

VEXVE

AM45 DHC district heating unit controller



Flow meter controlled domestic hot water production and return flow modulating heating control for two heat circuits

“ Vexve also delivers specialized control solutions for heating (HVAC/R) systems. Vexve’s smart control solutions are designed to deliver maximum comfort, while offering savings in both energy consumption and the cost of installation.

Vexve Oy from Finland

Vexve Oy is specialized in solutions for the district heating and district cooling industries to which Vexve products are designed to deliver the highest possible energy efficiency and cost-effectiveness - throughout the entire heating and cooling network - from district heating power stations and centralized cooling units to individual households.

Vexve Oy is the world's leading supplier of high quality ball and butterfly valves specifically developed for the most demanding District Heating and -Cooling applications. Vexve ball valves are additionally used in various heating and cooling (HVAC/R) applications as well as Oil and Gas piping systems.

Vexve also delivers specialized control solutions for heating (HVAC/R) systems. Vexve's smart control solutions are designed to deliver maximum comfort, while offering savings in both energy consumption and the cost of installation.

Vexve products are used all around the world - wherever energy-savings and environmental thinking are a priority.



AM45 DHC District heating unit controller

Introduction

AM45 DHC is a heating controller with smart technology for production of sanitary hot water and modulating control for 1 or 2 heat circuits.

AM45 DHC is developed for the OEM-market and producers of district heating units.

AM45 DHC control units overview

The AM45 DHC system includes two control units.

The AM40 is a heating control unit for two heat circuits and a display for the complete AM45 DHC system. Temperature, flow and current information about actuator positions are displayed to the user. All programmable settings for both AM40 and AM50 are made from the AM40.

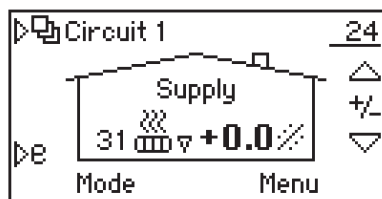
The AM50 is a control unit for flow meter controlled domestic hot water production. Three circulation pumps can be controlled and powered from the AM50, one domestic hot water pump and one or two heat circuit pumps. The AM50 is powered from 230VAC. AM40 and AM50 are connected together with a data cable.

Both AM40 and AM50 can be mounted together on a DIN-rail for a professional installation inside a district heating unit.

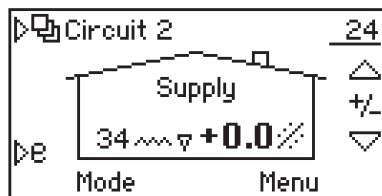


AM45 DHC control of heating

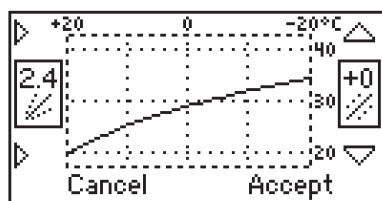
Heat system



The controller can operate one or two heat circuits each with one supply sensor and actuator. The controller uses the same outdoor sensor to control both heat circuits. Floor- Radiator- or Constant control can be chosen for both heat circuits. Wireless room units can be used for both heat circuits.

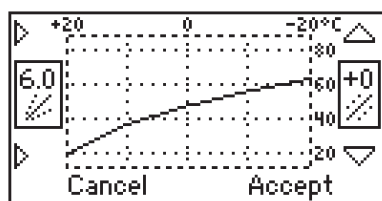


Floor heating



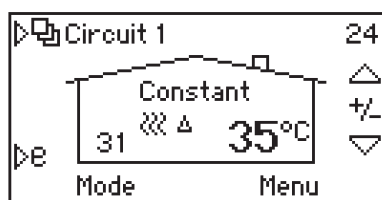
The controller has factory settings to control a floor heating system with heat curve for lower supply temperature. A “floor drying program” according to EN-1264 can be used the first time a concrete floor is heated.

Radiator heating



Radiator heating control allows the controller to use a heat curve with higher supply temperature.

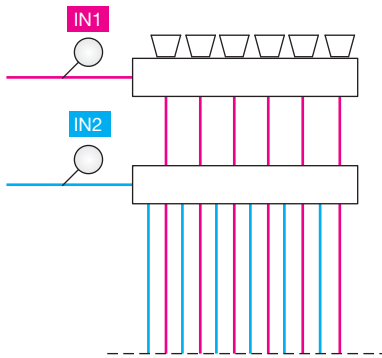
Constant control



Constant heating control can be used to always have the same supply temperature to the heat circuit.

Return temperature modulation control

.. / Modulation ΔT	
Modulation ΔT	On
Correction	35%
Sensor	IN2
Cancel	Accept



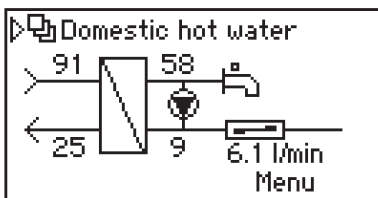
For heat circuit one an extra sensor can be used to also control the return temperature from the heat circuit. This function is useful especially in floor heating systems. It prevents overloading of heavy floor structures. This is based on the fact that return water temperature usually reacts to the temperature changes in heating circuit before there is any noticeable change in room temperature. The supply + return temperature control is more energy saving than traditional control systems.

District Heating return temperature priority control

.. / Return temp prior.	
Return temp prior.	<On
Maximum temp	35°C
Sensor	IN4
Cancel	Accept

To ensure that return temperature back to DH-network cannot override a certain level there is a priority function available. A sensor is placed on the DH-return and the temperature level is set.

"Patent pending" flow meter controlled domestic hot water production

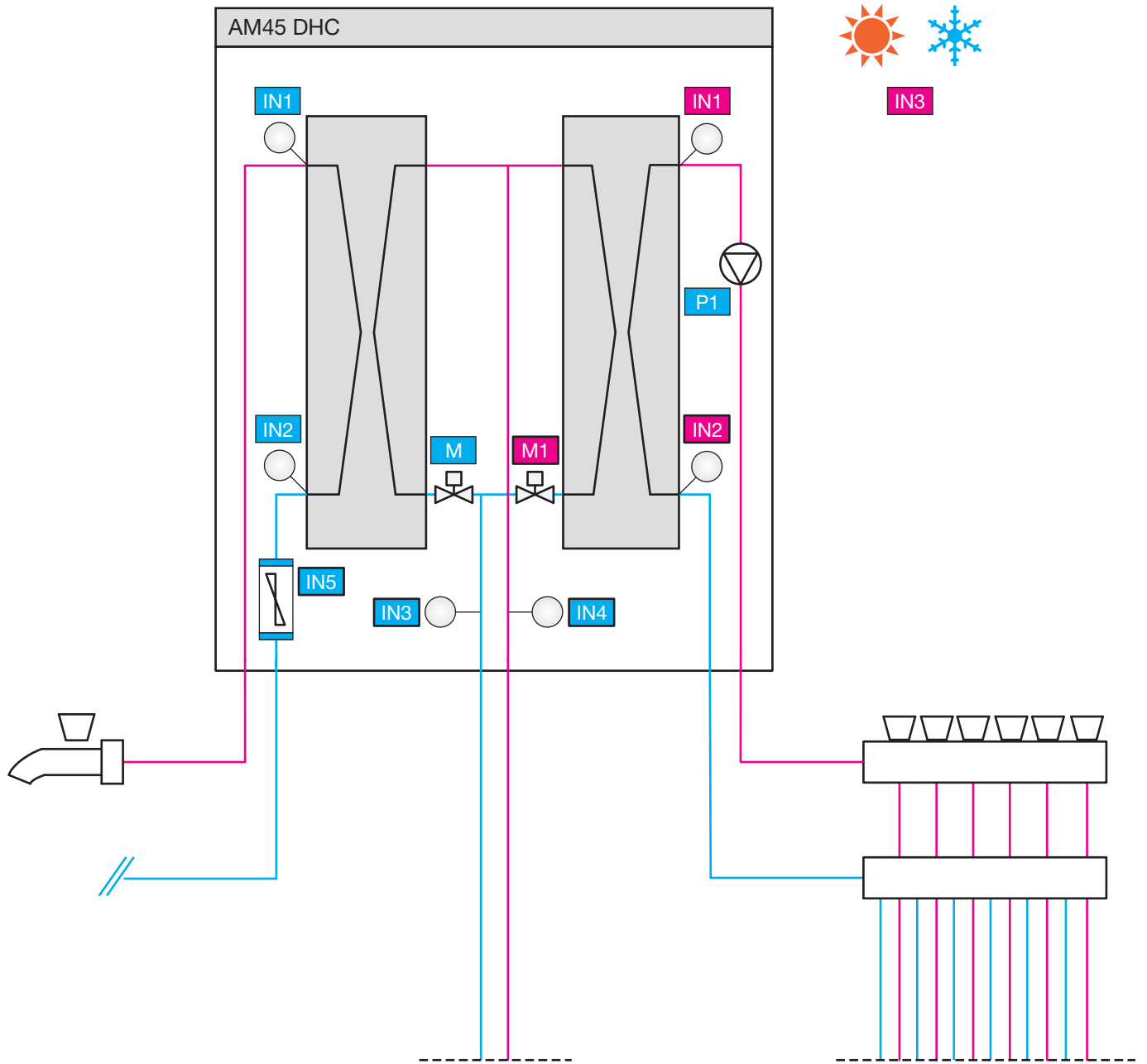


The domestic sanitary hot water is produced by using a 2-way valve and a fast moving actuator. A flow meter together with temperature sensors on both primary and secondary sides measures the actual flow and temperature and controls the opening position of the actuator.

The flow meter and temperature controlled production of DHW water is also "self-learning". The controller recognizes a certain flow and temperature and moves the actuator to the "correct position" in a few seconds. The DHW water will immediately reach the temperature setting. Changing flow and temperature allows the actuator to move to a new "self-learned" position.

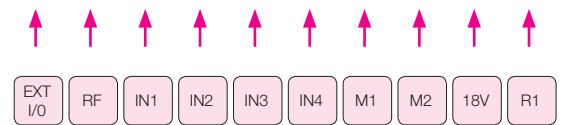
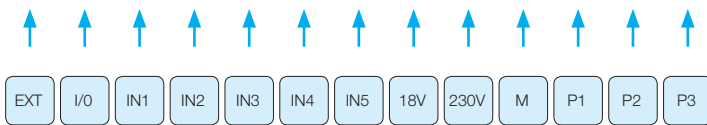
The flow-meter and temperature guided production of DHW water is a "patent pending" control system by Vexve Oy.

AM45 DHC system drawing





AM45 DHC electrical installation



IN1	Supply sensor to H1 circuit	RJ11 4C connector
IN2	Supply H2 or return H1 sensor	RJ11 4C connector
IN3	Outdoor sensor	RJ11 4C connector
IN4	Sensor / switch connection	2 wire connection
M1	Actuator for H1 circuit	RJ11 6C connector
M2	Actuator for H2 circuit	RJ11 6C connector
RF	RF-Unit	RJ11 4C connector
R1	Potential free relay 230 VAC/1A	2 wire connection
EXT I/O	Data cable connection AM40/50	RJ11 6C connector
18V / 18V	Power supply from AM50 to AM40	2 wire / plug
IN1	Sensor domestic hot water	RJ11 4C connector
IN2	Sensor domestic cold water	RJ11 4C connector
IN3	Sensor DH return	RJ11 4C connector
IN4	Sensor DH supply	RJ11 4C connector
IN5	Flow sensor domestic hot water	RJ11 4C connector
M	Actuator for domestic hot water	3 wire connection
P1	Domestic hot water pump	3 wire connection
P2	Heat circuit 1 pump	3 wire connection
P3	Heat circuit 2 pump	3 wire connection
230V	Connection of 230V	3 wire connection



AM45 DHC delivery

Factory pre-mounted AM45 District Heating control system

Delivery from Vexve Oy is factory pre-mounted. The AM45 control system is custom programmed and can be mounted ready on a DIN-rail for mounting direct into a DH-unit. All sensors are produced with RJ-connectors of exact length to be placed in the correct position on the piping inside a DH-unit.

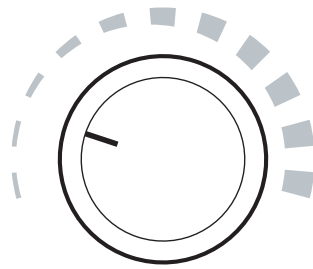
Actuators for heat circuit and DHW water production are pre-wired with RJ-connectors. Flow-meter is pre-wired with RJ-connector. Also pump power cables with easy connect plugs can be pre-assembled with exact length. The 230V power supply is pre-wired ready for direct plug in at installation.

Certified environmental responsibility



Vexve Oy is an ISO 14001 certified company, and responsibility for the environment is a key element of our operations. Vexve strives to reduce any environmental impact by utilising all materials as efficiently as possible, recycling raw materials, properly sorting all waste generated by the business activities, and disposing of all waste appropriately.

Vexve Oy follows and maintains environmental policies adhering to the ISO 14001 environmental management standard. Vexve's corporate environmental management programme and its aims belong to everyone at Vexve. Situated in the idyllic Finnish lake district, Vexve – as a company and through each of its employees – is committed to taking action for a clean environment and efficient use of raw materials.



Keep **energy** under control



Vexve Oy

Pajakatu 11
FI-38200 Sastamala, Finland

Tel.: +358 10 734 0800
Fax: +358 10 734 0839
vexve.customer@vexve.com

Naval Oy

P.O.Box 32
FI-23801 Laitila, Finland

Tel.: +358 10 734 0500
Fax: +358 2 856 506
naval.customer@naval.fi

