



# **ISH Series TUCAM-API Properties & Capabilities**



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## 1. Before Use

This document explains the supported properties and capabilities of the ISH series cameras and how to control them through TUCAM-API. Before use them, please understand the basic concepts of the TUCAM-API and SDK.

The ISH series of cameras in the documentation include:

Camera Model	Version	Name
ISH130	V1.0	ISH130
ISH 300	V1.0	ISH 300
ISH 500	V1.0	ISH 500
ISH 1000	V1.0	ISH 1000
ISH130BW	V1.0	ISH130BW
X1000	V1.0	X1000

## 2. Reference List

### Note:

- 1) Macro definitions that are not listed indicates that they are not supported.
- 2) ●: supported, ○: not supported

### 2.1. Capability reference table (prefix "TUIDC \_")

Camera Model	RESOLUTION (0x00)	PIXELCLOCK (0x01)	BITOFDEPTH (0x02)	ATEXPOSURE (0x03)	HORIZONTAL (0x04)
ISH130	●	●	●	●	●
ISH 300	●	●	●	●	●
ISH 500	●	●	●	●	●
ISH 1000	●	●	●	●	●

ISH130BW	•	•	•	•	•
X1000	•	•	•	•	•

Camera Model	VERTICAL (0x05)	ATWBALANCE (0x06)	ATLEVELS (0x08)	HISTC (0x0A)	CHANNELS (0x0B)
ISH130	•	•	•	•	•
ISH 300	•	•	•	•	•
ISH 500	•	•	•	•	•
ISH 1000	•	•	•	•	•
ISH130BW	•	○	•	•	○
X1000	•	•	•	•	•

Camera Model	DFTCORRECTION (0x0D )	FLTCORRECTION (0x0F)	VERCORRECTION (0x13)	MONOCHROME (0x14)
ISH130	•	•	•	•
ISH 300	•	•	•	•
ISH 500	•	•	•	•
ISH 1000	•	•	•	•
ISH130BW	○	•	•	○
X1000	•	•	•	•

## 2.2. Property reference table (prefix "TUIDP \_")

Camera Model	GLOBALGAIN (0x00)	EXPOSURETM (0x01)	BRIGHTNESS (0x02)	GAMMA (0x08)
ISH130	•	•	•	•
ISH 300	•	•	•	•
ISH 500	•	•	•	•
ISH 1000	•	•	•	•
ISH130BW	•	•	•	•
X1000	•	•	•	•

Camera Model	CONTRAST (0x09)	LFTLEVELS (0x0A)	RGTLEVELS (0x0B)	CHNLGAIN (0x0C)	SATURATION (0x0D )
ISH130	●	●	●	●	●
ISH 300	●	●	●	●	●
ISH 500	●	●	●	●	●
ISH 1000	●	●	●	●	●
ISH130BW	●	●	●	○	○
X1000	●	●	●	●	●

### 3. Detailed Reference Table

**Note:** The camera models not listed indicate that the camera is not supported.

#### 3.1. Capability reference Table

##### 3.1.1. TUIDC\_RESOLUTION

Camera Model	Range	Default	Step	Description
ISH130	[0, 1]	0	1	0: "1272x952" 1: "632x472"
ISH 300	[0, 4]	0	1	0: "2040x1528" 1: "1016x760" 2: "632x472" 3: "1016x760 Bin" 4: "632x472 Bin"
ISH 500	[0, 4]	0	1	0: "2584x1936" 1: "1272x952" 2: "632x472" 3: "1272x952 Bin" 4: "632x472 Bin"
ISH 1000	[0, 1]	0	1	0: "3656x2740"

				1: "1824x1362"
ISH130BW	[0, 0]	0	0	0: "1272x1016"
X1000	[0, 5]	0	1	0: "3656x2740" 1: "1824x1362" 2: "1640x1228" 3: "908x672" 4: "1824x1362 Bin" 5: "908x672 Bin"

### 3.1.2. TUIDC\_PIXELCLOCK

Camera Model	Range	Default	Step	Description
ISH130	[0, 1]	0	1	0: "High" 36MHZ 1: "Normal" 18MHZ
ISH 300	[0, 2]	0	1	0: "High" 48MHZ 1: "Normal" 34MHZ 2: "Low" 12MHZ
ISH 500	[0, 2]	0	1	0: "High" 32MHZ 1: "Normal" 24MHZ 2: "Low" 16MHZ
ISH 1000	[0, 4]	0	1	0: "High" 36MHZ 1: "Normal" 30MHZ 2: "Low" 24MHZ 3: "Lower" 18MHZ 4: "Lowest" 12MHZ
ISH130BW	[0, 2]	0	1	0: "High" 40MHZ 1: "Normal" 30MHZ 2: "Low" 20MHZ
X1000	[0, 0]	0	0	0: "Super" 79.5MHZ

### 3.1.3. TUIDC\_BITOFDEPTH

Camera Model	Range	Default	Step	Description
ISH series	[8, 8]	8	0	8:8 The Bit data bit

### 3.1.4. TUIDC\_ATEXPOSURE

Camera Model	Range	Default	Step	Description
ISH, in the full series	[0, 1]	1	1	0: Manual exposure mode 1: Single exposure mode

### 3.1.5. TUIDC\_HORIZONTAL

Camera Model	Range	Default	Step	Description
ISH series	[0, 1]	0	1	0: Non-horizontal mirror state 1: Horizontal mirror state

### 3.1.6. TUIDC\_VERTICAL

Camera Model	Range	Default	Step	Description
ISH series	[0, 1]	0	1	0: Non-horizontal mirror state 1: Horizontal mirror state

### 3.1.7. TUIDC\_ATWBALANCE

Camera Model	Range	Default	Step	Description
ISH130	[0, 2]	1	1	0: Manual white balance state 1: Single white balance state
ISH 300				
ISH 500				
ISH 1000				
X1000				



### 3.1.8. TUIDC\_ATLEVELS

Camera Model	Range	Default	Step	Description
ISH series	[0, 3]	0	1	0: Manual color scale status 1: Automatic left color order state (must open histogram statistics) 2: Automatic right color order state (must open histogram statistics) 3: Auto left and right color order status (must open histogram statistics)

### 3.1.9. TUIDC\_HISTC

Camera Model	Range	Default	Step	Description
ISH series	[0, 1]	0	1	0: Close the histogram data statistics (the auto color level is invalid) 1: Open the histogram data statistics (the auto color level is valid)

### 3.1.10. TUIDC\_CHANNELS

Camera Model	Range	Default	Step	Description
ISH130	[0, 3]	0	1	0: Shared channel (RGB or Gray) 1: Red channel 2: Green channel 3: Blue channel
ISH 300				
ISH 500				
ISH 1000				
X1000				

### 3.1.11. TUIDC\_DFTCORRECTION

Camera Model	Range	Default	Step	Description
ISH130	[0, 1]	0	1	0: Close correction 1: Calculate 2: Open the correction
ISH 300				
ISH 500				
ISH 1000				
X1000				

### 3.1.12. TUIDC\_FLTCORRECTION

Camera Model	Range	Default	Step	Description
ISH series	[0, 3]	0	1	0: Close the flat-field correction 1: Grab the frame data 2: Calculate the flat-field correction 3: Open level field correction (successful calculation becomes effective)

### 3.1.13. TUIDC\_VERCORRECTION

Camera Model	Range	Default	Step	Description
ISH series	[0, 1]	1	1	0: Close the vertical mirror correction 1: Open the vertical mirror correction (Windows system Default)

### 3.1.14. TUIDC\_MONOCHROME

Camera Model	Range	Default	Step	Description
ISH130	[0, 1]	0	1	0: Close the monochrome state 1: Open the monochrome state
ISH300				
ISH500				
ISH1000				

X1000				
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## 3.2. Property Reference Table

### 3.2.1. TUIDP\_GLOBALGAIN

Camera Model	Range	Default	Step	Description
ISH130	[10, 174]	30	1	The larger the value, the higher the brightness, but the noise increases accordingly
ISH 300	[0, 159]	30	1	
ISH 500	[0, 174]	10	1	
ISH 1000	[30, 310]	30	1	
X1000			1	
ISH130BW	[10, 71]	10	1	

### 3.2.2. TUIDP\_EXPOSURETM

Camera Model	Range	Default	Step	Description
ISH series	[0, -]	-	-	The range of exposure time and step are related to the resolution and the minimum exposure time, and the range is obtained through the interface.

### 3.2.3. TUIDP\_BRIGHTNESS

Camera Model	Range	Default	Step	Description
ISH130	[20, 240]	240	1	Valid in auto exposure state
ISH 300				
ISH 500				
ISH 1000				
X1000				
ISH130BW	[20, 200]	78	1	

### 3.2.4. TUIDP\_GAMMA

Camera Model	Range	Default	Step	Description
ISH130	[20, 150]	100	1	Gamma value
X1000				
ISH 300	[20, 200]	165	1	
ISH 500				
ISH 1000				
ISH130BW	[20, 150]	180	1	

### 3.2.5. TUIDP\_CONTRAST

Camera Model	Range	Default	Step	Description
ISH series	[0, 255]	128	1	Contrast value

### 3.2.6. TUIDP\_LFTLEVELS

Camera Model	Range	Default	Step	Description
ISH series	[0, 254]	0	1	8 Bit data

### 3.2.7. TUIDP\_RGTLEVELS

Camera Model	Range	Default	Step	Description
ISH series	[1, 255]	255	1	8 Bit data

### 3.2.8. TUIDP\_CHNLGAIN

Camera Model	Range	Default	Step	Description
ISH130	[0,1366]	256	1	Gain values of the corresponding channel
ISH 300				

ISH 500				
ISH 1000				
X1000				

### 3.2.9. TUIDP\_SATURATION

Camera Model	Range	Default	Step	Description
ISH130	[0, 255]	100	1	Saturation value
ISH 300				
ISH 500				
ISH 1000				
X1000				