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WELCOME TO REMEHA, THE EXPERT CHOICE

WE LEAD THE WAY IN INNOVATION, RELIABILITY AND EFFICIENCY FOR ADVANCED COMMERCIAL HEATING SOLUTIONS.

We're completely focused on commercial heating solutions and are at the forefront of condensing gas boiler technology – we don't manufacture boilers for anyone else.

We heavily invest in research and development which enables our specialist team to design high-performance products at every level. From using the latest materials and manufacturing techniques, to meticulously designing and engineering each boiler, we ensure they're efficient to specify, install, run and maintain.

INTRODUCING THE REMEHA GAS 110 ECO RANGE

The Gas 110 Eco range features advanced floor-standing, modular gas-fired condensing boilers, available in 65 and 115kW models.

These boilers have been specifically developed to fit directly into the same floor area as a traditional boiler of equal output, promoting higher energy-efficiency and lower carbon emissions. They're designed for sealed and open-vented heating systems, with a maximum operating temperature of 90°C. All our boilers share the same simple design, so they're expandable, adaptable and future-proofed.

We've tried to think of everything, so from specification to blueprint sign-off, through to supply and installation, our customer service and product support is our number one priority.

	FEATURES AND BENEFITS
High efficiency boiler up to 96.3% GCV	Higher than average energy-savings
Small dimensions and lightweight design	Easy to install in smaller spaces – particularly suitable for retrofit applications
Ultra-low, Class 5 NO _x emission levels of 35mg/kWh at 0% O_2 dry or less	Low pollutant emissions that meet environmental regulations including BREEAM and Clean Air Act
Premix down-firing gas burner and one-piece cast aluminium heat exchanger	Clean, trouble-free operation
Digital display, removable front panel, data file for storing information and remote signalling options	Improved ease of maintenance and operation
Remeha's built-in advanced boiler control: • modulating 19-100% (5:1) • Open Therm (OT) control • 0-10V or volt-free control integration	Built-in flexibility for easy installation and reliable heat delivery
Cascade/modular packages for up to six boilers	Effective space-saving solution for greater design flexibility
Quiet operation <48 dB(A)	Improved comfort
For use with natural gas and LPG (115 requires a conversion kit)	Flexible solution to energy-saving heating







GAS 110 ECO OPERATING PRINCIPLE

The products of combustion, in the form of hot flue gases, are forced through the heat exchanger, transferring their heat to the system water. The flue gas temperature is reduced to approximately 5°C above the temperature of the system return water then discharged vertically via the condensate collector, through the flue connection to atmosphere.



The low flue gas exit temperature means there will be a vapour cloud formed at the flue gas terminal – this is water vapour formed during the combustion process. If the controls allow the flow, and therefore return temperature, to fall below dew point (55°C), this water vapour will begin to condense in the boiler, transferring its latent heat into the system water and increasing the output of the boiler, without increasing gas consumption. Condensation formed within the boiler and flue system is discharged from the boiler to an external drain via the drain pan/siphon supplied.

Combustion air is drawn into the closed air box by a variable speed fan, through the air inlet connection from the plant room (open flued) or from outside via the concentric flue system (room-sealed). On the inlet side of the fan is a specially designed Venturi which is connected to the outlet side of the gas valve.

Depending on the demand (under the dictates of flow/return sensor and other external/internal control inputs) the electronic control unit directly monitors the volume of gas and air being delivered to the premix burner. This mixture is initially ignited by the combined ignition/ionisation probe which then monitors the state of the flame. If the flame doesn't ignite or is unstable, within the pre-set safety time cycle, the controls will shut the boiler down (after five attempts) requiring manual intervention to reset the boiler. The digital display will also indicate a flashing fault code confirming the reason for the failure.

GAS 110 ECO TECHNICAL INFORMATION

	1	1	
	GAS 110 ECO 65	GAS 110 EC0 115	
PERFORMANCE	1	-	
Nominal heat output central heating operation @ 80/60°C kW (min-max)	12-61	16.6-107	
Nominal heat output central heating operation @ 50/30°C kW (min-max)	13.2-65	18.4-114	
Nominal input (Hi) (min-max)	12.2-62	17.2-110.2	
EFFICIENCY			
SBEM seasonal efficiency GCV	96.3%	94.79%	
Efficiency - full load 100% NCV	98.3%	97.1%	
Efficiency – part load 30% NCV	108.9%	107.1%	
ECO design useful efficiency @ 80/60°C (100% full load) GCV	88.6%	87.5%	
ECO design useful efficiency @ 50/30°C (30% part load) GCV	98.1%	96.5%	
Energy labelling seasonal space efficiency GCV	96%	N/a	
ErP efficiency rating	А	N/a	
Annual energy consumption Gj	189	N/a	
GAS			
Standard fuel	Natural gas	Natural gas	
Optional fuel adjustment – see installation and service manual	LPG (propane)	LPG (propane) – conversion kit required	
Max gas consumption NG m ³ /h	6.56	11.66	
Max gas consumption LPG kg/h	4.82	8.56	
Min-max gas inlet pressure NG mbar	17-40	17-40	
Min-max gas pressure LPG mbar	25-60	25-60	
Gas connection size BSP inches	3⁄4" Male thread	3/4" Male thread	
FLUE (CONCENTRIC CONNECTION SUPPLIED AS STANDARD)			
Flue diameter mm I/D	100		
Air inlet diameter mm I/D		150	
Min-max flue gas flow rate kg/h	20.5-104	28.9-186	
Average flue gas temperature (75/60°C)	65	67.9	
Residual fan duty PA	100	250	

GAS 110 ECO TECHNICAL INFORMATION

	GAS 110 ECO 65	GAS 110 EC0 115		
HYDRAULICS				
Water content litres	6.5	7.5		
Hydraulic resistance @ 20°C ΔT mbar	175	230		
Resistance @ 11°C ∆T mbar	580	830		
Nominal flow rate @ 20°C Δ T I/s	0.73	1.28		
Nominal flow rate @11°C ΔT I/s	1.32	2.32		
Minimum flow rate I/hr	240	350		
Condensate connection	25m	m OD		
Connection size BSP	11⁄4" Ma	le thread		
Standard operating temperature °C	20-	90*		
Max operating temperature °C	9	0*		
Max water temperature °C	11	0*		
Max water operating pressure bar		4		
Min water operating pressure bar	0.8			
Min water operating pressure bar open vented* (OV)	0.3	0.5		
GENERAL				
Dry weight kg	116	133		
Dimension (WxHxD) (includes flow/return and gas pipework)	600 x 1100 x 770	600 x 1322 x 770		
NO _x (dry, 0% 0) mg/kWh EN483/15420	32	35		
Noise levels dB(A) at 1 metre	48	<48		
ECO Design Sound Power Levels LWA indoors dB	49	N/a		
Standby heat loss kWh/24hr	0.125	0.131		
ELECTRICAL				
Nominal power supply	230v x 1ph x 50hz			
Power consumption w	88 213			
Modulating input v DC	0-10			
Fuse rating amps	6.3			
Controls voltage	24 (max 4va)			
Insulation class IP	21			

*Open vented option maximum operating temperature 75°C.

SUGGESTED ENGINEERING SPECIFICATION

GAS 110 ECO

□ CONSTRUCTION

The boiler will be a floor standing type condensing boiler. The single piece, cast aluminium heat exchanger and other major components are contained within a sealed air box. The boiler casing is complete with a removable front section for maintenance purposes. Electrical and electronic controls are contained within the instrument panel mounted in the hinged top panel and also the electrical housing mounted on the inside of the boiler panel.

HYDRAULIC, GAS AND FLUE CONNECTIONS

The combined flue gas outlet and combustion air inlet shall be mounted at the top of the boiler, with the flow, return, gas and condensate connections located at the rear. The boiler is suitable for room-sealed or open flue applications. The boiler is designed for central heating and indirect hot water production up to four bar working pressure. The boiler is suitable for use on sealed systems and open vented installations.

□ OPERATION

The boiler is complete with a modulating control system that limits the maximum difference in temperature between the heating flow and return, and the maximum speed at which the flow temperature increases. The boiler is complete with a pre-mix burner (NG or LPG) with the gas/air ratio control system controlled internally. An intelligent, advanced boiler control continuously monitors the boiler conditions, varying the heat output to suit the system load. The control is able to react to external negative influences in the rest of the system (flow rates and air/gas supply problems) maintaining boiler output for as long as possible without resorting to a lock out condition. Should a negative effect happen in the system the boiler reduces its output and/or shuts down (shut-off mode), awaiting the negative conditions to return to normal before restarting. The control cannot override the standard flame safety controls. Standard frost protection shall activate below 7°C with stage one activating the system/shunt pump. Stage two shall activate below 3°C with boiler switching on to 10°C flow.

CONTROLS

The boiler includes a controls package that allows the actual and set values to be read and adjusted on the built-in digital display, which also provides normal operating and fault code indication. The controls come as standard with the following inputs/outputs:

- 0-10V input (flow temperature or load control)
- DHW temperature input (optional)
- High-limit lock out
- Safety/shutdown/release input
- Low water protection
- Outside sensor (optional)
- External shunt pump control
- Service report output
- External system pump control (optional)
- Fault alarm output
- DHW 3-port valve control
- Open therm interface
- Flue gas damper (optional)

□ FEATURES

- Ultra-low NO_x <37 mg/kWh
- Fully modulating
- Quiet operation <48 dB(A)
- Data file for storing fault/run info
- ErP compliant
- PC connection
- Premix burner

The boiler meets the requirements of the EC regulations and directives – 90/396/EEC Gas Appliances Directive – 92/42/ EEC Efficiency Directive – 2006/95/EC Low Voltage Directive – 89/336/EEC EMC directive ErP compliant ECA listed CE Certification Remeha Gas 110 ECO 115/65 CE-0063BS3826.



MAINTENANCE AND SERVICE CLEARANCES

Clear space should be left around the boiler:

- 700mm in front of the boiler
- 400mm above the boiler
- 100mm each side of the boiler.

(Facilitates removal of the casing.)







ELECTRICAL INSTALLATION

GENERAL

The Gas 110 Eco is supplied as standard with electronic control and flame ionisation safety controls, with a specially designed microprocessor at the heart of the control system.

□ SPECIFICATIONS

ELECTRICAL SUPPLY

The Gas 110 Eco must have a permanent 230V – 50Hz single phase supply rated at 6.3 amps. The control unit is not phase/ neutral sensitive.

CONTROL BOX

Manufacture	Gasmodul
Model	MCBA 1461 D
Supply voltage	230V/50 Hz
Electrical rating	10VA
Pre-purge time	0.3 seconds
Post-purge time	10 seconds
Safety time	3 seconds
Anti-hunting time	150 seconds
Pump run on (HTG)	1-15 minutes
Pump run on (DHW)	5 minutes

FUSE SPECIFICATION

The boiler is protected by fuses:

- On the 203V power supply located in the control panel 6.3 amps (fast acting)
- On the control box located on the bottom right hand side of the boiler:
 - Control circuit 230V 2 amps (fast acting)
 - Control circuit 24V DC 4 amps (slow acting)

BOILER TEMPERATURE CONTROL

The Gas 110 Eco has electronic temperature control with flow and return temperature sensors. The flow temperature can be adjusted between 20 and 90°C.

HIGH-LIMIT TEMPERATURE PROTECTION

The high-limit temperature protection device switches off and locks out the boiler when the flow temperature exceeds the high-limit set point (adjustable). When the fault is corrected, the boiler can be restarted by using the reset key on the control panel.

LOW WATER PROTECTION (FLOW AND CONTENT)

The Gas 110 Eco is supplied with low water protection via temperature measurement. By modulating back at the moment the water flow threatens to fall too low, the boiler is kept operating for as long as possible. In the event of low flow (F/R $\Delta T > 45^{\circ}C$) the boiler will shut off and not lockout. If the boiler is fired dry it will go to lockout (code 18).



FLUE OPTIONS

The Gas 110 Eco boilers have fan assisted flues supplied as standard, with a concentric flue outlet/air inlet connection used for room sealed operation, or for open flue (room ventilated) applications. An optional twin pipe fitting is available for the room sealed CLV system.

The concentric system can be supplied for individual boilers for horizontal or vertical installation. Because of the excess fan capacity of the boiler, most flue lengths can be accommodated (depending on the boiler model and actual route taken), which enables installers to position the boiler almost anywhere in the building.

Open flue or room ventilated systems can be installed as individual or combined flues and should discharge vertically, with the flue terminating in an optional tapered cone, complete with bird guard. Care needs to be taken when siting the actual discharge point as a vapour plume will be visible when the boiler is operating (maximum flue gas exit temperature will be less than 75°C) and it's possible for water to drip to the ground from the terminal on horizontal installations, which could turn to ice in freezing conditions.



Note: If further classification is required please refer to a specialist flue contractor.

TYPICAL FLUE SYSTEMS

CONCENTRIC ROOM-SEALED APPLICATIONS (C13/C33)				
CALCULATION DATA – ROOM-SEALED APPLICATIONS		FLUE OPTION	GAS 110 ECO 65	GAS 110 ECO 115
	Maximum length O/L using 100/150mm concentric flue	C13	9m	5.9m
	Maximum length O/L using 100/150mm concentric flue	C33	11.5m	9.4m
O/L To suit site requirements	90° Elbow – an equivale 45° Elbow – an equivale Inspection Tee – an equi Note: Flue lengths can b For further clarification pl technical department on	ow – an equivalent length of 1.9m ow – an equivalent length of 1.2m ion Tee – an equivalent length of 3.3m lue lengths can be extended by using larger diameter flue pipe. her clarification please consult a flue specialist and the Remeha al department on 0118 978 3434.		
			CONVE FL	NTIONAL UE B23P
CALCULATION DATA CONVENTIONAL FLUE		FI UE OPTION	CONVER FL	ATIONAL UE B23P
CALCULATION DATA CONVENTIONAL FLUE	Maximum length 0/L using 100mm single wall flue	FLUE OPTION B23P	CONVER FL GAS 110 ECO 65 27m	ATIONAL UE B23P GAS 110 ECO 115 19m

CLV SYSTEM B53

CALCULATION DATA – CLV SYSTEM (TWIN PIPE – TWO ZONE) APPLICATIONS				
		FLUE OPTION	GAS 110 ECO 65	GAS 110 ECO 115
ب ۲	Maximum length O/L using 2 x 100mm single wall flue	C53	23m	16m (11m air/ 5m gas)
	90° Elbow – an equivale	nt length of 5m		
0/L	45° Elbow – an equivale	nt length of 1.2m		
	Inspection Tee – an equi	valent length of 5.3m		
Birdguard	Inspection Tee – an equivalent length of 5.3m Note: Flue lengths can be extended by using larger diameter flue pipe. For further clarification please consult a flue specialist and the Remeha technical department on 0118 978 3434.			



Note: Connect the boilers to the horizontal header using swept connections.



□ FLUE GUIDELINES

Refer to the latest relevant British Standards.

REF BS 5440-2: Specification for installation and maintenance of ventilation for gas appliances not exceeding 70kW (1st, 2nd and 3rd family gases).

REF BS 5440-1: Specification for installation of gas appliances to chimneys and for maintenance of chimneys not exceeding 70kW (1st, 2nd and 3rd family gases).

REF BS 6644: Specification for installation of gas red hot water boilers of rated inputs between 70kW to 1.8 MW (net) (2nd and 3rd family gases).

REF IGE/UP/10: Installation of flued gas appliances in industrial and commercial premises.

It's the responsibility of the installer to install the flues and fluecades to comply with the current regulations and standards.

IMPORTANT NOTE

All flue terminals and CLV kits are supplied with a condense drain/siphon – this must be connected within one metre of the boiler flue connection. Any condensate which is able to flow

back into the boiler from flue lengths greater than one metre must be discharged via a condense collector and drain system fitted within one metre of the boiler flue connection. Make sure that any flue gas outlet pipe to the boiler has a sufficient gradient (at least 50mm per metre) and there's a sufficient condensate collector. Where boilers have been installed on a common open flue system, condensate collectors and drain systems must be fitted on each individual boiler directly above the boiler flue connection. Condense siphons must be deep-seal water type with the discharge taken to a suitable drain point.

Further information regarding flue with dissimilar metals can be found in BS6644 – 2011 Section 6.10.4.

Concentric room-sealed flue components should not be mixed with single wall flue components.

Flue components are constructed from a white painted metal outer and plastic inner.

Flue terminals are painted as detailed in the terminal diagrams.

Plume kit external components are aluminium or plastic and are painted black.

All flue components are CE approved.











TECHNICAL SUPPORT

From brochures to CAD drawings and BIM files, you can access all the information you need at **remeha.co.uk**

Or call our sales or technical departments on **0118 978 3434**. We're always happy to help.

We can provide you with:

- Brochures
- Technical specification sheets
- Case studies
- Installation manuals
- BIM files

- CAD files
- Energy-related Products Directive data
- Commissioning
- Technical information
- Spare parts (part of our after sales service).

DECLARATION OF COMPLIANCE

We hereby certify that the series of appliances specified herein is in compliance with the standard model described in the EC declaration of compliance, and that it is manufactured and marketed in compliance with the requirements and standards of the following European Directives.

- 90/396/EEC Gas Appliance Directive
- Reference Standards: EN 437; EN 483; EN 625; EN 677
- 2006/95/EC Low Voltage Directive Reference Standard: EN 60.335.1
- 2004/108/EC Electromagnetic Compatibility Directive
- Generic standards: EN 1000-6-3; EN 61000-6-1
- 92/42/EEC Efficiency Directive
- ErP compliant
- ECA listed.

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