

# *Optical and Mechanical Tools*



[www.ibe-optics.com](http://www.ibe-optics.com)

**IB/E OPTICS** is a designer, manufacturer and service provider of customized optics in the field of image acquisition, projection and illumination. Our developments and products are used worldwide in industry, medicine, photography and professional film production.

Apart from developing and creating cine products consisting of the RAPTOR Macro Lens Series and an extensive array of optical tools and adapters, IB/E OPTICS has collaborated with many renowned manufacturers on numerous projects, most notably, ARRI Rental on the development of lenses for the ALEXA 65.



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## HDx Converters

*Our professional optical converters are engineered to perform perfectly with the latest digital cameras and provide a seamless mechanical fit while correcting spectral alignments for three-chip prism block sensors.*

*They are highly telecentric in design and deliver bright, sharp images across the entire frame while maintaining excellent color and contrast.*

*Our Universal Mount System (UMS) makes it possible to use our converters with multiple mounting systems, considerably increasing their utility in the field.*



## Advantages

- *Use your HD ENG 3D CCD lenses with S35 sensors*
- *Telecentric Design for Digital Cameras*
- *Maximum T-Stop 1.9*
- *High Performance at all T-Stops*
- *Flare Optimized Systems using High-End Coatings*
- *Compact Size*
- *B4-PL Converter*
- *PL UMS Mount for Flexibility*



## HDx1.4

*The HDx1.4 converts B4 mount video lenses for use with single sensor (S16 or 2K) while slightly correcting the image. This converter is best suited when using HD ENG 3D CCD lenses on modern 2.5K cameras.*

*The HDx1.4 can be used with the following cameras with only one stop of light loss (1080p).*

- Phantom Flex 4K
- Sony F5/F55 2K
- Sony F700
- Blackmagic Pocket
- and others

*For a complete list see [www.lbe-optics.com](http://www.lbe-optics.com)*

*Item Number: 193000045000*



## HDx2 Mark II

The HDx2 Mark II was specifically designed to give cinematographers the ability to use all HD ENG 3D CCD lenses on high speed Phantom cameras and MFT format cameras (22 mm).

This converter is best suited for scenarios when our HDx35 Mark III adapter's magnification is too strong or when light loss has to be restricted.

The HDx2 Mark II enables the use of most extreme lenses, such as the Canon HJ18x28, Canon Digi Super 86II xs /95, Fujinon zooms on cameras including the Phantom v640, RED One (4K), Panasonic AF101 and the Blackmagic Cinema/Production for an image circle up to a maximum of 25.5 mm.

For a complete list see [www.lbe-optics.com](http://www.lbe-optics.com)

Item Number: 190902400500



## HDx35 Mark III

*The HDx35 Mark III is our standard converter for high performance HD ENG 3D CCD lenses, such as TV box lenses, Digiprimes and other broadcast lenses.*

*This optical converter magnifies for all S35 sensor cameras to include:*

- ARRI Alexa
- RED Epic (all 4K formats)
- Sony F3/F5/F55/F65/FS100/FS700
- Phantom Flex v641/v642/HD Gold (1920x1080)
- Canon C100/C300/C500
- and others

*For a complete list see [www.ibe-optics.com](http://www.ibe-optics.com)*

*Item Number: 193000000501*





..... ***New Life for your  
HD ENG Lenses*** .....



## PLx Extenders

Modern cameras require high quality optics that have been designed and optimized for electronic sensors. PL Extenders increase the focal length of 35 mm PL mount lenses. Our extenders feature high-index, low-dispersion glass and flare optimized systems to ensure the highest possible resolution and contrast with minimal optical degradation. The highly telecentric optical design avoids all micro lens issues.

### Advantages

- Extends the Focal Length
- Telecentric Design for Digital Cameras
- High Performance at all T-Stops
- Flare Optimized High-End Systems
- Fits Most PL lenses on the Market
- PL-PL Extender
- PL UMS Mount for Flexibility



## Extender Compatibility

### Cameras

- ARRI Alexa/Studio
- ARRI 35mm
- Aaton 35mm
- Phantom High-Speed
- Sony F3/F5/F55/F65
- Canon C300/C500 (PL Mount)
- RED One, Epic, Scarlet, Dragon, Weapon

### Lenses

For a complete list see [www.lbe-optics.com](http://www.lbe-optics.com)



## PLx1.4 Mark II

*The PLx1.4 Mark II extends the focal length of S35 PL mount lenses by a factor of 1.4 while only losing one stop in the process. The recommended maximum input T-Stop is 1.6.*

*In addition to extending the focal length of a lens, the PLx1.4 Mark II enlarges the projected image circle, enabling a wide range of standard 35mm format primes and zooms to cover the full 6K frame on the RED Dragon sensor.*

*The PLx1.4 Mark II is optimized for digital cameras that expect telecentric lens design.*

*Maximum Image Diameter: 34.5mm*

*Maximum T-Stop: 1.6*

*Item Number: 193000104200*



## PLx2

While most extenders can only physically fit on a limited range of lenses, the design of the PLx2 accommodates more spherical and anamorphic PL mount lenses than any other doubler on the market. This is achieved by designing the extender with a deep-set optical assembly, thus, making it possible to use lenses with long protruding rear elements.

The PLx2 will mount perfectly to any digital camera with a native PL mount. It will also clear the spinning mirror on ARRI and Aaton 35 mm cameras.

Optically, the PLx2 projects an image circle large enough to cover all commonly used 35 mm formats, including 5K on RED Epic and 4:3 full frame on ARRI Alexa.

Maximum Image Diameter: 34.5 mm

Maximum Input T-Stop: 1.9

Item Number: 191100900001



## PLx2 VV – NEW!

*The PLx2 VV optical extender doubles the focal length of Vista Vision Format PL mount lenses.*

*The extender is the sequel to our successful PLx2 adapter. Thanks to its compact optical and mechanical design, the PLx2 VV is compatible with a wide range of lenses.*

*The PLx2 VV features high-index, low-dispersion glass to ensure the highest possible resolution and contrast with minimal optical degradation. In doubling the image size, the transmitted light is spread over 4 times the area, decreasing the brightness by two f-stops. The optical design has been optimized for modern lenses and digital cameras. The maximum input T-Stop is 1.9.*

*The PLx2 VV is designed to mount to any digital cinema camera with a native PL mount. The UMS Mount System makes it easy to change the mount to Canon EF, Sony E or others without re-shimming.*

*Item Number: 193000155500*



..... *Living Large*





## S35x Expander

*There are many great S35 (18x24 mm) lenses available to include: Leica Summilux, Leica Summicron, ARRI / Zeiss Master Prime, Cooke S4, Cooke S5, to name a few. With the advent of the Full Frame (24x36 mm) sensors, these lenses can no longer fill the entire image circle without an optical attachment. We have the solution. **Our S35x Expander.***

*The movement toward larger format sensors, such as the Arri ALEXA LF, Arri ALEXA 65, RED MONSTRO 8K VV, Panavision Millennium DXL2 and the Sony VENICE is still in progress. Larger sensors deliver a film-style look and interesting bokeh due to their very shallow depth of field. These new cameras require lenses that can cover larger sensor sizes or an expander that allows cinematographers to use their favorite S35 lenses.*





- *The S35x Expander can be used with most PL mount S35 optics*
- *The S35x Expander has a UMS PL mount, allowing it to be used with other mounts, such as standard UMS E, FZ, and FZ Mark II*
- *The S35x is NOT compatible with mirror shutter cameras*

### **IB/E S35x Expander Compatibility**

- *Angenieux Optimo 17-80 mm*
- *Angenieux Optimo 24-290 mm*
- *Angenieux Compact Optimo Zooms*
- *Angenieux 17-102 mm*
- *Angenieux 25-250 mm HR-Zoom*
- *Fuji & Canon Lenses from T 2.0*
- *Leica Summicron from T 2.0*

*For a complete list of compatible lenses see  
[www.ibe-optics.com](http://www.ibe-optics.com)*



..... ***S35 Lenses –  
We've Got You  
Covered***



## S35xFF

*The S35xFF Expander scales the Super 35 image up to 46.4 mm, covering full-frame format (ø 43.5 mm) and the entire RED Dragon 8K format (46.3mm). Special attention was taken while designing the extender to ensure minimum light fall off and maximum image performance up to the edge of the larger sensors.*

*The S35xFF Expander is recommended for lenses with a maximum aperture of T2.0 and provides the best performance at T2.8 for optimal resolution and sharpness.*

*Item Number: 193000025701*



# Universal Mounting System – UMS

*The Universal Mounting System (UMS) allows cinematographers to easily swap mounting systems in the field.*

## Available Mounts

- Canon EF Mark III (Art.-No.: 193000161100)
- Sony NEX E (Art.-No.: 193000002901)
- Sony FZ Mark II (Art.-No.: 193000014703)
- MFT (Art.-No.: 193000003002)
- Nikon F (Art.-No.: 193000002801)

## Coming Soon

- LPL Mount



## UMS Conversion Kits

*UMS Conversion Kits allow cinematographers to quickly switch lens mounts on Canon Zoom Lenses.*

*Once the UMS mount has been installed on the lens and the lens's back focus has been adjusted, the lens mount can be quickly and easily swapped in the field between PL, EF, E, F, FZ and MFT mount (Coming Soon LPL) with no play and no shift in back focus.*

### Coming Soon

- *UMS Conversion Kit for Fujinon Cabrio (LPL, EF, and E Mounts Available)*

*Conversion Kits should only be installed by a qualified technician. Please contact us for more details.*



# Technical Specifications

## HDx Converters

	<i>HDx1.4</i>	<i>HDx2 Mark II</i>	<i>HDx35 Mark III</i>
<i>Optical Design (Lenses/Groups)</i>	<i>4/2</i>	<i>5/2</i>	<i>5/2</i>
<i>Magnification</i>	<i>1.4x</i>	<i>2.2x</i>	<i>2.6x</i>
<i>Image Diameter (mm) Maximum/Recommended*</i>	<i>16/15.4</i>	<i>25.5/24.4</i>	<i>30.2/28.6</i>
<i>Maximum Input T-Stop</i>	<i>1.9</i>	<i>1.9</i>	<i>1.9</i>
<i>Light Drop (Stops)</i>	<i>1.3</i>	<i>2.2</i>	<i>2.5</i>
<i>Lens Mount</i>	<i>B4 2/3"</i>	<i>B4 2/3"</i>	<i>B4 2/3"</i>
<i>Camera Mount</i>	<i>PL UMS Mount</i>	<i>PL UMS Mount</i>	<i>PL UMS Mount</i>
<i>Length (mm) B4 to PL</i>	<i>15</i>	<i>50.7</i>	<i>61.6</i>
<i>Diameter (mm)</i>	<i>68.0</i>	<i>65.0</i>	<i>65.0</i>
<i>Weight (kg)</i>	<i>0.30</i>	<i>0.50</i>	<i>0.50</i>

\* depending on max. image diameter of input lens.

# Technical Specifications

## PLx Extenders

	<i>PLx1.4 Mark II</i>	<i>PLx2</i>	<i>PLx2 VV</i>
<i>Optical Design (Lenses/Groups)</i>	<i>5/4</i>	<i>7/5</i>	<i>7/5</i>
<i>Focal Length Extension</i>	<i>1.4x</i>	<i>2x</i>	<i>2x</i>
<i>Maximum Image Diameter (mm)</i>	<i>34.5</i>	<i>34.5</i>	<i>46.4</i>
<i>Maximum Input T-Stop</i>	<i>1.6</i>	<i>1.9</i>	<i>1.9</i>
<i>Light Drop (Stops)</i>	<i>1.0</i>	<i>2.0</i>	<i>2.0</i>
<i>Lens Mount</i>	<i>PL Standard</i>	<i>PL Standard</i>	<i>PL Standard</i>
<i>Camera Mount</i>	<i>PL UMS Mount*</i>	<i>PL UMS Mount*</i>	<i>PL UMS Mount**</i>
<i>Length (mm) PL to PL</i>	<i>19.3</i>	<i>48.2</i>	<i>34.8</i>
<i>Diameter (mm)</i>	<i>78.0</i>	<i>78.0</i>	<i>78.0</i>
<i>Weight (kg)</i>	<i>0.40</i>	<i>0.55</i>	<i>0.50</i>

\* without F Mount.

\*\* without F, MFT and E Mount including inner ring.

# Technical Specifications

## S35 Expander

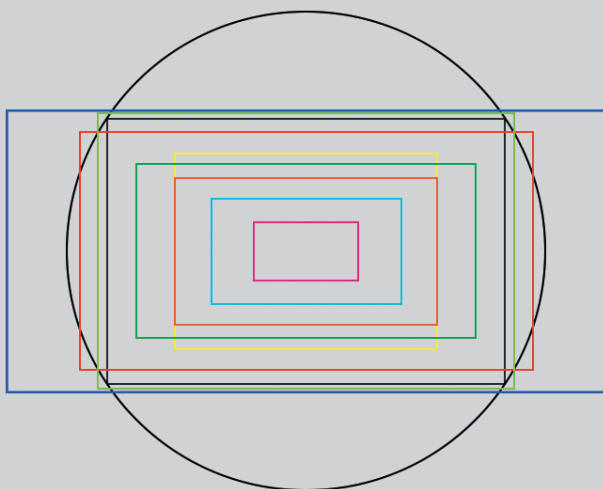
	<b>S35xFF</b>
<b>Optical Design (Lenses/Groups)</b>	<b>5/3</b>
<b>Focal Length Extension</b>	<b>1.6x</b>
<b>Maximum Sensor Diameter (mm)</b>	<b>46.4</b>
<b>Maximum Input T-Stop</b>	<b>2.0</b>
<b>Light Drop (Stops)</b>	<b>1.2</b>
<b>Lens Mount</b>	<b>PL Standard</b>
<b>Camera Mount</b>	<b>PL UMS Mount*</b>
<b>Length (mm) PL to PL</b>	<b>20.8</b>
<b>Diameter (mm)</b>	<b>78.0</b>
<b>Weight (kg)</b>	<b>0.50</b>

\* Standard UMS E, FZ Mark II.

All products subject to change in design and construction.



## Common Sensor Sizes



**ARRI Alexa65** (54.12x25.59 mm),  $\varnothing$  60.0 mm

**RED Weapon 8K** (40.96x21.6 mm),  $\varnothing$  46.3 mm

**ARRI Alexa 65 Vista Vision** (37.7x25.5 mm),  $\varnothing$  45.0 mm

**Full Frame Stills** (36x24 mm),  $\varnothing$  43.3 mm

**RED Dragon 6K Full Frame** (30.7x15.8 mm),  $\varnothing$  34.5 mm

**ARRI Alexa 4x3** (23.8x17.8 mm), 29.7 mm

**ARRI Alexa 16x9** (23.8x13.4 mm),  $\varnothing$  27.3 mm

**GH4 16x9** (17.3x9.7 mm),  $\varnothing$  19.8 mm

**2/3"** (9.6x5.4 mm),  $\varnothing$  11.0 mm

### Flange Focal Distance

ARRI PL	52.00 mm
ARRI XPL	60.00 mm
Sony NEX E	18.00 mm
Sony FZ	19.00 mm
Arri LPL / Canon EOS EF	44.00 mm
NIKON F	46.50 mm
Micro Four Thirds	19.20 mm

## HDx Converters

**2/3"**  
**video**  
9.6 x 5.4  
ID: 11



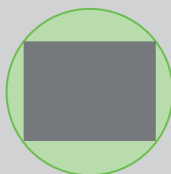
**Blackmagic**  
**Pocket**  
12.5 x 7  
ID: 14.33



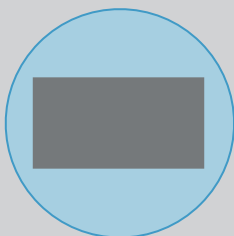
**Blackmagic**  
**2.5K**  
15.8 x 8.8  
ID: 18.09



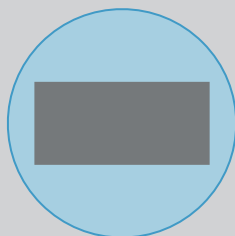
**M4/3**  
**(Four Thirds)**  
17.3 x 13  
ID: 21.64



**AJA CION**  
22.5 x 11.9  
ID: 25.45



**RED**  
**RAVEN**  
23 x 10.8  
ID: 25.45

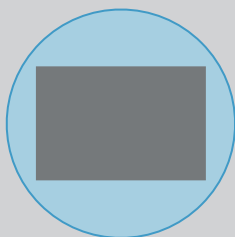


# 3CCD HD ENG Lenses on Single-Chip Digital Motion Picture Cameras

## Canon 7D II

22.3 x 14.9

ID: 26.82

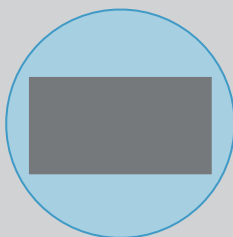


## Sony F-5/F-55, F-65

### Sony FS-5/FS-7

24 x 12.7

ID: 27.15



## Legend



**2/3"**

1.0x

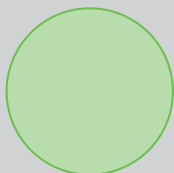
max. ID: 11



**HDx1.4**

1.4x

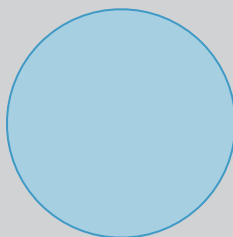
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**HDx2 Mark II**

2.0x

max. ID: 22



**HDx35 Mark III**

2.6x

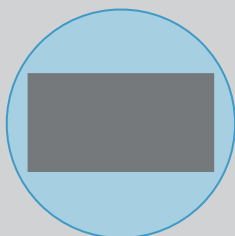
max. ID: 30.2

## HDx Converters

**Panasonic  
Varicam 35/LT**

24.5 x 12.9

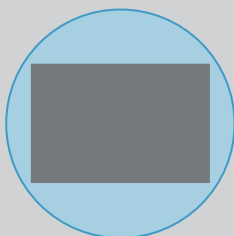
ID: 27.78



**APS-C  
(SONY NEX)**

23.5 x 15.6

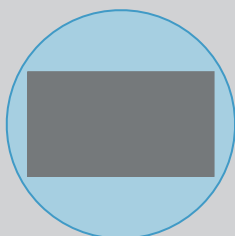
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**Canon C100  
C300, C500**

24.6 x 13.8

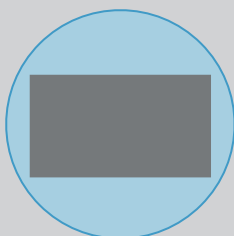
ID: 28.21



**Arri  
ALEXA/AMIRA  
16:9 mode**

23.8 x 13.4

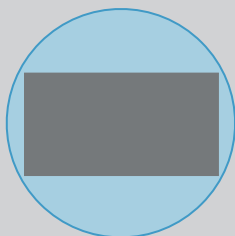
ID: 27.26



**RED  
SCARLET-W**

25.6 x 13.5

ID: 28.94



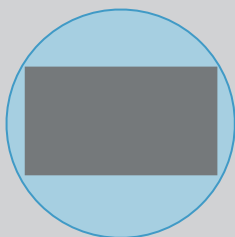
## 3CCD HD ENG Lenses on Single-Chip Digital Motion Picture Cameras

**Blackmagic**

**URSA 4.6K**

25.3 x 14.2

ID: 29.07

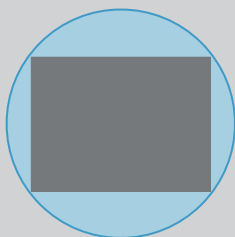


**Arri ALEXA**

**4:3 mode**

23.8 x 17.8

ID: 29.7



### Legend



**2/3"**

1.0x

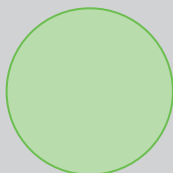
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**HDx1.4**

1.4x

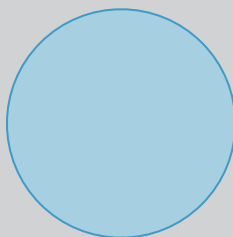
max. ID: 15.4



**HDx2 Mark II**

2.0x

max. ID: 22



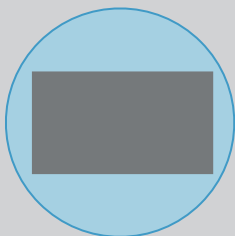
**HDx35 Mark III**

2.6x

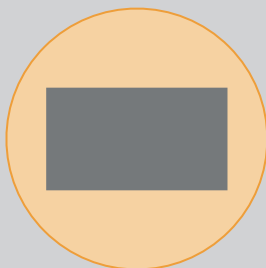
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## PLx1.4 Mark II, PLx2 and S35xFF

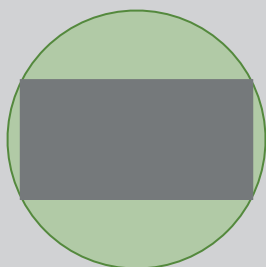
### S35 FORMAT



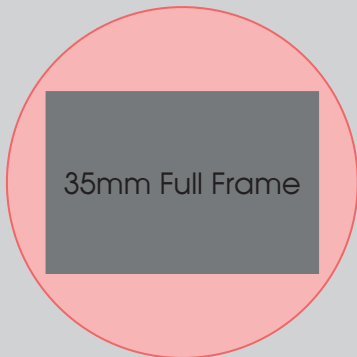
Arri  
**ALEXA/AMIRA**  
16:9 mode  
23.8 x 13.4  
ID: 27.26



**RED Dragon 6K/HELIUM**  
30.7 x 15.8  
ID: 34.53

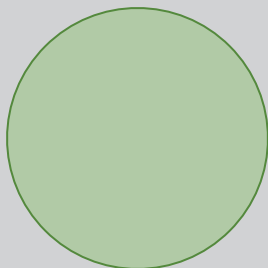


Sony  
**A7 series/VENICE**  
36 x 24  
ID: 43.27



# Extenders / Expander for Digital Motion Picture Cameras

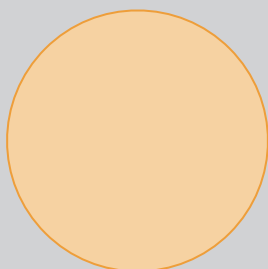
## Legend



**PLx1.4 Mark II**

1.4x

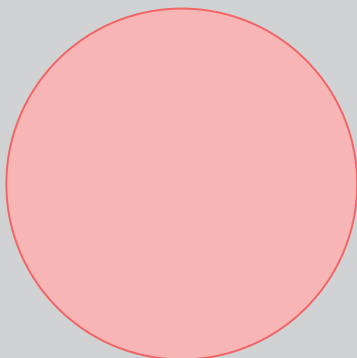
max. ID: 34.5



**PLx2**

2.0x

max. ID: 34.5




**S35xFF**

1.45x

max. ID: 46.4

## PLx1.4 Mark II, PLx2 and S35xFF



A diagram showing a light pink circle representing the sensor area. Inside the circle is a dark gray rectangle representing the sensor. The text is centered within the rectangle.

**RED MONSTRO 8K/  
WEAPON 8K  
Panavision DXL 8K/  
Millennium DXL2**

40.96 x 21.6  
ID: 47.19



A diagram showing a light pink circle representing the sensor area. Inside the circle is a dark gray rectangle representing the sensor. The text is centered within the rectangle.

**Arri ALEXA LF**  
36.7 x 25.54  
ID: 44.71



A diagram showing a light pink circle representing the sensor area. Inside the circle is a dark gray rectangle representing the sensor. The rectangle is outlined with a dashed yellow border. The text is centered within the rectangle.

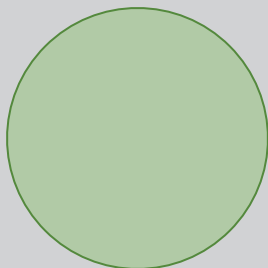
**Arri ALEXA 65**  
54.12 x 25.59  
ID: 59.87

**Vista Vision**  
37.7 x 25.5  
ID: 45



# Extenders / Expander for Digital Motion Picture Cameras

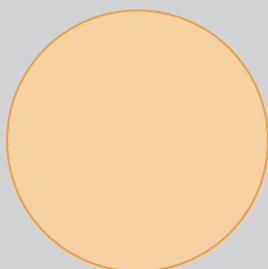
## Legend



**PLx1.4 Mark II**

1.4x

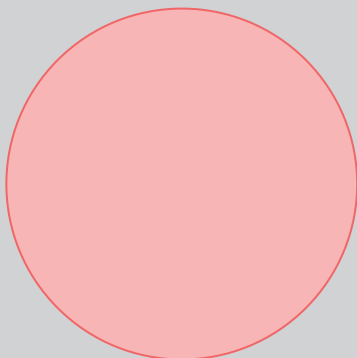
max. ID: 34.5



**PLx2**

2.0x

max. ID: 34.5



**S35xFF**

1.45x

max. ID: 46.4

# Notes

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(Stand 2018/04)

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