



## MMT Diffuser control

## MMTxQ30

Doc#

### Master

- MMTM-A11 -- Stand alone
- MMTMLA11 -- LON network
- MMTMBA11 -- BACnet network
- MMTMSA11 -- Local network

### Slave

- MMTSA10 -- Damper only
- MMTSA20 -- Damper + element

**A stand-alone or network connected master unit controlling up to 16 diffuser slave units.**

**Pre-set temperature set point or use with a MK2A81 wall control**

**Inputs for return and supply air temperature sensors**

**Input for occupancy sensor**

**Auxiliary input for various interlocks**

**Power supply to unit: 24V AC**

**Plugin screw terminals**



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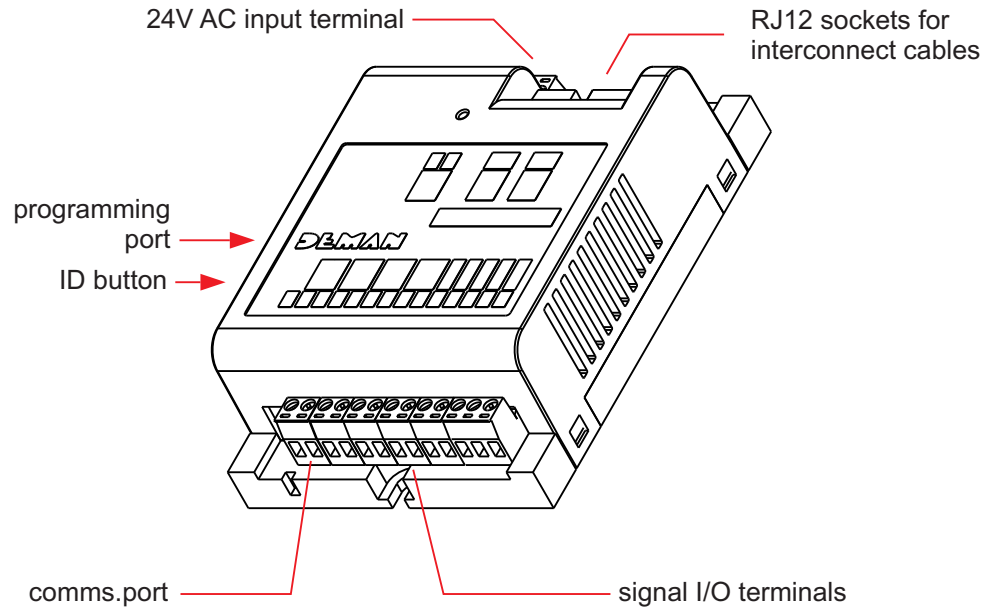
## References

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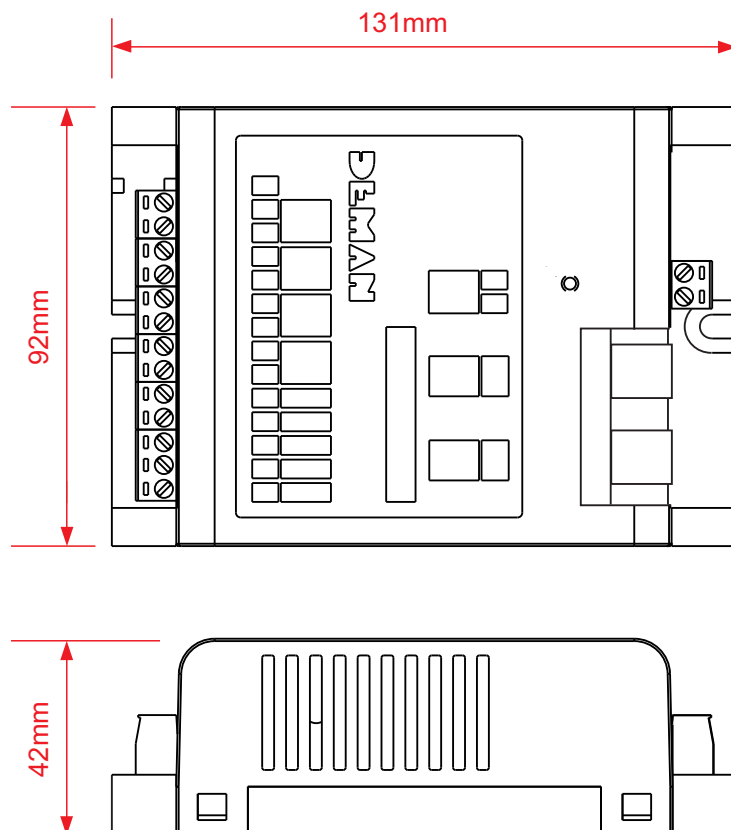
MM1 range of controllers LON interface	MM1LQ20
MM1 range of controllers BACnet interface	MM1BQ20
LONWORKS® Bus Wiring Guidelines	CAT5-1LQ10
LONWORKS® Network Wiring Aid	LONTKSQ10
Wall Unit (User interface)	MK2Q10

## Design - master unit

Enclosure: fire retardant ABS.  
Terminals: plugin screw terminals.  
Cabling to slave units: 6 way telephone with RJ12 plugs fitted.



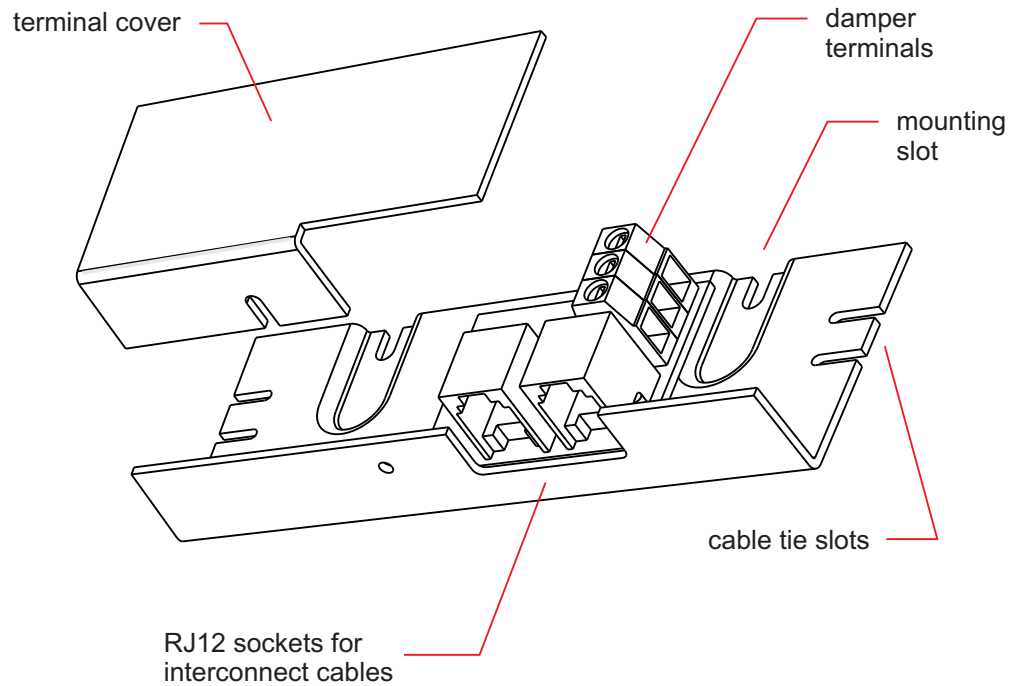
## Dimensions - master unit



## Design - slave unit-1 (damper only)

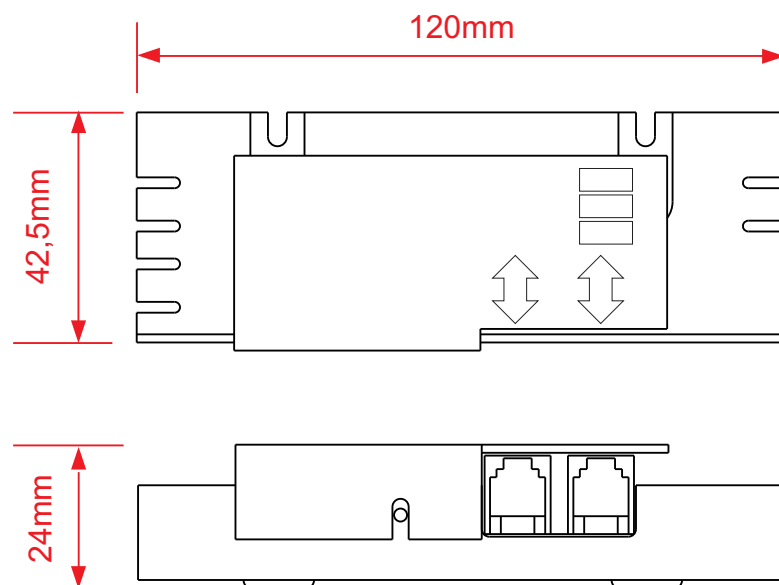
### MMTSA10

Enclosure: Aluminium  
Terminals: Damper wiring - screw terminals.  
Interconnect cable: 6 way telephone with RJ12 plugs fitted.



## Dimensions - slave unit-1 (damper only)

### MMTSA10



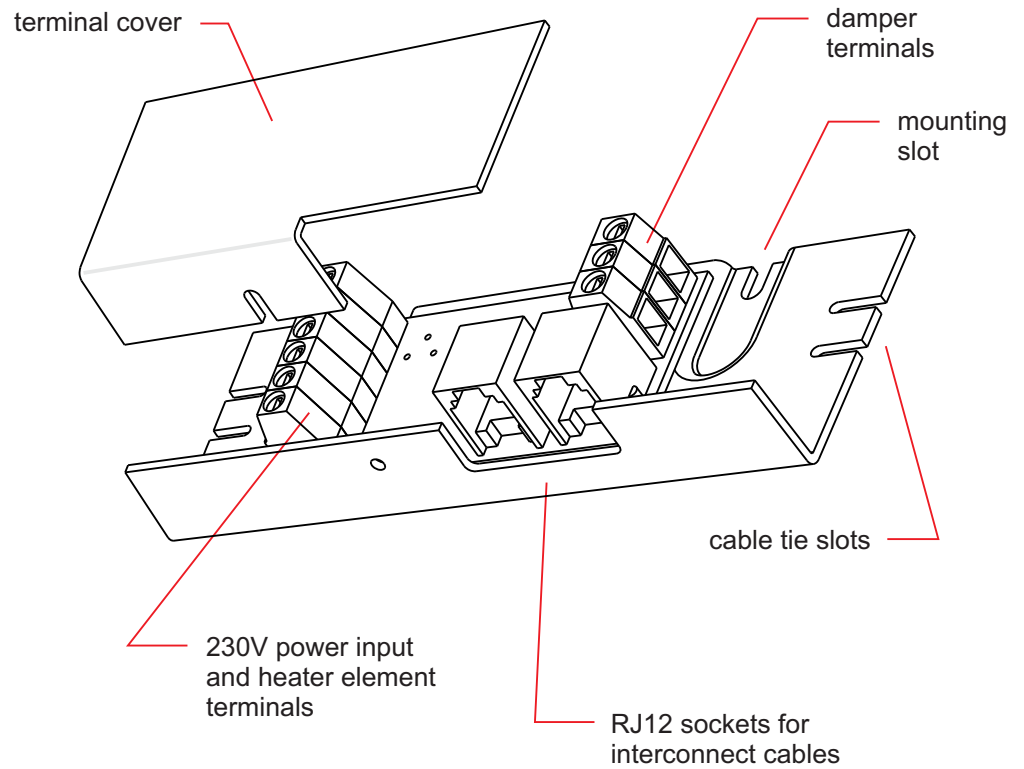
## Design - slave unit-2 (damper + heating element)

### MMTSA20

Enclosure: aluminium

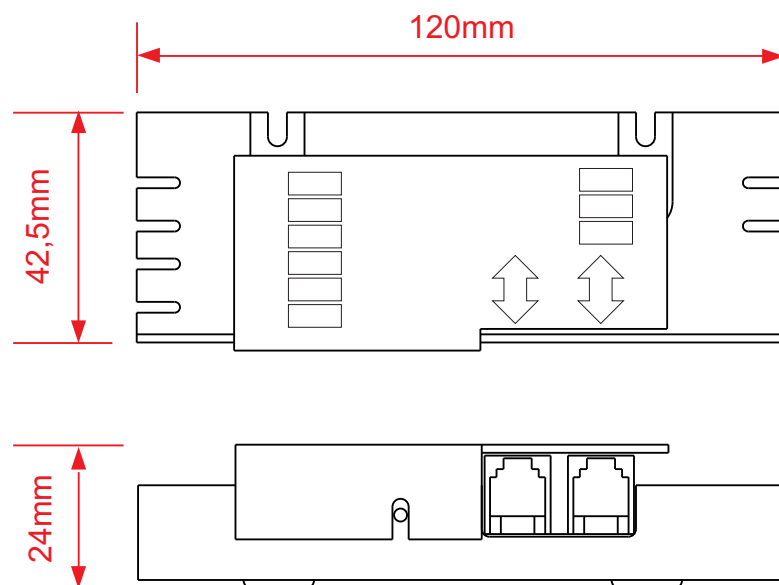
Terminals: screw terminals for 230V input, heater element and damper.

Interconnect cable: 6 way telephone with RJ12 plugs fitted.



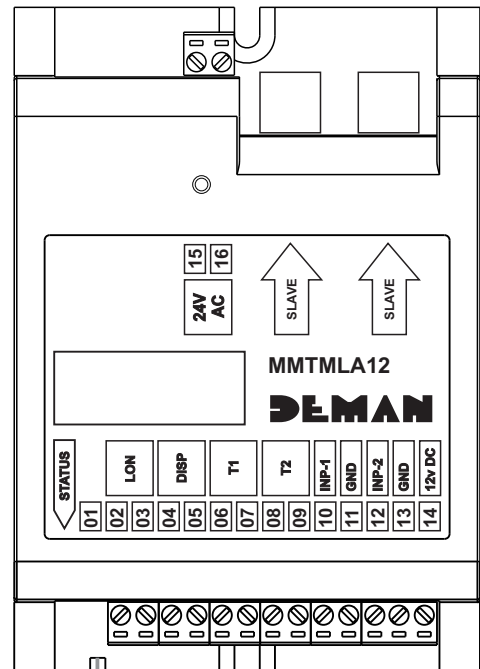
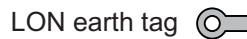
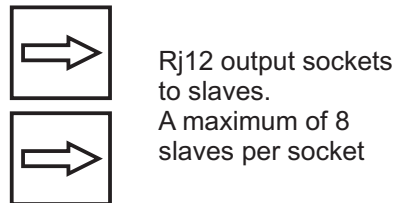
## Dimensions - slave unit-2 (damper + heating element)

### MMTSA20

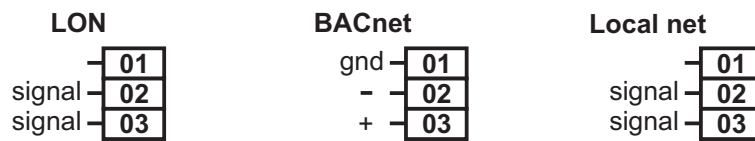


# Technical Data - master unit

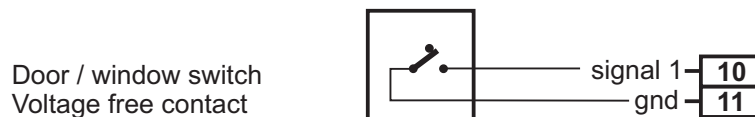
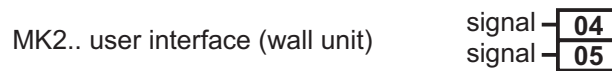
## Power & slave terminals



## Communication port



## Signal I/O terminals



## Technical Data - master unit (continued)

### Note:

All user interface units (wall unit on terminals 04/05) have a built-in temperature sensor. If however, a room air temperature sensor is wired to terminals 06/07, the room air sensor is dominant and the wall unit sensor is ignored.

Wiring of the user interface (wall unit) to terminals 04/05 is polarity insensitive.

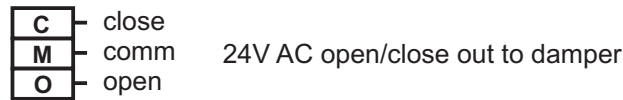
Voltage free contact inputs to terminals 10/11 and 12/13:

Door/window switch (term.10/11) -- closed contact indicates door/window closed.

Occupancy (term.12/13) -- closed contact indicates occupied.

## Technical Data - slave unit -1 (damper only)

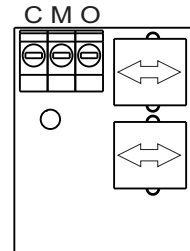
### Damper terminals



### Interconnect terminals

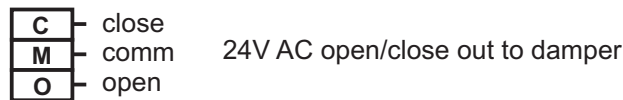
Sockets for interconnect cabling. In/out are exchangeable.

RJ12 sockets



## Technical Data - slave unit-2 (damper + heating element)

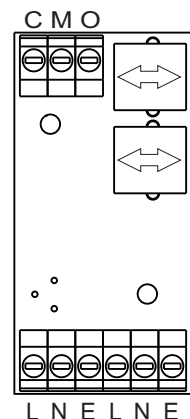
### Damper terminals



### Interconnect terminals

Sockets for interconnect cabling. In/out are exchangeable.

RJ12 sockets



### Heater element terminals

Maximum output to heater: 1,5kW

230V power in

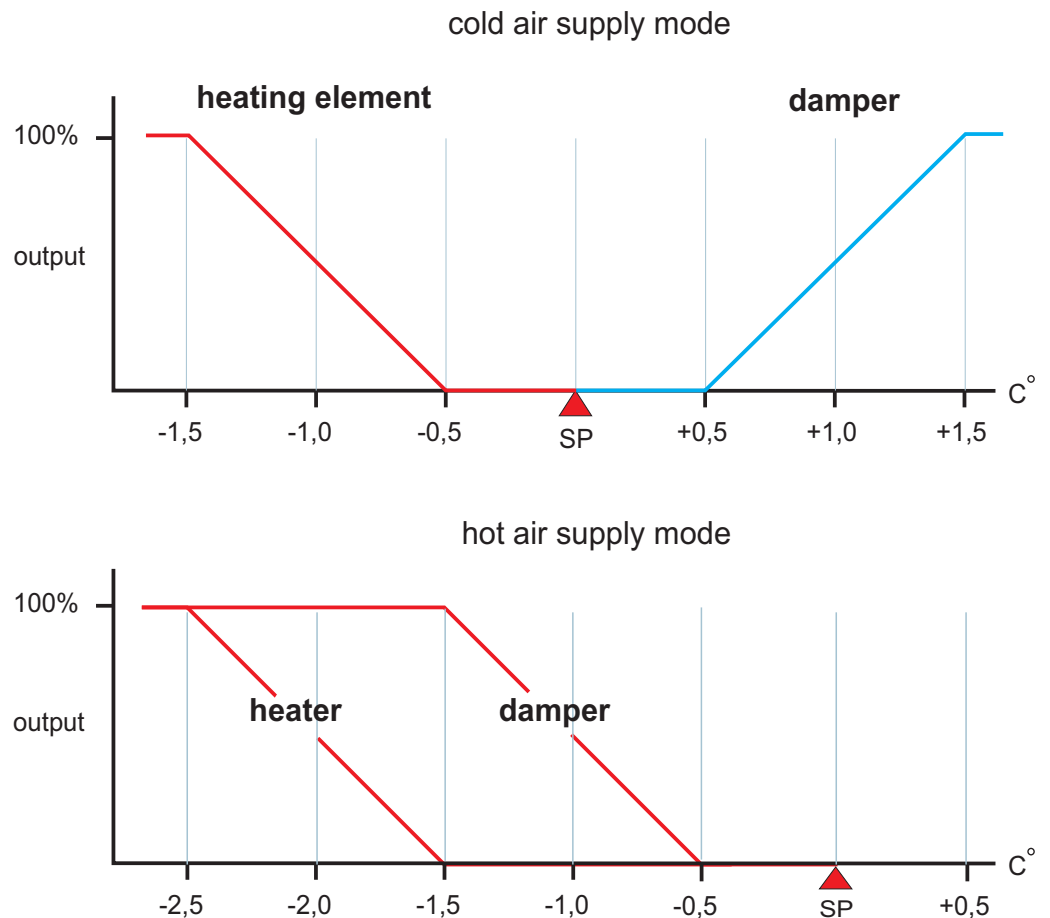
power out to heating element





## Control

### Temperature control



### Control Process

The controller is in cold air supply mode or in hot air supply mode depending on the supply air temperature if it is an alone standing unit or on the instruction from the BMS if it is in a BM system.

Switch over between heating and cooling is automatic with a 1°C dead band between heating and cooling. Therefore the controller does cooling for temperatures higher than 0,5°C above set point and does heating for temperatures lower than 0,5°C below set point.

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

Damper control in **hot air** and **cold air** supply mode - proportional:

Fully open when temperature is further than 1.5°C from set point and fully closed when temperature is closer than 0.5°C from set point.

Heater control in **cold air** supply mode - proportional:

Fully on when temperature is more than 1.5°C below set point and fully off when temperature is less than 0.5°C below set point. (Damper would be in the "closed" position below 0.5°C above set point)

Heater control in **hot air** supply mode - proportional:

Fully on when temperature is more than 2.5°C below set point and fully off when temperature is less than 1.5°C below set point. (Damper would be in the fully open position below 1.5°C below set point)

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

## Control (continue)

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### Control Process in unoccupied mode

Input (voltage free) over terminals 12/13 is used for occupancy. A closed input places the controller in occupied mode and an open input in unoccupied mode.

**Occupied mode:** (closed contact)

Normal control process as set out above.

**Unoccupied mode:** (open contact)

Minimum flow is provided between 18°C and 26°C. Normal cooling above 26°C and normal heating below 18°C.

### Control process in conserve mode

Input (voltage free) over terminals 10/11 is used for energy waste monitoring. For instance a door and/or window switch. An open contact indicate an open window or door placing the unit into conserve mode.

**Conserve mode:** (open contact)

Minimum flow is provided.

**Normal mode:** (closed contact)

Normal control process as set out above.

## Product selection

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### Master unit

**MMTM**  **A**  **1**

- Alone standing
- L** LON connectivity
- B** BACnet connectivity
- S** Local network

**1**

Alone standing controller: supply air temperature on terminals 08/09

LON or BACnet controller: the supply air temperature is reported on the BMS.

**2**

Future use.

**3**

Future use.

### Slave units

**MMTSA10**

output for damper only

**MMTSA20**

output for damper and heater element

### Wall displays

**MK2A12**

2 button wall unit (user interface) temperature control only.

**MK2A81**

3 button wall unit (user interface) temperature control + on/off

### Cables

**SDVDSH00**

interconnect cable 0,5m

**SDVDSH10**

interconnect cable 3m

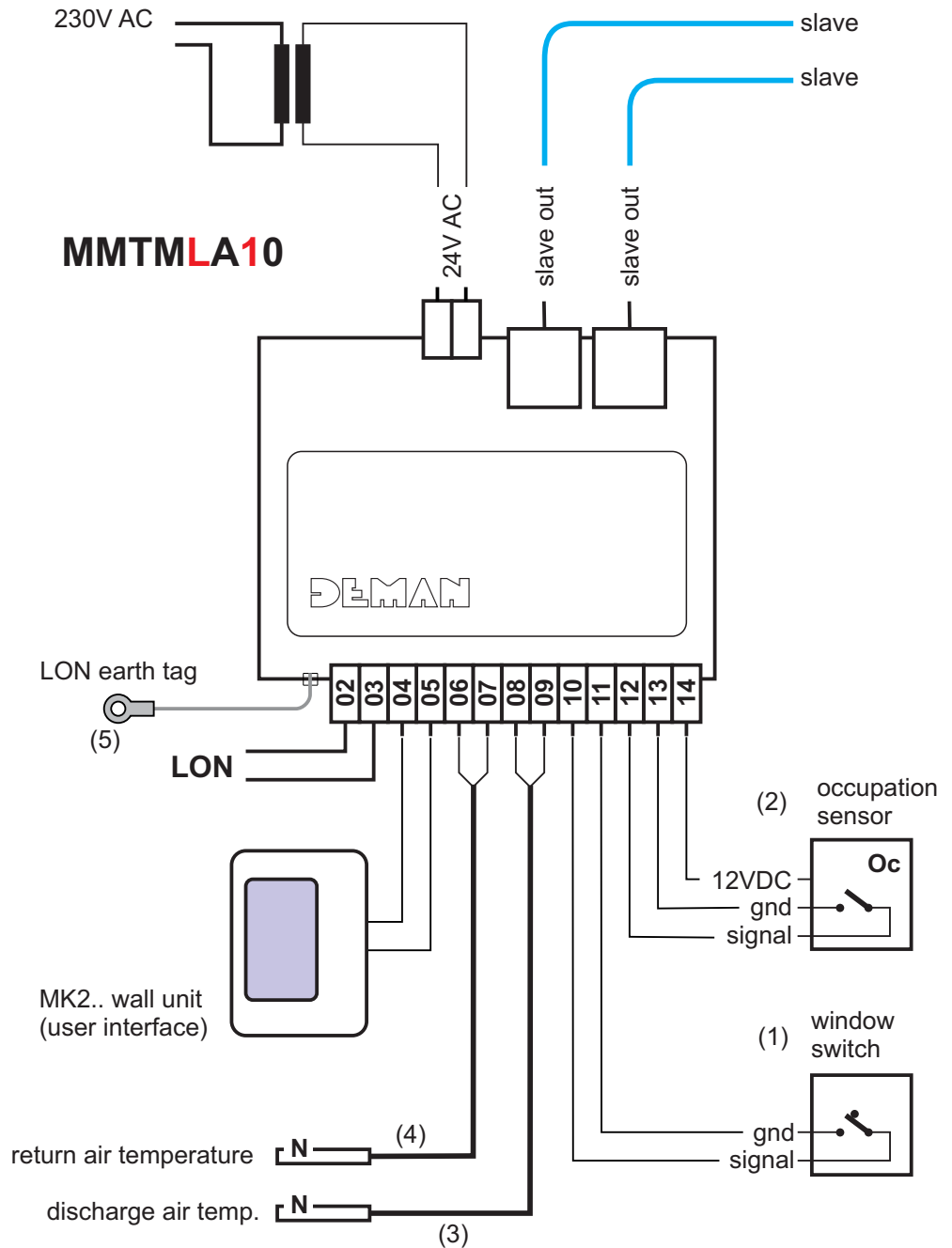
**SDVDSH20**

interconnect cable 6m

## Wiring example

Wiring diagram for a diffuser master controller with LON, discharge air temperature monitoring, occupancy sensing and window monitoring.

### Master unit

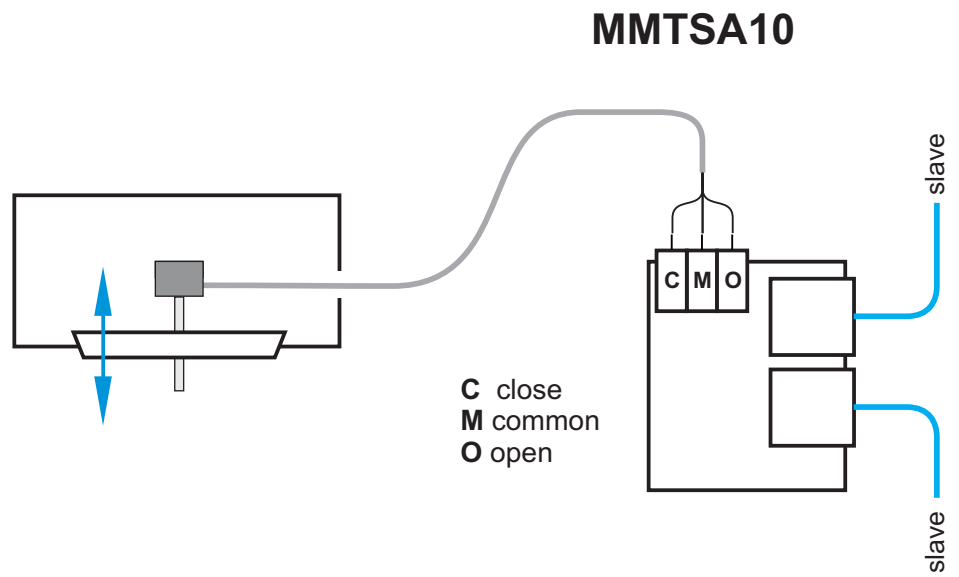


### Notes

- 1) Window open (contact open) -- controller in conserve mode.
- 2) Room unoccupied (contact open) -- controller in unoccupied mode.
- 3) Discharge air temperature is measured for report back on the LON network.
- 4) If the return air temperature sensor is not installed the room temperature will be measured at the wall unit.
- 5) For LON the earth tag must be wired, directly or indirectly, to 3rd pin Earth.

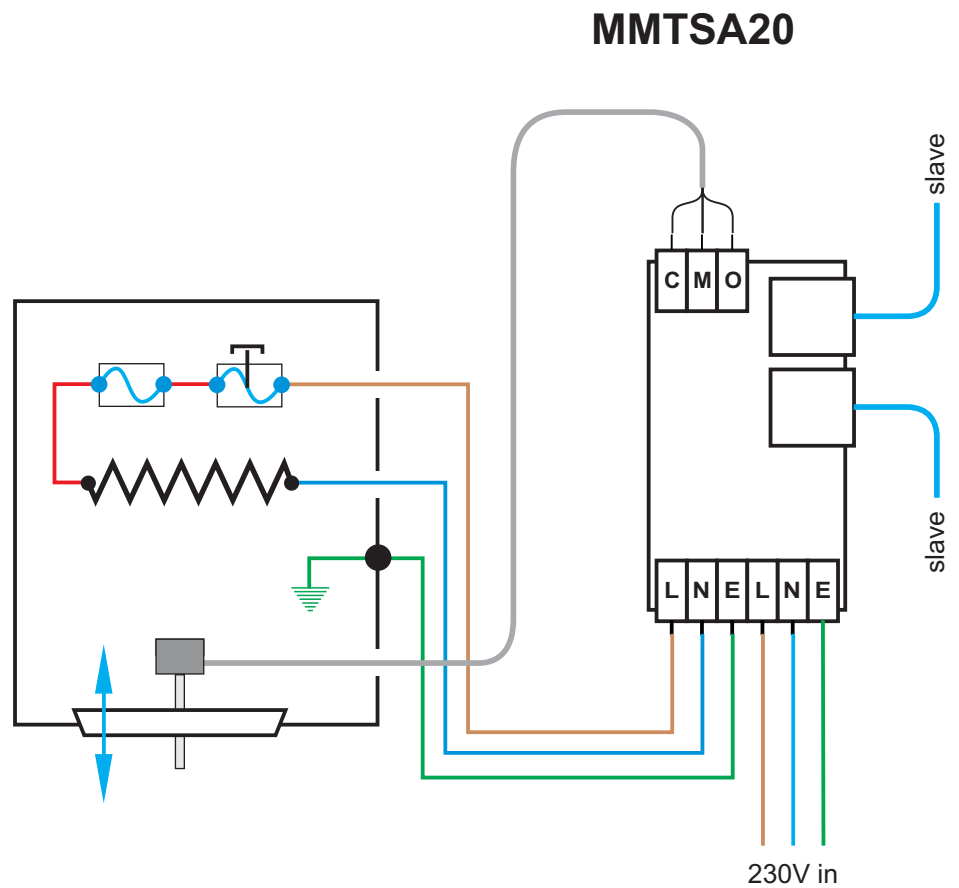
## Wiring example (continue)

Slave unit-1  
damper only



**NOTE:** The above slave unit functions with the MMTM master controller only.

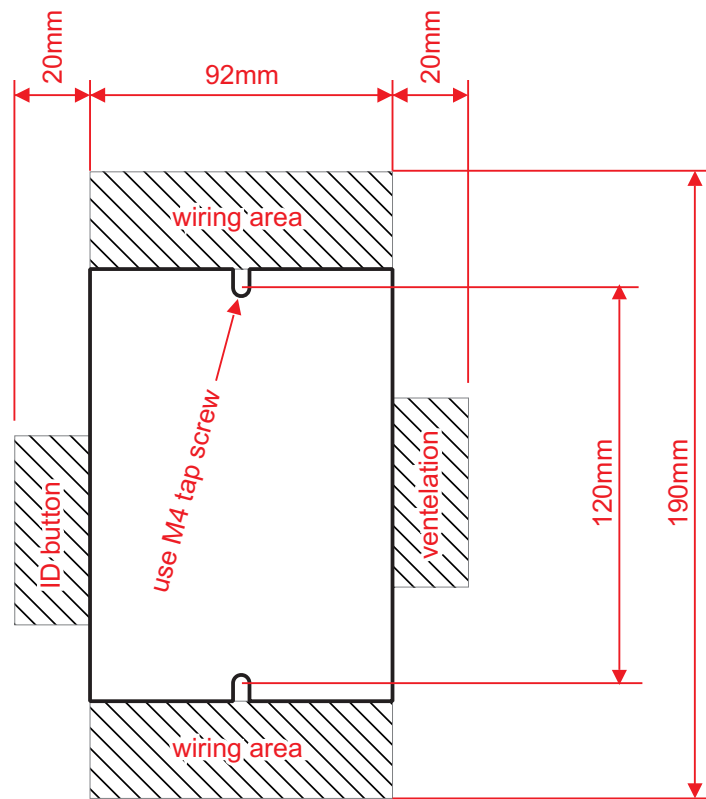
Slave unit-2  
damper + heater element



**NOTE:** The above slave unit functions with the MMTM master controller only.

## Installation notes

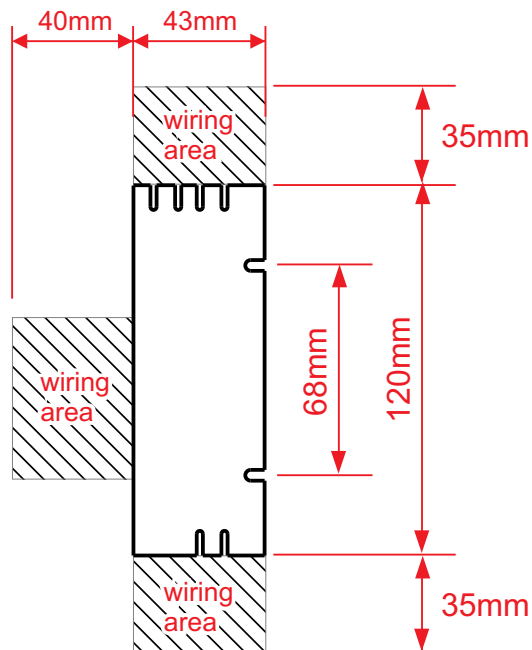
### Mounting template master unit



### LON earthing

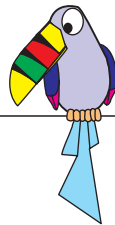
On the MMTMLA..0 configurations, the LON earth tag must be attached to the frame of the diffuser unit. The diffuser frame must in turn be attached to the power supply 3rd pin earth.

### Mounting templates slave units



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