EN

LADDOMAT® MR

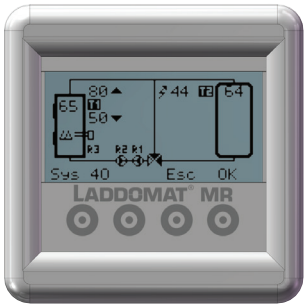
sustainable energy solutions

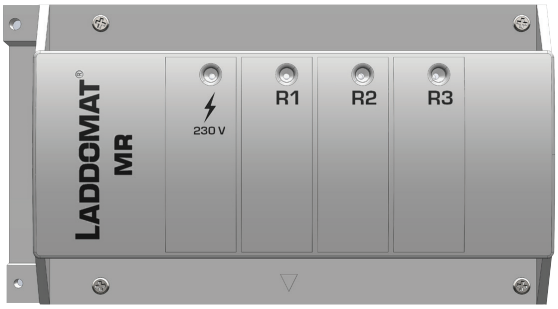
Termoventiler

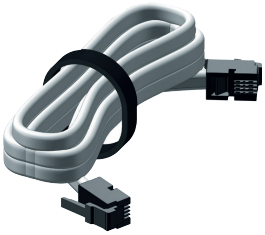
MEMBER OF debe FLOW GROUP

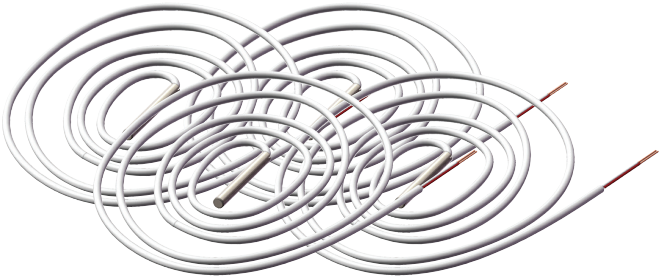
LADDOMAT® MR

Laddomat MR is a versatile control device with separate connection centre (CC) with a total of 3 relays and 4 sensor inputs. A number of different control programs are available. All settings are made in the separate control panel (CP).









- A Laddomat MR can control in many different ways, partly making it easier to have it in stock, partly easier to learn one and the same control with the settings, connections and the adjustments that are possible.
- Removable terminals in the connection centre make it easier to connect sensors and pumps.
- The display provides an overview of relevant temperatures and settings, as well as what is currently operating.
- Possibility of connection up to 4 sensors to read temperatures in the display.
- Submersible tubes and/or materials for sensor tube assembly are always included according to the specification for best functions.

Technical data

The connection centre has:

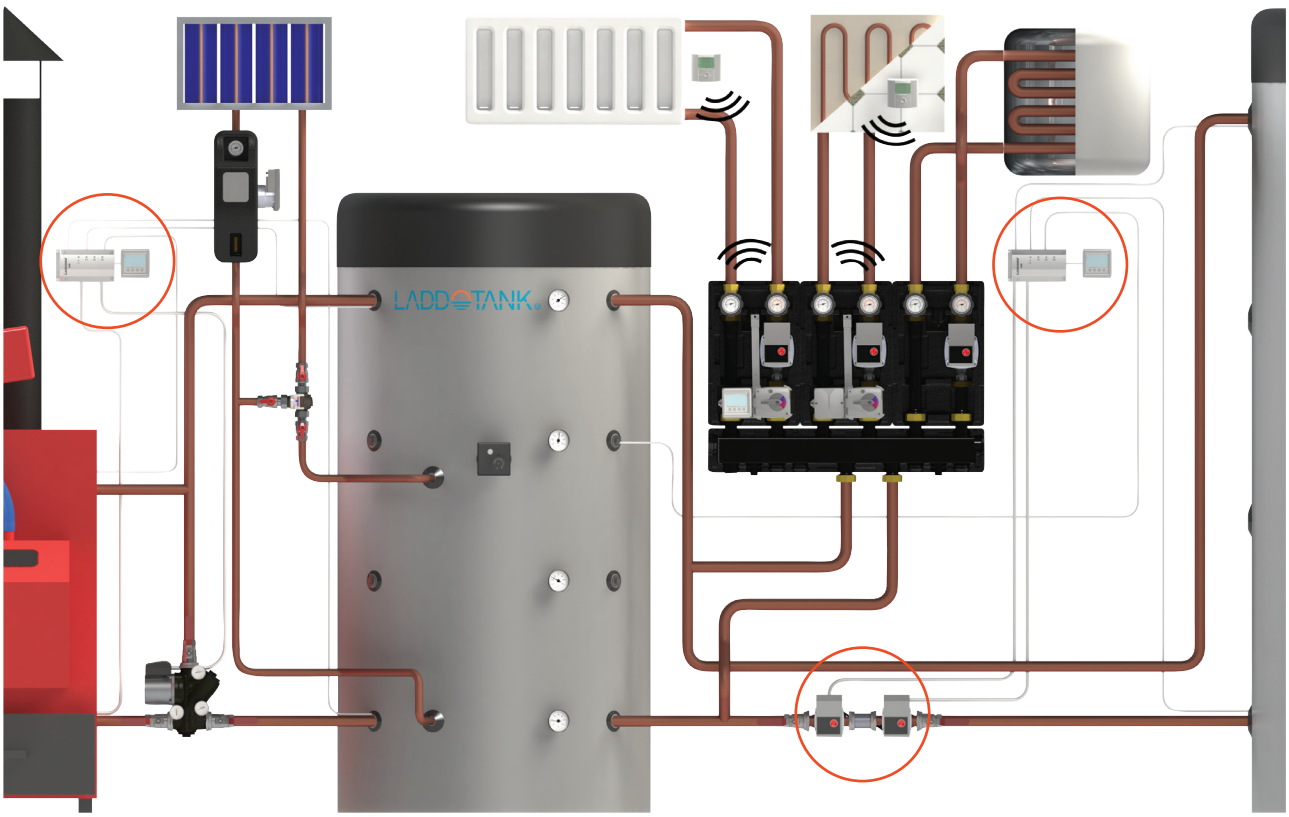
3 relay outputs, one of which is potential-free. 250 V, 5 A.

4 x temperature sensor inputs, NTC 50 kOhm @ 25°C (10 kOhms selectable in the service menu).

Permissible ambient temperature in operation: 0-55°C, 95% RH.

Scope of delivery:

Laddomat MR control panel with 1.5 m communication cable. Connection centre. 4 x sensors with 3 m cable. DIN rail for wall mounting the CC. Screws and plugs for installing the CP and CC are also included.



Control options/Products:

Laddomat MR 10 - Burner control, Sys 10, page 5.
Laddomat MR 10 is a complete burner control for batch charging tank(s).

Laddomat MR 30 – Culvert control, Sys 30, page 6-7.
Laddomat MR 30 is used for batch charging between main tank(s) and slave tank(s).

Laddomat MR 30 – Culvert control with return charging, Sys 31, page 6-7.
Laddomat MR 30 is used for batch charging and return charging between the main tank(s) and the slave tank(s).

Laddomat MR 40 – Charging/discharging between the boiler and the tank, Sys 40, page 8-9.
Laddomat MR 40 is a charging unit for boilers with integrated hot water heater and mixing valve.

Laddomat MR 40 – Charging/discharging between the boiler and the tank with burner control, Sys 41, page 8-9.
Laddomat MR 40 is a charging unit for boilers with integrated hot water heater and mixing valve. Burner control is included.

Laddomat MR 50 – Charging/discharging between tanks, Sys 50, page 10-11.
Laddomat MR 50 is used for charging and discharging between the main tank(s) and extra tank(s).

Laddomat MR 50 – Charging/discharging between tanks with extra charging, Sys 51, page 10-11.
Laddomat MR 50 is used for charging and discharging between the main tank(s) and extra tank(s).

Other control options:

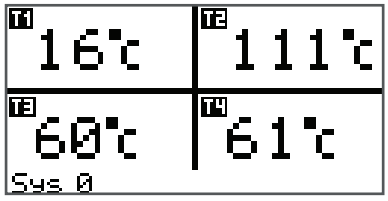
See page 4.

LADDOMAT® MR

In addition to the complete application packages, the following control options are available.

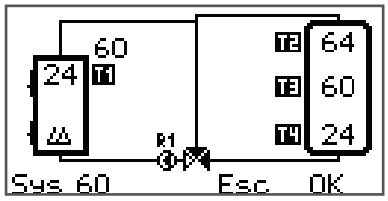
Sys 0

Display of up to four different temperatures.



Sys 60

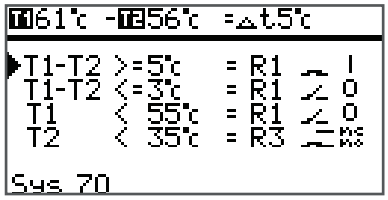
Start of circulation pump plus display of boiler temperature and three different tank temperatures.



Sys 70

Differential control with two temperature sensors.

Examples of areas of use:
Charging from solar collectors when the solar collector is warmer than the tank.
Charging from one tank to another, when the first tank is warmer than the second.
Additional heating can be started if the temperature T2 is too low.

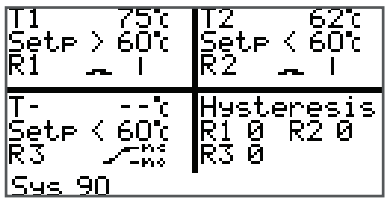


Sys 90

Thermostat function, where one, two or three relays can be controlled from one temperature sensor each.

Example of area of use:

To start circulation pump and additional heating.



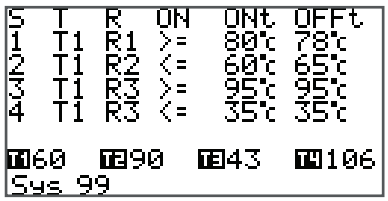
Sys 99

"Free" function, where optional temperature sensor is used for optional relay.
Up to eight different settings are possible.

Examples of areas of use:

When the sensor T1 is warmer than 80°C, a charging pump is started.
When the sensor T1 is colder than 60°C, a recharging pump is started.

When the sensor T1 is warmer than 95°C or colder than 35°C, an alarm is sent.



LADDOMAT® MR 10

Burner control with a thermal charging unit for optimum charging of accumulator tanks.

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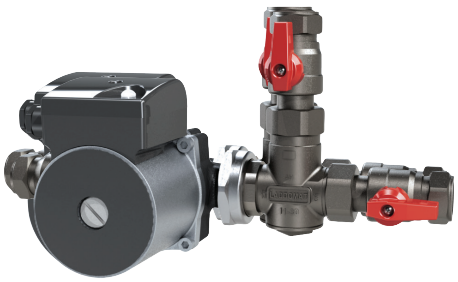
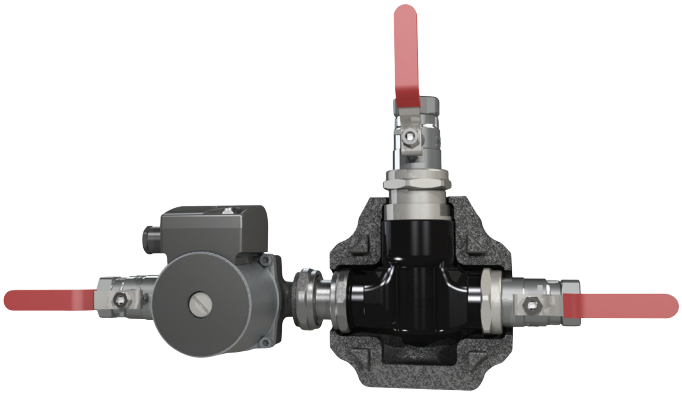


Laddomat 11-30



Laddomat 11-200

Laddomat MR 10 is a burner control for batch charging of a tank or tanks.

Applications:

- **Sys 10 – Burner control.** To control starting/stopping burners (e.g. oil or pellets) for batch charging of the tank(s). This provides long operation times and fewer starts/stops of the burner.

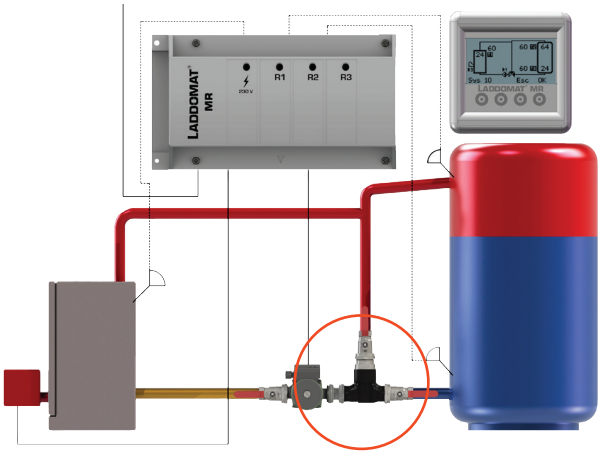
Sensors that are not used for control can be used for temperature reading in a separate menu.

Scope of delivery:

- Laddomat MR, complete.
- Thermal charging unit Laddomat 11-30 or 11-200, with pump and ball valves.
- 2 x 3-bulb submersible tubes for bulbs with D=6 mm. R15, L=150 mm.
- 3 x sensor holders and hose ties for pipe fitting.

Function Sys10

The burner starts when the sensor at the top of the tank becomes cold and stops when the sensor at the bottom of the tank is hot. The charging pump starts when the sensor in the boiler heats up, or directly when the burner starts, so-called "constant" operation.



LADDOMAT® MR 30

Control and charging package for batch charging between tanks, and re-charging the main tank.

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Laddomat MR 30 is used for batch charging between the main tank and slave tank.

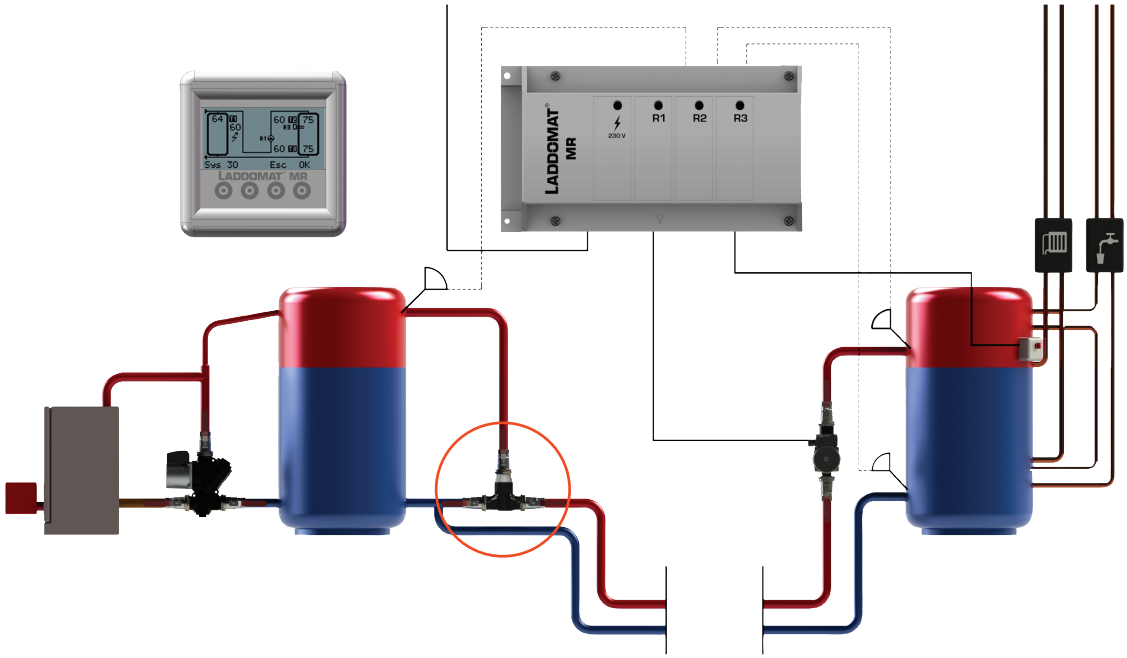
- Reduces culvert losses.
- Increases accumulation capacity.
- Automatic start of additional heating when the main tank is empty.
- Non-return valve and automatic stop of the charging pump guarantees that additional heating does not heat the main tank.
- There is an option to customise to send heat back to the main tank, e.g. if the slave tank has a solar coil.

Applications:

- **Sys 30 - Culvert control.** Batch charging from, e.g. a main tank in a separate boiler room into a slave tank in the living areas. Batch charging significantly reduces heat losses in the culvert.

- **Sys 31 - Culvert control with return charging .** Culvert control can be supplemented for return charge with an extra sensor and pump. This will start the return charging, for example, if a solar coil is fitted in the slave tank and it overheats. The surplus heat is returned to the main tank in the boiler room.

Sensors that are not used for control can be used for temperature reading in a separate menu.



Scope of delivery:

Sys 30
- Laddomat MR, complete.
- Spring-loaded non-return valve BV FB40-T
- Charge pump LM9A-130, with 2 x ball valves.

As above but also with an adaptor for PEX culvert with temperature limiter:
- Laddomat MR, complete.
- Charge pump LM9A-130, as above
- Thermal valve Laddomat 31-200 with built-in non-return valve, 72°C, with 3 x ball valves and EPP-insulation. Thermostat cartridge with 78°C opening temperature is included.

Sys 31
- Laddomat MR, complete.
- Laddomat 5000 double non-return valve, with 2 pumps LM9A-130 and 2 x ball valves.

As above but also with an adaptor for PEX culvert with temperature limiter:
- Thermal valve Laddomat 31-200, as above but adapted for return flow.

For sensor installation, the following are always included:
4 x 3-bulb submersible tubes for bulbs with D=6 mm. R15, L=150 mm, and 2 x sensor holders and hose ties for pipe fitting.

Function Sys 30

Charging
Laddomat MR starts the charging pump when the sensor in the top of the main tank is hot, at the same time as the sensor in the slave tank's top calls for heat. In order to optimise the charging you can set a delay time before the charging can be started. In that way, you get a greater volume of hot water that can be charged into the slave tank in the start sequence. Charging continues until the sensor in the bottom of the slave tank is hot. The pump restarts when the sensor in the top of the slave tank gets cold. After completed firing in the boiler the main tank will be drained gradually.

Additional heating
When the temperature at the sensor in the top of the main tank is below the set value, the charging pump is stopped and, if necessary, additional heat in the slave tank starts.

Function Sys 31

Return charging
If a fourth sensor is used, it is possible to start the return charging pump to send heat back to the main tank, e.g. if there is a solar coil in the slave tank. The surplus is sent to the main tank and the solar heating can give the maximum heating all of the time to the slave tank. If the slave tank cools again, the heat is sent back from the main tank.

LADDOMAT® MR 40

Control and charging unit for charging/discharging for boilers with integrated hot water heaters and mixing valves, connected to an accumulator tank.

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Laddomat MR 40 is a charging unit for boilers with integrated hot water heater and mixing valve. The thermal 3-way valve has 2 non-return valves to ensure that the flow can go in two directions.

Applications:

- **Sys 40 – Charging/discharging between boiler/tank.** Charging from the boiler with an integrated water heater and mixing valve to accumulator tank/tanks. Discharging from the tank starts when the boiler temperature drops. When the tank is cold, additional heating may be started.

- **Sys 41 – Charging/discharging between boiler/tank with burner control.** To increase water volume for e.g. pellet boilers with built-in hot water heater and mixing valve.

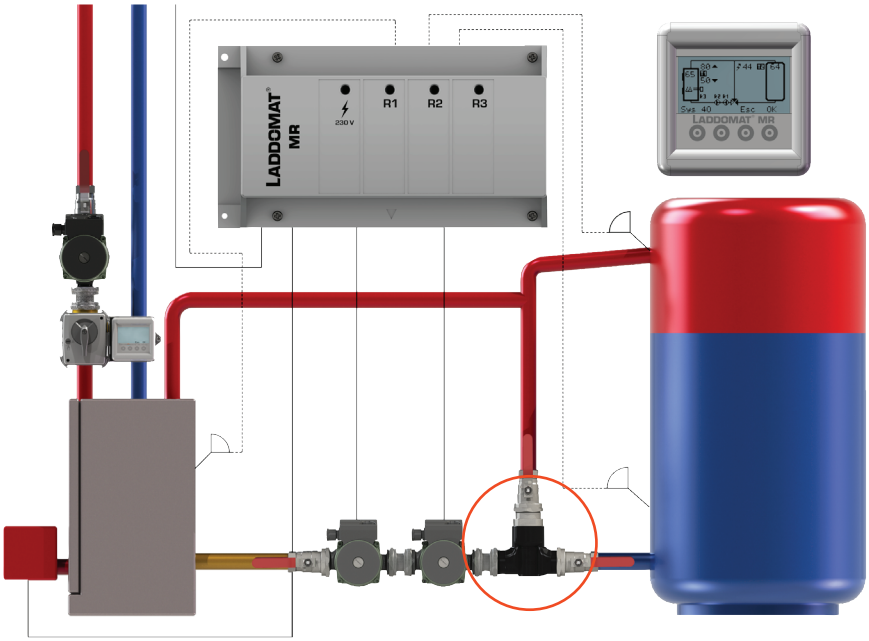
Sensors that are not used for control can be used for temperature reading in a separate menu.

Scope of delivery:

Sys 40 / Sys 41
Valve package Laddomat MR 40 with:

- Laddomat MR, complete.
- Charging and discharging valve Laddomat 41-200, with 2 x built-in non-return valves.
- 2 x pumps, Laddomat LM9A-130.
- 3 x ball valves, Cu28 or R32.
- Submersible tube for boiler sensor. Connection R10, L = 50-480 mm.
- 3 x 3-bulb submersible tubes for bulbs with D=6 mm. R15, L=150 mm.
- 2 x sensor holders and hose ties for pipe fitting
- EPP insulation for the thermal valves supplied as standard.

For boiler output max. 45 kW.



Function Sys 40

Charging
When firing up, the boiler quickly reaches its working temperature. The charging pump starts when the boiler sensor is hot. Hot water from the boiler top is mixed with cold water from the bottom of the tank to approximately 60°C in the Laddomat 41-200 valve, and into the bottom of the boiler to be re-heated. No risk of condensation which can cause corrosion due to low bottom temperature. The tank top is supplied with hot water at a low flow, providing efficient separation of the heat in the tank.

Discharging
When firing stops, the boiler cools and the charging pump is stopped when the boiler sensor is cold. When the boiler has cooled so that the boiler sensor is less than the set temperature, the discharging pump starts, and the now cold water at the bottom of the boiler is pumped over to the bottom of the tank. At the same time, hot water is sent to the top of the boiler. This takes place at a low flow thanks to that the Laddomat 41-200 valve is equipped with a strong choke. Efficient separation of the heat is thereby achieved both in the tank and the boiler. Discharging can only be started if the tank is warmer than the boiler.

Additional heating
Discharging can be interrupted at the desired temperature at the tank top sensor and the additional heating, if any, may then be started in addition.

Function Sys 41 – Burner control + charging/discharging

The burner is started by the tank top sensor. It continues until the sensor in the bottom of the tank exceeds the set temperature. When the burner stops, the tank empties little by little. When it is completely empty and the temperature at the sensor at the top of the tank is less than the set temperature, the burner re-starts. The charging pump can either start when the burner starts, or when the boiler exceeds the set temperature.

LADDOMAT® MR 50

Control and charging unit for charging/discharging between the main tank(s) and extra tank(s).

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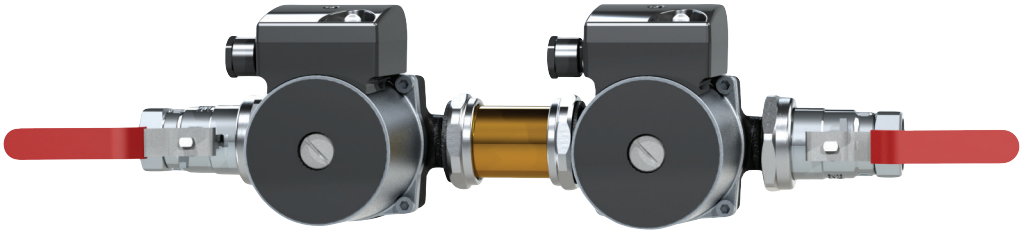


Laddomat MR 50 is used for charging and discharging between the main tank and extra tanks. The double non-return valve that is included means that the flow can go in both directions.

- The extra tanks can be positioned a long way from the main tank.
- No involuntary circulation between the tanks.
- Piping can be made with the smaller dimensions = easier and cheaper installation.
- Efficient separation = large accumulation capacity
- Optimisation of solar heating, if fitted.

Scope of delivery:

Sys 50 / Sys 51
Valve package Laddomat MR 50 with:

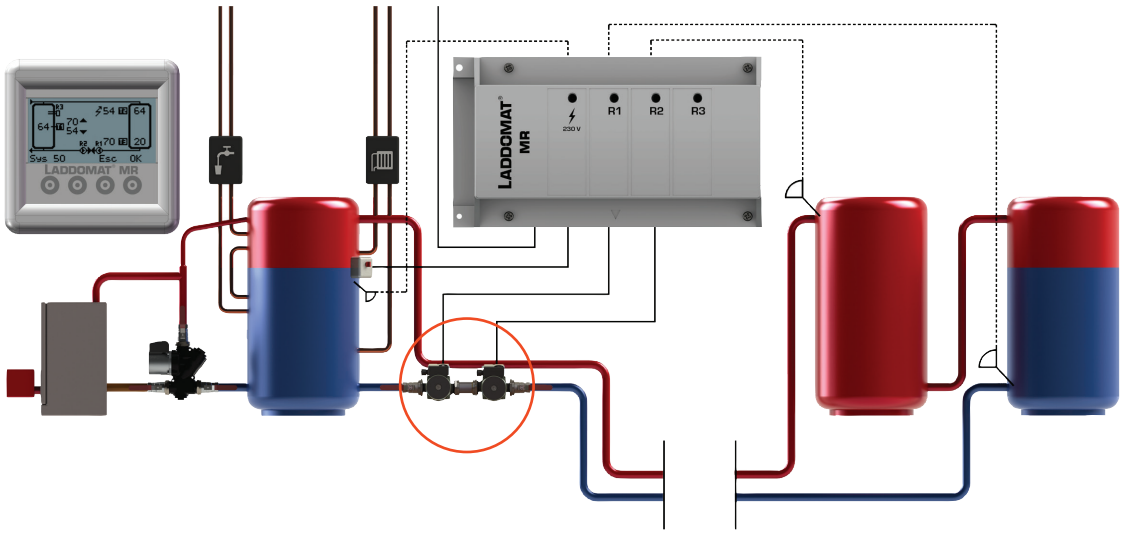
- Laddomat MR, complete.
- Patented dual action non-return valve.
- 2 pumps, Laddomat LM9A-130.
- 2 ball valves, Cu28 or R32.
- 3 x 3-bulb submersible tubes for bulbs with D=6 mm. R15, L=150 mm
- 2 x sensor holders and hose ties for pipe fitting

Applications:

- **Sys 50 - Charging/discharging between tank/tank. Charging from the main tank to the extra slave tank/tanks.** Charging can be stopped when the slave tank is fully charged. Discharging from the slave tank occurs when the main tank drops below the set temperature. Used to easily expand the accumulator volume with one or more tanks, even if they are not directly located next to the main tank due to lack of space.

- **Sys 51 - Charging/discharging between tank/tank with extra charging.** With e.g. a solar coil in the main tank, this system can be used to optimise the efficiency of solar panels. The tanks are filled in two stages, which also maximises the charging volume. It is also possible to use this to prevent the system from overheating, for example when burning wood.

Sensors that are not used for control can be used for temperature reading in a separate menu.



Function Sys 50

Charging
When the boiler heats the main tank so that the temperature is higher than the set temperature, the charging pump starts to pump hot water into the slave tank. The sensor in the bottom of the slave tank stops the process when the slave tank is fully charged.

Discharging
When the main tank is cold, the discharging pump starts and pumps over hot water from the top of the slave tank to the main tank. This takes place at a low flow thanks to that the Laddomat 5000 valve is equipped with a strong choke. Efficient separation of the heat is thereby achieved in both tanks. Discharging can only be started if the slave tank is warmer than the main tank.

Additional heating
Discharging can be interrupted at the desired temperature at the tank top sensor and, the additional heating, if any, may then be started in addition.

Function Sys 51

Extra charging
A fourth sensor can be put in the main tank to force the charging pump, in this way optimise use of any solar heating. By heating in two steps the solar coil can heat the primary tank first and then heat up the entire system. It is first then that the entire volume's temperature is increased. It is also possible to use this function to prevent the system from overheating, for example when burning wood.

Laddomat 5000 – patented double non-return valve, DBV

A double non-return valve is fitted in order to prevent involuntary circulation between the tanks. This has an integrated choke of the flow during discharging that provides optimum separation. As the non-return valve is spring-loaded in both directions it is completely mode-independent.

Termoventiler AB is represented in the following countries:

Australia, Belgium, Bulgaria, Chile, Denmark, Estonia, Finland, France, Greece, Ireland, Italy, Canada, Croatia, Latvia, Liechtenstein, Lithuania, Moldova, the Netherlands, New Zealand, Norway, Austria, Poland, Portugal, Romania, Russia, Switzerland, Serbia, Slovakia, Slovenia, Spain, Sweden, the Czech Republic, Turkey, Germany, Ukraine, Hungary, USA and Belarus.

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All high efficiency pumps conform to the European directive for energy-related products. ErP 2009/125/EC
For deliveries inside EU, only high efficiency pumps are used.

EAC

EC – Declaration of conformity: Termoventiler products, as delivered, are CE-certified according to relevant provisions

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