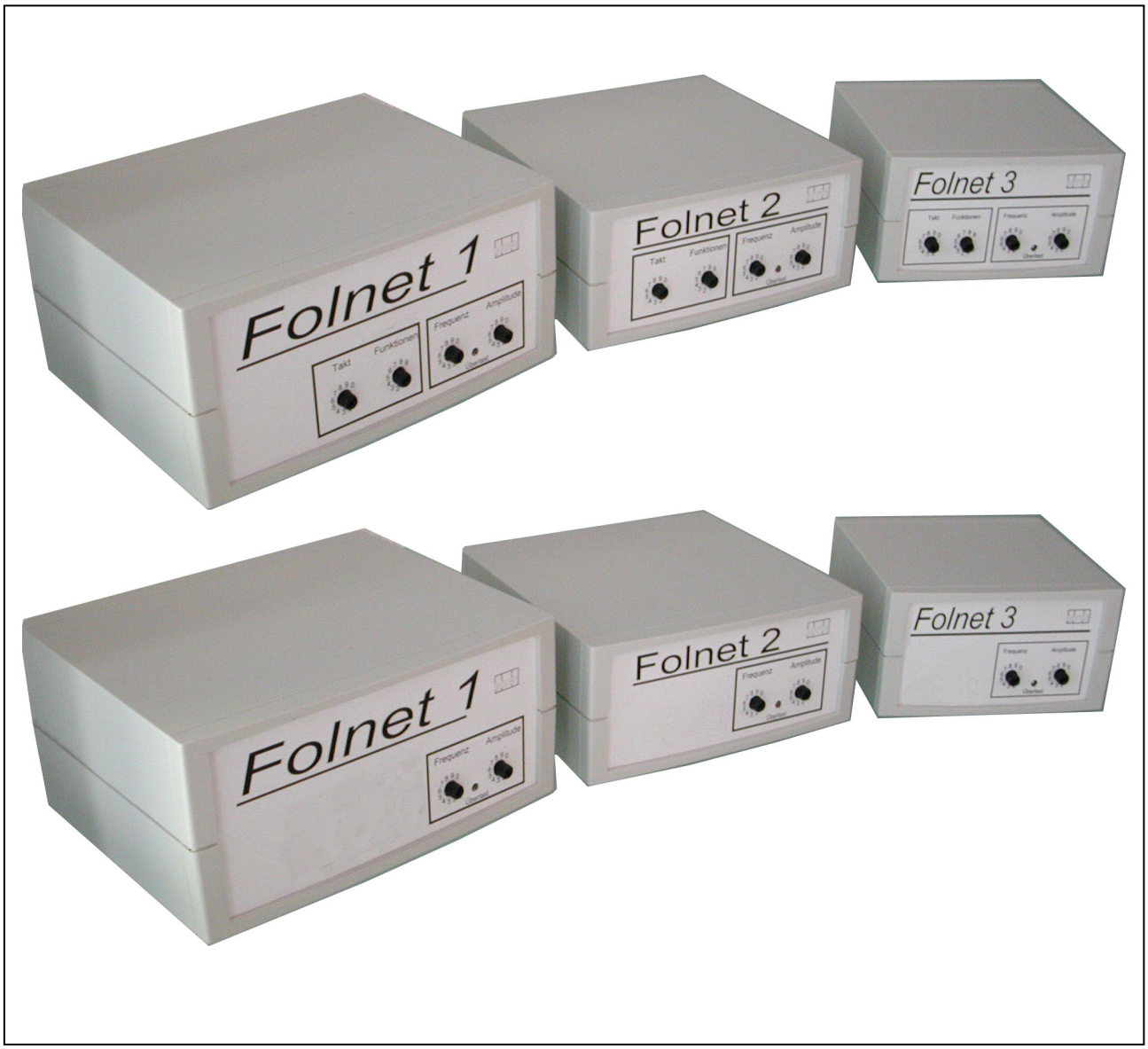
FOLNET 1 / 2 / 3
FOLNET 1 / 2 / 3 oef

controlled by microcontroller



BMR GmbH

1. 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 Increasement 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 sinusodial 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. Therefor applications even under thermal sensitive conditions are possible.
- EL-lamps have a very good fail-save 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.

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.

The difference of devices **FOLNET *1 , 2, 3 oef*** to the standard types is the absence of internal effects.

2. Description and Features

- all functions controlled by a **microcontroller**
- **Sinusoidal shape of output voltage**. independent of el-foil connected
- infinitely **variable amplitude** of output voltage
- infinitely **variable frequency** of output voltage
- **6 effects implemented**, variable in repetition time and speed
- **active overload regulation** via microcontroller
- elecronical **short circuit protection** of the output (Folnet1,2)
- Implemented **softstart function** after power-on and after restart after short circuit takes care of the el-foil. (Folnet1,2)

3. Technical Data

Folnet	**1**	**2**	**3**
Mains Supply	230 VAC / 50 - 60 Hz		
El-Foil-Connector	2-pole: AMP		
mains separation	no		
output voltage	0.VAC...100 VAC eff.		
output current	limited electronically, short circuit protected		
output frequency	400 Hz...1000 Hz		
integrated effects (n.a on ***oef***)	6 Flash, Blink, Sine, Triangle, Sawtooth, Sawtooth inverted		
options	effects by customer definition, galvanically mains separation		
overload display	LED		
suitable EL-Foil-size (dependent on foil capacitance and power-consumption)	up to 4.972 cm² = DIN A 1	up to 2.515 cm² = DIN A 2	up to 1.243 cm² = DIN A 3
housing	plastic	plastic	plastic
dimensions [mm] (BxHxT)	158 x 75 x 140	134 x 60 x 132	110 x 60 x 107

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 .

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

- **Speed** (n.a on ***oef***)
  Adjustment of the speed and repetition of the effect

- **Effect** (n.a. on ***oef***)
  Selection of the effect

  Nr. 0 ⎫ no effect
  Nr. 1 ⎫ Flash
  Nr. 2 ⎫ Blink
  Nr. 3 ⎫ Sine
  Nr. 4 ⎫ Triangle
  Nr. 5 ⎫ Sawtooth
  Nr. 6 ⎫ Sawtooth inverted
  Nr. 7 ⎫ reserved
  Nr. 8 ⎫ reserved
  Nr. 9 ⎫ reserved

- **Overload LED**
  If the maximum output power is reached or superceeded (e.g. foil capacitance to high) the output voltage is reduced so far that just no overload takes place. In this case the red LED is lit on, indicating the output power limitation.

  Folnet 1,2:
  In case of a short circuit at the output, the power stage of the folnet is immediately switched off. The red LED is blinking for about 5 seconds recovery time. After this time the folnet starts up with softstart automatically.

  Folnet 3:
  In case of a short circuit at the output, the power stage of the folnet is immediately switched off. The red LED is blinking, a reset can be carried out by switching power off / on.

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
This device has **no mains separation**! The output terminals are connected to mains are not protected again earth-shortage!

When operating in test applications or with not isolated connections, an additional mains separation has to be used.

Operate the device only in circuits being protected with suitable fuses.

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

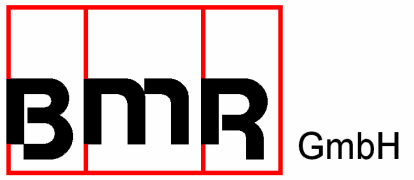
MOUNTING AND POSITION
It has to be cared for good ventilation of the environment and it has to be prevented that the ventilation drills in the housing are not covered.

6. Hints for Safety and Warning

ATTENTION:
CONECTION OF THE EL_FOIL WITH FOLNET ONLY WITH DISCONNECTED MAINS PLUG !

ATTENTION:
THERE IS NO MAINS SEPARATION !

- 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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