# Film Capacitors – Power Factor Correction

## Power Factor Controller

**Series/Type:** **BR 2100 (With Auto Initialization)**
**Ordering code:** **B44066R....R240**

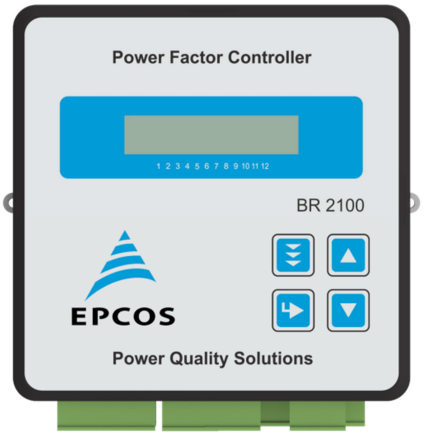
Date: 2018-09-25
Version: 00



EPCOS AG is a TDK Group Company.

## Characteristics

- Intelligent control
- Menu driven handling in English language
- Test-run possible
- Large voltage measuring range
- Recall function of recorded values
- Four-quadrant operation
- Potential free contact alarm output (Optional)
- RS485 communication interface (Optional)
- Real Time Clock (Optional)
- Log of Time date stamping for last 3 system faults enabled
- Auto Initialization function
  - Input voltage connection detection (L-N\L-L)
  - Input Phase correction angle detection
  - Number of capacitor bank connected
- Three bank selection mode
  - Control series (upto 20)
  - User defined capacitor bank kvar
  - Auto detected capacitor bank kvar




## Features

| | |
|---|---|
| Display | - Large and multifunctional LCD (2 × 16 characters)<br>- Graphic and alphanumeric<br>- LCD illumination |
| System parameters displayed | - Line voltage (V AC)<br>- Reactive power (kvar)<br>- Active power (kW)<br>- Frequency<br>- Apparent power (kVA)<br>- Line current (A)<br>- Temperature (°C)<br>- Real-time cos phi<br>- Difference to PF<br>- THD – V / THD - I in % upto 31st<br>- Individual Harmonics in % upto 31st for V & I<br>- Energy kWh (Import/ Export)<br>- Energy kVAh<br>- Energy kVARh (Inductive / Capacitive)<br>- Demand kVA /Current<br>- Run Hour – Number of hours load is connected |

| | |
|---|---|
| | - On Hour – Hours for which power supply is ON<br>- No of interruption – Number of interruption for power supply. |
| Alarm output | - Out of Bank (Under Compensation)<br>- Overcompensation<br>- Under Voltage<br>- Over Voltage<br>- Undercurrent<br>- Overcurrent<br>- Over temperature<br>- Under / Over Frequency<br>- Excess Harmonics ( V-THD / I-THD) |

| | |
|---|---|
| Recall recorded values | - Maximum / Minimum Voltage<br>- Maximum / Minimum Current<br>- Maximum / Minimum Frequency<br>- Maximum Active Power<br>- Maximum Apparent Power<br>- Maximum Reactive Power<br>- Maximum / Minimum Temperature<br>- Maximum THD(V/I)<br>- Switching count of Capacitor<br>- Operation time of capacitor |
| Warning Messages | - Capacitor switching count exceed the limit<br>- Capacitor Health Fault |

**Technical Data**

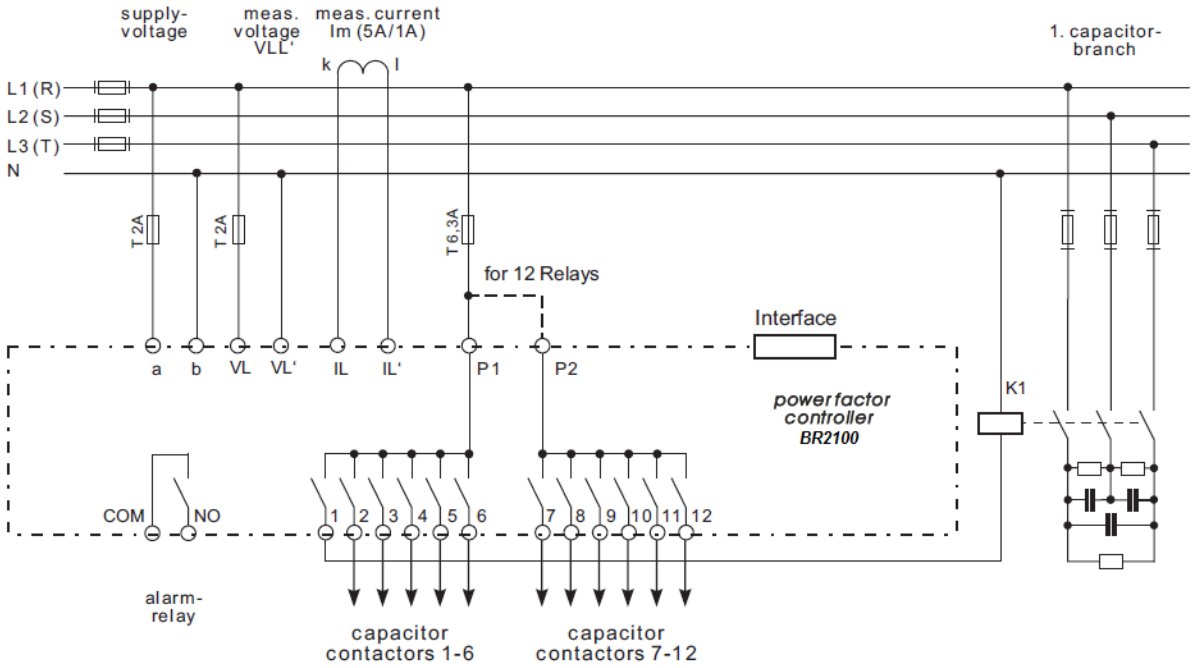
| | |
|---|---|
| Weight | 0.57 kg |
| Case | Panel-mounted instrument,<br>144 × 144 × 56 mm<br>(cut out 142 $^{+0.8}$× 142$^{+0.8}$ mm) |
| Ambient conditions | |
| - Over-voltage class | III |
| - Pollution degree | 2 |
| - Operating temperature | –10 ... +60 °C |
| - Storage temperature | –20 ... +65 °C |
| - Sensitivity to EMC | IEC61326-1 |
| - Safety guidelines | IEC 61010-1:2010 |
| - Mounting position | Flush Mounting |
| - Humidity class | 15% … 95% non-condensing |
| Protection class | IP54 to IEC60529 |
| - Front plate | IP20 to IEC60529 |

| | |
|---|---|
| - Rear side | |
| Operation | |
| - Auxiliary Supply voltage | 110 V AC – 550VAC |
| - Auxiliary Supply Frequency | 40 to 70 Hz |
| - Target cos phi | 0.8 ind. … 0.8 cap. |
| - Switching On & Off | 10 s … 30 min |
| - Discharge Time | 60 s … 30 min |
| - Control modes | self-optimized intelligent control mode |
| Measurement | |
| - Measurement voltage range | 30 ... 550 V AC (L–L / L–N) |
| - Fundamental frequency | 50 / 60 Hz |
| - Measurement current (CT) | x/5 and x/1 Ampere onsite programmable |
| - Minimum operating current | 2 mA |
| - Maximum current | 6 A (sinusoidal) |
| - Accuracy | Current, voltage: 0.5% of nominal value<br>Active, apparent power: 1% of nominal value<br>Active Energy : 1%<br>Apparent Energy : 1%<br>Reactive Energy : 2%<br>THD : ± 4% |
| Switching outputs<br>Relay outputs | |
| - Number of outputs | 6 / 8 / 12 steps available |
| - Switching voltage/Power | Max. 250 VAC / 1000W |
| Alarm relay | Potential-free contact (Max. 250 VAC / 1000W) |

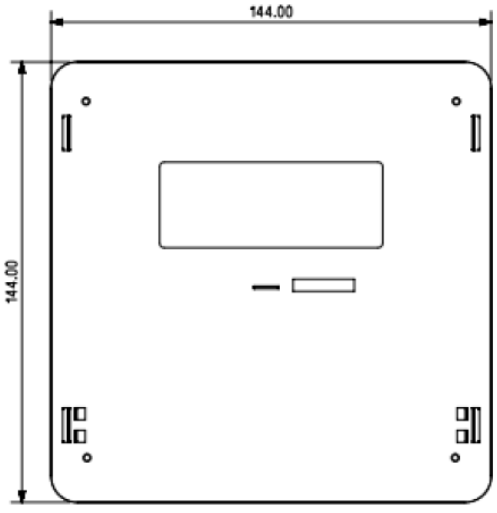
**Ordering Codes :**

| Type | Voltage 50/60 Hz | Output Relay | Alarm output | Interface (RS485) | RTC | Ordering code |
|---|---|---|---|---|---|---|
| BR2100 | 240 | 6 | Yes | No | No | B44066R2006R240 |
| BR2100 | 240 | 8 | Yes | No | No | B44066R2008R240 |
| BR2100 | 240 | 12 | Yes | No | No | B44066R2012R240 |

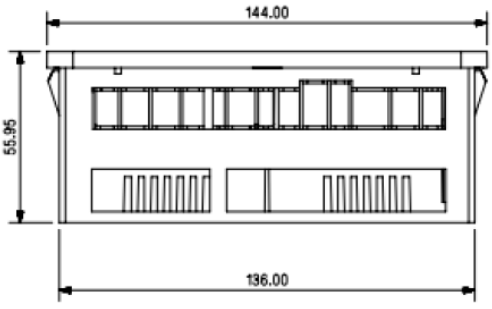
## Connection plan




## Dimensions :




FRONT VIEW




SIDE VIEW

### ⚠ 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 BR4001 with the actual system parameters (current transformer prim. and sec., Nominal Voltage, kvar steps, capacitor switching threshold, 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.**

**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.**

## Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application.** As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified.** In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as hazardous)**. Useful information on this will be found in our Material Data Sheets on the Internet (www.epcos.com/material). Should you have any more detailed questions, please contact our sales offices.
5. We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time**. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order. We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available. The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.
6. Unless otherwise agreed in individual contracts, **all orders are subject to the current version of the "General Terms of Delivery for Products and Services in the Electrical Industry" published by the German Electrical and Electronics Industry Association (ZVEI)**.
7. **Our manufacturing sites serving the automotive business apply the IATF 16949 standard.** The IATF certifications confirm our compliance with requirements regarding the quality management system in the automotive industry. Referring to customer requirements and customer specific requirements ("CSR") TDK always has and will continue to have the policy of respecting individual agreements. Even if IATF 16949 may appear to support the acceptance of unilateral requirements, we hereby like to emphasize that **only requirements mutually agreed upon can and will be implemented in our Quality Management System.** For clarification purposes we like to point out that obligations from IATF 16949 shall only become legally binding if individually agreed upon.

## Important notes

8. The trade names EPCOS, CeraCharge, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CTVS, DeltaCap, DigiSiMic, ExoCore, FilterCap, FormFit, LeaXield, MiniBlue, MiniCell, MKD, MKK, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, ThermoFuse, WindCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.epcos.com/trademarks.

Release 2018-06