Centrifugal fan
RadiCal in scroll housing.
Smart, precise, compact.
About ebm-papst.

ebm-papst is a leader in ventilation and drive engineering technology and a much sought-after engineering partner in many industries. With around 20,000 different products, we have the perfect solution for practically every requirement. We believe the consistent further development of our highly-efficient GreenTech EC technology provides our customers with the best opportunities for the future in industrial digitization. With GreenIntelligence, ebm-papst already offers intelligent networked complete solutions that are unique anywhere in the world today.

Six reasons that make us the ideal partner:

Our systems expertise: as experts in advanced motor technology, electronics and aerodynamics, we provide system solutions from a single source.

Our spirit of invention: our 600 engineers and technicians will develop a solution that precisely fits your needs.

Our lead in technology: with our EC technology and GreenIntelligence, we combine the highest energy efficiency with the advantages of IoT and digital networking.

Closeness to our customers: at 49 sales offices worldwide.

Our standard of quality: our quality management is uncompromising, at every step in every process.

Our sustainable approach: we assume responsibility with our energy-saving products, environmentally-friendly processes, and social commitment.

Designed for the future: RadiCal in scroll housing.

The Ecodesign Directive now has much more stringent requirements for residential ventilation units, which need to have documented improvements in energy efficiency and must be automatically adjustable. And, of particular importance for residential use, they have to be especially quiet. The backward-curved centrifugal fan with scroll housing from ebm-papst is considerably more efficient than forward-curved fans and allows exact balancing of the intake and outflow rates. A crucial benefit: On backward-curved fans, air flow sensors previously had to be retrofitted in a costly and time-consuming process. With the new plug & play solution from ebm-papst, this and other features are already integrated. Typical applications for the RadiCal with scroll housing include central ventilation units for single- and multi-family houses as well as industrial applications.
The RadiCal series of backward-curved GreenTech EC fans is now installed in a special housing. This all-in-one single-source solution consists of an impeller, a GreenTech EC motor with integrated control electronics, and a scroll housing, all of which are perfectly matched for ideal efficiency and acoustics.

Extremely high-efficiency GreenTech EC motors ranging from 25 to 510 watts are available. They feature impressive efficiency that is over 30% higher than the efficiency of comparable fans with centrifugal blowers. Special features include air flow measurement with a vane anemometer (patent pending), humidity and temperature sensors positioned in the air flow, a MODBUS RTU interface, and connections for further sensors for additional temperature and humidity monitoring. The significantly reduced noise level is an extra benefit – especially for residential applications. In comparison to centrifugal blower fans with the same air performance, the RadiCal is 3.5 dB(A) quieter. And it also has an ace up its sleeve for installation: no preparation required thanks to plug & play. Incidentally, the RadiCal with scroll housing is also available with a 2-pole, single-phase asynchronous motor.

More than 30% gain in efficiency
All-in-one. Convincing performance.

Aerodynamically optimized scroll housing

- Powerful
  - 30% more efficient than centrifugal blower fans
  - Higher back pressure capability
- Noise reduction
  - 3.5 dB(A) lower than comparable centrifugal blower fans
- Simple installation
  - Compact design
  - Various mounting options

Integrated sensors

- Precise data collection
  - Temperature and humidity are measured exactly

Vane anemometer

- Air flow measurement
  - Already installed and ready for operation
  - Constant volume tolerance ± 1% referenced to target value

FlowGrid

- Reduced noise
  - Low noise level
  - Significantly dampened blade passing noise
- Sustained efficiency
  - Unchanged air performance
- Effective environmental protection
  - Noise reduction as an essential aspect of environmentally friendly operation
Central electronics

- **Simple commissioning**
  - No programming effort; motor and electronics preconfigured
- **Adaptable**
  - Smoothly adjustable speed
  - Integrated control electronics
  - MODBUS RTU interface
  - Optional: 0-10 V/PWM control input
- **Safe operation**
  - Integrated locked-rotor and thermal overload protection
  - Overvoltage protection
- **Connection options**
  - 2x external analog sensors
  - 1x external I²C interface

Connection area

- **Integrated**
  - 450 mm cable including splices
- **Optional**
  - Plug

GreenTech EC motor

- **Economical operation**
  - Optimized commutation for efficient partial-load operation
- **Maintenance-free operation**
  - Maintenance-free ball bearings
  - Safe operation
  - Designed for continuous operation S1
- **Low noise emission**
  - Low-noise commutation logic
- **Sustainable design**
  - Magnets without rare earths
  - 3-core GreenTech EC motors

Impeller

- **High static efficiency**
  - Aerodynamically optimized blade channel
- **Low noise emission**
  - Optimized blade pass noise
- **Minimal vibration**
  - Dynamic balancing of impeller-rotor unit
- **Unrivaled compactness**
  - Impeller mounted directly on motor’s rotor
Self-control:
RadiCal in scroll housing controls itself autonomously with maximum precision and freely programmable air flows. If the back pressure in the system changes, the electronics adjust automatically. The deviation of ±1% from the target value fulfills all current requirements.

Smart solution:
Thanks to integrated sensors for measuring air flow, humidity and temperature, and an option for connecting additional external sensors, RadiCal is prepared for all requirements.

Progress made perfect.

Examples of individually programmable target values for constant-volume operation.
Perfectly interconnected: Ventilation systems can be remotely monitored and programmed via the MODBUS RTU interface.

Monitoring *made easy.*

GreenIntelligence for smart homes.
Centrifugal fans with scroll housing are model representatives of ebm-papst’s GreenIntelligence philosophy. All GreenIntelligence products have full smart factory capability and can be integrated in any system quickly and easily – thanks to plug & play. This adds value that goes far beyond the capabilities of individual fans or drives. In detail, this means:

– Complete status monitoring
– Notification when filter change required
– Connection to smart home
– Collection of additional environmental data
– Optimal air quality everywhere

GreenIntelligence is the logical next step in the evolution of GreenTech. In a nutshell, it is everything GreenTech stands for, enhanced by the possibilities and opportunities of digital connectivity, the Internet of Things and artificial intelligence.

Remote monitoring, predictive maintenance, and self-optimizing processes: GreenIntelligence raises RadiCal in scroll housing and many other innovative fan and drive systems with EC technology from ebm-papst to a new level. Installation and adjustment effort – and operating costs – are all reduced to a minimum. Or put simply: The next level of green.

Monitoring options:
With stored fan characteristic curves, air flow and speed measurement with GreenIntelligence enable the simple and precise monitoring of EC motors during operation. As shown here, this can be displayed in an external monitoring unit.
Size 133.

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal voltage range</th>
<th>Frequency</th>
<th>Nominal speed</th>
<th>Nominal power consumption</th>
<th>Nominal input current</th>
<th>Permitted ambient temperature</th>
<th>Weight</th>
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<tbody>
<tr>
<td>G2E 133-RA03-01</td>
<td>AC</td>
<td>1~230</td>
<td>50</td>
<td>2,700</td>
<td>24</td>
<td>-25...+45</td>
<td>1.0</td>
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<tr>
<td>G2G 133-RF15-03</td>
<td>EC</td>
<td>1~200-240</td>
<td>50/60</td>
<td>5,750</td>
<td>85</td>
<td>-25...+60</td>
<td>1.1</td>
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<tr>
<td>G2G 133-RO15-04</td>
<td>EC</td>
<td>1~200-240</td>
<td>50/60</td>
<td>5,750</td>
<td>85</td>
<td>-25...+45</td>
<td>1.2</td>
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</table>

Standard variants

<table>
<thead>
<tr>
<th>Type</th>
<th>Constant volume Controlled</th>
<th>Integrated RH/T sensor*</th>
<th>Speed-controlled 0-10 V/PWM</th>
<th>Speed-controlled PWM</th>
<th>MODBUS RTU Interface</th>
<th>Cable 450 mm</th>
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<td>G2E 133-RA03-01</td>
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<td>G2G 133-RO15-04**</td>
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</tr>
</tbody>
</table>

Constant volume control: Range 30 m³/h – 350 m³/h, tolerance ±1% of final value
* RH/T = Relative humidity/temperature
** Optional variant with 0–10 V / 10 VDC available.
Available as an option: FlowGrid air inlet grille for all sizes.
450 mm cable with splices for all types with controlled constant volume included. Optional plug.
Subject to technical changes
## Size 160.

![Fan Diagram](image)

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal voltage range</th>
<th>Frequency</th>
<th>Nominal speed</th>
<th>Nominal power consumption</th>
<th>Nominal input current</th>
<th>Permitted ambient temperature</th>
<th>Weight</th>
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<tbody>
<tr>
<td>G2E 160-RA63-01</td>
<td>VAC</td>
<td>1~230</td>
<td>2,550</td>
<td>27</td>
<td>0.12</td>
<td>-25...+60</td>
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<td></td>
<td></td>
<td>60 Hz</td>
<td>2,700</td>
<td>35</td>
<td>0.16</td>
<td>-25...+60</td>
<td>1.0</td>
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<tr>
<td>G3G 160-RF31-03</td>
<td>EC</td>
<td>1~200-240</td>
<td>4,300</td>
<td>85</td>
<td>0.75</td>
<td>-25...+60</td>
<td>1.6</td>
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<td>G3G 160-RG53-03</td>
<td>EC</td>
<td>1~200-240</td>
<td>4,950</td>
<td>115</td>
<td>1.0</td>
<td>-25...+55</td>
<td>1.8</td>
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<tr>
<td>G3G 160-RD15-03</td>
<td>EC</td>
<td>1~200-240</td>
<td>5,500</td>
<td>165</td>
<td>1.35</td>
<td>-25...+60</td>
<td>1.9</td>
</tr>
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<td>G3G 160-RO31-04</td>
<td>EC</td>
<td>1~200-240</td>
<td>4,300</td>
<td>85</td>
<td>0.75</td>
<td>-25...+45</td>
<td>1.5</td>
</tr>
</tbody>
</table>

### Standard variants

<table>
<thead>
<tr>
<th>Type</th>
<th>Constant volume controlled</th>
<th>Integrated RH/T sensor</th>
<th>Speed-controlled 0-10 V PWM</th>
<th>Speed-controlled PWM</th>
<th>MODBUS RTU Interface</th>
<th>Cable length</th>
</tr>
</thead>
</table>

**Standard variants:**
- Constant volume control: Range 40 m³/h – 500 m³/h, tolerance ±1% of final value
- Integrated RH/T sensor: Optional variant with 0-10 V 10 VDC available.
- Speed-controlled PWM: Available as an option: FlowGrid air inlet grill for all sizes.
- MODBUS RTU Interface: Optional plug.
- Cable length: 450 mm cable with splices for all types with controlled constant volume included. Optional plug.

Subject to technical changes.

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* RH/T = Relative humidity/temperature
** Optional variant with 0-10 V 10 VDC available.

Included
Size 190.

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal voltage range</th>
<th>Frequency</th>
<th>Nominal speed</th>
<th>Nominal power consumption</th>
<th>Nominal input current</th>
<th>Permitted ambient temperature</th>
<th>Weight</th>
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<tr>
<td>G2E 190-RA26-01</td>
<td>AC 1-230</td>
<td>50 Hz</td>
<td>2,250 rpm</td>
<td>52 W</td>
<td>0.23 A</td>
<td>-25…+60 °C</td>
<td>2.1 kg</td>
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<tr>
<td>G3G 190-RC05-02</td>
<td>EC 1-200-240</td>
<td>50/60 Hz</td>
<td>3,200 rpm</td>
<td>83 W</td>
<td>0.75 A</td>
<td>-25…+60 °C</td>
<td>2.1 kg</td>
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<tr>
<td>G3G 190-RG19-01</td>
<td>EC 1-200-240</td>
<td>50/60 Hz</td>
<td>3,650 rpm</td>
<td>115 W</td>
<td>0.9 A</td>
<td>-25…+55 °C</td>
<td>2.0 kg</td>
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<tr>
<td>G3G 190-RD45-03</td>
<td>EC 1-200-240</td>
<td>50/60 Hz</td>
<td>4,100 rpm</td>
<td>170 W</td>
<td>1.35 A</td>
<td>-25…+60 °C</td>
<td>2.1 kg</td>
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<td>G3G 190-RD45-08</td>
<td>EC 1-200-240</td>
<td>50/60 Hz</td>
<td>4,100 rpm</td>
<td>170 W</td>
<td>1.35 A</td>
<td>-25…+60 °C</td>
<td>2.1 kg</td>
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<tr>
<td>G3G 190-RP03-04</td>
<td>EC 1-200-240</td>
<td>50/60 Hz</td>
<td>3,050 rpm</td>
<td>72 W</td>
<td>0.7 A</td>
<td>-25…+60 °C</td>
<td>2.0 kg</td>
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<td>G3G 190-RQ45-04</td>
<td>EC 1-200-240</td>
<td>50/60 Hz</td>
<td>4,150 rpm</td>
<td>170 W</td>
<td>1.35 A</td>
<td>-25…+50 °C</td>
<td>2.2 kg</td>
</tr>
</tbody>
</table>

Standard variants

- **Constant volume**
- **Integrated RH/T sensor**
- **Speed-controlled 0-10 V/PWM**
- **Speed-controlled PWM**
- **MODBUS RTU Interface**
- **Cable 450 mm**

Volume flow control: Range 50 – 700 m³/h, tolerance ±1% of final value

*RH/T = relative humidity/temperature
Available as an option: FlowGrid air inlet grill for all sizes.
** Optional variant with 0-10 V/10 VDC available.
450 mm cable with splices for all types with controlled constant volume included. Optional plug.
Subject to technical changes
Size 225.

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal voltage range</th>
<th>Frequency</th>
<th>Nominal speed</th>
<th>Nominal power consumption</th>
<th>Nominal input current</th>
<th>Permitted ambient temperature</th>
<th>Weight</th>
</tr>
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<tr>
<td>G2E 225-RA92-01</td>
<td>AC</td>
<td>1~230</td>
<td>2,550</td>
<td>145</td>
<td>0.65</td>
<td>-25...+60</td>
<td>3.6</td>
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<td>G3G 225-RD05-02</td>
<td>EC</td>
<td>1~200-240</td>
<td>2,700</td>
<td>205</td>
<td>0.9</td>
<td>-25...+60</td>
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<td>G3G 225-RH19-01</td>
<td>EC</td>
<td>1~200-240</td>
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<td>EC</td>
<td>1~200-240</td>
<td>2,900</td>
<td>165</td>
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<td>-25...+60</td>
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<td>G3G 225-RE07-22</td>
<td>EC</td>
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<td>2,900</td>
<td>165</td>
<td>1.4</td>
<td>-25...+50</td>
<td>3.1</td>
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Standard variants

<table>
<thead>
<tr>
<th>Type</th>
<th>Constant volume Controlled</th>
<th>Integrated RH/T sensor</th>
<th>Speed-controlled 0-10 VIPWM</th>
<th>Speed-controlled PWM</th>
<th>MODBUS RTU interface</th>
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**RH/T = relative humidity/temperature
Available as an option: FlowGrid air inlet grill for all sizes.
** Optional variant with 0-10 V / 10 VDC available.
450 mm cable with splices for all types with controlled constant volume included. Optional plug.
Subject to technical changes.