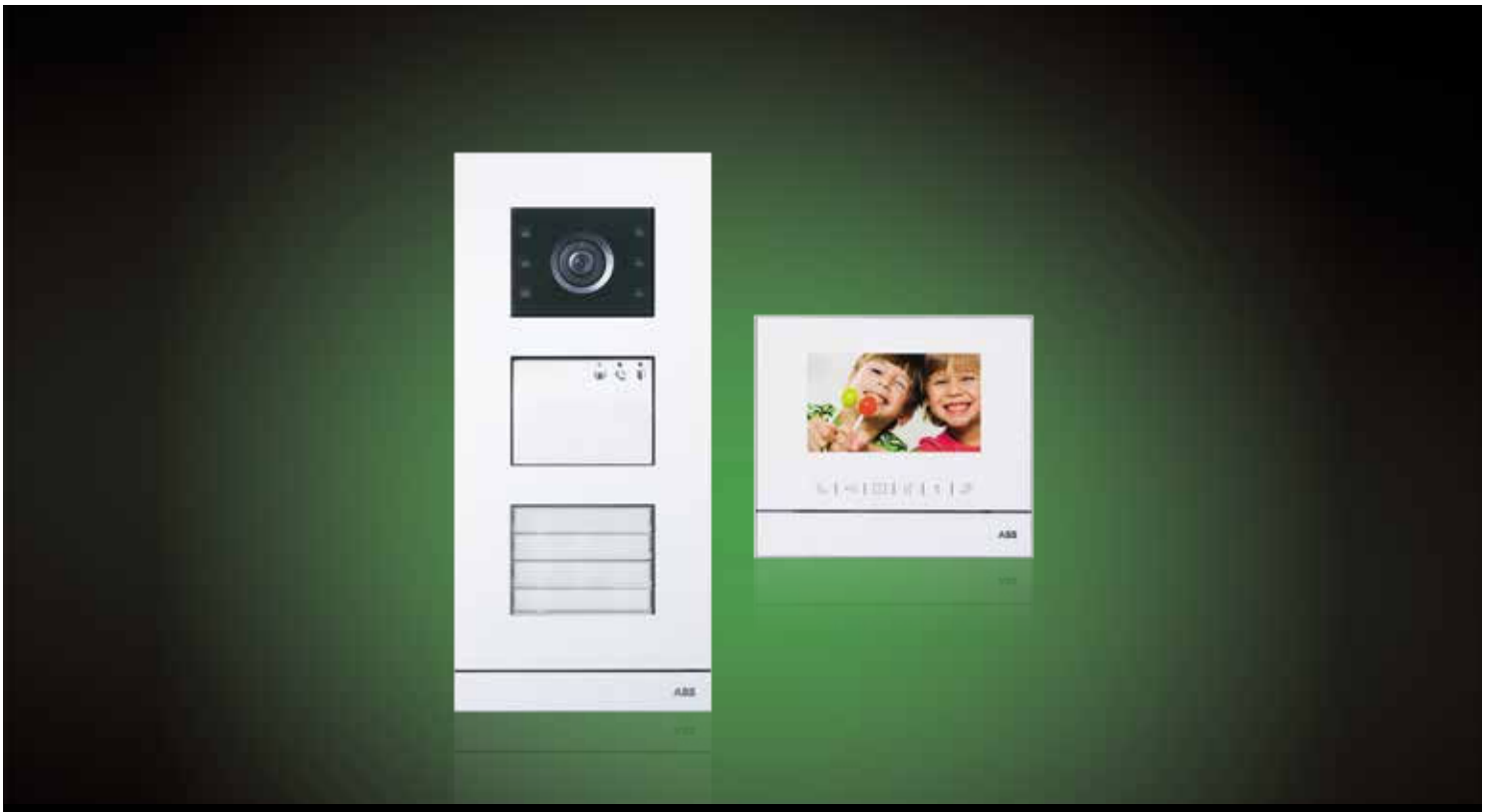


Manual | May 2014

System Manual
Welcome M

Power and productivity
for a better world™

Welcome M
Leading to a flexible and simple world

The new door entry system ABB - Welcome M is a new product range for more flexible application in 2-wire technology.

By the simple 2-wire bus and modular design of outdoor stations, the installers will have a variety of choices for any kind of application of single-family house, multi-family buildings and residential complex, no matter for new buildings or renovation.

Welcome M, it is what you are looking for.

Welcome M
More flexibility and simplicity

Thanks to the modular design and extremely versatile 2-wire bus system,the new Welcome M range is designed with the concept of flexibility, simplicity and elegance.Therefore installation and usage become much easier and more comfortable. With the wide range of well-designed products, Welcome M meets all your needs for door entry.

01

02

03

04

05

01 One-family house
02 Multi-family house
03 Apartment building
04 High rise building
05 Residential Complex

06

07

08

09

10

11

12

13

06 Welcome M video pushbutton outdoor station, white
07 Welcome M video pushbutton outdoor station, aluminum
08 Welcome M video keypad outdoor station, white
09 Welcome M video keypad outdoor station, aluminum
10 Welcome M 7" video hands-free indoor station, white
11 Welcome M 4.3" video hands-free indoor station, white
12 Welcome M 4.3" video handset indoor station, white
13 Welcome M audio handset indoor station, 3 buttons , white

Contents

Terminology

In order to logically and easily understand Welcome M system for installation, terminologies are defined below with illustrations . It is strongly recommended to read them first before other chapters.

Insulated system Fig.1

The insulated system is a system in which all devices are managed by one system controller and isolated by a gateway if get networked. The operation within an insulated system will work independently and not interrupt other insulated systems. This is an important concept, both power consumption and distance calculation are made based on the insulated system.

Common part

The common part is the bus of the networked system —the insulated system where gate station, gateway(only the part out of building) and other related system devices are installed.

System C is a typical networked system where the system controller manages the gate station, guard unit and gateways. Fig.1

Building part

The building part is the bus of the individual building system — the insulated system where the outdoor station and indoor stations and other related system devices are installed.

System A and B are typical building systems where the system controller manages the outdoor station, gateway, video indoor distributor, and audio/video indoor stations. Fig.1

Looping connection

Looping connection is a connection layout of devices. With the looping connection, the same type of devices are connected one after another. The device can be indoor station, video distributor or gateway.

System A shows the looping connection of audio indoor stations in one building, and system C shows the looping connection of gateway (the ones inside the building) in a networked system. Fig.1

Branch connection

Branch connection is a connection layout of devices. With the branch connection, the same type of devices are not connected with each other like looping connection, sometimes an additional device, such as a video indoor distributor is needed. Usually, the branch connection of indoor stations or gateways is coexisting with looping connection of video distributor.

System B is a typical branch connection where the indoor stations are connected by branch and video indoor distributors are needed with looping connecting. Fig.1

Internal bus Fig.2

The system controller supplies the other bus subscribers with voltage and controls communication on the 2-wire bus. Starting from the system controller, the 2-wire bus is divided into 2 parts — the internal bus and external bus.

The internal bus is the bus for controlling devices of indoors or sub insulated system devices. In the building system, it refers to the bus line from system controller to the last indoor station. In the networked system, it refers to the bus line from system controller to the last gateway.

External bus Fig.2

The external bus is the bus for controlling devices of outdoors of the same insulated system and outdoor related system devices. In the building trunk system, it refers to the bus line from system controller to outdoor station. In the networked system, it refers to the bus line from system controller to the gate station.

Fig.1

A,B and C are 3 insulated systems

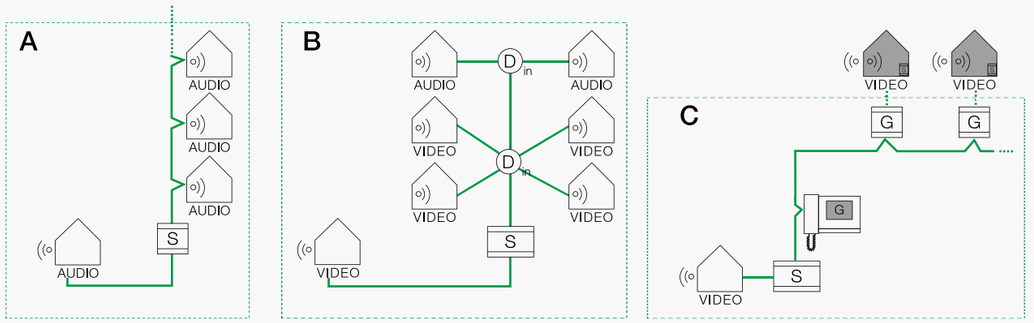
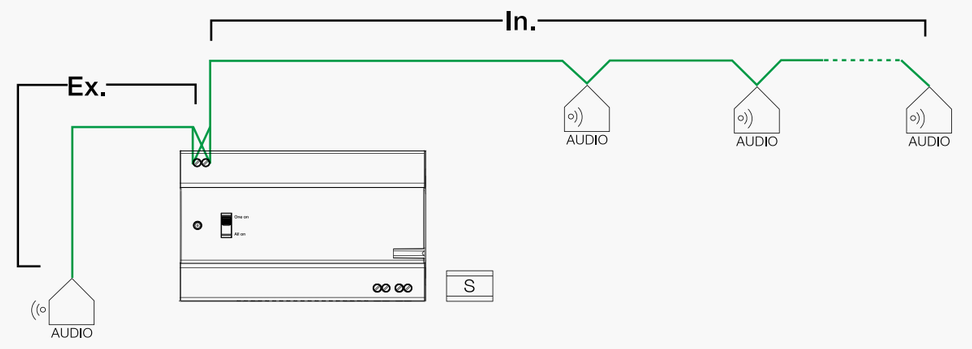


Fig.2

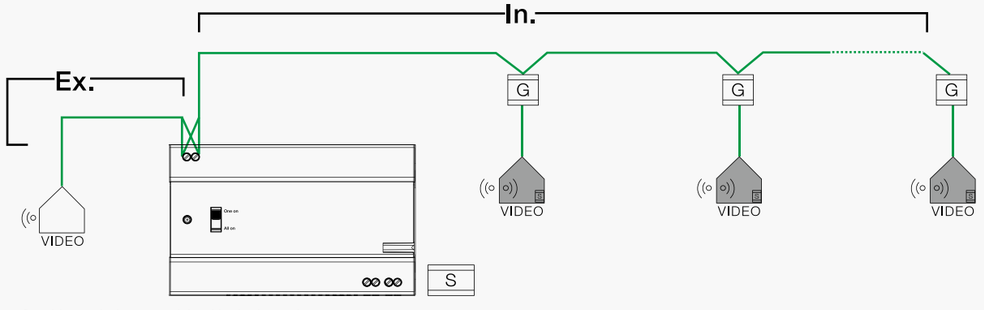
Internal bus and external bus in building system

In. — Internal bus
Ex. — External bus



Internal bus and external bus in networked system

In. — Internal bus
Ex. — External bus



Note: Graphic symbols are explained in the legend on page 126

Apartment system

For multi-insulated systems with multi-system controllers, when an insulated system is for an apartment, this is called apartment system. Fig.3

A group of villas/single-families linking into a networked system can also be taken as one form of apartment system. Fig.4

The gateway address is set subsequently one upon another while no addressing is needed at the indoor station.

Floor system

For multi-insulated systems with multi-system controllers, when an insulated system for a building floor that contains several apartments (for example on a floor) , this is called floor system. Fig.5

A group of multi-family buildings linking into a networked system can also be taken as one form of floor system. Fig.6

The gateway address should be set based on the address of the first indoor station managed by this gateway.

Building system

For multi-insulated systems with multi-system controllers, when an insulated system is for one building, this is called building system. A high-rise building with more than 250 apartments breaking down into several parts and being able to be called from the same gate station can also be taken as one form of building system. Fig.7

The gateway address is set subsequently one upon another.

Audio system

For insulated system with only one system controller, in addition to the control information(unlock), only audio signal is transmitted on a 2-wire bus, it is audio system.

The left insulated system of Fig. 6 (system A) is a typical audio system.

Neither video outdoor station nor video indoor station will be present in audio systems.

Video system

For insulated system with only one system controller, in addition to the transmission of the control information, the audio signal as well as the video signal is transmitted on a 2-wire bus, it is video system.

The right insulated system of Fig.6 (system B) is a typical video system.

For video systems, at least one video outdoor station should be present, the indoor station can be purely audio or at least one video indoor station.

Outdoor stations

Like one person may have different roles such as father, employee, etc., the outdoor station can be named differently when installed in different places. When no specific referring to certain installing environment, it is called outdoor station as a general.

When the outdoor station is installed in the door of an apartment or villa, it is called apartment/villa outdoor station.

When the outdoor station is installed in the door for several apartments on that floor, it is called floor outdoor station.

When the outdoor station is installed in the door for one building, it is called building outdoor station.

When the outdoor station is installed in a general entrance for the residential complexes, it is called gate station.

Parallel outdoor stations

With one system controller, when several outdoor stations are connected (with different addresses set), it is called parallel outdoor stations.

Parallel indoor stations

When several indoor stations are set as the same address for one apartment (expect apartment system), it is called parallel indoor stations.

While for apartment system, parallel indoor stations use different addresses, such as the case on page 59 Fig.73.

Fig.3

Apartment system for apartments

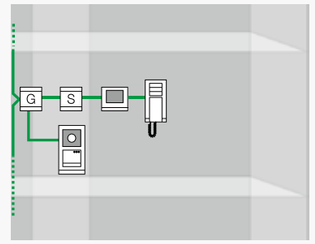


Fig.4

Apartment system for a group of villas

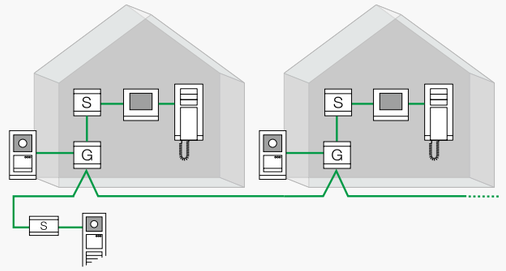


Fig.5

Floor system for apartments in a floor

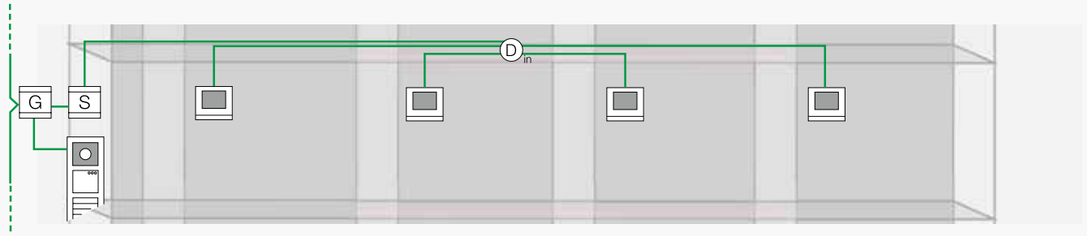


Fig.6

Floor system for a group of multi-family buildings

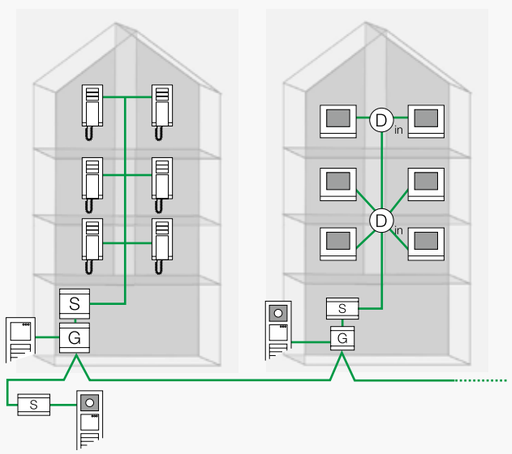
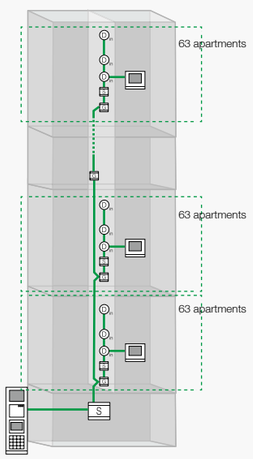


Fig.7

Building system for building with more than 63 apartments



01
Examples of typical system

Welcome M answers to all your needs in all contexts, no matter for new construction or renovation of old buildings, no matter for single-family houses, multi-family houses, high-rise buildings with more than 250 apartments or residential complex.

Single-family house, audio/video Fig.8

Welcome M system at least consists of a system controller, outdoor station and indoor station. In Fig. 8 three indoor stations are installed in one house. When a visitor rings the bell at the video outdoor station, the call can be answered at either the 4.3" video hands-free indoor station, the 4.3" handset video indoor station, or the audio indoor station.

Multi-family building, audio Fig.9

Retrofitting a Welcome M system in a multi-family house with existing wiring is very easy. Even a plain bell system can be converted to audio or video system. Depending on the local circumstances, an installation with recourse to a rising mains, as shown in Fig.9, is recommended. The wires branch off on each floor where the existing apartments are located – to where an audio indoor station with handset is mounted. There the user can answer incoming calls, open the pedestrian door and the garage door. Also door bell buttons can be used. These are connected to the indoor station.

Fig.8

Single-family house/villa

- System type: audio/video combined
- Wiring: looped from devices to devices
- Devices used
  - One video outdoor station, 1-row push button, article number: M21351P1-A
  - One flush mounted box, size 1/2, article number: 41022F
  - One mini system controller, article number: M2301
  - One 4.3" hands-free video indoor station, white, article number: M22311-W
  - One 4.3" handset video indoor station, white, article number: M22302-W
  - One audio handset indoor station, white, article number: M22002-W
  - One electric door opener (not provided by ABB)

The combined audio/video solution for the one-family houses. The drawing shows the easy-to-install 2-wire bus. From the door opener to audio/video outdoor station. And from there to the mini system controller whose working mode is “one on”. And from there to 4.3" hands-free indoor station, which loops through to 4.3" handset indoor station and audio indoor station. No additional distributors are required.

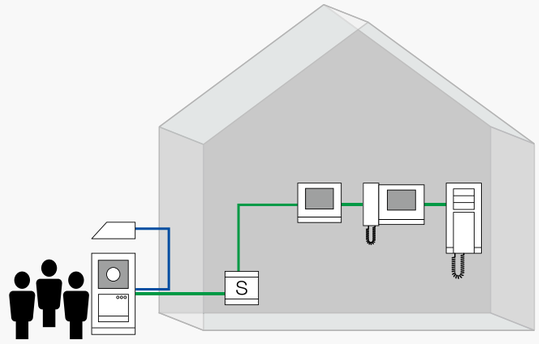
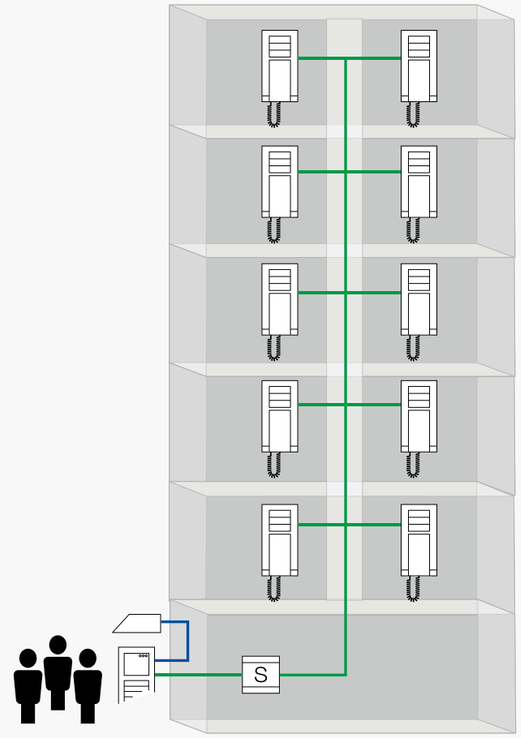


Fig.9

Multi-family building, audio

- System type: audio
- Wiring: rising mains with branch connections
- Devices used
  - One audio outdoor station with the composition of: one audio module with 1-row push button, article number:M251022A-. one cover frame, article number: 51022CF-. one 4-row push button module, article number:M251021P4 one flush mounted box, size 1/2, article number:41022F
  - One mini system controller, article number:M2301
  - Ten audio handset indoor station, white, article number:M22002-W
  - One electric door opener(not provided by ABB)

The audio solution for the multi-family houses. The drawing shows the easy-to-install 2-wire bus from the electrical door opener to outdoor audio station, from there to the system controller and from there to the audio indoor station with handset. No additional distributors are required. In case of future renovation into video system, then a video distributor is needed for every 4 indoor stations.



01 Examples of typical system

High-rise building, audio/video Fig.10

The setup of a video system or a combined audio/video system can include an existing rising mains. To correctly distribute the video image of the outdoor station inside the house, video distributors are installed in each branch box. Once one system controller can not cover all the power consumption of the devices, additional power supply in the bus should be added by the combination of gateway and system controller.

Group of villas, audio/video Fig.11

For a group of villas/single-family houses, a gate station can be equipped as the main entrance. The gateway installed in each villa/single-family ensures the independent operation of each villa/single-family and links the whole group as a networked system.

Fig.10

High-rise building, audio/video

- System type: audio/video combined
- Wiring: branch line by distributor connection
- Devices used
  - One keypad outdoor station, article number: M21351K-./M21352K-.
  - One flush mounted box, size 1/4, article number: 41024F
  - Three system controller, article number: M2300
  - Two gateway, article number: M2302
  - Twenty five video indoor distributor, article number: M2304
  - Fifty audio handset indoor station. white, article number:M22002-W
  - Fifty video 4.3” hands-free indoor station. white, article number:M22311-W
  - One electric door opener(not provided by ABB)

The audio/video combined solution for high-rise buildings. The drawing shows the easy-to-install 2-wire bus from the electrical door opener to outdoor audio station, from there to the system controller and from there to the audio indoor station with handset. An additional system controller and a gateway works as auxiliary power supply are needed to support the bus line for power consumption.

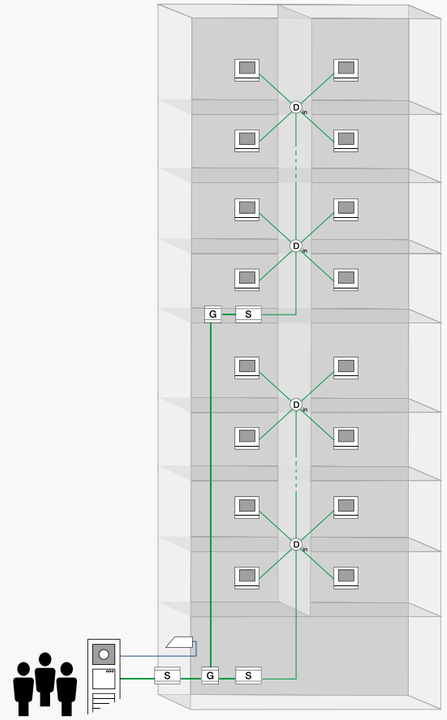
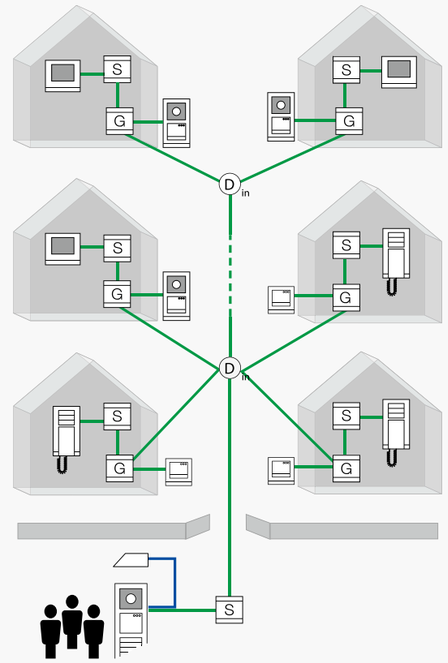


Fig.11

Group of villas, audio/video

- System type: audio/video combined
- Wiring: branch line by distributor connection
- Devices used
  - One video outdoor station(16 pushbuttons) with the composition of: one camera module, article number: M251021C one audio module, article number: M251021A-. one cover frame, article number: 51024CF-. two pcs of 4-row pushbutton module, article number: M251021P4 one flush mounted box, size 1/4, article number: 41024F
- One system controller, article number: M2300
- Four video indoor distributor, article number: M2304
- Sixteen sets of villa kit, article number: M20001/ M20321
- Sixteen of gateway, article number: M2302
- One electric door opener (not provided by ABB)

The solution for a group of villas/single-family houses networked together. The drawing shows the easy-toinstall 2-wire bus from the electrical door opener to gate station, from there to the system controller from there to the video indoor distributor, and from there to villa system and to video hands-free indoor station. Each villa system should add a gateway to be insulated from the networked bus.



01 Examples of typical system

High-rise building with floor entrance, video Fig.12

For a high-rise building, on which floor, a pushbutton outdoor station is present as the second entrance to reach the apartment door. The gateway installed on each floor ensures their independent operation within the building.

Resident complexes, audio/video Fig.13

For residential complexes that may include villa/single-family houses, multi-family houses and high-rise buildings, usually common gate station(s) are present with guard unit(s). The gateway installed in each villa/single-family/high-rise building ensures their independent operation within the building and links the whole group as a networked system.

Fig.12

High-rise building with floor entrance, video

» System type: audio/video combined

» Wiring: branch line by distributor connection

» Devices used
- » One keypad outdoor station, article number: M21351K-./M21352K-.
- » One flush mounted box, size 1/4, article number: 41024F
- » Five video outdoor stations, each with the composition of: one came modules, article number: M251021C one audio modules, article number: M251023A-. one cover frame, article number: 51022CF-. one flush mounted box article number: 41022F
- » One system controller, article number: M2300
- » Five mini system controller, article number: M2301
- » Five gateway, article number: M2302
- » Five video indoor distributor, article number: M2304
- » Fifteen 4.3 video hands-free indoor station, white, article number: M22311-W
- » Six electric door opener(not provided by ABB)

The solution for high rise buildings when a second entrance on each floor is needed. The drawing shows the easy-to-install 2-wire bus from the electrical door opener to outdoor station, from there to the system controller, from there to floor gateway, and from there to floor system and to video hands-free indoor station. Each floor system should add a gateway to be insulated from the networked bus.

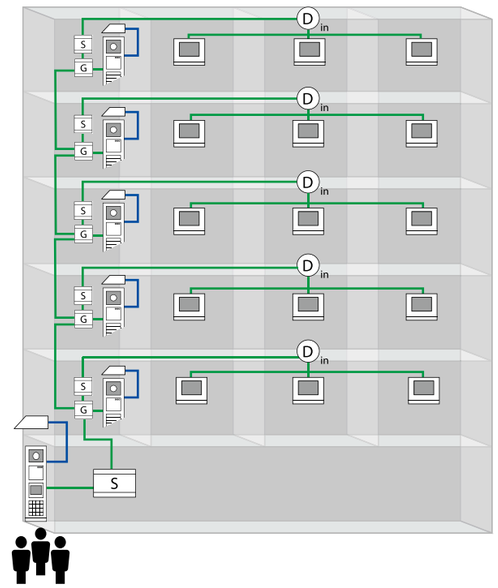


Fig.13

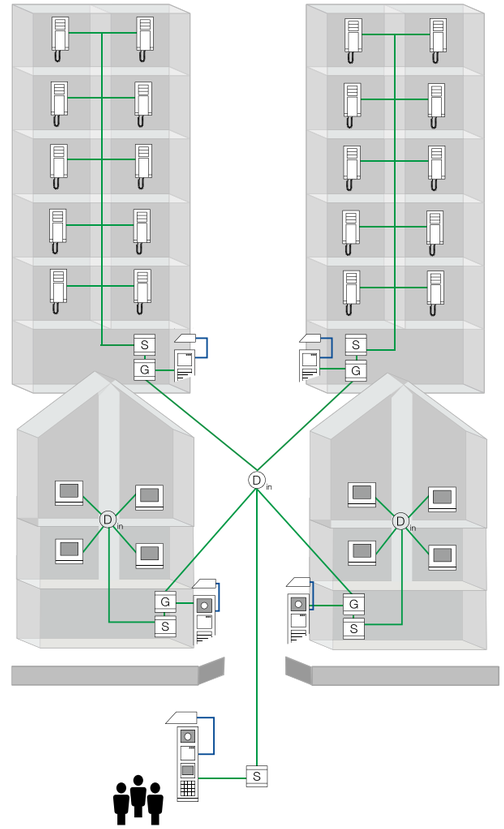
Residential complexes, audio/video

» System type: audio/video combined

» Wiring: branch line by distributor connection

» Devices used
- » One keypad outdoor station, article number: M21351K-./M213512K-.
- » One flush mounted box, size 1/4, article number: 41024F
- » Two video outdoor station, each with the composition of: one camera module, article number: M251021C one audio module, article number: M251023A-. one cover frame, article number: 51022CF-. one flush mounted box, article number: 41022F
- » Two audio outdoor station, each with the composition of: one audio module with 1-row pushbutton, article number:M251022A-. one 4-row pushbutton module, article number:M251021P4 one cover frame, article number: 51022CF-. one flush mounted box, size 1/2, article number:41022F
- » Five mini system controller, article number: M2301
- » One video indoor distributor, article number: M2304
- » Four gateway, article number: M2302
- » Eight 4.3” hands-free video indoor station, white article number: M22311-W
- » Twenty audio handset indoor station. white article number: M22002-W
- » Five electric door opener (not provided by ABB)

The solution for residential complex. The drawing shows the easy-to-install 2-wire bus from the electrical door opener to gate station, from there to the system controller, from there to video distributor, and from there to each insulated building system and to audio handset indoor station. Each building system should add a gateway to be insulated from the networked bus.



01 Examples of typical system

Commercial objects, audio/video Fig.14

For buildings with several entrances (doctor's office, law firm, small workshops, etc.), these can be individually equipped with outdoor stations. A combination of audio outdoor stations and video outdoor stations is possible. For this application a video outdoor distributor as MDRC unit must be used. The door, from which the bell is rung, is opened by the indoor station called.

Fig.14

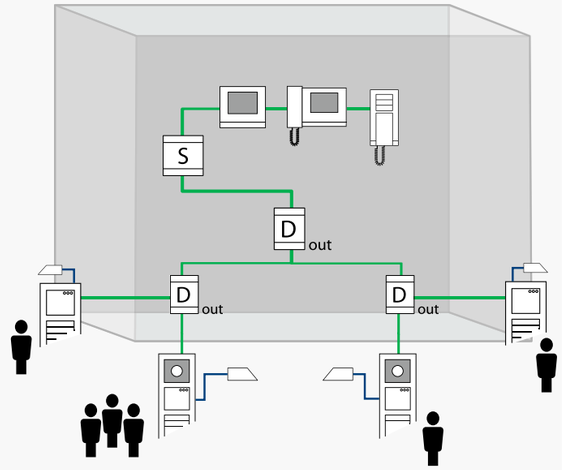
Commercial objects, video/audio

» System type: audio/video combined

» Wiring: looped from devices to devices

» Devices used
  » Two video outdoor station, each with the composition of:
    one camera module, article number: M251021C
    one audio module, article number: M251023A-.
    one cover frame, article number: 51022CF-.
    one flush mounted box, article number: 41022F
  » Two audio outdoor station, each with the composition of:
    one audio module article number: M251023A-.
    one cover frame, article number: 51021CF-.
    Two flush mounted box, article number: 41021F
  » One system controller, article number: M2300
  » Three video outdoor distributor, article number: 83325/2-500
  » One audio handset indoor station. White,
    article number: M22002-W
  » One video hands-free indoor station. White,
    article number: M22311-W
  » One video handset indoor station. White,
    article number: M22301-W
  » Four electric door opener(not provided by ABB)

The solution for commercial object with more than 2 entrances. The drawing shows the easy-to-install 2-wire bus connect indoor stations and multi outdoor stations. The outdoor distributor is needed to connect the multi outdoor stations together.



02
Planning

Either by providing an all-round and easy-to-understand table to grasp all the possibilities of the combination of outdoor station, indoor station and system device, or by supplying a few simple rules for flexible topology and power consumption and distance calculation to meet the project requirement, this makes even complex projects easy to manage and easy to implement at a later stage.

The ABB-Welcome M door communication can be used purely as a 2-wire bus system in new buildings and for modernizing existing systems. In most cases, the existing lines can be used. The universally used 2-wire bus technology allows a bell system to be upgraded to a video system with outdoor camera.

Welcome M system can be set up with one system controller or with multi-system controllers. For both types, every system controller makes an insulated system.

For each insulated system, it can be purely an audio system. In the building part, visitors and residents use it to communicate between audio outdoor station and audio indoor station. In the common part, if a guard unit is present, the visitor and guard can communicate with each other.

The insulated system can also be a video system.
This makes the camera image of the video outdoor station visible at the video indoor stations in the building part, or image of video gate station visible at the guard units in the common part.

This chapter includes below sections to make the planning job easier

2.1 Capacity of Welcome M system

The system capacity is determined by the valid address number of the devices. Two kinds of addressing are used in Welcome M system:

Independent addressing and combined addressing.

» For independent addressing, the devices' addresses are independent in the common part and in the building part.

» For combined addressing, the total address number of the devices in every building and the devices in common part-should be less than a certain value.

	Outdoor station	Indoor station	Gateway	Guard unit	Switch actuator
Total address: (independent addressing)	-	250	60 - building gateway mode 99 - apartment/Floor gateway mode	9	-
Total address: (combined addressing)	9	-	-	-	199

* Total address of independent addressing =Common part or every individual building part, two parts are independent
Total address of combine addressing =Common part + every individual building part , two parts are combined

Outdoor station

The outdoor station of Welcome M system includes the building outdoor station ,villa outdoor station, gate station, and second confirmed outdoor station. The total address number of outdoor stations is 9 for all kinds of entry level. The following are some examples of the address of door stations:

» In one video system with only one building/villa, 9 outdoor stations can be installed.

» In a networked system, 4 gate stations in the common part, and each building has 4 building outdoor stations and one second confirme doutdoor station in each of the apartment, total 9(4+4+1) outdoor stations can be installed for the apartment. Fig.15(B4)

Or 5 building outdoor stations for one villa and 4 gate stations in the common part, total 9 (5+4) outdoor stations can be installed for the apartment. Fig.15(B54)

Indoor station

In a single building or in the building part of a networked system, the total address number of indoor stations is 250.

» In one audio/video system for one building of up to 250 apartments.

» In one networked system, with each building of up to 250 apartments Fig.15(B1)

Gateway

The address of gateway is using independent addressing. The total address of gateway varies when it is set as different modes for application.

The total address number of gateway when it is set as apartment gateway or floor gateway is 99. While the available number of address of gateway when set as building gateway is 60. Please refer to page 41-45 for gateway setting for application.

Guard unit

The address of guard unit is using independent addressing. Total up to 9 guard units is allowed in a video system of one building or in the building part of networked system. And in one networked system, total up to 9 guard units is allowed in the common part.

Switch actuator

The address of switch actuator is using combined addressing. Total up to 199 switch actuators can be connected.

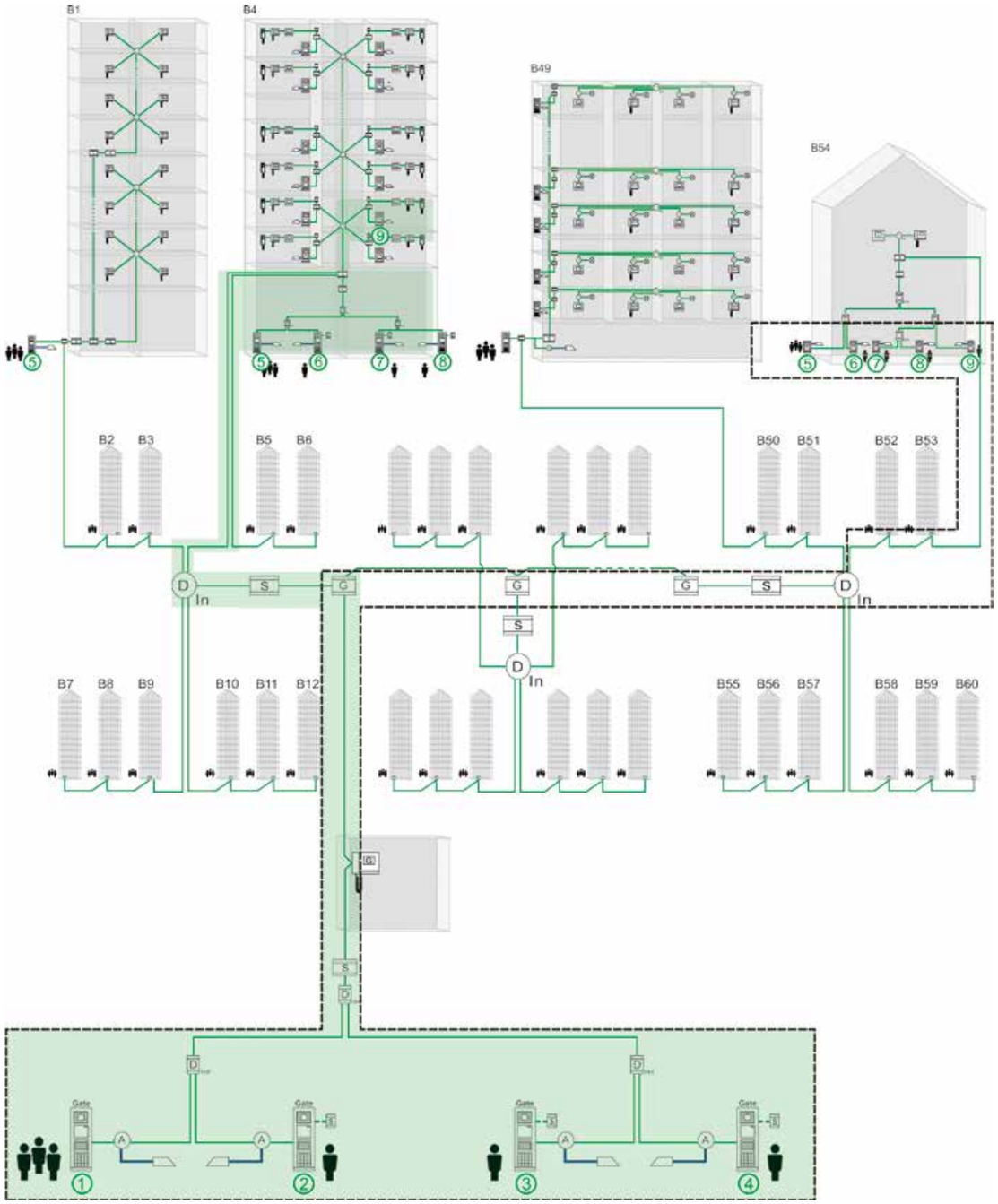
For example:

» In a system with one building of 199 apartments, each apartment can install one switch actuator.

» In a networked system, 4 switch actuators can be installed in the common part, and 195 switch actuators can be installed in every building.

Fig.15

Capacity of Welcome M system



2.2 Selection of the outdoor station

Welcome M provides a wide range of outdoor stations with pushbutton by the combination of the modules, covers and boxes.

Composition of pushbutton outdoor station

For pushbutton outdoor stations, it multiples the application by setting as one column or double column for the same pushbutton module. The setting is made by the audio modules. We call the different pushbutton status "single row" or "double row". 3-row pushbutton and 4-row pushbutton are optional for application. For pushbutton outdoor stations, to compose an outdoor station, audio module (with no pushbutton, with 1-row pushbutton or 2-row pushbutton), pushbutton module (3-row pushbutton or 4-row pushbutton), cover frame and flush mounted boxes are compulsory. If surface mounting is required, a rain hood is needed. Fig.16

There is a quick composition table for pushbutton outdoor station on page 26-27. Please follow the guide below and refer to the table to choose the articles for the desired pushbutton outdoor station.

Step 1: Audio or video?
Please refer to page 26 for audio pushbutton outdoor station and page 27 for video pushbutton outdoor station.

Step 2: 3-row pushbutton or 4-row pushbutton?
Please refer to the 3-row pushbutton or 4-row pushbutton table for different pushbuttonapplication.

» It is technically possible but esthetically, inconsistent for combining audio module with pushbutton and 3-row pushbutton module. For better appearance as an outdoor station, the composition of pushbuttons follows the rule that every pushbutton should have the same height. Thus if 3-row pushbutton module is used, audio module with pushbutton and 4-row pushbutton module are not recommended.

Step 3: How many calls are needed?

Please decide whether single row or double row pushbutton is needed, then please turn to the button ranges to quickly locate the possible composition.

» In case the light and call guard functions are required for the outdoor station, then the total buttons should be the combination of the apartment no. and button number for extra functions.

» In case it is not sure whether single or double pushbuttons for one row is optimal, it is also possible to turn to the pushbutton range to see all the possibilities.

Step 4: Choose the right composition by balancing the cost and esthetics

» There may be more than one possibility of compositing outdoor station in certain cases by choosing 3-row pushbutton module or 4-row pushbutton module, choosing a nameplate module or not and setting as single row or double row for the same pushbutton module. It is advised to consider the cost and esthetics together when making the composition decision.

Fig.16

Composition of an pushbutton outdoor station

Audio pushbutton outdoor station composition

Video pushbutton outdoor station composition

Nameplate module use case

Rainhood use case

Audio outdoor station

3-row pushbutton

Button Range		Article No.																	
		Audio Module						Pushbutton Module & Nameplate Module		Cover Frame & Flush Mounted Box									
Single Row*	Double Row*	M251021A-.		M251022A-.		M251023A-.		M251021P3	51021DN	51021CF-. + 41021F	51022CF-. + 41022F	51023CF-. + 41023F	51024CF-. + 41024F	51028CF-. + 41028F	51025CF-. + 41025F	51026CF-. + 41026F	51029CF-. + 41029F	51024CF-. + 41024F + 51021J	
		x1		x1		x1													
		Single	Double	Single	Double	Single	Double												
1 - 2	1 - 4			1	1 - 2	2	1 - 4												
3 - 5	5 - 10	3	5 - 6	4	7 - 8	5	9 - 10	x1											
6 - 8	11 - 16	6	11 - 12	7	13 - 14	8	15 - 16	x2											
9 - 11	17 - 22	9	17 - 18	10	19 - 20	11	21 - 22	x3											
12 - 14	23 - 28	12	23 - 24	13	25 - 26	14	27 - 28	x4											
15 - 17	29 - 34	15	29 - 30	16	31 - 32	17	33 - 34	x5											
18 - 20	35 - 40	18	35 - 36	19	37 - 38	20	39 - 40	x6	x1										
21 - 23	41 - 46	21	41 - 42	22	43 - 44	23	45 - 46	x7											
24 - 26	47 - 52	24	47 - 48	25	49 - 50	26	51 - 52	x8	x1										
27 - 29	53 - 58	27	53 - 54	28	55 - 56	29	57 - 58	x9											
30 - 32	59 - 64	30	59 - 60	31	61 - 62	32	63 - 64	x10	x1										
33 - 35	65 - 70	33	65 - 66	34	67 - 68	35	69 - 70	x11											

* Optional to install rain hood	51021RH	51022RH	51023RH	51024RH	51028RH	51025RH	51026RH	51029RH	51027RH

4-row pushbutton

Button Range		Article No.																	
		Audio Module						Pushbutton Module & Nameplate Module		Cover Frame & Flush Mounted Box									
Single Row*	Double Row*	M251021A-.		M251022A-.		M251023A-.		M251021P3	51021DN	51021CF-. + 41021F	51022CF-. + 41022F	51023CF-. + 41023F	51024CF-. + 41024F	51028CF-. + 41028F	51025CF-. + 41025F	51026CF-. + 41026F	51029CF-. + 41029F	51024CF-. + 41024F + 51021J	
		x1		x1		x1													
		Single	Double	Single	Double	Single	Double												
1 - 2	1 - 4			1	1 - 2	2	1 - 4												
4 - 6	7 - 12	4	7 - 8	5	9 - 10	6	11 - 12	x1											
8 - 10	15 - 20	8	15 - 16	9	17 - 18	10	19 - 20	x2											
12 - 14	23 - 28	12	23 - 24	13	25 - 26	14	27 - 28	x3											
16 - 18	31 - 36	16	31 - 32	17	33 - 34	18	35 - 36	x4											
20 - 22	39 - 44	20	39 - 40	21	41 - 42	22	43 - 44	x5											
24 - 26	47 - 52	24	47 - 48	25	49 - 50	26	51 - 52	x6	x1										
28 - 30	55 - 60	28	55 - 56	29	57 - 58	30	59 - 60	x7											
32 - 34	63 - 68	32	63 - 64	33	65 - 66	34	67 - 68	x8	x1										
36 - 38	71 - 76	36	71 - 72	37	73 - 74	38	75 - 76	x9											
40 - 47	79 - 84	40	79 - 80	41	81 - 82	42	83 - 84	x10	x1										
44 - 46	87 - 92	44	87 - 88	45	89 - 90	46	91 - 92	x11											

* Optional to install rain hood	51021RH	51022RH	51023RH	51024RH	51028RH	51025RH	51026RH	51029RH	51027RH

Video outdoor station

3-row pushbutton

Button Range		Article No.																		
		Camera Module	Audio Module						Pushbutton Module & Nameplate Module		Cover Frame & Flush Mounted Box									
Single Row*	Double Row*	M251021C	M251021A-.		M251022A-.		M251023A-.		M251021P3	51021DN	51022CF-. + 41022F	51023CF-. + 41023F	51024CF-. + 41024F	51028CF-. + 41028F	51025CF-. + 41025F	51026CF-. + 41026F	51029CF-. + 41029F	51024CF-. + 41024F + 51021J		
		x1	x1		x1		x1													
			Single	Double	Single	Double	Single	Double												
1 - 2	1 - 4				1	1 - 2	2	1 - 4												
3 - 5	5 - 10		3	5 - 6	4	7 - 8	5	9 - 10	x1											
6 - 8	11 - 16		6	11 - 12	7	13 - 14	8	15 - 16	x2											
9 - 11	17 - 22		9	17 - 18	10	19 - 20	11	21 - 22	x3											
12 - 14	23 - 28		12	23 - 24	13	25 - 26	14	27 - 28	x4											
15 - 17	29 - 34		15	29 - 30	16	31 - 32	17	33 - 34	x5	x1										
18 - 20	35 - 40		18	35 - 36	19	37 - 38	20	39 - 40	x6											
21 - 23	41 - 46		21	41 - 42	22	43 - 44	23	45 - 46	x7	x1										
24 - 26	47 - 52		24	47 - 48	25	49 - 50	26	51 - 52	x8											
27 - 29	53 - 58		27	53 - 54	28	55 - 56	29	57 - 58	x9	x1										
30 - 32	59 - 64		30	59 - 60	31	61 - 62	32	63 - 64	x10											

* Optional to install rain hood	51022RH	51023RH	51024RH	51028RH	51025RH	51026RH	51029RH	51027RH

4-row pushbutton

Button Range		Article No.																		
		Camera Module	Audio Module						Pushbutton Module & Nameplate Module		Cover Frame & Flush Mounted Box									
Single Row*	Double Row*	M251021C	M251021A-.		M251022A-.		M251023A-.		M251021P3	51021DN	51022CF-. + 41022F	51023CF-. + 41023F	51024CF-. + 41024F	51028CF-. + 41028F	51025CF-. + 41025F	51026CF-. + 41026F	51029CF-. + 41029F	51024CF-. + 41024F + 51021J		
		x1	x1		x1		x1													
			Single	Double	Single	Double	Single	Double												
1 - 2	1 - 4				1	1 - 2	2	1 - 4												
4 - 6	7 - 12		4	7 - 8	5	9 - 10	6	11 - 12	x1											
8 - 10	15 - 20		8	15 - 16	9	17 - 18	10	19 - 20	x2											
12 - 14	23 - 28		12	23 - 24	13	25 - 26	14	27 - 28	x3											
16 - 18	31 - 36		16	31 - 32	17	33 - 34	18	35 - 36	x4											
20 - 22	39 - 44		20	39 - 40	21	41 - 42	22	43 - 44	x5	x1										
24 - 26	47 - 52		24	47 - 48	25	49 - 50	26	51 - 52	x6											
28 - 30	55 - 60		28	55 - 56	29	57 - 58	30	59 - 60	x7	x1										
32 - 34	63 - 68		32	63 - 64	33	65 - 66	34	67 - 68	x8											
36 - 38	71 - 76		36	71 - 72	37	73 - 74	38	75 - 76	x9	x1										
40 - 42	79 - 84		40	79 - 80	41	81 - 82	42	83 - 84	x10											

* Optional to install rain hood	51022RH	51023RH	51024RH	51028RH	51025RH	51026RH	51029RH	51027RH

Options of keypad outdoor station

For condominium buildings and residential complexes, it is recommended to choose keypad outdoor station.

Keypad with pure audio module outdoor station Fig.17

Besides the keyless access by inputting the correct password, it can also be used for inputting the correct call code to call the indoor stations.

The call code is default starting from 1, which will call the indoor station with the address of 1.

Keypad and display (in-built RFID reader) with pure audio module outdoor station Fig.18

The display with in-built ID/IC reader can be used for multiple uses: keyless access by reading the registered proximity card, displaying some welcome messages, showing the status of calling progress, or processing the programming.
Upon programming, the name or call code can also be displayed on the screen and scrolled up and down on the keypad module.

The call code is default starting from 1, which will call the indoor station with the address of 1.

Keypad with the pushbutton outdoor station Fig.19

Keypad provides the keyless access for the residents of the building by inputting the correct password.

It is a good solution especially for the villa/singlefamily house solution. Then the pushbutton is largely for visitors only.

Display(in-built RF reader) with the pushbutton outdoor station Fig.20

ID/IC proximity reader can be useful also for residents' keyless access by reading the registered proximity card. In case lost, it can also be easily wiped out in the system and a new card can be efficiently registered. Then the push button is largely for visitors only.

Keypad and display(in-built RF reader) with pushbutton outdoor station Fig.21

It is the combination of keypad outdoor station and push button outdoor station. It provides the most convenient calling experience for the residents and the visitors. For the residents, he can input the correct password or swipe the registered proximity card. He can also press the push button or scroll up and down the screen and press call button in case the resident's name is stored there.

Fig.17

Keypad with pure audio module outdoor station

Fig.18

Keypad and display (in-built RFID reader)with pure audio module outdoor station

Fig.19

Keypad with pushbutton outdoor station

Fig.20

Display (in-built RFID reader) with pushbutton outdoor station

Fig.21

Keypad and display (in-built RFID reader) with pushbutton outdoor station

2.3 Selection of the indoor station

In addition to the appearance, to select the indoor station for application needs to consider the functions needed for the project. The table below gives a general function list for the indoor station for application.

Functions	7" all touch video handsfree indoor station	4.3" video hands-free indoor station	** 4.3" video handset indoor station	Audio handset indoor station
* Secret conversation	x	x	x	x
* Cyclical surveillance	x	x	x	-
* Manual call	x	x	x	-
* Door bell call	x	x	x	x
* Remote unlock	x	x	x	x
* Control two locks	x	x	x	x
* Room to room call	x	x	x	x
* Home to home call	x	x	x	x
* Paging/Broadcast	-	x	x B/W(-)	-
* Black list	x	x	x B/W(-)	-
* Call guard unit	x	x	x	x
* SOS	x	x	x	x
* Image saving	x	x	x B/W(-)	-
* Customized audio message leaving	x	-	-	-
* Call forward	x	x	x B/W(-)	-
* Door status check	x	x	x	x
Variable ringtone	x	x	x	x
Customized password for keypad	x	x	x	-
* Picture frame and screen saver	x	-	-	-
* Automatic unlock	x	x	x	x
* QR code for user manual reach	x	x	x	-
* Mute one or mute all	x	x	x	- only mute itself
* Induction loop	-	x	x B/W(-)	x
Local power supply	-	x	x	-
Surface mounted installation	x	x	x	x
Desktop installation	x	x	x	-
Flush-mounted installation	-	x	-	-

Notes:
* For the function description, please find the explanation in the following pages.
** There are two versions of 4.3” video handset indoor station – color version and the B/W, differ from the color or B/W TFT screen. For B/W version there are some limited functions compared to color version.

Secret conversation Fig.22

During the conversation between the outdoor station and the indoor station, all outdoor stations and indoors that are not involved in the conversation are temporarily excluded in order to guarantee the privacy of video door entry conversations. When calling from an outdoor station that is temporarily excluded, a time-out will indicate that the extension line is momentarily busy.

Cyclical surveillance Fig.23

All indoor stations are equipped with a surveillance button which can be used to connect the outdoor stations at any time. The user sees the images from the default outdoor station; press repeatedly the button to display images from the additional camera (if present) connected to the default outdoor station, and then from other outdoor stations.

Manual call Fig.24

During surveillance, by picking the handset up or activating audio in case of hands-free stations, the user starts a conversation with the selected call station.

Door bell call Fig.25

Indoor stations are provided with two terminal pins used to connect the door bell button. If the button is pressed, the indoor station emits an about 3s ring, according to the selected call ring tone (different from those of the other calls). If the user has several indoor stations in parallel, and connect this button only to one indoor station, all indoor stations will ring together.

Fig.22
Secret conversation

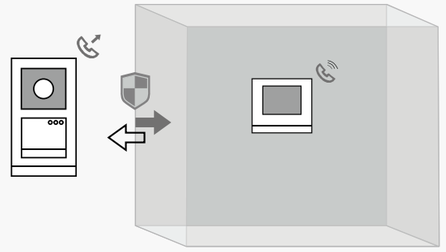


Fig.24
Manual call

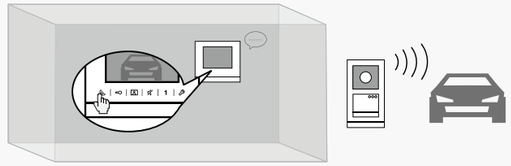


Fig.23
Cyclical surveillance

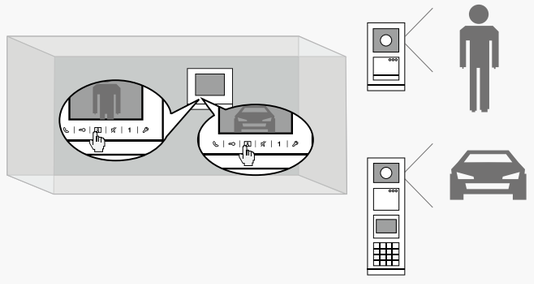
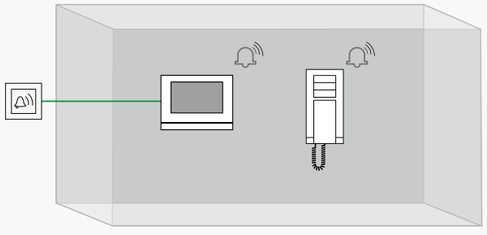


Fig.25
Door bell call



Remote unlock Fig.26
With the system at reset, the user can open the lock of the default outdoor station at any time. If during conversation, the user can release the door lock associated to the outdoor station making the call .

Control two locks Fig.27
Two locks can be connected with outdoor station, one is for pedestrian gate and the other is for driveway gate. User can press "unlock" button and programmable button (e.g. button 1, release 2ndlock function is programmed first) to control the two doors respectively.

Room to room call&Home to home call Fig.28
If there are several indoor stations in parallel, after programming an indoor station for internal intercom function, user can activate the intercom call at this indoor station, all other indoor stations will ring together.

For several different apartments, after programming an indoor station for external intercom function, user can activate the intercom call at this indoor station, the called indoor station will ring.

Paging/Broadcast Fig.29
User can activate the broadcast function by entering broadcast menu, a message can be forwarded through all IS in the same apartment.

Blacklist Fig.30
To be safe, for home to home call the unwanted caller can be set in blacklist.

Call guard unit Fig.31
This function allows establishing a communication with the guard unit. Enter communication menu to send the call to the guard unit or press a programmable button (call guard unit function is programmed first) to activate the call.

Send SOS Fig.32
If there is emergency, user can send an SOS message to guard unit by pressing programmable button 1 for 3s. Guard unit will receive the SOS message and indicates which apartment is sending SOS.

Image saving Fig.33
Users can find who has recently been at the door and what happened to him by history menu. Either manual snapshots during conversation or automatic snapshots after bell ringing in your absence will be saved in history.

Customized audio message leaving Fig.34
Before going out you can record an audio message for a family member or visitors who ring the bell.

Fig.26
Remote control
Remote unlock at any time for default outdoor station

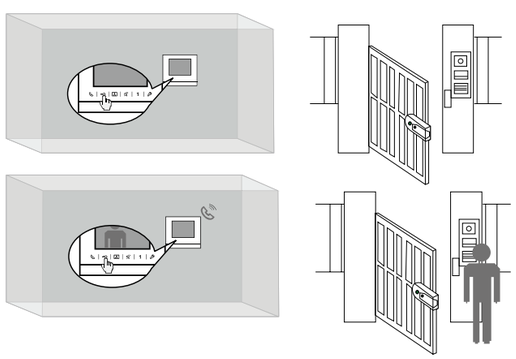


Fig.27
Control 1st and 2nd locks

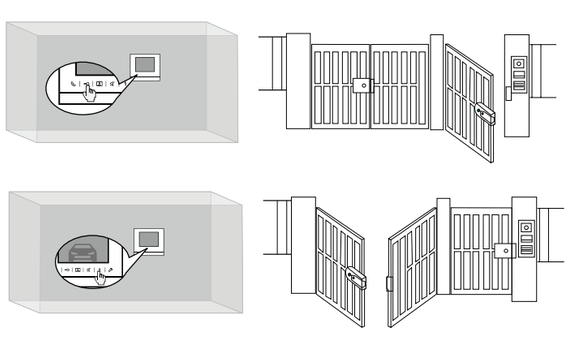
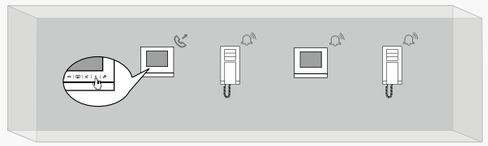


Fig.28
Room to room call



Home to home call

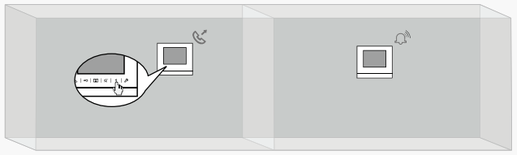


Fig.29
Paging/Broadcast

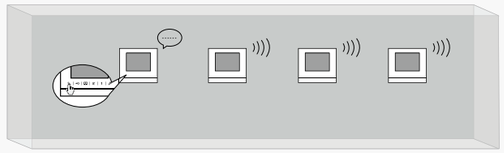


Fig.30
Blacklist

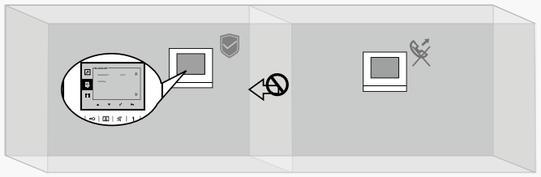
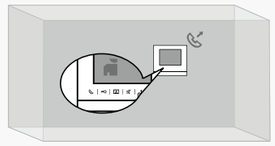


Fig.31
Call guard unit



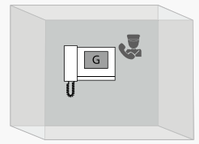


Fig.32
Send SOS

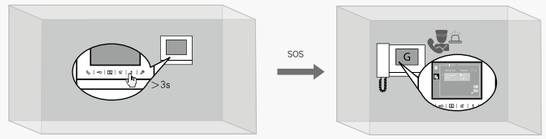


Fig.33
Image saving

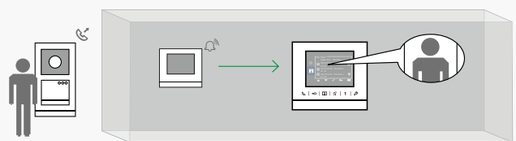
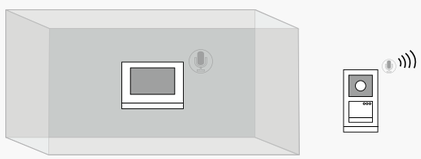


Fig.34
Customized audio message leaving



Call forward Fig.35

It is possible to forward the income calling when absent from home. Through the setting at indoor station before leaving home, the incoming call can be forwarded from home to the selected neighbor or the guard unit.

Door status check Fig.36

A sensor is connected with outdoor station, if this door is open for over 120s, LED of unlock button of indoor stations and guard units will flash. When the door is closed, the LED will be off. If 2 or more outdoor stations are associated, the LED will be off when all outdoor stations are closed and will flash when at least one outdoor station is open.

Variable ringtone

Users can select the ring tone for default outdoor station or other outdoor stations or the door bell ring tone among the 5 available ones.

Customized password for keypad

Users can set a private password (6-8 digits) at indoor station just at home, which is easy to remember.

Picture frame and screen saver Fig.37

When the indoor station is at standby, its appearance will add the decor of the room. With a SD card the indoor station can display high-resolution files from the computer or camera directly on the touch display. The display time can be adjusted optionally.

Automatic unlock Fig.38

This function is used mainly in the service sector (offices, doctors, professional). This feature can be activated or deactivated at the indoor station. With the function activated, LED unlock will light, and after receiving a call, unlock command will be sent automatically.

QR code for user manual reach Fig.39

Users can scan QR-Code contained in the menu of video indoor stations directly to get the detailed manual. While for audio indoor station, QR-Code is contained in the quick guide.

Mute one / mute all indoor station Fig.40

User can mute the ringtone when there's an incoming call. Press the mute button to mute the indoor station. If the user has several indoor stations in parallel, long-press the mute button for about 3s at one indoor station, and all indoor stations will mute together when there's an incoming call. When the function is activated, the LED MUTE turns on.

Induction loop Fig.41

Indoor station with an induction loop allows hearing-impaired persons to wear a hearing aid (working in "T" mode) to hear the ringtone and the voice of visitors.

Local power supply

Indoor station can be powered by an additional power supply when a parallel indoor station needs to be installed without impact on the whole system.

Fig.35
Call forward

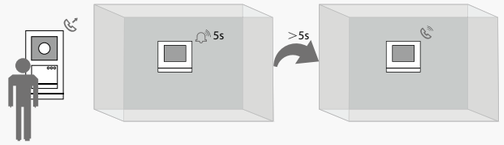


Fig.36
Door status check

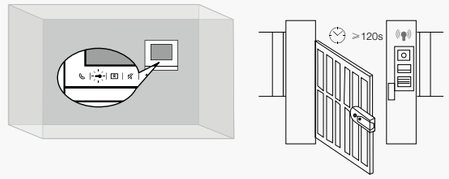


Fig.37
Picture frame and screen saver

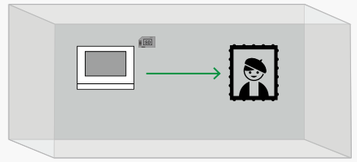


Fig.38
Automatic unlock

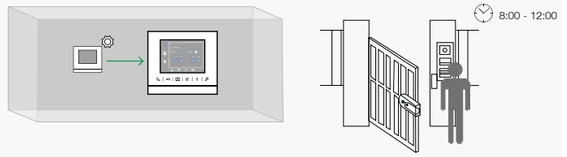


Fig.39
QR code for user manual reach

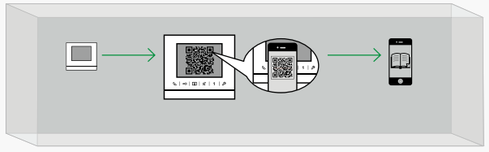
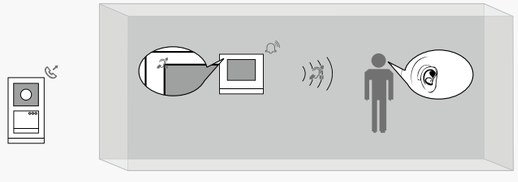


Fig.40
Mute one and mute all

Fig.41
Induction loop for hearing aid



2.4 Selection of system devices

It's important to select the appropriate system devices to set up a Welcome M system. It needs to consider both the function of the devices and topology for application. System controller is a must for any insulated system, other system devices can be selected to meet the specific project requirement.

System controller, local power supply and auxiliary power supply

System controller provides both power and communication command for a Welcome M system. As the extension of system controller, auxiliary power supply and local power supply serve as the supplement to provide a flexible power solution to meet the requirement of all kinds of Welcome M system. The given illustration is a project case using three power sources. Fig.42

System controller

Working as the "brain“ of all devices, a system controller is compulsory and exclusive in any insulated system . It not only provides power, but also manages all the communication and control between outdoor stations and indoor stations in the building part ,and between gate stations and the gateway in the common part.

For those systems with multi-system controllers , it will be broken down into several insulated systems and every insulated system needs separate power consumption and distance limit calculation. (See page 60-63)

Both standard system controller and mini system controller are provided to meet different project needs.

The system controller has two working modes: “all on” and “one on”, "all on" and "one on" are system behavior for screen switching on for the indoor stations with the same address(parallel indoor stations) in case of being called. Under "all on", the master video indoor station and other slave video indoor station(s) will all switch on the screens and ring at the same time upon being called from the outdoor stations or gate stations. Under "one on", only the "master" video indoor station will switch on the screen and ring, the other "slave" video indoor station(s) will ring but will not switch on the screen. Fig.43

Power units of system controller

As system controller will provide the power for the system, it is important to calculate the available power unit of standard system controller or mini system controller for the system before application.

For a 2-wire system, the available power unit of a system controller needs to take the situation of 1 or ⩾ 2 apartments into consideration firstly.

To achieve a comfortable door communication experience in applications, different value of working power will always be reserved first to handle the simultaneous working of different devices(door call, setting, door bell) before allocated to the standby devices.

Since the power calculation is based on the remaining standby current after subtracting the varied reserved working current in 1 or ⩾ 2 apartments, thus, the power units of system controller varies when the system contains 1 or ⩾ 2 apartments, which has been revealed in Table 1 (page 61).

Moreover, the "all on" and "one on" mode setting will impact the power consumer calculation when one apartment contains more than one video indoor station(parallel indoor stations). As we can see from the power and distance table in Table 1 on page61, for one additional video 4.3" indoor station when the system controller is under "all on" mode, 23 more consumer units should be counted, while only 11 consumer units are counted when system controller is under "one on" mode. In the real project, the balance can be made between cost and comfort.

Fig.42

Application of system controller, local power supply and auxiliary power supply

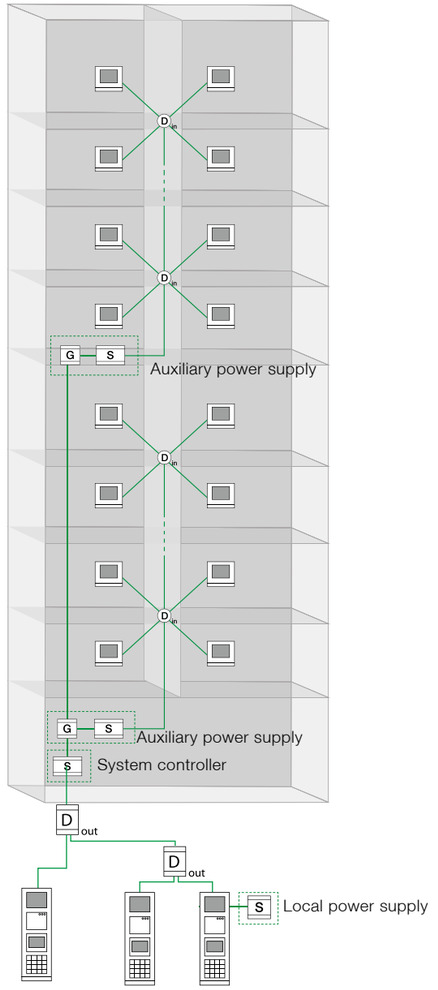
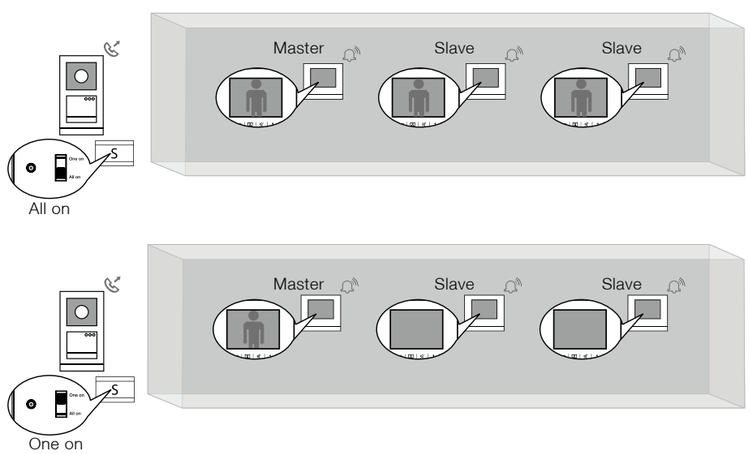


Fig.43

“All on” and “One on” setting of system controller



Local power supply

Local power supply and system controller are exactly the same devices, but they are named differently because of the different functions they serve.

- Local power supply only provides the pure power source without giving communication command like system controller.
- Unlike the system controller or auxiliary power supply that provides the power for all the devices in the external and internal bus line through the 2-wire bus terminal, local power supply provides the pure power to individual device directly by connecting the local power supply terminals.
- Devices below contain local power supply terminals, and can be powered by local power supply:
  - Audio module of outdoor station
  - 4.3” video handset/hands-free indoor station
  - Guard unit

Despite the physical product is like system controller, the working mode setting of local power supply is useless .

Power units of local power supply

One mini local power supply can feed:

- Up to 4 pcs of parallel 4.3" video hands-free indoor station
- Up to 4 pcs of parallel guard units
- 1 pc of any kind of pushbutton outdoor station
- 1 pc of any kind of keypad outdoor station

Despite one standard local power supply doubles the capacity compared to one mini local power supply, the real user cases will not need it due to the letter already can fulfill the needs.

For parallel 4.3” video indoor stations in one apartment, the screen of any one fed by local power supply will always be on for incoming call even in “one on” setting in system controller. Fig.44

When the device is fed by local power supply, it requires rather small power consumer unit from the system controller. For easy calculation, it is taken as "0" power unit during the power consumer calculation, which is shown in Table 1 on page 61. The saved power of system controller can be used to increase the number of devices under this system controller.

The increased number of devices can be the increased quantities of apartments in one building or the increased quantities of apparel indoor stations within one apartment.

Based on the calculation rule in Table 1 (page 61), specifically, for scenarios below when the power units of one system controller is smaller than required consumer units of devices, local power supply is highly recommended. This is due to the fact that compared to auxiliary power supply, local power supply solution will be less cost and easier wiring:

- When the total consumer units of external and internal bus > power unit of system controller, while the total consumer units of the devices on internal bus ⩽ power unit of system controller, one or all outdoor stations should be powered by local power supply. See the application on page 68(example 3)
- When feeding the local power supply to parallel slave 4.3" video hands-free or 4.3" video handset indoor station(s), the total power consumer units will become ⩽ power units of system controller. Fig.45
- When feeding the local power supply to guard unit, the total power consumer units will become ⩽ power units of system controller.
- When adding the parallel 4.3" video hands-free or 4.3" video handset indoor station to an apartment after the door communication system installation had been finished in the past. Since the additional device might cause the system controller inadequate to cover the increased consumer units, it is safe to put local power supply to additional 4.3" indoor station to that certain apartment without affecting the existing power solution. Fig.46

Fig.44

Local power supply for parallel indoor stations

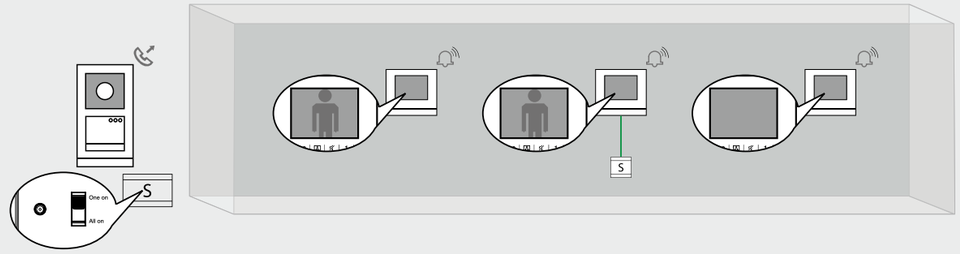
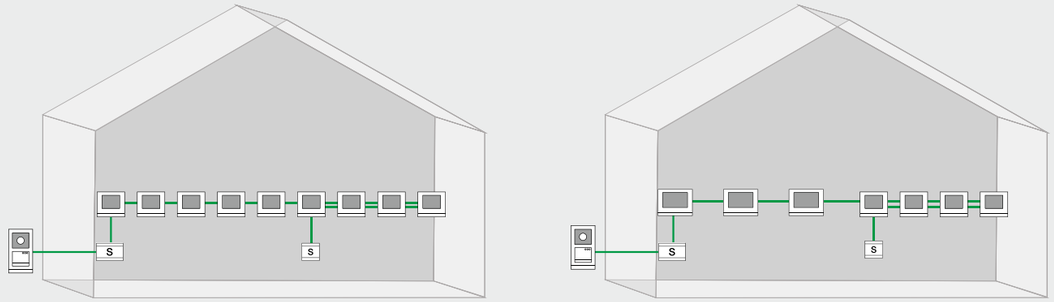


Fig.45

Feed parallel 4.3” video indoor stations by mini local power supply

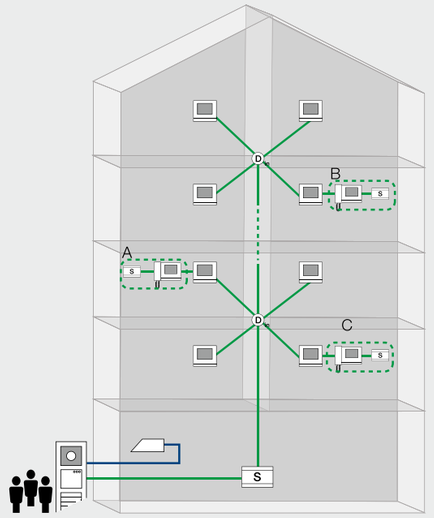


Note:
1. Standard system controller “all on” mode, supports 1 outdoor station + 5 parallel 4.3” video hands-free indoor stations
2. Mini local power supply, feeds 4pcs 4.3 video hands-free indoor stations

Note:
1. Standard system controller “all on” mode, supports 1 outdoor station + 3 parallel 7” video hands-free indoor stations
2. Mini local power supply, feeds 4pcs 4.3 video hands-free indoor stations

Fig.46

Add parallel 4.3” video indoor stations to apartments after installation



Note:
In 2013, the door entry system for this building had been installed. Later on, Apartment A, B and/or C can also equire to add one more video indoor station with local power supply without affecting other users.

Auxiliary power supply

For one insulated system, when adding the local power supply to the devices in external bus or internal bus, or both ways still can not cover the required consumption units of the devices, auxiliary power supply is suggested. The combination of gateway(under auxiliary power supply mode) and system controller will make an auxiliary, which can be used to split the system into two insulated systems. Fig.47

Like system controller, the "all on" and "one on" mode setting will impact the power consumption calculation when of parallel indoor stations.

Power units of auxiliary power supply

The Table 1-2 on page 62 can be used to count devices powered by auxiliary power supply. To have an easy reference please check Table 3-2, Table 3-3 and Table 3-4 on page 76-77, the capacity of both mini auxiliary power supply and standard auxiliary power supply are counted in.

Gateway

For the system with multi-system controllers, gateway is needed to make each insulated system(managed by one system controller) interact with devices installed in the common part.

Gateway offers high level flexibility for application with 5 different working modes. The modes of gateway can be set as below:

- Building gateway
- Floor gateway
- Apartment gateway
- Auxiliary power supply
- Line amplifier

For the setting of the working mode of gateway, please refer to page 97 in Chart 04.

Building gateway mode

Building gateway is mainly applied to building systems, which enables one building to be an independent sub insulated system within a residential complex. Each building supports up to 250 apartments. Fig.48

Or it can be used for a building with more than 250 apartments by making 2 insulated building systems for this building. Fig.49

It supports 60 such system for application. The address of building gateway should be set one upon another in sequence from 1 to 60.

Fig.47

Auxiliary power supply

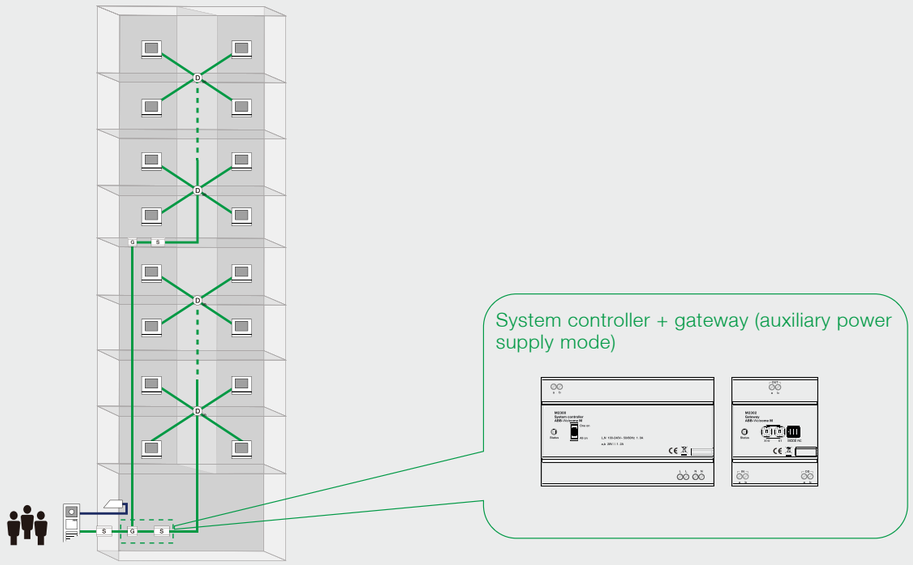


Fig.48

Building gateway application for building systems within a residential complex

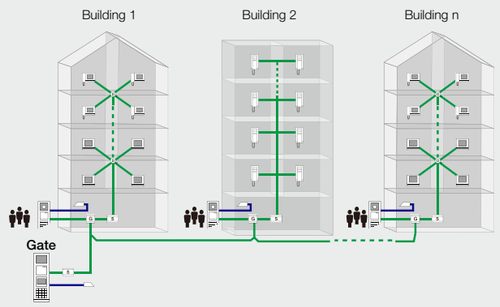
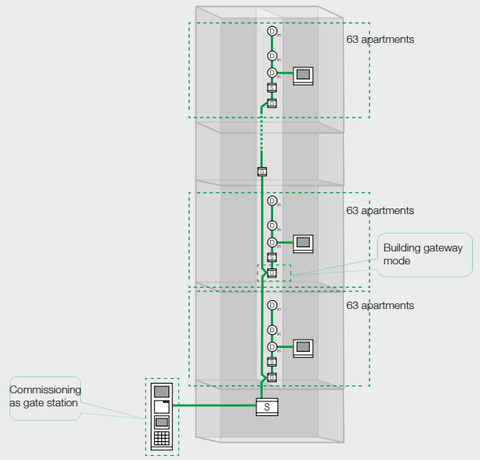


Fig.49

Building gateway application for high-rise building with more than 63 apartments



Floor gateway mode

Floor gateway is mainly applied to floor systems, which enables a floor outdoor station and multi-apartments on the same floor to be an independent sub insulated system within the building. Fig.50

Also it can be used for a small residential complex that uses pushbutton outdoor station as gate station. Fig.51

The starting address of one floor gateway should be minimal address of indoor station of this floor.
But the available address number for floor gateway is 99.
Please refer to page 98 for commissioning of gateway.

Fig.50

Floor gateway application for floor systems within the building

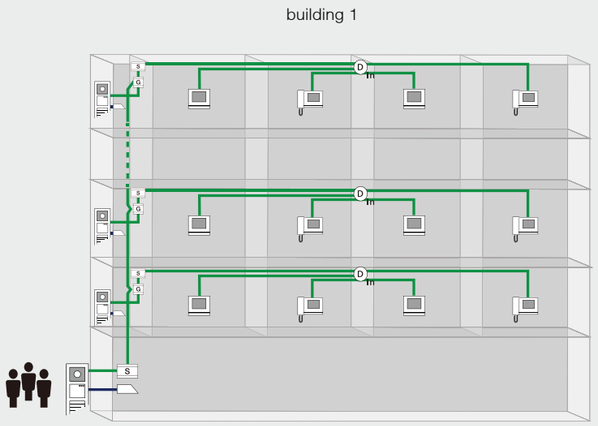
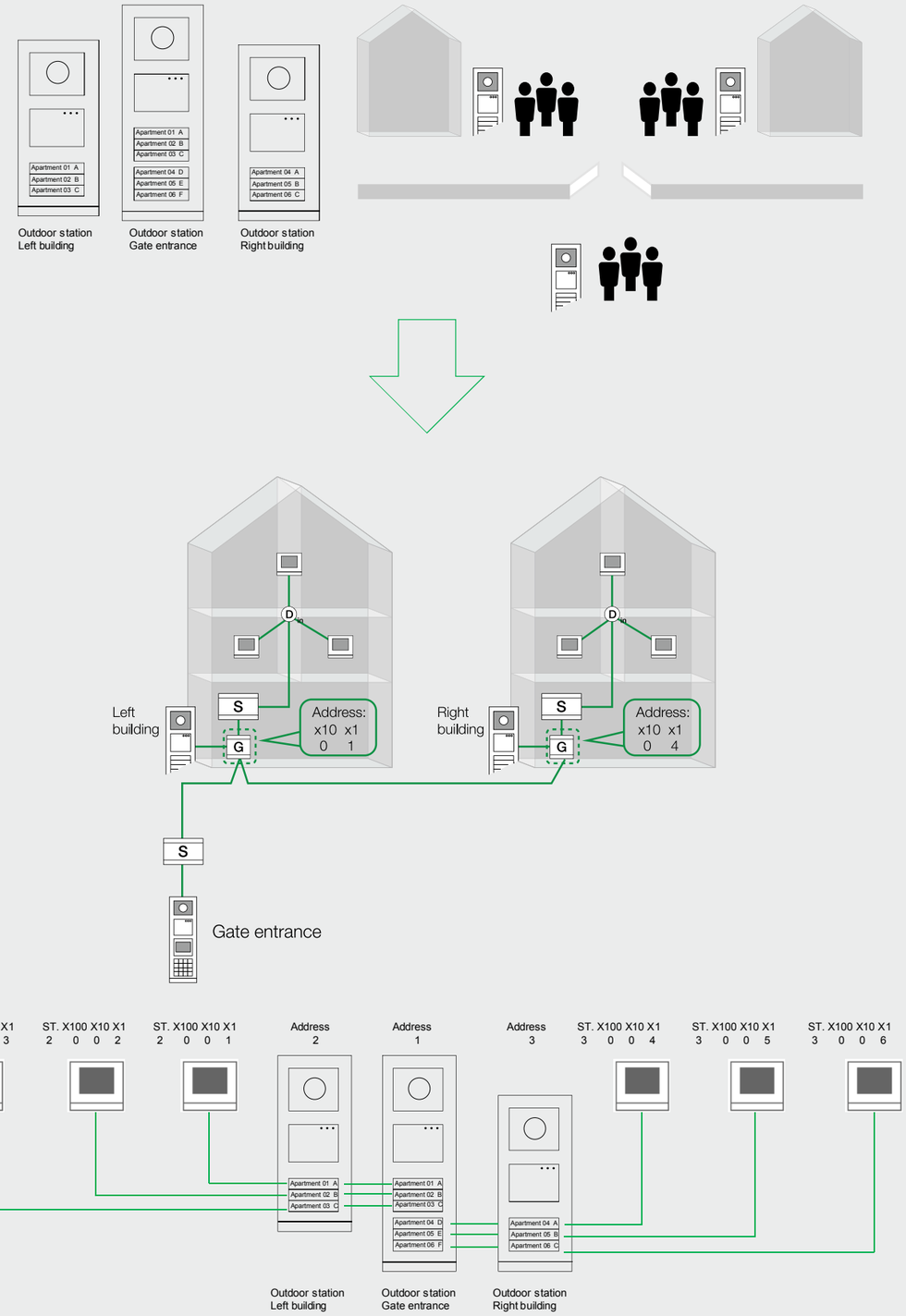


Fig.51

Floor gateway application for small residential complex



Apartment gateway mode Fig.52

Apartment gateway is mainly applied to apartment systems, which enable an apartment with a second confirmed outdoor station to be an independent sub insulated system within the building.

Also it can be used for the application of a group of villas/ single family houses in a residential complex. It supports 99 such systems for application. The address of apartment gateway should be set one upon another in sequence from 1 to 99.

Auxiliary power supply mode

The system controller must combine the gateway set as auxiliary power supply mode to feed the system with extra power. The additional system controller is used to split the system into two insulated systems.

There is no need to set address for auxiliary power supply.

Line amplifier mode

Line amplifier is used to extend the distance of signal when it is not enough. The distance extended by one amplifier will vary according to cable type.

Please refer to page 63 Table 2-3 for the distance calculation. The position to install the amplifier is recommended at the end of the maximum distance of the cable. Fig.53

Example:
A project of a residential complex with 10 buildings, looped through with 10 building gateways, whose wiring distance from gate station to last building is 300m, cable RVV, Ø=1mm is used.

User case analysis:
The attenuation units of the 10 building gateways are 15 units (1.5 unit x10). If with cable RVV, Ø=1mm, according to the Table 2-3, the max. distance can be counted as 170m, which is <300m.

Solution:
One gateway in amplifier mode is needed to split into section A and section B.

Gateway address	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Actual distance	30m	60m	90m	120m	150m G	180m	210m	240m	270m	300m
Solution:	Section A is from gate station to 5th building, the attenuation unit is 7.5 unit (1.5 unit x 5),the max. distance is 180m, ⩾ the real distance 150m					Section B is from 5th building to 10th building, the attenuation unit is 7.5 unit (1.5 unit x 5), the max. distance is 180 m, ⩾ the real distance 150m				
Reference table:	Table 2-3					Table 2-3				

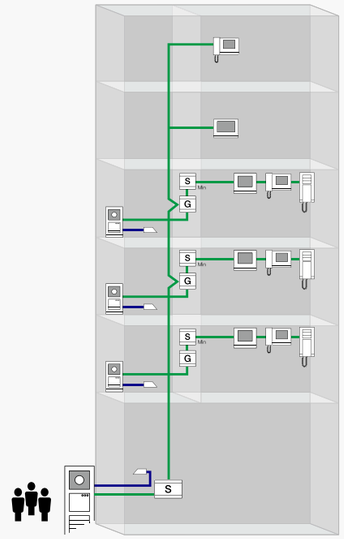
So the solution is to install the gateway as line amplifier mode at 6th building for maximum use of cable.

There is no need to set address for line amplifier.

Fig.52

Apartment gateway application

1. For apartment systems within the building



2. For a group of villa that networked

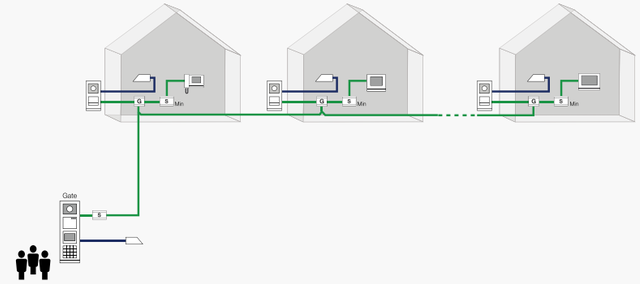


Fig.53

Line amplifier application

Maximum quantity limitation of gateway pass through to an apartment

Noted: a maximum of 4 gateways can be passed through to any apartment, regardless of the mode of gateway, except this combination:building gateway + floor gateway + apartment gateway. (The looping of gateway is not counted)

For example, for building n Fig.54
» For floor 1 and floor 2, total 3 gateways
» For floor 10, up to 4 gateways, which is the maximum

For each building, a maximum of 2 gateways for each apartment is allowed, either building gateway + floor gateway, building gateway + apartment gateway, or floor gateway + apartment gateway. It is not allowed building gateway + floor gateway + apartment gateway. So for floor 10, it is not allowed to have apartment gateway.

Power consumption units of gateway

For gateway except when it is set as line amplifier mode, the consumption unit is divided into two parts: the one provided by the internal bus of system controller of one insulated system , and the other part provided by the external bus of system controller of the sub insulated system(if any). Fig.55
When set as line amplifier mode, the power consumption is provided independently by the system controller that controls it.

Please refer to page 61 for Table 1-1 of power consumption and distance calculation. The power consumption need to be calculated distinctively by the mode:
» When it is set as building gateway, floor gateway, apartment gateway and auxiliary power supply mode, the total consumption is 7 units, with 2 units (C1) from internal bus of system controller of the insulated system and 5 units (C2) from external bus of system controller from system controller of the other connected insulated system.
» When it is set as line amplifier mode, the consumption unit is 5 from the system controller that controls it.

Attenuation unit of gateway

For looping through of one gateway regardless of the mode, 1.5 attenuation unit will be consumed.

Fig.54

Maximum gateways passed through to apartments

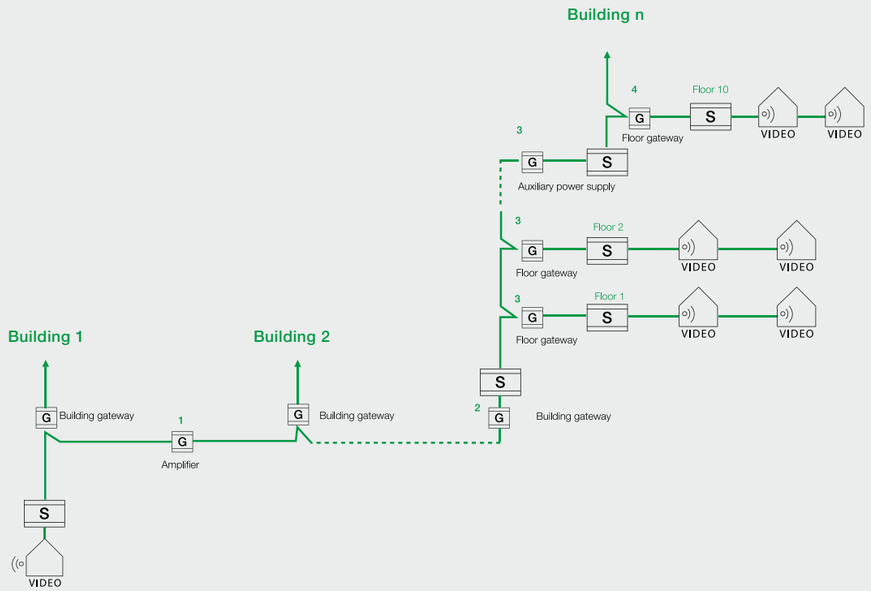
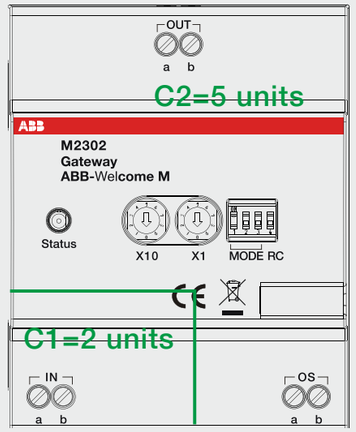
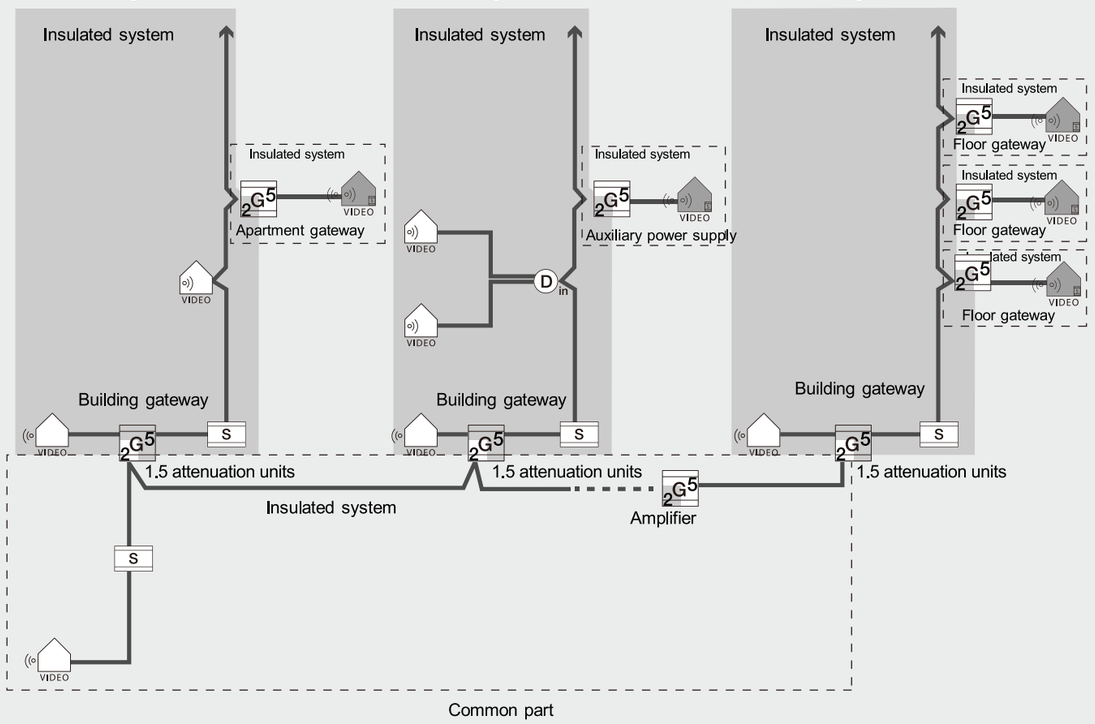


Fig.55

Power consumption units of gateway





Switch actuator Fig.56

As the function implementation device of the indoor station or outdoor station or guard unit, switch actuator can be installed in the internal bus or external bus in both building part and common part. Different modes can be set to realize different functions.

- If installing within the apartment, it can be used to extend the call to a bell or a light (switch on for a period of time when it is called). The address of the switch actuator and the indoor station should be configured to be the same. This is called "Call repetition mode". Fig.56-1
- If installing the switch actuator in the common part to connect a lock or a light, it can be controlled by any indoor station, guard unit or outdoor station in the whole system. If installing it within a building, only the devices of the given building can control it.
  For all these scenarios:
  - If the "unlock" button of indoor station or guard unit controls the connected lock, the switch actuator address should be set as the address of outdoor station which the lock is associated with. This is called "Door opener mode". Fig.56-2
  - If the lock or light will be controlled by the programmable button of indoor station ,guard unit or outdoor station, the mapping of the switch actuator address and the programmable button address should be configured. This is called "Time relay mode". Fig.56-3

The local power source should be provided to the connected lock or light, as the switch actuator only provides a dry contact.

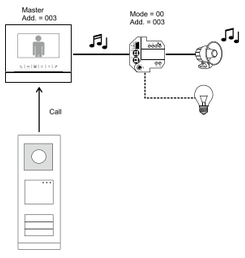
Outdoor distributor Fig.57

As a video signal switching device in the external bus, outdoor station distributor should be used when more than one outdoor station or one gate station is present in a given project while at least one of the outdoor stations is video. If pure multiple audio outdoor stations are the case, the node connection is enough without the need of video outdoor distributor.

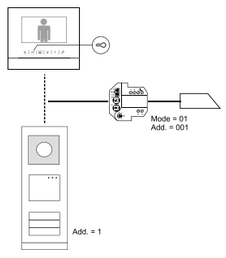
Each outdoor station distributor can connect 2 outdoor stations. The cascaded connection is also possible from outdoor station distributor to next level outdoor station distributors. As a passive device, it consumes no power, but the video signal drops a lot (15 attenuation units), thus as less level as possible of the video outdoor distributor should be achieved to have less signal attenuation for a given line.

Fig.56

1. Call repetiton mode



2. Door opener mode



3. Time relay mode

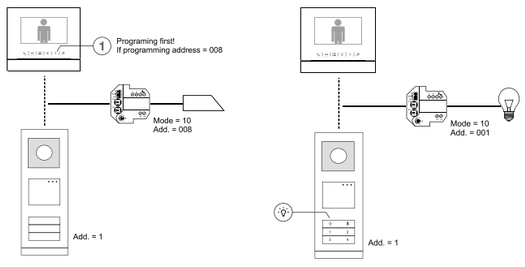
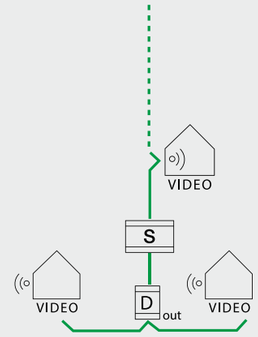
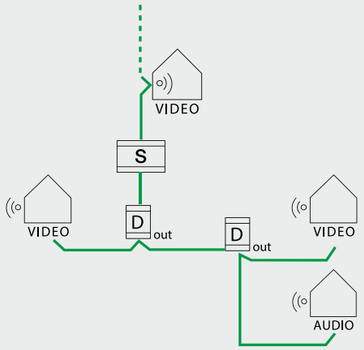


Fig.57

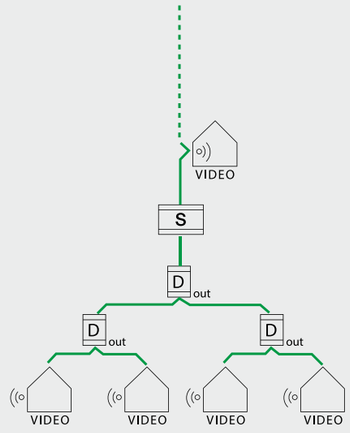
1. 1 level cascading connection for 2 outdoor stations with outdoor distributor



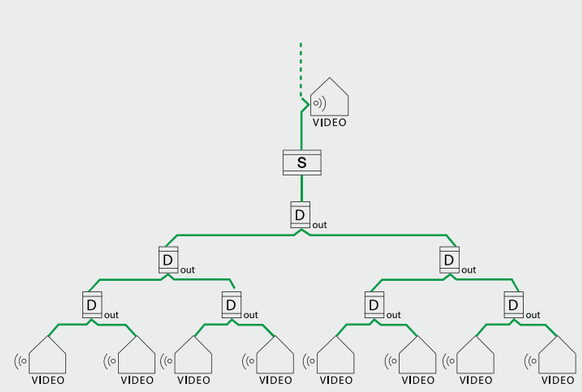
2. 2 level cascading connection for 3 outdoor stations with outdoor distributor



2 level cascading connection for 4 outdoor stations with outdoor distributor



3 level cascading connection for 8 outdoor stations with outdoor distributor



Video distributor

As a video signal branching device in the internal bus, video distributors should be used when star connection is needed for the apartments in the building part and for the gateways in the common part. For the audio system, the video distributor is not needed in the building part and the common part. Fig.58

Each video distributor can connect up to 4 apartments or 4 lines in the building part and 4 gateways in the common part. The cascaded connection is also possible. The impact of the distance can be reviewed from the distance calculation in Table 2 on page 63.

When video distributor is used in the common part, the total distance of all the lines branched by the video distributor under one system controller should be less than 800meters. Auxiliary power supply can be used to split the whole distance into several sections, which can ensure each section meet the 800 meters distance limit with one system controller. The distance constraint from different cables should also be considered, please check page 63 to view the details. Fig.59

Guard unit

As the management interface, the desk-top supported guard unit in the 4.3" touch screen can interact with gate stations, outdoor stations, indoor stations and even the other guard units efficiently. PC or laptop can also be connected to edit the resident information efficiently by a universal USB cable. Fig.60

For security concern, guard unit can act as a panic reception center, receiving the emergency call from any indoor station by activating the “SOS" signal. What is more, the interception in day/night mode can be set with customized timeline and receivers(for all or just VIPs), the call will be directed to the guard unit for monitoring purpose when the visitor call the resident directly from the gate/outdoor station. Finally, when the outdoor station or gate station 's "call guard" function is activated, for example by a one-button video gate station, the operator in the guard unit will intercede all the calls from the visitors and transfer the filtered call to the dedicated indoor station. Fig.61

Fig.58

Star sharp connection in common part by distributors

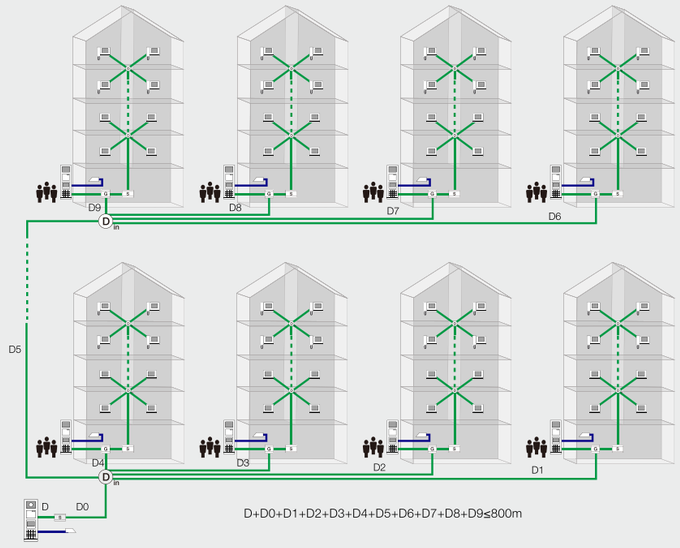


Fig.59

Use one auxiliary power supply in common part

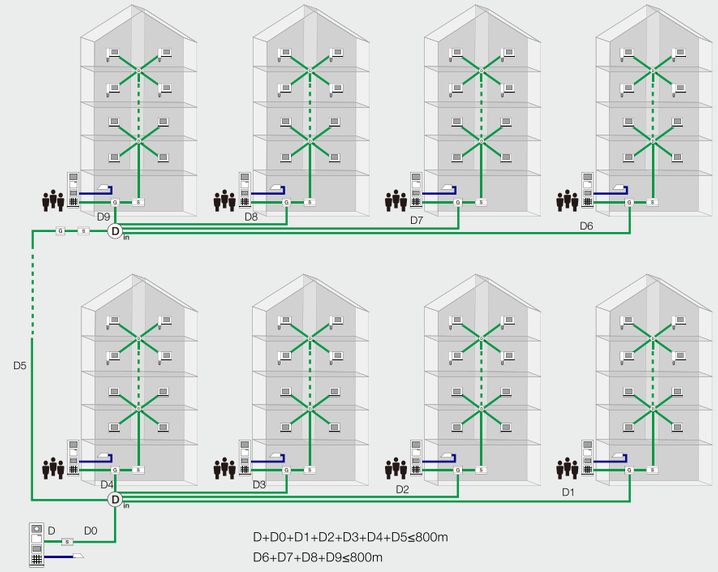


Fig.60

Connect guard unit and PC or laptop by USB cable

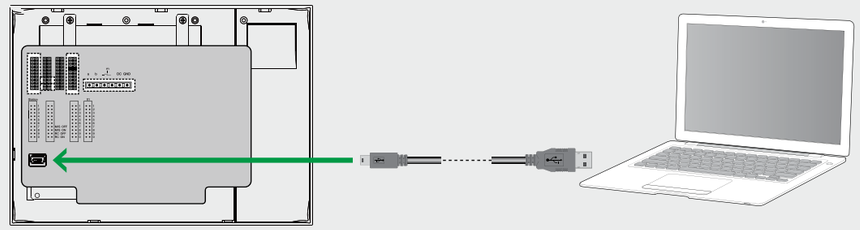
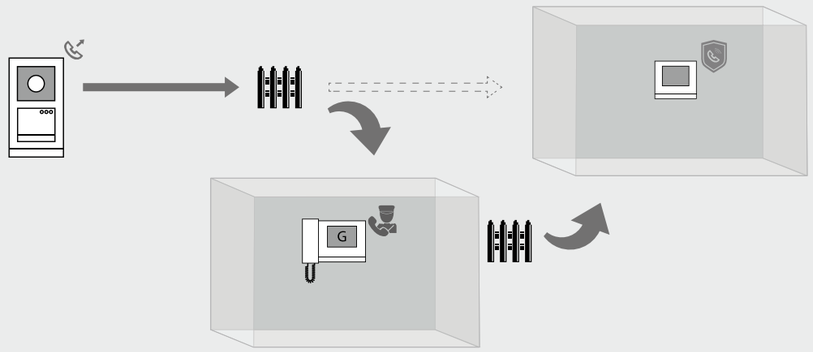


Fig.61

Interception function of guard unit



2.5 System topology

For any insulated system, there are 2 kinds of connection to make the topology – loop through connection and branch connection (node branch or branch with video distributor). In real project there will be more than one topology for the same project. Different topology will decide different devices that are needed in the application.

Topology of the external bus

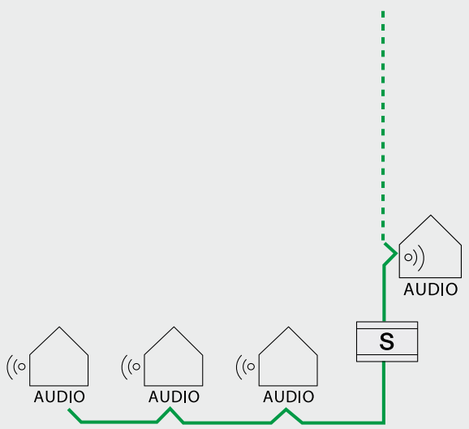
For external bus, if there is more than one outdoor station or system devices in the insulated system, things should be considered to make the topology.

- For audio system, if there is more than one outdoor station, the outdoor station can be looping through the device or node branch. Fig.62
- For video system, if there is more than one outdoor station (audio/video), the outdoor video distributor is needed for a cascading connection for parallel outdoor station (please see the topology illustration on page 49 for video outdoor distributor) . By cascading connection, the distance calculation for external bus line is between the longest parallel outdoor station and system controller, rather the total of the distance of each parallel outdoor station. Fig.63

Fig.62

Topology audio outdoor stations in a audio system

Loop though of outdoor station in audio system



Node branch of outdoor station in audio system

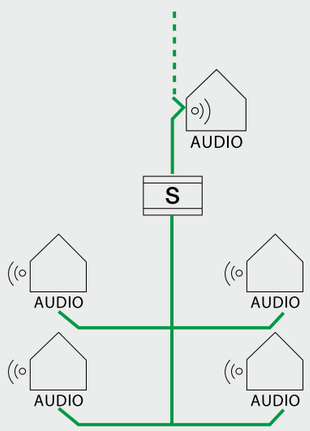
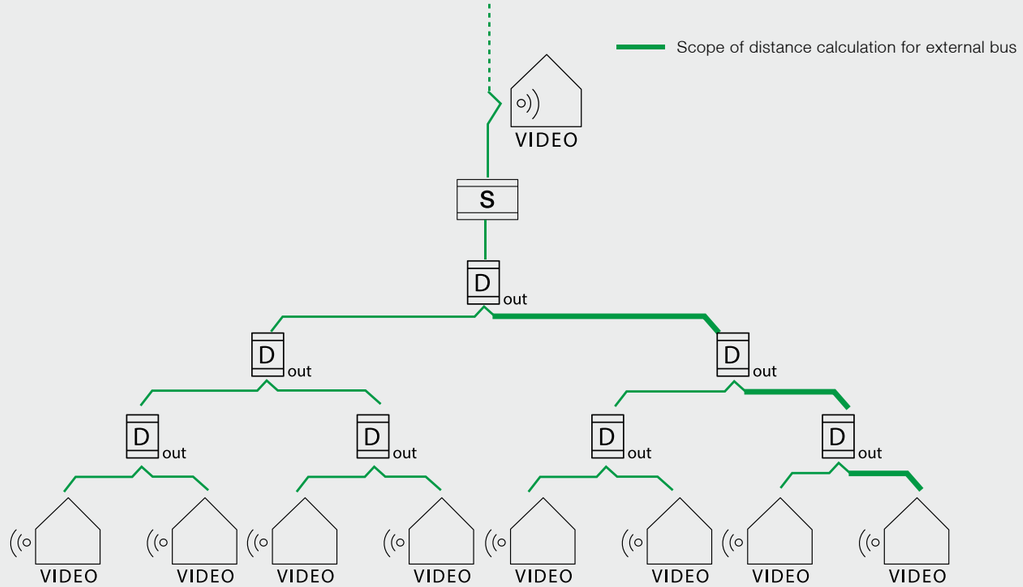


Fig.63

Topology video outdoor stations in a video system

3 level cascading connection for 8 outdoor stations with outdoor distributor



Topology of the internal bus

For internal bus, the RC rule is needed to be considered when making the topology.
Below things need to be taken into consideration when making the topology.

Topology	RC rule if in audio system	RC rule if in video system	Can be used in building part?	Can be used in common part?	Advantage to use	Caution to make
Looping through the indoor station	RC=OFF in all the devices Fig.64	RC=ON in the last device RC=OFF in all other devices Fig.65	YES	NO	- Good for low rise building and parallel indoor stations - Future proof even upgrading from audio system into video system - Cost and power effective without video distributor	- When the BUS terminals of one indoor station which is in the middle of building is not well fixed, the rest of the indoor stations will not work - The diameter of the cable is recommended no less than Ø=0.6mm
Looping through the node(branch line/stub line)	RC=OFF in all the devices Fig.66	-	YES	NO	- Flexible wiring, "star shaped" is allowed - Cost effective for audio system, no distributor is needed	Each nude should be changed into video distributor if upgrading into video system
looping through the video distributor(branch line/stub line)	RC=OFF in all the devices	RC=ON in the last device of each stub line and at the end of the riser main and RC=OFF in all other devices Fig.67	YES	YES	- It will have longer distance compared to looping the same quantity of gateway or indoor station, especially when parallel indoor stations are looped within the apartment - When one of the branch does not work, it will not impact the others - Allow the parallel bus lines	The total cable length should be less than 800 meters, this might not be enough in a big residential complex. Auxiliary power supply can be used to spit the common part from one system controller into several system controllers
looping through the gateway	RC=OFF in all the devices Fig.68	RC=ON in the last device RC=OFF in all other devices Fig.69	YES	YES	Long distance when the looping quantities are less(for example≤8),which is good for residential complex	When as building gateway in the residential complex, the distance will not be long enough when the looping quantities are many

Remarks: In the real world, the combination of different topologies will be used to maximize the advantage while to avoid the constraint of each topology.
See Fig.70 Fig.71 Fig.72 for RC rule.

Fig.64

Looping through the indoor station in audio system

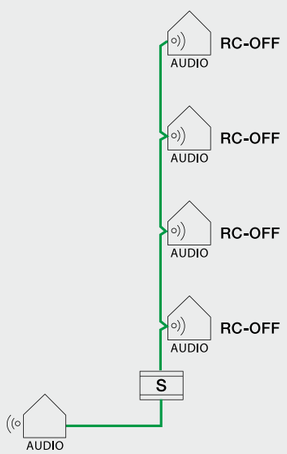


Fig.65

Looping through the indoor station in video system

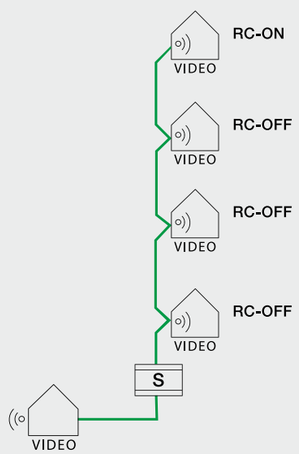


Fig.66

Looping through the node(branch line/stub line)

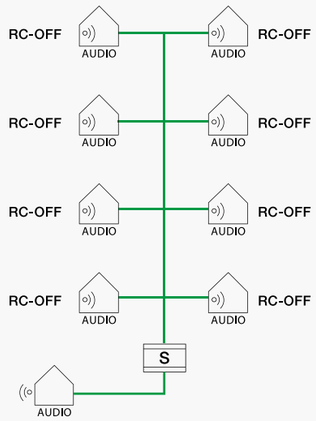


Fig.67

Looping through the distributor (branch line/stub line)

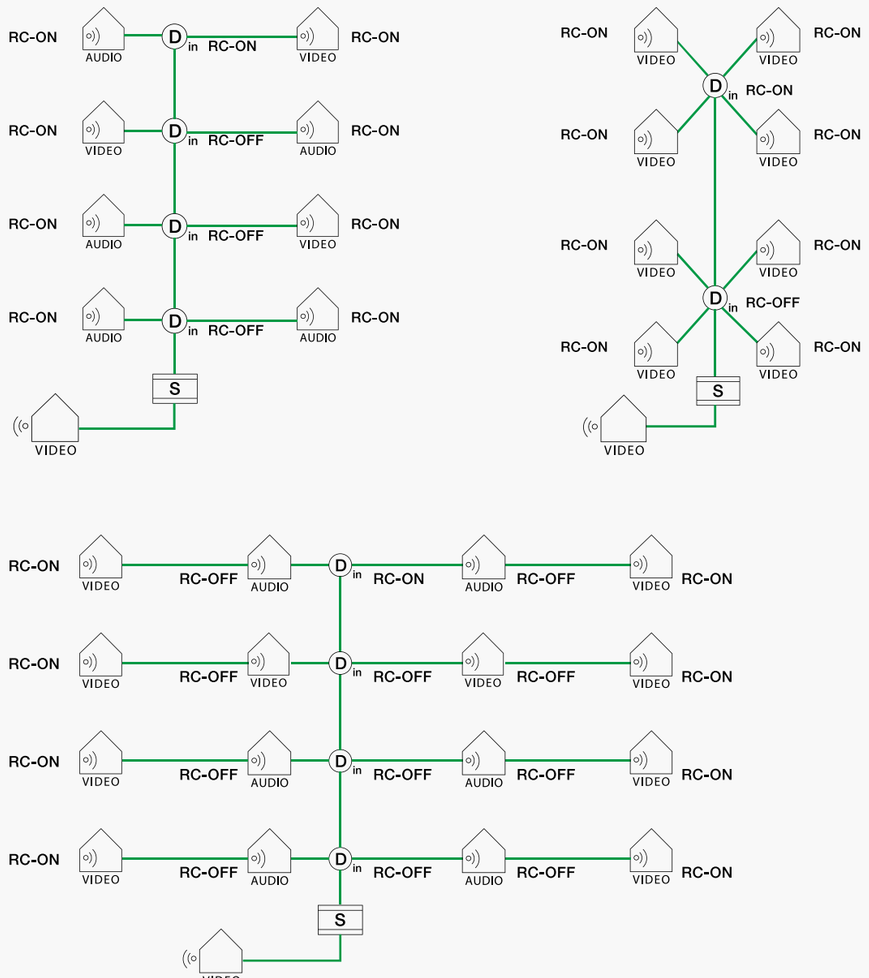


Fig.68

Looping through the gateway in audio system

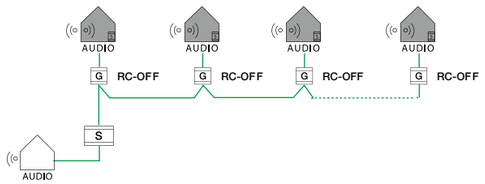


Fig.69

Looping through the gateway in video system

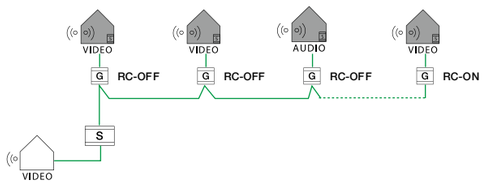


Fig.70

In audio system
Looping through the video distributor with each distributor branching into 4 lines . The terminal resistor must be set as “OFF”, to all the gateway and distributor

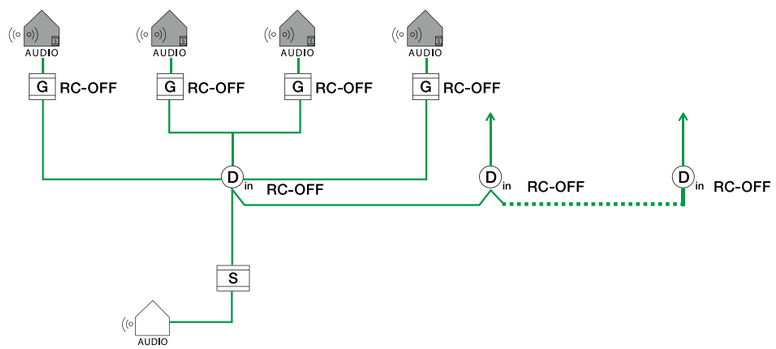


Fig.71

In video system
Looping through the video distributor with each distributor branching into 4 lines. The terminal resistor must be set as "ON" on the last gateway each stub line and at the end of last distributor

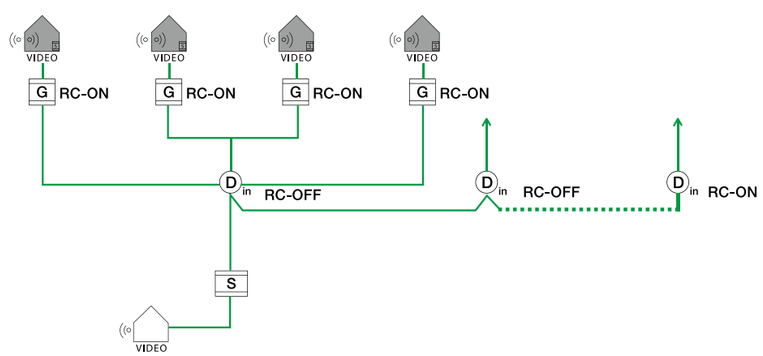
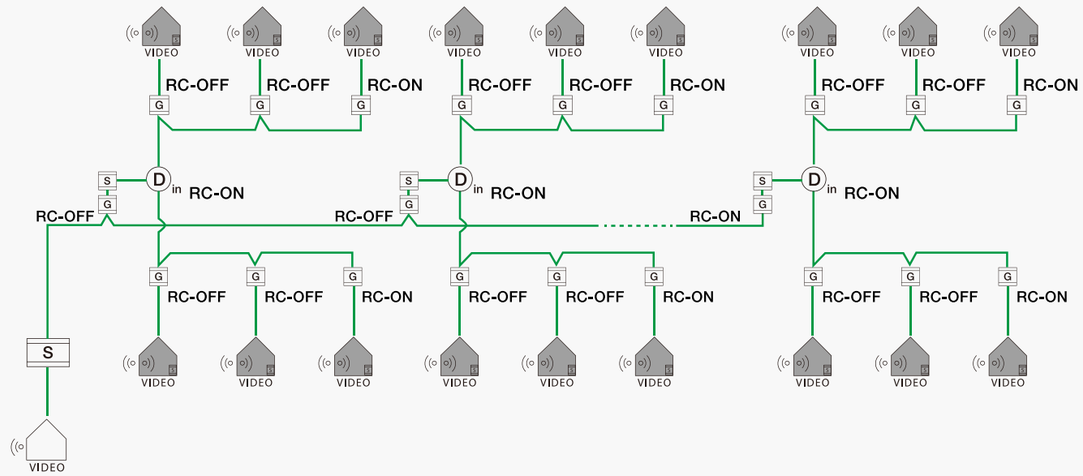


Fig.72

Looping through gateway as auxiliary power supply. Each distributor is connected to branching into 4 lines. Each line looping through the building gateway.



Topology for some special application

Welcome M is a flexible system for many special applications. For some cases, by allocating all the devices in a certain topology will conquer the limitation such as the power consumer and distance.

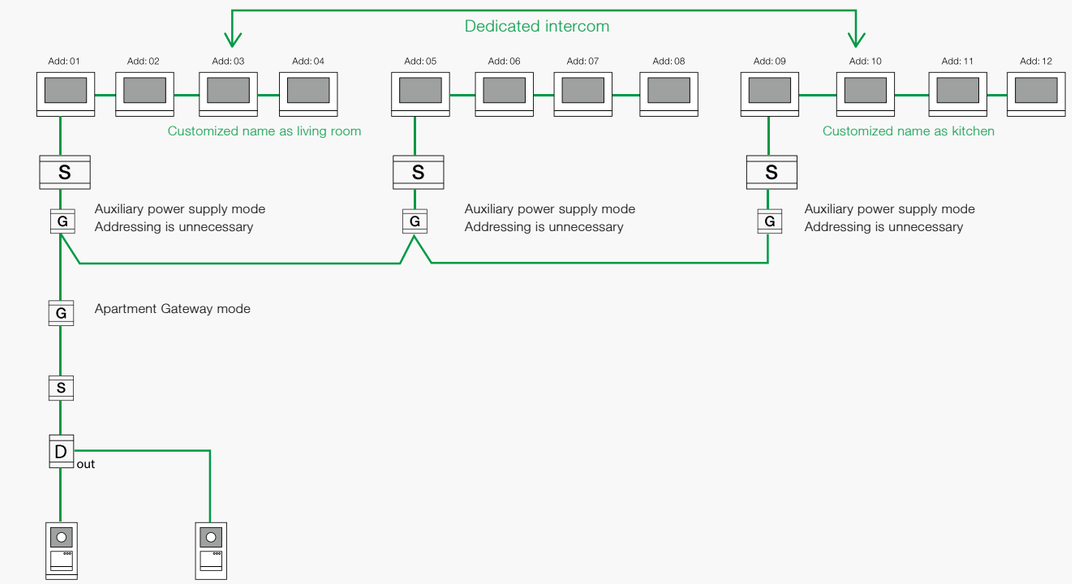
For example, for a big villa, more than 1 video outdoor stations are needed, more than 4pcs 7” video indoor stations are required, and dedicated intercom (one room can call the dedicated room, while all the rest keep idle), then the topology can be made as the illustration. Fig.73

In some cases, for example the pushbutton modules of outdoor station need to be installed at a lower place for wheelchair users, or be installed separately with audio outdoor station for renovation from audio system to video system, it can make topology like the illustration. Fig.74

But it must be noted that the maximum distance of the cable from camera modules to audio module is only 10 m.

Fig.73

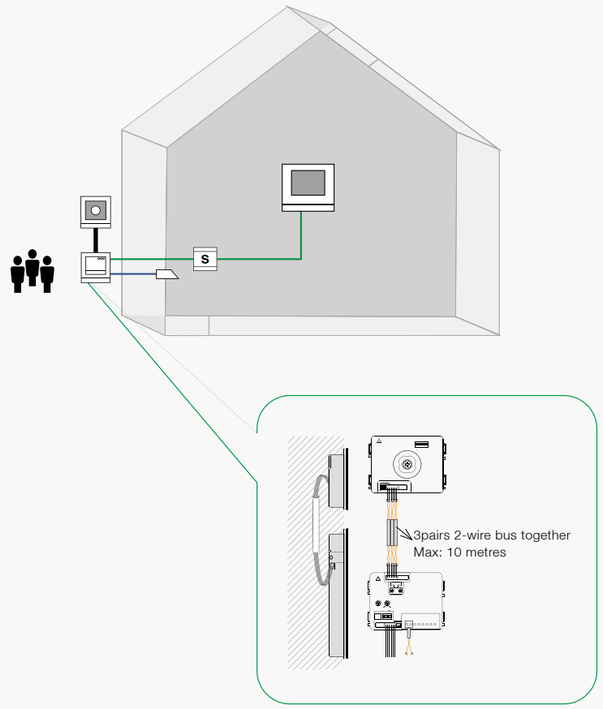
Topology of a big villa with 12 7” hands-free indoor stations



Remarks: Special software should be supplied for both gateway and 7”, please contact your installer for this application

Fig.74

Special application of camera module

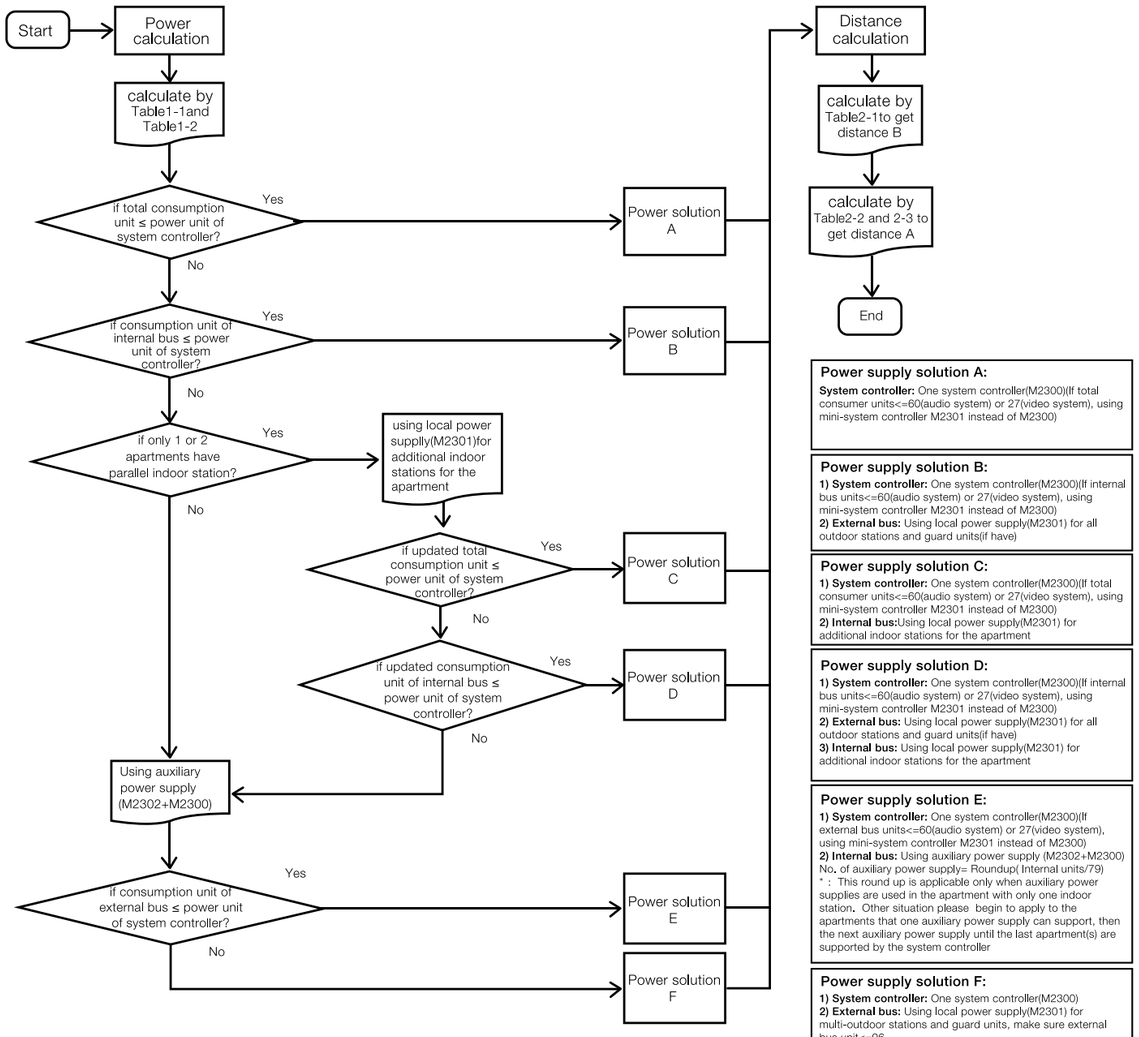


2.6 Power consumer and distance calculation to an insulated system of Welcome M system

The set up of a welcome M system needs to calculate both the power consumer and distance.
Based on the table 1 and table 2, installers can make plans for any kind of projects by following the process below:

Fig.75

Process of power consumer and distance calculation



Power supply solution A:
System controller: One system controller(M2300)(If total consumer units<=60(audio system) or 27(video system), using mini-system controller M2301 instead of M2300)

Power supply solution B:
1) System controller: One system controller(M2300)(If internal bus units<=60(audio system) or 27(video system), using mini-system controller M2301 instead of M2300)
2) External bus: Using local power supply(M2301) for all outdoor stations and guard units(if have)

Power supply solution C:
1) System controller: One system controller(M2300)(If total consumer units<=60(audio system) or 27(video system), using mini-system controller M2301 instead of M2300)
2) Internal bus: Using local power supply(M2301) for additional indoor stations for the apartment

Power supply solution D:
1) System controller: One system controller(M2300)(If internal bus units<=60(audio system) or 27(video system), using mini-system controller M2301 instead of M2300)
2) External bus: Using local power supply(M2301) for all outdoor stations and guard units(if have)
3) Internal bus: Using local power supply(M2301) for additional indoor stations for the apartment

Power supply solution E:
1) System controller: One system controller(M2300)(If external bus units<=60(audio system) or 27(video system), using mini-system controller M2301 instead of M2300)
2) Internal bus: Using auxiliary power supply (M2302+M2300)
No. of auxiliary power supply= Roundup(Internal units/79)
* : This round up is applicable only when auxiliary power supplies are used in the apartment with only one indoor station. Other situation please begin to apply to the apartments that one auxiliary power supply can support, then the next auxiliary power supply until the last apartment(s) are supported by the system controller

Power supply solution F:
1) System controller: One system controller(M2300)
2) External bus: Using local power supply(M2301) for multi-outdoor stations and guard units, make sure external bus unit<=96
3) Internal bus: Using auxiliary power supply(M2302+M2300)
No. of auxiliary power supply= Roundup(Internal units/79)
* : This round up is applicable only when auxiliary power supplies are used in the apartment with only one indoor station. Other situation please begin to apply to the apartments that one auxiliary power supply can support, then the next auxiliary power supply until the last apartment(s) are supported by the system controller

Table 1-1: Power consumer calculation& attenuation unit (system controller)
Note: All below consumer and distance calculation is based on each insulated system

Device	Number(n)	Consumer Unit (c)	n x c	Attenuation Unit(a)	n x a	Distance based on cable selected(m)--Check Table 2
External Bus--Outdoor Station						
Camera module		6 or 0*		-		
Audio module(0/1/2-row button)		14 or 0*		-		
Push button module(3-row or 4-row)		1 or 0*		-		
Keypad module		2 or 0*		-		
Display module(ID or IC)		20 or 0*		-		
Nameplate module		1 or 0*		-		
External Bus--System device						
Outdoor distributor	**	-		15		
Gateway		5		-		
Gateway (line amplified mode)		5		-		
Switch actuator		6		1		
Guard Unit		15 or 0*		1		
Total consumer units for external bus						
Internal Bus-Indoor Station						
Audio handset--- (no additional consumer unit for parallel indoor stations in audio system)		1		-		
4.3" handset & hands-free--(additional consumer unit should be counted in parallel indoor stations)		1		1 or 0***		
7" hands-free--(additional consumer unit should be counted in parallel indoor stations)		17		1 or 0***		
Additional consumer unit in case parallel 4.3" indoor stations or 4.3' and audio in video system(Only consider the apartment with max. parallel indoor stations), the system controller is set as "one on" Fig.76		11 or 0*		1		
Additional consumer unit in case parallel 4.3" indoor stations or 4.3' and audio in video system(Only consider the apartment with max. parallel indoor stations), the system controller is set as "all on"		23 or 0*		1		
Additional consumer unit in case parallel 7" indoor stations or 7" and 4.3" or 7" and audio in video system(Only consider the apartment with max. parallel indoor stations)		17		1		
Internal Bus-System Device						
Guard Unit		15 or 0*		1		
Gateway		2		1.5		
Gateway (line amplified mode)		5		-		
Video distributor		1		2		
Switch actuator		6		1		

Total consumer units for internal bus	**B= (max. distance from system controller to the furthest indoor staion)**

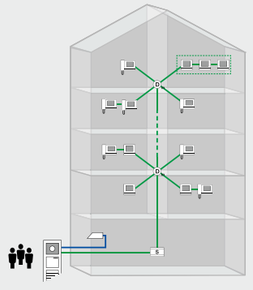
Total consumer units	**Total attenuation units**	**A= (max. distance from outdoor station to the furthest indoor station)**

The total consumer units should be less than below power unit whose value varies in 1 or >=2 apartments building

	>=2 apartments	1 apartment
One standard system controller in audio&video system,Total conumer units	<=96	<=127
One mini system controller in audio system, Total consumer units	<=60	<=72
One mini system controller in video system, Total consumer units	<=27	<=58

Note:
* When the device is powered by local power supply, the value of consumer unit=0. See example.3 for its application.
** The number counted for the attenuation will base on how many levels so to achieve the least attenuation. For example 4 outdoor stations, 3 outdoor distributors, but 2 levels is counted. Check page 53 for the levels.
*** When looping through the indoor station, the attenuation unit=1, and when the indoor station is branched from the distributor, the attenuation=0

Fig.76 **Parallel 4.3" indoor stations or 4.3" and audio in video system, the system controller is set as "one on"**



Note:
when make calculation of power consumer, the apartment with max. indoor stations.
For the illustrated figure,the value of the additional quantity that should be counted is 2.

If one system controller or even by the provision of local power supply is not enough to feed all the devices, auxiliary power supply can be used.
Please be informed that the power unit for system controller and auxiliary power supply are the result of different formula, even the same value is made to have easy memory.

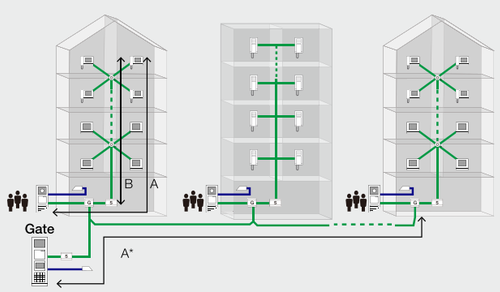
Table 1-2: Power consumer calculation & attenuation unit (auxiliary power supply)
Note: All below consumer and distance calculation is based on each insulated system

Device	Number(n)	Consumer Unit (c)	n x c	Attenuation Unit(a)	n x a	Distance based on cable selected(m)--Check Table 2
Internal Bus-Indoor Station Audio handset--- (no additional consumer unit for parallel indoor stations in audio system)		1		-		
4.3" handset & hands-free--(additional consumer unit should be counted in parallel indoor stations)		1		1 or 0***		
7" hands-free--(additional consumer unit should be counted in parallel indoor stations)		17		1 or 0***		
Additional consumer unit in case parallel 4.3" indoor stations or 4.3' and audio in video system(Only consider the apartment with max. parallel indoor stations), the system controller is set as "one on" Fig.76		11 or 0*		1		
Additional consumer unit in case parallel 4.3" indoor stations or 4.3' and audio in video system(Only consider the apartment with max. parallel indoor stations), the system controller is set as "all on"		23 or 0*		1		
Additional consumer unit in case parallel 7" indoor stations or 7" and 4.3" or 7" and audio in video system(Only consider the apartment with max. parallel indoor stations)		17		1		
Internal Bus-System Device Guard Unit		15 or 0*		1		
Gateway		2		1.5		
Gateway (line amplified mode)		5		-		
Video distributor		1		2		
Switch actuator		6		1		

Total consumer units for internal bus		**B= (max. distance from system controller to the furthest indoor staion)**
The total consumer units should be less than below power unit whose value varies in 1 or >=2 apartments building		
	>=2 apartments	1 apartment
One standard auxiliary power supply in audio&video system,Total conumer units	<=79	<=122
One mini auxiliary power supply in audio system, Total consumer units	<=43	<=67
One mini auxiliary power supply in video system, Total consumer units	<=38	<=53

Note:
* When the device is powered by local power supply, the value of consumer unit=0.
*** When looping through the indoor station, the attenuation unit=1, and when the indoor station is branched from the distributor, the attenuation=0

Fig.77
Distance calculation



B: The distance from system controller to the furthest indoor staion (Table 2-1)
A: The distance from outdoor station to the furthest indoor station (Table 2-2)
A*:The distance from outdoor station to the furthest gateway (Table 2-3)

B: Max. distance from system controller to the furthest indoor station, calculation is based on total power unit of internal bus(check Table1)
Table 2-1: Distance calculation for different cables (distance B)

unit:m

Cable	 Coax, 75-5 Ø=0.75 mm, 0.45 mm²		 RVV, Ø=1 mm, 2 x 0.75 mm²		 J-Y(ST)-Y, Ø=0.8 mm, 2 x 0.5 mm²		 J-Y(ST)-Y, Ø=0.6 mm, 2 x 0.28 mm²		 UTP 5, 2 x Two pairs, each core Ø=0.5 mm 8 x 0.2 mm²	
Power consumer units	**Video system**	**Audio system**	**Video system**	**Audio system**	**Video system**	**Audio system**	**Video system**	**Audio system**	**Video system**	**Audio system**
1-4	370	600	350	570	230	370	130	200	360	580
5-8	340	570	320	540	210	350	120	190	330	550
9-12	310	540	300	510	200	340	110	190	300	520
13-16	290	480	270	450	180	300	100	170	280	460
17-20	270	430	260	400	170	270	100	150	260	410
21-24	250	390	240	370	160	240	90	140	240	370
25-28	240	350	230	330	150	220	80	130	230	340
29-32	230	330	210	310	140	200	80	120	220	310
33-36	210	300	200	280	130	190	80	110	210	290
37-40	200	280	190	260	130	180	70	100	200	270
41-44	190	260	180	250	120	170	70	90	190	250
45-48	190	250	170	230	120	160	70	90	180	240
49-52	180	230	170	220	110	150	60	80	170	220
53-56	170	220	160	210	110	140	60	80	160	210
57-60	160	210	150	200	100	130	60	70	160	200
61-64	160	200	150	190	100	120	60	70	150	190
65-68	150	190	140	180	90	120	50	70	140	180
69-72	150	180	140	170	90	110	50	60	140	170
73-76	140	170	130	160	90	110	50	60	130	170
77-80	140	170	130	160	90	100	50	60	130	160
81-84	130	160	120	150	80	100	50	60	130	150
85-88	130	150	120	140	80	100	50	50	120	150
89-92	120	150	120	140	80	90	40	50	120	140
93-96	120	140	110	130	80	90	40	50	110	140

A: Max. distance from furthest outdoor station to furthest indoor station or gateway, calculation is based on te total attenuation unit (check Table 1)
For audio system, the value of A is fixed

unit:m

Cable	Coax, 75-5	RVV, Ø=1 mm,	J-Y(ST)-Y,Ø=0.8 mm,	J-Y(ST)-Y,Ø=0.6 mm,	UTP 5, 2 x 2pairs
	650	610	410	230	640

For Video system, the value of A varies due to differtent total attenuation unit from outdoor station to the last device

Table 2-2: Max distance from furthest outdoor station to furthest indoor station (distance A)

unit:m

Cable	Coax, 75-5	RVV, Ø=1 mm,	J-Y(ST)-Y,Ø=0.8 mm,	J-Y(ST)-Y,Ø=0.6 mm,	UTP 5, 2 x 2pairs
Attenuation unit					
1-5	470	290	150	130	300
6-10	450	280	140	130	290
11-15	430	260	140	120	280
16-20	410	250	130	120	270
21-25	390	240	120	110	250
26-30	370	230	120	110	240
31-35	350	220	110	100	230
36-40	330	200	110	90	220
41-45	310	190	100	90	200
46-50	290	180	90	80	190
51-55	280	170	90	80	180
56-60	260	160	80	70	170
61-65	240	150	80	70	150
66-70	220	130	70	60	140

Table 2-3: Max distance from furthest outdoor station to furthest gateway (distance A*)

unit:m

Attenuation unit	Coax, 75-5	RVV, Ø=1 mm,	J-Y(ST)-Y,Ø=0.8 mm,	J-Y(ST)-Y,Ø=0.6 mm,	UTP 5, 2 x 2pairs
1-5	310	190	100	90	200
6-10	290	180	90	80	190
11-15	280	170	90	80	180
16-20	260	160	80	70	170
21-25	240	150	80	70	150
26-30	220	130	70	60	140
31-35	200	120	60	60	130
36-40	180	110	60	50	120
41-45	160	100	50	50	100
46-50	140	90	40	40	90
51-55	120	70	40	30	80
56-60	100	60	30	30	70
61-65	80	50	30	20	50
66-70	60	40	20	20	40

Sample project 1: big villa with 3 outdoor stations

One big villa with 3 outdoor stations all with one 1 button. First one is video with display as reader, second one as video with keypad, without display, third one is audio only, inside the apartment, 1 x 7", and 1 audio handset. All on mode with branch line connection by a video distributor. The cable will use RVV, Ø=1mm, The cable run is estimate to be around 200 meters from outdoor station to the 7".

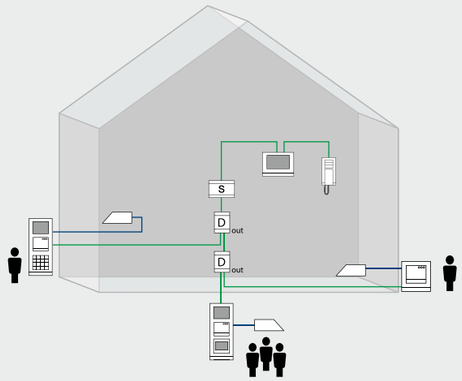
Device	Number(n)	Consumer Unit (c)	n x c	Attenuation Unit(a)	n x a	Distance based on RVV, Ø=1m,Check Table 2
External Bus--Outdoor Station						
Camera module	2	6	12	-	-	
Audio module(0/1/2-row button)	3	14	42	-	-	
Keypad module	1	2	2	-	-	
Display module(ID or IC)	1	20	20	-	-	
External Bus--System Device						
Outdoor distributor	2	-	-	15	30	
Total consumer units for external bus			**76**			
Internal Bus--Indoor Station						
Audio handset	1	1	1	0	0	
7" handsfree	1	17	17	1	1	
Additional consumer unit in case parallel 7" indoor stations or 7" and 4.3" or 7" and audio in video system(Only consider the apartment with max. parallel indoor stations)	1	17	17	1	1	
Total consumer units for internal bus			**35**			**B= (max. distance from system controller to the furthest indoor staion)** **200m**
Total consumer units			**111**	**Total attenuation units**	**32**	**A= (max. distance from outdoor station to the furthest indoor station)** **220m**
System controller in video system,Total conumer units<=127						
Conclusion: The power consumption is ok with one system controller. The max distance from outdoor station is 220m, so the distance is also OK.						

Fig.78

Big villa with 3 outdoor stations

- System type: audio/video combined
- Wiring: looping through
- Devices used
- Two camera module, article number: M251021C
- Three audio module, article number:M251022A-.
- One keypad module, article number: M251021K-.
- One display module, article number: M251021CR
- Two cover frame, size 1/3, article number:51023CF-.
- One cover frame, size 1/1, article number:M22002-W
- Two flush mounted box, size 1/3, article number:41023F
- One flush mounted box, size 1/1, article number:41023F
- Two outdoor distributor, article number:83325/2-500
- One system controller, article number:M2300
- One 7” video hands-free indoor station, articlenumber: M22331-.
- One audio handset indoor station, article number: M2200.-.
- Three electric door opener(not provided by ABB)

The power consumption is ok with one system controller. The max distance from outdoor station is 220m, so the distance is also OK without amplifier



Sample project 2: condominium with 12 apartments

One keypad OS(display is included+4pcs name plate modules) with 12 apartments, 10 apartments with 3 pcs 4.3" in each apartment and 2 apartments with 1 audio handset per apartment, one standard system controller under "one on" working mode. Branch line connection with 3pcs of video distributor (4 apartments per distributor). Cable will use J-Y(ST)-Y,Ø=0.6mm. The cable run will be around 100m from outdoor station to last indoor station.

Device	Number(n)	Consumer Unit (c)	n x c	Attenuation Unit(a)	n x a	Distance based on J-Y(ST)-Y,Ø=0.6mm, Check Table 2	
External Bus--Outdoor Station							
Camera module	1	6	6	-	-		
Audio module(0/1/2-row button)	1	14	14	-	-		
Keypad module	1	2	2	-	-		
Display module(ID or IC)	1	20	20	-	-		
Nameplate module	4	1	4	-	-		
Total consumer units for external bus			**46**				
Internal Bus--Indoor Station							
Audio handset	2	1	2	0	0		
4.3" handset & hands-free	30	1	30	0	0		
Additional consumer unit in case parallel 4.3" indoor stations or 4.3" and audio in video system(Only consider the apartment with max. parallel indoor stations), the system controller is set as "one on"	2	11	22	1	2		
Internal Bus--System Devices							
Video distributor	3	1	3	2	6		
Total consumer units for internal bus			**57**			**B= (max. distance from system controller to the furthest indoor staion)**	**60m**
Total consumer units			**103**	**Total attenuation units**	**8**	**A= (max. distance from outdoor station to the furthest indoor station)**	**130m**

One standard system controller in video system,Total conumer units<=96

Conclusion: The power consumption 96<103, so one standard system controller is not enough, and the distance is OK.

Solution: The outdoor station is locally powered by one mini system controller

Device	Number(n)	Consumer Unit (c)	n x c	Attenuation Unit(a)	n x a	Distance based on J-Y(ST)-Y,Ø=0.6mm, Check Table 2	
External Bus--Outdoor Station							
Camera module	1	0	0	-	-		
Audio module(0/1/2-row button)	1	0	0	-	-		
Keypad moduleNameplate module	1	0	0	-	-		
Display module(ID or IC)	1	0	0	-	-		
Nameplate module	4	0	0	-	-		
Total consumer units for external bus			**0**				
Internal Bus--Indoor Station							
Audio handset	2	1	2	0	0		
4.3" handset & hands-free	30	1	30	0	0		
Additional consumer unit in case parallel 4.3" indoor stations or 4.3" and audio in video system(Only consider the apartment with max. parallel indoor stations), the system controller is set as "one on"	2	11	22	1	2		
Internal Bus--System Devices							
Video distributor	3	1	3	2	6		
Total consumer units for internal bus			**57**			**B= (max. distance from system controller to the furthest indoor staion)**	**60m**
Total consumer units			**57**	**Total attenuation units**	**8**	**A= (max. distance from outdoor station to the furthest indoor station)**	**130m**

One standard system controller in video system, Total consumer units<=96

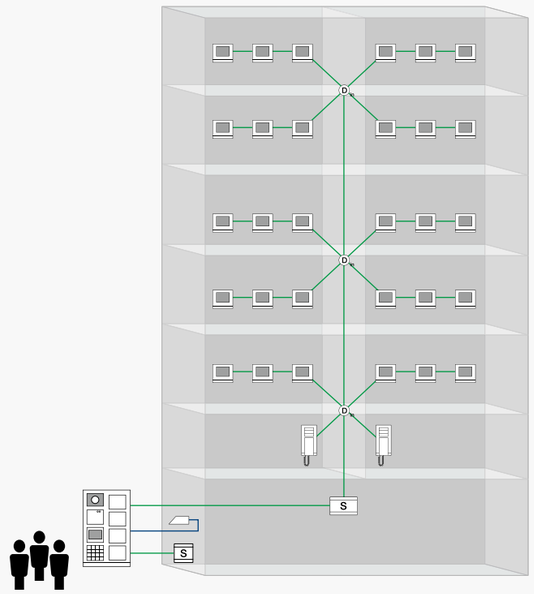
Conclusion: The power consumption is ok with this solution.
The max distance from outdoor station is 130m, so the distance is also OK .

Fig.79

Condominium with 12 apartments

- System type: audio/video combined
- Wiring: branch line by distributor connection
- Devices used
- One camera module, article number: M251021C
- One audio module, article number:M251021A-.
- One keypad module, article number: M251021K-.
- Four nameplate module, article number: 51021DN
- One cover frame, size 2/4, article number:51026CF-.
- One flush mounted box, size 2/4, article number:41026F
- One system controller, article number:M2300
- One mini system controller, article number:M2301
- Three video distributor, article number: M2304
- Thirty 4.3” video hands-free indoor station, article number: M22311- Two audio handset indoor station, ariticle number:M2200.-.
- One electric door opener(not provided by ABB)

One standard system controller is not enough, need to add a local power supply for outdoor station.



Sample project 3: Condominium with 3 outdoor stations and 12 apartments

1 building with 3 video push button outdoor stations of 12 apartments, each apartment is equipped with 3x4.3" video hands-free indoor stations, all the screens should be truned on in case being called from outdoor station. The topology is going to be looping the video distributor with one supporting 2 apartments in which looping the indoor station will be uses.The cable will use J-Y(ST)-Y,Ø=0.6mm. The cable run will be around 40m from outdoor station to system controller, and 40m from system controler to last indoor station.

Device	Number(n)	Consumer Unit (c)	n x c	Attenuation Unit(a)	n x a	Distance based on J-Y(ST)-Y,Ø=0.6mm, Check Table 2	
External Bus--Outdoor Station							
Camera module	3	6	18	-	-		
Audio module(0/1/2-row button)	3	14	42	-	-		
Push button module(3-row or 4-row)	12	1	12	-	-		
External Bus--System device							
Outdoor distributor	2	-	-	15	30		
Total consumer units for external bus			**72**				
Internal Bus--Indoor Station							
4.3" handset & hands-free	36	1	36	0	0		
Additional consumer unit in case parallel 4.3" indoor stations or 4.3" and audio in video system(Only consider the apartment with max. parallel indoor staions), the system controller is set as "all on".	2	23	46	1	2		
Internal Bus--System Devices							
Video distributor	6	1	6	2	12		
Total consumer units for internal bus			**88**			**B= (max. distance from system controller to the furthest indoor staion)**	**50m**
Total consumer units			**160**	**Total attenuation units**	**44**	**A= (max. distance from outdoor station to the furthest indoor station)**	**90m**
One standard system controller in video system,Total conumer units<=96							
Conclusion: The power consumption 96<160, so one standard system controller is not enough, and the distance is OK.							

Solution: Each of the outdoor stations are locally powered by one mini system controller

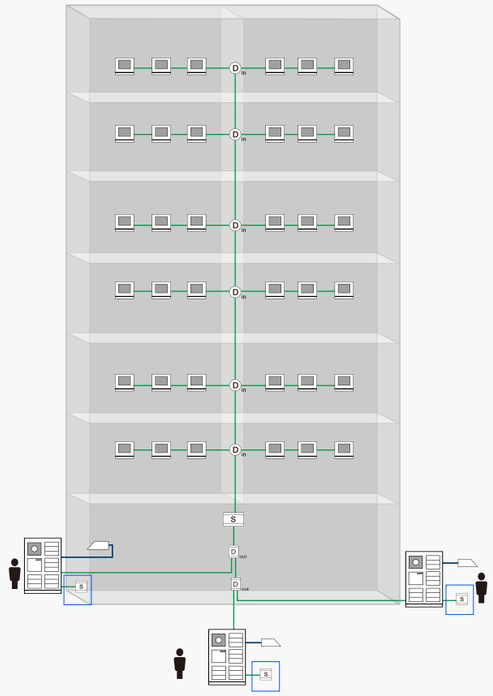
Device	Number(n)	Consumer Unit (c)	n x c	Attenuation Unit(a)	n x a	Distance based on J-Y(ST)-Y,Ø=0.6mm, Check Table 2	
External Bus--Outdoor Station							
Camera module	3	0	0	-	-		
Audio module(0/1/2-row button)	3	0	0	-	-		
Push button module(3-row or 4-row)	12	0	0	-	-		
External Bus--System device							
Outdoor distributor	2	-	-	15	30		
Total consumer units for external bus			**0**				
Internal Bus--Indoor Station							
4.3" handset & hands-free	36	1	36	0	0		
Additional consumer unit in case parallel 4.3" indoor stations or 4.3" and audio in video system(Only consider the apartment with max. parallel indoor staions), the system controller is set as "all on".	2	23	46	1	2		
Internal Bus--System Devices							
Video distributor	6	1	6	2	12		
Total consumer units for internal bus			**88**			**B= (max. distance from system controller to the furthest indoor staion)**	**50m**
Total consumer units			**88**	**Total attenuation units**	**44**	**A= (max. distance from outdoor station to the furthest indoor station)**	**90m**
One standard system controller in video system,Total conumer units<=96							
Conclusion: The power consumption 88<96, so one standard system controller plus 3 local power supply are enough, the distance is also OK.							

Fig.80

Condominium with 3 outdoor station and 12 apartments

- System type: video
- Wiring: branch line by distributor connection
- Devices used
- Three camera module, article number:M251021C
- Three audio module, article number:M251021A-.
- Twelve button module, 3/6 pushbutton, article number: M251021P3
- Three cover frame, size 2/3, article number: 51025CF-.
- Three flush mounted box, size 2/3, article number:41025F
- Two outdoor distributor, article number:83325/2-500
- One system controller, article number:M2300
- Three mini system controller, article number:M2301
- Six video distributor, article number: M2304
- Thirty six 4.3” video hands-free indoor station, article number: M22311-.
- Three electric door opener(not provided by ABB)

One standard system controller is not enough, and distance is ok, need to add a local power supply for each outdoor station.



Sample project 4: residential complex with 4 entrances

4 gate stations, one is keypad with display(ID card reader), and the other is video push button modules with up to 7x4-row modules, 4 buildings are looped with building gateway together with 1 guard unit, the system controller is used to feed all the above products in the common part. The max. distance from gate station to last building is around 250m. RVV, Ø=1mm, is going to be used.

Analysis: The network system involves 5 insulated system: 4 buildings and one in the common part. Each insuated system should be evaluated respectively. Only the insulated system in the common part will be examplified.

Device	Number(n)	Consumer Unit (c)	n x c	Attenuation Unit(a)	n x a	Distance based on RVV, Ø=1mm Check Table 2	
External Bus--Outdoor Station							
Camera module	4	6	24	-	-		
Audio module(0/1/2-row button)	4	14	56	-	-		
Keypad module	4	2	8	-	-		
Display module(ID or IC)	4	20	80	-	-		
External Bus--System device							
Outdoor distributor	2	-	-	15	30		
Total consumer units for external bus			**168**				
Internal Bus-System Devices							
Guard unit	1	15	15	1	1		
Gateway in the common part	4	2	8	1.5	6		
Total consumer units for internal bus			**23**			**B= Max. distance from system controller to the furthest building**	**240m**
Total consumer units			**191**	**Total attenuation units**	**37**	**A= (Max. distance from gate station to the furthest building) (check Table 2-3)**	**110m**

One standard system controller in video system,Total conumer units<=96

Conclusion: The power consumption191>96, so one standard system controller is not enough, and also the distance can not be met without amplifier

Solution: gate stations are powered by local power supply, while like only one gate station is counted to have the consumer units, 1 gateway as amplifier can be used in the first building

Device	Number(n)	Consumer Unit (c)	n x c	Attenuation Unit(a)	n x a	Distance based on RVV, Ø=1mm Check Table 2	
External Bus--Outdoor Station							
Camera module	1	6	6	-	-		
Audio module(0/1/2-row button)	1	14	14	-	-		
Keypad module	1	2	2	-	-		
Display module(ID or IC)	1	20	20	-	-		
External Bus--System Device							
Outdoor distributor	2	-	-	15	30		
Total consumer units for external bus			**42**				
Internal Bus-System Device							
Guard unit	1	15	15	1	1		
Total attenuation units for system controller					**31**	**A1=Max. distance from gate station to the added gateway (check Table 2-3)**	**120m**
Gateway (line amplifier mode)	1	5	5	-	-		
Gateway	4	2	8	1.5	6		
Total consumer units for internal bus			**28**			**B= (Max. distance from system controller to the furthest building(check Table 2-1)**	**230m**
Total consumer units			**70**	**Total attenuation units**	**6**	**A2=Max. distance from the added gateway to the furthest building(check Table 2-3)**	**180m**

One standard system controller in video system,Total conumer units<=96

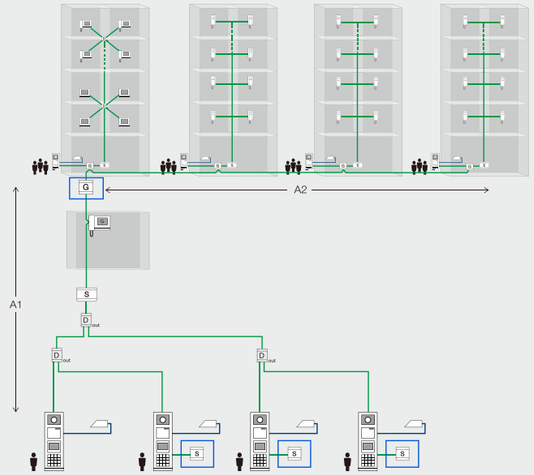
Conclusion: The power consumption 70<96, so one standard system controller plus 3 local power supplies are enough, the distance can be met by a line amplifier

Fig.81

Residential complex with 4 entrance

- System type: video
- Wiring: branch line by distributor connection
- Devices used (common part only)
- Four keypad outdoor station, with ID card reader, article number: M21352K-.
- Four flush mounted box, size 1/4, article number: 41024F
- Three outdoor distributor, article number: 83325/2-500
- One guard unit, article number: M2303
- One system controller, article number: M2300
- Three mini system controller, article number: M2301
- Four electric door opener(not provided by ABB)

One standard system controller is not enough, and distance is problem, need to add a local power supply for each outdoor station and a gateway in the internal bus of common part.



Sample project 5: high-rising building with 140 apartments

1 building with 2 video keypad outdoor station with display. The building has 140 apartments, with 110 apartments with one audio handset, and 28 with one 4.3" handsfreee indoor station, two last apartments with 2 x 4.3" handsfree indoor stations/apartment. For these 2 apartments, each are equipped with a second confirmed outdoor station before the private door. Whole system is branch line connection through distributor with each supporting 4 indoor stations. System controller is set under "all on" working mode. The cable will use RVV, Ø=1mm, the distance from outdoor station to the furthest indoor station is estimated to be 150m.

Analysis:
For the140 apartments, please check the "The mixed power solution for keypad outdoor staiton with display" to get an easy reference.
For the last 2 apartements equipped with 2 second-confirmed outdoor stations, apatment gateway should be used.

Step1: For the 140 apartments, check the "The mixed power solution for keypad outdoor staiton with display"table
Divide the 140 apartments into Four insulated systems, and "auxiliary power supply+gateway" is used for the last three insulated systems.

- 1st insulated system: 2 keypad outdoor stations with 3 gateway in the internal bus -- one standard system controller.
- 2nd insulated system: 62 apartments(62 pcs audio indoor stations) with 16 vdieo distributors -- one standard auxiliary system controller.
- 3rd insulated system: 62 apartments(48 pcs audio indoor stations + 14 pcs 4.3" video handsfree indoor stations) with 16 vdieo distributors -- one standard auxiliary system controller.
- 4th insulated system: 16 apartments(14 pcs 4.3" video handsfree indoor stations + last 2 apartment systems) with 4 vdieo distributors -- one mini auxiliary system controller

For 1st insulated system:

Device	Number(n)	Consumer Unit(c)	n x c	Attenuation Unit(a)	n x a	Distance based on RVV, Ø=1mm, Check Table 2
External Bus--Outdoor Station						
Camera module	2	6	12	-	-	
Audio module(0/1/2-row button)	2	14	28	-	-	
Keypad module	2	2	4	-	-	
Display module(ID or IC)	2	20	40	-	-	
External Bus--System Device						
Outdoor distributor	1	-	-	15	15	
Total consumer units for external bus			**84**			
Internal Bus-System Device						
Gateway	3	2	6	1.5	4.5	
Total consumer units for internal bus			**6**			**B=Max. distance from system controller to the furthest gateway** **320m**
Total consumer units			**90**	**Total attenuation units**	**19.5**	**A=Max. distance from outdoor station to the furthest gateway (check Table 2-3)** **160m**
Mini system controller in video system,Total conumer units<=96						
Conclusion: The power consumption 90<96, so one standard system controller is OK, and distance is also OK.						

For 2nd/3rd/4th insulated systems, the value is OK accroding to Table "he mixed power solution for keypad outdoor staiton with display".
Step2: For the 2 apartments with second-confirmed outdoor station, each is equipped with a mini system controller and apartment gateway.

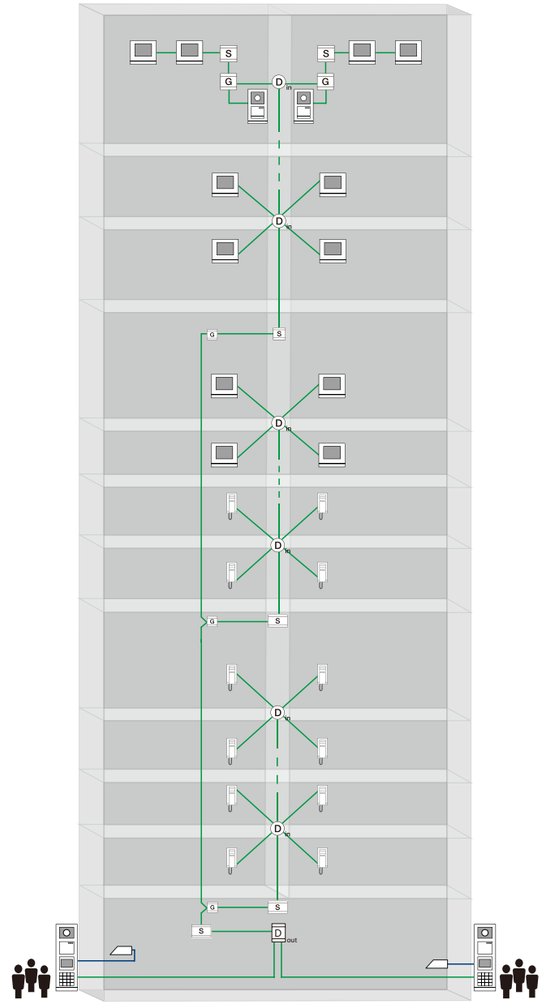
Device	Number(n)	Consumer Unit(c)	n x c	Attenuation Unit(a)	n x a	Distance based on RVV, Ø=1mm, Check Table 2
External Bus--Outdoor Station						
Camera module	1	6	6	-	-	
Audio module(0/1/2-row button)	1	14	14	-	-	
External Bus--System Device						
Gateway	1	5	5	-	-	
Total consumer units for external bus			**25**			
Internal Bus-Indoor Station						
4.3" handset & hands-free	2	1	2	1	2	
Additional consumer unit in case parallel 4.3" indoor stations or 4.3'"and audio in video system(Only consider the apartment with max. parallel indoor stations), the system controller is set as "all on"	1	23	23	1	1	
Total consumer units for internal bus			**25**			
Total consumer units			**50**			
Mini system controller in video system,Total conumer units<=58						
Conclusion: The power consumption 50<58, so one mini system controller for each of apartment with second-confirmed outdoor station is OK						

Fig.82

High-rising building with 140 apartments

- System type: audio/video combined
- Wiring: branch line by distributor connection
- Devices used
- Two keypad outdoor station, article number:M2135.K-.
- Two flush mounted box, size 1/4 , article umber:41024F
- Two camera module, article number:M251021C
- Two audio module, 1/2 pushbutton, article number:M251022A-.
- Two cover frame, size 1/2, article number: 51022CF.
- Two flush mounted box, size 1/2 , article number: 41022F
- Thirty six video distributor, article number: M2304
- One outdoor distributor, article number: 83325/2-500
- Three system controller, article number: M2300
- Five gateway, article number: M2302
- Three mini system controller, article number: M2301
- One hundred and ten audio handset, article number: M22002-W
- Thirty-two 4.3" video handsfree, article number: M22311-W
- Four electric door opener(not provided by ABB)

It is OK to use one mini system controller for each of the apartment system of the last 2 apartment with second confirmed outdoor station, distance is also OK.



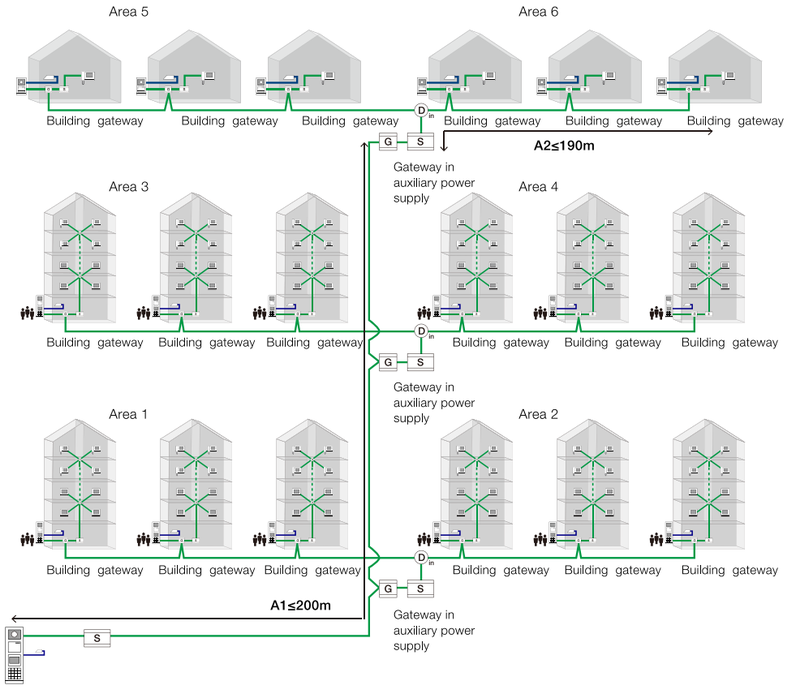
Rule to maximize the distance calculation in the common part

In the residential complexes, the actual distance from the gate station to the furthest gateway can be really long. So, by balancing the wiring topology and system total cable length, the combination of looping the gateway and looping the distributor together with auxiliary power supply in the common part can be used to maximize the distance calculation rule. Fig.83

Checking the Table 2, if 3 gateways are looped through in the trunk of the common part, it can be allowed a maximum of 200m (check Table 2-3) by UTP cable for A1 (3x1.5=4.5 units), and the max. cable distance from last gateway in auxiliary power supply in the trunk to the furthest building gateway of Area6 with A2≤190m (check Table2-3) of UTP cable (2+3x1.5=6.5 units).

Fig.83

Rule to maximize the distance of cable



Reverse calculation for capacity of system controller andauxiliary power supply

Based on Table 1-1 and Table 1-2, suppose after deducting the consumer units of other devices in external bus and internal bus(for example the outdoor station), the remaining power units for indoor station and video distributor(if has) in the internal bus=R. then, below Table3-1 is the reverse calculation to efficiently know the capacity of different power supply.

Table 3-1: Internal bus capacity formula for system controller and auxiliary power supply

Indoor station type	The setting of Standard System controller	1 indoor station /apartment			2 indoor stations /apartment			3 indoor stations /apartment			4 indoor stations /apartment		
		Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments
Audio indoor station in audio system	"One On" or " All on"	R	-	-	R/2	-	-	R/3	-	-	R/4	-	-
Audio indoor station or 4.3" video indoor station in video system	"One On"	R/1.25	R/2.5	-	(R-11)/2.25	(R-11)/2.25/4	-	(R-22)/3.25	(R-22)/3.25/4	-	(R-33)/4.25	(R-33)/4.25/4	-
		R//1.5	-	R/3	(R-11)/2.5	-	(R-11)/2.5/2	(R-22)/3.5	-	(R-22)/3.5/2	(R-33)/4.5	-	(R-33)/4.5/2
		R	-	-	(R-11)/2	-	-	(R-22)/3	-	-	(R-33)/4	-	-
	"All On"	R/1.25	R/2.5	-	(R-23)/2.25	(R-23)/2.25/4	-	(R-46)/3.25	(R-46)/3.25/4	-	(R-69)/4.25	(R-69)/8.5	-
		R//1.5	-	R/3	(R-23)/2.5	-	(R-23)/2.5/2	(R-46)/3.5	-	(R-46)/3.5/2	(R-69)/4.5	-	(R-69)/4.5/2
		R	-	-	(R-23)/2	-	-	(R-46)/3	-	-	(R-69)/4	-	-

For example:

- For an audio system with 1 audio outdoor station with keypad but without display(total 14+2=16 units), mini system controller is used, then R=60-16=44 units. From above table, it can support max. 44/3=14 apartments with 3 indoors stations/apartments.
- For a video system, 2 parallel outdoor stations are fed by local power supply, standard system controller is used with "one on", then R=96-0=96 units. From the above table, it can support (96-22)/3.25=22 apartments with 3 IS/apartment, the no. of video distributor 22/4=6. with each supporting 4 apartments.
- For a video system, 1 keypad outdoor station is fed by local power supply, standard system controller is used with "all on", then R=96-0=96 units. From the above table, it can support(96-23)/2.5=29 apartments with 2 x4.3" video IS/apartment, the no. of video distributor 29/2=15 with each supporting 2 apartments.
- For a video system, 1pc push button outdoor station with 1 push button module(Total 6+14+1=21 units) is used, standard system controller is used with "all on", then R=96 - 21=75 units. From above table, it can support (75-46)/3.5=8 apartments with 3x4.3" video IS/apartments, the no. of video distributor =8/2=4 pcs with each supporting 2 apartments.

Based on Table 3-1, for audio or video keypad outdoor station whose power units value are fixed, then, the capacity for different types of indoor station are available as below:

Table 3-2: Internal bus capacity for one standard system controller with only one keypad outdoor station

Indoor station type	The setting of Standard System controller	1 indoor station /apartment			2 indoor stations /apartment			3 indoor stations /apartment			4 indoor stations /apartment		
		Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments
Audio indoor station in audio system with one audio keypad outdoor station	"One On" or " All on"	60	-	-	30	-	-	20	-	-	15	-	-
Audio indoor station or 4.3" video indoor station in video system with one video keypad outdoor station	"One On"	43	11	-	19	(5	-	9	3	-	4	1	-
		36	-	18	17	-	9	9	-	5	4	-	2
	"All On"	43	11	-	13	4	-	2	1	-	-	-	-
		36	-	18	12	-	6	2	-	1	-	-	-

Based on Table 3-1, for audio or video keypad outdoor station whose power units value are fixed, then, the capacity for different types of indoor station are available as below:

Table 3-3: Internal bus capacity for one standard auxiliary power supply

Indoor station type	The setting of Standard System controller	1 indoor station /apartment			2 indoor stations /apartment			3 indoor stations /apartment			4 indoor stations /apartment		
		Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments
Audio indoor station in audio system	"One On" or " All on"	79	-	-	39	-	-	26	-	-	19	-	-
Audio indoor station or 4.3" video indoor station in video system	"One On"	63	16	-	30	8	-	17	5	-	10	3	-
		52	-	26	27	-	14	16	-	8	10	-	5
	"All On	63	16	-	24	6	-	10	3	-	Local power supply is recommended		
		52	-	26	22	-	11	9	-	5			
7" indoor station in video system	"One On" or " All on"	4	1	-	2	1	-	1	1 or 0 by looping through		1	1 or 0 by looping through	
		4	-	2	2	-	1						

Remark:
To see the whole picture of all kinds of indoor station supported by auxiliary power supply, despite the 7" capacity is the result out of the table 1-2, it is still shown in this table. Also for 2 indoors/apartment. the result is still valid despite conflict with the result counted by Table 1-2, in which some buffer has been given.

Table 3-4: Internal bus capacity for one mini auxiliary power supply

Indoor station type	The setting of Standard System controller	1 indoor station /apartment			2 indoor stations /apartment			3 indoor stations /apartment			4 indoor stations /apartment		
		Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments	Max. No. of apartment	No. of video distributor with each supporting 4 apartments	No. of video distributor with each supporting 2 apartments
Audio indoor station in audio system	"One On" or " All on"	43	-	-	21	-	-	14	-	-	10	-	-
Audio indoor station or 4.3" video indoor station in video system	"One On"	30	8	-	12	3	-	4	1	-	Local power supply is recommended		
		25	-	13	10	-	5	4	-	2			
	"All On	30	8	-	6	2	-	Local power supply is recommended			Local power supply is recommended		
		25	-	13	6	-	3						
7" indoor station in video system	"One On" or " All on"	2	1	-	1	1	-	-			-		
		2	-	1	1	-	1						

2.7 Easy reference for the modular outdoor station solution

The mixed power solution for pushbutton outdoor station

Indoor station No. or Apartment No.	System controller	No. of audio outdoor station fed by standard system sontroller or mini system controller				Button Module	Nameplate Module	Audio Outdoor Station Composed by 3-row Button Modules												Distance range and cable type									
								Audio Module						Cover Frame & Flush-mounted Box															
M2200.-.	M2300 or M2301	The article no. of the composed OS modules are shown in the right				M251021P3	51021DN	M251021A-.		M251022A-.		M251023A-.		51021CF-.+ 41021F	51022CF-.+ 41022F	51023CF-. +41023F	51024CF-. +41024F	51028CF-. +41028F	51025CF-. +41025F	51026CF-. +41026F	51029CF-. +41029F	51024CF-. +41024F + 51021J		A=From one or parallell outdoor stations to the furthest indoor staiton B=From system controller to the furthest indoor station							
		By M2300	By M2301	By M2300	By M2301			x1		x1		x1												Coax, 75-5		RVV, Ø=1mm,		J-Y(ST)-Y,Ø=0.8mm,		J-Y(ST)-Y,Ø=0.6mm,		UTP 5, 2 x 2pairs	
								Below apartment no. is composed by selected push button module and the selected audio module																					
Single	Double	Single		Double				Single	Double	Single	Double	Single	Double											A	B	A	B	A	B	A	B	A	B
1-2	1-4	1	6	4	6	4	-	-				1	1-2	2	3-4									650m	600m	610m	570m	410m	370m	230m	200m	640m	580m
3-5	5-10	1	5	3	5	2	1	-	3	5-6	4	7-8	5	9-10										650m	540m	610m	510m	410m	340m	230m	190m	640m	520m
6-8	11-16	1	5	2	4	2	2	-	6	11-12	7	13-14	8	15-16										650m	480m	610m	450m	410m	300m	230m	170m	640m	460m
9-11	17-22	1	4	2	3	1	3	-	9	17-18	10	19-20	11	21-22										650m	390m	610m	370m	410m	240m	230m	140m	640m	370m
12-14	23-28	1	4	2	3	1	4	-	12	23-24	13	25-26	14	27-28										650m	350m	610m	330m	410m	220m	230m	130m	640m	340m
15-17	29-34	1	3	2	2	1	5	-	15	29-30	16	31-32	17	33-34										650m	300m	610m	280m	410m	190m	230m	110m	640m	290m
18-20	35-40	1	3	1	2	-	6	1	18	35-36	19	37-38	20	39-40										650m	280m	610m	260m	410m	180m	230m	100m	640m	270m
21-23	41-46	1	3	1	2	-	7	-	21	41-42	22	43-44	23	45-46										650m	250m	610m	230m	410m	160m	230m	90m	640m	240m
24-26	47-52	1	2	1	1	-	8	1	24	47-48	25	49-50	26	51-52										650m	230m	610m	220m	410m	150m	230m	80m	640m	220m
27-29	53-58	1	2	1	1	-	9	-	27	53-54	28	55-56	29	57-58										650m	210m	610m	200m	410m	130m	230m	70m	640m	200m
30-32	59-64	1	2	1	1	-	10	1	30	59-60	31	61-62	32	63-64										650m	200m	610m	190m	410m	120m	230m	70m	640m	190m
33-35	65-70	1	2	1	1	-	11	-	33	65-66	34	67-68	35	69-70										650m	180m	610m	170m	410m	110m	230m	60m	640m	170m
															51021RH	51022RH	51023RH	51024RH	51028RH	51025RH	51026RH	51029RH	51027RH										

Remarks:
1. * Optional to install rain hood

Remarks:
1. * means the outdoor station should be powered by one mini local power supply when the no. of indoor stations are more than 73, as thestandard system controller can not fully cover the required power units

2. For each of the additional parallel outdoor station , it should be locally powered. For example, for a building with 64 apartments, the 4-rowdouble button modules are used, totally, 2 outdoor stations are required, then one outdoor station is powered by standard system controller,and the second one should be powered by mini local power supply.

Indoor station No. or Apartment No.	System controller	No. of audio outdoor station fed by standard system sontroller or mini system controller				Button Module	Nameplate Module	Audio Outdoor Station Composed by 4-row Button Modules																						Distance range and cable type									
								Audio Module						Cover Frame & Flush-mounted Box																									
M2200.-.	M2300 or M2301	The article no. of the composed OS modules are shown in the right				M251021P3	51021DN	M251021A-.		M251022A-.		M251023A-.		51021CF-.+ 41021F	51022CF-.+ 41022F	51023CF-. +41023F	51024CF-. +41024F	51028CF-. +41028F	51025CF-. +41025F	51026CF-. +41026F	51029CF-. +41029F	51024CF-. +41024F + 51021J	51021RH	51022RH	51023RH	51024RH	51028RH	51025RH	51026RH	51029RH	51027RH	51021AH	51022AH	51023AH	51024AH	51028AH	51025AH	51026AH	51029AH	51027AH	A=From one or parallell outdoor stations to the furthest indoor station B=From system controller to the furthest indoor station									
		By M2300	By M2301	By M2300	By M2301			x1		x1		x1																										Coax, 75-5		RVV, Ø=1mm,		J-Y(ST)-Y,Ø=0.8mm,		J-Y(ST)-Y,Ø=0.6mm,		UTP 5, 2 x 2pairs	
								Below apartment no. is composed by selected push button module and the selected audio module																		

Indoor station No. or Apartment No.	Video distributor No.	System controller	No. of video outdoor station fed by standard system sontroller or mini system controller	Video Outdoor Station Composed by 3-row Button Modules																Distance range and cable type									
				Camera Module	Button Module	Nameplate Module	Audio Module						Cover Frame & Flush-mounted Box																
M2231.-. M2230.-.	M2304	M2300 or M2301	The article no. of the composed OS modules are shown in the rightt	M251021C	M251021P3	51021DN	M251021A-. x1		M251022A-. x1		M251023A-. x1		51022CF -. + 41022F	51023CF -. + 41023F	51024CF -. + 41024F	51028CF -. + 41028F	51025CF -. + 41025F	51026CF -. + 41026F	51029CF -. + 41029F	51024CF -. + 41024F + 51021J	A=From one or parallell outdoor stations to the furthest indoor staiton B=From system controller to the furthest indoor station									
or							Below apartment no. is composed by selected push button module and the selected audio module														Coax, 75-5		RVV, Ø=1mm,		J-Y(ST)-Y,Ø=0.8mm,		J-Y(ST)-Y,Ø=0.6mm,		UTP 5, 2 x 2pairs	
Single	Double	Single	Double				Single	Double	Single	Double	Single	Double									A	B	A	B	A	B	A	B	A	B
1-2	1-4	1	1	1	4 or 1*	4 or 1*	1	-	-			1	1-2	2	3-4						470m	340m	290m	320m	150m	210m	130m	120m	300m	330m
3-5	5-10	1-2	2-3	1	4	3	1	1	-	3	5-6	4	7-8	5	9-10						450m	290m	280m	270m	140m	180m	130m	100m	290m	280m
6-8	11-16	2	3-4	1	3	3	1	2	-	6	11-12	7	13-14	8	15-16						450m	270m	280m	260m	140m	170m	130m	100m	290m	260m
9-11	17-22	3	5-6	1	3	2	1	3	-	9	17-18	10	19-20	11	21-22						430m	240m	260m	230m	140m	150m	120m	80m	280m	230m
12-14	23-28	3-4	6-7	1	3	2	1	4	-	12	23-24	13	25-26	14	27-28						430m	210m	260m	200m	140m	130m	120m	80m	280m	210m
15-17	29-34	4-5	8-9	1	2	2	1	5	1	15	29-30	16	31-32	17	33-34						410m	190m	250m	190m	130m	120m	120m	70m	270m	190m
18-20	35-40	5	9-10	1	2	1	1	6	-	18	35-36	19	37-38	20	39-40						410m	180m	250m	170m	130m	110m	120m	60m	270m	170m
21-23	41-46	6	11-12	1	2	1	1	7	1	21	41-42	22	43-44	23	45-46						390m	160m	240m	160m	120m	100m	110m	60m	250m	160m
24-26	47-52	6-7	12-13	1	2	1	1	8	-	24	47-48	25	49-50	26	51-52						370m	150m	230m	150m	120m	90m	110m	50m	240m	140m
27-29	53-58	7-8	14-15	1	1	1**	1	9	1	27	53-54	28	55-56	29	57-58						370m	140m	230m	140m	120m	90m	110m	50m	240m	130m
30-32	59-64	8	15-16	1	1	1**	1	10	-	30	59-60	31	61-62	32	63-64						350m	140m	220m	130m	110m	90m	100m	50m	230m	130m
Optional to install rain hood													51022RH	51023RH	51024RH	51028RH	51025RH	51026RH	51029RH	51027RH	For each one of video parallel OS, for A, below amount of distance should be subtracted.									
																					50m	-	30m	-	20m	-	20m	-	40m	-

Remarks:
1. * means one mini system controller, others are the no. of standard system controller.(M2300)

2. ** means the local power supply should power that outdoor station in addtion to the system controller(M2301)

3. For each of the additional parallel outdoor station , it should be locally powered. For example, for a building with 32 apartments, 2 outdoorstations are required, then one outdoor station is powered by standard system controller, and the second outdoor station should be poweredby mini local power supply.

4. For double button outdoor station, despite techenically possible with the combination of audio module with button, it is recommended touse pure audio module with 3-row button module. Then for example for 28 buttons, the 5 pcs of 3-row button module should be used.

Indoor station No. or Apartment No.	Video distributor No.	System controller	No. of video outdoor station fed by standard system sontroller or mini system controller	Video Outdoor Station Composed by 4-row Button Modules																										Distance range and cable type									
				Camera Module	Button Module	Nameplate Module	Audio Module						Cover Frame & Flush-mounted Box																											
M2231.-. M2230.-.	M2304	M2300 or M2301	The article no. of the composed OS modules are shown in the rightt	M251021C	M251021P4	51021DN	M251021A-. x1		M251022A-. x1		M251023A-. x1		51022CF -. + 41022F	51023CF -. + 41023F	51024CF -. + 41024F	51028CF -. + 41028F	51025CF -. + 41025F	51026CF -. + 41026F	51029CF -. + 41029F	51024CF -. + 41024F + 51021J	51022CF -. + 41022F	51023CF -. + 41023F	51024CF -. + 41024F	51028CF -. + 41028F	51025CF -. + 41025F	51026CF -. + 41026F	51029CF -. + 41029F	51027CF -. + 41027F + 51021J	A=From one or parallel outdoor stations to the furthest indoor station B=From system controller to the furthest indoor station									
or							Below apartment no. is composed by selected push button module and the selected audio module																						Coax, 75-5		RVV, Ø=1mm		J-Y(ST)-Y,Ø=0.8mm,		J-Y(ST)-Y,Ø=0.6mm,		UTP 5, 2 x 2pairs	
Single	Double	Single	Double				Single	Double	Single	Double	Single	Double																	A	B	A	B	A	B	A	B	A	B
1-2	1-4	1	1	1	4 or 1*	4 or 1*	1	-	-			1	1-2	2	3-4														470m	340m	290m	320m	150m	210m	130m	120m	300m	330m
3-6	5-12	1-2	2-3	1	4	3	1	1	-	3-4	7-8	5	9-10	6	11-12														450m	290m	280m	270m	140m	180m	130m	100m	290m	280m
7-10	13-20	2	3-4	1	3	3	1	2	-	7-8	15-16	9	17-18	10	19-20														450m	270m	280m	260m	140m	170m	130m	100m	290m	260m
11-14	21-28	3	5-6	1	3	2	1	3	-	11-12	23-24	13	25-26	14	27-28														430m	240m	260m	230m	140m	150m	120m	80m	280m	230m
15-18	29-36	3-4	6-7	1	4	2	1	4	-	15-16	31-32	17	33-34	18	35-36														430m	210m	260m	200m	140m	130m	120m	80m	280m	210m
19-22	37-44	4-5	8-9	1	2	1	1	5	1	19-20	39-40	21	41-42	22	43-44														410m	190m	250m	190m	130m	120m	120m	70m	270m	190m
23-26	45-52	5	9-10	1	2	1	1	6	-	23-24	47-48	25	49-50	26	51-52														410m	180m	250m	170m	130m	110m	120m	60m	270m	170m
27-30	53-60	6	11-12	1	2	1	1	7	1	27-28	55-56	29	57-58	30	59-60														390m	160m	240m	160m	120m	100m	110m	60m	250m	160m
31-34	61-68	6-7	12-13	1	1	1**	1	8	-	31-32	63-64	33	65-66	34	67-68														370m	150m	230m	150m	120m	90m	110m	50m	240m	150m
35-38	69-76	7-8	14-15	1	1	1**	1	9	1	35-36	71-72	37	73-74	38	75-76														370m	140m	230m	140m	120m	90m	110m	50m	240m	130m
39-42	77-84	8	15-16	1	1	1**	1	10	-	39-40	79-80	41	81-82	42	83-84														350m	140m	220m	130m	110m	90m	100m	50m	230m	130m
Optional to install rain hood													51022RH	51023RH	51024RH	51028RH	51025RH	51026RH	51029RH	51027RH	51022AF + 51021J	51023AF + 51021J	51024AF + 51021J	51028AF + 51021J	51025AF + 51021J	51026AF + 51021J	51029AF + 51021J	51027AF + 51021J	For each one of video parallel OS, for A, below amount of distance should be subtracted.									
																													50m	-	30m	-	20m	-	20m	-	40m	-

The mixed power solution for keypad outdoor station with display

Building <=250 apartments		Standard System Controller			1st Standard Auxiliary Power Supply		2nd Standard Auxiliary Power Supply		3rd Standard Auxiliary Power Supply		4th Standard Auxiliary Power Supply		Cable type and distance A:Max. distance from outdoor station to the furthest indoor station A1:Max.distance from outdoor station to the furthest gateway B: Max. distance from furthest system controller to the furthest indoor station									
Apartment No. =Indoor station No.	Total distributor No.	How many OS fed by standard system controller	Apartment No. with 1indoor station/ apartment	How many distributor	How many apartment. with 1indoor station/ apartment	How many distributor	How many apartment. with 1indoor station/ apartment	How many distributor	How many apartment. with 1indoor station/ apartment	How many distributor	How many apartment. with 1indoor station/ apartment	How many distributor	Coax, 75-5		RVV, Ø=1 mm,		J-Y(ST)-Y, Ø=0.8 mm,		J-Y(ST)-Y, Ø=0.6 mm,		UTP 5, 2 x 2pairs	
Audio system with audio keypad outdoor station with display --- without auxiliary power supply													A	B	A	B	A	B	A	B	A	B
1-24	-	2	24	-	-	-	-	-	-	-	-	-	650m	390m	610m	370m	410m	240m	230m	140m	640m	370m
25-60	-	1	60	-	-	-	-	-	-	-	-	-	650m	210m	610m	200m	410m	130m	230m	70m	640m	200m
61-96	-	1*	96	-	-	-	-	-	-	-	-	-	650m	140m	610m	130m	410m	90m	230m	50m	640m	140m
Audio system with audio keypad outdoor station with display --- for auxiliary power supply														B		B		B		B		B
	-	-	-	-	79	-	-	-	-	-	-	-	-	170m	-	160m	-	100m	-	60m	-	160m
Audio system with audio keypad outdoor station with display --- with auxiliary power supply													A1**	B	A1**	B	A1**	B	A1**	B	A1**	B
97-158	-	2	-	-	79	-	79	-	-	-	-	-	650m	170m	610m	160m	410m	100m	-	-	640m	160m
159-237	-		-	-		-		-		-	-	-	650m	170m	610m	160m	410m	100m	-	-	640m	160m
238-250	-												650m	170m	610m	160m	410m	100m	-	-	640m	160m
Video system with video keypad outdoor station with display, indoor station is 4.3 video handset/hands-free or audio handset.---without auxiliary power supply													A	B	A	B	A	B	A	B	A	B
9	3	2	9	3	-	-	-	-	-	-	-	-	390m	310m	240m	300m	120m	200m	110m	110m	250m	300m
10-43	11	1	43	11	-	-	-	-	-	-	-	-	390m	170m	240m	160m	120m	110m	110m	60m	250m	160m
44-76	19	1*	76	19	-	-	-	-	-	-	-	-	330m	120m	200m	110m	110m	80m	90m	40m	220m	110m
Video system with video keypad outdoor station with display, indoor station is 4.3 video handset/hands-free or audio handset.---for auxiliary power supply														B		B		B		B		B
-	-	-	-	-	63	16	-	-	-	-	-	-	-	140m	-	130m	-	90m	-	50m	-	130m
Video system with video keypad outdoor station with display, indoor station is 4.3 video handset/hands-free or audio handset---with auxiliary power supply													A1**	B	A1**	B	A1**	B	A1**	B	A1**	B
77-103	26	1	40	10	63	16	-	-	-	-	-	-	240m	140m	150m	130m	80m	90m			150m	130m
104-126	32	2	-	-	63	16	63	16	-	-	-	-	260m	140m	160m	130m	80m	90m	-	-	170m	130m
127-189	48	2	-	-	63	16	63	16	63	16	-	-	260m	140m	160m	130m	80m	90m	-	-	170m	130m
190-250	63	2	-	-	63	16	63	16	63	16	61	16	240m	140m	150m	130m	80m	90m	-	-	150m	130m

Remarks:
* means the outdoor station(s) are all fed by local power supply, and the power of system controller is used purely to power the indoor stations. Please be noted that the total cable length of the system should be less than 800 meters. Fig.58 Fig.59
**means the Max. distance from futhest outdoor station to the furthest indoor station/gateway under one auxiliary power supply. Unit:m

- In case each building should be connected into a residential complexes, a building gateway with 5 consumer units should be considered, which will result in:
  1) 5 less audio indoor station in audio system for the standard system controller. Eg. A max. of 55 audio indoor stations with 1 audio keypad outdoor station can be powered by one system controller plus a building gateway.
  2) 4 indoor stations and 1 video distributor in video system for the standard system controller. Eg. A max. of 72 video indoor stations with 18 video distributors and 1 video keypad outdoor station(fed by mini local power supply) can be powered by one system controller
- In case several auxiliary power supplies or several standard system controller with building gateway are used, if possible, it is recommended to power the same amount of devices for each auxiliary power supply or system controller. Fig.84

For building with more than 250 apartments, it can be handled by using gate station as the apartment outdoor station, and splitting the whole building into several sections with section connected by one building gateway . Fig.7

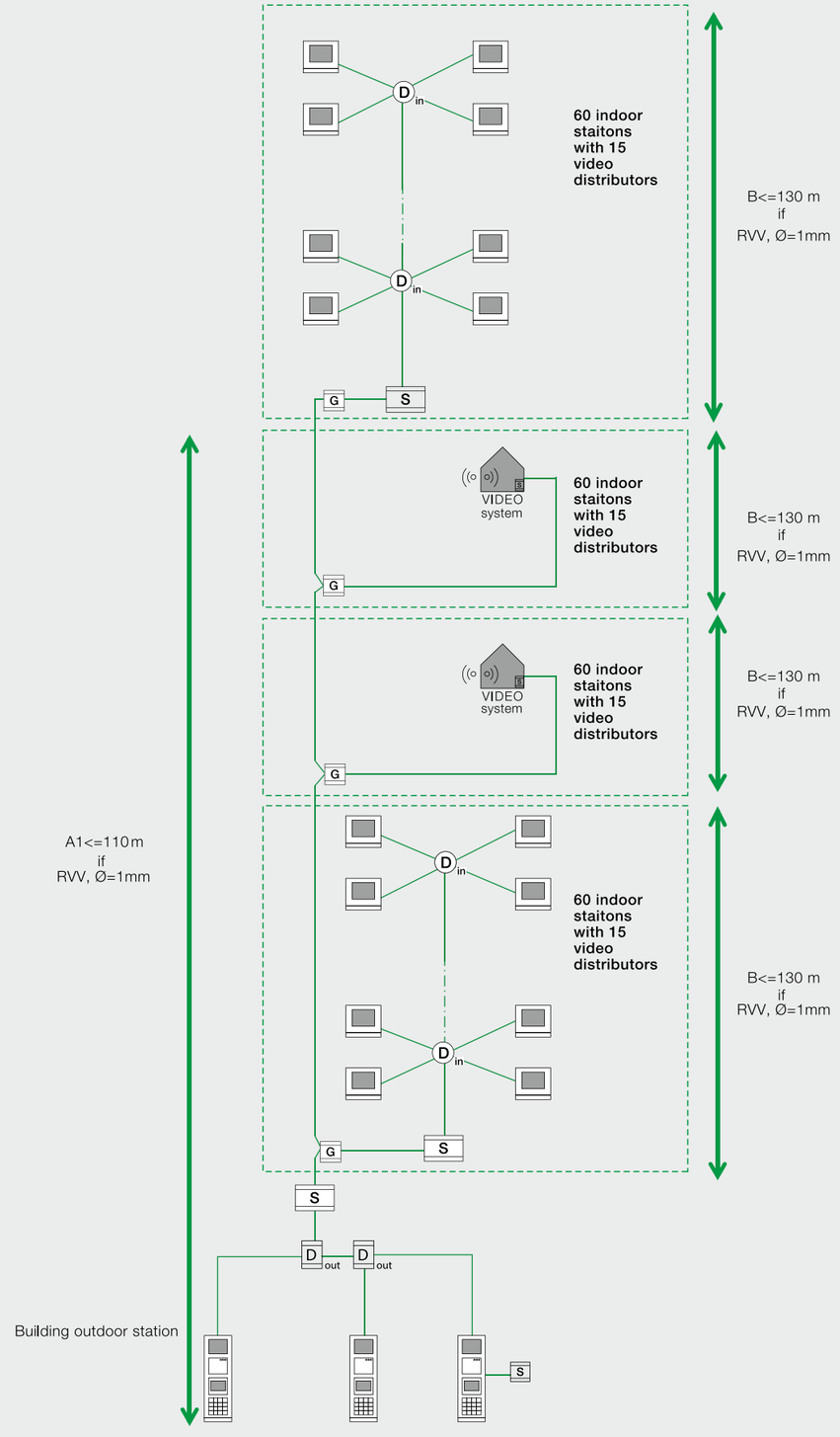
Building <=250 apartments		Standard System Controller			1st Building Gateway+ Standard System Controller		2nd Building Gateway+ Standard System Controller		3rd Building Gateway+ Standard System Controller		4th Building Gateway+ Standard System Controller		5th Building Gateway+ Standard System Controller		6th Building Gateway+ Standard System Controller		Cable type and distance A1: The max. distance from outdoor station to the furtherst gateway B: Max. distance from furthest stem controller to the furthest indoor station				
Total apartment No. =Indoor station No.	Total distributor No.	How many OS fed by standard system controller	Apartment No. with 1indoor station/ apartment	How many distributor	How many apartment. with 1indoor station/ apartment	How many distributor	How many apartment. with 1indoor station/ apartment	How many distributor	How many apartment. with 1indoor station/ apartment	How many distributor	How many apartment. with 1indoor station/ apartment	How many distributor	How many apartment. with 1indoor station/ apartment	How many distributor	How many apartment. with 1indoor station/ apartment	How many distributor	Coax, 75-5	RVV, Ø= 1mm,	J-Y(ST)-Y,Ø= 0.8mm,	J-Y(ST)-Y,Ø= 0.6mm,	UTP 5, 2 x 2pairs
																	A1 + B	A1 + B	A1 + B	-	A1 + B
251-315	80	2	-	-	63	16	63	16	63	16	63	16	63	16	-	-	240m + 140m	150m + 130m	80m + 90m	-	150m + 130m
316-378	96	2	-	-	63	16	63	16	63	16	63	16	63	16	63	16	240m + 140m	150m + 130m	80m + 90m	-	150m + 130m

General Remarks :

- In case more keypad outdoor stations are needed, each additional outdoor station should be powered by local power supply, the distance will impacted.
- In case one video distributor does not support 4 indoor stations, please base on one standard auxiliary power supply can feed total 79 units to count the capacity(84-5 units of gateway) For example it can be 52 indoor stations plus 26 video distributors with one supporting 2 indoor stations.
- In case parallel indoor stations are present, please base on the power consumer units calculation rule to count the capacity in Table 1 and Table 2.

Fig.84

Keypad outdoor station solution example: One building with 3 keypad video outdoor station with display, total 240 apartments, each auxiliary power supply with 60pcs 4.3" hands-free indoor station



03 Installation

General information for the installation of an ABB Welcome M system in new and existing buildings.
The installation of flush-mounted and surface-mounted devices as well as MDRC units and Kit is described in details in the operating manuals of the devices. The attached video enables the installation more understandable.

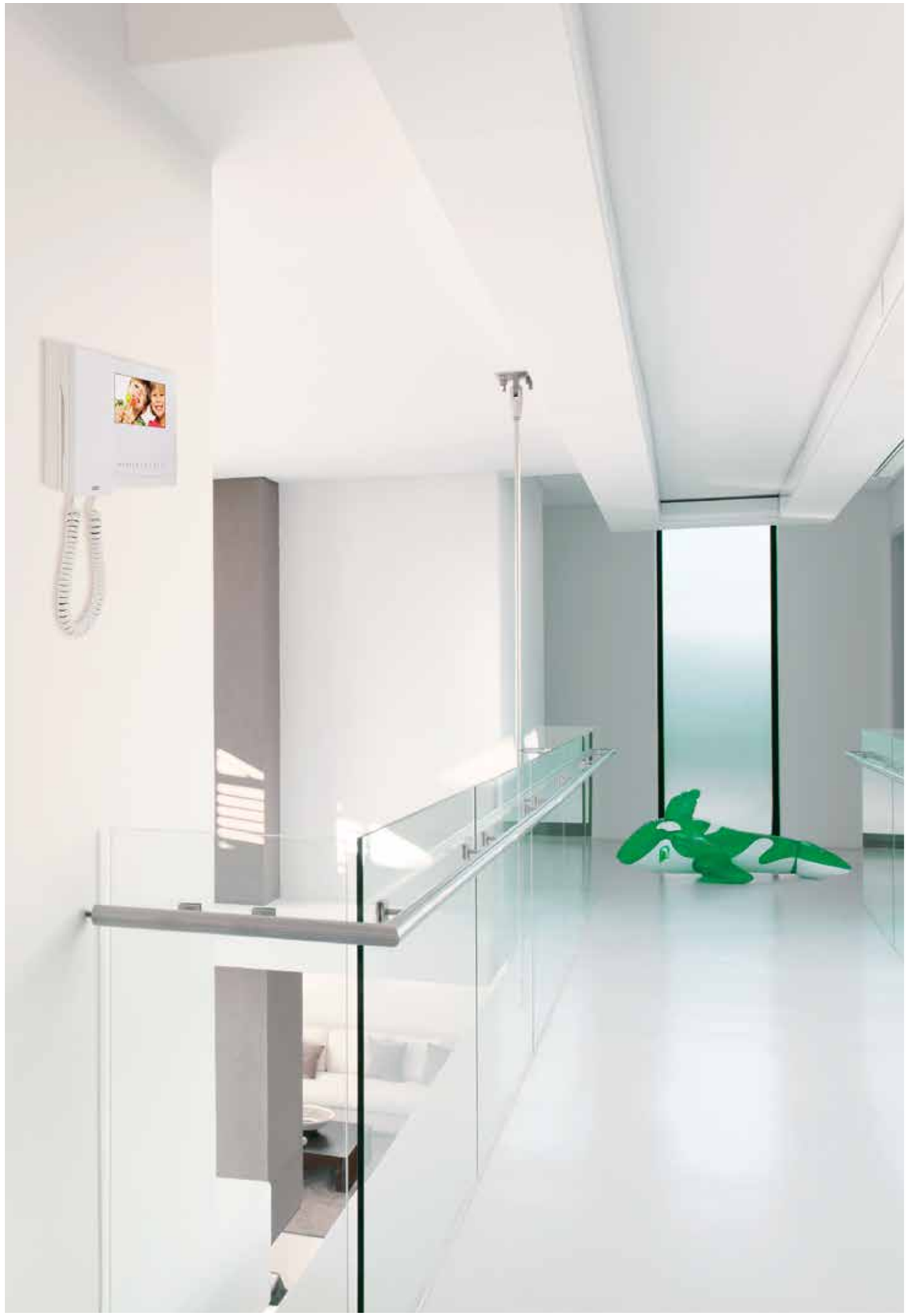
Installation instructions for new buildings
The following should be ensured when setting up a reliable, simple, economical and future-oriented Welcome M system:

- Despite many kinds of cables are workable for the Welcome M system, the distance subjects to the type of cable used, please check the page 63 to select the correct cable to the given project.
- For small systems: Looping the internal bus from device to device is recommended.
- For high rising building: setup of a structure with a rising mains is recommended.
- For small networked system. Looping trunk line from one villa/building to next villa/building through gateway is recommended. If two or more trunk lines are provided, many internal bus lines can be used. But please pay attention to the distance restraint of this topology to keep the sum of the wiring distance smaller than 800 meters.
- For big networked residential complex.
  Branch line connections for the trunk line is recommended by gateway plus video distributor is recommended.

Please check chapter 2 for the distance and capacity for all above mentioned scenarios.

Welcome M audio system should make later conversion to video easy. The conversion includes the exchange of at least one audio outdoor station with a video outdoor station and at least one audio indoor station with a video indoor station. The system controller needn't not be replaced. However, if the total power consumption of the conversed system exceeds the capacity of the original system controller, additional bus power supply(gateway + system controller) should be put in the bus.

For branch connections in the system, video distributors must be installed for the conversion. This is very important, If not, the conversion will become very time-consumping, as even the exchange of one audio indoor station with one video indoor station will require a total change of the original node connection into branch line connection by video distributor. These are not required in the internal bus – if it is looped from device to device. The setting of the terminal resistors of the system must be checked after the conversion.
(see page 54-57)



Installation instructions for modernization

The modernization of a building is an ideal opportunity for replacing an existing door entry system with a Welcome M system within the design of the other electrical installations.

Here, as a rule – independent of the type of wiring of the old system (pure bell system, system with "1+n“ technology or comparable systems with 2-wire bus technique) – existing lines can be used. In case of existing cable material a possible reduction of the transmission range is to be checked.

Conversion of old bell systems in one-family houses to Welcome M

Available:

- At the door: one button
- Indoors: one door bell
- In the sub-distribution: one transformer for the door bell and the name plate

The conversion of the bell system in a one-family house to Welcome M system is easy if a cable is available from the front door to the distribution and a cable from the distribution into the building, e.g. in the hallway. This layout is used by the system controller, outdoor station and indoor station.

This enables buildings with only a bell system to be retrofitted with audio or video system.

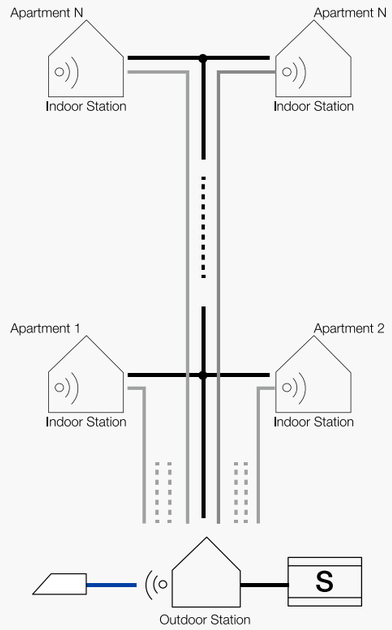
The conversion of old bell and intercom systems to ABB-Welcome M ("1+n" technique, with coaxial cable for video if necessary) The multifamily house has available:

- At the door: bells (with "1+n" wiring) + loudspeakers / microphones
- Indoors: in each apartment, one indoor station with door bell and a button for opening the front door
- In the sub-distribution: one bell transformer for the buzzer/electronic door opener, one transformer for the house telephones

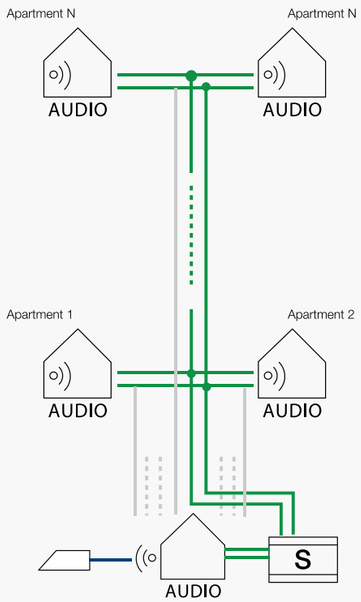
For systems with "1+n" wiring as rising mains installation with branch connections to the indoor stations only two wires are required from the multi-wire cable. The indoor stations of the ABB-Welcome M system are also connected to the rising mains via the branch line. For a video system one indoor FM video distributor should be installed in the branch box. Fig.85

Fig.85

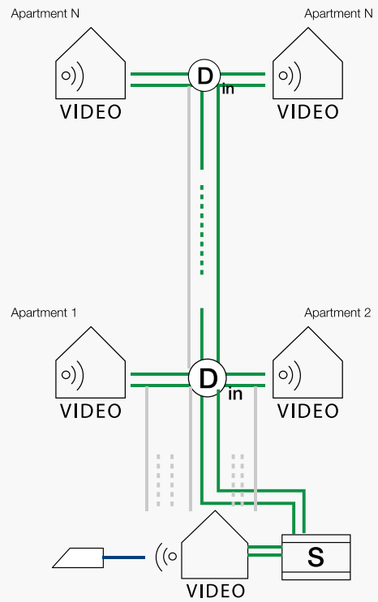
Conversion of "1+n"system to Welcome M(Including audio system and video system)



Existing“1+n" system



Conversion for audio system



Conversion for video system

Installation of the outdoor stations

The composition process from modules into an outdoor station is screwless and convenient. The direction to snap the module should be heeded. A "click" sound will be heard when the module is well placed. The installation video is available to see the whole process. Fig.86

For all outdoor stations an installation wall box is available for flush-mounting. The rainy hood servers as surface-mounting box as well as the device to protect dirt, water or snow falling on the camera lens.
Flush-mounting is suitable for all types of walls, whether rendered, clinker or cavity wall. because the installation box has a full perimeter frame. For flush-mounting in a cavity wall (thickness between 2 and 25 mm), the glass glue or similar adhesive material is recommended to seal and adhere the flush box and wall. Fig.87

In case a 10-moudle frame and box are not enough for the actual application, the conjunction by 3 or more 4-module frame and flush box by jointing fixture is possible. However, the rainy hood is only available 3 pcs of 4-module frames in horizontal connection. Fig.88

For dismantling the end strip, a distance of 1 cm should be kept to the right of the outdoor station. Fig.89

The camera has a large detection angle . The view area can be manually adjusted by a simple tool with range of +15 ,-15 at all direction. Fig.90

Note: The camera of the video outdoor station should not face powerful light sources, such as street lights. This should be taken into consideration when choosing the correct position for mounting. Lamps in the entrance area should uniformly illuminate the face of the visitor. The recommended installation height is 1.50 m. This optimally captures persons of average body size. Bright or backgrounds with a deep contrast should be avoided. It could reduce the quality of the picture.

Fig.86

Composition of outdoor station

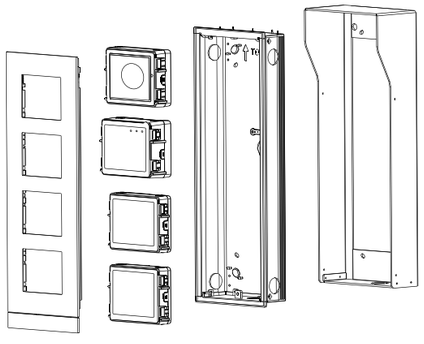


Fig.87

Flush-mounting box installation

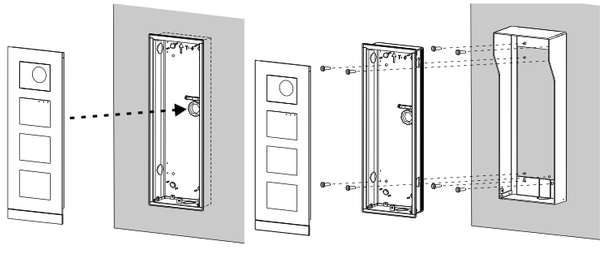


Fig.88

The conjunction of 3 pcs of 4-moudle outdoor stations

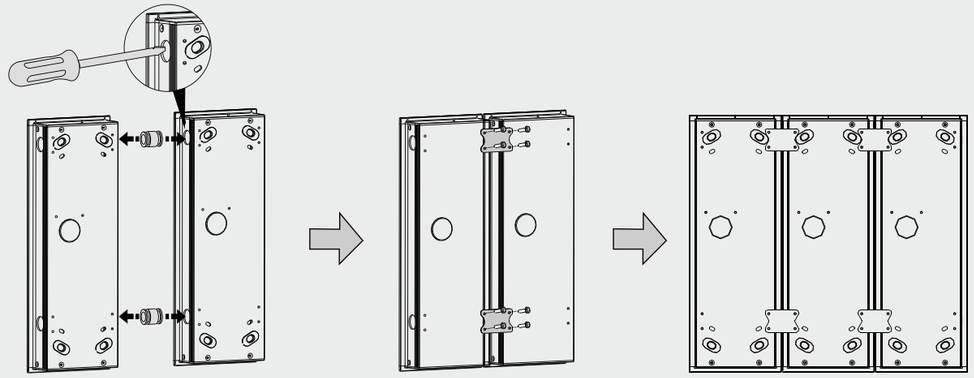


Fig.89

The distance zones for the installation of the outdoor station

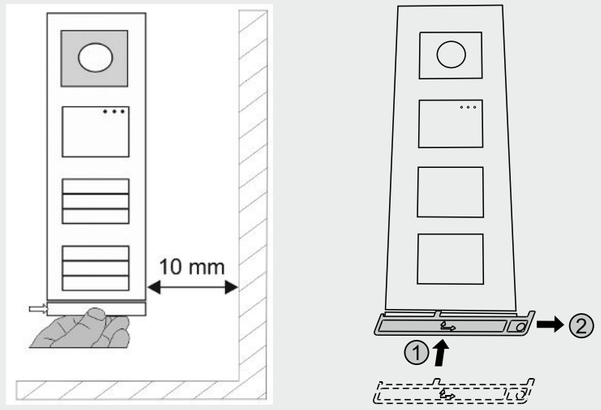
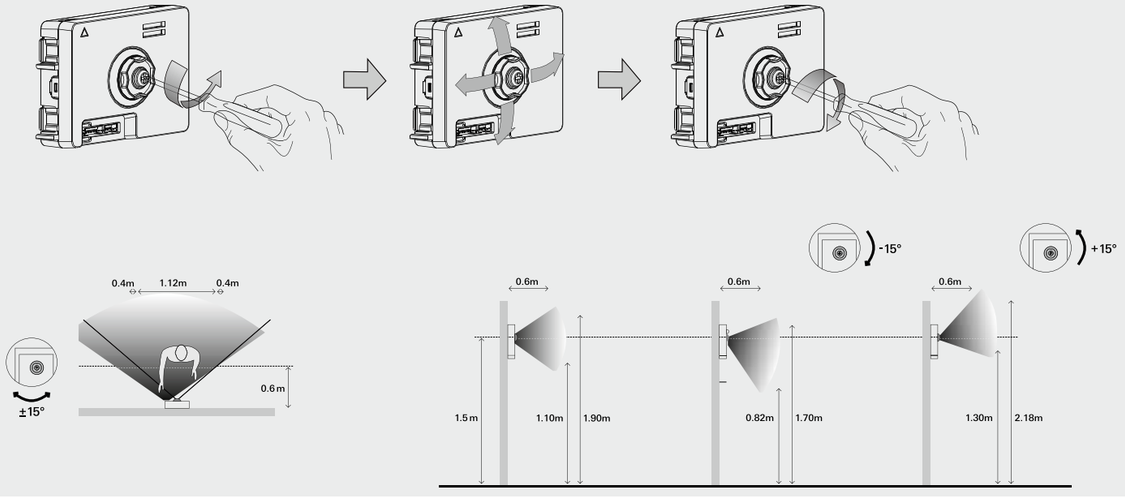


Fig.90

Mechanical adjustment and detection angle of camera



Installation of indoor stations

The Welcome M audio indoor station and video 4.3" handset indoor station and 7" video handsfree indoor station are easy to install as a surfacemounted device with the aid of the enclosed mounting frame. The devices can also be mounted on a commercially available VDE or Italian flushmounted wall box. Fig.91 Fig.92 Fig.93

The 4.3" video hands-free indoor station can be installed in the design of 5 various easily changeable color frames so to comply with or contrast the decoration color in an apartment. Both surface mounted and flush mounted are possible. For surface mounted, the device can be mounted on VDE/ Italian flush mounted wall box. For the flush mounted version, a metal flush box is recommended to ensure the efficient and sleek installation. Fig.94

Note: In order to enable disabled people to use and set video handsets, we recommend an installation height of 120-125 cm

Additional information is contained in the operating manuals. The associated QR codes are listed starting from page 102.

Installation of system devices

Recommendation: All MDRC units should be mounted in the central distribution of the building. This can be altered depending on the size of the building and topology selected. Fig.95

For example, when installing an auxiliary power supply in the sub-distribution of the apartment, for connecting the devices.

The ABB-Welcome M indoor video distributor is suitable for mounting in rising mains below a door bell button in a deep flush-mounted wall box. Fig.96

Fig.91

Surface mounted and desktop of 7” video hands-free indoor station

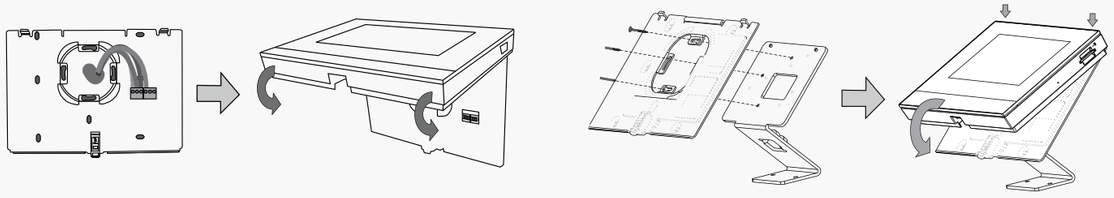


Fig.92

Surface mounted and desktop of 4.3" video handset indoor station

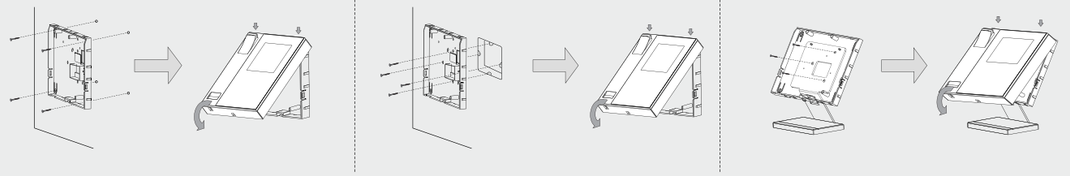


Fig.93

Surface mounted and desktop of audio handset indoor station

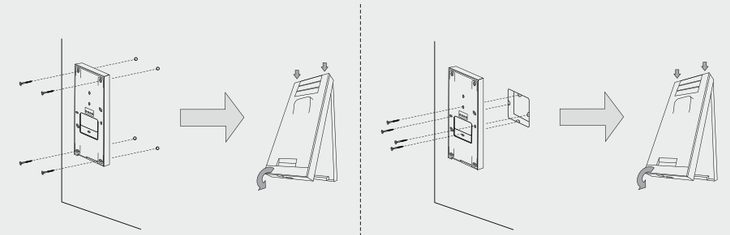


Fig.94

Surface mounted, desktop mounted and flush mounted of 4.3” video hands-free indoor station

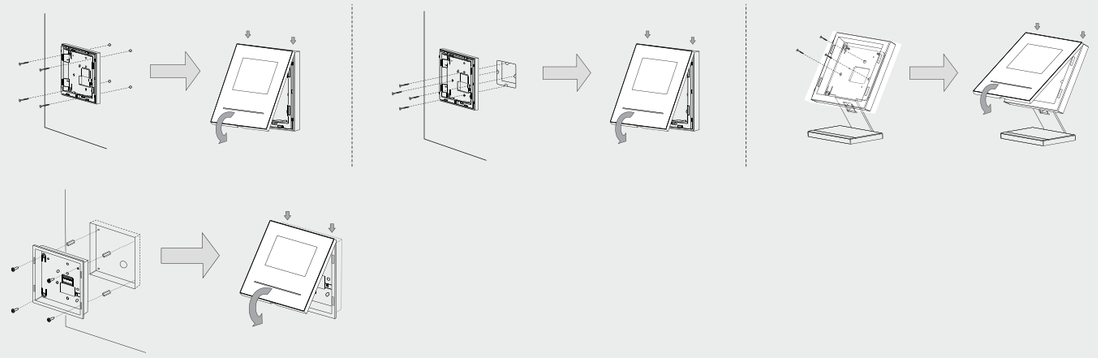


Fig.95

Mounting of the MDRC devices

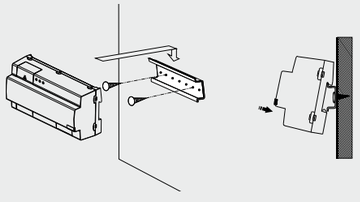
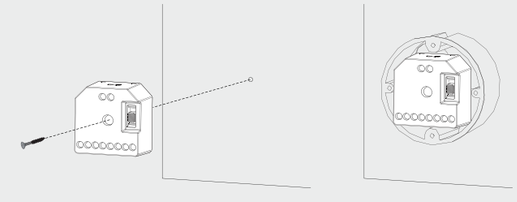


Fig.96

Mounting of the video distributor



04
Commissioning

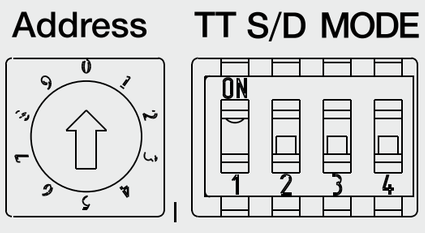
Well-prepared for everything. Several settings need to be made prior to the installation of a Welcome M system. These can be carried out by the electrical installer already at the factory, so that the devices can be directly installed at the customer's premises.

Setting the address of the outdoor station: Fig.97
The allocation to one of the nine inputs of the Welcome M system is made at the outdoor stations and the associated switch actuators for lock and light via the setting of the address.

Here the rotary knob house/outdoor is set on an address between 1 and 9. The knob is located at the rear of the outdoor station.

Setting the button sounds on/off:
At the outdoor stations the acoustic feedback signal is switched on and off via the "TT" button sounds switch when a push button is pressed. The switch is located at audio module of outdoor station.

Fig.97
Rotary knob for setting the address of an outdoor station



Address: Address of outdoor station
TT: Button sounds(ON=active)
S/D: Single or double button for one row(ON=double buttons)
MODE: Working mode of 1st/ 2nd button

Overview of the different setting options

Device	Setting	Note
ABB-Welcome M outdoor station	Address of the outdoor station	
	Button sounds on/off	
	Single or double button for one row	
	"MODE"switch for 1st/2nd button	
	Volume fron indoor station to outdoor station	
	Setting of door lock release time	
	Setting of the video signal fomat	
ABB-Welcome M indoor station	Address of the indoor station	
	Setting of the default outdoor station	Only if several outdoor stations are used in the one system
	Setting of the master indoor station	
	Setting of the terminal resistor	
ABB-Welcome M systen controller	Serring of the system working mode "One on "or "All on"	
ABB-Welcome M gateway	Address of gateway	
	Setting of the working mode of gateway	
	Setting of the terminal resisto	
ABB-Welcome M switch actuator	Address of switch actuato	
	Setting of switch actuator	
	Setting of the terminal resistor	
	Setting of the door opener times and light times	
ABB-Welcome M video distributor	Setting of the terminal resistor	
ABB-Welcone M guard unit	Address of guaed unit	
	Setting of the standard outddoor	
	Setting of the master guard unitt	
	Setting of the terminal resistor	

Setting the single or double button for one row Fig.98

In case the push button is present on the outdoor station, once the single or double buttons for one row is set on "S/D" switch, all the push button modules on the outdoor station will behave the same manner, either one button for each of all the button modules or double buttons for each of all the button modules

Setting the "MODE" switch for 1st/2nd button Fig.99

For each row of push button, both in single button and double buttons scenarios, 4 modes are possible to set the function of first and second button. When switching the light is desired, the switch actuator is needed to enable the function.

Setting of indoor station->outdoor station volume

The volume from all the indoor stations to outdoor station during communication can be set on the sliding switch in case the outdoor station is installed in the noisy area.

Setting of door lock release time

This setting determines the operating period of the door lock (from one to ten seconds).

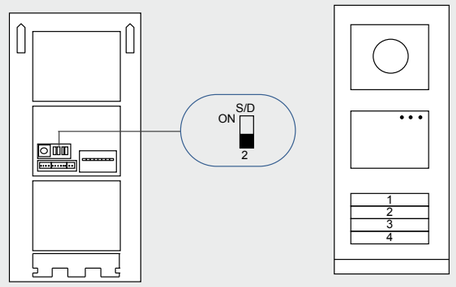
Setting of the video signal format Fig.100

The setting allows selection of the standard of the video signal of the system, either PAL or NTSC.
PAL Standard video 50 Hz
NTSC Standard video 60 Hz
The jumper is located on the back of the camera module.

Fig.98

Setting of single or double button for one row of pushbutton outdoor station.

1. Setting of single button



2. Setting of double button

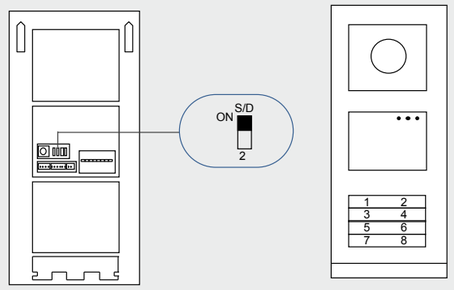
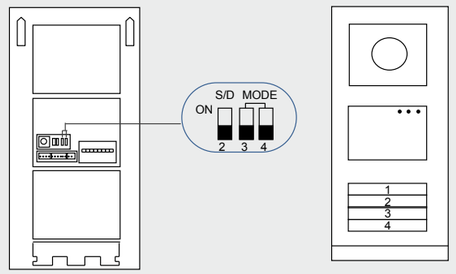


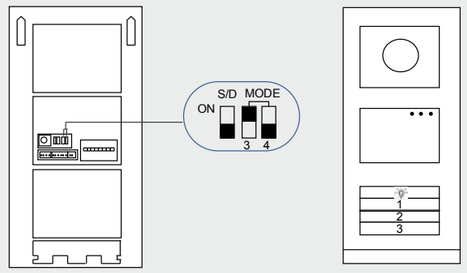
Fig.99

Setting of mode for 1st and 2nd button

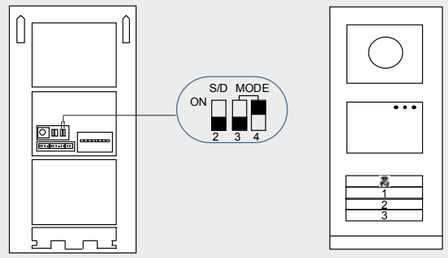
1. Setting of not extra function



2. Setting of lighting



3. Setting of call guard unit



4. Setting of both call guard unit and lighting

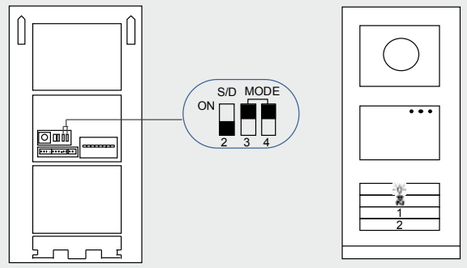
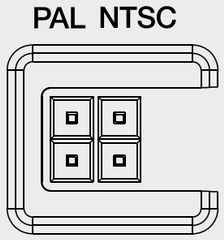


Fig.100

Setting of video signal format.



Setting the address of the indoor station: Fig.101

At the indoor stations the apartment is assigned via the setting of the address. Up to 250 apartments can be addressed within a Welcome M system.

For handset indoor station, the address of an indoor station (e.g. "024") is set with the aid of the jumpers "X100","X10" and "X1" at the indoor stations, where "X100" specifies the hundreds digit (here "0"), "X10" the tens digit (here "2") and "X1" the units digit (here "4"). The jumpers are located at the rear or outside of the indoor stations.

For 4.3" hands-free indoor station, the address of an indoor station (e.g."024") is set with the aid of the rotary knobs & dip-switches "X200","X100","X10" and "X1" at the indoor stations, where "X200" & "X100" specifies the hundreds digit (here "off"), "X10" the tens digit (here "2") and "X1" the units digit (here "4").

Attention that, for 7" hands-free indoor station, if address is more than 99, the setting must be done when entering system setting and "X10" & "X1" is set as "0".

Setting of the "default outdoor station"

For several outdoor stations in a Welcome M system the “default outdoor station" must be set at the indoor stations and guard unit.
Here the rotary knob STATION is set on the address of the standard outdoor station – between 1 and 9. For handset indoor station, the setting is done with the aid of jumper. The rotary knob or jumper is located at the rear or outside of the indoor stations.

Setting of the master indoor station

In each apartment the switch "M/S" must be activated at one indoor station. This means "M/S=ON". For additional indoor stations in the apartment the switch here must be on "M/S=OFF".
The master/slave setting is on all indoor stations as well as guard unit. The switch is located at the back of the indoor stations and guard unit.

Setting of the terminal resistor

The terminal resistor "RC" in Welcome M audio systems is always switched to "RC=OFF". For video systems, the terminal resistors are to be switched to "RC=ON" for the last devices of a branch and to "RC=OFF" for all others.

The terminal resistors are set via the switch "R/C" on all indoor stations as well as guard unit, video indoor distributors, switch actuator and gateway.

Setting of the system controller working mode "One on" or "All on" Fig.102

System working mode "One on" or "All on" is controlled by system controller. If in "One on" mode, when there's an incoming call, all indoor stations in the same apartment ring together, but only master indoor station switches on screen. If in "All on" mode, when incoming call, all indoor stations in the same apartment ring and switches on screen together. (refer to illustration on page 36)

All indoor stations which are powered by the same system controller follow this rule.

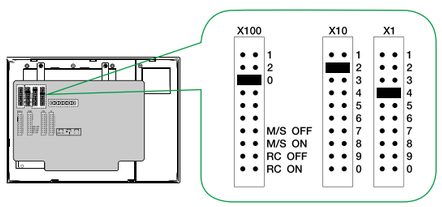
Setting the "MODE" for gateway Fig.103

At the gateway, the building no. or apartment no. is assigned via the setting of the address according to different working mode of gateway.
5 modes are possible to set the function of gateway.

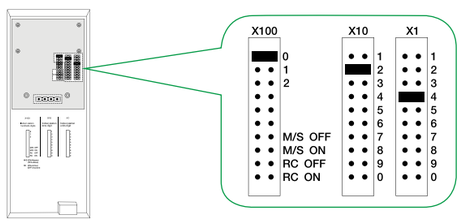
- Building gateway (MODE:1->OFF, 2->OFF, 3->OFF)
  -Enable one building as an independent subsystem(outdoor station/guard unit can be connected), support up to 60 such systems within the whole system.
  Refer to page 41.
- Floor gateway (MODE:1->OFF, 2->OFF, 3->ON)
  -Enable multi-apartments as an independent subsystem (another outdoor station can be connected, for example in front of the door of floor with multi-apartments).
  Refer to page 42.
- Apartment gateway (MODE:1->OFF, 2->ON, 3->OFF)
  - Enable one apartment as an independent sub-ystem(2nd confirmed outdoor station can be connected), support up to 99 such systems within the whole system.
  Refer to page 44
- Additional power supply mode (MODE:1->OFF, 2->ON, 3- >ON).
  - Enable a system controller to provide additional power source for system.
  Refer to page 44.
- Line amplifier (MODE:1->ON, 2->OFF, 3->OFF)
  - Strengthen the video signal and extend transmission distance. The increased distance please refer to Page 44.

Fig.101

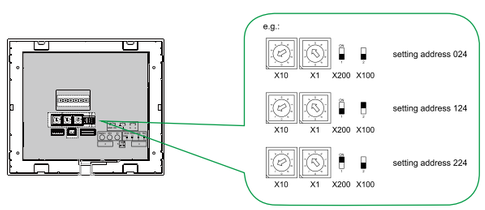
1. Setting of 4.3" video handset indoor



2. Setting of audio handset indoor station



3. Setting of 4.3" video hands-free indoor



4. Setting of 7" video hands-free indoor

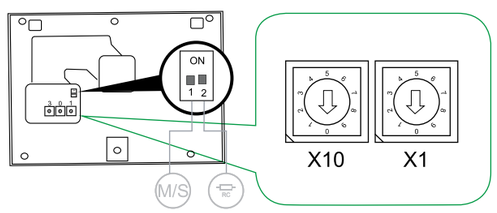


Fig.102

Setting of working mode on system controller/ mini system controller

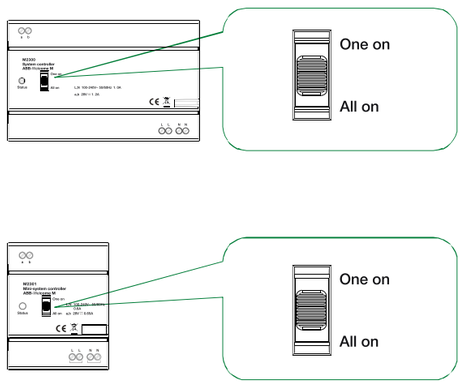
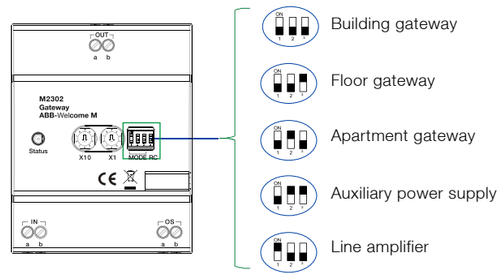


Fig.103

Setting of gateway for different working mode



Setting the address of the gateway

At the gateway, the building no. or apartment no. is assigned via the setting of the address according to different working modes of gateway.

Building gateway - the address is equal to the riser number.
Floor gateway - address is equal to the minimum address of the indoor station inside the sub-system. Fig.104
Apartment gatewy - address is equal to the apartment number.

There is no need to set address for auxiliary power supply and line amplifier.

Setting the "MODE" for switch actuator Fig.105

3 modes are possible to set the function of switch actuator.

» Call repetition (MODE:2->OFF, 3->OFF)
Switch actuator is enabled upon an incoming call to control an external bell or light. The device is disabled after the call is answered or after a customized time out (adjusted from 1 to 30 seconds).

» Door opener (MODE:2->OFF, 3->ON)
Switch actuator is enabled by pressing unlock button of indoor stations / guard units, to release a lock connected. The device is disabled after a customized time out (adjusted from 1 to 10 seconds).

» Time relay (MODE:2->ON, 3->OFF)
Switch actuator is enabled by pressing program button of indoor stations/ guard units or light button of outdoor station in the same sub-system, to release a lock connected or switch on a light. The device is disabled after a customized time out (adjusted from 1 second to 5 minutes).
Please refer to page 48 for the illustration of above function.

Setting the address of the switch actuator

The address of the switch actuators is associated with the outdoor station or indoor station which controls the actuator. Up to 199 switch actuators can be addressed in one system.

The address of a switch actuator (e.g. "001") is set with the aid of the rotary knobs & dip-switch "X100","X10" and "X1", where "X100" specifies the hundreds digit (here "off"), "X10" the tens digit (here "0") and "X1" the units digit (here "1"). Fig.106

Setting the address of guard unit

The commissioning of guard unit is same as 4.3" video handset indoor station, except the valid address for guard is only 9. Fig.107
User can use the USB connector for the connection to the PC: download/upload the configuration. e.g. download the contact lists.

Fig.104
Setting address of floor gateway

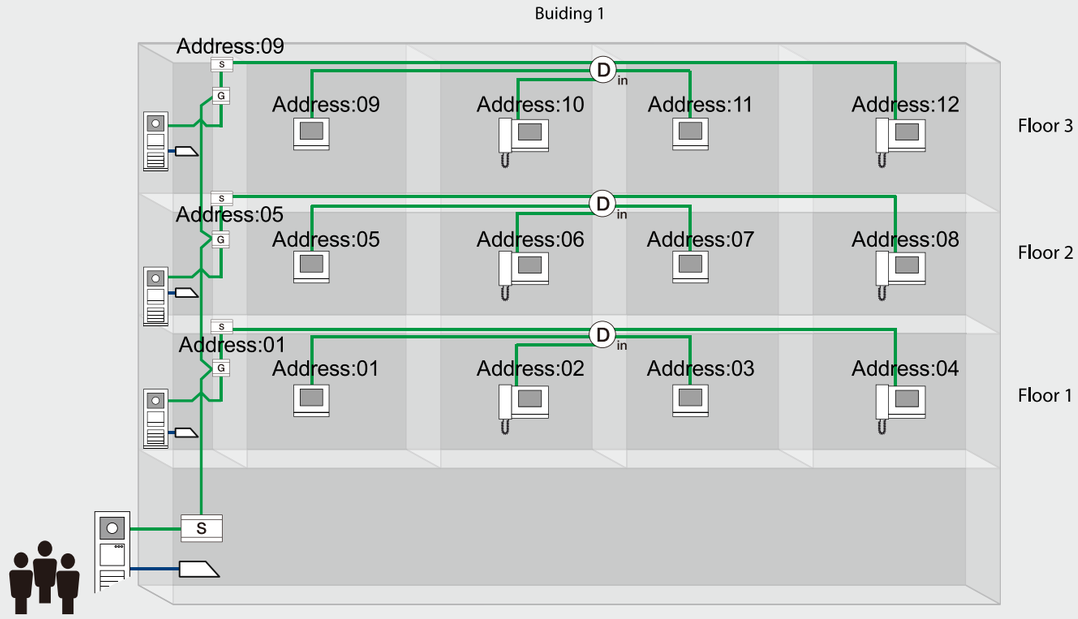


Fig.105
Setting mode of switch actuator

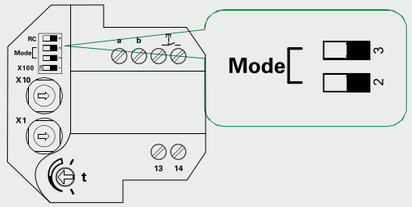


Fig.106
Setting address of switch actuator

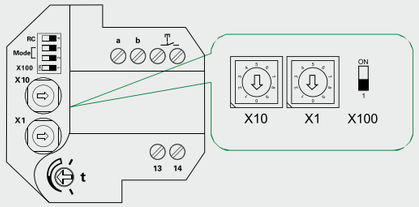
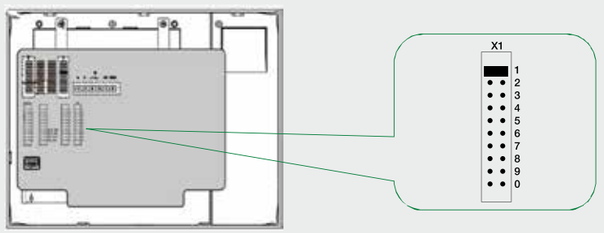


Fig.107
Setting the address of guard unit



05
Operation

Always intuitively correct. ABB-Welcome M system makes this possible from the very first contact. Because the eyes, hands and ears quickly orient themselves. In this way the intelligent system fulfills individual wishes and requirements.

Operating the outdoor and indoor stations

The outdoor and indoor stations are operated intuitively. Familiar style elements and easy-to-understand icons are used.
For the 7" all touch and 4.3" hands-free and 4.3" handset indoor station, the menu structure is used.
The functions of all devices are described in the respective operating manuals, which can be scanned from the QR code either from the quick guide or from the screen of the device under "information".

System behavior

Optional connection activation.
The advanced technology of Welcome M system offers the user a large variety of options. A connection can be established by ringing the button at the second-confirmed outdoor station or apartment outdoor station or gate station. Or it can be established at the indoor station by switching on the microphone and/or the camera of the outdoor station. A connection lasts at most two minutes after which it is automatically terminated.

Connection priority.
To guarantee that no call of a visitor is missed at an outdoor station, the following simple rule applies.

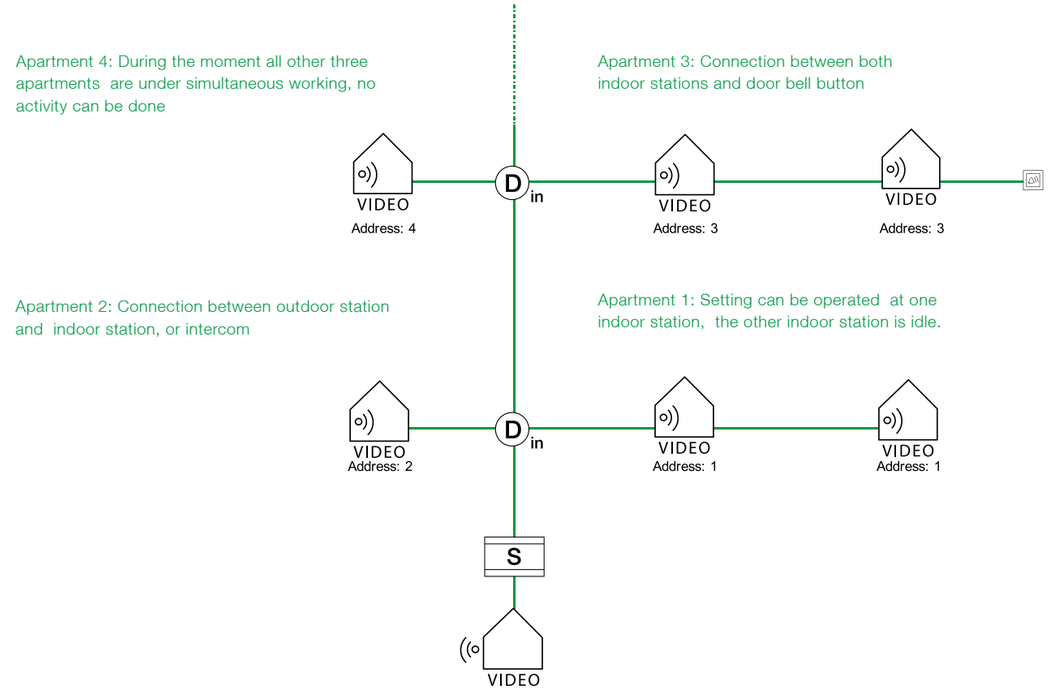
» Connections that are established at the outdoor station(second-confirmed outdoor station, apartment outdoor station, gate station or guardunit) always have a higher priority than the connections that are established between two indoor stations-intercom. This means that an existing intercom will be interrupted as soon as the bell is rung from outdoor station.
» In case an existing connection between outdoor station and indoor station is established, a new connection(intercom) will not be established, however, an occupied status of the system is displayed at the indoor station

Simultaneous connection and setting. Fig.108
To achieve a comfortable user experience, the door bell button can be rung irrespective of an existing connection between outdoor station and indoor station or between one indoor station and the other indoor stations. In the case of parallel indoor stations in the same apartment, all indoor stations will ring at the same time for the door bell. A third indoor station in the building can be still under setting without interrupting the door bell and existing connection.

Fig.108

Simultaneous connection and setting.(1+1+1) .

A maximum of one apartment is being called(can be the connection between outdoor station and indoor station, or the indoor station and the other indoor station), one apartment is rung by door bell button, and one indoor station is under setting at the same time.



06
Overview of product range

Camera module

Features

- Scratch and fire resistant finish
- Video camera with large detection angle (H 86°,V 67°, D 104°) and manually mechanical adjustment (H ± 15°, V ± 15°)
- Anti-fog design with in-built heater
- In-built infrared lighting ensures clear picture at night
- Secret "surveillance" enables users to surveil one area through the camera of the outdoor station, whose backlight will not be switched on
- Optional to connect one additional output of camera for surveillance inside the video indoor station
- Optional to choose the standard of the video signal, either PAL or NTSC (according to the local power frequency) for clear video quality

Technical data

- Waterproof: IP 54, vandal proof: IK 07.
- Operation temperature: -40 °C – +70 °C
- Bus voltage: 20-30 VDC

QR code service

Audio module

Features

- 1 output for door opener without the need of additional power supply.
- 1 output for floating output, door opener (30V AC/DC 1A)
- 1 input for door status check
- 1 input for exit pushbutton
- 2 options: aluminum brush and white coating
- 4 options of functions: audio without pushbutton, audio with 1 row of pushbutton, audio with 2 rows of pushbuttons, audio without pushbutton but with speech synthesis
- 3 led indications: call established / system busy, communication possible, door unlocked
- Adjustable feedback ringtone of pushbutton
- Adjustable lock release time
- Adjustable speaker volume
- Integrated optic sensor for day/night mode
- Mode setting for the first/second button as switch on lightings, call indoor station or call guard unit
- Mode setting for pushbutton as single column or double columns

Technical data

- Waterproof: IP 54, vandal proof: IK 07.
- Operation temperature: -40 °C – +70 °C
- Power supply, door opener (Lock-GND): 18 V 4 A impulsive, 250 mA holding
- Floating output: door opener (COM-NC-NO): 30 V AC/DC,1 A
- Single-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Bus voltage: 20-30 VDC

QR code service

Pushbutton module

Features

- Two options of article: 3 rows and 4 rows
- Two options: single column or double columns
- Extractable nameplate by tool without the need to disassemble the panel
- Backlight ensures clear visuality at night
- UV resistant

Technical data

- Waterproof: IP 54, vandal proof: IK 07
- Operation temperature: -40 °C – +70 °C
- Bus voltage: 20-30 VDC

QR code service

Keypad module

Features

- Name scrolling by up and down or by inputting letters of thecalling name(display must be accompanied, sorting is progressive upon inputting next letter of name)
- The calling code can be pure number or the combination of number and letter.
- Call can be activated automatically or by pressing " " after inputting code.
- Download name directory from PC or directly enter to edit from the keyboard
- Up to 3000 names.
- Public password and up to 6000 customized passwords are allowed
- Repeatedly inputting wrong password will be locked.
- Password can be set with 6~8 digits
- Calling code can be set with 1~6 digits
- Call guard unit is available
- Backlight ensures clear visuality at night

Technical data

- Waterproof: IP 54 vandal proof: IK 07
- Operation temperature: -40 °C – +70 °C
- Bus voltage: 20-30 VDC

QR code service

Display module

Features

- 2 options for in-built RFID proximity reader: ID card and IC card
- Wiegand output available
- Up to 3000 different cards
- Register and delete cards locally in setting menu
- Different feedback sounds when accepting or rejecting the reading card
- Customized message is programmable
- Withstand down to -40℃

Technical data

- Waterproof: IP54, vandal proof: IK07
- Operation temperature: -40 °C – +70 °C
- Bus voltage: 20-30 VDC

QR code service

Nameplate module

Features

- It can be used to hold the address of the building or the resident directory for keypad outdoor station, or simply to complete the module within the cover frame.
- Backlight ensures clear visibility at night.

Technical data

- Waterproof: IP54, vandal proof: IK07
- Operation temperature: -40 °C – +70 °C
- Bus voltage: 20-30 VDC

QR code service

7" video hands-free indoor station

Features

- Large 17.8 cm (7") color display with intuitive touch control.
- 6 touch film buttons for communication, unlocking, mute, programmable button (can be set as intercom, call guard unit, etc.), surveillance and setting.
- During resident's absence, voice message of the resident will be played automatically in case of door calls, and 3 pictures of the visitor will be automatically stored.
- The no. of pictures that can be stored is decided by the capacity of the SD card (not provided).
- Call transfer among different apartments and guard unit is available.
- Doctor function for automatic unlock.
- 5 ringtones for different call sources, i.e. from default outdoor station, secondary outdoor station, door bell, intercom or guard unit.
- Send SOS alarm to guard unit in emergency.
- Surface mounting and desktop mounting
- The detailed user manual can be downloaded though scanning the QR code on the screen.

Technical data

- Display resolution: 800 x 480
- Display size: 7"
- Operating temperature: -10 °C - +55 °C
- Protection: IP 30
- Single-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Bus voltage: 20-30 VDC

QR code service

4.3" video hands-free indoor station

Features

- 4.3" color display with OSD.
- 6 touch film buttons for communication, unlocking, mute, programmable button (can be set as intercom, call guard unit, etc.), surveillance and setting.
- 2 pictures of the visitor will be automatically stored in the picture memory for door calls during resident's absence.
- The no. of the pictures is up to 60 pcs.
- Call transfer among different apartments and guard unit is available.
- Doctor function for automatic unlock
- 5 ringtones for different call sources, i.e. from default outdoor station, secondary outdoor station, door bell, intercom or guard unit.
- Broadcast by simply long pressing the communication button.
- Surface mounting, flush mounting and desktop mounting
- The detailed user manual can be downloaded though scanning the QR code on the screen.

Technical data

- Display resolution: 480 x 272
- Display size: 4.3"
- Operating temperature: -10 °C - +55 °C
- Protection: IP 30
- Single-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Bus voltage: 20-30 VDC

QR code service

4.3" video handset indoor station

Features

- Slim indoor station with handset (depth of 45 mm).
- 4.3" color display with OSD.
- 6 touch film buttons for communication, unlocking, mute, programmable button (can be set as intercom, call guard unit, etc.), surveillance and setting.
- 2 pictures of the visitor will be automatically stored in the picture memory for door calls during resident's absence.
- The no. of the pictures is up to 25 pcs.
- Call transfer among different apartments and guard unit is available.
- Doctor function for automatic unlock.
- 5 ringtones for different call sources, i.e. from default outdoor station, secondary outdoor station, door bell, intercom or guard unit.
- Surface mounting and desktop mounting.
- The detailed user manual can be downloaded through scanning the QR code on the screen.

Technical data

- Display resolution: 480 x 272
- Display size: 4.3"
- Operating temperature: -10 °C – +55 °C
- Protection: IP 30
- Single-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Bus voltage: 20-30 VDC

QR code service

Audio handset indoor station

Features

- 1 easy pushbutton for unlock, and 2 additional buttons for self setting functions, e.g. intercom, door status check, second lock release or even calling the security guard, etc.
- Max-mid-mute volume adjuster on the side.
- 2 LEDs to indicate different working status.
- 5 ringtones for different call sources, i.e. from default outdoor station, secondary outdoor station, door bell, intercom or guard unit.
- The activating or deactivating of automatic unlock can be made by simply pressing the unlock button for 10 seconds.
- Surface mounted.

Technical data

- Operating temperature : -10 °C – +55 °C
- Protection: IP 30
- Single-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Bus voltage: 20-30 VDC

QR code service

System controller

Features

- Control the entire system, the "brain" of the individual system
- Over-heat protection, over-current protection, lightening protection
- Two working modes to switch between "all on" and "one on"
- 1LED for normal working condition indication.
- Overheat, short-circuit and lightening protection.
- As auxiliary BUS power supply when connecting to gateway under certain mode

Technical data

- Operating temperature: -25 °C – +55 °C
- Protection: IP 20
- Single-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Mains voltage: 100-240 V, 50 / 60 Hz, 1.0 A
- Bus voltage: 28 ± 2 VDC, 1.2 A
- Size: 8 U

QR code service

Mini system controller

Features

- Control the entire system, the "brain“ of the individual system
- Over-heat protection, over-current protection, lightening protection
- Two working modes to switch between "all on" and "one on"
- 1LED for normal working condition indication.
- Overheat, short-circuit and lightening protection
- As auxiliary BUS power supply when connecting to gateway under certain mode

Technical data

- Operating temperature: -25 °C – +55 °C
- Protection: IP 20
- Single-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Mains voltage: 100-240 V, 50 / 60 Hz, 0.6 A
- Bus voltage: 28 ± 2 VDC, 0.65 A
- Size: 4 U

QR code service

Gateway

Features

- It offers 5 different modes which can be set by dipswitch: apartment gateway, floor gateway, building gateway, auxiliary BUS power supply interface and line amplifier

Technical data

- Operating temperature: -25 °C - +55 °C
- Protection: IP 20
- Single-wire clamps: 2 x 0,28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0,28 mm² – 2 x 1 mm²
- Bus voltage: 20-30 VDC

QR code service

Video outdoor distributor

Features

- 2 way inputs connect different outdoor stations
- Used in buildings with more than one video outdoor station

Technical data

- Operating temperature: -25 °C - +55 °C
- Protection: IP 20
- Single-wire clamps: 2 x 0.28 mm²–2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm²–2 x 1 mm²
- Bus voltage: 20-30 VDC
- Size: 2U

QR code service

Guard unit

Features

- 4.3" touch screen and 6 touch film buttons can ensure the communication with calls from outdoor station, indoor station or other guard unit (if any).
- It can be manually or automatically set into intercept mode to increase security level for all users or only VIPs.
- Surveillance can be done through the camera of outdoor stations or integrated analog camera.
- Missed calls and alarm messages stored in the memory can be reviewed.
- It can be surface mounted on the wall or desktop mounted

Technical data

- Display resolution: 480 x 272
- Display size: 4.3"
- Operating temperature: -10 °C - +55 °C
- Protection: IP 30
- Single-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Bus voltage: 20-30 VDC

QR code service

Video distributor

Features

- This compact device supports 4-way outputs connected to different apartments or different high-rise buildings.
- Flush-mounted into VDE/Italian box or surface mounted through the hole in the middle.

Technical data

- Operating temperature: -25 °C - +55 °C
- Protection: IP 20
- Single-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Bus voltage: 20-30 V

QR code service

Switch actuator

Features

- 1 output for connecting an electronic lock or light
- 1 output for local pushbutton
- 3 working modes: extend door bell, switch on lighting, door lock release
- The switching duration of unlock or switch on lighting is adjustable
- Flush-mounted

Technical data

- Operating temperature: -25 °C - +55 °C
- Protection: IP 30
- Single-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Fine-wire clamps: 2 x 0.28 mm² – 2 x 1 mm²
- Floating output for light: 230 V AC, 3 AX
- Floating output for door opener: 30 V AC/DC; 3 A
- Bus voltage: 20-30 VDC

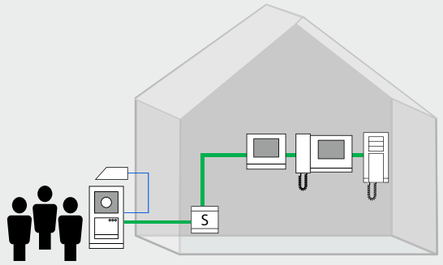
QR code service

07
Connection

The flexible solutions made by easy connection. ABB Welcome M system can also be easily and quickly connected for all kinds of buildings. The following examples of terminal diagrams provide optimum orientation and guarantee effective installation.

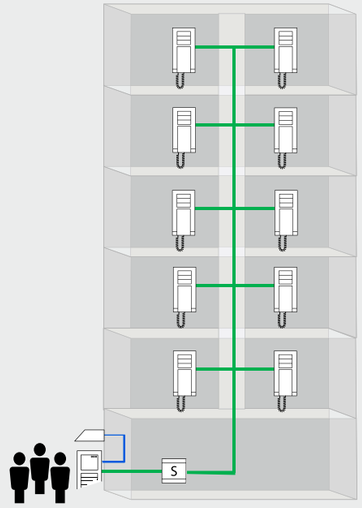
Single-family house/villa

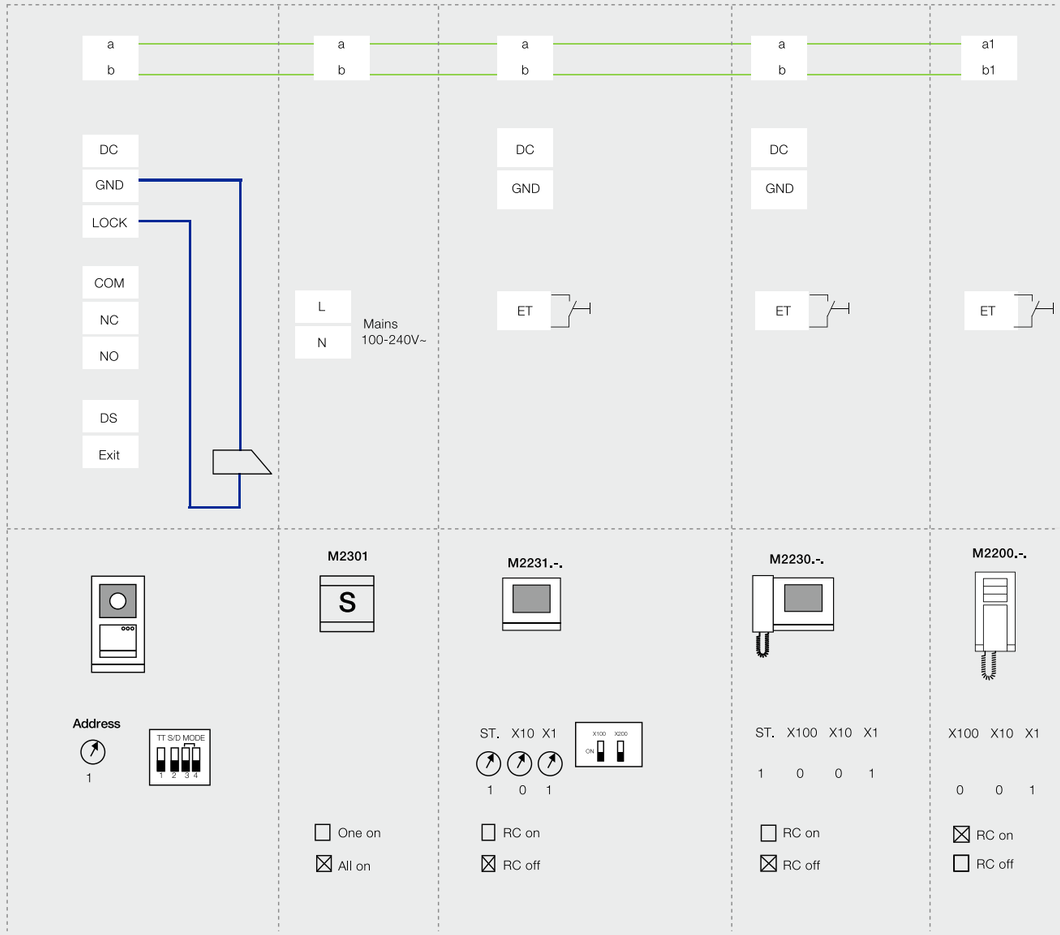
- System type: audio/video combined
- Wiring: looped from devices to devices

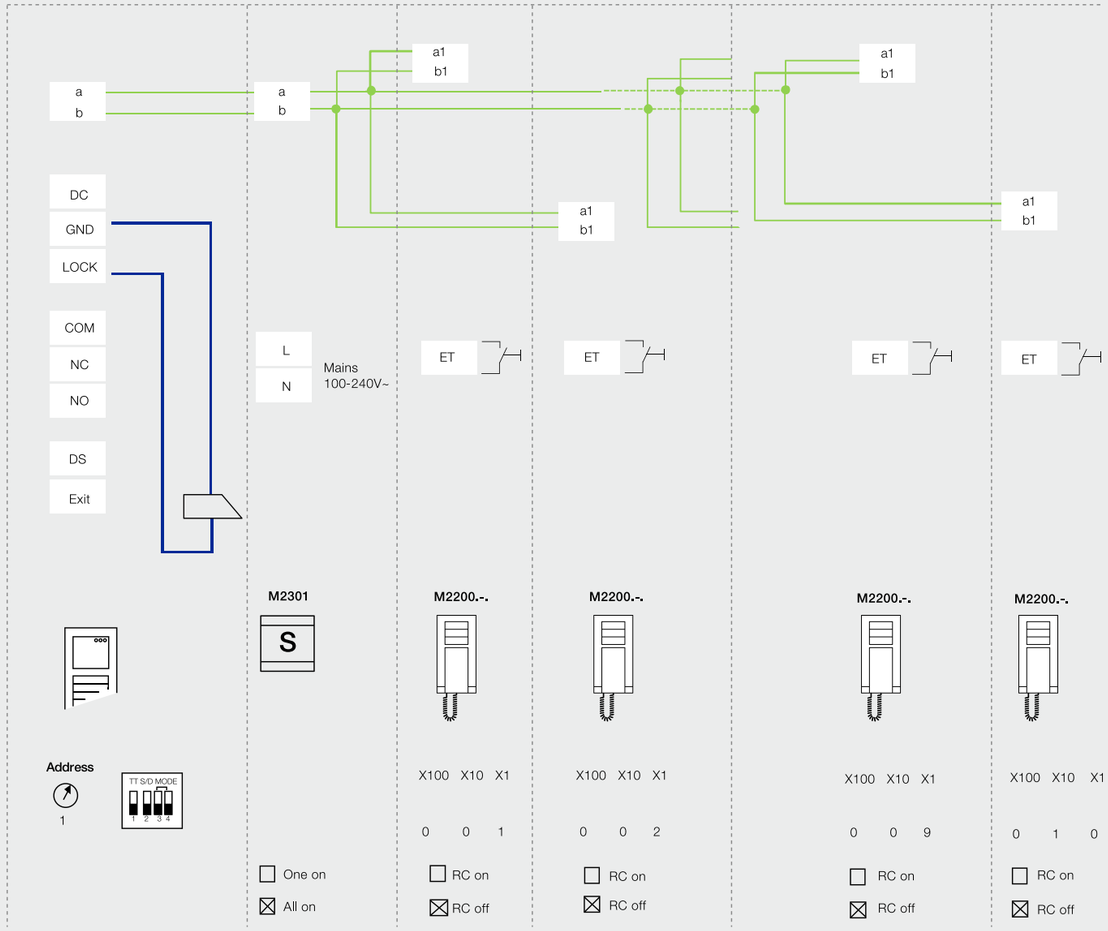


Multi-family, audio only

- System type: audio only
- Wiring: Branch line connection, node
- 1 entrance, 10 apartments, 1 pc of audio handset for each apartments

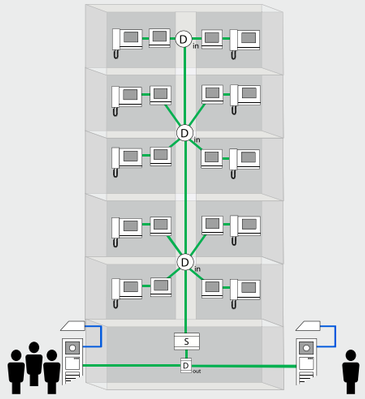


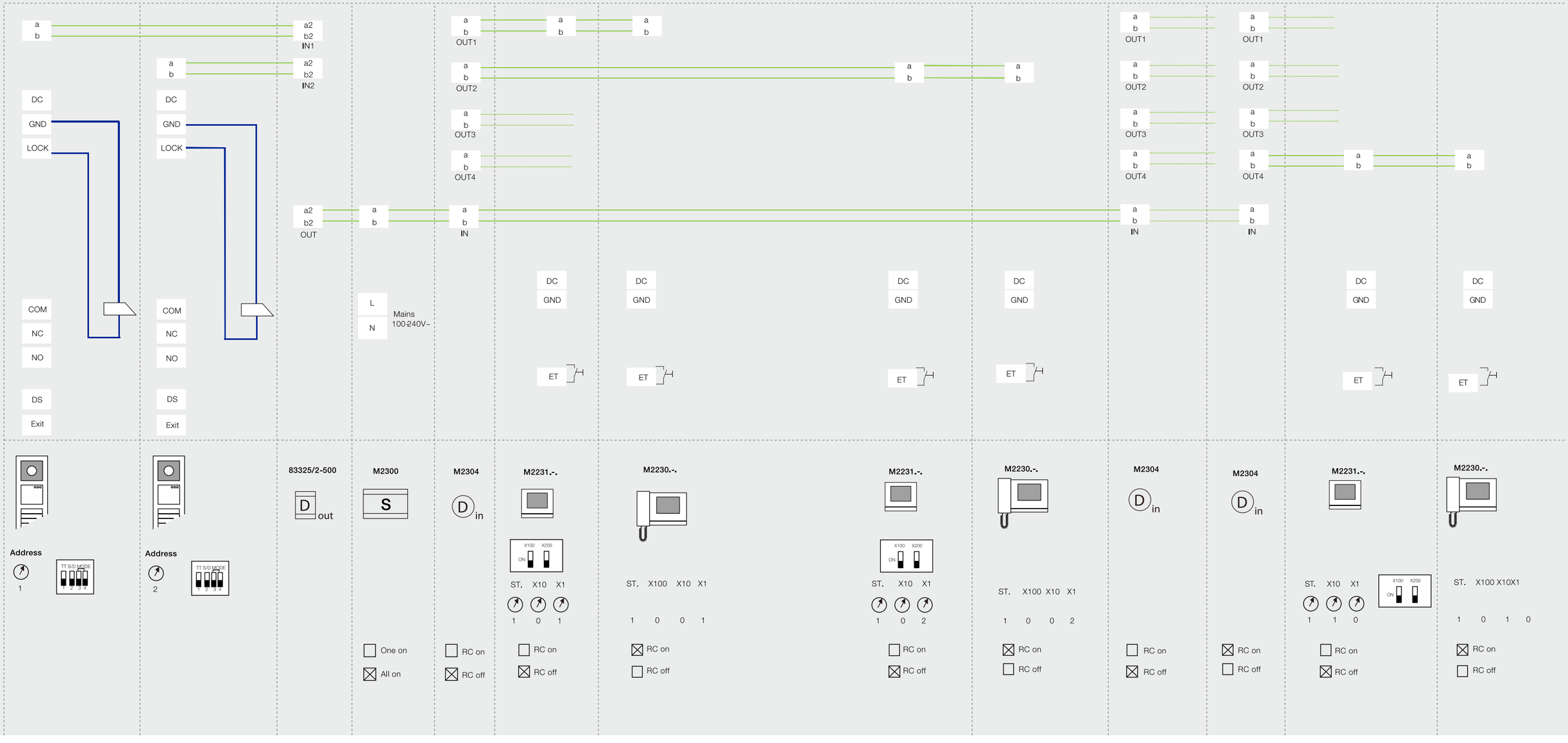




Multi-family, video

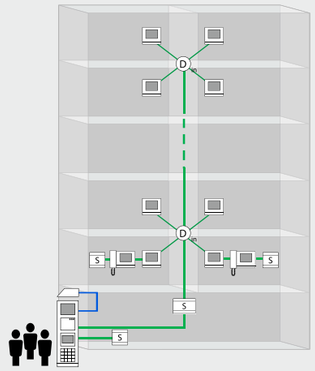
- System type: video
- Wiring: Branch line connection with video distributor
- 2 entrances, 10 apartments, 1 pc of 4.3” video hands-free and 1 pc of 4.3” video handset for each apartment

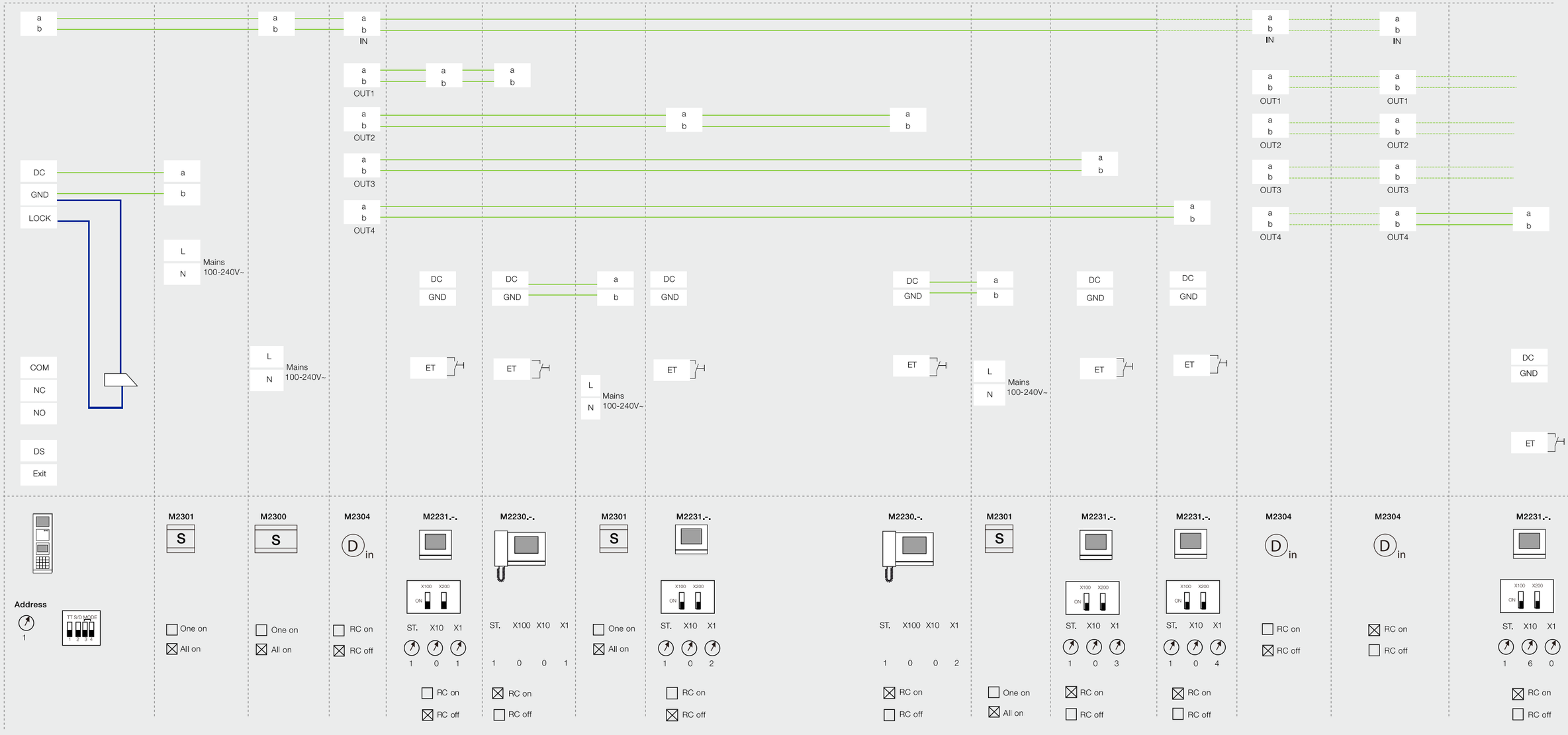




Multi-family, video

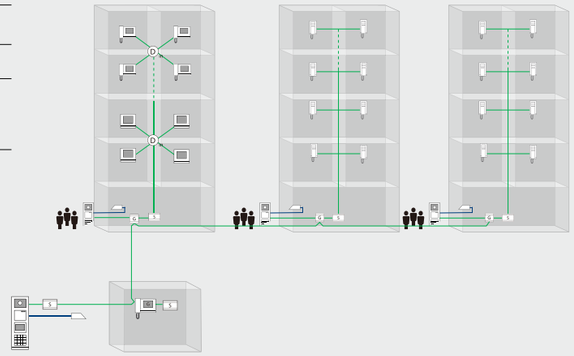
- System type: video
- Wiring: Branch line connection with video distributor
- 1 entrance, 60 apartments, 1pc of 4.3" indoor stations each apartment except apartment No.1 & apartment No.2 with 1 pc of 4.3” video hands-free and 1 pc of 4.3” video handset

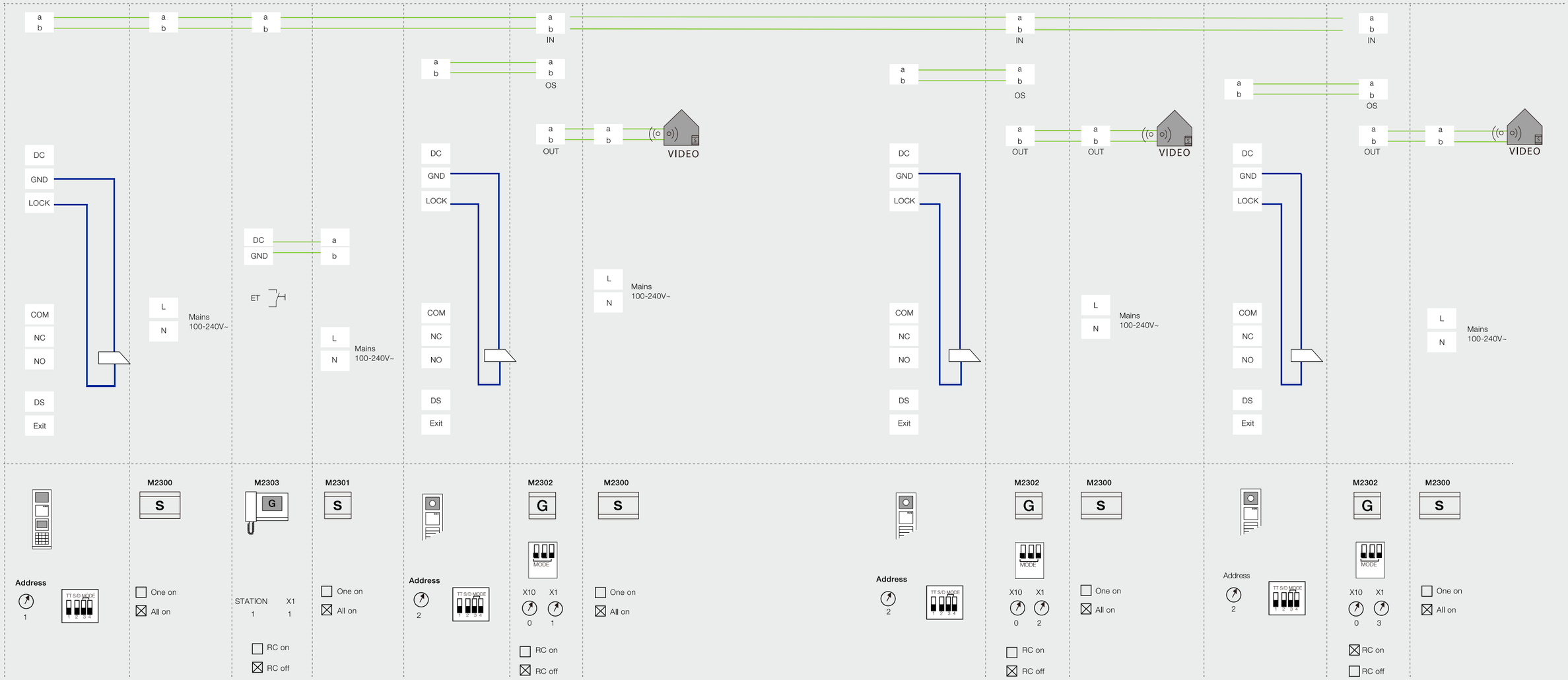




Residential complex, audio/video

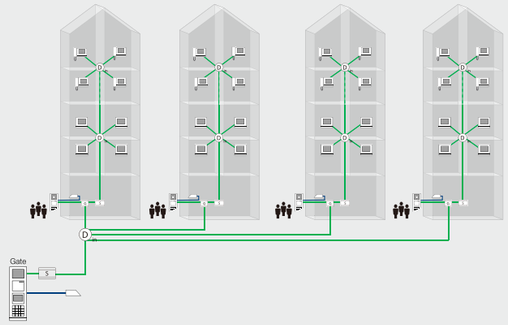
- System type: audio/video
- Wiring: Loop connection for the common part
- 1 gate station, 1 guard unit for the common part, 3 sub-insulated systems (audio/video)

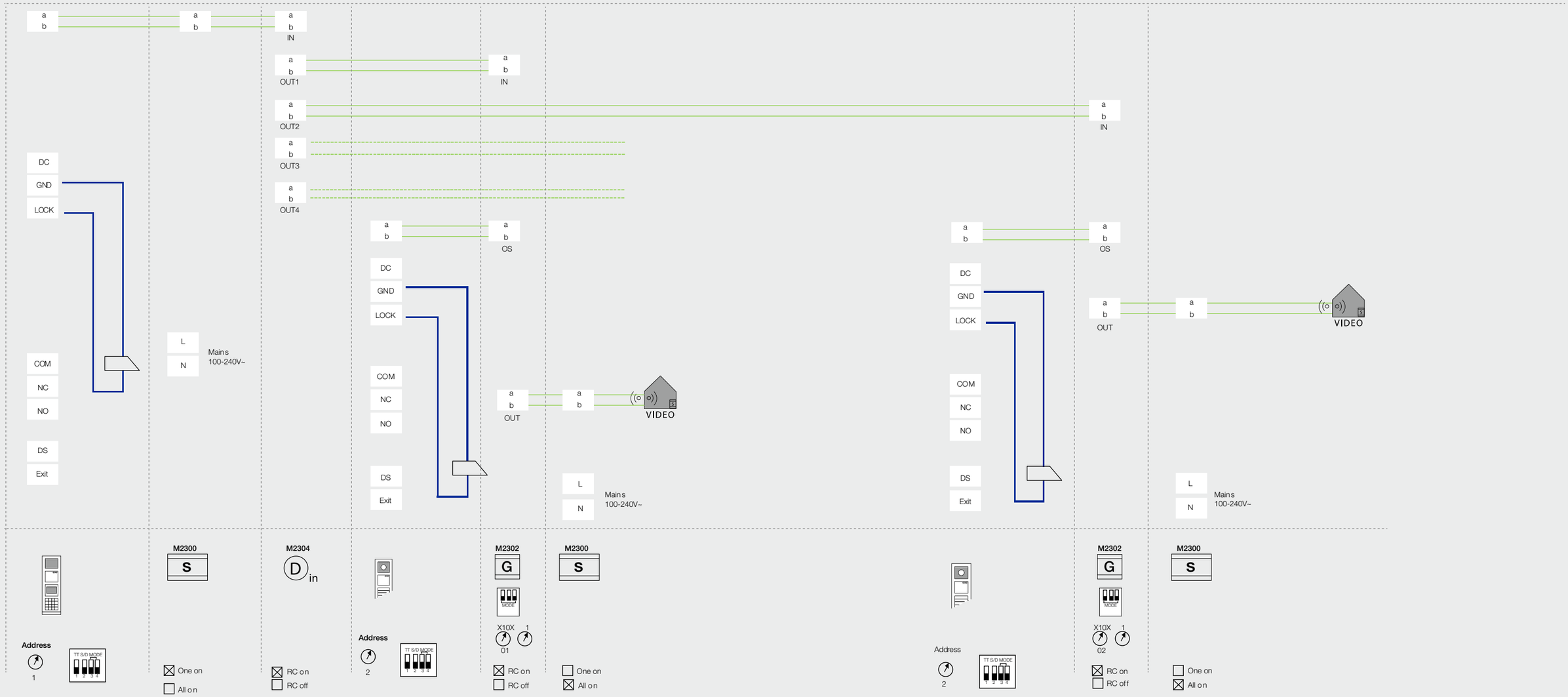




Residential complex, audio/video

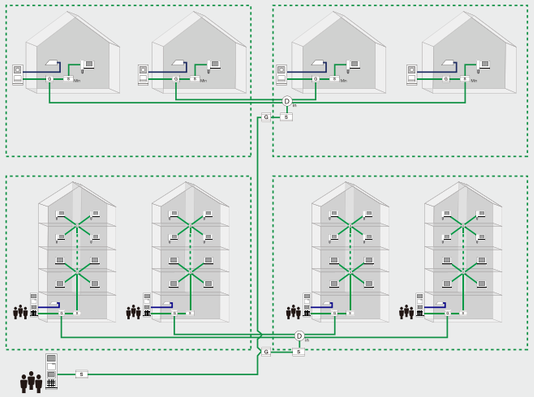
- System type: audio/video
- Wiring: Branch line connection for the common part
- 1 gate station, 4 sub-insulated system (audio/video)

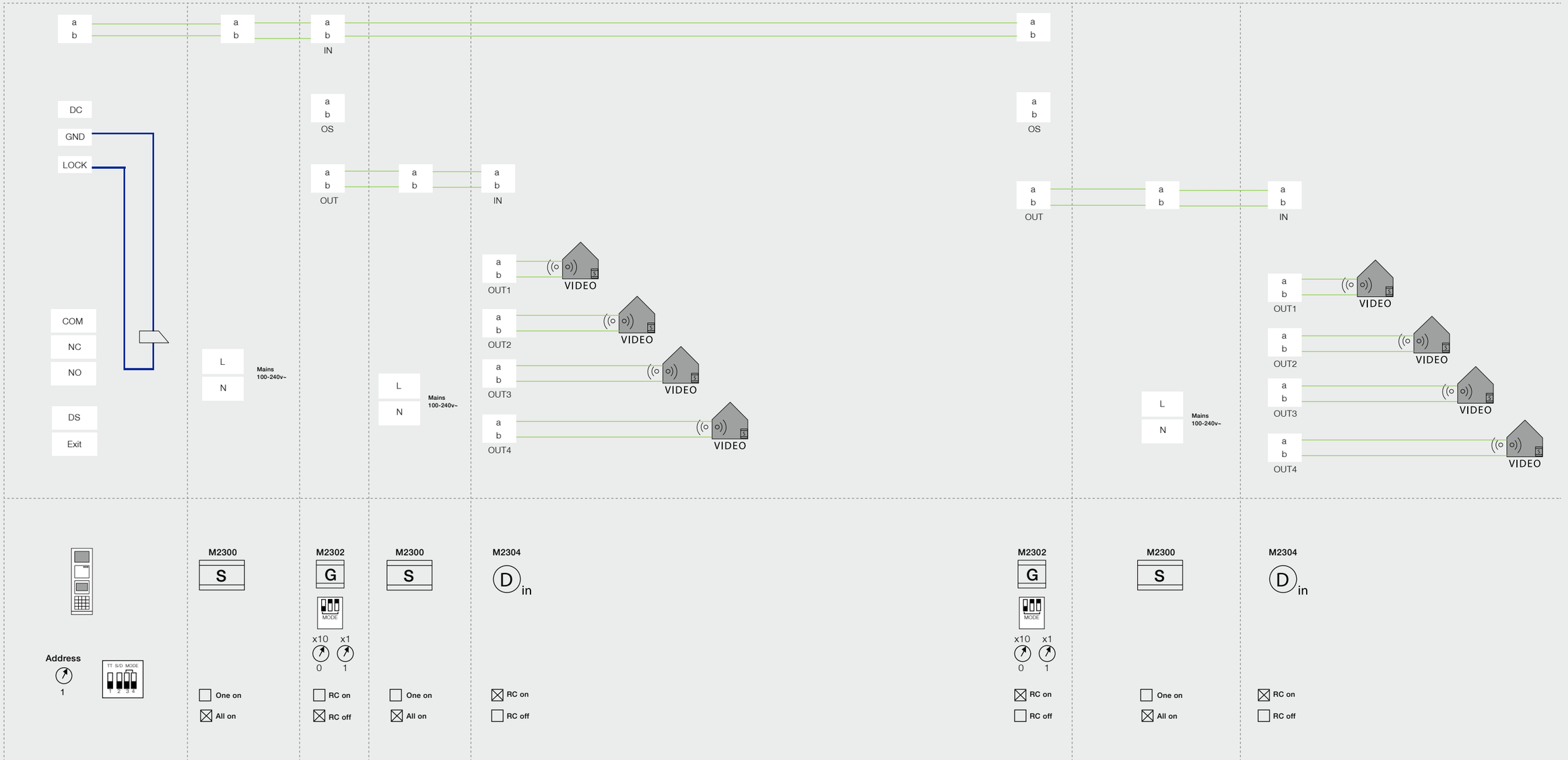




Residential complex, audio/video

- System type: audio/video
- Wiring: Branch line connection with auxiliary power supply
- 1 gate station, 8 sub-insulated system (audio/video)





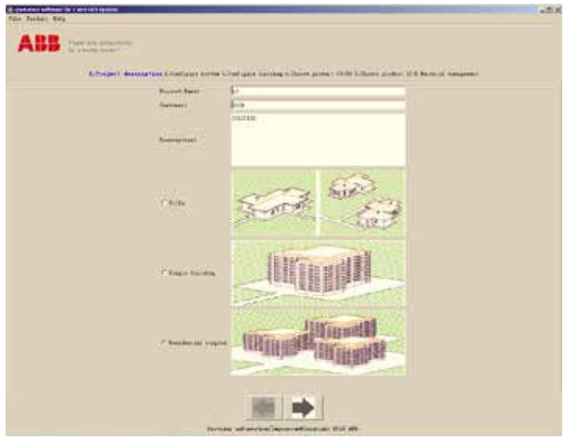
08
Technical assistant tool

Welcome M system provides a series of tools for installation. The technical tools can be downloaded by the given link or scanning the QR code of each tools.

Quotation software

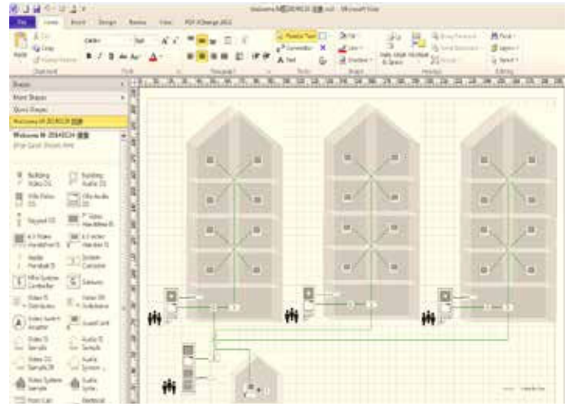
The quotation software enables the easy and efficient system composition and quotation automatically. Three key advantages as below:

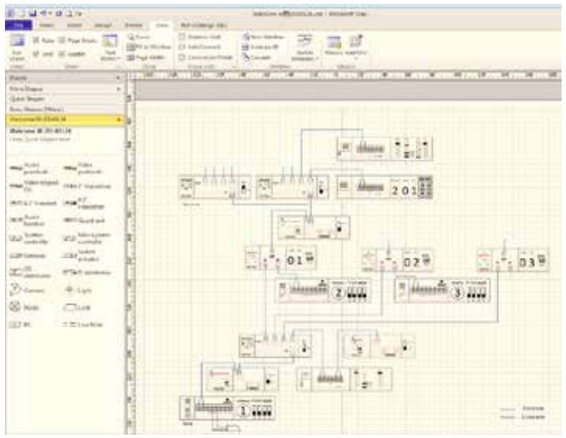
1. Can upload customized price easily for better price management.
2. Can generate possible matched modular outdoor stations(with cost and general effect)for selection.
3. Once the indoor station is also selected, the other system devices will be selected automatically.



Topology wizard

With single family house, multi-family house and high-rise building simulation application scenario to be used as the topology background, it is very easy for the designer or architect to make a "DRAWING" topology. With the Visio sharp source, the designer or architect just need to drag in or out the related device, then the desired topology is done. It is as easy as A-B-C.



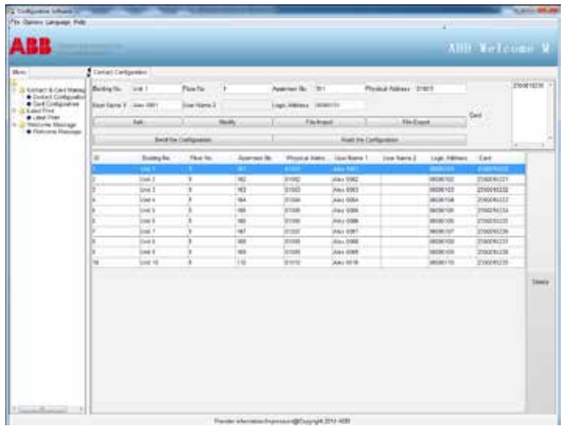


Setting and wiring wizard

The Visio and CAD version product library are available to help the designer, architects and those who need the drawing etc., which will help to make the drawing and setting more efficiently. The wiring and setting will move accordingly once the product device moves.

The product library include:

- Each product device with illustration, connection terminals and setting instruction.
- The 2-wire BUS and normal 2 wire
- The sketch of the third party products, such as lock and analog camera.



Configuration software

With configuration software, just a few data input will be enough to configuration the system.

- It enables the efficient inputting, editing and deleting resident names for keypad outdoor station or keypad gate station.
- It supports easy proximity card management.
- It also supports uploading the data from the excel sheet into the software.
- On-line labeling tool enables the efficient and professional printing 3 difference names or numbers' printing, which are for 3-row push button module or 4-row push button module, or nameplate module.

Installation video

Besides the installation manual, below videos are available for easy and better understanding.

1. Video for assembly modules into an finished outdoor station, mounting and wiring of outdoor stations.
2. Video for mounting and wiring of indoor stations.
3. Video for mounting and wiring of system devices.
4. Video for KIT connection for easier DIY solution.

The attached QR code for the direct and easier scanning and review in mobile phone or tablet

Legend

Terminal devices


Welcome M video outdoor station

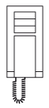

Welcome M audio outdoor station


Welcome M video keypad outdoor station


Welcome M 7“ video hands-free indoor station


Welcome M 4.3“ video hands-free indoor station


Welcome M 4.3“ video handset indoor station


Welcome M audio handset indoor station

System devices/wiring

Welcome M system controller

Welcome M mini system controller

Welcome M gateway

Welcome M video indoor distributor

Welcome M video outdoor distributor

Welcome M video switch actuator

Welcome M guard unit


Electric door opener

Video indoor station

Audio indoor station

Video outdoor station

Audio outdoor station

Video system

Audio system

2-wire bus

Wire

Inputs


Floor call button


Main entrance


Analog camera


Side entrance


Lighting

M/S Master/Slaver configuration

RC Terminal register

Contact us

ABB (United Arab Emirates)
Industries(L.L.C)
P.O.Box 11070 Dubai-UAE
T : +971-4-3147 586
F : +971-4-3401 541

ABB(Turkey) Eletrik San.AS
ABB ELEKTRIK SANAYI AS.
ORGANIZE SANAYI BOLGESI
2.CADDE
NO:16 Y.DUDULLU-ISTANBUL
T : +90 216 528 2281
F : +90 216 528 2945

ABB (Thailand) Limited
61/1 SG Tower; Soi Mahatlekluang 3;
Rajdamri Road 10330, Bangkok,
THAILAND
T : +6626651000
F : +6626651043

ABB(Korea) Ltd.
Oksan Bldg, 10th Fl. 157-33
Samsung-dong
Kangnam-ku, 135000, Seoul, Korea
T: +82 2 528 3177
F:+ 82 2 528 2350

ABB (India) Limited.
Plot No.1, Sector-1B, I.I.E.SIDCUL,
Haridwar-249403.India
T : +91 1334 235447
F : +91 1334 235449

ABB Australia Pty Limited
601 Blackburn Road
3168, Notting Hill, Victoria, Austrilia
T : +61 3 8577 7139
F : +61 3 9545 0415

ABB (Vietnam) Ltd.
Kmg. National Road 1A,
Hanai Vietnam
T : +84 4 3861 1010
F : +84 4 3861 1009

ABB(KSA)Electrical Industries Co. Ltd.
P.O.Box 325841,Riyadh 11371
T:+966 11 484 5600
F:+966 11 206 7609

ABB (Russia) Ltd.
3121 WIRING ACCESSORIES
30/1 bld.2, Obrucheva str.RU
T : +7 495 9602200
F : +7 495 9602220

ABB Malaysia Sdn Bhd
Block A, Level2, Lot 608, Jalan
SS13/IK 47500 Subang Jaya
Selangor
Darul Ehsan, Malaysia
T : +603-5628 4888
F : +603-5635 8200

ABB (Hong Kong) Limited
3Dai Hei Street, Tai Po Industrial
Estate, Tai po, Hong Kong
T : +852 2929 3912
F : +852 2929 3505

www.abb.com

2TMC107015M0201
06-2014 SH-SO 2000

Power and productivity
for a better world™