

BRC

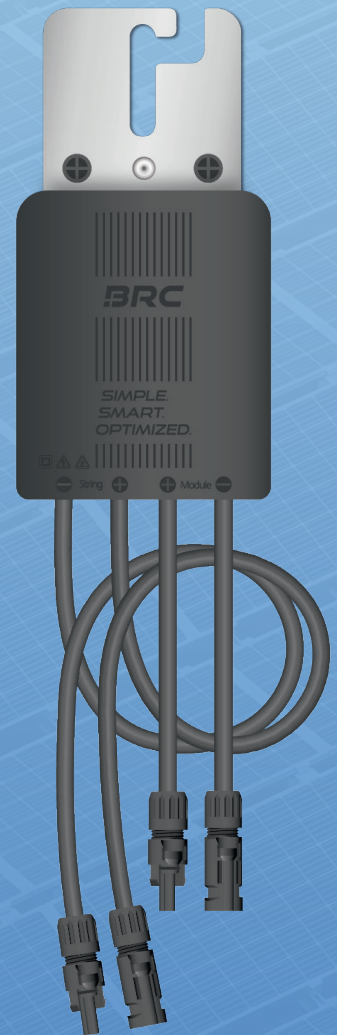
SOLAR

Product Catalog

Power Optimizer

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English



**SIMPLE.
SMART.
OPTIMIZED.**



„We are not only engineers, we are pioneers for a sustainable future.“

Quote Managing Director Pascal Ruisinger

With innovative optimizers, we make photovoltaics more efficient and accessible for every roof - without compromising on quality and fairness. For us, it's about more than just technology: it's about taking responsibility and shaping an energy-independent future together. Our company was born out of this passion. Our goal was and is to create an important building block for photovoltaic technology that is flexible and cost-effective for installers. The first step towards achieving this goal was the M500 power optimizer. The focus here was on maximum efficiency, maximum independence from other components and maximum simplicity.

Our vision

At BRC Solar, we are united by one thing above all: our enthusiasm for photovoltaics and a pronounced cost-benefit mentality. Our vision is to develop innovative products with which all roofs can be efficiently equipped with photovoltaics. can be efficiently equipped with photovoltaics. Our journey began as three students full of enthusiasm for photovoltaics. In the beginning, we soldered the first prototypes together ourselves in the lab. Our company was born out of this passion. Our goal was and is to create an important building block for photovoltaic technology that is flexible and cost-effective for installers. cost-effective for installers. The first step towards achieving this goal was the M500 power optimizer. The focus here was on maximum efficiency, maximum independence from other components and maximum simplicity. Based on this product, we are always working closely with changing customer needs and adding new functions to our product portfolio. In doing so, we always focus on our three main values within the company.

Simple

Simple & user-friendly: Thanks to the simple plug & play installation of our product, you save valuable time and avoid complications.

Customer satisfaction: Your satisfaction is our greatest concern. We strive not only to meet your expectations, but to exceed them.

Smart

Innovation: By utilising the latest technologies and creative thinking, we develop products that are always one step ahead.

Teamarbeit: Together we achieve more. Cooperation and mutual respect within the team are the basis for our success.

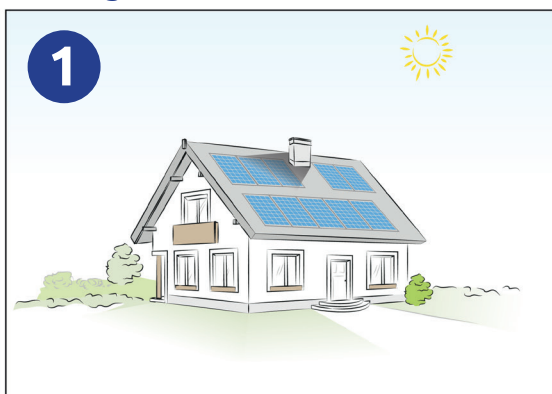
Optimized

Efficiency: We continuously optimize all our processes in order to achieve the best results with the fewest possible resources.

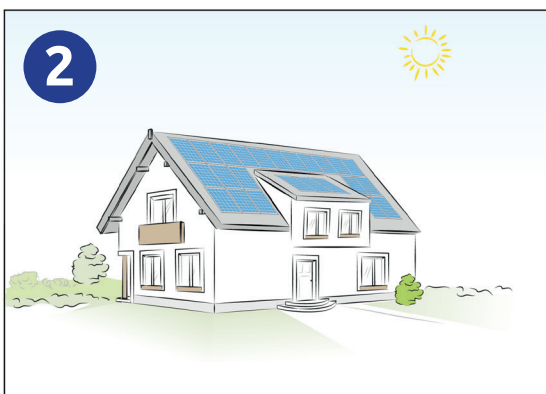
Excellence: We always strive for the highest quality and do everything we can to offer you only the best.

Application cases

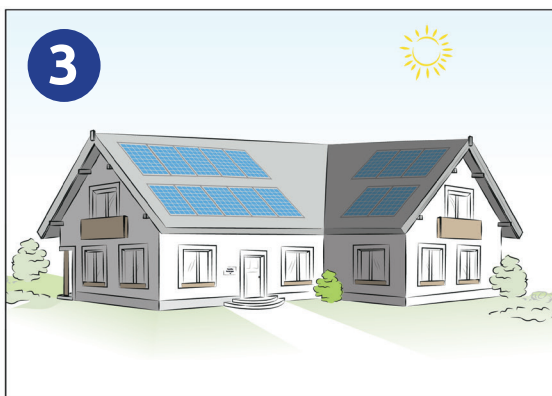
Shading



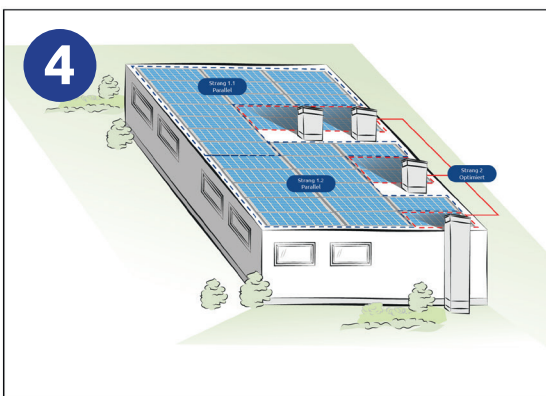
Different inclination



Different alignment



Special case: C&I system



Description of the problem:

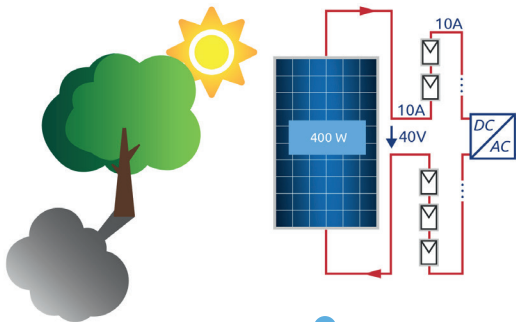
Due to the series connection of the PV modules, the current in the entire string is always the same. As the current of a module depends on the irradiation, the module with the worst irradiation reduces the current and therefore the yield of the entire string. This problem mainly occurs with localized shading (Pic. 1), different inclinations (Pic. 2) and different orientations (Pic. 3). The BRC optimizer is now applied specifically to these affected modules and modules and raises the current at the output of the module to the level of the other modules. This prevents a reduction in output.

Special case for C&I systems (Pic. 4):

Occasional shading can also occur with C&I systems. Here it is important to know that optimizers reduce the voltage of the module to keep the current up. As the voltage in both strings must be maintained in parallel strings must be maintained in both strings, optimizers are not recommended in parallel strings. However, to solve local shading, we recommend forming a separate string with problematic modules and connecting it to a separate MPP on the inverter. Full optimization of the additional string is then possible without any problems.

The problem

Explanation for PV experts



When looking at the electrotechnical situation under optimum lighting conditions, it can be seen that one module in the example can produce 400W. There is a voltage of 40V on each module and a string current of 10A in the overall system.

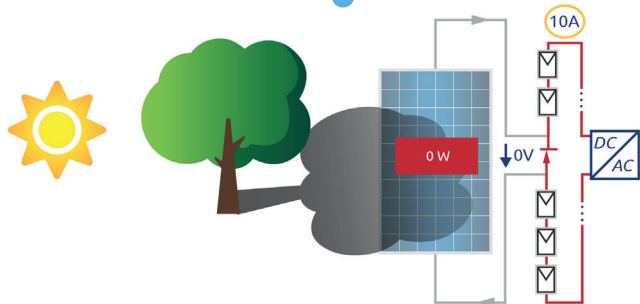
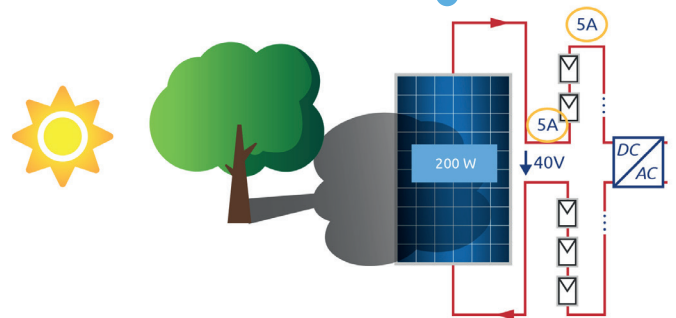
However, if shade falls on the module, the output drops accordingly. In our example (see right), the shading is 50%, which is why the string current drops to 5A. As the current decreases, the output also decreases:

$$P \text{ (Performance)} = U \text{ (Voltage)} * I \text{ (Current)}$$

Because all modules are connected in series in a string, the string current is now only 5A on all modules. The reason for this is the behavior of the current in a series connection:

$$I_{\text{total}} = I_1 = I_2 = \dots$$

The formula shows that the current is the same at every point in the circuit, i.e. the string current is determined by the weakest module. In this case, I_{Total} is therefore 5A.



Modern inverters can avoid this problem by activating the modules' bypass diodes. If the bypass diode is activated, the shaded cell string delivers its maximum possible current and the difference to the string current flows through the bypass diode.

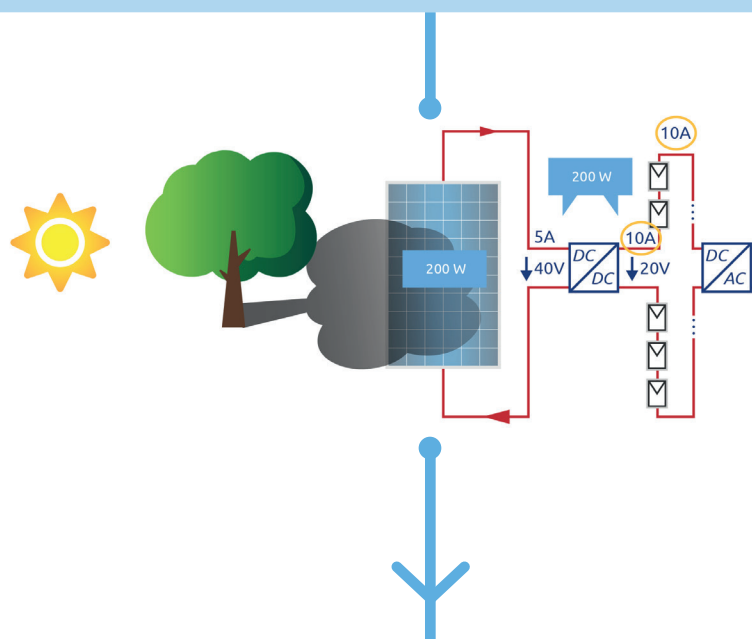
$$I_{\text{total}} = I_{\text{cell string}} + I_{\text{diode}}$$

In bypass mode, a current continues to flow through the shaded cell, causing it to heat up. This leads to a hot spot on the shaded cell. Depending on the duration and intensity with which it occurs, this hot spot can damage or, in the worst case, destroy the module. The bypass diodes can also be overloaded and destroyed if they are activated very frequently.

The solution

Using the BRC Power Optimizer prevents all these problems.

The Power Optimizer is connected in parallel to the module. When shading occurs, it is automatically activated by the inverter in a similar way to the bypass diode. When activated, the Power Optimizer reduces the output voltage and increases the output current so that it corresponds to the string current. This means that the BRC Power Optimizer can continue to feed the available module power into the PV system.

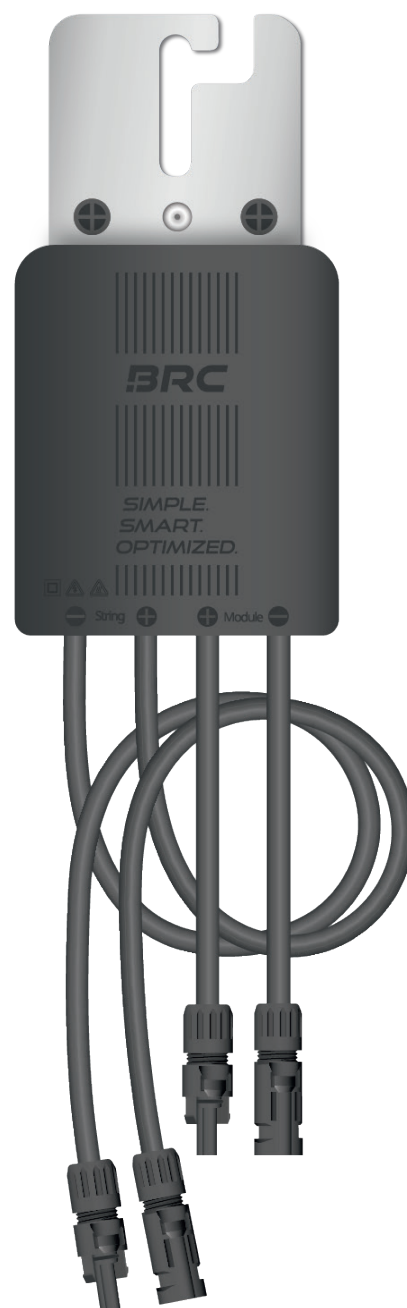


In the example, the BRC Power Optimizer converts the module voltage of 40V and the module current of 5A into an output voltage of 20V and a string current of 10A. The result is that the total string current throughout the string is now 10A again and each module can supply 10A. Although the voltage on the partially shaded module is lower, this does not affect the voltage of the other modules.

$$I_{total} = I_1 = I_2 = \dots$$

$$U_{total} = U_1 + U_2 + \dots$$

The energy yield is maximized. The problem of hot spots is also solved, as the optimizer operates the shaded module at its individual maximum operating point without the shaded cell working as a consumer and generating power losses.



BRC

SOLAR

GERMAN BRAND

Power Optimizer M600-E

Module optimizer for photovoltaic systems



Maximum yield

Solves the problem of shading, different orientations and different module inclinations



Maximum quality & efficiency

Standby function, Ultra Fast MPP tracking with 20 times faster switching, Production switching



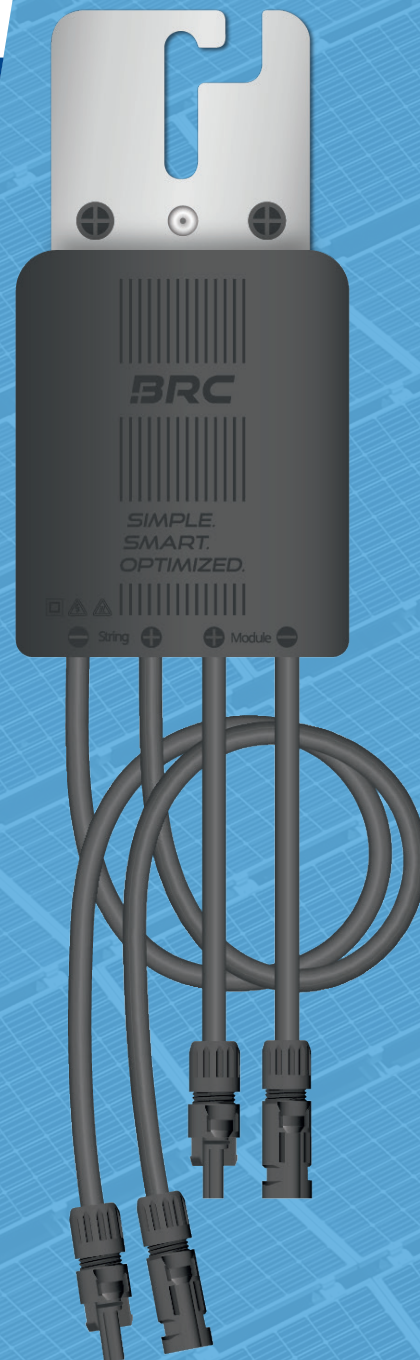
Simple installation

Simple plug & play system, no additional software or app required



Inverter independence

Maximum flexibility in use, can be combined with most common common inverters



**SIMPLE.
SMART.
OPTIMIZED.**

www.brc-solar.de

M600-E COMPARED TO SYSTEM-INDEPENDENT OPTIMIZERS

Similar product features

- Can be used independently of the inverter
- Partial equipment possible



Time saving and simplicity

- Simple installation and connection via Plug & Play
- No app setup or initialization required
- No additional components required



Cost savings and additional yield

- Best price-performance ratio (lower price)
- Most efficient technology (patented inactivity of the power electronics when no optimization is necessary)
- 20x faster response to shading. Efficient optimization through the use of GaN transistors.



Highest quality

- Long-life electronics (German development art)
- Full encapsulation in the optimizer

M600-E COMPARED TO SYSTEM-DEPENDENT OPTIMIZERS



Maximum flexibility

- Can be used independently of the inverter
- Partial configuration possible from 1 piece



Time saving and simplicity

- Simple installation and connection via Plug & Play
- Time required for installation per optimizer approx. 2 min.
- No app setup or initialization required
- No additional components required



Cost savings and additional yield

- Best price-performance ratio
- Most efficient technology (patented inactivity of the power electronics when no optimization is necessary)
- 20x faster response to shading. Efficient optimization through the use of GaN transistors.



Highest quality

- Long-life electronics (German development art)
- Full encapsulation in the optimizer



Important notes M600-E:

- Do not carry out a short-circuit current measurement during commissioning.
- When carrying out insulation measurements with a measuring device, ensure that the measuring short-circuit current measurement is in auto mode.
- In strings with an IMPP (see data from the inverter data sheet) of over 17A, a maximum of 50% of the modules may be equipped with optimizers.
- Optimizers must not be used in parallel-connected strings - this also applies to partial equipment.



WARRANTY

Thanks to our long-life electronics, we offer a 25-year warranty on the Power Optimizer M600



LONG-LIFE ELECTRONICS

The Power Optimizer has long-life electronics thanks to our new GaN technology



MAXIMUM YIELD

More PV modules can be installed and more energy can be used



RELIABLE SUPPORT

You can reach us by e-mail and telephone for any concerns you may have

BRC

SOLAR

New



GERMAN BRAND

Power Optimizer M600-M System & Gateway BRConnect

*Module optimizer for photovoltaic systems
with monitoring*



Maximum yield

Solves the problem of shading, different orientations and different module inclinations



Maximum quality & efficiency

Standby function, Ultra Fast MPP tracking with 20 times faster switching

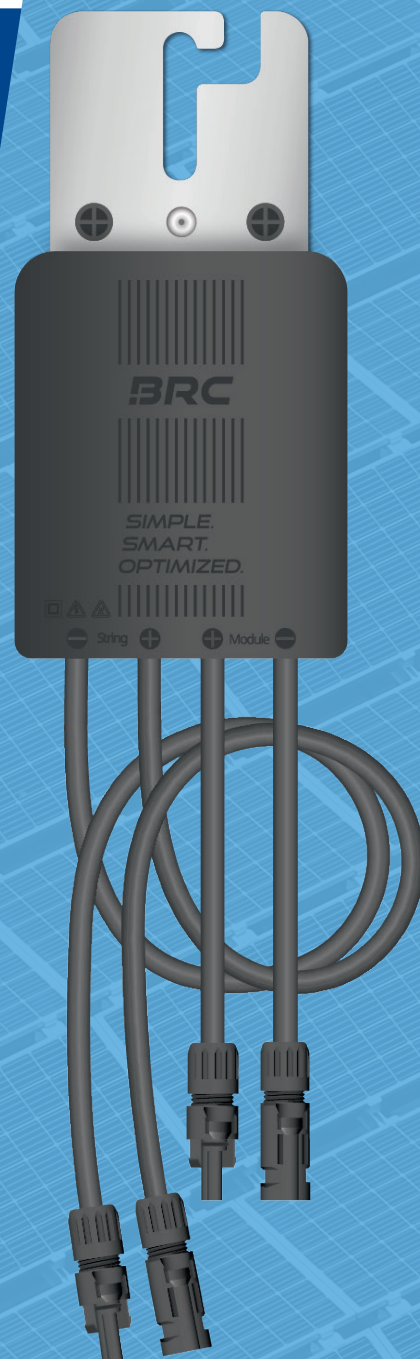


Monitoring function

Display of module performance via the Power Manager app or on the web



www.brc-solar.de



**SIMPLE.
SMART.
OPTIMIZED.**

M600-M COMPARED TO **SYSTEM-INDEPENDENT** OPTIMIZERS

Similar product features

- Can be used independently of the inverter
- Use of M600-M optimizers also possible without monitoring (then partial equipment from 1 piece possible)
- Monitoring function can be retrofitted at any time with a BRConnect



Cost savings and additional yield

- Cost savings thanks to time savings of approx. 2 hours when installing a 20KW system
- Only one additional component required for monitoring (BRConnect)
- 20x faster response to shading. Efficient optimization through the use of GaN transistors
- Most efficient technology (patented inactivity of the power electronics when no optimization is necessary)



Maximum data security

- Data storage only on European servers



Maximum flexibility

- Partial equipment with monitoring still possible, even with full warranty (min. 4 - max. 25 optimizers per string are required for monitoring)



Reliable and uncomplicated

- Simple commissioning without communication interruptions (setup and data transmission of the system via Powerline Communication/ DC line, not via radio)
- Establishing communication between the M600-M optimizer and BRConnect without plug connections (contactless data tapping via toroidal coils in the BRConnect)



Highest quality

- Long-life electronics (German development art)
- Full encapsulation in the optimizer

M600-M COMPARED TO **SYSTEM-DEPENDENT** OPTIMIZERS

Similar product features

- Simple commissioning without communication interruptions (setup and data transmission of the system via Powerline Communication/ DC line, not via radio)



Cost savings and additional yield

- Best price - performance ratio
- Most efficient technology (patented inactivity of the power electronics when no optimization is necessary)
- 20x faster response to shading. Efficient optimization through the use of GaN transistors



Maximum data security

- Data storage only on European servers



Maximum flexibility

- Can be used independently of the inverter
- Partial equipment also possible with monitoring (min. 4 - max. 25 optimizers per string)
- Use of M600-M optimizers also possible without monitoring
- Monitoring function can be retrofitted at any time with a BRConnect



Reliable and uncomplicated

- Establishing communication between BRConnect and M600-M optimizer without plug connections (contactless data pick-up via toroidal coils in the BRConnect)



Highest quality

- Long-life electronics (German development art)
- Full encapsulation in the optimizer



Important notes M600-M:

- Do not carry out a short-circuit current measurement during commissioning.
- When carrying out insulation measurements with a measuring device, ensure that the measuring short-circuit current measurement is in auto mode.
- Optimizers must not be used in parallel-connected strings - this also applies to partial equipment.



WARRANTY

Thanks to our long-life electronics, we offer a 25-year warranty on the Power Optimizer M600



LONG-LIFE ELECTRONICS

The Power Optimizer has long-life electronics thanks to our new GaN technology



MAXIMUM YIELD

More PV modules can be installed and more energy can be used



RELIABLE SUPPORT

You can reach us by e-mail and telephone for any concerns you may have

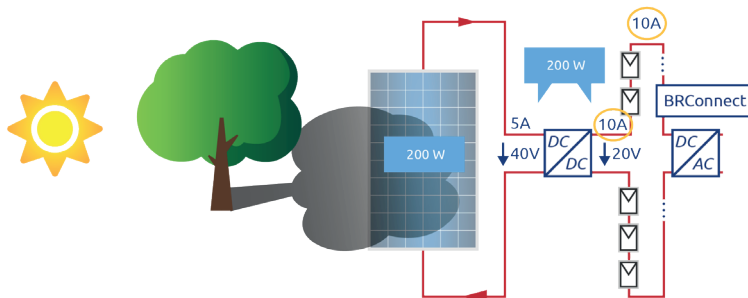
Functionality M600-M and BRConnect

Monitoring at module level

Would you like to know how much power your PV system and the individual modules are currently producing? Would you like to see which BRC optimizer is currently active in your string, e.g. due to shading?

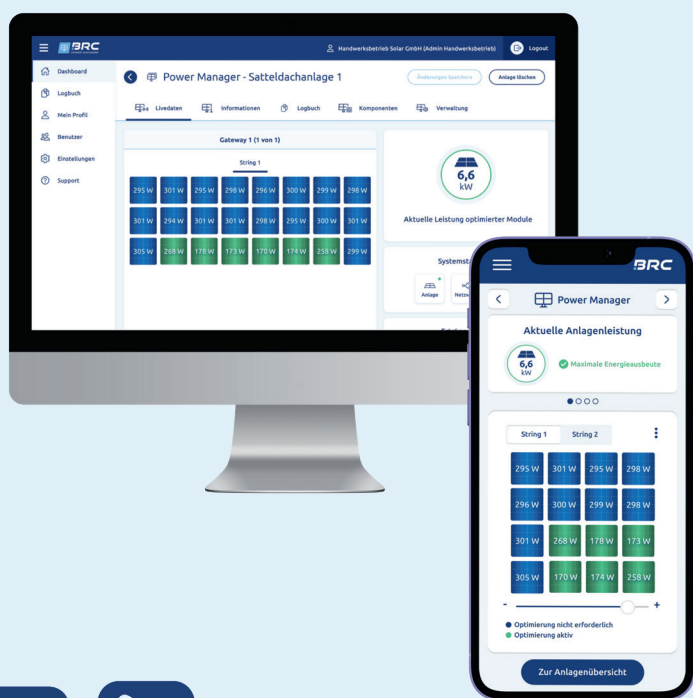
→ Then the new BRC optimizer M600-M incl. BRConnect is just right for you.

Each optimizer performs a constant measurement on its associated module and then transmits the determined data via Powerline via the string cables. Up to three strings can be routed through the BRConnect so that it can pick up the data from the respective string cables thanks to the toroidal coils. The BRConnect processes the data and now provides a precise overview of the system via the Power Manager app.



The new Power Manager app

Easily accessible via app, available in the Appstore and Playstore



Simple – Smart - Overview

Monitoring at module level thanks to our Power Manager app. After installing the BRC Power Optimizer M600-M and the BRConnect, the respective strings can be simulated in the app using drag & drop. This makes it possible to obtain a simple overview of the individual module outputs and the yield achieved. There are two different views, both for the end customer and for the installer.



BRC Advantages



German development art / German **quality standards**



Professional **immediate assistance** from BRC support staff



Supporting **checker tools**



Always **full product warranty** (25 years for optimizers) without restrictions or conditions



Higher **replacement package** in the event of a warranty claim
(If the installer is a member of the BRCademy)



Simple **installation videos** for support available at any time

The BRCademy

*Discover the new BRC training portal - your path to becoming a certified BRC partner!
Welcome to the future of training! With our brand new, in-house training portal, we offer you the opportunity to expand your expertise and benefit from exclusive advantages at the same time. The BRCademy will be available from summer 2025.*

- **Free registration:** Start your journey to becoming a certified BRC partner without any costs. Sign up and get started today.
- **Interactive learning content:** Learn from the best! Our high-quality videos offer you practical insights and valuable tips that you can implement directly in your day-to-day work.
- **Certification:** Answer the questions on our learning content and secure the status of a certified BRC partner. This certification will set you apart from the competition and show your customers that you are an expert in your field.
- **Exclusive benefits:** As a certified BRC partner, you will receive a personal identification number that ensures you a higher replacement fee in the event of a warranty claim. Benefit from this unique opportunity and increase your added value!

Become part of our community!

Together we will shape the future - innovatively, competently and successfully!



**We support you with the following tools
you with your planning:**

- ✓ **Module checker**
- ✓ **Compatible inverters**
- ✓ **Planning tool**
- ✓ **Order request**
*We will find the right
wholesaler near you*



*To the
planning aids*



*To the
BRCademy*



*Free
webinar*



*Newsletter
registration*



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