How to integrate thermal camera using ISAPI

Please note that for how to configure device parameters, please contact local technical support personnel for support. Before integration, confirm that the relevant configurations on the device are configured and function normally on the device.

Test camera model: DS-2TD4137-25/WY

一、 RTSP preview stream

RTSP url format：

rtsp://admin:abcd1234@10.43.126.55/Streaming/Channels/201/

admin:abcd1234 is the camera’s user name and password; 10.43.126.55 is the camera’s IP address;

201: The first number represents the thermal/visible channel, the second and third number represent the code stream.

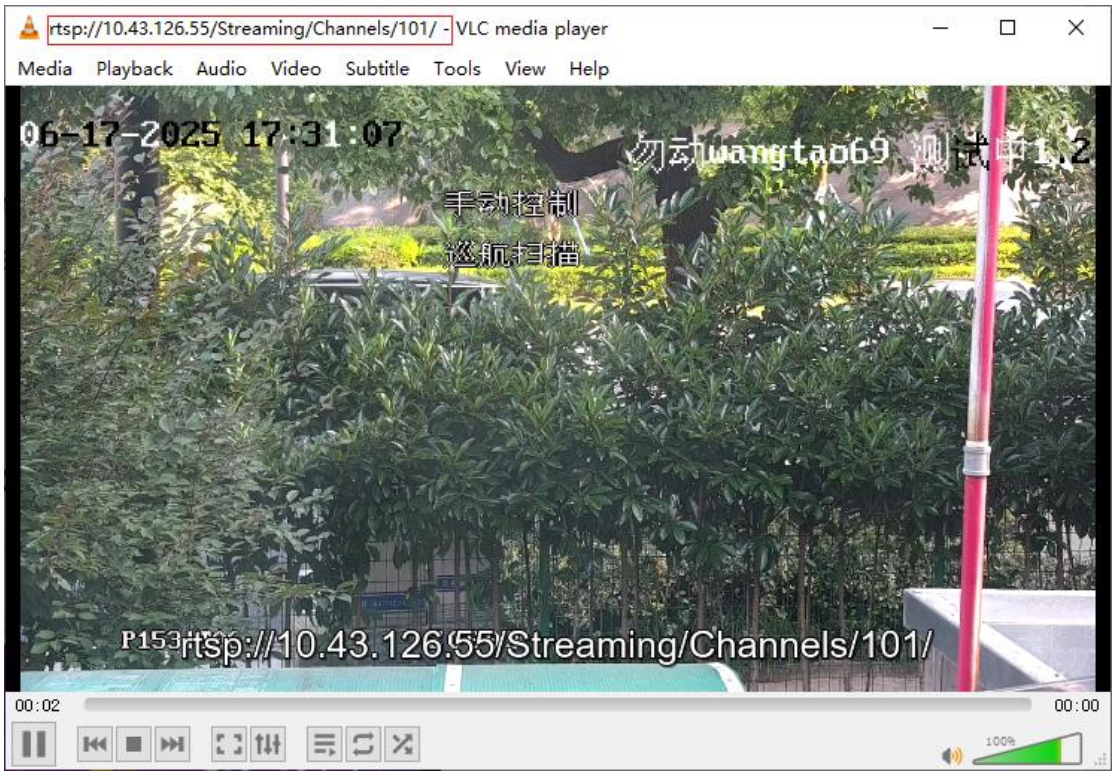
2 is thermal channel, 01 is code stream. (so 101 is visible channel).

1. Get thermal channel stream by RTSP

rtsp://admin:abcd1234@10.43.126.55/Streaming/Channels/201/

2. Get visible channel stream by RTSP

rtsp://admin:abcd1234@10.43.126.55/Streaming/Channels/101/



二、 Obtain real-time temperature measurement data

Protocol：

GET
/ISAPI/Thermal/channels/<channelID>/thermometry/realTimethermometry/rules?format=json

Receive data sample：

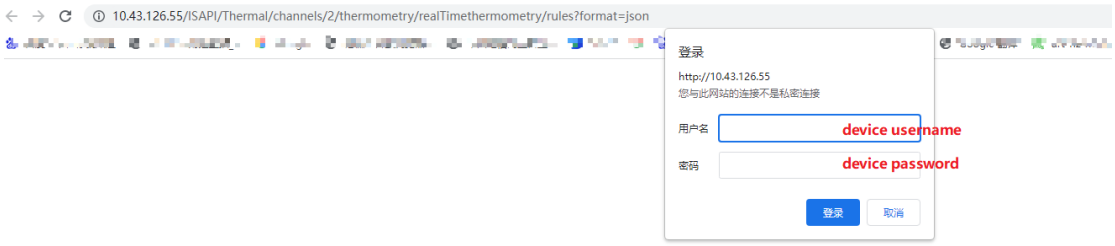
```
{
    "ThermometryUploadList":    {
        "ThermometryUpload":    [{
                "relativeTime":    1705179702,
                "absTime":    1705146934,
                "presetNo":    0,
                "LinePolygonThermCfg":    {
                    "MaxTemperature":    55.0,
                    "MinTemperature":    25.4,
                    "AverageTemperature":    39.2,
```

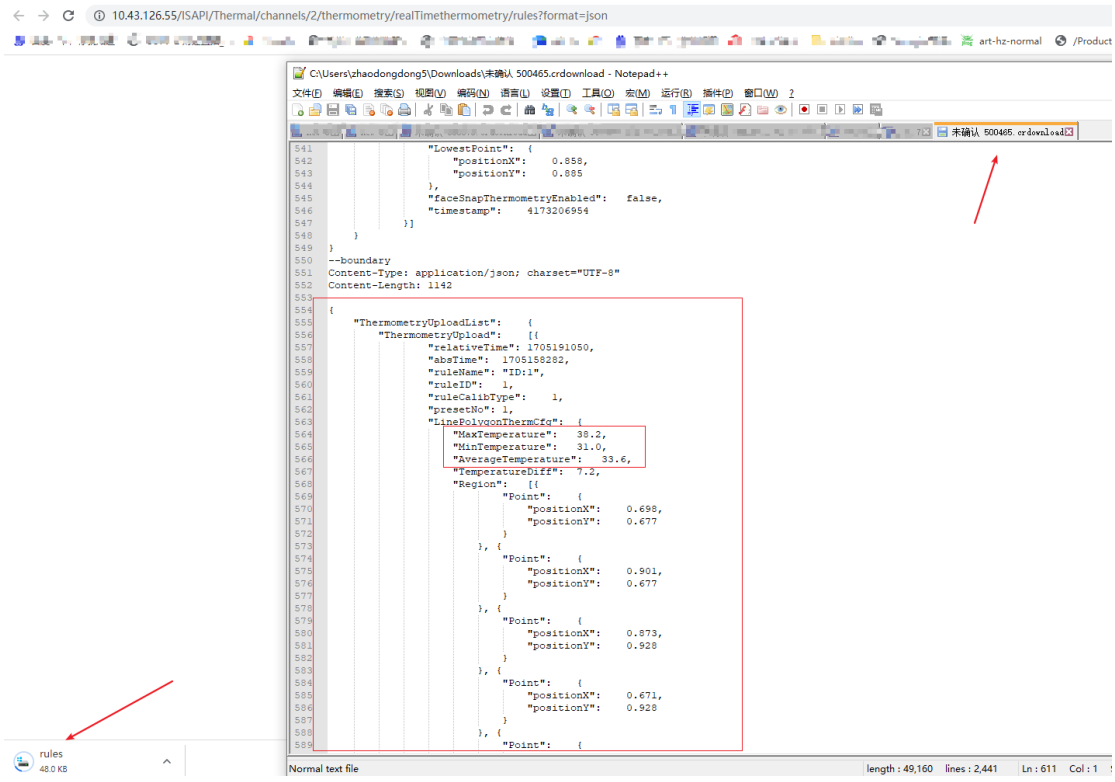
```
                "TemperatureDiff":      29.6,
                "Region":      [{
                        "Point":      {
                            "positionX":      0.000,
                            "positionY":      0.000
                        }
                    }, {
                        "Point":      {
                            "positionX":      0.000,
                            "positionY":      1.000
                        }
                    }, {
                        "Point":      {
                            "positionX":      1.000,
                            "positionY":      1.000
                        }
                    }, {
                        "Point":      {
                            "positionX":      1.000,
                            "positionY":      0.000
                        }
                    }]
            },
            "thermometryUnit":      0,
            "dataType":      2,
            "isFreezedata":      false,
            "HighestPoint":      {
                "positionX":      0.452,
                "positionY":      0.568
            },
            "LowestPoint":      {
                "positionX":      0.850,
                "positionY":      0.000
            },
            "faceSnapThermometryEnabled":      false,
            "timestamp":      3280866134
        }]
    }
}
```


Note that you need to establish a long HTTP connection with the device so that you can continue to receive test data pushed by the device. You can also use a browser to test directly.

http://10.43.126.55/ISAPI/Thermal/channels/2/thermometry/realTimethermometry/rules?format=j

son





三、 Receive temperature events

Protocol：GET /ISAPI/Event/notification/alertStream

1. Temperature alarm：eventType:TMA

Temperature alarm message sample：

<EventNotificationAlert version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
<ipAddress>10.43.126.55</ipAddress>
<portNo>80</portNo>
<protocol>HTTP</protocol>
<macAddress>58:50:ed:98:58:ca</macAddress>
<dynChannelID>2</dynChannelID>
<channelID>2</channelID>
<dateTime>2025-06-17T15:30:55+08:00</dateTime>
<activePostCount>185</activePostCount>
<eventType>TMA</eventType>
<eventState>active</eventState>
<eventDescription>Temperature Measurement Alarm</eventDescription>
<DetectionRegionList>
<DetectionRegionEntry>
<regionID>0</regionID>
<RegionCoordinatesList>
<RegionCoordinates>
<positionX>0</positionX>
<positionY>0</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>0</positionX>
<positionY>1000</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>1000</positionX>
<positionY>1000</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>1000</positionX>
<positionY>0</positionY>
</RegionCoordinates>
</RegionCoordinatesList>
<TMA>
<thermometryUnit>celsius</thermometryUnit>
<ruleTemperature>56.0</ruleTemperature>
<currTemperature>133.5</currTemperature>
<ruleCalibType>region</ruleCalibType>
<ruleType>highest temp is higher than</ruleType>
<MaximumTemperaturePoint>
<RegionCoordinates>
<positionX>368</positionX>
<positionY>900</positionY>
</RegionCoordinates>

</MaximumTemperaturePoint>
<AbsoluteHigh>
<elevation>-5.000</elevation>
<azimuth>128.460</azimuth>
<absoluteZoom>1.00</absoluteZoom>
</AbsoluteHigh>
<presetNo>0</presetNo>
</TMA>
</DetectionRegionEntry>
</DetectionRegionList>
<channelName>Camera 02</channelName>
<detectionPicturesNumber>2</detectionPicturesNumber>
<URLCertificationType>no</URLCertificationType>
<thermalBackgroundImageResolution>
<height>1080</height>
<width>1920</width>
</thermalBackgroundImageResolution>
<visibleLightBackgroundImageResolution>
<height>720</height>
<width>1280</width>
</visibleLightBackgroundImageResolution>
</EventNotificationAlert>

2. Temperature pre-larm : eventType:TMPA

Temperature pre-alarm message sample：

<EventNotificationAlert version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
<ipAddress>10.43.126.55</ipAddress>
<portNo>80</portNo>
<protocol>HTTP</protocol>
<macAddress>58:50:ed:98:58:ca</macAddress>
<dynChannelID>2</dynChannelID>
<channelID>2</channelID>
<dateTime>2025-06-17T15:30:18+08:00</dateTime>
<activePostCount>3</activePostCount>
<eventType>TMPA</eventType>
<eventState>active</eventState>
<eventDescription>Temperature Measurement Precautionary Alarm</eventDescription>
<DetectionRegionList>
<DetectionRegionEntry>
<regionID>1</regionID>

<RegionCoordinatesList>
<RegionCoordinates>
<positionX>0</positionX>
<positionY>0</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>0</positionX>
<positionY>1000</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>1000</positionX>
<positionY>1000</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>1000</positionX>
<positionY>0</positionY>
</RegionCoordinates>
</RegionCoordinatesList>
<TMPA>
<thermometryUnit>celsius</thermometryUnit>
<ruleTemperature>45.0</ruleTemperature>
<currTemperature>53.3</currTemperature>
<ruleCalibType>region</ruleCalibType>
<ruleType>highest temp is higher than</ruleType>
<MaximumTemperaturePoint>
<RegionCoordinates>
<positionX>495</positionX>
<positionY>955</positionY>
</RegionCoordinates>
</MaximumTemperaturePoint>
<AbsoluteHigh>
<elevation>-5.000</elevation>
<azimuth>128.460</azimuth>
<absoluteZoom>1.00</absoluteZoom>
</AbsoluteHigh>
<presetNo>0</presetNo>
<alarmRuleTemperature>56.0</alarmRuleTemperature>
</TMPA>
</DetectionRegionEntry>
</DetectionRegionList>
<channelName>Camera 02</channelName>
<detectionPicturesNumber>2</detectionPicturesNumber>
<thermalBackgroundImageResolution>
<height>1080</height>

<width>1920</width>
</thermalBackgroundImageResolution>
<visibleLightBackgroundImageResolution>
<height>720</height>
<width>1280</width>
</visibleLightBackgroundImageResolution>
</EventNotificationAlert>

3. Temperature difference alarm：eventType:TDA

Temperature difference alarm message sample：

12.9.1.27 Temperature difference alarm

EventType:TDA

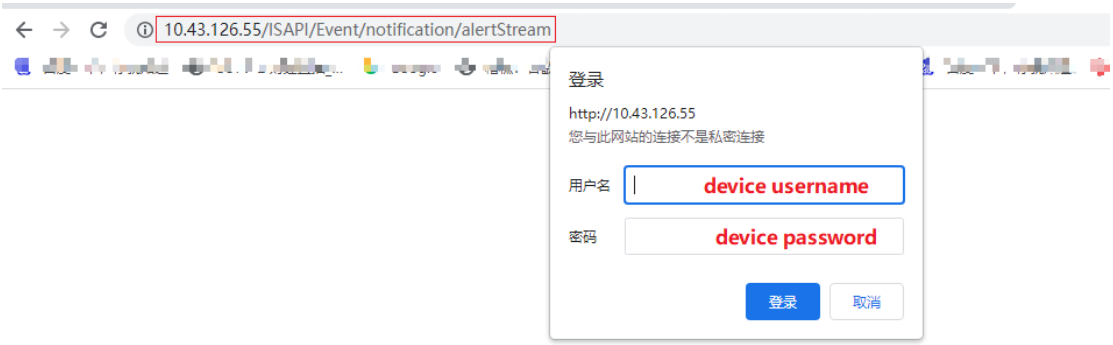
```
{
    "ipAddress": "172.6.64.7",
    /*ro, req, string, IPv4 address of the device that triggers the alarm*/
    "ipv6Address": "1080:0:0:0:8:800:200C:417A",
    /*ro, opt, string, IPv6 address of the device that triggers the alarm*/
    "portNo": 80,
    /*ro, opt, int, communication port No. of the device that triggers the alarm*/
    "protocol": "HTTP",
    /*ro, opt, enum, transmission communication protocol type, subType:string, desc:when ISAPI protocol is transmitted via HCNetSDK, the channel No. is the
video channel No. of private protocol. When ISAPI protocol is transmitted via EZ protocol, the channel No. is the video channel No. of EZ protocol. When
ISAPI protocol is transmitted via ISUP, the channel No. is the video channel No. of ISUP*/
    "macAddress": "01:17:24:45:D9:F4",
    /*ro, opt, string, MAC address*/
    "channelID": 1,
    /*ro, opt, int, channel No. of the device that triggers the alarm, desc:when ISAPI protocol is transmitted via HCNetSDK, the channel No. is the video
channel No. of private protocol. When ISAPI protocol is transmitted via EZ protocol, the channel No. is the video channel No. of EZ protocol. When ISAPI
protocol is transmitted via ISUP, the channel No. is the video channel No. of ISUP*/
    "releatedChannelList": [1, 2, 3],
    /*ro, opt, array, list of alarm related channels, which are of the same camera with channelID, subType:int, desc:this parameter is used for live view or
playback on the platform*/
    "dateTime": "2004-05-03T17:30:08+08:00",
    /*ro, req, datetime, alarm trigger time*/
    "activePostCount": 1,
    /*ro, opt, int, times that the same alarm has been uploaded, desc:times that the same alarm has been uploaded*/
    "eventType": "TDA",
    /*ro, req, string, event type, desc:"TDA" (temperature different alarm)*/
    "eventState": "active",
    /*ro, req, enum, event status, subType:string, desc:for durative event: active (valid event or event starts), inactive (invalid event or the event
ends). For the heartbeat, the field value indicates the heartbeat data, and it is uploaded every 10 seconds*/
```

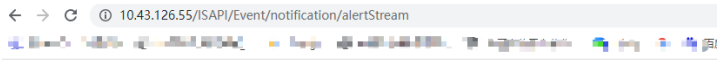
```
    "eventDescription": "Temperature Diff Alarm",
    /*ro, req, string, event description, desc:Temperature Difference Alarm*/
    "DetectionRegionList": [
    /*ro, opt, array, area list of temperature difference alarm, subType:object*/
        {
            "DetectionRegionEntry": {
            /*ro, opt, object, temperature difference alarm area*/
                "AlarmRuleList": [
                /*ro, opt, array, alarm rule list, subType:object*/
                    {
                        "alarmID": 1,
                        /*ro, req, int, rule ID of temperature difference alarm*/
                        "RegionCoordinatesList": [
                        /*ro, opt, array, area of temperature difference alarm, subType:object*/
                            {
                                "RegionCoordinates": {
                                /*ro, opt, object, temperature difference alarm area points*/
                                    "positionX": 1,
                                    /*ro, req, int, X-coordinate, range:[0.000,1.000]*/
                                    "positionY": 1
                                    /*ro, req, int, Y-coordinate, range:[0.000,1.000]*/
                                }
                            }
```

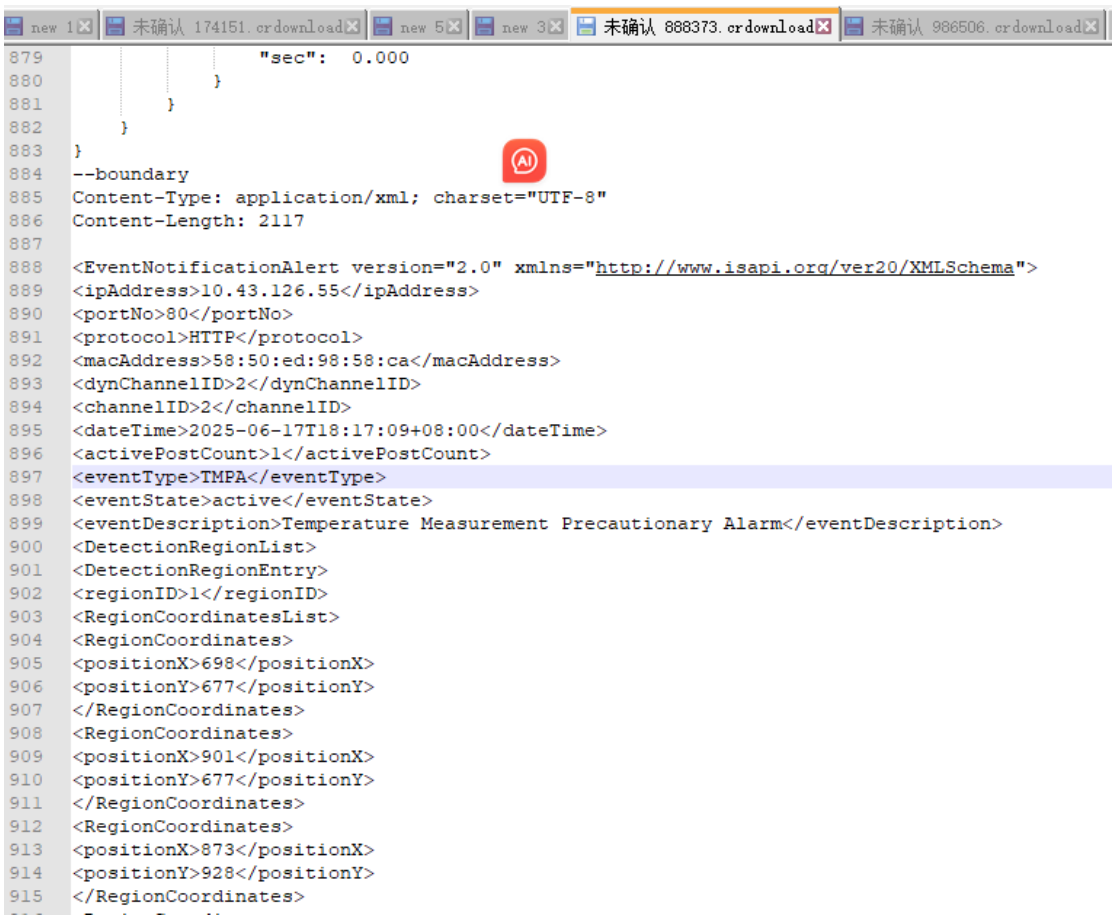
Note that you need to establish a long HTTP connection with the device so that you can continue to

receive test data pushed by the device. You can also use a browser to test directly.

http://10.43.126.55/ISAPI/Event/notification/alertStream






new 1
未确认 174151.crdownload
new 5
new 3
未确认 888373.crdownload
未确认 986506.crdownload
"sec": 0.000
}
}
}
}
--boundary
Content-Type: application/xml; charset="UTF-8"
Content-Length: 2117
<EventNotificationAlert version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
<ipAddress>10.43.126.55</ipAddress>
<portNo>80</portNo>
<protocol>HTTP</protocol>
<macAddress>58:50:ed:98:58:ca</macAddress>
<dynChannelID>2</dynChannelID>
<channelID>2</channelID>
<dateTime>2025-06-17T18:17:09+08:00</dateTime>
<activePostCount>1</activePostCount>
<eventType>TMPA</eventType>
<eventState>active</eventState>
<eventDescription>Temperature Measurement Precautionary Alarm</eventDescription>
<DetectionRegionList>
<DetectionRegionEntry>
<regionID>1</regionID>
<RegionCoordinatesList>
<RegionCoordinates>
<positionX>698</positionX>
<positionY>677</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>901</positionX>
<positionY>677</positionY>
</RegionCoordinates>
<RegionCoordinates>
<positionX>873</positionX>
<positionY>928</positionY>
</RegionCoordinates>

四、 Temperature threshold configuration

1. Normal mode

1) Method 1: You can configure the temperature threshold in the device web interface

2) Method 2: Call ISAPI protocol to configure temperature threshold

First, call the protocol GET /ISAPI/Thermal/channels/2/thermometry/basicParam to obtain the parameters, and use the returned message as the request parameter of the protocol PUT /ISAPI/Thermal/channels/2/thermometry/basicParam. At the same time, modify the fields alert and alarm, where alert indicates the pre-alarm temperature threshold and alarm is the alarm temperature.

Request parameter example:

```
<?xml version="1.0" encoding="UTF-8"?>
<ThermometryBasicParam version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <id>2</id>
```

<enabled>true</enabled>
<streamOverlay>true</streamOverlay>
<pictureOverlay>true</pictureOverlay>
<temperatureRange>-20~150</temperatureRange>
<temperatureUnit>degreeCentigrade</temperatureUnit>
<emissivity>0.96</emissivity>
<distanceUnit>centimeter</distanceUnit>
<specialPointThermType>centerPoint</specialPointThermType>
<distance>2000</distance>
<reflectiveEnable>false</reflectiveEnable>
<alert>45.0</alert>
<alarm>56.0</alarm>
<showTempStripEnable>true</showTempStripEnable>
<AlertOutputIOPortList>
<OutputIOPort>
<portID>1</portID>
<enabled>false</enabled>
</OutputIOPort>
<OutputIOPort>
<portID>2</portID>
<enabled>false</enabled>
</OutputIOPort>
</AlertOutputIOPortList>
<AlarmOutputIOPortList>
<OutputIOPort>
<portID>1</portID>
<enabled>false</enabled>
</OutputIOPort>
<OutputIOPort>
<portID>2</portID>
<enabled>false</enabled>
</OutputIOPort>
</AlarmOutputIOPortList>
<alertFilteringTime>0</alertFilteringTime>
<alarmFilteringTime>0</alarmFilteringTime>
<displayMaxTemperatureEnabled>true</displayMaxTemperatureEnabled>
<displayMinTemperatureEnabled>true</displayMinTemperatureEnabled>
<displayAverageTemperatureEnabled>true</displayAverageTemperatureEnabled>
<thermometryInfoDisplayposition>rules_around</thermometryInfoDisplayposition>
<emissivityMode>customsettings</emissivityMode>
<alarmInterval>3</alarmInterval>
<SunReflectionBlur>
<enabled>false</enabled>
<sensitivity>50</sensitivity>

```
        <filterEnabled>false</filterEnabled>
        <fireFilterEnabled>true</fireFilterEnabled>
        <fireFluctuationThreshold>1</fireFluctuationThreshold>
        <fireFluctuationPercentage>25</fireFluctuationPercentage>
    </SunReflectionBlur>
    <VehicleBlur>
        <enabled>false</enabled>
        <sensitiveLevel>2</sensitiveLevel>
        <filterEnabled>false</filterEnabled>
        <filteringTemperature>300.0</filteringTemperature>
    </VehicleBlur>
    <displayRuleNameEnabled >true</displayRuleNameEnabled >
    <pixelToPixelOverlay>false</pixelToPixelOverlay>
    <refreshPixelToPixeDataIntervalTime>3</refreshPixelToPixeDataIntervalTime>
    <smokingFilter>
        <enabled>false</enabled>
        <sensitivity>50</sensitivity>
        <filterEnabled>false</filterEnabled>
        <smokingDetectionThreshold>1000</smokingDetectionThreshold>
        <smokingAreaThreshold>5</smokingAreaThreshold>
    </smokingFilter>
</ThermometryBasicParam>
```

Postman test example:

PUT http://10.43.126.55/ISAPI/Thermal/channels/2/thermometry/basicParam

Params Authorization Headers (9) Body Scripts Settings

none form-data x-www-form-urlencoded raw binary GraphQL XML

```xml
<?xml version="1.0" encoding="UTF-8"?>
<ThermometryBasicParam version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <id>2</id>
    <enabled>true</enabled>
    <streamOverlay>true</streamOverlay>
    <pictureOverlay>true</pictureOverlay>
    <temperatureRange>-20~150</temperatureRange>
    <temperatureUnit>degreeCentigrade</temperatureUnit>
    <emissivity>0.96</emissivity>
    <distanceUnit>centimeter</distanceUnit>
    <specialPointThermType>centerPoint</specialPointThermType>
    <distance>2000</distance>
    <reflectiveEnable>false</reflectiveEnable>
    <alert>45.0</alert>
    <alarm>56.0</alarm>
    <showTempStripEnable>true</showTempStripEnable>
    <AlertOutputIOPortList>
        <OutputIOPort>
            <portID>1</portID>
            <enabled>false</enabled>
        </OutputIOPort>
        <OutputIOPort>
            <portID>2</portID>
```

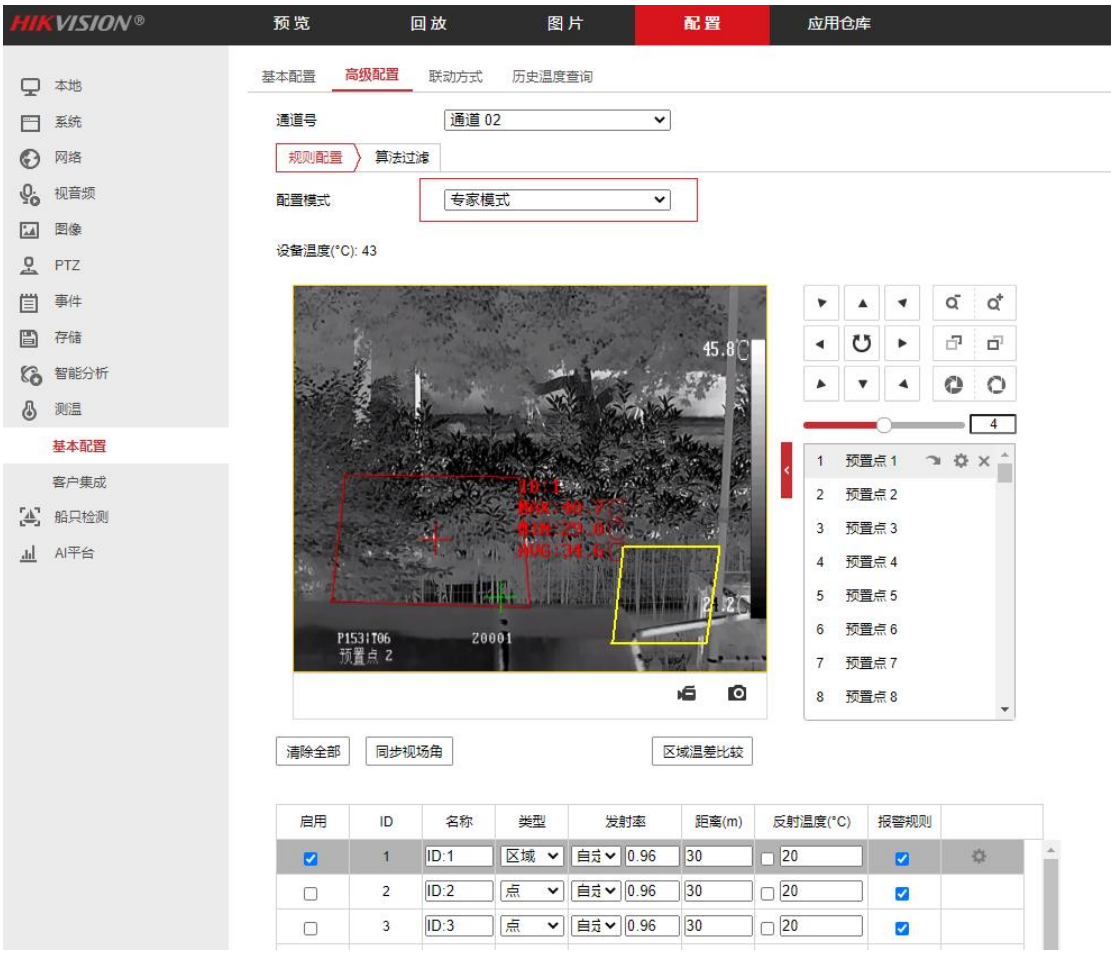
Body Cookies Headers (6) Test Results

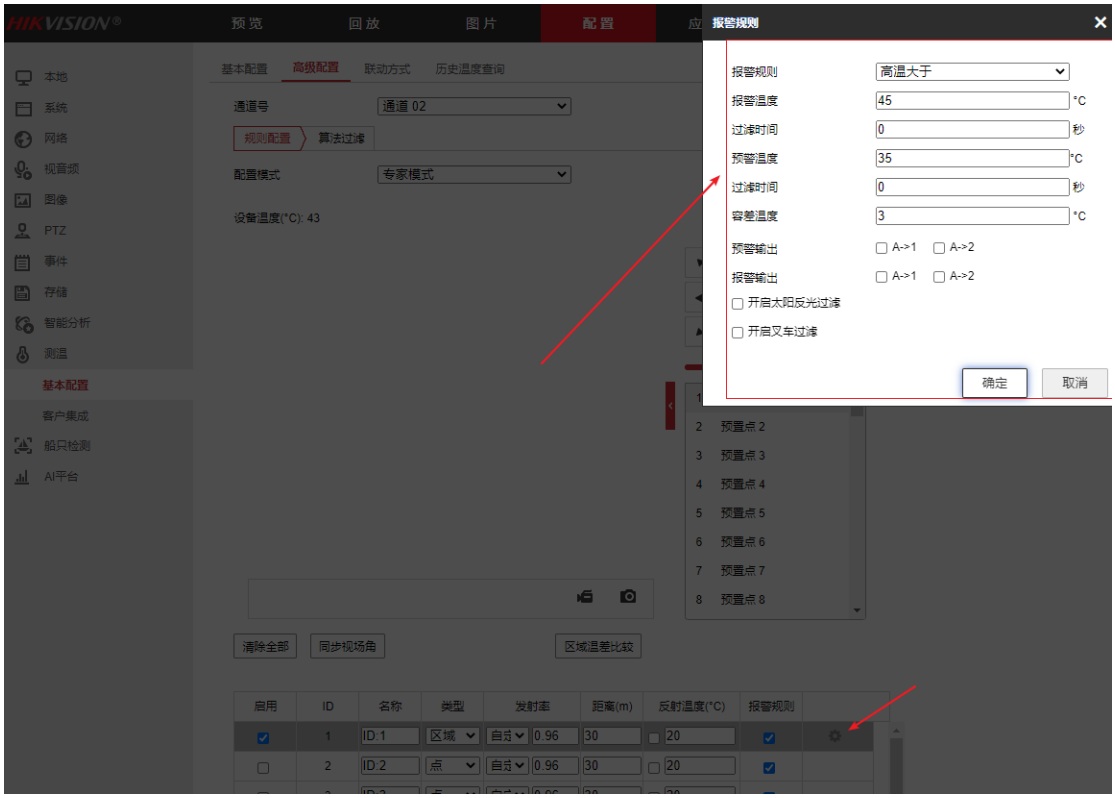
XML Preview Visualize

```xml
<?xml version="1.0" encoding="UTF-8"?>
<ResponseStatus version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <requestURL></requestURL>
    <statusCode>1</statusCode>
    <statusString>OK</statusString>
    <subStatusCode>ok</subStatusCode>
</ResponseStatus>
```

2. Expert Mode

1) Method 1: You can configure the temperature threshold in the device web interface





2) Method 2: Call ISAPI protocol to configure temperature threshold

Protocol：PUT /ISAPI/Thermal/channels/2/thermometry/1/alarmRules

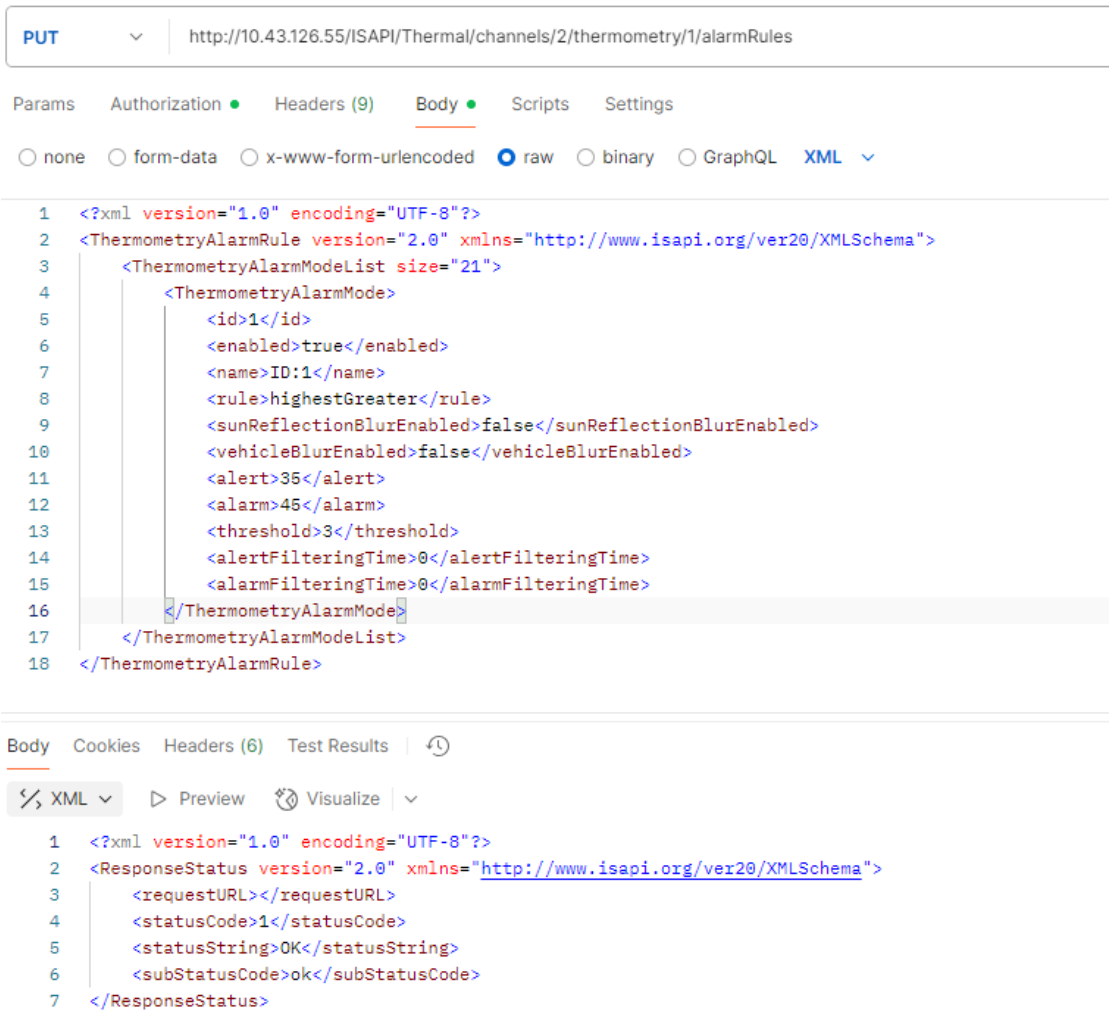
Request parameters:

```
<?xml version="1.0" encoding="UTF-8"?>
<ThermometryAlarmRule                                    version="2.0"
xmlns="http://www.isapi.org/ver20/XMLSchema">
    <ThermometryAlarmModeList size="21">
        <ThermometryAlarmMode>
            <id>1</id>
            <enabled>true</enabled>
            <name>ID:1</name>
            <rule>highestGreater</rule>
            <sunReflectionBlurEnabled>false</sunReflectionBlurEnabled>
            <vehicleBlurEnabled>false</vehicleBlurEnabled>
            <alert>35</alert>
            <alarm>45</alarm>
            <threshold>3</threshold>
```

```
            <alertFilteringTime>0</alertFilteringTime>
            <alarmFilteringTime>0</alarmFilteringTime>
        </ThermometryAlarmMode>
    </ThermometryAlarmModeList>
</ThermometryAlarmRule>
```

Among them, alert indicates the warning temperature threshold, and alarm is the alarm temperature.

Postman test example:



五、 PTZ

Protocol：PUT /ISAPI/PTZCtrl/channels/<channelID>/continuous

Request parameters:

<?xml version="1.0" encoding="UTF-8"?>

<PTZData xmlns="http://www.isapi.org/ver20/XMLSchema" version="2.0">

```
    <!--req, object, attr:version{req, string, protocolVersion}-->
    <pan>
        <!--opt, int, panning positive direction, range:[-100,100], desc:panning positive direction-->60
    </pan>
    <tilt>
        <!--opt, int, tilting positive direction, range:[-100,100], desc:tilting positive direction-->60
    </tilt>
    <zoom>
        <!--opt, int, range:[-100,100]-->60
    </zoom>
    <rotate>
        <!--opt, int, range:[-100,100]-->60
    </rotate>
</PTZData>
```

Move left request parameters Example:

```
<PTZData>
    <pan>-60</pan>
    <tilt>0</tilt>
</PTZData>
```

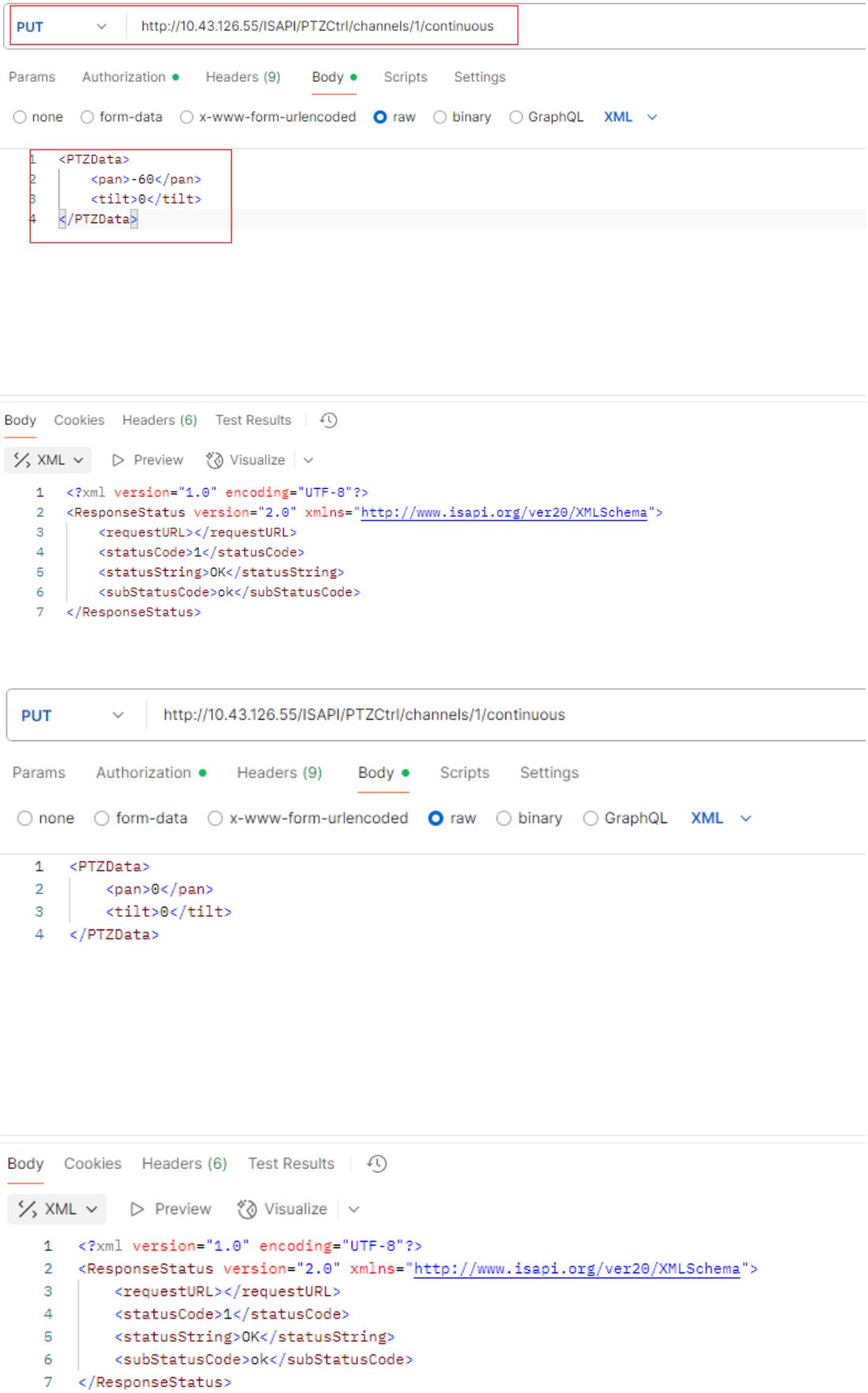
Move right request parameter example：

```
<PTZData>
    <pan>60</pan>
    <tilt>0</tilt>
</PTZData>
```

Stop Move Request Parameters Example：

```
<PTZData>
    <pan>0</pan>
    <tilt>0</tilt>
</PTZData>
```

Postman test example：


PUT
http://10.43.126.55/ISAPI/PTZCtrl/channels/1/continuous
Params
Authorization
Headers (9)
Body
Scripts
Settings
none
form-data
x-www-form-urlencoded
raw
binary
GraphQL
XML
<PTZData>
<pan>-60</pan>
<tilt>0</tilt>
</PTZData>
Body
Cookies
Headers (6)
Test Results
XML
Preview
Visualize
<?xml version="1.0" encoding="UTF-8"?>
<ResponseStatus version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
<requestURL></requestURL>
<statusCode>1</statusCode>
<statusString>OK</statusString>
<subStatusCode>ok</subStatusCode>
</ResponseStatus>
PUT
http://10.43.126.55/ISAPI/PTZCtrl/channels/1/continuous
Params
Authorization
Headers (9)
Body
Scripts
Settings
none
form-data
x-www-form-urlencoded
raw
binary
GraphQL
XML
<PTZData>
<pan>0</pan>
<tilt>0</tilt>
</PTZData>
Body
Cookies
Headers (6)
Test Results
XML
Preview
Visualize
<?xml version="1.0" encoding="UTF-8"?>
<ResponseStatus version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
<requestURL></requestURL>
<statusCode>1</statusCode>
<statusString>OK</statusString>
<subStatusCode>ok</subStatusCode>
</ResponseStatus>

12.4.2.11 Control PTZ to pan and tilt

Request URL

PUT /ISAPI/PTZCtrl/channels/<channelID>/continuous?type=<type>

Query Parameter

Parameter Name	Parameter Type	Description
channelID	string	--
type	enum	Module type. 1. Determine whether the device supports the optional parameter "type" by checking if /ISAPI/PTZCtrl/channels//capabilities returns continuousPanTiltType; 2. PTZLaser (laser PTZ), which indicates the control of the laser PTZ linked with the specified channel's PTZ camera

Request Message

```
<?xml version="1.0" encoding="UTF-8"?>

<PTZData xmlns="http://www.isapi.org/ver20/XMLSchema" version="2.0">
  <!--req, object, attr:version{req, string, protocolVersion}-->
  <pan>
    <!--opt, int, panning positive direction, range:[-100,100], desc:panning positive direction-->60
  </pan>
  <tilt>
    <!--opt, int, tilting positive direction, range:[-100,100], desc:tilting positive direction-->60
  </tilt>
  <zoom>
    <!--opt, int, range:[-100,100]-->60
  </zoom>
  <rotate>
    <!--opt, int, range:[-100,100]-->60
  </rotate>
</PTZData>
```

2012@163.com Test

You can perform ptz operations on the device web interface, and you can see the ISPAI protocol called by the device. You can refer to the protocol sent by the device.