

# **Water-proofing Requirements and Water-proofing Treatment for Site Tail Circuit Operation Instructions**



Zhejiang Uniview Science and Technology Co., Ltd.

<http://www.uniview.com>

## Revision record

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## Table of Contents

1 Application Scope and Main Contents	4
1.1 Application scope	4
1.2 Main contents	4
2 Basic Water-proof Requirements of Tail Circuit	4
3 Recommended Water-proof Treatment Methods for Tail Circuit	6
3.1 Method I: silicone rubber treatment	6
3.1.1 Features of silicone rubber	6
3.1.2 Water-proof treatment for tail circuit terminal	6
3.1.3 Water-proof treatment at the junction of tail circuit	7
3.2 Method II: Self-adhesive rubber tape treatment	7
3.2.1 Features of self-adhesive rubber tape	7
3.2.2 Application instruction for water-proof tape	8
4 Installation Methods of Common Equipment	11
4.1 Method I: Wall mounting	11
4.1.1 Installation demonstration	11
4.1.2 Precautions	12
4.2 Method II: Rail installation	12
4.2.1 Installation demonstration	12
4.2.2 Precautions	13
4.3 Method III: Standing pole mounted	13
4.3.1 Installation demonstration	13
4.3.2 Precautions	14

# 1 Application Scope and Main Contents

## 1.1 Application scope

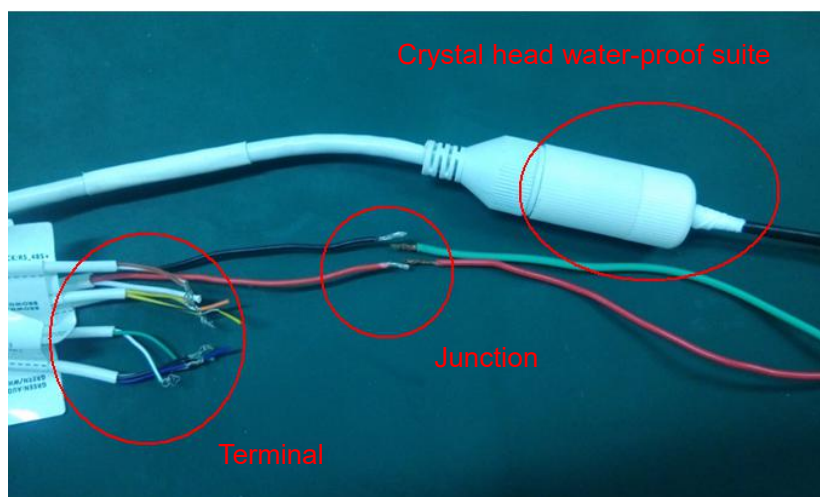
- (1) Non-standard site engineering installation leads to water inflow and fog phenomenon for outdoor camera and has a direct influence on image effect of the camera. The instruction standardizes the basic water-proof requirements for tail circuit, and recommends water-proof treatment methods for site tail circuit.
- (2) This instruction is applicable to all cameras of our company, especially for outdoor camera.

## 1.2 Main contents

- (1) Basic water-proof requirements for tail circuit.
- (2) Recommended water-proof treatment methods.

# 2 Basic Water-proof Requirements of Tail Circuit

- (1) The junction of tail circuit terminal should not be exposed, and its location must be integral waterproofing (rod chambers, the inside of water-proof junction box, inside corrugated pipe or PVC pipe, etc.) to avoid contacting with liquid water at the junction of tail circuit terminal.



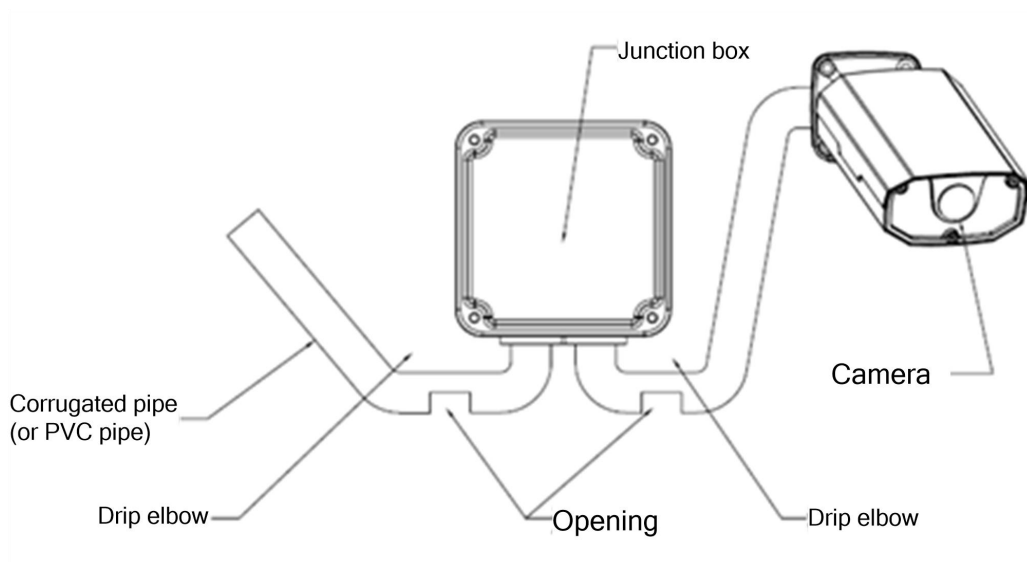
- (2) Crystal head water-proof suite must be correctly installed for cable connection.
- (3) Effective insulation protection must be made before water-proof protection for the junction of tail circuit terminal.

- (4) If the installation method of water-proof junction box combined with corrugated pipe (or PVC pipe) is applied:

**A:** The outdoor corrugated pipe arranged in sections shall be routed as “U” type to ensure the water-proof junction box and equipment are on the top of U type.

**At the same time, measures should be taken to prevent ponding in the box and pipe.** Ports at both ends of corrugated pipe should be extended into the sealed chamber as far as possible;

A small hole should be opened at the bottom to avoid ponding in the pipe caused by insufficient sealing at both ends of the pipe, aging and other reasons.



**B:** Corrugated pipe (or PVC pipe) which are integrally arranged outdoor should be completely sealed at both ends, and U type and opening treatments are not necessary. Ensure **that the junction of tail circuit terminal will not contact with liquid water.**

- (5) If full tail circuit equipment or high power equipment are adopted, special attention should be paid to the water-proof protection treatment at the junction of tail circuit terminal.

## 3 Recommended Water-proof Treatment Methods for Tail Circuit

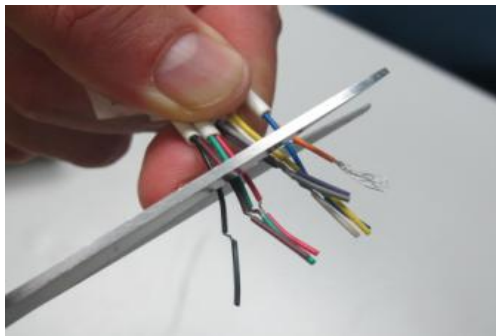
### 3.1 Method I: silicone rubber treatment

#### 3.1.1 Features of silicone rubber

- It can be cured by absorbing the steam in the air at normal temperature. Moreover, it is convenient, safe and unpolluted to use.
- It possesses the characteristics of single package, ageing resistance, moisture resistance, electric insulation and arc-resistance, as well as good bonding effect.

#### 3.1.2 Water-proof treatment for tail circuit terminal

- (1) Tail circuit terminals (i.e. audio cable and alarming line, etc.) that are not used on site can be cut short and flat.



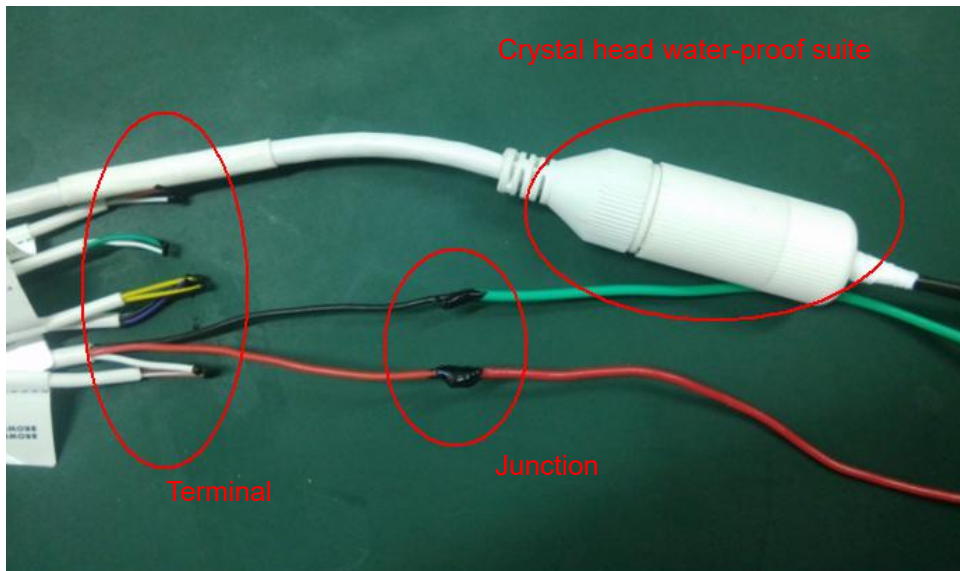
- (2) Dip dipped a little of glue for cut tail circuit terminals to make the glue fully immerse the core and outer layer of each wire.



- (3) Keep it still for a while, and then carry out equipment installation treatment after the initial curing of silica gel.

### 3.1.3 Water-proof treatment at the junction of tail circuit

- (1) Glue water-proof treatment can be used for power line or junctions of the tail circuits for other application. Or refer to *Application Instruction of Water-proof Tape* (3.2.2) to conduct water-proof treatment.



- (2) As for cable junction treatment, refer to the contents in operation part of Product Quick Start for Crystal Head Water-proof Suite to carry out water-proof treatment for cable junction.

## 3.2 Method II: Self-adhesive rubber tape treatment

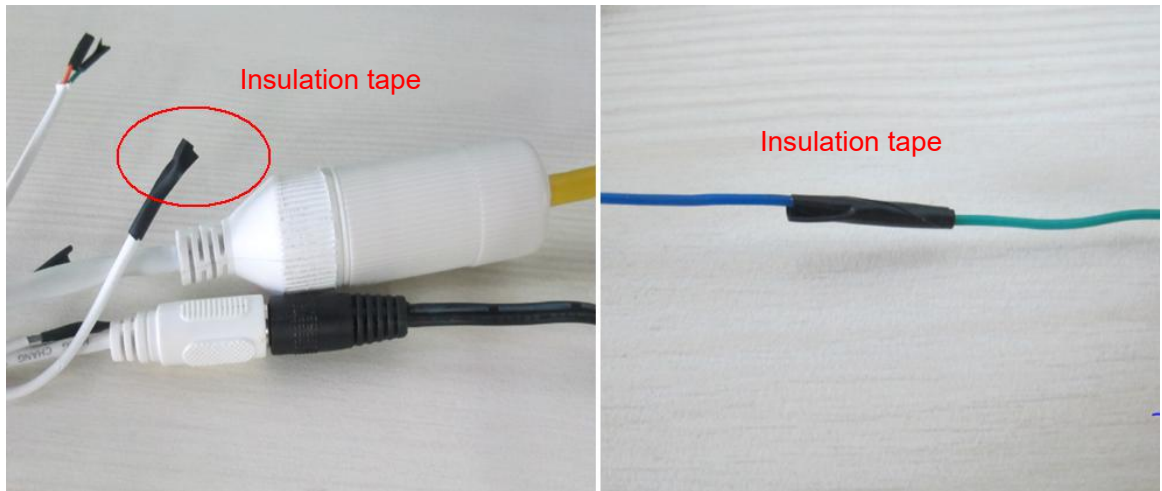
### 3.2.1 Features of self-adhesive rubber tape

- It has the characteristics of good self-adhesiveness, strong tightness, insulation, water-proof, high voltage resistance, etc.
- It is mainly used for insulation sealing water-proof of joints for wires and cables.
- While using it, unfasten isolating membrane and twine in half type by 200% stretching the tape. The insulation layer is integrated after twining.

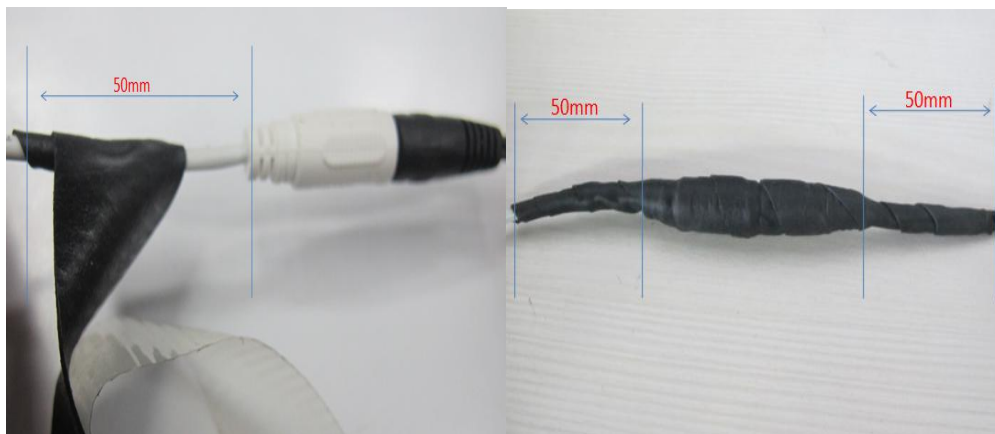


### 3.2.2 Application instruction for water-proof tape

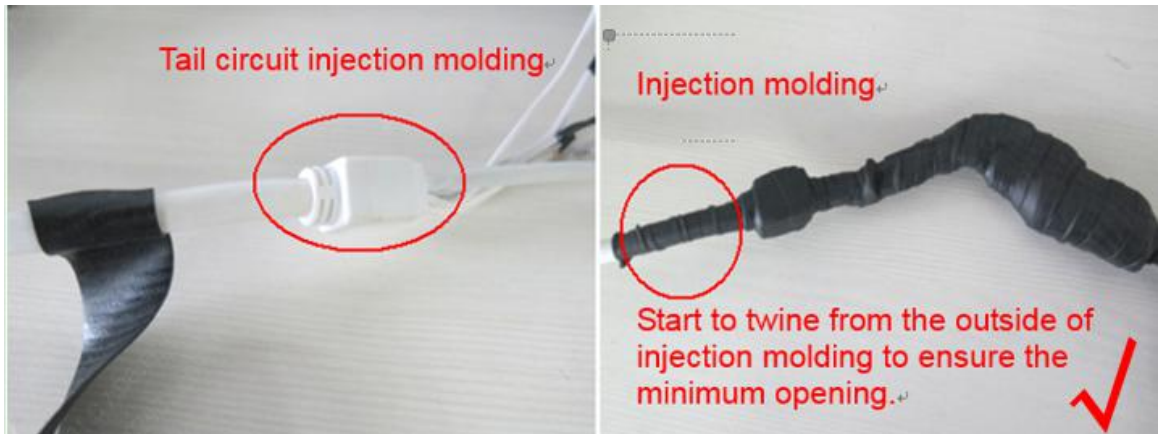
- (1) Before water-proof treatment for the tail circuit with water-proof tape, the tail circuit should be connected as needed and the exposed metal part should be subject to insulation treatment with insulation tape to avoid short circuit.



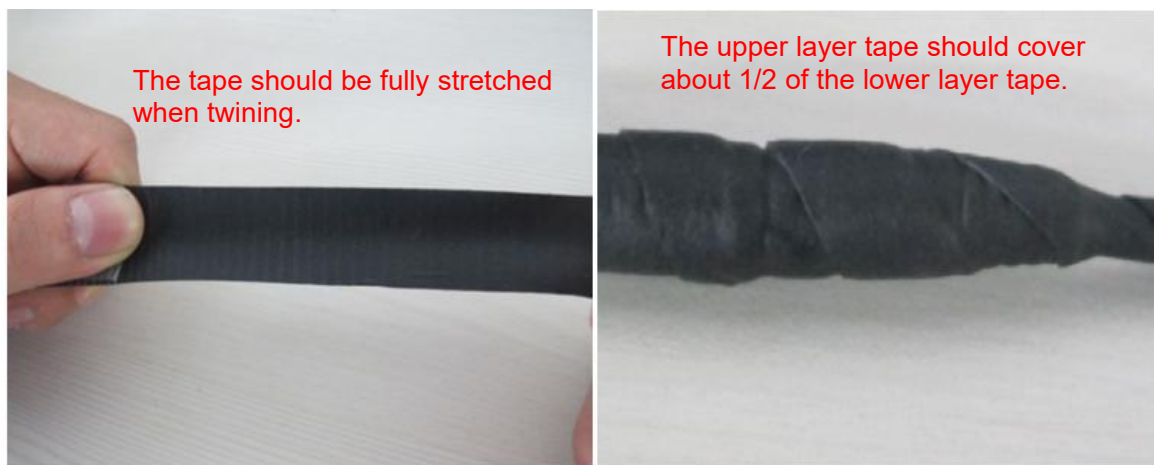
- (2) The starting point and ending point where the water-proof tape twining started should be about 50mm beyond the edge of the joint. During integrated protection for the tail circuit with injection molding, the selected starting point of twining is about 50mm beyond the edge of the injection molding.







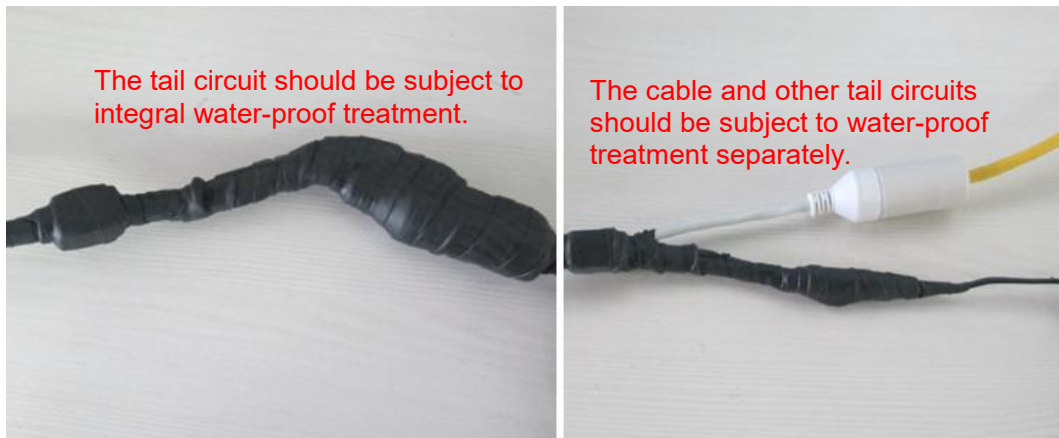
- (3) The tape should be stretched uniformly (stretching the tape to about 200% of original length), and certain tensile strength should be kept when twining. Twining should be carried out by overlapping and the upper layer tape should cover about 1/2 of the lower layer tape.



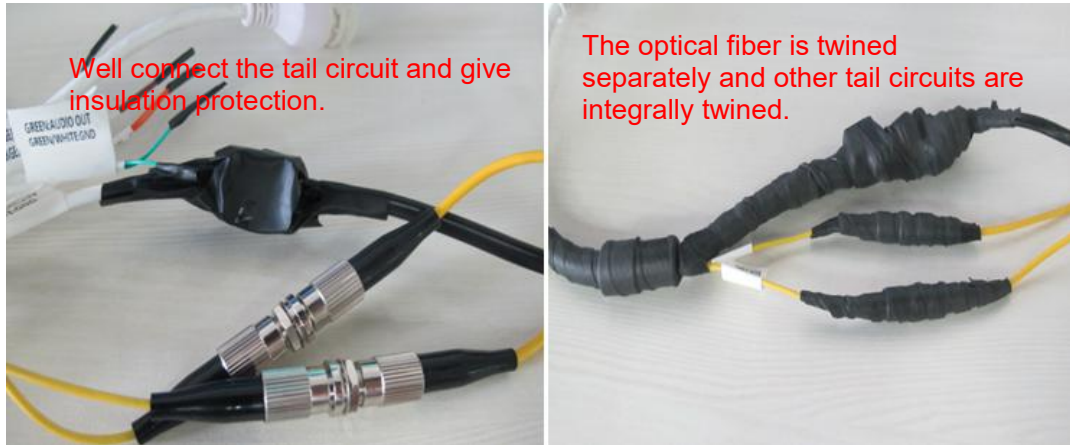
- (4) The tail circuit must be twined tightly to ensure the minimum opening for starting and ending points of tape twining. Moreover, the starting and ending points should be twined with several rounds to avoid cambering.



- (5) The twining should be in place while twining, and two layers of water-proof tape should be made in total. Firstly, twine a layer of water-proof tape from top to bottom, then reversely twine from the bottom to top in the same way. After the twining is completed, the tape should be squeezed at the twining position by hand to realize tight interlayer attachment, so as to ensure sufficient self-adhesion.
- (6) Except for internet access with water-proof joints, all the rest joints must be subject to water-proof treatment. Integrated water-proof treatment is recommended for the tail circuit. If the volume of tail circuit is too large to pass through the pipe as a result of integral twining, the internet access and other tail circuits can be treated separately. Meanwhile, the injection molding of tail circuit should be twined in place and arranged in water-proof junction box as per Principle (4).



- (7) After well connect the tail circuit and give insulation protection for the tail circuits with optical fibers, firstly two optical fibers should be twined separately with water-proof tape, and then other parts of tail circuit should be subject to integral twining. The twining for water-proof tape should be carried out in accordance with the requirements of Clauses (2), (3), (4), (5) and (6). At the same time, it is required that the twisting and excessive bending of optical fibers should be avoided for fear of optical fiber damages, and the tail circuit of optical fiber cannot be exposed outside.

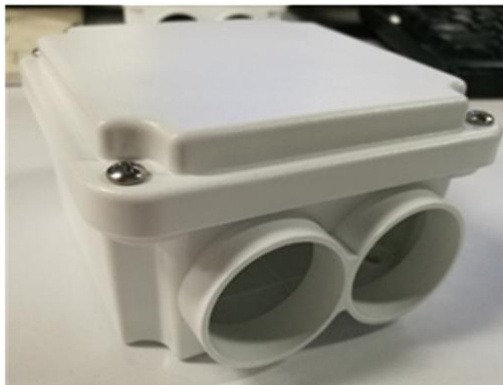


## 4 Installation Methods of Common Equipment

### 4.1 Method I: Wall mounting

#### 4.1.1 Installation demonstration

- (1) Plastic water-proof junction box of our company is recommended (code: 2152C011; model: TR-JB02).

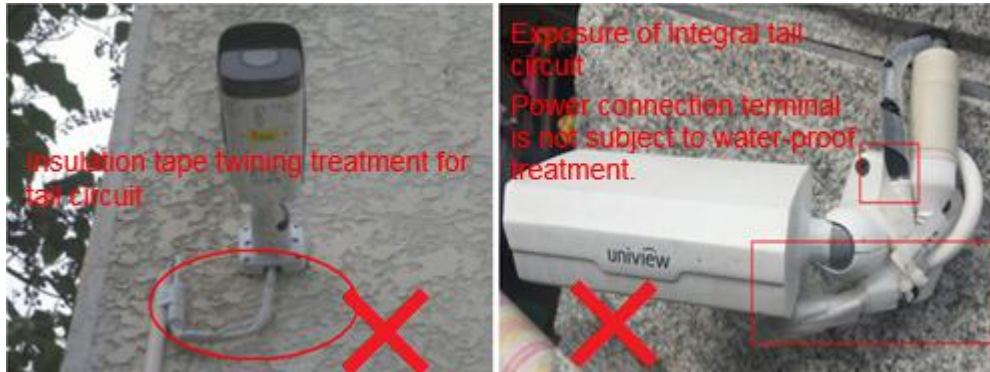


- (2) Water-proof junction box is used to collect the tail circuits of equipment in the junction box.



### 4.1.2 Precautions

- (1) Effective water-proof cannot be realized by insulation tape twining for exposed tail circuit terminals.



- (2) The equipment can be installed under eaves or in other similar semi-outer position, so as to avoid getting drenched directly. Pay attention to avoid the rain water inflows to the junction of tail circuit terminal for the equipment along the routing.
- (3) Horizontal installation of water-proof junction box is forbidden to avoid ponding in the box.



## 4.2 Method II: Rail installation

### 4.2.1 Installation demonstration

- (1) Wire hole should be avoided on the top of the rail for rail installation. The junction of equipment tail circuit terminal should be penetrated into the rail to avoid getting drenched directly and contacting with liquid water at the junction of tail circuit terminal.



- (2) Or use corrugated pipe, route the tail circuit to the corrugated pipe, and penetrate it into the rail behind the routing inside.



#### 4.2.2 Precautions

- (1) As for rail installation, if the tail circuit is not long enough to penetrate the junction of tail circuit into the rail, penetrate the rail after effective water-proof treatment is made for the tail circuit in reference to *Recommended Water-proof Treatment Methods for Tail Circuit*.
- (2) It should be noted that the ports at both ends of corrugated pipe should be extended to the sealed chamber as far as possible, or the two ports should be sealed tightly to ensure no liquid water is accumulated in the pipe when the corrugated pipe is used.

### 4.3 Method III: Standing pole mounted

#### 4.3.1 Installation demonstration

- (1) The tail circuit is routed from standing pole directly to avoid contacting with liquid water directly.



- (2) The tail circuit should be routed in the corrugated pipe for standing pole installation.



#### 4.3.2 Precautions

- (1) Upward opening, direct drenching and pouring of rain water should be avoided for standing hole; the side holes should be sealed to prevent the rain water entering.
- (2) It should be noted that the ports at both ends of corrugated pipe should be extended to the sealed chamber as far as possible, or the two ports should be sealed tightly to ensure no liquid water is accumulated in the pipe when the corrugated pipe is used.