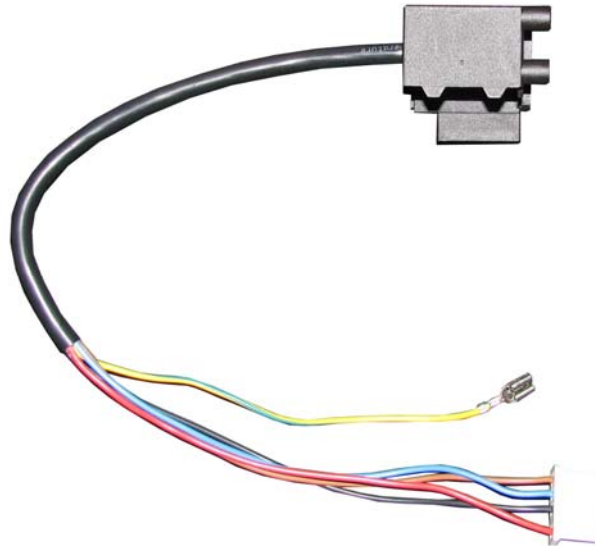




## Electronic Ignition Equipment

**TQG4...**

The TQG4... consists of a cable for connection to the safety shutoff valves of the VGUxxS... gas valves and electronic ignition equipment for use on gas boilers with single- or double-pole ignition.

The TQG4... and this Data Sheet are intended for use by OEMs which integrate the ignition equipment in their products.

### Use

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

The TQG4... electronic ignition equipment is of compact design and delivers high sparking power.

It is designed specifically for use with the VGUxxS... 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 TQG4... does not include the high-voltage ignition cables.

## Warning notes

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**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

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- 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 TQG4... 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 and 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 TQG4... would not suffice

## Mounting notes

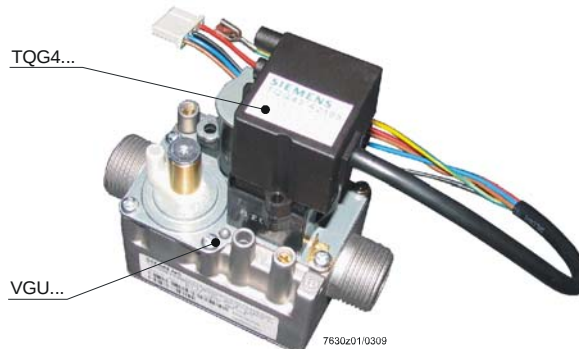
- Ensure that the relevant national safety regulations are complied with
- Protection against electric shock hazard must be ensured through the way the TQG4... is mounted. Parts carrying high-voltage should be protected against dirt and moisture to ensure sufficient sparking power. Insulate the ignition 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)



### Recommendation!

Ensure that the TQG4 cannot be removed, therefore the TQG4 should be secured with a suitable fixing screw.

TQG4... fitted to the  
VGUxxS... gas valve



## Installation notes

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

## Electrical connection of the high-voltage ignition cable

- 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

- 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 TQG4..., 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 TQG4... and the burner must be observed

## Standards and certificates



Conformity to EEC directives  
- Electromagnetic compatibility EMC (immunity)  
- Low-voltage directive

2004/108/EC  
2006/95/EC



ISO 9001: 2008  
Cert. 00739



ISO 14001: 2004  
Cert. 38233

## Disposal notes



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 4 3 . A 2 1 0 9**

— 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
- 5 Lumberg PCB-direct connector

Operating voltage for gas valve

|   | Input TQG4...   | Output TQG4...  | Typ VGUxxS... |
|---|-----------------|-----------------|---------------|
| 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
- 2 2 electrodes for ignition spark
- 3 1 electrode for ignition spark and ionization

— Type

- 4 Ignition connector for VGUxxS...

7630101e/0911

## Ordering

### Electronic ignition equipment

**TQG4...**

- Without accessories
- Type references according to «Type code»

When ordering, please give the type reference.

## Accessories

- **Seal**, to be fitted between VGUxxS... gas valve and TQG4... ignition equipment to ensure degree of protection IP44  
**Only on requirement!**
- **Fixing screw**, for securing the montage of TQG4...  
**Only on requirement!**

## Technical data

### General unit data

|                                                                                                |                                                                                                                          |                                                                        |     |
|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-----|
| Supply voltage                                                                                 | DC 24 V<br>-15 % / +10 %                                                                                                 | AC 220...240 V<br>-15 % / +10 %                                        | --- |
| <b>Nominal value, primary side</b>                                                             |                                                                                                                          |                                                                        |     |
| Mains frequency                                                                                | ---                                                                                                                      | 50...60 Hz ±5 %                                                        | --- |
| Current consumption (part of ignition)                                                         | Max. 150 mA                                                                                                              | Max. 15 mA                                                             | --- |
| Power consumption (part of ignition)                                                           | Max. 1,5 W                                                                                                               | Max. 1.5 VA                                                            | --- |
| Valve current                                                                                  | Max. 1,5 A                                                                                                               | Max. 200 mA                                                            | --- |
| Primary connection                                                                             | Double pole<br>Stelvio, Stocko<br>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                                                                               | ≥23 kV at 3 pF/100 MΩ<br>≥20 kV at 20 pF/100 MΩ                                                                          |                                                                        |     |
| Ignition frequency                                                                             | 10 Hz +50 % / -30 %<br>at DC 24 V                                                                                        | 10 Hz ±30 %<br>at AC 230 V / 50 Hz                                     | --- |
| Spark energy (measured at 2 kΩ)                                                                | 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                                                                           | Must be substantiated in connection with the target application                                                          |                                                                        |     |
| Immunity                                                                                       | To DIN EN 60335-2-102                                                                                                    |                                                                        |     |
| Radio interference suppression                                                                 | Filter integrated,<br>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 VGUxxS...                                                            |                                                                        |     |
| 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 mm²                                                                                                             |                                                                        |     |
| - Isolation                                                                                    | Min. 30 kV, pulse load                                                                                                   |                                                                        |     |
| Product life                                                                                   | 2 electrode operation, 1 electrode not earthed:<br>2 Mio. cycles (3 s on / off)                                          |                                                                        |     |
|                                                                                                |                                                                                                                          |                                                                        |     |
| Electrical safety                                                                              | DIN EN 60335-2-102                                                                                                       | DIN EN 60335-2-102, DIN EN 60730-2-5                                   |     |
| Safety mains separation (does not apply to single electrode igniter, refer to «Warning notes») | ---                                                                                                                      | Double or reinforced isolation between mains input and ignition output |     |
| Starting current                                                                               | 100 %                                                                                                                    |                                                                        |     |

## Technical data (cont'd)

Environmental  
conditions

|                       |                  |
|-----------------------|------------------|
| <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.       |



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

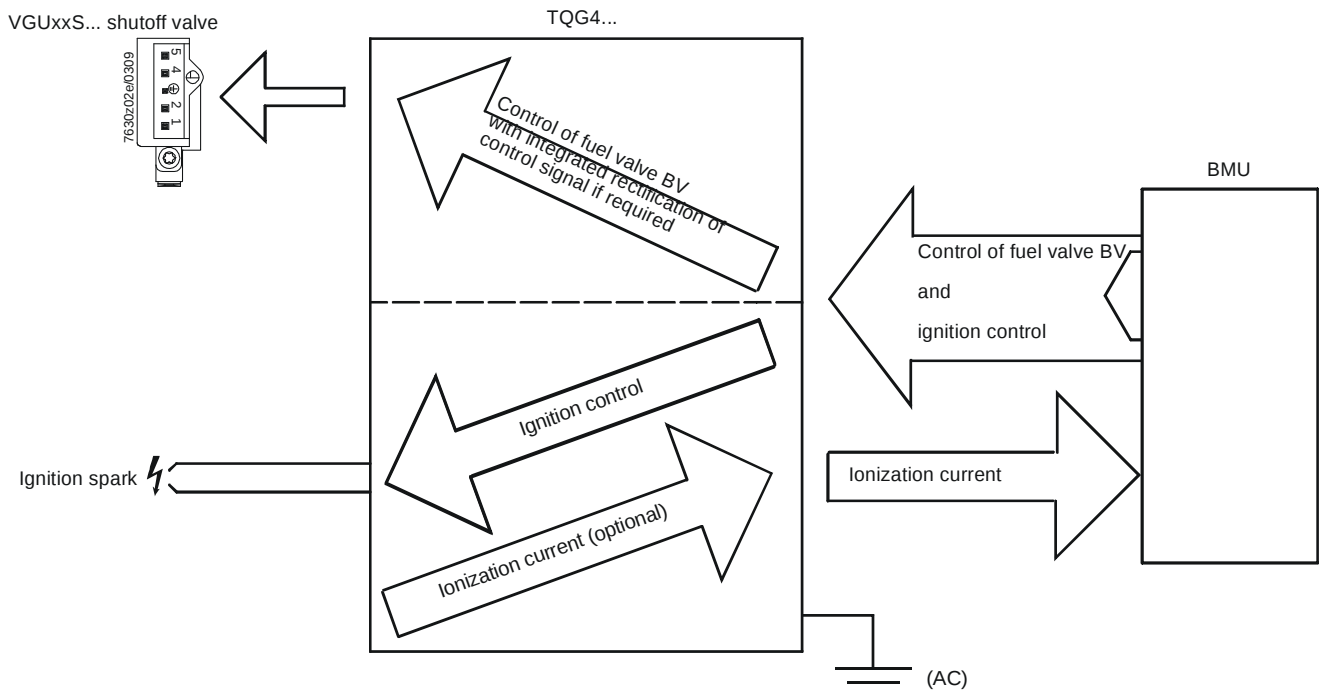
## Functional description

The TQG4... provides 2 functions

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

The TQG4... is suited for different applications

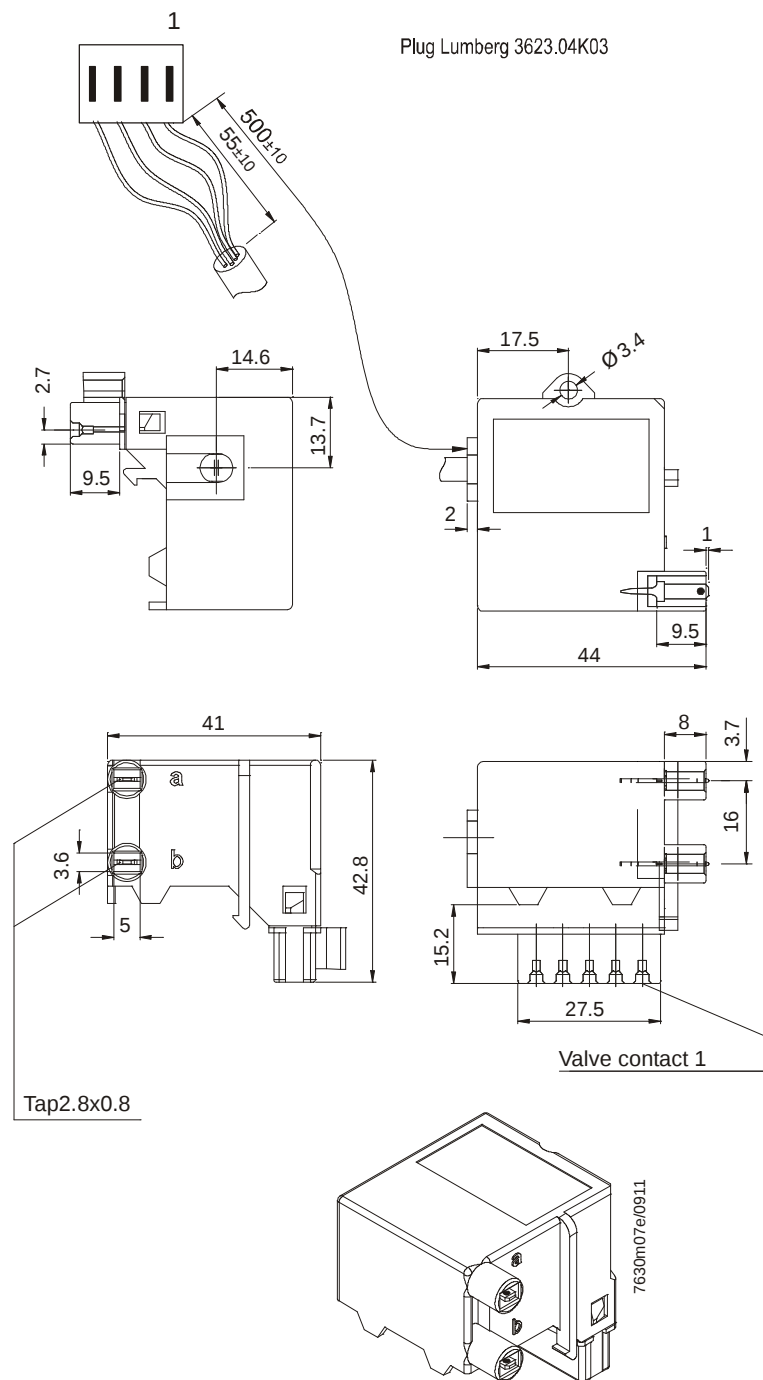
- Shutoff valve of the VGUxxS...
  - 24 V, 120 V or 230 V
  - Control signal of the burner control (AC, RAC or DC)
  - **I**gnition **P**ilot or **D**irect **B**urner **I**gnition (shutoff valves connected in series or controlled separately)
- Ignition transformer
  - 24 V, 120 V or 230 V
  - Control 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

**TQG42.A02xx**



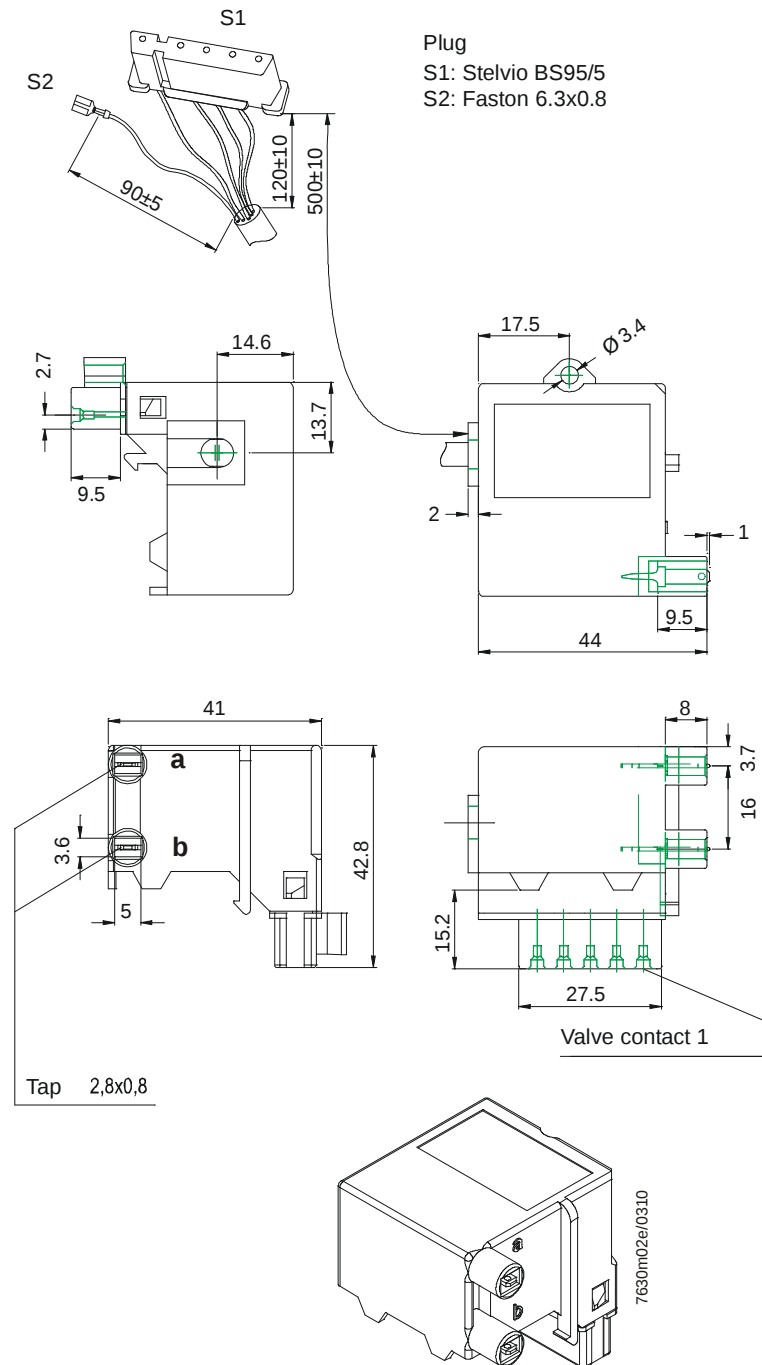
### Connection plug arrangement

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

- 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 in mm

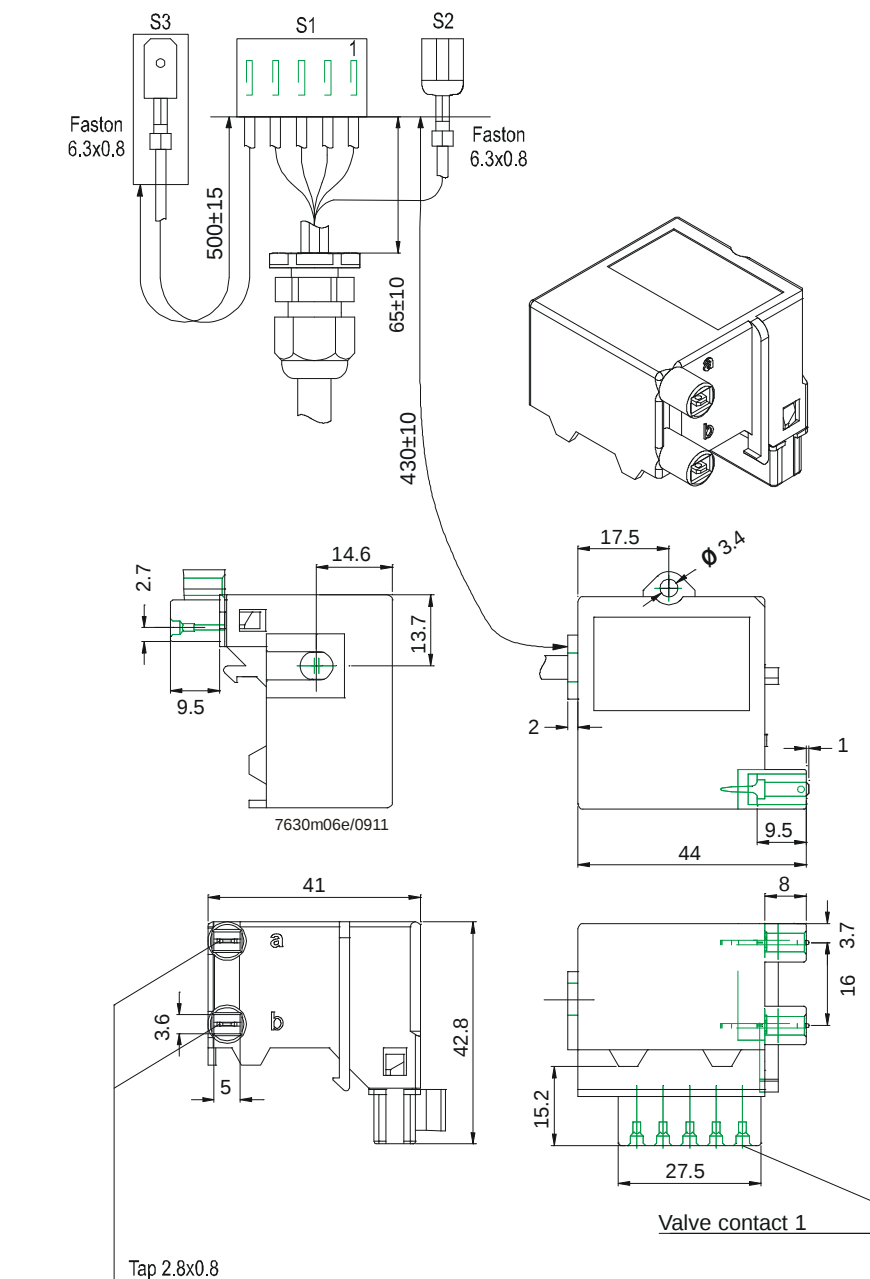
**TQG42.A04xx**



### Connection plug arrangement

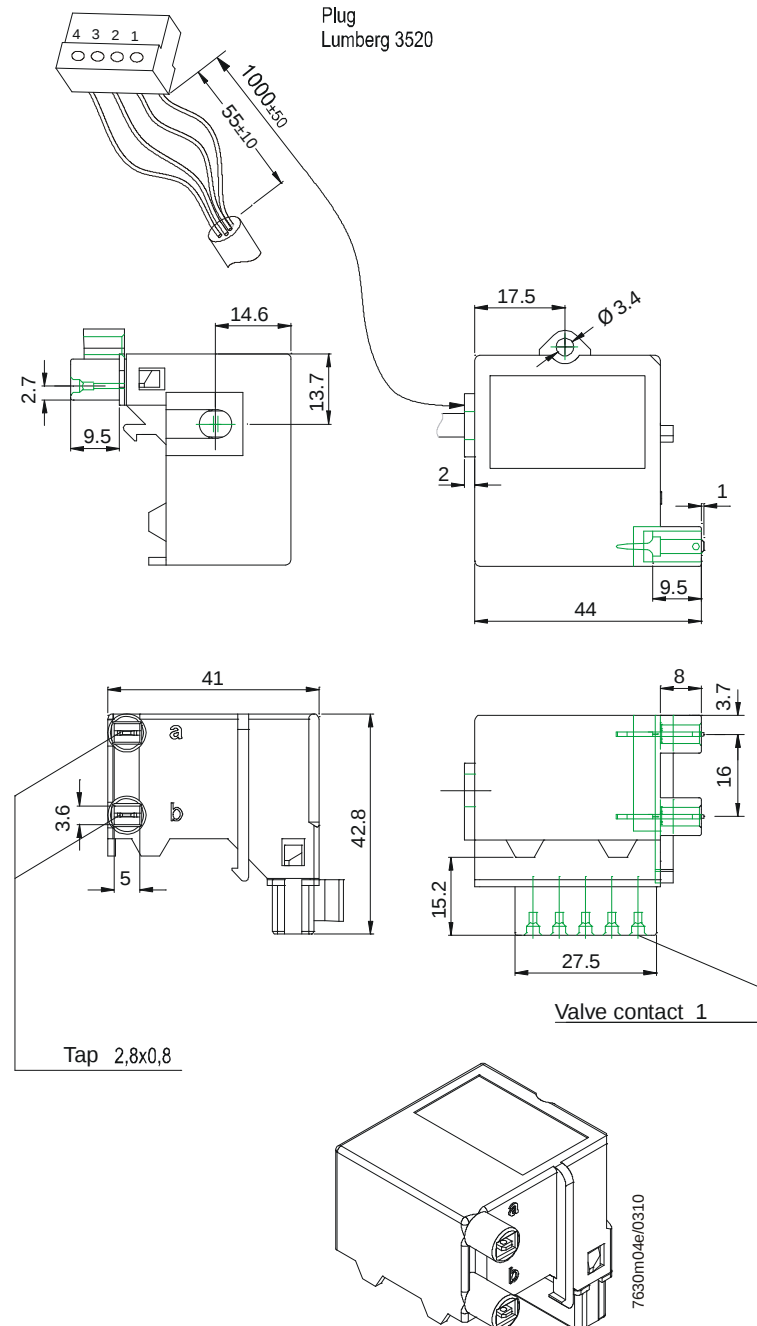
|    |     |              |                       |
|----|-----|--------------|-----------------------|
| S1 | 1   | Red          | Valve                 |
| S1 | 2   | Black        | Valve                 |
| S1 | 3   | Brown        | Ignition (L)          |
| S1 | 4   | Blue         | Neutral (N)           |
| S1 | 5   | ---          | Not used              |
| 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



|    |     |              |                       |
|----|-----|--------------|-----------------------|
| S1 | 3   | Brown        | Ignition (L)          |
| S1 | 4   | Blue         | Neutral (N)           |
| S1 | 5   | Red          | Ionization            |
| S2 | --- | Yellow-Green | Protective earth (PE) |
| S3 | --- | Red          | Ionization            |

**TQG42.C12xx**



### Connection plug arrangement

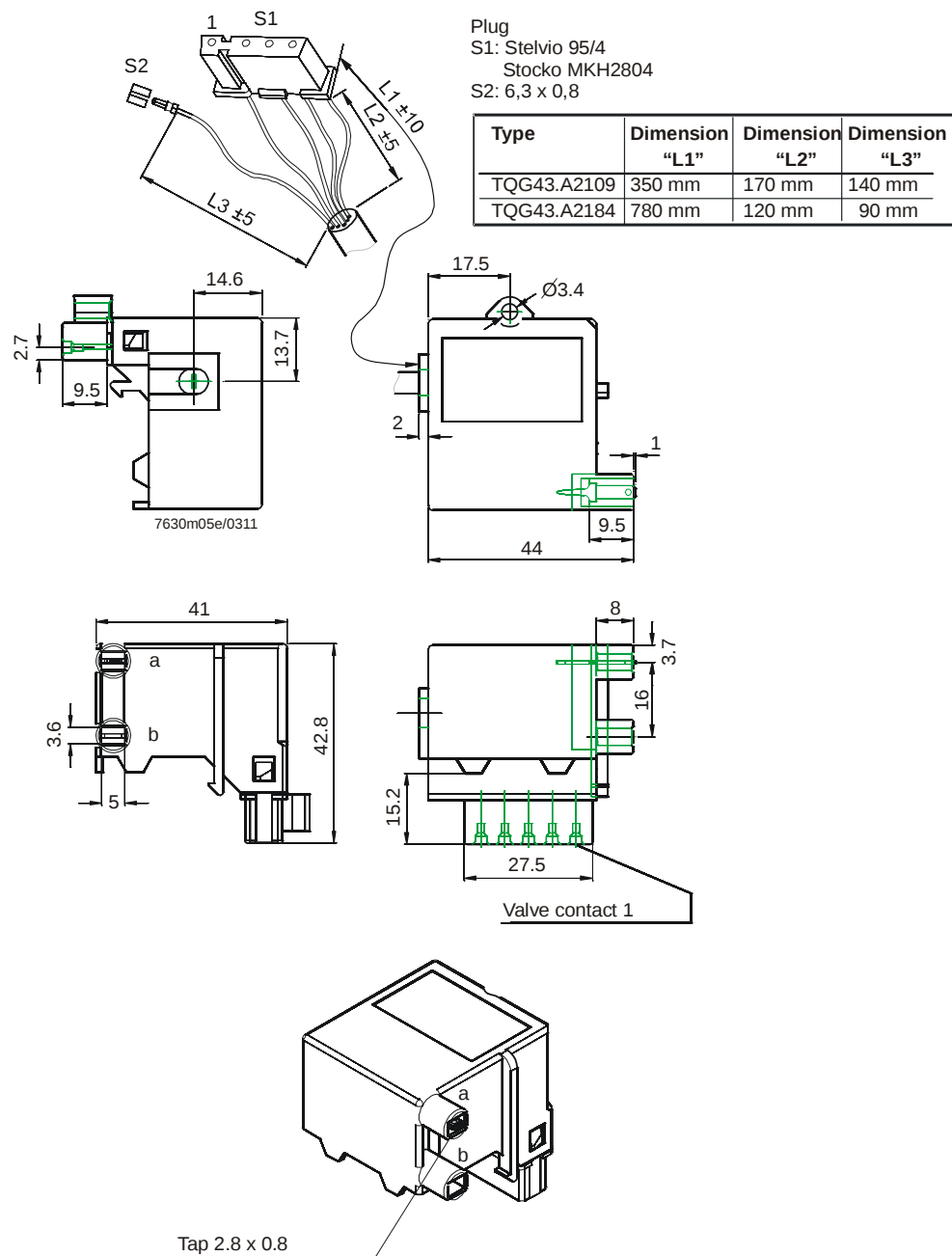
|    |   |       |              |
|----|---|-------|--------------|
| S1 | 1 | Red   | Valve (+)    |
| S1 | 2 | Black | Valve (-)    |
| S1 | 3 | Blue  | Ignition (-) |
| S1 | 4 | Brown | Ignition (+) |

- 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

Dimensions in mm

### TQG43.A21xx



Connection plug  
arrangement

|    |     |              |                       |
|----|-----|--------------|-----------------------|
| S1 | 1   | Red          | Ionization            |
| S1 | 2   | Black        | Common line (L)       |
| S1 | 3   | Blue         | Valve (N)             |
| S1 | 4   | Brown        | Ignition (N)          |
| 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