



# Film Capacitors – Power Factor Correction

## Power Factor Controller

**Series/Type:** BR7000-I  
**Ordering code:** B44066R7012E230/B44066R7112E230  
**Date:** March 2013  
**Version:** 4

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### Characteristics

- 12 – 13 switching outputs
- 20 pre-programmed control series
- Control series editor
- Full graphic display 128 x 64 dots
- Plain language menu
- 4-quadrant-operation
- Automatic initialization
- Display of multiple grid parameters
- Display of harmonics
- Display of distortion factor THD-V/THD-I
- Display and control of temperature
- Monitoring of capacitor current
- Storage of maximum values
- Storage of switching operations and times
- Manual and automatic operation
- Zero voltage cut-off
- Various error messages/alarm rely
- Error storage
- Test run of system with error analysis
- Interface RS485 optional
- Panel mounting 144 x 144 x 55 mm



### Inputs

- Operation voltage: 110 ... 230 V ~ +/- 15%
- Measuring voltage: 30 ... 440 V ~ (L-N) / 50 ... 760 V ~ (L-L)
- Current: X:1A / X:5A
- Additional external input (110...230V) - optional

### Outputs

- 12 relay outputs for capacitor
- 1 relay output (message/alarm/fan)
- 1 message relay (free programmable) - optional

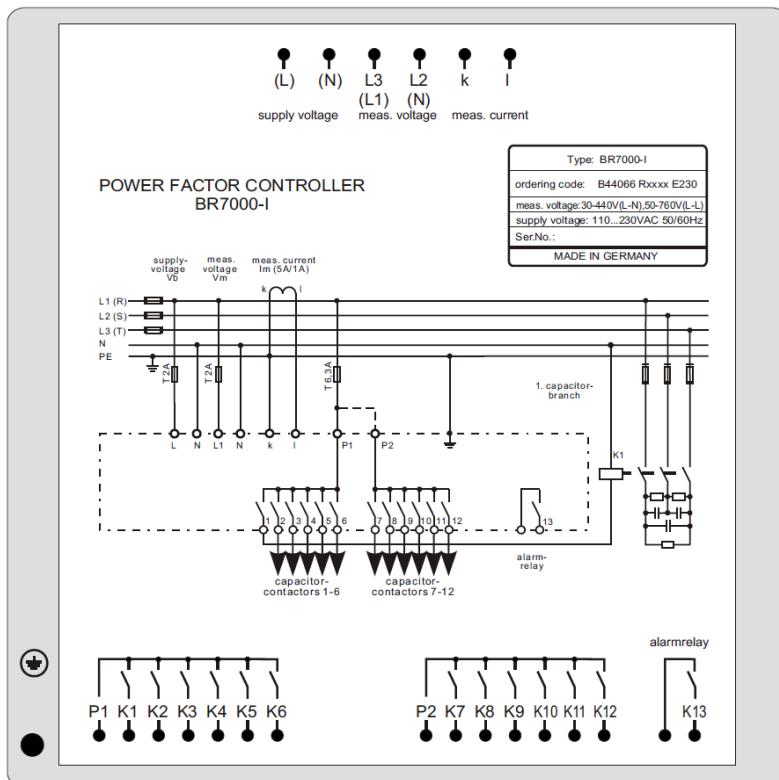
### Measuring and display of following grid parameters

- Voltage, current, frequency
- Active, reactive and apparent power
- Power factor, missing reactive power
- Energy
- Harmonics of voltage (up to 19<sup>th</sup>)
- Harmonic of current (up to 19<sup>th</sup>)
- TDH-V, THD-I
- Temperature
- Well-arranged display of power factor and actual status of switching outputs
- Display and storage of maximum values, switching operations and operation time
- Display of harmonics as bar chart

### Operation

- Graphic display 164 x 64 dots with 8 lines maximum
- Plain language menu in ten languages
- Optimum navigation in the menus via return (ESCAPE) button
- HELP-button for interactive help text

### Connection



**Technical data and specifications**

Operating voltage	110 ... 230 V ~ +/- 15 %, 50 and 60 Hz
Measuring voltage	30 ... 440 V ~ (L-N); 50 ... 760 V ~ (L-L); 50/60 Hz
Measuring current	X: 5 A / X: 1 A, selectable
Power consumption	< 5 VA
Sensitivity	50 mA/10 mA

**Switching outputs**

Relay outputs for capacitor branches	12
Alarm relay	1
Switching power of relays	250 V AC, 1000 W
Number of active outputs	Programmable
Version BR7000-I/S485	Interface RS485, for usage with evaluation software BR7000-SOFT, included in the delivery One freely programmable external input, e.g. for 2 <sup>nd</sup> parameter set Additional freely programmable message relay

**Operation and display**

Display	Illuminated full graphic display 128 x 64 dots
Menu languages	CZ/EN/ES/FR/GER/NL/PL/PT/RU/TR
Freely editable control series	1 via Editor

**Control**

Control principle	Sequential switching, circle switching, intelligent switching behavior, 4-quadrant operation
Automatic initialization/test run	Possible
Target cos-φ	0.3 inductive up to 0.3 capacitive adjustable
Switch on time	Selectable from 1 sec. to 20 min.
Switch off time	Selectable from 1 sec. to 20 min.
Discharge time	Selectable from 1 sec. to 20 min.
Manual operation	Yes
Fixed steps/skip steps	Programmable
Zero voltage release	Standard

**Display/display functions**

Display of grid parameters	Cos-φ, V, I, F, W, Q, P, S, ΔQ, THD-V, THD-I
Display of harmonics	3 <sup>rd</sup> to 19 <sup>th</sup> harmonics of V and I
Accuracy	Current/voltage: 1% Active, apparent and reactive power: 2%
Integrated help function	Context dependent

<b>Storage function</b>	
Storage of maximum values	Voltage, current, active/reactive/apparent power, temperature, THD-V, THD-I
Storage of switching operations	Each output can be reset separately
Storage of operation time	Each capacitor can be reset separately
Error storage	Error register in plain language
<b>Temperature monitoring</b>	
Monitoring	Automatic step switch off
Temperature measuring range	-30 ... +100 °C
<b>Casing</b>	
Panel mounted instrument	DIN 43700, 144 x 144 x 55 mm
Weight	1 kg
Ambient operating temperature	-20 °C ... +60 °C
Protection class accord. DIN 40050	Front: IP54, rear: IP 20
Safety regulations	IEC 601010-1:2001, EN61010-1:2001
Interference resistance	EN50082-1:1995
EMC-interference	IEC61000-4-2: 8 kV IEC61000-4-4: 4 kV
<b>Ordering codes</b>	
BR7000-I (without interface)	B44066R7012E230
BR7000-I/S485 (with interface RS485)	B44066R7112E230

### Cautions and Warnings

Controller hunting: When putting the capacitor bank into operation, it is required to avoid needless switching cycles (means permanent switching on and off of steps without significant change of consumer load). This so called “controller hunting“ would increase the number of switching operations of the connected contactors and capacitors and decrease the expected life cycle (wear out) and, in worst case, capacitor bursting and fire, etc . This can be avoided by a proper programming of the BR7000-I with the actual system parameters (current transformer prim. and sec., first kvar step, control series, switching time).

**⚠ Please read cautions information about PFC capacitors and cautions as well as installation and maintenance instructions in the actual version of the Product Profile *Power Factor Correction* to ensure optimum performance and prevent products from failing, and in worst case, bursting and fire, etc. The actual Product Profile is available at [www.epcos.com/publications](http://www.epcos.com/publications).**

**Information given in the PFC-product profile and values given in the data sheet reflect typical specifications. You are kindly requested to approve our product specifications or request our approval for your specification before ordering.**

### Note

For detailed information about PFC capacitors and cautions, refer to the latest version of EPCOS PFC Product Profile.

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