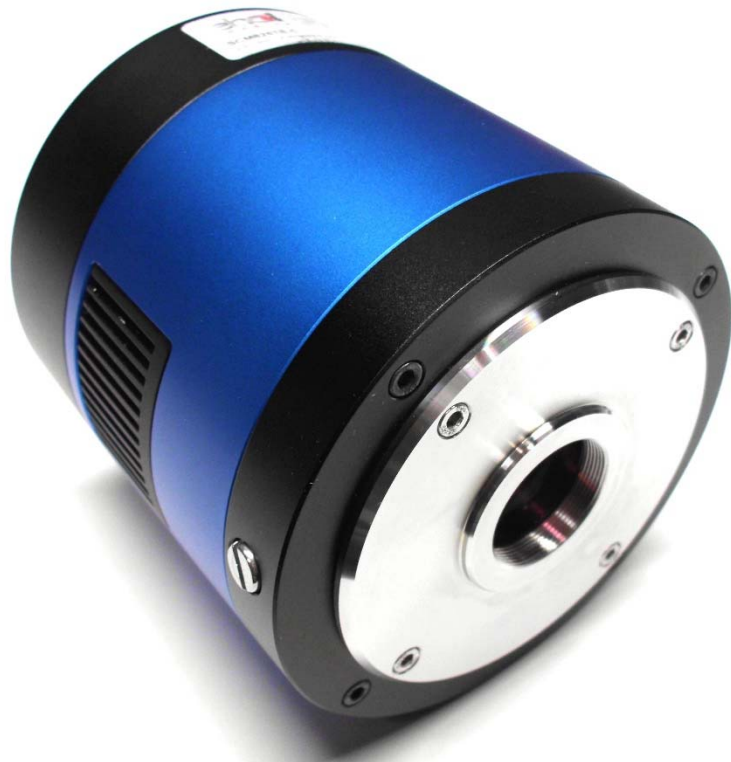




2020

EHD SCM-TE Cooled Scientific CCD/CMOS Cameras



EHD imaging GmbH

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# 1 Scientific TE-Cooled USB2.0 and 3.0 CCD Camera

## 1.1 SCM CCD Series TE-Cooled C-mount USB3.0 CCD Camera

### 1.1.1 The Basic Characteristic of EHD SCM-TE CCD

**EHD SCM-TE CCD** camera adopts Sony Exview HAD CCD II sensor as the image-picking device with two-stage peltier cooling sensor chip to -40 degree below ambient temperature. This will greatly increase the signal to noise ratio and decrease the image noise. Smart structure is designed to assure the heat radiation efficiency and avoid the moisture problem. Electric fan is used to increase the heat radiation speed.

USB3.0 is used as the data transfer interface to increase the frame rate.

**EHD SCM-TE CCD** comes with advanced video & image processing application EHDView; Providing Windows/Linux/OSX multiple platform SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

**The EHD SCM-TE CCD** can be widely used in low light environment and microscope fluorescence image capture and analysis, as well as the astronomy deep sky application.



The basic characteristic of EHD SCM-TE CCD can be summarized as follows:

- Standard C-Mount camera with SONY ExView HAD CCD II sensors from 1.4M to 12M;
- Two-stage TE-cooling with controllable electric fan;
- Sensor chip cooling up to 40°C below ambient temperature;
- Working temperature can be regulated to specified temperature in 5 minutes;
- Smart structure to assure the heat radiation efficiency and avoid the moisture problem;
- IR-CUT/AR coated windows;
- Up to 1 hour long time exposure;
- USB3.0 5Gbit/second interface ensuring high speed data transmission;
- Ultra-Fine™ color engine with perfect color reproduction capability;
- With advanced video & image processing application ToupView;
- Support both video and trigger modes;
- Providing Windows/Linux/Mac OS multiple platforms SDK;
- Native C/C++, C#/VB.NET, DirectShow, Twain control API;

## 1.1.2 EHD SCM-TE CCD Datasheet

Order Code	Sensor Size(mm) &	Pixel( $\mu\text{m}$ )	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure
SCM834-C-TE MP112000A (New)	12M/ICX834AQG(C) 1" (13.15x8.77)	3.1x3.1	420mv with 1/30s 15.2mv with 1/30s	3.6@4248x2836 3.6@2124x1418	1x1, 2x2	0.06ms~1h
SCM834-M-TE MM112000A (New)	12M/ICX834ALG(M) 1" (13.15x8.77)	3.1x3.1	420mv with 1/30s 12mv with 1/30s (F8.0)	3.6@4248x2836 3.6@2124x1418	1x1, 2x2	0.06ms~1h
SCM814-C-TE MP109000A (New)	9.0M/ICX814AQG(C) 1" (12.47x9.98)	3.69x3.69	580mv with 1/30s 12mv with 1/30s	4.4@3388x2712 4.4@1694x1356	1x1, 2x2	0.06ms~1h
SCM814-M-TE MM109000A (New)	9.0M/ICX814ALG(M) 1" (12.47x9.98)	3.69x3.69	660mv with 1/30s 12mv with 1/30s (F8.0)	4.4@3388x2712 4.4@1694x1356	1x1, 2x2	0.06ms~1h
SCM694-C-TE MP106000A	6.0M/ICX694AQG(C) 1" (12.48x9.99)	4.54x4.54	880mv with 1/30s 8mv with 1/30s	7.5@2748x2200 14@2748x1092	1x1	0.06ms~1h
SCM694-M-TE MM106000A	6.0M/ICX694ALG(M) 1" (12.48x9.99)	4.54x4.54	1000mv with 1/30s 8mv with 1/30s	7.5@2748x2200 14@2748x1092	1x1	0.06ms~1h
SCM674-C-TE MP102800A (New)	2.8M/ICX674AQG(C) 2/3" (8.81x6.63)	4.54x4.54	800mv with 1/30s 4mv with 1/30s	15@1938x1460 17@1610x1212 18@1930x1092	1x1	0.05ms~1h
SCM674-M-TE MM102800A (New)	2.8M/ICX674ALG(M) 2/3" (8.81x6.63)	4.54x4.54	950mv with 1/30s 4mv with 1/30s	15@1938x1460 17@1610x1212 18@1930x1092	1x1	0.05ms~1h
SCM285-C-TE MP101400A	1.4M/ICX285AQ(C) 2/3" (8.88x6.70)	6.45x6.45	1240mv with 1/30s 10mv with 1/30s	15@1360x1024	1x1	0.07ms~1h
SCM285-M-TE MM101400A	1.4M/ICX285AL(M) 2/3" (8.88x6.70)	6.45x6.45	1300mv with 1/30s 11mv with 1/30s	15@1360x1024	1x1	0.07ms~1h
SCM825-C-TE MP101400B (New)	1.4M/ICX825AQA(C) 2/3" (8.88x6.70)	6.45x6.45	2000mv with 1/30s 4.8mv with 1/30s	25@1376x1040	1x1	0.07ms~1h
SCM825-M-TE MM101400B (New)	1.4M/ICX825ALA(M) 2/3" (8.88x6.70)	6.45x6.45	2000mv with 1/30s 4.8mv with 1/30s	25@1376x1040	1x1	0.07ms~1h

C:Color; M:Monochrome;

### Other Specification for EHD SCM-TE CCD Cameras

Spectral Range	380-650nm (with IR-cut Filter)
White Balance	ROI White Balance/ Manual Temp Tint Adjustment/NA for Monochromatic Sensor
Color Technique	Ultra-Fine™ Color Engine/NA for Monochromatic Sensor
Capture/Control API	Native C/C++, C#/VB.NET, DirectShow, Twain and Labview
Recording System	Still Picture and Movie
Cooling System*	Two-stage TE-cooling System -45 °C below Camera Body Temperature

### Operating Environment

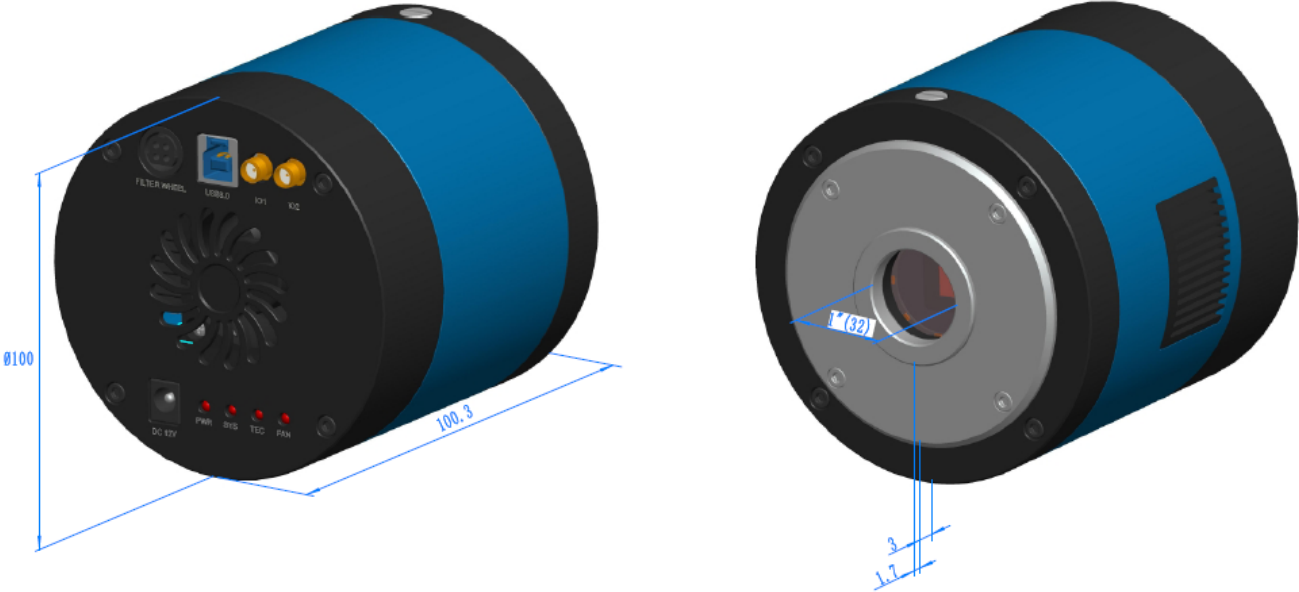
Operating Temperature(in Centidegree)	-10~ 50
Storage Temperature(in Centidegree)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port External Power Adapter for Cooling System, DC12V, 3A

### Software Environment

Operating System	Microsoft® Windows® XP / Vista / 7 / 8 /10 (32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory:2GB or More
	USB Port:USB2.0 High-speed Port
	Display:17" or Larger
	CD-ROM

### 1.1.3 EHD SCM-TE CCD Dimension

The EHD SCM-TE CCD body, made from tough, alloy with CNC technique, ensures a heavy duty, workhorse solution. The camera is designed with a high quality IR-CUT or AR to block the IR light or protect the camera sensor. The fan's vibration is minimized to the low level to eliminate the vibration caused imaging blur. This design ensures a rugged, robust solution with an increased lifespan when compared to the other industrial camera solutions.



Dimension of EHD SCM-TR CCD

## 2 Scientific cooled USB3.0 CMOS Camera

### 2.1 EHD SCM-TE CMOS Series TE-Cooled C-mount USB3.0 CMOS Camera

#### 2.1.1 The Basic Characteristic of EHD SCM-TE CMOS

**EHD SCM-TR CMOS** camera adopts SONY Exmor CMOS sensor as the image-picking device and USB3.0 is used as the transfer interface to increase the frame rate.

With the two-stage peltier cooling sensor chip to -42 degree below ambient temperature. This will greatly increase the signal to noise ratio and decrease the image noise. Smart structure is designed to assure the heat radiation efficiency and avoid the moisture problem. Electric fan is used to increase the heat radiation speed.

USB3.0 is used as the data transfer interface to increase the frame rate.

**EHD SCM-TE CMOS** comes with advanced video & image processing application ToupView; Providing Windows/Linux/OSX multiple platform SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

The **EHD SCM-TE CMOS** can be widely used in low light environment and microscope fluorescence image capture and analysis, as well as the astronomy deep sky application.



The basic characteristic of EHD SCM-TE CMOS can be summarized as follows:

- Standard C-Mount camera with SONY Exmor CMOS sensors from 1.7M to 21M;
- Two-stage TE-cooling with controllable electric fan;
- Sensor chip cooling up to 42°C below ambient temperature;
- Working temperature can be regulated to specified temperature in 5 minutes;
- Smart structure to assure the heat radiation efficiency and avoid the moisture problem;
- IR-CUT/AR coated windows;
- Up to 1 hour long time exposure;
- USB3.0 5Gbit/second interface ensuring high speed data transmission;
- Ultra-Fine™ color engine with perfect color reproduction capability;
- With advanced video & image processing application ToupView;
- Support both video and trigger modes;
- Providing Windows/Linux/Mac OS multiple platforms SDK;
- Native C/C++, C#/VB.NET, DirectShow, Twain control API;

## 2.1.2 EHD SCM-TE CMOS Datasheet

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure
SCM269-C-TE MTRP121000A (10/09/2019) <span style="color:red">(New)</span>	21M/IMX269(C) 4/3“(17.4x13.1)	3.3 x3.3	400mv with 1/30s 0.1mv with 1/30s	5@5280x3956 6@3952x3952 15@2640x1978 50@1760x1318 100@584x440	1x1 1x1 2x2 3x3 9x9	0.1ms~3600s
SCM183-C-TE MTRP12000A <span style="color:red">(New)</span>	20M/IMX183(C) 1“(13.056x8.755)	2.4 x2.4	462mv with 1/30s 0.21mv with 1/30s	5@5440x3648 10@4096x2160 15@2736x1824 30@1824x1216	1x1, 1x1, 2x2, 3x3	0.1ms~3600s
SCM183-M-TE MTRM12000A <span style="color:red">(New)</span>	20M/IMX183(M) 1“(13.056x8.755)	2.4 x2.4	388mv with 1/30s 0.21mv with 1/30s (F8.0)	17.8@5440x3648 41@4096x2160 51@2736x1824 64@1824x1216	1x1, 1x1, 2x2, 3x3	0.1ms~3600s
SCM34230-C-TE MTRP116000A <span style="color:red">(New)</span>	16M/MN34230PLJ(C) 4/3“(17.6x13.3)	3.8x3.8	241LSB 89.1LSB (Gain = 0dB)	6@4640x3506 20@2304x1750 48@1536x1160	1x1 2x2 3x3	0.15ms~3600s
SCM34230-M-TE MTRM116000A <span style="color:red">(New)</span>	16M/MN34230ALJ(M) 4/3“(17.6x13.3)	3.8x3.8	2650LSB 89.1LSB (Gain = 0dB)	22.5@4648x3506 43.0@2304x1750 48.0@1536x1168	1x1 2x2 3x3	0.15ms~3600s
SCM294-C-TE MTRP110300A <span style="color:red">(New)</span>	10.3M/IMX294(C) 4/3“(17.47x12.86)	4.63 x4.63	419mv with 1/30s 0.12mv with 1/30s	7.5@3704x2778 8.5 @4096x2160 30@2048x1080 60@1360x720	1x1, 1x1, 2x2, 3x3	0.15ms~3600s
SCM428-C-TE MTRP107100A <span style="color:red">(New)</span>	7.0M/IMX428(C, <b>GS</b> ) 1.1“(14.4x9.9)	4.5 x4.5	2058mv with 1/30s 0.15mv with 1/30s	12@3200x2200 33@1600x1100	1x1 1x1	0.1ms~3600s
SCM428-M-TE MTRM107100A <span style="color:red">(New)</span>	7.0M/IMX428(M, <b>GS</b> ) 1.1“(14.4x9.9)	4.5 x4.5	3354mv with 1/30s 0.15mv with 1/30s	51@3200x2200 133@1600x1100	1x1 2x2	0.1ms~3600s
SCM432-C-TE MTRP101700A <span style="color:red">(New)</span>	1.7M/IMX432(C, <b>GS</b> ) 1.1“(14.4x9.9)	9.0 x9.0	4910mv with 1/30s 0.3mv with 1/30s	33@1600x1100	1x1	0.1ms~3600s
SCM432-M-TE MTRM101700A <span style="color:red">(New)</span>	1.7M/IMX432(M, <b>GS</b> ) 1.1“(14.4x9.9)	9.0 x9.0	8100mv with 1/30s 0.3mv with 1/30s	94@1600x1100	1x1	0.1ms~3600s

C:Color; M:Monochrome;

### Other Specification for EHD SCM-TE CMOS Cameras

Spectral Range	380-650nm (with IR-cut Filter)
White Balance	ROI White Balance/ Manual Temp Tint Adjustment/NA for Monochromatic Sensor
Color Technique	Ultra-Fine™ Color Engine/NA for Monochromatic Sensor
Capture/Control API	Native C/C++, C#/VB.NET, DirectShow, Twain and Labview
Recording System	Still Picture and Movie
Cooling System*	Two-stage TE-cooling System -45 °C below Camera Body Temperature

### Operating Environment

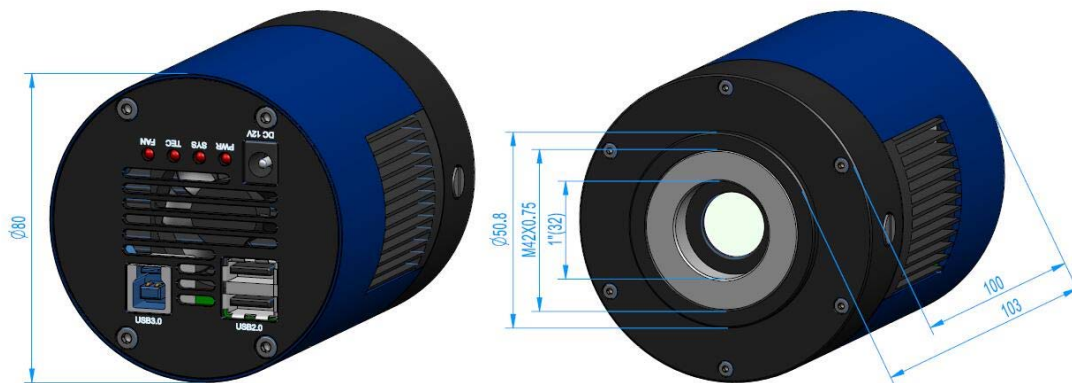
Operating Temperature(in Centidegree)	-10~ 50
Storage Temperature(in Centidegree)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port External Power Adapter for Cooling System, DC12V, 3A

### Software Environment

Operating System	Microsoft® Windows® XP / Vista / 7 / 8 / 10 (32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory:2GB or More
	USB Port:USB3.0 High-speed Port
	Display:17" or Larger
	CD-ROM

### 2.1.3 EHD SCM-TE CMOS Dimension

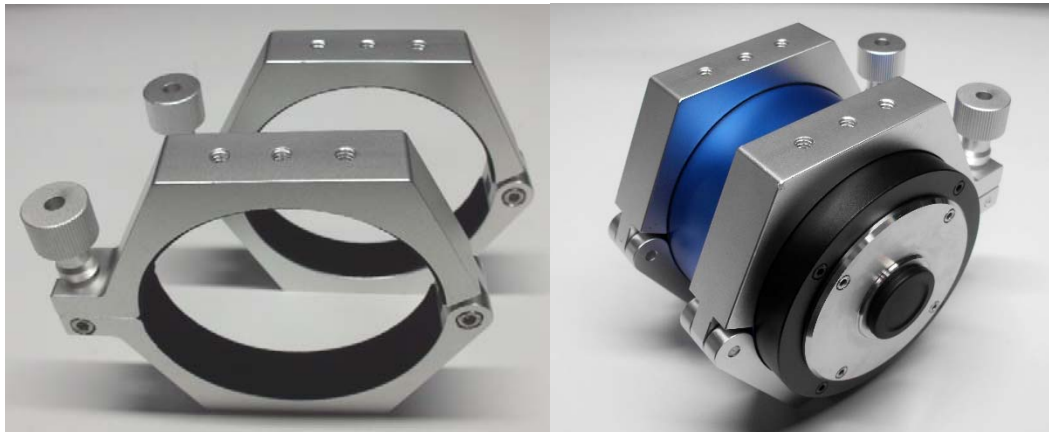
The EHD SCM-TE CMOS body, made from tough, alloy with CNC technique, ensures a heavy duty, workhorse solution. The camera is designed with a high quality IR-CUT or AR to block the IR light or protect the camera sensor. The fan's vibration is minimized to the low level to eliminate the vibration caused imaging blur. This design ensures a rugged, robust solution with an increased lifespan when compared to the other industrial camera solutions.



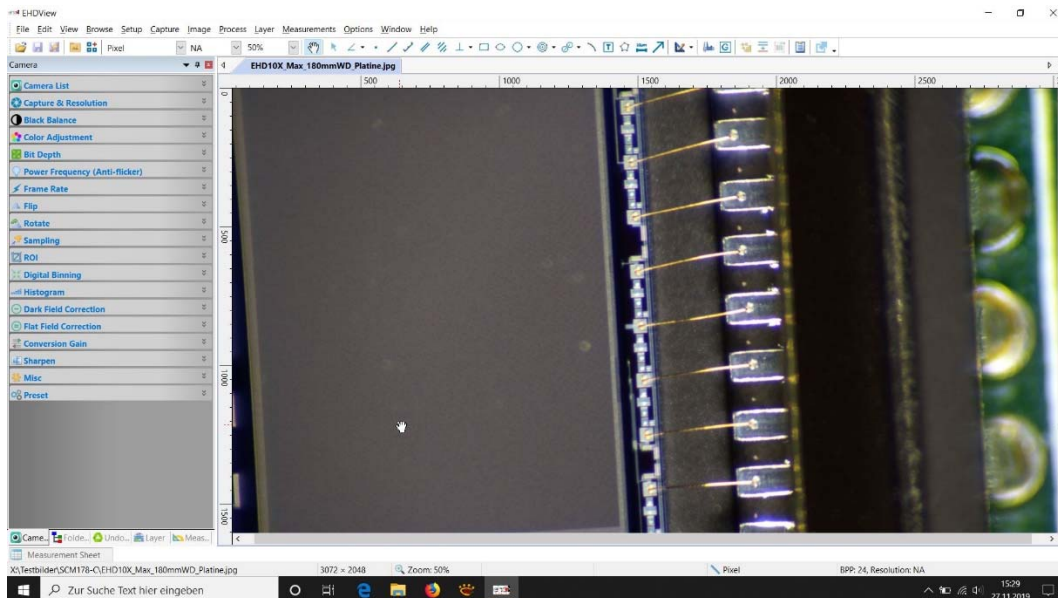
Dimension of EHD SCM-TE CMOS



### 3.1 EHD SCM-TE CCD Clamp (optional)



### 4.1 EHDview Image-Processing Software (included)



### 5.1 SDK (included)

<ul style="list-style-type: none"><li>▼ SDK_Linux_Windows_LV<ul style="list-style-type: none"><li>&gt; android<ul style="list-style-type: none"><li>doc</li></ul></li><li>&gt; dotnet</li><li>▼ extras<ul style="list-style-type: none"><li>&gt; directshow</li><li>&gt; imagelib</li><li>&gt; imagepro</li><li>&gt; labview</li><li>&gt; twain</li><li>matlab.zip</li><li>inc</li></ul></li><li>&gt; java</li><li>&gt; linux</li><li>mac</li><li>&gt; python</li><li>&gt; samples</li><li>&gt; win</li></ul></li></ul>	<p>EHD SCM cameras support various kinds of APIs (Application Program Interface), namely Native C/C++, .NET/C#/VB.NET, Python, Java, DirectShow, Twain, LabView, MablLab and so on. Compared with other APIs, Native C/C++ API, as a low level API, don't depend any other runtime libraries. Besides, this interface is simple, flexible and easy to be integrated into the customized applications.</p> <p>Please contact us for a complete API manual.</p>
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