



SDV HVAC controller

SDVxQ10

Doc#

SDV-B..0 – Stand-alone SDVLB..0 – LON SDVBB..0 – BACnet SDVSB..0 – Local net

A configurable stand-alone or network connected unit for fan-coil and variable air volume applications with various selectable output modules.

Possible control options include:

- Three speed or variable speed fan control.
- Single step, three step or variable heating.
- On/off or modulating valve control.
- 0-5V or 0-10V analog out for various controlling functions.

Other features:

- Pre-set temperature set point or use with a MK2A22 wall control unit.
- Range of wall units compatible with most standard room fittings.
- Configure by specifying selectable modules.
- Input for water temperature, supply air temperature, occupancy or heater interlock.
- Plugable screw terminals.
- Power supply to unit 230V.

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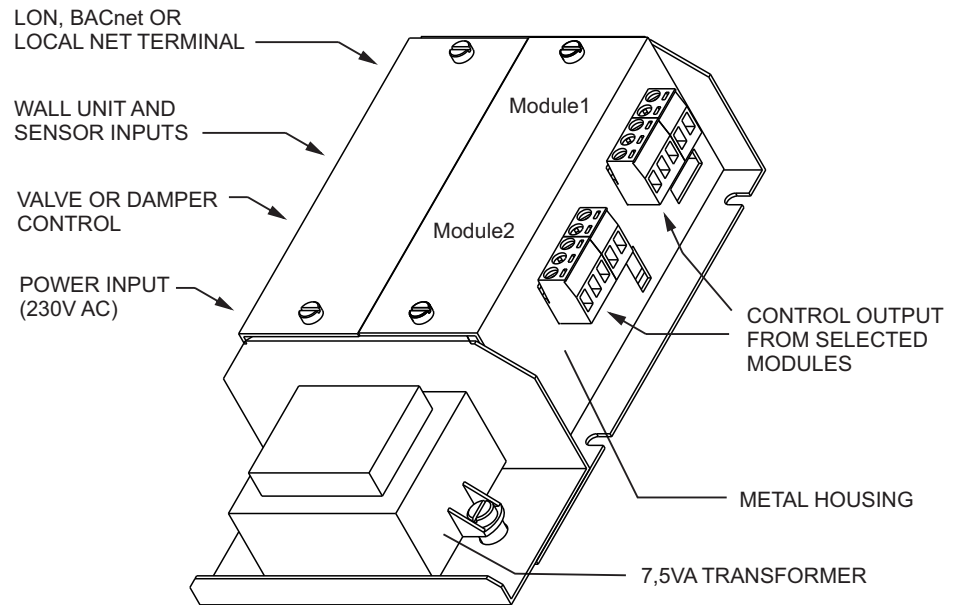
References

SDV range of controllers LON interface	SDVLQ20
SDV range of controllers BACnet interface	SDVBQ12
LONWORKS® Bus Wiring Guidelines	CAT5-1LQ10
LONWORKS® Network Wiring Aid	LONTKSQ10
Wall Unit (User interface)	MK2Q10

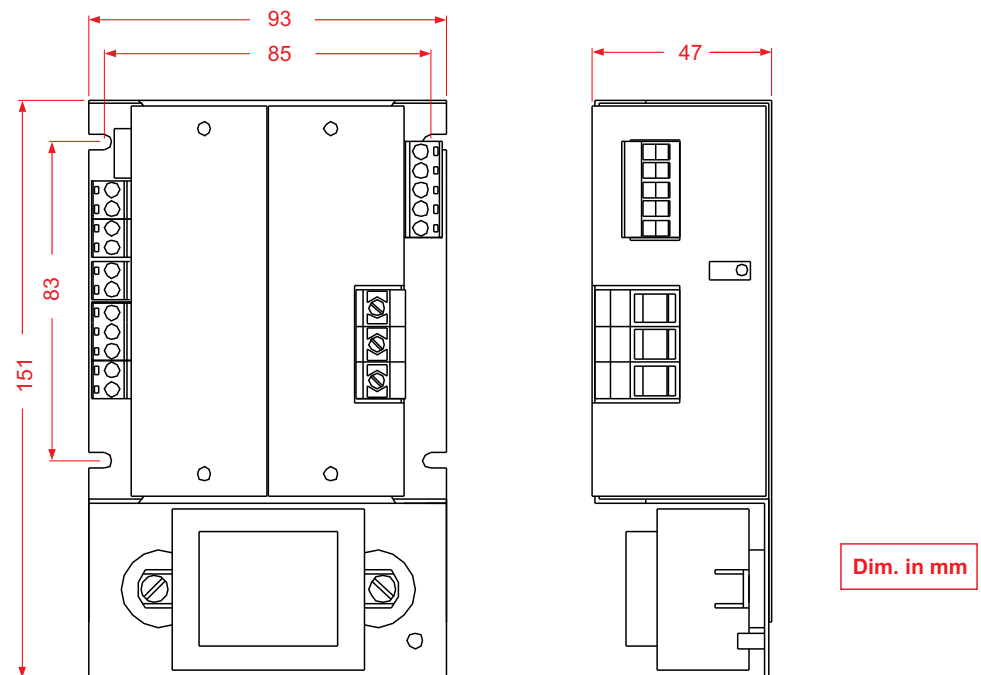
Design

The SDV range of fan-coil controllers consist of a controller plus power supply housed in a powder coated mild steel enclosure.

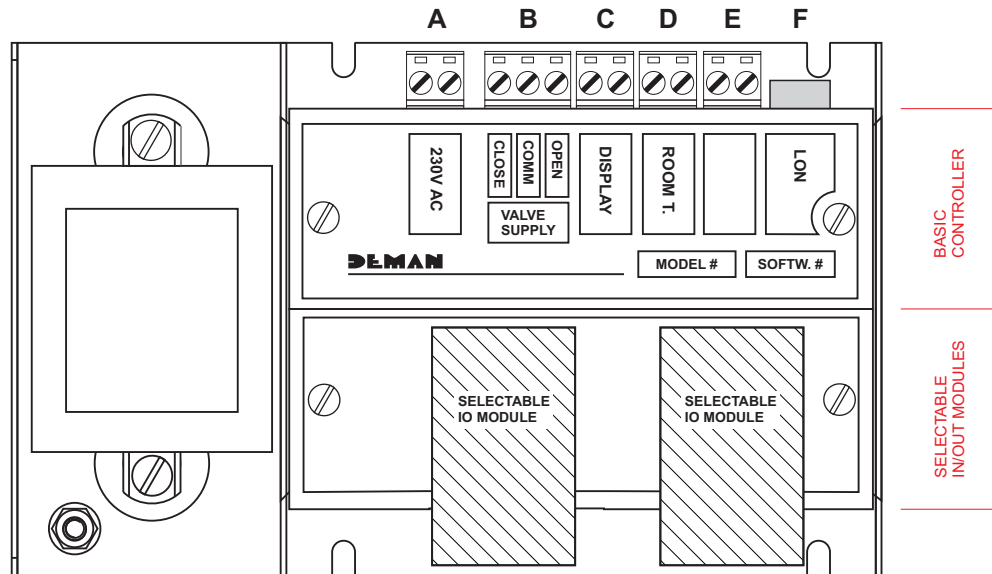
Various configurations are possible depending on the selected modules.



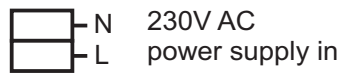
Dimensions



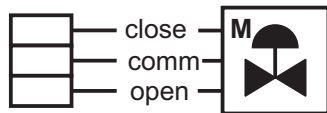
Technical Data: Basic Controller



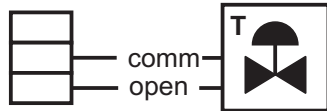
A - Power terminal



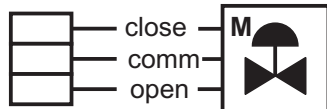
B - Valve or damper control



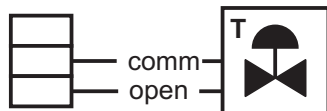
- OR -



- OR -



- OR -



Note:

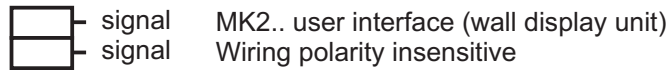
24V out -- max. output 5VA.

220V out -- max. output 20VA.

Output can be On/off, proportional or proportional plus integral.

Technical Data: Basic Controller (continued)

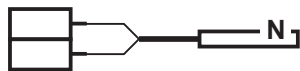
C - Display



Note:

Wall unit is Optional. Without the wall unit the temperature set-point is fixed or, if part of a building management system, via the BMS system.
The wall unit has a built in temperature sensor. If however a temperature sensor is wired to the ROOM T terminals the wired sensor is dominant.

D - Room temperature

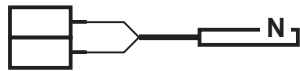


10K NTC temperature sensor.
Usually placed in the return air duct.

Note:

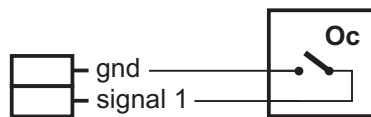
If this sensor is absent room temperature is measured at the wall unit.

E - Auxiliary input



10K NTC temperature sensor.
Usually supply water temperature or in a building management system the discharge air temperature.

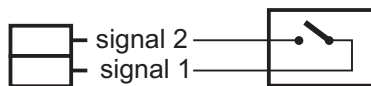
- OR -



Occupancy sensor

Voltage free signal from sensor.
Closed = movement in area.

- OR -



Heater interlock

Voltage free signal

F - Communication port

LON

- OR -

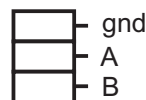
BACnet

- OR -

Local net



RJ11 6P4C



Note:

The controller is available as a stand-alone unit or with LON, BACnet or Local net connectivity.

SDV LON Configuration Parameters. Refer to doc.# SDVLQ20

SDV BACnet Configuration Parameters. Refer to doc.# SDVBQ20

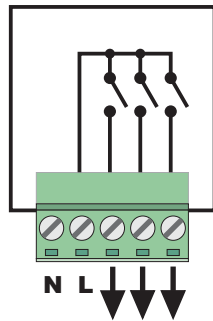
LONWORKS® Bus Wiring Guidelines. Refer to doc.# CAT5-1LQ10

Local Net Wiring. Refer to page 10

Technical Data: Selectable Modules

Modules

SDV3R

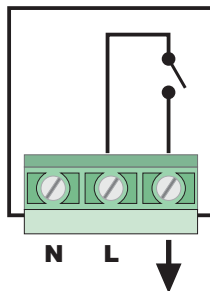


3x relay (3A)

Contacts rating: 3A max.
275V max.

Usage: 3 speed fan
3 bank heater

SDVGR

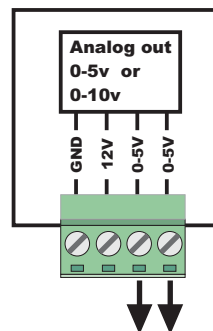


1x relay (15A)

Contacts rating: 15A max.
275V max.

Usage: single step heating (3kW max.)

SDVAU

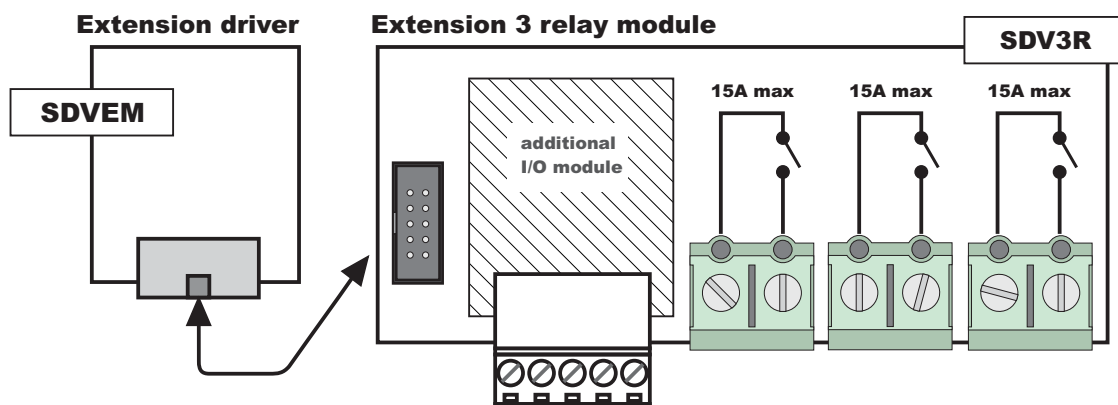


Analog out

Output: 0-5V or 0-10V
12V DC supply 2W max.

Usage: valve or damper control.

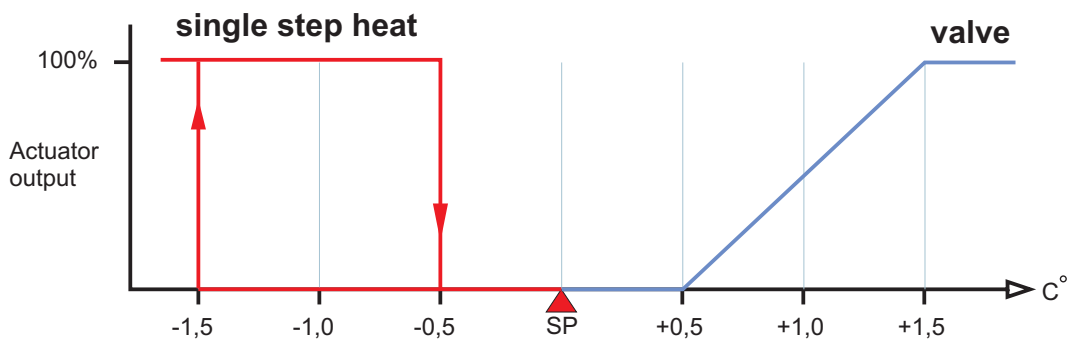
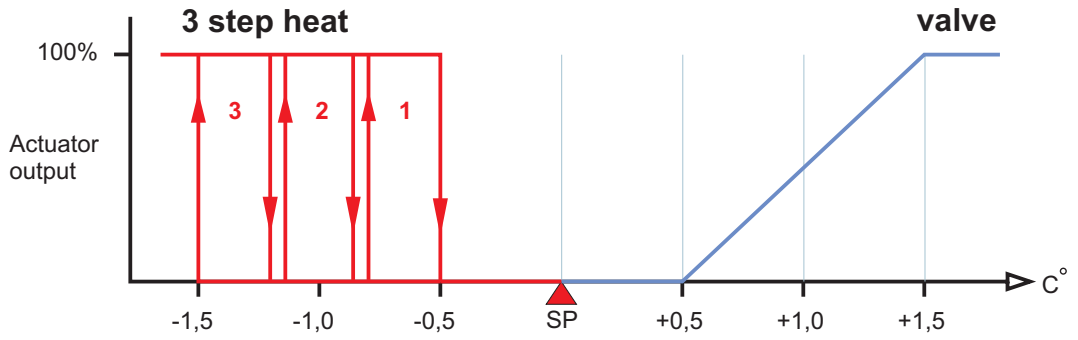
Extention card



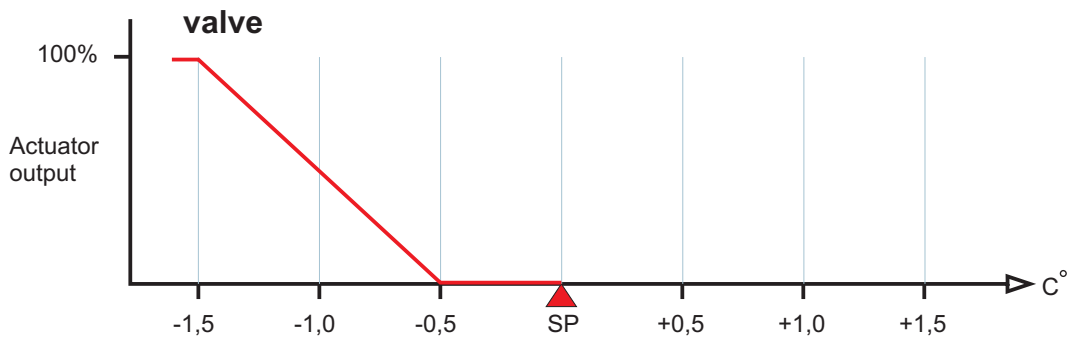
Contacts rating: 15A max / 275V max.

Usage: 3 step heating
(3kW per element max.)

Water temp < room temp



Water temp > room temp



Control (continue)

Control Process

Temperature set point entered on the wall unit can be from 18°C up to 26°C.

Switch over between heating and cooling is automatic with a 1°C dead band between heating and cooling. Therefore a temperature rise of 0,5°C above set point causes the controller to go into cooling mode and a fall to 0,5°C below set point to go into heating mode.

Indications on the wall unit: Cooling mode -- Snow flake symbol
Heating mode -- Sun symbol
In between -- The letter A

The controller use a 1 degree proportional band for both heating and cooling modes.

Proportional valve control:

Closed at 0.5°C from set point, fully open at 1.5°C from set point and proportionally open between 0.5°C and 1.5°C from set point. (Will for example be 50% open at 1°C from set point.)

ON/OFF valve control (solenoid or thermic):

Opens fully on temperature reaching 1.5°C from set point and closes fully should the temperature move to 0.5°C from set point.

Single step heater control:

Switches on when temperature drops to 1.5°C below set point and switches off should the temperature rise to 0.5°C below set point.

3 step heater control:

Each heater is controlled as a single step heater. The control offset temperatures below the set point are however cascaded. Heater 1 on at 0,83°C and of at 0,5°C, heater 2 on at 1,13°C and off at 0,83°C and heater 3 on at 1,5°C and off at 1,13°C.

The fan speed control is either on/off or 3 speed. The three speed setting is entered on the wall unit. Two bars for low, four for medium and six for high speed.

Control Process in un-occupied mode

If the auxiliary input is used for occupancy the controller can be in occupied or in un-occupied mode.

Occupied mode:

Normal control process as set out above.

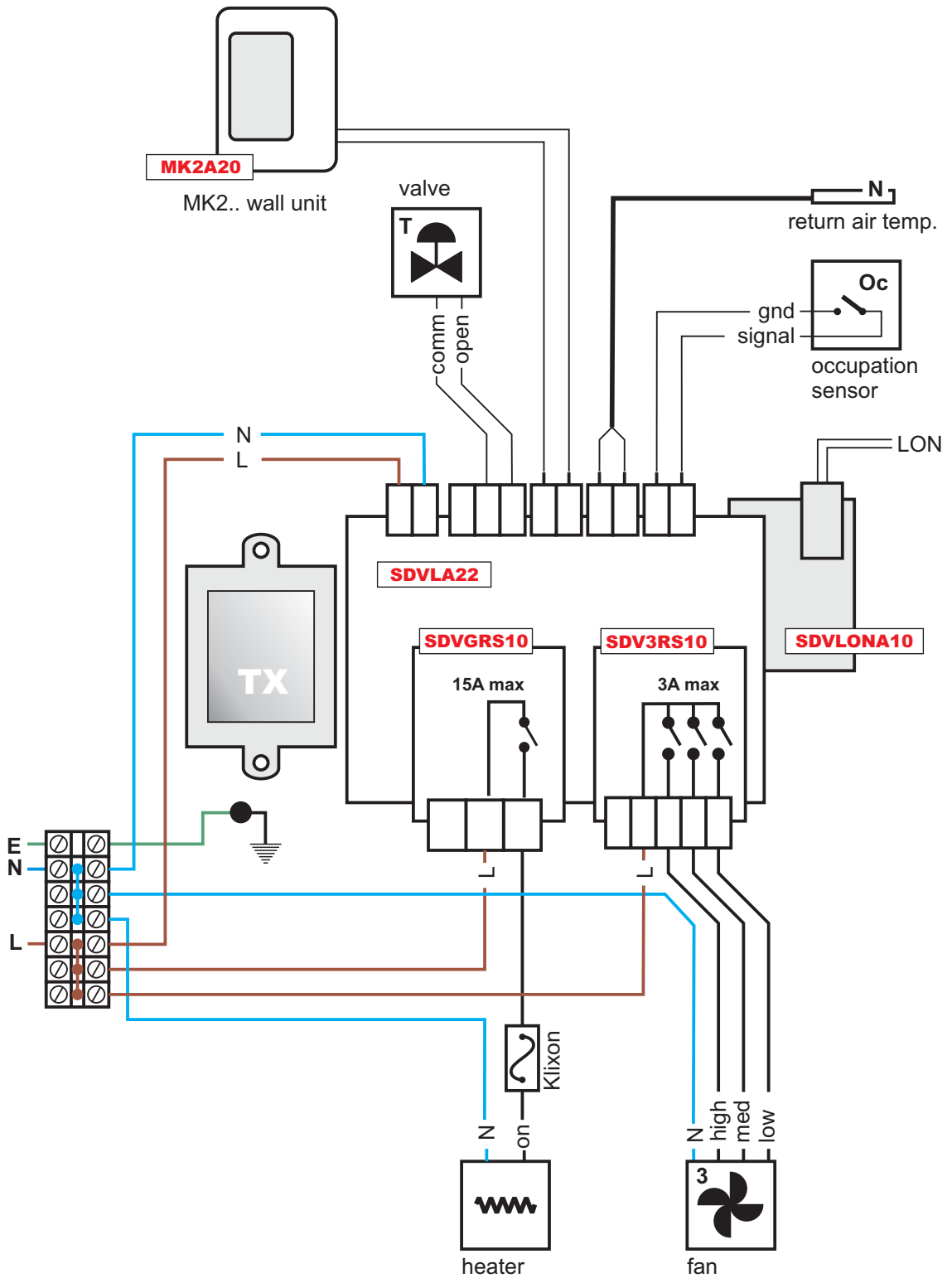
Un-occupied mode:

No heating or cooling is provided between 18°C and 26°C. Cooling "switches on" at 27,5°C and off at 26°C. Heating "switches on" at 16.5°C and off at 18°C.

Wiring example

SDVLB60

Wiring diagram for a fan-coil controller with LON and occupancy sensing.

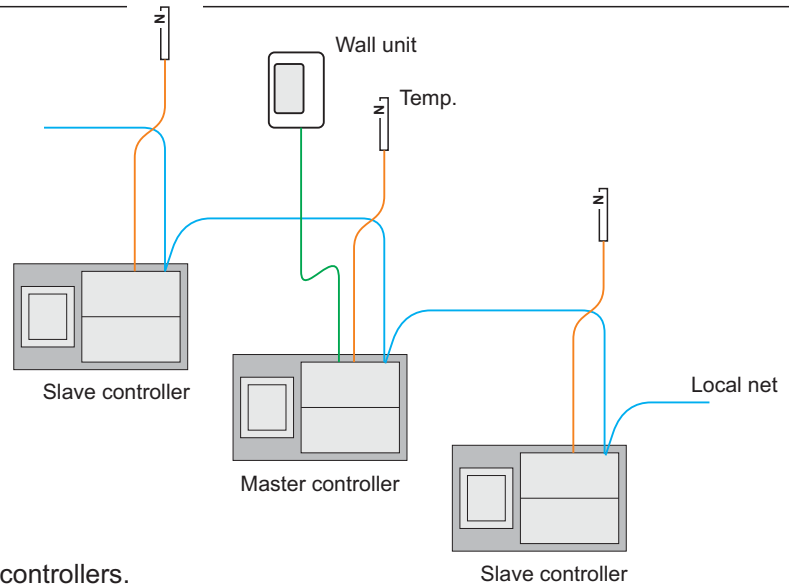


Accessories

MK2A2	User interface (wall unit) 5 button.
NTC10HB1	10K NTC temperature sensor. 1m cable
NTC10HB2	10K NTC temperature sensor. 2m cable.
CAT5-1	UTP cable, 1 pair, category 5e, stranded. (LON network cable.)

Local Net Wiring

Wiring



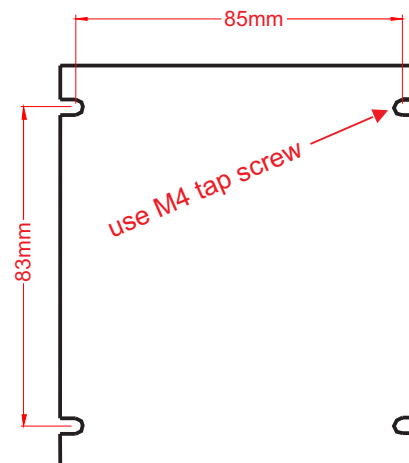
Maximum of 6 controllers.
 2-core wiring polarity insensitive.
 Controller with wall unit plugged in is the master controller.
 Each controller must have a room temperature sensor.

Functioning

All the controllers receive the temperature and fan speed set points from the wall unit plugged in at the master controller.
 All slave controllers are in the same mode as the master controller. A slave unit will for example not heat if the master controller is in cooling mode.
 Each controller controls according to the set points and its own room temperature sensor.

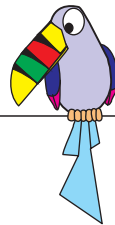
Installation notes

Mounting template



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