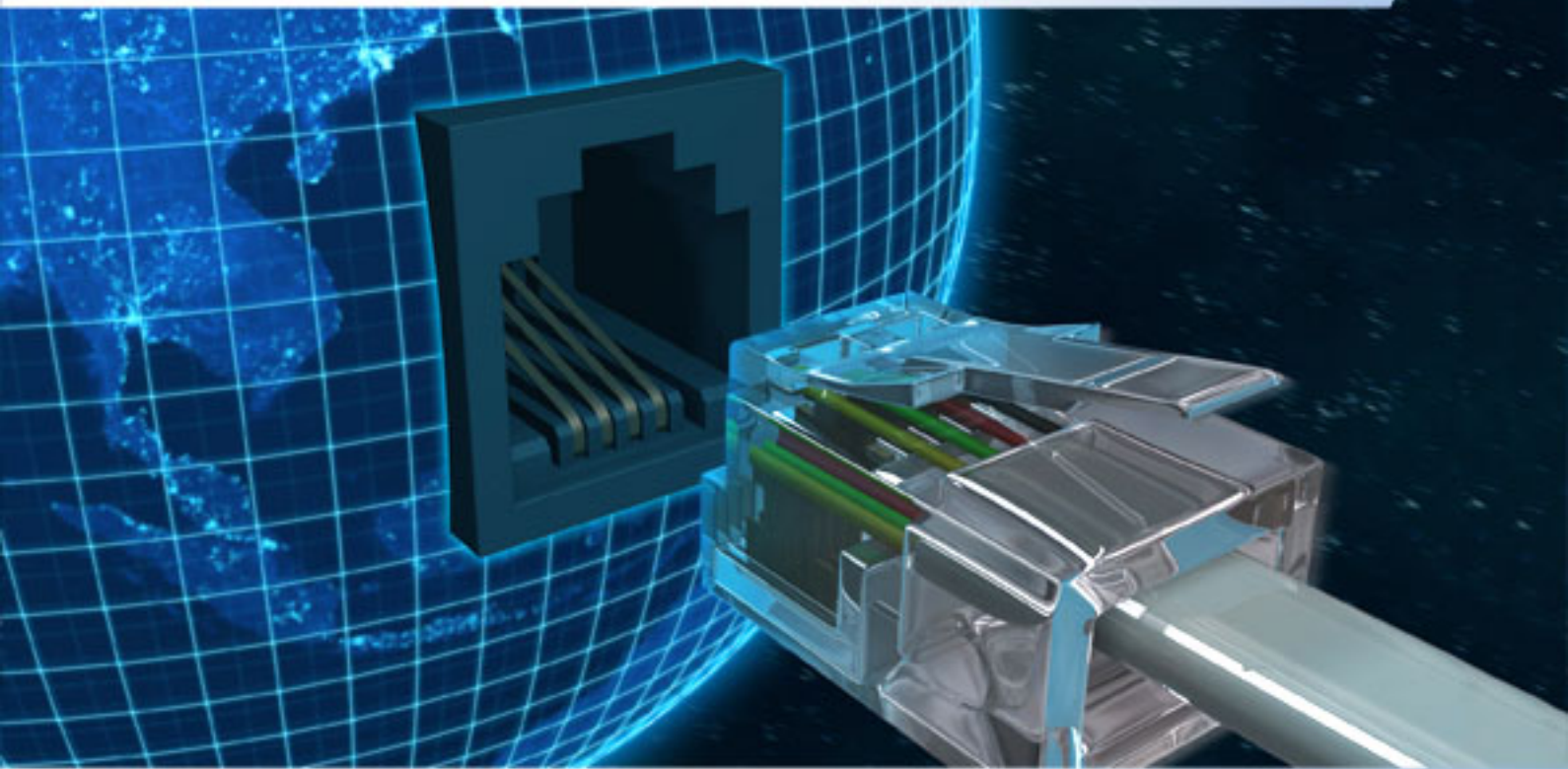


2-WIRE IP SYSTEM

TECHNICAL GUIDE 2017



Chapter 01 General Description

1. System Description

Thanks to the IP technology, the traditional 2-wire analog video entry system steps into a new generation, the 2-wire IP hybrid network system. By taking the advantage of IP network, the system becomes more flexible and versatile, higher performance system with longer distance, multichannel operation and switchboard. Therefore, with the powerful IP products and tools, the system is able to satisfy all kinds of applications needs:

- Villa group
- Apartment buildings group
- High-rise building
- Residential Complex
- Commercial building
-

As IP network is a backbone bus which is ideal for simplifying installation. The system can share the existing Ethernet(LAN) network, without a dedicated network cabling and cost, so it also represents the ideal solution for renovation of existing systems.

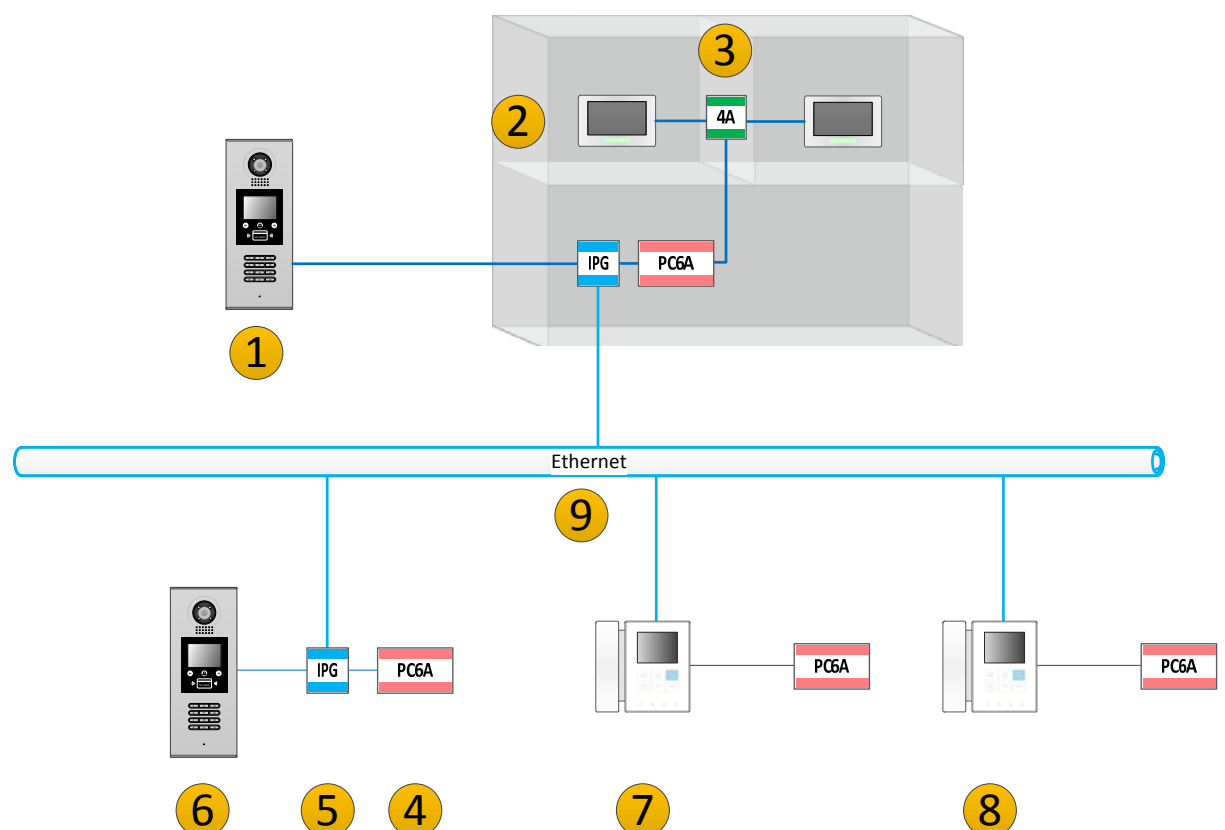


2. System Features

2.1 System Elementary Composition

In order to create a 2-wire IP hybrid network system, in addition to the existing standalone 2-wire subsystem, the IP gateway is necessary to integrate the existing system with IP network. Besides, as a network system, a common door station and guard station is beneficial to the management of all the services from the system to users.

- ① Building Door Station
- ② Indoor Monitor
- ③ Video Distributor
- ④ Power supply
- ⑤ IP Gateway
- ⑥ Common Door Station
- ⑦ Guard Station 1
- ⑧ Guard Station 2
- ⑨ Ethernet network



2.2 Key Terminology

In order to logically and easily understand what the system can do and how it works, it is very necessary to have an over view of some key terminologies.

Namelist

Namelist is composed by device address, input and name(user name or device name). It likes a address book for the whole system.

- For 2-wire subsystem, it is a local name list which will be downloaded to building door station and indoor monitor.
- For IP network, it is a global namelist used by IP devices, including common door station and guard station.

Device address

In 2-wire IP system, every device has its own independent address.

For 2-wire subsystem:

- Monitor Device Address(Abbr: IM_ADD): the address is set by DIP switch, max.32 addresses.
- Door Station Device Address(Abbr: DS_ID): the address is set by DIP switch or parameter settings, max.4 addresses.

For IP network, the device address is the IP device address (Abbr: IP_NODE_ID) which is assigned to IP Gateway and Guard station.

IP device address and 2-wire subsystem device address compose the Global address.

Input

Input is call number that typed on door station or guard station to connect indoor monitor or other door station and guard station. It is assigned by DX-Builder software manually and without actual relation with device address.

If lunch a call from IP network device to the device in a 2-wire subsystem, the input prefix must be integrated.

2.3 System Functions

In order to explain the system functions more visualized, a evaluated demo system example is showing for better understanding.

IM_ADD = 02
INPUT = 18
NAME = JIM02

2.3.1 Calling

1 → 2

Call from building door station to monitor

By device address: press 02 to launch call

By Input: press 18 to launch call

By Name: select JIM02 from namelist to launch call

6 → 2

Call from common door station to monitor

By device address: press 0110002 to launch call

By Input: press 3218 to launch call

By Name: select JIM02 from namelist to launch call

7 → 2

Call from guard station to monitor

By device address: press 0110002 to launch call

By Input: press 3218 to launch call

By Name: select JIM02 from namelist to launch call

2 → 7

Call from monitor to guard station

By device address: inapplicable

By Input: inapplicable

By Name: select GL1 from namelist to launch call

By direct icon: press 'call guard unit' to launch call

7 → 1 6

Surveillance from switchboard to (common)door station

By device address: press 011001 to activate surveillance

By Input: press 3261 to activate surveillance

By Name: select DS1 to activate surveillance

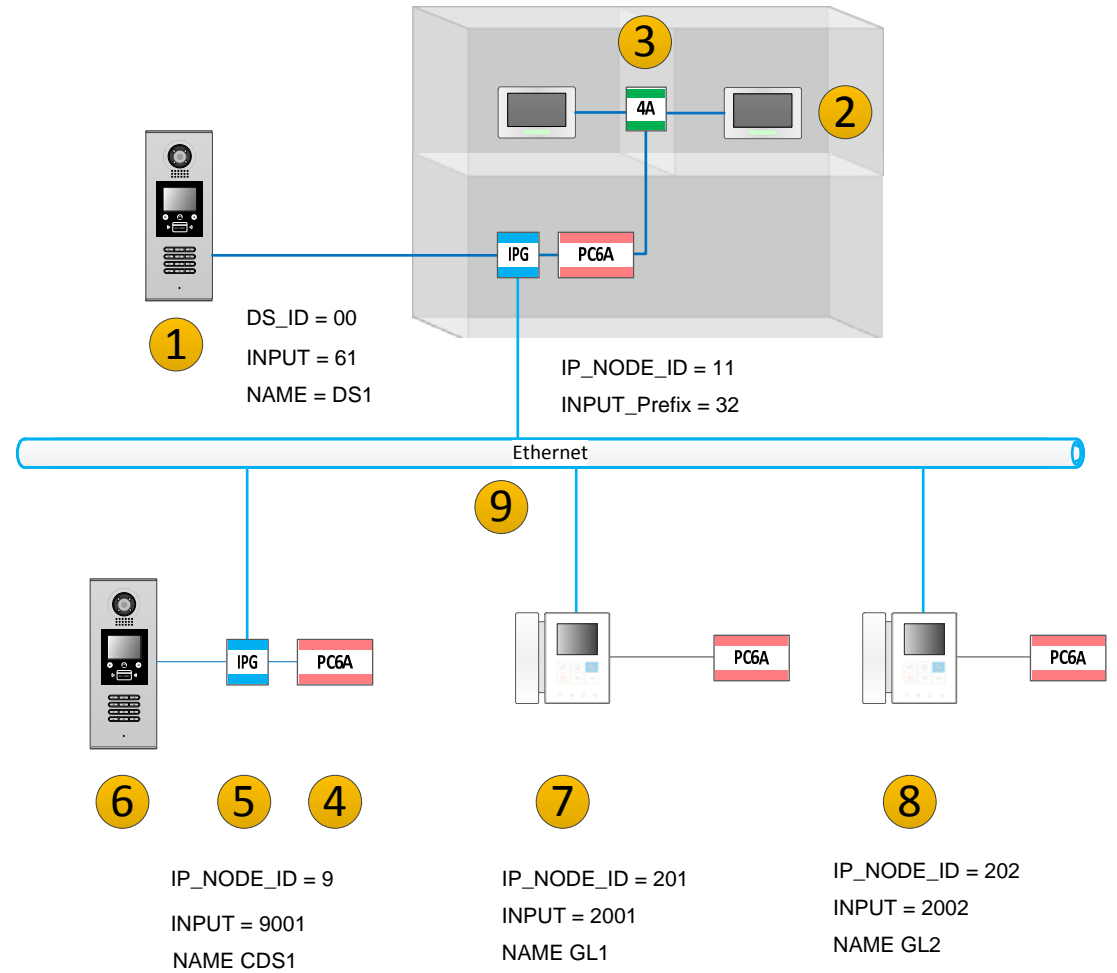
7 → ?

Surveillance from switchboard to camera

By device address: press 001005 to activate surveillance

By Input: inapplicable

By Name: inapplicable



1 6 → 7

Call from (common)station to guard station

By device address: press 20100 to launch call

By Input: press 2001 to launch call

By Name: select GL1 from namelist to launch call

7 → 8

Call from switchboard to switchboard

By device address: press 20200 to launch call

By Input: press 2002 to launch call

By Name: select GL2 from namelist or press GL2 to launch call

2 → ?

Surveillance from monitor to network video

By device address: inapplicable

By Input: inapplicable

By Name: inapplicable

By direct icon: press 'monitor' activate surveillance

3. System Capacity and Limits

The 2-wire IP system capacity is determined by the valid address number of the devices. There are two kinds of addresses used in the system:

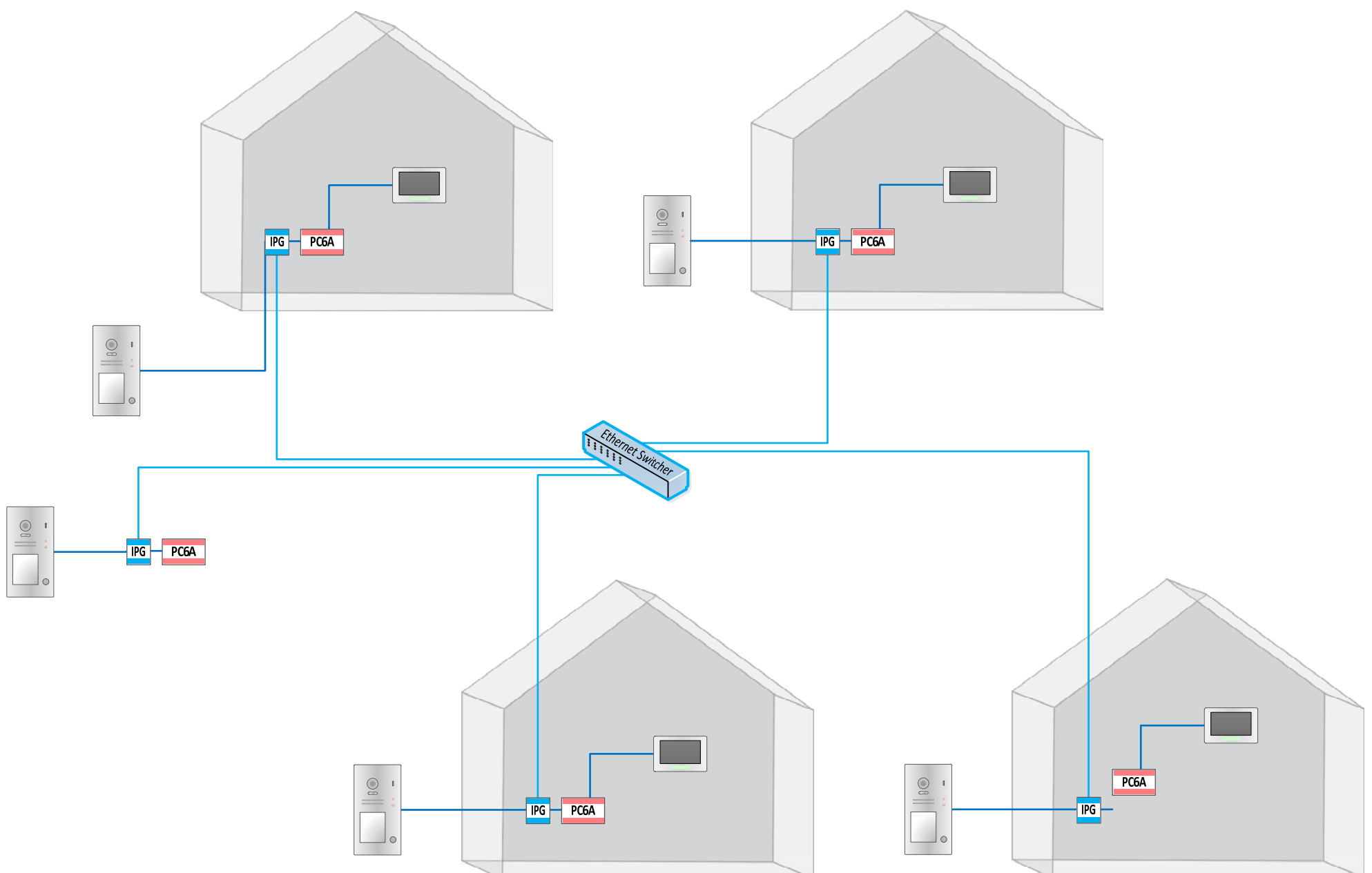
- For 2-wire subsystem, every address of monitor and door station are independent under each IP gateway.
- For IP network, the total number of IP addresses for all the buildings and common parts should less than a certain value.

Total Address	Door Station	Monitor	IP Gateway	Switchboard
2-wire Subsystem	4	32	-	-
IP Network	-	-	199	32

4. Examples for Typical Applications

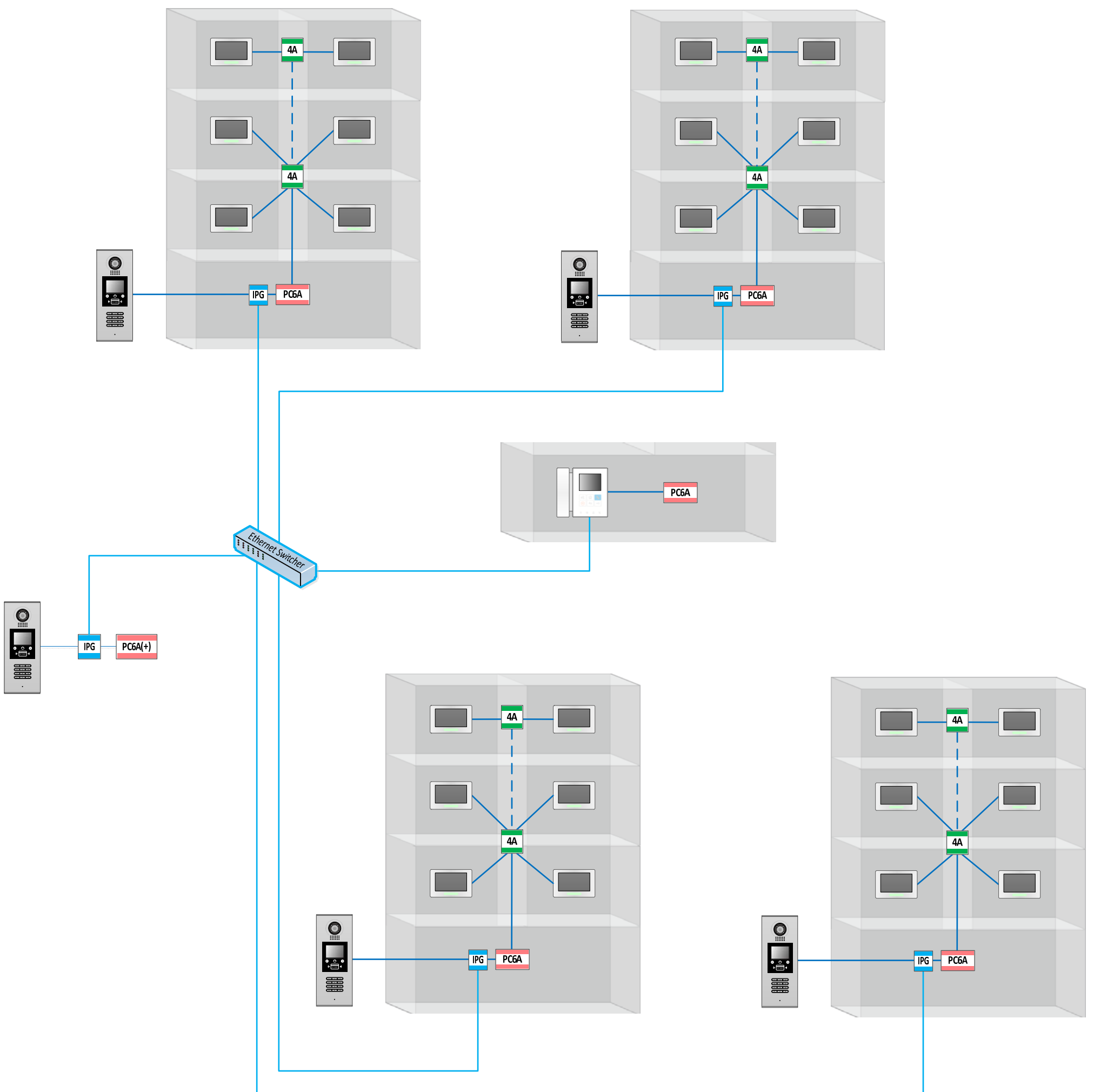
Example 01 - Villa Group

For a group of villas, a common door station can be used for main entrance. The IP gateway is installed in each villa' entrance to ensure the independent operation of each villa and links the whole group as a networked system. The common door station is able to call any indoor monitor in any villa belong to the network system, and each 2-wire subsystem of villa is insulated from the network backbone bus because of IP gateway.



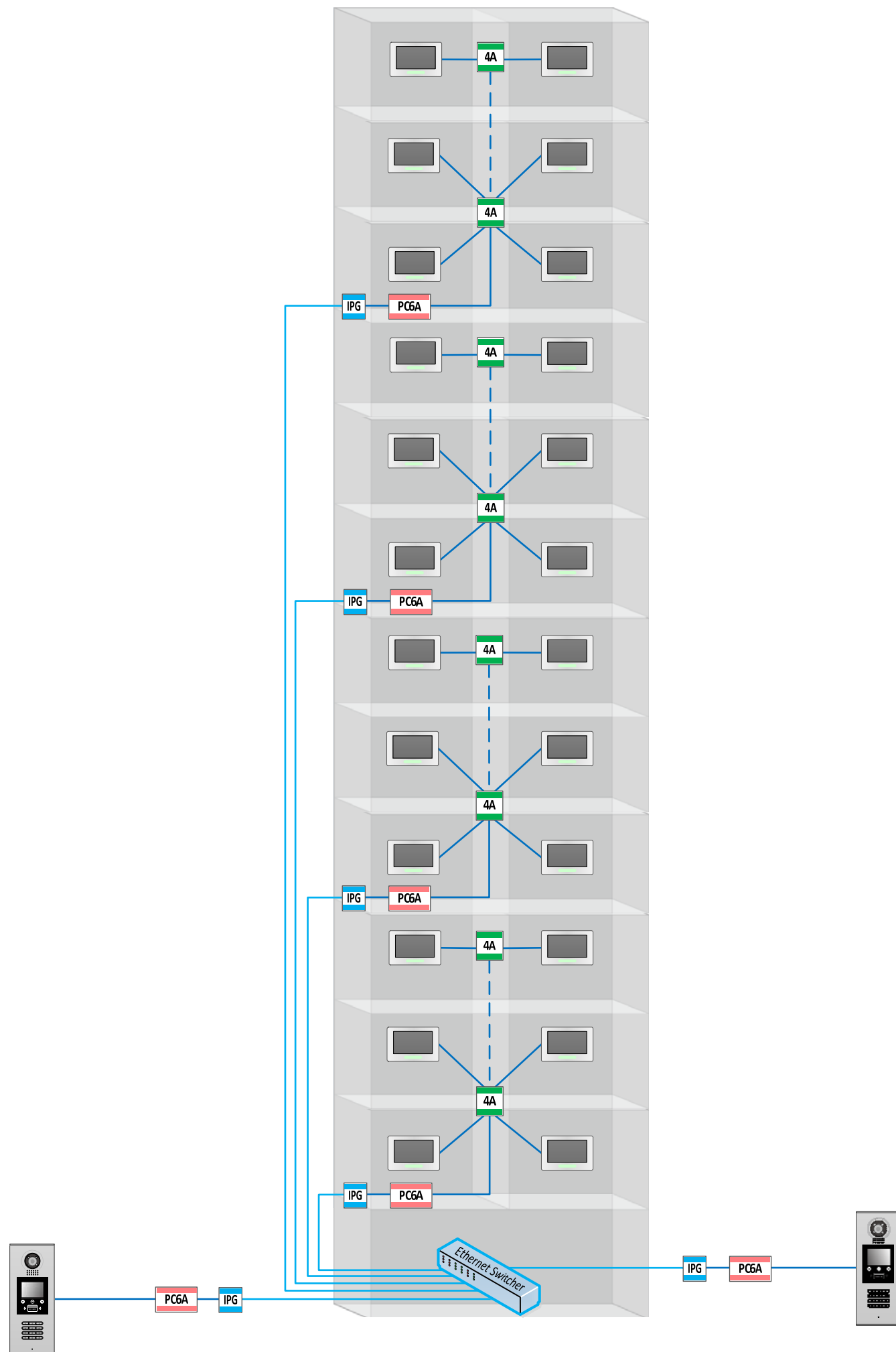
Example 02 - Apartment Buildings

A group of apartment buildings linking into a IP networked system is similar with villa group. The only difference is wiring inside the buildings which is recommended to use video distributor to make star connection. For better buildings management, a guard station can be installed in the service/guard room, for interactive communication with users and visitors.



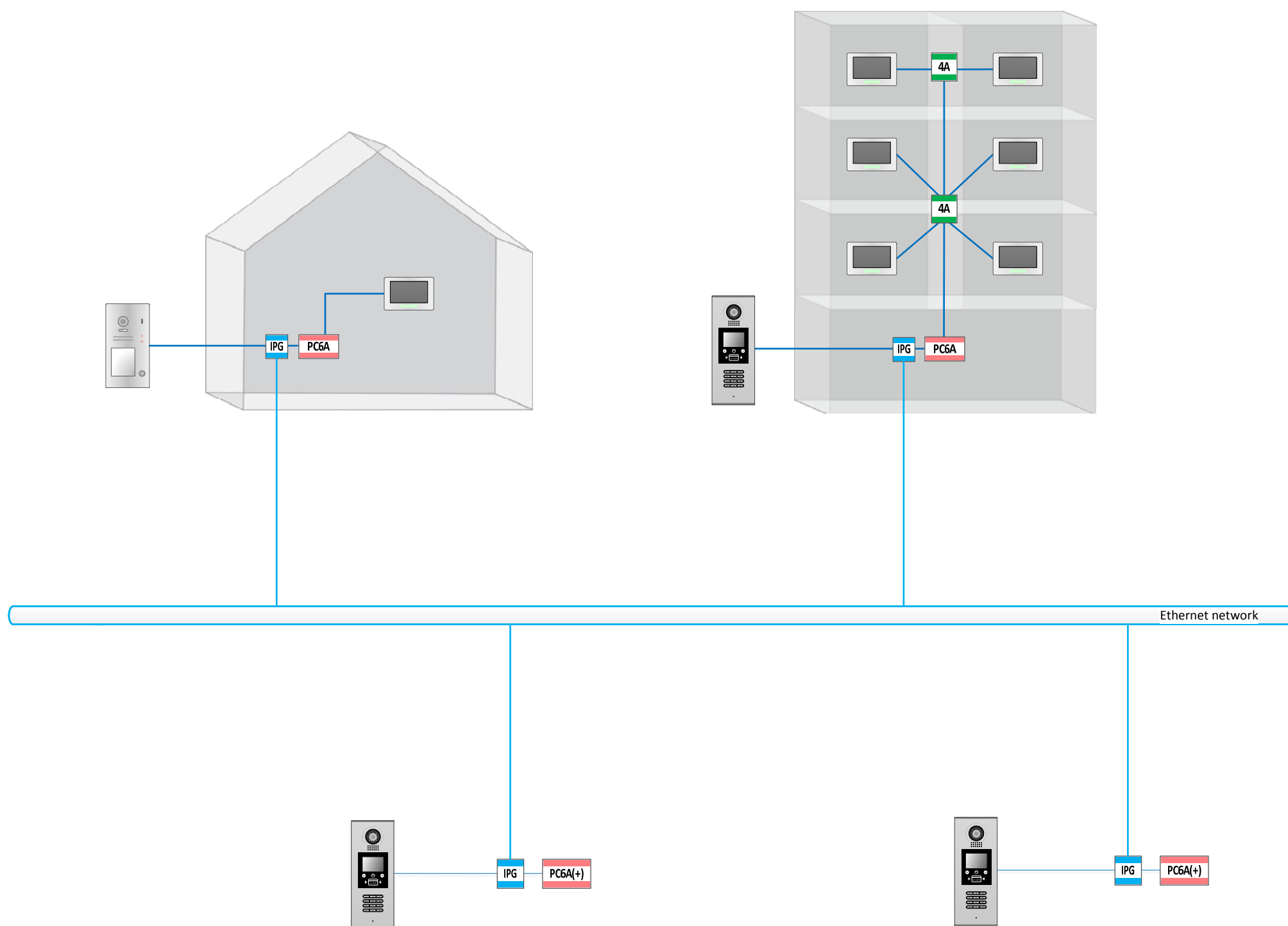
Example 03 - High-rise building

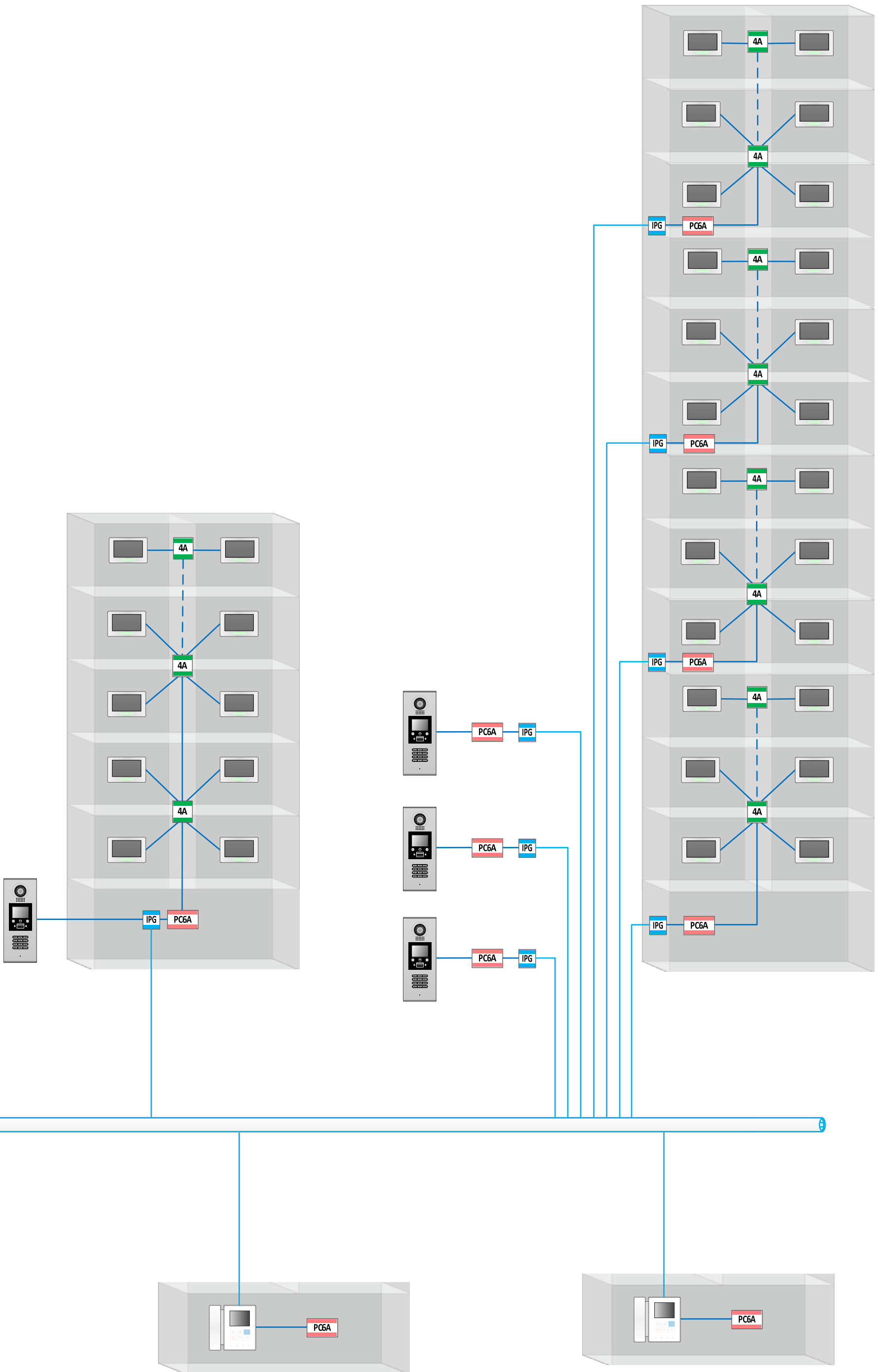
If one building has more than 32 apartment that the traditional 2-wire system can not cover, the IP gateway can be used to expand the system capacity to reach max. 512 residents. The high-rise building is divided into several groups, every group contains max.32 residents.



Example 04 - Residential Complex

For residential complex that may include villas, apartment buildings and high-rise buildings, usually common door station(s) are presented with guard station. The gateway installed in each villa and building ensures their independent operation within the building and links the whole group as a networked system.





Chapter 02 System Planning

1. Planning the system

System planning compose by two parts: 2-wire subsystem and IP network, 2-Wire subsystem is insulated system with only 2-Wire easily connected, IP network is to network those insulated system to a united system, and DT-IPG is the IP network convertor unit.

1.1 Count of DT-IPG

It is important to know how many DT-IPGs are required for the system, by the capacity of insulated system and network system, to count the quantity of DT-IPG shall be follow by below rules:

For Common door stations:

Each Common door station require one door station, that is not allowed to connect multi door stations via distributor connect with DT-IPG and work as common door station.

For Apartment within 32 video monitors:

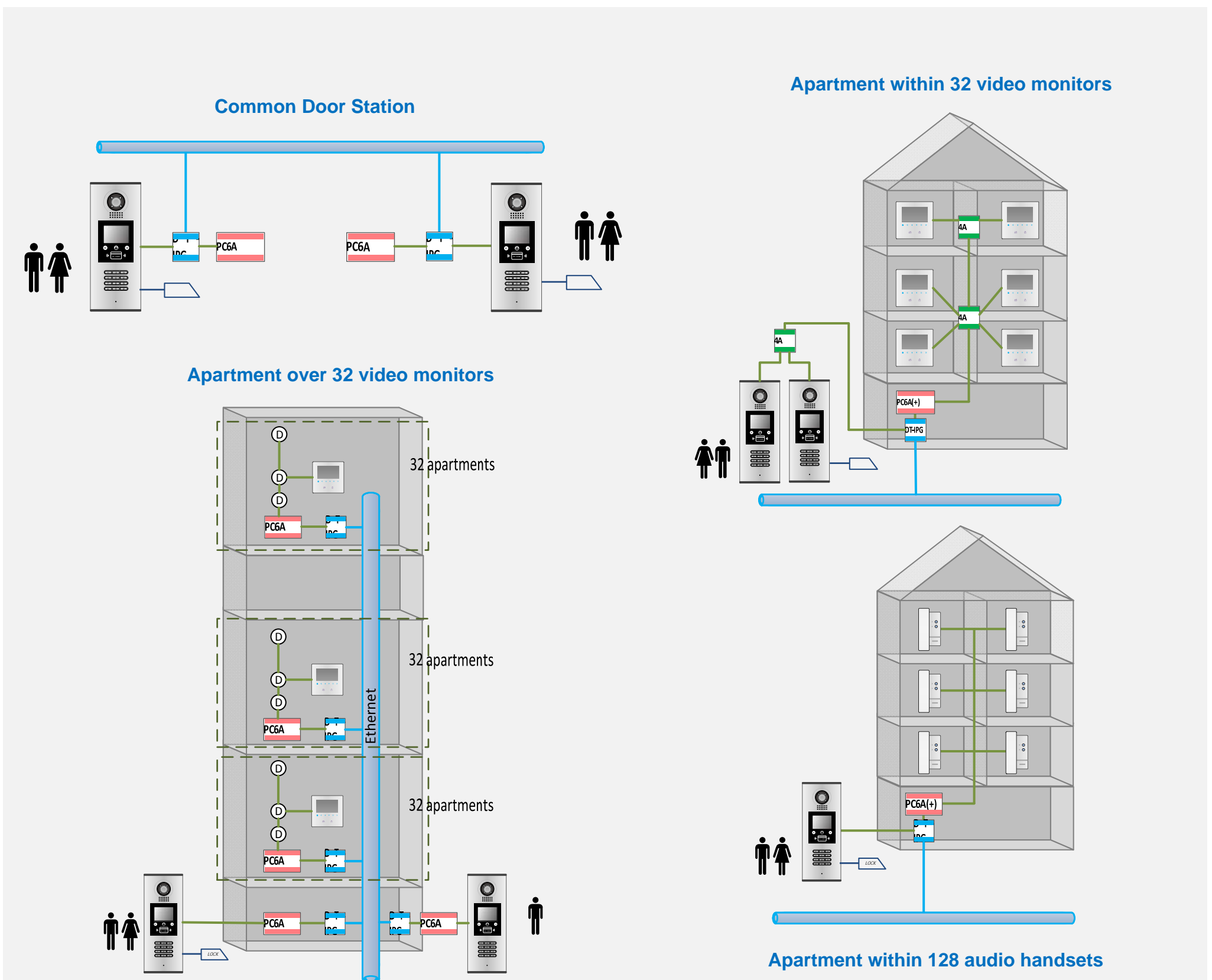
Apartment building which within 32 apartments requires only one DT-IPG, with this DT-IPG is allowed to connect with maximum 3 building door stations

For Apartment over 32 video monitors:

Apartment building which content more than 32 apartments requires at least 3pcs DT-IPGs. For the building door stations, each building door station shall be connected with one DT-IPG, if multi building door stations are needed, extent with a DT-IPG for each building door station. For monitors, each 32 monitors required one DT-IPG, and extent with a DT-IPG for each more 32 monitors. This rule also works if using DT-IPG to build up a insulated high-rise building

For Apartment within 128 audio handsets:

Apartment building which content within 128 audio handsets requires only one DT-IPG, and is allowed to connect with maximum 3 door stations



1.2 Networking between DT-IPG

DT-IPG network each insulated system to united system, in each insulated 2-wire system the connection is same as before, via connect with DT-IPG easily connect LAN with a LAN switch and set DIP switches on DT-IPG the networking will automatically adapt.

IP_Node_ID addressing:

There are total 6bit dip switch for the IP_Node_ID addressing, if more than 63pcs DT-IPG is required, than you need to commissioning the IP address via DX-Builder software. The addressing within 63pcs are still use DIP switch commissioning.

DX-Builder:

This is a software for commissioning and networking for the system. It is not a must to use it until you need:

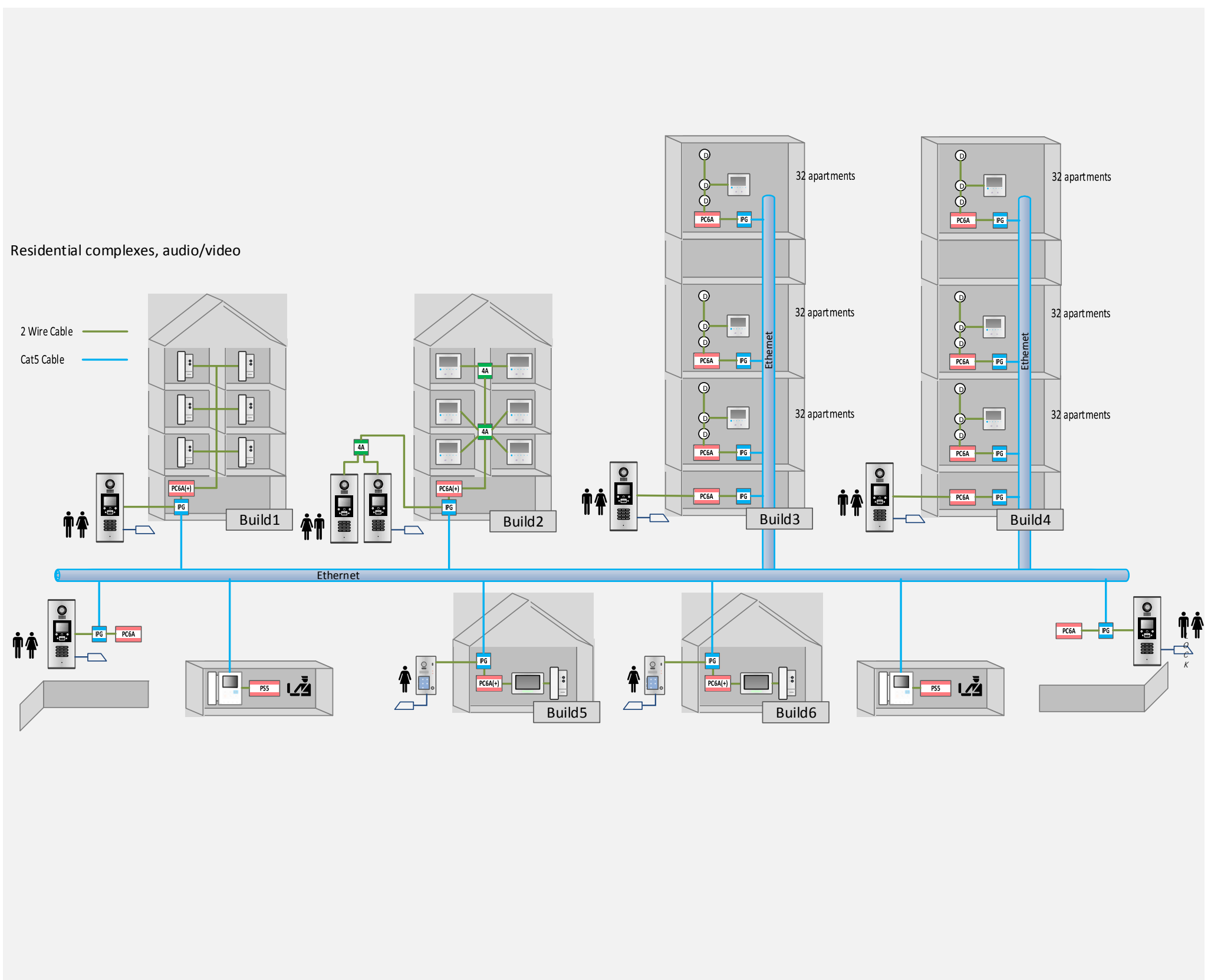
- Name-list function on DMR18S..
- With buildings that more than 32 apartments.
- Special needs on Input calling codes customize.

Fast Self-commissioning:

If project without any Name-list/Input require, and every building in the system requires no more than 32 indoor monitors. The system work without any special commissioning via software. Just need to set DIP switch and it will work, and for next work you can easily to use DX-Builder to load this project only to add Name-list

High-rise building's network:

If high-reis building are exist in the system extend each more 32 Indoor monitors with one DT-IPG and all those DT-IPG shall be connected in the same network with all other DT-IPG in the system. Commissioning files will make this building door station insulated to call only this building



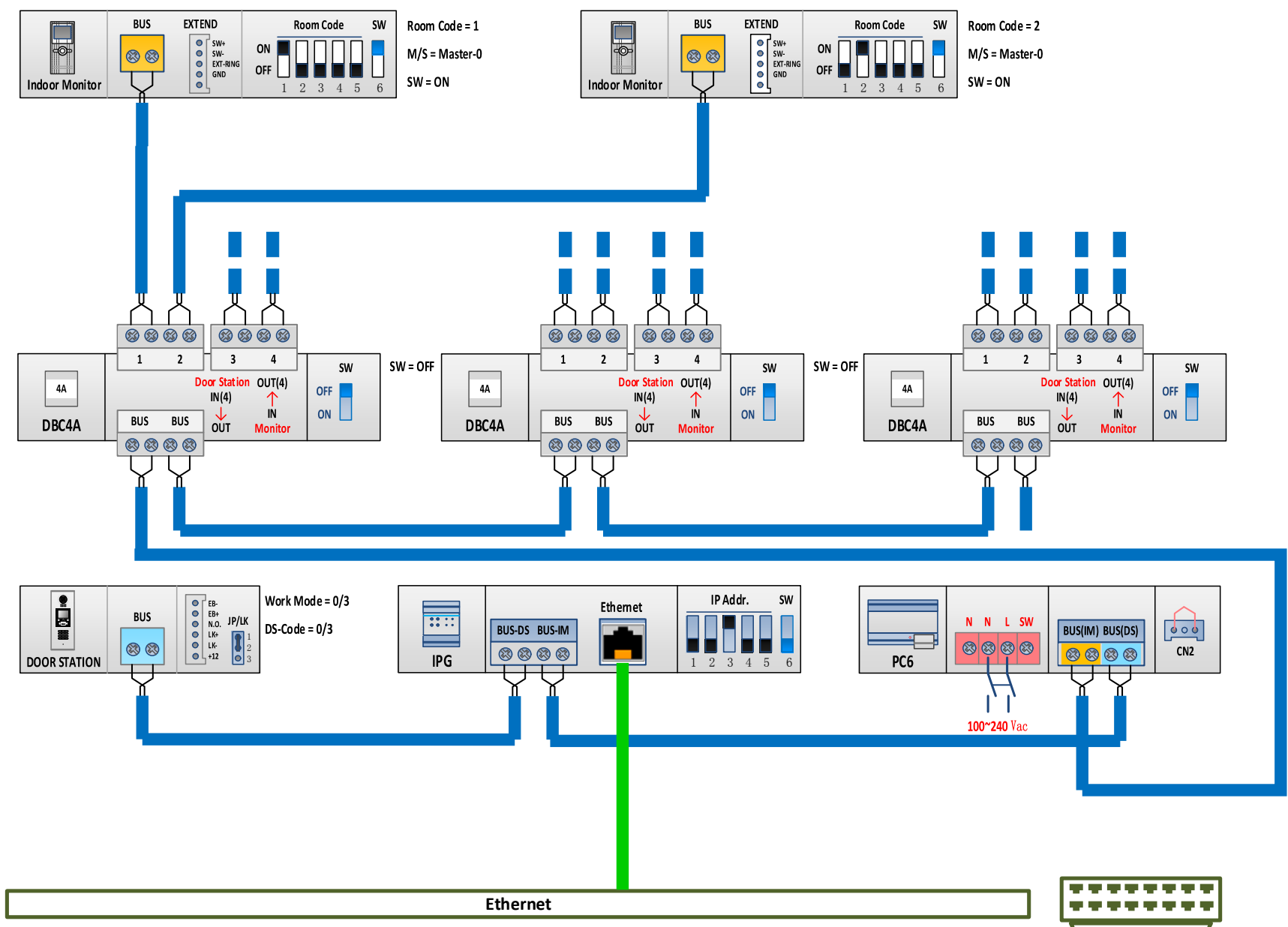
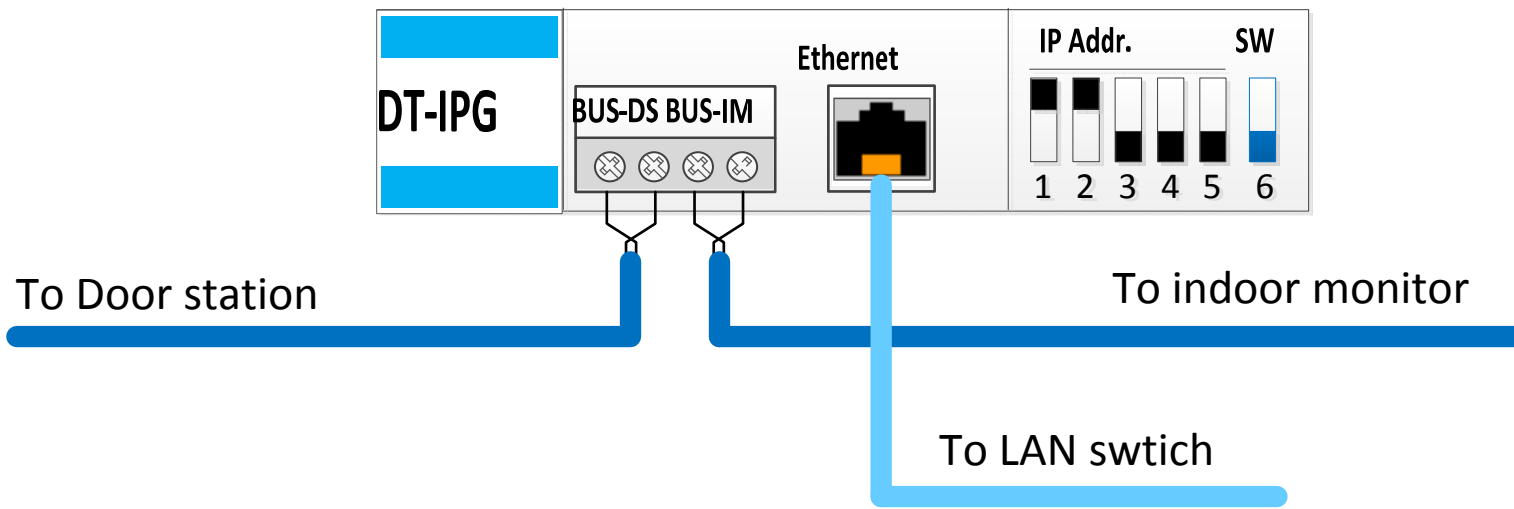
1.3 Connection

DT-IPG just like any other 2-Wire accessory, it can be connected anywhere on the BUS line of 2-Wire, no matter if the DT-IPG is working as a Common door station or as an apartment, the connection is always similar.

Typical connection

For example, in a general building with 32 monitors, this connection can be modified to use as a common door station and an extent monitor.

Remove all indoor unit's connection, it is for a common door station or a high-rise building's door station, remove all building door stations as extent monitors for high-rise buildings.



2. Typical system

Either by providing an all-round and easy-to-understand table to grasp all the possibilities of the combination of door station, indoor monitor 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.



Villa Group

IP network can be set up with one system IP network device or with multi-system IP network devices. For both types, every IP network device makes an insulated subsystem.



Apartment Group

For system, In the building part, visitors and residents can communicate between building door station and indoor monitor. In the common part, if a guard station is present, the visitor and guard can communicate with each other.



High-Rise Building

2.1 Typical Villa group

It can be used for the application of a group of villas. It supports 199 such projects for application. The address of villa should be set one upon another in sequence from 1 to 199.

For more than 63pcs DT-IPGs require DX-Builder to commissioning the system.

Here is the example that within 63pcs DT-IPGs and which can use fast self-commissioning settings to easily commissioning the system.

IP_Node_ID Map

Each DT-IPG require to sign with a unique IP device address to identify it in the system, in fast self-commissioning the IP device address' default setting is the same with the DIP switches' addressing, and also this indicate the IP device address is end with the same value.

IP_Node_ID Map is according to the IP_Node_ID to simplify the system, to understand how to call in self-commissioning.

Calling

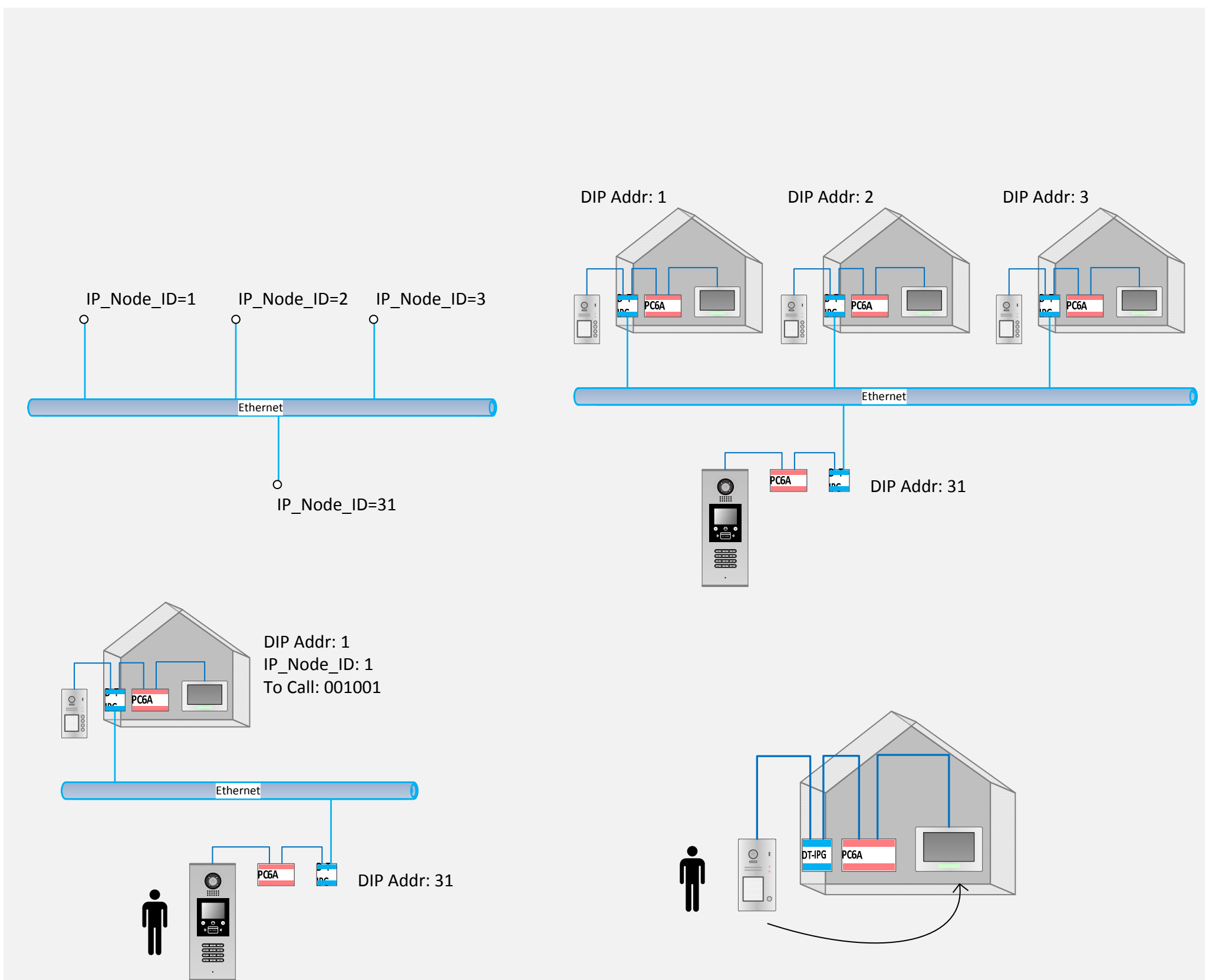
Without any setting, just according to the DIP switches to commissioning the system, the system shall work as:

On each villa's building: press first button to call.

On common door station: input 001001 to call 1st villa's monitor; input 002001 to call 2nd villa's monitor

Advance settings

For customize the input calling code/Namelist function, connected with PC and "Discovery" exist the system via DX-Builder



2.2 Typical Apartment group

Same as the Villa group, the system can build up to 199 apartment buildings, and it supports to connect with IP-G24 to call and receive the call from monitors and door station.

Below is an example that small building which quantity is no more than 63 and within 32 apartments on each buildings , by this occasion we can use fast self-commissioning to finish this job.

Calling

With self-commissioning without any settings just set the DIP switches on the DT-IPG to commissioning the IP device address

On each building, use buttons(DMR21/DT607) or input 2 digit address(DMR18S) directly to call the monitor.

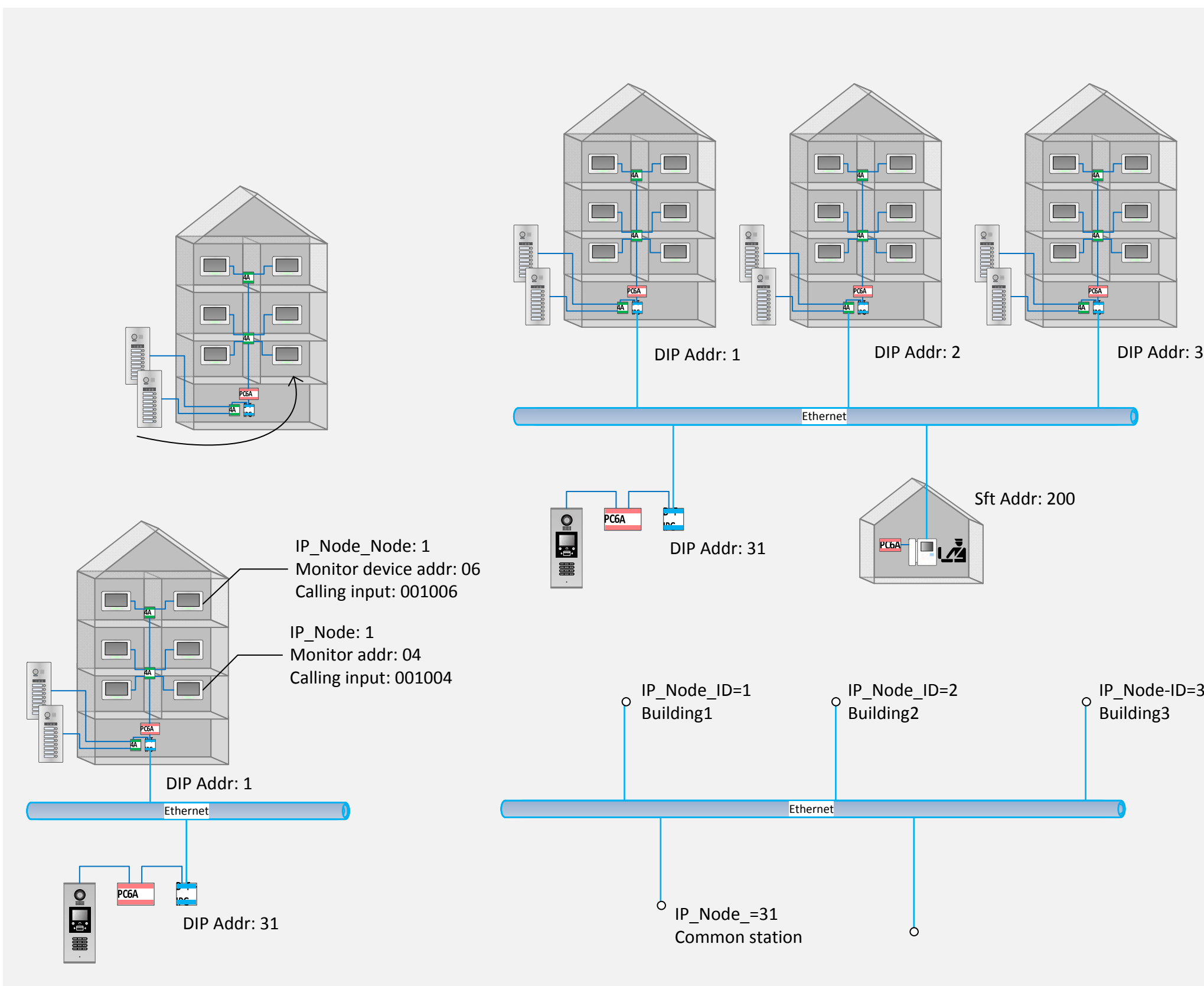
On common door station to call monitors requires to input:

IP_Node 3 digit(complement with 0) + Monitors' device address (complement with 0)

Such as from building door station/DT-IPG-G24 to call to building 1's monitor which device address as 06, input: 001006

Advance setting

For customize the input calling code/Namelist function, such using code 106 to call IP_Node 1's 6th monitor, set the namelist and input via DX-Builder

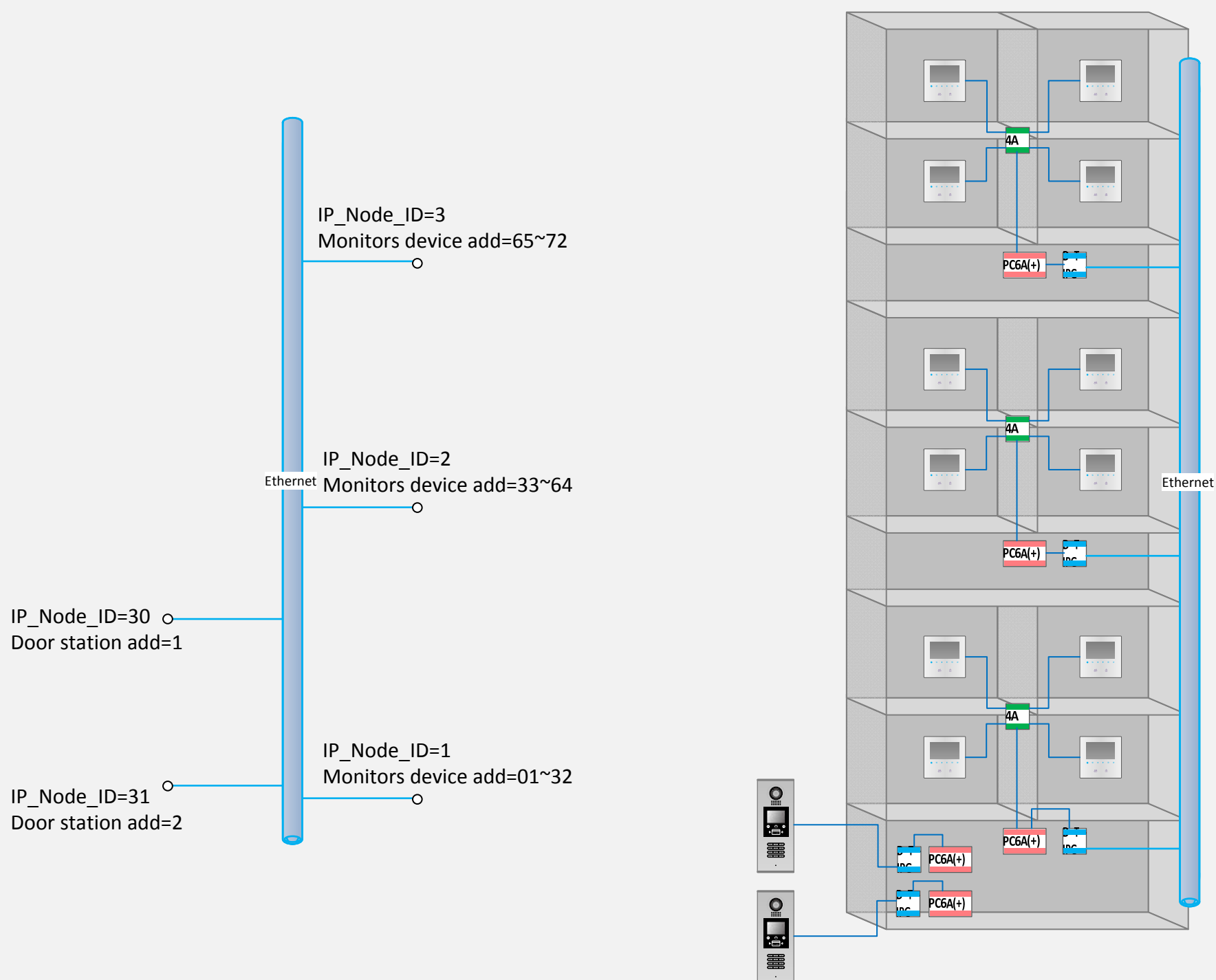


2.3 Typical High-rise building

The maximum video monitor's quantity in general 2-Wire subsystem is 32, for High-rise building which has more than 32 monitors, extent each more 32 monitors with one extra DT-IPG and connect with each building door station with one DT-IPG. For example as below fig shows that connect with 3 groups of monitors and each group connects with 32 indoor monitors.

Commisioning

In this occasion, when more 32 video monitors connect via DT-IPG, commisioning via DX-Builder is a must. Otherwise to calling monitors have to use 6 digits input to call.



Chapter 03 Commissioning

1. Quick Self-commissioning

An system can be set up without any complex commissioning, just settings input mode on DMR18S and commissioning the DIP switch on DT-IPG can easily build up the system.

With this occasion, few function still needs DX-Builder to commissioning:

- System content with Buildings that requires more than 32 video monitor.
- Name-list display on DMR18S
- Customize input call codes

Calling and input call codes setting

With Self-commissioning, to calling via building's door station just as in 2-wire subsystem, push call button or input room number to call.

Calling from Common door station will be different, to located the monitor 2 different section's input is required:

Building No.

In Self-commissioning, each DT-IPG will be signed with a Building No. automatically by the DIP switches, such as, DT-IPG with DIP switches addressing 02 will be sign to Building No.02. For complex project the Building No. is depends on the settings on DX-Builder

Room No.

Room No. is the monitor device address, general this number can be check on the "About" screen.

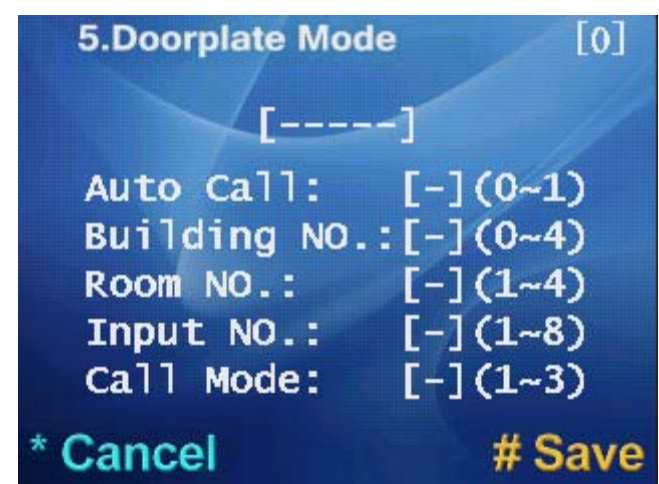
To calling monitor you shall input:

Building No. + Room No.

DMR18S Input call codes setting

To setting the input mode so that is allowed using to input lengthen call codes.

In standby, input "8001 + Admin code" to go into Installer setup and than select "5.Doorplate Mode"



Setting Item	Available Value	Description
Auto Call	0~1	0: after a complete input the call codes, automatically dialing. 1: required to input "#" to confirm dialing after input a complete call codes
Building No.	0~4	0~4 digit for the Building No., 0 means without Building No. the door station will be only call to local monitor.
Room No.	1~4	1~4 digit for the Room No., at least 1 digit for the Room No. to call
Input No.	1~8	1~8 maximum digit for input codes, at least 1 digit
Call Mode	1~3	Reserve, always set it to 2

Take a simplified example, all calling in a self-commissioning project can be simplified as below:

- Calling from common door station to monitor
- Calling from common door station to IP-G24
- Calling from building's door station to monitor
- Calling from IP-G24 to monitor
- Calling from monitor to IP-G24

Recommend settings are:

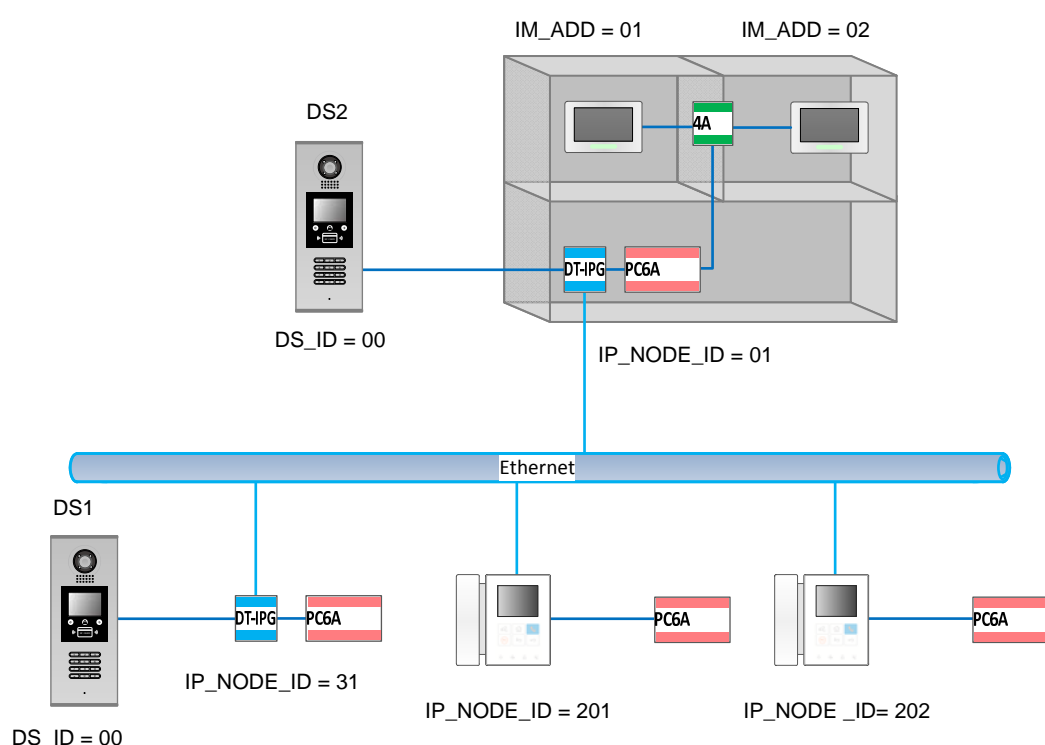
On DS1 door station, Guard Station IP_Node_ID is 201 which is depend by IP device address in self-commissioning occasion, so in order to call Guard Station 201 at least 3 digit on Building No. and the mean time, there is no more than 32 monitors, so only 2 digit Room No. is enough.

Calling input codes setting will be: 03252

On DS2 door station, only needs to call building's monitor, does need to input Building No., the 0 digit for Building No. and 2 digit for Room No.

Calling input codes setting will be: 00222

On DT-IPG just need to commissioning the DIP switches as required. Buildings' DIP start with 01, and for Common door station count down from 31.



Calling from DS1 Common door station:

Ex: Dial 00101 to call building 1 monitor's address 1

Dial 20100 to call Guard Station IP-G24

Calling from DS2 door station to monitors:

Ex: Dial 01 to call monitor 1

Dial 02 to call monitor 2

Calling from IP-G24

Ex: Dial 001001 to call building 1 monitor 1

Calling from monitor

Ex: select "Call Guard Station" to call IP-G24

2. Advanced commissioning

Once one or more of below points are inquire in the project:

- System content with Buildings that requires more than 32 video monitor.
- Name-list display on DMR18S
- Customize input call codes, such as 99 to call Guard Station

DX-Builder is necessary in such situation.

For exist project if just need Name-list function and customize input calling codes, you just need to use the software to load all exist DT-IPG and IP-G24 on LAN network, and easily fill in the item.