

Wired versus Wireless

Price comparison for offices



Discover the differences in:



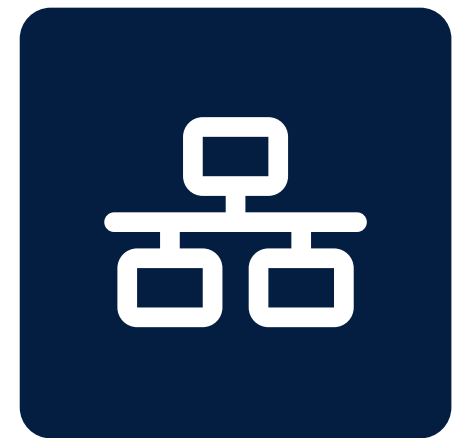
Wiring costs



Installation costs



Fault margin



Components and
connections

The essence

A major component of installation costs is cable-wiring. That starts with the 240V power connections, followed by the building network connections among which Ethernet, BACnet, all the 24V connections for controllers, sensors and servos, all the data connections including Roombus, DALI, Modbus, 0-10V of sensors and servos, room control cabinets, switches, fixtures and so on.

Bringing everything back to the essence, i.e. distributing power supply, greatly simplifies installation.

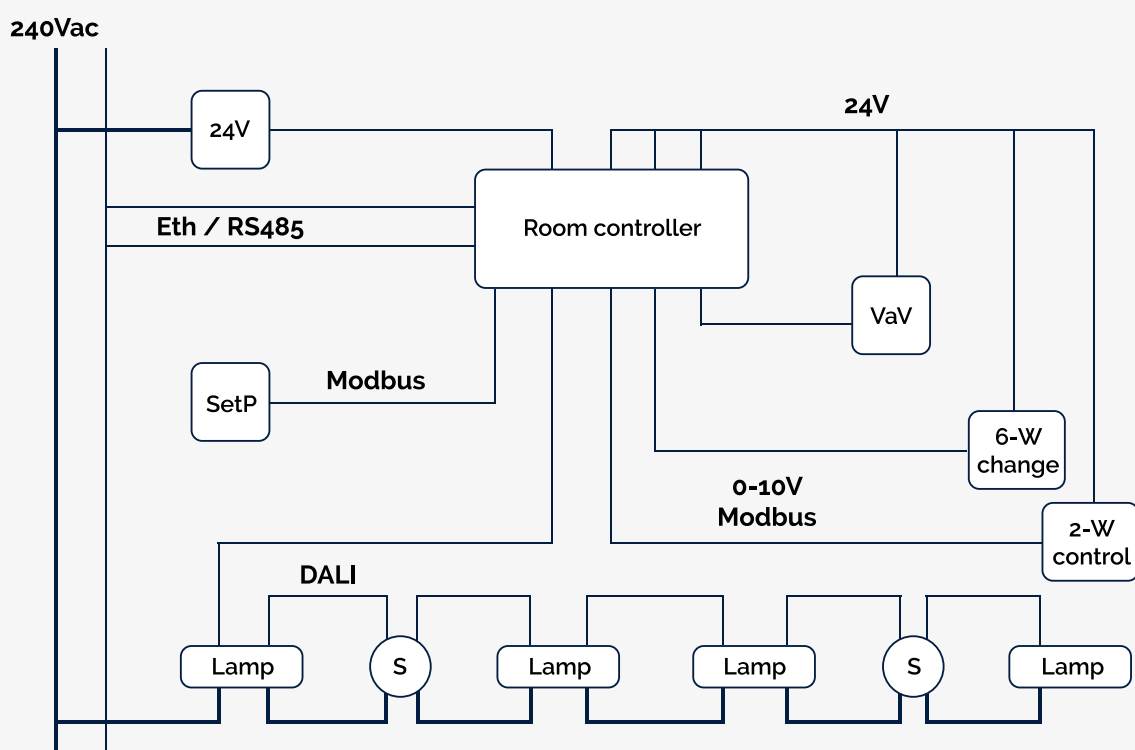
Classic wired zone layout

The commonly used layout for a control zone is shown in the scheme below. Characteristic of this layout is the central control with, in this case, a so-called room controller. At building level, the room controllers are all interconnected via floor controllers to the central control system, also called the Building Management System (BMS).

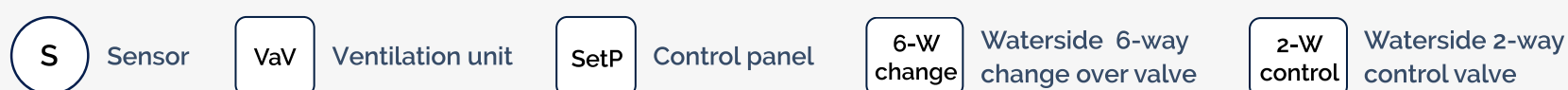
There are many variations of this scheme, depending on the system supplier or installer. As a result, there is a wide variety of control types for servomotors (Modbus, 0-10V, sensor feedback yes/no, etc.) with ditto interfaces. Typically, organizations try to minimize material costs, so there are few installations where water and air flow are locally measured and fed back. Precisely this feedback has great added value during installation and operation for the purpose of quick fault diagnosis.

A second characteristic is the wide variety of cabling types to be laid. For instance: data cable to the servo, the 24V power cables, the Room bus, Modbus or BACnet cables, both locally in the control zone and in the building at large.

Both factors contribute to failure costs during the installation process. Each connection represents a risk of failure. The more connections, the more work to find and repair the "failing" connections. The large number of connections significantly increases the risk of a lower-quality installation in the future. Changes are not or hardly documented so that after several years the current situation of how things are connected will be unknown.



Classic zone layout



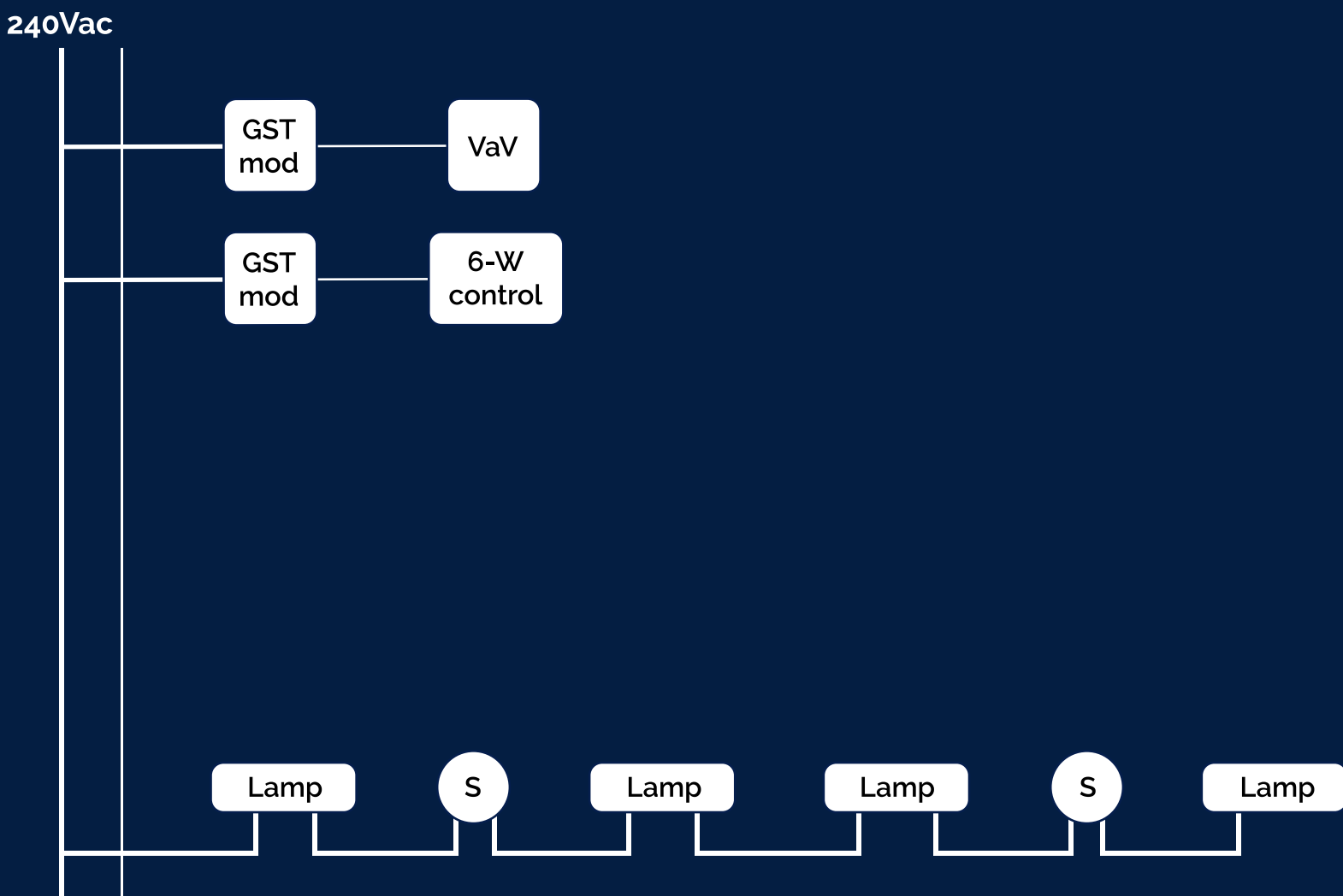


Mymesh wireless zone layout

Mymesh's basic principle is that all products are plugged. Essentially, everything is connected in 240Vac using the Wieland GST18i3 plug family. This is popular in the Electrical installation world, where in the M-installation world it has not yet caught on. The direct control signals to lamp, servo motor, etc are also Wieland-based. The goal is to have the sub-assembly of such products already factory-fitted with a plug, so that the risk of failure in the field is significantly reduced.

Data connections on both room and building level are no longer needed, as Mymesh connects everything wirelessly.

This type of installation therefore only has one type of cable with one type of plug. The end products (VaV box, 6-way valve) already have a cable with connector that fits directly onto the Mymesh product. This brings an enormous simplification to the installation, while the risk of failure is very low. In addition, diagnosis is much clearer: voltage or not, and then, device connected or not.



Mymesh zone layout

-  Mymesh sensor
-  Mymesh GST-Modbus
-  Ventilation unit
-  Waterside 6-way control valve

Did you know?

Mymesh uses only one type of cable

This brings an enormous simplification to the installation, while the risk of failures is very small and diagnoses become much clearer.



Wireless makes all data connections redundant

This results in significant cost savings and makes Mymesh easily scalable.



Did you know?



Reducing the number of cable connections reduces the risk of failures during installation and maintenance.



Installation and assembly costs

To arrive at a comparison of the different solutions with the calculation model, four costs have been defined for all calculations. Mymesh is aware that prices or their breakdown may vary from one installer to another. A "connection" can be a plug connection (regardless of the number of wires it contains) and an individual wire connection, such as a wire under a screw terminal and a wire in a terminal strip

The typical Wieland splitter creates a 3-way plug for power distribution. There are also options for 5-way plugs and more, but they have little impact on the price. Wieland cables are typically slightly cheaper than stated in the calculation model. On the other hand, we assume that the cables must be partially mounted on the ceiling or installed in a cable duct. The mounting of the equipment itself, such as the fixture, VaV box and 6-way valve, is not included in this price comparison. Mounting must be done in all cases and will not make the difference in price.

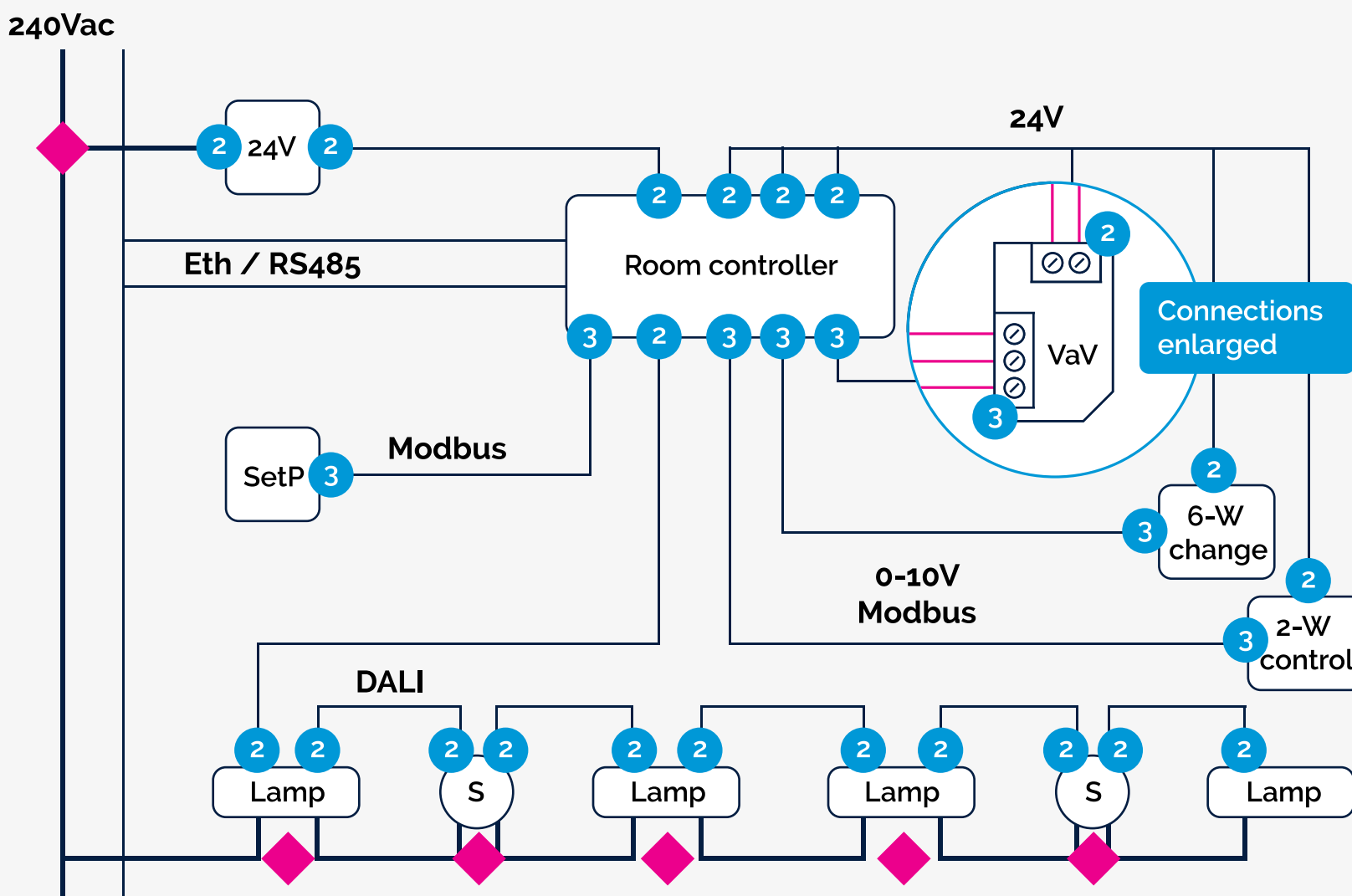
The calculation model

To arrive at a comparison of installation costs, two main points were considered: the number of meters of cable and the number of connections to be made. A plug connection with multiple wires counts as one connection and an individual wire connection under a screw terminal also counts as one connection.

Cable lengths are determined by estimation, assuming that each control area measures 20 m² and thus 4 by 5 meters. That brings the distance between connections to 3 metres. The HVAC valves are at a shorter distance from one another and the distance of the connections between the rooms and the floors are a lot longer: 5 metres and 10 metres.

The calculations also include the 240 V connection of the zone on the floor. These, however, are not shown in the illustrations.

The calculation model Classic wired zone layout



Type	Cables	Connections	Splitters
Ethernet	2	2	0
24V power	4	16	0
DALI	6	24	0
Modbus	4	24	0
240Vac	8	21	7
Total	24	87	7



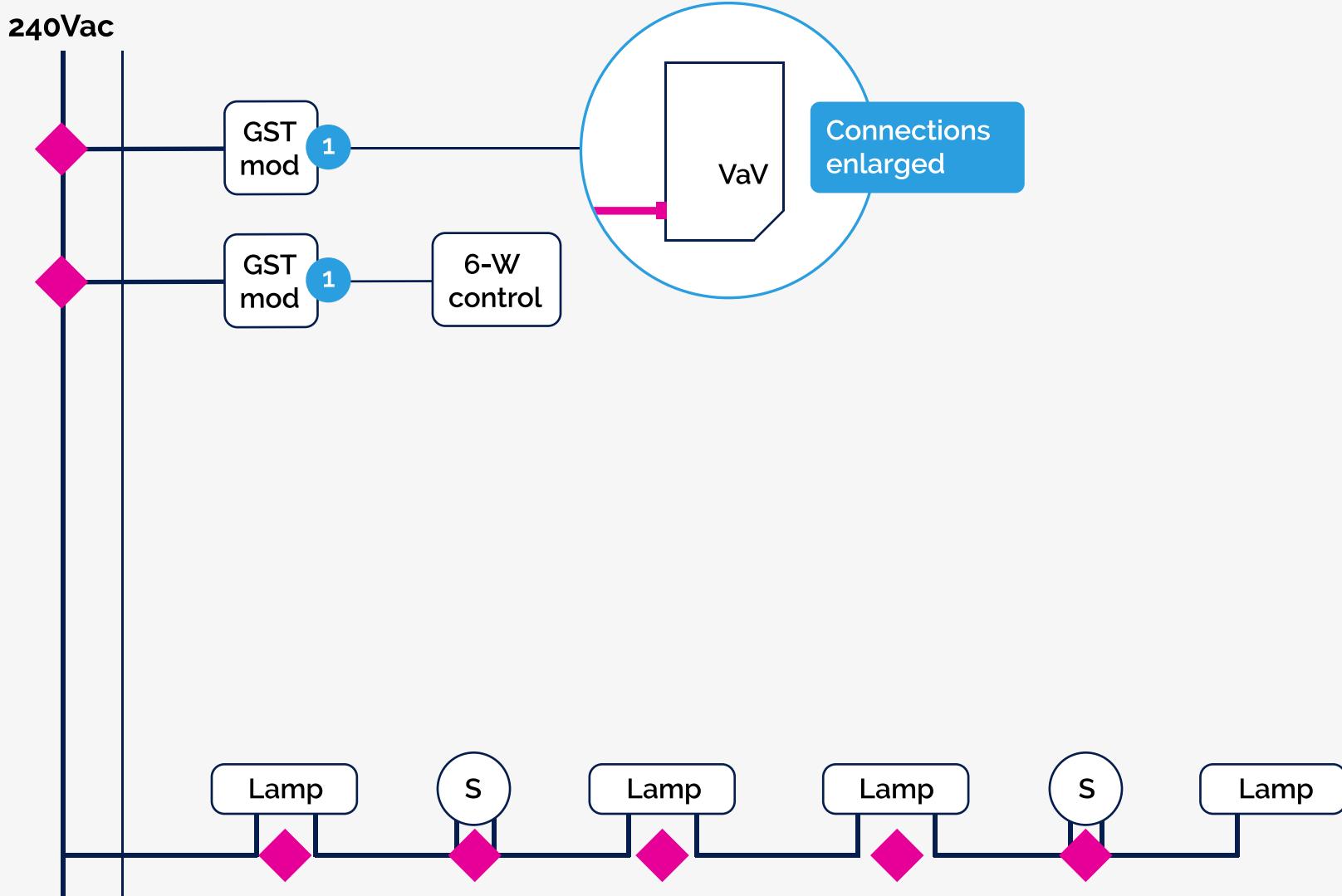
The calculation model
Classic wired zone layout



POWER



DATA



Type	Cables	Connections	Splitters
Ethernet	0	0	0
24V power	0	0	0
DALI	0	0	0
Modbus	0	2	0
240Vac	10	24	8
Total	10	26	8

Did you know?

You save on installation costs with Mymesh

For a project with 350 control zones for 7,000 m², the Mymesh wireless zone layout is €498 cheaper (-57%).



With wireless, fewer connections are needed

Mymesh requires only 26 connections per control zone, while the classic variant requires 87.





Installation prices 2023

The prices below are conservative estimates of current installation prices and consist of material costs including labour and assembly costs.

Price per connection	Data cable / metre	Power supply / metre	Splitter
€5,00	€5,00	€7,00	€5,00

Price comparison wired versus wireless

Type	 Classic wired zone layout				 Mymesh wireless zone layout			
	Quantity	Cable length	Price per unit	Costs	Quantity	Cable length	Price per unit	Costs
240 Vac cables	8	3	€7,00	€168,00	10	3	€7,00	€210,00
Splitters	7		€5,00	€35,00	8		€5,00	€40,00
Connections	87		€5,00	€435,00	26		€5,00	€130,00
Data cables +24 V	16	3	€5,00	€240,00	0	3	€5,00	€0,00
Total				€878,00				€380,00



In the calculation model, you will save €498 per control zone with the wireless variant!

Conclusions

Now, if we count the number of types of cables and connections, the following becomes apparent:

✓ **Cost savings on cabling:**

Mymesh uses only one type of cable during installation as data cabling is left out. In contrast, the classic variant uses four to five different types of cables.

✓ **Cost savings on installation:**

For a project with 350 control zones for 7,000 m², the Mymesh wireless zone layout is € 498 more economical (-57%) than the classic wired zone layout. This results in a total price advantage of € 174,300 for the zone cable-wiring alone.

In addition, the installation process is simplified because fewer wired connections are needed, and the components are pre-plugged. This significantly shortens the installation process.

✓ **Reduction of number of connections with a wireless system:**


Mymesh requires only 26 connections per control zone, while the classic variant requires 87 connections. This means that the number of cable connections is reduced by 70% if wireless technology is used.

✓ **Fault reduction with wireless installation:**

Reducing the number of cable connections significantly reduces the risk of failures during installation and maintenance.

Find out the price difference for your project.

Request a free quote or explore your options via:

 (0)23 5149 149

 sales@mymesh.nl

