

**RICOH**  
imagine. change.

Binoculars/Spotting Scopes

**PENTAX**

**SPORT OPTICS**

Since 1938



Innovation is about breaking barriers. For more than 85 years we've pushed optical technology to the edge to ensure that world travellers, wildlife adventurers, and devoted birdwatchers and stargazers never miss a moment. The earth beneath our feet and beyond is a gift to be treasured. One view can change you forever. Your eyes. Our engineering. PENTAX is with you all the way.

# Z series

The flagship series offers the ultimate in optics, giving you state-of-the-art performance, whatever the environment, whether at work or play.

# S series

High-quality, large objective lenses over 40mm provide a bright and clear field of view for astronomy or birding, even in difficult or low-light conditions.

# A series

Cutting-edge technologies packed into a compact body. For travel, or even mountaineering, exceptional portability is balanced superbly with top-grade performance.

# Papilio

A high-performance compact model, giving you a clear view from 50cm macro to stellar observation. Enabling a closer view of distant objects and a clear view of small items in proximity, The Papilio series is ideal for a variety of applications at museums, art galleries, for botanical observation, concerts, sports watching and stargazing.

# U series

From outdoor nature-viewing to concert-going and sporting events, this compact and lightweight series takes you right into the heart of the action.

# V series

A series of new-concept models that feature innovative functions and unique designs, beyond conventional ideas. Ideal for anyone who prefers to use binoculars more conveniently or experience a sense of excitement with a special someone to create lasting memories.

## PENTAX Lens Coating Technology

Drawing on technologies cultivated in the development of a wide range of cameras and lenses, PENTAX has provided quality binoculars since 1938. We invite you to see for yourself the clear, sharp, contrast-rich view created by our world-renowned optics and innovative coating technologies.

### Point 1 New Fully Multi-Coated Optics



Full application of multi-coating maximises light transmission and minimises internal glare and flare. PENTAX applies multiple layers of coating to every light-incident surfaces of lens elements and prisms on most of the models. A lineup you can rely on, from the compact U-series to flagship Z-series.

### Point 2 Coating for Enhanced Light Transmission



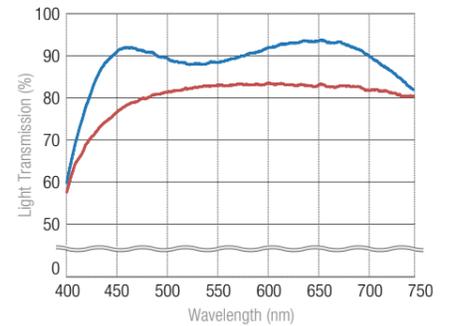
Our high-end models have undergone a redesign, while a coating, developed with the latest film-deposition technology, has been applied to lens and prism surfaces to dramatically raise visible light transmission.

### Point 3 Protects Outer Lens Surfaces from Grease and Abrasive Materials



A protective coating has also been added to protect objective and eyepiece lens surfaces from accidental drops of water, oil or dirt, ensuring they can be wiped clean with ease. (Limited to Z-series and some S-series models.)

Light Transmission of Fully Multi-Coated and Conventional Multi-Coated Models



— New Multi-Coating  
— Conventional Multi-Coating



Easily cleaned with light wiping

#### Product Naming Scheme

**ZD 8x43 ED**

(1) (2) (3) (4) (5)

- (1) Series
- (2) Type: D – roof (Dach) prisms; P – porro prisms
- (3) Magnification
- (4) Objective Lens Diameter
- (5) Main Features:
  - WP – waterproof construction
  - ED – ED (Extra-low Dispersion) glass used
  - ZOOM – with zoom

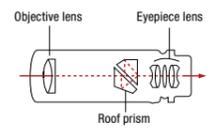
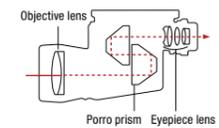
#### Types of Binocular Construction



**PORRO PRISM** Porro Prism Binoculars  
True to binocular basics, this prism design provides high optical performance with great value.



**ROOF PRISM** Roof Prism Binoculars  
The objective and eyepiece lenses are positioned along a straight light axis. This prism design achieves a compact, lightweight body.



#### Feature Icons



**Optical Zoom** Zoom  
Binoculars with a zoom function for a wider range of indoor and outdoor use.



**Macro Observation** Macro Observation  
Focus as close as 50cm for a magnified view of nearby objects.



**Aspherical Lens** Aspherical Lens  
Provides a crystal-clear view with minimal distortion from edge to edge.



**BaK-4 Prism System** BaK-4 Prism System  
High-grade prisms with outstanding refractive index deliver clear and clear images.



**Waterproof** Waterproof  
JIS Class 6 certified, the binoculars can withstand short-term submersion or rinsing clean under a faucet.



**Rubber Grip Coat** Rubber Coat  
Entire binocular body is housed in rubber for exceptional shock resistance and a firm, fast grip.



**Nitrogen Purged** Nitrogen Purged  
Nitrogen gas sealed inside prevents fogging on inner lens elements caused by temperature fluctuations.



**Long Eye Relief** Long Eye Relief  
Long eye relief provides a full field of view and helps prevent eye-fatigue during extended viewing.



**Phase Coating** Phase Coating  
Increases sharpness and contrast by correcting phase fluctuations in light waves passing through the roof prisms.



**Reflection Coating** Reflection Coating  
Applied to the prism's reflective aluminium surfaces to increase light transmission.



**Helicoid Eyepiece** Helicoid Eyepieces  
Turn and slide out to allow fine adjustments to the preferred eye relief.



**Tripod-Ready** Tripod-Ready  
Allows mounting to a tripod via a tripod adaptor (sold separately) to reduce shake during observation.

# Z series

Extreme sharpness from edge to edge.  
A crystal-clear view to satisfy even the most demanding users.

For the ultimate in high-end performance, this top-of-the-line family of binoculars features hybrid aspherical lens elements for a clear, sharp target view even at the edge of the field. Exceptional light transmission thanks to phase-coated roof-prisms provides crisp, high-contrast images. Protective coating deflects dust, water and oil to maintain the clearest possible view at all times. Magnesium alloy construction ensures the optimal balance of durability and weight. They are also waterproof\* and nitrogen-purged to prevent inner lens fogging from temperature fluctuations, ensuring they stand up to the harshest weather conditions.

\*JIS Class 6 waterproof protection (submersible to 1m); not for underwater use.



Flagship models with ED glass elements that meet the highest expectations of serious users.



**ZD 8x43 ED ZD 10x43 ED ZD 10x50 ED**

- ED (Extra-low Dispersion) glass elements with superior chromatic aberration correction provide a smear-free view.
- New Premium Level Lens Coating with the latest film-deposition technology delivers a sharp, crisp view.
- Rigid magnesium alloy construction withstands the roughest use while Protective Coating repels dirt.



Hybrid aspherical lens elements with the New Premium Level Lens Coating offer a supreme viewing experience.



**ZD 8x43 WP ZD 10x43 WP ZD 10x50 WP**

- New Premium Level Lens Coating with the latest film-deposition technology delivers a sharp, crisp view.
- JIS Class 6 waterproof construction resists extreme weather conditions.
- Rigid magnesium alloy construction withstands the roughest use while Protective Coating repels dirt.



# S series

A bright, sharp and clear field of view. Designed for high-contrast images even under the most challenging light conditions.

Large objective lenses in this lineup offer outstanding light gathering capabilities. Clear, high-contrast images even at twilight or in other low-light conditions make these models suitable for even astronomical observation. A range of magnification options from 8x to 20x allows you to choose the best model for your needs. Meanwhile, the exceptional, nitrogen-purged waterproof\* construction ensures they can stand up to the harshest weather conditions.

\*JIS Class 6 waterproof protection (submersible to 1m); not for underwater use. Except SP 8x40/10x50/12x50/16x50 models.



A highly portable roof-prism model with a stylish open bridge design.



## SD 9x42 WP

- Open bridge design combines style and portability.
- New Premium Level Lens Coating with the latest film-deposition technology delivers a sharp, crisp view.
- JIS Class 6 waterproof construction resists extreme weather conditions.



Large objective lens for enhanced performance that rivals the highest-grade models.



## SD 8x42 WP SD 10x42 WP

- New Premium Level Lens Coating with the latest film-deposition technology delivers a sharp, crisp view.
- Enhanced basic features, including long eye-relief and helicoid eyecups.
- JIS Class 6 waterproof construction resists extreme weather conditions.



The pinnacle of PENTAX porro prism binoculars, packed with high-performance features.



## SP 8x40 WP SP 10x50 WP SP 12x50 WP SP 20x60 WP

- Durable and lightweight aluminium construction; Protective Coating ensures a clear view in inclement weather.
- Fully multi-coated optics ensure a clear and bright view free of flare and ghosting.
- JIS Class 6 waterproof construction resists extreme weather conditions.



Standard porro prism models featuring fully multi-coated optics.



## SP 8x40 SP 10x50 SP 12x50 SP 16x50

- Durable and lightweight aluminium construction.
- Fully multi-coated optics ensure a clear and bright view free of flare and ghosting.
- High-index BaK-4 glass prism ensures a clear view from edge to edge.



# A series

## Compact and lightweight models with enhanced portability.

Combining stylish, compact design with top-grade performance, each model is fully equipped with basic features from full multi-coating to helicoid eyecups and more. It's the optimal series for users who want a great view and exceptional portability. It can handle harsh weather conditions thanks to its nitrogen purged waterproof construction\*.

\*JIS Class 6 waterproof protection (submersible to 1m); not for underwater use.



Stylish open bridge design provides high optical performance with a lightweight body.



### AD 9x32 WP

- Open bridge design combines style and portability.
- Premium Level Lens Coating delivers enhanced sharpness.
- JIS Class 6 waterproof construction resists extreme weather conditions.



High-performance models that feature large 36mm objective lenses for a bright view and easy portability.



### AD 8x36 WP AD 10x36 WP

- Premium Level Lens Coating delivers enhanced sharpness.
- Bright lenses recommended for extended use.
- JIS Class 6 waterproof construction resists extreme weather conditions.



Comprehensive functionality in a compact, lightweight body. A long-selling roof prism model.



### AD 9x28 WP

- Outstanding view in a sleek, portable design.
- Premium Level Lens Coating delivers enhanced sharpness.
- JIS Class 6 waterproof construction resists extreme weather conditions.



The smallest and lightest of all PENTAX roof prism binoculars, balancing superb view and portability.



### AD 8x25 WP AD 10x25 WP

- Dual-hinge design gives exceptional portability.
- Premium Level Lens Coating delivers enhanced sharpness.
- JIS Class 6 waterproof construction resists extreme weather conditions.



Popular porro prism models that provide high performance in a compact package.



### AP 8x30 WP AP 10x30 WP

- Fully-featured porro prism model in a compact body with an excellent view.
- Fully multi-coated optics ensure a clear and bright view free of flare and ghosting.
- Enhanced basic performance features combined with great usability.



# U series

**Brightness and sharpness to perform in- and outdoors.**  
 When utility and ease of use are what you need, this ultra-compact series is there to carry with you wherever you go. Whether at an action-packed sporting event or an indoor concert, the distinctive design fits comfortably in your hand, while a host of PENTAX technologies work to give you a clear field of view and extreme sharpness edge to edge.



A compact, lightweight pair of binoculars with 8-16x zoom for wide-ranging versatility.



**UP 8-16x21 ZOOM**



The compact standard UP model puts high performance right in your hand.



**UP 8x25 UP 10x25**



Forget about the weather. Compact and waterproof\* for a wide range of activities.



**UP 8x25 WP UP 10x25 WP**



\*JIS Class 6 waterproof protection (submersible to 1m); not for underwater use.

The smallest performer in the U series that fits right in the palm of your hand.



**UP 8x21 UP 10x21**



One of the lightest roof prism binoculars in the U series, featuring a selection of five different unique bi-colour designs.



**UD 9x21 NEW!**



**UD 10x21 NEW!**



A high-cost-performance model equipped with a high magnification of 10x, which is one of the lightest models in the U series.

# Papilio

A high-performance compact model, giving you a clear view from a mere 50cm to infinity.

Papilio is a high-performance, compact model that integrates full-scale functions into a compact, lightweight body, with excellent optical performance and multi-coating technology unique to camera manufacturers.

The enhanced fully multi-coated optics with multi-coating applied to all lens and prism surfaces realise a bright clear view.

Not only can you fully enjoy long-distance observation, but also Papilio features an originally developed convergence correction mechanism that enables macro observation up to approx. 50cm. The compact body delivers viewing beyond your imagination and creates fresh, new excitement in your everyday life.

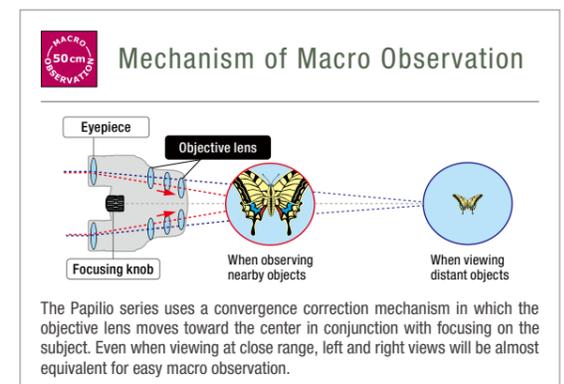
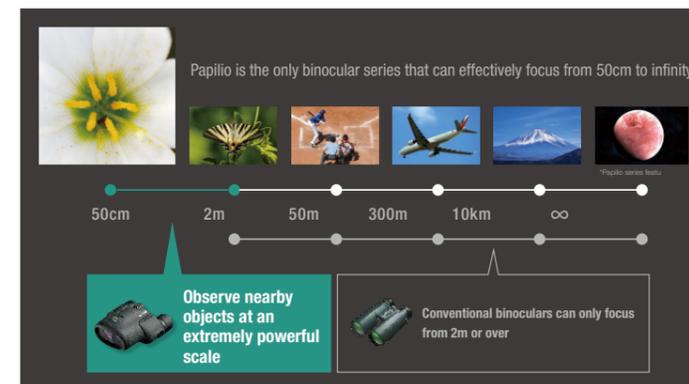
Minimum focusing distance of 50cm. These uniquely designed binoculars let you make new discoveries via macro observation.



Papilio II 6.5x21



Papilio II 8.5x21



Not only great for close-up viewing! Ideal for a variety of situations.

**At museums and art galleries**

By viewing through binoculars, you can observe many details more realistically and can also enjoy a feeling as if the subject is floating, like a three-dimensional effect.



**For concerts and sports watching**

Not just for nearby objects, Papilio also delivers excellent performance as standard binoculars to view distant subjects. The bright vision powered by "Full multi-coating" enhances the realistic feeling when watching sports events and live performances of any kind.



**For botanical and nature observation**

Papilio is absolutely ideal for mountain climbing, hiking and local strolls. If you observe the flowers near your feet, you will notice their hidden beauty with butterflies and other insects coming and going. Papilio will open up a whole new world with a different macro perspective.



**For stargazing**

Although Papilio is extremely effective for viewing nearby objects, it is often also used by those who love to scan the night sky as well. It is equipped with all the technologies you need for stargazing such as full multi-coating and aspherical lenses.



Papilio

# V series

A series of new-concept model binoculars and monoculars that feature innovative functions and unique designs, beyond conventional ideas

One of these models is the world's first\* three-in-one binocular with triple-functions: as four-times-magnification binoculars; as two independent monoculars, by disconnecting the two barrels; or as a telescope, by connecting the barrels inline.

Featuring detachable construction, the left and right barrels separate from the centre, and each can be used as an individual monocular, enabling you to gaze at far-off scenery together with a companion as well as to share the same wonderful sense of excitement.

The other is a compact, lightweight, high-performance monocular, providing single-handed focusing operation. With the complete kit installed, this monocular can be converted into a microscope or telescope lens for smartphones, enabling a broader range of applications. The waterproof construction realises confident usage during outdoor activities. It is perfect for viewing objects up close for nature observation or at museums.

\* Based on RICOH IMAGING research ( as of July, 2020 ).

World's first\* three-in-one binoculars let you share the excitement in three different ways

\*Survey by Ricoh Imaging in July 2020.



VD 4x20 WP NEW!



## Three-in-one binoculars



Enjoy viewing in three different ways that suit your purpose and the scene (binoculars, monoculars, telescope). All of this is available with this single product. These high-performance three-in-one binoculars were only made possible through an expert optical manufacturer.

### 1: 4X binoculars

The 4X magnification is convenient for watching stage performances, concerts, and sporting events. These binoculars feature the appropriate field of view for scenes with movement and for situations where you want to view the entire scene.



### 2: 4X monoculars

This option is perfect for viewing museum or art gallery exhibits up close or for sharing a scene with someone else.



### 3: 16X telescope

When 4X magnification is not quite powerful enough for viewing stars or far-away scenery, connect each monocular's end to make a 16X telescope that will take you where you want to go.



VD 4x20 WP



High-performance monocular providing single-hand focusing operation

VM 6x21 WP NEW!



## Monoculars



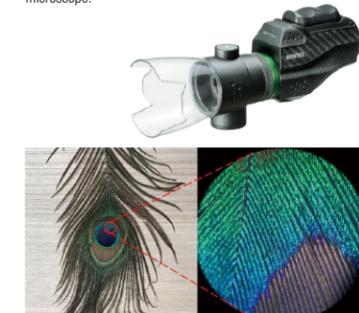
Single-hand focusing operation with either your left or right hand.

A complete kit to convert the VM 6x21 WP into a microscope or telephoto camera for a broader range of applications



VM 6x21 WP Complete Kit NEW!

When the macro stand is installed, the VM 6x21 WP lets you take a much closer look at diverse subjects as an 18X microscope.



When the smartphone adaptor is installed, the VM 6x21 WP lets you record an image captured by the monocular on your smartphone using its camera function.



Please refer to our website for compatible smartphone models.

# Spotting Scopes

Bringing you the pinnacle of optical performance. Capture your target in a clear view with excellent operability.

All PENTAX Spotting Scopes feature ED glass elements in the objective lens, providing a sharper image and clear field of view with reduced chromatic aberration. Exceptional rubber-coated shock resistance, and nitrogen-purged waterproof construction\* mean you can have confidence in extreme conditions. The optional camera adaptor allows additional functionality as a camera lens, enabling you to enjoy the experience of super-telephoto photography.

\*JIS Class 6 waterproof protection (submersible to 1 m); not for underwater use.



Compact spotting scopes with 65mm lens, now brought to you with a higher level of optical performance.

- ED glass elements used for clearer view and higher image quality at high-magnification digital photography.
- Retractable lens shade prevents extraneous light from entering the lens.
- Convenient rotating tripod collar with click-stops allows you to change the viewing angle for comfortable viewing.

- Comes with field-usage carrying case.
- Choose between straight and angled models depending on use.



**PF-65EDII**

\*Attached eyepiece is the XF 8.5 (optional).



**PF-65EDAII**

\*Attached eyepiece is the XF ZOOM EYEPIECE 6.5-19.5mm (optional).

Packing a large 80mm lens in a compact and lightweight body. Standard high-performance models.

- Lightweight body thanks to magnesium alloy construction.
- Retractable lens shade cuts out extraneous light, and protects lens surfaces from rain and dust.

- Comes with field-usage carrying case.
- Choose between straight and angled models depending on use.



**PF-80ED**

\*Attached eyepiece is the ZOOM EYEPIECE 8-24mm (optional).



**PF-80EDA**

\*Attached eyepiece is the XW 14 (optional).

Extra-large 100mm lens with ED glass for astonishing clarity and resolution.

- Large 100mm objective lens provides an extremely clear view, enabling highly detailed observation.
- Lightweight body thanks to magnesium alloy construction.
- Convenient click-turn rotating tripod collar allows you to change the viewing angle for comfortable viewing.
- Comes with field-usage carrying case.



**PF-100ED**

\*Attached eyepiece is the XW10 (optional).

# Accessories

The Ultimate Partner of PENTAX Sport Optics.



Orion Nebula Photo by Naotoshi Saito

## Eyepieces for Spotting Scopes

### SMC PENTAX XF Series

High-performance, exceptional value eyepieces exclusively designed for PENTAX Spotting Scopes.

- Outstanding light transmission thanks to original multi-coating.
- The rotatable eyecup offers an adaptor-mounting screw/thread when removed (single-focus models: 30.5mm in diameter with a 0.5mm pitch; zoom: 43mm in diameter with a 0.75mm pitch).



XF 8.5

XF 12

XF ZOOM EYEPIECE 6.5-19.5mm

## Eyepiece for Astronomical Telescope/Spotting Scope

### SMC PENTAX XW Series

Exceptional performance, wide-angle eyepieces with a long 20mm eye relief and water-resistant\* body.

- Standard XW eyepiece for use with astronomical telescopes also ideally matched for spotting scopes.
- \* XW 3.5, XW 5 cannot be used with Spotting Scope.
- \* XW 30-5, XW 40-R cannot be attached to Spotting Scope.
- Features high-grade lanthanum glass with high refraction and low dispersion.
- Original multi-coating and special coating on the laminated surfaces effectively reduce flare and ghosting, achieving extremely high light-transmission performance.
- Removable eyecup allows attachment of an adaptor of 43mm in diameter with a 0.75mm pitch.

\*JIS Class 4 splash resistance.



XW 3.5

XW 5

XW 7

XW 10

XW 14

XW 20

XW 30-R

XW 40-R

### SMC PENTAX ZOOM Eyepiece

High-performance water-resistant\* eyepiece for astronomical telescopes offering exceptional versatility.

\*JIS Class 4 splash resistance.



ZOOM EYEPIECE 8-24mm

## PENTAX Binoculars Specifications and Performance

	Magnification	Objective lens diameter	Real field of view	Field of view at 1000 m	Exit pupil	Eye relief	Relative brightness	Minimum focusing distance	Height	Width	Thickness	Weight (approx.)		
Z series	ZD 10×50 ED	10	50mm	5.0°	87m	5.0mm	22mm	25.0	3.5m	170mm	132mm	59mm	855g	
	ZD 10×43 ED	10	43mm	6.0°	105m	4.3mm	17mm	18.5	2.0m	146mm	126mm	53mm	730g	
	ZD 8×43 ED	8	43mm	6.3°	110m	5.4mm	22mm	29.2	2.0m	146mm	126mm	53mm	715g	
	ZD 10×50 WP	10	50mm	5.0°	87m	5.0mm	22mm	25.0	3.5m	170mm	132mm	59mm	840g	
	ZD 10×43 WP	10	43mm	6.0°	105m	4.3mm	17mm	18.5	2.0m	146mm	126mm	52mm	710g	
S series	ZD 8×43 WP	8	43mm	6.3°	110m	5.4mm	22mm	29.2	2.0m	146mm	126mm	52mm	695g	
	SD 9×42 WP	9	42mm	6.1°	107m	4.7mm	18mm	22.1	2.5m	147mm	128mm	59mm	665g	
	SD 10×42 WP	10	42mm	6.0°	105m	4.2mm	18mm	17.6	2.5m	143mm	134mm	52mm	615g	
	SD 8×42 WP	8	42mm	7.5°	131m	5.3mm	21mm	28.1	2.5m	148mm	134mm	52mm	640g	
	SP 20×60 WP	20	60mm	2.2°	38m	3.0mm	21mm	9.0	8.0m	224mm	195mm	85mm	1,400g	
	SP 12×50 WP	12	50mm	4.2°	73m	4.2mm	20mm	17.6	5.5m	178mm	183mm	79mm	1,080g	
	SP 10×50 WP	10	50mm	5.0°	87m	5.0mm	20mm	25.0	5.5m	178mm	183mm	79mm	1,060g	
	SP 8×40 WP	8	40mm	6.3°	110m	5.0mm	20mm	25.0	3.5m	136mm	178mm	76mm	900g	
	SP 16×50	16	50mm	3.5°	61m	3.1mm	13mm	9.6	10.3m	166mm	198mm	65mm	900g	
	SP 12×50	12	50mm	5.6°	98m	4.2mm	11mm	17.6	9.0m	160mm	198mm	65mm	870g	
	SP 10×50	10	50mm	6.5°	114m	5.0mm	13mm	25.0	9.0m	166mm	198mm	65mm	900g	
	SP 8×40	8	40mm	8.2°	143m	5.0mm	13mm	25.0	6.0m	131mm	187mm	56mm	770g	
	A series	AD 9×32 WP	9	32mm	6.7°	117m	3.6mm	16mm	13.0	2.5m	138mm	128mm	52mm	500g
		AD 10×36 WP	10	36mm	5.5°	96m	3.6mm	18mm	13.0	3.0m	155mm	129mm	53mm	640g
		AD 8×36 WP	8	36mm	6.5°	114m	4.5mm	16mm	20.3	3.0m	155mm	129mm	53mm	640g
AD 9×28 WP		9	28mm	5.6°	98m	3.1mm	18mm	9.6	3.0m	117mm	115mm	44mm	365g	
AD 10×25 WP		10	25mm	5.0°	87m	2.5mm	20mm	6.3	3.0m	110mm	105mm	40mm	300g	
AD 8×25 WP		8	25mm	5.5°	96m	3.1mm	21mm	9.6	3.0m	110mm	105mm	40mm	300g	
AP 10×30 WP		10	30mm	5.5°	96m	3.0mm	19mm	9.0	3.0m	120mm	158mm	57mm	465g	
AP 8×30 WP		8	30mm	7.0°	122m	3.8mm	17mm	14.4	3.0m	120mm	158mm	57mm	460g	
U series		UP 8-16×21 ZOOM	8-16	21mm	5.0°-3.0°	87m-52m	2.6mm-1.3mm	14mm-11mm	6.8-1.7	3.0m	111mm	111mm	55mm	310g
		UP 10×25 WP	10	25mm	5.0°	87m	2.5mm	15mm	6.3	1.9m	112mm	116mm	56mm	370g
	UP 8×25 WP	8	25mm	6.2°	108m	3.1mm	15mm	9.6	1.9m	116mm	116mm	56mm	370g	
	UP 10×25	10	25mm	5.0°	87m	2.5mm	15mm	6.3	1.9m	115mm	110mm	56mm	300g	
	UP 8×25	8	25mm	6.2°	108m	3.1mm	15mm	9.6	1.9m	115mm	110mm	56mm	300g	
	UP 10×21	10	21mm	5.0°	87m	2.1mm	10mm	4.4	2.8m	80mm	110mm	48mm	210g	
	UP 8×21	8	21mm	6.2°	108m	2.6mm	13mm	6.8	2.8m	83mm	110mm	48mm	210g	
	UD 10×21	10	21mm	5.4°	94m	2.1mm	8.5mm	4.4	3.0m	87mm	108mm	38mm	195g	
	UD 9×21	9	21mm	6.0°	105m	2.3mm	9.9mm	5.3	3.0m	87mm	108mm	38mm	195g	
	Papilio	Papilio II 8.5×21	8.5	21mm	6.0°	105m	2.5mm	15mm	6.3	0.5m	116mm	110mm	55mm	290g
Papilio II 6.5×21		6.5	21mm	7.5°	131m	3.2mm	15mm	10.2	0.5m	114mm	110mm	55mm	290g	
V series	VD 4×20 WP	4*	20mm	10°*	175m*	5mm	19mm	25*	1.5m (Bino) 0.5m (Mono)	95mm	117mm	36mm	345g	
	VM 6×21 WP	6	21mm	8.2°	143m	3.5mm	17.8mm	12.3	[Normal] 1.5m [Near] 0.7m	68mm	101mm	39mm	150g	

\*Upper row is binoculars/monoculars data and lower row is telescope data.

## PENTAX Spotting Scopes Specifications

	Type	Objective lens diameter	Objective lens structure	Minimum focusing distance	Eyepiece type	Eyepiece attachment size	Length	Height	Width	Weight (approx.)
PF-65ED II	Porro Prism Straight Type	65mm	3 groups 5 elements	5m*	Collet	31.7mm (1.25inch)	270mm	115mm	85mm	1,050g
PF-65EDA II	Porro Prism Angled Type	65mm	3 groups 5 elements	5m*	Collet	31.7mm (1.25inch)	270mm	120mm	85mm	1,070g
PF-80ED	Porro Prism Straight Type	80mm	3 groups 3 elements	5.8m*	Collet	31.7mm (1.25inch)	397mm	120mm	98mm	1,400g
PF-80EDA	Porro Prism Angled Type	80mm	3 groups 3 elements	5.8m*	Collet	31.7mm (1.25inch)	415mm	135mm	100mm	1,600g
PF-100ED	Porro Prism Straight Type	100mm	3 groups 3 elements	8.5m*	Collet	31.7mm (1.25inch)	510mm	134mm	117mm	2,600g

\*Calculated with the XF and XW series eyepieces, and the ZOOM EYEPIECE 8-24mm.

## PENTAX Eyepieces Specifications and Performance in Combination with PENTAX Spotting Scopes

	Magnification				Real field of view				Field of view at 1000 m			
	PF-65ED II PF-65EDA II	PF-80ED	PF-80EDA	PF-100ED	PF-65ED II PF-65EDA II	PF-80ED	PF-80EDA	PF-100ED	PF-65ED II PF-65EDA II	PF-80ED	PF-80EDA	PF-100ED
XF8.5	46	59	61	74	1.3°	1.0°	0.95°	0.8°	22m	17m	16.5m	14m
XF12	32.5	42	43	52	1.85°	1.5°	1.4°	1.2°	32m	26m	24m	21m
XF ZOOM 6.5-19.5	20-60	26-78	27-81	32.5-97.5	2.1°-1.0°	1.6°-0.8°	1.6°-0.75°	1.3°-0.65°	37m-17m	28m-14m	28m-13m	22.5m-11m
XW7	55.5	71	74	90	1.25°	1.0°	0.95°	0.8°	21m	17m	16.5m	14m
XW10	39	50	52	62	1.8°	1.4°	1.4°	1.1°	31m	24m	24m	19m
XW14	28	36	37	44	2.5°	2°	1.9°	1.6°	44m	35m	33m	28m
XW20	19.5	26	27	32	3.5°	2.7°	2.6°	2.2°	61m	47m	45m	38m
ZOOM 8-24	16-48	20-60	21-63	26-78	2.4°-1.25°	1.9°-1.0°	1.8°-0.95°	1.5°-0.8°	40m-21m	33m-17m	31m-16.5m	26m-14m

	Exit pupil				Eye relief	Relative brightness				Eyepiece attachment size	Length	Width	Weight
	PF-65ED II PF-65EDA II	PF-80ED	PF-80EDA	PF-100ED		PF-65ED II PF-65EDA II	PF-80ED	PF-80EDA	PF-100ED				
XF8.5	1.4mm	1.4mm	1.3mm	1.4mm	18mm	1.9	1.9	1.6	1.9	31.7mm	83mm	43mm	150g
XF12	2mm	1.9mm	1.8mm	1.9mm	18mm	4	3.1	3.2	3.1	31.7mm	78mm	43mm	155g
XF ZOOM 6.5-19.5	3.2mm-1.1mm	3.0mm-1.0mm	3.0mm-1.0mm	3.0mm-1.0mm	11mm-15mm	10.2-1.2	9.0-1.0	9.0-1.0	9.0-1.0	31.7mm	90mm	50mm	240g
XW7	1.2mm	1.1mm	1.1mm	1.1mm	20mm	1.4	1.2	1.2	1.2	31.7mm	120mm	61mm	390g
XW10	1.7mm	1.6mm	1.6mm	1.6mm	20mm	2.9	2.6	2.6	2.6	31.7mm	110mm	61mm	390g
XW14	2.4mm	2.2mm	2.2mm	2.3mm	20mm	5.7	4.8	4.8	5.3	31.7mm	97mm	61mm	365g
XW20	3.3mm	3.1mm	3mm	3.1mm	20mm	10.9	9.6	9	9.6	31.7mm	86mm	61mm	355g
ZOOM 8-24	4.0mm-1.4mm	4.0mm-1.3mm	3.8mm-1.3mm	3.9mm-1.3mm	18mm-22mm	16.0-2.0	16.0-1.7	14.4-1.7	15.2-1.7	31.7mm	144mm	69mm	550g

## PENTAX Eyepieces Specifications

	Focal length	Lens Construction	Apparent Angle of View	Eye Relief	Sleeve Size	Length	Diameter	Weight
XW 3.5	3.5mm	5 groups 8 elements	70°	20mm	31.7mm	137mm	61mm	405mm
XW 5	5mm	5 groups 8 elements	70°	20mm	31.7mm	127mm	61mm	395mm
XW 7	7mm	6 groups 8 elements	70°	20mm	31.7mm	120mm	61mm	390mm
XW 10	10mm	6 groups 7 elements	70°	20mm	31.7mm	110mm	61mm	390mm
XW 14	14mm	6 groups 7 elements	70°	20mm	31.7mm	97mm	61mm	365mm
XW 20	20mm	4 groups 6 elements	70°	20mm	31.7mm	86mm	61mm	355mm
XW 30-R	30mm	6 groups 7 elements	70°	20mm	50.8mm	123mm	76mm	740mm
XW 40-R	40mm	5 groups 6 elements	70°	20mm	50.8mm	117mm	76mm	700mm

## Tripod Adaptors for Binoculars

Perfect for attaching to a tripod for extended viewing of birds, the night sky, the natural world and more.

### Tripod Adaptor TP-3



### Tripod Adaptor U



\*Binoculars not included.

#### Tripod Adaptor Compatibility

	Z series		S series				A series					U series					Papilio	V series	
	ZD ED	ZD WP	SD 9x42	SD 8/10x42	SP WP	SP	AD 9x32	AD 8/10x36	AD 9x28	AD 8/10x25	AP 8/10x30	UP WP	UP 8/10x25	UP 8-16x21	UP 8/10x21	UP 9/10x21	Papilio II	VD 4x20WP	VD 6x21WP
Tripod Adaptor TP-3 (magnesium-alloy construction)	●	●	●	●	●	●	—	●	—	—	●	—	—	—	—	●	—	●	—
Tripod Adaptor U	—	—	—	—	—	—	—	—	—	—	—	●	●	●	—	—	●	—	●

\*AD 9x32 WP, AD 9x28 WP, AD 8x25 WP, AD 10x25 WP, UP 8x21, and UP 10x21 cannot be attached to a tripod.  
The interpupillary distance will be limited to no less than 60mm when using Tripod Adaptor TP-3 with ZD 10x50 ED or ZD 10x50 WP.

## Dedicated Accessories for Monocular VM 6x21 WP

\*VM 6x21 WP not included.

### Macro Stand V-MS1



### Smartphone Adapter V-SA1



## Binocular Basics

### 1. Magnification

Magnification expresses how much (how many times) larger an object will appear compared to with the naked eye. For example, 8x means an object 800m away will look as large as if you were standing 100m from it. In general, the higher the magnification, the lower the brightness and narrower the field of view. Shaking also becomes a bigger factor, so with binoculars featuring a magnification of 12x or higher, use of a tripod is recommended.

### 2. Brightness

If you point a pair of binoculars toward bright light and look at the ocular lenses while holding your eyes about 30cm away from them, you will notice a round circle in the middle. This is referred to as the binoculars' pupil. Just as human pupils get larger in the dark, the bigger the diameter of the binoculars' pupil the brighter the field of view that is obtained. In daylight conditions, a diameter of 3mm is needed, while to view celestial bodies in the night sky a diameter of 5-7mm is required. Among binoculars of the same magnification, those with a larger objective lens aperture will be more effective for use in the morning or at twilight.

### 3. Real Field of View

The real field of view expresses in degrees the breadth of the image in view when the binoculars are stationary. Generally it becomes narrower as magnification increases, so for viewing sporting events with a great deal of movement, binoculars with a wide field of view are recommended, while to see distant objects magnified, binoculars with high magnification are optimal. For example, viewing 1,000m into the distance with binoculars that have a real field of view of 5° would give you a visible range of 87m in diameter.

### 4. Eye-Relief

Eye-relief refers to the maximum distance from your eyes to the eyepiece lenses while still being able to see the full field of view. Binoculars with long eye-relief are easier to look through and so prevent fatigue during extended viewing; they also provide a field of view free of vignetting even for eyeglass wearers. If you wear glasses, binoculars with sliding eyecups and eye-relief of at least 15mm are recommended.



# PENTAX

A B C  
6.5x21 7.5°

**A** Magnification  
**B** Effective diameter of objective lens  
**C** Actual field of view

Effective diameter of objective lens / magnification = pupil diameter  
(When the effective diameters of the objective lenses are the same, the pupil diameter is smaller the higher the magnification is, while brightness decreases.)

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