

Combitronic operating guide

Technical description



Eberspächer

Combitronic CT03C, CT03M, CT05C, CT05M

Standard and Deluxe versions

Eberspächer (UK) Ltd.
Headlands Business Park,
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Hants BH24 3PB

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1 Introduction

Concept of this Manual

This manual aims to provide all the necessary information to assist with the operation of Eberspächer Combitronic CT03C, CT03M, CT05C, CT05M heaters.

The manual also includes warranty and technical information for future reference.

This manual has been divided into chapters for quick and easy reference as listed below.

Please Note!

Additional safety and statutory information is to be found within the technical description and operating instruction manuals that accompany this manual. If you require information specific to your installation, which is not included in our manuals, please contact your local Eberspächer dealer.

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1 Introduction

Special Text Structure, Presentation and Picture Symbols

This manual uses special text structures and picture symbols to emphasise different contents. Please refer to the examples below for the corresponding meanings and associated actions.

Picture Symbols



Regulation!

This picture symbol with the remark “Regulation” refers to a statutory regulation. Failure to comply with this regulation results in expiry of the type of permit for the heater and preclusion of any Guarantee and liability claims on J. Eberspächer GmbH & Co, KG.



Danger!

This picture symbol with the remark “Danger!” refers to the risk of a fatal danger to life and limb. Failure to comply with these instructions can result in severe injuries or even death under certain circumstances.



Caution!

This picture symbol with the remark “Caution!” refers to a dangerous situation for a person and/or the product. Failure to comply with these instructions can result in injury to people and/or damage to machinery.

Please Note!

These remarks contain application recommendations and useful tips for installation of the heater.

Safety Instructions for Installation and Operation!



Caution!

- Only the control elements approved by Eberspächer must be used to operate the heater. The use of other control elements can cause malfunctions.
- Repairs by unauthorised third-parties or with non original spare parts, are dangerous and therefore not allowed.
- The following measures are not allowed:
 - Changes to components relevant to the heater;
 - Use of third party components not approved by Eberspächer;
 - Nonconformities in installation or operation from the statutory regulations, safety instructions or specifications relevant to safe operation, as stated in the installation instructions and operating instructions. This applies in particular to the electrical wiring, fuel supply, combustion air system and exhaust system.
- Only original accessories and original spare parts must be used during installation or repairs.
- When carrying out electric welding, the battery should be disconnected to protect the controller.
- The heater must not be operated where there is a risk of an accumulation of flammable vapours or dust.
- The battery isolator switch must not be turned off until the heater has completed its cooling cycle.
- The heater must be switched off when refuelling.
- Exhaust gases exit the heater at very high temperatures and therefore any combustible material that may come into contact with the heater exhaust must be removed.



1 Introduction

Please read carefully the following instructions, these have been compiled to assist you with every aspect of operating your heater. Special attention is required to the Safety or Caution areas, which are found at the end of each section.

To ensure maximum performance from your heater and for your own safety, please adhere to the following instructions closely, being aware that in the unlikely event of a heater failure during the warranty period, that warranty may be rejected if the heater is not installed or operated in accordance with these instructions.

When installing the heater, for your own safety, please use all necessary personal protection/safety equipment where required.

2 Technical description

The Combitronic range of heaters are diesel fuelled blown hot air and hot water heating systems. With varying outputs, control options and 230v AC devices there will be a product within the range to suit your heating needs.

The model type is specified by code and is explained as follows:

CT	Refers to Combitronic.
03	3.5kW maximum output at 0°C for accomodation heating.
05	5.0kW maximum output at 0°C for accomodation heating.
M	Modular version.
C	Compact version.
S	Standard controls with mode selection and dial temperature control.
D	Deluxe controls with 230v air heating and full function control panel.

Therefore, a CT05CD is a 5kW blown air system with an additional 230v AC blown air function using the Deluxe control interface.

All heaters in the range offer the latest PWM technology for smooth fan control with high efficiency heat exchangers for fast heat-up times of the interior and hot water.

Typically, hot water will be achieved after approximately 15 minutes with a recovery time of 10 minutes.

All Combitronic heaters can be used while stationary or on the move, providing an adequate supply of diesel and DC electrical power is available.

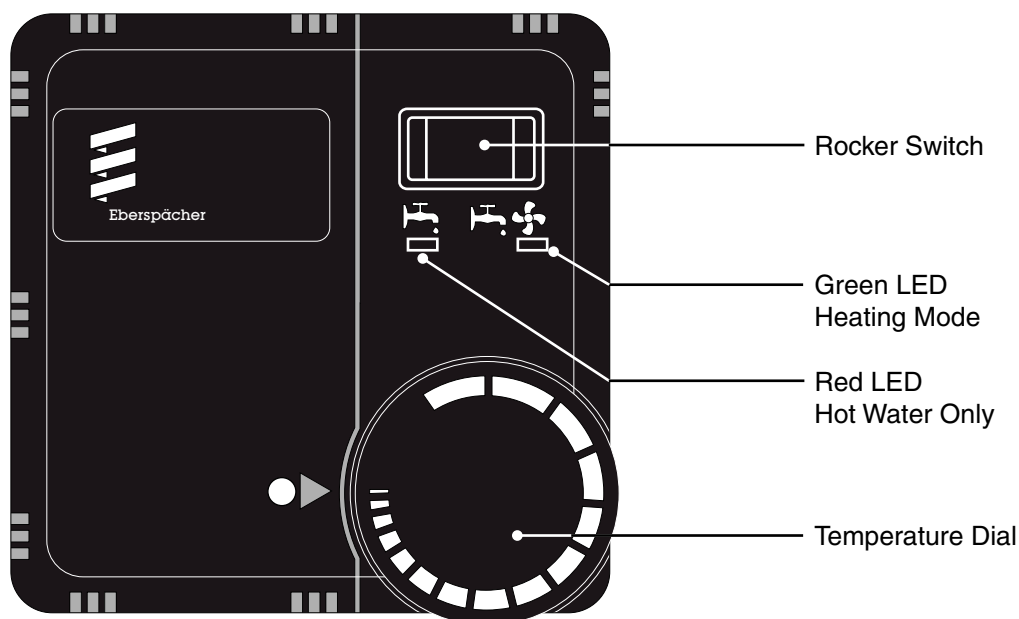
Technical Specification

	CT03	CT03 - D	CT05	CT05 - D
Air Heating Output (W)				
Diesel (maximum)	3,500	3,500	5,000	5,000
Mains 230v (maximum)	-	1,500	-	1,800
Air Heating Output (W)				
Diesel (minimum)	500	500	800	800
Mains 230v (minimum)	-	500	-	800
Water Heating Output (W)				
Diesel (maximum)	1,000	1,000	1,000	1,000
Mains 230v (maximum)	1,000	1,000	1,000	1,000
Fuel Consumption (l/hr)				
Minimum	0.27	0.27	0.27	0.27
Maximum	0.62	0.62	0.62	0.62
Electrical Power Consumption (W)				
Minimum	23	23	28	28
Maximum	85	85	106	106
Electrical Power Consumption (W)				
At start	120	120	120	120
After Running (heating only)	8	8	8	8
Fan Air Throughput (m³/h)				
Minimum	50	50	80	80
Maximum	260	260	460	460

Technical data is based on zero restrictions.



Standard Version



To Start Heating Hot Water Only

Press the rocker switch to the left position.

The red LED will illuminate.

The Combitronic will commence its start cycle and provide heating to the water system. After approximately 15 minutes the thermostat in the water tank will switch off the Combitronic until either the water cools or is used.

The red LED will remain illuminated at all times.

To Start Heating and Hot Water

Press the rocker switch to the right position.

The red and green LED's will illuminate.

The Combitronic will commence its start cycle and provide heating to the hot water system.

Once the system has reached 35°C the main heating fan will briefly start at full speed then reduce to a low setting.

A gradual increase in fan speed will commence until the set temperature has been achieved.

The fan will now regulate in smooth stepless modulation phases to maintain the set temperature.

Both the red and green LED's will remain illuminated at all times.

Adjusting Set Temperature

The temperature dial should be set at a half way point for initial operation.

Small adjustments should be made to increase or decrease the set temperature.

Allow several minutes for temperature stabilisation before readjusting.

Switching the System Off

Press the rocker switch to the central position.

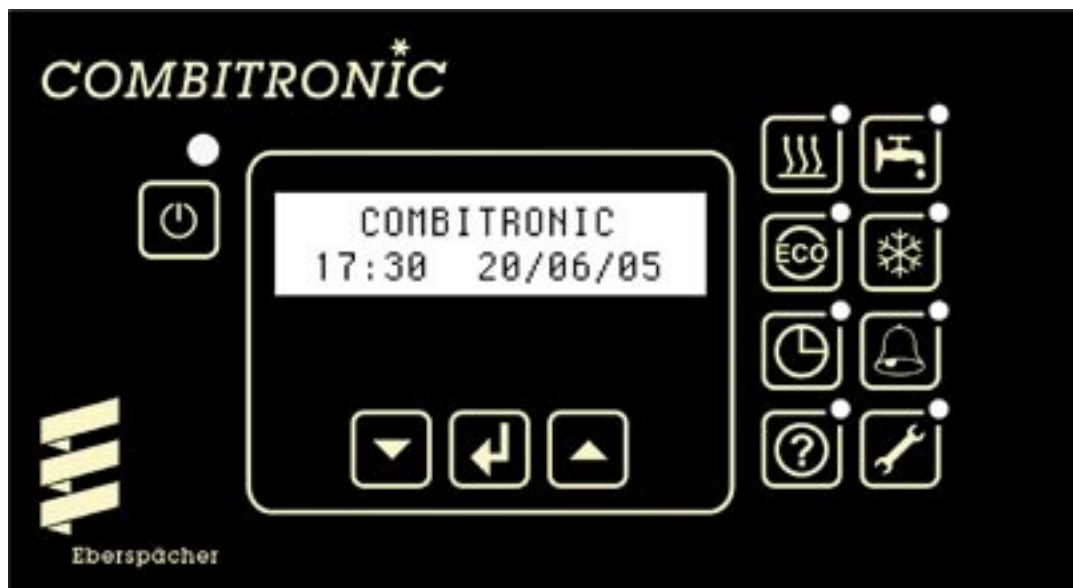
All LED's will be off.












The main heating fan will switch off and the Combitronic will commence its 3 minute shut down cycle.

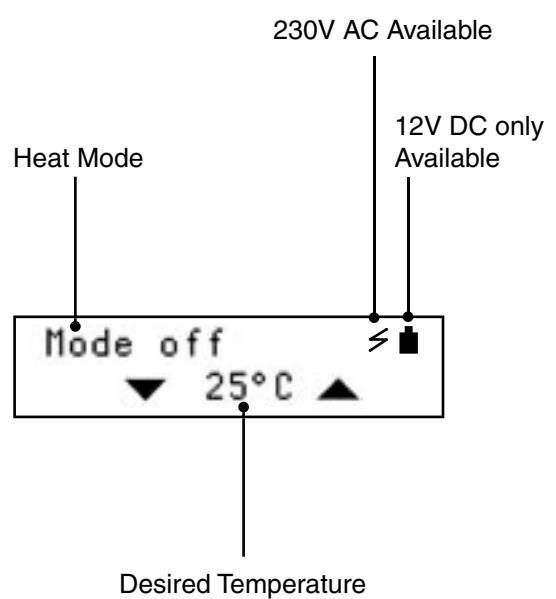
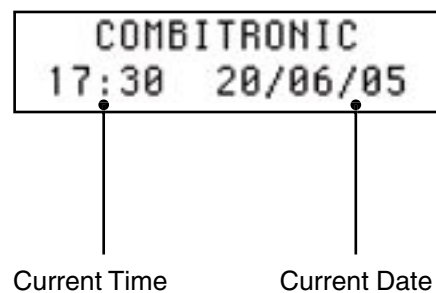
Please Note!

All functions can be used whilst stationary or on the move.

3A Operating instructions - Deluxe




-  On / Off Key
-  Select Up Key
-  Enter / Confirm Key
-  Select Down Key
-  Heating On
-  Hot Water On
-  Economy Mode On
-  Frost Protection On
-  Activate Timer
-  Activate Alarm
-  User Set-up
-  Engineers Menu










To Turn Panel On / Off

Press and hold  for 2 seconds. The panel will be switched on or off in turn.

The panel uses minimal electrical power and may be left on, however, turning the panel off will avoid any accidental key presses.

Setting the Hot Water Mode

Press  to enter the "Settings Menu". Press  until "Water Mode" is displayed. Press . Use the  or  key to toggle between the three hot water modes.

Diesel	Uses only diesel fuel to heat the domestic hot water.
230V	Uses only the 230V AC mains hook up to heat the domestic hot water.
Auto	Uses both diesel fuel and 230V AC for faster warm up of the domestic hot water.






Press  to exit.



Caution!

Auto and 230V mode should not be selected if the domestic water system has been drained.

Setting the Heating Mode

Press  to enter the "Settings Menu". Press  until "Heat Mode" is displayed. Press . Use the  or  key to toggle between the three heating modes.



Diesel	Uses only diesel fuel to heat the accommodation.
230V	Uses only the 230V AC mains hook up to heat the accommodation.
Boost	Uses both diesel fuel and 230V AC for faster warm up of the accommodation.

Press  to exit.

Please Note!

In 230V AC mode, only 1500W of heat will be available.

Adjusting the Desired Temperature

While in either the Combitronic or Mode screen, press either  or . The desired temperature is adjusted by one degree higher or lower.

To Start Heating (Hot Water Only)

Press , the red indicator will illuminate.

Using diesel fuel or 230V AC, the domestic water will start to heat up. This process should take between 10 and 15 minutes from cold. Once hot an integral thermostat will monitor the water temperature and re-heat when required.

To Start Heating (Accommodation)

Press , the red indicator will illuminate.


The heat exchangers within the Combitronic begin to preheat and therefore a delay should be expected before the heating fan begins to convey warm air to the outlets.

Using diesel fuel, mains or both, the Combitronic will begin to heat the accommodation to the temperature selected. As set point approaches the fan will begin its regulation phase until the desired temperature has been reached.

Please Note!


Hot water will be available.

Toggle Display

The "Combitronic Screen" displays the current time and date. Press the  key and the display will change to the "Mode Screen". Now the heating mode, power source and desired temperature for air heating will be displayed.

After 30 seconds the display will revert back to the "Combitronic Screen".

To Stop Heating (Hot Water Only)

Press , the red indicator will go off.

The Combitronic will cease heating the hot water.

To Stop Heating (Accommodation)

Press , the red indicator will go off.

After a short cool down cycle, the Combitronic will cease heating the accommodation.

3A Operating instructions - Deluxe

Economy Mode

Ideal as a night time mode, the economy mode turns off the diesel heating and uses mains only to try to maintain the desired temperature.

The reduced heating power may make it impossible to reach the desired temperature, however, a comfortable level of background heating will be provided.

Press , the red indicator will illuminate.

Please Note!

The Economy Mode is a MAINS & DIESEL FUNCTION.

Frost Mode

Should the internal temperature fall to 0°C or less the Combitronic will operate. The internal temperature will be kept above 5°C and the hot water heated periodically to prevent it freezing.

Press , the red indicator will illuminate.

Please Note!


The Frost Mode is a MAINS ONLY FUNCTION.






Caution!

230V AC must be available and this mode should only be used if the domestic water system has not been drained.

Setting the Current Time

Press  to enter the "Settings Menu".

Press .

Use the  or  key until "Time Set" appears on the display.



Press .

Use the  or  to toggle 12 / 24 hour clock mode.

Press .


Use the  or  to toggle hours.

Press .


Use the  or  to toggle minutes.


Press  to exit.



Setting the Current Date

Press  to enter the "Settings Menu".



Press .

Use the  or  key until "Date Set" appears on the display.

Press .

Use the  or  to adjust the day of the week.



Press .

Use the  or  to adjust the month.

Press .


Use the  or  to adjust the calendar day.

Press .



Use the  or  to adjust the year.

Press  to exit.

Setting the Timer


Press  to enter the "Settings Menu".

Press .

Use the  or  key until "Timer Set" appears on the display.

Press .


Use the  or  to adjust the Time ON hours.

Press .

Use the  or  to adjust the Time ON minutes.

Press .

Use the  or  to adjust the Time OFF hours.

Press .

Use the  or  to adjust the Time OFF minutes.

Press  to exit.




Activating the Timer


Press , the red indicator will illuminate.

Select heating, hot water or both using  .


The heating will now operate at the pre set times.

To stop the timer function press .



Setting the Alarm Time

Press  to enter the "Settings Menu".


Press .

Use the  or  key until "Alarm Set" appears on the display.

Press .

Use the  or  to adjust the hours.

Press .

Use the  or  to adjust the minutes.

Press  to exit.

Activating the Alarm


Press  the red indicator will illuminate.

When the current time is the same as the alarm time, the alarm will sound.

To stop the alarm, press any key.

The red indicator will go out.

Turning the Button Beeps On / Off

Press  to enter the "Settings Menu".

Press .


Use the  or  key until "Button Beeps" appears on the display.

Press .



Use the  or  to select on or off.

Press  to exit.



Changing the Display Settings – Contrast / Brightness

Press  to enter the "Settings Menu".



Press .

Use the  or  key until "Display" appears on the display.

Press .

Use the  or  key until "Contrast" appears on the display.


Press .

Press and HOLD the  or  key to adjust the display contrast.



Press  to exit.

Changing the Display Settings – Backlight Time Delay



The Backlight time delay is the amount of time that the screen will remain illuminated after any button press.

Press  to enter the "Settings Menu".



Press .

Use the  or  key until "Display" appears on the display.

Press .

Use the  or  key until "Backlight" appears on the display.

Press .


Use the  or  key to adjust the delay between 15 seconds, 30 seconds, 1 minute and 2 minutes.


Press  to exit.



3A Operating instructions - Deluxe

Changing the Display Settings – Timeout Delay



The Timeout delay is the amount of time before the display reverts back to the “Combitronic Screen”.

Press  to enter the “Settings Menu”.



Press .

Use the  or  key until “Display” appears on the display.

Press .

Use the  or  key until “Timeout” appears on the display.

Press .


Use the  or  key to adjust the delay between Never, 30 seconds, 1 minute and 3 minutes.

Press  to exit.



Draining the Domestic Water from the Panel


An **OPTIONAL** valve can be installed by your motorhome or Eberspächer dealer that will allow the domestic water to be drained from the panel.


Ensure the water pump is switched on.

Press  to enter the “Settings Menu”.

Press .

Use the  or  key until “Purge” appears on the display.

Press .

Press and HOLD  key to open the drain valve.

Keep the button pressed until the sound from the pump changes.

Press  to exit.



Eberspächer recommend the Combitronic should be serviced every 12 months.

It is also advisable to operate the system every few months to prevent seizure of moving parts.

Eberspächer will cover parts and labour during the warranty period. Eberspächer will not cover wear and tear items such as fuses and filters or dealer / customer travel costs (see Conditions of Guarantee).

The ignition glow pin will be covered under warranty for a period of twelve months.

Eberspächer (UK) Ltd. Conditions of Guarantee for Eberspächer Heaters

Eberspächer (UK) Limited guarantee their heaters and associated parts for a period of twelve months to include parts and labour. The period of guarantee starts with the date of original purchase, the date of installing the heater into an original equipment machine or the date which the new vehicle is registered, licensed or placed in service. Glow pins carry a twelve month guarantee.

Guarantee will be honoured only if the installation has been carried out according to the Eberspächer instructions in force at the time and that the installation is carried out by an authorised Eberspächer distributor/ dealer or recognised original equipment manufacturer or their agent. It is appreciated that to assist with warranty records the guarantee material enclosed with each heater is completed and copies returned to Eberspächer (UK) Limited for completion of internal records.

Heater and parts guarantee is conditional on the appliance being used only in those conditions for which it was originally designed and will not take account of problems experienced through a shortage of D.C. electrical power, fuel or disregard to the installation or operating instructions.

The guarantee covers exclusively only those parts of delivery by Eberspächer (UK) Limited.

Change of ownership of the appliance does not affect

the guarantee obligation. These obligations do not exist, however when the fault originally developed was connected with:

- A user or customer not having given notice at once that a fault had developed and providing Eberspächer (UK) Limited or their distributors/ dealers the opportunity of rectification.
- Failure of the unit through fair wear and tear applying primarily to fuses.
- Failure of the appliance through abuse, unreasonable treatment or the use for which the appliance was not designed.
- Installation of parts into or in conjunction with the appliance which are not approved or sanctioned by the manufacturer or his distributors/dealers and agents.
- Changes in the appliance in a way which the manufacture has not agreed or sanctioned.
- Installation faults which conflict with Eberspächer (UK) Limited specifications.

Please note the guarantee does not cover fair wear and tear and no liability will be accepted for defects caused or service required through such use.

The information detailed within our conditions of guarantee does not effect your statutory rights.

5 Approved main dealers (UK)

Southern England	Company Address	Phone	
Bedfordshire / N. London	Auto Electrical Services Ltd Harmill Industrial Estate, Grovebury Road, Leighton Buzzard	(01525) 372 330	Vehicle/marine specialist
N. London	E.R.E.S 264 Maybank Road, South Woodford, London	(0208) 504 1188	Vehicle specialist
Berkshire	Thames Valley Electro Diesel (Reading) Ltd, Unit 5, Hyperion Way, Rose Kiln Lane, Reading	(01189) 751 199	Vehicle/marine specialist
Buckinghamshire / Thames	Espar Ltd Harleyford Marina, Harleyford, Marlow	(01628) 471 368	Vehicle/marine specialist
Hampshire / Dorset	Krueger (New Milton) Ltd 16 Queensway, Stem Lane Industrial Estate, New Milton	(01425) 619 869	Vehicle/marine specialist
	Krueger (Portsmouth) Ltd Unit 2, Venture Lane Industrial Estate, Limberline Road, Hilsea, Portsmouth	(02392) 665 005 (02392) 699 059	Vehicle/marine specialist
Kent	South Eastern Auto Electrical (Maidstone) Ltd Wharf Road, Tovil, Maidstone	(01622) 690 010	Vehicle/marine specialist
	South Eastern Auto Electrical Services (Erith) Ltd Unit 26, Manford Industrial Estate, Erith	(01322) 342 277	Vehicle/marine specialist
S.E. London	A23 Engineering Unit 8, Blackheath Business Centre, 87B Blackheath Hill, London	(0208) 469 4033	Vehicle specialist
Surrey	Reader Air Conditioning Unit 3, Boundary Business Park, Boundary Way, Woking	(01483) 726 300	Vehicle specialist
	Transport Maintenance Wood Street Service Station, Wood Street Village, Guildford	(01483) 235 401	Vehicle specialist
Sussex	F. M. E The Boatyard, Brighton Marina, Brighton	(01273) 601 779	Marine specialist
	F. M. E Sovereign Harbour Marina, Pevensey Bay Road, Eastbourne	(01323) 470 211	Marine specialist
Midlands			
Cambridgeshire	C F Parkinson (Peterborough) Ltd Vicarage Farm Road, Peterborough	(01733) 311 222	Vehicle specialist
Derbyshire	Derby Auto Electrical Services 11 Canal Street, Derby	(01332) 203 592	Vehicle specialist
Herefordshire	LSUK (Hereford) Mortimer Road, Hereford	(01432) 267 678	Vehicle specialist
Leicestershire	AB Butt Frog Island, Leicester	(0116) 251 3344	Vehicle/marine specialist
Lincolnshire	C F Parkinson (Boston) Ltd Marsh Lane, Riverside Industrial Est, Boston	(01205) 363 008	Vehicle specialist
	C F Parkinson (Lincoln) Ltd Outer Circle Road, Lincoln	(01522) 530 176	Vehicle specialist
Nottinghamshire	C F Parkinson (Newark) Ltd Brunel Drive, Northern Industrial Estate, Newark	(01636) 672 631	Vehicle specialist
	C F Parkinson (Nottingham) Ltd 80 Castle Boulevard, Nottingham	(0115) 947 6624	Vehicle specialist
Northamptonshire	Boating Leisure Services 609 Obelisk Rise, Kingsthorpe, Northampton	(01604) 843 904	Marine specialist
Shropshire	CPC Sommerfield Road, Trench Lock 3, Trench, Telford	(01952) 249 832	Vehicle specialist
Staffordshire	H Bowers Ltd Normacot Road, Longton, Stoke-on-Trent	(01782) 599 990	Vehicle/marine specialist
Cannock	J D Boat Services The Wharf, Watling Street, Gailey	(01902) 791 811	Marine only
Warwickshire	Carwood Motor Units Herald Way, Binley, Coventry	(024) 764 49 533	Vehicle specialist

5 Approved main dealers (UK)



Midlands	Company Address	Phone	
West Midlands	Carwood Motor Units Units 3-4, Willow Ct. Smethwick, Birmingham	(0121) 552 9524	Vehicle specialist
	LSUK (Tipton) Unit 23, Coneygre Industrial Estate, Birmingham New Road, Tipton	(0121) 557 9601	Vehicle specialist
Northern England			
Cheshire / N. Wales	T.C.L Rossfield Road, Rossmore Trading Estate, Ellesmere Port	(0151) 355 2101	Vehicle/marine specialist
Cumbria	Cumbria Auto Electrical Services Ltd Kingstown Broadway, Kingstown Trading Estate, Carlisle	(01228) 531 707	Vehicle/marine specialist
Greater Manchester	P F Jones Nuttall Street, Old Trafford, Manchester	(0161) 872 4755	Vehicle/marine specialist
Lancashire	Ribblesdale Auto Electrics Marsh Lane, Preston	(01772) 555 011	Vehicle/marine specialist
North Humberside	Humber Auto Electrics Unit 4, Unit Factory Estate, English Street, Hull	(01482) 227 025	Vehicle specialist
South Humberside	C F Parkinson (Grimsby) Ltd Estate Road Number 1, South Humberside Industrial Estate, Grimsby	(01472) 358 758	Vehicle specialist
North Yorkshire	Ripon Auto Electrics Blossomgate, Ripon	(01765) 602 253	Vehicle specialist
South Yorkshire	LSUK (Doncaster) Unit 9, Ten Pound Walk, Doncaster	(01302) 342 194	Vehicle specialist
	Sheffield Tachograph & Tail Lift Services Unit 4, Thornhill Industrial Park, Hope Street, Rotherham	(01709) 839 000	Vehicle specialist
Teeside	Auto Electrics (Teesside) Ltd Thornaby House, Thornaby Place, Thornaby	(01642) 607 901	Vehicle specialist
Tyne and Wear	Auto Electrical Solutions Hay Street, Sheepfold Ind Estate, Sunderland	(0191) 567 4040	Vehicle specialist
	R Thursby Limited Rutland Street, Sunderland	(0191) 565 8734	Vehicle specialist
West Yorkshire	Automotive Electrical Ltd Hopton Works, Station Road, Mirfield	(01924) 495 726/7	Vehicle/marine specialist
East Anglia			
Cambridgeshire	LSUK (Cambridge) 150 Cowley Rd Business Park, Cowley Rd	(01223) 438 190	Vehicle specialist
Essex	Colchester Fuel Injection Ltd Haven Road, Colchester	(01206) 862 049	Vehicle/marine specialist
Norfolk	Panks Auto Electrical 15 Heigham Street, Norwich	(01603) 629 967	Vehicle/marine specialist
Suffolk	LSUK (Ipswich) No. 7 Arkwright Road, Hadleigh Road Industrial Estate, Ipswich	(01473) 215 931	Vehicle specialist
South West England			
Avon	Halls Auto Electrical Limited Unit 16, Dean Road, Great Western Business Park, Yate	(01454) 319 722	Vehicle/marine specialist
	LSUK (Bristol) Short Street, Bristol	(0117) 977 0772	Vehicle specialist
Devon / Cornwall	Espar Limited Eastern Hanger, Plymouth Yacht Haven, Mount Batten, Plymouth	(01752) 491 900	Vehicle/marine Specialist
Gloucestershire	LSUK (Gloucester) Sparrows Wharf, Bristol Road, Gloucester	(01452) 524 951	Vehicle specialist
Somerset	Hickley Valtone Castle Street, Tangier, Taunton	(01823) 328 600	Vehicle specialist
Wiltshire	Masons Air Conditioning Limited Unit 6 - 14, Windmill Farm, Common Hill, Cricklade, Swindon	(01793) 752 033	Vehicle specialist

5 Approved main dealers (UK)

Scotland	Company Address	Phone	
Ayrshire	DDZ Marine Largs Yacht Haven, Irvine Rd, Largs	(01475) 686 072	Marine specialist
Glasgow	Auto Freeze Unit 5/6, Flemmington Ind Est, Hamilton Road, Cambuslang	(0141) 646 2777	Vehicle specialist
	Transcool 124 Lochend Road, Gartcosh, North Lanarkshire	(01236) 874 599	Vehicle specialist
Grampian	Taylor's Auto Electrics Fernhill Unit, Langstracht, Aberdeen	(01224) 662 424	Vehicle specialist
Highland	Caley Marina Canal Road, Muirtown, Inverness	(01463) 236 539	Vehicle/marine specialist
	LSUK (Inverness) Unit 5, 17 Harbour Road, Longman South, Inverness	(01463) 224 855	Vehicle specialist
Lothian	Fulton Auto Electrics 15 West Bowling, Green St, Edinburgh	(0131) 555 0396	Vehicle/marine specialist
Wales			
Glamorgan	Tanner Electrics Whittle Road, Leckwith Industrial Estate, Cardiff	(02920) 225 580	Vehicle specialist
Gwynedd	LSUK (Caernarfon) South Road, Caernarfon	(01286) 672 888	Vehicle specialist
South Glamorgan	LSUK (Cardiff) Glynstell Close, Hadfield Road, Cardiff	(02920) 228 361	Vehicle specialist
West Glamorgan	Shorts Auto Electrical (Swansea) 43-49 Station Road, Landore, Swansea	(01792) 469 595	Vehicle/marine specialist
Eire			
Dublin	Metalcove Marine 50, City Quay, Dublin 2	(00353) 1679 5477	Marine only
Naas	Coldchain Temperature Control Maudlins Industrial Estate, Naas	(00353) 4587 4788	Vehicle specialist
Co. Clare	Shannon Castle Line Williamstown Harbour, Whitegate	(00353) 6192 7042	Marine specialist
Co. Cork	Union Chandlery 4-5 Penrose Quay, Cork	(00353) 21455 4334	Marine specialist
Northern Ireland			
Belfast	C J Collins Auto Electrics 4 Ballymena Road, Doagh, Ballyclare	(02893) 352 556	Vehicle/marine specialist
Channel Islands			
Guernsey	Island Marine Craft Griffiths Yard, Rue Du Chateau, Northside, Vale	(01481) 294 294	Marine specialist
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