Condensing boiler technology

Product Catalogue 2020-03

the engineer’s choice
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 have placed the highest emphasis on economy and ecology for many years.

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 and that secure our customers a decisive advantage.

Six reasons that make us the ideal partner:

Our systems expertise.
You want the best solution for every project. The entire ventilation system must thus be considered as a whole. And that’s what we do – with motor technology that sets standards, sophisticated electronics and aerodynamic designs – all from a single source and perfectly matched.

Our spirit of invention.
We are also always able to develop customized solutions for you with our versatile team of over 600 engineers and technicians.

Our lead in technology.
We are not only pioneers and trailblazers in the development of highly efficient EC technology, we also recognized the opportunities of digitization at an early stage. Therefore, we can offer solutions today that combine the highest energy efficiency with the advantages of IoT and digital networking.

Closeness to our customers.

GreenIntelligence gives you system solutions with intelligent networking capabilities that can be used to schedule service assignments according to needs and reduce variance. With the platform principle, you also save lots of time and money during development.

With our comprehensive range of services, we accompany you and your projects through every step in the process, from your application’s planning to its deployment. Make use of our experts’ product expertise to offer your customers new and advanced features. Or use our digital tools for optimal product selection. That will make your processes more efficient and get your products to market faster.

Now you know why ebm-papst makes engineers happy.

Why do our customers look so happy? Because when it comes to the Internet of Things and the digital transformation, we provide them with a clear competitive edge with GreenIntelligence for intelligent control and interconnection of fans, drives and systems to make applications more powerful, processes more efficient, businesses more successful and their customers more satisfied.

In heating technology, the greatest demand is for innovative, reliable and energy-efficient products that reach the market quickly. GreenIntelligence gives you system solutions with intelligent networking capabilities that can be used to schedule service assignments according to needs and reduce variance. With the platform principle, you also save lots of time and money during development.

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Here is how much GreenIntelligence there is in RadiMix:

– Future-proof thanks to full Industry 4.0 capability
– System data readout through LIN bus connectivity
– Easy integration of digital heating functionality
– Status monitoring of blower and environment
– Predictive maintenance for lower servicing costs – maintenance only when really needed
– Can be used in combination with renewable energy sources
– Perfectly adjusted and network-capable integrated solution from a single source

André opts for ready-to-install system solutions when it comes to condensing technology, which saves him a lot of adjustment effort.
More than just combustion
Modern gas condensing units are known for their productivity and efficient energy utilization. They have to be supplied with exactly the right amount of gas and air in an ideal ratio for every operating status and under all ambient conditions. Only then is hygienic and efficient combustion guaranteed. Compact dimensions keep the installation space to a minimum and at the same time provide better accessibility.

ebm-papst offers the world’s most extensive product range for condensing technology. From just a few kilowatts for use in private households to several megawatts for supplying entire residential areas: We will always find the right solution. Our portfolio contains efficient EC radial blowers, gas valves and perfectly matched system solutions for every application.

Advantages at a glance
- System and development expertise from the market leader
- Unrivaled power and modulation spectrum
- Well-established technology guarantees a long service life
- High power density thanks to compact design
- Outstanding efficiency levels
- Extremely smooth operation with a low noise level
- Pre-matched components for easy adaptation to the respective application
- Future-proof thanks to BUS connection option
The first condensing blower for heat output up to 4 MW rounds off our extensive product portfolio. For decentralized heating solutions keeping construction work and heat loss from long pipes to a minimum compared to large Combined Heat and Power stations.

Gas condensing heating systems for applications ranging from small trade businesses to heating installations in large industrial plants. From single boiler to cascade system installations.

Residential technology 150 kW

Gas condensing heating systems for private households

Use as heating unit only, as combi-boiler or in conjunction with regenerative energies

Commercial technology

Apartment blocks / residential areas

Ideally suited for all applications

Gas condensing heating systems for private households

Use as heating unit only, as combi-boiler or in conjunction with regenerative energies

2 kW
As market and technology leaders, we are constantly endeavoring to improve our performance and provide our customers with the best possible complete solution. Our engineers and technicians assist our customers with the development of their application right from the start to help advance the process of improvement. Before series launch we conduct extensive tests to ensure compliance with legal requirements and customer specifications. We have a wide range of measuring equipment at our disposal for this purpose.

For example our checks include examining design influences such as modifications to the gas-air mixing device, the backflow flaps or the venturi. All these factors can affect the efficiency, noise level and functionality of a condensing heating system. We take measurements on combustion control systems directly in the heating unit to ensure ideal matching of the individual components and motor performances. This is accomplished by flow simulation with direct incorporation of the results obtained.
An optimum gas-air mixing ratio is crucial to the energy yield realized during combustion. The mixing ratio needs to be exactly adjusted to the heating value of the gases being used (e.g., natural gas, LPG or biogas). An additional challenge is the flexibility of heat output. The greater the modulation range of a heating system, the better its heating output can be adjusted to actual needs. The limits of the modulation level are determined among others by the minimum and maximum output of the premixing blower. This means its components need to be perfectly matched. That’s why we offer complete heating systems including gas blowers, venturis, gas valves and burner control units from a single source.

Ideally suited for use in electronic or pneumatic gas air ratio control systems

Electronic gas air ratio control system

- Gas air unit
- Venturi
- Gas valve
- Burner control unit
- Electronic control
- LINbus communication
- Electronic gas air ratio control system

Pneumatic gas air ratio control system

- Gas air unit
- Gas blower
- Burner control unit (BCU)
- Gas air unit
- Control pressure
- Speed control (PWM)
- Burner control unit (BCU)

Gas blower:
State-of-the-art blower technology for modulating operation with low noise and a long service life.

Venturi:
The pressure generated by the venturi effect provides an optimum mixture of gas and air in the pneumatic gas-air ratio control.

Gas valve:
The component required for the reliable supply of gas has a particularly compact design.

Burner control with display:
The electronic control is matched precisely to the system. Signals from the burner control can be evaluated in the lab using LabVision software.

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Our system solutions

at a glance

All heating technology components must be perfectly harmonized in order to achieve optimum performance and efficiency. This is why we offer complete heating systems, including gas blower, venturi and gas valve, from a single source.

A key benefit of our combustion control systems is their optimal mixing ratio with simultaneously high modulation ranges. To achieve this high level of efficiency, we provide different venturi elements for multi-venturis, depending on the heat output range.

Mounting positions

With horizontal shaft or vertical shaft with motor positioned at top

<table>
<thead>
<tr>
<th>System solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>HS0077E1PXXS</td>
</tr>
<tr>
<td>(NRV 77)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>HS0118E1PXXS</td>
</tr>
<tr>
<td>(NRV 118)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>HS0148D1PXXS</td>
</tr>
<tr>
<td>(NRV 148)</td>
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<tr>
<td></td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

Heat output range depending on type of gas concerned and system conditions.
**Our system solutions at a glance**

### NRV 137 The system for heat outputs from 15 to 145 kW
- Gas blower NRG 137 with multi-venturi
- Gas valve G15 E01
- Operating voltage 230 V, option of 120 V
- 24 V gas valve on request
- Further heat output ranges on request

<table>
<thead>
<tr>
<th>Nominal data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Heat output range [kW]</td>
</tr>
<tr>
<td>HS0137D1PXXS</td>
<td>15 – 90</td>
</tr>
</tbody>
</table>

* Approximate figures. Heat output range depending on type of gas concerned and system conditions.

### NRV 148 The system for heat outputs from 10 to 110 kW
- Gas blower RG 148 with multi-venturi
- Gas blower G15 E01 (5571450040); G20 D01 (5572450020)
- Operating voltage 230 V, option of 120 V
- 24 V gas valve on request

<table>
<thead>
<tr>
<th>Nominal data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Heat output range [kW]</td>
</tr>
<tr>
<td>HS0148D1PXXS</td>
<td>10 – 65</td>
</tr>
<tr>
<td></td>
<td>20 – 110</td>
</tr>
</tbody>
</table>

* Approximate figures. Heat output range depending on type of gas concerned and system conditions.

### NRV 77 The system for heat outputs from 2 to 35 kW
- Gas blower NRG 77 with multi-venturi
- Gas valve G15 E01
- Operating voltage 230 V, option of 120 V
- 24 V gas valve on request
- Further heat output ranges on request

<table>
<thead>
<tr>
<th>Nominal data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Heat output range [kW]</td>
</tr>
<tr>
<td>HS0077E1PXXS</td>
<td>2 – 15</td>
</tr>
<tr>
<td></td>
<td>5 – 28</td>
</tr>
<tr>
<td></td>
<td>7 – 35</td>
</tr>
</tbody>
</table>

* Approximate figures. Heat output range depending on type of gas concerned and system conditions.

### NRV 118 The system for heat outputs from 3 to 42 kW
- Gas blower NRG 118 with multi-venturi
- Gas valve G15 E01
- Operating voltage 230 V, option of 120 V
- 24 V gas valve on request
- Further heat output ranges on request

<table>
<thead>
<tr>
<th>Nominal data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Heat output range [kW]</td>
</tr>
<tr>
<td>HS0118E1PXXS</td>
<td>3 – 23</td>
</tr>
<tr>
<td></td>
<td>5 – 28</td>
</tr>
<tr>
<td></td>
<td>7 – 42</td>
</tr>
</tbody>
</table>

* Approximate figures. Heat output range depending on type of gas concerned and system conditions.
Modern gas-fired modulated condensing units have to be supplied with the optimum volume and mixture of air and fuel in all operating modes and ambient conditions. They require adjustable blowers with steep pressure/air flow characteristic curves and high maximum pressures. EBM-Papst played a significant role in developing EC blowers for this purpose and now offers the widest range of solutions for this application area. The technical data in this catalog relate to intended use in gas condensing boilers with interior installation. The special features of these blowers also make them suitable for many other applications upon consultation. Examples include gas-powered cooking appliances for the food service industry or gas-powered deep fryers for commercial use.

### Heat load in kW

- **250**
- **500**
- **750**
- **1000**
- **1250**
- **1500**
- **1750**
- **2000**
- **2500**
- **3000**
- **3500**
- **4000**

Heat output range depending on type of gas concerned and system conditions.

### Impellers:
- For type VG, NRG und RG blowers of pentane-resistant plastic: dynamically fine balanced
- For the G1G 170, G3G 200, G3G 250, G3G 250MW, G3G 315 and VG 450 models made of sheet aluminum

### Speed controls:
- Adjustment required in individual cases
- Controlled via PWM signal
- 0–10 V input optional
- Bus communication optional

### Bearings:
- Maintenance-free ball bearings covered on both sides for long service life and smooth operation
- Use of lubricants suited for the particular application

### Commutation electronics:
- Integrated into the blower unit and perfectly harmonized with the motor
- Integrated blockage switch-off and overheating protection as per EN 60335
- Various standard interfaces available for the respective burner control
- Optimized in accordance with EMC emissions and pollution

### Drive:
- Brushless DC (EC) motors with integrated electronics
- Vibration-free mounting to minimize structure-borne sound
- Adjustment of motor power on an individual basis

### Housing:
- Made of die-cast aluminum
- (respectively cast aluminum/sheet steel)
- Required density thanks to special seal for housing halves and drive shaft conduit
- Outlet flange adjustable to many designs

### Impellers:
- For type VG, NRG and RG blowers of pentane-resistant plastic: dynamically fine balanced
- For the G1G 170, G3G 200, G3G 250, G3G 250MW, G3G 315 and VG 450 models made of sheet aluminum

### Protection class:
- Protection class I

### Degree of protection DIN EN 60529:2014:
- Degree of protection IP00, with cover hood, as a built-in component

### Motor protection cap:
- The adjustable rotation of the motor protection cap enables easy accessibility to the plugs and protection against dripping water in the application.

### Speed output:
- With Hall IC signal output; in case of motors for line voltage operation, speed signal output is galvanically isolated
- VG, NRG and RG blowers, each with two pulses per revolution
- G1G and G3G blowers, each with three pulses per revolution
- G3G 250 MW blower with four pulses per revolution
- G3G 315 and VG 450 blower with five pulses per revolution
Air performance and recommended operating range

**Efficiency and losses of the blower:**

Outside the range highlighted in gray, the electronics, motor and parts of the blower that carry air only convert a reduced portion of the electrical input power into usable air performance. The motor and electronics have been optimally designed to comply with strict energy guidelines (ErP2015). Therefore, it is important to operate the blower in the recommended operating range in order to achieve maximum efficiency and minimal noise emissions.

**Definitions:**

- **q<sub>V</sub>**: Air flow rate [m³/h]
- **Q<sub>B</sub>**: Heat output in [kW]
- **P<sub>E</sub>**: Electrical power consumption in [W]
- **p<sub>fs</sub>**: Pressure increase in [Pa]

**Recommended operating range:**

Our blowers are developed for operation in the recommended operating range, which is highlighted in gray in the characteristic curve below. In this range, you will benefit from the blower’s maximum overall efficiency and optimized acoustics. The service life is tested in this range. The recommended operating range makes it easier to select the right blower for your application.

**System characteristic curve:**

The operating point of the blower moves along the system characteristic curve at a variable speed. The mostly quadratic characteristic curve arises from the pressure loss in the system (venturi mixer, intake and exhaust pipe, heat exchanger, burner) at a given air flow rate.

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### High-efficiency Venturi

**Gas air mixing device**

**Advantages**

- High efficiency and flexibility at the same time
- Variable installation of venturi in 30° steps
- Variant reduction
- Low amount of qualification work
- Convenient in the application
- Simple gas pipe connection

**Technical drawing**

[..., technical drawing...]

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**Material/surface**

- Plastic

**Mechanical data**

- Material approval: UL and VDE
- Can be combined with RadiMix VG 71 and RadiMix VG 100
- Depending on the tuning and system pressure losses, modulations up to 1:10 are possible

**High-efficiency Venturi**

<table>
<thead>
<tr>
<th>Type</th>
<th>Part number</th>
<th>Heat load [kW]</th>
</tr>
</thead>
<tbody>
<tr>
<td>VGM0071XSGBS</td>
<td>5566781010</td>
<td>15</td>
</tr>
<tr>
<td>VGM0071XSGBS</td>
<td>5566781012</td>
<td>28</td>
</tr>
<tr>
<td>VGM0071XSGBS</td>
<td>5566781013</td>
<td>36</td>
</tr>
<tr>
<td>VGM0010XSGBS</td>
<td>5566781010</td>
<td>28</td>
</tr>
<tr>
<td>VGM0010XSGBS</td>
<td>5566781011</td>
<td>36</td>
</tr>
<tr>
<td>VGM0010XSGBS</td>
<td>5566781016</td>
<td>50</td>
</tr>
</tbody>
</table>

*Subject to change. Type specifications as system solution consisting of fan and mounted venturi with gas pipe connection position 0°. Other versions on request. Only available in combination with an ebm-papst gas valve. Heat output range depending on type of gas concerned and system conditions.*
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EC-Radialventilator
RadiMix VG 71

Heat output range:
- Up to 41 kW

Material/surface:
- Housing: Die-cast aluminium/sheet steel
- Impeller: Plastic
- Motor protection cap: Plastic

Mechanical data:
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings
- High efficiency venturi available on request

Electrical data:
- Designed for protection class I

Possible mounting positions:
- Possible mounting positions
- from Page 48: Mains connector X, interface connector W
- from Page 50: Electrical interfaces
- on Page 20: Air performance and recommended operating ranges
- More at: www.ebmpapst.com

Nominal voltage 220/240 V AC, 50/60 Hz

<table>
<thead>
<tr>
<th>Curve</th>
<th>Max. speed n</th>
<th>Max. input power Pₑ</th>
<th>Max. motor ambient temperature range</th>
<th>Perm. conveying medium temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>14,000</td>
<td>65</td>
<td>0 up to 60</td>
<td>-15 up to 60</td>
</tr>
</tbody>
</table>

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

Curves

EC radial blower

<table>
<thead>
<tr>
<th>Type</th>
<th>Part number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VGR7023MSGBS</td>
<td>0.9 kg</td>
</tr>
</tbody>
</table>

Technical drawing

Dimensions in mm

1 Suitable for oval-head screw SF M4x12
EC radial blower
RadiMix VG 100

Heat output range:
- Up to 57 kW

Material/surface:
- Housing: Die-cast aluminium/sheet steel
- Impeller: Plastic
- Motor protection cap: Plastic

Mechanical data:
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings
- High efficiency Venturi available on request

Electrical data:
- Designed for protection class I

Electrical specifications:
- Designed for protection class I

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

Model numbers:
- EC radial blowers
- EC radial blower RadiMix VG 100

Electrical interfaces:
- Electrical interfaces on Page 20

Measuring requirements:
- Air performance measured in accordance with ISO 5801, installation category C. The specifications only apply under the specified measurement conditions. Heat output specifications are approximate and may change due to the installation conditions. Heat output Q_B for gas type G20 with air-fuel ratio λ=1.3.

Heat output range:
- Approximate data; heat output depends on gas type and the system conditions.
**EC radial blower**

RadiMix VG 108

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**Heat output range**
- Up to 93 kW

**Material/surface**
- Housing: Die-cast aluminium/sheet steel
- Impeller: Plastic
- Motor protection cap: Plastic

**Mechanical data**
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings
- High efficiency Venturi available on request

**Electrical data**
- Designed for protection class I

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**Remote view**
- Measurements in millimetres
- Air performance measured in accordance with ISO 5801, installation category C. The specifications only apply under the specified measurement conditions (p=0.1013 bar, T=20°C) and may change due to the installation conditions. Heat output Q<sub>B</sub> are valid with air temperature T<sub>a</sub>=40°C.

**Product Information**
- Approximate heat output depends on gas type and the system conditions.

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**Technical drawing**

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**Dimensions in mm**

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**Possible mounting positions**
- from Page 48 Mains connector X, interface connector W
- from Page 50 Electrical interfaces
- on Page 20 Air performance and recommended operating ranges

More at [www.ebmpapst.com](http://www.ebmpapst.com)
EC radial blower
NRG 118

Heat output range:
- Up to 4.2 kW

Material/surface:
- Housing: Aluminium
- Impeller: Plastic
- Motor protection cap: Plastic

Mechanical data:
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings
- Multi-venturi available

Electrical data:
- Designed for protection class I

Subject to change. Temperature specifications dependent on type/temperature profile. Extended temperature range on request. Available with the option of a more powerful motor.

### Electrical data

- Designed for protection class I

### Mechanical data

- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings
- Multi-venturi available

### Heat output range

- Up to 4.2 kW

### Material/surface

- Housing: Aluminium
- Impeller: Plastic
- Motor protection cap: Plastic

### Electrical interfaces

- Designed for protection class I

### Technical drawing

Dimensions in mm

### Curve

- Effective speed $n$
- Max. input power $P_{ed}$
- Perm. motor ambient temperature range
- Perm. conveying medium temperature range

### Nominal voltage

<table>
<thead>
<tr>
<th>Type</th>
<th>Voltage</th>
<th>Part number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>230 V AC, 50 Hz</td>
<td>5566731160</td>
<td>1.0</td>
</tr>
<tr>
<td>B</td>
<td>115 V AC, 60 Hz</td>
<td>5566730030</td>
<td>1.0</td>
</tr>
</tbody>
</table>

### Measuring requirements

- Air performance measured in accordance with ISO 5801, installation category C.
- The specifications only apply under the specified measurement conditions $(\rho=1.14 \text{ kg/m}^3 \pm 3.5\%$) and may change due to the installation conditions.
- Heat output $Q_B$ for gas type G20 with air-fuel ratio $\lambda=1.3$.

### Heat output range

- approx. data; heat output depends on gas type and the system conditions.

More at www.ebmpapst.com
EC radial blower

**RG 148**

**Heat output range**: Up to 110 kW

**Material/surface**
- Housing: Aluminium
- Impeller: Plastic
- Motor protection cap: Plastic

**Mechanical data**
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings
- Multi-venturi available

**Electrical data**
- Designed for protection class I

---

**Data Sheet**

**Nominal voltage**
- 230 V AC, 50/60 Hz
- 120 V AC, 60 Hz

<table>
<thead>
<tr>
<th>Type</th>
<th>Part number</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VGR0148KSHGS</td>
<td>2.1</td>
</tr>
<tr>
<td>B</td>
<td>VGR0148KSHGS</td>
<td>on request</td>
</tr>
</tbody>
</table>

---

**Technical drawing**

Dimensions in mm

---

**Electrical interfaces**

More at [www.ebmpapst.com](http://www.ebmpapst.com)

---

**Heat output range**
- Up to 110 kW

**Material/surface**
- Housing: Aluminium
- Impeller: Plastic
- Motor protection cap: Plastic

**Mechanical data**
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings
- Multi-venturi available

**Electrical data**
- Designed for protection class I

---

**Measuring requirements**

Air performance measured in accordance with ISO 5801, installation category C. The specifications only apply under the specified measurement conditions (p = 0.1 kg/m³) and may change due to the installation conditions. Heat output Q_B is calculated with an air fuel ratio of 1.0.

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**EC radial blowers**

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**Condensing boiler technology**

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**Condensing boiler technology**

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EC radial blower
NRG 137

Heat output range
- Up to 150 kW

Material/surface
- Housing: Aluminium
- Impeller: Plastic
- Motor protection cap: Plastic

Mechanical data
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings
- Multi-venturi available

Electrical data
- Designed for protection class I

Nominal voltage 230 V AC, 50/60 Hz
<table>
<thead>
<tr>
<th>Type</th>
<th>Part number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VGR1137NSHGS</td>
<td>1.9 kg</td>
</tr>
<tr>
<td>B</td>
<td>VGR1137NSHGS</td>
<td>2.4 kg</td>
</tr>
</tbody>
</table>

Technical drawing
Dimensions in mm

Measurements (in mm)
- Groove suitable for round sealing ring (Ø) x 3
- 6.5 deep
- 7.5 deep

Environmental conditions
- Nominal voltage: 230 V AC, 50/60 Hz
- Maximum input power: Ped
- Permanent motor ambient temperature range: -15 up to 60 °C
- Permanent conveying medium temperature range: -15 up to 60 °C

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request. Available with the option of a more powerful motor.

More at www.ebmpapst.com
**EC radial blower**

*RG 175*

Heat output range
- Up to 200 kW

Material/surface
- Housing: Aluminium
- Impeller: Plastic
- Motor protection cap: Plastic

Mechanical data
- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings

Electrical data
- Designed for protection class 1

### Heat output range

- **Nominal voltage 230 V AC, 50/60 Hz**
  - Max. speed n: 6250 rpm
  - Max. input power Ped: 270 W
  - Perm. motor ambient temperature range: 0 up to 60 °C
  - Perm. conveying medium temperature range: -15 up to 60 °C

- **Nominal voltage 120 V AC, 60 Hz**
  - Max. speed n: 6250 rpm
  - Max. input power Ped: 240 W
  - Perm. motor ambient temperature range: 0 up to 60 °C
  - Perm. conveying medium temperature range: -15 up to 60 °C

Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request. Available with the option of a more powerful motor.

**Technical drawing**

- **Type**
  - Part number
  - Weight (kg)
  - **A**
    - VGR0175XSHGS
    - 5566714090
    - 2.9
  - **B**
    - VGR0175XSHGS
    - 5566714002
    - 2.8

---

**Material/surface**

- Housing: Aluminium
- Impeller: Plastic
- Motor protection cap: Plastic

**Mechanical data**

- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings

**Electrical data**

- Designed for protection class I

---

**Heat output range**

- Up to 200 kW

**Material/surface**

- Housing: Aluminium
- Impeller: Plastic
- Motor protection cap: Plastic

**Mechanical data**

- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings

**Electrical data**

- Designed for protection class I

---

**Heat output range**

- Up to 200 kW

**Material/surface**

- Housing: Aluminium
- Impeller: Plastic
- Motor protection cap: Plastic

**Mechanical data**

- Degree of protection: IP00, with cover hood, as a built-in component
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings

**Electrical data**

- Designed for protection class I
EC radial blower
G1G 170

Heat output range
- Up to 300 kW

Material/surface
- Housing: Aluminium
- Impeller: Sheet aluminium
- Motor protection cap: Plastic

Mechanical data
- Degree of protection: IP20 with cover hood
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings

Electrical data
- Designed for protection class I

Technical drawing

Dimensions in mm

Curve
<table>
<thead>
<tr>
<th>rpm</th>
<th>Max. speed n</th>
<th>Max. input power P_{input}</th>
<th>Perm. motor ambient temperature range</th>
<th>Perm. conveying medium temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7200</td>
<td>420</td>
<td>0 up to 55</td>
<td>-15 up to 55</td>
</tr>
<tr>
<td>B</td>
<td>7200</td>
<td>360</td>
<td>0 up to 55</td>
<td>-15 up to 55</td>
</tr>
</tbody>
</table>

Subject to change. Temperature specifications dependent on fan/temperature profile. Extended temperature range on request.

EC radial blower

<table>
<thead>
<tr>
<th>Type</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VGR0170XSPGS</td>
<td>5.0</td>
</tr>
<tr>
<td>B</td>
<td>VGR0170XSPGS</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Mains connector X, interface connector W
From Page 48
Electrical interfaces

More at www.ebmpapst.com

Measurements (m³/h)
These measurements are in accordance with ISO 5801, installation category C. The specifications only apply for the specified measurement conditions
(ρ=1.14 kg/m³ +/- 3.5%) and may change due to the installation conditions. Heat output Q_{B} for gas type G20 with air-fuel ratio λ=1.3.

Heat output range
approx. data; heat output depends on gas type and the system conditions.

Groove suitable for round sealing ring 110 x 3.2
9.5 deep
EC radial blower
G3G 200

Heat output range
- Up to 500 kW

Material/surface
- Housing: Aluminium
- Impeller: Sheet aluminium
- Motor protection cap: Plastic

Mechanical data
- Degree of protection: IP20 with cover hood
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings

Electrical data
- Designed for protection class I

Electrical interfaces
More at www.ebmpapst.com

EC radial blower
Type Part number Weight kg
A VGR0200XSPKS 5560003030 10
B VGR0200XSPKS 5560003051 10

Subject to change: Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

EC radial blower
Type Part number Weight kg
A VGR0200XSPKS 5560003030 10
B VGR0200XSPKS 5560003051 10

Table:

<table>
<thead>
<tr>
<th>Curve</th>
<th>Max. speed ( n )</th>
<th>Max. input power ( P_{ed} )</th>
<th>Room, motor ambient temperature range ( \Delta t )</th>
<th>Room, conveying medium temperature range ( \Delta t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7200</td>
<td>420</td>
<td>0 to 55</td>
<td>-15 to 55</td>
</tr>
<tr>
<td>B</td>
<td>7200</td>
<td>360</td>
<td>0 to 55</td>
<td>-15 to 55</td>
</tr>
</tbody>
</table>

Subject to change: Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

Technical drawing
Dimensions in mm

1) Groove suitable for round sealing ring 180 x 3.5
2) Deep

Measuring requirements:
As performance measured in accordance with ISO 5801, installation category C. The specifications only apply under the specified measurement conditions (\( p_0 = 1013 \text{ hPa} \), \( t = 20 \text{ °C} \)), and may change due to the installation conditions. Heat output \( Q_{B} \) can be determined with the full curve A.

\(^1\) Heat output range approx. daily heat output depends on gas type and the system conditions.

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EC radial blower

G3G 250

Heat output range
- Up to 800 kW

Material/surface
- Housing: Aluminium
- Impeller: Metal
- Motor protection cap: Plastic

Mechanical data
- Degree of protection: IP20 with cover hood
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings

Electrical data
- Designed for protection class I

**Table: EC radial blower**

<table>
<thead>
<tr>
<th>Type</th>
<th>Part number</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VGR250XSP05</td>
<td>556009S0521</td>
</tr>
<tr>
<td>B</td>
<td>VGR250XSP05</td>
<td>556009S0521</td>
</tr>
</tbody>
</table>

**Diagram:**

- **A** Technical drawing
- **B** Dimensions in mm

**Notes:**
- Measurements (approximate) measured in accordance with ISO 5801, installation category C. The specifications only apply under the specified measurement conditions. Heat output QB may be higher or lower than the nominal value specified.
- **Groove suitable for round sealing ring 180 x 3.5**
- **12 deep**

**Legend:**
- Groove suitable for round sealing ring 180 x 3.5
- 12 deep
**EC radial blower**

**G3G 250 MW**

---

**Heat output range**
- Up to 1100 kW

**Material/surface**
- Housing: Aluminium
- Impeller: Sheet aluminium
- Motor housing: Metal

**Mechanical data**
- Degree of protection: IP20 with cover hood
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings

**Electrical data**
- Designed for protection class I

---

**Technical drawing**

---

**Material/surface**

- Housing: Aluminium
- Impeller: Sheet aluminium
- Motor housing: Metal

**Mechanical data**

- Degree of protection: IP20 with cover hood
- Installation position: With horizontal shaft or for vertical shaft with motor position above
- Mounting: Ball bearings

**Electrical data**

- Designed for protection class I

---

**Possible mounting positions**
- From Page 48
- Mains connector X, interface connector W
- More at: [www.ebmpapst.com](http://www.ebmpapst.com)

---

**Measuring requirements**

Air performance measured in accordance with ISO 5801, installation category C. The specifications only apply under the specified measurement conditions. Heat output Q_B can be handed over at local (±3%).

**Technical drawing**

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**Dimensions in mm**

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**Subject to change. Temperature specifications dependent on load/temperature profile. Extended temperature range on request.**

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**Subject to change. Temperature specifications dependent on load/temperature profile. Extended temperature range on request.**

---

**More at:** [www.ebmpapst.com](http://www.ebmpapst.com)
EC radial blower
G3G 315

Heat output range
- Up to 2000 kW

Material/surface
- Housing: Aluminium
- Impeller: Sheet aluminium
- Motor protection cap: Plastic

Mechanical data
- Degree of protection: IP20 with cover hood
- Installation position: Any
- Mounting: Ball bearings

Electrical data
- Designed for protection class I

Possible mounting positions
From Page 48
Mains connector X, interface connector W
From Page 50
Electrical interfaces
More at www.ebmpapst.com

MEASURING REQUIREMENTS
Air performance measured in accordance with ISO 5801, installation category C. The specifications only apply under the specified measurement conditions (ρ=1.14 kg/m³ ± 3.5%) and may change due to the installation conditions. Heat output Q_B for gas type G20 with air-fuel ratio λ=1.3.

Heat output range
approx. data; heat output depends on gas type and the system conditions
EC radial blower
VG 450

Heat output range
- Up to 4000 kW

Material/surface
- Housing: Die-cast aluminium
- Impeller: Sheet aluminium
- Motor casing: Cast aluminium
- Electronics box: Cast aluminium

Mechanical data
- Protection class electronics: IP54
- Protection class motor: IP20
- Installation position: Any
- Mounting: Ball bearings

Electrical data
- Designed for protection class I

Technical drawing

Measurements (optional)

As performance measured in accordance with ISO 5801, installation category C. The specifications only apply under the specified measurement conditions.

Note: Subject to change. Temperature specifications dependent on time/temperature profile. Extended temperature range on request.

Heat output range; approximate; heat output depends on gas type and the system conditions.

Dimensions in mm

EC radial blower VG 450
Connectors

1 Mains connector X
3-pin pin-connector with coding type 0A according to RAST 5 in 90° angled / horizontal design with locking feature on top or down for locking device suitable for mating connector according to RAST 5 with coding type 0A as e.g. CoHaMo YY-AY5053-H05-K01 or Lumberg 3623 03 K01
Part number for mating connector: 2431045025

2 Mains connector X
3-pin pin-connector according RAST 6.35 in 90° angled / horizontal design suitable for mating connector according to RAST 6.35 e.g. Tyco Universal MATE-N-LOK
Order number: 1586847-1 and 3 x socket 926882-1
Part number for mating connector: Connector shell 2431045012; Crimp socket 2450745022

3 Interface connector W
4-pin pin-connector according RAST 4.2 in 90° angled / horizontal design suitable for mating connector e.g. Stocko STO-FIT, CoHaMo
Order number Stock: EH 705-004-004-960 and 3 x socket RBB 8230.120
Order number CoHaMo: YY-5700-H04AS-GT and 3x socket YY-5700-TTAMA
Part number for mating connector: Plug shell 2431045201; Crimp socket 2430045316

4 Interface connector W
5-pin pin-connector according RAST 4.2 in 90° angled / horizontal design suitable for mating connector e.g. Stocko STO-FIT, CoHaMo
Order number Stock: EH 705-005-004-960 and 3x socket RBB 8230.120
Order number CoHaMo: YY-5700-H05AS-GT and 3x socket YY-5700-TTAMA
Part number for mating connector: Connector shell 2431045200; Crimp socket 2430045116

5 Interface connector W
5-pin pin-connector according RAST 4.2 in 90° angled / horizontal design suitable for mating connector e.g. Stocko STO-FIT, CoHaMo
Order number Stock: EH 705-005-004-960 and 3x socket RBB 8230.120
Order number CoHaMo: YY-5700-H05AS-GT and 3x socket YY-5700-TTAMA
Part number for mating connector: Connector shell 2431045200; Crimp socket 2430045116

6 Interface connector W
5-pin pin-connector according RAST 4.2 in 90° angled / horizontal design suitable for mating connector e.g. Stocko STO-FIT, CoHaMo
Order number Stock: EH 705-005-004-960 and 3x socket RBB 8230.120
Order number CoHaMo: YY-5700-H05AS-GT and 3x socket YY-5700-TTAMA
Part number for mating connector: Connector shell 2431045200; Crimp socket 2430045116
**Electrical interfaces**

### Interface 03
- **Interface DA00K/S1...**
  - 03 03 03 03 04 04 04 38 39 39 64 61 63

### Interface 04
- **Interface 04 3 - 380...**
  - 03 03 03 04 04 04 38 39 39 64 61 63

---

**EC radial blowers**

Further types available on request.

Condemning boiler technology - Edition 2020 - 03
Electrical interfaces

Further types available on request.
Our gas valves are mainly used in condensing unit applications for domestic heating technology in the low-to-medium output range. They ensure precise air-gas ratio adjustment.

The G20 D01 and G15/G20 E01 gas valves are suitable for condensing units with pneumatic composite controls. Regardless of the suction pressure generated by the premix blower, these gas valves always keep the offset pressure at zero and compensate for pressure fluctuations in the supply network as well.

The offset (zero point shift) can be configured at the servo controller. At the same time, the desired gas quantity is adjusted using an integrated flow control element. Depending on the design, reference pressure can be connected to the servo controller if required.

The G15/G20 F01, G12 F01 and G40 F01 gas valves are suitable for condensing units with electronic composite controls. Regardless of gas quality and any pressure fluctuations in the supply network, these gas valves regulate the constant air-gas ratio without relying on mechanical gas valve settings.

Mounting position
Solenoid at any position between vertical and horizontal – but not upside down

Type examination certificate for North America (USA and Canada):
Master Contract No. 172723

Applicable standards
ANSI Z22.78 - CSA A.6.20-2010 (Reaffirmed 2014): Combination Gas Controls for gas appliances

Approvals exist for the chief gas consuming countries.

Type examination certificate
Product ID number: CE0085CM0036

Applicable directives and standards:
EU/2016/426 Gas Appliances Regulation
- EN126:2012 06: Multifunctional controls for gas burning appliances
- EN13611:2016: Safety and control devices for gas burners and gas burning appliances – General requirements
- EN161:2013: Automatic shut-off valves for gas burners and gas appliances
- EN88-1:2016: Pressure regulators and associated safety devices for gas appliances – Part 1: Pressure regulators for inlet pressures up to and including 50 kPa

Additional notes
- Work on the gas valve may be performed by authorised specialists only.
- Please be sure to observe the corresponding installation instructions.
- Corresponding documents with safety instructions are available upon request or on the Internet.
Gas valves pneumatic gas air ratio control system
G15/G20 E01

Material/surface
- Housing: Aluminium

Mechanical data
- Degree of protection: IP65 in combination with a suitable plug
- Permitted gas families: II + III (in accordance with EN 437)
- Maximum inlet pressure: 65 mbar (CE), 0.5 psi (CSA)
- Permitted ambient temperature: -15°C to 60°C; extended temperature range on request, dependent on time/temperature profile
- Permitted storage temperature: -25°C to 70°C
- Offset correction: +/- 20 Pa
- Input (gas connection): External thread G3/4 or G1/2 (EN ISO 228) or 4 x M4-mounting holes (optional)
- Output: ebm-papst proprietary quick release
- Safety valve: Coaxial design: Valve class B/C as per EN161

Electrical data
- Designed for protection class I
- Electrical connection: Connector shell with 4.20 mm grid

Capacity curve – GXXE01-BCXCS

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal data</th>
</tr>
</thead>
<tbody>
<tr>
<td>GXXE01-BCXCS</td>
<td>Weight: 0.57 kg</td>
</tr>
</tbody>
</table>

Technical drawing

Dimensions in mm

Subjects to change.
Gas valves pneumatic gas air ratio control system

G20 D01

Material/surface
- Housing: Aluminium

Mechanical data
- Degree of protection: IP65 in combination with a suitable plug
- Permitted gas families: II + III (in accordance with EN 437)
- Maximum inlet pressure: 65 mbar (CE), 0.5 psi (CSA)
- Permitted ambient temperature: -15°C to 60°C, extended temperature range on request, dependent on time/temperature profile
- Permitted storage temperature: -25°C to 70°C
- Offset correction: ± 20 Pa
- Input (gas connection): 4 x M5 mounting holes (hole spacing 36 mm)
- Output: 4 x M5 mounting holes (hole spacing 36 mm)
- Safety valve: Valve class B/B as per EN161

Electrical data
- Designed for protection class I
- Electrical connection: Connector shell with 5.08 mm grid

More at: www.ebmpapst.com

Technical drawing

Capacity curve – G20D01-BBXCS

<table>
<thead>
<tr>
<th>Type</th>
<th>Rated voltage</th>
<th>Max. input power</th>
<th>Nominal diameter</th>
<th>Maximum inlet pressure</th>
<th>Flow rate (at Δp = 5 mbar)</th>
<th>Automatic shut-off valves</th>
<th>Minimum signal pressure</th>
<th>Opening and closing time</th>
</tr>
</thead>
<tbody>
<tr>
<td>230RAC</td>
<td>2 x 12.5</td>
<td>DN20</td>
<td>65</td>
<td>5.3</td>
<td>Class B/B</td>
<td>-40</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>120RAC</td>
<td>2 x 12.5</td>
<td>DN20</td>
<td>65</td>
<td>5.3</td>
<td>Class B/B</td>
<td>-40</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>24 RAC</td>
<td>2 x 12.5</td>
<td>DN20</td>
<td>65</td>
<td>5.3</td>
<td>Class B/B</td>
<td>-40</td>
<td>&lt; 1</td>
<td></td>
</tr>
<tr>
<td>24 DC</td>
<td>2 x 12.5</td>
<td>DN20</td>
<td>65</td>
<td>5.3</td>
<td>Class B/B</td>
<td>-40</td>
<td>&lt; 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>G20D01-BBXCS</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Subject to change.
Gas valves electronic gas air ratio control system

G15/G20 F01

More at: www.ebmpapst.com

Material/surface
- Housing: Aluminium

Mechanical data
- Degree of protection: IP40 in combination with a suitable plug
- Permitted gas families: II + III (in accordance with EN 437)
- Maximum inlet pressure: 60 mbar (CE), 0.5 psi (CSA)
- Permitted ambient temperature: -15°C to 60°C, extended temperature range on request, dependent on time/temperature profile
- Permitted storage temperature: -25°C to 70°C
- Input (gas connection): External thread G3/4 oder G1/2 (EN ISO 228)
- Output: ebm-papst proprietary quick release
- Safety valves: Coaxial design: Valve class B/C as per EN161

Electrical data
- Designed for protection class I
- Electrical connection: Connector shell with 4.20 mm grid

Subject to change.

Technical drawing

Dimensions in mm

<table>
<thead>
<tr>
<th>Type</th>
<th>Nominal data</th>
<th>Maximum inlet pressure</th>
<th>Flow rate (at Δp = 5mbar)</th>
<th>Flow rate (at Δp = 5mbar)</th>
<th>Automatic shut-off valves (EN161)</th>
<th>Operating time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>VA</td>
<td>mbar</td>
<td>m³/h</td>
<td>m³/h</td>
<td>g</td>
</tr>
<tr>
<td>GXXF01-BCXCS</td>
<td>230 RAC</td>
<td>9.8</td>
<td>60</td>
<td>2.1</td>
<td>2.9</td>
<td>Class B/C</td>
</tr>
<tr>
<td>GXXF01-BCXCS</td>
<td>120 RAC</td>
<td>9.8</td>
<td>60</td>
<td>2.1</td>
<td>2.9</td>
<td>Class B/C</td>
</tr>
<tr>
<td>GXXF01-BCXCS</td>
<td>24 DC</td>
<td>9.8</td>
<td>60</td>
<td>2.1</td>
<td>2.9</td>
<td>Class B/C</td>
</tr>
<tr>
<td>GXXF01-BCXCS</td>
<td>22 DC</td>
<td>11.9</td>
<td>60</td>
<td>2.1</td>
<td>2.9</td>
<td>Class B/C</td>
</tr>
</tbody>
</table>

Gas valve

Material/surface
- Housing: Aluminium

Mechanical data
- Degree of protection: IP40 in combination with a suitable plug
- Permitted gas families: II + III (in accordance with EN 437)
- Maximum inlet pressure: 60 mbar (CE), 0.5 psi (CSA)
- Permitted ambient temperature: -15°C to 60°C, extended temperature range on request, dependent on time/temperature profile
- Permitted storage temperature: -25°C to 70°C
- Input (gas connection): External thread G3/4 oder G1/2 (EN ISO 228)
- Output: ebm-papst proprietary quick release
- Safety valves: Coaxial design: Valve class B/C as per EN161

Electrical data
- Designed for protection class I
- Electrical connection: Connector shell with 4.20 mm grid

Subject to change.

Capacity curve – GXXF01-BCXCS

More at: www.ebmpapst.com
Gas valves electronic gas air ratio control system
G32 F01

Material/surface
- Housing: Aluminium

Mechanical data
- Degree of protection: IP20
- Permitted gas families: I + II + III (in accordance with EN 437)
- Maximum inlet pressure: 60 mbar (CE), 0.5 psi (CSA)
- Permitted ambient temperature: -25°C to 70°C
- Input (gas connection): external thread G 1 1/4 (EN ISO 228)
- Output: Flange connection 4 x mounting holes for self-tapping screw (nominal diameter 5 mm), hole spacing G32.33 mm
- Safety valves: Coaxial design: Valve class B/C in accordance with EN161
- Interface to mechanical pressure monitor port: Inlet pressure; central chamber pressure
- Pressure test nipple: Inlet and outlet pressure

Electrical data
- Designed for protection class I
- Electrical connection: Safety module: suitable for connector housing with pitch 4.20mm (e.g., Stocko STO-FIT System, EH 705-103; Würth series WR-MPC4, item no. 649 003 013 322)
- Stepper motor module: Connector housing Stocko-Grid MH790-06-001

More at: www.ebmpapst.com

Capacity curve – G32F01-CBXCS

Capacity curve – G32F01-CBXCS

Gas valve G32 F01

More at: www.ebmpapst.com

Condensing boiler technology · Edition 2020 - 03

Technical drawing

Dimensions in mm

Subject to change.

Type
Nominal data
G32F01-CBXCS

More at: www.ebmpapst.com

Condensing boiler technology · Edition 2020 - 03
Gas valves electronic gas air ratio control system

G40 F01

Material/surface
- Housing: Aluminium

Mechanical data
- Degree of protection: IP20
- Permitted gas families: I + II + III (in accordance with EN 437)
- Maximum inlet pressure: 60 mbar (CE), 0.5 psi (CSA)
- Permitted ambient temperature: -15°C to 60°C, extended temperature range on request, dependent on time/temperature profile
- Permitted storage temperature: -25°C to 70°C
- Input (gas connection):
  - Flange connection 4 x mounting holes for self-tapping screw (nominal diameter 6 mm), hole spacing 52.33 mm. Input flange 1 ½” optional
- Output:
  - Flange connection 4 x mounting holes for self-tapping screw (nominal diameter 6 mm), hole spacing 52.33 mm
- Safety valve:
  - Coaxial design: External thread B/B as per EN161
  - Interface to mechanical pressure monitor port: Inlet pressure, central chamber pressure for VPS (optional)
- Pressure test nipple:
  - Inlet and outlet pressure

Electrical data
- Designed for protection class I
- Electrical connection:
  - Suitable for connector housing with pitch 4.20 mm (e.g., Stocko STO-FIT System, EH 705-103; Würth WR-MPC4 series, item no. 649 003 013 322)
- Stepper motor module:
  - Connector housing Stocko-Grid MH790-06-001

More at www.ebmpapst.com

Capacity curve – G40F01-BBXCS

<table>
<thead>
<tr>
<th>Type</th>
<th>Rated voltage</th>
<th>Max. input power</th>
<th>Nominal diameter</th>
<th>Min. Mptp.</th>
<th>Flow rate (at Δp = 5 mbar)</th>
<th>Automatic shutoff valves (VPS)</th>
<th>Opening and closing time (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G40F01-BBXCS</td>
<td>230 VAC</td>
<td>22</td>
<td>DN40</td>
<td>60</td>
<td>15.5</td>
<td>Class B/B</td>
<td>&lt; 1</td>
</tr>
<tr>
<td></td>
<td>120 VAC</td>
<td>22</td>
<td>DN40</td>
<td>60</td>
<td>15.5</td>
<td>Class B/B</td>
<td>&lt; 1</td>
</tr>
<tr>
<td></td>
<td>24 VDC</td>
<td>22</td>
<td>DN40</td>
<td>60</td>
<td>15.5</td>
<td>Class B/B</td>
<td>&lt; 1</td>
</tr>
</tbody>
</table>

Subject to change.

Gas valve

<table>
<thead>
<tr>
<th>Type</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G40F01-BBXCS</td>
<td>1.37</td>
</tr>
</tbody>
</table>

Technical drawing

Dimensions in mm
We supply the right electronics for controlling ignition, performance regulation and monitoring the function of the condensing boiler as well as user interfaces needed for conveniently controlling central heating and hot water. The burner control can also be combined with other modules and provide control for system regulation, for example cascade operation.

Our product range, consisting of tried-and-tested hardware and software, enables reliable operating performance and short development cycles. The versatile software architecture enables easy interface integration. In addition, as with our blowers, we value having the lowest possible energy consumption.

For Commercial Applications
- For commercial boilers up to 2MW
- Integrated cascade control
- Flexibility to configure many systems: preset appliance types
- Configurable inputs and outputs
- Integrated low water cutoff
- Many modes for CH and DHW

For Residential Applications
- Smart control for various appliances up to 50kW: water heaters (with/without tank) and residential combi boilers
- Also applicable as general burner control
- Optional Modbus communication
- Available as all-in-one kit

User Interface
- On-board HMI: Reset button and status LED
- Ethernet connection to web server
- Graphical LCD interface for boiler status, operation and configuration
- Password-protected user levels
- Includes diagnostics software and a smart app for remote control
### Commercial range

**Standard packages**

**Commercial Plus**
- Applicable for commercial boilers up to 2 MW
- Configurable input/output functions
- Multiple heat demand options (on/off, OpenTherm, 0-10V)
- Internal/external spark igniter or hot-surface igniter
- Primary safeguard functions
- Extra safety- and smart control functions

<table>
<thead>
<tr>
<th>Packages</th>
<th>Power supply</th>
<th>Dimensions (WxDxH)</th>
<th>Tether stores</th>
<th>User interface</th>
<th>AC-BUS</th>
<th>Modbus</th>
<th>Ethernet</th>
<th>Diagnostics software</th>
<th>Smart app</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Plus</td>
<td>120/230</td>
<td>212x152x49</td>
<td>Y</td>
<td>900PB Display</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Commercial</td>
<td>120/230</td>
<td>212x152x49</td>
<td>Y</td>
<td>900PB Display</td>
<td>Y</td>
<td>optional</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Residential Plus</td>
<td>120/230</td>
<td>212x152x49</td>
<td>Y</td>
<td>900LB Display</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

**Commercial Plus with integrated cascade control:**
Up to 8 boilers x 8 modules (1 managing boiler and max. 7 dependent boilers).

### Residential range

**Standard packages**

**Residential Plus**
- Smart control for various appliances: water heaters (with/without tank) and residential combi boilers
- Also applicable as general burner control
- Flexible mounting options
- On-board user interface or advanced external display
- Optional Modbus communication

<table>
<thead>
<tr>
<th>Packages</th>
<th>Power supply</th>
<th>Dimensions (WxDxH)</th>
<th>On-board HMI</th>
<th>User interface</th>
<th>AC-BUS</th>
<th>Modbus</th>
<th>Diagnostics software</th>
<th>Smart app</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tankless Water Heater</td>
<td>120/230</td>
<td>203x114x50</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Water Heater</td>
<td>120/230</td>
<td>203x114x50</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Residential Combi Boiler</td>
<td>120/230</td>
<td>203x114x50</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Smart Burner</td>
<td>120/230</td>
<td>203x114x50</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

**Commercial Plus**

901PB Display (Cover assembly)

900TS Touchscreen

**Power supply**
- V AC

**Dimensions**
- mm

**Control**
- On-board HMI

**User interface**
- Multiple heat demand options (on/off, OpenTherm, 0-10V)

**Additional Features**
- Internal/external spark igniter or hot-surface igniter
- Primary safeguard functions
- Extra safety- and smart control functions

**Smart control for various appliances:**
- Water heaters (with/without tank) and residential combi boilers
- Also applicable as general burner control
- Flexible mounting options
- On-board user interface or advanced external display
- Optional Modbus communication