

# OEM/Designer Handbook:

## Model InfiniVar™ Video Inspection Microscope



**Infinity Photo-Optical Company** • 2530 Frontier Ave. • Boulder, CO 80301 • Telephone 303/440-4544 • Fax 303/440-4144

## InfiniVar™ Video Inspection Microscope

InfiniVar is a compact, video-dedicated inspection microscope based on Infinity Photo-Optical's patented, award-winning AVS Afocal Variation System technology. It is the only video-dedicated microscope that focuses *continuously* without "blackout" from infinity down to 0.40 inches (10mm) by a half-twist (180°) of its focus control. InfiniVar offers variable degrees of depth-of-field, magnification and resolution--all of which can be controlled by the user. Since InfiniVar will acquire an image almost anywhere (except closer than 0.40 inches), it may well be the easiest-to-use video microscope you have ever experienced. Used properly, it will provide years of trouble-free service.

You are about to experience how different a continuously-focusable video instrument is from all other kinds (e.g., mono-objective zoom systems) you may have used before. InfiniVar has no objective lens changes, and does not require any additional optics to operate throughout its more than 40:1 range. Instead, you will quickly find just the right setting which provides the best overall view. *Unless you try using InfiniVar CLOSER than 0.40 inches from an object, it is impossible NOT to get an image from it.* This means that you will see everything happen as you do it.

**InfiniVar's Optics Module is a SEALED UNIT. DO NOT attempt to take InfiniVar's Optics module apart or to enter ANY PART or its optical assembly. Doing so may destroy the unit and will AUTOMATICALLY VOID THE WARRANTY.**

InfiniVar is composed of a unitized Optics Module (which contains all its lens elements), Spacer Tubes [with international "T" thread (M42 x 0.75)], a Mounting Clamp and C-mount Adapter. Three 24mm-long ganged tubes are attached to the Optics Module, ending in a Long C-mount Adapter. All C-mount video cameras can be connected to this total assembly. Once connected, InfiniVar is ready for use.

Also supplied as standard equipment are a Plastic Probe Tip and a 66mm Ring Light Adapter. These permit the use of various illuminator options (see below).

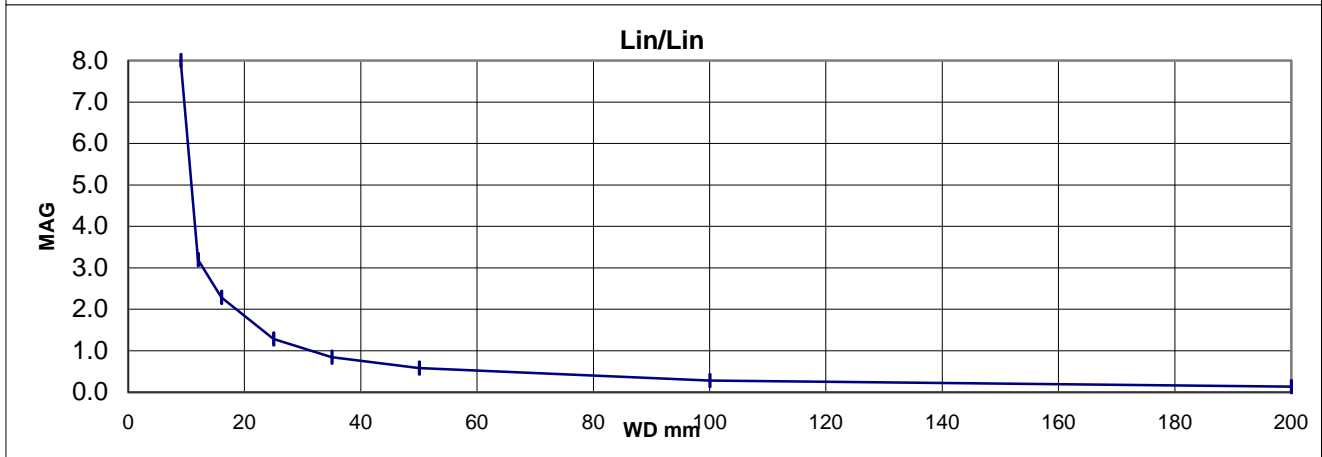
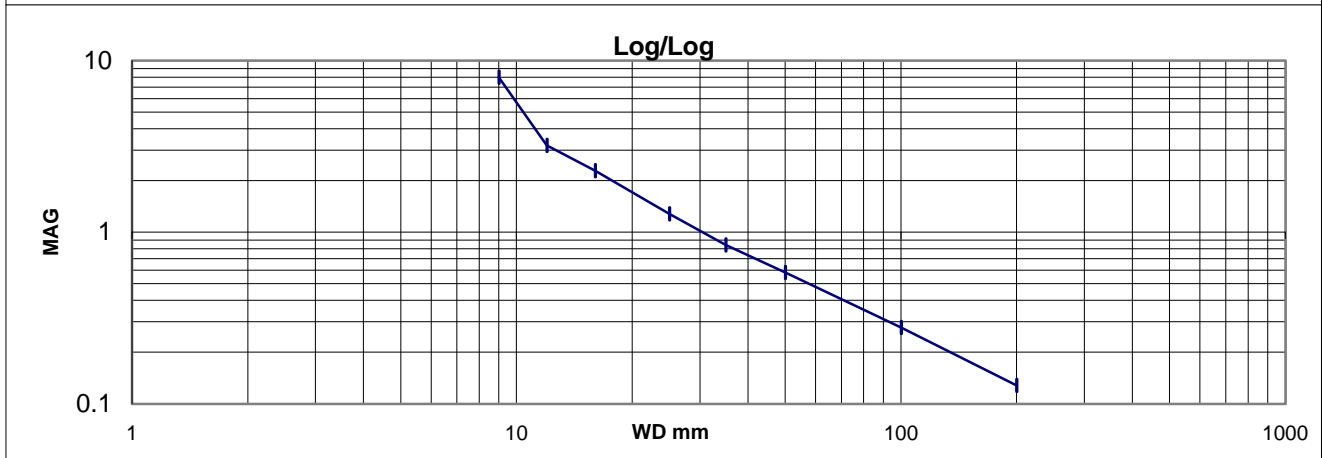
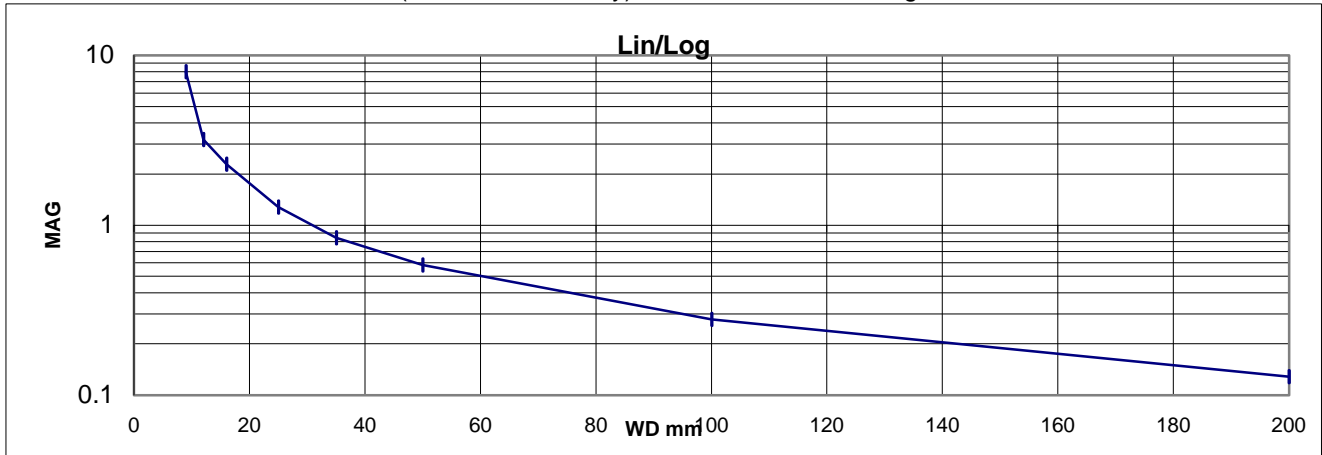
On InfiniVar's front Optics Module is a section that looks like a standard microscope objective. This part is topped with a 28mm diameter flange, permitting fiber optic ring illuminators of that diameter to be attached. This flange also has a mounting depression which mates with the three setscrews of the 66mm Ring Light Adapter. Once mounted, 66mm ring lights can be used. The 66mm Ring Light Adapter can be left on InfiniVar on a more or less permanent basis, if desired. Below the flange, a black metal Sheath protects the inner lens elements. If the Sheath is carefully unscrewed, it can be exchanged with the Plastic Probe Tip. **CAUTION: Do not unscrew any of the objective lens elements when this is done.** The Plastic Probe Tip permits mounting 21mm fiber optic ring lights around it. By moving a 21mm ring light up and down the Plastic Probe's shaft, continuous transition from brightfield to darkfield can be set at close ranges.

**Magnification and Working Distance.** Please see the table on the next page for specific details of InfiniVar's optical characteristics. In general, InfiniVar has a c.40:1 variation ratio *when used on typical stereomicroscope stands.\** Of course, InfiniVar has even greater magnification variation if used from a greater initial stand-off. At great distance, InfiniVar's practical limit depends on illumination available.

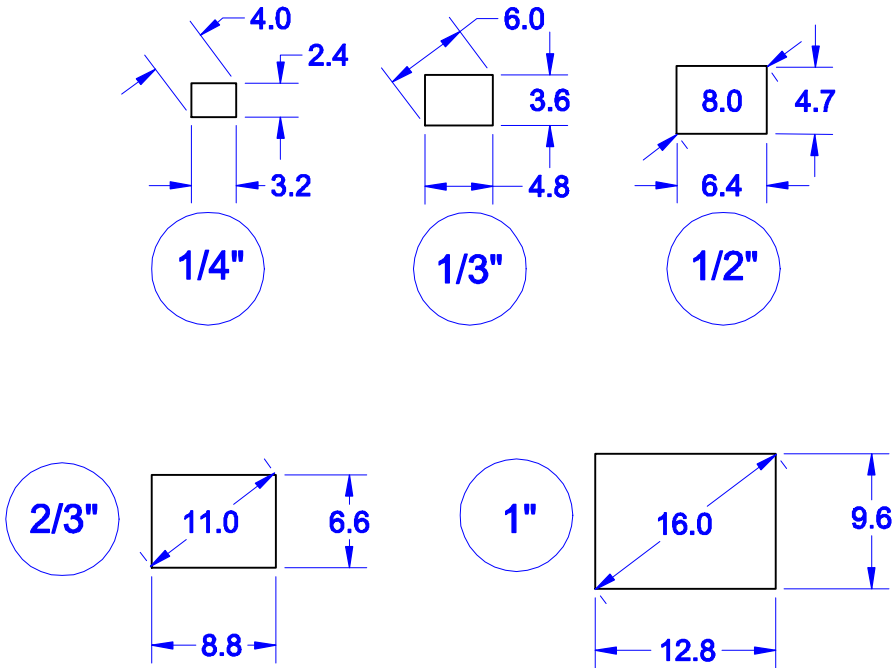
# INFINIVAR OPTICAL DATA

	<b>WD mm</b>	9	12	16	25	35	50	100	200
	<b>Mag</b>	8.0	3.2	2.3	1.3	0.8	0.6	0.3	0.1
	<b>FOV</b>	0.8	2	2.8	5	7.6	11	23	50

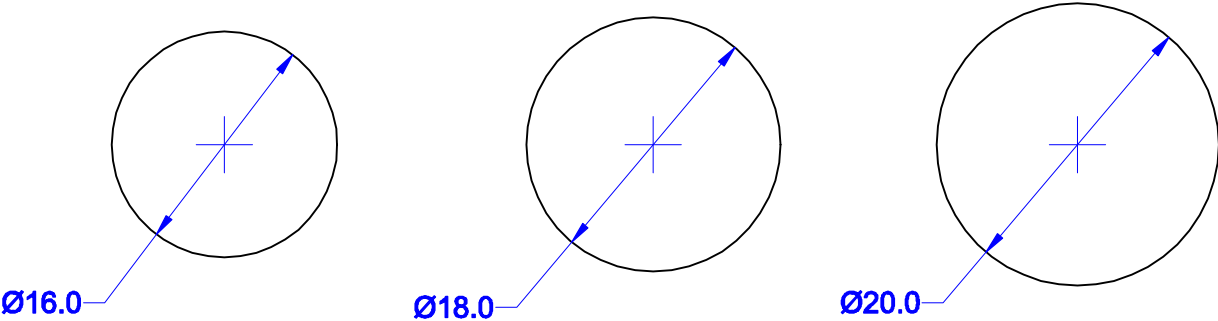
\*FOV based on 1/2" video format (6.4mm horizontally). See Video Format Page.



# Video Formats



# Eyepiece Formats



All dimensions in mm.

\*Multiply magnification by 1.15 for 15-inch monitors; 1.46 for 19-inch monitors and 1.92 for 25-inch monitors. Magnifications and fields may vary *slightly*, due to absence of video standards among camera/monitor manufacturers.

**Mountings.** InfiniVar is supplied with a Mounting Clamp with 1/4-20 central tap and two "outboard" M4 (metric) taps. This permits mounting InfiniVar on any stand, tripod, custom assembly or jig which provides such threads. In addition, InfiniVar can be mounted on most major-brand stereomicroscope stands by *substituting the appropriate Steromicroscope Stand Mount* for ONE T24 tube and the Mounting Clamp which surrounds it.

Stereomicroscope Stand Mounts are all standardized to be 24mm thick in optical tubelength. Consequently, to mount InfiniVar on any major-brand stereomicroscope stand, *remove* ONE T24 tube and the Mounting Clamp and *replace* them with the suitable Stand Mount. The two remaining T24 tubes can be repositioned above or below the Stand Mount to establish the desired "zero-in" range. For example, with a Bausch & Lomb (Leica) Stand Mount, InfiniVar's Optics Module is best attached directly to the Mount's underside, with the two remaining T24 tubes placed above the Mount. On the other hand, the drive of an Olympus stereo stand is such that the best "zero-in" power is achieved by putting ONE T24 under the Olympus Stand Mount, and ONE above it. In any case, the "right" configuration is the one *you* decide upon for best results. Just remember that when a Stand Mount is used, TWO T24 tubes should be used with it--NOT ALL THREE as originally supplied.

Since various brands have more or less drive motion, there will be slight differences in total magnification range possible from each. Our statistics have been based on the Bausch & Lomb (Leica) stand's range.

**Camera Orientation.** Infinivar provides an erect image to the video sensor. Your camera and Infinivar should be rotated in the Clamp or Stand Mount, accordingly.

The Bausch & Lomb (Leica) Stand Mount--unlike other major brands--does not rotate in its stand's socket. Consequently, we offer an (optional) Rotatable C-mount. The Rotatable C-mount is recommended for use with Bausch & Lomb (Leica) Stand Mounts. In the absence of a Rotatable C-mount, it is recommended that the Standard Long C-mount be rotated slightly and locked in place by the small setscrew (located on the C-mount).

**DL Doubler Tube.** The DL doubler tube provides a 2x factor. The DL Tube interfaces the InfiniVar and the video camera and maintains all focus ranges, ect.--but at a 2x increase in magnification.

**HX (Handholdable Accessory) Tube.** The HX Tube is a focal compressor, reducing InfiniVar's optical and mechanical tubelengths. When used with InfiniVar, ALL SPACER TUBES ARE REMOVED and the HX Tube is interfaced DIRECTLY BETWEEN the Optics Module and C-mount. The essential focusing range of InfiniVar remains, but the unit is now small enough to be held conveniently by hand.

The HX Tube makes it possible to use InfiniVar for handheld scans of objects without working distance limitations. Further, when HX Tube equipped, InfiniVar's depth-of-field is more than enough to assure steady handheld video scans. In addition, the HX Tube enhances InfiniVar's light efficiency. As a result, table-top lamps or fiber optic light guides located near the object are usually quite sufficient. By using illuminators near the object, no fiber optic cable need be attached, further improving InfiniVar's handholdability.

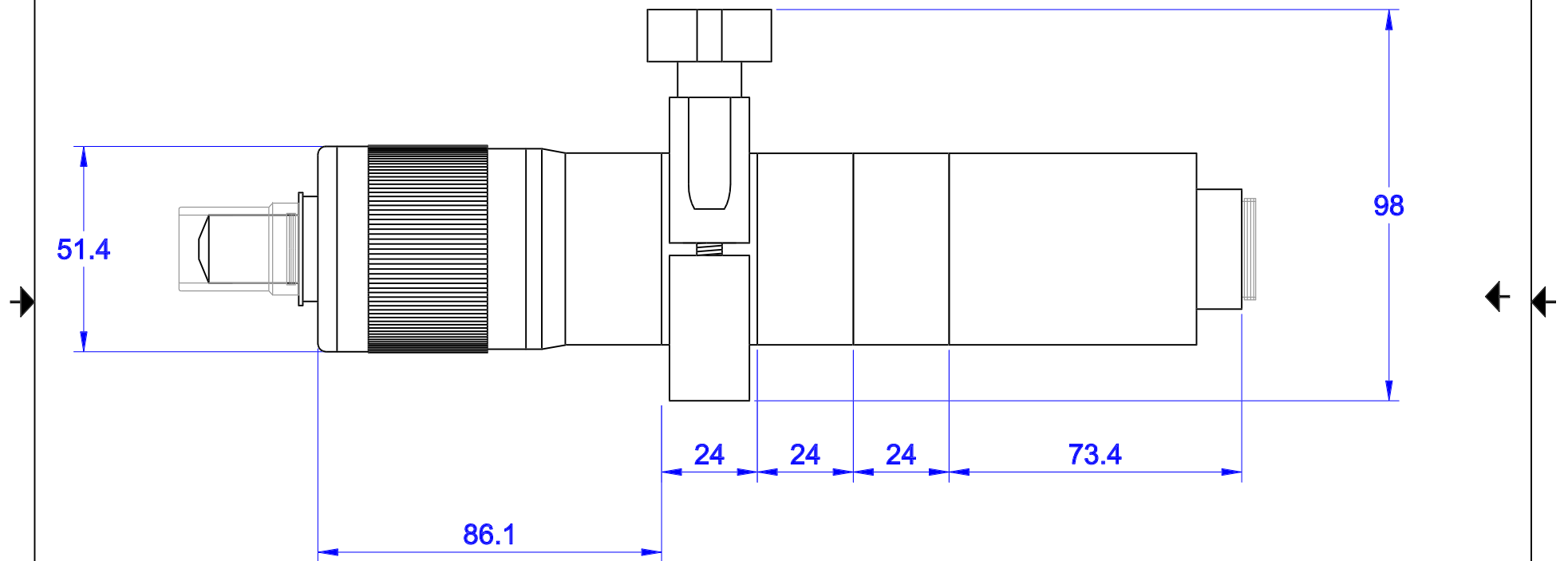
Although developed primarily for handheld mode, the HX Tube can be used with the Mounting Clamp or Stand Mounts as well. When used with the Stand Mount, simply remove the 24mm Logo tube and replace it with the appropriate Stand Mount and reconnect all parts accordingly.


**Illumination.** InfiniVar functions best when the object is evenly illuminated. Fiber optic light guides and table-top halogen illuminators are recommended. Nicholas-type stereomicroscope illuminators are also well-suited. InfiniVar's light efficiency is high enough to allow the use of separate illuminators. As already noted, InfiniVar can be equipped with 21mm, 28mm and 66mm fiber optic illuminators. When Plastic Probe Tips are used with 21mm ring lights, brightfield and darkfield effects can be set at close ranges by sliding the illuminator up and down the Probe's shaft.

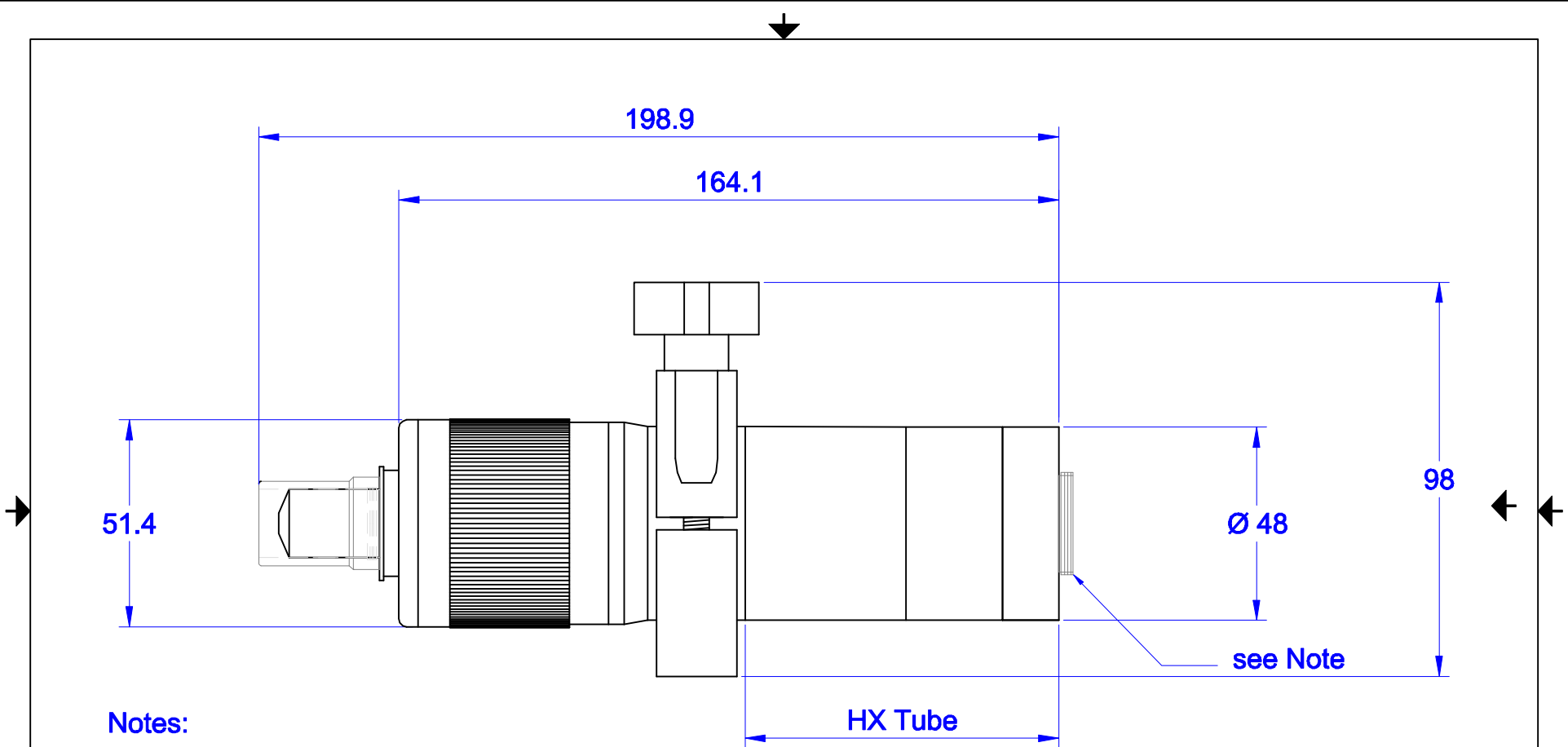
**Video Accessories.** Virtually all video accessories *compatible with your camera* can be used with InfiniVar. These include crosshair generators, video recorders, video printers, IBM PC compatibles and image processing systems.

**Care and Cleaning.** InfiniVar should be treated as the fine optical instrument it is. Care should be taken to keep dust and dirt off external surfaces. If the objective front should ever need to be cleaned, use lens tissue moistened by a lens cleaner. NEVER USE SOLVENTS of any kind. InfiniVar's Optics Module should NEVER be opened. If contaminants enter any inner parts, consult your dealer or INFINITY about cleaning services.

**Warranty Service and Questions.** Specific details of the warranty are given on the limited warranty statement. In general, all parts and labor are guaranteed for one full year. Should InfiniVar become damaged or need service, return it to your authorized dealer with a letter explaining the problem. If you have additional questions, please do not hesitate to contact your dealer or INFINITY PHOTO-OPTICAL COMPANY directly.



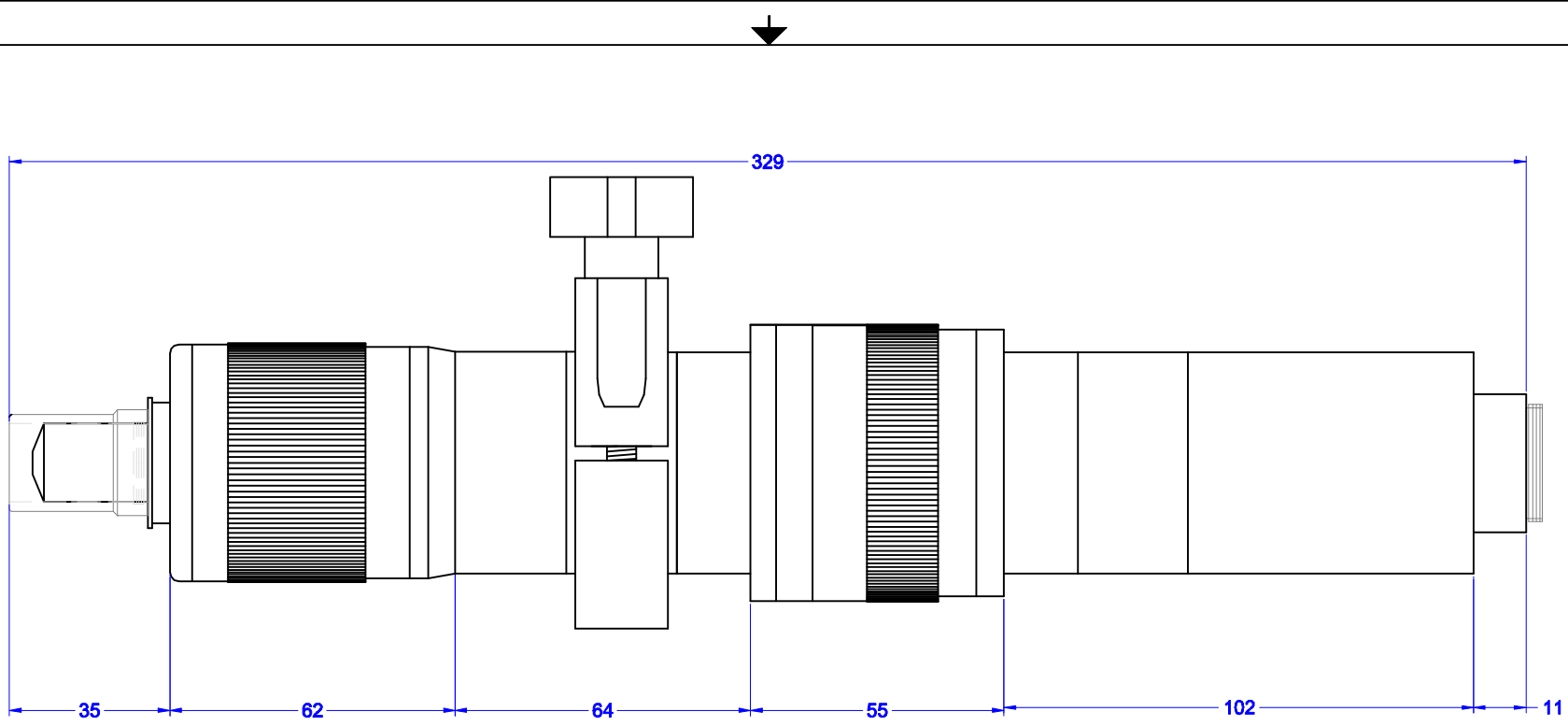
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		<b>InfiniVar™</b>		
<b>Rel 3/4/97</b>	SIZE <b>B</b>	FSCM NO.	DWG NO.	REV
<b>Rev 11/20/97</b>	SCALE <b>NONE</b>	SHEET <b>1 OF 1</b>		



**Notes:**

1. When DL Tube (2x amplifier) is used, 12mm is added to total length.

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		<b>InfiniVar/HX Tube</b>		
<b>Rel 4/1/97</b> <b>Rev 4/1/97</b>	SIZE B	FSCM NO.	DWG NO.	REV
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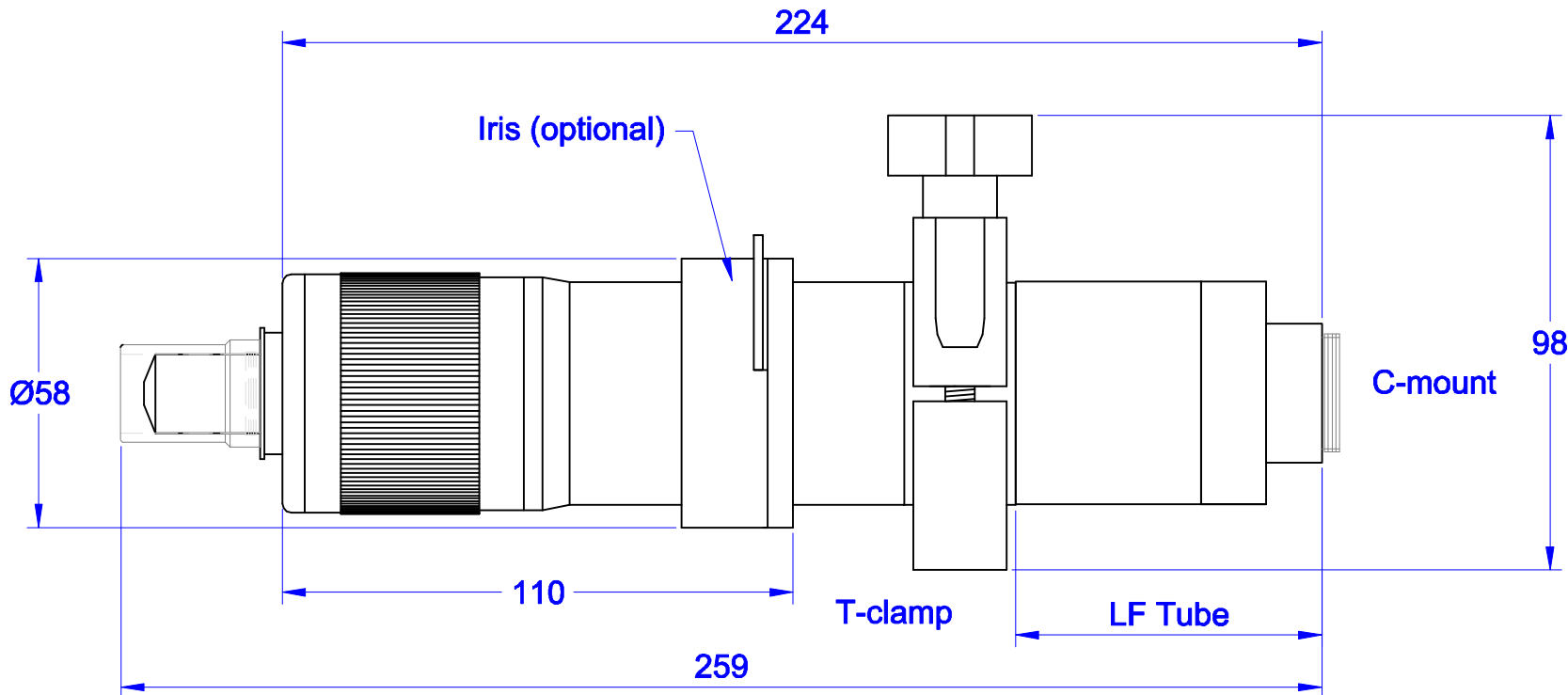


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**InfiniVar with Zoom Module**

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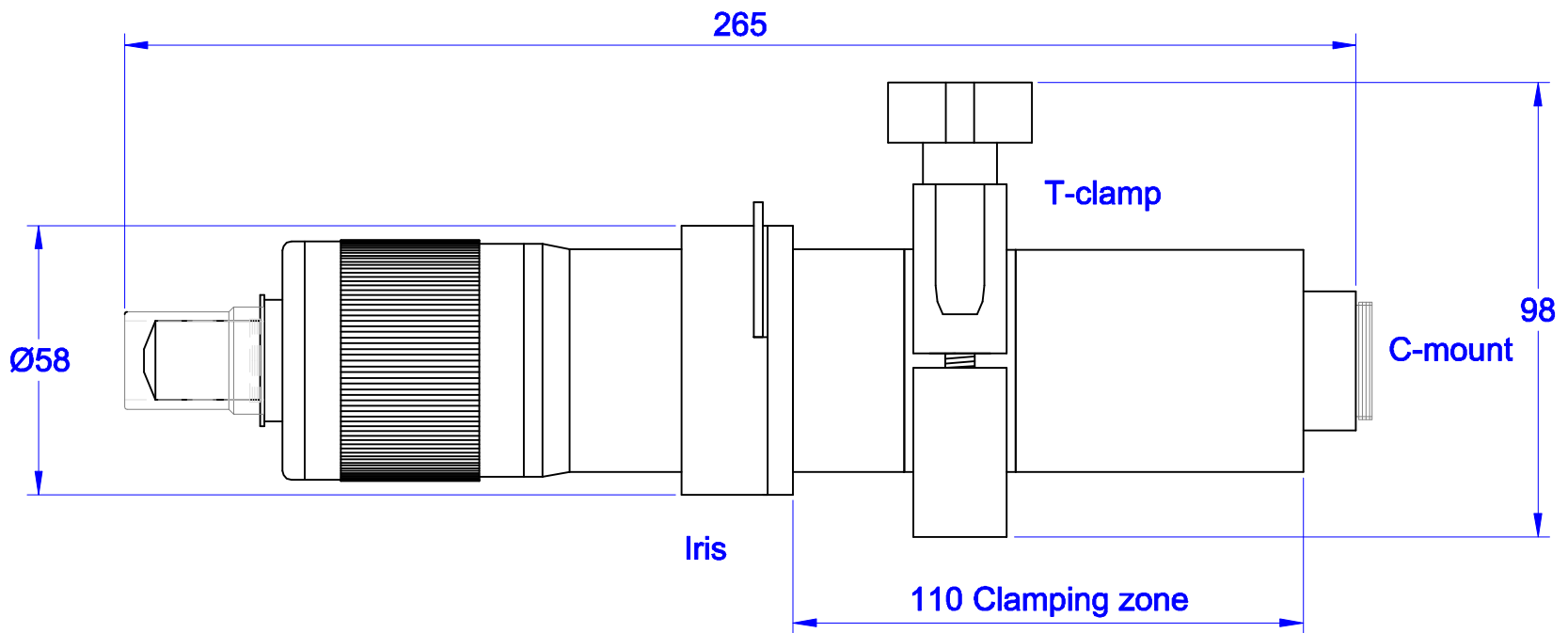
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**InfiVar™ for Large Format C-mount**

Rel 7/22/97  
Rev 11/20/97

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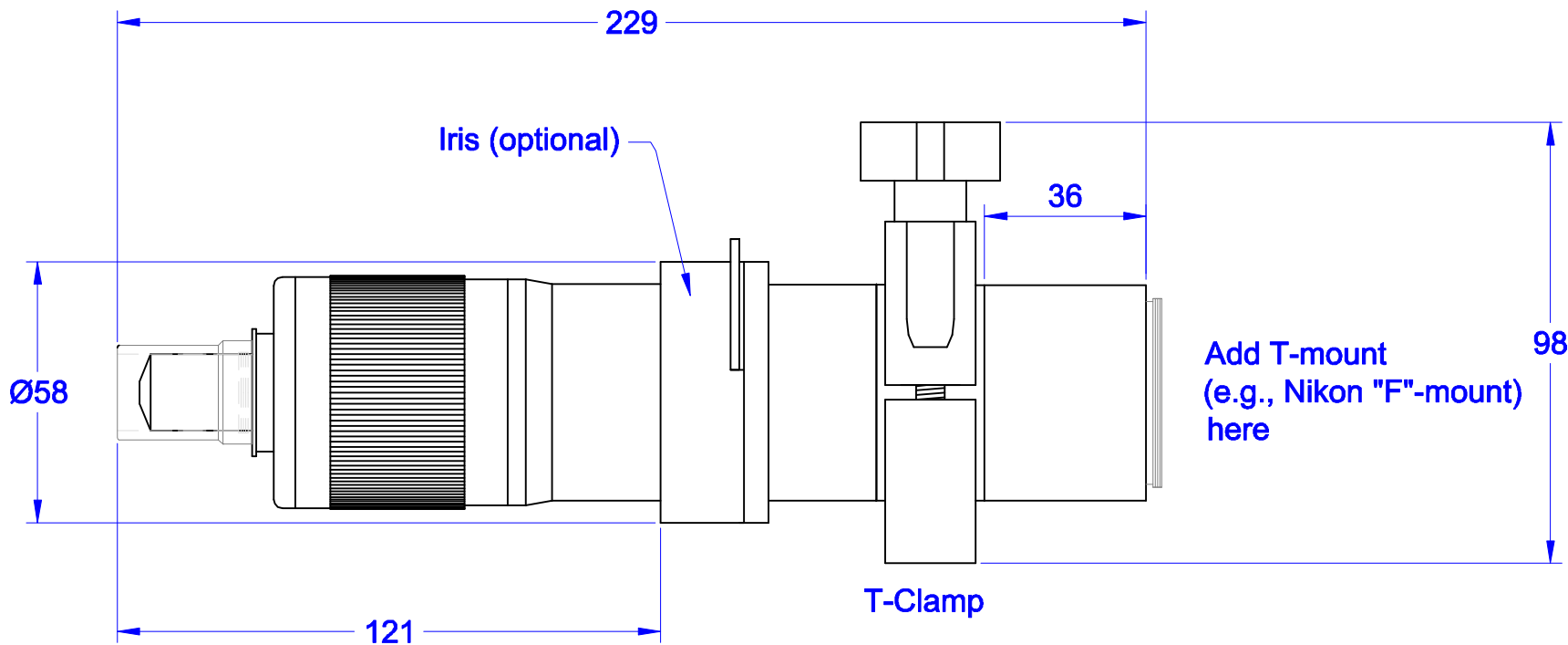
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**InfiniVar™ with Iris**

Rel 7/22/97  
Rev 11/20/97

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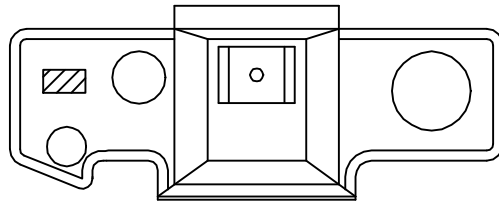
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**InfiniVar™ for T-mount Video Cameras**

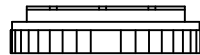
**Rel 7/22/97**  
**Rev 11/20/97**

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Photo or Large-Format Video  
SLR Body (or LF-Video) Camera



T2 mount

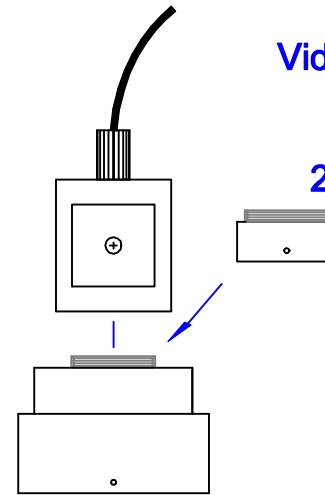


Attach to InfiVar for  
T-mount.

Video

2x DL Doubler

C-mount



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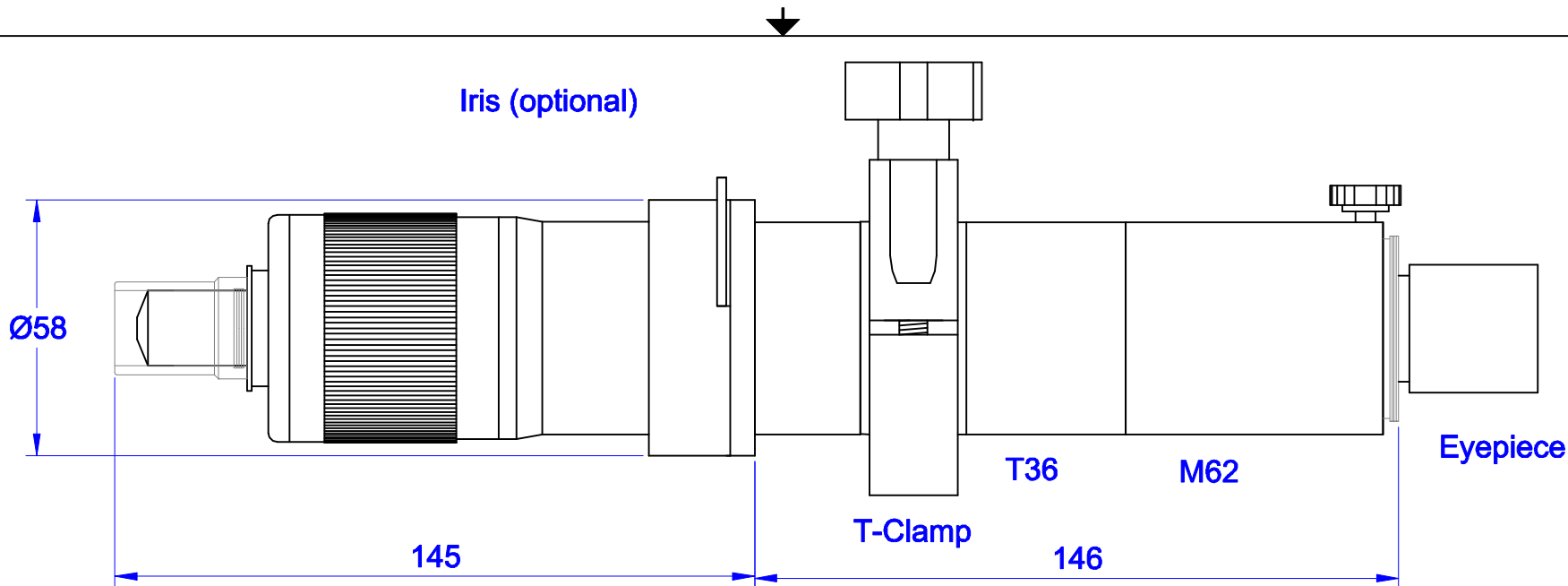
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**InfiVar Large Format Direct-Imaging Options**

SIZE B	FSCM NO.	DWG NO.	REV
SCALE NONE	SHEET 1 OF		



**Notes:**

1. Use M62/Eyepeice combination with Unipar and C- or T-mount.
2. This configuration permits InfinitiVar to be used with large format video/photo cameras up to 35mm size.

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		<b>InfinitiVar™ Large Format Video/Photo</b>		
SIZE	FSCM NO.	DWG NO.	REV	
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11/20/97		SCALE	NONE	SHEET 1 OF 1

Photo/Large-Format Video

SLR Body (or LF-Video) Camera

Video

T2 mount

C-mount

2x DL Doubler

2x DL Doubler

Unipar-Vid 0.2x video adapter

Unipar 0.3x video/photo adapter

or

T30 spacer

Eyepiece

M62 monocular

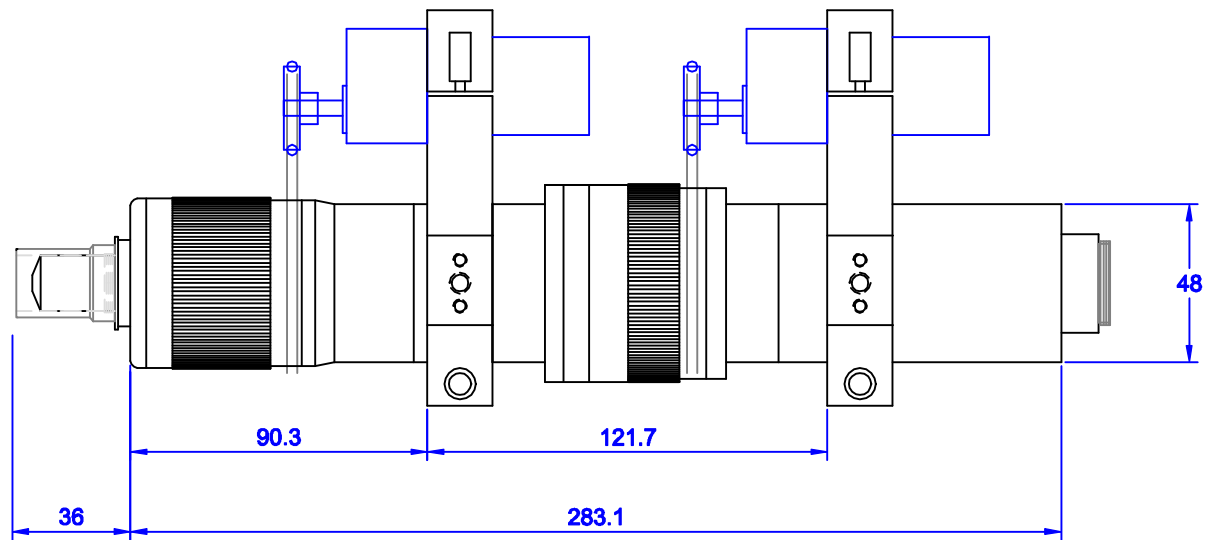
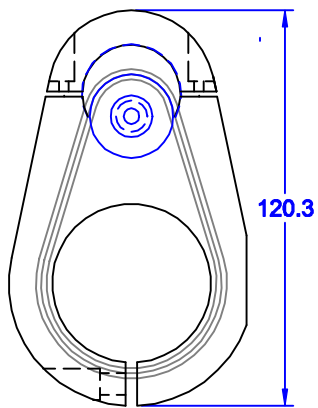
to Instrument

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**Photo/Video Micrographic Options**

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Overall Dimensions of InfiVar with Zoom and Motor Drive for Zoom and Focus.

Motor power cables attach directly to motor terminals.

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**InfiVar w/ Zoom & Focus Motor Drive**

Rel 3/4/97

Rev 11/20/97

SIZE B	FSCM NO.	DWG NO.	REV
SCALE NONE	SHEET 1 OF 1		