

# GB162 Series Wall-Hung Gas Condensing Boiler

**Buderus**

Bosch Group



LOW **NOx**  
EMISSIONS



## Compact & Powerful

- Designed for Stand-Alone or Cascades
- Ultra-High Efficiencies up to 96% with Low Flue Gas Emissions
- Ideal for Smaller Commercial Buildings and Large Residences
- Unique Manifold for Easy Installation of Single Units or Cascades
- Innovative ALU-plus Condensing Heat Exchanger for Long Life and Easy Servicing
- Modulation Ranging from 20% to 100%
- 2 Models with 290 MBH and 333 MBH Input, Cascades up to 2,664 MBH

**Comfortable. Efficient. Intelligent Heating.**

### The GB162 Series—Good Things Come in Small Packages

The GB162 is a high-performance, compact gas condensing boiler capable of achieving ultra-high efficiency levels of 96%. GB162 boilers are available with individual inputs of 290 MBH or 333 MBH. Each boiler, though, is capable of modulating down to just 69 MBH when used with natural gas. This ensures that efficiency is maintained throughout the year, even when the demand for heat is low. Optimum performance minimizes energy usage and is achieved in the GB162 through the large, aluminum ALU-Plus heat exchanger, an advanced Energy Management System, and by encouraging the condensing process.

With systems designed to operate at 190°F–122°F, the GB162 can remain in condensing mode as much as possible, providing energy savings year-round. In addition to ensuring optimal condensing performance through comprehensive heating system control, the advanced Energy Management System (EMS) also ensures minimal energy usage, and reduced emissions.

### Save Space and Energy

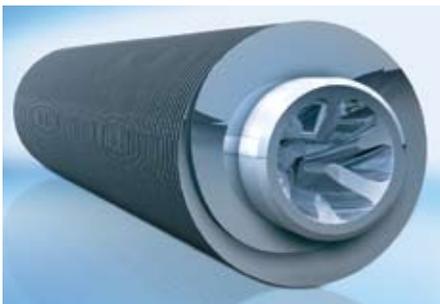
The GB162 can be used individually in a residence or commercial operation, but it is especially well suited for multi-boiler cascades. Typically linking together two to four boilers, cascades may be expanded up to 8 units to meet the required BTU load of the installation.

With the GB162's small size, wall-hung attribute, and light weight—only 150 lbs each—there is a great deal of flexibility in planning an installation. Not only is it easy to install as a single unit, but it is easy to install as a multi-boiler cascade. The boilers can be configured back-to-back or in-line by using a simple frame. This is especially useful when boiler rooms are small or unusually shaped. In fact, a 4-boiler cascade, delivering over 1,000 MBH, can fit in less than 13 square feet of floor space. This makes the GB162 ideal for new installations, as well as for replacing an inefficient heating system and freeing up valuable commercial floor space.

The GB162 is also extremely quiet in operation, thanks to a number of acoustic insulation measures and the low resistance on water flowing through the boiler. Combine its compact size, wall-hung versatility, and quiet operation with its vertical or horizontal venting options, and the GB162 makes heating system planning easier, as it offers potential placement not just in a traditional boiler room.

### ALU-Plus Modern Technology – Modern Efficiency

The Buderus GB162 wall-hung condensing boilers use an advanced, aluminum ALU-Plus heat exchanger design. This lightweight heat exchanger has a number of innovative features to prolong its life and increase the efficiency of the boiler. Fins



on the outside of the aluminum tube increase the exterior surface area. This means more hot flue gas comes into contact with the heat exchanger to maximize heat transfer. A spiral channel on the inside of the tube increases the internal surface area and creates turbulence, bringing more water into contact with the heating surface, also

### Outstanding Efficiency

The GB162 is capable of achieving efficiencies of up to 96%. This is due, in part, to its patented, extremely efficient, aluminum silicate ALU-Plus heat exchanger, but also because our advanced Energy Management System encourages the GB162 to remain in condensing mode.

Condensing technology has long been used in Europe. By condensing the water vapor in the flue gases into liquid water, the maximum amount of heat from the fuel is captured.

The condensing efficiencies of the GB162 can also be combined with the benefits of a cascading system to ensure you receive every possible bit of energy from the fuel you are burning.



ensuring optimal heat transfer. The surface of the heat exchanger tubes are treated with a patented plasma-polymerization process that leaves the surface so smooth that no deposits can adhere to it. In addition to also helping maintain extremely high efficiency, this keeps the heat exchanger clean.

### Achieve Greater Efficiencies with a Cascade and Reduce Carbon Footprint

Energy efficiency is not just applicable to domestic boilers, even though that is what we most often hear of. Boilers for commercial applications—from offices and public buildings to hospitals, schools and colleges, multi-family dwellings, and sports centers—also have a significant impact on our environment. Companies and owners of commercial properties are increasingly looking to improve or upgrade their boiler rooms to maximize energy efficiency, but also to minimize their carbon emissions and increase the value of the building.

Cascade systems, a relatively new development in heating technology, achieve significant energy savings because their output can be precisely controlled to match the demand for heating.

Each individual unit comes into operation only when the demand is high enough for an additional boiler in the cascade to fire. A cascade system adapts particularly well to seasonal temperature changes by allowing heat output to be precisely matched to heating demand whether in summer or winter.

The optional 4323 commercial control handles up to 8 GB162 boilers and offers the flexibility to operate the cascade in either series or parallel mode. In serial mode the heat demand will fire the first boiler and, as load increases, it will continue to modulate to 100%. If the heating demand is not satisfied, the control will fire additional boilers in the same manner until the load or capacity is met.

To better conserve energy, the boiler cascade can also operate in parallel mode. In parallel mode the first boiler would fire at 20% and, as the heat load increases, additional boilers would fire at 20% until all boilers are operational. Once all the boilers in the cascade are firing, the control collectively modulates all the boilers to satisfy the load. Parallel mode enables the boilers to run at the lowest modulation rate for the longest period of the heating cycle.

Optional controls also allow a cascade heating system to be configured so that different zones can be operated with mixed temperature circuits and domestic hot water priority. To ensure that the system always runs in the most efficient mode of operation, this is all automatically controlled.



## A Safe Economical Choice

Buderus manufactures with strict quality procedures. This ensures that all our boilers are fully tested at the factory and are certified to meet rigorous standards for safety, efficiency, and the environment.

At Buderus we use only the most reliable and efficient components in the design and manufacture of our products. All Buderus boilers are built to withstand heavy and constant use. The GB162 is no exception. It benefits from the very latest in high efficiency heating technology with the patented, award winning ALU-Plus heat exchanger, and a host of energy saving features.

## Award-winning Design

The GB162 is the proud recipient of the 2008 iF Product Design award. Every year about 2,700 products from 35 countries are judged by renowned experts.

Only the best products receive the iF seal of outstanding design quality. The iF seal is one of the world's three leading design awards.

It is an internationally recognized trademark, recognizing its recipient's place on the cutting edge of contemporary design.



## Straight Forward Installation

A single GB162 boiler comes complete with a pump group, wall mounting bracket, and low loss header to expedite the assembly of the near boiler piping.

For a multi-boiler cascade system, Buderus has all the necessary fittings and accessories to allow the installer to simply build the framework and join everything together. Once the boilers are assembled, they are connected with the factory-supplied low-loss header and then covered with the pipe insulation. The result is an easy installation where everything fits perfectly, all the piping is neat, and the boilers are ready to be connected to the main heating system. The combination of the low-loss header and EMS control system ensures worry-free boiler flow rates.

### 1st step:

The sturdy floor standing cascade framework is bolted together.



### 2nd step:

Low-loss header, flow, return and gas pipes are fitted.



### 3rd step:

Individual GB162 boilers are mounted securely on the framework.



### 4th step:

Pump groups (additional accessory) and valves are connected to boilers and flow and return pipe work attached to the headers.



### 5th step:

Custom-fit insulation is added to pipe work and fitted around each pump group to minimise heat loss.



## Easy Service and Quiet Operation

The compact size and light weight of the GB162 allows for ease of installation, even where space is limited. A single push button door release allows access to all parts, including the heat exchanger, for servicing. What could be easier?

A ceramic pre-mix burner and modulating fan provide modulation to 20% of total output and the boiler is so quiet that it can be located near living or working areas without causing a disturbance.



## Complete Your System

Once you have a Buderus boiler, you can add a Buderus indirect fired hot water tank, or an optional Buderus control — or both. In addition to maximizing comfort and fuel savings, optional Logamatic control will accommodate specialized heating applications such as radiant flooring or multiple boilers. Multiple design innovations increase the versatility of Buderus Logamatic controls. A Buderus boiler combined with a Logamatic control produces a premium heating system that will provide years of exceptional comfort and economy.

## Buderus Controls

### Standard

- AM10 weather compensation module included for single boiler installations
- BC10 boiler control included with cascades

### Options

- RC35 control with automatic mode and adjustable programs ensures energy-saving operation by reducing the room temperature at certain times or shutting down heating completely (adjustable night setback) to control the heating system to ensure optimum heating comfort and minimum energy consumption.
- MCM10 (cascade module) for 4 boiler installations. Expandable to 8 boilers using 2 MCM10 Modules.
- 4000 series controls
  - Accommodates single or multiple boiler installations
  - Can be interfaced to a building management system via LON module
  - Modular construction allows for ease of field configuration and flexibility of installation
- SM10 solar DHW module, controls solar pump and sensors for the collector panels and the tank
- WM10 low loss header sensor module and hydraulic decoupler for use with cascade systems



RC35 Control

## 4000 Control



Optional integrated multi-boiler system controller with the following features and control modules:

- Control of single and modulating burners for up to 8 boilers with 4323 control
- Automatic and load/switch dependent burner rotation
- Operation of boiler pumps, 2, 3, or 4-way valves and system pumps
- Capable of DHW and other external on-demand loads
- Self diagnostics and system parameter display
- Solar Integration Module

## The Convenience of a Logamatic Control

In addition to manual adjustments, Logamatic controls can be pre-programmed for automatic night and day functions and pre-set to trigger automatic adjustments based on outdoor or indoor temperature shifts. This includes adjustment by time, date, or temperature between various modes of operation. All Logamatic controls now include summer, winter and vacation modes to efficiently regulate energy consumption. An optional module is available that enables direct communication



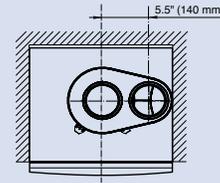
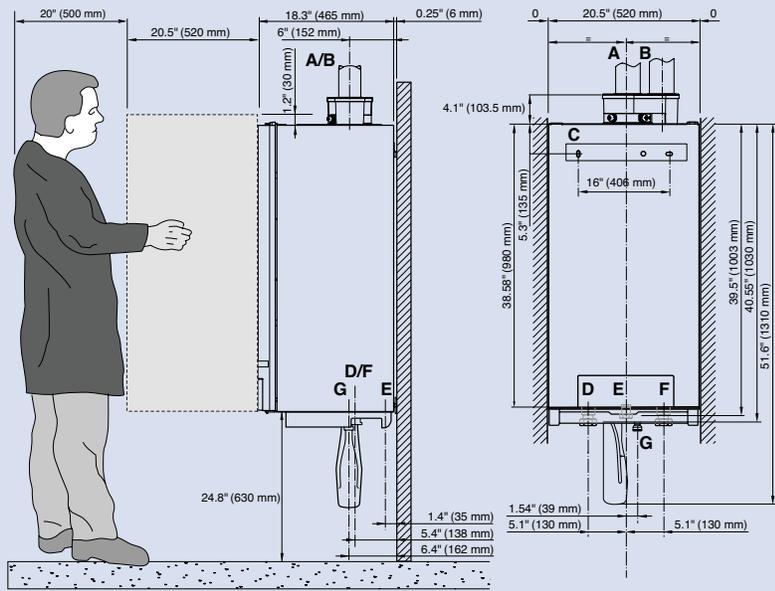
## GB162 Series Specifications

General Specifications	GB162/80		GB162/100	
	Natural Gas (NG)	Liquid Propane (LP)*	Natural Gas (NG)	Liquid Propane (LP)*
Rated thermal load input	69,000–290,000 btu/h	58,000–270,000 btu/h	69,000–333,000 btu/h	58,000–315,000 btu/h
Heating capacity / Gross output	61,400–260,000 btu/h	51,600–242,000 btu/h	61,400–298,000 btu/h	51,600–282,000 btu/h
Net IBR	226,000 btu/h	210,000 btu/h	259,000 btu/h	245,000 btu/h
Efficiency rating	93.8% AFUE	93.9% AFUE	Low Fire 96.1% High Fire 90.8%**	Low Fire 96.1% High Fire 90.8%**
De-rating altitudes 2,000–5,000' %/1,000 ft.	2.2	2.3	2.0	2.1
De-rating altitudes 5,500–8,000' %/1,000 ft.	2.0	2.5	1.7	2.1
De-rating altitudes 8,000–10,200' %/1,000 ft.	2.8	2.0	2.6	1.9
<b>Heating</b>				
Maximum flow temperature	190°F (88°C)			
Max. working pressure (boiler)	50 psi (3.6 bar)			
Min. water circulation volume	0			
Flow temperature	86–190°F (30–88°C), can be set on the BC10 basic controller			
Resistance at $\Delta T = 20\text{ K}$	3.26 psi (225 mbar)		4.57 psi (315 mbar)	
Heating circuit volume of heat exchanger	1.3 gal. (5.0 l)			
<b>Pipe Connections Boiler, Without Pump Group</b>				
Gas connection	Rp1"			
Heating water connection	G1½" union nut with female thread enclosed			
Condensate connection	Ø 1¼" (32 mm)			
<b>Flue Gas Valves</b>				
Condensate quantity at 122/86°F (50/30°C)	2.4 gal/h (9.0 L/h)		2.85 gal/h (10.8 L/h)	
pH value of condensate	approx 4.1			
Flue gas mass flow rate, full load	35.3 g/s		44.9 g/s	
Flue gas temp., full load 176/140°F (80/60°C)	153°F (67°C)	149°F (65°C)	169°F (76°C)	165°F (63°C)
Flue gas temp., partial load 176/140°F (80/60°C)	142°F (61°C)	136°F (58°C)	142°F (61°C)	136°F (58°C)
Flue gas temp., full load 122/86°F (50/30°C)	118°F (48°C)	114°F (46°C)	124°F (51°C)	120°F (49°C)
Flue gas temp., partial load 122/86°F (50/30°C)	93°F (34°C)	88°F (31°C)	93°F (34°C)	88°F (31°C)
CO <sub>2</sub> content at full load	9.3	9.6	9.4	9.7
Free fan feed pressure	0.602 inch w.c. (150 Pa)		0.883 inch w.c. (220 Pa)	
<b>Flue Gas Connection</b>				
Ø flue gas system, room-air dependent	Ø 4" (100 mm)			
Ø flue gas system, room-air independent	Ø 4" (100 mm) / 4" (100 mm) parallel			

\* Special order field conversion kit required

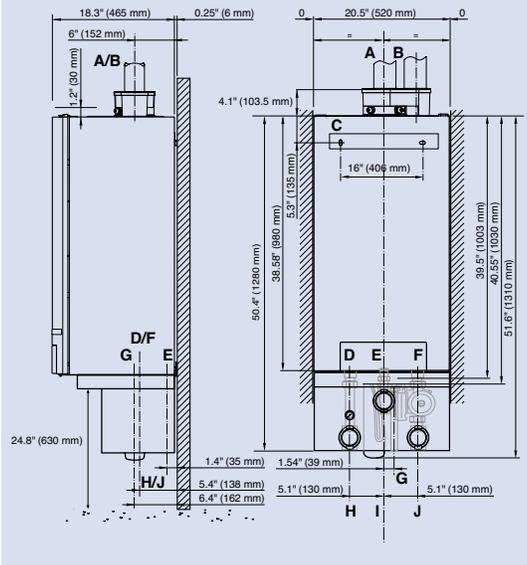
\*\* I=B=R Rating based on AHRI BTS2000 spec. 180 degree F supply and 80 degree F return

#### 4.1 Without pump group



- A (LA) = Flue gas connection;
- B (AA) = Air intake connection;
- C (WB) = Wall Bracket (not shown)
- D (VK) = Supply;
- E (GAS) = Gas connection to boiler;
- F (RK) = Return;
- G (AKO) = Condensate outlet;
- H (PF) = Pump group supply;
- I = Gas connection to pump group;
- J (PR) = Pump group return;

#### 4.2 With pump group



The required permanent clearances (closet) are:

- front: 1" (25 mm)
- right side: 0
- left side: 0
- above: 6" (152 mm)

The position selected for installation MUST allow adequate space for servicing in front of the boiler of at least 20" (500 mm).

Maintain an installation clearance from combustible construction from hot water piping of at least 1" (25 mm).

All non-steel combustion air and vent pipe materials and fittings must comply with the following and must be UL approved venting material.

Item	Material	United States	Canada
4" (100 mm) Vent or air pipe and fitting	PVC schedule 40, 80 PVC-DWV CPVC schedule 40, 80	ANSI/ASTM D1785 ANSI/ASTM D2665 ANSI/ASTM F441	BH Gas venting systems, ULC S636*
Pipe cement/ primer	PVC CPVC	ANSI/ASTM D2564 ANSI/ASTM F493	

\*Components of the certified vent systems must not be interchanged with other vent systems or unlisted pipe fittings. Plastic components, and specified primers and glues of the certified vent system, must be from a single system manufacturer and not intermixed with other system manufacturer's vent system parts.

Wall terminals	Flue System (trade name)	Supplier
4" (100 mm) parallel	PVC	Flex-L/SJTK_DVG
90°-elbow with inlet screen	PVC/stainless steel	Z-Flex/Heat Fab

# GB162 Series: Wall-Hung Gas Condensing Boiler



## GB162 Benefits at a Glance

- Compact Dimension, Light Weight, High Output
- Innovative ALU Plus condensing heat exchanger for the longest possible life and easy servicing
- Efficiency of up to 94% AFUE
- Modulation down to 20% of total output for year round efficiency
- Compact and lightweight
- Cascades up to 8 units
- Quick-Install: innovative cascade concept for easy installation
- Ideal for smaller commercial buildings and large domestic properties
- No minimum flow rate required
- Whisper quiet
- Low flue gas emissions
- Integrated BC10 boiler controls with space for the optional RC35 Digital Programmer and extension modules
- LPG conversion kit available
- 1 year parts, Limited Lifetime warranty on the heat exchanger

## GB162 Approvals and Certifications



### Approval Numbers

AQMD certified under rule  
1146.2 Ref# R08061  
CRN 7990.7C  
MA # G1-00808-30

## A Tradition of Excellence



The World's leader in hydronic heating technologies since 1825, Buderus produced the world's first low-temperature hydronic heating systems. Today, Buderus products are acknowledged as the world standard in high-efficiency, low emissions hydronic heating. All Buderus products are designed to meet strict safety and environmental regulations.

Buderus boilers are quick and easy to install and will outlast and outperform virtually any other commercial hot water heating system. They are designed for easy access and service. With appropriate maintenance, Buderus boilers deliver the highest possible efficiencies throughout the lifespan of operation.