



MasterTherm
H E A T P U M P S

www.mastertherm.co.uk



ABOUT MASTERTHERM

MasterTherm heat pumps have been at the forefront and pioneers of heat pump technology for over two decades...

Today, MasterTherm continue to dominate the heat pump market as a manufacturer of a superior range of both ground and air source heat pumps. Since inception in the early 90's, MasterTherm have developed a comprehensive range of heat pumps suitable for all applications.

Built in Prague, Czech Republic, MasterTherm has a long and successful history of supplying heat pumps into the European market with the UK, Germany, Austria, Belgium, Italy and the Netherlands amongst the largest export markets. The central European location lends itself well to the distribution of heat pumps throughout mainland Europe and beyond.

As pioneers of Inverter Technology in ground source heat pumps, MasterTherm are always pushing boundaries to maximise efficiency and performance across the entire range. Every product produced by

MasterTherm are hand built and are subject to rigorous analysis, robustness testing, lifetime performance testing as well as regular acoustic testing at independent laboratories.

In producing bespoke, hand-built heat pumps, MasterTherm offers commercial properties complete bespoke systems to meet individual requirements. Modbus and MasterLAN™ allow for smooth integration with Building Management Services (BMS) and for applications with substantial heating requirements

APPROVED PRODUCT



Cert No: MCS BBA 0034



MasterTherm UK

MasterTherm UK was born in 2009 to serve the ever-expanding UK market and to offer UK customers access to all the benefits that MasterTherm units have to offer. With a UK based technical support centre, full online control and an extensive network of accredited installer and engineers, you're never alone.

All MasterTherm heat pumps are MCS accredited by BBA, ErP compliant, Domestic and Non Domestic RHI compliant (PEL listed products)



WHY CHOOSE MASTERTHERM?

Online Control and 7 Year Warranty

The robust and reliable design of MasterTherm heat pumps allows for a 7 year comprehensive warranty.

All units are fitted with internet modules allowing control of all units via iOS, Android or any other web enabled device. MasterTherm UK actively monitors all units, looking to improve performance or reliability.

Intelligent Zone Control

MasterTherm allows the highest possible level of control of heating or cooling circuits. Control up to 6 heating circuits including swimming pool, solar thermal hot water systems and DHW. Up to 6 heating circuits can be linked and controlled by the heat pump system. This allows for multiple zones of varying flow temperatures, ideal for systems where underfloor heating is combined with traditional radiator or higher temperature underfloor heating zones.

Solar Thermal Integration

The majority of heat pumps on the market operate independent of solar thermal hot water systems. MasterTherm heat pumps will prioritise hot water generation from solar thermal hot water systems when there is solar gain, maximising the savings without compromising on hot water availability.

Inverter Technology

MasterTherm heat pumps are available with inverter driven compressors on both air and ground source heat pumps. Through modulating the output of the unit, supply will match the demand of the property reducing running costs whilst increasing the lifespan and efficiency.

Cooling Capability

MasterTherm heat pumps can, when purchased with an additional module, provide whole-house cooling. With state of the art cooling control and functions, heat pumps can offer a cost effective cooling alternative. Cooling is available both passively and actively.

Low Noise Output

State of the art DC fans are fitted across the entire MasterTherm range. Low noise impellers, combined with modulation flow result in minimum airflow and noise disturbance ensuring that MasterTherm are amongst the quietest units on the UK market.

Modulating Circulation Pumps

Circulating pumps fitted to Mastertherm heat pumps are fully modulating. Pumps will operate between 30% and 100% of their rated output, based on the required temperature. In selecting a speed based on temperature, efficiency is increased as well as running costs reduced.

Weather Compensation

Weather compensation monitors external ambient temperatures and alters required output. Thermostats need not be adjusted between seasons as the heat pump will switch between modes dependant on external ambient temperatures. MasterTherm differ from the competition in being able to apply weather compensation to individual zones and circuits.

Wide Range of Sizes

With outputs of up to 22kW in single phase and 70kW in three phase, MasterTherm come in all shapes and sizes. Units can be linked together in a Master/Slave configuration to provide up to an incredible 2MW – ideal for commercial applications.

Simultaneous Heating and Cooling

Using MasterLAN algorithm and controls, MasterTherm heat pumps are able to offer simultaneous heating and cooling to buildings, manufacturing processes and more. Heat pumps in general are able to offer 'heating energy' and 'cooling energy' either actively or passively. With the MasterLAN application, management of the heating and cooling capacities of inverter heat pumps is far more controlled, balanced and efficient when compared against other manufacturers.





Arguably the most comfortable heat pump

All MasterTherm heat pumps can be connected to the internet.

Users have the ability to control and monitor units from the Web, iPad or mobile phone (android or iOS).



iOS App (iPad, iPhone)
Use test login
(login: demo, Password: demo-mt)

Android App
Use test login
(login: demo, Password: demo-mt)



The New Age – Inverter Control Technology

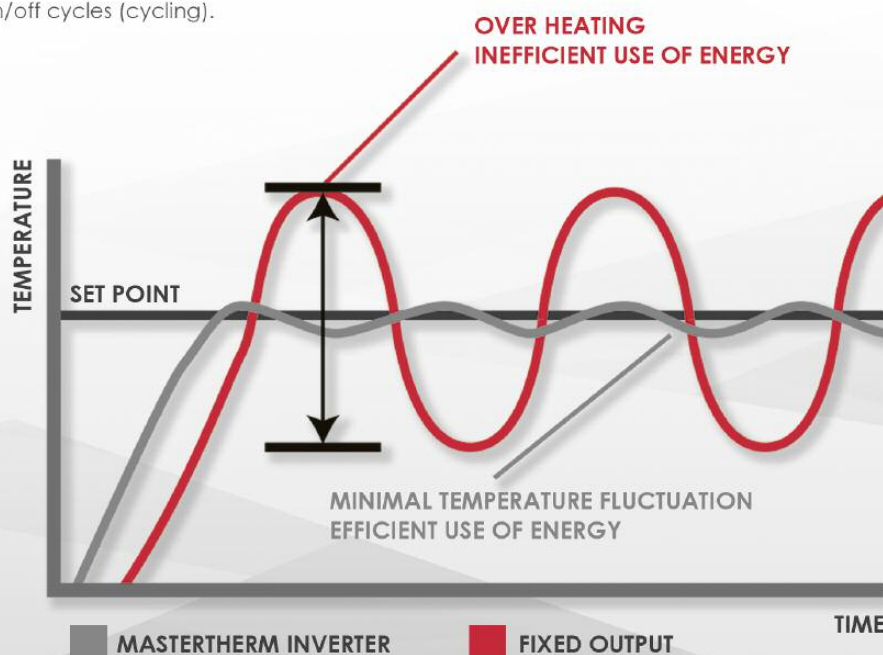
The development of inverter control technology started more than two decades ago in Japan. Since then manufacturers of compressor units for cooling and heating equipment have been working on perfecting variable output technology. MasterTherm have perfected this technology and applied it to the flagship range of inverter heat pumps – the inverter range. These heat pumps have the capacity to continuously modulate heating/cooling output across a range of 30% - 100%. This level of control enables the output of the system to be matched perfectly to the demand of the property eliminating inefficient overheating.

The technology has a number of notable advantages including:

- Increased Coefficient of Performance (CoP) – Inverter control allows demand to be matched by supply through speed modulation of the compressor resulting in a greater CoP
- Reduced energy consumption
- Controlled starting current - Zero Amps
- No requirement for a buffer tank
- Reduced mechanical load – increase lifespan

Heat pumps, in general, are sized to cater for the full load of a property – 100%. A fixed output heat pump will be turned on and off continuously with the compressor always operating at 100% of its capacity regardless of demand. The use of inverter technology allows the units to vary its output to match the demand of the property. When demand is low, the output of the heat pump is reduced to match the requirement of the property, therefore significantly reducing the number of on/off cycles (cycling).

The lifespan of a compressor is limited by the number of times the compressor is switched on and off. MasterTherm inverter technology significantly reduces the mechanical load applied through cycling and vastly extends the lifespan of the equipment





WHAT IS THE RHI?

The Renewable Heat Incentive (RHI) is a financial incentive scheme established by the government to increase the use of renewable heat across the UK and in turn reduce national carbon emissions. Under the RHI, air source heat pumps, ground source heat pumps, biomass or solar thermal system owners are paid over a period of 7 or 20 years, dependant on whether it is classified as a Domestic or Non-Domestic system.

The Domestic Scheme

As the name suggests, the domestic version of the scheme is intended for use by domestic customers, and includes system types and capacities which would be suited for home use.

How much can homeowners earn?

RHI cash payments are paid out to the recipient every quarter for a total duration of 7 years, and are based upon the annual heat requirement of your property set out by the EPC. Regardless of actual use, payments will be made based on the requirement set out on the EPC.

Homeowners can easily calculate their annual entitlement using the UK Government's RHI Calculator which can be found online. Payments are fixed and increase annually in line with CPI.

The Non-Domestic Scheme

Not only does the scheme exist to reduce carbon emissions in UK homes, but right across the UK throughout businesses, hospitals, schools and other organisations. As a general rule, if you fit into one of these categories, then the non-domestic RHI scheme is for you.

How much can businesses earn?

Unlike the Domestic scheme, the Non-Domestic RHI cash payments are paid out to the recipient every quarter for a total duration of 20 years, and are based on the Kilowatt hours (kWh) your system produces – it is not deemed as with the Domestic scheme.



COMMERCIAL SYSTEMS

MasterTherm ground and air source heat pumps are ideal for industrial and commercial premises. Heat pumps will significantly reduce running costs and increase the green credentials of your organisation helping to boost environmental policies. Heat pumps operate best at a low, constant temperatures which will make for a better working environment.

Installations are not limited by the rating of an individual unit. A series of heat pumps can be linked together using MasterTherm's intelligent MasterLAN software. Units can be linked in a Master/Slave configuration with a combined total power of up to 2MW.

Return on Investment

The UK Government has put in place significant subsidies to encourage commercial properties to switch from traditional fossil fuels to ground and air source heat pumps. The Government will pay organisations a quarterly tariff (based on usage) for up to 20 years, index linked. Payback will vary dependent on the system size and demand. Typically, those installing a ground source heat pump system can expect the initial system cost to be covered within 5-6 years, with a further 15 years of RHI at no further cost.

Longevity

Unlike traditional boilers, heat pumps do not rely on any form of combustion and as such the lifespan of a heat pump is expected to exceed 20 years, with ground source heat pumps lasting more than 30 years. Traditional oil and gas fired boilers installed in a commercial premises have a typical lifespan of 7-10 years.

Simultaneous Heating and Cooling

Utilising MasterTherm's bespoke MasterLAN algorithm and controls, MasterTherm heat pump systems have the ability to offer simultaneous heating and cooling to buildings, manufacturing processes and numerous other applications.

Most heat pumps have the ability to offer 'heating energy' and 'cooling energy' either actively or passively but with the MasterLAN application the management of the actual heating and cooling capacities of MasterTherm inverter heat pumps is far more controlled, balanced and efficient when compared against other manufacturers.

Some manufacturing processes such as galvanising steel, brewing of beer, anodising aluminium and ice cream production to name a few all have a heating and cooling demand. Ground source heat pumps are ideally suited to provide this and can offer significant energy savings over conventional heating and cooling systems.

With MasterTherm's MasterLAN application, rather than this energy being provided with a reversible unit, this can be achieved using the unique control system without the need of a reversible unit. MasterLAN will control the multiple set points of each unit at the given conditions to ensure that the energy is going to the right place at the right time.

ENERGY RELATED PRODUCTS (ERP) DIRECTIVE - Heat Pump Efficiency

From 26th September 2015 all heating and hot water products, with an output equal to or less than 400kW will be affected by the Energy related Products (ErP) directive that comes into force. Energy labels are used for assigning heat pumps to individual classes based on their energy efficiency (heating efficiency). **The best class is marked A++**, the worst G. The deciding factor for determining energy efficiency is the seasonal SCOP heating factor. Methodology for determining energy efficiency is defined in BS EN 14 825.

What is the heat pump seasonal energy efficiency?

Seasonal energy efficiency η_{sp} represents a degree of utilisation efficiency of unrenovable primary energy by a particular heat pump. It is calculated as a ratio between the given heat pump seasonal heating factor and the electricity production and distribution coefficient, stated in %. For example, shall the seasonal energy efficiency amount to 150%, the heat pump will, during the entire heating season, supply energy that is by 50% greater than its primary energy consumption (i.e. the consumption of unrenovable energy necessary for the production of electricity for driving the heat pump).

For assessment purposes, 2 types of applications are recognised: medium-temperature applications, when the heat pump provides an output temperature of 55 °C, and low-temperature applications with an output temperature of 35 °C.

What is SCOP?

The seasonal heating factor represents the ratio between the total produced heat and the total electricity consumption. In contrast to the COP heating factor, which is specified for particular temperature conditions (for example, COP=3.2 at A2W35 – air temperature of 2°C and heating water temperature of 35 °C), SCOP is calculated for the entire heating season. The SCOP factor thus characterises the real efficiency of heat pumps much more accurately conditions than the COP factor.

Air-water	Low-temperature operation 35°C				Medium-temperature operation 55°C			
BoxAir Inverter	Power*	SCOP	ns %	Class	Power*	SCOP	ns %	Class
BA 22I	5 kW	4,18	164	A++	4 kW	3,22	126	A++
BA 26I	7,5 kW	4,40	173	A++	7 kW	3,36	132	A++
BA 30I	8,5 kW	4,49	177	A++ (+)	8 kW	3,45	135	A++
BA 45I	14 kW	4,30	169	A++	13 kW	3,32	130	A++

*Power output – for the proposal outdoor temperature of -10 °C | A++(+) – complies with class A+++ in effect from 2019



Ground-water	Low-temperature operation 35°C				Medium-temperature operation 55°C			
AquaMaster Inverter	Power*	SCOP	ns %	Class	Power*	SCOP	ns %	Class
AQ 22I	7 kW	4,61	177	A++ (+)	6 kW	3,53	133	A++ (+)
AQ 30I	11 kW	4,85	186	A++ (+)	11 kW	3,78	143	A++ (+)
AQ 45I	21 kW	4,80	184	A++ (+)	19 kW	3,70	140	A++ (+)

*Power output – for the proposal outdoor temperature of -10 °C | A++(+) – complies with class A+++ in effect from 2019



Air-water	Low-temperature operation 35°C				Medium-temperature operation 55°C			
BoxAir	Power*	SCOP	ns %	Class	Power*	SCOP	ns %	Class
BA 22Z	8 kW	3,66	144	A+	8 kW	3,00	117	A+
BA 26Z	11 kW	3,63	142	A+	10 kW	2,84	111	A+
BA 30Z	12 kW	3,64	143	A+	12 kW	2,86	111	A+
BA 37Z	16 kW	3,71	145	A+	15 kW	2,97	116	A+
BA 45Z	19 kW	3,89	153	A++	18 kW	3,08	120	A+

*Power output – for the proposal outdoor temperature of -10 °C



Air-water	Low-temperature operation 35°C				Medium-temperature operation 55°C			
AirMaster	Power*	SCOP	ns %	Class	Power*	SCOP	ns %	Class
AM3015Z	6 kW	3,60	141	A+	6 kW	2,90	113	A+
AM3021Z	8 kW	3,73	146	A+	8 kW	3,00	117	A+
AM3030Z	12 kW	3,87	152	A++	12 kW	3,08	120	A+
AM3038Z	15 kW	3,90	153	A++	15 kW	3,10	121	A+
AM3045Z	18 kW	3,93	154	A++	17 kW	3,13	122	A+

*Power output – for the proposal outdoor temperature of -10 °C



Air-water	Low-temperature operation 35°C				Medium-temperature operation 55°C			
EasyMaster	Power*	SCOP	ns %	Class	Power*	SCOP	ns %	Class
EM60Z	25 kW	3,56	140	A+	24 kW	2,86	111	A+
EM75Z	31 kW	3,61	141	A+	30 kW	2,92	114	A+

*Power output – for the proposal outdoor temperature of -10 °C





AVAILABLE IN ALL COLOURS

GROUND/WATER SOURCE HEAT PUMP - AquaMaster Inverter

MasterTherm's range of Ground and Water source heat pumps in a range of capacities.

The AquaMaster Inverter heat pump achieves the highest efficiency in its class. The BLDC compressor with frequency controlled inverter drive continuously adjusts its output to the building's heating demand. This means the AquaMaster Inverter only produces the energy the property needs. It also means we can remove or reduce the capacity of a buffer tank. The combination of inverter technology, electronic expansion valve, equi-thermal control system adds unique heating performance at all operating modes with significant operating savings, market leading COP's, extended lifetime and improved reliability.

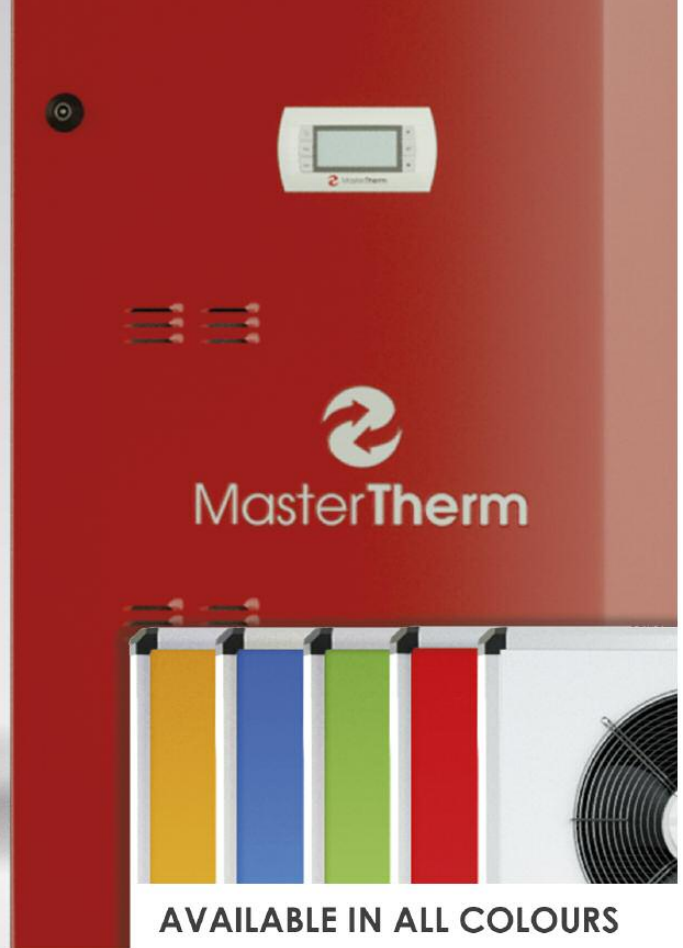
These outstanding features means the AquaMaster Inverter heat pump has won several internationally recognised awards.

Key Features:

- 2 7 Year Warranty supplied as standard with Internet Control Neobox Module
- 2 Low noise with special insulation and painted panels
- 2 Zero Amp Starting current. Never issues with DNO.
- 2 High Efficiency BLDC Compressor
- 2 No requirement for a buffer tank
- 2 Fully Variable output control from 30 - 100%
- 2 Electronic Expansion Valve
- 2 Integral Solar Controller
- 2 Output water up to 60°C
- 2 Low Maintenance

Optional Features:

- 2 Passive Cooling
- 2 Full Cooling
- 2 Desuperheater (Output water up to 70°C)
- 2 Water to Water Version
- 2 Heating Circuit Room Terminals
- 2 Heating Circuit Expansion Board
- 2 Immerison Backup Heater



AVAILABLE IN ALL COLOURS

GROUND/WATER SOURCE HEAT PUMP - AquaMaster Inverter Combi

The AquaMaster Combi Ground Source Inverter Heat pump with integral stainless steel domestic hot water cylinder encompasses the same intelligent control systems as the AquaMaster Inverter Ground Source Heat Pump. Unit requires minimum space and can be positioned in a kitchen or utility room and is available in 3 capacity ranges the same as the original AquaMaster Inverter range.

Due to the 'all in one' nature of the unit, electrical and mechanical installation is significantly reduced resulting in a faster, more efficient installation. The integral hot water tank includes a solar coil to allow Solar Hot Water system integration.

Key Features:

- 2 7 Year Warranty supplied as standard with Internet Control Neobox Module
- 2 Low noise with special insulation and painted panels
- 2 Zero Amp Starting current. Never issues with DNO.
- 2 High Efficiency BLDC Compressor
- 2 No requirement for a buffer tank
- 2 Fully Variable output control from 30 - 100%
- 2 Electronic Expansion Valve
- 2 Integral 180l hot water cylinder with rapid heat recovery coil
- 2 Integral Solar Coil
- 2 Integral Solar Controller
- 2 Output water up to 60°C
- 2 Low Maintenance
- 2 4.5kW Immersion for backup and legionella function

Optional Features:

- 2 Passive Cooling
- 2 Heating Circuit Room Terminals
- 2 Heating Circuit Expansion Board



AVAILABLE IN ALL COLOURS

AIR SOURCE HEAT PUMP - BoxAir Inverter

The BoxAir Inverter is the latest development in the MasterTherm range of products to feature Inverter technology and single phase output up to 22kW (A7W35). The range combines the compact design of the BoxAir with an electronic expansion valve, electronic control and BLDC inverter compressor technology in a single compact unit that offers many advantages compared to standard equipment. Inverter drive decreases the frequency of the compressor switching on and off, this greatly reduces power consumption and extends the equipment lifetime. A significant decline in operating costs is achieved (up to by 30 %).

In most cases, no buffer tank is required, this saves boiler room space and installation costs. The unit is equipped with modulating DC fans of infinitely variable speed, built-in immersion heaters, equi-therm control and internet control/diagnostics.

Key Features:

- 2 7 Year Warranty supplied as standard with Internet Control Neobox Module
- 2 Operate down to -20°C external ambient temperature
- 2 Low noise with special insulation and painted panels
- 2 Low noise DC Fan - 38dBA @ 10m
- 2 Zero Amp Starting current. Never issues with DNO.
- 2 High Efficiency BLDC Compressor
- 2 No requirement for a buffer tank
- 2 Fully Variable output control from 30 - 100%
- 2 Electronic Expansion Valve
- 2 Integral Solar Controller
- 2 Output water up to 60°C
- 2 Low Maintenance
- 2 Integral backup heater

Optional Features:

- 2 Full Cooling
- 2 Heating Circuit Room Terminals
- 2 Heating Circuit Expansion Board



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H E A T P U M P S

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