

DEGERconecter Control System for the DEGERtraker

Accurate adjustment ...

The **DEGERconecter** always adjusts the solar installation to face the brightest point in the sky. It includes the entire system control.

Maximum power yield

During times of sunshine the module surface is accurately adjusted to face the sun. During times of overcast weather, the **DEGERconecter** automatically adjusts to face the point with the strongest global radiation.

A control system to rely on.

The patented **DEGERconecter** control was distinguished with the Baden-Württemberg Prize for Innovation in 2000, has been continuously improved and has more than 40,000 units in operation.

Description of DEGERconecter functions

Two sensor cells in the **DEGERconecter** supply reference values which are evaluated by the logic device, and which provide the basis for the adjustments of the module surface in the course of the day. A third sensor cell is attached to the back of the **DEGERconecter** to reset the installation in the morning. Depending on the irradiation intensity, a differential amplifier controls the transition from the logarithmic characteristic curve during strong irradiation to a linear characteristic curve during low currents in diffuse light. That means that the logic device accepts a much higher value for the linear characteristic curve than for the logarithmic characteristic curve. This leads to improved adjustment accuracy in dim light. A load is added to the differential voltage, moving the switch-off threshold further into dusk, to ca. 30 W/m².

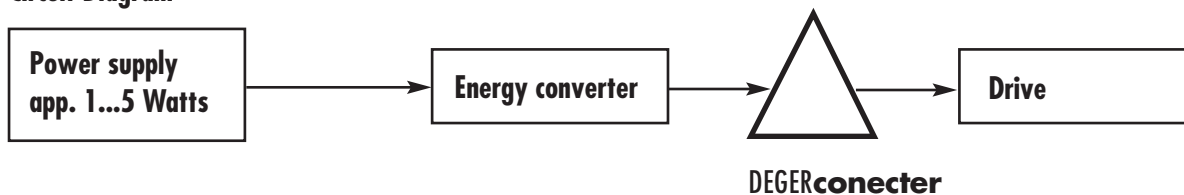
Drive control

The drive is controlled directly – and without requiring additional parts – by the MOSFET bridge circuit, which is integrated in the **DEGERconecter**. The bridge is characterised by a very low closing resistance. To avoid overload of the motor and the **DEGERtraker's** structure, a current limiter was integrated into the system. This current limiter functions dynamically, i.e. the motor is switched off as a response to overload (e.g. frozen or blocked drives). As soon as the drive works again, the system is reset automatically.

Tasks of an energy converter

The energy converter exploits wide voltage ranges of solar modules, battery systems and the grid for the **DEGERconecter**. The power for the control and drive systems may also be supplied without a battery, by direct connection to solar modules with less than one Watt power.

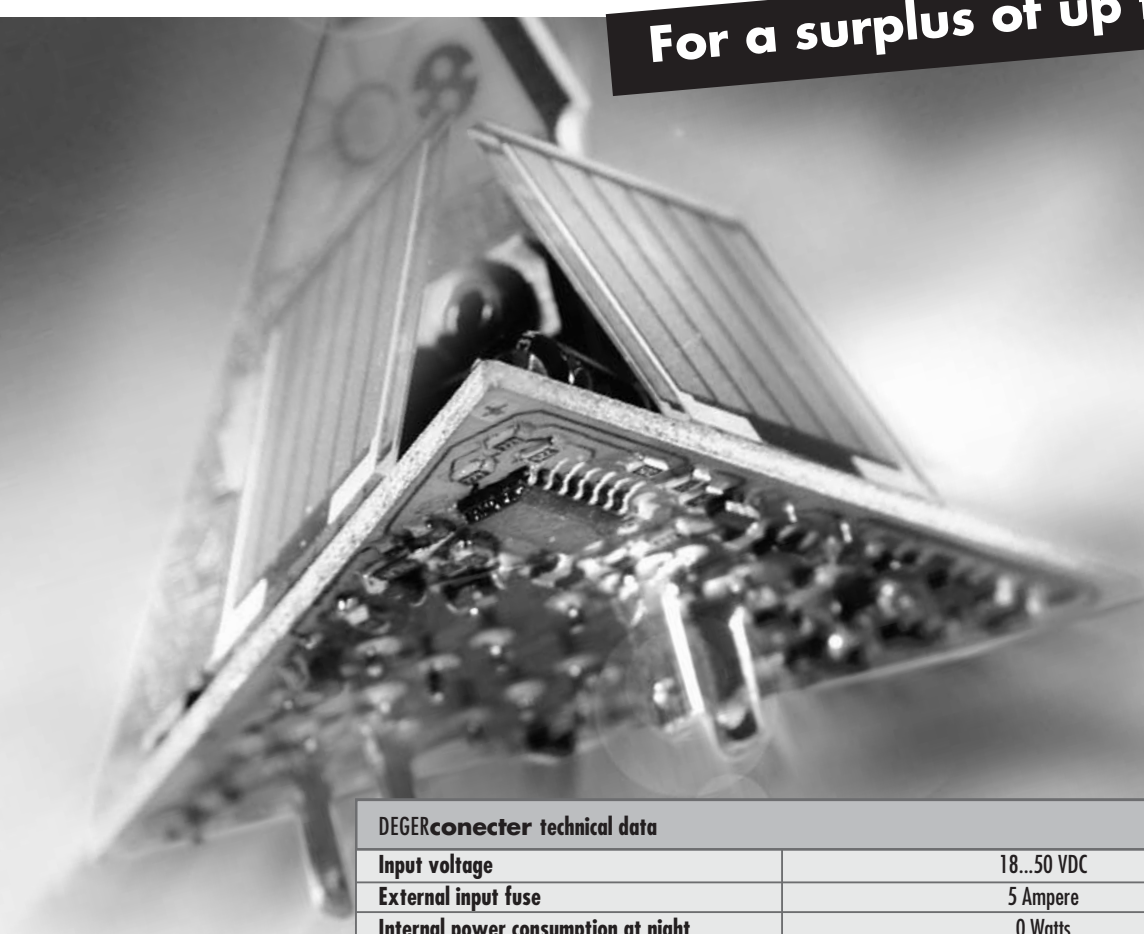
Circuit Diagram



During dawn, the **DEGERconecter** recognises the brightest spot in the sky and tries to reset the installation. The power supply module for the control system starts by producing 0.01 Watts or less, and as soon as the **DEGERconecter** attempts to control the electric motor, the voltage on the solar module breaks down. To avoid the **DEGERconecter** switching the drive on and off all the time and to achieve quick resetting, **DEGERenergie** has developed the energy converter. The energy converter collects even small power inputs from the solar module (which are too small to be fed into the grid) in a high performance condenser and makes this energy available to the **DEGERconecter**. The **DEGERconecter** is thus able to reset the installation to face the brightest spot even before the modules produce enough energy to be fed into the grid. To avoid both drives from working simultaneously, the energy converter gives the east-west drive priority over elevation. The energy converter also ensures that not more than ca. 1-3 Watts is drawn from the solar module while the drive is running. The control does not use any energy during the night.

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For a surplus of up to 45%



DEGERconecter technical data

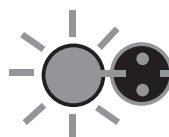
Input voltage	18...50 VDC			
External input fuse	5 Ampere			
Internal power consumption at night	0 Watts			
Internal power consumption control mode	0.1 Watt			
Input protection	reverse polarity protection diode max. 5 A			
Output voltage	see input voltage			
Output on motor side	short-circuit proof, reverse polarity protected			
Motor protection	overload recognition, current limitation			
Switching capacity loss-free	4 Ampere			
Peak switching capacity	9 Ampere			
Adjustment accuracy in sunshine	< 1°			
Adjustment accuracy in diffuse light	< 6 %			
Measurement	edge length 80 mm			
Weight	90 gr			
Energy converter	I	II	III	V
Input voltage	9...34 VDC	24 V (20...30 VDC)	80...380 VDC or 80...265 VAC	
Connection	independent of polarity			
Output voltage	22 VDC			
Power consumption with motor	3 Watts	20 Watts	5 Watts	20 Watts
Internal power consumption control mode approx.	0.1 Watt	0 Watt	1 Watt	
Output on motor side	short-circuit proof			
Dimensions	130 x 130 x 80 mm			
Weight	440 gr	600 gr	570 gr	600 gr
Input external drive system	no	yes		

Benefits

- No computer with high energy consumption required
- No rotation angle potentiometer, relay, step motors ... required
- No networking with data lines required
 - The automatic drive does not contain any electromechanical parts
- Little cabling required for large solar parks
 - Simple, easy-to-use control technology
 - Efficient utilisation even during cloudy weather
- Only makes movements which directly lead to increased power yield.

Subject to technical changes for future improvements.

Available at any time: From your solar equipment retailer.



DEGERenergie
Tracking Systems

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