IP Surveillance API
PTZ Service Specification

Version 2.2

Revision 1

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1 Introduction

This specification mainly introduces the PTZ function section of ISAPI Protocol.

2 Conformance

All of interface definition in this specification is consistent with that of ISAPI protocol, the specification is a part of ISAPI protocol. The architecture, glossary and relationship are consistent with ISAPI IPMD documentation.

3 Glossary and Relationship

3.1 Glossary of Terms

- ***PTZ channel* =** PTZ channel is the basic unit of PTZ functions, and a PTZ channel corresponds to a PTZ control unit.
- ***Absolute PTZ*** = PTZ control unit that supports absolute PTZ. Absolute positioning can designate horizontal angle, vertical angle and lens range.
- ***Relative PTZ*** = PTZ control unit that supports relative PTZ. The parameter of relative positioning is an increment, which relatives to the current position of PTZ and can be an increment in the horizontal direction, or vertical direction, or increment of lens distance.
- ***Continuous PTZ*** = PTZ control unit that supports to configure PTZ control speed, the parameter is speed of PTZ.
- ***Momentary Move*** = this part is the extension of Continuous PTZ function. The running time can be specified in the command and PTZ movement will stop when reaching the specified time.
- ***Preset Point*** =Moving to a position can be marked as a preset, the preset includes the following parameters: horizontal direction, vertical direction and lens distance,.etc.
- ***Patrol*** = Patrol is a collection of a serials of preset points; the path of patrol will be in order of presets.
- ***Home position*** = Special preset.
- ***PTZ limitation*** =Limit the range of PTZ movement. The up, down, left and right border can be specified.
- ***PTZ Time Task*** = Support to set time and task to PTZ unit.
- ***PTZ auxcontrol* =** PTZ auxiliary function, including light, rain wipers and heat lamp.

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- ***Digital PTZ*** = Digital PTZ is not really used to control mechanical movement; it is generally based on a large resolution, and displayed images in electronic PTZ is a part of the original images obtained by sensor.

3.2 Basic PTZ space type XML

The definition of PTZ space: “X” represents the horizontal direction; “Y” represents the vertical direction, “Z” on behalf of lens distance. A few basic variables will be introduced in this section.

```
<Min><!--xs:integer--></Min>
<Max><!--xs:integer--></Max>

<XRange>
        <Min/>
        <Max/>
</XRange >

<YRange>
        <Min/>
        <Max/>
</YRange >

<ZRange>
        <Min/>
        <Max/>
</ZRange >
```

4 PTZ Service and Resources

Back-end devices support multi-channel PTZ, but front-end devices only contain 1-ch PTZ. For different PTZ channels, capability is a little different.

4.1 PTZCtrl

/ISAPI/PTZCtrl	**Service**	**v2.0**
Notes: PTZCtrl control service.		

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4.2 /ISAPI/PTZCtrl/capabilities

/ISAPI/PTZCtrl/capabilities	General Resource v2.0
GET	
Description	It is used to get the list of PTZ channels for the device
Query	None
Inbound Data	None
Success Return	**PTZCtrlCap**
Notes: If maxPTZChannleNum is 0 , PTZ service is unavailable	

PTZCtrlCap XML Block

```
<PTZCtrlCap version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <maxPTZChannleNum><!—opt,xs:interger--></maxPTZChannleNum>
   <isSupportPTZWithPreview><!--opt,xs:boolean--></isSupportPTZWithPreview>
</PTZCtrlCap>
```

4.3 /ISAPI/ PTZCtrl/channels

/ISAPI/PTZCtrl/channels	General Resource v2.0
GET	
Description	It is used to get the list of PTZ channels for the device
Query	None
Inbound Data	None
Success Return	**PTZChannelList**
PUT	
Description	It is used to update the list of PTZ channels for the device.
Query	None
Inbound Data	**PTZChannelList**
Success Return	**ResponseStatus**
POST	
Description	It is used to add a PTZ channel for the device.
Query	None
Inbound Data	**PTZChannel**
Success Return	**ResponseStatus**
DELETE	
Description	It is used to delete the list of PTZ channels for the device.
Query	None

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Inbound Data	None
Success Return	**ResponseStatus**
Notes: PTZ channels may be hardwired, or it may be possible to create channels if the device supports it. To determine whether it is possible to dynamically PTZ channels, check the defined HTTP methods in /ISAPI/PTZCtrl/channels/description.	

PTZChannelList XML Block

```
<PTZChannelList version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <PTZChannel/>       <!-- opt -->
</PTZChannelList>
```

4.4 /ISAPI/PTZCtrl/channels/<ID>

/ISAPI/PTZCtrl/channels/<ID>	**General Resource v2.0**
GET	
Description	It is used to get a particular PTZ channel configuration for the device.
Query	None
Inbound Data	None
Success Return	**PTZChannel**
PUT	
Description	It is used to update a particular PTZ channel configuration for the device.
Query	None
Inbound Data	**PTZChannel**
Success Return	**ResponseStatus**
DELETE	
Description	It is used to delete a particular PTZ channel on a device.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: <videoInputID> links the PTZ channel to a video channel. <presetSpeed> indicates the movement speed level about calling preset <autoScanSpeed> indicates the movement speed level about park function <keyPadControlSpeed> indicates the movement speed level to be controlled by keyboard <controlProtocol> indicates the control protocol to be used for PTZ. < controlAddress> indicates the soft address (enabled means soft address is used)	

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PTZChannel XML Block

```
<PTZChannel version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <id>    <!-- req, xs:integer -->    </id>
   <enabled>    <!—ro,req, xs:boolean -->    </enabled>
   <videoInputID>         <!-- req, xs:integer -->    </videoInputID>
   <panMaxSpeed> <!—ro,opt, xs:integer, degrees/sec --> </panMaxSpeed>
   <tiltMaxSpeed> <!—ro,opt, xs:integer, degrees/sec --> </tiltMaxSpeed>
   <presetSpeed>      <!—opt, xs:integer 1..8 –>    </presetSpeed>
   <autoPatrolSpeed> <!-- opt, xs:integer, 0..100 --> </autoPatrolSpeed>
   <keyBoardControlSpeed>
         <!-- opt, xs:integer, 0..100 -->
   </keyBoardControlSpeed>
   <controlProtocol> <!-- opt, xs:string, "pelco-d,…" --> </controlProtocol>
   <controlAddress>       <!—opt -->
         <enabled>           <!-- req, xs:boolean -->    </enabled>
         <Address>          <!—opt, xs:string    1-255 -->    </Address>
   </controlAddress>
   <defaultPresetID> <!-- opt, xs:string;id --> </defaultPresetID>
   <PTZRs485Para>           <!-- opt -->
      <baudRate>           <!-- req, xs:integer -->                                    </baudRate>
      <dataBits>           <!-- req, xs:integer -->                                    </dataBits>
      <parityType>         <!-- req, xs:string, "none,even,odd,mark,space" --> </parityType>
      <stopBits>           <!-- req, xs:string, "1,1.5,2" -->                          </stopBits>
      <flowCtrl>             <!-- req, xs:string, "none, software, hardware" --> </flowCtrl>
   </PtZRs485Para>
   <manualControlSpeed> <!-- opt, xs:string, "pedestrian, nonMotorVehicle, motorVehicle,
selfadaptive, compatible" --> </manualControlSpeed>
</PTZChannel>
```

4.5 /ISAPI/PTZCtrl/channels/<ID>/capabilities

/ISAPI/PTZCtrl/channels/ID/capabilities	**General Resource v2.0**
GET	
Description	It is used to get the list of PTZ channels for the device
Query	None
Inbound Data	None
Success Return	**PTZChanelCap**
Notes: XRange: Pan range	

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YRange: Tilt range
ZRange:Zoom range

PTZChanelCap XML Block

```
<PTZChanelCap version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <AbsolutePanTiltPositionSpace> <!--opt-->
        <XRange/><!-- req -->
        <YRange/><!-- req -->
   </AbsolutePanTiltPositionSpace>
   <AbsoluteZoomPositionSpace> <!--opt-->
        <ZRange/> <!-- req -->
  </AbsoluteZoomPositionSpace>
  <RelativePanTiltSpace> <!--opt-->
      <XRange/><!-- req -->
      <YRange/><!-- req -->
  </ RelativePanTiltSpac >
  <RelativeZoomSpace> <!--opt-->
      <ZRange/><!-- req -->
  </RelativeZoomSpace>
  <ContinuousPanTiltSpace> <!--opt-->
      <XRange/><!-- req -->
      <YRange/><!-- req -->
  </ContinuousPanTiltSpace>
  <ContinuousZoomSpace> <!--opt-->
      <ZRange/><!-- req -->
  </ContinuousZoomSpace>
  <MomentaryPanTiltSpace> <!--opt-->
      <XRange/><!-- req -->
      <YRange/><!-- req -->
  </MomentaryPanTiltSpace>
  <MomentaryZoomSpace> <!--opt-->
      <ZRange/><!-- req -->
  </MomentaryZoomSpace>
  <homePostionSupport><!--req,xs:boolean ></homePostionSupport>
  <maxPresetNum><!--req,xs:integer></maxPresetNum>
  <maxPatrolNum><!--req,xs:integer></maxPatrolNum>
  <maxPatternNum><!--req,xs:integer></maxPatternNum>
  <maxLimitesNum><!--req,xs:integer></maxLimitesNum >
  <maxTimeTaskNum><!--req,xs:integer></maxTimeTaskNum>
   <controlProtocol> <!-- opt, xs:string, "pelco-d,…" --> </controlProtocol>
   <controlAddress>      <!—opt, xs:string    1-255 -->    </controlAddress>
   <PTZRs485Para>           <!-- opt -->
```

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```
    <baudRate>          <!-- req, xs:integer -->                                    </baudRate>
    <dataBits>          <!-- req, xs:integer -->                                    </dataBits>
    <parityType>        <!-- req, xs:string, “none,even,odd,mark,space” --> </parityType>
    <stopBits>          <!-- req, xs:string, “1,1.5,2” -->                          </stopBits>
    <flowCtrl>            <!-- req, xs:string, “none, software, hardware” --> </flowCtrl>
  </PtZRs485Para>
  <PresetNameCap> <!-- opt -->
    <presetNameSupport><!--opt,xs:boolean ></presetNameSupport>
  <maxPresetNameLen> <!—dep,xs:integer --> </maxPresetNameLen>
  <specialNo/> <!-- dep -->
  </PresetNameCap>
  <isSupportPosition3D><!--opt,xs:boolen--></isSupportPosition3D>
  <isSupportManualTrack><!--opt,xs:boolen--></isSupportManualTrack>
  <manualControlSpeed
opt="compatible,pedestrian,nonMotorVehicle,motorVehicle,selfadaptive"><!--opt,xs:string--></ma
nualControlSpeed>
  <isSpportPtzlimiteds><!--opt,xs:boolen--></isSpportPtzlimiteds>
  <ParkAction/>
  <TimeTaskList/>
</PTZChanelCap>
```

ParkAction XML Block

```
<ParkAction version=“2.0” xmlns=“http://www.isapi.org/ver20/XMLSchema”>
    <enabled>    <!-- req, xs:boolean -->    </enabled>
    <Parktime min="" max="">    <!-- req, xs:integer, seconds -->    </Parktime>
    <Action>
        <ActionType
opt="autoscan,framescan,randomscan,panoramascan,patrol,pattern,preset">
        <!-- req, xs:strings,    -->
        </ActionType>
        <ActionNum min="" max="">      <!-- req, xs:integer, 0..255-->        </ActionNum>
    </Action>
</ParkAction>
```

TimeTaskList XML Block

```
<TimeTaskList size=””>
    <enabled>    <!-- req, xs:boolean -->    </enabled>
    <Parktime min=”” max=””>    <!-- req, xs:integer, seconds -->    </Parktime>
    <TimeTaskBlock>
        <dayOfWeek>
```

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```
            <!-- req, xs:integer, ISO8601 weekday number, 1=Monday, … -->
            </dayOfWeek>
            <TimeTaskRange>
                <TaskID min="" max=""><!-- req, xs:string;id --></TaskID>
                <beginTime> <!-- req, xs:time, ISO8601 time --> </beginTime>
                <endTime> <!-- req, xs:time, ISO8601 time --> </endTime>
                <Task>
                    <TaskType
opt="disable,autoscan,framescan,randomscan,panoramascan,patrol,pattern,preset,tiltscan,periodreboot,periodadjust,auxoutput">
                    <!-- req, xs:strings, -->
                    </TaskType>
                    <patrolTaskNum min="" max=""><!-- dep, xs:integer, 0..8--></patrolTaskNum>
                    <patternTaskNum min="" max=""><!-- dep, xs:integer, 0..8--></patternTaskNum>
                    <presetTaskNum min="" max=""><!-- dep, xs:integer, 0..8--></presetTaskNum>
                    <auxoutputTaskNum min="" max=""><!-- dep, xs:integer, 0..8--></auxoutputTaskNum>
                </Task>
            </TimeTaskRange>
        </TimeTaskBlock>
        <isSupportTimeTaskCopy><!-- req, xs:boolean --></isSupportTimeTaskCopy>
</TimeTaskList>
```

4.6 /ISAPI/PTZCtrl/channels/<ID>/homeposition

/ISAPI/PTZCtrl/channels/<ID>/homeposition	**General Resource v2.0**
PUT	
Description	It is used to set the current horizontal position as horizontal coordinate zero point for the device
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
DELETE	
Description	It is used to delete system horizontal coordinate zero point and restore default zero point for the device (The photoelectric detection location)
Query	None
Inbound Data	None
Success Return	**ResponseStatus**

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Notes:

4.7 /ISAPI/PTZCtrl/channels/<ID>/homeposition/goto

/ISAPI/PTZCtrl/channels/<ID>/homeposition/goto	General Resource v2.0
PUT	
Description	It is used to move a particular PTZ channel to horizontal coordinate zero point position for the device.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes:	

4.8 /ISAPI/PTZCtrl/channels/<ID>/continuous

/ISAPI/PTZCtrl/channels/<ID>/continuous	General Resource v2.0
PUT	
Description	It is used to control PTZ move around and zoom for the device.
Query	pan, tilt, zoom
Inbound Data	**PTZData**
Success Return	**ResponseStatus**
Notes:	

PTZData XML Block

```
<PTZData version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <pan> <!-- opt, xs:integer, -100..100 --> </pan>
    <tilt> <!-- opt, xs:integer, -100..100 --> </tilt>
    <zoom> <!-- opt, xs:integer, -100.. 100--> </zoom>
</PTZData>
```

4.9 /ISAPI/PTZCtrl/channels/<ID>/momentary

/ISAPI/PTZCtrl/channels/<ID>/momentary	General Resource v2.0
PUT	
Description	It is used to control PTZ move around and zoom in a period of time for the device.
Query	pan, tilt, zoom, duration
Inbound Data	**PTZData**
Success Return	**ResponseStatus**

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Notes:

PTZData XML Block

```
<PTZData version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <pan> <!-- opt, xs:integer, -100..100 --> </pan>
    <tilt> <!-- opt, xs:integer, -100..100 --> </tilt>
    <zoom> <!-- opt, xs:integer, -100.. 100--> </zoom>
    <Momentary>
        < duration>    <!—opt , xs:integer, milliseconds -->    </duration>
    </Momentary>
</PTZData>
```

4.10 /ISAPI/PTZCtrl/channels/<ID>/relative

/ISAPI/PTZCtrl/channels/<ID>/relative	General Resource v2.0
PUT	
Description	It is used to move the position which is defined by positionX, positionY to the screen center and relative zoom for the device.
Query	positionX, positionY, relativeZoom
Inbound Data	**PTZData**
Success Return	**ResponseStatus**
Notes: Mouse clicking function	

PTZData XML Block

```
<PTZData version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <Relative>
        <positionX> <!-- opt, xs:integer --> </positionX>
        <positionY> <!-- opt, xs:integer --> </positionY>
        <relativeZoom> <!-- opt, xs:integer, -100-.. 100---> </relativeZoom>
    </Relative>
</PTZData>
```

4.11 /ISAPI/PTZCtrl/channels/<ID>/absolute

/ISAPI/PTZCtrl/channels/<ID>/absolute	General Resource v2.0
PUT	
Description	It is used to move a particular PTZ channel to a absolute position which is

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	defined by Absolute for the device.
Query	elevation, azimuth, absoluteZoom
Inbound Data	**PTZData**
Success Return	**ResponseStatus**
Notes: Absolute position function <AbsoluteHigh> is high precision positioning which is accurate to a bit after the decimal point; For example elevation -900..2700 is corresponding to vertical -90.0-270.0 degree, and azimuth 0..3600 is corresponding to horizontal 0.0-360.0 degree, absoluteZoom is corresponding to zoom 0.0..100.0;	

PTZData XML Block

```
<PTZData version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <AbsoluteHigh>
        <elevation> <!-- opt, xs:integer, -900..2700 --> </elevation>
        <azimuth> <!-- opt, xs:integer, 0..3600 --> </azimuth>
        <absoluteZoom> <!-- opt, xs:integer,0.. 1000---> </absoluteZoom>
    </AbsoluteHigh>
</PTZData>
```

4.12 /ISAPI/PTZCtrl/channels/<ID>/digital

/ISAPI/PTZCtrl/channels/<ID>/digital	**General Resource v2.0**
PUT	
Description	It is used to move the position number which is defined by positionX, position to the screen center and digital zoom for the device.
Query	position, positionY, digitalZoomLevel
Inbound Data	**PTZData**
Success Return	**ResponseStatus**
Notes: Digital zoom function digitalZoomLevel: 0 indicates that maintain the original image ratio.	

PTZData XML Block

```
<PTZData version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
<Digital>
        <positionX> <!-- opt, xs:integer --> </positionX>
        <positionY> <!-- opt, xs:integer --> </positionY>
        <digitalZoomLevel> <!-- opt, xs:integer, 0.. 100---> </digitalZoomLevel>
```

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```
    </Digital>
</PTZData>
```

4.13 /ISAPI/PTZCtrl/channels/<ID>/status

/ISAPI/PTZCtrl/channels/<ID>/status	General Resource v2.0
GET	
Description	It is used to get currently PTZ coordinate position for the device.
Query	None
Inbound Data	None
Success Return	**PTZStatus**
Notes: <AbsoluteHigh> is high precision positioning which is accurate to a bit after the decimal point; For example elevation -900..2700 is corresponding to vertical -90.0-270.0 degree, and azimuth 0..3600 is corresponding to horizontal 0.0-360.0 degree, absoluteZoom is corresponding to zoom 0.0..100.0;	

PTZStatus XML Block

```
< PTZStatus version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <AbsoluteHigh>
        <elevation> <!-- opt, xs:integer, -900..2700 --> </elevation>
        <azimuth> <!-- opt, xs:integer, 0..3600 --> </azimuth>
        <absoluteZoom> <!-- opt, xs:integer,0.. 1000---> </absoluteZoom>
    </AbsoluteHigh>
</PTZStatus>
```

4.14 /ISAPI/PTZCtrl/channels/<ID>/presets

/ISAPI/PTZCtrl/channels/<ID>/presets	General Resource v2.0
GET	
Description	It is used to get preset configuration information of a particular PTZ channel for the device.
Query	None
Inbound Data	None
Success Return	**PTZPresetList**
PUT	
Description	It is used to update preset configuration information of a particular PTZ channel for the device.

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Query	None
Inbound Data	**PTZPresetList**
Success Return	**ResponseStatus**
POST	
Description	It is used to add a preset configuration information of a particular PTZ channel for the device.
Query	None
Inbound Data	**PTZPreset**
Success Return	**ResponseStatus**
DELETE	
Description	It is used to delete a preset configuration information of a particular PTZ channel for the device.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes:	

PTZPresetList XML Block

```
<PTZPresetList version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <PTZPreset>    <!-- opt -->
</PTZPresetList>
```

4.15 /ISAPI/PTZCtrl/channels/<ID>/presets/<ID>

/ISAPI/PTZCtrl/channels/<ID>/presets/<ID>	**General Resource v2.0**
GET	
Description	It is used to get particular preset configuration information of a particular PTZ channel for the device.
Query	None
Inbound Data	None
Success Return	**PTZPreset**
PUT	
Description	It is used to update particular preset configuration information of a particular PTZ channel for the device.
Query	None
Inbound Data	**PTZPreset**
Success Return	**ResponseStatus**
DELETE	
Description	It is used to delete a particular preset configuration information of a

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	particular PTZ channel for the device.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: <id> indicates the preset number. <presetName> indicates the preset name Enable is used to indicate whether preset have been set. PUT is used to set preset and update title of new preset. (Enable value import to **PTZPreset** should be 1 when PUT)	

PTZPreset XML Block

```
<PTZPreset version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <enabled>    <!-- req, xs:boolean -->    </enabled>
     <id> <!-- req, xs:string;id --> </id>
     <presetName> <!-- req, xs:string --> </presetName>
</PTZPreset>
```

4.16 /ISAPI/PTZCtrl/channels/<ID>/presets/<ID>/goto

/ISAPI/PTZCtrl/channels/<ID>/presets/<ID>/goto	**General Resource v2.0**
PUT	
Description	It is used to move a particular PTZ channel to a ID preset position for the device.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes:	

4.17 /ISAPI/PTZCtrl/channels/<ID>/patrols

/ISAPI/PTZCtrl/channels/<ID>/presets	**General Resource v2.0**
GET	
Description	It is used to get patrol configuration information of a particular PTZ channel for the device.
Query	None
Inbound Data	None
Success Return	**PTZPatrolList**

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PUT	
Description	It is used to update patrol configuration information of a particular PTZ channel for the device.
Query	None
Inbound Data	**PTZPatrolList**
Success Return	**ResponseStatus**
POST	
Description	It is used to add a patrol point configuration for a particular PTZ channel.
Query	None
Inbound Data	**PTZPatrol**
Success Return	**ResponseStatus**
DELETE	
Description	It is used to delete patrol configuration for a particular PTZ channel.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: It is similar to presets!!	

PTZPatrolList XML Block

```
<PTZPatrolList version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <PTZPatrol>    <!-- opt -->
</PTZPatrolList>
```

4.18 /ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>

/ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>	**General Resource v2.0**
GET	
Description	It is used to get a particular patrol route configuration of a particular PTZ channel.
Query	None
Inbound Data	None
Success Return	**PTZPatrol**
PUT	
Description	It is used to update a particular patrol configuration of a particular PTZ channel.
Query	None
Inbound Data	**PTZPatrol**
Success Return	**ResponseStatus**
DELETE	
Description	It is used to delete a particular patrol route configuration of a particular PTZ

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	channel
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: <PatrolSequence> indicates the patrol point. < presetID > indicates the preset number <seqSpeed> indicates the patrol speed <delay> indicates the dwell time, in milliseconds	

PTZPatrol XML Block

```
<PTZPatrol version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <enabled>    <!-- req, xs:boolean -->    </enabled>
     <id> <!-- req, xs:string;id --> </id>
    <patrolName> <!-- req, xs:string --> </patrolName>
    <resumeType> <!-- opt, xs:string, "relative,absolute" --> </resumeType>
     <PatrolSequenceList> <!-- req, at least one entry -->
        <PatrolSequence> <!-- req -->
            <presetID> <!-- req, xs:string;id --> </presetID>
            <seqSpeed> <!-- req, xs:string;id --> </seqSpeed>
            <delay> <!-- req, xs:integer, milliseconds --> </delay>
        </PatrolSequence>
    </PatrolSequenceList>
</PTZPatrol>
```

4.19 /ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>/start

/ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>/start	**General Resource v2.0**
PUT	
Description	It is used to start running particular patrol route of a particular PTZ channel.
Query	None
Inbound Data	None
Success Return	ResponseStaus **ResponseStatus**
Notes:	

4.20 /ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>/stop

/ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>/stop	**General Resource v2.0**
PUT	

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Description	It is used to stop running particular patrol route of a particular PTZ channel.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: It is available to stop the patrol route which is in running state or in pause state.	

4.21 /ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>/pause

/ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>/pause	**General Resource v2.0**
PUT	
Description	It is used to pause particular patrol route which is in running state of a particular channel.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: Patrolstart is used to restart patrol route. It doesn't support dome at this moment.	

4.22 /ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>/status

/ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>/status	**General Resource v2.0**
GET	
Description	It is used to get particular patrol route state of a particular PTZ channel.
Query	None
Inbound Data	**PTZPatrolStatus**
Success Return	**ResponseStatus**
Notes: It doesn't support dome at this moment!!	

PTZPatrolStatus XML Block

```
< PTZPatrolStatus version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
        <patrolID> <!-- req, xs:string;id --> </patrolID>
        <patrolStatus> <!-- req, xs:string, "running,stopped,paused" --> </patrolStatus>
</ PTZPatrolStatus>
```

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4.23 /ISAPI/PTZCtrl/channels/<ID>/patrols/<ID>/schedule

/ISAPI/PTZCtrl/channels/<ID>/schedule	General Resource v2.0
GET	
Description	It is used to get patrol schedule of a particular PTZ channel.
Query	None
Inbound Data	None
Success Return	**TimeBlockList**
PUT	
Description	It is used to update patrol schedule of a particular PTZ channel.
Query	None
Inbound Data	**TimeBlockList**
Success Return	**ResponseStatus**
Notes:	

4.24 /ISAPI/PTZCtrl/channels/<ID>/patterns

/ISAPI/PTZCtrl/channels/<ID>/patterns	General Resource v2.0
GET	
Description	It is used to get pattern configuration of a particular PTZ channel.
Query	None
Inbound Data	None
Success Return	**PTZPatternList**
Notes: It is similar to presets!!	

PTZPatternList XML Block

```
<PTZPatternList version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <PTZPattern>    <!-- opt -->
</ PTZPatternList >
```

4.25 /ISAPI/PTZCtrl/channels/<ID>/patterns/<ID>

/ISAPI/PTZCtrl/channels/<ID>/patterns/<ID>	General Resource v2.0
GET	
Description	It is used to get a particular pattern configuration of a particular PTZ

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	channel.
Query	None
Inbound Data	None
Success Return	**PTZPattern**
PUT	
Description	It is used to update a particular pattern configuration of a particular PTZ channel.
Query	None
Inbound Data	**PTZPattern**
Success Return	**ResponseStatus**
DELETE	
Description	It is used to delete a particular pattern configuration of a particular PTZ channel
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: <space> x% indicates the remaining space for pattern	

PTZPattern XML Block

```
<PTZPattern version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
  <enabled>  <!-- req, xs:boolean -->  </enabled>
  <id>  <!-- req, xs:integer -->  </id>
  <space>  <!-- req, xs:integer, 0..100-->  </space>
</PTZPattern>
```

4.26/ISAPI/PTZCtrl/channels/<ID>/patterns/<ID>/recordstart

/ISPAI/PTZCtrl/channels/<ID>/patterns/<ID>/recordstart	**General Resource v2.0**
PUT	
Description	It is used to start particular pattern information recording of a particular PTZ channel.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: Remaining space information will be uploaded in real time during the recording process.	

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4.27 /ISAPI/PTZCtrl/channels/<ID>/patterns/<ID>/recordstop

/ISAPI/PTZCtrl/channels/<ID>/patterns/<ID>/recordstop	General Resource v2.0
PUT	
Description	It is used to stop a particular pattern information recording of a particular PTZ channel
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes:	

4.28 /ISAPI/PTZCtrl/channels/<ID>/patterns/<ID>/start

/ISAPI/PTZCtrl/channels/<ID>/patterns/<ID>/start	General Resource v2.0
PUT	
Description	It is used to start a particular pattern of a particular PTZ channel.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes:	

4.29 /ISAPI/PTZCtrl/channels/<ID>/patterns/<ID>/stop

/ISAPI/PTZCtrl/channels/<ID>/patterns/<ID>/stop	General Resource v2.0
PUT	
Description	It is used to stop a particular pattern which is in running status of a particular PTZ channel.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes:	

4.30 /ISAPI/PTZCtrl/channels/<ID>/PTZOSDDisplay

/ISAPI/PTZCtrl/channels/<ID>/PTZOSDDisplay	General Resource v2.0

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GET	
Description	It is used to get OSD display information of a particular PTZ channel.
Query	None
Inbound Data	None
Success Return	**PTZOSDDisplay**
PUT	
Description	It is used to update OSD display information of a particular PTZ channel.
Query	None
Inbound Data	**PTZOSDDisplay**
Success Return	**ResponseStatus**
Notes: <zoomlable> indicates the zoom progress bar display <azimuth> indicates the azimuth display <presetlable> indicates the preset title display	

PTZOSDDisplay XML Block

```
<PTZOSDDisplay version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <zoomlable>
        <!-- req, xs:strings, "2sec, 5sec, 10sec, alwaysclose, alwaysopen"-->
    </zoomlable>
    <azimuth>
        <!-- req, xs:strings, "2sec, 5sec, 10sec, alwaysclose, alwaysopen"-->
    </azimuth>
    <presetlable>
        <!-- req, xs:strings, "2sec, 5sec, 10sec, alwaysclose, alwaysopen"-->
    </presetlable>
</PTZOSDDisplay>
```

4.31 /ISAPI/PTZCtrl/channels/<ID>/parkaction

/ISAPI/PTZCtrl/channels/<ID>/parkaction	**General Resource v2.0**
GET	
Description	It is used to get park action information of a PTZ channel.
Query	None
Inbound Data	None
Success Return	**ParkAction**
PUT	
Description	It is used to update park action information of a PTZ channel.
Query	None
Inbound Data	**ParkAction**

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Success Return	ResponseStatus
Notes: <Parktime> Time span that will trigger an park action <Action> park action <ActionNum> park action number. It is used when park action is patrol, pattern or preset. For others, it is 0	

ParkAction XML Block

```
<ParkAction version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <enabled>   <!-- req, xs:boolean -->   </enabled>
    <Parktime>   <!-- req, xs:integer, seconds -->   </Parktime>
    <Action>
        <ActionType>
            <!-- req, xs:strings, "autoscan, framescan, randomscan, panoramascan, patrol,
    pattern, preset" -->
        </ActionType>
        <ActionNum>     <!-- req, xs:integer, 0..255-->       </ActionNum>
    </Action>
</ParkAction>
```

4.32 /ISAPI/PTZCtrl/channels/<ID>/ptzlimiteds

/ISAPI/PTZCtrl/channels/<ID>/ptzlimiteds	General Resource v2.0
GET	
Description	It is used to get movement limitations of PTZ channels.
Query	None
Inbound Data	None
Success Return	**PTZLimitedList**
Notes:	

PTZLimitedList XML Block

```
<PTZLimitedList version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <PTZLimited>   <!-- opt -->
</ PTZLimitedList>
```

4.33 /ISAPI/PTZCtrl/channels/<ID>/ptzlimiteds/<ID>

/ISAPI/PTZCtrl/channels/<ID>/ptzlimiteds/<ID>	General Resource v2.0

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GET	
Description	It is used to get movement limitations of a PTZ channel.
Query	None
Inbound Data	None
Success Return	**PTZLimited**
PUT	
Description	It is used to update movement limitations of a PTZ channel.
Query	None
Inbound Data	**PTZLimited**
Success Return	**ResponseStatus**
DELETE	
Description	It is used to clear movement limitations of a PTZ channel.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: It is used to get or set the parameter that whether movement limitation is enabled or disabled. Speed dome add two types of movement limitation. <ID>=1 Manual control movement limitation <ID>=2 Panorama scan movement limitation	

PTZLimited XML Block

```
<PTZLimited version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <enabled>    <!-- req, xs:boolean -->    </enabled>
    <id> <!-- req, xs:string;id --> </id>
</PTZLimited>
```

4.34 /ISAPI/PTZCtrl/channels/<ID>/ptzlimiteds/<ID>/Initialization

/ISAPI/PTZCtrl/channels/<ID>/ptzlimiteds/<ID>/Initialization	**General Resource**	**v2.0**
PUT		
Description	Set the start position of a movement limitation of a PTZ channel.	
Query	None	
Inbound Data	None	
Success Return	**ResponseStatus**	
Notes: Only used when movement limitation is enabled.		

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4.35 /ISAPI/PTZCtrl/channels/<ID>/ptzlimiteds/<ID>/confirm

/ISAPI/PTZCtrl/channels/<ID>/ptzlimiteds/<ID>/confirm	General Resource v2.0
PUT	
Description	Set other positions of a movement limitation of a PTZ channel.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: Only used when movement limitation is enabled and Initialization already been used. Order of the positions is left→right→up→down. Please save the settings after setup.	
Notes: Only used when movement limitation is enabled and Initialization already been used. Order of the positions is left→right→up→down. Please save the settings after setup. **boundary: left,right,up,down**	

4.36 /ISAPI/PTZCtrl/channels/<ID>/ptzlimiteds/<ID>/stop

/ISAPI/PTZCtrl/channels/<ID>/ptzlimiteds/<ID>/setstop	General Resource v2.0
PUT	
Description	Set the start position of a movement limitation of a PTZ channel.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes: Stop ptz limitation setting ， save boundary to device.	

4.37 /ISAPI/PTZCtrl/channels/<ID>/saveptzpoweroff

/ISAPI/PTZCtrl/channels/<ID>/saveptzpoweroff	General Resource v2.0
GET	
Description	It is used to get the PTZ power off memory settings information
Query	None

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Inbound Data	None
Success Return	**savePtzpoweroff**
PUT	
Description	It is used to update the PTZ power off memory settings information
Query	None
Inbound Data	**savePtzpoweroff**
Success Return	**ResponseStatus**
Notes: <savePtzPoweroff>Power off memory	

savePtzPoweroff XML Block

```
<savePtzPoweroff version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <savePtzPoweroffType>
         <!-- req, xs:integer, "disable, 30sec, 60sec, 300sec, 600sec"-->
   </savePtzPoweroffType>
</savePtzPoweroff>
```

4.38 /ISAPI/PTZCtrl/channels/<ID>/timetasks

/ISAPI/PTZCtrl/channels/<ID>/timetasks	**General Resource v2.0**
GET	
Description	It is used to get a list of tasks based on a schedule
Query	None
Inbound Data	None
Success Return	TimeTaskList
PUT	
Description	It is used to update a list of tasks based on a schedule
Query	None
Inbound Data	TimeTaskList
Success Return	**ResponseStatus**
Notes: GET is used to get a list of tasks of a whole week(7) <enabled>Enable all the tasks <Parktime> Time span for a task to resume.	

TimeTaskList XML Block

```
<TimeTaskList version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <enabled>    <!-- req, xs:boolean -->    </enabled>
   <Parktime>    <!-- req, xs:integer, seconds -->    </Parktime>
```

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```
  <TimeTaskBlock /> <!-- opt -->
</TimeTaskList>
```

4.39 /ISAPI/PTZCtrl/channels/<ID>/timetasks/<ID>

/ISAPI/PTZCtrl/channels/<ID>/timetasks/<ID>	General Resource v2.0
GET	
Description	It is used to get a list of tasks of one day
Query	None
Inbound Data	None
Success Return	**TimeTaskBlock**
PUT	
Description	It is used to update a list of tasks of one day
Query	None
Inbound Data	**TimeTaskBlock**
Success Return	**ResponseStatus**
DELETE	
Description	It is used to delete a list of tasks of one day
Query	None
Inbound Data	None
Success Return	**ResponseStatus**

Notes:

Tasks based on a schedule consist of time blocks ad tasked. This task is enabled always.

<TimeTaskBlock> get all the time span and tasks of one day

<dayOfWeek> specify the day of a week, ranging from 1 to 7

<TimeTaskRange> time span of each task. Up to ten time spans and 10 tasks are supported in one day.

<beginDateTime> specify the begin time of each task, ranig from 0:0:0-23:59:00, format is consistent to ISO 8601.

<endDateTime> specify the end time of each task, ranig from 0:0:0-23:59:00, format is consistent to ISO 8601. endDateTime should be larger than or equal to beginDateTime.

<TaskType> Tasks type

<TaskNum> Tasks number. Enabled when park action is patrol, pattern, preset or auxoutput, otherwise the value is 0.

TimeTaskBlock XML Block

```
<TimeTaskBlock version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
  <dayOfWeek>
    <!-- req, xs:integer, ISO8601 weekday number, 1=Monday, … -->
  </dayOfWeek>
```

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```
  <TimeTaskRange>
      <TaskID><!-- req, xs:string;id --></TaskID>
      <beginTime> <!-- req, xs:time, ISO8601 time --> </beginTime>
      <endTime> <!-- req, xs:time, ISO8601 time --> </endTime>
      <Task>
          <TaskType>
              <!-- req, xs:strings, "disable, autoscan, framescan, randomscan, panoramascan, patrol,
pattern, preset, tiltscan,periodreboot,periodadjust,auxoutput" -->
          </TaskType>
          <TaskNum><!-- dep, xs:integer, 0.8--></TaskNum>
      </Task>
  </TimeTaskRange>
</TimeTaskBlock>
```

4.40 /ISAPI/PTZCtrl/channels/<ID>/timetasks/<ID>/copytask

/ISAPI/PTZCtrl/channels/<ID>/timetasks/<ID>/copytask	**General Resource v2.0**
GET	
Description	It is used to get the default copy time of a tasks list of a specified PTZ channel.
Query	None
Inbound Data	None
Success Return	TimeTaskCopy
PUT	
Description	It is used to update the default copy time of a tasks list of a specified PTZ channel.
Query	None
Inbound Data	TimeTaskCopy
Success Return	**ResponseStatus**
Notes: <curDayOfWeek> specify the current day of a week; <copyDayOfWeek> specify the days that will have the same settings as the current day;	

TimeTaskCopy XML Block

```
<TimeTaskCopy version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
  <curDayOfWeek>
      <!-- req, xs:integer, ISO8601 weekday number, 1=Monday, … -->
  </curDay>
  <copyDayOfWeek>
```

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```
        <!-- req, xs:integer, ISO8601 weekday number, 1=Monday, … -->
    </copyDay>
</TimeTaskCopy >
```

4.41 /ISAPI/PTZCtrl/channels/<ID>/auxcontrols

/ISAPI/PTZCtrl/channels/<ID>/auxcontrols	General Resource v2.0
GET	
Description	It is used to get auxillary PTZ control information of a specified PTZchannel.
Query	None
Inbound Data	None
Success Return	**PTZAuxList**
PUT	
Description	It is used to update auxillary PTZ control information of a specified PTZchannel.
Query	None
Inbound Data	**PTZAuxList**
Success Return	**ResponseStatus**
Notes:	

PTZAuxList XML Block

```
<PTZAuxList version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <PTZAux /> <!-- opt -->
</PTZAuxList>
```

4.42 /ISAPI/PTZCtrl/channels/<ID>/auxcontrols/<ID>

/ISAPI/PTZCtrl/channels/<ID>/auxcontrols/<ID>	General Resource v2.0
GET	
Description	It is used to get auxillary PTZ control information of a specified PTZchannel.
Query	None
Inbound Data	None
Success Return	**PTZAux**
PUT	
Description	It is used to update auxillary PTZ control information of a specified PTZchannel.
Query	None

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Inbound Data	**PTZAux**
Success Return	**ResponseStatus**
Notes: Auxillary Types: LIGHT WIPER FAN HEATER <status> may be “write only”, due to ptz type	

PTZAux XML Block

```
<PTZAux version=“2.0” xmlns=“http://www.isapi.org/ver20/XMLSchema”>
    <id>    <!-- req, xs:string; id -->    </id>
    <type>    <!--req, ro, xs:string, “LIGHT, WIPER, FAN, HEATER” --> </type>
    <status /> <!--req, xs:string, “on, off”>
</PTZAux>
```

4.43 /ISAPI/PTZCtrl/channels/<ID>/onepushfoucs/start

/ISAPI/PTZCtrl/channels/<ID>/onepushfoucs/start	**General Resource v2.0**
PUT	
Description	It is used to start focusing by pushing a key.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes:	

4.44 /ISAPI/PTZCtrl/channels/<ID>/onepushfoucs/reset

/ISAPI/PTZCtrl/channels/<ID>/onepushfoucs/reset	**General Resource v2.0**
PUT	
Description	It is used to stop focusing by pushing a key.
Query	None
Inbound Data	None
Success Return	**ResponseStatus**
Notes:	

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4.45 /ISAPI/PTZCtrl/channels/<ID>/ManualTrace

/ISAPI/PTZCtrl/channels/<ID>/ManualTrace	General Resource v2.0
PUT	
Description	It is used to set manual tracking of a particular PTZ channel.
Query	None
Inbound Data	**ManualTrace**
Success Return	**ResponseStatus**
Notes:	

ManualTrace XML Block

```
<ManualTrace version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <positionX> <!-- req, xs:integer --> </positionX>
    <positionY> <!-- req, xs:integer --> </positionY>
</ManualTrace>
```

4.46 /ISAPI/PTZCtrl/channels/<ID>/position3D

/ISAPI/PTZCtrl/channels/<ID>/position3D	General Resource v2.0
PUT	
Description	It is used to set 3D zoom of a particular PTZ channel.
Query	None
Inbound Data	**Position3D**
Success Return	**ResponseStatus**
Notes:	

Position3D XML Block

```
<Position3D version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
    <StartPoint><!--0-255-->
        <positionX> <!-- req, xs:integer --> </positionX>
        <positionY> <!-- req, xs:integer --> </positionY>
    </StartPoint>
    <EndPoint>
        <positionX> <!-- req, xs:integer --> </positionX>
        <positionY> <!-- req, xs:integer --> </positionY>
    </EndPoint>
</Position3D>
```

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4.47 /ISAPI/PTZCtrl/channels/<ID>/autoPan

/ISAPI/PTZCtrl/channels/<ID>/autoPan	General Resource v2.0
PUT	
Description	
Query	None
Inbound Data	**autoPanData**
Success Return	**ResponseStatus**
Notes:	

autoPanData XML Block

```
<autoPanData version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <autoPan>  <!-- req, xs:integer, 0..100 --></autoPan>
</autoPanData>
```

4.48 /ISAPI/PTZCtrl/channels/<ID>/lockPTZ

/ISAPI/PTZCtrl/channels/<ID>/lockPTZ	General Resource v2.0
GET	
Description	Obtain the remaining time before unlocking the PTZ of the specific channel.
Query	None
Inbound Data	None
Success Return	**LockPTZ**
PUT	
Description	Lock the PTZ of specific channel.
Query	None
Inbound Data	**LockPTZ**
Success Return	**ResponseStatus**
Notes: Set lockTime as 0, which represents ptz unlock	

LockPTZ XML Block

```
<LockPTZ version="2.0" xmlns="http://www.isapi.org/ver20/XMLSchema">
   <lockTime> <!--req, xs:integer; second --> </lockTime>
</LockPTZ>
```

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