



Intelligent High Speed Dome Camera
User Manual
2015 version

Please read the user manual carefully before operation.

Safety Precautions

1. Technical skill needed for installer and serviceman

- 1) with qualification certificates in CCTV installation skills
- 2) with certificate for work in high above ground
- 3) Basic acknowledgement and skills for electronic circuits
- 4) Understand and familiar with the product specification

2. Lifting appliance requirements:

- 1) Installing to right place through correct lifting device.
- 2) Lifting appliance can reach to the high place where will installed camera
- 3) Lifting appliance are safety and reliable.

Precautions

1. Be careful of transportation

During transportation or storing, prevent camera from heavy goods, violent vibration or soaking. Our product packed and shipping separately, all the return products should packed separately, or we will not maintain it.

2. If camera break down

If the Camera not work, and with smoke come out, please cut off the power supply and contact your supplier for help.

3. Do not disassemble or change internal structure

Do not disassemble the dome camera, it will be dangerous. If you need internal setup or maintenance, contact the manufacturer for help.

4. Do not put any other items into the dome camera

Please confirm no combustible items in the camera. If water or liquid flow into the camera, please cut off the power supply. Contact your supplier to solve problems. Protect the camera away from rain or other corrosive liquid.

5. Handle with care

To avoid damage, prevent camera from violent shaking

6. Installation place should away from electric or magnet field.

The TV set, wireless transmitter, transformer or speaker will have influence to the image of camera

7. Avoid moisture and dust

To protect the camera, please install it away from the fume and vapor

8. Away from high temperature

The camera should stay away from high temperature objects, such as projector lamp. Do not install camera at the places which expose to the sunlight.

9. Cleaning

Cleaning the surface with soft cloth. And remove the dirt with neutral detergent. Do not use gasoline, paint or other chemicals to clean the surface of camera. Otherwise, it will deformation or paint peeling off.

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1. Product Overview

1.1 Product Description

This intelligence PTZ dome with high performance DSP, and vari-focal lens. This PTZ Dome camera support 360°PTZ function and Digital recorder function, Its quick location and tracking scanning features make the All direction and no blind spot surveillance come true. It can identify the light condition and target distance, Reliable system and easy for installation. Use the stepper motor device, working stable and quick response. This product with power off memory function, auto self check when it power on again. This will be very safety.

1.2 Technical Parameter

| | |
|-----------------------------|--|
| Power Supply | DC12V ±20% |
| Working Temperature | Indoor: (0~+40 °C) Outdoor: (-40 °C~+60 °C) |
| Environment Humidity | ≤95% non condensing |
| Power Consumption | ≤25W |
| Menu Language | English |
| Password Protection | Support |
| Azimuth Information Display | Support |
| Communication | RS-485 Bus Control、Coaxial |
| Communication Protocol | Pelco_P、Pelco_D、Coaxial |
| Baud Rate | 2400bps/4800bps/9600bps/19200bps |
| Dome ID | Address :001~255 |
| Horizontal Rotation Speed | Horizontal : High 160°/S Mid. 60°/S Vertical: High 120°/S Mid. 40°/S |
| Rotation Range | Horizontal : 0~360° Vertical: 0~90° |
| Auto Reverse | 2 level (Horizontal :180° Vertical : 90°) |
| Proportional Speed change | support |
| IR LED Control | Auto/ON/Near/Far/OFF |
| IR light | Constant Current Light Adjust |
| IR Checking Time | 1~15 second |
| IR ON Illumination | 1~20 level |
| IR LED power output | 2 level control |
| Power On | Recovery / LR Scan/360°Scan/ Tour Scan/ Pattern Scan/ Preset/ None |
| Left & Right Range | 0°~90° adjustable |
| LR Scan Speed | Level 1~15 |
| Tour Groups | 4groups (16 presets selectable, and stay time adjustable) |
| Presets | Support 255 presets |
| Home Action | Preset /LR Scan /360°Scan/Tour Scan /Pattern Scan/ None |

| | |
|------------------------|--|
| Parking Time | 001~255sec. Adjustable |
| PATTERN SCAN | 8 Groups(1000 movements for each group, Longest time reach to 8 minutes) |
| Backlight Compensation | Support (Camera support) |
| Digital Zoom | Support (Camera support) |
| AE mode | Auto/ manual/shutter/AGC (Camera support) |
| Digital Noise | Support (Camera support) |
| WDR | Support (Camera support) |
| Data Reduction | Factory Reset/Preset Reset /Camera Reset /System Restart |
| Zero Point Adjust | Manual /Auto |
| Protection Grade | OutDoor Dome : IP66, TVS Instantaneous Voltage 6KV, Anti-thunder, Anti surge, Vandal proof |

1.3 Function introduction

Super Communication:

The Communication setting can be changed through the Camera menu , no need setting hard address. This dome without hard address setting, this will avoid hard damage.

Privacy Masking

Privacy Masking function will protect your secret, apply to the important places' monitoring

Focus Control Function

During the focus progress, the camera will select one target to do focus on. This step will keep the image very clear. Under special situation, the camera need manual focus .such as below situation:

- 1).Target not in the middle of image
- 2).Two targets near or far to the camera lens, can not get clear image.
- 3).Target with highlight. Such as Neon lamp, spot lamp.
- 4).Target on the surface of glass, which covered with dust or water.
- 5).Target move too fast
- 6).Large area of target such as the wall.
- 7).target is dark or fuzzy.

BACKLIGHT COMPENSATION

If the Camera installed under the high light situation, it will auto focus on the dark target and make backlight compensation. The image effect will be better.

Proportional variable speed function

The horizontal or vertical speed will change coincident with Zoom times.

Power cut memory function

If the power cut off, the data information will be saved. When the PTZ camera power on, it will recover the action (Tour Scan, LR Scan, Pattern Scan and presets).

PRESET FUNCTION

Setting the PTZ location to the presets, and call the presets, the camera will move to the preset direction.

TOUR SCAN

The Dome camera will tour scanning according to the order of presets

PATTERN SCAN

The dome can save the PTZ control action . if you running the the pattern scan, the PTZ dome will running the action you saved.

LR SCAN

If you set the Left point and Right point of dome camera, it will scan between these two points, and keep in the same speed. If the Left point & Right point are the same, the camera will running 360° horizontal rotation.

HOME ACTION

If the camera without action for a long time (preset),the camera will running the home action((LR Scan, Pattern Scan, Tour Scan or running Presets) .

HORIZONTAL ROTATION

When use the manual tracking function, if target beyond top point range, the dome camera will running horizontal rotation 180°and then tracking the target.

2. Installation Instruction

2.1 Preparation

2.1.1 Basic Requirements

All electrical work must comply with the latest electrical codes, fire codes and regulations. According to packing list, please confirm if all accessories are contained. Check to confirm the location of the machine and installation applications whether the required match. If not, please contact your supplier.

2.1.2 Check the Space and Structure of Installation Site

Confirm the space is enough for the camera and other components. Pay attention to the carrying capability of ceiling, wall and bracket, it must support the total weight of Speed dome and other structure components。 4 level safety factor.

2.1.3 Length of AC24Vpower line and transmission range

The power voltages will loss during the transmission. Longer distance has more voltage losses. To avoid the voltage shortage problem, please refer to below list to meet the requirements of diagram of cable, and distance of transmission.

| | | | | |
|-------------------------|-------------|-------------|-------------|-------------|
| Sectional area of cable | 0.5mm2(20#) | 1.0mm2(18#) | 1.5mm2(16#) | 2.5mm2(14#) |
| Distance | 11m(37ft) | 18m(60ft) | 29m(95ft) | 46m(152ft) |

eg. : the distance between dome camera and power supply is 35 meters, must use the copper core cable with 2.5mm² sectional area. Otherwise, the power supply will be shortage

Note: If use DC12V power supply, the distance between PTZ camera and power adaptor within 3 meters

2.1.4 RS-485Control and transmission range

When use the 0.56mm(24AWG)twisted pair cable as transmission cable, the transmission range will differ for the baud rate

| Baud Rate | Max Transmission Distance |
|-----------|---------------------------|
| 2400Bps | 1800m |
| 4800Bps | 1200m |
| 9600Bps | 800m |

If you use thinner cables, the signal will be weak and will be affected. The transmission range also affected by the quantity of devices which connect to the RS 485 Bus connection

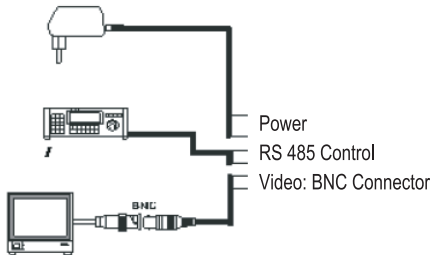
2.1.5 Video Cable transmission range

The video signals will loss during the transmission. The longer cable will have more video losses, higher signal frequency. Below is the common used cable type and the transmission range for reference:

| Video cable signal | Transmit range | Video cable signal | Transmit range |
|--------------------|----------------|--------------------|----------------|
| 75-2 | 150m | 75-5 | 370m |
| 75-3 | 200m | 75-7 | 500m |
| 75-4 | 270m | 75-9 | 680m |

2.2 Wiring Diagram

Before installation, please cut all the power supply of camera, and read user manual carefully.



3. Basic Operation

The operation approach will be different from the different operation platform. Please refer to the User Guide for common operation, For special function, please contact supplier for the detailed information. Here we introduce the common use of PTZ keyboard.

3.1 Power-on Self-check

If the camera power on, it will enter into self-check. The dome camera will horizontal or vertical rotate, and then Zoom in and zoom out automatically.

3.2 Control the Rotation

Select one camera, move the joystick to control the camera upward or downward, etc..Move the joystick to the right, the camera will running to the right direction.

3.3 Preset setup

According to the following steps to set the presets:

3.3.1 Move the joystick to adjust Camera image through the Zoom ,Focus and Iris function..

3.3.2 Input the number + PRESET, save the data of this preset.

3.3.3 Selecting the preset

Call the Presets according to below steps:

Input number+ CALL, the dome camera will turn to this location. And the Lens data and focus function will change to the related settings.

Special Preset list:

| Special Preset | Function description |
|------------------|---|
| 93+CALL(66+CALL) | Factory Setting |
| 94+CALL | Open/Close Internal Menu (only apply to Camera with internal menu) |
| 95+CALL(65+CALL) | Enter the system main menu |
| 97+CALL | Delete all presets |
| 98+CALL(67+CALL) | IR Mode switch |
| 61~64+CALL | Run tour group 1~4 |
| 71~78+CALL | Run pattern scan group 1~8 |
| 81~87+CALL | Run LR Scan group 1~8 |
| 99+CALL(68+CALL) | Run 360°Scan |

4. Menu Function

This part will mainly introduce how to set the OSD menu of dome.After power on, PTZ dome will enter to self-check, display information as below:

| | |
|------------|--------|
| DOME ID | 001 |
| COMM | 2400 |
| PROTOCOL | PELCOD |
| DOME MODEL | XXX |
| VERSION | XXX |
| INIT... | |

These are the self-check parameters of dome,

(Serial number, dome ID, Communication, Protocol, Model No. , dome Model, software version, etc.)

Note: Set the protocol, Dome ID, communication in the communication function menu.

The below is the introduction of Camera setting. Usage of the keyboard to operate the OSD menu.

Keyboard function:

- 【OPEN】** It will adjust to big iris, if you select image. Confirmations function for camera setting and skip to next setting
- 【CLOSE】** It means reduce the aperture, if you adjust the image. And cancel function for Camera setting or back to the forward menu.
- 【FAR】** Far focus, the image setting, it will focus on the target far..Camera menu setting , this function means modify menu item to forward value
- 【NEAR】** Near focus, the camera setting, it will focus on the near target..Camera menu setting, this function means modify menu item to next value
- 【TELE】** Zoom in, increase the zoom times of image. In the camera menu setting, it will back to forwarder menu item
- 【WIDE】** Zoom out, increase the zoom times of image. In the camera menu setting, it will back to forwarder menu item
- 【UP】** Camera upward, When you setting the menu, it means back to forward menu item. When you setting privacy masking, it means decrease the height of masking area
- 【DOWN】** Camera downward. When you setting the menu, it means skip to the next menu item. When you setting the privacy masking, it means increase the height of masking area.
- 【RITHT】** Camera turn right; When you set the menu that means enter to next object or save the setting. When you setting privacy masking, it means enlarge the length masking area.
- 【LEFT】** Camera turn to left; In the menu operation means back to forward menu, or return to main menu; When you setting privacy masking, it means reduce the masking area.

◆ **Note: It will quicken the speed. If control the PTZ camera Up and Down continuously,**

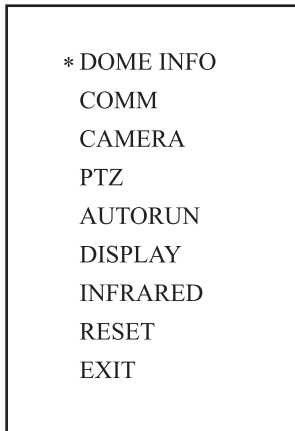
Meaning of symbols:

“→” present Menu item selected

“()”that means this one have subsidiary menu;

4.1 Main Menu

After PTZ Dome power on, Call No. 95 preset will enter to Main menu:



4.2 SPEED DOME INFORMATION

| | |
|----------|---------|
| DOME ID | 001 |
| COMM | 2400 |
| PROTOCOL | PELCO/P |
| MODEL | XXX |
| VERSION | XXX |
| * RETURN | |

4.3 Communication

| | |
|-----------------|------|
| (COMMUNICATION) | |
| ----- | |
| * SOFT ID: | 001 |
| PROTOCOL | AUTO |
| BAUDRATE | 2400 |
| SAVE | |
| EXIT | |

If hard ID switch is off, you can modify the Soft ID, protocols or the baud rate .

SOFT ID: 001~255 selectable

PROTOCOL: Support PELCO-P/D, and auto identification.

BAUDRATE: 2400bps / 4800bps/ 9600bps/ 19200bps.

SAVE: Save the setting and system restart, communication will be valid.

Tip: If you change the above data of PTZ Dome, please make the keyboard or DVR set the same date.

4.4 Camera Setting

Camera setting menu, it will be differ from suppliers. Please refer to the related usual manual..

4.5 PTZ Setting

| | |
|----------|-----|
| * FLIP | ON |
| JOYSTICK | ALL |
| PROP | ON |
| NORTH | |
| ZERO | |
| EXIT | |

FLIP: Auto flip turn ON/ OFF

JOYSTICK: All / Focus/ IRIS./None

All: Manual IRIS mode or Manual focus mode, move the joystick, it will change to Auto Focus or Auto IRIS.

FOCUS: Manual focus or Manual IRIS, move the joystick, system will back to Auto Focus.

IRIS: Manual IRIS or Focus, move the stick, it will back to Auto Iris mode

None: move the joystick, no action

PROP: ON/ OFF; If turn on, the dome camera zoom function and vertical speed will change proportionately.

NORTH: if run this function, the present location will save as North Direct in the system. And it is also the horizontal Zero Point of

ZERO :

| | |
|----------|----|
| * MANUAL | |
| AUTO | ON |
| EXIT | |

Manual Adjust: Active this function, the system will recheck the Horizontal and Vertical Zero Point. This is important step to prevent power off damage.

Auto Adjust: **ON or OFF;** If turn on, the dome camera will run to Zero Point automatically.

4.6 Autorun setup

```
* PRESET
  TOUR
  PATTERN
  LR SCAN
  HOME ACT
  POWER ON
  EXIT
```

4.6.1 PRESET SETUP

```
* PRESET NO:      001
  SET
  NEXT
  DEL
  EXIT
```

PRESET NO.: between 001~255

Tip: when the Presets setuped, the dome camera will run to it, show the location of Preset.

SET: Set and save this preset setup.

NEXT: Check the data of next preset, if it exist, the dome will adjust to the location of this preset automatically. If the next preset inexistence, it will note: "preset invalid...".

DEL: Delete the setup of present preset.

4.6.2 TOUR SETUP

```
* TOUR NO:        001
  SPEED:           004
  RUN
  DEL
  EXIT
```

TOUR NO.: Group 001 ~ 004 Tour Scan adjustable

Tour1 is preset 1~16 combination, Tour2 is preset 17~32 combination,

Tour3 is preset 33~48 combination, Tour4 is preset 49~60 combination;

SPEED: Scanning speed level 1~4 adjustable

RUN : Run the present tour scan.

DEL: Delete the tour , restore to factory default.

4.6.3 PATTERN SETUP

```

* PATTERN NO:          001
  REC
  RUN
  DEL
  EXIT
    
```

PATTERN NO.: 001 ~ 008

REC: Recording the pattern scan and save this settings.

RUN: Running current pattern scan

DEL: Delete pattern scan.

4.6.4 LR SCAN SETUP

```

* LR SCAN NO:          001
  SET LEFT
  SET RIGHT
  SPEED                004
  RUN
  DEL
  EXIT
    
```

LR SCAN NO: 001~007 LR Scan No. selectable

SET LEFT: Set the left limit

SET RIGHT: Set the right limit

SPEED: Scanning speed level 1 ~ 15 adjustable

RUN: Run the LR Scan

DEL: Delete the present LR Scan

4.6.5 HOME ACTION

| | |
|---------|-----|
| * TIME: | 030 |
| ACTION: | NOP |
| EXIT | |

TIME: between 005~255 sec.

HOME ACTION: Set the home action: LR scan 1-7, 360°Scan, presets1-255、 Tour scan 1-4, Pattern Scan 1-8 or Close function selectable

4.6.6 POWER ACTION

| | |
|-----------------|--------|
| * POWER ACTION: | MEMORY |
| EXIT | |

POWER ON ACTION: Set this Power on function, the LR scan range between level 1~7, 360°Scan, Presets 1-255、 Tour group 1-8, Pattern scan 1-8, power on recovery , No action.etc

4.7 DISPLAY INFORMATION

| | |
|----------|----|
| * PRESET | ON |
| DIRECT | ON |
| EXIT | |

4.8 INFRARED SETTING

| | |
|-------------|------|
| * ONTROL | ON |
| IR MODE | AUTO |
| TIME | 03S |
| POWER | HIGH |
| IR SENS | 08 |
| AMB SENS | 20 |
| ZOOM SWITCH | 06 |
| EXIT | |

CONTROL: Mode: ON/ OFF. If IR Zoon control turn ON, the IR light will change based on the zoom magnification “OFF” All the IR LED will turn on

IR MODE: AUTO, ON, OFF ,FAR, NEAR (default AUTO)

TIME: the IR LED will turn on automatically, when the outside is dark. It will change to Day/ Night mode

When the checking time, 01~15 seconds selectable

POWER: IR power output MODE : High /Low

IR SENS: IR turn on range between level 01~20,default level 8,

AMB SENS: it cannot be change, the illumination level is updating continuously, just in the menu

ZOOM SWITCH: Multiple of IR level 01~10 selectable

4.9 RESET



- * FACTORY
- CAMERA
- PRESET
- RESTART
- EXIT

FACTORY: All parameters will restore to factory default

CAMERA: OSD menu function will restore to factory default.

Note: If camera with internal menu, please set it in the internal menu to default setting

RESET: Delete all presets information

RESTART: Restart the PTZ camera

Appendix I Dome Switch Setting

Address setting

| Address | Address Codes Table | | | | | | | |
|-----------|---------------------|-----|-----|-----|-----|-----|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 0 | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| 1 | ON | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| 2 | OFF | ON | OFF | OFF | OFF | OFF | OFF | OFF |
| 3 | ON | ON | OFF | OFF | OFF | OFF | OFF | OFF |
| 4 | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| 5 | ON | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| • • • • • | | | | | | | | |
| 250 | OFF | ON | OFF | ON | ON | ON | ON | ON |
| 251 | ON | ON | OFF | ON | ON | ON | ON | ON |
| 252 | OFF | OFF | ON | ON | ON | ON | ON | ON |
| 253 | ON | OFF | ON | ON | ON | ON | ON | ON |
| 254 | OFF | ON | ON | ON | ON | ON | ON | ON |
| 255 | ON | ON | ON | ON | ON | ON | ON | ON |

Protocol setting

| Protocol | Protocol setting | | | |
|----------|------------------|-----|---|---|
| | 1 | 2 | 3 | 4 |
| Pelco_P | OFF | OFF | | |
| Pelco_D | ON | OFF | | |
| NC | OFF | ON | | |
| Coaxial | ON | ON | | |

Baudrate setting

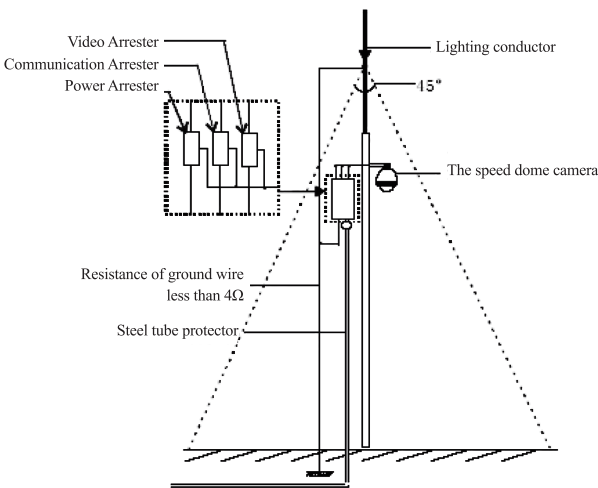
| Baudrate | Baudrate setting | | | |
|----------|------------------|---|-----|-----|
| | 1 | 2 | 3 | 4 |
| 2400BPS | | | OFF | OFF |
| 4800BPS | | | ON | OFF |
| 9600BPS | | | OFF | ON |
| 19200BPS | | | ON | ON |

Appendix II Prevent Lighting stroke and Surging

This product use the Air Discharge tube and lightning protection technology. It can effectively prevent the 1500W instant lighting, surge and other types of pause signal damage. However, outdoor installation must according to the actual situation. Ensuring electrical safety under the premise of take the necessary protection measures

Signal transmission line must keep a distance from High Voltage equipment or High-voltage cables.(at least 50 meters)

- Outdoor wiring must be under eaves. ;
- For the open area must be sealed tube buried way wiring, and steel single point ground, the absolute prohibition of use of overhead wiring methods;
- in strong thunderstorm or high induced voltage areas (such as high-voltage substation), you must take extra strong lightning protection equipment and lightning rods and other measures
- For outdoor device and line, lightning protection and grounding design must consider incorporate protection requirement and comply with the relevant national and industry standards;
- The system must be equipotential grounding. Grounding device must meet the without interference and electrical safety. And shall not connect high voltage electricity lines or short circuited lines. System individually grounded, anti-ground resistance of less than 4Ω , grounding wire cross-sectional area must not be less than 25 mm^2 ;



Appendix III RS485 bus cable

1. RS485 bus cable features

According to RS485 industrial standard, RS485 bus cable belongs to 120Ω characteristic impedance half-duplex communication cable. Max load capacity is 32 effective load (including main control equipment and manipulated equipment)

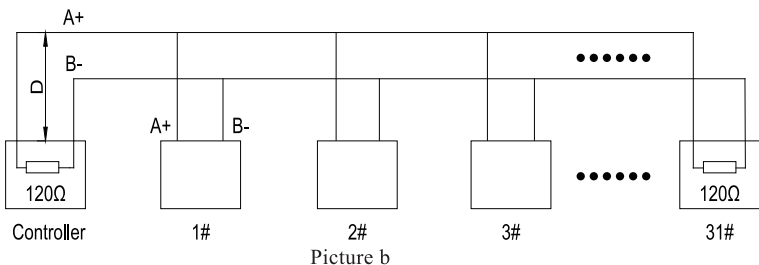
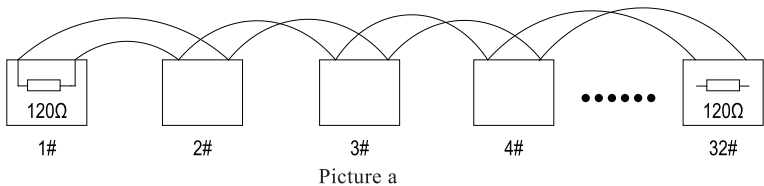
2. RS485 bus cable transmitting distance

Using 0.56mm (24AWG) twisted-pair as the communication cable, according to different baud rate, max distance data is as follows,

| Baud rate | Max distance |
|-----------|--------------|
| 2400Bps | 1800M |
| 4800Bps | 1200M |
| 9600Bps | 800M |

3. Connection method and terminal resistance

According to RS485 industrial standard, it require each equipments connected by the following connection ways. The two ends must be with 120Ω terminal resistance (picture a). Simple connection is as picture b, but “D” section distance is max 7 meters.



Picture b is RS485 bus cable 120Ω terminal resistance jumper. To avoid 485 signal reflex, connect 120Ω terminal resistance at the end the 485 bus cable. The middle equipments must disconnect terminal resistance.

Appendix IV Simple Troubles Shootings

| Trouble | Probable Cause | Solution |
|---|---|--|
| Power-on ,the machine no action, no image, and signal light not turn on | Power supply not enough | Test with Multimeter , and use the propriety power voltage |
| | Wrong connection of Power ling | Correct it |
| | Local power supply or transformer damaged | Check the power supply , if the power adaptor work |
| | Power adaptor damaged | Eliminate |
| Self-Checked, display image but can not control | The Dome ID or Baudrate incorrect | Reset it |
| | Protocols not correct | Correct |
| | Wiring loose | Check the RS 485 connection |
| | RS485 wrong connection or open circuit | Check RS 485 connection |
| Self-Check abnormal, motor purring, with image | Mechanical breakdown | maintenance |
| | Camera incline | Adjust |
| | Power is not enough | Change to better one |
| Fuzzy Image | Manual Focus mode | Set to Auto Focus mode |
| | Camera Shade with dust | Clean it |
| Instability image | Video line wrong connection | Check the video line |
| | Power supply not enough | Change |
| PTZ Dome out of control | Power supply not enough | Change to a better supply |
| | RS485 control bad contact | Reconnect the RS485 line |
| | RS485 line broken | Change another line |
| | Many PTZ Domes connected in parallel | Add RS485 Distributor |
| | Long distance between Host and PTZ dome | Add distributor |