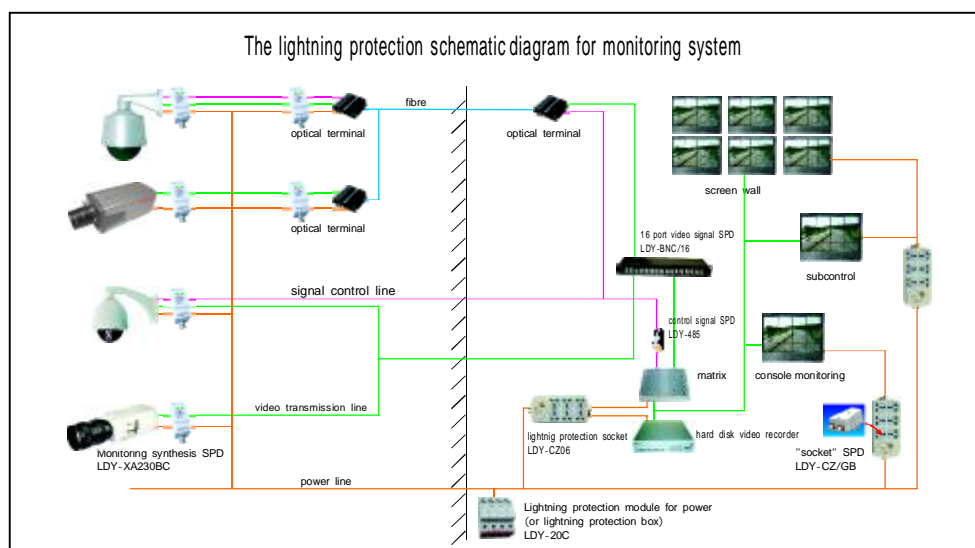


Application range:

Peace project(police),telecom "global E-eye"(telecom),road monitoring(police), Community Monitoring(building management), monitoring of environment(environment protection),expressway monitoring, etc.

System specification:

The lightning protection of monitoring system of CCTV is relatively complicated,firstly,we should understand the main reason why the monitoring system was damaged by the lightning and the possible lightning invaded route, specially,the outdoor monitoring equipment suffer from serious damage of lightning.only analysis on basis of the reason of damage, research and discussion on the laying,shield and earthing mode of signal and power line,the lightning protection device of monitoring system device can be selected and used accurately



The TV monitoring system is consisting of three parts as below:

- 1, the former part: composed of monochrome (colour television) vidicon, len, holder, hood, bracket, etc
- 2, transmission part: coaxial-cable, wire, Multi-core wire, fibre, which transmiss video, audio or control signal by way of overhead in air, burial under ground or wall following laying.
- 3, computer room terminal part: composed of matrix, monitoring device, hard disk video recorder, etc.

A. Lightning protection for front-end device

The front-end device has indoor installation and outdoor installation, the indoor device isn't exposed to the lightning strike, but we should consider how to avoid the overvoltage damage to the device, such as the vidicon installed in the underground car park, etc. For outdoor device, we should consider how to avoid the direct and inductive lightning strike at the same time. The front-end device, such as the vidicon, should be placed in the effective protection range of contacting point (lightning rod or other contacting conductor). For the convenience of construction, the lightning rod is usually erected on the knighthead of vidicon, the metal pole of $\Phi 8$ zincification round steel or 35mm² copper lead can be used as the down lead, which here should be comply with GB50198-94 <<Technical code for civil closed circuit monitoring TV system engineering >> Chapter 2, section 2.5, power supply, earthing and safety protection, requirement of section 2.5.4, when the system introduce the earthing device, the earthing resistance should be not more than 4 Ω

To avoid electromagnetism induction, the up along pole power line and signal line of camera should pass through metal pipe for shield. To avoid lightning wave invasion into the the front-end device along the line, the proper SPD should be inserted into every line in frond of the device., such as LDY-20C/2P is proper for AC220v, LDY-VD24 for DC24V, LDY-BNC for video line, LDY-485 for control line of camera pan and tilt. this selection is complicated, many problem exist, and be restricted by the installation space, so we recommend that you choose LERDN's patent product monitoring synthesis SPD: LDY-XA230BC, only one product can provide full surge protection covering power, video signal and control signal of the monitoring camera. camera

When the signal is transmitted to the computer room through fiber, usually a control case is placed at the side of camera for position of device, such as optical terminal, etc. due to the definite distance between the control case and the camera, we recommend that install the monitoring synthesis SPD LDY-XA230BC at both sides of optical terminal and camera respectively.

B. Lightning protection for transmission lines

the monitoring system line include power line, video line and control signal line. the power line of outdoor camera can connect the terminal device,also can connect the power supply system nearby the monitoring point.the video signal is usually transmitted by fibre or coaxial-cable. control signal is usually transmitted by two-core shielding cord,which is erected(or buried) between the front-end and terminal.Stipulation on GB50198-94 <<Technical code for civil closed circuit monitoring TV system engineering>>: when transmission line is layed in the suburb and village of the city,directly buried laying can be introduced,when the term and condition don't permit, communication pipe laying or overhead laying can be introduced.

Introducing communication pipe laying or overhead laying, we should notice the least length between the transmission cable and the other line, for example,the least length is 0.5m with AC 220V distribution line, 0.1m with communication cable, the least vertical length is 2.5m with 1~10KVpower line,1.5 m with 1kv below power line,1.0m with broadcast line, 0.6m with communication line, etc.

The lightning protection effect of directly buried laying is better, but the overhead laying is exposed to inductive lightning.To avoid the damager of the device at the initial and ending,each knighthead should be grounded while introducing the overhead laying for transmission, the messenger wire and the metal pipe of the overhead cable line should be grounded,if fibre transmission is applied,only the stiffener of the fibre should be grounded.

the transmission line of buried laying can not completely prevent the damage to the line, the statistic data show that the failure of buried cable caused by lightning strike occupy the 30% of the total failure,even if the lightning strike is far away, part of lightning current still pass into cable. So introducing shielding-layer cable or cable through the steel pipe of burial laying, to keep the steel pipe electric connected,will be very efficient to against the electromagnetism interfere and electromagnetism induction,because of the shielding efficience of the mental pipe and the skin effect of the lightning current. If it is difficult for the cable full through the metal pipe,the cable can be introduced by through the metal pipe before the terminal of the cable and the front-end equipments,but the buried depth should be not less than 15m,connect the metal sheet of the cable and the steel pipe to the lightning-proof grounding device at the entering household end.

C. lightning protection for terminal device in computer room

For monitoring system, it is vital to protect the monitoring room, we shall carry out protection covering direct lightning protection, lightning radio wave intrusion,equipotential bonding and surge protection, the building of monitoring room shall have the lightning rod,lightning band,lightning network against the direct lightning, the measures against direct lightning shall be in accordance with GB 50057-94 <<code for design of lightning protection of building>>, various metal pipe into monitoring room share the grounding device and the single point method for grounding are prevail.

The power supply system of the computer room should adopt 2 steps measures of lightning protection, one set of grade 2 lightning protection device,LDY-20C/4P, or lightning protection box LDY-20C/Y5C should be fitted at the main incoming line. The lightning protection socket,LDY-CZ06 or "socket" lightning protection device,LDY-CZ/GB should be fitted at every terminal unit.

The signal wire,which connect to the hard video recorder and pass throught outdoor, are the video signal transmission line or console control line, the related SPD should be fitted before the signal wire access to the device in the central monitoring room from outdoor.LDY-485 control signal SPD for console control line, LDY-BNC coaxial signal SPD for video signal transmission line, LDY-BNC016 coaxial signal SPD for multiport matrix.

Implementation method

1. Install one set of monitoring synthesis SPD,LDY-XA230BC/3A or LDY-XA230BC/3D,at the front of power supply line, video line and console control line of each speed dome camera respectively to against lightning.
 2. Install one set of monitoring synthesis SPD,LDY-XA230BC/2A or LDY-XA230BC/2D,at the front of power supply line, video line of each fixed camara respectively to against lightning.
 3. Install one set of grade 2 lightning protection module for power,LDY-20C/4p or lightning protection box,LDY-20C/Y5C.at the incoming line of power distribution cabinet in the computer room to against lightning,install one set of lightning protection socket, LDY-CZ06 at the terminal device,such as hard disk video recorder,matrix,optical terminal,server,etc. or add a "socket" SPD, LDY-CZ/GB to each common socket to against lightning.
 4. Install one set of video signal SPD,LDY-BNC/16 at front of each 16-port matrix circuit in the monitoring centre to against lightning.
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