Kowa

PROMINAR

TELEPHOTOLENS / SCOPE
SPOTTING SCOPES CATALOG

http://www.kowa-prominar.com

2014.9

Capture the color and magnificence of nature.

CONTENTS

Kowa Brand cherished by outdoor enthusiasts around the world – a testament to quality.

The Electronics & Optics business of Kowa began the production of spotting scopes in 1952. Originally, they were developed as scopes for examining targets in shooting matches and saw official use in the 1964 Olympics Games held in Tokyo. Once discovered by birdwatchers, they gained unexpected popularity which gradually spread throughout the world of nature observation. Kowa Sporting Optics are highly appreciated as it is widely known that their quality and reliability are the result of more than half a century of experience and development. Kowa's larger aperture models enjoy a large market share in Europe and North America.

PROMINAR

The Prominar line which includes models utilizing pure fluorite crystal to achieve optical characteristics unattainable with glass, is the gold standard of serious users.

Based on our experience that optics have to travel and endure all types of adverse environmental conditions, Kowa Sporting Optics are designed to be rugged yet lightweight, without compromising optical performance. The shapes of our products and their protective covers are ergonomically designed to optimize ease of use, and Eco-Glass is utilized in all lenses. Kowa offers a wide variety of products that provide quality optical performance for the outdoor enthusiast.
Whether you are a beginner or an experienced professional, Kowa has the right spotting scope or binocular that will exceed your expectations.

* Eco-Glass is an environmentally friendly glass that does not contain lead or other harmful substances.

OPTICAL TECHNOLOGY

Lens

Environmentally friendly Eco-Glass.

FC Fluorite Crystal Lenses

These fluorite crystal lenses, manufactured with Kowa's advanced processing technology that was acquired over many years, provide users with the ultimate viewing experience.

XD XD Lenses

Kowa's XD Lenses (eXtra-low Dispersion glass which has characteristics close to fluorite crystal), when combined with a concave lens possessing special dispersion properties, reduces a very high percentage of chromatic aberration (color blur). Their performance nearly matches Kowa's flagship models which utilize fluorite crystal lenses.

Features

DF Dual Focus Mechanism (Quick and Fine Focusing)

The well established Kowa focus system has progressed to a dual focus system. The quick focus, with a large and easy to turn knob, will focus from infinity to 5m in two revolutions. The fine focus, with smooth movement and pinpoint accuracy, is extremely useful at high magnifications and for digiscoping systems.

EL Eyepiece Locking Mechanism

Kowa's standard eyepiece bayonet mount has been passed down to these spotting scopes with a attractive feature. An eyepiece locking mechanism has been added to the mount to prevent the eyepiece from getting lost or falling out unexpectedly.

MB Magnesium Alloy Body

The magnesium alloy body made by a sophisticated molding process called thixotropic molding has the feel and strength of a traditional metal body with decreased weight when compared to other large-diameter scopes. The rugged structure can tolerate the severest conditions and provides confidence and a sense of security for the user.

TS Tripod Mounting Screw

The addition of a insert to the tripod mount of the scope allows the scope to be secured to both 1/4 and 3/8 inch mount tripods.

MC Multicoat processing applied to all lens surfaces

All lenses, prisms, and dustproof glass are fully multicoated, ensuring sharp images and a clear visual range.

WP Completely Waterproof Structure filled with Dry Nitrogen Gas

The housing is waterproof to JIS* Protection Class 7** and filled with dry nitrogen gas to prevent the lenses from fogging.

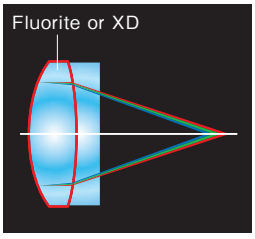
** Not intended for underwater use.

KR KR Coating

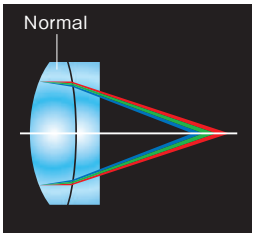
Kowa's KR coating protects the lenses from dirt and other foreign residue that may affix to the lenses during normal use. Even in cases where the lens is accidentally touched, fingerprints or oil can easily be removed through proper lens cleaning methods.

Applicable Models: GENESIS Series, BD42 XD PROMINAR Series, SV Series, YF Series

Chromatic Aberration



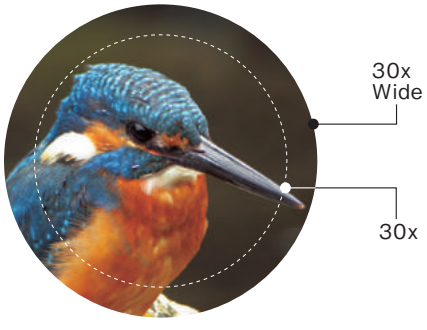
Fluorite crystal or XD Lenses



Normal Lenses

Eyepieces

Image examples of different eyepieces



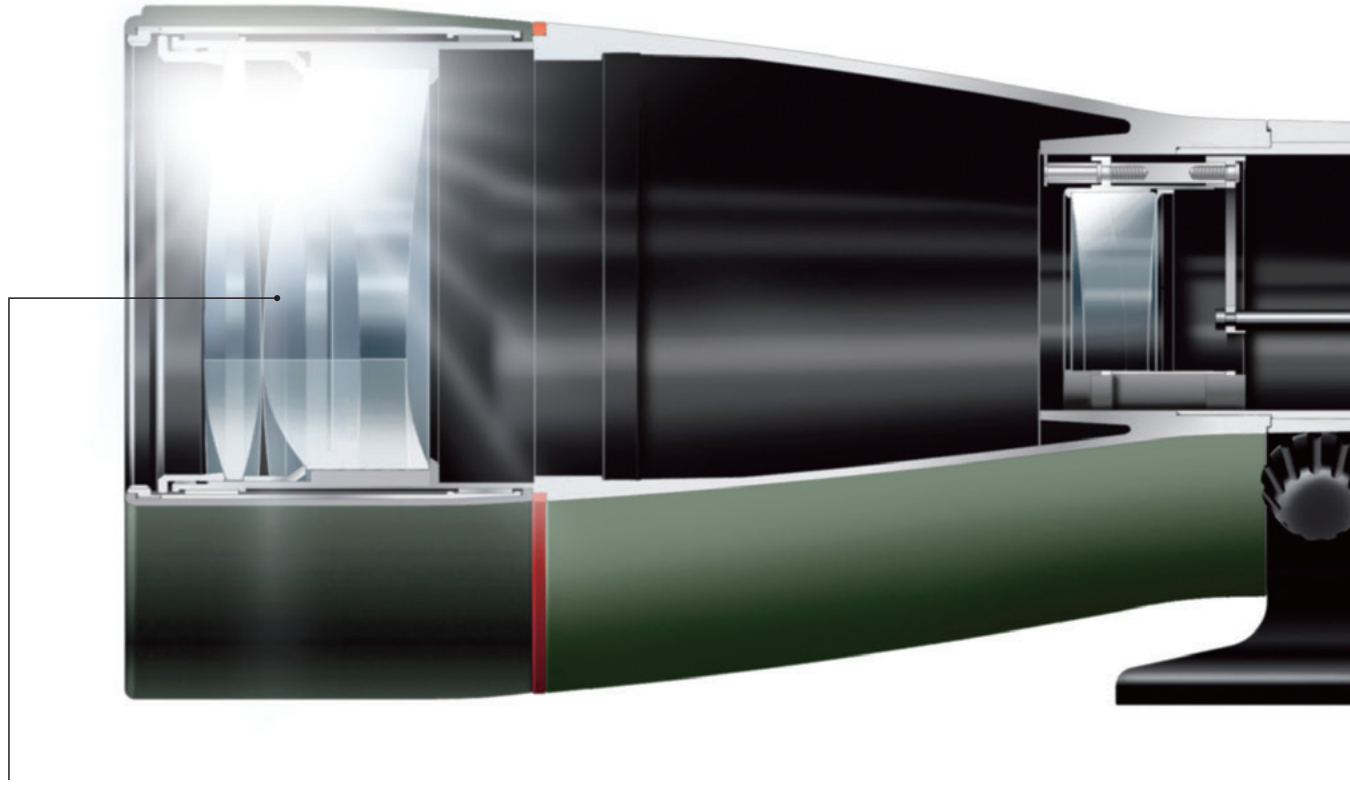
ZOOM

880 TSN-880 Series 770 TSN-770 Series 82SV TSN-82SV 660M TSN-660M Series 600 TSN-600 Series 556 Telephoto Lens/Scope

TSN-880/770 Series

Advanced Design

This body, designed to be user-friendly, is light and compact despite its large objective lens and metal construction. Logically tailored to meet the needs of the most demanding user, every technical and ergonomic detail has been painstakingly examined and perfected. Users of these advanced spotting scopes will know that they possess an instrument of extremely high quality.



"PROMINAR" Lens

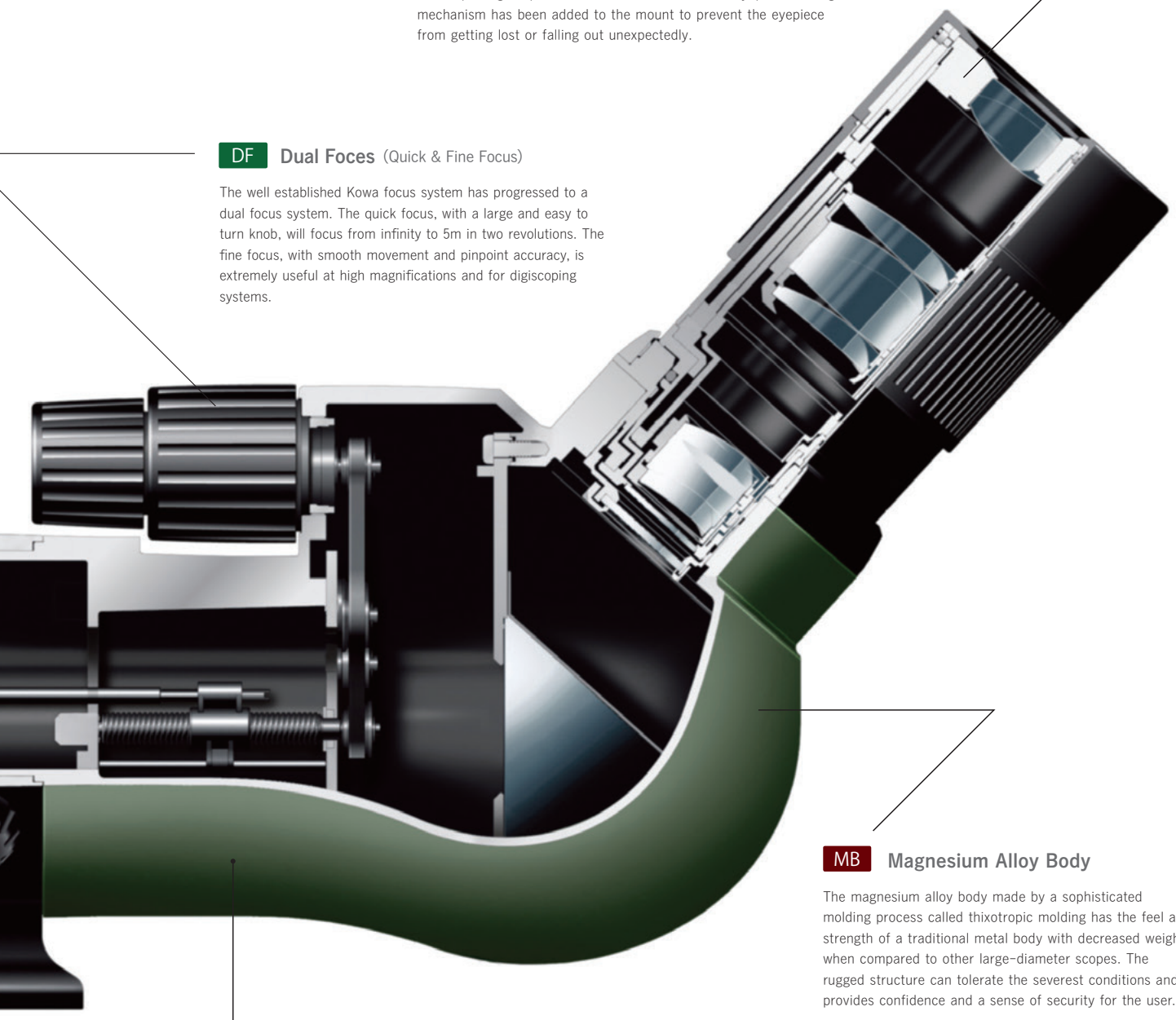
One of the major causes of deterioration of viewing quality in optics is chromatic aberration (color blur).
Chromatic aberration occurs due to the dispersion of light and the different wavelengths of light focusing on different positions, resulting in a red or purple fringing around the image. The optimum optical material to minimize chromatic aberration is fluorite crystal. A fluorite crystal with extremely low dispersion characteristics is used for the convex lens of the TSN-883/884 PROMINAR models. In place of an ordinary optical glass lens, the concave lens paired with the fluorite crystal lens is made of glass with special dispersion properties to reduce the chromatic aberration to a further degree. This combination of fluorite crystal and glass with special dispersion properties nearly eliminates chromatic aberration and redefines the standards of color brilliance. This technology is the result of many years of optical design and has realized great reduction in chromatic aberration, while maintaining a large diameter lens and high contrast images when compared with conventional models. The XD lens used in our TSN-773/774 PROMINAR models has characteristics similar to those of fluorite crystal to significantly reduce the chromatic aberration. All lenses are environmentally friendly Eco-Glass.
(Eco-Glass is an environmentally friendly glass that does not contain lead or other harmful substances.)

EL Eyepiece Locking Mechanism

Kowa's standard eyepiece bayonet mount has been passed down to these spotting scopes with a attractive feature. An eyepiece locking mechanism has been added to the mount to prevent the eyepiece from getting lost or falling out unexpectedly.

DF Dual Foces (Quick & Fine Focus)

The well established Kowa focus system has progressed to a dual focus system. The quick focus, with a large and easy to turn knob, will focus from infinity to 5m in two revolutions. The fine focus, with smooth movement and pinpoint accuracy, is extremely useful at high magnifications and for digiscoping systems.



MB Magnesium Alloy Body

The magnesium alloy body made by a sophisticated molding process called thixotropic molding has the feel and strength of a traditional metal body with decreased weight when compared to other large-diameter scopes. The rugged structure can tolerate the severest conditions and provides confidence and a sense of security for the user.

Compact

The telephoto lens design of using 5 lens elements in 4 groups has successfully shortened the overall length of the scope while keeping a large diameter objective lens without sacrificing optical performance. The adoption of an inner focusing system has made the prism box light and compact and at the same time decreases the amount of image movement when compared to conventional prism focusing systems. The highly achromatized objective lens makes the scope as compact as a 60mm class scope without sacrificing performance.

FC Fluorite Crystal Lenses

Kowa uses the fluorite crystal exclusively in its flagship spotting scope and large binocular models. The fluorite used to make an optical lens is an artificially grown mono-crystal with "ultra-low dispersion," a characteristic that ordinary optical glass does not have. It is an ideal lens material that almost completely eliminates chromatic aberration (on blur). The fluorite crystal produced by the sophisticated processing technology that Kowa has accumulated over the years guarantees the ultimate viewing experience.

XD XD Lenses

This lens has outstanding optical performance and is easier to work with than fluorite crystal. When an XD lens (eXtra-low-Dispersion-lens) is paired with a concave lens with special dispersion properties, chromatic aberration is almost eliminated. The performance of spotting scopes with XD lenses is very close to that of our flagship models with fluorite crystal.

TSN-880/770 Series

Rufous-tailed Hummingbird / Tony Mills
Image selected as category winner/highly commended in the Birdwatch Digital Photography Awards 2006, sponsored by KOWA

Eyepieces

for TSN-880/770 Series and Telephoto Lens/Scope

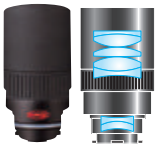
The eyepieces are fully multicoated to achieve a high transmittance and possess a complex lens structure to prevent light loss. The housing is waterproof and the eyepieces are filled with dry nitrogen gas to prevent fogging.

TE-11WZ
PROMINAR
25~60×WIDE ZOOM
880 770 556

A first for any Kowa eyepiece, the optical construction of the TE-11WZ PROMINAR contains 2 XD lenses. Images are delivered with outstanding sharpness even at 60x magnification. Chromatic aberration is limited at the highest level. Eye relief of 17mm remains constant throughout magnification range.

TE-17W 30×WIDE
880 770 556

This high-performance eyepiece design with 7 lens elements in 5 groups provides easy viewing with an eye relief of 20mm and field of view approximately 10% wider than conventional eyepieces. This wide field of view is extremely useful when searching for subjects that you want to bring into view. The 20mm eye relief allows you to see the entire field of view, even when wearing eyeglasses.



TE-20H 25×LER
880 770 556

This high-performance eyepiece design with 7 lens elements in 4 groups has an extremely long eye relief of 32mm. This extra eye relief is extremely useful when wearing eyeglasses or for a digiscoping system.

* Suitable for 4x zoom cameras and cameras with large-diameter objective lenses. Vignetting may not be eliminated in some cameras.

Angled Type

TSN-883 PROMINAR
Fluorite Crystal Lens Angled Type

FC DF EL MB TS WP

The flagship of Kowa spotting scopes with an extremely large 88mm objective lens.
The enthusiasm behind Kowa'60 years of spotting scope development is manifested in this supreme model. Its optical performance and user friendliness leaves a most satisfying impression on the user.

TSN-773 PROMINAR
XD Lens Angled Type

XD DF EL MB TS WP

A 77mm objective lens in a compact body. With the portability and compactness of a 60mm class scope and the optical performance of an 80mm class scope, this model will satisfy both experienced users and beginners.

＊ Eyepieces are sold separately.

Straight Type

TSN-884 PROMINAR
Fluorite Crystal Lens Straight Type

FC DF EL MB TS WP

TSN-774 PROMINAR
XD Lens Straight Type

XD DF EL MB TS WP

＊ Eyepieces are sold separately.

TSN-82SV

Eyepieces

TE-9Z
82SV
21～63×ZOOM

TE-14WD
82SV
32× WIDE

TE-17HD
82SV
27×LER

TSN-82SV

TSN-82SV

MC WP KR

This sophisticated scope with outstanding light gathering power and a bright field of view is the dream instrument of every bird watcher, hunter, or target shooter.

* Eyepieces are sold separately.

Large 82mm Objective Lens Fully Multicoated Optics

All Lenses, prism, and dustproof glass are fully multicoated, ensuring sharp images and a clear visual range

Waterproof and Filled with Dry Nitrogen Gas

The housing waterproof to JIS* Protection Class 7** and filled with dry nitrogen gas to prevent the lens from fogging.

* JIS=Japanese Industrial Standard

** The scope is not intended for use underwater.

Selection of 3 Eyepieces

A lineup of 3 eyepieces is available for the TSN-82SV as shown on the left.

TSN-AR42T

SLR Camera Adapter Ring for TSN-82SV, TSN-660M & TSN-600. This is used between the TSN-DA1 and TSN-CM2.

TSN-660M/600 Series

Eyepieces

TE-9Z
660 600
20～60×ZOOM

TE-14WD
660 600
30×WIDE

TE-17HD
660 600
25×LER

TSN-664M PROMINAR
XD Lens Straight Type

TSN-663M PROMINAR
XD Lens Angled Type

XD MC WP KR

TSN-664M PROMINAR
XD Lens Straight Type

XD MC WP KR

These high performance models are the perfect fusion of compactness and high optical performance.
This series satisfies the needs of a wide range of users from beginning bird watchers to scientists and professional researchers.

＊ Eyepieces are sold separately.

TSN-602
Normal Lens Straight Type

TSN-601
Normal Lens Angled Type

MC WP KR

TSN-602
Normal Lens Straight Type

MC WP KR

These 60mm class scopes boast an unprecedented light weight. Since carrying and handling is so easy, anyone can enjoy viewing and observation.

＊ Eyepieces are sold separately.

Accessories

Digital Camera Adapter

TSN-DA1

660 600 82SV

Digital camera adapter for the TSN-660/600 series scopes. It should be used in combination with the universal camera adapter and the adapter rings.

TSN-DA10

660 770 556

Digital camera adapter for the TSN-880/770 series and Telephoto Lens/Scope. It should be used in combination with the universal camera adapter and the adapter rings.

Universal Camera Adapter

TSN-DA4

Universal camera adapter that allows the mounting of various digital cameras. It has an opening and closing type configuration that enables easy switching between viewing and photographing. (For details of cameras that can be used, please refer to p.22.)

Adapter Rings

TSN-AR28/30/305/ 37/43/46/52/55/58/ 62/72

The appropriate adapter ring should be selected according to the camera filter thread. (11 types)

Photo & Video Adapter

880 770 556
660 600

TSN-VA2B

Photo & video adapter that supports use for up to large-sized video cameras. Compared to the TSN-VA3, it is possible to carry out imaging without vignetting even with large-aperture cameras. (The TSN-CR3 will be required for mounting on TSN-660/600 series.)

880 770 556

TSN-VA3

High resolution adapter that suppresses distortion up to the edge of the lens, while also thoroughly reducing chromatic aberration on the axis. Due to the wide apparent field of view, photographing will be possible without vignetting from the wide side of the camera.

Photo Attachment

TSN-PZ

Zoom-type photo attachment that allows use of a 680-1000mm focal length. (TSN-660/600 is 560-840mm.) It is exclusively for use with digital SLR cameras, and allows brighter, higher resolution photographing than before.
* Attachment supporting APS-C and Four Thirds formats.
The 35mm format converted focal length will be approximately 1.5 times the situation in APS-C format, and approximately 2 times the situation in Four Thirds format.
* In the case of using a 35mm full size digital SLR camera, this can only be used at 1000mm.

880 770 556 660 600

TSN-PA7

This photo adapter slides directly over the spotting scope eyepiece* and secures onto the supplied inner collar at the scope body. A T2 mount attaches D-SLR Camera to TSN-PA7.
Design allow for full use of entire zoom range of eyepiece achieved focal lengths up to 2700mm.**

* For use with TE-11WZ and TE-10Z.
** When using TE-11WZ with Telephoto Lens/Scope.

880 770 556

Eyepiece Converter

TSN-EC2

Required when using a previous model TSN-820/820M series eyepiece with a TSN-880/770 series.

TSN-EC1A

Required when using a TSN-82SV/660/600 series eyepiece with a TSN-820/820M series.

TSN-EC3

Required when using a TSN-660/600 series eyepiece with a TSN-880/770 series.

When other model eyepieces are used with TSN-880/770 Series scopes, not only will the specifications including the magnification change, but there may be cases where an adequate optical performance cannot be obtained.

Converter Ring

TSN-CR3

Should be used when mounting TSN-VA2B/TSN-PZ on TSN-660/600 series.

TSN-VA2-CR

Should be used when mounting TSN-VA1 on TSN-880/770 series.

Camera Mount System

TSN-880/770 Series
Exclusively for straight spotting scopes

TSN-PS1

Fixes the scope, photo attachment, and adapter for use, and reduces blurring due to movement during digiscoping and when connecting a digital SLR camera. Adjustment of the weight balance is also possible.

TSN-880/770/660 Series
Exclusively for straight spotting scopes

TSN-PS2

Using the TSN-PS2 together with the TSN-PS2-SP allows use as a mount system for digital SLR cameras. It can also be used for digiscoping with the CASIO EX-F1.

TSN-880/770/660 Series
Exclusively for straight spotting scopes

TSN-PS2-SP

Used as a digital SLR camera plate for the TSN-PS2.

Universal Mount System

TSN-DA3
(For straight/angled type spotting scopes)

Accessory that allows secure fixing of spotting scope and video camera.
* When used with angled spotting scope, the TSN-DA3-88A is required.

TSN-DA3st
(Only for straight type spotting scopes)

With a more compact structure than the TSN-DA3, this is convenient for carrying and storage.
* Cannot be used with angled spotting scopes.

TSN-DA3-88A

*TSN-DA3-88A is necessary to use the TSN-DA3 with the TSN-881/883/771/773.

Universal Shoe

TSN-DA3-40

Use the Universal Shoe for mounting video camera that have their lens in a high position, such as vertical format video cameras. Height: 40mm

Balance Plate

TSN-BP

Can be used for forward and backward balance adjustment during digiscoping use. It should be used by mounting it on a tripod head (1/4 inch screw).

Short Sleeve

TSN-SS1

Extends the outer tube of the TSN-DA1/DA10. (Approx. 7mm)

Sleeve

TSN-LS2

Should be used when carrying out digiscoping using the TE-9Z. Zoom operation is possible with the adapter still mounted.

Camera Mount (T-Ring)

TSN-CM2-CE/N/K/MA

Find the appropriate mount by matching it to the camera manufacturer.

* CE (Canon EOS), N (Nikon F), K (Pentax K), and MA (Sony A)

SLR Camera Adapter Ring

TSN-AR42T

SLR Camera Adapter Ring for TSN-82SV, TSN-660/600 series.
This is used between the TSN-DA1 and TSN-CM2.

82SV

Protection Filter

TP-95FT

Filter Thread: 95mm
Protective filter that has had water repellent and oil repellent processing applied.
Even if fingerprints or water droplets become attached to the filter, they can be easily wiped off.

880 556

Carrying Cases

for TSN-880 Series
C-881 (for angled type scopes)
C-882 (for straight type scopes)

for TSN-770 Series
C-771 (for angled type scopes)
C-772 (for straight type scopes)

for TSN-82SV
C-821 (for angled type scopes)

for TSN-660M Series
C-661 (for angled type scopes)
C-662 (for straight type scopes)

for TSN-600 Series
C-601 (for angled type scopes)
C-602 (for straight type scopes)

Only for U.S.A. market

for TSN-880 Series
CNW-12 straight type
CNW-11 angled type

for TSN-770 Series
CNW-14 straighttype
CNW-13 angled type

TSN-82 SV
CNW-5 angled type
TSN-660 Series
CNW-10 straight type
CNW-9 angled type
TSN-600 Series
CNW-4 straight type
CNW-3 angled type

- **Eyepeice Protection Cover**

TSN-CV88
TSN-CV66

- **Protect Filter**

TSE-FL
TSN-82SV

TSE-FL66
TSN-660 Series

Telephoto Lens/Scope

PROMINAR 500mm F5.6 FL / TX10

PROMINAR super-telephoto lenses incorporate fluorite crystal lenses to realize a high resolution

In order to limit chromatic aberration (color blur) to the utmost, which tends to easily occur in lenses with long focal lengths, one fluorite crystal lens and two XD (eXtra low Dispersion) lenses having particularly low dispersion capabilities are utilized. By bringing together advanced optical technology fostered through the development of spotting scopes, and incorporating fluorite crystal lenses with outstanding optical characteristics, high contrast and extremely sharp images can also be realized as a camera lens. Further, due to the high-level aberration correction and the utilization of a rounded diaphragm, an attractive effect can be obtained in out-of-focus areas as the pinnacle of imaging expression for a camera lens.

Dual-focus system that realizes ease of use in manual focusing

To enable the focus to be precisely adjusted by manual focusing, Kowa spotting scopes also utilize a highly reputed dual-focus system. In addition to using a high-contrast optical system that enables the focusing peak to be easily determined, a dual-focus system consisting of a quick focus that swiftly matches the focus and a fine focus for delicate focus adjustment is used. This enables precise adjustment to be carried out, even under the severe conditions encountered in super-telephotography.

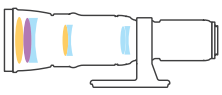
PROMINAR 500mm F5.6 FL

FC XD DF TS

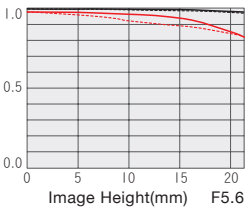
350mm, 500mm, and 850mm Three Focal Lengths in One Lens

500mm F5.6 (Using the TX10)

7 elements in 7 groups

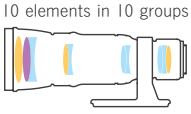


MTF



350mm F4 Using the TX07

10 elements in 10 groups



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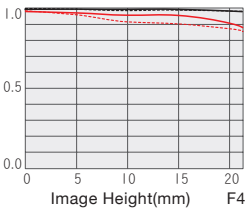
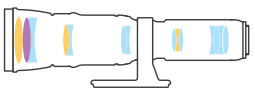


850mm F9.6 Using the TX17

14 elements in 13 groups



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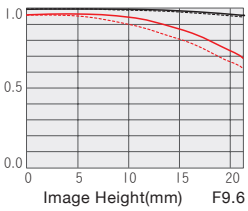
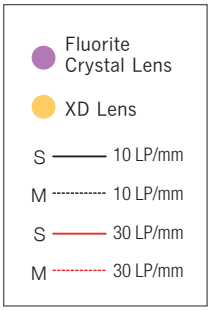




Telephoto Lens

Environmentally friendly Eco-Glass.

Three types of focal lengths, 350mm, 500mm, and 850mm, can be used as required in the one unit

From the standard specification of 500mm F5.6, it is possible to change the focal length of the master lens to a brighter 350mm F4 super-telephoto lens using the TX07 optional mount adapter, or to a lens with an even higher super-telephoto effect of 850mm F9.6 using the optional mount adapter TX17. The 350mm and 850mm mount adapters have been designed specifically for use in combination with the master lens, and the incorporation of XD lenses also inside each of the mount adapters realizes an outstanding optical performance comparable to that of previous dedicated lenses. (All lenses support 35mm full size format.)

Mount interchanging system that allows effective use of cameras made by several manufacturers

Anticipating the use of digital cameras made by several different manufacturers, a bayonet mount system is utilized that allows easy mounting and release. This makes it possible not only to exchange cameras, but also to exchange each of the mount adapters in an instant. Since the prism unit also employs an exchanging system that utilizes bayonet mounting, the switching between photographing and viewing can also be easily carried out.

Supported mounts: Nikon mount, Canon mount, Pentax mount, Micro Four Thirds mount, Sony "A" mount*

Scope

A new-concept lens having two "faces" that increase the scope of use as a high performance spotting scope

By connecting the optional prism unit and eyepiece, the telephoto lens can be used as a spotting scope by effectively making use of the high performance master lens optical system. Due to the utilization of a mounting and release system that uses a bayonet mount, the single telephoto lens can be easily used both for "photographing" and "viewing". Clear images can be enjoyed with a feeling of transparency since there is no focusing screen.

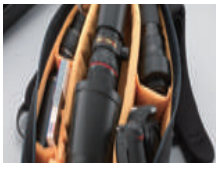
Digiscoping opens up a world of even higher super-telephotography between 1000mm and 3000mm*

By connecting an optional digital camera adapter to the lens in the spotting scope condition, it will be possible to carry out digiscoping using a compact digital camera.
Using digiscoping, it will be possible to carry out even higher super-telephotography between approximately 1000mm and 3000mm*, allowing wild birds and other subjects to be photographed at long ranges that would not be possible using digital SLR cameras.
(Eyepieces that support digiscoping: TE-17W, TE-10Z, and TE-20H)
* 35mm full size format equivalent effective focal length

Features

Lightweight and compact design that realizes outstanding portability.

The 500mm super-telephoto lens only weighs around 1.9kg.
The portability is extremely good, and the lightweight design also allows hand-held shooting. Further, when the mount adapter is removed, the compact design with a total length of only approximately 250mm allows it to be carried in a small rucksack.



Tripod mounting foot that allows mounting on video heads without modification

The tripod mounting foot has a format that allows mounting on some types of Manfrotto and Gitzo video heads without requiring a quick shoe. Simple mounting and release is possible on the video heads mentioned above, so that the lens can be used without worrying about the tripod screw coming loose. Mounting can also be carried out on other manufacturers' tripod heads. (1/4 inch mount screws are supported.)

Lens hood with attached sighting device allows objects to be captured quickly

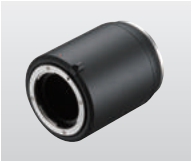
A lightweight lens hood is provided as a standard accessory.
In order to increase the speed for introducing the subject into the field of view when carrying out super-telephotography, a sighting function is incorporated in the hood. The hood mounting screw has a special shape that assists with the swift sighting of objects when used in combination with the included sighting devices.

Dustproof and Weatherproof Structure

The objective lens and focusing units utilize rubber O-rings to seal the housing of the lens for enhanced dust and weatherproofing.

Options

500mm Mount Adapter [TX10]



Supported Mounts
Nikon F
Canon
Pentax K
Micro Four Thirds
Sony "A"
Mount adapter for 500mm focal length

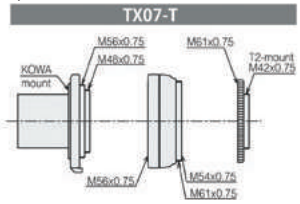
350mm Mount Adapter [TX07]

Supported Mounts :
Nikon F
Canon
Pentax K
Micro Four Thirds
Sony "A"
Mount adapter for 350mm focal length

500mm Mount Adapter [TX10-T]

Mount adapter for 500mm focal length with T-Ring(TSN-CM2) and M56/M48/M61x0.75.*

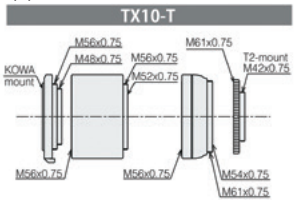
*



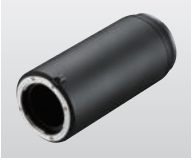
350mm Mount Adapter [TX07-T]

Mount adapter for 350mm focal length with T-Ring(TSN-CM2) and M56/M48/M61x0.75.**

**



850mm Mount Adapter [TX17]



Supported mounts :
Nikon F
Canon
Pentax K
Micro Four Thirds
Sony "A"
Mount adapter for 850mm focal length

Prism Unit [TP-88EC1]

By using the lens in combination with the eyepieces for the TSN-880/770 Series, the lens can be used as a spotting scope.
* By using together with the TSN-EC3, the eyepieces for the TSN-660/600 Series can also be used.

Protection Filter [TP-95FT] 880 556

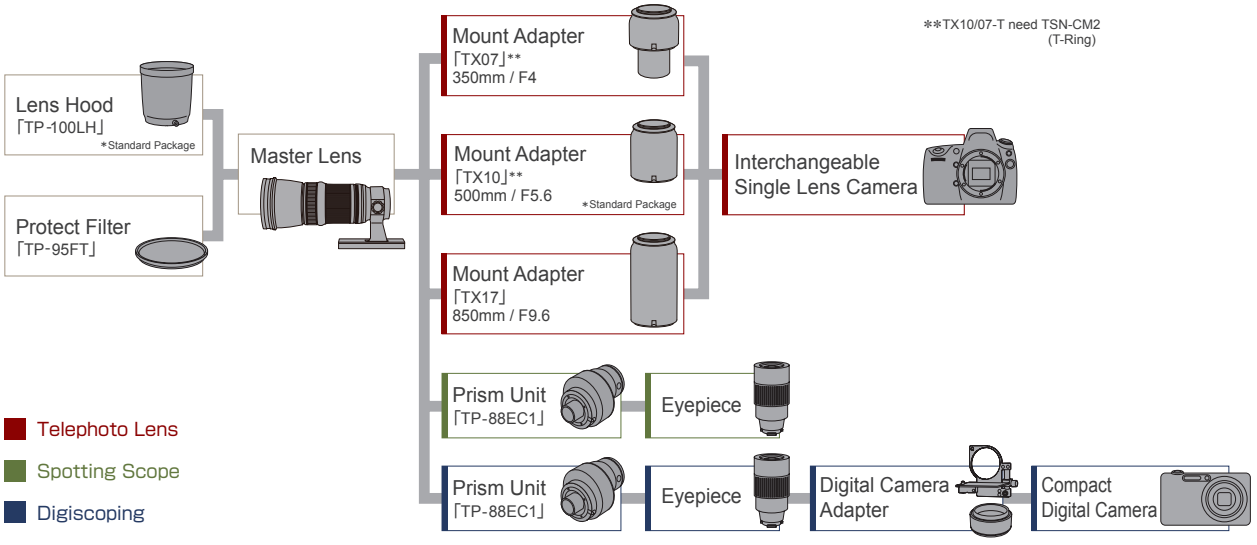
Filter Thread: 95mm
Protective filter that has had water repellent and oil repellent processing applied.
Even if fingerprints or water droplets become attached to the filter, they can be easily wiped off.

Lens Hood [TP-100LH]

A lightweight long hood provided as a standard accessory.

* Refer to page 8 for details of the various types of eyepieces.

System Configuration



Smart phone Photo System

TSN-IP4S
iPhone 4/4S digiscoping holder

TSN-IP5
iPhone 5/5S digiscoping holder

TSN-GA4S
Samsung Galaxy S4 digiscoping holder

TSN-GA5S
Samsung Galaxy S5 digiscoping holder

The iPhone 4/5/5S or Samsung Galaxy S4/S5 sits firmly in the TSN-IP4S/IP5/GA4S/GA5S digiscoping holder and simply pushes over your eyepiece.

Transform your iPhone 4/4s or 5/5s or Samsung Galaxy S4/S5 into a super telephoto lens.

Now you can combine the high quality camera and HD video functions of these smartphones with the power and legendary quality of a Kowa spotting scope or binocular to create an ultra compact, high quality super telephoto lens.

It couldn't be easier to start taking highly magnified images or HD video with your iPhone/Galaxy and Kowa optic via the Kowa TSN-IP4S, TSN-IP5, TSN-GA4S or TSN-GA5S digiscoping holder.

KOWA SPOTTINGSCOPE SERIES	EYEPIECE	ADAPTERRING
TSN-880 TSN-770	TE-11WZ(25-60x widezoom)	Included
	TE-10Z(20-60x zoom)	Included
	TE-17W(30x wide)	Included
TSN-660M TSN-600 TSN-82SV	TE-9Z(20-60x zoom)	TSN-AR66Z
	TE-9WD(45x wide)	TSN-AR66Z
	TE-14WD(30x wide)	TSN-AR66HL
	TE-21WD(20x wide)	TSN-AR66HL

Opening up the world of super-telephotography with digiscoping

What's "Digiscoping" system?

What is "Digiscoping"?

Digiscoping is a method of taking photographs through the combination of a spotting scope and a digital camera. By using the spotting scope as a telephoto lens, it is easy to enjoy digital photography at effective focal lengths of over 1,000mm*.

[Method of calculating the effective focal length]
Focal length of digital camera* x Magnification of spotting scope (eyepiece) = Effective focal length*

Ex.: Using a digital camera with focal length of 114mm and an eyepiece magnification of 30x:
114 (mm) x 30 (magnification) = 3,420 (mm)

* Converted to 35mm full size format.

Super-Telephotography Over 1,000mm

Connecting a digital camera to a spotting scope produces super-telephoto images. Inaccessible wildlife and scenery can be photographed with amazing detail.

Lightweight and Compact

There can be a lot of walking when digiscoping and it is important for the equipment to be as light as possible. A typical digiscoping system is 6 to 11 pounds, including the weight of the tripod. You can enjoy super-telephotography with a system that is lighter and more compact than one telephoto SLR lens. This is a very attractive feature for long trips or traveling.

Photography at 1,000mm/F2.8

The use of a compact digital camera in a digiscoping system permits super-telephotography with a very small F-number. (The F-number changes according to the objective lens diameter if the spotting scope.)

Wide Focal Range with One Camera

The focal length of a digiscoping system can be changed by simply increasing or decreasing the magnification of the eyepiece. Digiscoping can be done at a wide range of focal lengths without changing the digital camera or spotting scope.

Quickly Change from Viewing to Photographing

The Kowa digital camera adapter is secured in place with a single screw, allowing for quick and easy switching between viewing and photographing.

What is vignetting?

The darkening phenomenon that appears around an image is called vignetting. When digiscoping, it is important to choose the appropriate adapter and eyepiece to reduce vignetting as much as possible.

Why does vignetting occur? How can it be reduced?

Vignetting occurs when the angle of view of the camera is larger than the apparent field of view of the eyepiece.

▶ A wide angle eyepiece is effective in reducing vignetting.

Vignetting occurs when the eye relief of an eyepiece is not sufficient for the camera to capture the full image.

▶ A long eye relief eyepiece is effective in reducing vignetting.

Digiscoping Advice

Prevent Shaking and Image Blur

- Even slight shaking and vibration can affect super-telephoto images. Use a sturdy tripod with an easy to operate head to prevent shaking and image blur.
- Due to the extremely large focal length, the use of a cable shutter release, remote control or timer, is recommended to eliminate shaking and image blur.

Digiscoping Tips

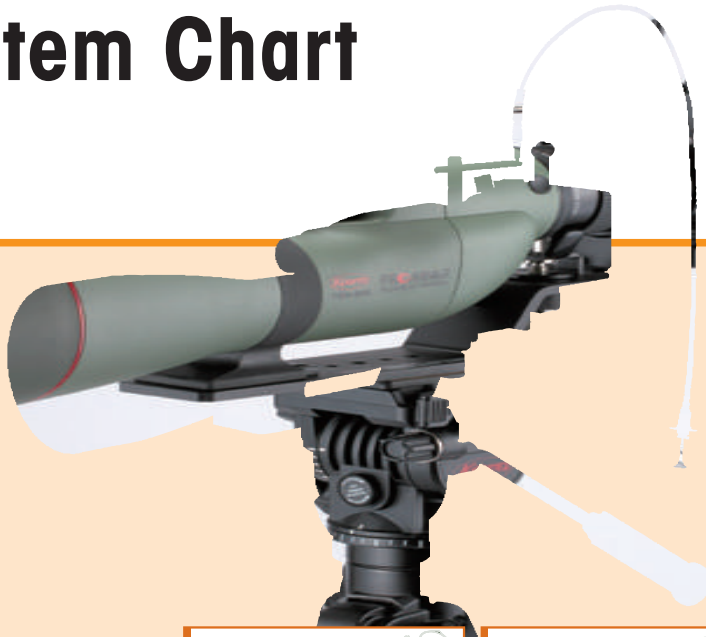
- The liquid crystal display of the camera can be difficult to see when outdoors. The use of a hood will increase visibility and make it easier to confirm the shot.
- The balance of the entire digiscoping system is very important for easy operation. The use of a balance plate or Kowa's "Universal Mount Sysytem" is recommended to properly adjust the balance of the system.
- Use the sight on the spotting scope or attach an optical sight to quickly bring an object into view.

Environmental Friendly Photo Session

Behavior during photographing

Be aware of your surroundings when out in the field. Do not trespass on private property or enter sensitive wildlife areas.
Enjoy your viewing and photographing while behaving in an environmentally considerate manner.

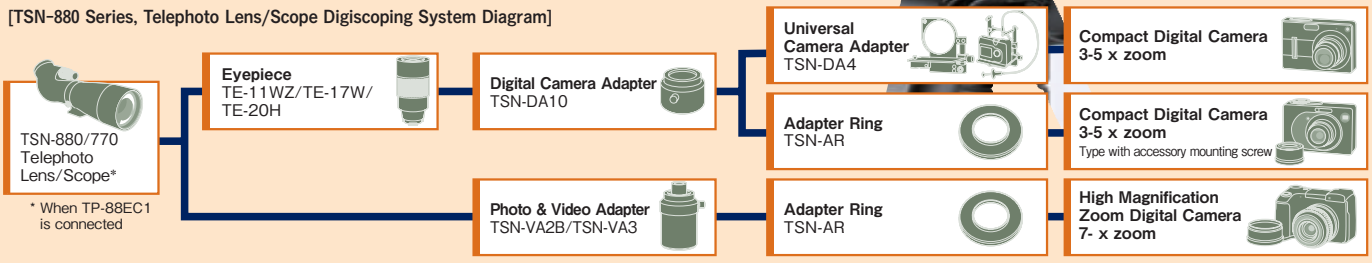
Digiscoping System Chart



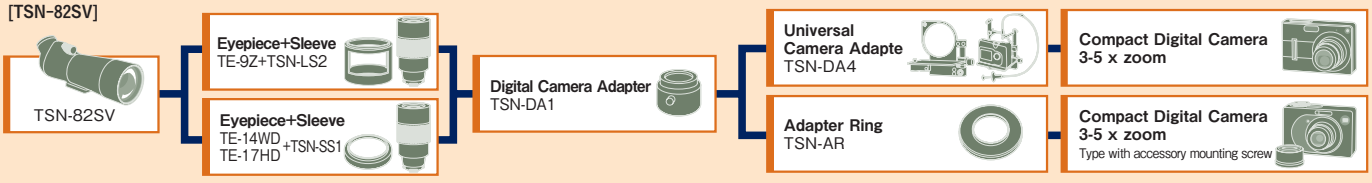
Compact Digital Camera Digiscoping System Diagram

Attach a compact digital camera to a Kowa spotting scope for Super-telephotography.

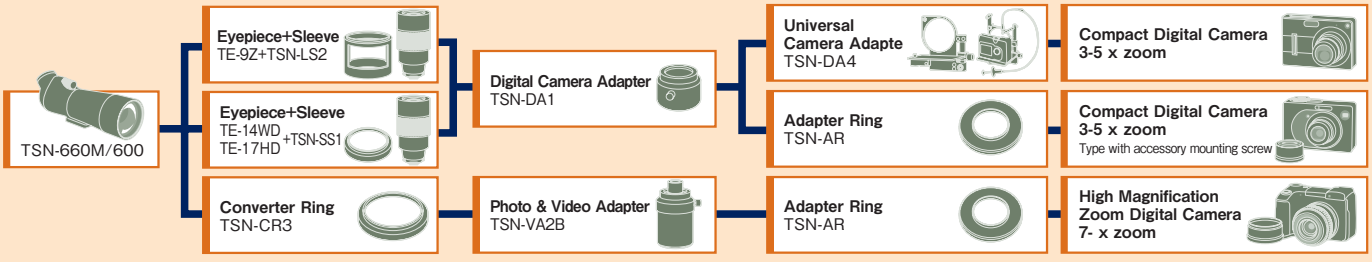
[TSN-880 Series, Telephoto Lens/Scope Digiscoping System Diagram]



[TSN-82SV]

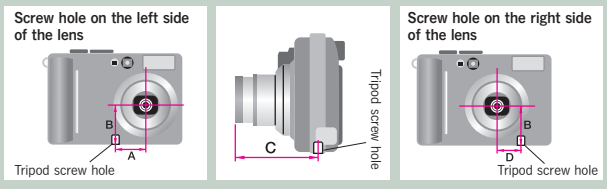


[TSN-660M/600 Series Digiscoping System Diagram]



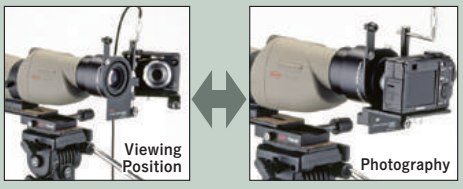
TSN-DA4 Compatibility

The TSN-DA4 universal camera adapter can be used with cameras that meet the following criteria.



A	0~44mm
B	21~40mm
C	~56mm (When the power is switched on and the lens is fully extended)

D	0~28mm
B	21~40mm
C	~56mm (When the power is switched on and the lens is fully extended)



- The TSN-DA4 allows a compact digital camera without filter threads to be used for digiscoping.
- Quickly change between photographing and viewing through the scope.
- The camera is attached to the adapter with the camera's tripod mount. Locking mechanisms ensure safe operation.

For cameras with the tripod mount to the left of the lens (facing the lens).

A. The distance between the center of the tripod mount and the center of the lens.
B. The distance between the center of the lens and the base of the camera.
C. The distance between the center of the tripod mount and the front of the lens.

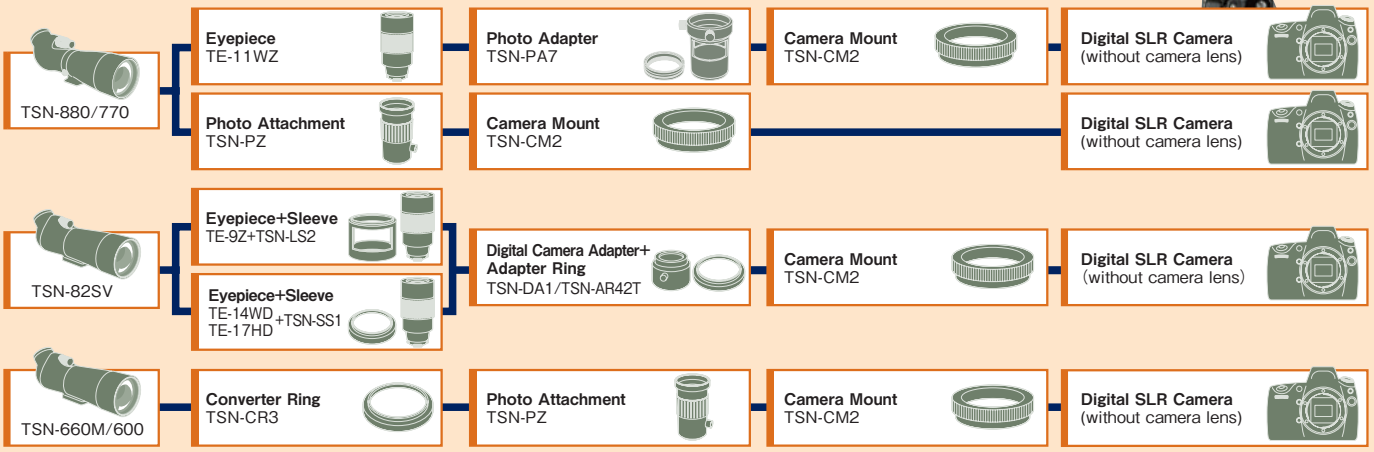
For cameras with the tripod mount to the right of the lens (facing the lens).

D. The distance between the center of the tripod mount and the center of the lens. B and C are the same as above.

"SLR Digiscoping" and "Videoscoping" System Chart

Super-Telephotography with a Single Lens Reflex Camera

Attach a 35mm film single lens reflex camera or digital single lens reflex camera to a Kowa spotting scope for super-telephotography.



Collimation method

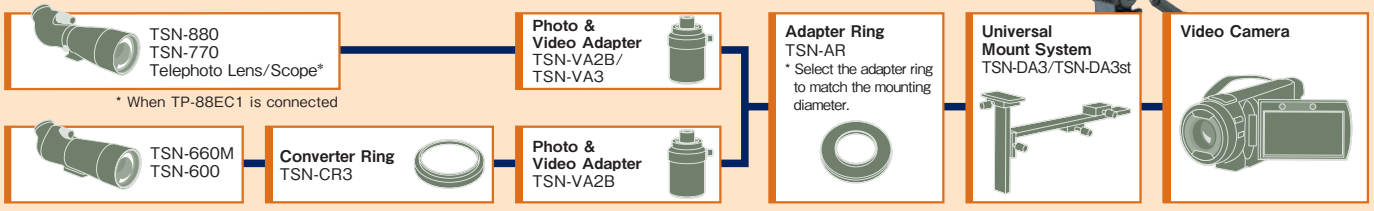
Attach a digital single lens reflex camera to a Kowa TSN-880/770 series spotting scope using the TSN-VA3 to enjoy super-telephotography using the collimation method.

*1 In some cases, step-up or step-down rings may be necessary.
*2 The TSN-DA3 or TSN-DA3st may also be used instead of the TSN-PS2/PS2-SP.
* For carrying out collimation photographing using digital SLR cameras, inner focusing camera lenses should be used. Further, care will be required depending on the model since in some cases the auto-focus function may not be used or vignetting may occur.

Super-Telephoto Video

Super-telephoto video by connecting a video camera to a spotting scope.

[Video Camera Mounting System Diagram]



TSN-DA3/TSN-DA3st Mounting a Digital Camera/Video Camera

The TSN-DA3/TSN-DA3st can be used with cameras that meet the following criteria:

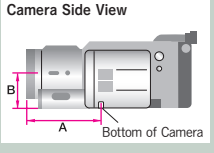
【TSN-DA3】 This cannot be mounted on TSN-880/770 Series angled type spotting scopes.

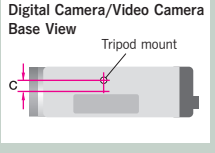
Spotting Scopes	TSN-884 TSN-774			TSN-662/664		TSN-602/604		TSN-661/663				TSN-601/603			
	Straight type spotting scope			Straight type spotting scope		Straight type spotting scope		Angled type spotting scope				Angled type spotting scope			
	TSN-VA1	TSN-VA2B	TSN-VA3	TSN-VA1	TSN-VA2B	TSN-VA1	TSN-VA2B	TSN-VA1		TSN-VA2B		TSN-VA1		TSN-VA2B	
A	to 160mm	to 135mm	to 135mm	to 155mm	to 130mm	to 200mm	to 175mm	to 160mm*1	to 55mm*1	to 135mm*1	to 30mm*1	to 190mm*1	to 85mm*1	to 165mm*1	to 60mm*1
B	to 85mm(to 125mm)*2			to 75mm(to 115mm)*2		to 70mm(to 110mm)*2		to 100mm*1	to 205mm*1	to 100mm*1	to 205mm*1	to 120mm*1	to 225mm*1	to 120mm*1	to 225mm*1
C	55mm (right and left)			55mm (right and left)		55mm (right and left)		55mm (right and left)				55mm (right and left)			

【TSN-DA3st】

Spotting Scopes	TSN-884 TSN-774			TSN-662/664		TSN-602/604	
	Straight type spotting scope			Straight type spotting scope		Straight type spotting scope	
	TSN-VA1	TSN-VA2B	TSN-VA3	TSN-VA1	TSN-VA2B	TSN-VA1	TSN-VA2B
A	to 170mm	to 145mm	to 145mm	to 165mm	to 140mm	to 210mm	to 185mm
B	to 85mm(to 125mm)*2			to 73mm(to 113mm)*2		to 68mm(to 108mm)*2	
C	55mm (right and left)			55mm (right and left)		55mm (right and left)	

*1 As the value for A increases, the value for B decreases. The maximum values for A and B are shown.
*2 The values in () apply when the TSN-DA3-40 (sold separately) is used.





A. The distance between the center of the tripod mount and the front of the lens.
B. The distance between the center of the lens and the base of the camera.
C. The distance between the center of the tripod mount and the center of the lens.

Specifications

Spotting Scope Specifications

Model	TSN-880 Series		TSN-770 Series		TSN-660M Series		TSN-600 Series		TSN-82SV
	TSN-883	TSN-884	TSN-773	TSN-774	TSN-663M	TSN-664M	TSN-601	TSN-602	
	Angled type	Straight type	Angled type	Straight type	Angled type	Straight type	Angled type	Straight type	Angled type
Objective Lens Effective Diameter	88mm	88mm	77mm	77mm	66mm	66mm	60mm	60mm	82mm
Objective Lens	Fluorite Crystal Lens		XD Lens		XD Lens		Normal Lens		Normal Lens
Minimum Focusing Distance	5 m	5 m	5 m	5 m	6 m	6 m	6 m	6 m	6 m
Length	343mm	329mm	318mm	304mm	311mm	312mm	299mm	299mm	383m
Weight	1520g	1520g	1330g	1330g	1040g	1020g	735g	720g	1490g
Filter Thread	95mm	95mm	82mm	82mm	72mm	72mm	67mm	67mm	86mm

* Mounting of commercially available filters is possible.

Telephoto Lens/Scope Specifications

Model	500mm F5.6 (with TX10)	350mm F4 (with TX07)	850mm F9.6 (with TX17)
Focal Length	500mm	350mm	850mm
Maximum Aperture	F5.6	F4	F9.6
Lens Construction	7 Elements in 7 Groups	10 Elements in 10 Groups	14 Elements in 13 Groups
Fluorite Crystal Lens	1	1	1
XD Lens	2	3	3
Field of View (Full Size)	4.9°	7.0°	2.9°
F-Number	F5.6 ~ 11	F4 ~ 8	F9.6 ~ 19
Iris Blades	9	9	9
Minimum Focusing Distance	3m	3m	3m
Maximum Reprojection Ratio	0.17x	0.12x	0.29x
Filter Thread	95mm	95mm	95mm
Weight*	1970g	2025g	2270g
Maximum Diameter x Length*	φ 104x341mm (φ 4x13.4in)	φ 104x296mm (φ 4x11.7in)	φ 104x396mm (φ 4x15.6in)

* Using the Nikon mount, excluding the lens hood

Standard Package

① Master Lens
② Mount Adapter「TX10」
Available Mounts: Nikon, Canon, Pentax, Micro Four-Thirds ,SONY "A"
③ Lens Hood「TP-100LH」
④ Objective Cap
⑤ Mount Adapter Cover
⑥ Mount Lens Cover
⑦ Camera Mount Cover
⑧ Sights(S/M/L)
・ Manual

【Eyepiece Specifications】

Model	TSN-880/770 Series						TSN-660M/600 Series					
	TE-11WZ PROMINAR		TE-17W		TE-20H		TE-9Z		TE-14WD		TE-17HD	
	TSN-880	TSN-770	TSN-880	TSN-770	TSN-880	TSN-770	TSN-660M	TSN-600	TSN-660M	TSN-600	TSN-660M	TSN-600
Magnification	25 ~ 60x WIDE ZOOM		30xWIDE		25xLER		20 ~ 60xZOOM		30xWIDE		25xLER	
Field of View	2.4° ~ 1.32°		2.4°		2.1°		1.9° ~ 1.0°		2.4°		2.1°	
Exit Pupil	3.5 ~ 1.5mm	3.1 ~ 1.3mm	2.9mm	2.6mm	3.5mm	3.1mm	3.3 ~ 1.1mm	3.0 ~ 1.0mm	2.2mm	2.0mm	2.6mm	2.4mm
Relative Brightness	12.3 ~ 2.3	9.6 ~ 1.7	8.4	6.8	12.3	9.6	10.9 ~ 1.2	9.0 ~ 1.0	4.8	4.0	6.8	5.8
Twilight Factor	46.9 ~ 72.7	43.9 ~ 68.0	51.4	48.1	46.9	43.9	36.3 ~ 62.9	34.6 ~ 60.0	44.5	42.4	40.6	38.7
Eye Relief	17mm		20.0mm		32.0mm		16.5 ~ 16.0mm		20.0mm		32.0mm	
Field of View at 1000m	42 ~ 23m		41.9m		36.7m		33.2 ~ 17.5m		41.9m		36.7m	

【Eyepiece Specifications TSN-82SV】

Model	TE-9Z	TE-14WD	TE-17HD
Magnification	21 ~ 63xZOOM	32xWIDE	27xLER
Field of View	1.8° ~ 0.95°	2.2°	2.0°
Exit Pupil	3.9 ~ 1.3mm	2.6mm	3.0mm
Relative Brightness	15.2 ~ 1.7	6.8	9.0
Twilight Factor	41.5 ~ 71.9	51.2	47.1
Eye Relief	16.5 ~ 16mm	20mm	32mm
Field of View at 1000m	31 ~ 17m	38m	35m

【Eyepiece Specifications Telephoto Lens/Scope】

Model	Telephoto Lens/Scope					
	TE-11WZ PROMINAR	TE-17W	TE-20H	TE-9Z*	TE-14WD*	TE-17HD*
Magnification	28 ~ 66xZOOM	33xWIDE	28xLER	26 ~ 78xZOOM	40xWIDE	32xLER
Field of View	2.2° ~ 1.2°	2.2°	1.9°	1.45° ~ 0.75°	1.8°	1.6°
Exit Pupil	3.2 ~ 1.3mm	2.7mm	3.2mm	3.4 ~ 1.1mm	2.2mm	2.7mm
Relative Brightness	10.2 ~ 1.8	7.1	10.2	11.3 ~ 1.3	4.8	7.4
Twilight Factor	49.2 ~ 76.2	53.9	49.2	48.0 ~ 82.8	59.3	53.4
Eye Relief	17mm	20.0mm	32.0mm	16.5 ~ 16.0mm	20.0mm	32.0mm
Field of View at 1000m	38 ~ 21m	38m	33m	25 ~ 13m	31m	28m

* Mounting will be possible using the TSN-EC3.

【Photo Attachment Specifications】

Model	TSN-PZ				TSN-PA7	
Supported Scopes	TSN-880	TSN-770	TSN-660M	TSN-600	TSN-880/770	Telephoto Lens
Focal Length	680~1000mm		560~840mm		1000~2450mm	1100~2700mm
F Value	7.7~11.4	8.8~13.0	8.5~12.7	9.3~14.0	12.4~27.8 (880) 14.2~31.8 (770)	12.5~30.7
Minimum Focusing Distance	5m		6m		6m	5m
Total Length	105mm				100mm	
Weight	350g				210g	

* In the case of mounting a digital SLR camera, the focal length will change according to the image sensor size.

【Photo & Video Adapter Specifications】

Model	TSN-VA2B					TSN-VA3		
Supported Scopes and Lenses	TSN-880	TSN-770	TSN-660M	TSN-600	PROMINAR 500mm	TSN-880	TSN-770	PROMINAR 500mm
Magnification	14x		12x		15.5x	14x		15.5x
Field of View	1.97°		2.3°		1.8°	3.0°		2.7°
Eye Relief	100mm					60mm		

Precautions for Use | **For correct and safe use of this product:**

Before using the product, be certain to carefully read the instruction manual.
Do not under any circumstances use this product to look at the sun, since this may result in loss of eyesight.

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