VIMAR group
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HOME AUTOMATION

GUIDE TO THE HOME AUTOMATION SYSTEM

Quick **Guide**

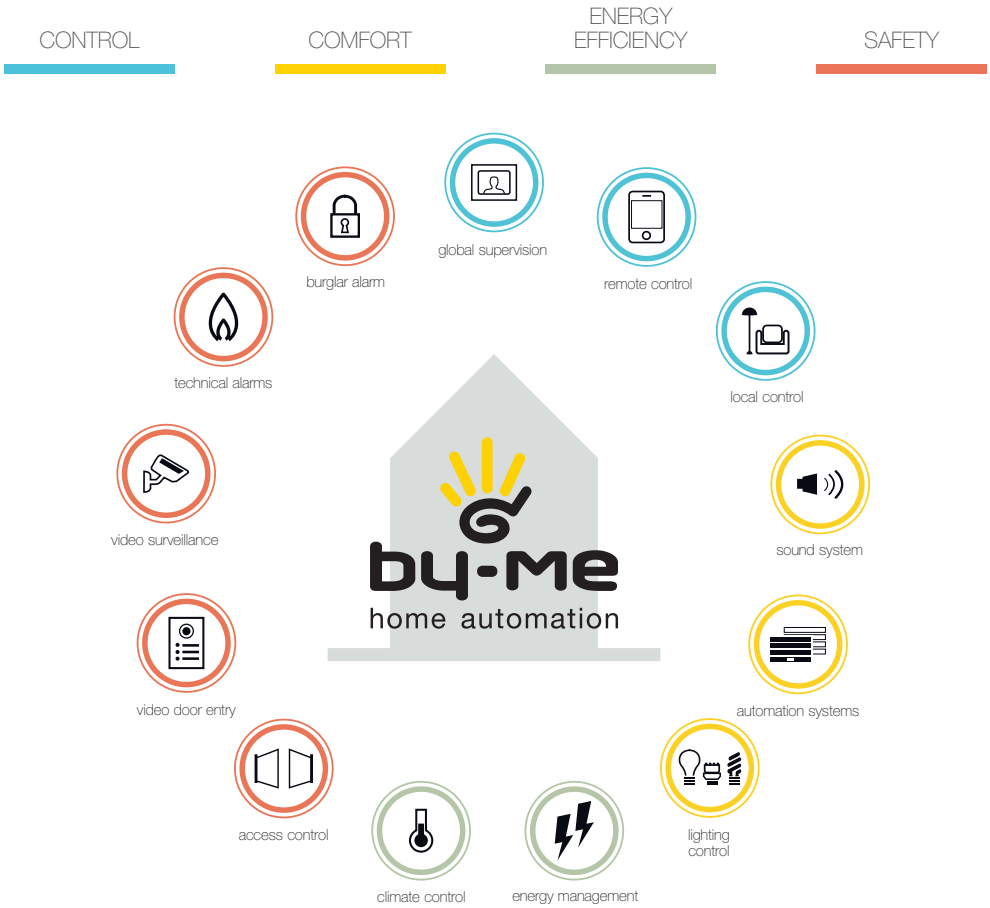
VIMAR

Rules for installing the By-me system

Introduction

This guide groups ten basic rules for creating a home automation system with the **By-me home automation system**: from choosing the cables for wiring the devices to correctly sizing the system and making provision for a sufficient number of power supply units (taking account of the absorption of each device in the field); from precisely drawing up the Areas and Lines in which the system is divided to the constraints of the speaker system; from the maintenance of the back-up batteries for the burglar alarm system to the choice of the system topology; from SPD installation at the power supply units to the detailed diagram for the connections between the actuators and their loads.

These are important instructions for building and correctly operating the entire system.



Rules for installing the By-me system

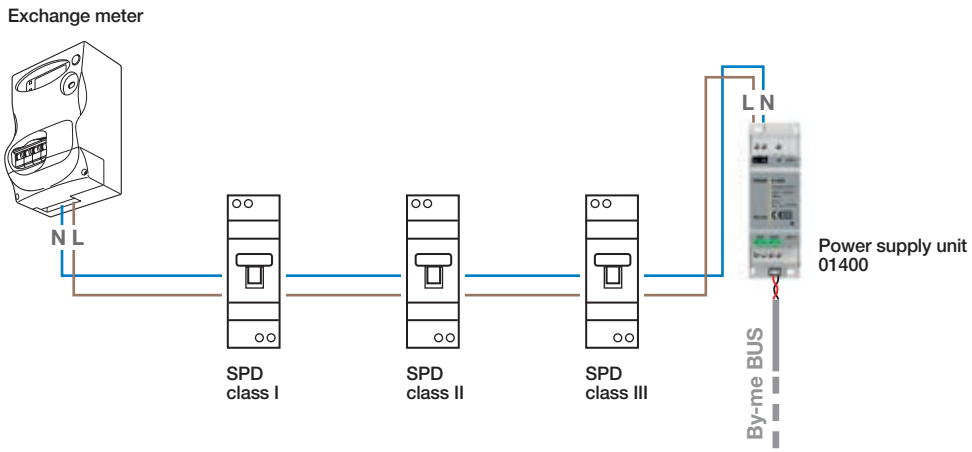
1. Choosing the wiring cables

Use cables of different colours to distinguish between the different lines of By-me devices during installation. The cable for Vimar Bus systems (2x0.5 mm^2) is insulated for 400 V nominal voltage to earth and can be routed along the same ducts as are used to carry category I power cables. In the case of new buildings, it is good policy to install a separate dedicated duct for the Bus cable. The following table lists the cables that can be used for wiring the devices in the system.

Type of cables			
Article	**Use**	**Colour**	**Laying**
01840	Automation	White	Internal
01840.Y	Burglar alarm	Yellow	Internal
01840.B	Speaker system	Blue	Internal
732H	Video door entry	Light Blue	Internal
732I		Green	Underground

2. Providing for SPDs

Always make provision for SPDs upstream of the By-me system power supply units to prevent overloads from damaging the system. As a general rule, the power supply side must be protected using a Class 1 SPD downstream of the power meter, a Class 2 SPD after the magneto-thermal protection device, and a Class 3 SPD at the power supply input.



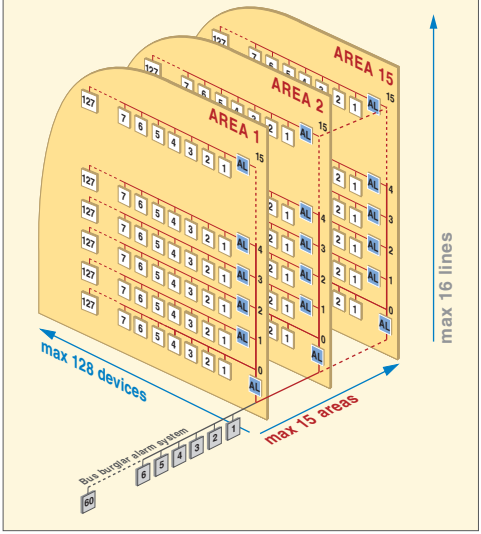
3. Areas and Lines

The system architecture offers the facility of organizing the system adopting a structure of **15 areas** connected to a backbone (Area 0, Line 0 dedicated to the burglar alarm system). Each of the 15 areas can be split up into **16 lines**, each allowing the connection of up to **128 devices**. The lines are connected one with another by way of couplers (routers) that will allow the passage only of messages established at the time of programming the system. Each line will be connected to 1 or at most 2 power supply units, depending on the demand of the devices installed.

When initializing the control unit, remember the area and line parameters to be entered for different system structures:

- burglar alarm **branch only**: Area 0 and Line 0
- automation system **branch only**: Area 1 and Line 0
- burglar alarm **and** automation system **branches**: Area 0 and Line 0 (in this type of structure remember that **it is essential to immediately configure the line coupler 01845 with Area 1 and Line 0**).

Division into Areas and Lines.



4. Choosing the power supply units

Correctly size the number of power supply units for the number of installed devices. When calculating the power supply units it is important to respect the maximum limit on permissible products for the different lines of the By-me system.

By-me power supply units

Code				Description	Draw from Bus (mA)	Input to the Bus (mA)
EIKON	ARKÉ	PLANA	DIN rail			
			01400	Power supply unit 230V~ 29Vdc 400 mA		400
			01401	Power supply unit 120-230V~ 29Vdc 1280 mA		1280
			01800	SAI-BUS 29 V power supply unit	-	320
			01801	Power supply unit 29 V 800 mA	-	800
			01804	SAI-BUS By-me back-up unit	-	320
			01807	SAI-BUS 600 mA DIN back-up unit	-	800
			01830	Power supply unit 12 V	-	1000
			01877	By-me dimm. power supply unit LED RGB 12-24V	10	-
20580	**19580**	**14580**		Power supply unit 32 Vdc 100 mA	-	100

By-me back-up unit (burglar alarm)

Code				Description	Draw from Bus (mA)	Input to the Bus (mA)
EIKON	ARKÉ	PLANA	DIN rail			
			01804	SAI-BUS By-me back-up unit	-	320
			01807	SAI-BUS 600 mA DIN back-up unit	-	800

The tables on the following pages show the absorption of the devices on the By-me BUS.

Absorption of the devices from the By-me BUS (29 Vdc power supply)

Code					Description	Draw from Bus (mA)	Draw from AUX power supply (mA)
EIKON	ARKÉ	IDEA	PLANA	DIN rail			
Control units							
20480		**16930**	**14480**		SAI-BUS control unit	10	
20510		**16950**	**14510**		Control unit	10	
21509					3M touch screen control unit	45	
Actuators							
20534	**19534**	**16974**	**14534**		1M relay actuator	10	
20535	**19535**	**16975**	**14535**		Actuator with 1 relay output	10	
20537	**19537**		**14537**		1x16 A relay actuator+curr. sensor	5	
20472		**16472**	**14472**		Relay actuator	8	
20489	**19489**	**16939**	**14489**		SAI-BUS actuator	5	
				01456	16 A relay actuator +curr. sensor+diff. sensor	5	
				01850.2	Actuator with 1 relay output	14	
				01851.2	Actuator with 4 relay outputs	18	
				01852.2	Actuator for 2 roller shutters-laths	24	
				01856	0-10 Vdc actuator for ballast + relay	10	
				01975	1-10Vdc actuator LED 120-230V	10	25
				01976	1-10Vdc actuator LED 12-24V	10	600@12 V~ (250@12 Vdc) 350@24 V~ (120@24 Vdc)
Dimmers							
				01867	230 V 500 VA MASTER dimmer	10	
				01863	230 V 800 W/VA MASTER dimmer	10	
				01870	230 V universal MASTER dimmer	15	
Controls with built-in actuator							
20525	**19525**	**16965**	**14525**		Two simple buttons + relay	10	
20526	**19526**	**16966**	**14526**		Two rocker buttons + relay	10	
20527		**16967**	**14527**		Two rocker buttons + roller shutter actuator	22	
20527.1	**19527.1**	**16967.1**	**14527.1**		Two rocker buttons + actuator, louvre rolling shutters	22	
20529	**19529**	**16969**	**14529**		Two rocker btns. + universal SLAVE	13	
20545	**19545**	**16985**	**14545**		Three simple buttons + relay	16	
20546	**19546**	**16986**	**14546**		Three rocker buttons + relay	16	
20547	**19547**	**16987**	**14547**		Three rocker buttons + roller shutter actuator	25	
20549	**19549**	**16989**	**14549**		Tree rocker btns. + universal MASTER	16	
Simple controls							
20520	**19520**	**16960**	**14520**		Two simple buttons	10	
20521	**19521**	**16961**	**14521**		Two rocker buttons	10	
20540	**19540**	**16980**	**14540**		Three simple buttons	10	
20541	**19541**	**16981**	**14541**		Three rocker buttons	16	
21520					Four Tactil home automation buttons	38	
21540					Six Tactil home automation buttons	45	
Interfaces							
20490.1	**19490.1**	**16940.1**	**14490.1**		SAI-BUS interf. 2 ind. contacts	15	
20491	**19491**	**16941**	**14491**		SAI-BUS contact interface 12 V	15 (+10 at output 12 Vdc)	

Absorption of the devices from the By-me BUS (29 Vdc power supply)

Code					Description	Draw from Bus (mA)	Draw from AUX power supply (mA)
EIKON	ARKÉ	IDEA	PLANA	DIN rail			
Interfaces							
20493	**19493**	**16943**	**14493**		SAI-BUS interface 2 RF	20	
20508	**19508**		**14508**		EnOcean BUS interface	20	
20515	**19515**	**16955**	**14515**		Conventional control interface	10	
20518	**19518**	**16958**	**14518**		Interface for 2 conventional controls 1 M	15	
20584	**19584**		**14584**		By-me IR interface	20	
20584.1	**19584.1**		**14584.1**		Home automation IR transmitter	20	
				01846	Emergency app. interface with By-me	10	
				01452	Pulse counter interface	10	
				01965	By-me module for Due Fili Plus video door entry unit	10	
Energy management							
	02951				2M home automation touch screen thermostat	5	
20513	**19513**	**16953**	**14513**		Fan-coil thermostat	20	
20514	**19514**	**16954**	**14514**		Thermostat with display	20	
20538	**19538**		**14538**		Home automation temperature probe	5	
				01450	3 IN energy meter, toroidal sensor	5	
				01451	Energy meter with current sensor	5	
				01455	3 IN load control module, toroidal sensors	5	
				01465	HVAC control for heating systems	5	5 VA
				01466	Home automation actuator, 4 analogue outputs	5	5 VA
				01467	Home automation interface, 3 analogue inputs	20	
Burglar alarm devices							
20482	**19482**	**16932**	**14482**		SAI-BUS connector	10	
20483	**19483**	**16933**	**14483**		SAI-BUS digital keypad	15	
20485	**19485**	**16935**	**14485**		SAI-BUS IR detector	10	
20486	**19486**				SAI-BUS IR detector, directionally adjustable	10	
20487	**19487**	**16937**	**14487**		SAI-BUS IR+microwave detector	15	
20495	**19495**	**16945**	**14495**		SAI-BUS indoor siren	10 standby (max 20)	
				01803	SAI-BUS battery holder unit	150	
				01806	SAI-BUS outdoor siren	10	
				01828	SAI-BUS mini IR detector, wall-mounting	15	
				01829.1	SAI-BUS IR+microwave detector, wall-mounting	20	
Video door entry system devices							
	19558				3.5" Due Fili Plus video door entry unit	200 *	
	19558.D				3.5" video door entry unit, audiofreq. Due Fili Plus	200 *	
20557	**19557**		**14557**		Due Fili Plus speakerphone audio door entry unit	150 *	
20577	**19577**		**14577**		Due Fili Plus call button	150 *	
Speaker system devices							
20581	**19581**		**14581**		Two rocker btns plus 1+1 W amplifier	150 **	
20582	**19582**		**14582**		2 M RCA audio input	35	
20585	**19585**		**14585**		Docking station for iPod/iPhone	35	
20586	**19586**		**14586**		Call microphone	35	
				01900	FM radio tuner with RDS	35	
				01901	Stereo amplifier with 2 x 8Ω outputs, 10+10 W	20	

Absorption of the devices from the By-me BUS (29 Vdc power supply)

Code					Description	Draw from Bus (mA)	Draw from AUX power supply (mA)
EIKON	ARKÉ	IDEA	PLANA	DIN rail			
Access control devices							
20470		**16470**	**14470**		Transponder key reader	22	
20471		**16471**	**14471**		BUS smart card reader/programm.	16	
System components							
				01468	Home automation logic unit	25	
				01810	SAI-BUS telephone dialler	-	
				01842	Decoupling coil	-	
				01845	Line coupler	10	
				01942	GSM-BUS phone communicator	10	200@29 Vdc (250@12 Vdc)
				01945	DIN web server	10	145@29 Vdc (330@12 Vdc)
20516	**19516**	**16956**	**14516**		Receiver for IR remote control	10	
Touch screen							
20511.1	**19511**		**14511.1**		Energy 4.3" colour touch screen	10	60@29 Vdc (120@12 Vdc)
20512	**19512**	**16952**	**14512**		3 M B&W touchscreen	42	
21511					Colour touchscreen 4.3” Full Flat	10	60@ 29 Vdc (120@12 Vdc)
21512					3 M Full Flat colour touchscreen	42	
21553.1					10" IP Multimedia video touchscreen	-	300
21554					4.3” Full Flat video touchscreen	5.5	100@29 Vdc (180@12 Vdc)

* Video door entry system devices that draw current from the Due Fili Plus Bus.

** The device, when powered solely from the Bus, draws 150 mA, whereas if the 32 Vdc power supply unit is used (20580, 19580, 14580) it draws 20 mA from the Bus.

5. Do not create a loop circuit

Ensure that, after laying the Bus cable and connecting the devices, you do not create a loop type of circuit. This type of structure **does not guarantee that messages will transit correctly between devices**.

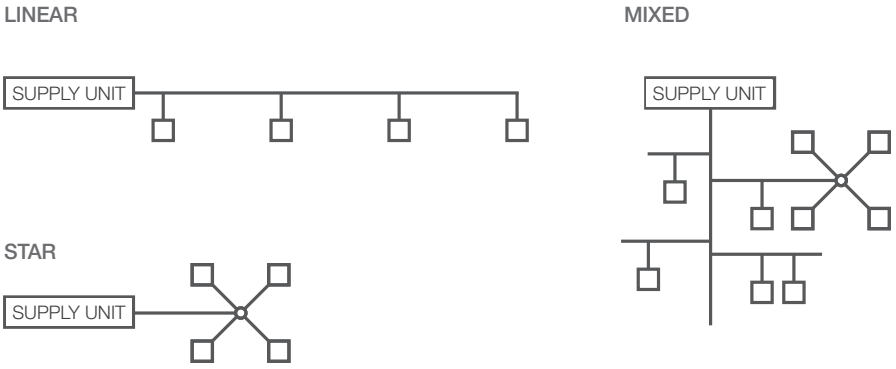
Line installation topology

The By-me system is designed in such a way that the devices of a given line can be connected in practically any order, with the exception of speaker system components.
When installing the system, it is advisable to select consumer units of the appropriate size and, depending on the types of control devices adopted and the number of loads to be handled, to fit a suitably generous number of flush mounting 3 and/or 4 module back boxes (V71303 and/or V71304).

The following basic requirements must always be taken into account when designing the system:

Distances	
Maximum **distance** between 1 power supply unit and the last device	**350 m**
Maximum **distance** between two components	**700 m**
Maximum **length** of the Bus cable for one line	**1,000 m**
Minimum **distance** between two power supply units on the same line	**40 m**

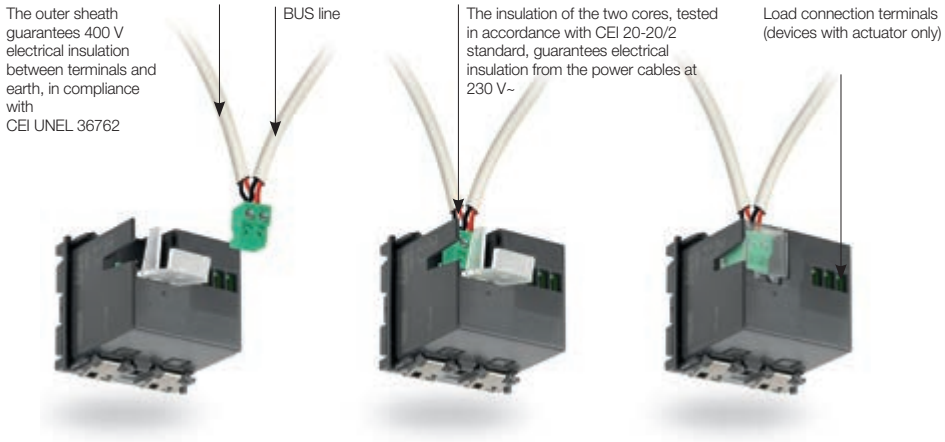
Line installation topologies



6. Installing By-me controls

Check the correct direction (up/down) of installation of the By-me automation controls to avoid feature reversal (On/Off, up/down and adjustment) when programming.

Connecting the Bus cable



7. Resetting the devices when first switching on the control unit

After first switching on the By-me control unit, always manually reset all the automation and speaker system devices in the system. This **will avoid potential issues related to the same addresses being present in the devices in the field**.

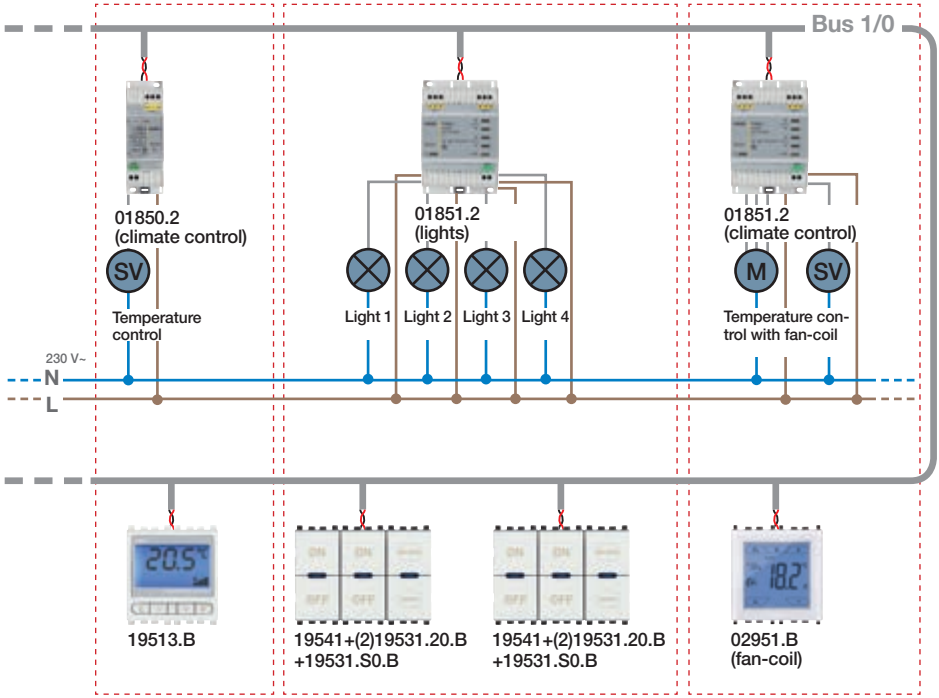
Control unit

The control unit 21509 can be flush-mounted in a box V71303 (V71703 for light walls) or on a DIN rail (60715 TH35) with the mounting frame V51921 provided

8. Actuator-load wiring diagram

To quickly configure the system it is a good rule to have a detailed diagram of the connection of all the actuators and their controlled loads as well as already have agreed with the customer on the points for switching on from the various controls in the field.

Example of actuator-load wiring



9. Scheduled maintenance of the back-up batteries

When there is the **burglar alarm system** it is essential to perform scheduled maintenance on all the batteries in the back-up devices, sirens and radio frequency.

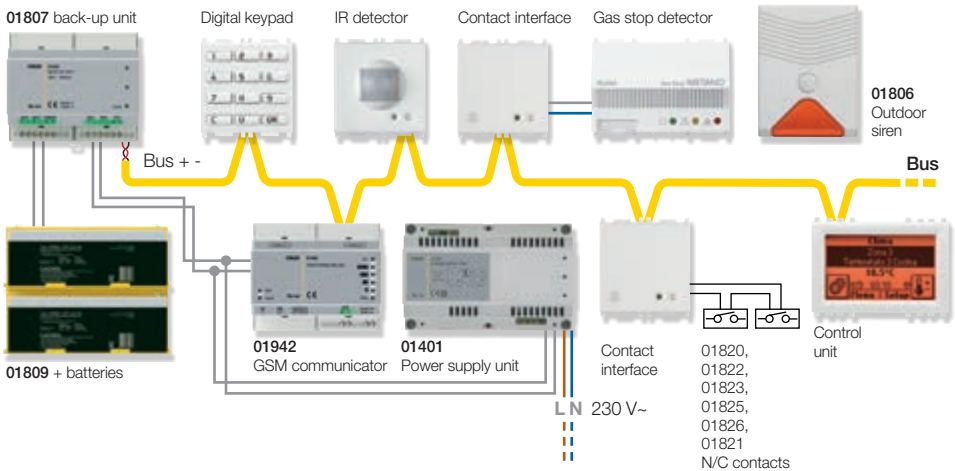
The burglar alarm system

The burglar alarm system can include up to 60 devices divisible into 30 groups or 9 distinct zones and, in combination with contact interfaces and radio frequency interfaces, will control technical alarms or allow the integration of RF sensors installed in all those locations where it may not have been possible to prewire the building. Since burglar alarm systems must remain powered up even in the absence of mains voltage, the devices in question belong to **Line 0 (Area 0)** and are guaranteed auxiliary power in the event of an outage occurring.

The system is activated/deactivated/partitioned by means of numeric keypads, transponders or radio remote controls and powered by way of one or two adapters and one or two back-up units (according to demand); as in the case of the automation system, the burglar alarm system can be customized to meet different requirements, such as the nature and layout of the rooms, the operating modes of the system, and the parameters of the various components.

By-me burglar alarm system data	
Maximum number of devices	**60**
Number of groups	**30**
Maximum number of distinct zones	**9**

Example of burglar alarm system



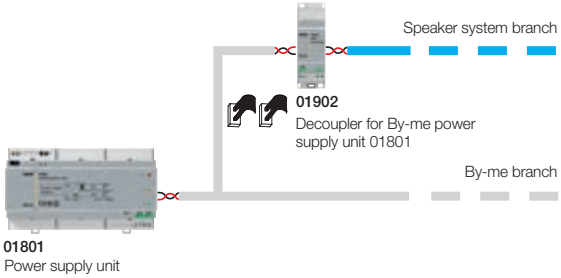
10. Connecting in in-out mode

The speaker system lends itself to various constructions according to the needs and dimensions of the system. When there is a **speaker system** line, it is important to remember that these devices must be connected in **in-out mode** or, in the case of shunting, use the special "**branch shunt**" (article 01904).

Speaker system

The new type of transmission of musical information in digital form over the same Bus where the By-me operation and configuration data transit requires some installation recommendations for the wiring and in the construction of the system, while maintaining perfect integration with the By-me home automation system.
To facilitate installation a dark blue Bus cable (01840.B) has been introduced to identify the part of the system or branches of the Bus dedicated to the speaker system easily and with no error.

Example 1: speaker system on the same logical branch (Area/Line), but with separate wiring.

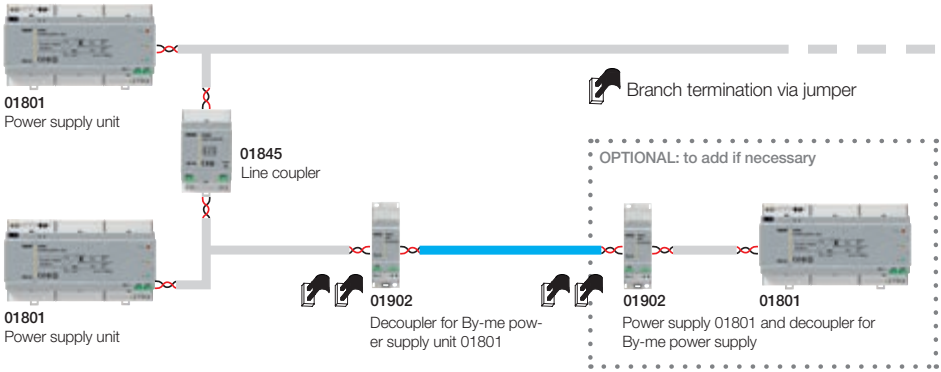


Typical use in systems where many devices can be installed separating the automation system from the speaker system (separate prearrangement).

In this case the separation is purely with the wiring and not the logic: the speaker system devices and the By-me devices are configured on the same line.

Branch termination via jumper

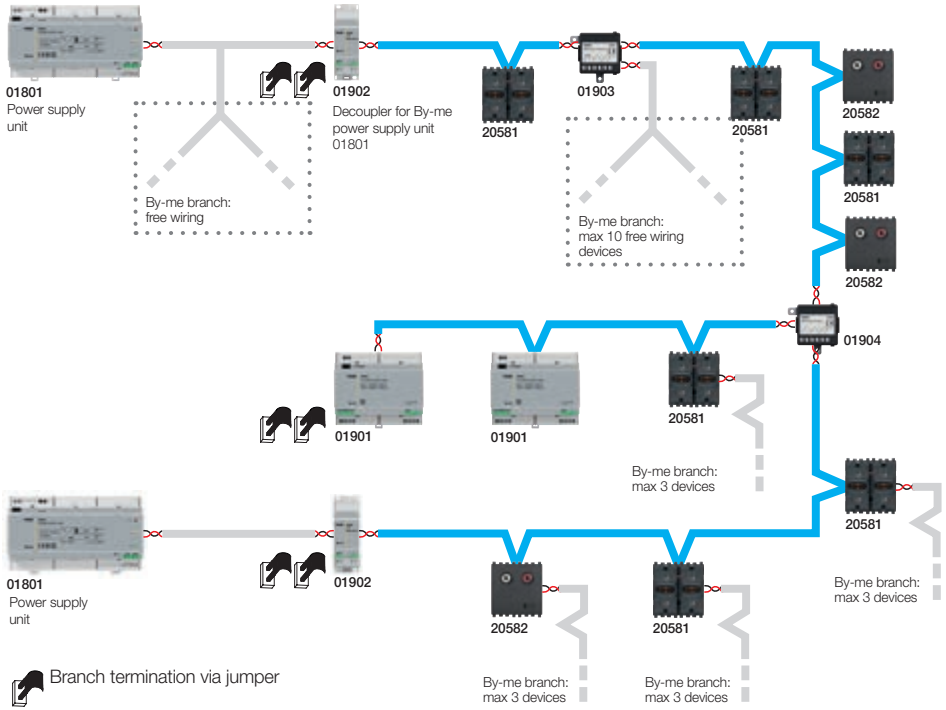
Example 2: dedicated logic branch.



Typical use in systems where there are many automation devices and it is necessary to add audio devices.

In this case, the speaker system devices are configured in a different line to the other By-me devices. The second power supply and the dedicated decoupler are optional and must only be included when necessary for reasons of consumption.

Example 3: By-me automation and speaker system on the same branch.



Legend

	By-me branch. Free wiring
	Speaker system branch. By-me devices cannot be connected; In-out wiring (linear, not star); max number of speaker system devices: 64.
01903	The shunt for the By-me enables creating By-me branches that contain a max of 10 automation devices. Max no. of shunts 01903=64
01904	The sound system shunt enables shunting speaker system branches (max 2 01904 per line).
01902	Decoupler for By-me power supply for speaker system. It must be inserted between the power supply and the audio line; none of the By-me devices between the decoupler and the power supply are “seen” by the speaker system.

Warning: By-me devices are not connected directly to the branch of the speaker system (blue branch) but through special shunts or through the devices of the speaker system (that have a special terminal).

Typical use in systems where there is a single prearrangement for the automation Bus and the speaker system Bus (therefore not in separate conduits).

This explains how it is possible to make a completely integrated system with the By-me automation and speaker system devices on the same branch.

Speaker system constraints

In order to ensure correct system operation and complete functionality in the installation it is necessary to respect the constraints given in the following tables:

Distances between transmitters and receivers		
Maximum distance between a receiver and a transmitter with no intermediate shunts	**300 m**	See diagram A
Maximum distance between a receiver and a transmitter with 1 intermediate shunt	**200 m**	See diagram B
Maximum distance between a receiver and a transmitter with 2 intermediate shunts	**100 m**	See diagram C

Diagram A

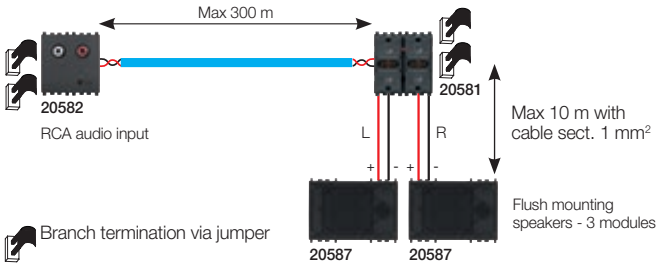
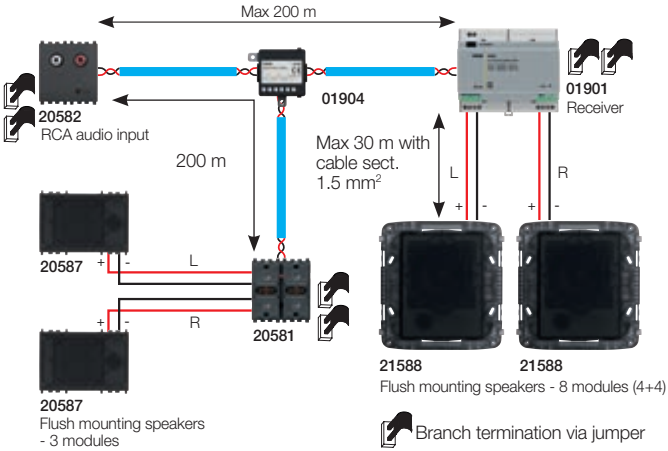
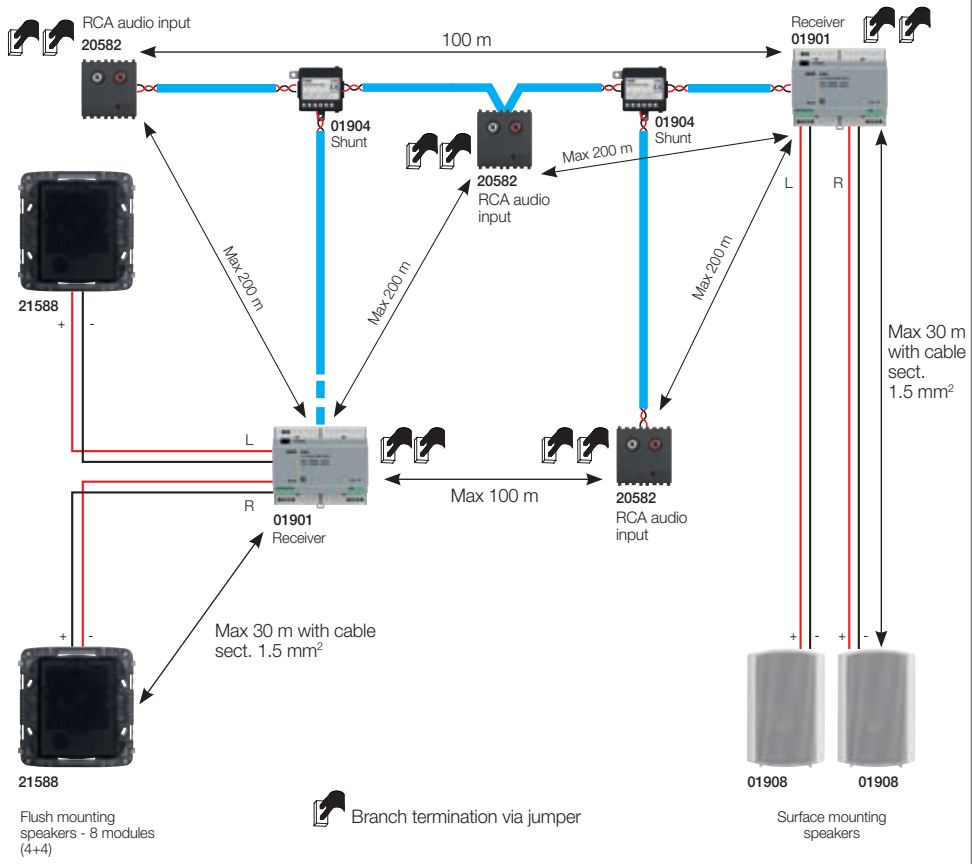


Diagram B



Rules for installing the sound system

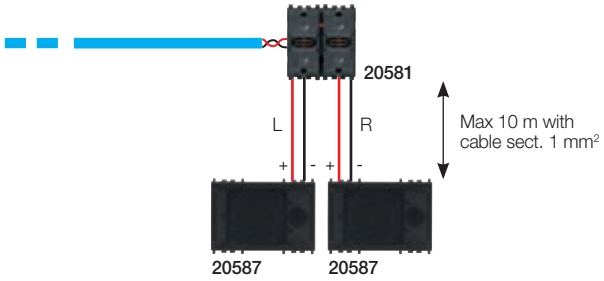
Diagram C



Rules for installing the sound system

Distances between receivers and speakers		
Distance between receiver 1+1 W RMS (14581, 19581, 20581) and speakers	**10 m**	See diagram D
Distance between receiver 10+10 W RMS (01901) and speakers	**30 m**	See diagram E
Distance between receiver 3+3 W RMS (01901) and speakers	**10 m**	See diagram F

Diagram D



Flush mounting speakers - 3 modules

Diagram E

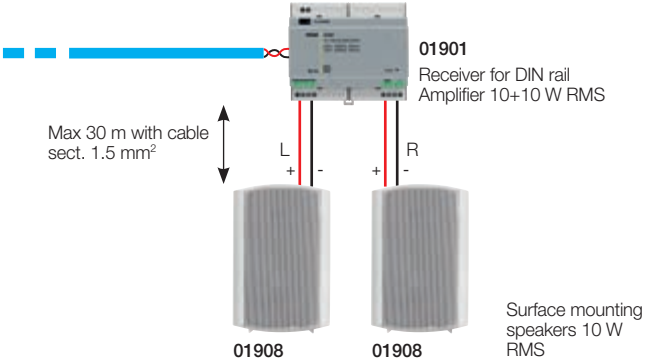
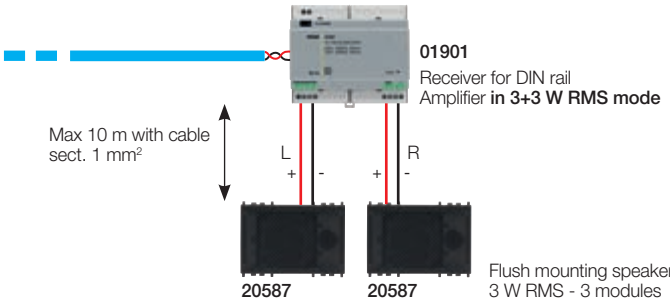
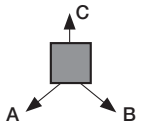
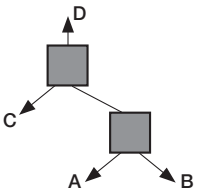


Diagram F



Rules for installing the sound system

Types of wiring

Wiring development	Condition 1	Condition 2
	If AB < 300 m: • no limit on position between RX and TX	If AB > 300 m: • ensure that the maximum distance between TX and RX is less than 300 m (see diagram G, H and I)
	If Max (AB,AC,BC) < 200 m: • no limit on position between RX and TX	If Max (AB,AC,BC) > 200 m: • ensure that the maximum distance between TX and RX is less than 300 m if there is no crossing of the shunt or it is less than 200 m if the shunt is crossed
	If Max (CD,AB) < 200 m and Max (AD, BD, AC, BC) < 100 m: • no limit on position between RX and TX	If Max (CD,AB) > 200 m and Max (AD, BD, AC, BC) > 100 m: • ensure that the maximum distance between TX and RX is less than 300 m if there is no crossing of the shunt or it is less than 200 m if the shunt is crossed or less than 100 m if there are two shunt crossings

Amplifier	Amplifier power W RMS	Speaker	Speaker power W RMS	Max. distance between amplifier and speaker (m)	Cable section (mm^2)
20581, 19581, 14581	1 + 1	20587	3	**10**	**1**
		21588	10	**30**	**1.5**
01901	10 + 10	21588	10	**30**	**1.5**
		01906	30		
		01907	30		
		01908	30		
01901	3 + 3	20587	3	**30**	**1**

Important
If the receivers (20581, 19581 or 14581) are powered directly by the Bus and not from the auxiliary power supply unit (20580, 19580 or 14580), the distance from the system power supply unit (01801, 01400 and 01401) is reduced:

Distances between receivers and Bus power supply unit	
With 1 receiver 20581, 19581, 14581 powered by Bus	**300 m**
With 2 receivers 20581, 19581, 14581 powered by Bus	**150 m**
With 3 receivers 20581, 19581, 14581 powered by Bus	**100 m**
With 4 receivers 20581, 19581, 14581 powered by Bus	**75 m**

Rules for installing the sound system

Diagram G

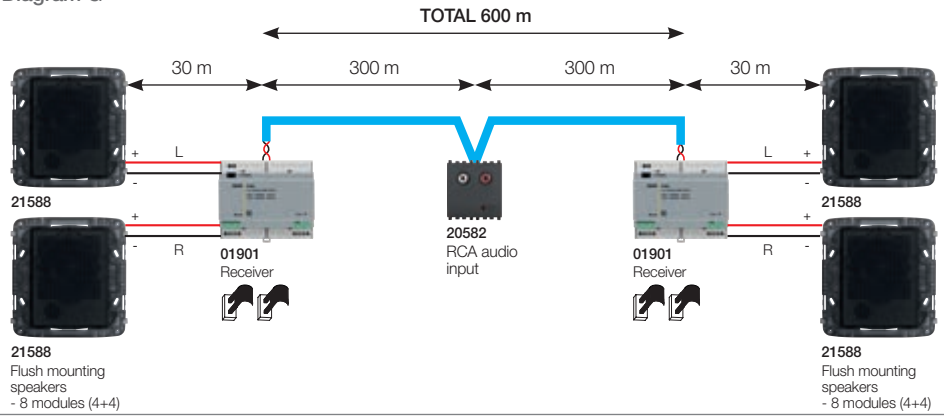


Diagram H (receivers on the same branch)

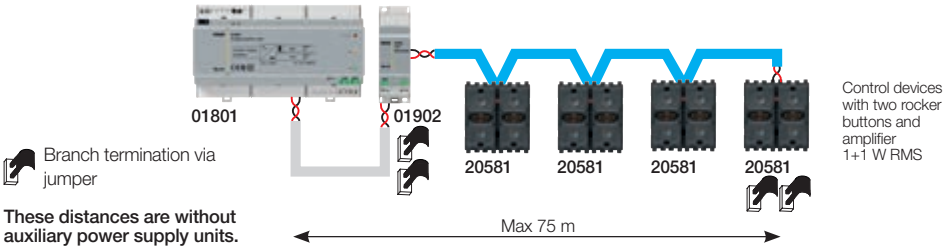
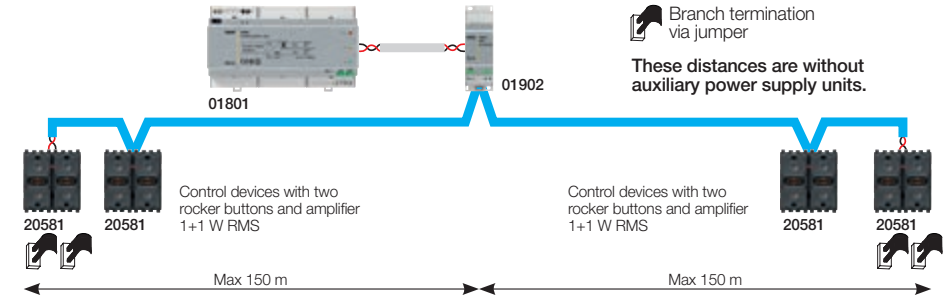


Diagram I (receivers on opposite branches)



Rules for installing the sound system

As regards the number of devices that can be used on the branches of the speaker system the following restrictions apply:

Description	Number	Notes
Maximum No. of inputs (transmitters)	4	4 stereo channels
Maximum No. of “audio” devices (inputs, outputs, accessories)	64	Limit fixed by the input impedance of the “audio” nodes
No. of receivers not powered by Bus	64 – no. of inputs – no. of accessories (shunts, decouplers, etc).	Total: max 64 devices (transmitters, receivers, accessories). Each receiver can choose the audio channel from the 4 available ones
No. of receivers powered by Bus 20581, 19581, 14581	A receiver powered via Bus consumes as much as 15 By-me devices (for example, max 4 devices per power supply unit with power supply unit 01801)	The limits of the power supply units apply: 01401 = 1280 mA 01801 = 800 mA 01400 = 400 mA
No. of decouplers 01902	2	Given the strong attenuation of the signal due to the shunts, it is necessary to make sure that the path between a transmitter and a receiver does not pass more than 2 of them
Max. No. of microphone modules 20586, 19586, 14586	8	Possibility of making up to 8 different selective calls
No. of By-me shunts 01903	64	Each shunt enables shunting a By-me branch beginning from the “audio” branch
No. of By-me devices that can be connected to the By-me shunt 01903	10	In each shunt created by the decoupler I can connect max 10 By-me devices
Maximum no. of branch shunts 01904	2	The shunt 01904 is used for shunting two new audio branches from a speaker system line, making it possible to create a star connection

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