

# FOLNET 1 Spezial

controlled by microcontroller



## Introduction

An electroluminescence lamp is basically a light emitting capacitor. It works as a multilayer capacitor with pigment and the isolation as dielectric material. So, connected to a suitable inverter, its load is mainly capacitive.

### Driving Voltage / Operating Voltage

The crystals in the pigment layer start emitting light at about 20VAC. This is the minimum voltage at which the field strength is high enough to excite electrons which cause light emission.

The luminance and the achieved brightness is dependent from the amplitude of the driving voltage.

An Increase of the frequency of the driving voltage causes a colour shift towards shorter wavelengths. This gives the impression of a higher luminance. The amplitude and frequency should be adjusted close to the recommended operating data of the el-lamp and to the needs of the application carefully. This is because the useful lifetime of the el-lamp will decrease with higher operating voltages and frequencies.

### Shape of Driving Voltage

Current through the el-lamp with shapes other than sinusoidal is not favourable. Because no smooth current shapes as a square or a triangle cause high peaks in charging and so may harm the pigment layer and reduce the useful lifetime.

### Useful Lifetime

The useful lifetime of el-lamps is directly dependent of amplitude, frequency and shape of the driving ac-voltage. The recommended driving conditions are to be looked up in the datasheets of the el-lamps.

### Advantages and Features of EL-Lamps

- EL-lamps are active light emitting sources which have attributes of indirect light, which is the same as light reflected on a ideal dull area.
- EL- lamps are so called Lambert-light sources. That means the luminance of their surface is equal and constant on the whole area.
- The light of an el-lamp is free of glare and homogenous. This is the basic condition for illumination without shadows
- The light of an el-lamp has a narrow band, nearly monochromatic, absolutely homogenous and is visible in far distances.
- The light of an el-lamp is easy on eyes, because of the absence of uv in the spectrum
- The light of an el-lamp are sturdy and not sensitive towards vibration and acceleration.
- El-lamps can be shaped easily because of the small thickness.
- El-lamps are not sensitive towards low and high temperatures

- The self-heating is minimal. Therefore applications even under thermal sensitive conditions are possible.
- EL-lamps have a very good fail-safe behaviour. The brightness in operation decreases slowly with the shape of an e-function. There will not be an immediate fail as at bulb-lights
- Operation at night and under bad conditions has several advantages compared to conventional light sources: because of the kind of the light, visibility in fog or in smoke is best.
- The possible geometric shapes are infinitely including cut outs within the area.
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The devices of **FOLNET** series are designed to operate with el-lamps. Depending on type they can drive el-lamps up to a size DIN A1. The use of a microprocessor, which controls all internal and supervises all external functions, ensures a high level of reliability in function and operation.

## 2. Description and Features

- all functions controlled by a **microcontroller**
- **Sinusoidal shape of output voltage**. independent of el-foil connected
- **Softstart function** of the output voltage after Power On
- infinitely **variable amplitude** of output voltage
- infinitely **variable frequency** of output voltage
- Display of output voltage on **LC-Display**
- Display of all operating conditions on LC-Display
- **active overload regulation** via microcontroller and hardware

### 3. Technical Data

<b>Folnet 1 S</b>	<b>Std</b>	<b>300</b>	<b>3000</b>
Mains Supply	230 VAC / 50 - 60 Hz		
EL-Foil-Connector	2-polig: 4mm - Jacks, at the frontpanel screw terminals at the backpanel		
Mains Separation	yes		
Output Voltage	0 ...135 VAC eff.	0 ...350 VAC eff.	
Output Current	limited electronically, short circuit protected		
Output Frequency	400 ...1000 Hz	400 ... 2590 Hz	
LC-display	4-lines with 16 characters		
Display	all operating conditions		
suitable EL-Foil-size (dependent on foil capacitance and power-consumption)	up to 4.972 cm <sup>2</sup> = DIN A 1		
Housing	plastic desktop housing		
dimensions [mm] (W x H x D)	230 x 85 x 205		

## 4. Functions and Operating Controls

The setup listed below can be adjusted on the front panel with potentiometers

- **Amplitude**

Adjustment of the output voltage infinitely variable from about 0 VAC up to 100 VAC / 350VAC.

- **Frequency**

Adjustment of the frequency of the output voltage infinitely variable from 400Hz up to 1000 Hz.

- **LC-Display with backlight**

both, all operating conditions and settings and failures are displayed as message

If the maximum output power is reached or exceeded (e.g. foil capacitance too high) the output voltage is reduced so far that just no overload takes place. In this case the message "**I<sub>max</sub> erreicht , U<sub>a</sub> abgeregelt**" is displayed, indicating the output power limitation.

In case of a short circuit at the output, the power stage of the folnet is immediately switched off. In this case the message "**Kurzschluss**" is displayed. As soon the short circuit is removed, the folnet starts up with softstart automatically.

If the adjustment of the output voltage or frequency is carried out too fast, the short circuit protection may trip. To avoid this, adjustments should be carried out smoothly.

- **Mains Switch** is located on the backpanel  
a built-in neon indicates the ON condition

## 5. Hints

The amplitude and the frequency of the output voltage should be adjusted to needs of the application and the specification of the el-foil carefully. Because the lifetime of the el-foil is directly dependent of these parameters. Because of voltage and frequency being too high, lifetime is reduced.

### **TIP**

Make a setup only to the minimum required needs. By this the lifetime of the el-foil is enlarged.

### **ATTENTION , HIGH VOLTAGE**

operation of the device only on circuit being protected with suitable fuses.  
The device is separated from mains.

### **EMC**

These devices may cause emc disturbances in ambient environment. In this case the operator has to care for adequate solutions.

### **MOUNTING AND POSITION**

It has to be cared for good ventilation of the environment and it has to be prevented that the ventilation drills in the housing are not covered.

## 6. Hints for Safety and Warning



**ATTENTION:  
CONNECTION OF THE EL\_FOIL WITH FOLNET ONLY WITH  
DISCONNECTED MAINS PLUG !**

- This device generates dangerous electrical voltages. For this reason the device may be operated and connected by technically skilled and qualified personal only.
- All manual operations with disconnected mains plug
- All manual operations on this device, have to be in compliance with all specific national security guidelines.
- The producer of the device or the installation is responsible for the compliance with limits of EMC .The way of connection of input and output lines may change the behaviour concerning EMC. For this reason the device may be operated and connected by technically skilled and qualified personal only.



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