

# The next generation condensing boilers

## Light commercial models

Central heating and indirect DHW

CB-85-CH  
CB-105-CH  
CB-125-CH  
CB-155-CH



# CB – Light Commercial Boiler – CH model

Available in four models: 85, 105, 125 and 155 kW

## Flexible heating specialist

The CB high efficiency boilers are the best of both worlds. No compromises. An aesthetically pleasing design combined with a robust stainless steel heat exchanger with 10 years warranty. Installation cannot be easier: the CB units have a very compact and lightweight wall mounted design that makes it fit in even the smallest basements. The flip over display gives plenty of space to service the units and the control has many integrated options, like a cascade manager up to 16 units. Whether an outdoor reset, 0-10V, ModBus or OpenTherm connection is preferred: the CB units have standard connections available for all of them.

## Features

- ✓ Extreme low NOx emission of less than 24 mg/kWh (2 credits under BREEAM 2018 NOx limit)
- ✓ Seasonal efficiency (Part L) close to 96%
- ✓ Stainless steel heat exchanger
- ✓ Compact wall hung boiler
- ✓ Full modulation of 5:1
- ✓ Cascade up to 16 boilers
- ✓ Natural or LP gas
- ✓ Easy installation and maintenance
- ✓ Also available as water heater

## State of the art PCB technology

- ✓ Clear display with graphic design
- ✓ Modbus connection standard
- ✓ Bacnet connection optional
- ✓ Easy to read fault history
- ✓ Internet and wifi connection possible



## Technical specifications datasheet CB HW EU

<b>GENERAL</b>						
Gas appliance type	-	B23(P), C13, C33, C43, C53, C63, C83, C93				
<b>Boiler model</b>		<b>CB-85-CH</b>	<b>CB-105-CH</b>	<b>CB-125-CH</b>	<b>CB-155-CH</b>	
Dimensions (h x w x d)	mm	845 x 440 x 530				
Water content (estimated)	liter	5,0	6,5	8,3	10,4	
Weight (empty)	kg	77	79	83	86	
Supply /return connection (boiler)	inch	1"	1"	1"	1 ¼"	
Gas connection	inch	¾"	¾"	¾"	1"	
Flue connection twin pipe	mm	100	100	100	150	
Flue connection concentric pipe	mm	100/150	100/150	100/150	N.A.	
<b>HEATING</b>		<b>Values Low fire - High fire:</b>				
Nominal input net G20	kW	15,4 – 81,7	18,6 – 97,3	23,6 – 119,4	35,0 – 145,3	
Nominal output G20 (80-60)	kW	14,9 – 79,1	18,0 – 94,2	22,9 – 115,7	33,9 – 140,9	
Nominal output G20 (50-30)	kW	16,0 – 85,1	19,5 – 101,8	24,7 – 124,7	36,4 – 151,0	
Nominal output G20 (37-30)	kW	16,6 – 88,4	20,2 – 105,5	25,6 – 129,7	38,0 – 157,8	
Turndown ratio	1:x	5	5	5	4	
Efficiency (input 30%, return 30°C)	%	108,2%	108,4%	108,4%	108,6%	
Seasonal efficiency (Part L)	%	95,6%	95,7%	95,7%	95,8%	
Seasonal space heating energy efficiency (η <sub>s</sub> )	%	92,4%	92,6%	92,7%	92,9%	
<b>GAS CONSUMPTION</b>		<b>Values Low fire - High fire:</b>				
G20	m <sup>3</sup> /h	1,6 – 8,5	1,9 – 10,2	2,5 – 12,5	3,7 – 15,3	
G31	m <sup>3</sup> /h	0,6 – 3,2	0,8 – 3,9	1,0 – 4,8	1,6 – 15,7	
Gas supply pressure nominal	G20	mbar	20			
	G31	mbar	37			
<b>EMISSION</b>						
NO <sub>x</sub> class	-	6				
Nitrogen Dioxide Emission (NO <sub>x</sub> ) <sup>1</sup>	mg/kWh	23,1	21,3	23,9	20,1	
Flue gas temperature at combustion air temperature of 20 °C	°C	60 - 90				
Available pressure for the flue system <sup>2</sup>	Pa	200				
Noise level	dB(A)	65,8	68,0	67,8	73,0	
<b>INSTALLATION</b>						
Maximum supply temperature	°C	90				
Resistance water heater ΔT = 20 °C	mWc	4,0	3,4	3,8	3,6	
Resistance water heater ΔT = 25 °C	mWc	2,8	2,3	2,5	2,4	
Pressure boiler	bar	1,0 – 6,0				
<b>ELECTRIC</b>						
Maximum power consumption	W	190	280	280	280	
Power supply	V/Hz	230 / 50				
Protection class	-	IPX4D				
<b>NOTES</b>						
<sup>1</sup>	These numbers are used to assign two credits according to the BREEAM 2018 standards					
<sup>2</sup>	Maximum allowed combined resistance of flue gas and air supply piping at high fire					

## The CB cascade system offers a wide choice of power output

Thanks to the integrated cascade controller, the CB boilers can be cascaded up to 16 boilers with only a single cable. Because we are able to supply the complete cascade kit, no calculation for the needed pipework to cascade the boilers is needed. With our kit, the installation of a cascade system is quick and easy. By using the frame work, which has a maximum frame height of 1775mm, the system can be placed in the most inaccessible areas.

### Complete cascade kit up till 6 boilers in line (> 900 kW)

- ✓ Frame work
- ✓ Flow and return header
- ✓ Gas header
- ✓ Low velocity header
- ✓ Flow temperature sensor
- ✓ Connection set for each individual boiler



## Equipment and terminal connections of CB models

### Standard boiler equipment

- ✓ Flip over panel with boiler control and display
- ✓ Graphic display with easy to use controls
- ✓ On/off power switch
- ✓ Laptop computer connection
- ✓ Supply and return water temperature sensors
- ✓ Integrated pressure sensor
- ✓ Flue gas temperature sensor
- ✓ Burner door temperature sensor
- ✓ Real wall temperature sensor
- ✓ Integrated flue gas check valve (non-return valve)
- ✓ Venturi system for steady gas/air mixture
- ✓ Full stainless steel heat exchanger
- ✓ Premix burner
- ✓ Internal automatic air vent with drain connection
- ✓ Stainless steel cabinet with light weight molded removable front door and removable side panels for easy access
- ✓ Fully serviceable from the front of the boiler
- ✓ Sealed boiler cabinet reduces chances for debris entering the premix fan
- ✓ Integrated low water cutoff
- ✓ Condensate trap
- ✓ Twin pipe or concentric air inlet and flue gas outlet connection
- ✓ External ignition transformer connection

### High voltage connections

- ✓ Boiler pump
- ✓ System pump
- ✓ DHW pump
- ✓ DHW TWV (3-way valve)
- ✓ Alarm

### Low voltage connections

- ✓ Outdoor temperature sensor
- ✓ System temperature sensor
- ✓ DHW temperature sensor
- ✓ Modbus
- ✓ Cascade connection
- ✓ On/off thermostat or OpenTherm heating circuit
- ✓ 0-10V VDC input
- ✓ Flow switch DHW
- ✓ PWM pump control
- ✓ External low water cutoff safety
- ✓ Gas pressure switch safety
- ✓ Universal safety contact set 1
- ✓ Universal safety contact set 2



## Features and benefits

### Boiler control

- ✓ Large backlit LCD screen with easy to read full text information, programming and errors

### Cabinet

- ✓ Removable stainless steel side panels for easy access
- ✓ Compact design with small footprint
- ✓ Light weight design for wall hung applications
- ✓ Narrow width of 44 cm that fits through doorways

### Pump controls

- ✓ PWM control for variable speed pumps
- ✓ Boiler pump
- ✓ System pump
- ✓ DHW pump
- ✓ Pump exercise function
- ✓ Pump overrun function
- ✓ Additional alternate functionality for air dampers and 3-way valves

### Additional features

- ✓ Two level frost protection
- ✓ Short cycle protection
- ✓ Adjustable minimum and maximum power
- ✓ Temperature boost function
- ✓ Multiple levels of security
- ✓ Field convertible to LPG
- ✓ Maximum flow temperature of 90°C
- ✓ Boiler pressure up to 6 bar
- ✓ Extreme low NOx emission of less than 24 mg/kWh with all models
- ✓ Turn down ratio of 1:5

### External control and BMS options

- ✓ Modbus connection standard
- ✓ 0-10 VDC remote flow temperature (set point) control
- ✓ 0-10 VDC remote boiler power output control
- ✓ IP module for remote access available



### Outdoor temperature control

- ✓ Easy to setup and program full weather dependent compensation with graphically displayed and adjustable curves
- ✓ Warm weather shutdown
- ✓ Night setback

### Cascade program options

- ✓ Integrated cascade control
- ✓ Cascade control of up to 16 boilers
- ✓ Remote operation and heat demand indication from each boiler
- ✓ Four cascade power program modes
- ✓ Cascade control for both heating and DHW
- ✓ Boiler sequencing and rotation control

### Data logging

- ✓ Error logging with time and date stamp
- ✓ Boiler history logging
- ✓ Real time and date clock
- ✓ Days of operation
- ✓ Heating burner runtime hours
- ✓ DHW burner runtime hours
- ✓ Successful ignition attempts
- ✓ Failed ignition attempts
- ✓ Flame failures
- ✓ Last 15 lockout errors
- ✓ Hours since last service
- ✓ Hours until next service
- ✓ Total days of boiler operation

### Multiple DHW control options

- ✓ DHW Priority
- ✓ CH Priority
- ✓ Parallel DHW and CH operation
- ✓ DHW priority with time out to CH
- ✓ DHW plate heat exchanger control option
- ✓ Anti-legionella program when used with indirect tank sensor



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