IP9165-LPR Kit (street)
License Plate Recognition Solution

Installation Guide

Rev. 1.0

Ordering part no.:
IP9165-LPR Kit (Street, 9-50mm, i-CS, Snap-in IR): 199005600G
IP9165-LPR Kit (Street, 12-40mm, i-CS, Snap-in IR): 199005700G

CAUTION:
TO REDUCE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT REMOVE COVER.
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

UNPACKING:
Unpack carefully. Electronic components can be damaged if improperly handled or dropped. If an item appears damaged in shipment, place it properly in its carton and notify the shipper.

IMPORTANT!:

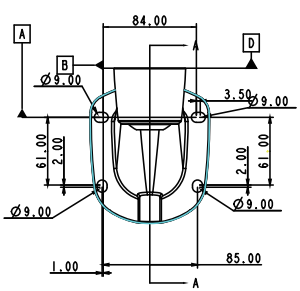
1. Read and follow Instructions: All operating and user instructions should be read and followed before the unit is to be operated.
2. Electrical Connections: Only a qualified electrician is allowed to make electrical connections.

I Specifications

Model Number	LPC enclosure
Power Input	24V AC
Max. Output power budget	48W (Street);
Power Consumption	Window heater: 10W; Blower: 2W; Camera: 6 ~ 8W
Environmental Operation Temp.	-20°C ~ +50°C (-4°F ~ +149°F)
Protection Level	IP68, IK10
Mounting Bracket	Fully-cable Management
Construction	Die-cast Aluminum Alloy
Coating	White epoxy powder coating
Dimensions	502.8 (L) x 170 (W) x 400 (H) mm
Net Weight	6,482g (9.24 lb)

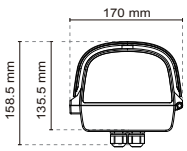
Below are the mounting hole dimensions for the mounting brackets. Chances are you may need to plan for the locations of the brackets.

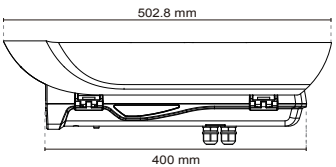
AM-21E

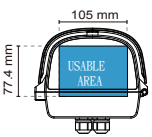


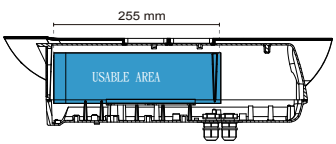
II Mounting Configuration & Dimensions

Swivel Positions and Directions

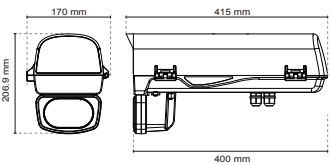


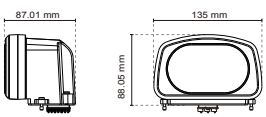




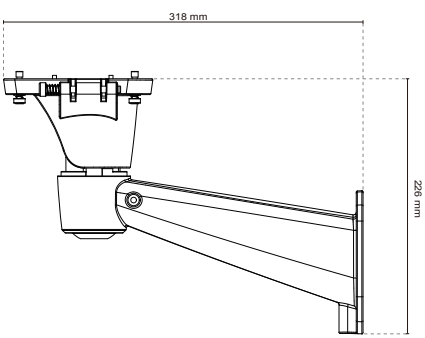


AE-23A

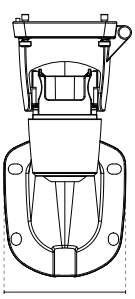




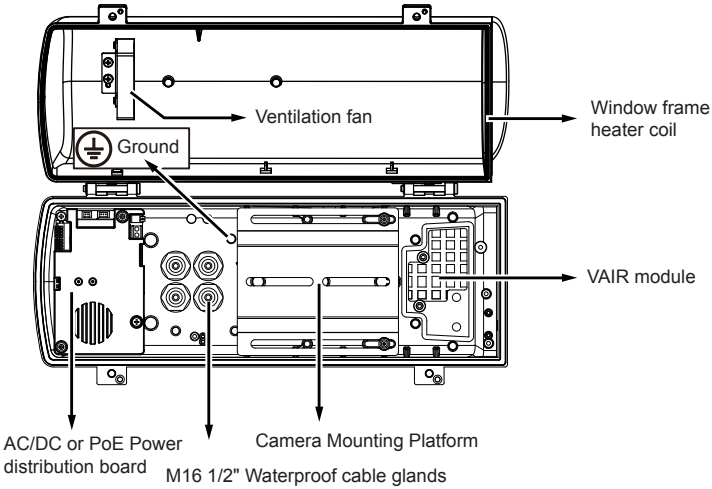
AI-109



AE-21E



III Component Description



IV Installation Suggestions

If you plan to install this camera enclosure into a tropical, sea coastal, or an environment where salt water or corrosive industrial waste water/moist are present, please seal each stainless steel screws and fittings with a silicon grease compounds. This will help prevent electrolysis to occur and extend the life span of the camera and housing.

IMPORTANT:

1. Disconnect devices: A readily accessible disconnect device in the building installation wiring should be incorporated.
2. Electrical Connection: Only a qualified electrician is allowed to make electrical connections.

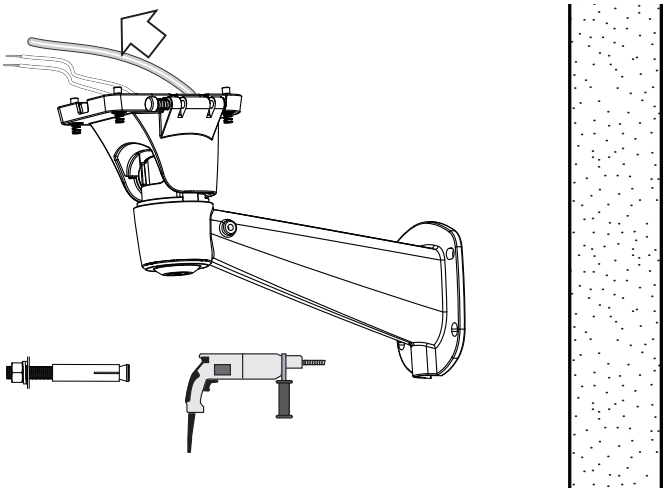
WARNING:

- Please avoid eye exposure or apply appropriate protection, such as wearing a pair of Infrared protection glasses, when working with the product. Always use camera live view to oberve IR lighting effects.

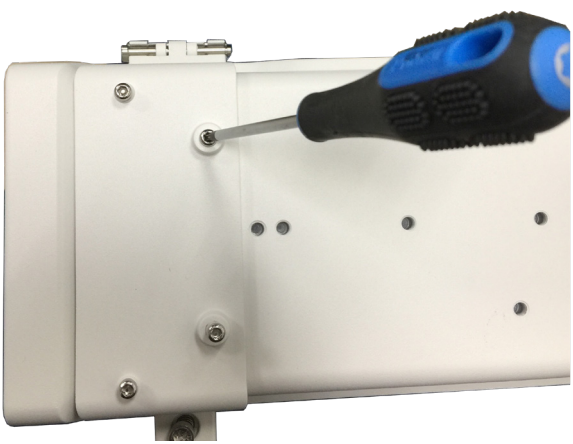
V Installation

1. Install the wall-mount bracket to a preferred location at your installation site. Drill mounting holes and a cable routing hole (if preferred) on a wall. Install the bracket. Prepare and route the wiring, Ethernet and 24V power source.

Note that the AC 110V-to-24V power adapter should have a capcity of at least 4A.

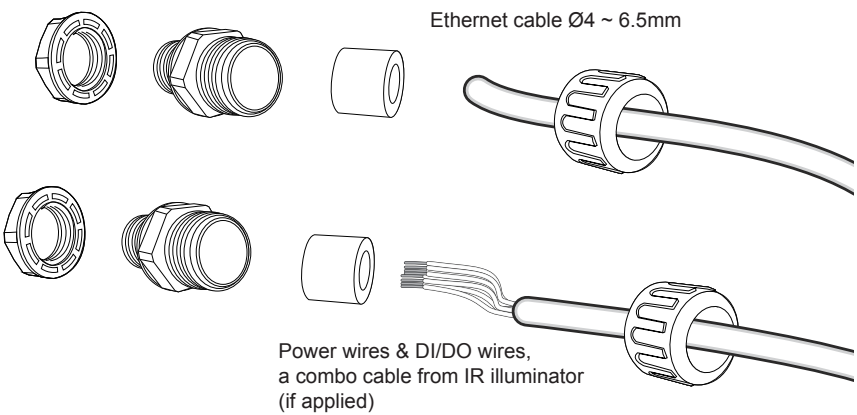


2. If you need to install an IR illuminator, remove the metal cover from the bottom of the housing using a T15 anti-tamper screwdriver.

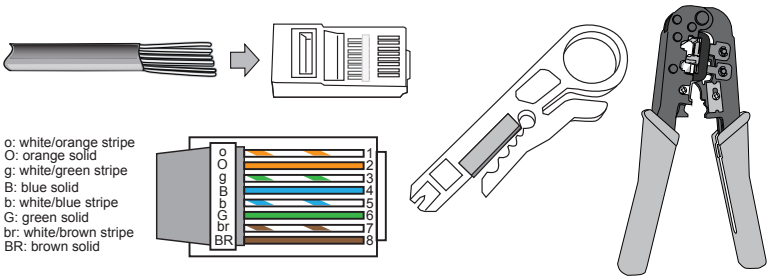


3. Orient and secure the IR illuminator to the housing using the 4 mounting holes at the bottom.

4. Prepare power wires, a ground wire, and a CAT5e Ethernet cable. Pass them through the M16 waterproof connectors under the housing.

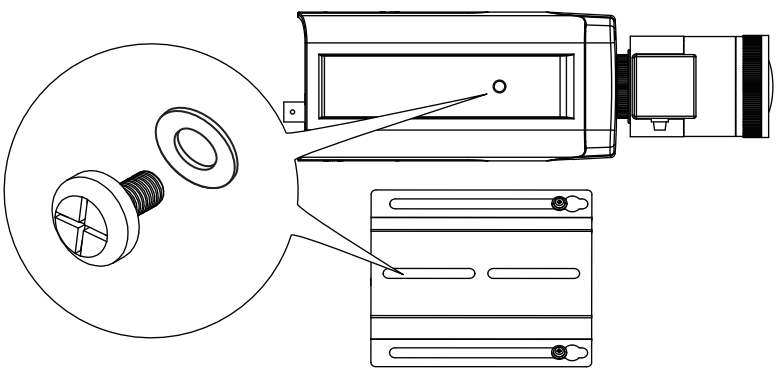


You may need to remove the RJ45 connector, and use a crimping tool to connect the Ethernet wires to an RJ45 connector inside the enclosure. Use an Ethernet cable of the width of 4 ~ 6.5mm.



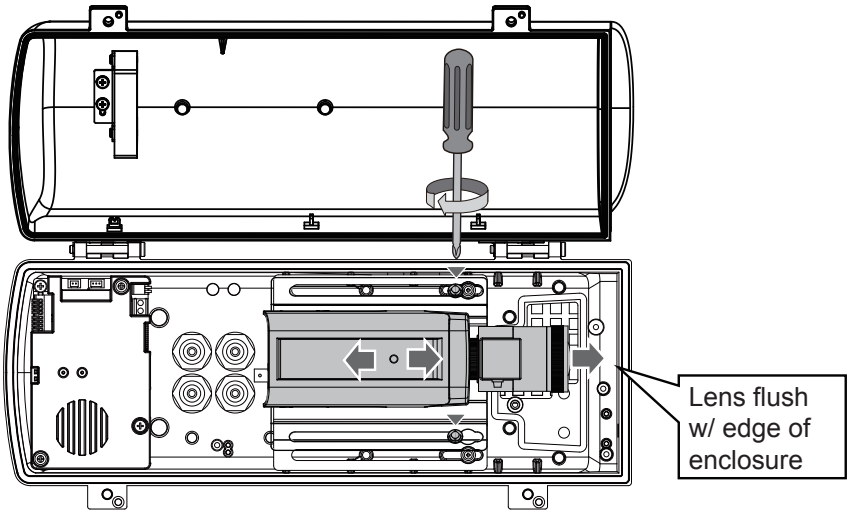
5. When done, tighten up and install the waterproof connectors.

6. Assemble the camera components, e.g., the CS ring and lens module. Secure the mounting plate to the bottom of the camera (the label side) using the included screw.

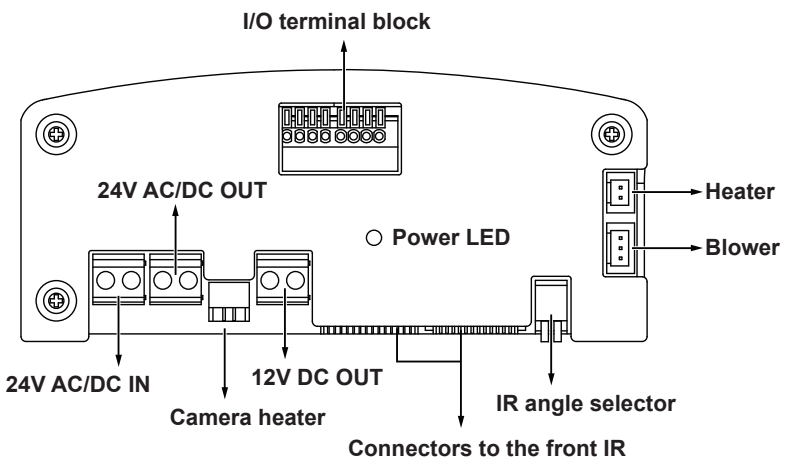


There is a plastic mount pad in the package. You do not need the mounting pad using the VIVOTEK camera.

7. Adjust the camera's position so that the lens module can flush align with the tempered glass. Secure the camera using the screws and washers to the bottom of the housing.



8. Connect 24V power source to the power input terminal. Connect power wires from the DC 12V output to the camera. Below is the distribution board drawing power from 24V AC/DC.



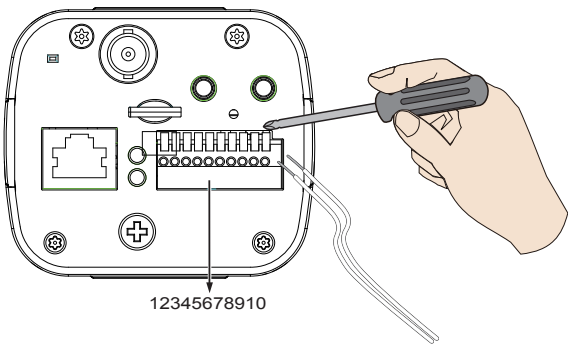
You should prepare a power adaptor of the sufficient capacity for supplying 24V input. Below are the requirements:

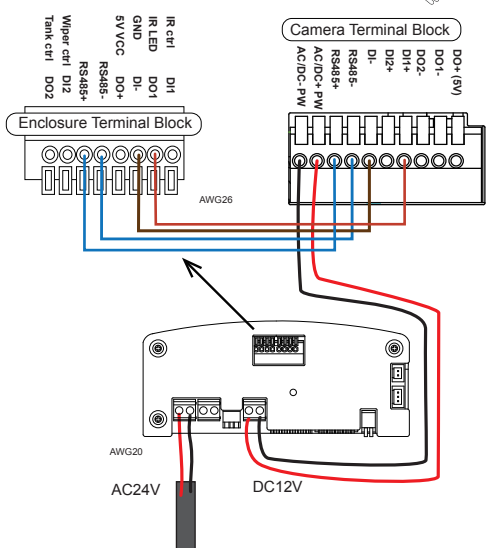
	Total consumption	Power adaptor
LPC Street	48W	4A

9. Connect the Ethernet cable to the camera's RJ45 socket.

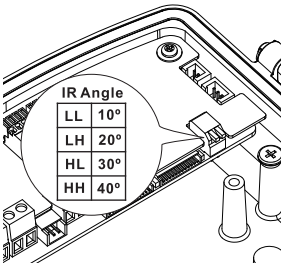
10. Also pass the combo cable of the IR illuminator through a waterproof connector.

11. Connect the day/night signal lines from the housing to the DI/DO connectors on the camera's terminal block.

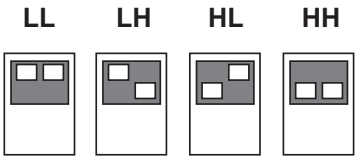




Configuring IR illuminator



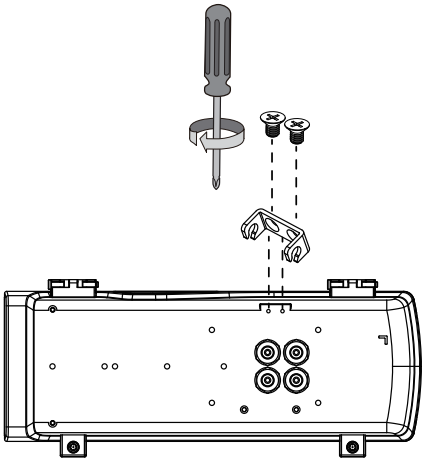
The following enclosures comes with adjustable IR lights: AE-23A



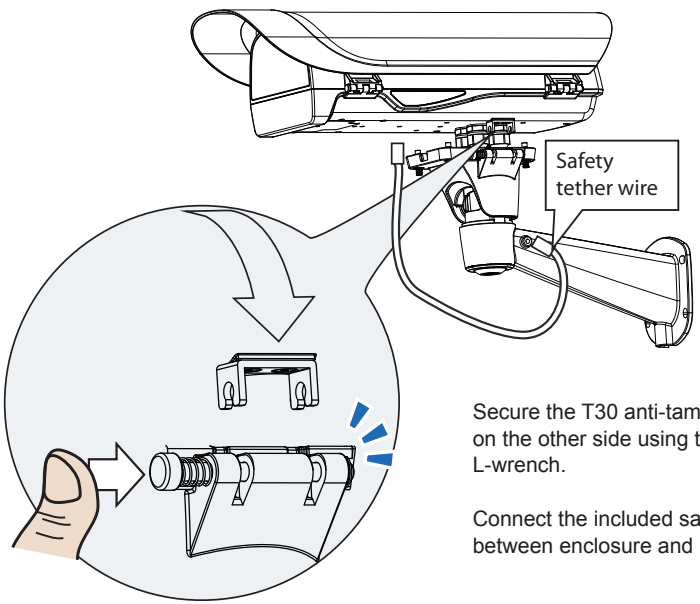
Below are the parameters of the IR illuminator. Use the onboard jumpers to configure the beam angle for a different effective illumination range.

VAIR	48W			
no. of LEDs	18P/Dual			
Beam angle	10°	20°	25°	30°
Distance (meter)	350m	280m	210m	150m

12. Secure the intersection bracket to the bottom of the housing by driving two screws.



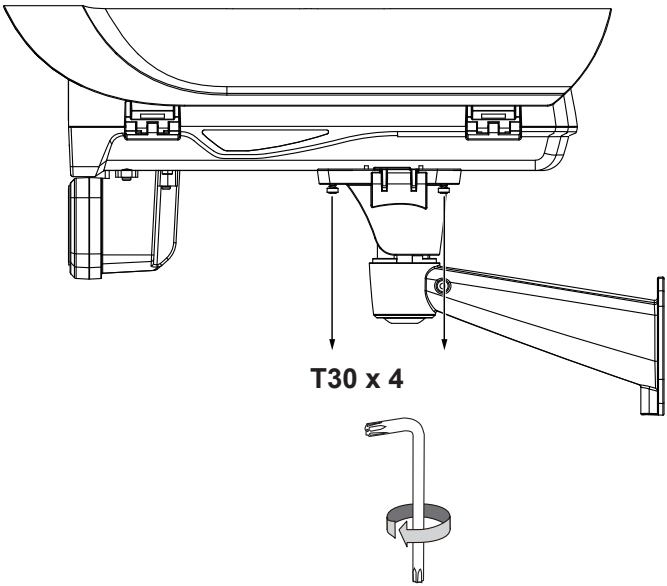
13. Install the housing to the wall-mount bracket by aiming and pressing the spring mortise, and hook the bracket onto the groove in the spring mortise.



Secure the T30 anti-tamper screws on the other side using the included L-wrench.

Connect the included safety wire between enclosure and bracket.

14. Secure the housing to the bracket by fasteninng 4 T30 screws.

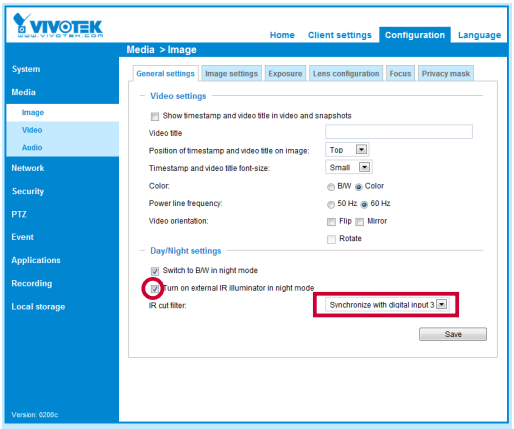


15. Adjust zoom and focus and open a web console with the camera to tune for the best image. When zoom and focus is done, Close the top cover and fasten the hex screws from below.

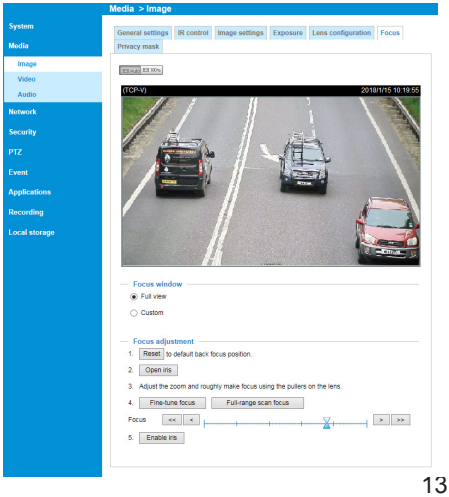
16. Firmware configurable options:

Make sure that the external IR is turned on in the night mode, and that the IR cut filter option is synchronized with the digital input you connected (default is DI1).

When the "Turn on external IR illuminator in night mode" is selected, a digital output signal will be triggered to turn on the IR illuminators.



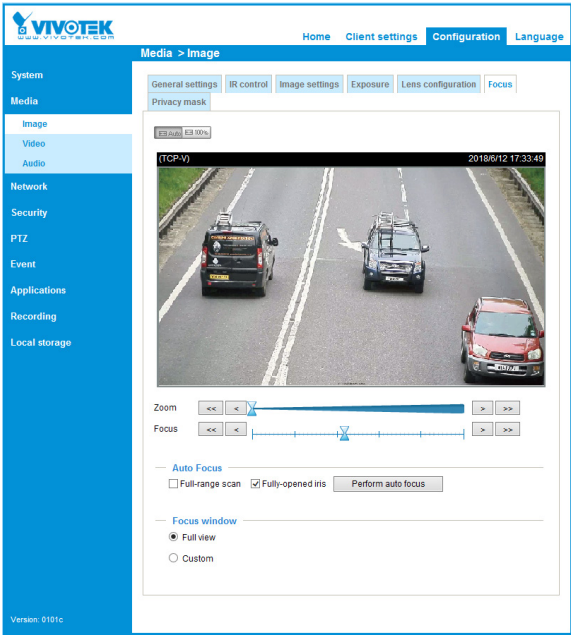
Use the **Media** > **Image** > **Focus** function to tune for a best image focus on your target area. If using a non-iCS lens model (RBF lens), you should manually tune the focus to be close to the optimal, and then use the auto scan focus function.



Non-iCS lens

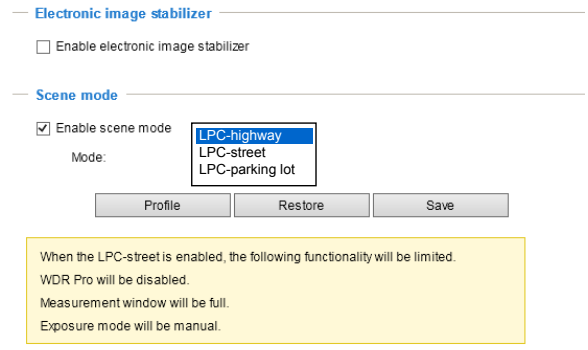
If using an iCS lens model, use the auto focus function for an optimal image.

The configuration page automaticallly displays different options according to the lens you installed.

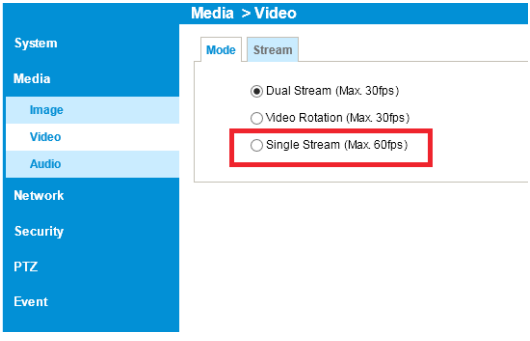


iCS lens

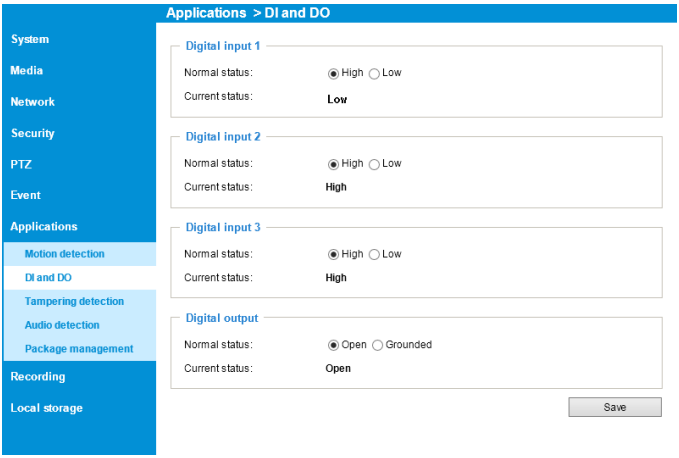
In the Configuration > Media > Image settings page, select an application scenario, LPC Highway, street, or parking lot mode. The related parameters, such as shutter time, will be automatically changed for the scenario.



If preferred, e.g., shooting fast moving vehicles, select the 60fps frame rate.



In the night mode, check if the input signals are correctly detected. You may simulate the night mode by blocking the IR unit's light sensor. Change the triggering parameters if necessary.



VI Appendix: RS485 Commands

For housings that come with IR illuminators, wiper, and washer, commands can be delivered via the RS485 protocol. The RS485 connection uses the Pelco D protocol.

Configuration parameters:

Baud rate	2400
Data bits	8
Parity	None
Stop bit	1

Command format:

Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
Sync	Addr	CMND1	CMND2	DATA1	DATA2	CKSM

Addr range: 0x00 ~ 0xFE. CKSM: check sum is the last 8 bits of the sum of Byte2 through Byte6.

Command Group 1:

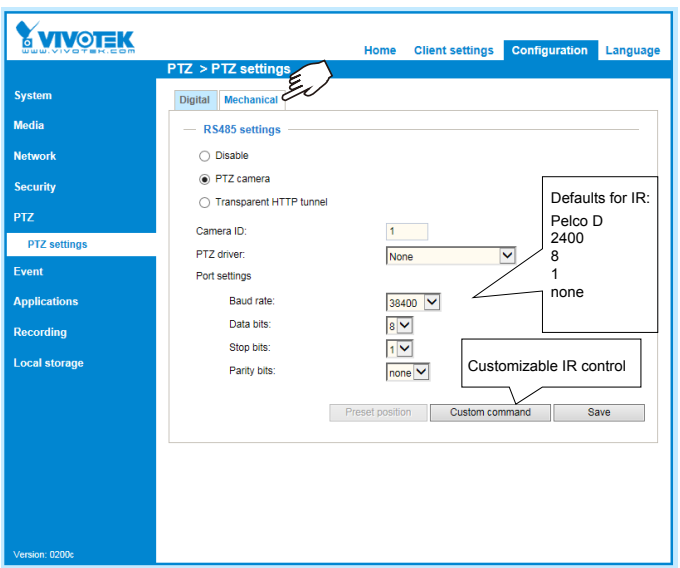
Command Description	Command (hexadecimal, "ox" is ommited)	Note
ValR Lens Stop	FF 01 00 00 00 01	Pelco D - Zoom Stop
VAIR Lens Wide	FF 01 00 40 00 00 41	Pelco D - Zoom Wide
ValR Lens Tele	FF 01 00 20 00 00 21	Pelco D - Zoom Tele
Wiper On	FF 01 00 09 00 01 0B	Pelco D – Aux 1 On
Wiper Off	FF 01 00 0B 00 01 0D	Pelco D – Aux 1 Off
Wiper and Washer On	FF 01 00 09 00 02 0C	Pelco D – Aux 2 On
Wiper and Washer Off	FF 01 00 0B 00 02 0E	Pelco D – Aux 2 Off
IR Led Force On	FF 01 00 09 00 03 0D	Pelco D – Aux 3 On
IR Led Force Off	FF 01 00 0B 00 03 0F	Pelco D – Aux 3 Off

Command Group 2:

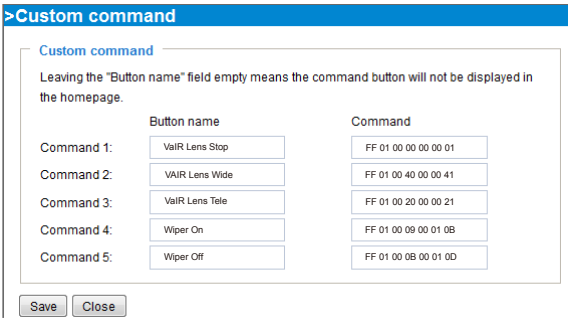
Command Name	Command (hexadecimal, ox is ommited)	Note
Addr configuration	FF 01 00 18 01 dd CKSM	dd: 0x00 ~ 0xFE; for example, when addr is 2, the command looks like FF 01 00 18 01 02 1C
IRMode	FF 01 00 18 02 mm CKSM	mm: IR mode mm=0x02: Light Sensor Auto (Default) mm=0x03: DI Trigger mm=0x04: via RS485 Command (When receiving IR Led Force On / IR Led Force Off command, will switch to using the IR Mode -RS485 Command)

		For example, IRmode_Auto FF 01 00 18 02 02 1D IRmode_DI FF 01 00 18 02 03 1E IRmode_CMD FF 01 00 18 02 04 1F
LightSensorGate	FF 01 00 18 03 LL CKSM	When the IR Mode Light Sensor Auto, the Lux value to turn IR LED can be configured. LL: Lux, changes is made by every10Lux For example: LightSensorGate = 100 FF 01 00 18 03 0A 26 LightSensorGate = 200 FF 01 00 18 03 14 30

The parameters of IR illuminator can be controlled via the RS485 connection. You can enable the connection in **Configuration** > **PTZ** > **Mechanical** window. Select the defaults for the IR illuminator: Pelco D, baud rate - 2400, Data bits - 8, Stop bit - 1, Parity - none.



You can create custom command buttons by entering the Button name and the command itself:



VaIR: The VAIR control include those on the IR Led and VaIR Lens.

There are 3 IR mode commands

IRMode = Light Sensor Auto (Default)

sensor lux reading < LightSensorGate - LED On

sensor lux reading >= (LightSensorGate + 10 Lux) - LED Off

IRMode = DI_1 Trigger (IR triggered on by DI

DI _1 shorted DI –(Low) - LED On

DI_1 open (High) - LED Off

IRMode = controlled by RS485 Command (Pelco D – Aux 3 On/Off)

IR Led Force On - LED On

IR Led Force Off - LED Off

DO_1 as IR Status Feedback

LED On, DO_1 is grounded via MOSFET (DI- connected)

LED Off, DO_1 no input

VaIR Lens Zoom control

Dip Switch

4 configurations using the Dip Switch on the distribution board.

When Lens stops, its last position will be memoried,and when powered on again, lens will move to the previous position. When powered on for the first time, Lens will follow the DIP switch configuration.

Wiper & Wahser control)
DI_2 Trigger:
When DI_2 connected to DI- (Low), wiper and washer operate for 3 times and then stop.

Using RS485 Command –Wiper Only (Pelco D – Aux 1 On/Off)
Wiper On, wiper takes action
Wiper Off, wiper starts one operation and then stops.

RS485 Command –Wiper & Washer (Pelco D – Aux2 On/Off)
Wiper and Washer On, pumps and spray water with wiper action.
Wiper and Washer Off, spraying and wiping starts one operation and then stops.

DO2 used for spraying control

DO_2 connected to DI- via MOSFET - starts spraying.

Spraying stops, and the LED turns Off when DO_2 is not triggered.

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