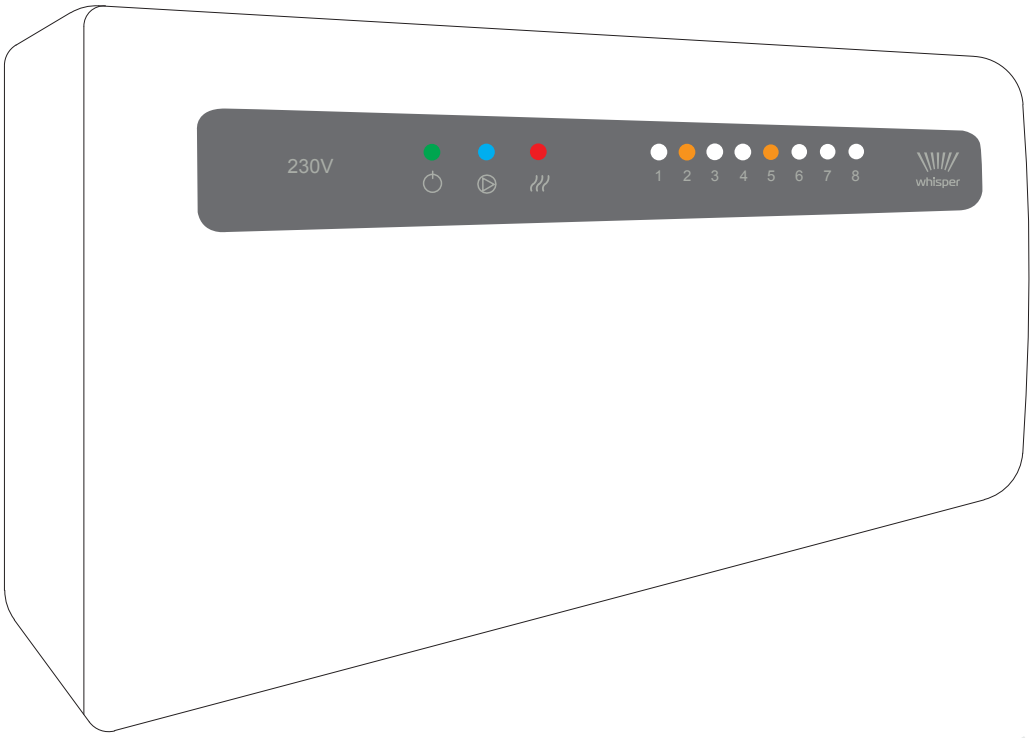
Installation Guide

KF-650 230v Essence 8 Way Wiring Centre



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KF-650 230v Essence 8 Way Wiring Centre

The KF-650 is a multi-zone wiring centre designed for use with underfloor heating and zonal heating systems. Its dimensions are 255mm x 120mm, and it has been engineered to make installation quicker and simpler. The KF-650 can operate any actuator or valve requiring a 230V AC signal. The volt-free heat source output providing seamless integration with a boiler or heat pump. Installation is made easy through a single captive screw and a quick release button, allowing fast access without the need for fully removing multiple screws. The unit also includes on board LED indicators to display system status at a glance, with distinct lights for power, pump, boiler/heat pump and zone activity. Additionally, the unit features dip switches for pump delay control, offering 0, 3, 4, or 5-minute options.

Technical Specification

Item	KF-650 230v Essence 8 Way Wiring Centre
Product Code	WCN8-0650
Dimensions	255mm x 120mm x 44.5mm
Voltage	230V AC 50Hz
Max Relay Load	NC 3A, NO 5A, 3Amp Pump/ 5Amp Boiler
Total Load Max	3A
Fuse Rating / Type	5Amp 20mm x 5mm Slow Blow/Time Delay (T)
Actuator Output	230V
Number of Zones	8
Actuators Per Zone	2
Boiler/Heat Source Connection	Volt Free
Pump Delay Options	0 min, 3 min, 4 min, 5 min
Protection Rating	IP20 (Pollution Degree 2, Class II)
Mounting Type	DIN Rail or Wall Mount
Ambient Temp Range	-20°C to 50°C
Compliance:	CE, Low Voltage Directive (LVD), EMC Directive (EMCD), RoHS Directive 2011/65/EU
Safety Standards:	EN IEC 62368-1:2020+A11:2020, EN IEC 60730-2-9:2019+A1:2019+A2:2020, EN 60730-1:2016+A1:2019+A2:2022, EN 60730-1 (9.3.1)
EMC Standards:	EN IEC 60669-2-1:2022+AC:2024-05, EN IEC 61000-3-2:2018, IEC 61000-3-3:2013+AMD1:2017

⚠ Safety ⚠

- **DANGEROUS VOLTAGES ARE PRESENT**. This document is intended for the use of suitably qualified and competent persons only.
- Installation, commissioning, maintenance, and testing must be carried out by individuals who meet the relevant **UK professional requirements**.
- All electrical work is **MANDATORY** to be carried out in strict accordance with:
  - The Electricity at Work Regulations 1989.
  - **BS 7671 (IET Wiring Regulations)**, current edition.
  - The requirements of **Part P of the Building Regulations** and all other relevant UK standards and Codes of Practice.
- **Prior to any work, the installer must**:
  - **Isolate**: Safely isolate all circuits from the power supply, **Prove Dead**, and secure against inadvertent re-energisation (e.g., Lock Out, Tag Out procedures).
  - **Assess**: Complete a thorough risk assessment.
  - **PPE**: Ensure appropriate Personal Protective Equipment (PPE) is worn.
- Failure to comply with these requirements may result in serious injury or death.

Disposal

Do not dispose of this product or its batteries in household waste; please use local WEEE and battery recycling schemes.

Appearance

- The KF-650 8 Way Wiring Centre is finished in **White**.
- It features an integral black display panel with onboard LED indicators.
- **Dimensions** are 255mm (width) x 120mm (height) x 44.5mm (depth).
- Installation access is achieved via a hinged cover secured by a single captive screw and a quick-release button to below 1.2 meters to comply with accessibility standards.

Functionality

The KF-650 is a **multi-zone wiring centre** designed for use with **underfloor heating** and zonal heating systems.

- It can operate any actuator or valve requiring a **230V AC signal**.
- **LED Indicators** display system status at a glance:
  - **Power**: Green ('ON').
  - **Pump Active**: Blue
  - **Boiler/Heat Pump Active**: Red.
  - **Zone Activity**: Orange.
- It provides a **volt-free heat source** output for seamless integration with a boiler or heat pump.

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Pump Delay

The KF-650 features a pump delay function that helps protect the boiler and optimise system performance. This can be configured using a series of dip switches located on the main printed circuit board (PCB). You can select from clearly defined delay options of 0, 3, 4, or 5 minutes.

Connections

Mains Supply

Power supply into the KF-650, which should be fused at 5 amps, these connections are;
L = Live or phase 230v AC 50/60Hz
N = Neutral
Earth Parking Terminal strip is located on the left hand side of the board.

UFH Pump

Used for an underfloor heating manifold pump, connections are;

L = Live

N = Neutral

The pump is Earthed via the left hand terminal strip When an under-floor heating zone sends a call for heat to the KF-+60, the live & neutral output will supply 230v to the manifold pump once the pump delay time has passed. It is recommended that this is fed through a high limit switch placed on the heating manifold, to protect against mechanical failure of the manifolds temperature control.

Boiler / Heat Pump Connection - Volt Free

This is the main call for heat for the system, there are 3 connections;
COM = Common
NC = Normally Closed
NO = Normally Open
Electrically this is a volt free switch, whatever supply is placed on the COM connection, is fed to the NO connection when there is a call for heat. For example, boiler permanent live (12v, 24v or 230v) is connected to COM, the NO is wired to the boiler switch live and will return the voltage supplied to COM, to the boiler to call for heat. For safety, the power to the heat source and wiring centre must originate from the same spur.

High Limit Protection

It is recommended that a high limit device is fitted when using this product for Underfloor Heating Systems. This will protect against mechanical failure of the manifolds temperature control. This is particularly advisable when using delicate floor coverings, floors with adhesives and wooden floors.

UFH Valve

If you intend to use a zone valve for the Underfloor Heating / zonal Heating System. This can be wired in using the Pump connections and earth terminal strip.
Typical 2 Port Zone Valve Wiring
L = Live - Connect to Pump Live
E = Earth - Connect to Earth Terminal Strip
N = Neutral - Connect to Pump Neutral
Gr = Grey- Permanent Live (from Heat Source)
If you are utilising a zone valve to enable the heat source, wiring to the Boiler Terminals can be omitted.

Fuses

Fuse 5amp, 30mm anti-surge fuse, this fuse supplies power to all 230v outputs from the board it protects the zone, pump/valve outputs. Outputs are 3Amp rated, NC (Boiler) is 3Amp, NO (Boiler) is 5Amp.

Location and Mounting

When choosing the location for the wiring centre, it's crucial to select a dry, accessible area that is protected from potential water ingress. Do not install the unit directly beneath a heating manifold or in any other location where it could be exposed to leaks or spills.

Consider the following technical details to ensure a professional and functional installation:
Cable Lengths: The unit should be mounted within 1 metre of the actuators and manifold to avoid the need for cable extensions, which adds complexity and potential points of failure.
Maintenance Access: Ensure the chosen location allows for easy access for future maintenance, fault-finding, and commissioning. Avoid cramped or hard-to-reach spaces. The hinged cover should have sufficient clearance to open fully.
Ambient Temperature: Install the unit in a location where the ambient temperature remains within the specified operating range of 5°C to 35°C.
The installer must also consider the installation location in relation to protection against thermal effects, as extremes of temperature can affect the performance and longevity of the internal electronic components and wiring.

Installation

Mount the Unit

Secure the wiring centre to the wall using the provided screws or by mounting it onto a DIN rail.

Prepare Cable Entries

Remove the required number of knockout panels located on the bottom and sides of the unit to accommodate your cables.

Secure Cables

Thread cable ties through the designated cable brace points. These should be left loose until all testing is complete.

Connect Wiring

Connect the main power supply, pump, actuators, and thermostats to their respective terminals.

Test the System

Power on the unit and test each zone individually to confirm correct operation.

Connect Heat Source

Once correct operation of all zones is verified, connect the heat source or zone valve. Refer to the manufacturer's specific wiring requirements for the heat source.

Final Checks

Perform a final check to ensure the entire system is functioning correctly and as intended.

Secure the cables with the cable ties

Brace the cables within the unit using the provided cable ties. Lock the ties in place to prevent the cables from being pulled from their terminals. This is a critical safety step to ensure mechanical stability and minimise the risk of electric shock.

Secure the Cover

When you are satisfied with the system's operation, secure the hinged cover using the single captive screw. The system is now ready for commissioning.

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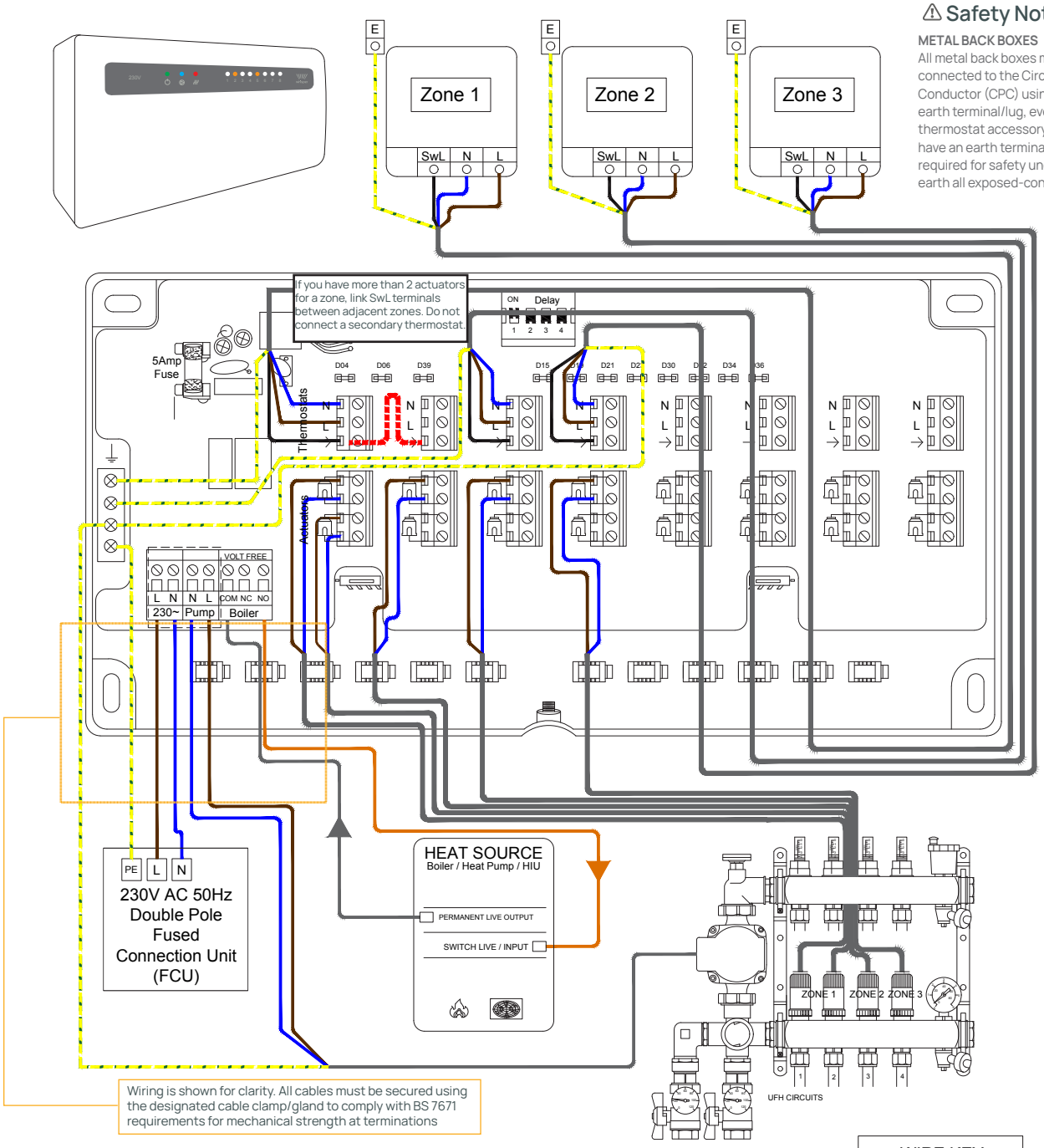

⚠ Safety Note ⚠

METAL BACK BOXES
All metal back boxes must be connected to the Circuit Protective Conductor (CPC) using the box's earth terminal/lug, even if the thermostat accessory does not have an earth terminal. This is required for safety under BS 7671 to earth all exposed-conductive-parts.

CONNECTION TO THE HEAT SOURCE

Volt Free Connection (Default)
The KF-650 boiler connection is a volt-free contact. For standard boiler/Heat Pump / HIU control, connect the permanent live feed (from the Heat Source) to the COM terminal. The NO (Normally Open) terminal will then provide the switched live signal back to the boiler when heat is demanded.230 V

Switched Output
Where a 230 V switched output is required, connect an external 230 V Live conductor to the COM terminal. The NO terminal will then switch this 230 V Live to the heat source

⚠ SAFETY CRITICAL WARNING: 230 V External Feed ⚠

1. The external 230 V Live feed connected to the COM terminal must originate from the same final circuit/isolator as the heat source (boiler/pump) being controlled.
2. If the wiring centre is supplied via an isolation point separate from the boiler's isolation point, the presence of the external 230 V link creates a high risk. This link MUST NOT compromise the ability to safely isolate the boiler by its local isolator.
3. Where a link is installed, a permanent warning label must be affixed at the local isolation point of the boiler/heat source, clearly stating that an external 230 V feed is present on the control wiring. This is required to ensure compliance with isolation and labelling provisions of BS 7671.

WIRE KEY	
	230V Outer
	Live
	Neutral
	Earth
	230V Switch Live
	Output
	Input

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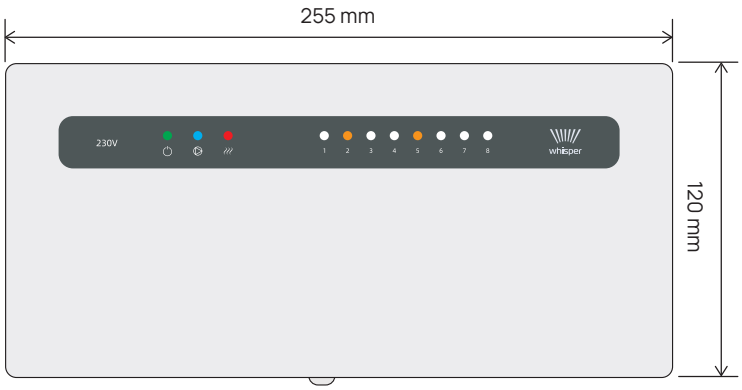
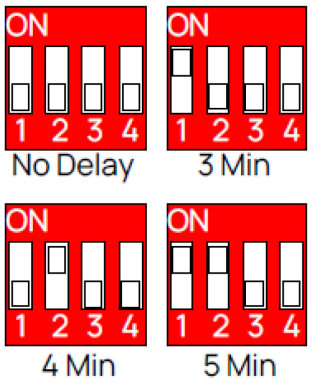
Dimensions

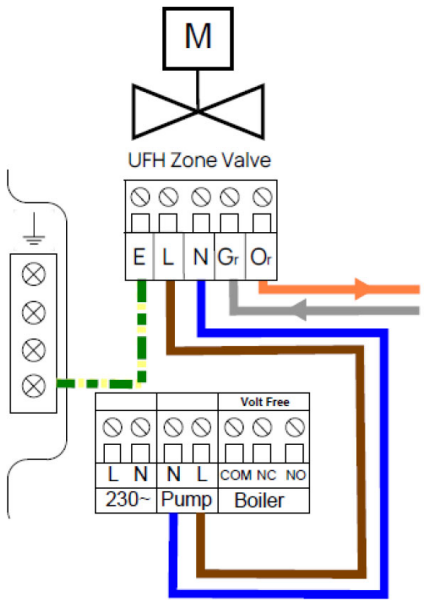


- Green - Wiring Centre On
- Blue - Pump Active
- Red - Boiler/Heat Pump Active
- 1-8 Orange - Zone Activity

Jumper Functions



Zone Valve Wiring Detail



Installer FAQs

Power & Lights

Q: The green power light is off
A: Check the main supply fuse. The unit requires a fuse on the mains supply line. Ensure the supply is live and correctly connected to the and terminals.

Q: No orange zone lights are coming on when I call for heat.
A: Verify the main power supply connections (**Live, Neutral and Earth**) are secure. Check that the thermostat's output is connected correctly to the respective zone's SwL (Switch Live) and Neutral (**N**) inputs. The onboard LEDs

display system status at a glance.

Boiler & Pump

Q: The boiler/heat pump is not firing when a zone demands heat.
A: The output is volt-free (or low-voltage) unless an external feed is linked to COM. Ensure the permanent live from the heat source is correctly wired to the KF- 650's COM terminal and the Switched Live is wired to NO.

Q: The pump output light (Blue) is on, but the pump isn't starting immediately.
A: Check the Pump Delay dip switches. The pump will only receive after the set delay time, which can be configured for 0,3,4 or 5 minutes.

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User Guide
Understanding the System Status (LED Indicators)

The KF-650 Wiring Centre is designed to operate without any input from you, the homeowner. The lights on the front of the unit provide a quick visual check of the system's status.

LED Indicator	Colour	Status Meaning (Normal Operation)
Power	Green	The unit has a mains power supply and is switched ON.
Zone 1 - 8	Orange	A thermostat in that specific zone is calling for heat, and the actuator/valve for that zone is opening.
Pump	Blue	The underfloor heating pump has been instructed to run.
Boiler / HP	Red	The system is requesting heat from the heat source (e.g., boiler or heat pump).

Pump and Boiler Delay

To help protect your boiler and optimise the system's performance, the KF-650 may include a short delay between a call for heat and the pump/boiler activating.

- If a zone calls for heat, the corresponding Orange Zone light will come on immediately.
- The Blue (Pump) and Red (Boiler/HP) lights may take between 3 and 5 minutes to switch on, depending on how the unit was configured by your installer. This delay is normal and is not a fault.

⚠ IMPORTANT SAFETY WARNING ⚠

DO NOT REMOVE THE COVER

The KF-650 Wiring Centre contains dangerous 230V voltages.

- Under no circumstances should the homeowner or any unqualified person attempt to remove the cover or access the internal wiring of this unit.
- If you suspect a fault, or if the unit is not operating as expected, you must immediately turn off the power to the system at the main isolation switch.
- Please contact a suitably qualified and competent electrician to inspect the unit and carry out any necessary maintenance or fault-finding.

⚠ ELECTRICAL SAFETY NOTICE: DANGEROUS VOLTAGES PRESENT ⚠

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COMPLIANCE IS MANDATORY: All electrical work must be carried out in strict accordance with:

- The Electricity at Work Regulations 1989.
- BS 7671 (IET Wiring Regulations), current edition.
- The requirements of Part P of the Building Regulations and all other relevant UK standards and Codes of Practice.

PRIOR TO ANY WORK, THE INSTALLER MUST:

1. ISOLATE: Safely isolate all circuits from the power supply, Prove Dead, and secure against inadvertent re-energisation (e.g., Lock Out, Tag Out procedures).
2. ASSESS: Complete a thorough risk assessment.
3. PPE: Ensure appropriate Personal Protective Equipment (PPE) is worn.

FAILURE TO COMPLY WITH THESE REQUIREMENTS MAY RESULT IN SERIOUS INJURY OR DEATH.

Product Support: 01993 640073

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Download a digital version of this manual or to find out more about our range of controls:
www.whispercontrols.com

Activate Your Warranty

To validate the 5-Year Warranty on your Whisper Controls product, you must register your installation within 7 days of fitting.

Key Conditions for a Valid Claim:

The warranty is offered subject to the following conditions:

Installation: Must be carried out by a UK qualified professional with relevant electrical competence and conform to BS 7671: 18th Edition IET Wiring Regulations.

Building Regulations: Installation must comply with Part P of the Building Regulations in England and Wales.

Indemnity: The warranty includes compensation for proven manufacturing defects up to a £5,000,000 limit of indemnity per incident.

To register your product and for full terms, conditions, please visit our website.

www.whispercontrols.com/productregistration