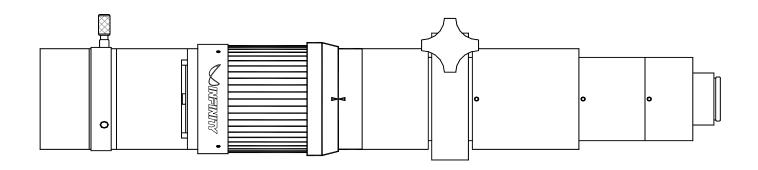
Model K2 DistaMax[™] Long-Distance Microscope System



Model K2 DistaMax™ Long-Distance Microscope

INTRODUCTION

The K2 DistaMax is the latest model of the K2 Long-Distance Microscope series. It offers the finest imagery of any long-distance microscope ever produced. Its new IVS infinity internal focusing system (patents pending) provides spherical and chromatic correction previously thought impossible to attain. At the same time, the IVS system expands the diffraction-limited field to over 43mm (diagonal) as opposed to competitive instruments which can only claim 12mm. Consequently, the K2 DistaMax is not limited to c.2/3-in. formats. Rather, it can be used with photo and digital SLRs with sensors up to the 35mm format (24x36mm) with exceptional claritiy and resolution throughout the field. Its contrast levels are higher than all other competitive instruments, providing usable—rather than merely theoretical—resolution that is artifact-free (no "doughnuts with out-of-focus details that can affect measurements and data). All-in-all, the K2 DistaMax represents the ultimate in long-distance microscopy—and more. A single K2 DistaMax can be equipped to function from infinity to the very limits of optical microscopy.

Note: The K2 DistaMax magnifications are now shown without *any* amplifiers presumed in-system. Actually, the K2 DistaMax can be amplified for magnifications higher than any previous models.

Please refer to the accompanying drawings for configuration details. The configurations are specific for optical quality and should not be altered in any way from their approved positions. When video/photo adapters are used in direct macro mode, the M62 Eyepiece Holder must not be used. DO NOT ATTEMPT TO USE THE M62 EYEPIECE HOLDER AS AN EXTENSION TUBE, BECAUSE THE UNOCCUPIED SMOOTH EYEPIECE BORE WILL NOT ONLY THROW THE K2 DistaMax's TUBELENGTH/CORRECTIONS OFF, IT WILL ALSO PRODUCE INTENSE GLARE AND REFLECTION, DESTROYING IMAGE QUALITY. The K2 DistaMax's unique design and internal focusing system make traditional "conventional wisdom" regarding extension tube use obsolete. If you think that some special requirement could be served by tube extension, please contact us for suggestions. Unauthorized use of the K2 DistaMax can void its warranty.

CONTROLS

Besides the focusing ring, the K2 DistaMax has a built-in iris diaphragm for depth of field and light attenuation control. The iris can be observed directly by removing the eyepiece and looking down the tube. Since each object has its best overall iris setting due to inherent glare or contrast requirements, you may wish to employ the standard rule in microscopy (known as "Nelson's 3/4-aperture Rule") by closing-down the aperture 3/4 of the field observed. After some practice, the effect of the aperture on the object's image can be observed by a sudden "jump" in image quality (the so-called "oomph" position). Although it can be used full-open for highest theoretical resolving power, the K2 DistaMax—like all other compound microscopes—benefits from "Nelson's Rule."

REFERENCE RING

Atop the focusing section is a Reference Ring which can be rotationally reset by unlocking the metal-colored 2-56 setscrew on it and locking back in place. Another (smaller) 2-56 setscrew on the top of the Reference Ring can be gently set to lock the K2 DistaMax at a particular focus.

CentriTel®

The K2 DistaMax is a supplemental CentriTel optic. The CentriTel Focuser permits focus to be adjusted from a fixed working distance and field of view without essential magnification change. This makes the K2 DistaMax perfect for montaging and 3-D stacking. In addition, the CentriTel Focuser also acts as an extremely fine secondary focus adjustment, "peeling away" detail at various depths.

To mount the CentriTel Focuser, simply interface it between the S-58 Tube or Mirror Diverter (Dual-port models) and the T-24 Tube (Clamp position) below. Keep all other tubes as before including the T-36 Tube.

When the CentriTel Focuser is interfaced and set to its central position, the K2 DistaMax "seeks" a new set of working distances with the Standard and CF-series Objectives. This sets up frontal conjugates that work in special relationships with the CentriTel Focuser and the K2 DistaMax itself and establish the patented CentriTel condition. These data are presented in separate tables in the PDFs.

OPERATING RANGES

For focus from infinity down to c.675mm, the NWE Objective is used. Then, by exchanging it for Standard and CF-series objectives, all other ranges and magnifications can be achieved as shown in the Data Tables.

By attaching the Microscope Objective Holder Disc to the front of the NWE Objective, most major-brand (including Infinity's Achrovid™ objectives can be used. The appropriate Microscope Objective Adapter is then added in order to mount the selected infinity-corrected objective. The Coaxial Illuminator may be interfaced between the Microscope Objective Holder Disc and the Microscope Objective Adapter.

The K2 DistaMax can also operate in the high-powered micro mode by simply attaching the Microscope Objective Holder Disc and the appropriate adapter for infinity-corrected objectives: Achrovid™, Mitutoyo, Olympus, Nikon, Edmund, Edmund REFLX™, etc. Whether in coaxial/epi- or transmitted illumination, these K2 DistaMax accessories permit it to achieve high magnifications—literally to the potential *limits of optical microscopy*—focused either manually or by motor-control.

AMPLIFIERS

The K2 DistaMax Main Bodies are supplied *without* amplifying optics. Amplifiers include 2x NTX Tube (all formats; camera mount required); the 1.66x CF Tube; the 2x DL Tube (C-mount) and the 1-2.2x Zoom Module (Adjustable C-mount recommended). In addition, the UNIPAR may be used with eyepieces (requires M62 Eyepiece Holder and suitable camera mount).

Two different amplifiers can be combined for even greater magnifications. For example, a 2x DL Tube can supplement the Zoom Module (Adjustable C-Mount required to reset parfocality of zoom; the Zoom Module then functions 2x-4.4x). The 2 DL Tube and its lockable LDL version (however mixed) are the only amplifiers designed to be ganged with others of their own kind.

ILLUMINATION

The K2 DistaMax functions best when the objective is as evenly and as brilliantly illuminated as possible. Intense lamps or fiber optic illuminators should be used. An adapter is available to mount 66mm fiber optic ring lights to the filter holders of all objectives except the CF-4. Flash (strobe) units provide excellent color characteristics.

STANDS

The K2 DistaMax can be mounted on any heavy-duty video-type floor-standing tripod or jig which can secure it either by standard 1/4-20 screws of M4 screws (mounted outboard on the mounting clamp). In addition, INFINITY manufactures adapters for major-brands of "boom-type" stereomicroscope stands.

FURTHER POSSIBILITIES

The K2 DistaMax is part of a comprehensive line of instruments made by INFINITY. As such, it is possible to mate many accessories for special purposes. Motor drives are available for focus, zoom—or both—controlled simply, by computer interface or by an autofocus module. Please do not hesitate to contact us with potential uses/configurations, since we have extensive experience in special-model configurations.

ACCESSORY WEIGHT

The K2 DistaMax should not be abused with extra-heavy, unsupported weights. The greatest weight that should ever be placed directly on a port is 1-1.5 kilograms. Beyond that, heavy cameras should be supported independently. The new Mounting Bar accessory goes far to address this problem. We will be pleased to advise.

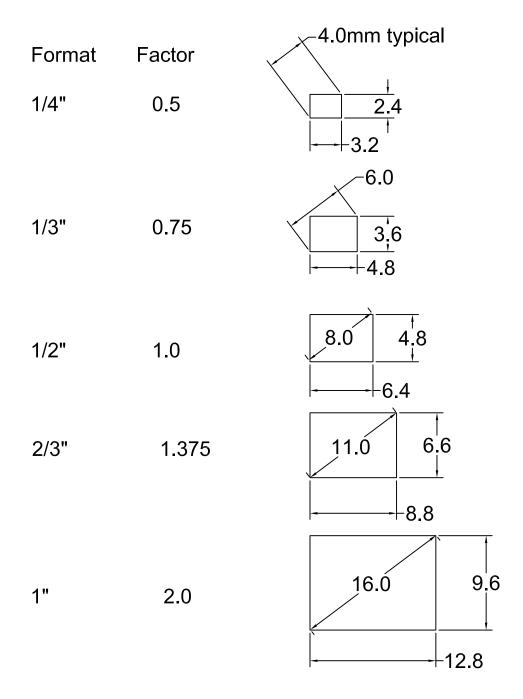
RESOLUTION STANDARDS

The resolution tables attached are in accord with standard microscopical practice for theoretical resolution. Since so many variables pertain—such as angle of illumination, camera or sensor characteristics and even aspects of the object's structure, they should only be considered in respect to similar data for other microscopes of similar aperture—in other words, as relative standards. For example, standard laboratory microscopes are usually equipped with 10/0.25 NA objectives. From that rating, it would be expected that such an objective has the ability to resolve 750 lines/mm or 1.33um. That is theoretically possible if all parameters are met. In actual practice, however—even with perfectly illuminated objects—the effective NA is 75% of that stated or 0.188 NA and the actual resolution is 562 lines/mm. Moreover, microscope resolution presupposes use at c.546nm (green) light. If the limit of expected resolution is not well within the data or if all parameters are known to be unattainable, it is recommended that another objective should be chosen with closer working distance, higher NA—or both—to allow for this.

CARE AND CLEANING

The K2 DistaMax should be treated as the fine optical instrument that it is. Care should be taken to keep dust and dirt off external lens surfaces. The unit can be cleaned (metal parts only) by a cloth moistened with alcohol. The external optical surfaces should be cleaned only when necessary, and then, only by a soft cotton swab moistened by an approved optical glass cleaner. If you have further questions, please contact Infinity Photo-Optical Company or your authorized dealer.

Video Formats



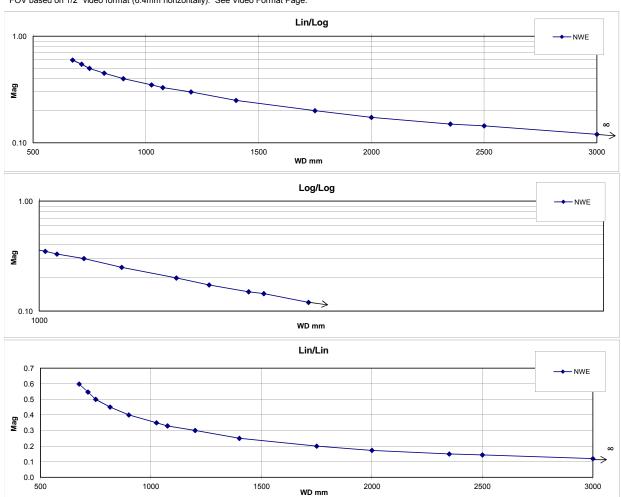
Unless otherwise noted all data is given for 1/2" camera sensors. For FOV or magnification in other sensor sizes use the factors listed. For example, a FOV of 25mm listed for a 1/3" camera would be $25 \times 0.75 = 18.75$ mm.

K2 DISTAMAX OPTICAL DATA WITH NWE OBJECTIVE

K2 DistaMax	NWE Objective														
WD mm	3000	2500	2350	2000	1750	1400	1200	1075	1025	900	815	750	715	675	
MAG	0.12	0.14	0.15	0.17	0.20	0.25	0.30	0.33	0.35	0.40	0.45	0.50	0.55	0.60	
FOV mm	53.3	44.4	42.7	37	32	25.6	21.3	19.4	18.3	16	14.2	12.8	11.7	10.7	

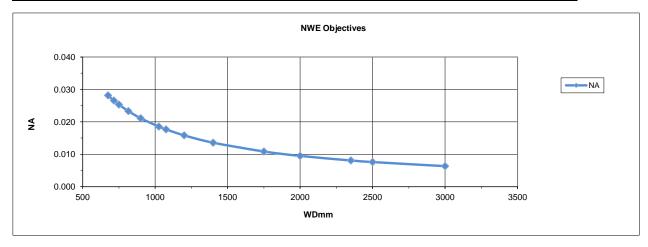
NOTE: The K2 DistaMax has greater potential magnification than previous models. The data above DO NOT assume amplifiers in-system.

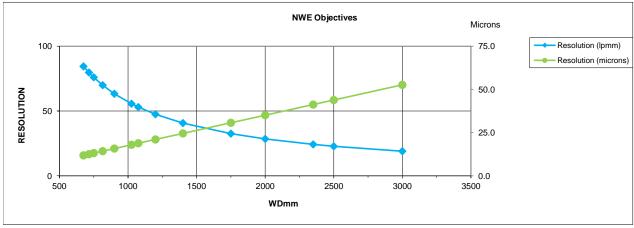
*FOV based on 1/2" video format (6.4mm horizontally). See Video Format Page.

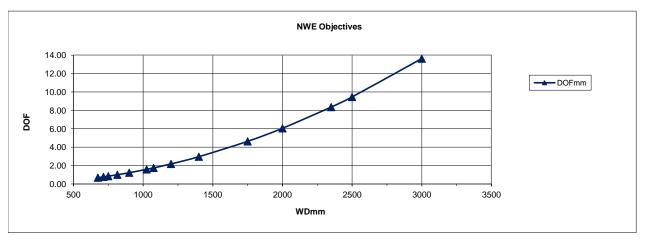


MODEL K2 DISTAMAX OPTICAL RESOLUTION DATA NWE OBJECTIVE

Model K2 DistaMax	NWE C	BJ												
WDmm	3000	2500	2350	2000	1750	1400	1200	1075	1025	900	815	750	715	675
MAG	0.12	0.14	0.15	0.17	0.20	0.25	0.30	0.33	0.35	0.40	0.45	0.50	0.55	0.60
NA	0.006	0.008	0.008	0.010	0.011	0.014	0.016	0.018	0.019	0.021	0.023	0.025	0.027	0.028
Resolution (Ipmm)	19	23	24	29	33	41	48	53	56	63	70	76	80	84
Resolution (microns)	52.6	43.9	41.2	35.1	30.7	24.6	21.1	18.9	18.0	15.8	14.3	13.2	12.5	11.8
DOFmm	13.61	9.45	8.35	6.05	4.63	2.96	2.18	1.75	1.59	1.22	1.00	0.85	0.77	0.69





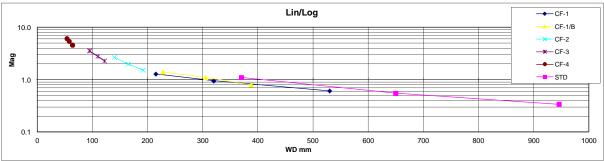


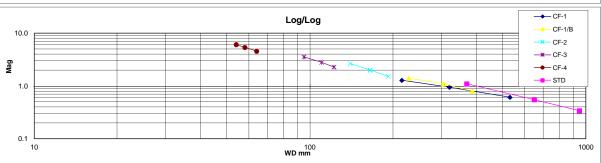
K2 DistaMax OPTICAL DATA STANDARD AND CF-OBJECTIVES

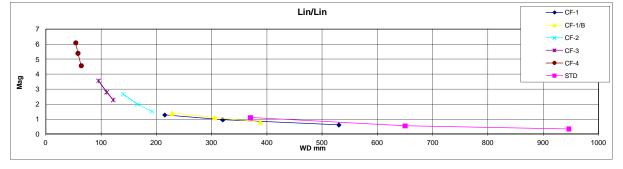
K2 DistaMax	STD			CF-1			CF-1/B			CF-2			CF-3			CF-4			
	Near	Mid	Far	Near	Mid	Far	Near	Mid	Far	Near	Mid	Far	Near	Mid	Far	Near	Mid	Far	
WD mm	370	650	946	215	320	530	228	305	388	140	165	192	95	110	122	54	58	64	
MAG	1.10	0.55	0.34	1.28	0.95	0.61	1.4	1.10	0.80	2.67	2.00	1.52	3.56	2.80	2.29	6.10	5.40	4.57	
FOV mm	6.74	10	20.5	5.0	7.4	12.2	4.6	6.00	9.0	2.80	4.20	4.7	2.10	2.50	3.1	1.20	1.35	1.50	

NOTE: The K2 DistaMax has greater potential magnification than previous models. The data above DO NOT assume amplifiers in-system.

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

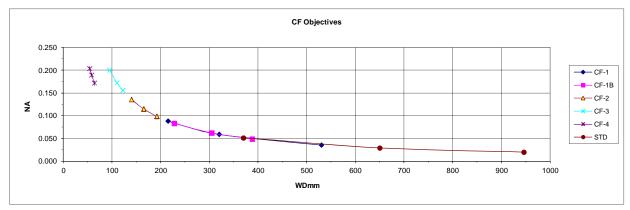


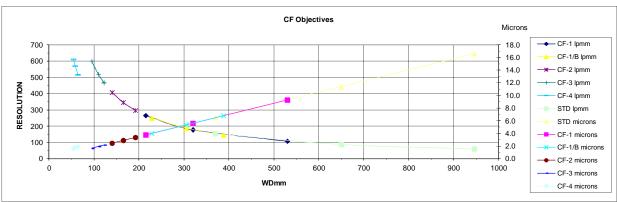


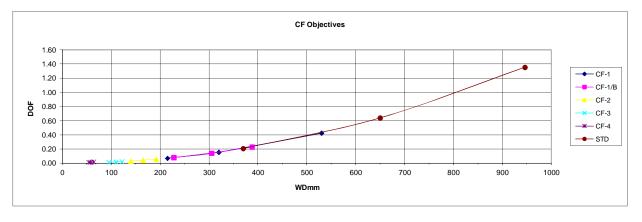


MODEL K2 DISTAMAX OPTICAL RESOLUTION DATA STANDARD AND CF-OBJECTIVES

Model K2 DistaMax	STD			CF-1			CF-1/B			CF-2			CF-3			CF-4		
	Near	Mid	Far	Near	MID	Far	Near	MID	Far	Near	MID	Far	Near	MID	Far	Near	MID	Far
WDmm	370	650	946	215	320	530	228	305	388	140	165	192	95	110	122	54	58	64
MAG	1.10	0.55	0.34	1.28	0.95	0.61	1.40	1.10	0.80	2.67	2.00	1.52	3.56	2.80	2.29	6.10	5.40	4.57
NA	0.051	0.029	0.020	0.088	0.059	0.036	0.083	0.062	0.049	0.136	0.115	0.099	0.200	0.173	0.156	0.204	0.190	0.172
Resolution (Ipmm)	154	88	60	265	178	108	250	187	147	407	345	297	600	518	467	611	569	516
Resolution (microns)	6.5	11.4	16.6	3.8	5.6	9.3	4.0	5.4	6.8	2.5	2.9	3.4	1.7	1.9	2.1	1.6	1.8	1.9
DOFmm	0.21	0.64	1.35	0.07	0.15	0.42	0.08	0.14	0.23	0.03	0.04	0.06	0.01	0.02	0.02	0.01	0.01	0.02





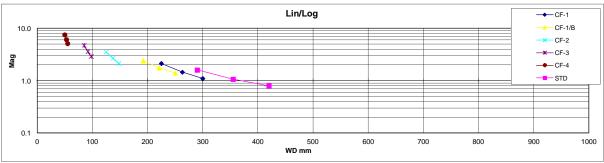


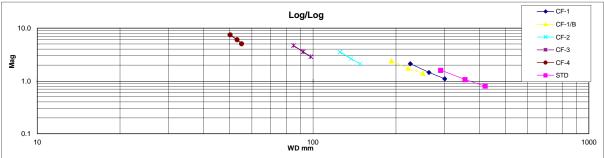
K2 DistaMax with CENTRITEL FOCUSER IN CENTRAL POSITION

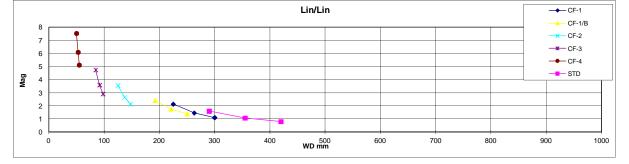
K2 DistaMax	STD			CF-1			CF-1/B			CF-2				CF-	3	CF-4			
	Near	Mid	Far	Near	Mid	Far	Near	Mid	Far	Near	Mid	Far	Near	Mid	Far	Near	Mid	Far	
WD mm	290	355	420	225	263	300	192	221	250	125	137	148	85	92	98	50	53	55	
MAG	1.60	1.07	0.80	2.13	1.45	1.10	2.42	1.75	1.40	3.56	2.67	2.13	4.74	3.60	2.91	7.53	6.10	5.12	
FOV mm	4	6	8	3.0	4.4	5.8	2.7	3.65	4.6	1.80	2.40	3.0	1.35	1.78	2.2	0.85	1.05	1.25	

NOTE: The K2 DistaMax has greater potential magnification than previous models. The data above DO NOT assume amplifiers in-system.

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

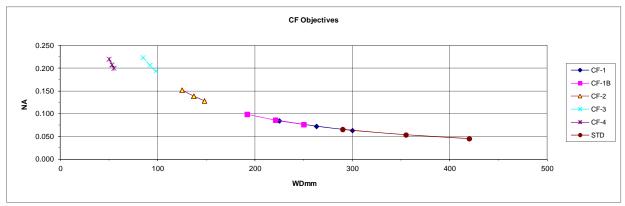


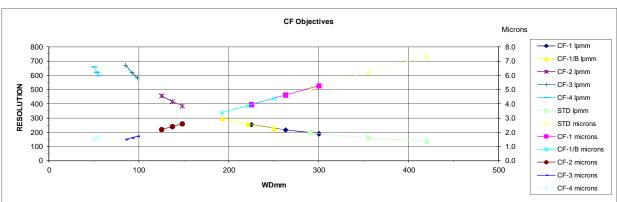


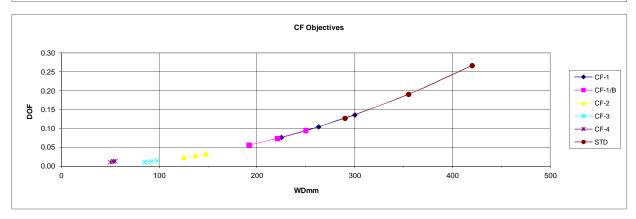


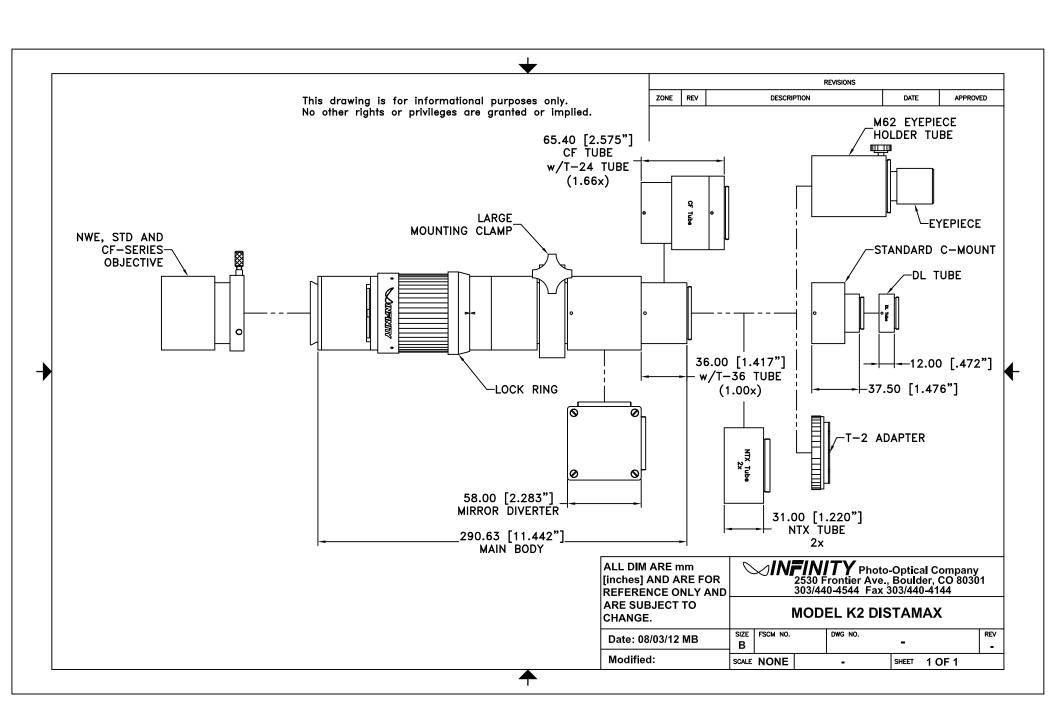
MODEL K2 DISTAMAX OPTICAL RESOLUTION DATA WITH CENTRITEL FOCUSER IN CENTRAL POSITION

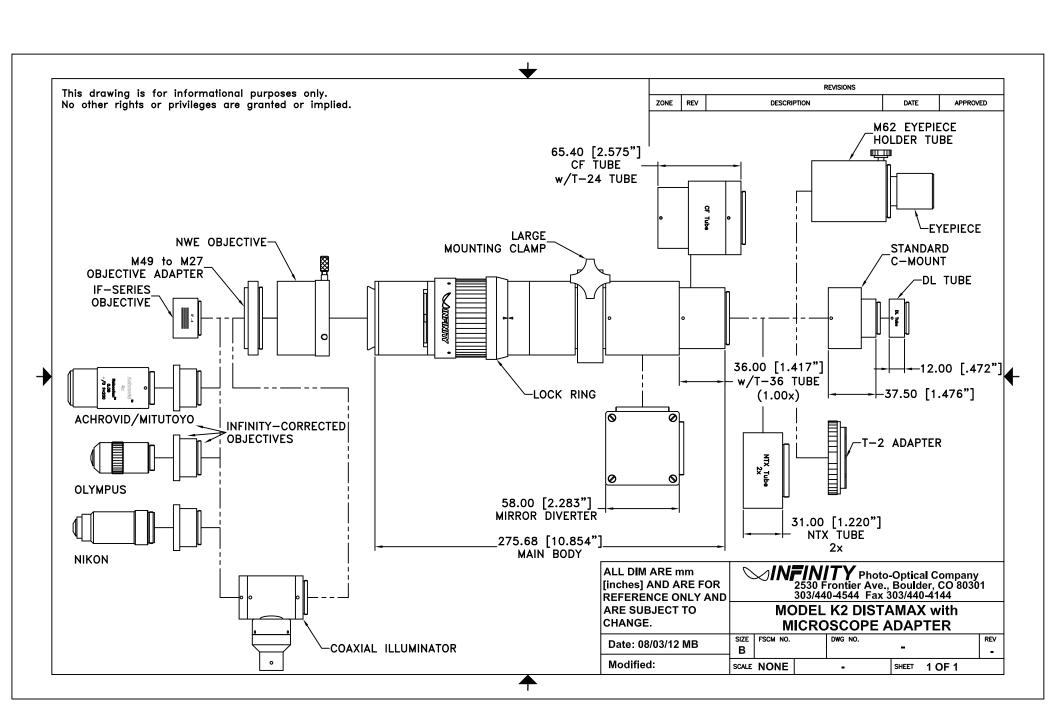
Model K2 DistaMax	STD			CF-1			CF-1/B			CF-2			CF-3			CF-4		
	Near	Mid	Far	Near	MID	Far	Near	MID	Far	Near	MID	Far	Near	MID	Far	Near	MID	Far
WDmm	290	355	420	225	263	300	192	221	250	125	137	148	85	92	98	50	53	55
MAG	1.60	1.07	0.80	2.13	1.45	1.10	2.42	1.75	1.40	3.56	2.67	2.13	4.74	3.60	2.91	7.53	6.10	5.12
NA	0.066	0.054	0.045	0.084	0.072	0.063	0.099	0.086	0.076	0.152	0.139	0.128	0.224	0.207	0.194	0.220	0.208	0.200
Resolution (Ipmm)	197	161	136	253	217	190	297	258	228	456	416	385	671	620	582	660	623	600
Resolution (microns)	5.1	6.2	7.4	3.9	4.6	5.3	3.4	3.9	4.4	2.2	2.4	2.6	1.5	1.6	1.7	1.5	1.6	1.7
DOFmm	0.13	0.19	0.27	0.08	0.10	0.14	0.06	0.07	0.09	0.02	0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.01

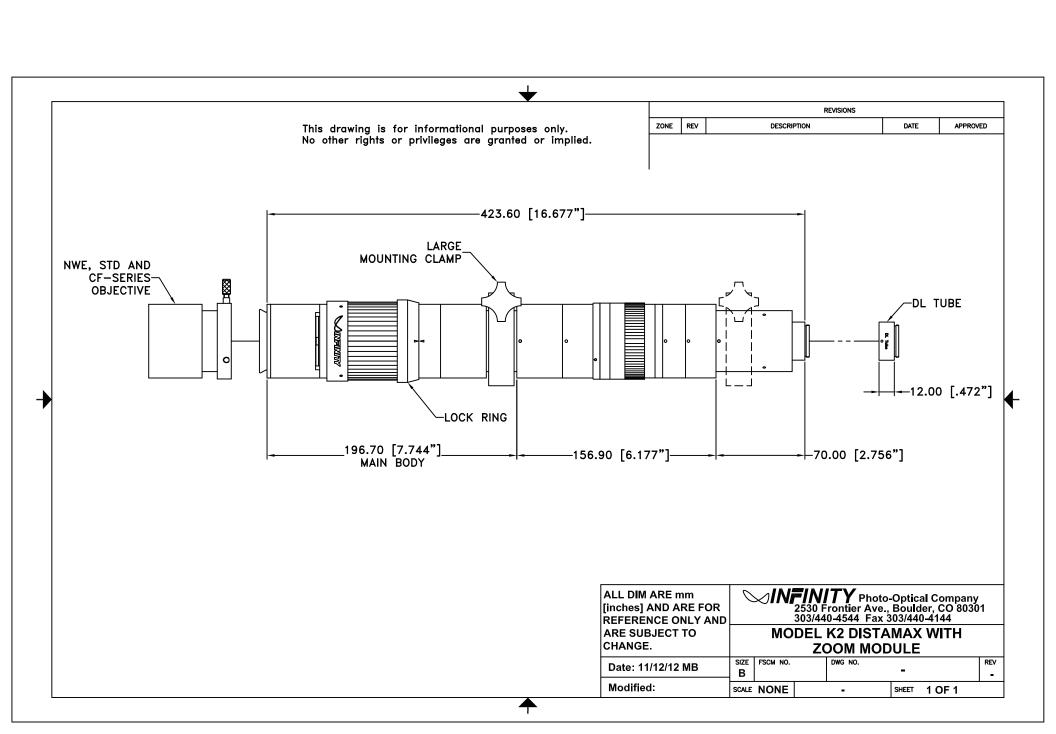


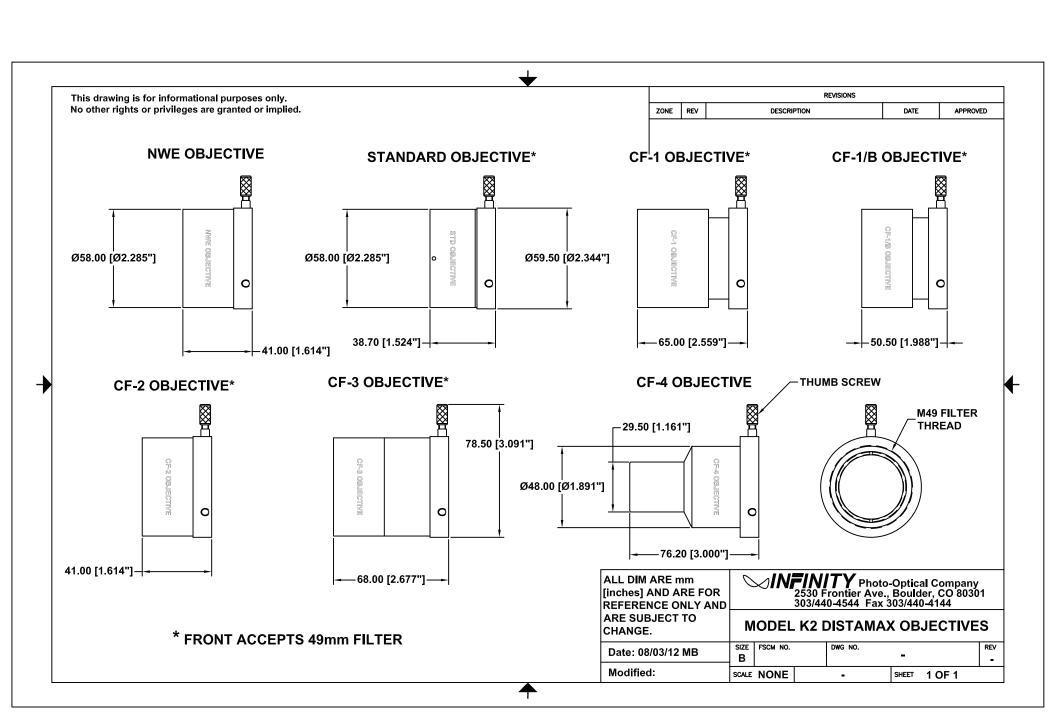


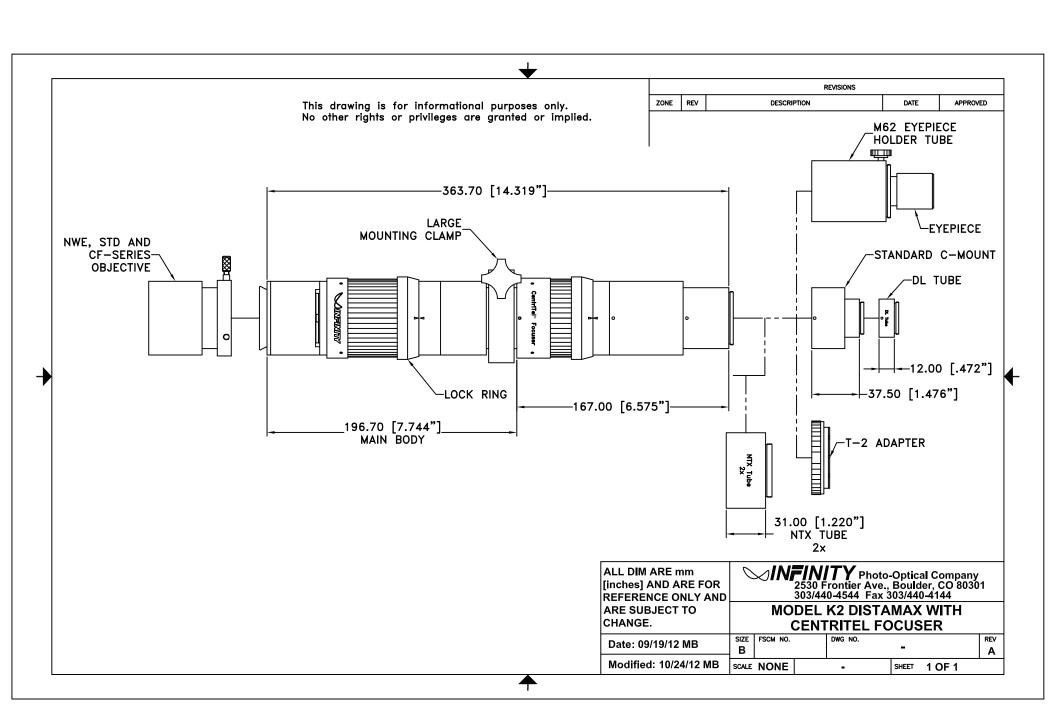


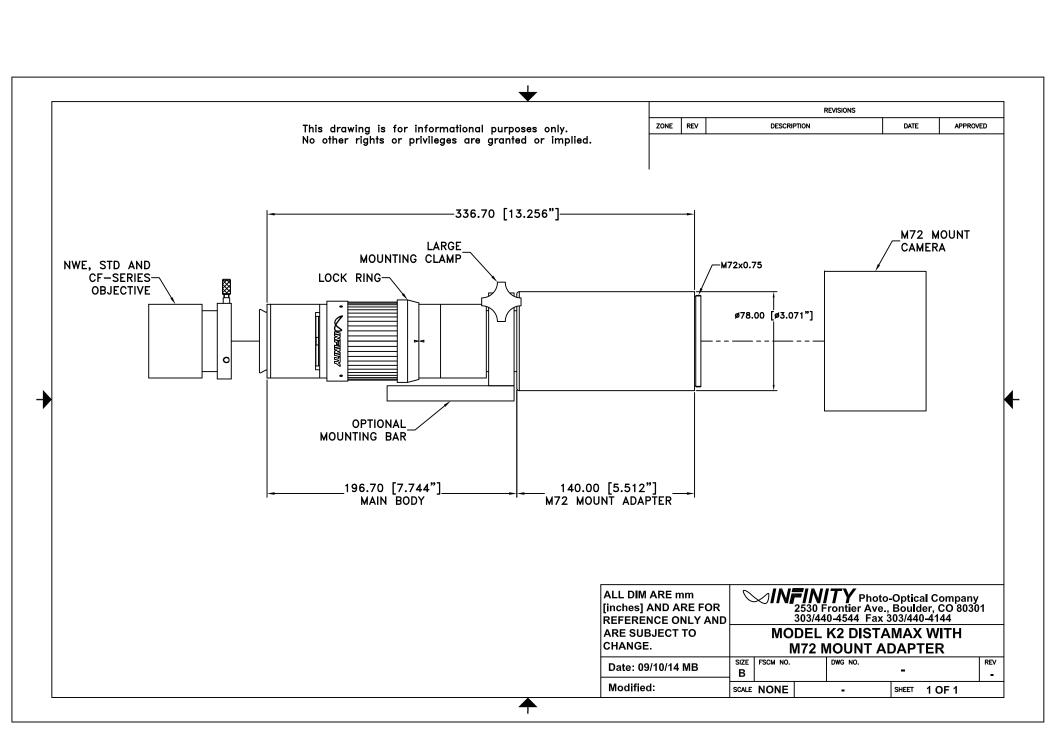


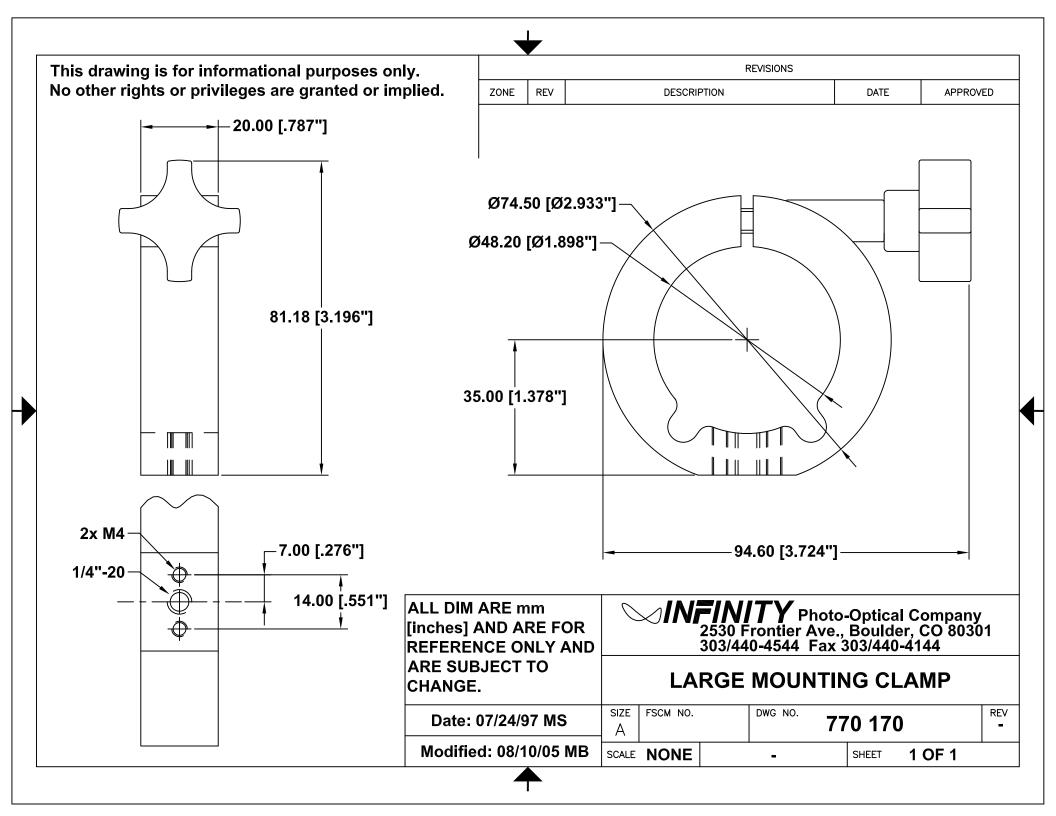


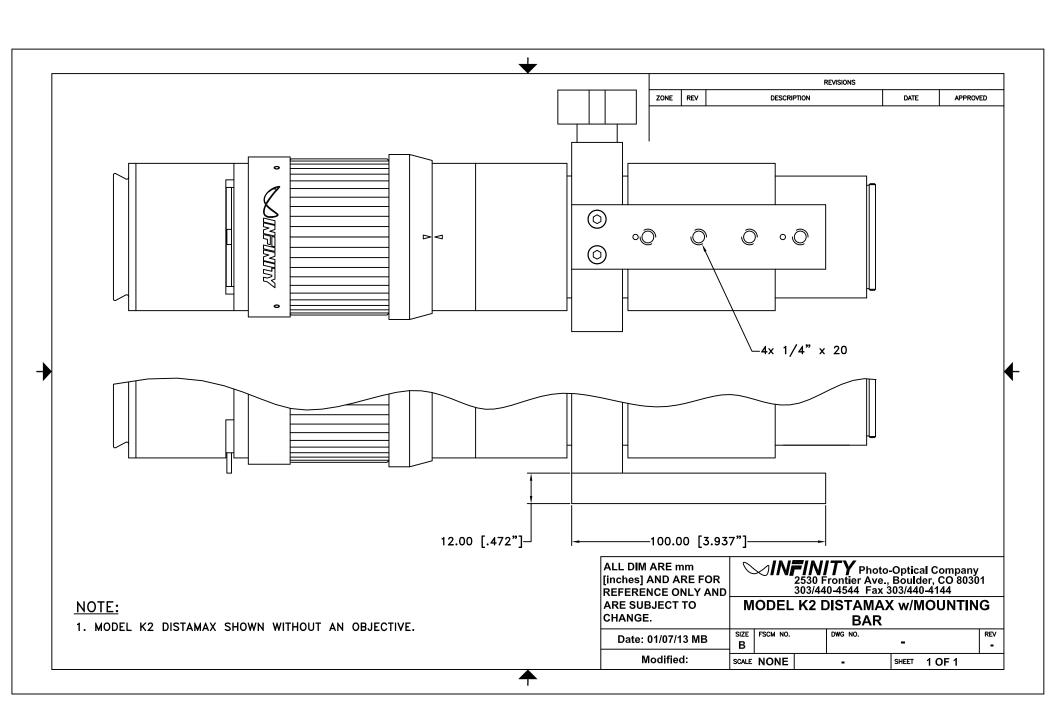


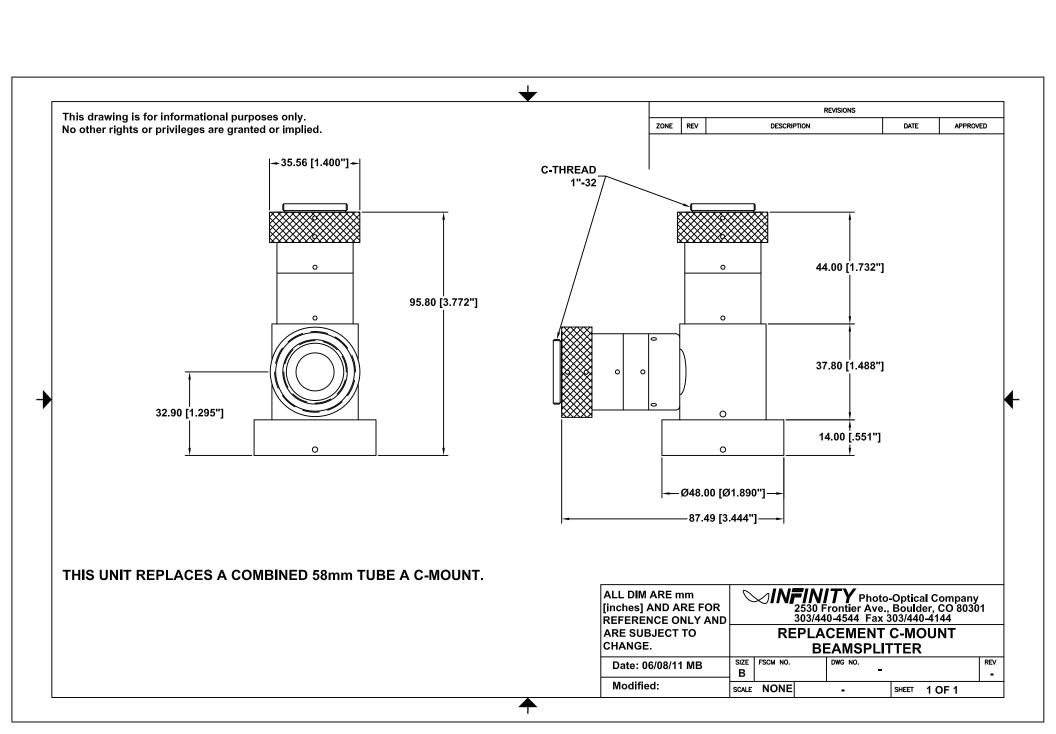


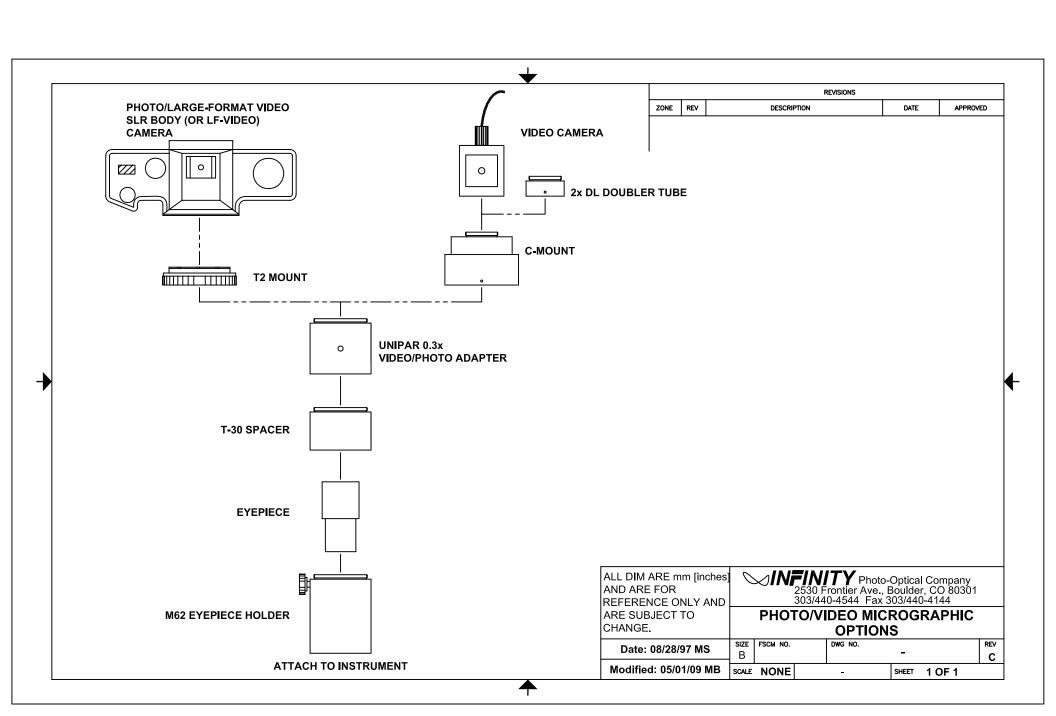












INFINITY PHOTO-OPTICAL COMPANY LIMITED WARRANTY

INFINITY PHOTO-OPTICAL COMPANY hereby warrants its products to be free from defects in workmanship or materials for the warranty period set forth below. INFINITY PHOTO-OPTICAL COMPANY, at its option, shall repair or replace the defective product without cost to the purchaser, and such repair or replacement shall be the full extent of this express limited warranty. INFINITY PHOTO-OPTICAL COMPANY shall not be liable for any other damages either direct or consequential.

This warranty is made to the original purchaser, and is effective only on new equipment purchased from INFINITY PHOTO-OPTICAL COMPANY, or a dealer authorized by INFINITY PHOTO-OPTICAL COMPANY to sell the product.

This warranty is valid only when the product is returned to the authorized dealer from whom it was purchased, or returned directly to INFINITY PHOTO-OPTICAL COMPANY, freight prepaid, with proof of date of purchase.

This warranty does not extend to any defect, malfunction or failure caused by misuse, abuse or the use of the product with equipment for which it may not have been intended. Any unauthorized repair voids this warranty.

The warranty period for all products manufactured by INFINITY PHOTO-OPTICAL COMPANY is five (5) years from date of original purchase. Parts or components made or sourced from other manufacturers shall be solely covered by that manufacturer's warranty.

The warranty contained herein is the only warranty made by INFINITY PHOTO-OPTICAL COMPANY. Any implied warranty of merchantability and/or fitness for a particular purpose is expressly excluded from this warranty. INFINITY PHOTO-OPTICAL COMPANY shall not be liable for any expense, loss, incidental or consequential damages which may arise in connection with the use of this equipment. Recovery under this warranty is limited to repair or replacement of the equipment as provided above.

INFINITY PHOTO-OPTICAL COMPANY reserves the right to modify designs, equipment and accessories without notice.