hz 2 A, cosφ 0.2	
X83	03K10		1	---	---	Protective earth (PE)	---	---
			2	---	---	Neutral conductor (N)	---	
			3	---	•	Pilot valve PV	230 V~ +10% / -15% 50 Hz 1 A, cosφ 0.4	
X84 *)	03K34		1	---	---	Protective earth (PE)	---	---
			2	---	---	Neutral conductor (N)	---	
			3	---	•	Fuel valve V2	230 V~ +10% / -15% 50 Hz 2 A, cosφ 0.4	

Note!

Valve proving via fuel valve circuit!



*)

With activated valve proving via fuel valve circuit

- Rated current 1 A
- Load factor Cosφ ≥ 0.4

3.1.6 Terminal X91 / X92 / X93

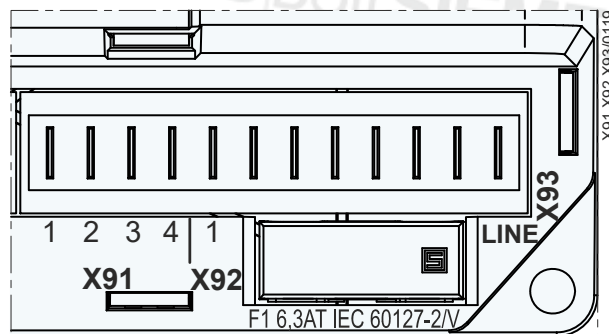


Figure 9: Description of terminal X91 / X92 / X93

Terminal	Coding	Type (ASN)	Pin	Input	Output	Function	Electrical limit value	Parameter
X91 *)	04K77		1	---	---	Protective earth (PE)	---	---
			2	---	---	Neutral conductor (N)	---	
			3	---	---	Auxiliary terminal	---	
			4	---	•	Fuel valve V1	230 V~ +10% / -15% 50 Hz 2 A, cosφ 0.4	
X92	03K15		1	---	•	---	---	---
			2	---	•	Alarm	---	
			3	•	---	Reset	---	
X93	05K30		1	•	---	Safety loop	230 V~ +10% / -15% 50 Hz max. 5 A	0925
			2	---	•	Power supply safety loop	---	
			3	---	---	Protective earth (PE)	---	
			4	---	---	Neutral	---	
			5	•	---	Mains power supply	5 A	



*)

Note!

Valve proving via fuel valve circuit!

With activated valve proving via fuel valve circuit

- Rated current 1 A
- Load factor Cosφ ≥ 0.4



Note!

Terminal X93 pin 1 or pin 2 and components of the safety loop!

The total current of all components connected to the LMV6 flows via terminal X93 pin 1 or pin 2 and components of the safety loop.



Caution!

Contacts in the safety loop!

In the safety loop, temporarily switching (< 1 second) contacts, buttons or similar must not be wired.



Caution!

Terminal X92 pin 1!

Make sure that the voltage output on terminal X92 pin 1 is not connected to live parts. The terminal must not be connected. Failure to observe this information poses a risk of the safety functions being impaired.



Caution!

Terminal X92 pin 3!

Only a simple button may be connected to terminal X92 pin 3. Units that can perform an automatic reset are not permitted.

3.2 AGG6.200A5

3.2.1 Terminal X13

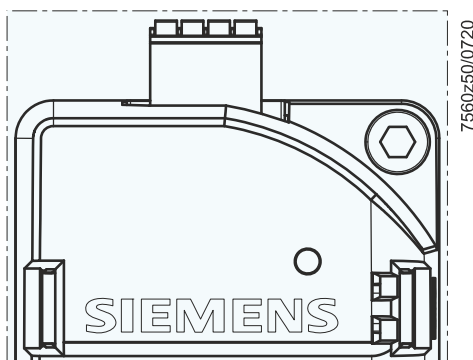


Figure 10: Description of terminal X13

Terminal	Coding	Type (ASN)	Pin	Input	Output	Function	Electrical limit value	Parameter
X13			1	---	•	DC power supply for the system components (24 V DC)	Approx. 24 V DC max. 1.25 A	---
			2	---	•	Communication signal (CAN_H)	DC U ↔ 5 V Rw = 120 Ω Level according to ISO-DIS 11898	
			3	---	•	Communication signal (CAN_L)	DC U ↔ 5 V Rw = 120 Ω Level according to ISO-DIS 11898	
			4	---	•	Reference ground (GND)	---	

3.2.2 Terminal X161

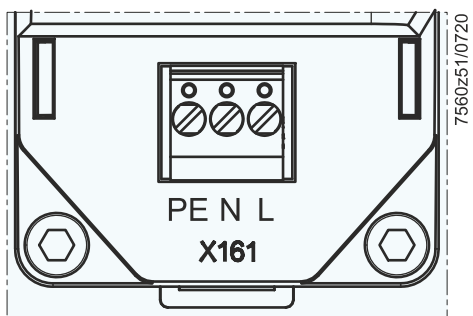


Figure 11: Description of terminal X161

Terminal	Coding	Type (ASN)	Pin	Input	Output	Function	Electrical limit value	Parameter
X161	03K105		1	---	---	Protective earth (PE)	---	---
			2	---	---	Neutral	---	
			3	---	---	Mains power supply	5 A	

4 Block diagram inputs / outputs

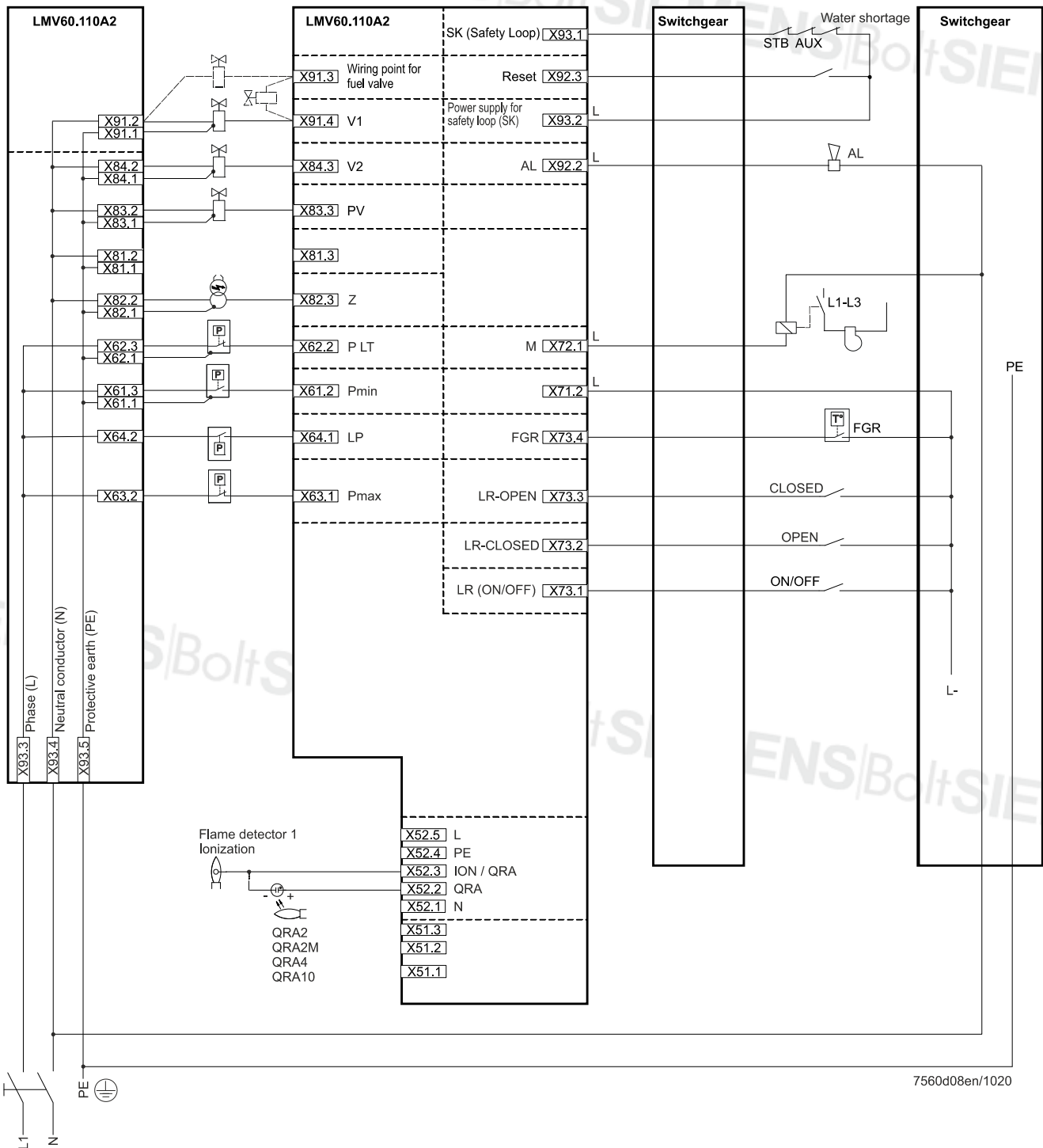


Figure 12: Block diagram inputs / outputs

5 AZL66 connection assignment

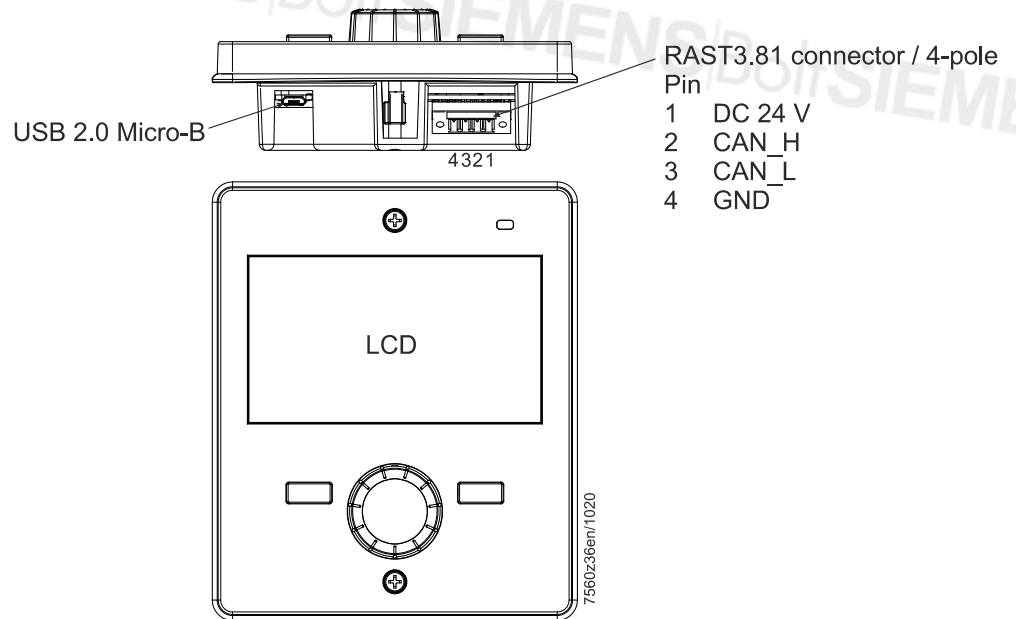


Figure 13: AZL66 connection assignment

6 SQM4 connection assignment

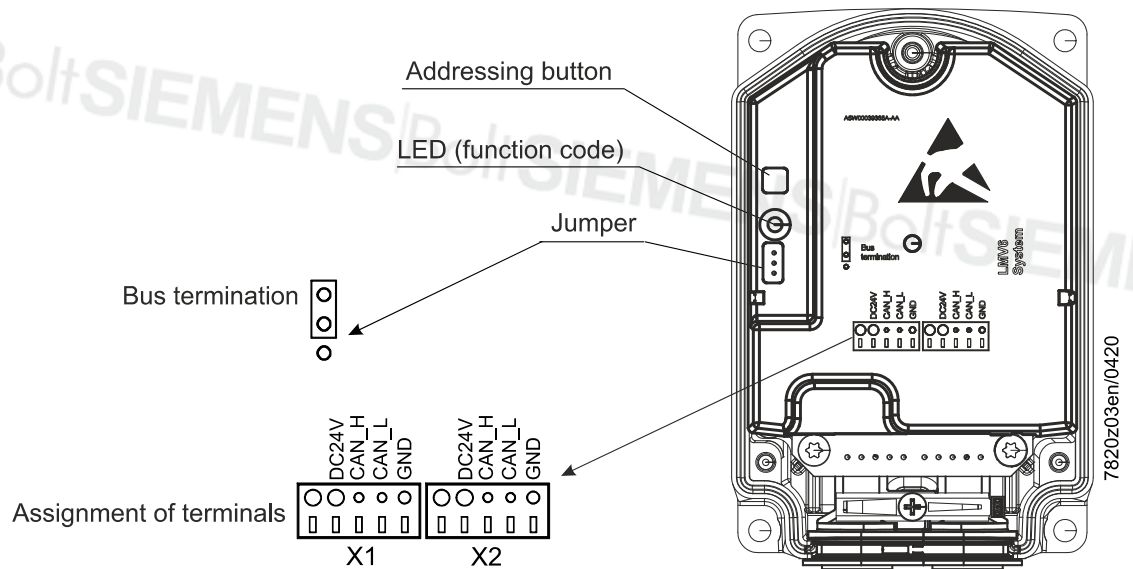


Figure 14: SQM4 connection assignment

7 AGG6.200A5 connection assignment

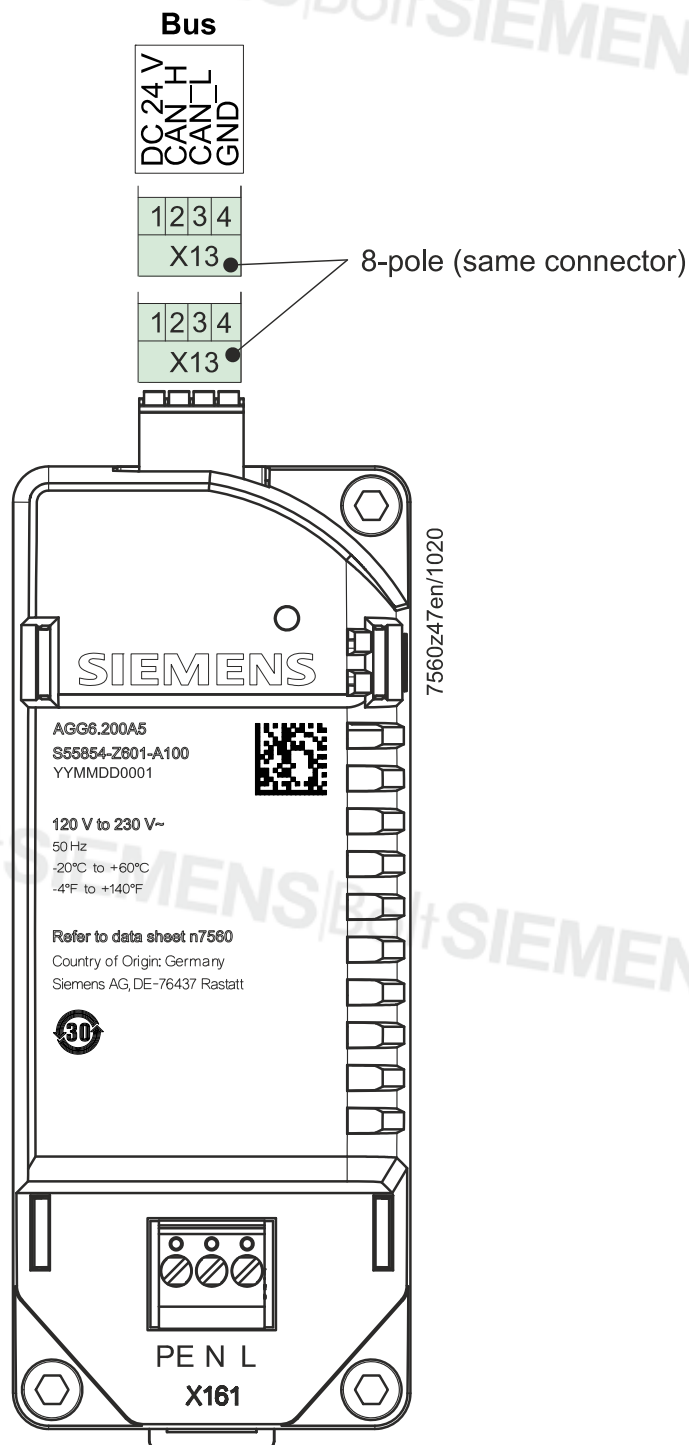


Figure 15: AGG6.200A5 connection assignment

8 Earthing and shielding of the LMV6

8.1 Earthing

The LMV6 has 2 different types of earthing:

- Protective earth **PE**
- Functional earth **FE**

8.1.1 Protective earth (PE)

The protective earth (PE) of the LMV6 must be connected.

The purpose of protective earth (PE) is to provide a protective conductor connection for all connected units/components. The protective conductor connection (PE) is also connected to the mounting plate via a short conductor.

8.1.2 Functional earth (FE)

The functional earth (FE) must be connected to a reference ground on the burner housing or in the control panel and is used to discharge interference current from the existing shielding. The functional earth (FE) connection can also be established via the AGG6.500.

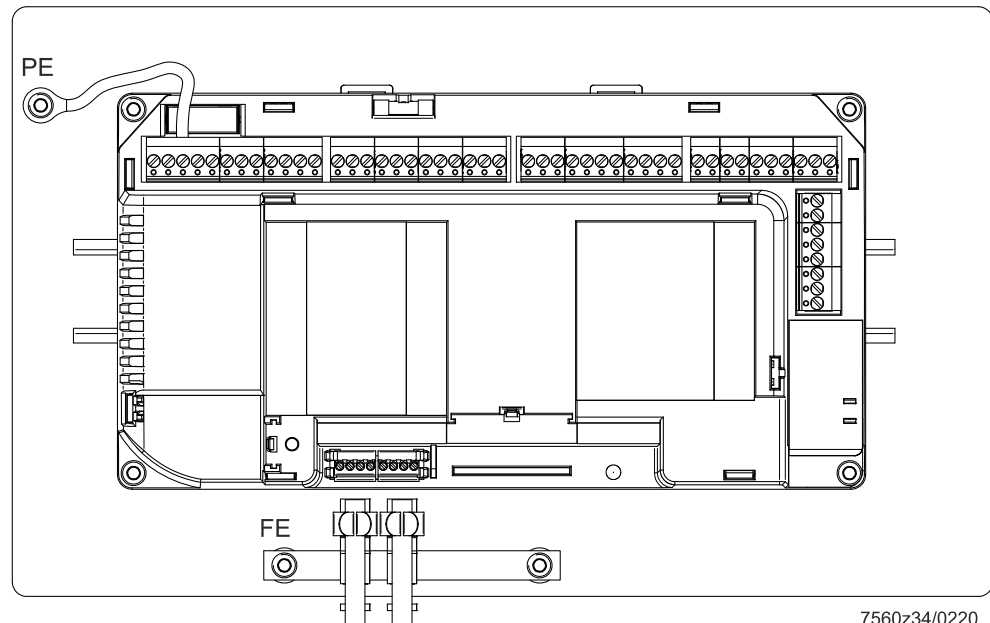


Figure 16: Connection of the protective earth (PE) / functional earth (FE) with the mounting plate

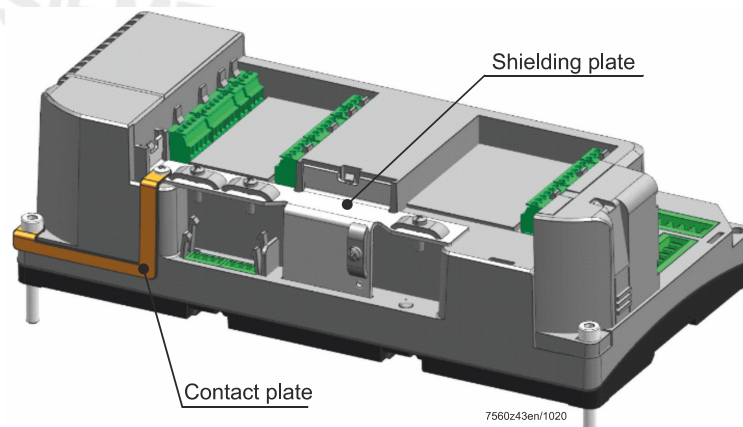


Figure 17: AGG6.500 shielding mechanism (optional)

Recommendation!

Establish short and low-resistance connections from the LMV6 to the mounting plate!

The connection from the LMV6 to the mounting plate can be established directly on the burner plate using the contact plate (figure 7560z43) and a screw. If there is no contact plate (figure 7560z43), there is an option to establish a connection directly from the shielding plate to the burner plate using a separate cable.

The connection between the functional earth (FE) and the housing of the SQM4 should also be established via short and low-resistance connections. Siemens recommends equipping the SQM4 with a separate cable if necessary. These cables should be connected to the functional earth (FE) with the greatest possible cross section (min. 1.5 mm²).

8.1.3 EMC-compliant wiring

- Shielded cables must also be used in control panels for the bus connections between the LMV6, SQM4, and AZL66
- Each SQM4 connected to the LMV6 must be connected to the same functional earth (FE) or earthing point via a short cable or low-resistance housing connection as the LMV6
- Ensure that the SQM4 actuator housing is in perfect electrical contact with the functional earth (FE) (use toothed lock washers and galvanically conductive mounting plates)
- The mains cable and the bus cable must be laid separately in separate cable channels and as far apart as possible
- The cables to and from ignition equipment must be laid separately and as far as possible from the bus cables
- The high voltage cables from the ignition equipment must be short and lead directly to the ignition electrodes
- With 2-pole ignition equipment, the cables must be routed closely together in order to keep the radiation area as small as possible

8.1.4 Earthing and wiring of the LMV6

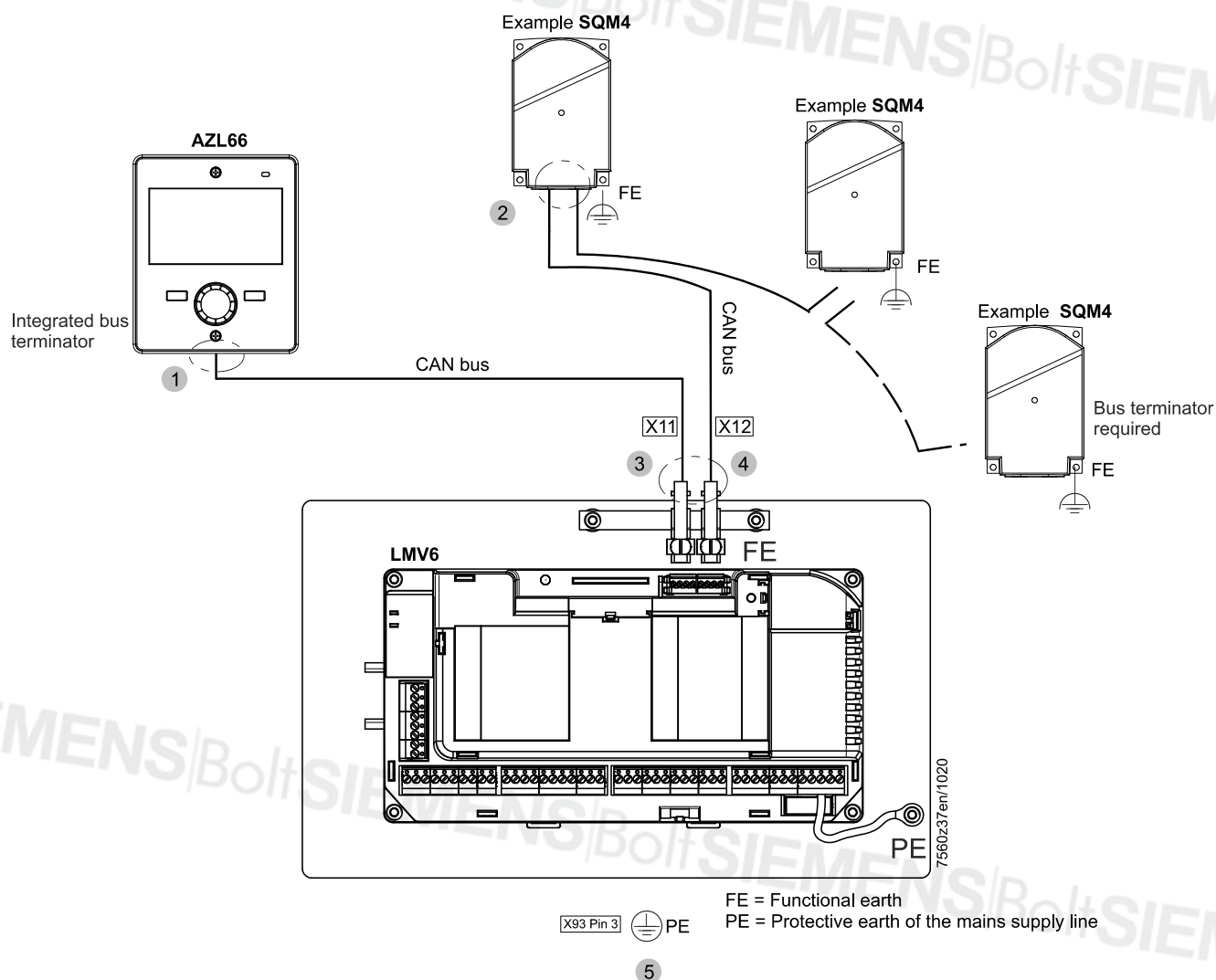
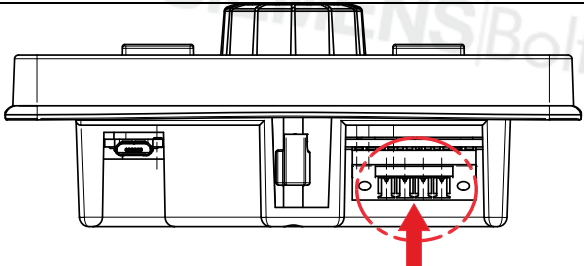
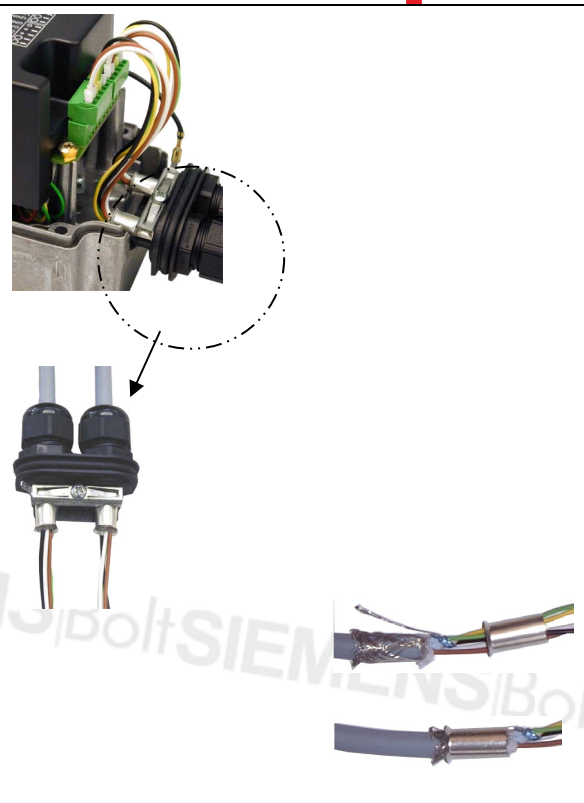
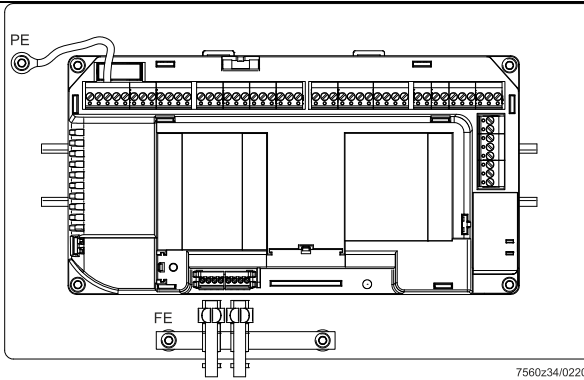

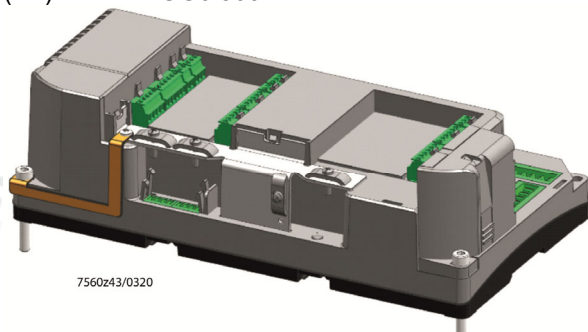


Figure 18: Earthing and wiring of the LMV6

1	 <p>7562z38/0320</p>	<p>No shielding on the AZL66. A screw connection can be established to prevent the connecting plug on the AZL66 from being pulled out.</p>
2		<p>Connect the SGM4 housing with the functional earth (FE): The connection between the SGM4 housing and the functional earth (FE) can be established by means of a low-resistance connection using the fixing screws or by means of an additional cable connection.</p> <p>When wiring, the inner shield of the data cable and the outer shield of the cable should be enclosed in a sleeve if possible, and both cable shields should be connected to each other with the internal clamp.</p> <p>The connection between the cable shielding and the SGM4 housing (functional earth (FE)) is established by means of an internal connection in the SGM4 between the clamp, the PCB, and the SGM4 housing.</p> <p>Ferrules without plastic collar:</p> <p>For AGG6.641 cable Osterrath Type H35/18 Order number: 036890</p>
3 + 5	 <p>7560z34/0220</p>	<p>The mounting plate is connected to the protective earth connection (PE) of the LMV6 via a short cable. This earthing point of the mounting plate also serves as reference earth for connecting the functional earth (FE).</p> <p>Connect the functional earth (FE) to the earthing point with a short cable. Connect the protective earth (PE) to the functional earth (FE) via the mounting plate or a low-resistance cable.</p> <p>Connect the protective earth (PE) to terminal X93 pin 3.</p>

<p>④</p>	<p>Electrical environment in which the cables run parallel: Wiring of the bus cables at LMV6 terminal X11 and X12.</p>  <p>It is essential to ensure that the cables of the low voltage connections are laid separately from the mains cables, even over short distances.</p> <p>Connection of the cable shield to functional earth (FE) via the AGG6.500:</p>  <p>7560z43/0320</p>	<p>For all shielded cables that have to be earthed, the cable shield must be fixed by a shield clamp (e.g., Icotek) or the shield clamp provided on the AGG6.500. Keep unshielded cables as short as possible.</p> <p>The cable shields of the low-voltage cables can be connected to the functional earth (FE) via the AGG6.500. For this purpose, the cable shields are contacted by means of terminals and connected to the functional earth (FE) via the AGG6.500. The functional earth (FE) and the AGG6.500 are connected via a screw connection on the LMV6 housing or via a separate cable connection (see Figure 17: AGG6.500 <i>shielding mechanism (optional)</i>).</p>
----------	--	--

8.2 Earthing systems

8.2.1 TN earthing system

In a TN earthing system, one of the points on the generator or transformer is connected to earth. In a three-phase system, this is typically the star point.

TN-S earthing:

Protective earth (PE) and neutral (N) are separate conductors.

This system is currently used in most residential houses and commercial plants in North America and Europe.

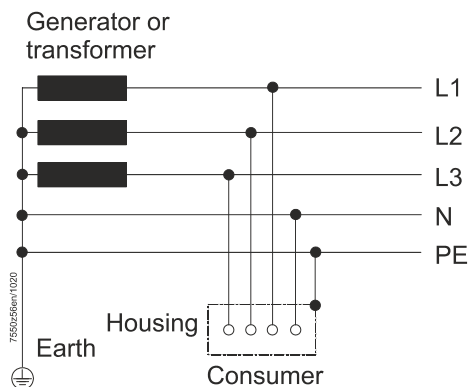


Figure 19: TN-S earthing

8.2.2 TT earthing system

In a TT earthing system (Terra–Terra), the protective earth connection for the consumer is provided by a local earth electrode and another earth electrode is independently installed at the generator. There is no earth cable between the two earth electrodes.

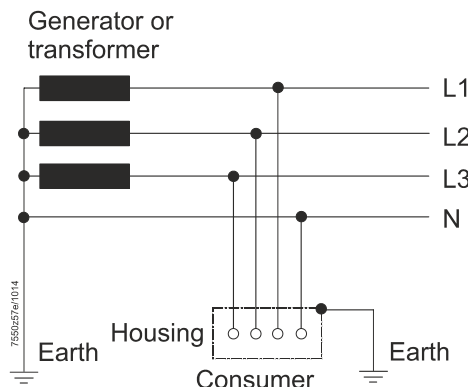


Figure 20: TT earthing

Note!

TN / TT earthing system.

For the LMV6, it is preconditioned that either a TN earthing system or a TT earthing system is used.



When using the TT earthing system, the special requirements for the design of the earthing resistors and the residual current protection circuit must be taken into account. It is essential to ensure that no impermissible potential differences arise between the earthing point and N.

8.3 Protective earth (PE) and functional earth (FE)

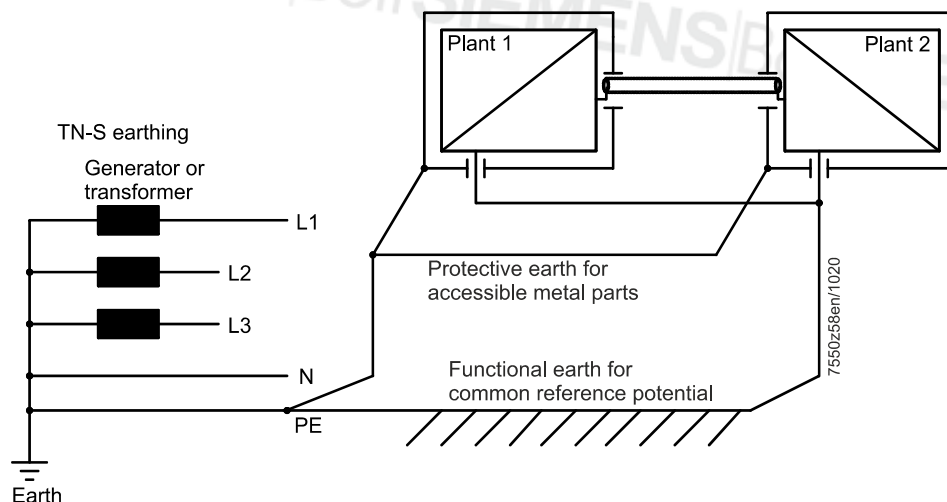


Figure 21: Protective earth (PE), functional earth (FE)

Protective Earth (PE):

Protective earth (PE) is a device earthing conductor that avoids hazards by keeping the exposed conductive surfaces of a device at ground potential.

To avoid a potential voltage drop, there should be no current flowing through this conductor under normal circumstances.

Functional Earth (FE):

Functional earth (FE) is not designed to protect against electric shock – it is used to establish a common reference potential.

9 Ignition

The ignition is a further strong source of interference. For this reason, please observe the following recommendations:

- Keep the cable loop/length in the high-voltage ignition circuit as short as possible
- Use a special EMC-compliant ignition cable
- Avoid capacitive and inductive coupling to other signal lines.
Always run the high-voltage ignition cables separately from the burner housing and other cables while observing the greatest possible distances

For example:

Use an electrically insulating cable channel or distance spacer (made from plastic, for example) – see also the Appendix “*Example for wiring, earthing, and shielding of the LMV6*”

- Use a 2-pole ignition where possible (see drawings below)
- When using a 2-pole ignition, the cables should run close together to ensure that the emissions range is as small as possible

9.1 2-pole ignition: Recommended

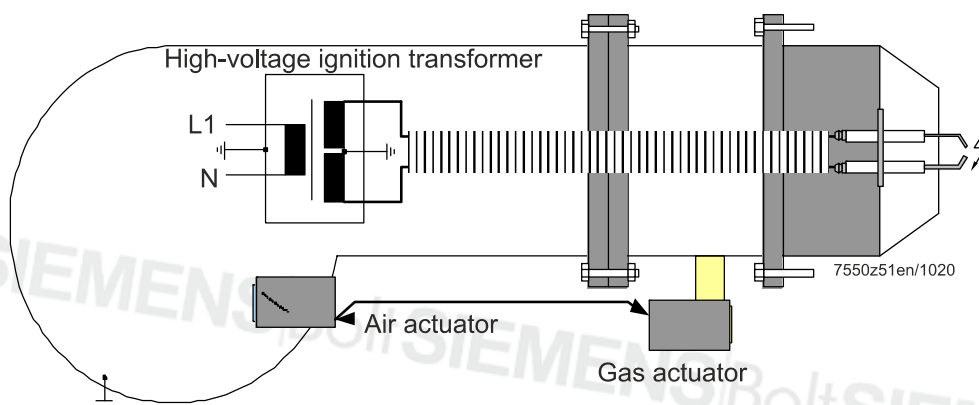


Figure 22: 2-pole ignition

9.2 1-pole ignition: Not recommended

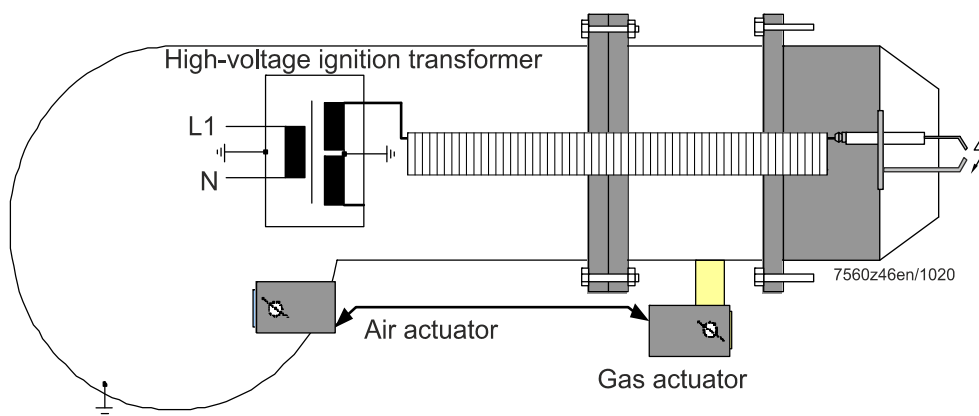


Figure 23: 1-pole ignition

If a 1-pole ignition has to be used, it is very important to have a low impedance at the mechanical connections (transitions) of the burner housing (no insulation material, e.g., no paint). Only then will you get a **good** current flow from the ignition spark back to the ignition transformer, resulting in **low** EM emissions (EMC):

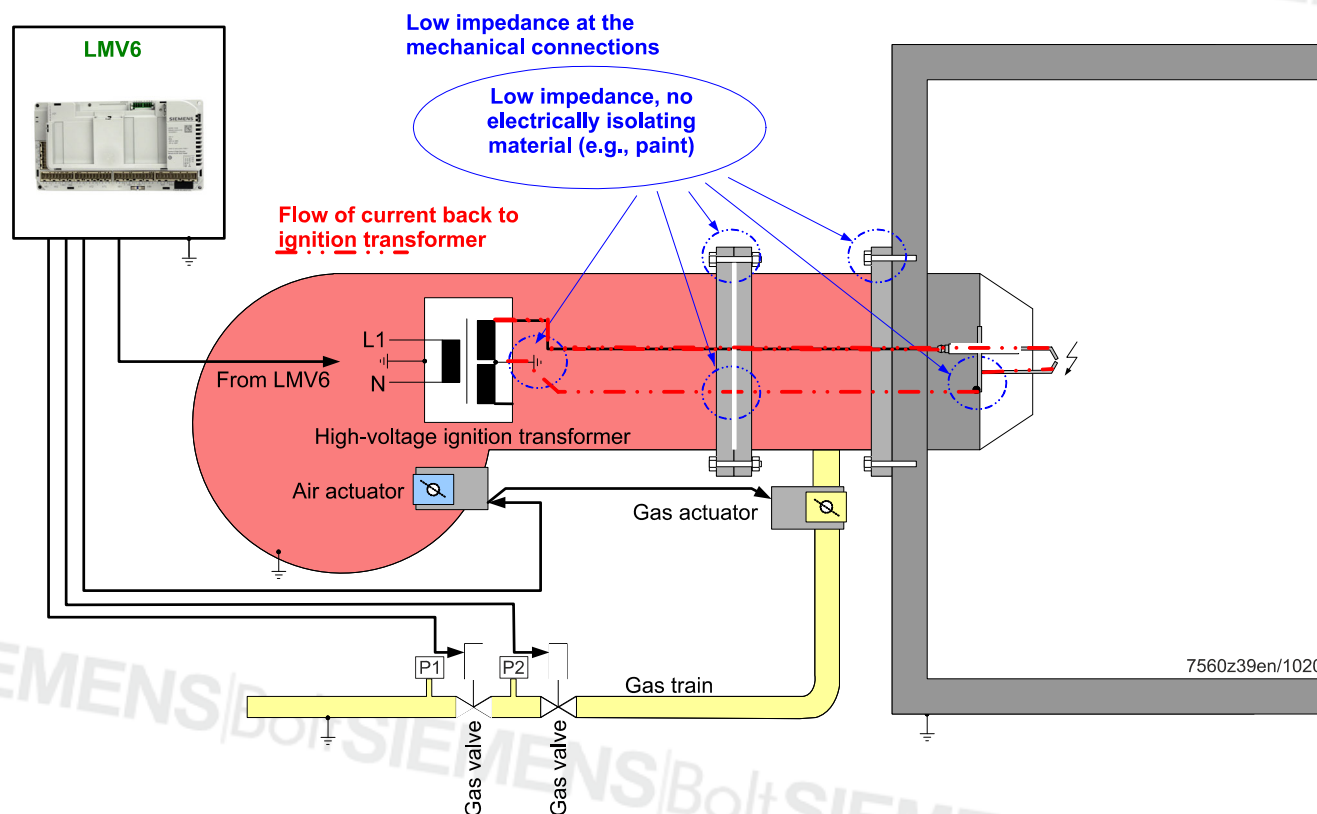


Figure 24: 1-pole ignition with low impedance at the burner housing

If the mechanical connections for the burner housing have a high level of impedance – e.g., due to paint – this causes multiple **poor** flows of current from the ignition spark back to the ignition transformer. These multiple current flows lead to **high** EM emissions (EMC).

Example:
1-pole ignition and high impedance between the output of the high-voltage ignition transformer and the ignition electrode

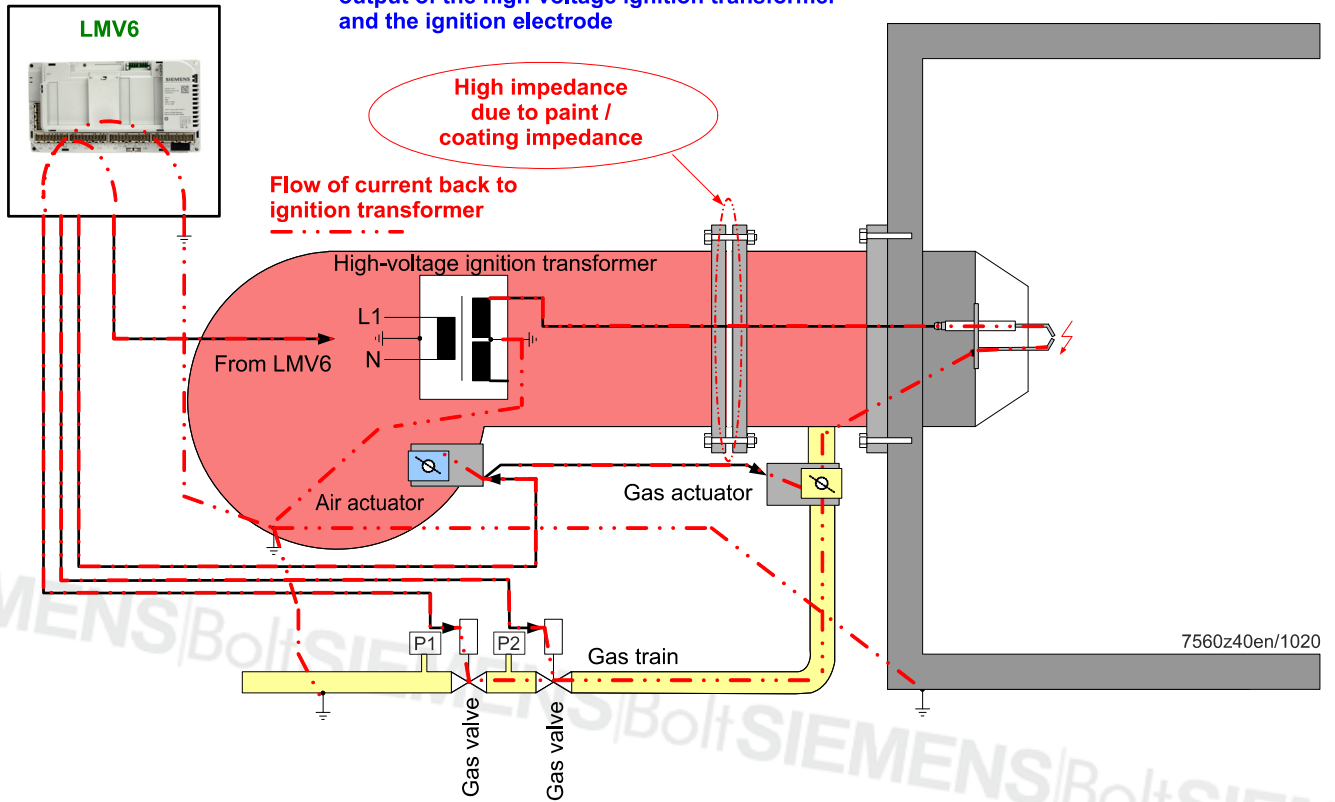


Figure 25: 1-pole ignition with high impedance of the burner housing

10 Wiring

Separate wiring is recommended for the following cables:

Completely separate from all other cables

- High-voltage ignition cable – see also chapter *Ignition*
- Cable for the flame detectors

Together in cable channel 1 for low voltage, e.g.:

- CAN bus cable

Together in cable channel 2 for mains voltage, e.g.:

- Cable for ignition transformer
- Cables for other mains voltage signals, e.g., gas pressure switch and air pressure switch.

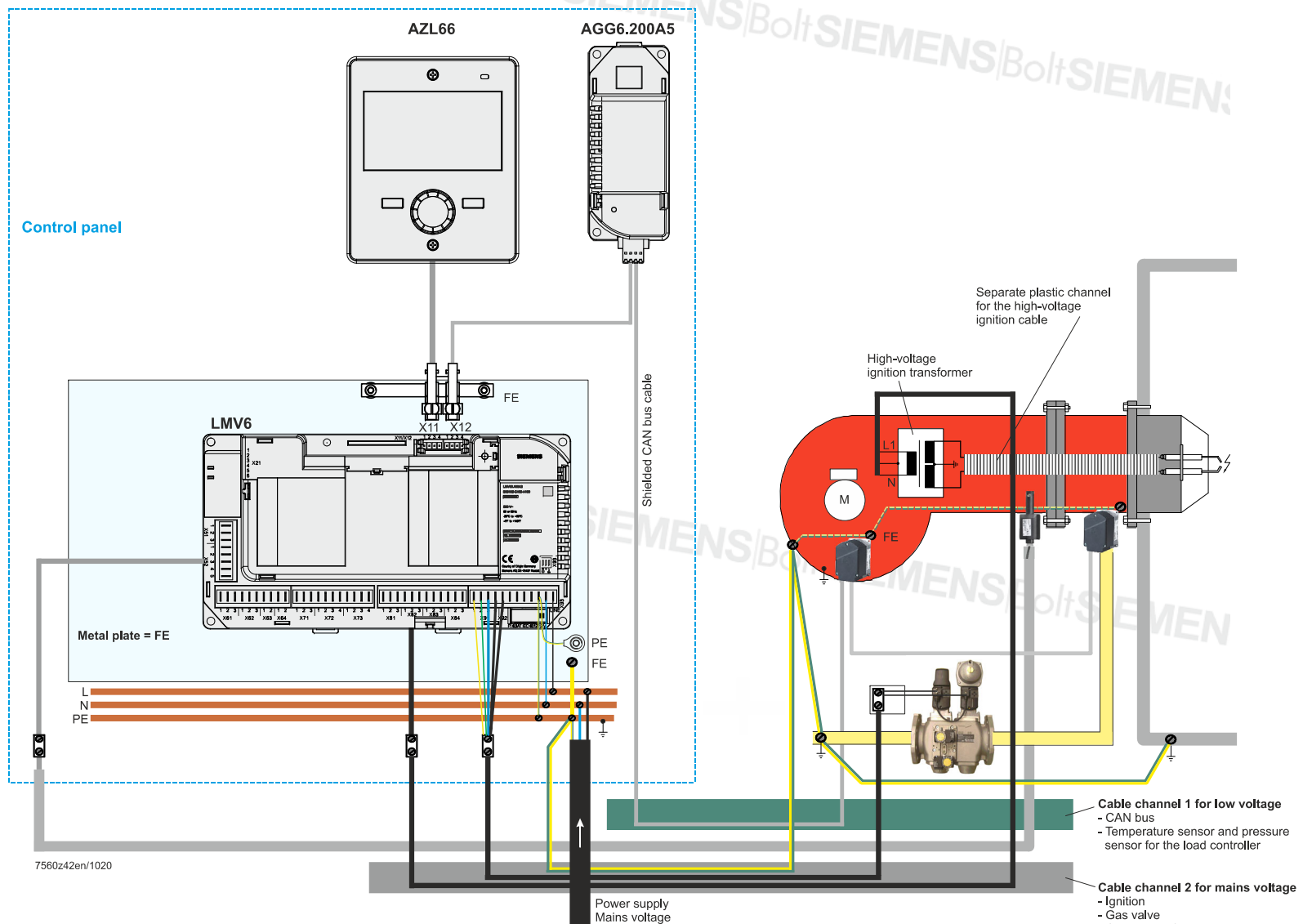
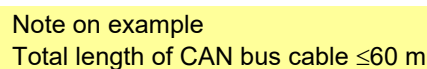


Figure 26: Example for wiring, earthing and shielding of the LMV6

General

With the SQM4, the last user becomes the bus end node (internal bus terminating resistor must be activated via a jumper). The other node users within the line structure are configured without terminating resistor.

Figure 27: Installation of all components in the burner: CAN bus cable LMV6 ↔ last SQM4 < 20 m



11.2 Cable types

AGG6.641 (cable type 1) LMV6 ↔ system components

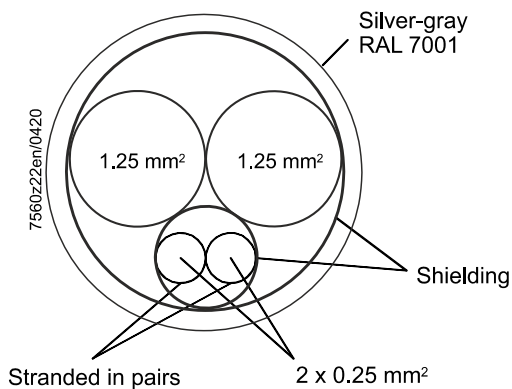


Figure 28: AGG6.641

Connection	Color	Wire cross-section in mm²
24 V DC	White	1.25
CAN_H	Yellow	0.25
CAN_L	Green	0.25
GND	Brown	1.25

AGG6.635 (cable type 2) LMV6 ↔ AZL66

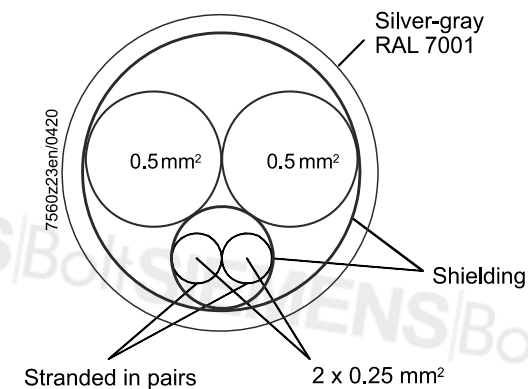


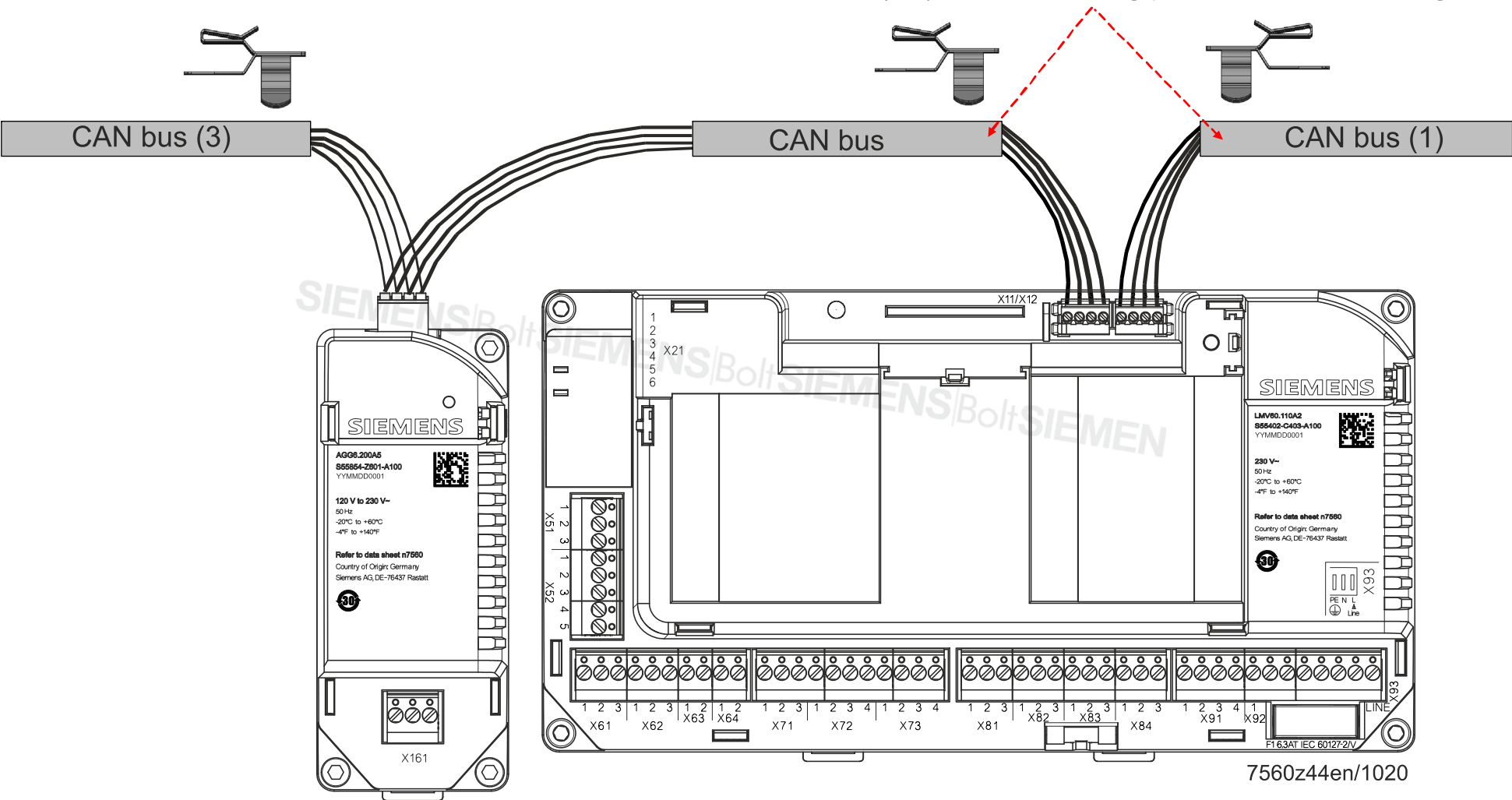
Figure 29: AGG6.635

Connection	Color	Wire cross-section in mm²
24 V DC	White	0.5
CAN_H	Yellow	0.25
CAN_L	Green	0.25
GND	Brown	0.5

12 Commissioning

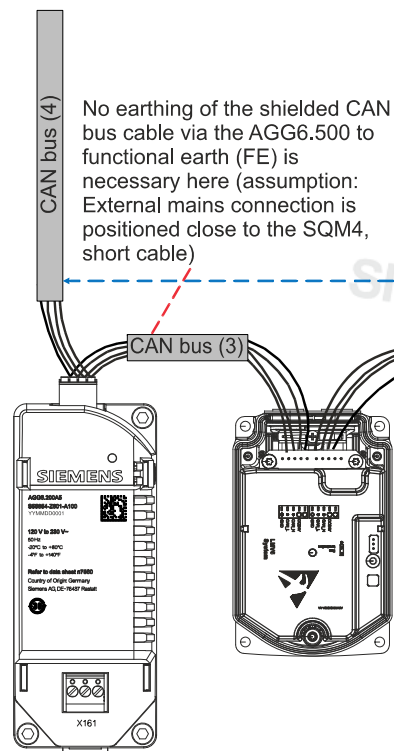
12.1 Parallel operation

Earthing of the shielded CAN bus cable via the AGG6.500 to functional earth (FE) of the mounting plate or burner housing



12.2 Variant for parallel operation

If the functional earth (FE) connection points (between AGG6.200A5 and the LMV6) are far away, the shielding of CAN bus cables (3) and (4) is not connected



System extension

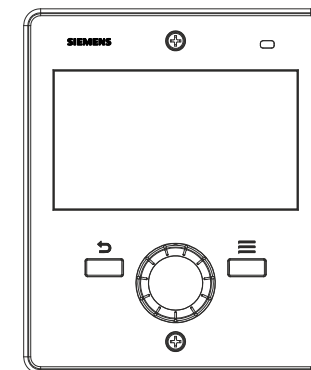
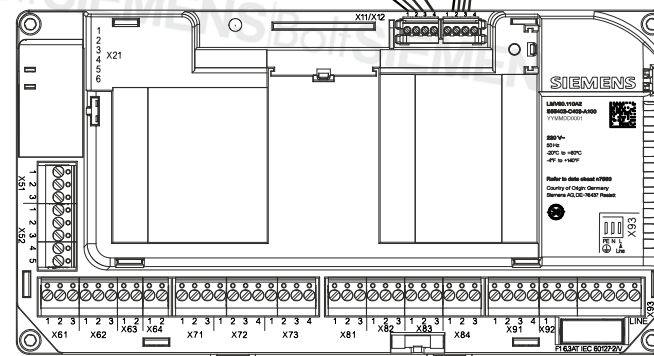
No earthing of the shielded CAN bus cable via the AGG6.500 to functional earth (FE) is necessary here (assumption: External mains connection is positioned close to the SQM4, short cable)

CAN bus (2)

The "functional earth (FE)" shield connection of the CAN bus cable is established in the SQM4 via the shield terminal and the existing flat connector of the SQM4

Minimal CCS system

Earthing of the shielded CAN bus cable via the AGG6.500 to functional earth (FE) of the mounting plate or burner housing



CAN bus (1)

7560z45en/1020

Figure 31: Variant for parallel operation

13 List of figures

Figure 1: LMV60.110A2 connection assignment	7
Figure 2: LMV6 protection classes.....	8
Figure 3: AGG6.200 protection classes	9
Figure 4: Description of terminal X11 / X12	10
Figure 5: Description of terminals X51 / X52	11
Figure 6: Description of terminal X61 / X62 / X63 / X64	12
Figure 7: Description of terminal X71 / X72 / X73	13
Figure 8: Description of terminal X81 / X82 / X83 / X84	14
Figure 9: Description of terminal X91 / X92 / X93	15
Figure 10: Description of terminal X13.....	17
Figure 11: Description of terminal X161	17
Figure 12: Block diagram inputs / outputs.....	18
Figure 13: AZL66 connection assignment	19
Figure 14: SQM4 connection assignment.....	19
Figure 15: AGG6.200A5 connection assignment.....	20
Figure 16: Connection of the protective earth (PE) / functional earth (FE) with the mounting plate	22
Figure 17: AGG6.500 shielding mechanism (optional)	22
Figure 18: Earthing and wiring of the LMV6.....	24
Figure 19: TN-S earthing.....	27
Figure 20: TT earthing	27
Figure 21: Protective earth (PE), functional earth (FE)	28
Figure 22: 2-pole ignition	29
Figure 23: 1-pole ignition	29
Figure 24: 1-pole ignition with low impedance at the burner housing	30
Figure 25: 1-pole ignition with high impedance of the burner housing.....	31
Figure 26: Example for wiring, earthing and shielding of the LMV6.....	33
Figure 27: Installation of all components in the burner: CAN bus cable LMV6 ↔ last SQM4 < 20 m.....	34
Figure 28: AGG6.641	35
Figure 29: AGG6.635	35
Figure 30: Parallel operation	36
Figure 31: Variant for parallel operation.....	37

Siemens AG Smart Infrastructure
Berliner Ring 23
76437 Rastatt, Germany
Tel. +49 (7222) 784 2396
www.siemens.com

© 2020 Siemens AG Smart Infrastructure
Subject to change!