2-Wire Door Station

User's Manual

V1.0.2

Foreword

General

This manual introduces the structure, functions and networking of the EACH door station (hereinafter referred to as "the VTO"). Read carefully before using the device, and keep the manual safe for future reference.

Safety Instructions

The following signal words might appear in the manual.

Signal Words	Meaning
DANGER	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
CAUTION	Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, or unpredictable results.
NOTE	Provides additional information as a supplement to the text.

Revision History

Version	Revision Content	Release Time
V1.0.2	• Revised network diagram. • Revised DIP configuration.	December 2024
V1.0.1	Revised network diagram.	September 2024
V1.0.0	First release.	July 2024

Privacy Protection Notice

As the device user or data controller, you might collect the personal data of others such as their face, audio, fingerprints, and license plate number. You need to be in compliance with your local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures which include but are not limited: Providing clear and visible identification to inform people of the existence of the surveillance area and provide required contact information.

About the Manual

- The manual is for reference only. Slight differences might be found between the manual and the product.
- We are not liable for losses incurred due to operating the product in ways that are not in compliance with the manual.

- The manual will be updated according to the latest laws and regulations of related jurisdictions. For detailed information, see the paper user's manual, use our CD-ROM, scan the QR code or visit our official website. The manual is for reference only. Slight differences might be found between the electronic version and the paper version.
- All designs and software are subject to change without prior written notice. Product updates might result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There might be errors in the print or deviations in the description of the functions, operations and technical data. If there is any doubt or dispute, we reserve the right of final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and company names in the manual are properties of their respective owners.
- Please visit our website, contact the supplier or customer service if any problems occur while using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

Important Safeguards and Warnings

This section introduces content covering the proper handling of the device, hazard prevention, and prevention of property damage. Read carefully before using the device, and comply with the guidelines when using it.

Operation Requirements

- Check whether the power supply is correct before use.
- Do not unplug the power cord on the side of the device while the adapter is powered on.
- Operate the device within the rated range of power input and output.
- Transport, use and store the device under allowed humidity and temperature conditions.
- If the device is powered off for longer than a month, it should be placed in its original package and sealed. Make sure to keep it away from moisture, and store it under allowed humidity and temperature conditions.
- Do not drop or splash liquid onto the device, and make sure that there is no object filled with liquid on the device to prevent liquid from flowing into it.
- Do not disassemble the device without professional instruction.

Installation Requirements

- Do not connect the power adapter to the device while the adapter is powered on.
- Strictly comply with the local electric safety code and standards. Make sure the ambient voltage is stable and meets the power supply requirements of the device.
- Do not connect the device to two or more kinds of power supplies, to avoid damage to the device.
- Improper use of the battery might result in a fire or explosion.

- Personnel working at heights must take all necessary measures to ensure personal safety including wearing a helmet and safety belts.
- Do not place the device in a place exposed to sunlight or near heat sources.
- Keep the device away from dampness, dust, and soot.
- Install the device on a stable surface to prevent it from falling.
- Install the device in a well-ventilated place, and do not block its ventilation.
- Use an adapter or cabinet power supply provided by the manufacturer.
- Use the power cords that are recommended for the region and conform to the rated power specifications.
- The power supply must conform to the requirements of ES1 in IEC 62368-1 standard and be no higher than PS2. Please note that the power supply requirements are subject to the device label.
- The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.

Table of Contents

1 Product Overview

1.1 Introduction

The 2-wire hybrid VTO uses the metal front panel and supports modular cascading. Using two wires for communication, the VTO supports video intercom with 2-wire hybrid VTH, and supports local lock and external 485 lock; it also supports call alarm and message notification on DMSS app.

1.2 Function

2-wire Communication

Supports 2-wire communication.

Video/Voice Call

Make video or voice call to VTHs.

Monitoring

Videos can be monitored by VTH or DMSS app users.

Auto IR Illumination

Supports auto IR illumination at night.

Unlock

There are 5 unlock methods: IC card, ID card, password, fingerprint and remote unlock.

Unlock methods of IC card, ID card, fingerprint and password are available when the device is connected to the corresponding modules.

2 Network Diagram

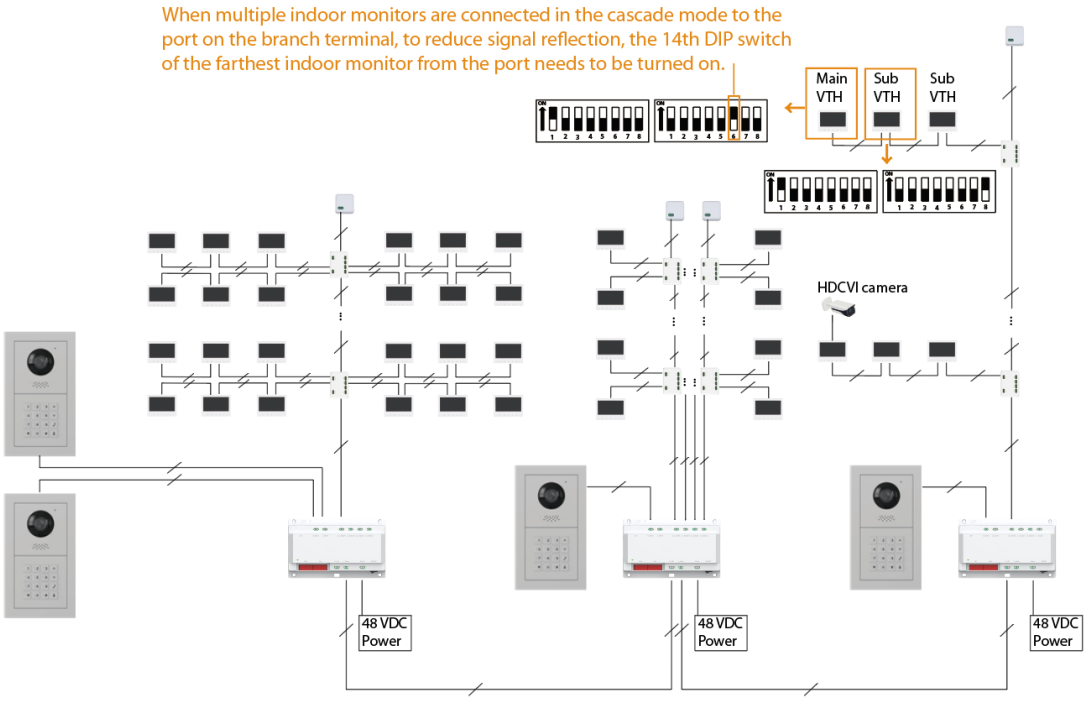
When multiple indoor monitors are connected in the cascade mode to the port on the branch terminal, to reduce signal reflection, the 14th DIP switch of the farthest indoor monitor from the port needs to be turned on.

Refer to the following image to configure the DIP switch of the device in the cascade. The DIP switch of ID should be configured according to the actual situation.

- The power supply of HDCVI camera cannot be grounded.
- The product appearance is for reference only.

Network Diagram

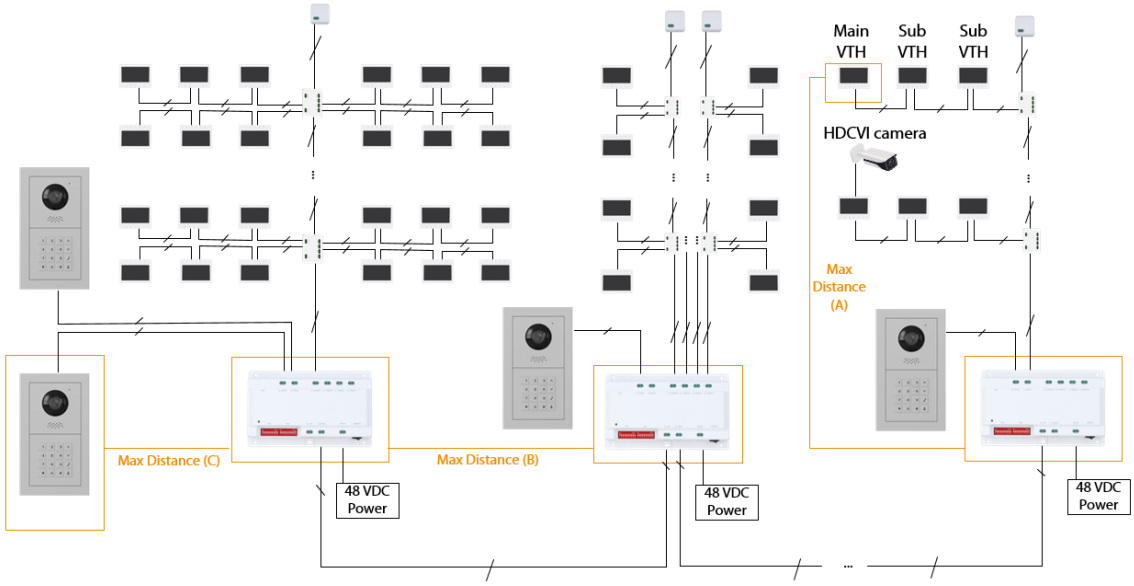
Figure 2-1 Network diagram



Wiring Distance between the Controller, VTH and the VTO

- Max distance (A) refers to the distance between the 2-wire controller and the VTH. A≤100 m.
- Max distance (B) refers to the distance between the cascading 2-wire controllers. B≤100 m.
- Max distance (C) refers to the distance between the 2-wire controller and the VTO. C≤100 m.
- The number of cascading controllers must be less than or equal to 10.

Figure 2-2 Max distance



Network capacity for VTH

The capacity for the VTH indicates the maximum number of VTHs that can be connected to one indoor monitor port on the 2-wire controller.

Each controller can connect up to 22 VTHs with Wi-Fi function or up to 100 VTHs without Wi-Fi function.

- The 2-wire VTHs with the Wi-Fi function can work at the same time. The number of 2-wire VTHs without the Wi-Fi function that work at the same time is 5% of the maximum capacity according to different cable specifications and distances.
- The capacity values are based on the default settings for voice and screen brightness, and standard cables that are mentioned in the following table.
- In the network, if you want to replace the VTH with Wi-Fi function to the VTH without Wi-Fi function, the conversion ratio is 1:8.

  For example, if you want to reduce 1 VTH with Wi-Fi function in the network, you can connect to 8 VTHs without Wi-Fi function.

  The maximum number of VTHs with Wi-Fi function cannot exceed 22.

  The maximum number of VTHs without Wi-Fi function cannot exceed 100.

Table 2-1 Network capacity for VTH

Cable Type	Cable Specification	AWG	Device Type	A=0–25 m	A=26–50 m	A=51–75 m	A=76–100 m
Regular cable	RVV 2 × 1.5 mm^2 (Recommend)	AWG 15	With Wi-Fi	22	22	22	17
			Without Wi-Fi	100	100	100	100
	RVV 2 × 1 mm^2	AWG 17	With Wi-Fi	22	22	18	13

Cable Type	Cable Specification	AWG	Device Type	A=0–25 m	A=26–50 m	A=51–75 m	A=76–100 m
			Without Wi-Fi	100	100	100	100
	RVV 2 × 0.5 mm²	AWG 20	With Wi-Fi	22	17	11	8
			Without Wi-Fi	100	100	91	68
Network cable	Double-pair network cable	AWG 21	With Wi-Fi	22	14	9	7
			Without Wi-Fi	100	100	75	56
	Single-pair network cable	AWG 24	With Wi-Fi	14	7	4	3
			Without Wi-Fi	100	56	37	28

Network capacity for 2-wire controller

The capacity for the 2-wire controller indicates the maximum number of controllers that can be connected to one corresponding port on the controller.

The capacity values are based on standard cables that are mentioned in the following table.

Table 2-2 Network capacity for the controller

Cable Type	Cable Specification	AWG	B=0–100 m
Regular cable	RVV 2 × 1.5 mm²	AWG 15	8
	RVV 2 × 1 mm²	AWG 17	10
	RVV 2 × 0.5 mm² (Recommend)	AWG 20	10
Network cable	Double-pair network cable	AWG 21	10
	Single-pair network cable	AWG 24	10

Network capacity for VTO

The capacity for the VTO indicates the maximum number of VTOs that can be connected to one 2-wire controller.

Up to 2 VTOs can be connected to one 2-wire controller.

The capacity values are based on standard cables that are mentioned in the following table.

Table 2-3 Network capacity for the VTO

Cable Type	Cable Specification	AWG	C=0–25 m	C=26–50 m	C=51–75 m	C=76–100 m
Regular cable	RVV 2 × 1.5 mm² (Recommend)	AWG 15	2	2	2	2
	RVV 2 × 1 mm²	AWG 17	2	2	2	2
	RVV 2 × 0.5 mm²	AWG 20	2	2	2	2

Cable Type	Cable Specification	AWG	C=0–25 m	C=26–50 m	C=51–75 m	C=76–100 m
Network cable	Double-pair network cable	AWG 21	2	2	2	2
	Single-pair network cable	AWG 24	2	2	1	1

3 Installation

- Do not expose the VTO to condensation, high temperature, direct sunlight, stain, dust, and chemically corrosive substances.
- Installation should be done by professional teams. Do not dismantle or repair the VTO by yourself in case of device failure. Contact after-sales service if you need any help.
- Prepare cross screwdrivers and gloves yourself.
- The recommended installation height of the VTO should be no more than 2 m from the ground.

4 Structure

4.1 Front Panel

Figure 4-1 Front panel

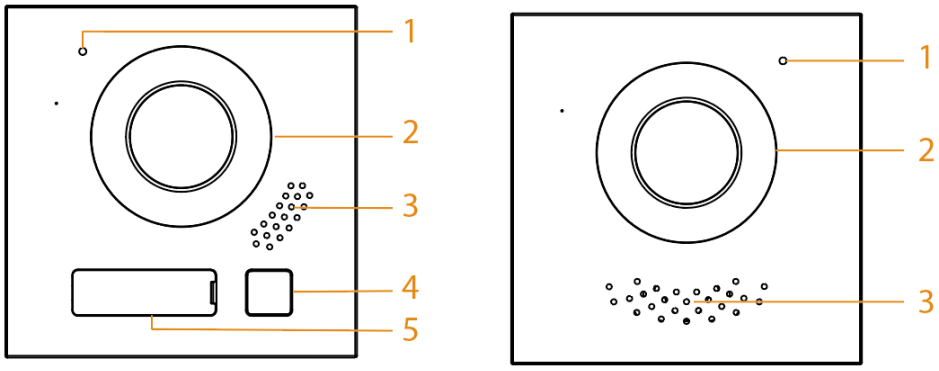


Table 4-1 Front panel description

No.	Name	Description
1	Microphone	Audio input.
2	Camera	Capture images or record videos for the VTO.
3	Speaker	Audio output.
4	Call button	Call the VTH and the management center.
5	Nameplate	Displays the custom information.

4.2 Rear Panel

Figure 4-2 Rear panel

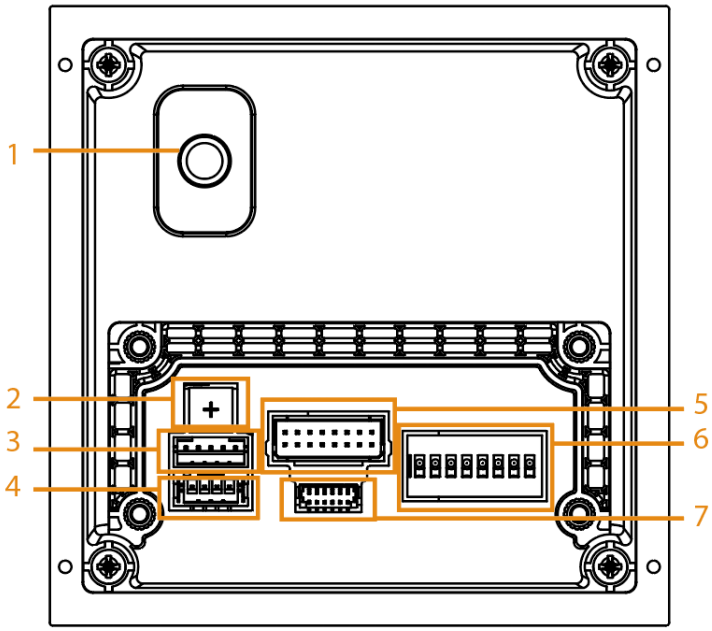


Table 4-2 Rear panel description

No.	Description
1	Tamper button.
2	Volume adjusting button. Use the screwdriver to adjust the volume of the talk. Rotate the button clockwise to turn down the volume.
3	Debug port.
4	Connect to other modules.
5	Functional port.
6	DIP switch.
7	Debug port.

5 Wiring

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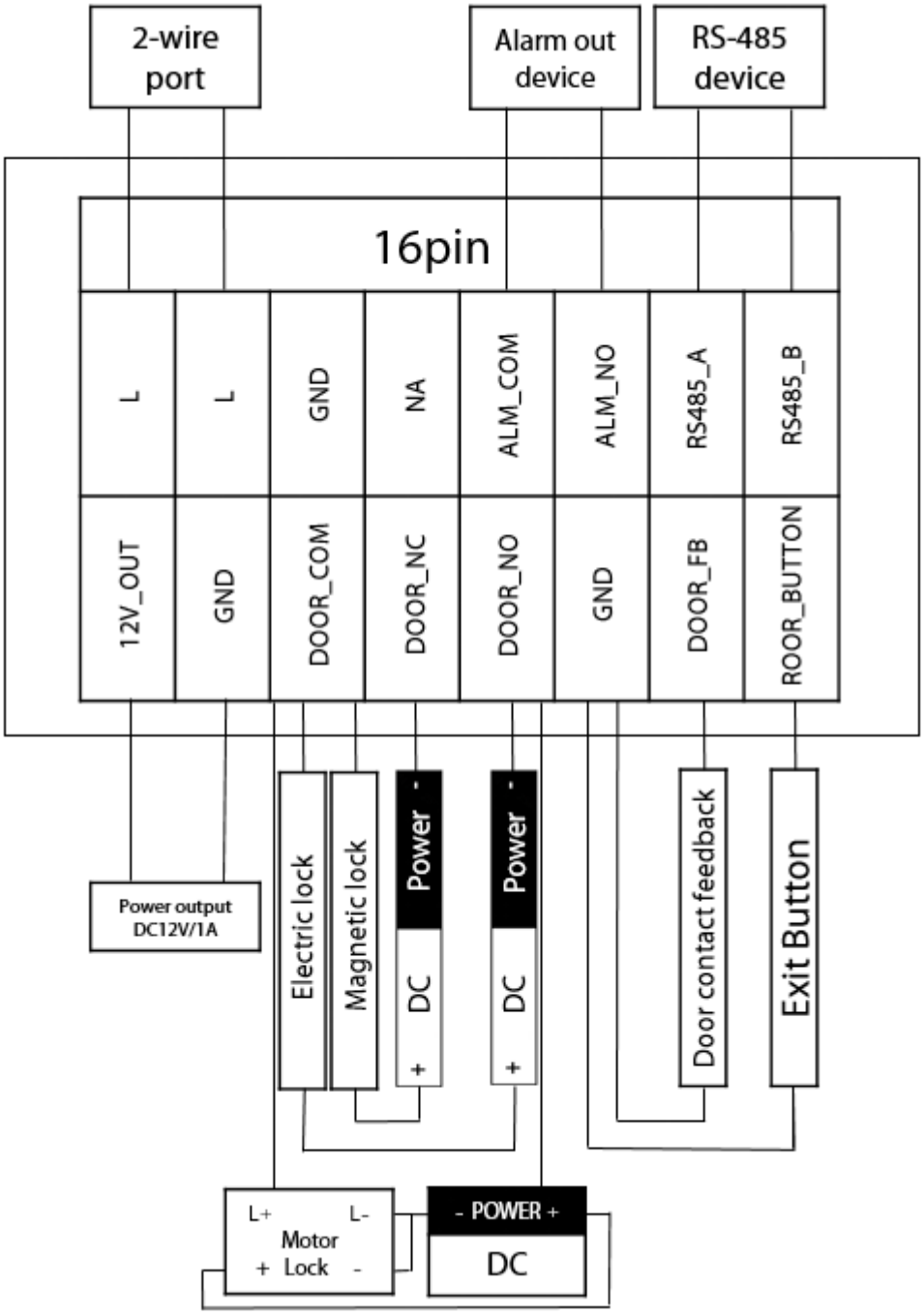
The alarm input port is connected as dry contact.

Figure 5-1 Wiring



6 Basic DIP Configuration

Configure the DIP switches to achieve the function you would like to program, which includes:

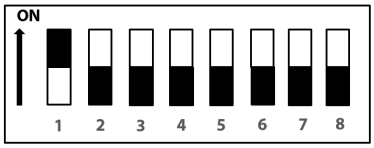
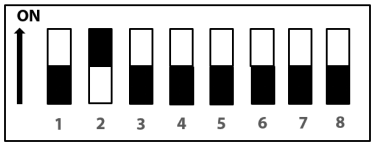
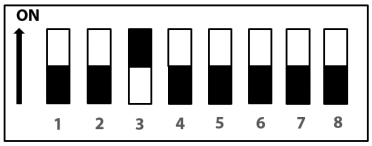
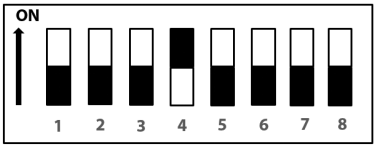
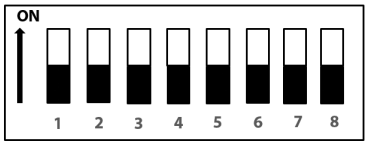
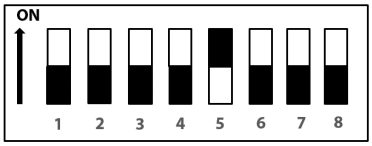
- Configure the address of the VTO.
- Configure the connection mode.

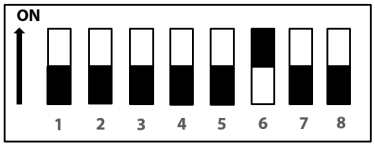
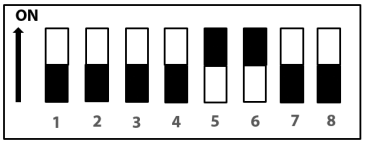
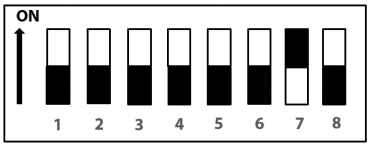
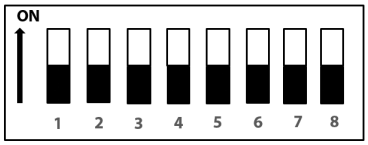
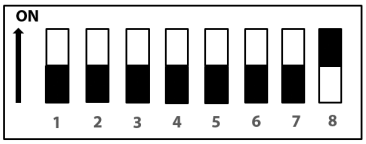
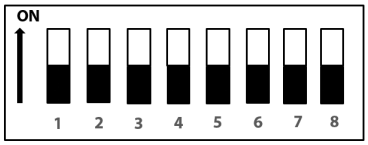
Move the actuator completely to the top or bottom position. If the actuator is in the middle position, it is considered to be in the top position.

6.1 DIP Switch Introduction

On the Dip-switch, set the code corresponding to the function you want to program as shown in the table below.

Table 6-1 DIP Switch mapping relations and function

DIP Switch No.		Corresponding Function	Description
DIP 1		VTO Address 1	Address DIP configuration. Supports programing a maximum of 14 VTO addresses.
DIP 2		VTO Address 2	
DIP 3		VTO Address 4	
DIP 4		VTO Address 8	
DIP 5		Lock-release activation time: 2 Sec	Lock-release activation time
		Lock-release activation time: 4 Sec	

DIP Switch No.		Corresponding Function	Description
DIP 6		lock-release activation time: 6 Sec	
		Lock-release activation time: 8 Sec	
DIP 7		**ON**: NTSC Mainly used in the U.S., Canada and Japan.	Television signal coding system In a networking system, this parameter mus be configured to the same status for all the VTOs.
		**OFF**: PAL Mainly used in Germany, Britain, China and Spain.	
DIP 8		**ON**: LED lighting of nameplate panel turned on.	LED lighting of nameplate panel If it can not be configured, update the module program to the latest.
		**OFF**: LED lighting of nameplate panel turned off.	

6.2 Configuring VTO ID

This section introduces how to configure the ID of a VTO through the coding rules of DIP switches.

Procedure

Step 1 Find the mapping relation between the DIP switch number and the ID number you plan to configure from the table.

It follows a calculation rule that combing only the numbers listed in the **ID No.** only to form a new ID number.

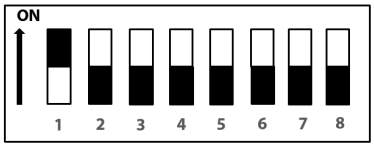
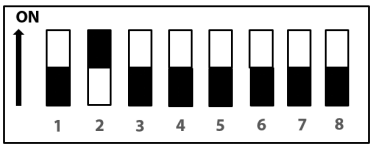
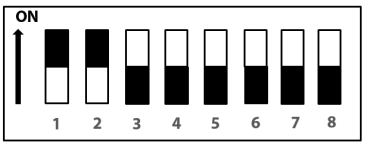
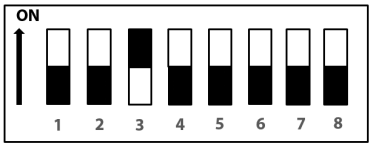
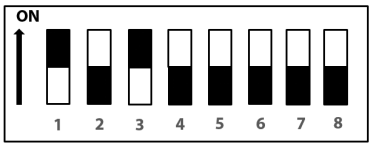
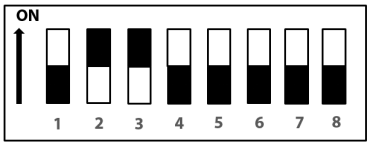
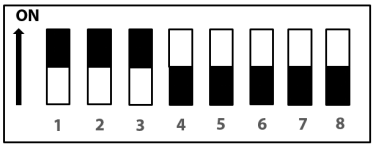
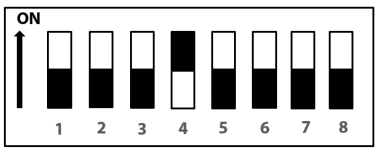
Step 2 Manually move the actuator(s) corresponding to the DIP switch(s) to the status **ON**, so that the ID of the VTO can be configured.

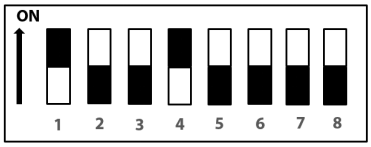
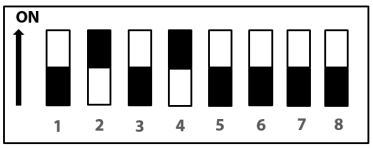
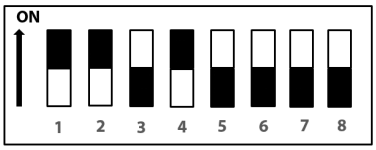
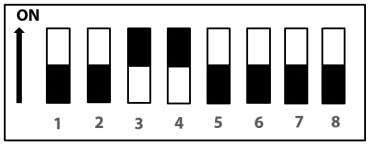
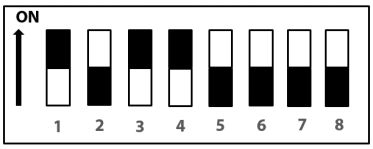
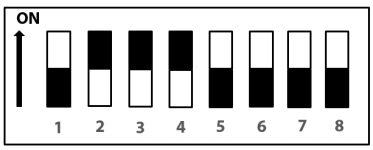
For example, if you want to set your VTO ID as 4, you need to first find the mapping relation (DIP 3 equals to the ID number of 4) in the table, and then manually move the actuator of the DIP 3 to the status **ON**. If you want to set your VTO ID as 3, you need to do the calculation (1+2=3; which equals to the value of DIP1 and DIP 2 combined together in

the mapping relation), and manually move both the actuator of DIP 1 and DIP 2 to the status **ON**.

Here is the list of commonly used VTO ID (1-14) and their corresponding DIP switch number combinations.

Table 6-2 Common VTO ID (1-14) and DIP switch numbers

VTO ID	DIP Switch Combination	Coding Rule
1		DIP 1
2		DIP 2
3		DIP 2+ DIP 1
4		DIP 3
5		DIP 3 + DIP 1
6		DIP 2 + DIP 3
7		DIP 3 + DIP 2 + DIP 1
8		DIP 4

VTO ID	DIP Switch Combination	Coding Rule
9		DIP 4 + DIP 1
10		DIP 4 + DIP 2
11		DIP 4 + DIP 2+ DIP 1
12		DIP 4 + DIP 3
13		DIP 4 + DIP 3+ DIP 1
14		DIP 4 + DIP 3+ DIP 2

7 Updating the Device

The Device can be updated on the webpage of the 2-wire controller after it is connected to the 2-wire controller.

Procedure

Step 1 Log in to the webpage of the 2-wire controller.

Step 2 Click **Config** next to the corresponding VTO.

Step 3 Select **Module**.

- View the VTO and all the cascading modules.
- Click  to view the current version information.
- Click **Browse** to select the update file, and then click **Update**.

Figure 7-1 Module