

ccHDtv Installation Instruction

Standard Installation/ Mixed Frequency Installation

ccHDtv Installation Instruction Safety Precautions

To our dear customers!

Thank you for using our products. If you encounter any problems when using, please do not hesitate to contact our resellers. We will provide excellent services to you via our resellers.

The software/hardware improvements of this series are subject to change without notice to you in advance. Before using, please read this user manual carefully to ensure that you can use the device correctly and safely.

Safety Precautions

Before using the product, please ensure that you read the safety precautions described below. Always ensure that the product is used correctly.

- Use only recommended power sources.
- Do not attempt to disassemble, alter or apply heat to the product.
- Avoid dropping or subjecting the product to severe impacts.
- To avoid the risk of injury, do not touch the interior of the product if it has been dropped or otherwise damaged.
- Stop using the product immediately if it emits smoke, a strange smell, or otherwise behaves abnormally.
- Do not use organic solvents such as alcohol, benzene, or thinner to clean the product.
- Do not allow liquids or foreign objects to enter the camera.
- Do not place the camera near or in direct flame.
- Do not handle the power cord with wet hands.
- Do not use the equipment in a manner that exceeds the rated capacity of the electrical outlet or wiring accessories.
- Do not use if the power cord or plug are damaged, or not fully plugged into the outlet.
- Do not allow dirt or metal objects (such as pins or keys) to contact the terminals or plug.

ccHDtv Installation Instruction Safety Precautions

Operating environment

• Keep and use this device at places where temperature ranges 0°C~40°C. Avoid direct sunlight or near heat sources.

- Do not install this equipment in a humid environment.
- Do not expose this equipment in smoky, dusty environments.
- Avoid strong collision, do not drop the machine.
- Keep the installation level, install in a stable place, avoid the product falling.
- Do not block any ventilation openings. And ensure well ventilation around the machine.
- Please use this equipment within rated input and output current/voltage range.
- This device is for long-time use. For safety, do not have flammable items placed next to the device.

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A. ccHDtv Features

- ccHDtv technology is capable to have HD surveillance monitoring in one of TV channel from your cable TV.
- ccHDtv has the great ability in noise reeducation and anti-electromagnetic interference, which allows the user can upgrade to HD surveillance by using existing coaxial cable deployment.
- High capacity / bandwidth.
- Planning and deployment is same as analog CCTV system
- Multiple transmitting interface media support including wire and wireless.
- Support DVR control (Return Channel).
- Long distance transmission without using any repeater. 3C2V transmission distance can be reached 400 meter.
- Cable Redundancy design prevents signal termination after cable has been cut off.
- Data Encryption design. Data encrypt when data transmitting.
- DTV Network Bridge is provided which makes better integration compatibility with ccHDtv system and IP surveillance system.

B. ccHDtv Installation Manual

- 1. Standard Installation: "Coaxial cable installation" and "Ethernet cable installation"
- 2. Mix Frequency Installation: "Parallel" and "Series" installations.

Please refer following installation methods carefully and apply suitable methods according to the environment.

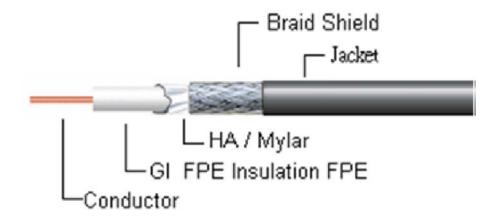
X Flicker option default setting of ccHDtv camera is Outdoor Mode (OFF), For Indoor setting, please refer to the local frequency selection, which must be switched to Indoor mode for choosing 50Hz/60Hz under Flicker option by DVR.

FLICKER CONTROL				
OFF	Outdoor Mode			
50Hz	Indoor Mode			
60Hz	indoor wode			

CCHDtv Installation Manual Standard Installation

1. Coaxial Cable Installation

1.1 Coaxial Cable Introduction



Cable Time	Coaxial Cable				
Cable Type	Central Conductor	Single Braid Single Aluminum	Single Braid Dual Aluminum		
RG-11U	1.63mm (Pure copper core)	v	v		
7C-2V	1.63mm (Copper wrapped steel)	v	v		
RG-6U	1.02mm (Pure copper core)	v	v		
5C-2V	1.02mm (Copper wrapped steel)	v	v		
RG-59U	0.81mm (Copper wrapped steel)	v	v		
4C-2V	0.81mm (Silver)	v	v		
RG-58U	0.65mm (Thin treaded core)	v	x		
3C-2V	0.65mm (Copper wrapped steel)	V	X		

- **Central Conductor:** Single core copper wire, single core twisted copper wire, multiple core twisted copper wire, copper wrapped steel wire, zinc plated copper wire.
- Insulation: PE, FB, or solid polyester material.
- Hot Melt Aluminum Foil (Tinfoil): It can decrease electromagnetic interference.
- Wire Braided Shield: Comes in 64, 128 wire braids, or 60%, 90%, 100% braid density (Metal wire braids such as copper wire or aluminum).
- Protection Layer: PE . PVC . NC-PVC . LSFH material covered insulation.

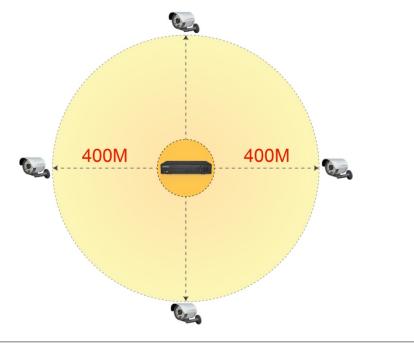
1.2 Choose the Proper Coaxial Cable

Cable Type	Cabling Distance	Camera Arrangement Range Diameter	Exceeding Camera Arrangement Range Diameter
RB6U	Within 800M	1600M (Max.)	Please arrange Channel according to Cable length.
5c2v	Within 600M	1200M (Max.)	Set the longest cable to CH0, set
3c2v	Within 400M	800M (Max.)	second long cable to CH1, and so forth.

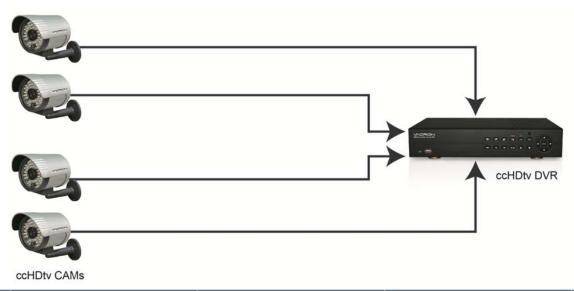
Note:

- > Do not mix DVR installation to avoid signal and cable length limitation.
- > Use proper splitters and mixers to ensure the cable completion and to prevent signal loss.
- Distance between camera and DVR is suggested to be more than 3 meters.

Camera Parameter using Cable(3c2v) as example:



1.3 Cabling Distribution



CAMERA	Single Cable Distance	Mixer (attenuation)	Extension	Mixer (attenuation)		
CAM1						
CAM2	4014 00014	V				
CAM3	10M~800M	X				
CAM4						

1.4 Co-axial Cabling Distance

0		RG	6U		RG	66U	RG	66U
Coaxial cable	5C2V			5C2V		X		
Type		3C2V)	X	X	
Distance	100M	200M	300M	400M	500M	600M	700M	800M
0	pass							
1	pass							
2	pass							
3	pass							
4	pass							
5	pass							
6	pass							
7	pass							
8	pass							
9	pass							
А	pass							
В	pass							
С	pass							
D	pass							
Е	pass							
F	pass							

2. Ethernet Cable Installation

2.1 Ethernet Cable Type

Ethernet Cable Type									
U/UTP	U/FTP	F/UTP	S/FTP	SF/UTP	SF/FTP				

UTP Unshielded Twisted Pair

FTP Foiled Twisted Pair

STP Shielded Twisted Pair)

F Foil

S Cooper Cable

※U/UTP is the specification for general usage

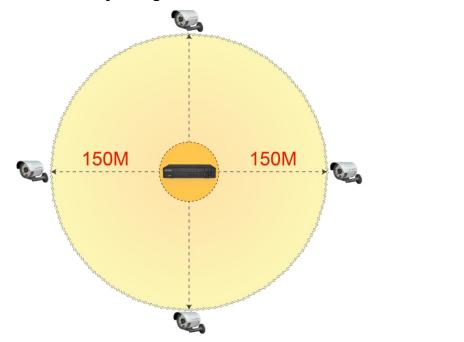
2.2 Choose the Proper Ethernet Cable

Cable Type	Cabling Length	Camera Distribution Range	Exceeding Camera Arrangement Range Diameter
U/UTP	150M (Best)	300M (Maximum)	Please arrange Channel according to Cable length. Set the longest cable to CH0, set second long cable to CH1, and so forth.

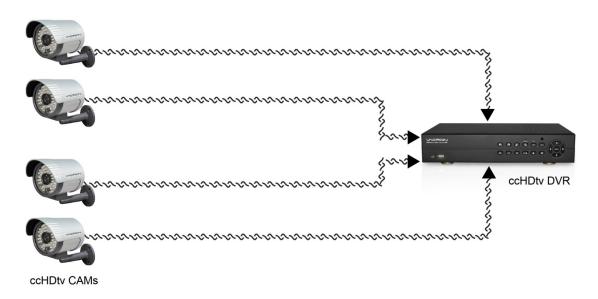
Remark:

- No twisted-pair transmitter is required, please remove the twist-pair transmitter for original cabling.
- For single cabling, please avoid to connect multiple cameras in series into one extension cable, it will affect to the signal attenuation.
- Distance between camera and DVR is suggested to be more than 3 meters.

> Camera Parameter by using U/UTP Cable



2.3 Ethernet cable cabling:



CAM	Camera Distribution Range	Mixer (Attenuation)	Extension Cable	Mixer (Attenuation)		
CAM1						
CAM2		V				
САМ3	50M ~150M	X				
CAM4						

2.4 U/UTP Cabling Distance

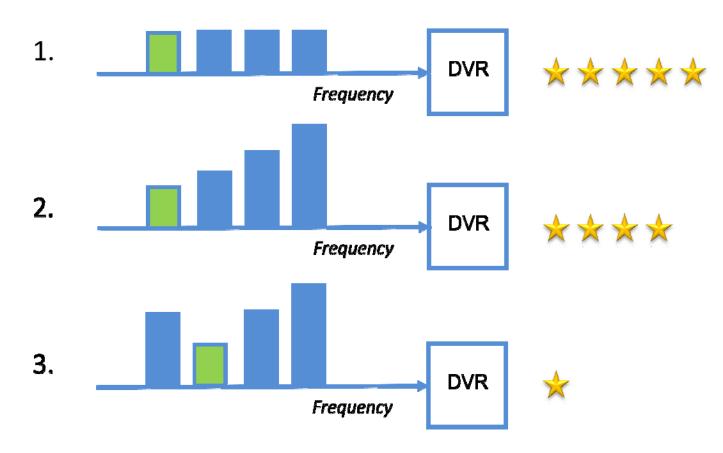
Distance	100M	150M	200M
0	pass	pass	pass
1	pass	pass	pass
2	pass	pass	pass
3	pass	pass	pass
4	pass	pass	pass
5	pass	pass	pass
6	pass	pass	pass
7	pass	pass	pass
8	pass	pass	pass
9	pass	pass	X
A	pass	pass	Х
В	pass	pass	X
С	pass	pass	Х
D	pass	pass	Х
E	pass	pass	Х
F	pass	pass	X

ccHDtv System Installation Instruction

Mix Frequency Installation

3. DVB-T Signal Reception

- Frequency is adjustable when signal reception is similar. Shown as Figure 1
- Wire quality and length will impact reception. Shown as Figure 2,3
 The longest one be set to CH.0 and the second one be set to CH.1....and so on.



4. Specification of Mixer

4.1 Type of mixer



4.2 Mixer Performance Index

Item		Unit	2 CH	3 CH	4 CH	6 CH	8 CH	16 CH
0 -	5-65MHZ	dB	≦ 4.2	≦ 6.3	≦ 8.0	≦ 11	≦ 11	≦ 14
Distril Consu	65-55MHZ		≦ 3.7	≦ 5.8	≦ 7.5	≦ 11.5	≦ 11.5	≦ 14.6
Distribution Consumption	550-750MHZ		≦ 4.0	≦ 6.5	≦ 8.0	≦ 11.5	≦ 11.5	≦ 15.4
ă 3	750-1000MHZ		≦ 4.5	≦ 7.0	≦ 8.5	≦ 12	≦ 12	≦ 17

4.3 **Mixer Transmission Length Consumption**

	Item	Unit	2 CH	3 CH	4 CH	6 CH	8 CH	16 CH
C	5-65MHZ		≦ 53M	≦ 78M	≦ 100M	≦ 138M	≦ 138M	≦ 175M
Wire	65-55MHZ	M	≦ 46M	≦ 73 M	≦ 94M	≦ 144M	≦ 144M	≦ 183M
ire	550-750MHZ		≦ 50M	≦ 81M	≦ 100M	≦ 144M	≦ 144M	≦ 193M
Ď	750-1000MHZ		≦ 56M	≦ 88M	≦ 106M	≦ 150M	≦ 150M	≦ 213M

5. Attenuator Specification

5.1 **Attenuator**



5.2 Attenuator separating consumption/ Wire consumption

Items		Unit		Attenuator (electric conduction)					
Distribution Consumption	1-2500MHZ	dB	-3dB	-5dB	-6dB	-9dB	-10dB	-12dB	-15dB
Wire Consumption	Impedance 75Ω	М	37.5M	62.5M	75M	113M	125M	150M	200M

6. Parallel Connection Installation

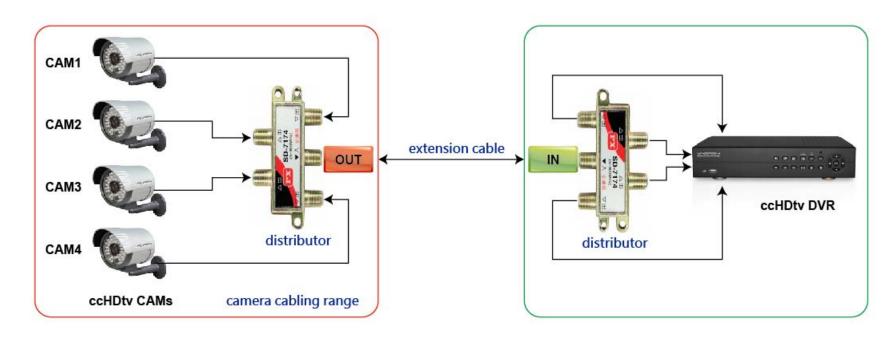
6.1 Notice of Choose Coaxial Wire

Cable Type	Total Wiring Distance	Camera Wiring Range	Over Camera Wire Installation Range
Cable(5c2v)	500M (Optimum)	200M(Optimum)	Frequency set by wire distance sorting The longest one will be set as CH.0 and the second one will be set as CH.1and so on.
Cable(3c2v)	300M(Optimum)	100M(Optimum)	Frequency set by wire distance sorting The longest one will be set as CH.0 and the second one will be set as CH.1and so on

Footage:

- Please do frequency setting according to cable length, please also use high quality mixer (splitter).
- > Use proper splitters and mixers to ensure the cable completion and to prevent signal loss.
- Please notify the cable length and frequency limitation to prevent signal Attenuation.
- > Distance between camera and DVR is suggested to be more than 3 meters.

6.2 **Parallel Connection-Connection**



CAMERA	Camera Wiring Range	Attenuator(Attenuation)	Extension Wire	Mixer(Attenuation)
CAM1				
CAM2	20014	40004	20084	100M
CAM3	200M	100M	300M	
CAM4				

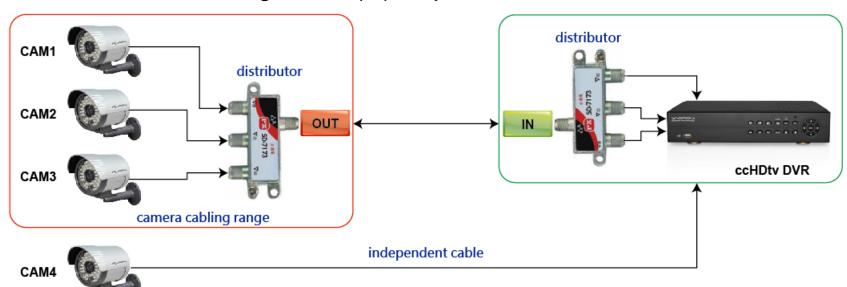
6.3 Parallel Connection-Wire Selection

Wire Type	Camera Wiring Range	Extension Wire Selection		
	100M			
Cable(5c2v) Mixer x 1	150M	100M ~ 300M		
	200M			
	60M			
Cable(3c2v) Mixer x 1	80M	100M ~ 200M		
	100M			

Footage:

- Please do frequency setting according to cable length, please also use high quality mixer (splitter).
- > Use proper splitters and mixers to ensure the cable completion and to prevent signal loss.
- Please notify the cable length and frequency limitation to prevent signal Attenuation.
- > Distance between camera and DVR is suggested to be more than 3 meters.

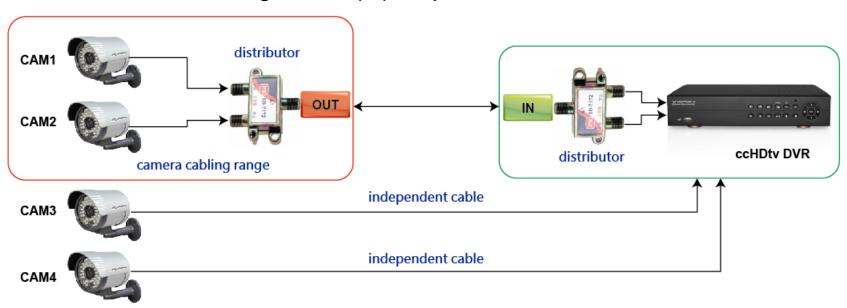
6.4 Parallel Cabling with one (1) independent cable



ccHDtv CAMs

Camera	Camera Installation Range	Mixer (Attenuation)	Extension Cable	Mixer (Attenuation)		
CAM1						
CAM2	200M	75M	300M	100M		
CAM3						
CAM4	500M~600M					

6.5 Parallel Cabling with two (2) independent cable



ccHDtv CAMs

Camera	Camera Installation Range	Mixer (Attenuation)	Extension Cable	Mixer (Attenuation)			
CAM1	200M	75M	300M	100M			
CAM2	ZUUW	/ SIVI	SUUIVI				
САМЗ	500M~600M						
CAM4	500M~600M						

6.6 Parallel Cabling Cable Choice (Independent Cable)

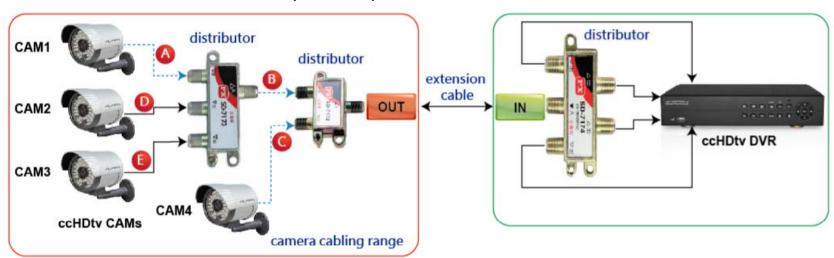
Cable Material	Camera Distribution Range	Extensional Cable	Independent Cable	
	100M			
Cable(5c2v) Mixer x 1	150M	100M ~ 300M	500M ~ 600M	
	200M			
	60M			
Cable(3c2v) Mixer x 1	80M	100M ~ 200M	300M ~ 400M	
	100M			

Footage:

- Please do frequency setting according to cable length, please also use high quality mixer (splitter).
- > Use proper splitters and mixers to ensure the cable completion and to prevent signal loss.
- Please notify the cable length and frequency limitation to prevent signal Attenuation.
- Distance between camera and DVR is suggested to be more than 3 meters.

7. Serial Topology Installation

7.1 Serial Installation (Mixer x2)



Camera	Camera Installation Range	Mixer (Attenuation)	Extension Cable	Mixer (Attenuation)
CAM1	A=200M-(B+C)			
CAM2	D=200M-(B+C)	113M	00014	4000
CAM3	E=200M-(B+C)		300M	100M
CAM4	C=200M-(A+B)	38M		

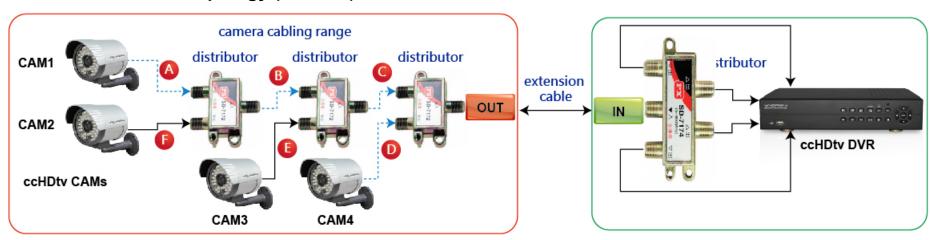
7.2 Serial Cabling Choice (Mixer x2)

Oakla Tura	Ca	amera Cabling Ran	Extension Cable (Optional)	
Cable Type	A	В	С	Length
	50M	50M	150M	
Cable(5c2v) Mixer x 2	75M	65M	60M	100M ~ 300M
MIXOT X 2	100M	80M	20M	
	25M	25M	50M	
Cable(3c2v) Mixer x 2	40M	35M	25M	100M ~ 200M
	55M	45M	5M	

Footage:

- Please do frequency setting according to cable length, please also use high quality mixer (splitter).
- Use proper splitters and mixers to ensure the cable completion and to prevent signal loss.
- Please notify the cable length and frequency limitation to prevent signal Attenuation.
- Distance between camera and DVR is suggested to be more than 3 meters.

7.3 **Serial Topology (Mixerx3)**



Camera	Camera Installation Range	Mixer (Attenuation)	Extension Cable	Mixer (Attenuation)	
CAM1	A=200M-(B+C+D)	114M			
CAM2	F=200M-(B+C+D)	1 14IVI	20014	100M	
CAM3	E=200M-(C+D)	76M	300M		
CAM4	D=200M-(A+B+C)	38M			

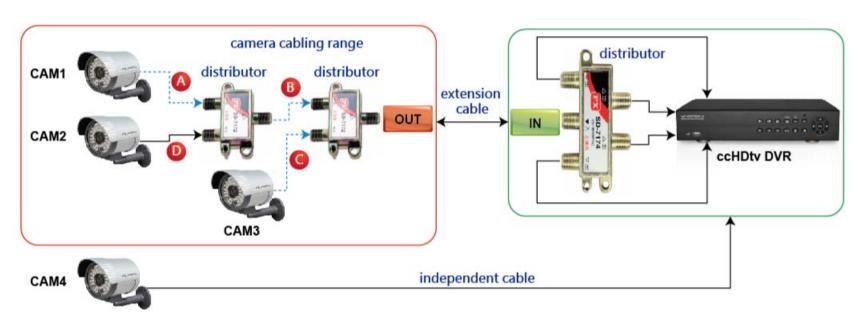
7.4 Serial Topology Cable Choice(Mixer x3)

Cable Metavial	Camera Cabling Range				Independent Cable
Cable Material	A	В	С	D	Decision of Extensional Cable
	50M	50M	150M	50M	
Cable(5c2v) Mixer x 2	75M	65M	60M	30M	100M ~ 300M
	100M	80M	20M	10M	
	25M	25M	50M	25M	
Cable(3c2v) Mixer x 2	40M	35M	25M	15M	100M ~ 200M
	55M	45M	5M	10M	

Footage:

- Please do frequency setting according to cable length, please also use high quality mixer (splitter).
- > Use proper splitters and mixers to ensure the cable completion and to prevent signal loss.
- > Please notify the cable length and frequency limitation to prevent signal declination.
- > Distance between camera and DVR is suggested to be more than 3 meters.

7.5 Serial Topology Cabling (Mixer x2_ Independent Cable x1)



ccHDtv CAMs

Camera	Camera Installation Range	Mixer (Declination)	Extension Cable	Mixer (Declination)					
CAM1	A=200M-(B+C)	76M							
CAM2	D=200M-(B+C)	/ OIVI	300M	100M					
CAM3	C=200M-(A+B)	38M							
CAM4	214M~600M								

7.6 Serial Cabling Cable Choice (Mixer x2_ Independent Cable x1)

Cable Material	Cam	era Cabling R	ange	Independent Cable				
	A	В	С	Select length	Independent Cable			
Cable(5c2v) Mixer x 3	50M	50M	150M		500M ~ 600M			
	75M	65M	60M	100M ~ 300M				
	100M	80M	20M					
	25M	25M	50M					
Cable(3c2v) Mixer x 3	40M	35M	25M	100M ~ 200M	300M ~ 400M			
	55M	45M	5M					

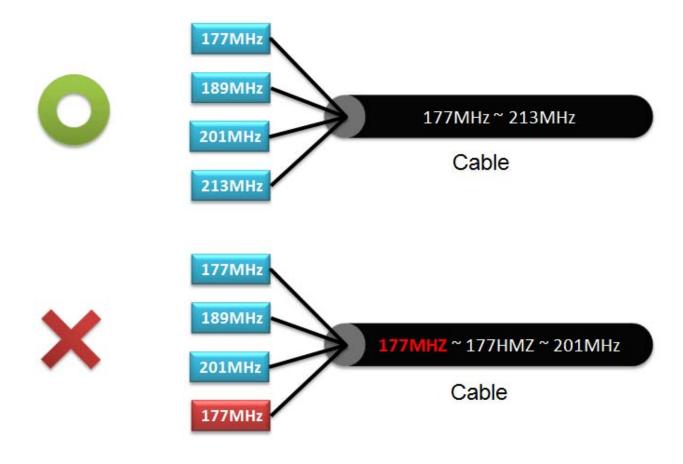
Footage:

- > Please do frequency setting according to cable length, please also use high quality mixer (splitter).
- > Use proper splitters and mixers to ensure the cable completion and to prevent signal loss.
- > Please notify the cable length and frequency limitation to prevent signal declination.
- > Distance between camera and DVR is suggested to be more than 3 meters.

8. Notices of Mixing Frequencies

8.1 Notice for cable mixing Frequencies

Frequencies cannot be mixed in single cable; otherwise, the interferences may cause image lost.



8.2 Rules of frequencies mixing

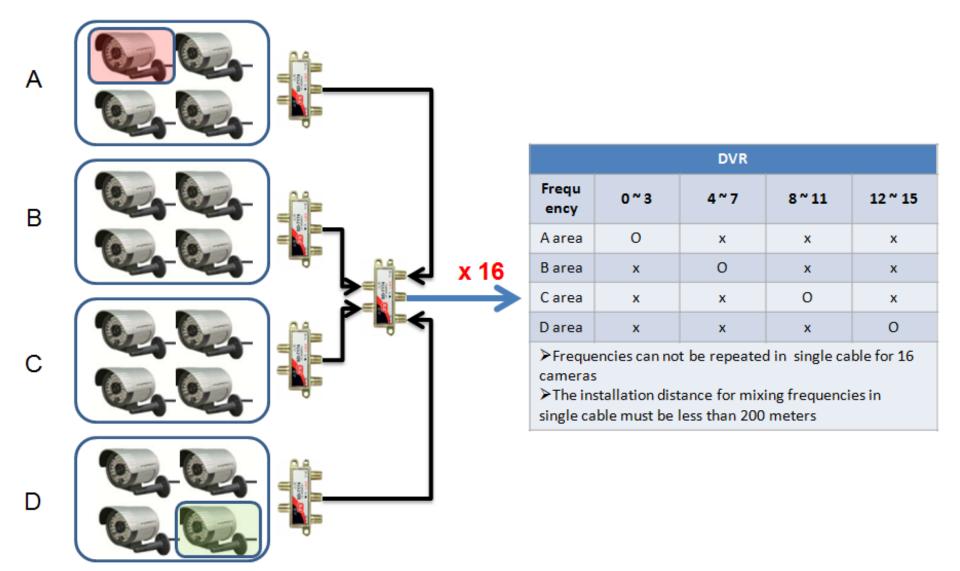
Camera	Splitter	Frequencies															
	16CH x 1	0	1	2	3	4	5	6	7	8	9	Α	В	С	D	E	F
Camera x 16	8CH x 2	0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Ε	F
	4CH x 4	0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Ε	F
Camera	8CH x 1	0	1	2	3	4	5	6	7								
x 8	4CH x 2	0	1	2	3	4	5	6	7								
Camera	4CH x 1	0	1	2	3												
x 4	2CH x 2	0	1	2	3												

Mixing frequency based on the same single cable , when accumulated channel adopted , there is no interference caused to system.

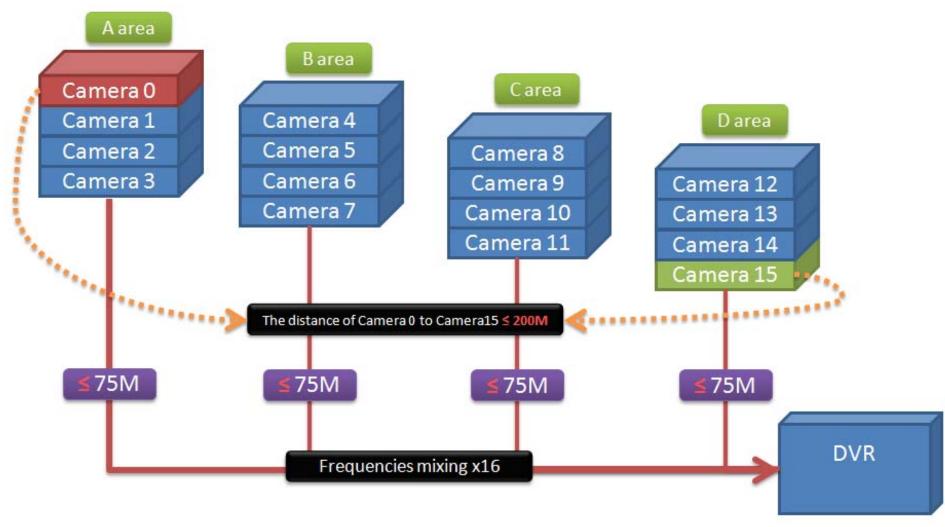
Camera	Splitter	Frequencies															
	16CH x 1	0	1	2	3	4	5	6	7	8	9	Α	В	С	D	Ε	F
Camera x 16	8CH x 2	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
	4CH x 4	0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3
Camera	8CH x 1	0	1	2	3	4	5	6	7								
x 8	4CH x 2	0	1	2	3	0	1	2	3								
Camera	4CH x 1	0	1	2	3												
x 4	2CH x 2	0	1	0	1												

Mixing frequency based on each different cable (like red font), another same channel is available to repeat, for avoiding interference, it is prohibited to have mixing frequency on the end of system.

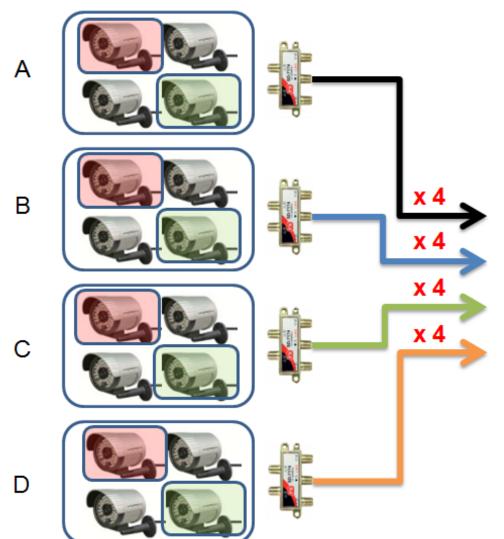
8.3 Installation of mixing frequency example _4-channel splitter (16 CH – output x1)



8.4 Cable distance of mixing frequency. example _4-channel splitter (16 CH- output x1)



8.5 Installation of mixing frequency. Example _4-channel splitter (4 CH – output x4)

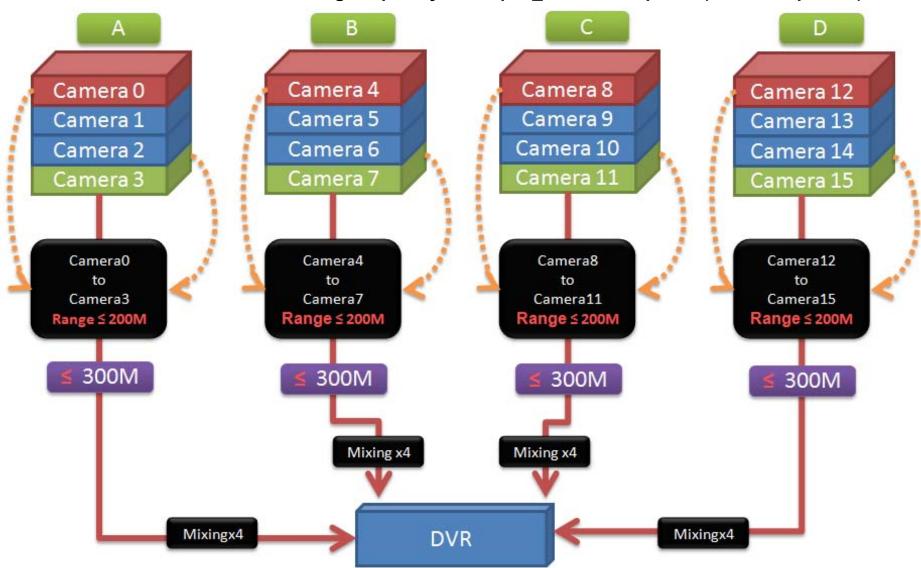


DVR										
Frequ ency	0~3	4~7	8~11	12 ~ 15						
Α	0	0	0	0						
В	0	0	0	0						
С	О	0	0	0						
D	0	0	0	0						

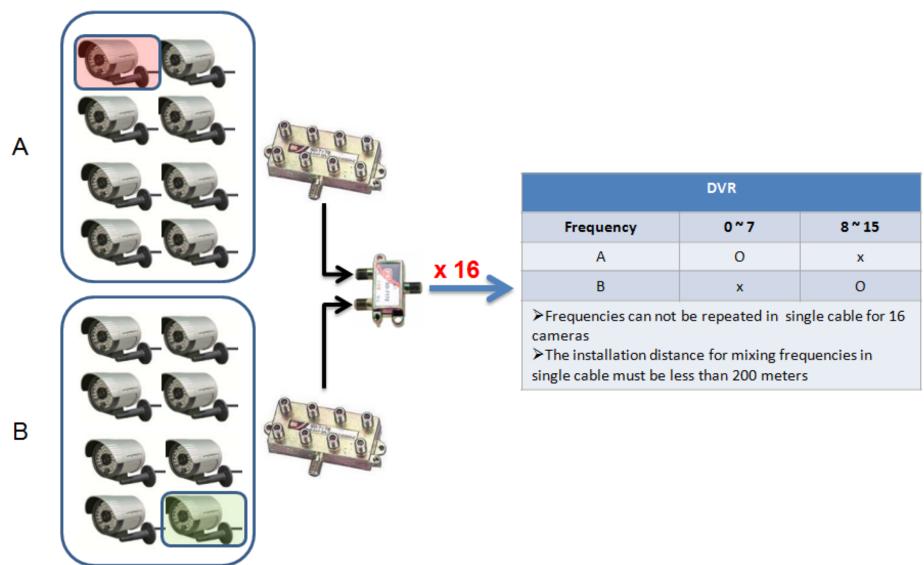
➤ Frequencies can be repeated in single cable for 4 cameras, but for preventing signals interferences, please don't mix frequencies in the end.

➤ The installation distance for mixing frequencies in single cable must be less than 200 meters

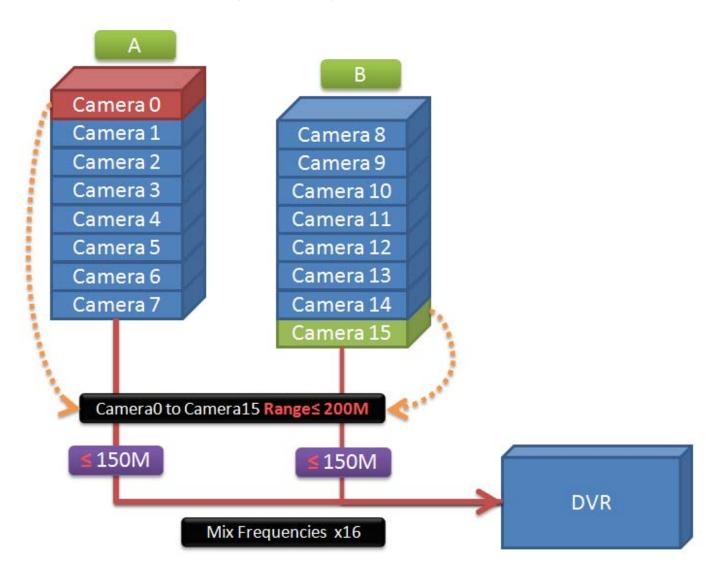
8.6 Cable distance of mixing frequency. Example _4-channel splitter (4 CH- output x4)



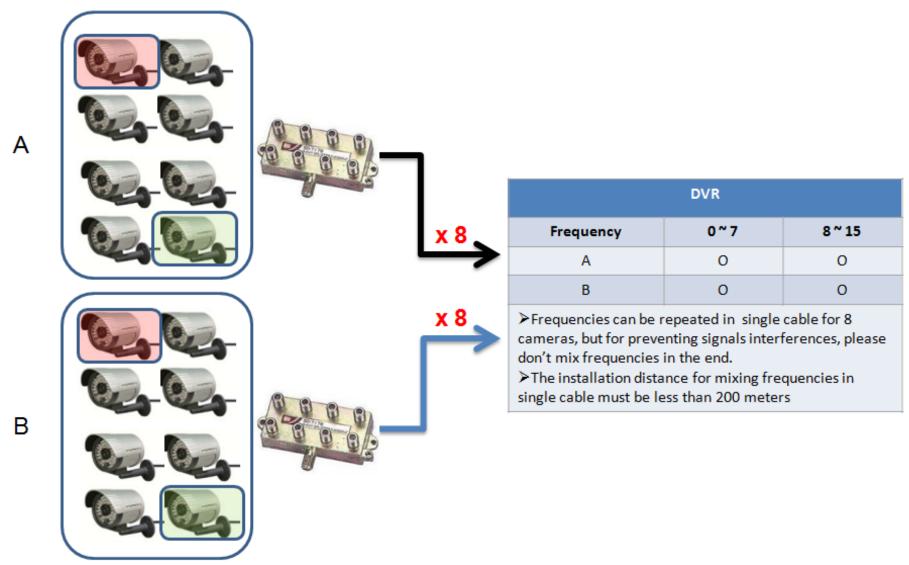
8.7 Installation of mixing frequency. Example _8-channel splitter (16 CH – output x1)



8.8 Cable distance of mixing frequency. Example _8-channel splitter (16 CH- output x1)



8.9 Cable distance of mixing frequency. Example _8-channel splitter (8 CH- output x2)



8.10 Cable distance of mixing frequency. Example _8-channel splitter (8 CH- output x2)

