

## Electronic Ignition Equipment

## TQG3...

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The TQG3... consists of a cable for connection to the safety shutoff valves of the VGU... gas valves and electronic ignition equipment for use on gas boilers with single- or double-pole ignition.

The TQG3... and this Data Sheet are intended for use by OEMs which integrate the ignition equipment in their products.

### Use

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Typical field of use are gas boilers equipped with atmospheric burners or condensing boilers with premix burners.

The TQG3... electronic ignition equipment is of compact design and delivers high sparking power.

It is designed specifically for use with the VGU... gas valves.

The fastening equipment and the compact design enable the ignition equipment to be installed in confined spaces.



#### Note!

The scope of delivery of the TQG3... does not include the high-voltage ignition cables.

## Warning notes



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

**⚡ The ignition equipment generates high-voltage which, if improperly applied, can lead to insulation failure that can cause fire and damage to persons!**

**Do not open, interfere with or modify the equipment!**

- All activities (mounting, installation, service work, shut down etc.) must be performed by qualified staff
- Before making any wiring changes in the connection area, completely isolate the plant from mains supply (all-polar disconnection). Ensure that the plant cannot be inadvertently switched on again and that it is indeed dead. If not observed, there is a risk of electric shock hazard
- Ensure protection against electric shock hazard by providing adequate protection for the connection terminals
- Each time work has been carried out (mounting, installation, service work, etc.), check to ensure that wiring is in an orderly state
- The single electrode igniters are not protected against electric shock hazard. If not observed, there is a risk of electric shock hazard

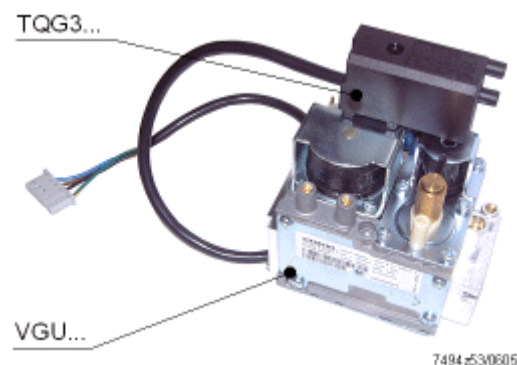
## Planning notes

- Electric ignition sparks produce high-frequency energy which can adversely affect radio and television reception. The high-voltage cable connected to the ignition electrode acts as a transmit antenna. For this reason, the TQG3... features inbuilt filters which prevent high-frequency from ignition cable to other terminals. This ensures compliance with international interference protection regulations. High-frequency energy also spreads as capacitive or inductive energy (not wire-bound), which must be taken into consideration when laying the cables. The ignition cable should be run to the ignition electrode as directly as possible, with no loops in between. It must never be run parallel or very close to other electric cables since otherwise the inbuilt filter of the TQG3... would not suffice

## Mounting notes

- Ensure that the relevant national safety regulations are complied with
- Protection against electric shock hazard must be ensured through the way the TQG3... is mounted. Parts carrying high-voltage should be protected against dirt and moisture to ensure sufficient sparking power. Insulate the ignition equipment adequately against non-earthed external, exposed parts
- Locate the ignition electrode and ionization probe such that the ignition spark cannot arc over to the ionization probe (risk of electric overloads on the connected burner control)

TQG3... fitted to the  
VGU... gas valve



## Installation notes

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- The connection of the earthing lug to burner ground must be rigid and electrically conducting

## Electrical connection of the high-voltage ignition cable

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- Run the high-voltage ignition cables
  - always separately while observing the greatest possible distance to the unit and other cables
  - as short as possible, avoiding loops and sharp bends

## Commissioning notes

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- High-frequency equipment places special requirements on high-voltage ignition cables and electrodes. Always use high-voltage ignition cables and electrodes that are special suited for this type of ignition equipment
- An important prerequisite for ensuring operating safety is the correct sizing and adjustment of the spark gap. Adjust it such that safe ignition is ensured under all permissible operating conditions
- The location of the TQG3..., the high-voltage ignition cables and the spark gap on the burner have a considerable impact on the generation of electromagnetic interference. The notes relating to the laying of high-voltage ignition cables and adequate earthing of both the TQG3... and the burner must be observed

## Standards and certificates

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### Applied directives:

- Low-voltage directive 2014/35/EC
- Electromagnetic compatibility EMC (immunity) 2014/30/EC

Compliance with the regulations of the applied directives is verified by the adherence to the following standards / regulations:

- Household and similar electrical appliances - Safety Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections DIN EN 60335-2-102
- Household and similar electrical appliances - Safety Part 1: General requirements DIN EN 60335-1



EAC-Konformität (Eurasien Konformität)



ISO 9001:2008  
ISO 14001:2004  
OHSAS 18001:2007



## Disposal notes

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The ignition equipment contains electric and electronic components and must not be disposed of together with domestic waste.  
Local and currently valid legislation must be observed.

## Type code

T Q G 3 1 . A 0 0 0 9

760801e/0309

— Versions  
09: Standard version

— Type of connector  
0 Stelvio or Stocko 4-pole  
1 Stelvio or Stocko 4-pole and Faston  
2 Lumberg  
3 Stelvio or Stocko 5-pole  
4 Stelvio or Stocko 5-pole and Faston

— Operating voltage for gas valve

	Input TQG...	Output TQG...	VGU... type
0	1 x AC	1 x AC	A, J
1	1 x RAC (or DC)	1 x RAC (or DC)	C, H
2	1 x AC	1 x RAC	C
3	2 x RAC (or DC)	2 x RAC (or DC)	E
4	2 x AC	2 x RAC	E

— Operating voltage for ignition

A AC 230 V  
B AC 24 V  
C DC 24 V  
D AC 120 V / 60 Hz

— Versions

1 1 electrode for ignition spark (ignition against earth)  
2 2 electrodes for ignition spark (unearthed ignition or ignition against burner ground)  
3 1 electrode for ignition spark and ionization

— Type

3 Ignition connector for VGU...

## Ordering

### Electronic ignition equipment

TQG3...

- Without accessories
- Type references according to *Type code*

When ordering, please give the type reference.

## Accessories

- **Seal**, to be fitted between VGU... gas valve and TQG3... ignition equipment to ensure degree of protection IP44  
**Only on requirement!**
- **Fixing screw**, for securing the montage of TQG3...  
**Only on requirement!**

## Technical data

### General unit data

Supply voltage	DC 24 V -15%/+10%	AC 220...240 V -15%/+10%	AC 120 V -15%/+10%
<b>Nominal value, primary side</b>			
Mains frequency	---	50...60 Hz $\pm 5\%$	60 Hz $\pm 5\%$
Switch-on current consumption (part of ignition)	Max. 150 mA	Max. 15 mA	Max. 25 mA
Power consumption (part of ignition)	Max. 1.5 VA	Max. 1.5 VA	Max. 1.5 VA
Current of valve	Max. 1.5 A	Max. 200 mA	Max. 200 mA
Primary connection	Double pole Stelvio, Stocko Lumberg		
Safety class	Suitable for use into systems of safety class I		
<b>Nominal value, secondary side</b>			
Type of ignition	Permanent spark ignition to DIN EN 60335-2-102		
Ignition voltage	$\geq 23$ kV at 3 pF/100 M $\Omega$ $\geq 20$ kV at 20 pF/100 M $\Omega$		
Ignition frequency	10 Hz +50%/-30% at 24 V	10 Hz $\pm 30\%$ at AC 230 V/50 Hz	10 Hz $\pm 30\%$ at AC 120 V/60 Hz
Spark energy (measured at 2 k $\Omega$ )	Min. 4 mJ		
High-voltage connection	Tab 2.8 x 0.8		
Spark gap (reference)	1 x max. 6 mm		
Ignition spots	1 (2)		
<b>Suppression/immunity</b>			
Network disturbances	to DIN EN 61000-3-2/DIN EN 61000-3-3/DIN EN 55014-1		
Immunity	To DIN EN 50165 severity level 3		
Radio interference suppression	Filter integrated, protection in the real application of the customer required		
<b>Others</b>			
Degree of protection	<ul style="list-style-type: none"> <li>• IP40</li> <li>• IP44 (with connector plugged in and with the required seal)</li> </ul>		
Earthing	With earthing plug, 6.3 x 0.8 mm or via earthing of VGU...		
Weight	125 g (typically)		
Compound	PU		
Housing material	PA 6 with 30% fiber glass		
Ignition cable			
- Length	Max. 1 m		
- Cross-sectional area	Min. 0.3 mm <sup>2</sup>		
- Isolation	Min. 30 kV, pulse load		
Product life	2 electrode operation, 1 electrode not earthed: 2 Mio. cycles (3 s ON/OFF)		
Electrical safety	DIN EN 61558-2-3, DIN EN 60730-2-5		
Safety mains separation (does not apply to single electrode igniter, see <i>Warning notes</i> )	---	Double or reinforced isolation between mains input and ignition output	
On time	100%		

## Technical data (cont'd)

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Environmental conditions

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<b>Storage</b>	DIN EN 60721-3-1
Climatic conditions	Class 1K3
Mechanical conditions	Class 1M2
Temperature range	-20...+60 °C
Humidity	<95% r.h.
<b>Transport</b>	DIN EN 60721-3-2
Climatic conditions	Class 2K3
Mechanical conditions	Class 2M2
Temperature range	-20...+60 °C
Humidity	<95% r.h.
<b>Operation</b>	DIN EN 60721-3-3
Climatic conditions	Class 3K3
Mechanical conditions	Class 3M3
Temperature range	-20...+60 °C
Humidity	<85% r.h.

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

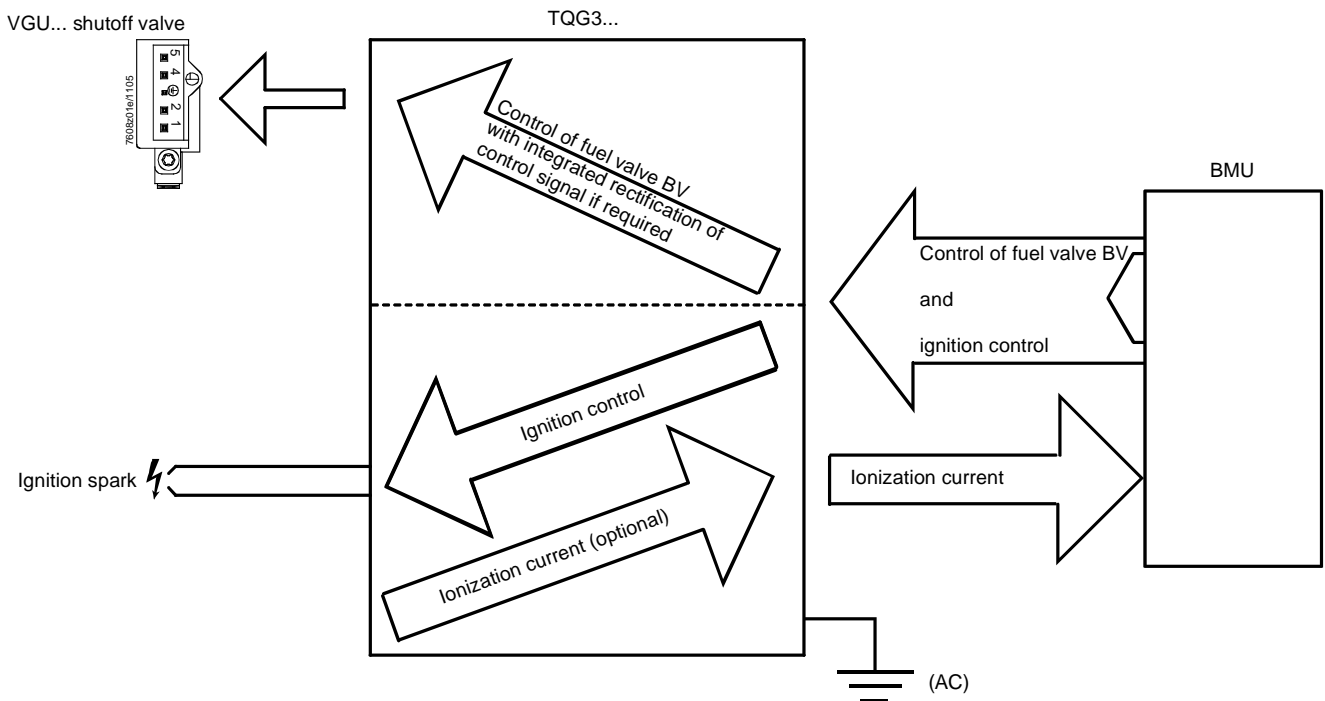
## Functional description

The TQG3... provides 2 functions

- Connecting cable between burner control and shutoff valve
- Ignition equipment and connecting cable to the burner control

The TQG3... is suited for different applications

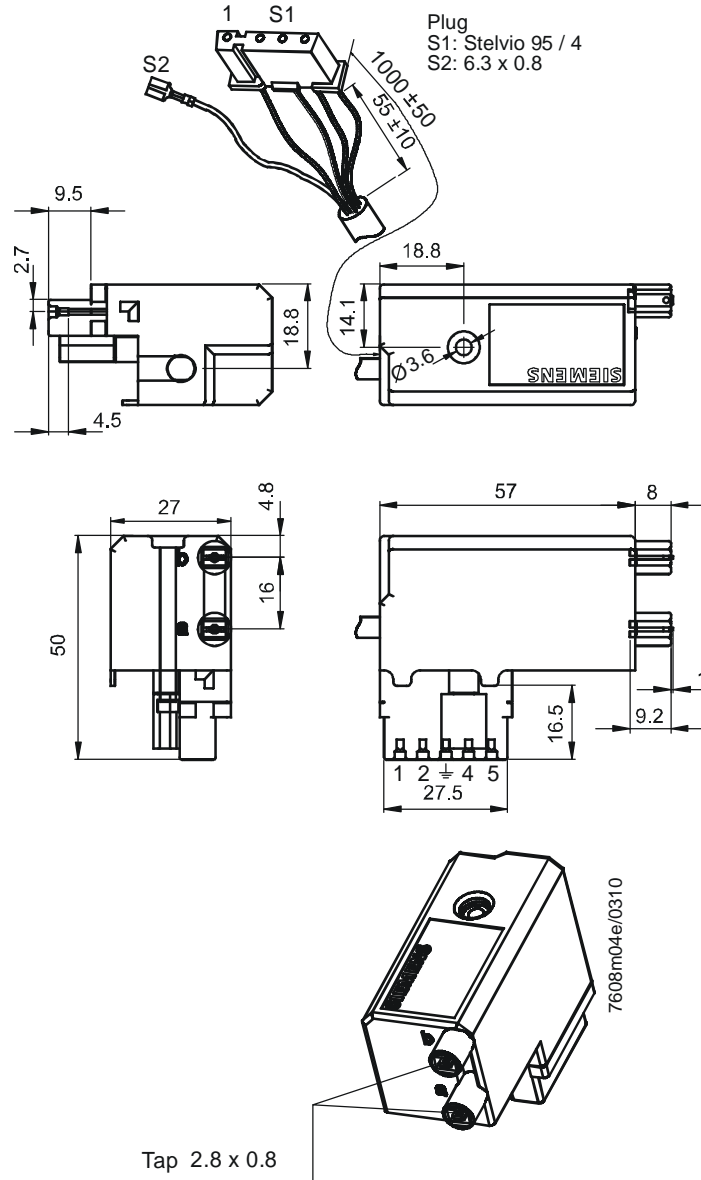
- Shutoff valve of the VGU...
  - 24 V, 120 V or 230 V
  - Control signal of the burner control (AC, RAC or DC)
  - Ignition **P**ilot or **D**irect **B**urner **I**gnition (shutoff valves connected in series or controlled separately)
- Ignition transformer
  - 24 V, 120 V or 230 V
  - Control signal of the burner control (AC, RAC or DC)
  - Single- or double-electrode operation (unearthed ignition or ignition against burner ground)
  - Ignition and ionization current supervision on the same electrode
  - Interference suppression integrated



**Dimensions**

Dimensions in mm

**TQG32.A0109**



**Connection plug arrangement**

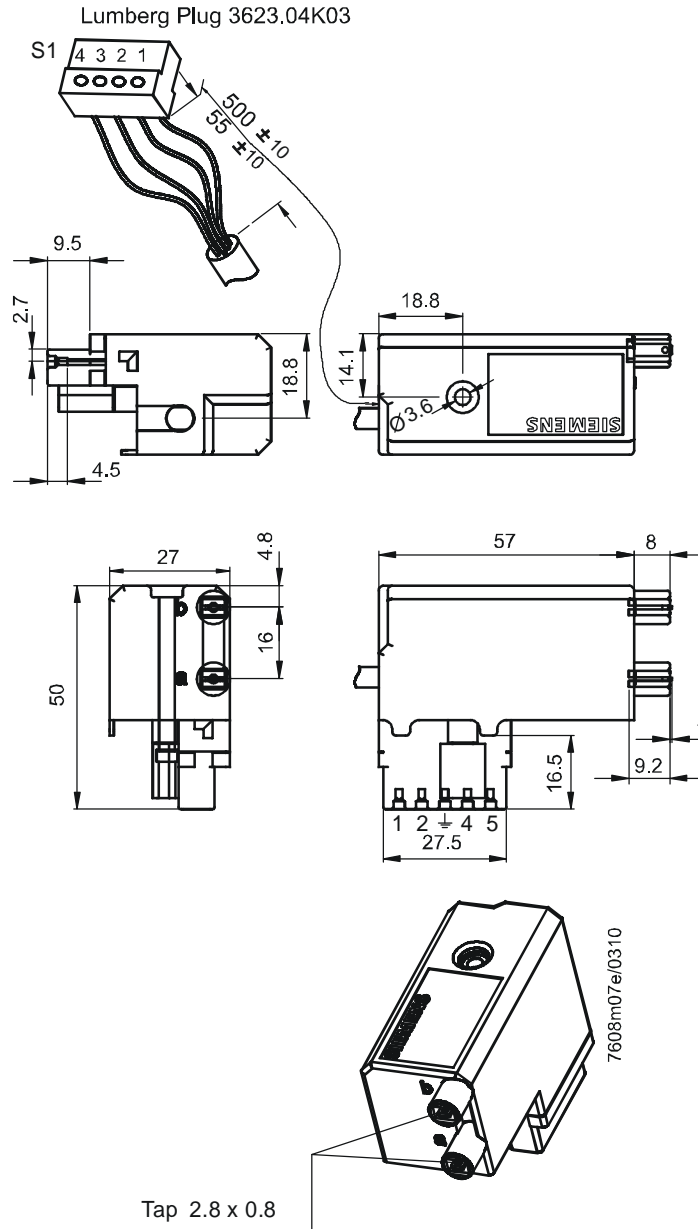
S1	1	Red	Valve (L)
S1	2	Black	Valve (N)
S1	3	Blue	Neutral (N)
S1	4	Brown	Ignition (L)
S2	---	Yellow-green	Protective earth (PE)

- Input for shutoff valves: AC 230 V
- Output for shutoff valves: AC 230 V
- Able for 1 and 2 electrode operation (ignition earthed and ungrounded)
- With ignition against burner ground, connect **b** to burner ground



Dimensions in mm

TQG32.A0209



Connection plug arrangement

S1	1	Brown	Ignition (L)
S1	2	Blue	Neutral (N)
S1	3	Black	Valve (N)
S1	4	Red	Valve (L)

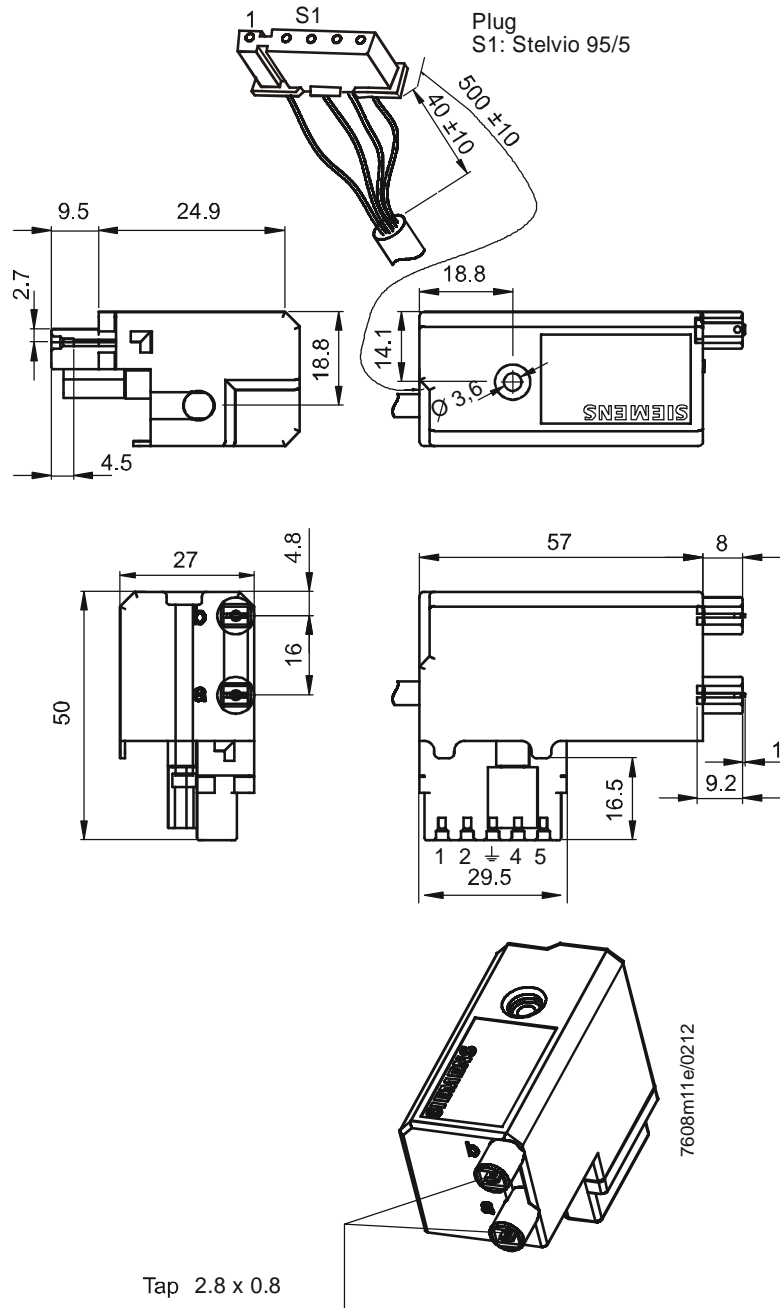
- Input for shutoff valves: AC 230 V
- Output for shutoff valves: AC 230 V
- Able for 1 and 2 electrode operation (ignition earthed and ungrounded)
- With ignition against burner ground, connect **b** to burner ground
- Earthing of VGU... required



Dimensions (cont'd)

Dimensions in mm

TQG32.A0309



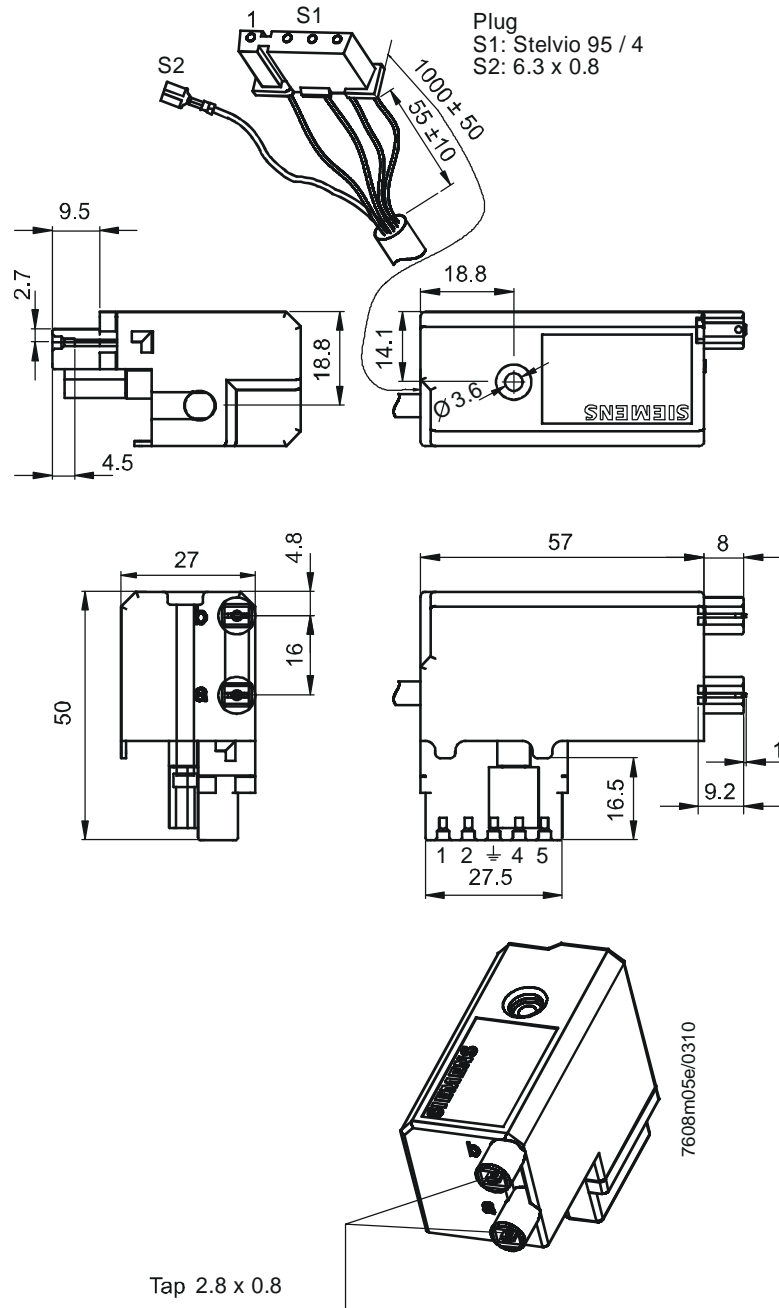
Connecting plug arrangement

S1	1	Red	Valve
S1	2	Black	Valve
S1	3	Brown	Ignition (L)
S1	4	Blue	Neutral (N)
S1	5	---	Free

- Input for shutoff valves: AC 230 V
- Output for shutoff valves: AC 230 V
- Able for 1 and 2 electrode operation (ignition earthed and ungrounded)
- With ignition against burner ground, connect **b** to burner ground

Dimensions in mm

TQG32.A4109



Plug  
S1: Stelvio 95 / 4  
S2: 6.3 x 0.8

Connection plug arrangement

S1	1	Black	Valve 1 (L)
S1	2	Red	Valve 2 (L)
S1	3	Blue	Neutral (N)
S1	4	Brown	Ignition (L)
S2	---	Yellow-green	Protective earth (PE)

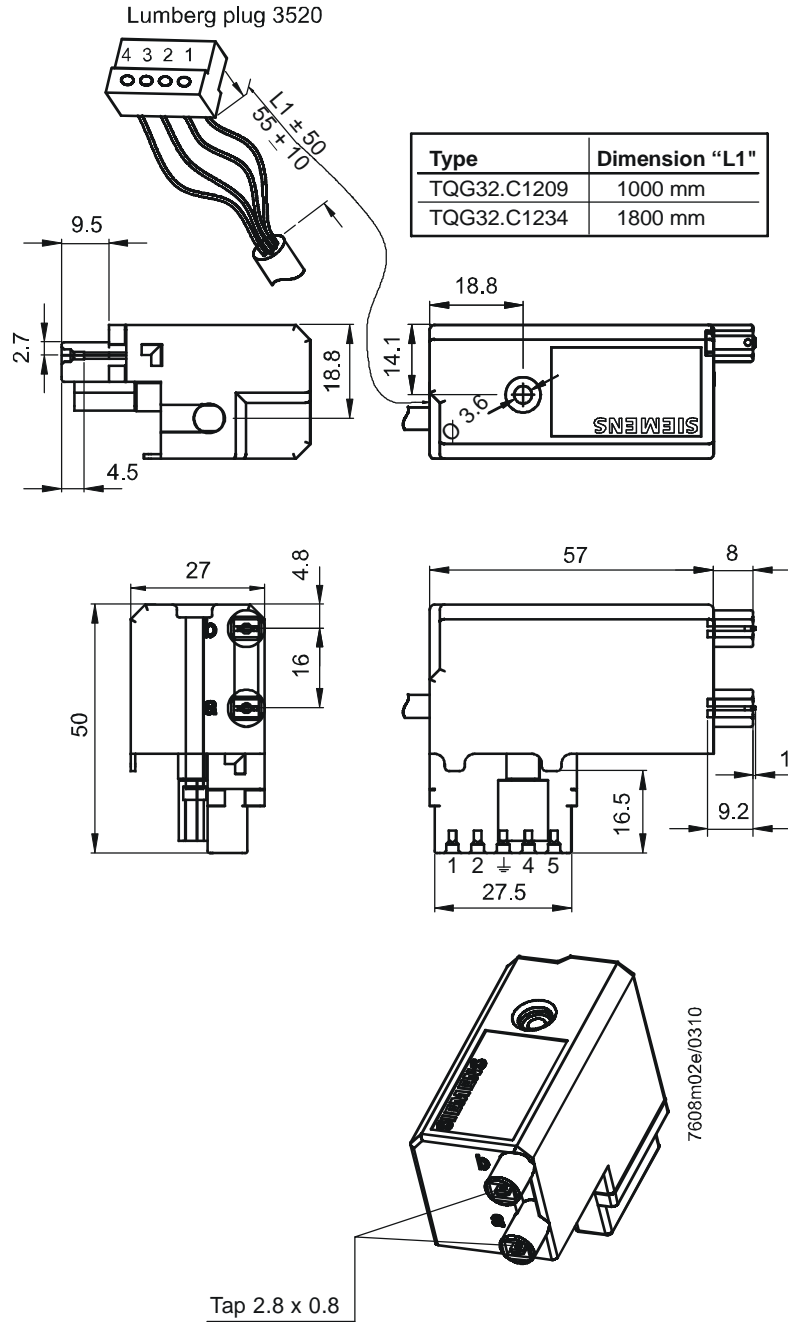
Rectifier and varistor for supplying of gas valve are integrated in the ignition module.

- Input for shutoff valves: AC 230 V  
Output for shutoff valves: RAC 230 V
- Able for 1 and 2 electrode operation (ignition earthed and ungrounded)
- With ignition against burner ground, connect **b** to burner ground

Dimensions (cont'd)

Dimensions in mm

TQG32.C12xx



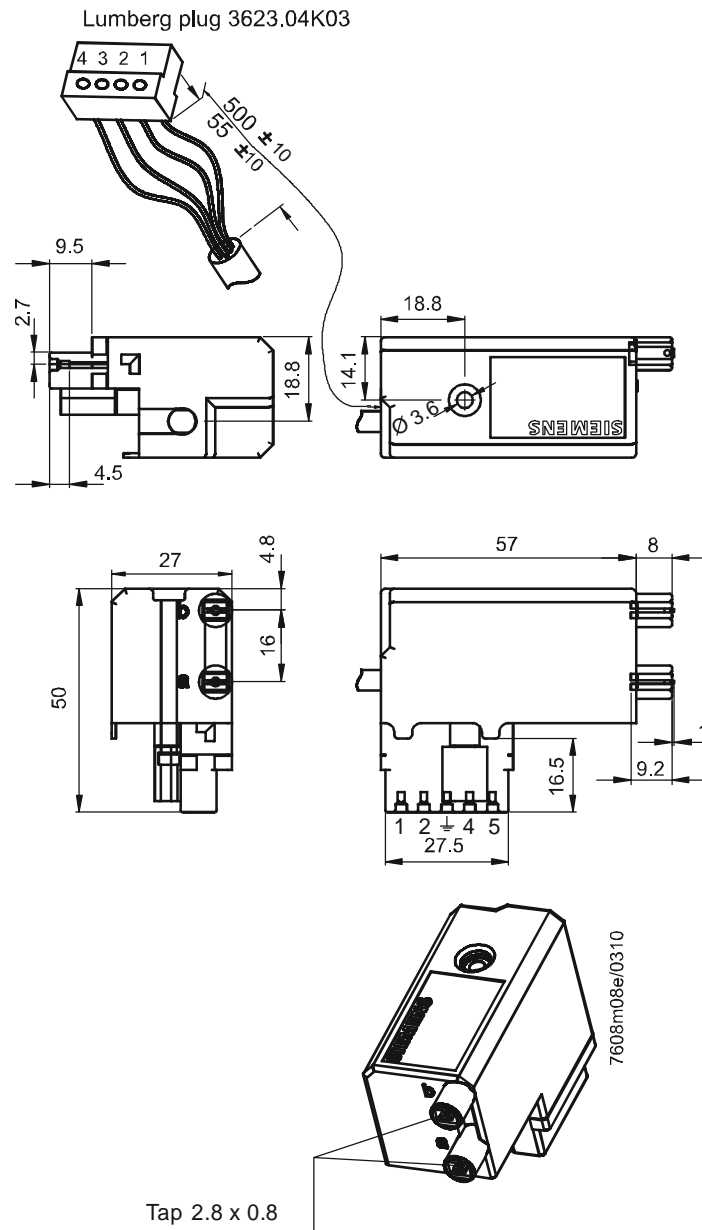
Connection plug arrangement

Lumberg	1	Red	Valve +
Lumberg	2	Black	Valve -
Lumberg	3	Blue	Ignition -
Lumberg	4	Brown	Ignition +

- Input for shutoff valves: DC 24 V
- Output for shutoff valves: DC 24 V
- Able for 1 and 2 electrode operation (ignition earthed and ungrounded)
- With ignition against burner ground, connect **b** to burner ground

Dimensions in mm

TQG32.D0209



Connection plug arrangement

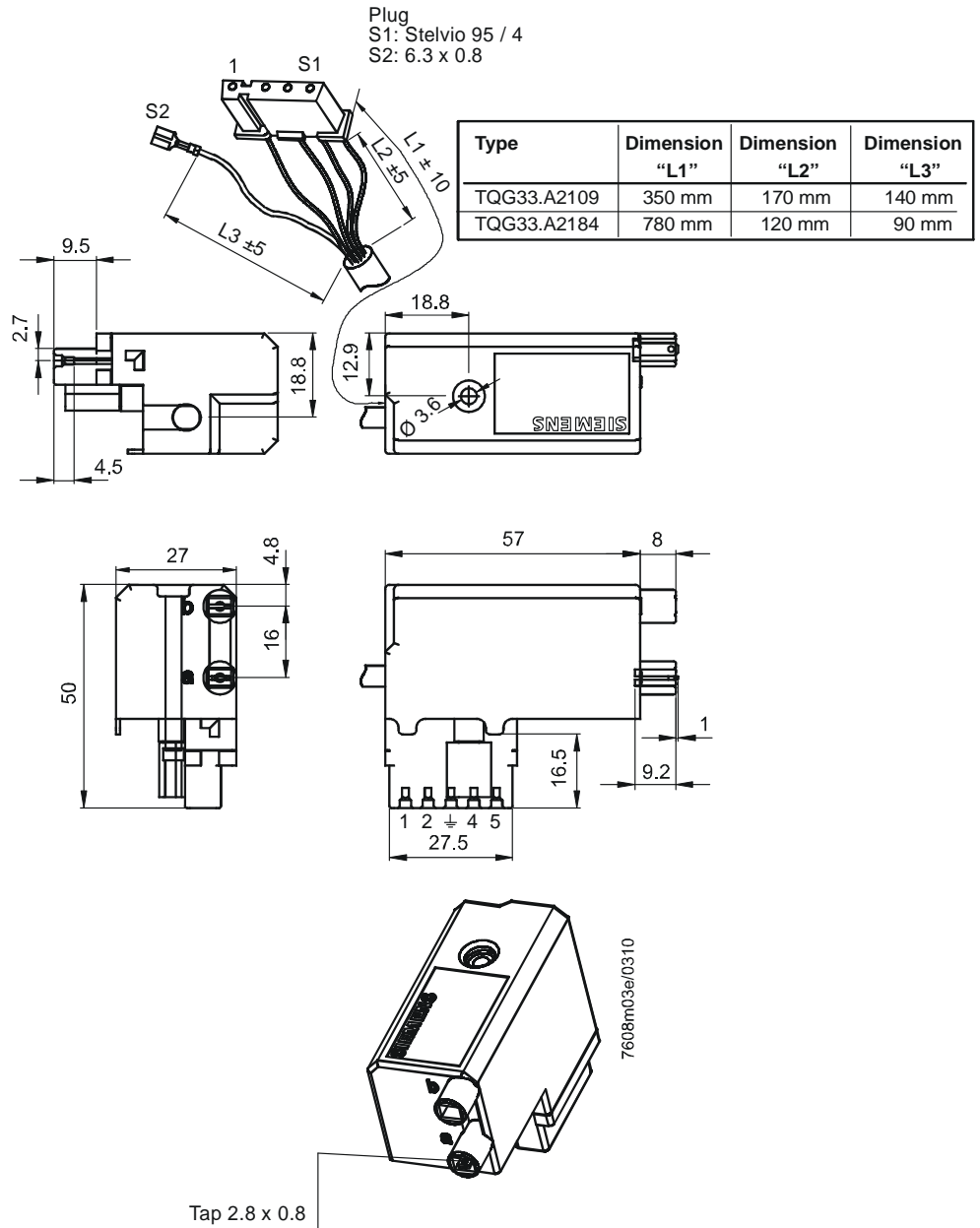
S1	1	Brown	Ignition (L)
S1	2	Blue	Neutral (N)
S1	3	Black	Valve (N)
S1	4	Red	Valve (L)

- Input for shutoff valves: AC 120 V
- Output for shutoff valves: AC 120 V
- Able for 1 and 2 electrode operation (ignition earthed and ungrounded)
- With ignition against burner ground, connect **b** to burner ground
- Earthing of VGU... required

Dimensions (cont'd)

Dimensions in mm

TQG33.A21xx



Connection plug arrangement

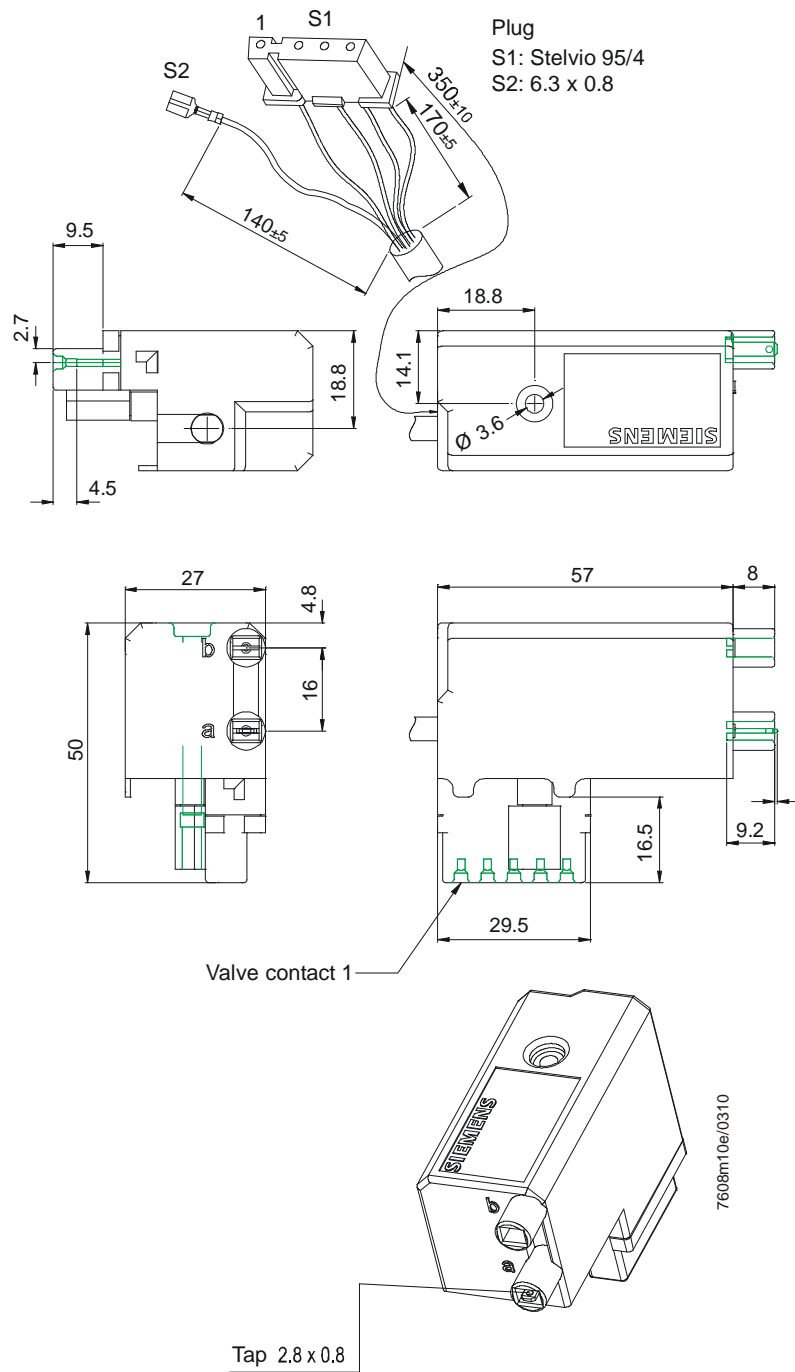
S1	1	Red	Ionization
S1	2	Black	Common (L)
S1	3	Blue	Valve (N)
S1	4	Brown	Ignition (N)
S2	---	Yellow-green	Protective earth (PE)

Rectifier and varistor for supplying of gas valve are integrated in the ignition module.

- Input for shutoff valves: AC 230 V
- Output for shutoff valves: RAC 230 V

Dimensions in mm

TQG33.D2109



Connection plug arrangement

S1	1	Red	Ionization
S1	2	Black	Common (L)
S1	3	Blue	Valve (N)
S1	4	Brown	Ignition (N)
S2	---	Yellow-green	Protective earth (PE)

Rectifier and varistor for supplying of gas valve are integrated in the ignition module.

- Input for shutoff valve: AC 120 V
- Output for shutoff valve: RAC 120 V