

Series 1 | March 2024



The Unico System®

# ELECTRICAL + MECHANICAL LAYOUTS *for Select Pairings of:*

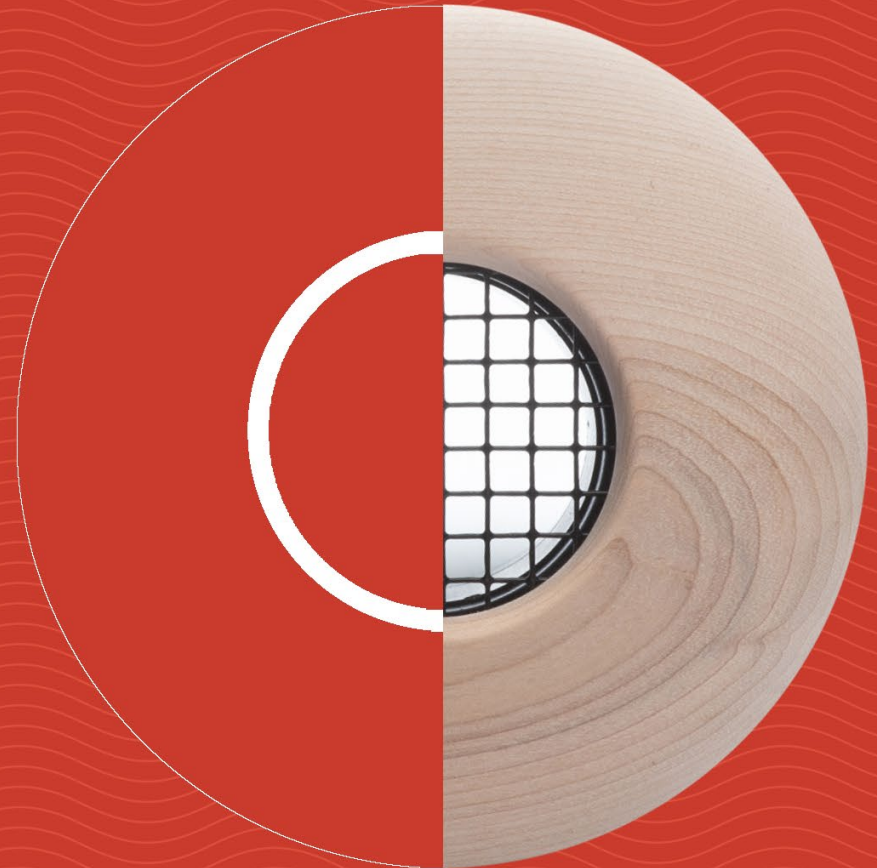
**Daikin**

Air-to-Water Heat Pumps

+

**The Unico System®**

Small Duct Central Heating & Cooling



## **Declaration of Eligibility**

We confirm that the Unico and Daikin match-up qualifies for the Domestic Renewable Heat Incentive (RHI) scheme. As a result, customers who install this system are eligible for a government grant of up to £7,500 to support the adoption of renewable heat technologies.

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**Unico System UK and Daikin Industries UK** created a joint specification that provides a superior renewable energy heating, cooling, and ventilation solution for the UK.

The Unico is a simple solution offering instant heating, cooling, and ventilation along with improved air quality and well-being. Unico is a central air distribution system made up of small ducts that mix and deliver conditioned air into the living space. The UNICO System replaces the need for traditional radiators and underfloor heating with the added option of cooling your property when installed with the appropriate Air Source Heat Pump. As with all significant investments you should always do your research to ensure you select the very best system for your home and personal lifestyle.

The Daikin Altherma High Capacity monobloc is an All-in-one heating, cooling and hot water heat pump with high energy efficient controls and functionality. The monobloc units are hermetically sealed which enables non-refrigerant (f-gas) qualified engineers to install them. The specification provides the ability to heat, cool and ventilate the property using the Unico System via an air to water heat pump. The heating and cooling function is provided using a chilled water coil within the Unico modular set-up. The Unico system can be fitted with the additional fresh air intake damper to regulate the input of fresh air into the unit for filtration and conditioning before entering the building. Additional features to this system are priority hot water generation from the same heat pump. The application of priority hot water is to switch the mode of operation to hot water from heating or cooling to re-heat the cylinders temperature. This function always ensures the homeowner has hot water available at all times. The system comprises of a Daikin Altherma High capacity monobloc heat pump and the Unico small duct high velocity system.

The operational services for these matchups are:

Low carbon renewable heating, cooling and hot water solution incorporating the Unico System small duct high velocity system. With:

- Weather dependant comfort control
- Heating & cooling operation
- Heating water temperatures to < 60 degrees
- Chilled water temperatures to < 7 degrees
- Internal circulating pump with delta t ( $\Delta t$ ) controls
- 2-zone control management

Priority hot water generation – This means that the hot water generation has priority over heating and cooling.

- Reheat and schedule functions
- Built-in legionella protection
- Powerful operation boost control for fast reheat

The Unico System small duct HVAC, providing a central air distribution system to the entire building envelope delivering heating, cooling, and ventilation.

- Centrally distributed conditioned air
- Draft-free operation
- Whisper quiet technology
- Continuous air filtration for enhanced indoor air quality (IAQ)
- Intelligent fresh air input control for ventilation
- Hi and low fan speed control
- Humidity reduction
- Cooling management control valve

# The Unico System<sup>®</sup> + Daikin Altherma

## High-Capacity Heat Pump

DKN.HC.DHW.UCO.CM.DIR

Daikin High-Capacity Domestic Hot Water with  
The Unico System Central HVAC & Cooling Management

*Mechanical System & Electrical System Diagrams*

◦ System *Reference Code*

DKN.HC.DHW.UCO.CM.DIR

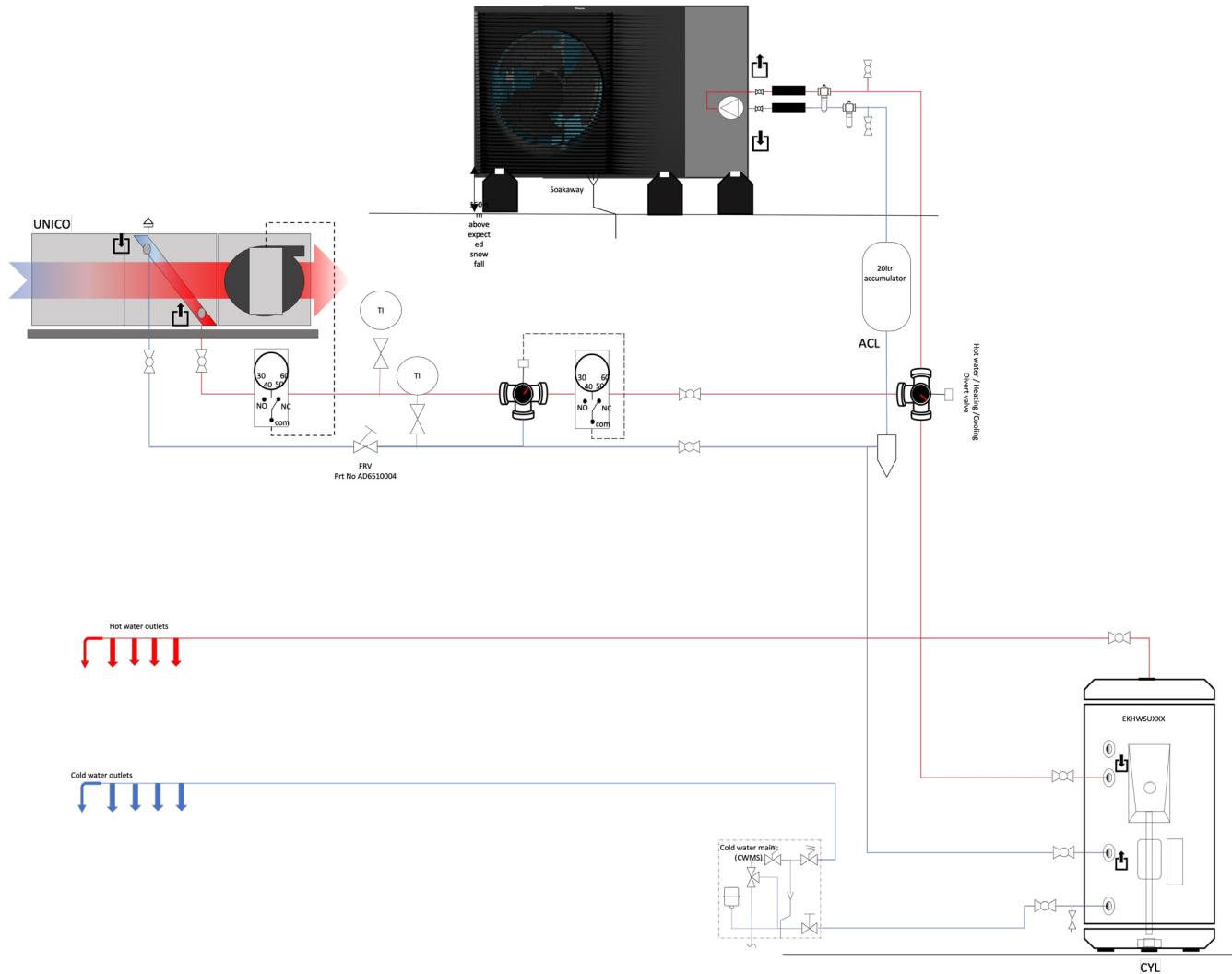
◦ System *Description*

This system comprises of a Daikin Altherma high-capacity monobloc heat pump and The Unico System small duct high velocity central heating and cooling system. The operational services are:

- Priority hot water generation – This means that the hot water generation has priority over heating
- The Unico System
- providing a central air distribution system to the entire building envelope delivering heating cooling, and ventilation
- A cooling management controller to allow the heat pump to change over from hot water generation to cooling without allowing heated water to pass through the Unico system

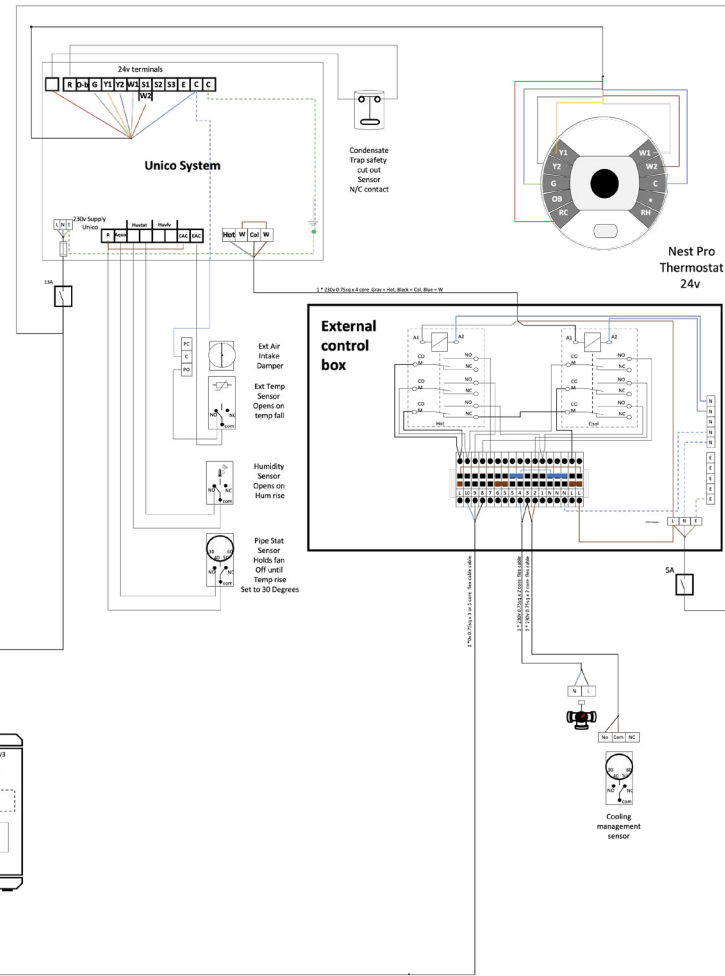
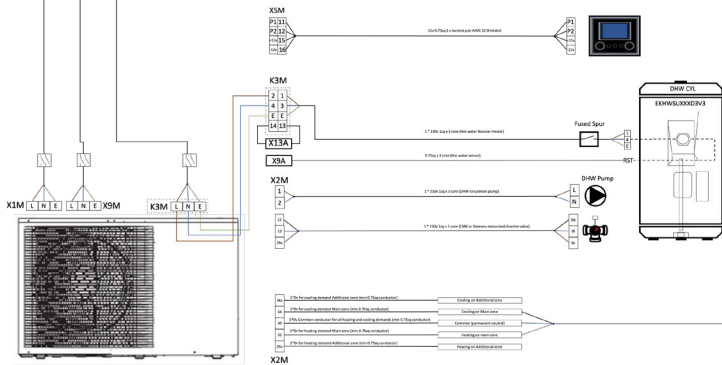
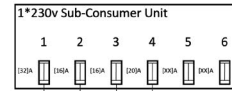
This system has been designed to utilise the internal circulating pump within the heat pump. The purpose is to gain efficiency from the  $\Delta t$  controlled pump and ensure the correct capacity of heat energy is delivered to the hot water cylinder and the Unico System air handler.

# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management Mechanical System Layout

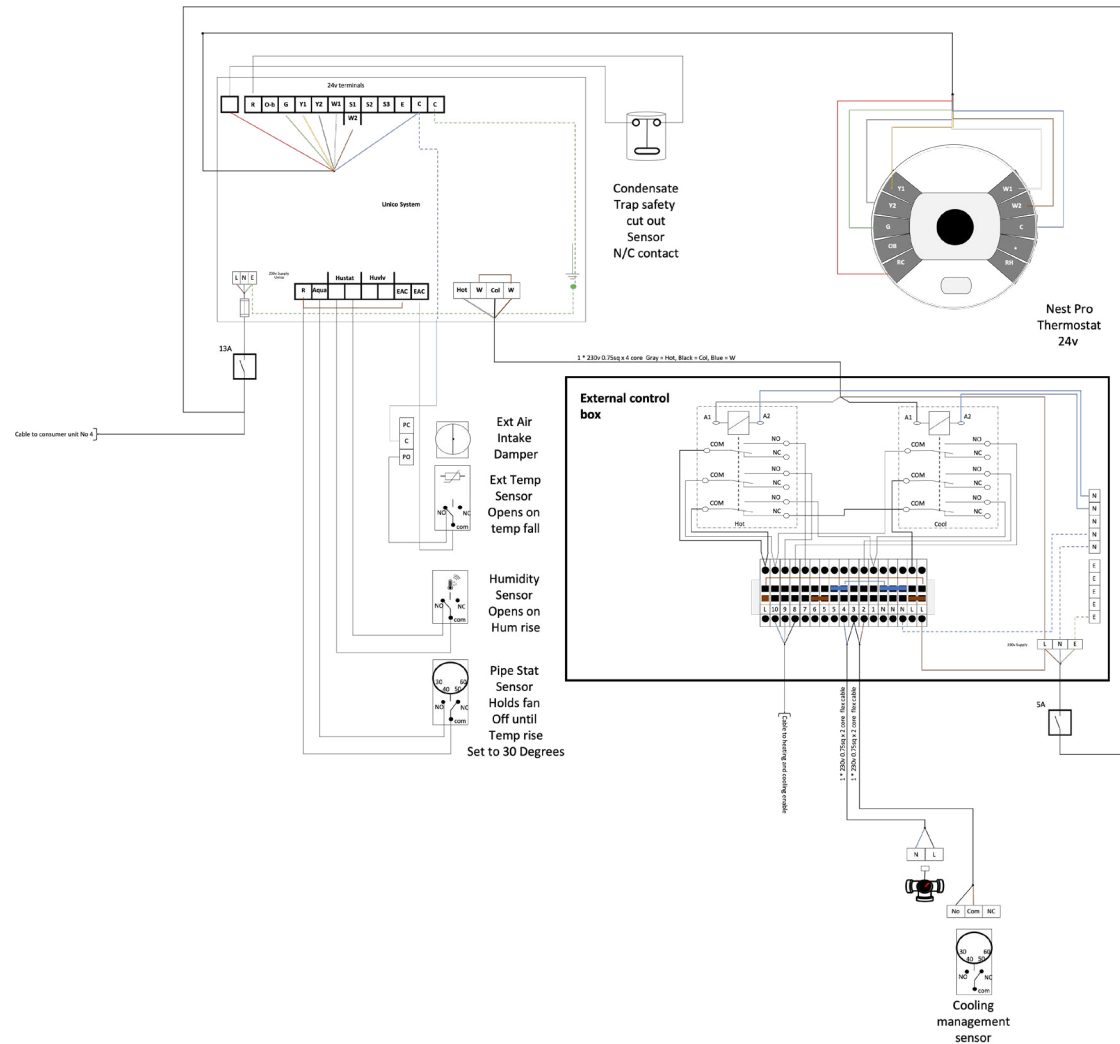


# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management Electrical System Layout: Overview

Ref	Description	Voltage and cable requirements	Protection requirements
1	Mains to Compressor	1*230v 4.0sq. x 3 core cable T&E, NYY or SWA	32 amp to MCB or RCBO
2	Mains to Internal back up heater (BUH)	1*230v 2.5sq x 3 core cable T&E, NYY or SWA	16 amp to MCB or RCBO
3	Mains to Hot water booster heater	1*230v 2.5sq x 3 core cable T&E, NYY or SWA	16 amp to MCB or RCBO
4	Mains to external controls Unico system	1*230v 2.5sq x 3 core cable T&E, NYY or SWA	20 amp to MCB or RCBO
5	Spare	1*230v 10.0sq x 3 core cable T&E, NYY or SWA	63A amp to MCB or RCBO
6	Spare	1*230v 12.0sq x 3 core cable T&E, NYY or SWA	100A amp to MCB or RCBO

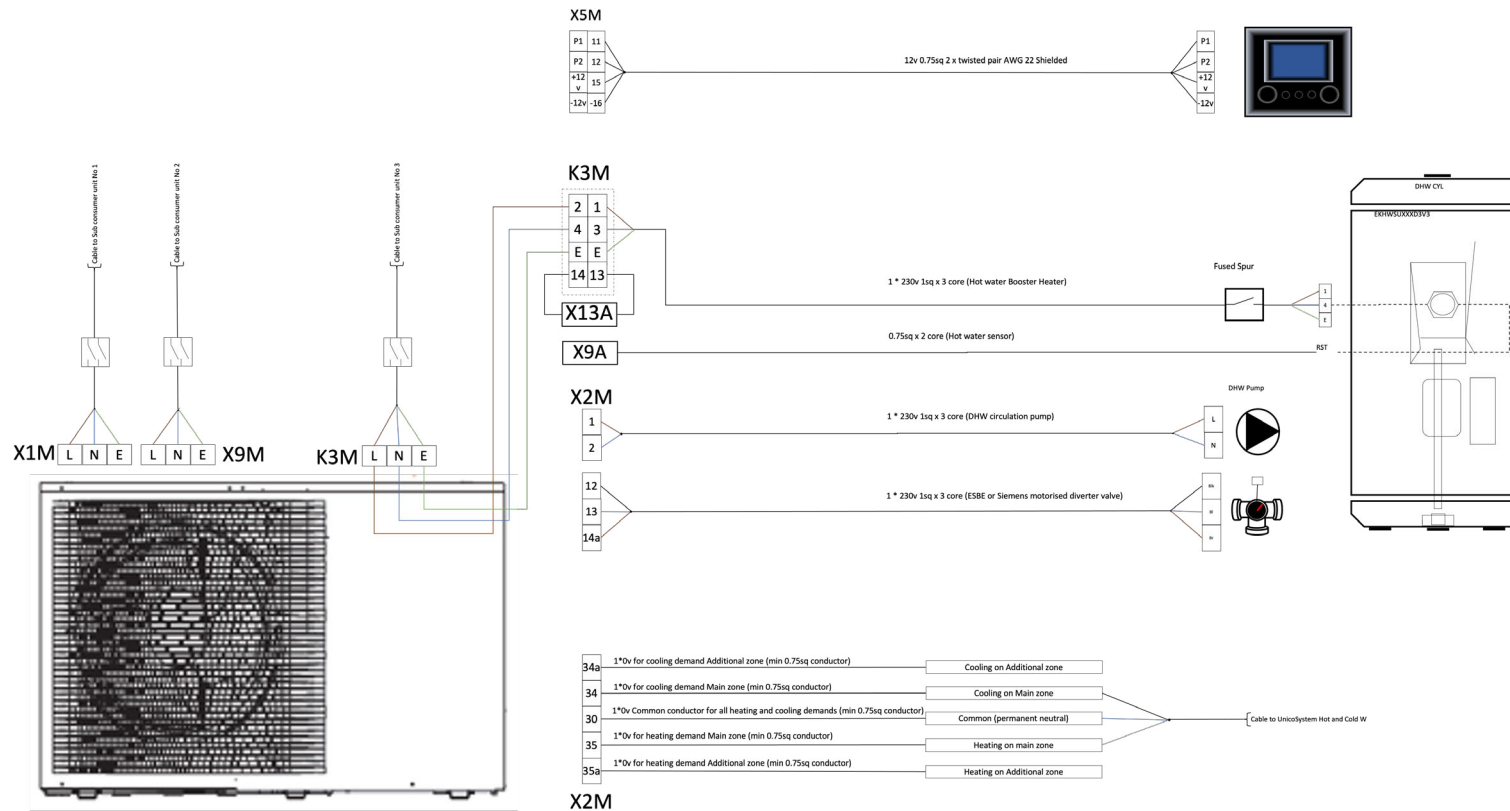


# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management Electrical System: Detail 1

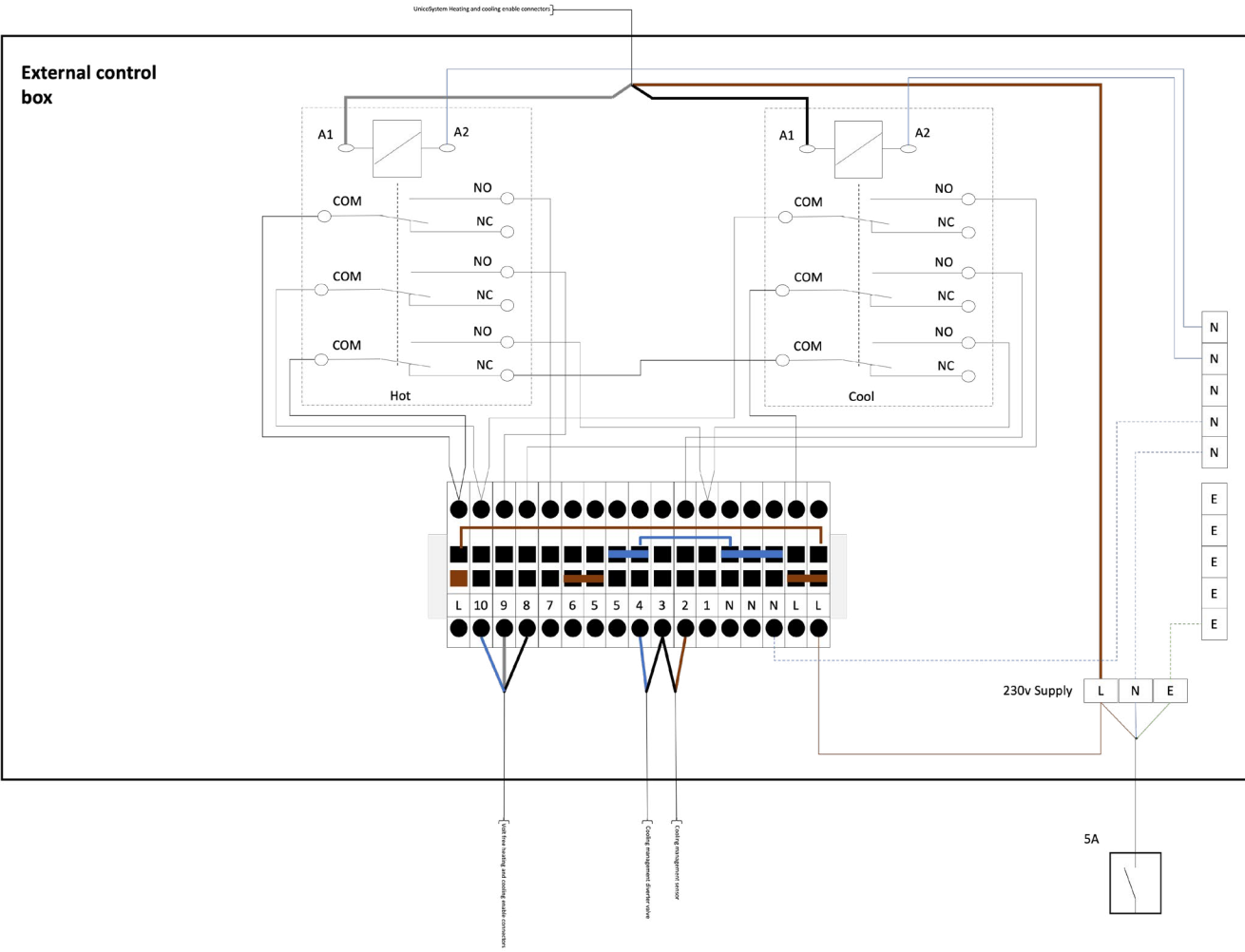




# Daikin Altherma 3 High Capacity + Domestic Hot Water + The UnicoSystem + Cooling Management Electrical System: Detail 2



# Daikin Altherma 3 High Capacity + Domestic Hot Water + The UnicoSystem + Cooling Management Electrical System: Detail 3



# The Unico System<sup>®</sup> + Daikin Altherma

## High-Capacity Heat Pump

DKN.HC.DHW.UCO.CM.RAD.DIR

Daikin High-Capacity Domestic Hot Water with  
The Unico System Central HVAC & Cooling Management & Radiators

*Mechanical System & Electrical System Diagrams*

◦ System *Reference Code*

DKN.HC.DHW.UCO.CM.RAD.DIR

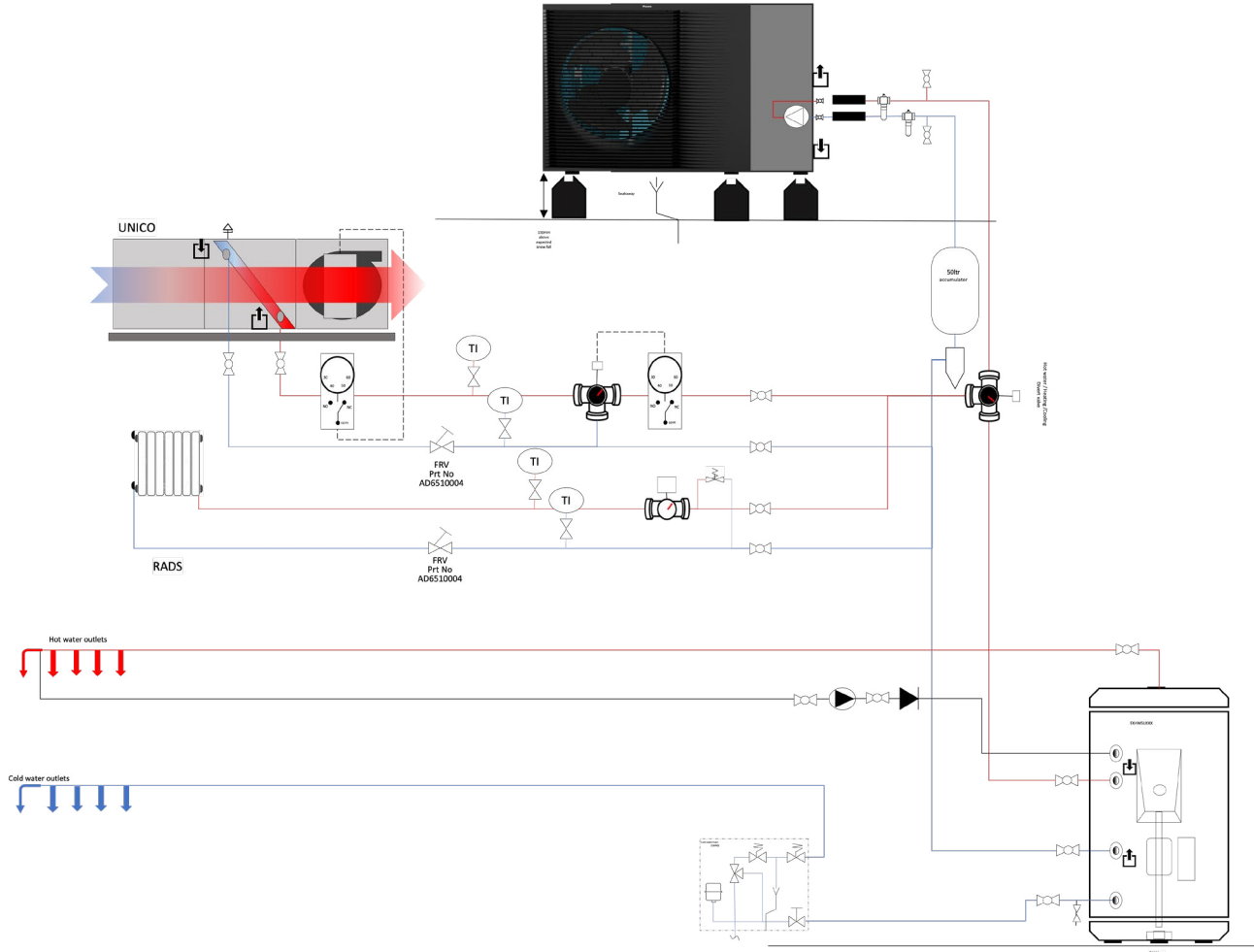
◦ System *Description*

This system comprises of a Daikin Altherma high-capacity monobloc heat pump and The Unico System small duct high velocity central heating and cooling system. The operational services are:

- Priority hot water generation – This means that the hot water generation has priority over heating
- The Unico System, providing a central air distribution system to the entire building envelope delivering heating cooling, and ventilation
- A cooling management controller to allow the heat pump to change over from hot water generation to cooling without allowing heated water to pass through the Unico system
- The Unico System chilled water coil to provide hot water for radiators

This system has been designed to utilise the internal circulating pump within the heat pump. The purpose is to gain efficiency from the  $\Delta t$  controlled pump and ensure the correct capacity of heat energy is delivered to the hot water cylinder and the Unico System air handler.

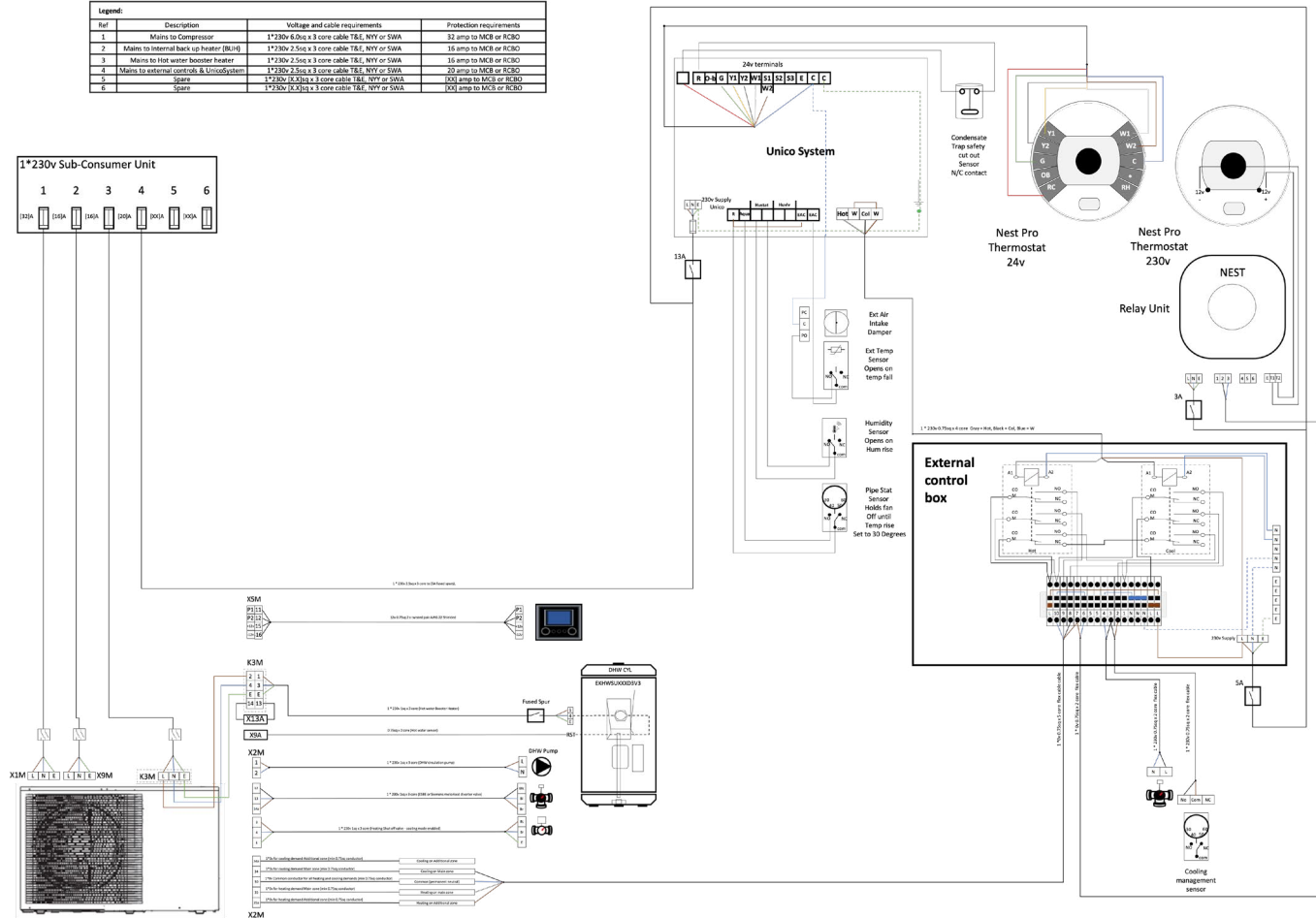
# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Radiators Mechanical System Layout



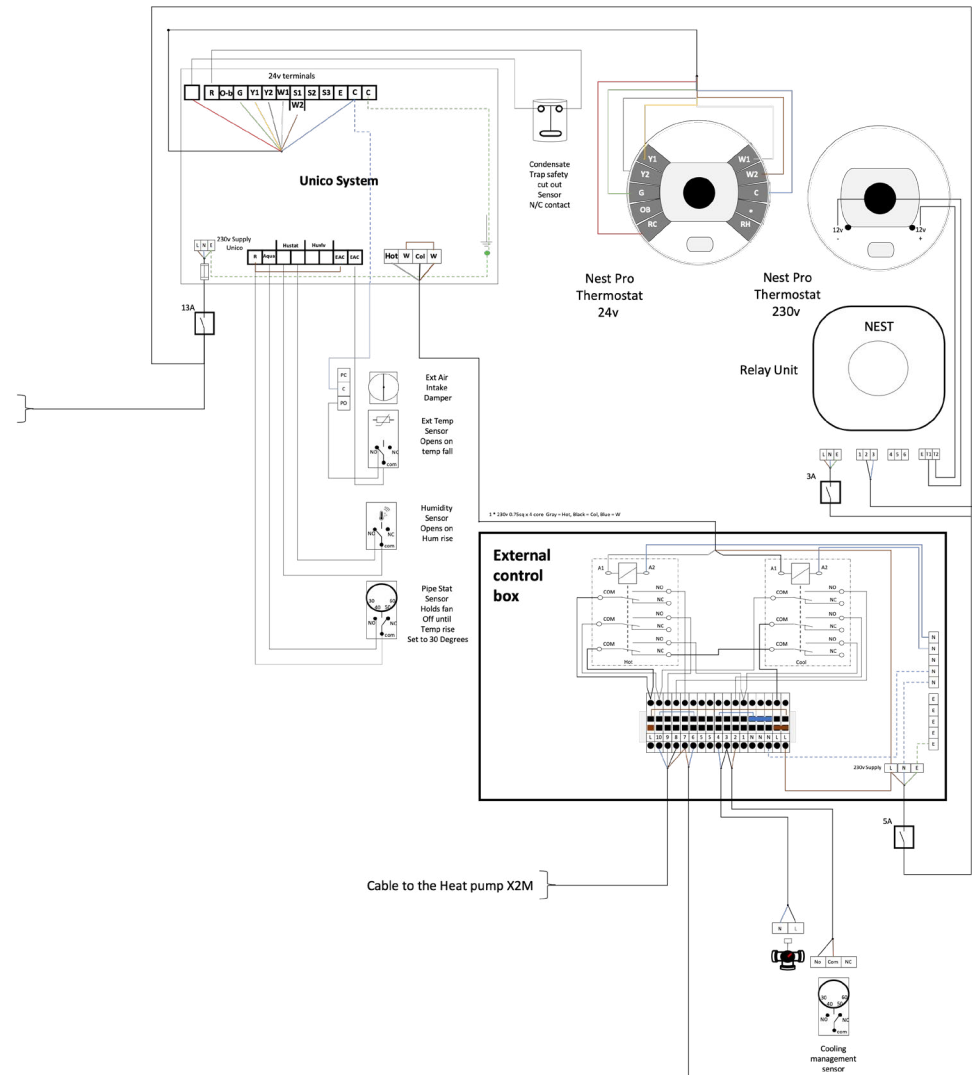
# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Radiators Electrical System Layout: Overview

**Legend:**

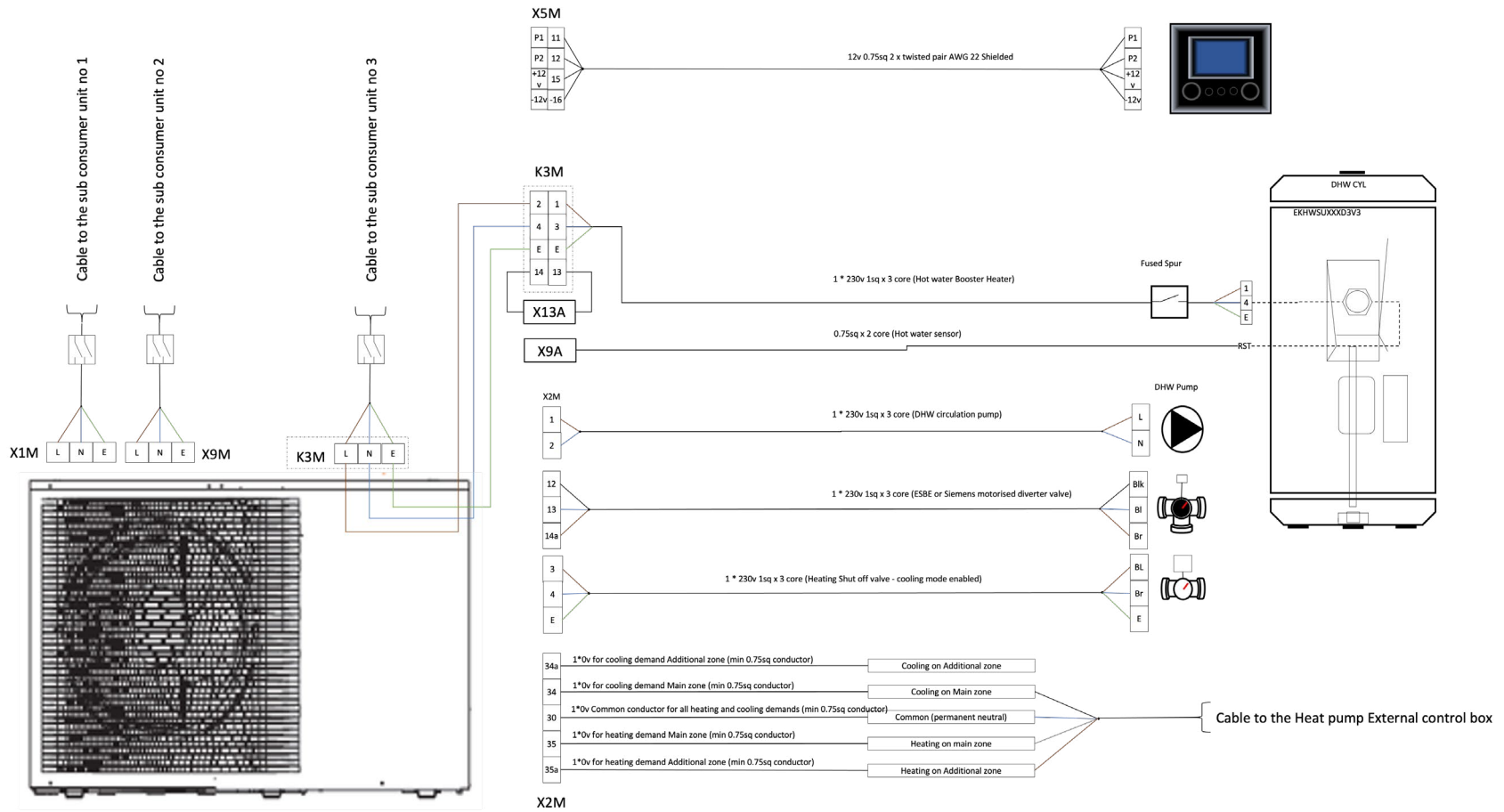
Ref	Description	Voltage and cable requirements	Protection requirements
1	Mains to Compressor	1*230v 6.0sq x 3 core cable T&E, NY or SWA	32 amp to MCB or RCBO
2	Mains to Internal back up heater (BUH)	1*230v 2.5sq x 3 core cable T&E, NY or SWA	16 amp to MCB or RCBO
3	Mains to Hot water booster heater	1*230v 2.5sq x 3 core cable T&E, NY or SWA	16 amp to MCB or RCBO
4	Mains to external controls & Unico system	1*230v 2.5sq x 3 core cable T&E, NY or SWA	20 amp to MCB or RCBO
5	Spare	1*230v 1.5sq x 3 core cable T&E, NY or SWA	10A amp to MCB or RCBO
6	Spare	1*230v 1.5sq x 3 core cable T&E, NY or SWA	10A amp to MCB or RCBO



# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Radiators Electrical System: Detail 1



# Daikin Altherma 3 High Capacity + Domestic Hot Water + Unico System + Cooling Management + Radiators Electrical System: Detail 2







# The Unico System<sup>®</sup> + Daikin Altherma

## High-Capacity Heat Pump

DKN.HC.DHW.UCO.CM.UFH.DIR

Daikin High-Capacity Domestic Hot Water with  
The Unico System Central HVAC & Cooling Management & Under Floor Heating

*Mechanical System & Electrical System Diagrams*

◦ System *Reference Code*

DKN.HC.DHW.UCO.CM.UFH.DIR

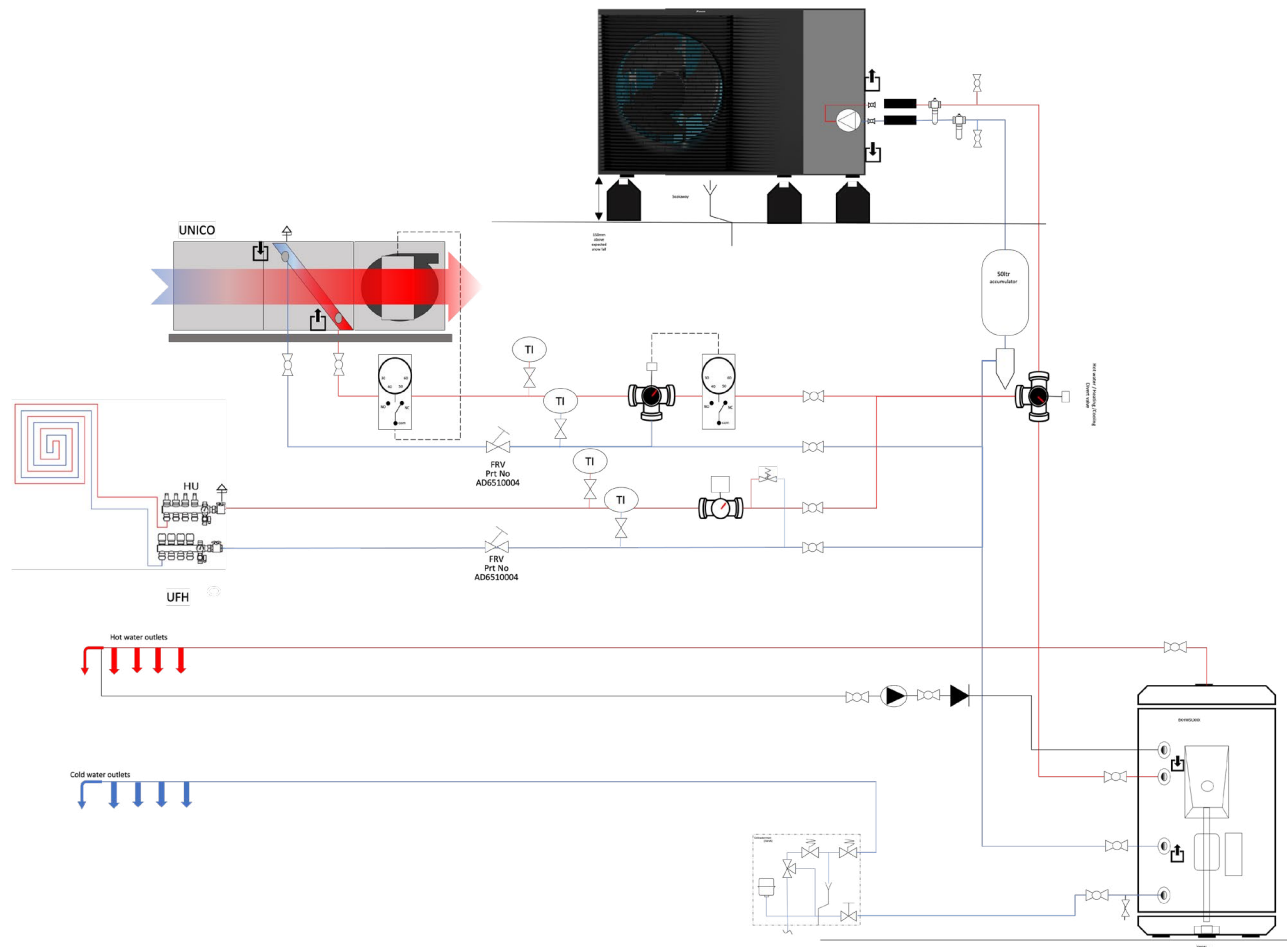
◦ System *Description*

This system comprises of a Daikin Altherma high-capacity monobloc heat pump and The Unico System small duct high velocity central heating and cooling system. The operational services are:

- Priority hot water generation – This means that the hot water generation has priority over heating
- The Unico System, providing a central air distribution system to the entire building envelope delivering heating, cooling, and ventilation
- A cooling management controller to allow the heat pump to change over from hot water generation to cooling without allowing heated water to pass through the Unico system
- The Unico System hydronic coil providing hot water for under floor heating

This system has been designed to utilise the internal circulating pump within the heat pump. The purpose is to gain efficiency from the  $\Delta t$  controlled pump and ensure the correct capacity of heat energy is delivered to the hot water cylinder and the Unico System air handler.

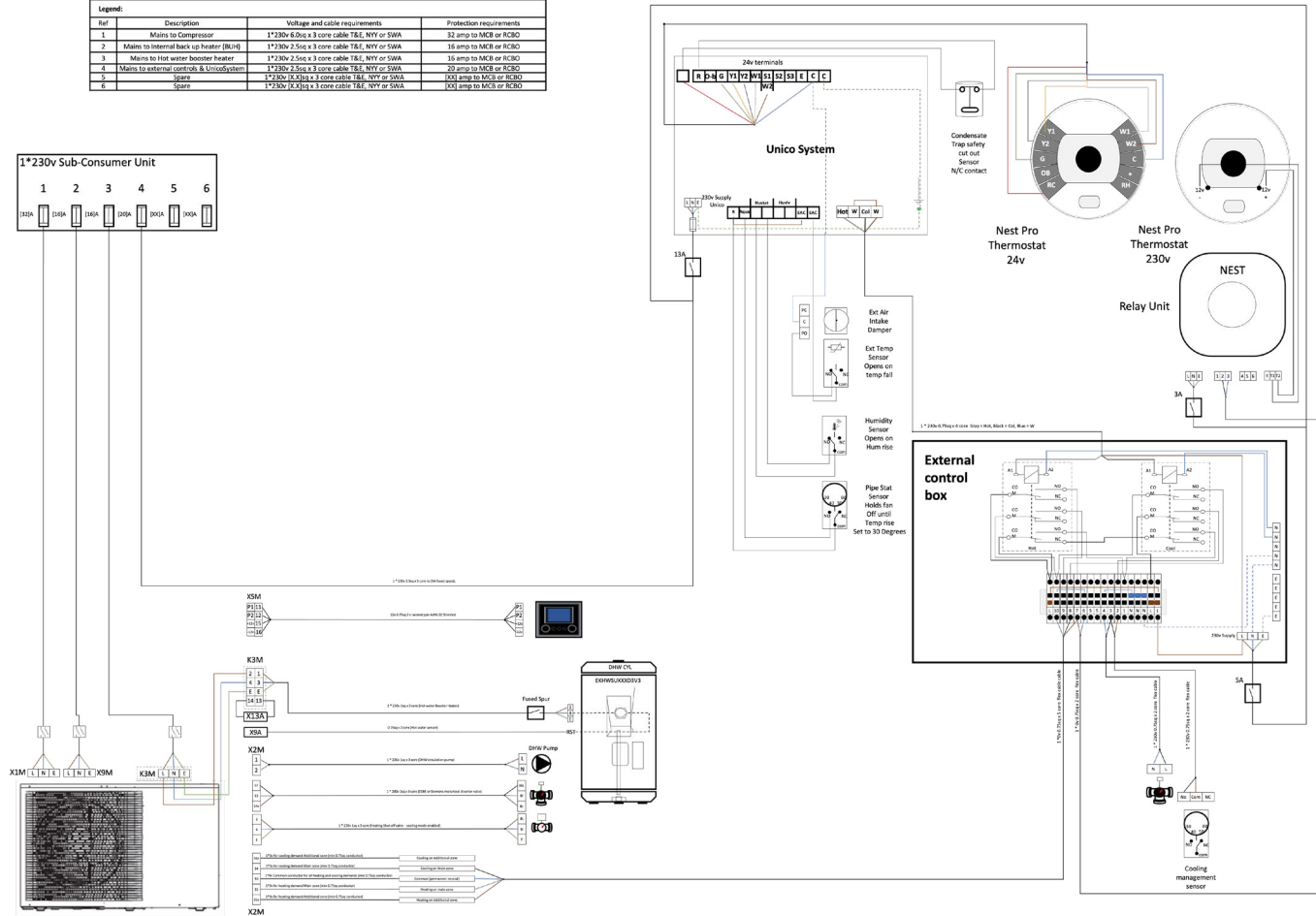
# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Under Floor Heating Mechanical System Layout



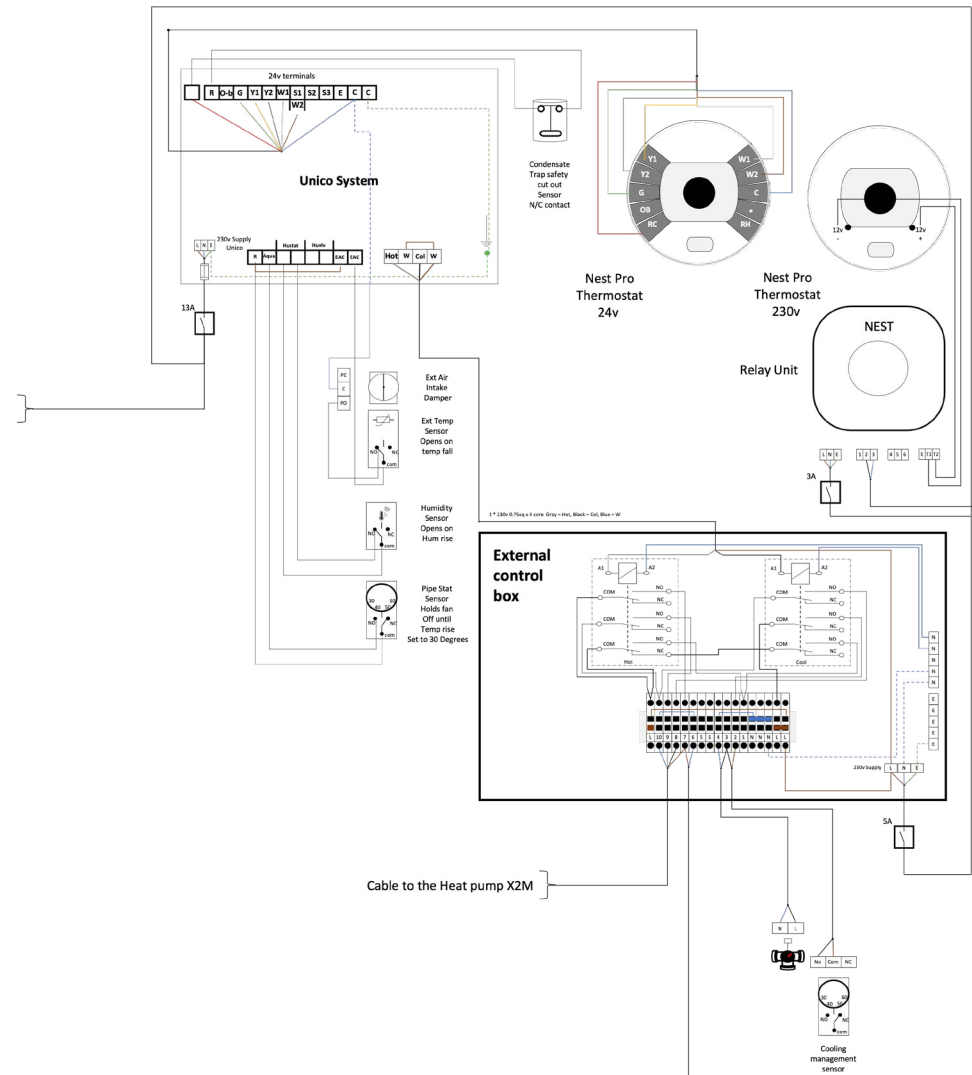
# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Under Floor Heating Electrical System Layout: Overview

**Legend:**

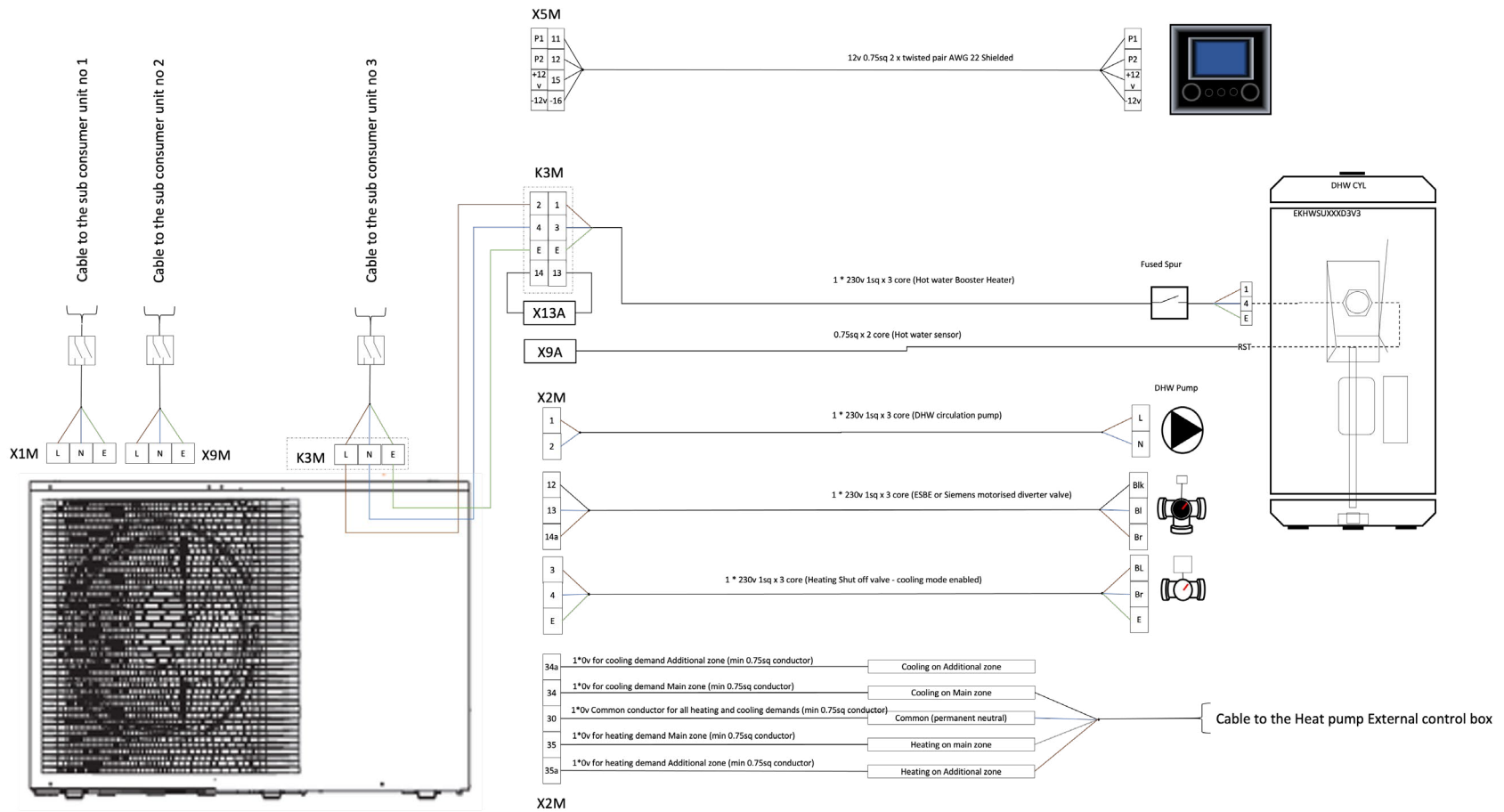
Ref	Description	Voltage and cable requirements	Protection requirements
1	Mains to Compressor	1*230v 6.0sq x 3 core cable T&E, NY or SWA	32 amp to MCB or RCBO
2	Mains to internal back up heater (BUH)	1*230v 2.5sq x 3 core cable T&E, NY or SWA	16 amp to MCB or RCBO
3	Mains to Hot water booster heater	1*230v 2.5sq x 3 core cable T&E, NY or SWA	16 amp to MCB or RCBO
4	Mains to external controls & Unico system	1*230v 2.5sq x 3 core cable T&E, NY or SWA	20 amp to MCB or RCBO
5	Spare	1*230v 16.5sq x 3 core cable T&E, NY or SWA	10A amp to MCB or RCBO
6	Spare	1*230v 16.5sq x 3 core cable T&E, NY or SWA	10A amp to MCB or RCBO



# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Under Floor Heating Electrical System: Detail 1



# Daikin Altherma 3 High Capacity + Domestic Hot Water + Unico System + Cooling Management + Under Floor Heating Electrical System: Detail 2



# The Unico System® + Daikin Altherma

## High-Capacity Heat Pump

DKN.HC.DHW.UCO.CM.RAD.BUF

Daikin High-Capacity Domestic Hot Water with  
The Unico System Central HVAC & Cooling Management & Radiator + Buffer

*Mechanical System & Electrical System Diagrams*

◦ System *Reference Code*

DKN.HC.DHW.UCO.CM.RAD.BUF

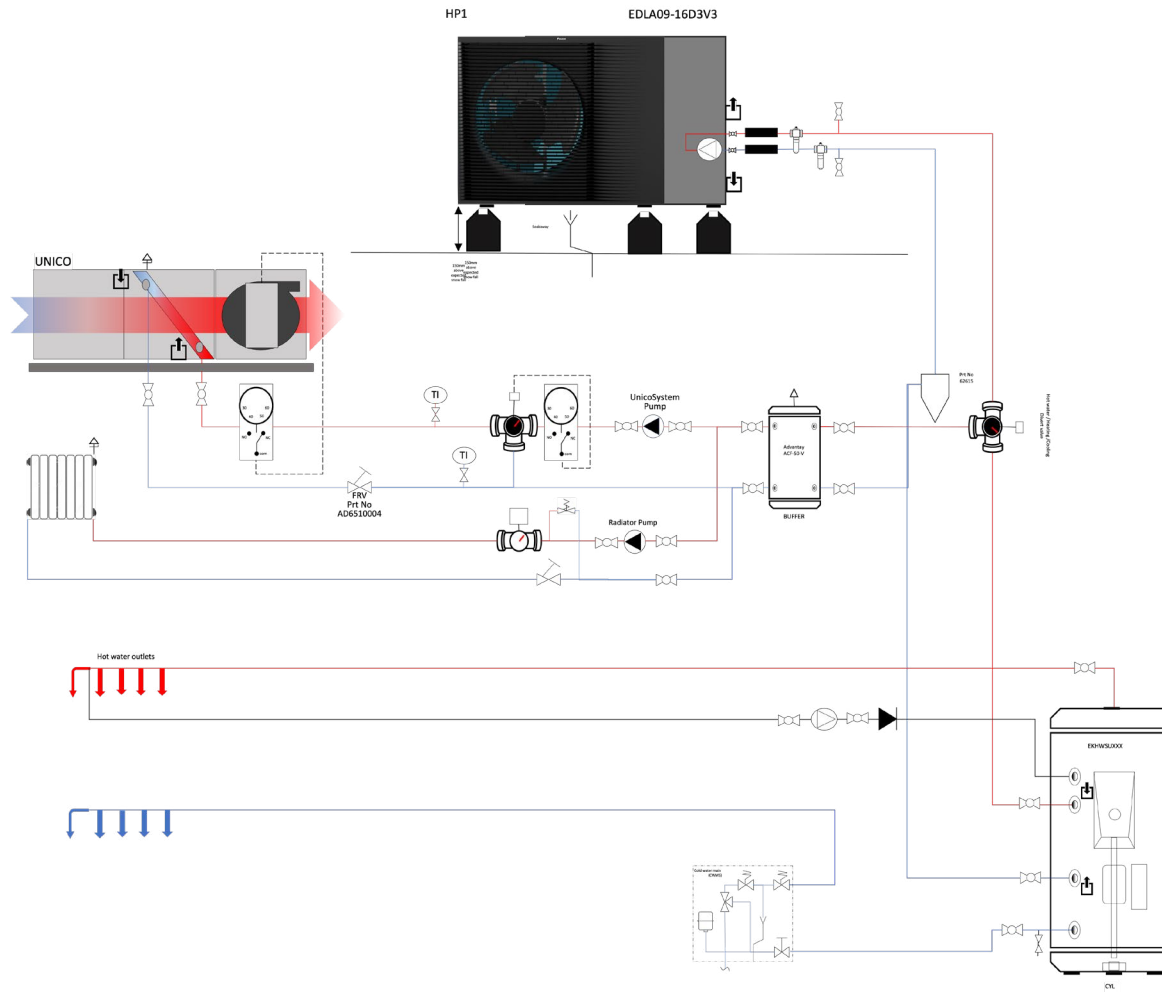
◦ System *Description*

This system comprises of a Daikin Altherma high-capacity monobloc heat pump and The Unico System small duct high velocity central heating and cooling system. The operational services are:

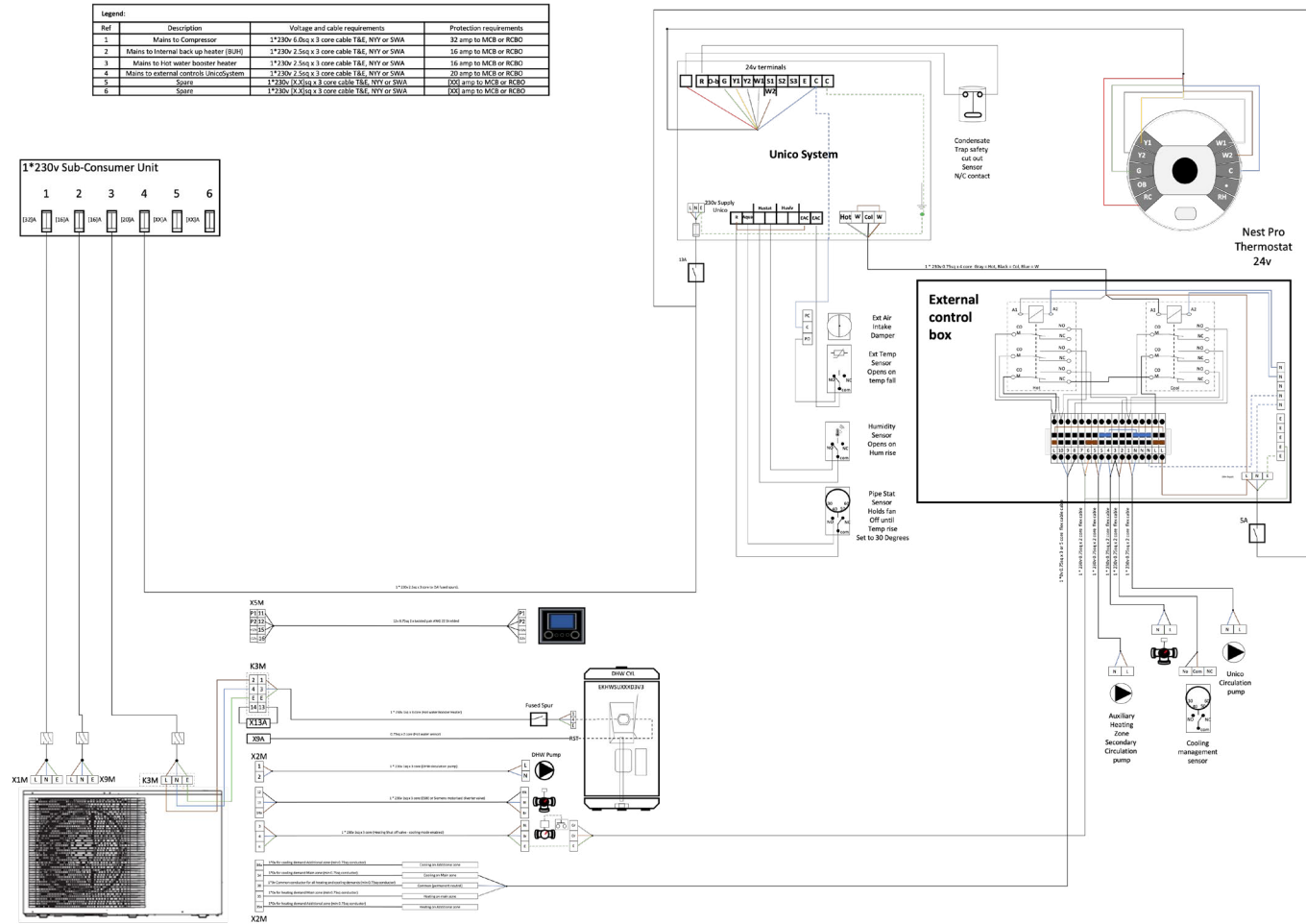
- Priority hot water generation – This means that the hot water generation has priority over heating
- The Unico System, providing a central air distribution system to the entire building envelope delivering heating cooling, and ventilation
- A cooling management controller to allow the heat pump to change over from hot water generation to cooling without allowing heated water to pass through the Unico system
- The Unico System hydronic coil providing hot water for under floor heating

This system has been designed to utilise the internal circulating pump within the heat pump. The purpose is to gain efficiency from the  $\Delta t$  controlled pump and ensure the correct capacity of heat energy is delivered to the hot water cylinder and the Unico System air handler.

# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Radiators + Buffer Mechanical System Layout

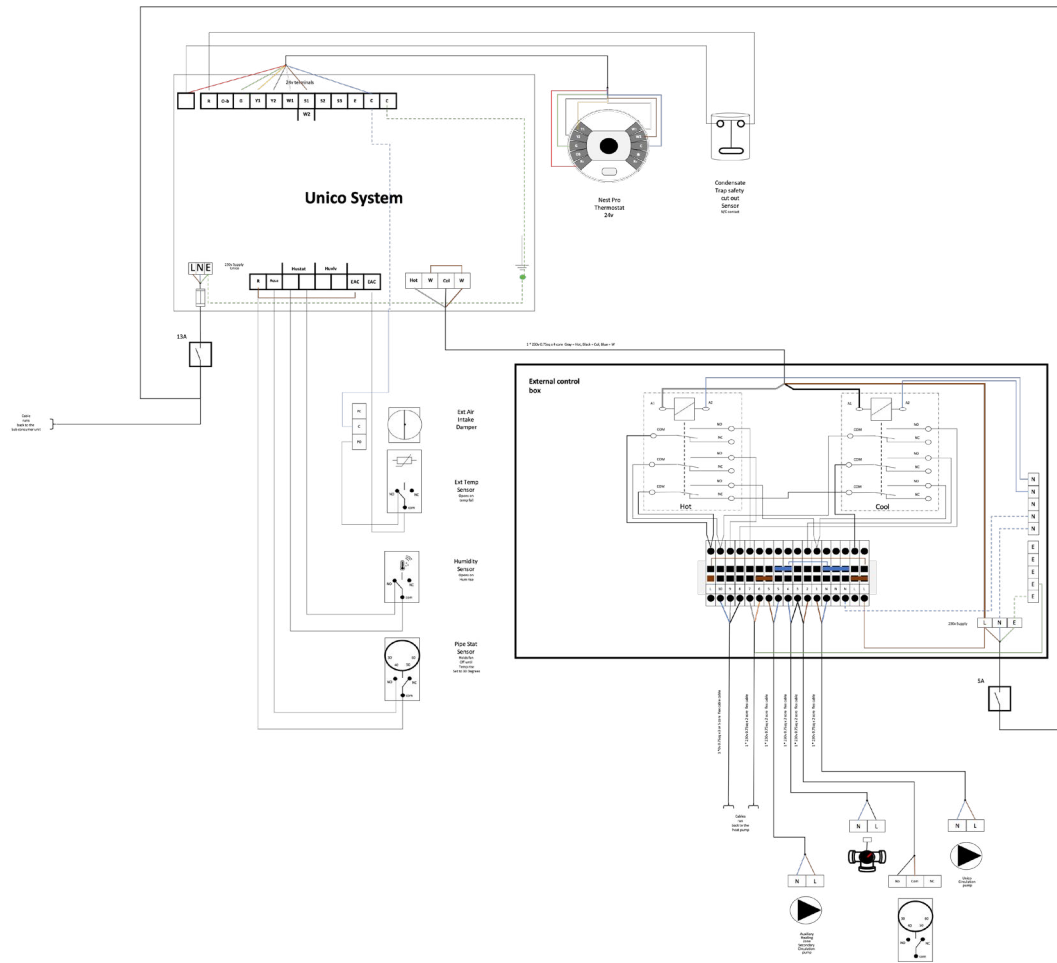


# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Radiators + Buffer Electrical System Layout: Overview

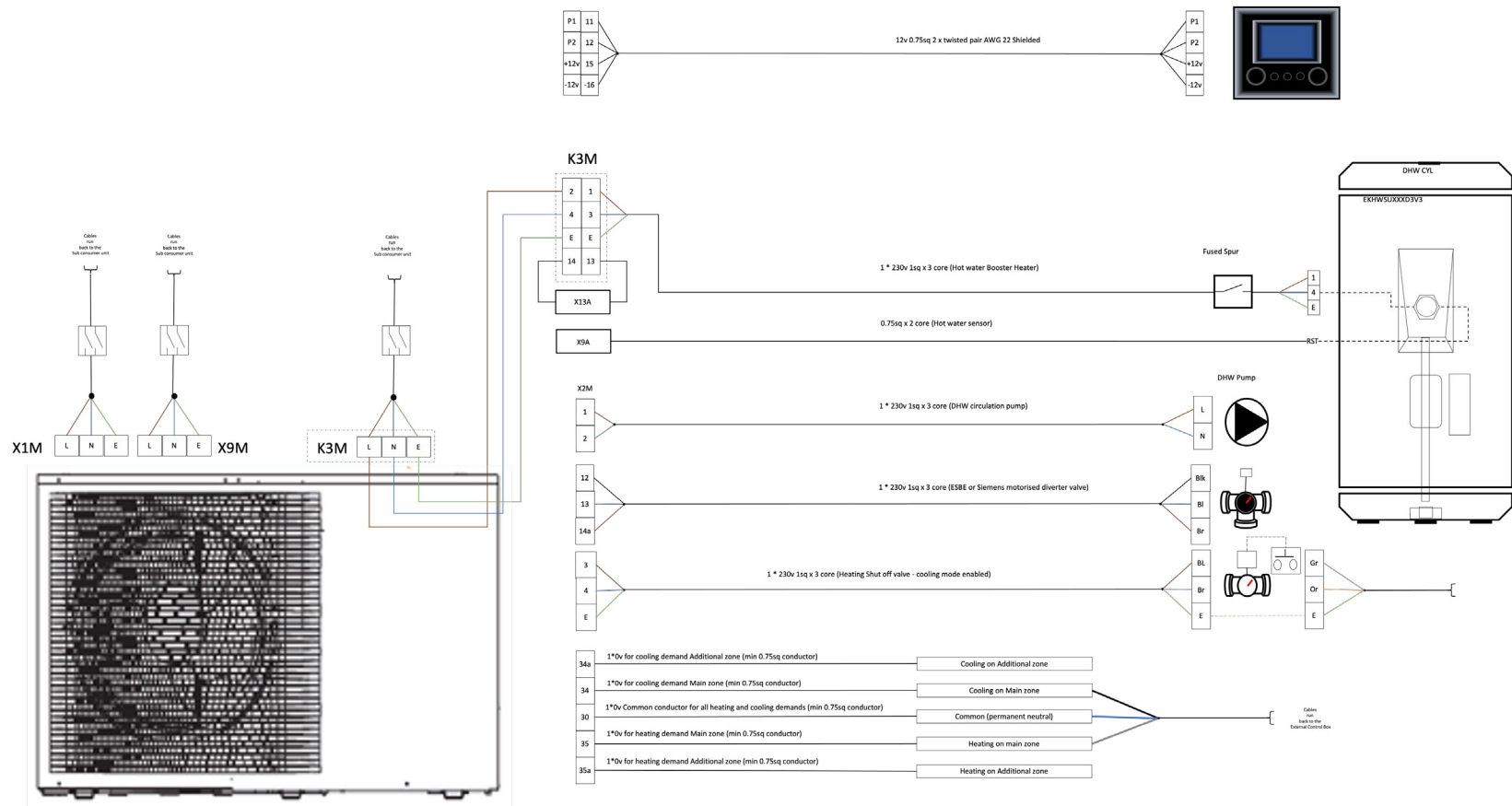




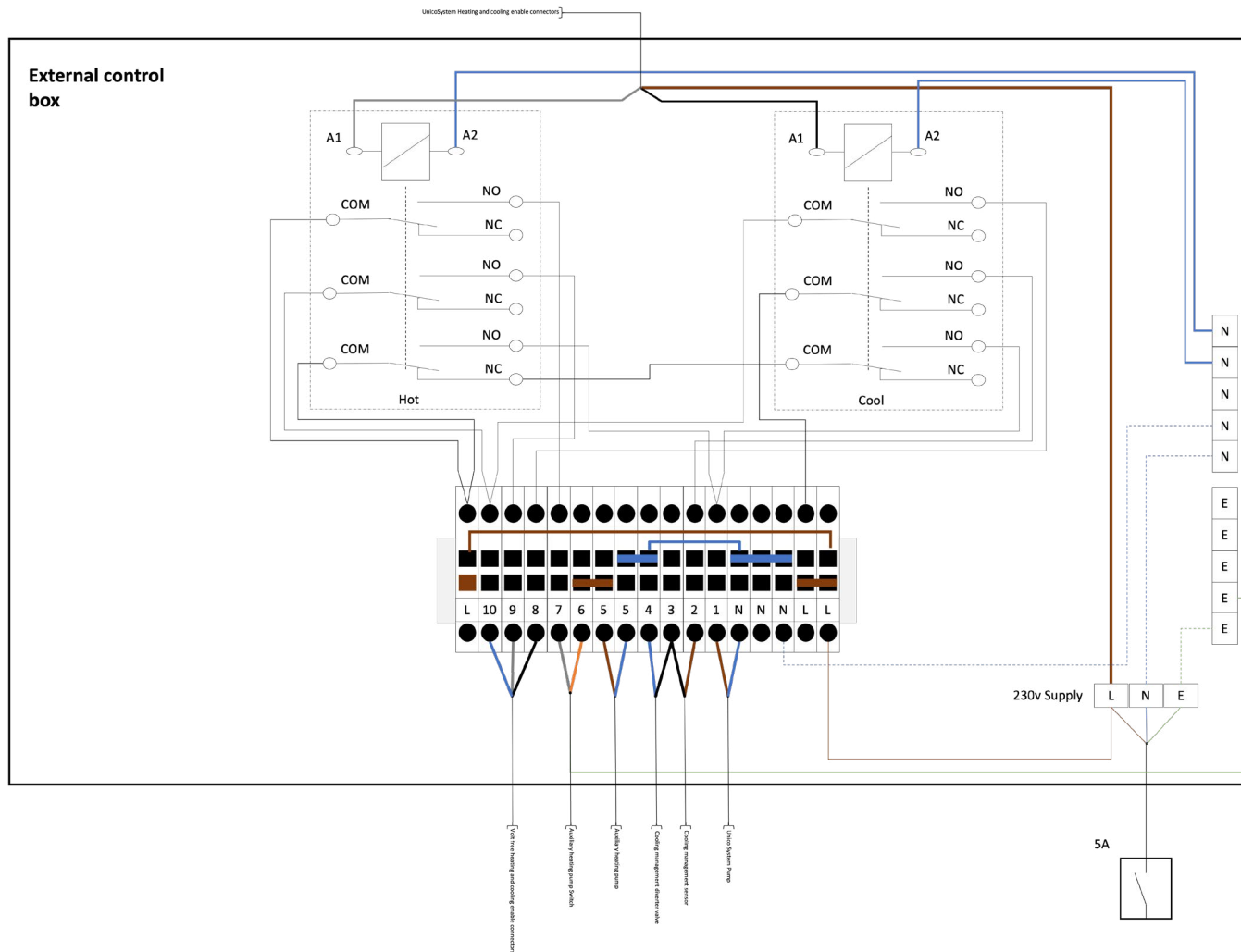
# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Radiators + Buffer Electrical System Layout: Detail 1



# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Radiators + Buffer Electrical System Layout: Detail 2



# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Radiators + Buffer Electrical System Layout: Detail 3



# The Unico System<sup>®</sup> + Daikin Altherma

## High-Capacity Heat Pump

DKN.HC.DHW.UCO.CM.UFH.BUF

Daikin High-Capacity Domestic Hot Water with  
The Unico System Central HVAC & Cooling Management & Under Floor Heating & Buffer Tank

*Mechanical System & Electrical System Diagrams*

◦ System *Reference Code*

DKN.HC.DHW.UCO.CM.UFH.BUF

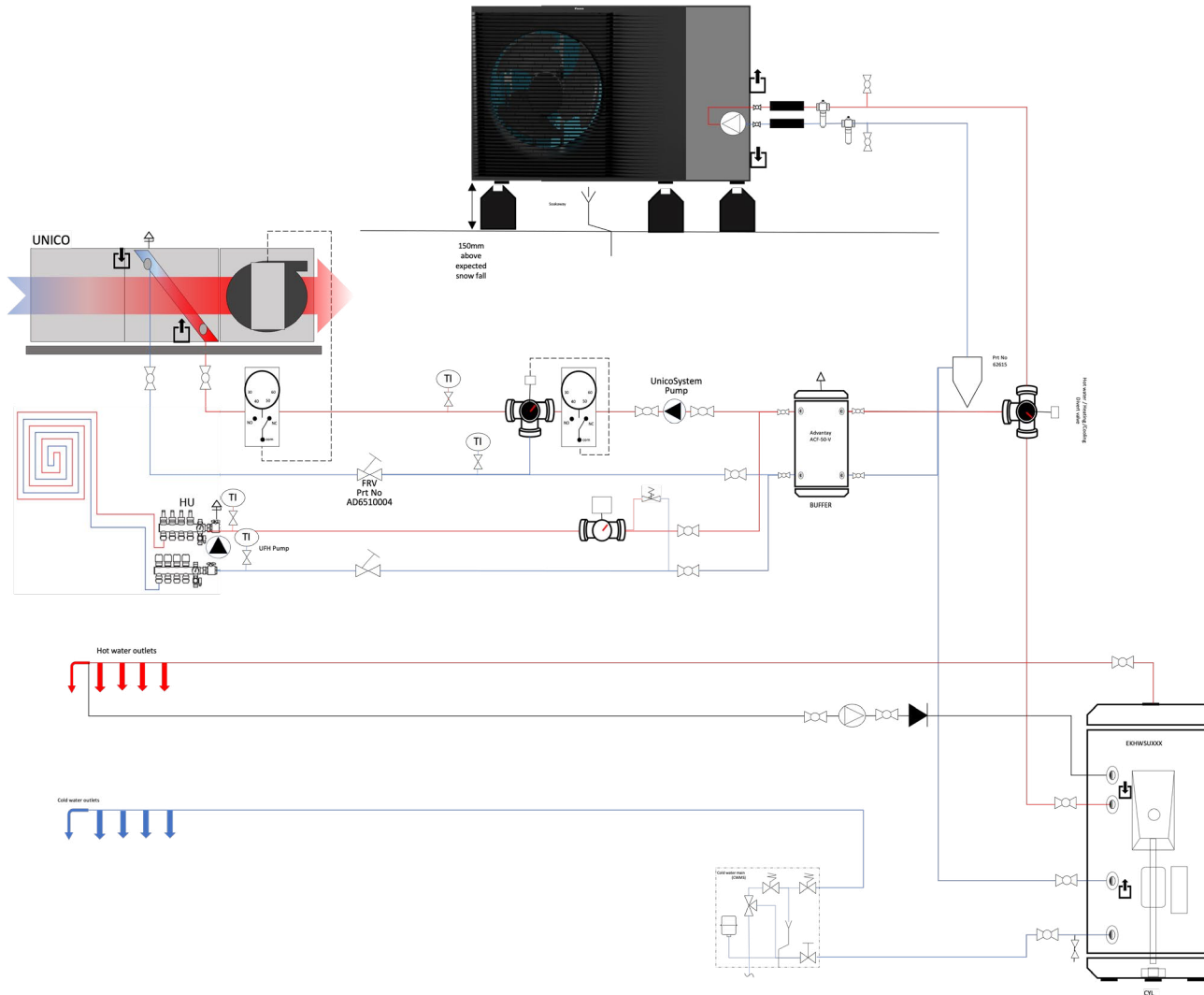
◦ System *Description*

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- Priority hot water generation – This means that the hot water generation has priority over heating
- The Unico System, providing a central air distribution system to the entire building envelope delivering heating cooling, and ventilation
- A cooling management controller to allow the heat pump to change over from hot water generation to cooling without allowing heated water to pass through the Unico system.
- The Unico System hydronic coil providing hot water for under floor heating with a buffer tank

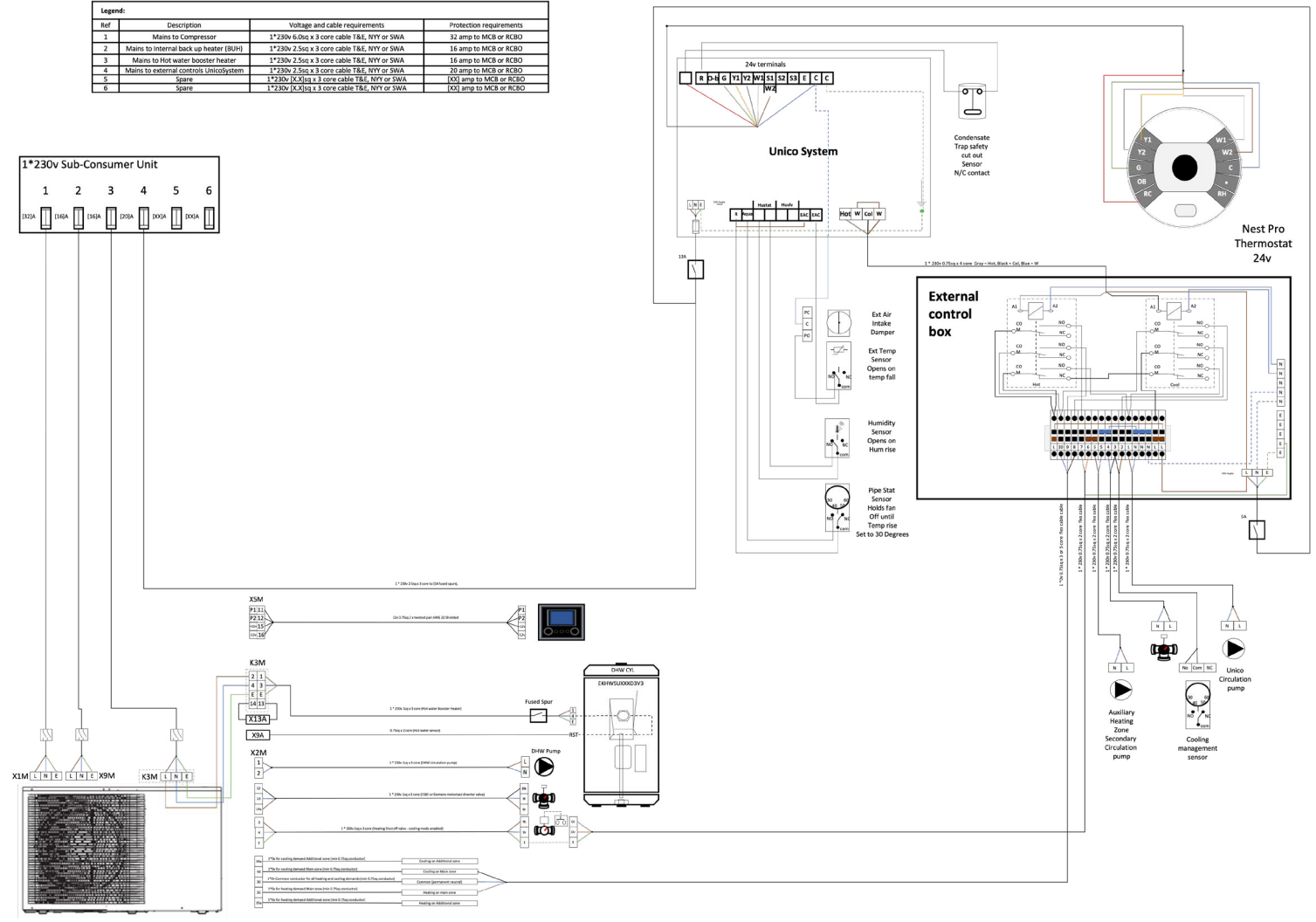
This system has been designed to utilise the internal circulating pump within the heat pump. The purpose is to gain efficiency from the  $\Delta t$  controlled pump and ensure the correct capacity of heat energy is delivered to the hot water cylinder and the Unico System air handler.

# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Under Floor Heating + Buffer Mechanical System Layout

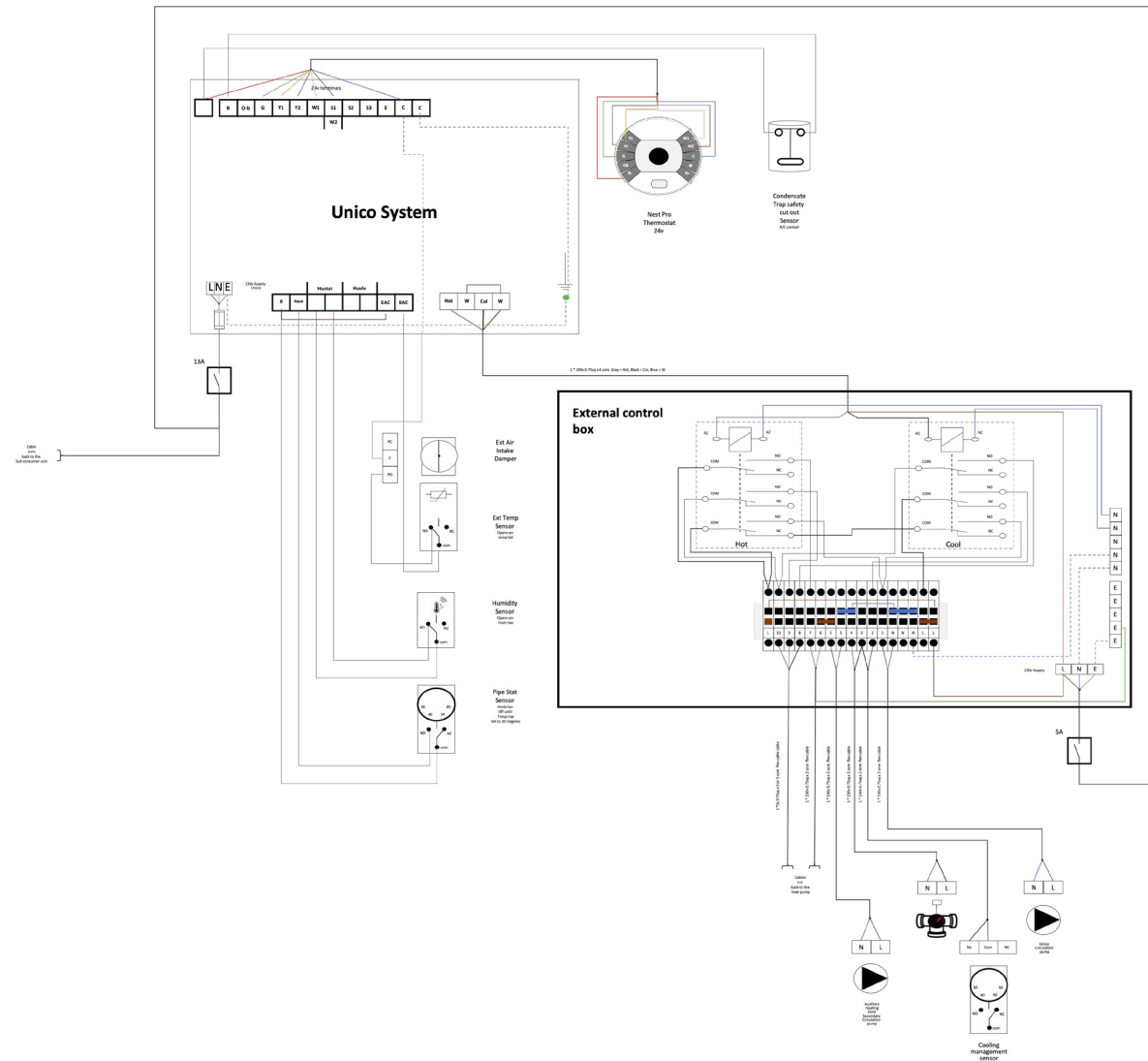


# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Under Floor Heating + Buffer Electrical System Layout: Overview

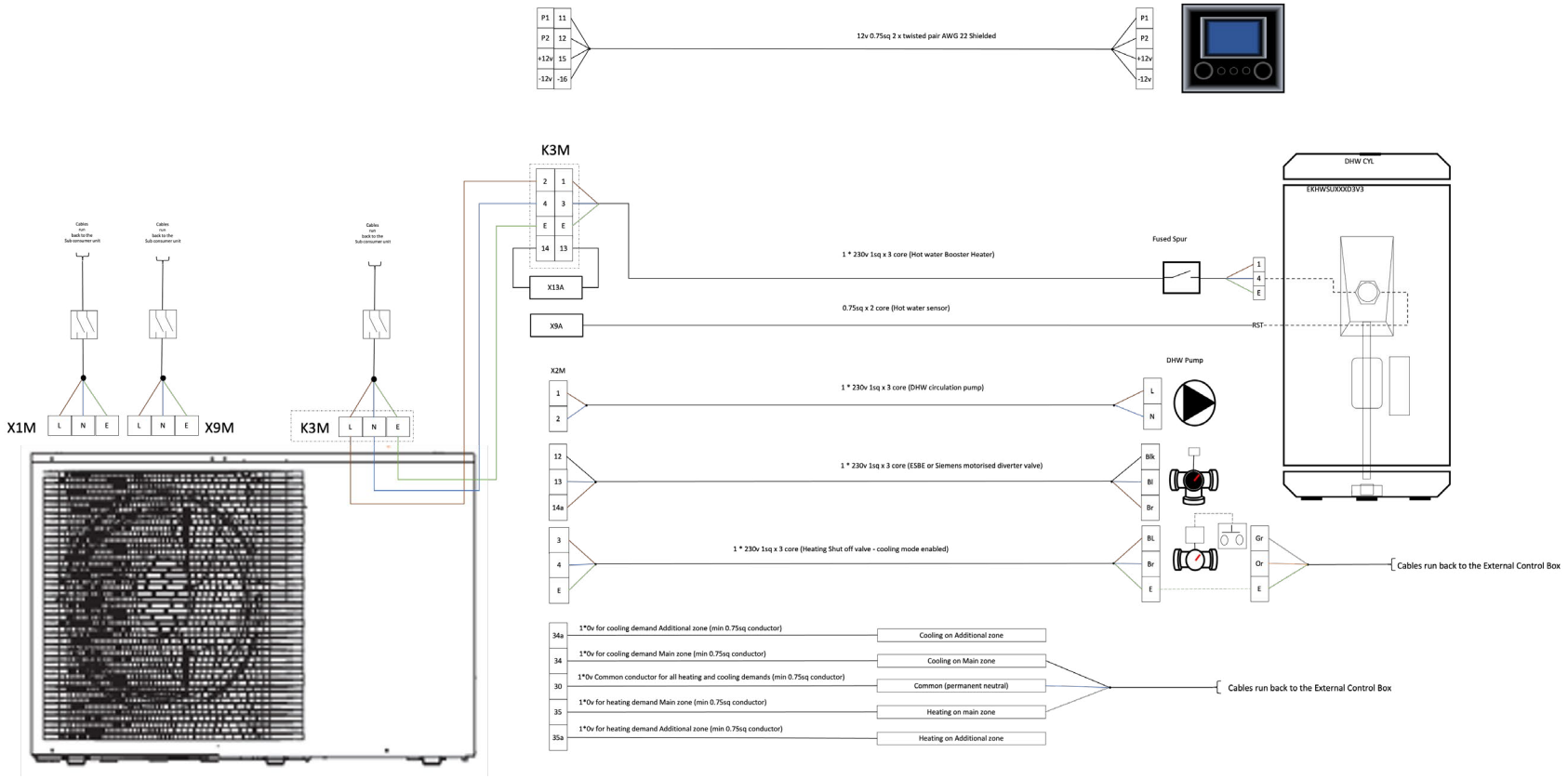
Ref	Description	Voltage and cable requirements	Protection requirements
1	Mains to Compressor	1*230v 6.0sq x 3 core cable T&E, NYW or SWA	32 amp to MCB or RCBO
2	Mains to Internal tank w/ heater (BUH)	1*230v 2.5sq x 3 core cable T&E, NYW or SWA	16 amp to MCB or RCBO
3	Mains to Hot water booster heater	1*230v 2.5sq x 3 core cable T&E, NYW or SWA	16 amp to MCB or RCBO
4	Mains to external controls Unicosystem	1*230v 2.5sq x 3 core cable T&E, NYW or SWA	20 amp to MCB or RCBO
5	Spare	1*230v 1N.X1sq x 3 core cable T&E, NYW or SWA	10A amp to MCB or RCBO
6	Spare	1*230v 1N.X1sq x 3 core cable T&E, NYW or SWA	10A amp to MCB or RCBO



# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Under Floor Heating + Buffer Electrical System Layout: Detail 1

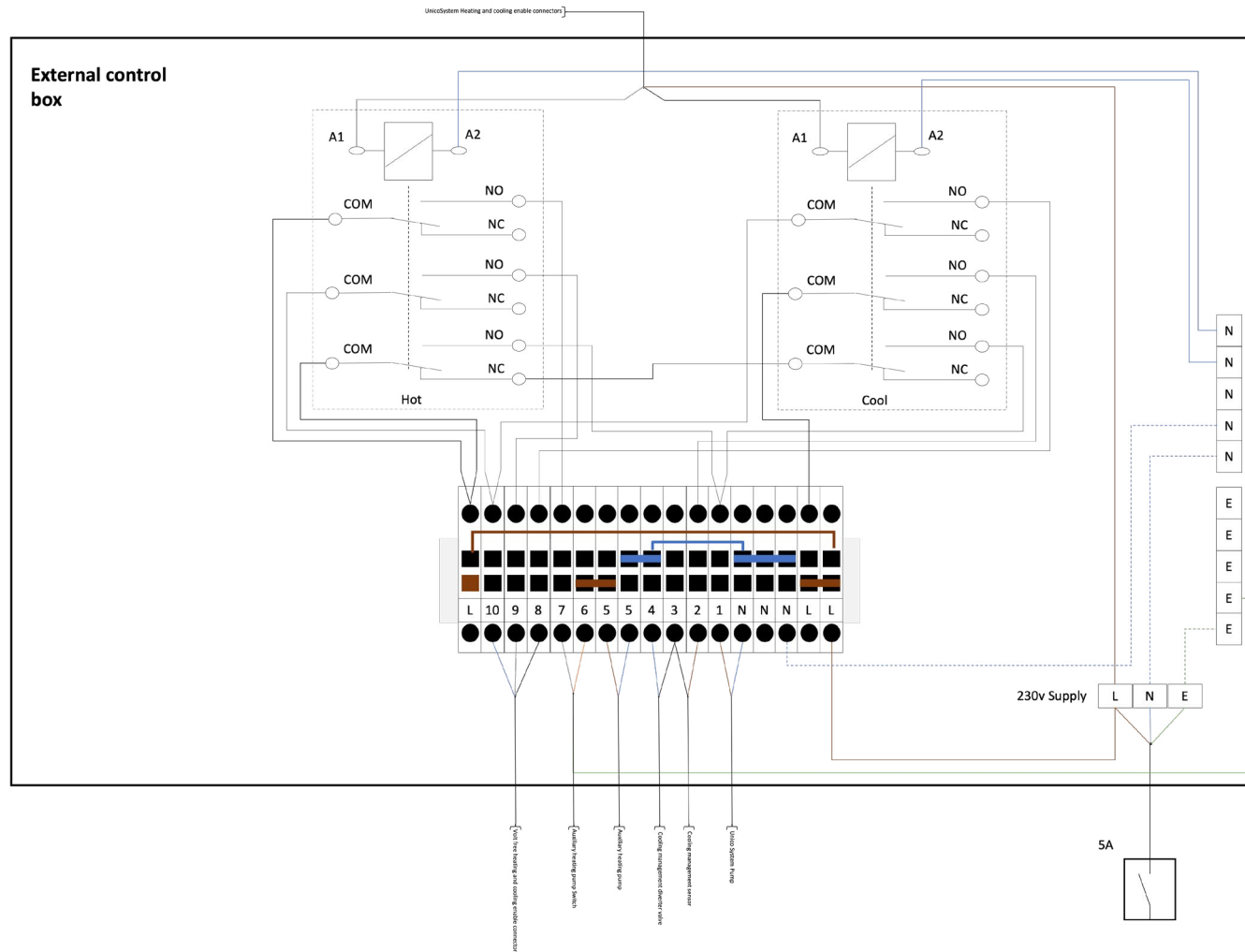


# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Under Floor Heating + Buffer Electrical System Layout: Detail 2



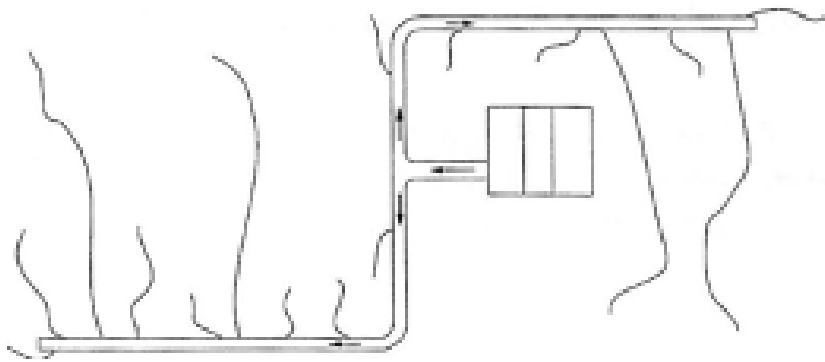


# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management + Under Floor Heating + Buffer Electrical System Layout: Detail 3

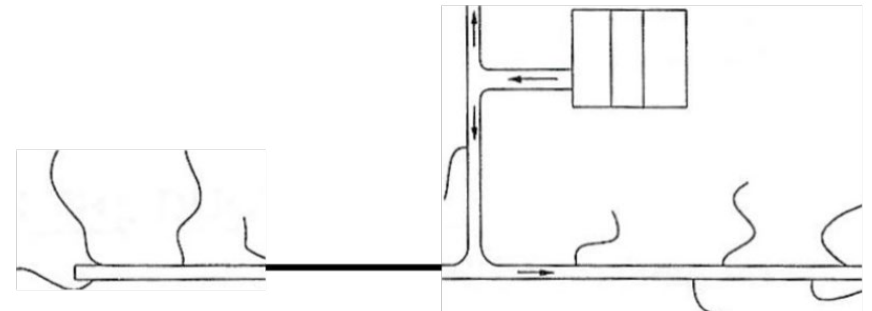


# Daikin Altherma 3 High Capacity + Domestic Hot Water + The Unico System + Cooling Management Layout

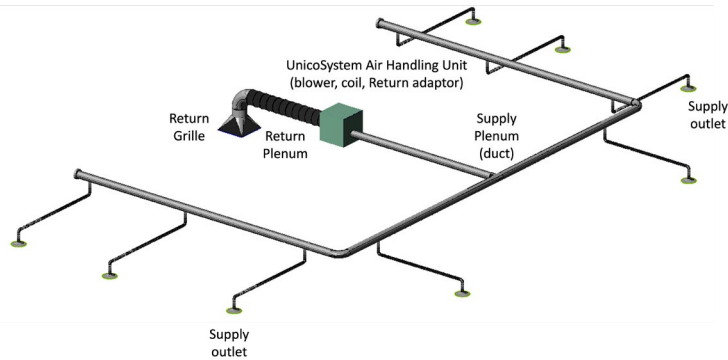
Plenum | *Dogleg*



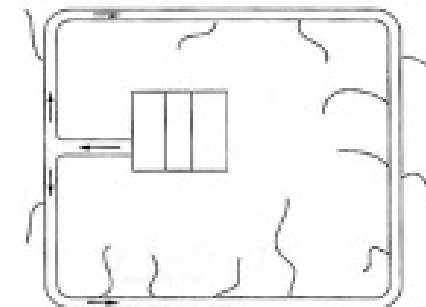
Plenum | *H-Pattern*



Plenum | *Horseshoe*



Plenum | *Perimeter*





**The Unico System<sup>®</sup>**

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