



# resolite T5

## Operating instructions

version 03/10

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**General information:**

Please read the operating instructions carefully. To prevent injury and damaging of the product please follow the instructions accurately.

**Warnings and hints:**

Whenever the following signs show up in the operating instruction, please be aware of risks of injury and damage of the product.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating instructions in the literature accompanying the appliance.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” that may be of sufficient magnitude to constitute a risk of electric shock to persons.

**Disposal and recycling information:**



Resolite T5 28W/35W contains electronic devices, the fluorescent lamp contains mercury. Don't dispose of a broken system in the domestic waste. Dispose of your resolite T5 28W/35W according to local environmental laws and guidelines.

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### **Included in delivery:**

- resolite T5 – ECG
- high output reflector
- T5 28W/35W fluorescent lamp (high efficiency)
- bridge

### **Preface:**

Resolite T5 28W/35W is a clip-on-ECG with fluorescent lamp and reflector. This system is a semi-luminaire that can replace 36W T8 and 58W T8 fluorescent lamps in luminaires with conventional ballasts. If a T8 fluorescent lamp is replaced by resolite T5 28W/35W the energy consumption for the luminaire reduces up to 45%. In spite of the reduced energy consumption the irradiance remains constant.

### **Usage according to its specifications:**

Resolite T5 28W/35W is only for the usage in luminaires with conventional ballasts. Thereby resolite T5 28W/35W replaces a T8 36W/58W fluorescent lamp. The luminaire may be compensated in series by a capacitor. In this case it is important that the value of the capacitance is higher than 80% of the original value.

Use only fluorescent lamps of the type “high efficiency” in combination with the resolite T5 ECG.

The input voltage range of resolite T5 28W/35W is between 200 VAC and 250 VAC.



resolite T5 28W/35W must not be used in T8 luminaires, which already contain ECGs!



resolite T5 28W/35W must not be used in T8 luminaires, which contain rapid start ballasts!

It is allowed to operate resolite T5 28W/35W only in dry surrounding conditions. If resolite T5 28W/35W is used in another way than described above, the product will be damaged. In addition, false usage can lead to risks like short circuits, fire, electric shock etc.

It is forbidden to modify the system! Please take note of the safety instructions.

## **Safety instructions:**

The producer is not responsible for damages and injury, which can occur due to false handling of the product and ignoring the operating instructions. In these cases the product guarantee is not valid.

Pay attention to the cable that is placed on the back site of the reflector. If this cable is externally damaged do not operate the product any more. There is a risk of an electric shock.

Resolite T5 28W/35W should be installed only in luminaires which contain conventional ballasts. Before resolite T5 28W/35W is started for the first time, please replace the starter with the delivered bridge!

The line voltage of the luminaire must be between 200 VAC and 250 VAC.



Do not open the housing of the ECG. Voltage can be applied to the capacitors of the ECG, even if the ECG is not connected to the line voltage anymore.

The ambient air temperature should be in the range of -10°C to +50°C. The optimal ambient air temperature for the operation of the fluorescent lamp is in the range of 25°C to 35°C.

Avoid the operation under adverse environmental conditions like flammable gases, steam and dust.

Never operate the product if it is wet or if it is in a humid environment. Before cleaning resolite T5 28W/35W please disconnect from the line voltage.

In industry please be aware of the directives for accident prevention .

Do not put objects, e.g. nails, in the housings of the product!

## Installation instruction:

1. Switch off the luminaire.

2.



3. Remove the T8 fluorescent lamp.

4.



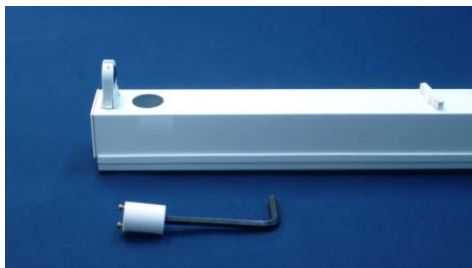
5. Remove the starter.



death!

Warning!!!! Do not put your finger or a tool in the hole of the starter! Even if the luminaire is switched off. - Risk of

6.



7. Put the delivered bridge in the luminaire.

8.



9. Put the resolite T5 28W/35W in the luminaire. For a correct installation the reflector must be in the end position.

10.

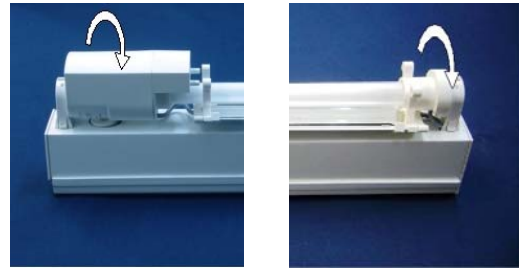


11. Turn the ECG and the lamp in the holder of the luminaire.



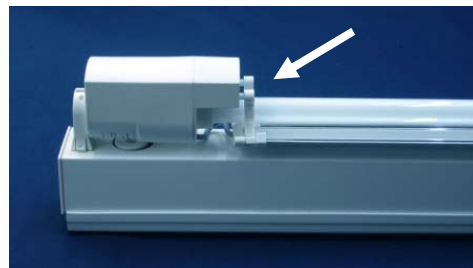
Hold the ECG with one hand and the opposite side with the other. The reflector must not be turned. It remains in the previous position.

12.



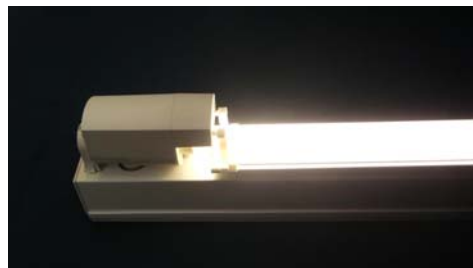
13. Attach the reflector to the ECG. To do this, the clamp of the reflector must be fitted to the pins of the ECG's housing.

14.



15. Switch on the luminaire.

16.



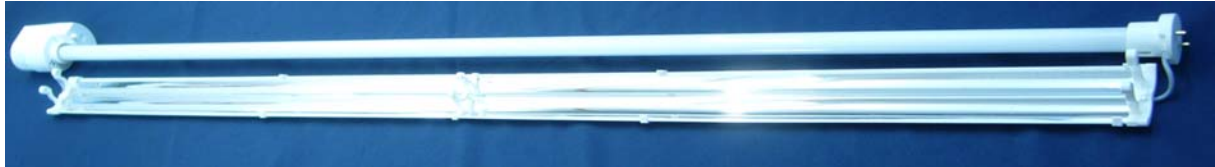
## Instructions for changing a lamp:

A standard T5 fluorescent lamp has an indicated lifetime of approximately 20.000 hours. A T5 “longlife” fluorescent lamp has an indicated lifetime of approximately 50.000 hours.

If a lamp has reached its end of life, **resolite T5 28W/35W** detects this. The lamp is switched off automatically and the system waits in the stand-by-modus until a new lamp is inserted.

For changing the lamp, please take out resolite T5 28W/35W off the luminaire and follow the instructions below.

1. Separate the lamp and the ECG from the reflector.



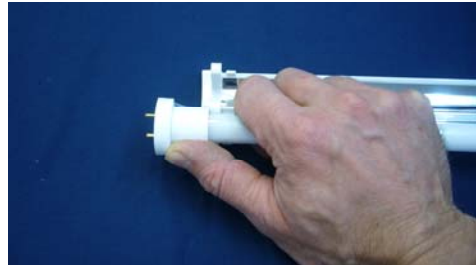
2. Push the ECG from the lamp away.

2a.



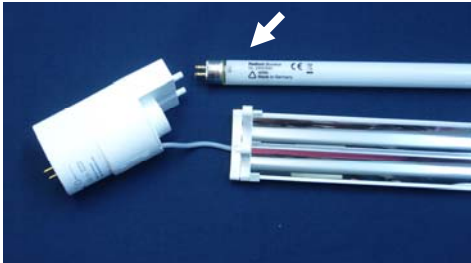
3. Push the “distal end” from the lamp away.

3a.



Attention! The label of the lamp must be on the side of the ECG.

2b.



3b.



4. Take a new lamp that corresponds to the old one and put it in the ECG and the distal end.

**Attention! The label of the lamp must be on the side of the ECG!**



Be aware that the new lamp has the same wattage than the old one. Otherwise the lamp and the ECG will be damaged.

5. Fit the reflector to the lamp.

6. Resolite T5 28W/35W can be put in the luminaire once again (- installation instruction).

## Troubleshooting:

Following described failures can be resolved on site. If there are other failures which are not described below, please contact the producer.

<b>failure</b>	<b>possible reason</b>	<b>solution</b>
The lamp does not ignite; both filaments of the lamp do not glow.	No line voltage at the holder of the luminaire.	Switch on the line voltage.
	The delivered bridge is not installed in the socket of the starter.	Take resolute T5 28W/35W out off the luminaire, install the bridge, install resolute T5 28W/35W in the luminaire.
	Both filaments of the lamp are broken – the lamp is broken.	Take resolute T5 28W/35W out off the luminaire, change the T5 lamp, install resolute T5 28W/35W in the luminaire.
If the luminaire is switched on, one filament glows for a short time. The lamp does not ignite.	One filament of the lamp is broken – the lamp is broken.	Take resolute T5 28W/35W out of the luminaire, change the T5 lamp, install resolute T5 28W/35W in the luminaire.
After switching on the luminaire both filaments glow for a short time, the lamp does not ignite.	Due to the low temperature of the lamp the ignition voltage is not high enough; the over voltage detection switches off the ECG.	Operate resolute T5 28W/35W in the specified temperature range.
After switching on the luminaire, the lamp ignites for a short time – then the lamp goes out.	The starter of the luminaire is not replaced by the delivered bridge.	Take resolute T5 28W/35W out off the luminaire; take the starter out of the luminaire; install the bridge; install resolute T5 28W/35W in the luminaire.
<ul style="list-style-type: none"> <li>• The lamp goes out after a short time of burning</li> <li>• The lamp blinks slowly.</li> </ul>	The luminaire is compensated by a capacitor in series. Due to ageing effects, the capacitance is too low. (see: usage according to its specifications - page 3)	Take resolute T5 28W/36W out of the luminaire, to prevent damaging of the ECG and the lamp. The capacitor has to be changed or he has to be bridged. This intervention has to be done by a person which is competent in the field of electricity.  

## Technical features of resolite T5:

- **EOL (End of Life):** Automatic protection (cut off) at the end of the lifetime of the lamp
- **Preheating the filaments of both sides:** A microcontroller controls the preheating of the filaments. Therefore it is possible to start the lamp over 400.000 times
- **Calibration of the nominal rating:** The microcontroller operates the lamp at its optimal operating point by an automatic adjustment of the electrical parameters. Therefore the lifetime of the lamp increases.
- **Optimal heat management:** To obtain a long lifetime of the ECG a heat management is implemented in the control gear. This heat management is protected by a patent.
- **Electromagnetic compatibility (EMC):**“resolite T5” complies with the required limits for harmonic current emissions (IEC 61000-3-2:2005) and the required limits of radio disturbance characteristics (IEC/CISPR 15:2005 + A1:2006) , in combination with every type of luminary for T8 35W/28W fluorescent lamps. Resoswitch can compile an inspection sheet for every type of luminary.
- **Active power factor correction (PFC):** The portion of reactive power is reduced by drawing a sinusoidal current from the line.
- **Operation of the lamp controlled by a microcontroller:** All critical operating conditions of the lamp are monitored by a microcontroller (IEC 61347); the lamp is operated in that way the longest lamp lifetime is achieved (IEC 60929); detection of broken filaments
- **Cut-off technology:** To achieve low power consumption, the filaments of the lamp are only heated before the ignition of the lamp and not during the operation of the lamp.

## Technical specification of resolite T5:

Article	resolite T5 35W	resolite T5 28W
Lamp	T5 35W	T5 28W
Weight	400 g	360 g
Energy class	A2 BAT	A2 BAT
Input power	39 W	31,5 W
Lamp power	35 W	28 W
Power loss ECG	3 W	2,6 W
Power loss conventional ballast	1 W	0,9 W
Efficiency factor (both ballasts)	90%	89%
Input nominal voltage	230 V	230 V
Input nominal current	171 mA	139 mA
Line frequency	50 Hz	50 Hz
Power factor	0,99	0,98
Total harmonic distortion	<10%	<10%
Crest-Factor	<= 1,4	<= 1,4
Nominal operating frequency	30 kHz	30 kHz
Input voltage range	200 V...250 V	200 V...250 V
Ambient temperature	0°C...55°C	0°C...55°C
Product life (ECG) at 35°C	200.000 h	200.000 h
45°C	100.000 h	100.000 h
55°C	50.000 h	50.000 h

## Certificate:



ENEC is the high quality European mark for electrical products that demonstrates compliance with European safety standards. Among other things ENEC guarantees an optimal operation of the fluorescent lamp by the tested ECG. This means, that the guaranteed lifetime of the fluorescent lamp will be reached. The electronic of the **resolite T5** system is ENEC certificated by VDE.

# EC Declaration of conformity

Issuer's name and address:

Resoswitch GmbH  
Hauptstrasse 44  
D-76870 Kandel  
Germany

Product:

Electronic ballast

Type designation:

resolite T5 28W/35W

The designated product is in conformity with the European Directive:

## **2006/95/EC**

„Council Directive on the harmonization of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits“.

Full compliance with the standards listed below proves the conformity of the designated product with the provisions of the above-mentioned EC Directive:

DIN EN 61347-1 (VDE 0712 Teil 30):2009-04; EN 61347-1:2008-05

DIN EN 61347-2-3 (VDE 0712 Teil 33):2006-08; EN 61347-2-3 + A1 + A2:2006-02

DIN EN 60929 (VDE 0712 Teil 23):2006-11; EN 60929:2006-03

## **2004/108/EC**

„Council directive on the approximation of the laws of the Member States relating to electromagnetic compatibility“.

Full compliance with the standards listed below proves the conformity of the designated product with the provisions of the above-mentioned EC Directive:

DIN EN 55015:2006 + A1:2007

DIN EN 61000-3-2:2006

DIN EN 61000-3-3:1995 + A1:2001 + A2:2005

DIN EN 61547: 1995 + A1:2000

## **2005/32/EC**

“Council directive establishing a framework for the setting of ecodesign requirements for energy-using products.”

Kandel, 05. 28. 2009

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(Sebastian Bartlakowski, Geschäftsführer)