Film Capacitors – Power Factor Correction

Power Factor Controller

Series/Type: BR6000 V6.0
Ordering code: B44066R6…E230
Date: June 2016
Version: 3
## Preliminary data

### Characteristics
- Intelligent control
- Menu driven handling (plain language; Czech/Dutch/German/English/French/Polish/Portuguese/Russian/Spanish/Turkish)
- Self-optimizing control capability
- Automatic initialization
- Test-run possible
- Large voltage measuring range
- Recall function of recorded values
- Four-quadrant operation (e.g. stand by generator)
- Powerful alarm output
- 13 steps possible
- Control series editor
- Detailed expert modes

### Features

<table>
<thead>
<tr>
<th>Display</th>
<th>- Large and multifunctional LCD (2 × 16 characters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Graphic and alphanumeric</td>
<td></td>
</tr>
<tr>
<td>- LCD illumination</td>
<td></td>
</tr>
<tr>
<td>- OLED display available for series BR6000-HD</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Housing</th>
<th>- Zinc coated sheet steel</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>System parameters displayed</th>
<th>- System voltage (V AC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Reactive power (kvar)</td>
<td></td>
</tr>
<tr>
<td>- Active power (kW)</td>
<td></td>
</tr>
<tr>
<td>- Frequency</td>
<td></td>
</tr>
<tr>
<td>- Apparent power (kVA)</td>
<td></td>
</tr>
<tr>
<td>- Apparent current (A)</td>
<td></td>
</tr>
<tr>
<td>- Temperature (°C)</td>
<td></td>
</tr>
<tr>
<td>- Real-time cos ( \delta )</td>
<td></td>
</tr>
<tr>
<td>- Target cos ( \delta )</td>
<td></td>
</tr>
<tr>
<td>- kvar value to target cos ( \delta )</td>
<td></td>
</tr>
<tr>
<td>- Harmonics (3rd … 19th) V (%) , I (%)</td>
<td></td>
</tr>
<tr>
<td>- Energy (kvar)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alarm output</th>
<th>- Insufficient compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Overcompensation</td>
<td></td>
</tr>
<tr>
<td>- Undercurrent</td>
<td></td>
</tr>
<tr>
<td>- Overcurrent</td>
<td></td>
</tr>
<tr>
<td>- Overtemperature</td>
<td></td>
</tr>
<tr>
<td>- Harmonics</td>
<td></td>
</tr>
<tr>
<td>- Threshold value programmable</td>
<td></td>
</tr>
<tr>
<td>- Internal error storage</td>
<td></td>
</tr>
</tbody>
</table>
## Preliminary data

Recall recorded values
- Maximum voltage \( V_{\text{max}} \)
- Minimum voltage
- Maximum reactive power, \( Q \) (kvar)
- Maximum active power, \( P \) (kW)
- Maximum apparent power, \( S \) (kVA)
- Maximum temperature \( ^\circ\text{C} \)
- Maximum THD-V/THD-I
- Switching cycles of capacitors
- Operation time of capacitors

## Technical Data

### Weight
- 1 kg

### Case
- Panel-mounted instrument, 144 × 144 × 55 mm (cut out 138 × 138 mm)

### Ambient conditions
- Over-voltage class: III
- Pollution degree: 2
- Operating temperature: −20 °C ... +60 °C
- Storage temperature: −20 °C ... +75 °C
- Sensitivity to inference (industrial areas): EN 55082-2.1995
- Safety guidelines: IEC 61010-1:2001
- EN 61010-1:2001
- Mounting position: Any
- Humidity class: 15 % ... 95% without dew

### Protection class
- Front plate: IP54 to IEC60529
- Rear side: IP20 to IEC60529

### Operation
- Supply voltage: 110...230 V AC ±15%, 50/60 Hz
- Target \( \cos \delta \): 0.3 ind. ... 0.3 cap.
- Switching and discharge time range: 1 s ... 20 min
- Number of control series: 20 series preset + control series editor for free programming
- Control modes: Series switching (LIFO), circular switching (FIFO), self-optimized intelligent control mode
### Preliminary data

#### Measurement
- **Measurement voltage range**: 30 ... 525 V AC (L–L / L–N)
- **Fundamental frequency**: 50 and 60 Hz
- **Measurement current (CT)**: x/5 and x/1 Ampere possible
- **Minimum operating current**: 40 mA / 10 mA
- **Maximum current**: 5.3 A (sinusoidal)
- **Zero voltage release**: < 15 ms
- **Accuracy**:
  - Current, voltage: 1%
  - Reactive, active, apparent power: 2%

#### Switching outputs
- **Relay outputs**
  - **Number of outputs**: 6/7 or 12/13 steps available
  - **Switching voltage/current**: Max. 250 V, 6 A

#### Alarm relay
- Potential-free contact (max. 250 V, 6 A)

### Ordering Codes

<table>
<thead>
<tr>
<th>Type</th>
<th>Voltage 50/60 Hz</th>
<th>Output Relay</th>
<th>Output Transistor</th>
<th>Alarm output</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR6000-R6</td>
<td>110 ... 230</td>
<td>6</td>
<td>–</td>
<td>Yes</td>
<td>B44066R6006E230</td>
</tr>
<tr>
<td>BR6000-HD6</td>
<td>110 ... 230</td>
<td>6</td>
<td>–</td>
<td>Yes</td>
<td>B44066R6506E230</td>
</tr>
<tr>
<td>BR6000-R12</td>
<td>110 ... 230</td>
<td>12</td>
<td>–</td>
<td>Yes</td>
<td>B44066R6012E230</td>
</tr>
<tr>
<td>BR6000-HD12</td>
<td>110 ... 230</td>
<td>12</td>
<td>–</td>
<td>Yes</td>
<td>B44066R6512E230</td>
</tr>
</tbody>
</table>

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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 BR6000 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.

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