

# Operating Manual

## Electronic Power Supply

**EVG UVT 200-400 W 1.8-2.9 A**

**EVG UVT 200-480 W 3.2-4.8 A**



## Imprint

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## Summary description: Electronic power supplies EVG UVT 200-480 W

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## Warning notes and symbols in the operating instructions

These operating instructions describe the singled flamed electronic power supply of the EVG UVT series, its operation and its uses. The safety and warning notices explain the safe, proper handling of the device.

You will find the symbols listed below next to all safety and warning instructions in these operating instructions where there is danger to life and limb. An additional signal word indicates the severity of a possible danger.

Observe these notes closely and be especially careful in these cases in order to preclude accidents.

**DANGER!** The signal word marks a danger with high risk or an immediately threatening danger. If it is not avoided, death or very severe injuries / damage to health will result. Damage to property is possible.

**WARNING!** The signal word marks a danger with medium risk or dangerous situation. If it is not avoided, death or very severe injuries / damage to health could result. Damage to property is possible.

**CAUTION!** The signal word marks a danger with low risk or marks a possible danger. If it is not avoided, slight injury / damage to health could be possible. Damage to property is possible.

### The symbols used in these operating instructions have the following meaning:



This symbol warns of a hazard area.



This symbol warns of a hot surface.



This symbol warns of hazardous electrical voltage.

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The two following symbols are used to address practices for optimal operation and/or prevention of damage to the equipment. This information is not related to hazardous situations. Additionally, the signal words **ATTENTION** and **NOTE!** are used.



#### **ATTENTION!**

This symbol with signal word is found at those places in the operating instructions which must be observed so that damage or destruction of the equipment is prevented.



#### **NOTE!**

This symbol is found next to notes, tips on operation and useful information.

---

## 1 Device and function description

The EVG UVT is a microprocessor-based electronic power supply for UV low pressure lamps. It is available in the same size for wattages from 200-480 W. It allows to operate all UV low pressure lamps in a power range from 200 W up to 480 W with lamp currents from 1.8 A up to 4.8 A. A rotary switch with 10 positions enables the selection of diverse lamp parameters. All commercially available lamps are covered with the standard types described like follows.

The EVG UVT comes by default with a control input for an external 0-10 V DC signal for lamp dimming. That allows the dimming in a range of 60-100% (on basis lamp current). The input will be only released after the heat-up time of the lamps of 5 minutes. Alternatively, it is possible to dim to the maximum by short circuit the input. This function can be used as power saving function. Switching on/off is carried out by applying the main voltage.

A microprocessor controls and monitors the device and the connected lamp in order to prevent damages during operation. Breakdowns are displayed via potential-free contact. Simultaneously LEDs show the status and the type of failure.

The EVG UVT contains no internal fan and must be mounted upright with the mains clamps below. With unhindered convection, proper heat dissipation is guaranteed up to ambient temperatures of 40°C. Criterion for the correct cooling is the tc-point temperature of 55°C at the case cover. To avoid damages by overheating the EVG UVT must be forced cooled in case of exceeding that threshold or if the mounting position is deviant. Permanent operation at over temperature causes losses in life time. Still higher temperatures provoke a shutdown.

The EVG UVT is designated for integration into switch cabinet and switch boxes. The connection of the unit is realized by spring clamps.

The EVG UVT offers the following essential advantages:

- compact design, low weight, little cabling effort
- constant power output over the entire input voltage range
- high frequency operation eliminates flickering of cathodes and raises the UV-efficiency
- integrated dimming function, useable for power saving or adjustment to operation conditions
- mains voltage range permits use in Europe at 230 V AC and America at 208 V AC
- rotary switch for adjustment of several lamp types
- failure display by potential free contact and blink code
- pre heating and gentle ignition to extend lamp life time
- energy efficient cutoff of the filament heating during operation
- high efficiency, low heat generation
- potential-free connection of external LEDs possible, LED supply integrated for easy application
- integrated inrush current limiter
- tailor made programming of special lamps within the power range possible
- enlarged dimming range on request possible
- RS485 control as option

## 2 Safety instructions

### General information

A sound knowledge of all basic safety regulations is essential to ensure safe and fault-free operation of the EVG UVT.

This operating manual contains all important safety regulations to ensure safe operation of the equipment.

This operating manual, and in particular the safety instructions, must be observed by all persons working with the equipment.

In addition, all relevant rules and accident prevention regulations relating to the operation site must be observed. In regular intervals, the operator will check that all personnel are observing the safety regulations.

### Appropriate use

EVG UVT is a microprocessor-based electronic power supply for UV low pressure lamps.

Any other use or use above and beyond these terms is defined as inappropriate and is thus dangerous.

The operator may only operate the equipment as stipulated by the operating instructions in this manual.

The following are further conditions for appropriate use:

- the observance of all points listed in this user manual
- compliance with the general and specific safety instructions in this user manual
- compliance with the relevant accident prevention regulations



#### **ATTENTION!**

uv-technik international ltd is not liable for damage resulting from inappropriate use of the equipment.

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### Staff obligation

Before commencing work, all persons entrusted with work to be performed on the EVG UVT undertake the following:

- to observe the safety at work and accident prevention regulations
- to read the chapter on safety and the warnings printed in this manual and to observe them at all times while using the equipment

## Hazards from handling the equipment

The EVG UVT has been manufactured in accordance with the very latest state-of-the-art technology and the recognized rules of safety technology.

### The equipment may only be used under the following conditions:

- it is used for the purpose for which it was constructed
- in a condition in which the equipment complies with all safety technology requirements

---

#### **DANGER! – HAZARDOUS ELECTRICAL VOLTAGE!**

Switch off the main switch and the main contactor before working on the connections of the power on the power supply or the UV lamp, e.g. for a lamp replacement, in order to eliminate the danger of an electric shock.



Reason: During operation, the UV lamp is switched off by semiconductor components. This does not correspond to a safe separation from the mains supply according to VDE! Residual voltages!

**Attention: Danger of life!**

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## Warranty and liability

The General sales and delivery conditions of uv-technik international ltd apply. The operator will have received these terms, at the latest upon signing the contract. The uv-technik international ltd is not liable for any damage to persons or property arising from any one or more of the following:

- inappropriate use of the EVG UVT
- incorrect assembly, commissioning and operation of the EVG UVT
- operation of the EVG UVT with faulty and/or nonfunctioning safety and protection device
- non observance of the instructions given in the user's manual with reference to the safety, transport, storage, assembly, commissioning, operation and servicing of the device
- unauthorized alterations to the construction of the EVG UVT
- repairs which are carried out incorrectly
- catastrophes, the action of foreign bodies or acts of God
- damages or losses originated from the use or a defect of the EVG UVT

## Organizational measures

All safety devices on the equipment must be tested for correct functioning regularly, prior to carrying out work and at each shift change. Look for external signs of damage.

## Informal safety measures

In addition to this user manual, the generally and locally applicable accident prevention and environmental protection regulations must be made available and observed.

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## Danger due to electricity

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**DANGER! – HAZARDOUS ELECTRICAL VOLTAGE!**

There is a danger caused by direct or indirect contact with electricity!

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The electrical components of the EVG UVT must be inspected regularly.

**Before commencing work:**

- check all equipment components for external signs of damage
- check that all electric cables are in perfect condition

Loose connections must be tightened, and damaged wiring replaced immediately.

**Service, maintenance, remedying faults**

In the unlikely event of faults occurring on the EVG UVT, the chapter 'Faults' offers information on the causes of the fault and possible remedial action.

In the unlikely event of faults occurring which cannot be remedied by any of the procedures listed, please contact our customer service department.

No changes may be made to the EVG UVT, no fittings may be added, or conversions carried out without obtaining the prior permission of the uv-technik international ltd.

In the event of claims under the warranty, for our repair and spare parts service, please contact:

uv-technik international ltd

Office E04, Basepoint Business Centre, 110  
Butterfield, Great Marlings, Luton, LU2 8DL (UK)

Phone +44 (0)1582 805410

E-Mail: [info@uv-technik.co.uk](mailto:info@uv-technik.co.uk)

Website: [www.uv-technik.co.uk](http://www.uv-technik.co.uk)

**WARNING!**

No repairs or changes to the equipment other than those described in this manual may be carried out.

---

## 3 Transport, storage, delivery

The EVG UVT will be delivered in an appropriate packing.

Any damage detected must be documented at once and reported immediately to your specialist dealer or directly to the uv-technik international ltd.

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**NOTE!**

Packing material must be disposed of in an environment friendly way or re-used if possible. We would recommend that the packing material be kept protecting the equipment if it needs to be shipped onward or otherwise transported.

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## 4 Order data for equipment

Order equipment from:

uv-technik international ltd  
Office E04, Basepoint Business Centre, 110  
Butterfield, Great Marlings, Luton, LU2 8DL (UK)

Tel.: +44 (0)1582 805410

E-Mail: [info@uv-technik.co.uk](mailto:info@uv-technik.co.uk)

### Devices

| description                        | article number | use / setting  |
|------------------------------------|----------------|--|
| EVG UVT 200-400W 1.8-2.9A ext. LED | 203 00901 xxxx | universal use, rotary coding switch, external LED    |
| EVG UVT 200-400W 1.8-2.9A          | 203 00902 xxxx | universal use, rotary coding switch                  |
| EVG UVT 200-400W 1.8-2.9A RS485    | 203 00903 xxxx | universal use, rotary coding switch, RS485 interface |
| EVG UVT 200-400W 1.8A              | 203 00910 xxxx | 1.8A lamp current, low pre heating                   |
| EVG UVT 200-400W 1.8A              | 203 00911 xxxx | 1.8A lamp current, high pre heating                  |
| EVG UVT 200-400W 2.0A              | 203 00912 xxxx | 2.0A lamp current, standard pre heating              |
| EVG UVT 200-400W 2.1A              | 203 00913 xxxx | 2.1A lamp current, medium pre heating                |
| EVG UVT 200-400W 2.1A              | 203 00914 xxxx | 2.1A lamp current, high pre heating                  |
| EVG UVT 200-400W 2.5A              | 203 00915 xxxx | 2.5A lamp current, low pre heating                   |
| EVG UVT 200-400W 2.5A              | 203 00916 xxxx | 2.5A lamp current, medium pre heating                |
| EVG UVT 200-400W 2.5A              | 203 00917 xxxx | 2.5A lamp current, high pre heating                  |
| EVG UVT 200-400W 2.9A              | 203 00918 xxxx | 2.9A lamp current, medium pre heating                |
| EVG UVT 200-400W 2.9A              | 203 00919 xxxx | 2.9A lamp current, high pre heating                  |

| description                        | article number | use / setting  |
|------------------------------------|----------------|--|
| EVG UVT 200-480W 3.2-4.8A ext. LED | 203 01001 xxxx | universal use, rotary coding switch, external LED    |
| EVG UVT 200-480W 3.2-4.8A          | 203 01002 xxxx | universal use, rotary coding switch                  |
| EVG UVT 200-480W 3.2-4.8A RS485    | 203 01003 xxxx | universal use, rotary coding switch, RS485 interface |
| EVG UVT 200-480W 3.2A              | 203 01010 xxxx | 3.2A lamp current, low pre heating                   |
| EVG UVT 200-480W 3.2A              | 203 01011 xxxx | 3.2A lamp current, medium pre heating                |
| EVG UVT 200-480W 3.2A              | 203 01012 xxxx | 3.2A lamp current, high pre heating                  |
| EVG UVT 200-480W 3.5A              | 203 01013 xxxx | 3.5A lamp current, medium pre heating                |
| EVG UVT 200-480W 3.5A              | 203 01014 xxxx | 3.5A lamp current, high pre heating                  |
| EVG UVT 200-480W 3.8A              | 203 01015 xxxx | 3.8A lamp current, medium pre heating                |
| EVG UVT 200-480W 3.8A              | 203 01016 xxxx | 3.8A lamp current, high pre heating                  |
| EVG UVT 200-480W 4.2A              | 203 01017 xxxx | 4.2A lamp current, high pre heating                  |
| EVG UVT 200-480W 4.5A              | 203 01018 xxxx | 4.5A lamp current, high pre heating                  |
| EVG UVT 200-480W 4.8A              | 203 01019 xxxx | 4.8A lamp current, high pre heating                  |

The sales and distribution department of the uv-technik international ltd provide you advice regarding the correct equipment for the used lamp type and clarify in detail the differences.

## 5 Repair

Should the EVG UVT be damaged or defective in any way, you have to send the unit back uv-technik international ltd for testing and/or repair!

By opening the unit or by breaking the unit's inspection seal, you lose any warranty claim!

## 6 Faults

### General information

The following fault lists contain information on faults which may occur on the EVG UVT, possible causes and tips on how to remedy the fault.

If a fault occurs on your equipment and cannot be remedied by following these instructions, contact the customer service department of the uv-technik international ltd.

Contact address:

uv-technik international ltd Office E04,  
Basepoint Business Centre, 110 Butterfield,  
Great Marlings, Luton, LU2 8DL (UK)

Tel.: +44 (0)1582 805410

E-Mail [info@uv-technik.co.uk](mailto:info@uv-technik.co.uk)

The EVG UVT switches of the lamp in case of a breakdown or failure. The failure status is indicated with the potential-free contact and additionally with a blinking code of the red LED. The failure status is maintained until switching off the mains voltage. Only by switching off the mains voltage, it is possible to reset the failure status. After having eliminated the failure cause and carried out a reset, you can start again the EVG UVT.

### Fault list

| ballast status                               | failure contact | LED red      | LED green    | description   | possible causes   |
|--|-----------------|--------------|--------------|---|---|
| start / pre heating                          | off             | on           | blink        | ballast in pre heating  |   |
| start / ignition                             | off             | on           | on           | ignition of the ballast   |   |
| normal operation                             | on              | off          | on           | system lamp/ballast ok  |   |
| start condition not fulfilled                | off             | steady blink | steady blink | ballast is waiting for start  | <ul style="list-style-type: none"> <li>- mains under- or overvoltage</li> <li>- start at over temperature</li> <li>- no lamp</li> <li>- lamp plug disconnected or cable break</li> <li>- no start command issued via RS485</li> </ul>                                     |
| temperature failure                          | off             | blink 1x     | off          | cut off by persisting over temperature, $t_c$ -temperature exceeded, too high ambient temp. | <ul style="list-style-type: none"> <li>- insufficient heat dissipation</li> <li>- wrong installation position</li> <li>- housing / cabinet too small</li> <li>- cabinet fan (cooling) out of order</li> </ul>   |
| mains undervoltage                           | off             | blink 2x     | off          | cut off by persisting undervoltage  | - mains voltage below threshold   |
| mains overvoltage                            | off             | blink 3x     | off          | cut off by persisting overvoltage   | - mains voltage exceed threshold  |
| incorrect lamp voltage                       | off             | blink 4x     | off          | cut off by monitoring of the lamp voltage lamp voltage abnormal (too high or too low)       | <ul style="list-style-type: none"> <li>- wrong lamp type for parameter set</li> <li>- lamp at end of life time (rectifier effect)</li> <li>- deactivated lamp during operation</li> <li>- dimming below power threshold</li> <li>- start with deactivated lamp</li> </ul> |
| overcurrent at half bridge during operation  | off             | blink 5x     | off          | cut off by overcurrent at the half bridge (abnormal operation)                              | <ul style="list-style-type: none"> <li>- ignition not possible/successful</li> <li>- too long cable</li> <li>- defective/wrong lamp</li> <li>- defective contact or short circuit in the lamp cabling during operation</li> </ul>   |
| overcurrent at half bridge during preheating | off             | blink 6x     | off          | cut off by overcurrent at the half bridge (abnormal operation)                              | <ul style="list-style-type: none"> <li>- lamp cabling failure</li> <li>- short circuit in the lamp cabling</li> <li>- start without lamp</li> </ul>   |

to count the numbers of blinking, please count the dark phases or rising edges, e.g.: 

## 7 Technical data

### Product description

| main features   | intended use   |
|---|--|
| ballast with preheating<br>cut off of preheating current in operation<br>lamps and current adjustable in 10 steps<br>ballast with dimming input<br>with limiter of inrush current<br>external potential-free status LED connectable | for all applications with Amalgam UV lamps<br>for water and air applications<br>for applications with many switches<br>for installation in cabinets<br>suitable for many lamps of various manufactures / suppliers |

### Performance data

| EVG UVT                            | 200-400W                              | 200-480W                                      |
|------------------------------------|---------------------------------------|---|
| article number                     | 203 009xx xxxxx                       | 203 010xx xxxxx                               |
| mains input power* min. /max.      | 200 W / 440 W                         | 200 W / 530 W                                 |
| output power / lamp wattage        | 200...400 W                           | 200...480 W                                   |
| variable lamp current range (±10%) | 1.8 A / 2.0 A / 2.1 A / 2.5 A / 2.9 A | 3.2 A / 3.5 A / 3.8 A / 4.2 A / 4.5 A / 4.8 A |

\* The minimal lamp power of the connected lamp must not be undercut, also in case of dimming. (tests mandatory!)

Please note that the lamp power depends from its operation conditions.

Attention: The lamp name is not a save information regarding the lamp power. Please gather the correct values from the lamp data sheet.

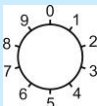
### General data, mains connection

|   |   |
|---|---|
| mains electricity supply (terminal 1-3) | 187...253 V AC (208/230 ± 10%), 50/60 Hz  |
| power factor                            | > 0.95 non-dimmed   |
| efficiency                              | > 0.9 non-dimmed  |
| operating frequency                     | approx. 28...70 kHz   |
| inrush current                          | $\hat{I} < 40 \text{ A}$ after 30 $\mu\text{s}$ / $\hat{I} < 30 \text{ A}$ after 300 $\mu\text{s}$  |
| relay contacts (terminal 4-6)           | 1 changer<br>maximal load 5 A, 250 V AC / 5 A, 24 V DC ohmic load<br>recommended minimal load $\geq 12 \text{ V DC}$ / 10 mA  |
| dimming input (terminal 7/8)            | 1-10 V DC galvanically isolated, max. 2 mA current draw<br>1V approx. 60%, 10V = 100% lamp current<br>dimming will be released after 5 min (lamp warm up phase)<br>dimming dependent on lamp and ambient conditions (tests mandatory) |
| standby current                         | approx. 2 W   |
| status output (terminal 14-21)          | galvanically isolated connection for 2 external LED for external 12 V DC  |
| leakage current to PE                   | max. 5 mA (typically 3.5 mA)  |

### Characteristics

|                                  |   |
|----------------------------------|---|
| lamp types                       | on request  |
| ignition                         | with 12 sec pre heating (current adjustable with code switch) |
| lamp current and pre heat ranges | 10 steps adjustable within the power range of the ballast     |

### Adjustment of lamp current (only for adjustable ballasts)

|   |  |
|---|--|
| adjustment by turning the code switch on top of the ballast |  <p>Please ask your supplier for the correct adjustment.</p> <p><b>No warranty for damages caused by incompatible lamps or wrong adjustments!</b></p> |
| switching of the lamp current parameters                    | must be carried out before voltage application; switching during operation will not be detected  |

## Monitoring circuitry

|   |  |
|---|--|
| mains voltage monitoring                                | cut off in case of persisting under- or overvoltage                                  |
| temperature monitoring                                  | cut off in case of persisting over temperature                                       |
| lamp presence check<br>filament check                   | prevention of ignition if lamp is not connected or if a wrong filament is identified |
| short circuit of lamp wires                             | immediate cut off  |
| lamp failure (see possible causes at status indication) | cut off  |

## Status indication - generally

|  |   |   |
|--|---|---|
| operation indicator  | LED green   | normal operation  |
| trouble indicator  | LED red   | failure by cut off  |
| potential free contact (failure contact)<br>relay / changer (terminal 4-6) | relay on (4-5 closed, 5-6 open)<br>relay off (4-5 open, 5-6 closed) | normal operation<br>no mains / no lamp ignition / failure |

## Status output

|  |  |
|--|--|
| external LED status indication<br>supplied via internal 12 V DC<br>(driver unit protected against short circuit) | galvanically isolated connection of 2 external LEDs with max. 20 mA<br>series resistor must be calculated according to the LED current, minimal 600 Ohm<br><b>14/15: a/c fault indicator LED</b><br><b>17/16: a/c LED for normal operation</b> |
| optional possibility   | RS485 port   |

## Installation instructions

|                             |   |
|-----------------------------|---|
| designed for                | installation in electrical cabinets                                     |
| IP protection class         | IP20  |
| size of housing (w x d x h) | 250 x 105 x 60 mm (borehole spacing 240 mm)                             |
| mounting position           | vertical (mains supply connector downside for optimal heat dissipation) |
| ambient temperature         | ta = 0...40°C   |
| relative humidity           | max. 80% non-condensing   |
| temperature at tc - point   | tc = 55°C max. at housing (forced cooling necessary if exceeded)        |

## Wire length / cabling

|                        |  |
|------------------------|--|
| allowed wire length    | to 5 m (longer cable possible, depending from cable capacity and laying)       |
| allowed cable capacity | max. 750 pF  |
| shielded wire allowed  | yes ( <b>Attention: Connect shield only at one side, avoid ground loops!</b> ) |

## Connectors

| clamp  | connector for       | allowed stranded wire gauge with ferrule | allowed rigid wire gauge          |
|--------|---------------------|--|-----------------------------------|
| 1..3   | mains               | 0.5-1.5 mm <sup>2</sup> /24-16AWG        | 0.5-2.5 mm <sup>2</sup> /24-11AWG |
| 4..6   | relay contacts      | 0.5-1.5 mm <sup>2</sup> /24-16AWG        | 0.5-2.5 mm <sup>2</sup> /24-11AWG |
| 7..8   | dimming input       | 0.25-1.0 mm <sup>2</sup> /30-18AWG       | 0.2-1.5 mm <sup>2</sup> /32-15AWG |
| 9..13  | lamp                | 0.5-1.5 mm <sup>2</sup> /24-16AWG        | 0.5-2.5 mm <sup>2</sup> /24-11AWG |
| 14..21 | output (LED/RS485)* | 0.25-1.0 mm <sup>2</sup> /30-18AWG       | 0.2-1.5 mm <sup>2</sup> /32-15AWG |

\* only active in ballast types with flexible adjustment

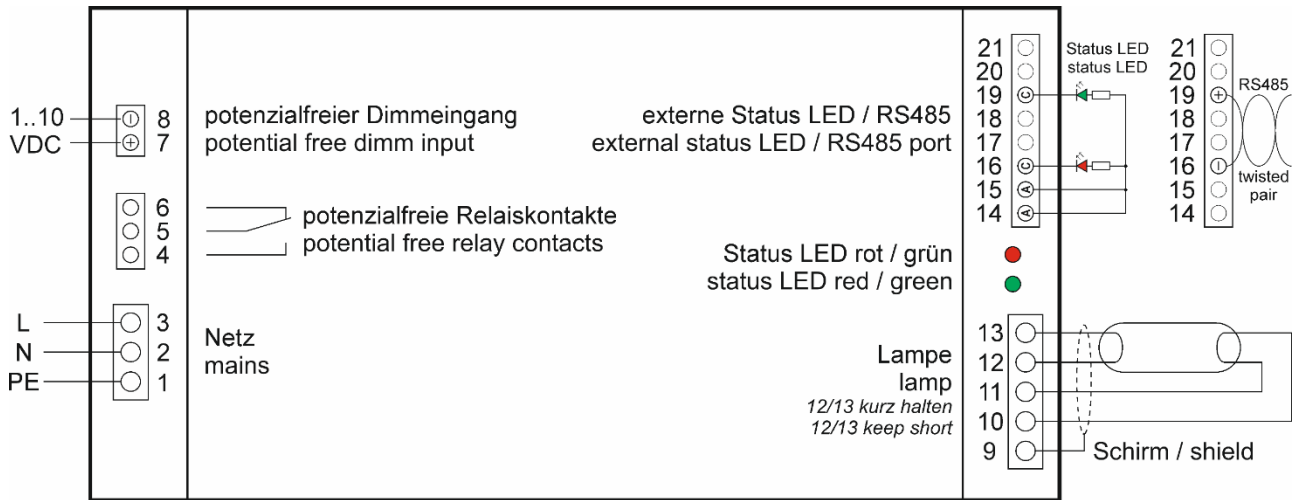
## Compliance with standards

|   |                   |
|---|-------------------|
| Safety                                    | EN 61347-2-3      |
| EMC limits for harmonic current emissions | EN 61000-3-2      |
| EMC radio interference suppression        | EN 55011 class A1 |
| EMC immunity                              | EN 61547          |

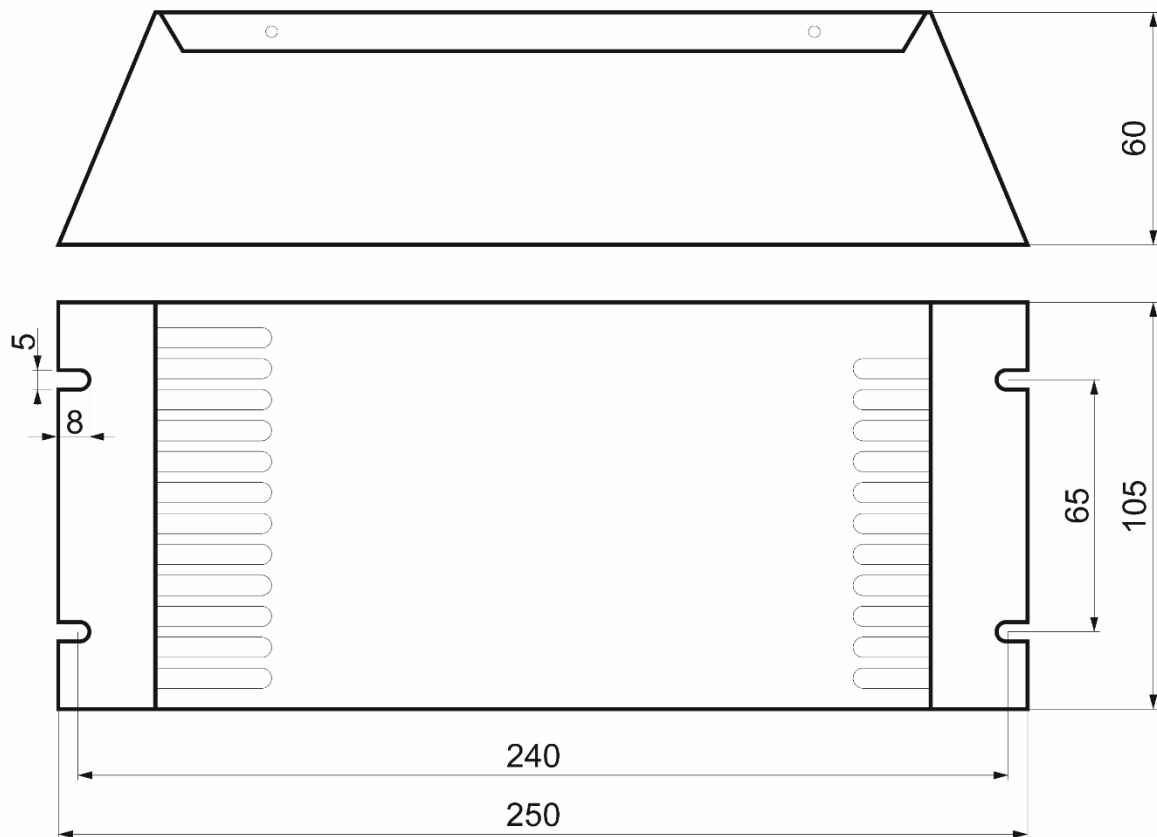
The stated EMC standards apply only to single ballast and for cable length < 3 m. Since the ballast is a part of an installation it needs in most cases an extra EMC approval of the whole device and necessarily additional measures to reduce disturbances.

## 8 Technical documentation

### Terminal diagram



### Dimensional drawing



## 9 Installation instructions

### Point of installation

The EVG UVT must be installed and operated only in a dry, chemically and biologically inactive environment. Installation in vibrating parts of the system is not allowed. Hints regarding IP protection have to be observed. The EVG UVT must be mounted upright at a grounded mounting base, which absorbs and removes ideally the emitted heat partly. For the installation, suitable fixing screws have to be selected. It is necessary to ensure that a distance between the screw and the printed circuit board of at least of 3 mm is kept. In no case, wide flat screw heads may be used, which protrude below the PCB (danger of short circuit!). The EVG UVT and its cabling should be mounted separately from other components of the installation if possible. That is especially important for control, signal or sensor cables with its low voltages/currents.

### Connection / cabling

The EVG UVT must be connected according the terminal diagram and the front sticker. The ballast is equipped with spring tension terminals, suitable as well for stranded wires as for rigid cables. The possible wire gauges are spezified in the technical data. Length of the stripped insulation or ferrules must be chosen according to the size of the terminals. The connection must be tight. Otherwise short circuits, wrong or loose connections could cause disfunctions and damages.

### Cabeling of lamps

Each lamp must be connected to the EVG UVT with an individual cable. It is not allowed to bundle several lamp cables into a multi-core cable. Cable connections to the lamp may not be disconnected during operation. By no means install additional components into the lamp supply cable, such as relays, switches, ignitors or capacitors. The number of the clamping points in the lamp cable should be reduced to a minimum, if possible any additional clamping should be avoided. Designated clamps and connectors must be checked carefully, not only rearding electrical data but necessarily also relating to temperature and environmental conditions. Clamp contacts must be protected against corrosion. Sparks at corroded clamps could cause disfunctions or breakdown of the EVG UVT and imply fire hazard.

Because of the high frequency supply, lamp cables emitts disturbances. Hence never install mains supply cables or control cables parallel to lamp cables. To minimize EMC disturbances, lamp cables must be kept as short as possible. Do not exceed the maximal lenth or cable capacity specified in the technical data. It is allowed to use shielded cables to reduce interferences. But note thus increases the cable capacity. Installing lamp cables in parallel as well as at metallic surfaces or cable ducts raise also the capacity. The sum of all parasitic capacities detune the oscillator circuit in the EVG UVT and can cause ignition problems and a deviant lamp current.

### Mains supply cabling

The mains supply cabling must have a low impedance and the installation of the power cable has to be such that interferences by the emission of lamp cables are minimized. Mains supply cables must be kept short and should not be installed parallel to the lamp cables or directly along the ballast housings. Intersections with lamp cables should be avoided where possible. If absolutely necessary, such crossings shall be made in right angles and a certain distance. Unavoidable noise interferences must be filtered with appropriate measures. Basically, the interference avoidance is preferable to interference elimination.

## Grounding

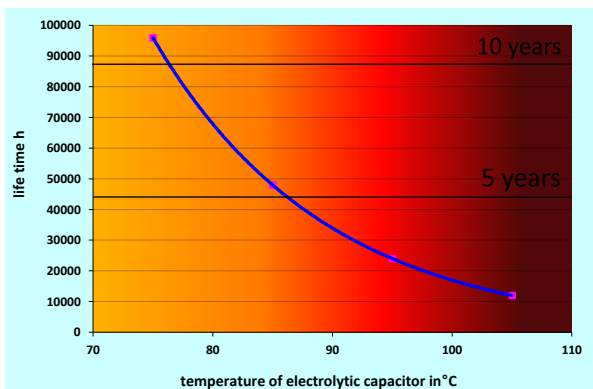
A clean earth potential and a proper grounding with an adequate cable cross section are the preconditions for compliance with the EMC standards. Only if this is guaranteed, high frequency disturbances can be derived and thus prevented. Therefore, always connect all grounding terminals. Ground the mounting base plate. Do not forget to ground the cabinet door. Use toothed washers for a reliable contacting of painted surfaces/housings. Avoid ground loops.

## Additional notes for cabling

Any damage to the cables must be avoided. Cable penetrations through housings shall have no burrs and must be adequate insulated. The same applies to edges touched by the cable. Use cable glands and bent protections and consider the allowed bending radiuses. The cable specification must comply with the environmental conditions on site. If necessary, special cables need to be used (e.g. waterproof, oil- or flame-resistant, etc.). Should cables be exposed to UV radiation or to ozone, generated by UV lamps, they must be insulated with Teflon (PTFE) or fibre glass. All other materials are not sufficiently UV-stable and need therefore to be protected in an appropriate manner.

## Temperature behaviour

The lifetime of an electronic device is determined by the error rate of the electronic components of which it consists. Generally spoken, the higher the temperature, the higher the error rate, the shorter the lifespan. In the EVG UVT, the electrolytic capacitor is the lifespan-determining component (see chart). We use only



premium-quality capacitors of the highest temperature stability. In compliance with the installation instructions as well as the maximum housing temperature, a lifetime of at least 50,000 hours is expected. That a temperature change of 10K doubles or halves the life of the capacitor can be seen as rough calculation. Please make sure that the specified maximum case temperature is not exceeded even in extreme operation (worst case). If you measure the temperature contact-free, please make sure that the

correction factor for the measured surface is adjusted correctly. Otherwise, significant measurement errors may occur.

A sufficiently large cabinet should be chosen. The contained air must be able to circulate. If possible, use sheet metal housings. In comparison, plastic and stainless steel are the worse heat conductors. Also with regards to the shielding of electromagnetic radiation caused by the ballasts, the sheet metal is the best choice. When calculating the size of the cabinet according to the specified loss, do not forget to add the loss of other build in components. Assemble the ballasts if possible in the lower part of the cabinet, as it is cooler. The distance between the EVG UVT must be at least 1 cm. Do not restrict the air convection with other fixtures or installation channels. If you need to assemble the devices above each other, please note that their operation is influenced by heat generation. The maximum case temperature must not be exceeded even for the upper unit. Avoid the input of heat from the outside. Assemble a roof for shading the control box for example. Decouple warm lamp housings from the ballast housings. Otherwise, it is of course beneficial to couple thermally cold equipment (e.g. reactor with cold water) to the cabinet of the EVG UVT. Turn on active cooling when overheating threatens. Wait long enough while doing temperature tests to reach the thermal balance of the ballasts. This can take up to several hours. Try to keep the case



temperature of ballasts for most of the time below the maximum allowable temperature (approx. 10K less). Hence, you will achieve a longer lifetime and better operating safety.

### **Switching**

When switching the EVG UVT on an inrush current pulse of very short duration arises by the up-charge of the integral storage capacitor for the internal power supply. So choose the fuses out not only by the indicated operating currents, but also by the impact load. If possible, use slow-blow fuses. The same applies to the ground fault circuit interrupter (GFCI), which is triggered either by the high temporary inrush current or a low continuous current. Here, the leakage currents arise on the interference suppression capacitors of the EVG UVT. If allowed, please install a surge resistant, short-delayed GFCI protection switch with 30 mA. Should the maximum possible number of EPS be exceeded for fuse or GFCI, you must group them wisely. Pay attention to the uniform load of the phases.

Please avoid repeated switch-off and on cycles of electronic ballasts. Wait at least 10 seconds after shut down before the next switching. In extreme switching loads you should check with the service of the uv-technik international ltd first, if the selected device is suitable for your application.

If a failure is indicated, the EVG UVT needs to cutoff from the mains voltage. Thus will reset the failure status and internal counters. After having eliminated the failure cause, you can start again the EVG UVT. The restart after a power failure will be carried out automatically.

### **Monitoring**

Besides the usual operation LEDs, the EVG UVT are equipped with a potential free signal output, which notifies the proper function of the unit. This output is a relay that switches once the lamp is in operation. This relay output can be used for displaying/signalising or switching functions. Please note the specified values in the data sheets for the contact load. Inductive or capacitive loads have to be avoided. In addition to the maximum allowable load, the minimum load must be considered in particular. Since relay contacts are cleaned by the sparks resulting from switching, the permanent operation with too low power or too low voltage can cause contact problems. Especially keep this in mind, when the signal contacts are to be connected directly to a PLC, where only 5 V and a few mA are present in the communication circuit. Avoid, if possible, a series of signal contacts. If this is unavoidable, please make signal rings with just as few devices. In this case, select voltages/currents in the signal circuit, which are significantly above the allowed minimum values.

In addition to the relay outlet, the flexible adjustable types of the EVG UVT have the possibility to connect additional operation LEDs directly. This function is useful, if the ballast operation must be displayed in the front panel of the control box. The EVG UVT delivers 12 V DC supply for the connected LEDs. Please note that the LEDs have to be equipped with a series resistor. The specified current of the LEDs of 20 mA must not be exceeded. Please calculate the series resistor accordingly (minimal 600 Ohm) or related to the actual LED-current.

### **Dimming**

The EVG UVT have by default a dimming function. Dimming can be used to adjust the lamp power to the operating conditions or to save power, but also for a stand-by mode to eliminate the ramp-up time of amalgam lamps. It is possible to control the lamp current in a range of about 60...100% via an isolated 0-10 V DC input. To realize a stand-by function, it is allowed to short circuit the dim input (e.g with a relay) to reach the maximum dimming level easily. Please note that the lamp output is not proportional to the lamp current, but strongly dependent on lamp characteristics and operating conditions (cooling of the lamp).



Hence the available dimming range is slightly smaller based on the lamp power. To avoid a cutoff, please note that the allowed minimum power of the EVG UVT must not undercut in case of dimming. Please check self dependent if you can use the full dimming range. If necessary, the operating temperature of the lamp as well as its possible dimming range can be influenced by a diameter adaption of the lamp protection tube. In order to allow amalgam lamps to reach its operation temperature, the release of the dimming function is delayed by 5 minutes. Additionally to the dimming function, the adjustment of the lamp current can be used to adjust the lamp power to the operating conditions.

Please never try to dim electronic ballasts by changing the mains supply voltage. The integral PFC regulates fluctuations in the supply voltage, so that there is no influence on the output power. Mains voltages out of specification cutoff the ballast and may cause damages.

### **Electromagnetic compatibility**

The EVG UVT comply with the standards mentioned in the technical data and the CE declaration. As a part of a system, other/further rules may be valid. It is the responsibility of the manufacturer/installer or generally the operator to check the complete system according to the relevant rules. If several ballasts build in a unit, generally additional measures can be necessary to eliminate interferences.

Beside the observance of the thresholds of the supply voltage, the mains suppl may not loaded with distortions, burst and surge disturbances. If the mains quality is unknown, the installation of filters and overvoltage/lightning protectors is recommended. An undisturbed supply is the precondition for a failure-free operation.

In addition to the known technical contexts, all given instructions of this document are based on our experiences. We take no guarantee of completeness and correctness.