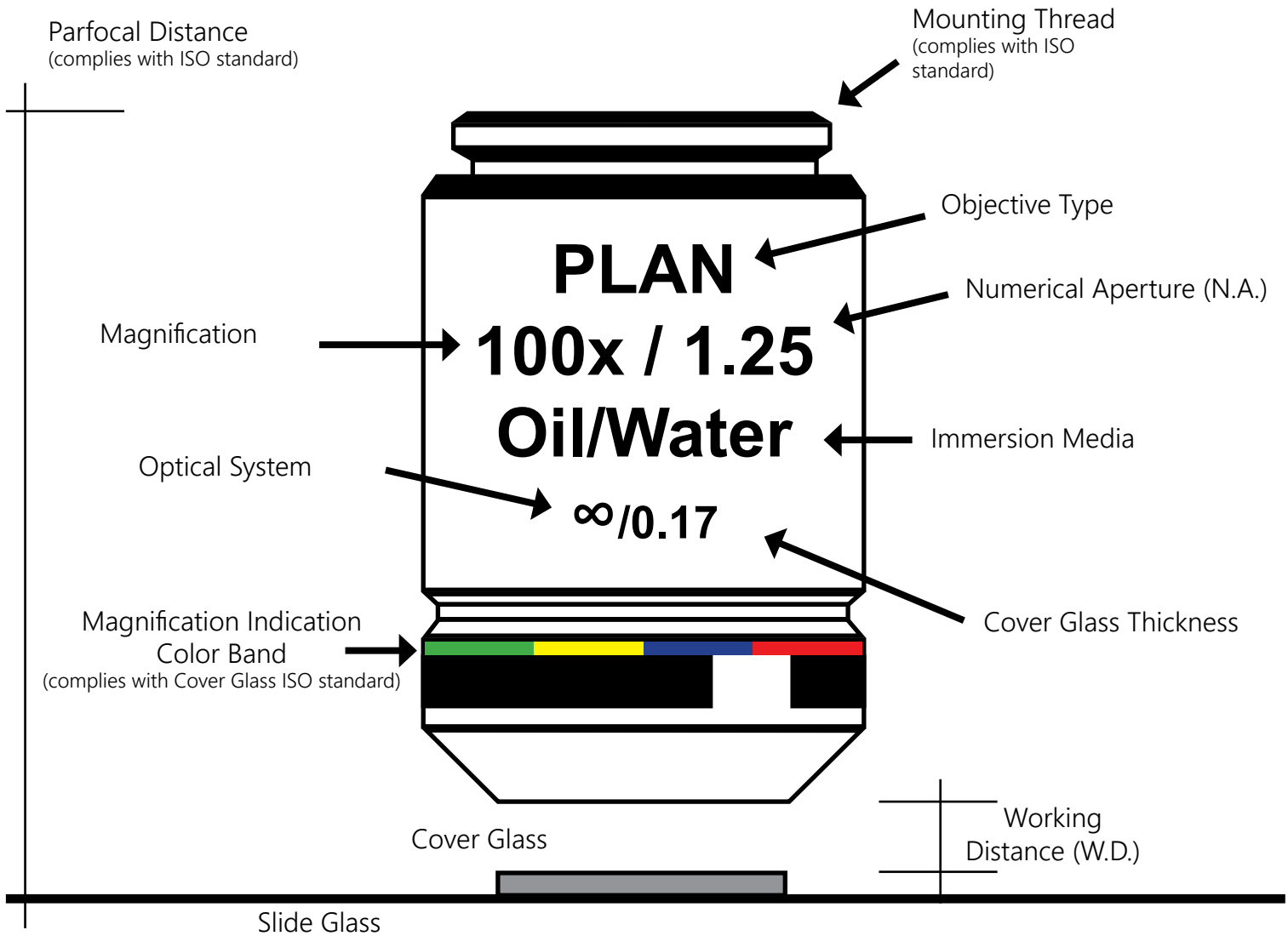




## **OPTIKA OBJECTIVES**

Objectives strongly determine the performance of your microscope!  
Find the most suitable lenses for your application.

## OBJECTIVE FEATURES



## OBSERVATION METHODS



Brightfield



Polarized Light



Differential Interference Contrast



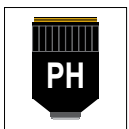
Darkfield



Fluorescence



Oblique Illumination



Phase Contrast

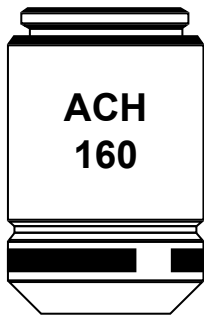


UV Fluorescence

# Table of contents

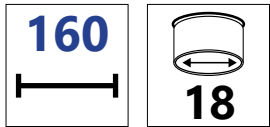
<b>Achromatic Objectives</b>	ACH Series HC Series	p. 4
<b>Plan Objectives</b>	N-PLAN Series IOS N-PLAN Series IOS N-PLAN POL Series W-PLAN Series IOS W-PLAN Series W-PLAN PH Series IOS W-PLAN PH Series IOS LWD W-PLAN MET Series IOS W-PLAN MET Series IOS W-PLAN POL Series IOS W-PLAN POL Series IOS LWD W-PLAN POL Series IOS LWD W-PLAN Series IOS LWD W-PLAN PH Series	p. 5
<b>Semi-APO Objectives</b>	IOS LWD W-PLAN MET BD Series IOS LWD U-PLAN POL Series IOS LWD U-PLAN MET Series IOS LWD U-PLAN MET BD Series IOS W-PLAN F Series IOS U-PLAN F Series IOS LWD U-PLAN F Series IOS LWD U-PLAN F PH Series IOS LWD U-PLAN F MET Series IOS LWD U-PLAN F MET BD Series	p. 12
<b>Objective Benchmark Table</b>		p. 18

## Achromatic Objectives - ACH Series



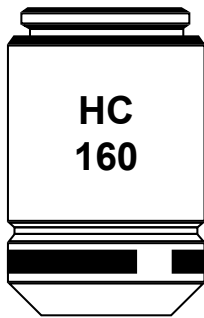
These cost-effective standard objectives for transmitted light brightfield observation are best-suited to routine work as well as educational and training purposes.

ACH objectives are designed for B-20CR, B-50, B-50B, M-100FX & M-100FLed.



- **M-131** Achromatic objective 4x/0.10
- **M-132** Achromatic objective 10x/0.25
- **M-133** Achromatic objective 20x/0.40
- **M-134** Achromatic objective 40x/0.65
- **M-135** Achromatic objective 60x/0.85
- **M-136** Achromatic objective 100x/1.25 (oil)

## Achromatic Objectives - HC Series

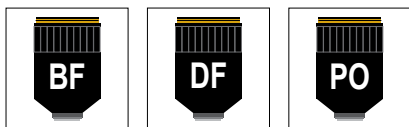
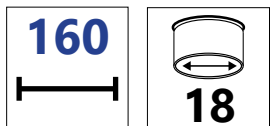


OPTIKA HC objectives ensure versatile and reasonably priced entry-level lenses for brightfield, darkfield and simple polarization applications.

They are specifically designed to achieve optimal contrast and thus maximize yield on an instrument intended for education on F.N. 18.

Discover how the 100x/1.25 (oil) can operate using water instead of oil for training purposes!

HC objectives are designed for B-150 & B-190 Series.



- **M-137** HC (high contrast) objective 4x/0.10
- **M-138** HC (high contrast) objective 10x/0.25
- **M-139** HC (high contrast) objective 20x/0.40
- **M-141** HC (high contrast) objective 40x/0.65
- **M-142** HC (high contrast) objective 60x/0.80
- **M-143** HC (high contrast) objective 100x/1.25 (oil)

## Plan Objectives - N-PLAN Series

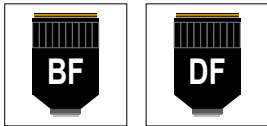
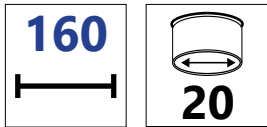


OPTIKA N-PLAN objectives stand out for their quality/price ratio, providing a recommendable solution especially in the education field and for laboratory routine applications.

Designed to ensure field flatness up to F.N. 20, with 160mm tube length.

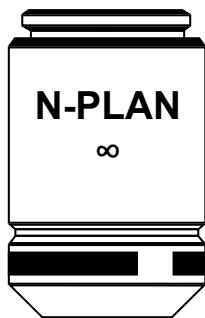
Discover how the 100x/1.25 (oil) can operate using water instead of oil for training purposes!

N-PLAN objectives are designed for B-290 & B-380 Series, with finite optical system.



- |                |                           |                |                                  |
|----------------|---------------------------|----------------|----------------------------------|
| • <b>M-164</b> | N-PLAN objective 4x/0.10  | • <b>M-168</b> | N-PLAN objective 60x/0.80        |
| • <b>M-165</b> | N-PLAN objective 10x/0.25 | • <b>M-169</b> | N-PLAN objective 100x/1.25 (oil) |
| • <b>M-166</b> | N-PLAN objective 20x/0.40 |                |                                  |
| • <b>M-167</b> | N-PLAN objective 40x/0.65 |                |                                  |

## Plan Objectives - IOS N-PLAN Series

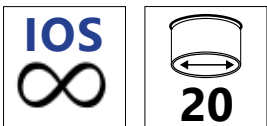


OPTIKA IOS N-PLAN objectives stand out for their quality/price ratio, providing a recommendable solution especially in the education field and for laboratory routine applications.

They are designed to ensure field flatness up to F.N. 20, based on infinity-corrected optical system.

Discover how the 100x/1.25 (oil) can operate using water instead of oil for training purposes!

IOS N-PLAN objectives are designed for B-290 & B-380 Series, with infinity-corrected optical system.



- |                |                               |                |                                      |
|----------------|-------------------------------|----------------|--------------------------------------|
| • <b>M-144</b> | IOS N-PLAN objective 4x/0.10  | • <b>M-149</b> | IOS N-PLAN objective 60x/0.80        |
| • <b>M-145</b> | IOS N-PLAN objective 10x/0.25 | • <b>M-148</b> | IOS N-PLAN objective 100x/1.25 (oil) |
| • <b>M-146</b> | IOS N-PLAN objective 20x/0.40 |                |                                      |
| • <b>M-147</b> | IOS N-PLAN objective 40x/0.65 |                |                                      |

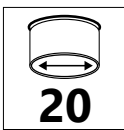
## Plan Objectives - IOS N-PLAN POL Series



OPTIKA IOS N-PLAN POL objectives stand out for their flexibility in different techniques and quality/price ratio, providing a recommendable solution with a dedicated design not to affect the light polarization, hence ensuring good contrast and measurement precision. Extensively used in education field and for laboratory routine applications.

These strain-free objectives are designed to ensure field flatness up to F.N. 20, based on infinity-corrected optical system.

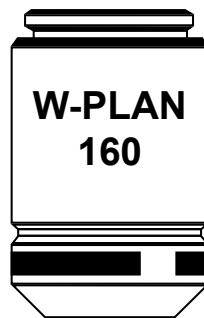
IOS N-PLAN POL objectives are designed for B-383POL.



- **M-144P** IOS N-PLAN POL objective 4x/0.10
- **M-145P** IOS N-PLAN POL objective 10x/0.25
- **M-146P** IOS N-PLAN POL objective 20x/0.40
- **M-147P** IOS N-PLAN POL objective 40x/0.65

- **M-149P** IOS N-PLAN POL objective 60x/0.80
- **M-148P** IOS N-PLAN POL objective 100x/1.25 (oil)

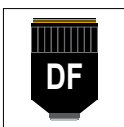
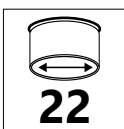
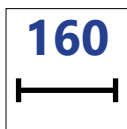
## Plan Objectives - W-PLAN Series



OPTIKA W-PLAN objectives represent the best cost-effective choice for high contrast and resolution, matching all the requirements of labs requiring routinary optics.

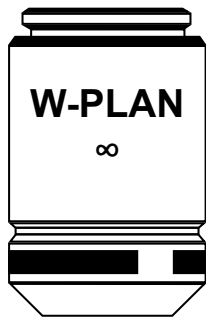
They are designed to ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

W-PLAN objective is designed for B-383DK



- **M-059** W-PLAN objective 100x/1.25OI - (oil) with iris for DF

## Plan Objectives - IOS W-PLAN Series



OPTIKA IOS W-PLAN objectives represent the best cost-effective choice for high contrast and resolution, matching all the requirements of labs requiring routinary optics.

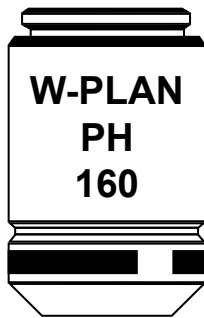
They are designed to ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

IOS W-PLAN objectives are designed for B-510 Series and upright modular systems. Additional lens needed when using 2x on B-510 Series. 100x is also available with iris for darkfield.



- |                 |                               |                   |   |
|-----------------|-------------------------------|-------------------|---|
| • <b>M-1049</b> | IOS W-PLAN objective 2x/0.08  | • <b>M-1128</b>   | IOS W-PLAN objective 40x/0.65                             |
| • <b>M-1125</b> | IOS W-PLAN objective 4x/0.10  | • <b>M-1129</b>   | IOS W-PLAN objective 60x/0.80                             |
| • <b>M-1126</b> | IOS W-PLAN objective 10x/0.25 | • <b>M-1130</b>   | IOS W-PLAN objective 100x/1.25 (oil)                      |
| • <b>M-1127</b> | IOS W-PLAN objective 20x/0.40 | • <b>M-1130.1</b> | IOS W-PLAN objective 100x/1.25OI - (oil) with iris for DF |

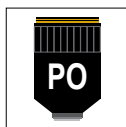
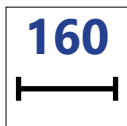
## Plan Objectives - W-PLAN PH Series



OPTIKA W-PLAN PH objectives deliver outstanding performance in phase contrast technique, providing a great contrast generally required in high-level education and routine laboratory needs.

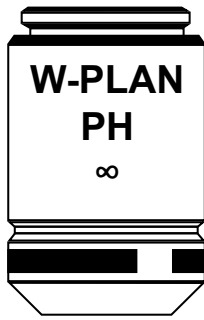
These phase contrast objectives are designed to ensure field flatness up to F.N. 22, with 160mm tube length.

W-PLAN PH objectives are designed for B-380, with phase contrast and infinite optical system.



- |                |                                     |
|----------------|-------------------------------------|
| • <b>M-170</b> | W-PLAN PH objective 10x/0.25        |
| • <b>M-171</b> | W-PLAN PH objective 20x/0.40        |
| • <b>M-172</b> | W-PLAN PH objective 40x/0.65        |
| • <b>M-182</b> | W-PLAN PH objective 100x/1.25 (oil) |

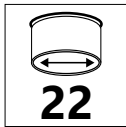
## Plan Objectives - IOS W-PLAN PH Series



OPTIKA IOS W-PLAN PH objectives deliver outstanding performance in phase contrast technique, providing a great contrast generally required in high-level education and routine laboratory needs.

These phase contrast objectives are designed to ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

IOS W-PLAN PH objectives are designed for B-380, B-510 and upright modular systems with phase contrast, and infinity-corrected optical system.



- **M-1120.N** IOS W-PLAN PH objective 10x/0.25
- **M-1121.N** IOS W-PLAN PH objective 20x/0.40
- **M-1122.N** IOS W-PLAN PH objective 40x/0.65
- **M-1123.N** IOS W-PLAN PH objective 100x/1.25 (oil)

## Plan Objectives - IOS LWD W-PLAN MET Series



OPTIKA IOS LWD W-PLAN MET 2.5x objective includes the depolarizer plate and delivers precise performance without the need of the cover slide, being NCG (no cover glass). It is the ideal solution to reach optimal contrast for epi-illumination with low-magnification.

Long Working Distance provides a wider working space between the lens surface and the object, a benefit for a variety of samples.

It is designed to ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

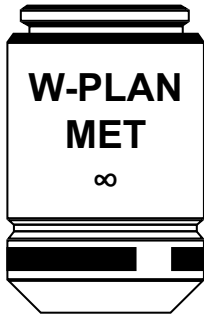
IOS LWD W-PLAN MET objective is designed for upright modular systems used in metallurgical applications.



- **M-1099** IOS LWD W-PLAN MET objective 2.5x/0.08



## Plan Objectives - IOS W-PLAN MET Series



OPTIKA IOS W-PLAN MET objectives deliver precise performance without the need of the cover slide, being NCG (no cover glass). They are intended to be used in metallurgical and epi-illumination applications especially, being addressed for routine laboratory needs.

They are designed to ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

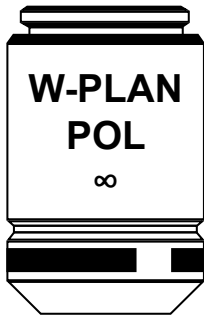
IOS W-PLAN MET objectives are designed for B-380 and B-510 used in metallurgical applications.



- **M-337** IOS W-PLAN MET objective 4x/0.10
- **M-336** IOS W-PLAN MET objective 5x/0.12
- **M-338** IOS W-PLAN MET objective 10x/0.25
- **M-339** IOS W-PLAN MET objective 20x/0.40

- **M-335** IOS W-PLAN MET objective 50x/0.75

## Plan Objectives - IOS W-PLAN POL Series



OPTIKA IOS W-PLAN POL objectives stand out for their flexibility in different techniques and deliver top-class performance when used with polarized light. The specific design makes them perfect for light polarization, driving to a formidable contrast and measurement precision, ideal for routine analysis in material science.

These strain-free objectives ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

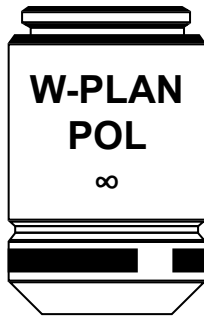
IOS W-PLAN POL objectives are designed for upright modular systems used in polarized light applications.



- **M-1080** IOS W-PLAN POL objective 4x/0.10
- **M-1081** IOS W-PLAN POL objective 10x/0.25
- **M-1081.5** IOS W-PLAN POL objective 20x/0.45
- **M-1082** IOS W-PLAN POL objective 40x/0.65

- **M-1083** IOS W-PLAN POL objective 60x/0.85

## Plan Objectives - IOS W-PLAN POL Series



OPTIKA IOS W-PLAN POL objectives stand out for their flexibility in different techniques and deliver top-class performance when used with polarized light. The specific design makes them perfect for light polarization, driving to a formidable contrast and measurement precision, ideal for routine analysis in material science.

These strain-free objectives ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

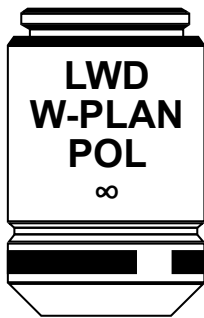
IOS W-PLAN POL objectives are designed for B-510POL used in polarized light applications.



- **M-1131** IOS W-PLAN POL objective 4x/0.10
- **M-1132** IOS W-PLAN POL objective 10x/0.25
- **M-1133** IOS W-PLAN POL objective 20x/0.45
- **M-1134** IOS W-PLAN POL objective 40x/0.65

- **M-1135** IOS W-PLAN POL objective 60x/0.80

## Plan Objectives - IOS LWD W-PLAN POL Series



OPTIKA IOS LWD W-PLAN POL objectives stand out for their flexibility in different techniques and deliver top-class performance when used with polarized light.

The specific design makes them perfect for light polarization, driving to a formidable contrast and measurement precision, ideal for routine analysis in material science/analysis.

Long Working Distance provides a wider working space between the lens surface and the object, a benefit for a variety of samples.

They deliver precise performance without the need of the cover slide, being NCG (no cover glass), specific for epi-illumination.

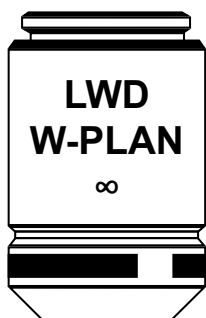
These strain-free objectives ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

IOS LWD W-PLAN POL objectives are designed for B-510POL-I used in polarized light applications.



- **M-1136** IOS LWD W-PLAN POL objective 5x/0.12
- **M-1137** IOS LWD W-PLAN POL objective 10x/0.25
- **M-1138** IOS LWD W-PLAN POL objective 20x/0.40
- **M-1139** IOS LWD W-PLAN POL objective 50x/0.75

## Plan Objectives - IOS LWD W-PLAN Series

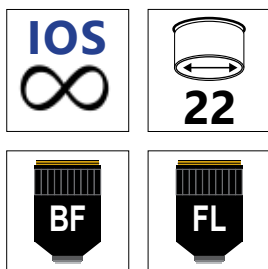


OPTIKA IOS LWD W-PLAN objectives are designed for inverted microscopes to ensure high resolution and contrast for various applications, especially clinical examinations and cell testing, and matching all the requirements of labs requiring routine optics.

Long Working Distance provides a wider working space between the lens surface and the object, a benefit for a variety of samples.

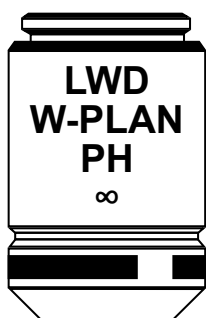
They are designed to ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

IOS LWD W-PLAN objectives are designed for IM-3 and inverted modular systems.



- **M-782** IOS LWD W-PLAN objective 4x/0.10
- **M-773** IOS LWD W-PLAN objective 40x/0.60
- **M-786** IOS LWD W-PLAN objective 60x/0.70

## Plan Objectives - IOS LWD W-PLAN PH Series

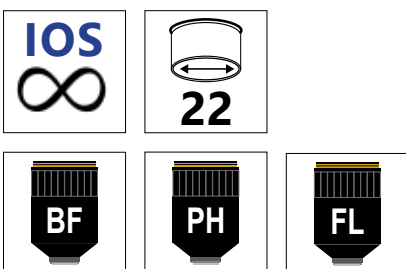


OPTIKA IOS LWD W-PLAN PH objectives are designed for inverted microscopes to deliver outstanding performance in (positive) phase contrast technique, providing high resolution and contrast for observation of culture specimens, clinical examinations and cell testing.

Long Working Distance provides a wider working space between the lens surface and the object, a benefit for a variety of samples.

These phase contrast objectives are designed to ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

IOS LWD W-PLAN PH objectives are designed for IM-3 and inverted modular systems.



- **M-782.1** IOS LWD W-PLAN PH objective 4x/0.13
- **M-783N** IOS LWD W-PLAN PH objective 10x/0.25
- **M-784N** IOS LWD W-PLAN PH objective 20x/0.40
- **M-785** IOS LWD W-PLAN PH objective 40x/0.60

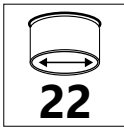
## Plan Objectives - IOS LWD W-PLAN MET BD Series



OPTIKA IOS LWD W-PLAN MET BD objectives deliver precise performance without the need of the cover glass, being NCG (no cover glass). They are required in metallurgical field, both for brightfield and darkfield techniques.

They offer an incredibly versatile solution for deep analysis and are designed to ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

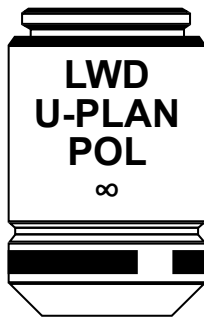
IOS LWD W-PLAN MET BD objectives are designed for upright modular systems used in metallurgical applications with darkfield.



- **M-1109** IOS LWD W-PLAN MET BD objective 5x/0.12
- **M-1110** IOS LWD W-PLAN MET BD objective 10x/0.25
- **M-1111** IOS LWD W-PLAN MET BD objective 20x/0.40
- **M-1112** IOS LWD W-PLAN MET BD objective 40x/0.60

- **M-1113** IOS LWD W-PLAN MET BD objective 50x/0.75
- **M-1114** IOS LWD W-PLAN MET BD objective 100x/0.80

## Plan Objectives - IOS LWD U-PLAN POL Series

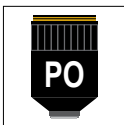


OPTIKA IOS LWD U-PLAN POL objectives represent the state-of-the-art lenses for upright microscopes, specifically delivering the greatest performance when used with polarized light without the need of the cover slide, being NCG (no cover glass).

The specific design makes them perfect for light polarization, driving to an excellent, ultra-effective contrast and measurement precision. Long Working Distance provides a wider working space between the lens surface and the object, a benefit for a variety of samples.

These strain-free objectives ensure field flatness up to F.N. 25.

IOS LWD U-PLAN POL objectives are designed for upright modular systems used in polarized light applications.



- **M-1090** IOS LWD U-PLAN POL objective 5x/0.15
- **M-1091** IOS LWD U-PLAN POL objective 10x/0.30
- **M-1092** IOS LWD U-PLAN POL objective 20x/0.45
- **M-1093** IOS LWD U-PLAN POL objective 50x/0.55

## Plan Objectives - IOS LWD U-PLAN MET Series

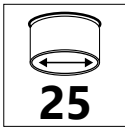


OPTIKA IOS LWD U-PLAN MET objectives represent the state-of-the-art lenses for both upright and inverted microscopes, specifically delivering excellent performance in the metallurgical field without the need of the cover slide, being NCG (no cover glass).

Long Working Distance provides a wider working space between the lens surface and the object, a benefit for a variety of samples.

They are designed to ensure field flatness up to F.N. 25.

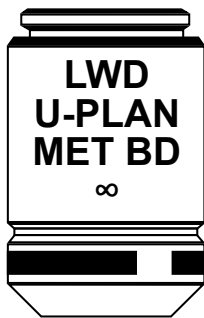
IOS LWD U-PLAN MET objectives are designed for IM-3, inverted and upright modular systems used in metallurgical applications.



- **M-1100** IOS LWD U-PLAN MET objective 5x/0.15
- **M-1101** IOS LWD U-PLAN MET objective 10x/0.30
- **M-1102** IOS LWD U-PLAN MET objective 20x/0.45
- **M-1103** IOS LWD U-PLAN MET objective 50x/0.55

- **M-1104** IOS LWD U-PLAN MET objective 100x/0.80

## Plan Objectives - IOS LWD U-PLAN MET BD Series

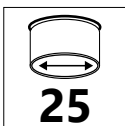


OPTIKA IOS LWD U-PLAN MET BD objectives represent the state-of-the-art lenses for inverted and upright microscopes, specifically delivering excellent performance in the material science field both for brightfield and darkfield techniques, without the need of cover glass, being NCG (no cover glass).

Long Working Distance provides a wider working space between the lens surface and the specimen, a benefit for a variety of samples.

They are designed to ensure field flatness up to F.N. 25, based on infinity-corrected optical system.

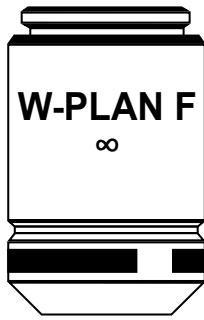
IOS LWD U-PLAN MET BD objectives are designed for inverted and upright modular systems used in metallurgical applications with darkfield.



- **M-1094** IOS LWD U-PLAN MET BD objective 5x/0.15
- **M-1095** IOS LWD U-PLAN MET BD objective 10x/0.30
- **M-1096** IOS LWD U-PLAN MET BD objective 20x/0.45
- **M-1097** IOS LWD U-PLAN MET BD objective 50x/0.55

- **M-1098** IOS LWD U-PLAN MET BD objective 100X/0.80

## Plan Semi-APO Objectives - IOS W-PLAN F Series

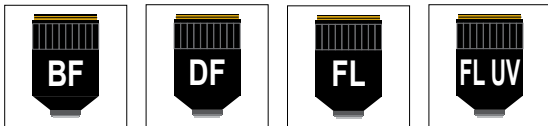
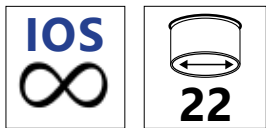


OPTIKA IOS W-PLAN F objectives are great to detect fluorescence, even in case of weak signals which will result very clear and visible. They combine superior performance especially in fluorescence with enhanced contrast, matching all the requirements of labs requiring specific lenses for B, G and UV fluorescence.

PLAN-Fluorite (or Semi-Apochromatic) design ensures additional spherical aberration correction for superior resolution and greater numerical apertures.

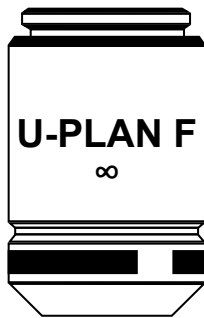
They are designed to ensure field flatness up to F.N. 22, based on infinity-corrected optical system.

IOS W-PLAN F objectives are designed for B-510 and upright modular systems.



- **M-1060** IOS W-PLAN F objective 4x/0.13
- **M-1061** IOS W-PLAN F objective 10x/0.30
- **M-1062** IOS W-PLAN F objective 20x/0.50
- **M-1063** IOS W-PLAN F objective 40x/0.75
- **M-1064** IOS W-PLAN F objective 100x/1.30 (oil)

## Plan Semi-APO Objectives - IOS U-PLAN F Series



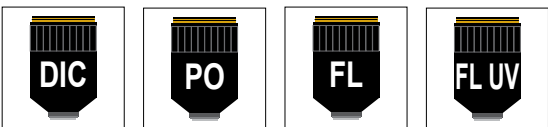
OPTIKA IOS U-PLAN F objectives represent the state-of-the-art lenses for upright microscopes, specifically developed for top-class performance and contrast required by the most demanding users.

The PLAN-Fluorite (or Semi-Apochromatic) design ensures additional spherical aberration correction for superior resolution and greater numerical apertures.

A superb resolution and contrast is granted especially for fluorescence applications, being very effective with UV fluorescence, but their extended versatility makes them an excellent product for other microscopic techniques.

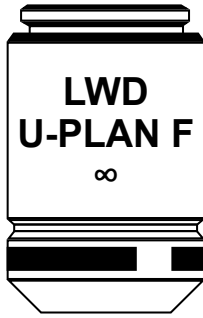
They are designed to ensure field flatness up to F.N. 25.

IOS U-PLAN F objectives are designed for upright modular systems.

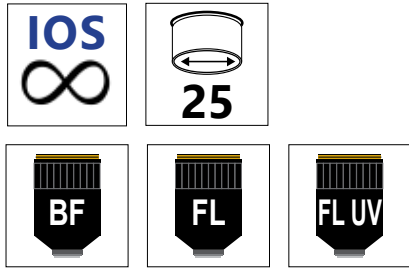


- **M-1075** IOS U-PLAN F objective 4x/0.13
- **M-1076** IOS U-PLAN F objective 10x/0.30
- **M-1077** IOS U-PLAN F objective 20x/0.50
- **M-1078** IOS U-PLAN F objective 40x/0.75
- **M-1079** IOS U-PLAN F objective 100x/1.30 (oil)

## Plan Semi-APO Objectives - IOS LWD U-PLAN F Series

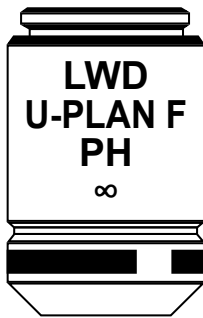


IOS LWD U-PLAN F objectives are designed for IM-3 and inverted modular systems.

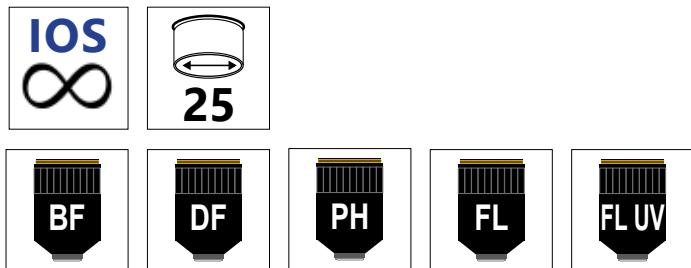


- **M-800** IOS LWD U-PLAN F objective 4x/0.13
- **M-801** IOS LWD U-PLAN F objective 10x/0.30
- **M-802** IOS LWD U-PLAN F objective 20x/0.45
- **M-803** IOS LWD U-PLAN F objective 40x/0.65
- **M-804** IOS LWD U-PLAN F objective 60x/0.75

## Plan Semi-APO Objectives - IOS LWD U-PLAN F PH Series



IOS LWD U-PLAN F PH objectives are designed for IM-3 and inverted modular systems.



- **M-1177** IOS LWD U-PLAN F PH objective 20x/0.45
- **M-1178** IOS LWD U-PLAN F PH objective 40x/0.65

OPTIKA IOS LWD U-PLAN F objectives represent the state-of-the-art lenses for inverted microscopes, specifically developed for top-class performance and contrast required by the most demanding users.

Long Working Distance provides a wider working space between the lens surface and the object, a benefit for a variety of samples, whilst the PLAN-Fluorite (or Semi-Apochromatic) design ensures additional spherical aberration correction for superior resolution and greater numerical apertures.

A superb resolution and contrast is granted especially for fluorescence applications, being very effective with UV fluorescence.

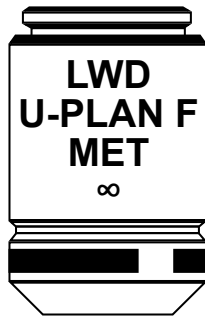
They are designed to ensure field flatness up to F.N. 25.

OPTIKA IOS LWD U-PLAN F PH objectives represent the state-of-the-art lenses for inverted microscopes, specifically developed for top-class performance and contrast required by the most demanding users.

Long Working Distance provides a wider working space between the lens surface and the object, a benefit for a variety of samples, whilst the PLAN-Fluorite (or Semi-Apochromatic) design ensures additional spherical aberration correction for superior resolution and greater numerical apertures. A superb resolution and contrast is granted especially for the observation of culture specimens in (positive) phase contrast method, but their versatility makes them an excellent product for other microscopic techniques, being very effective with UV fluorescence.

They are designed to ensure field flatness up to F.N. 25.

## Plan Semi-APO Objectives - IOS LWD U-PLAN F MET Series



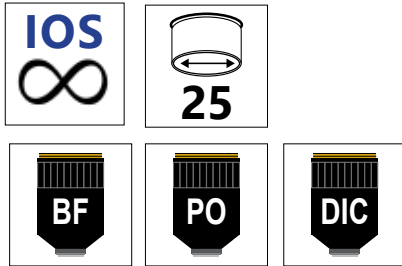
OPTIKA IOS LWD U-PLAN F MET objectives represent the state-of-the-art lenses for upright and inverted microscopes, specifically delivering excellent performance in the metallurgical field without the need of the cover slide, being NCG (no cover glass).

Long Working Distance provides a wider working space between the lens surface and the object, a benefit for a variety of samples.

The PLAN-Fluorite (or Semi-Apochromatic) design ensures additional spherical aberration correction for superior resolution and greater numerical apertures.

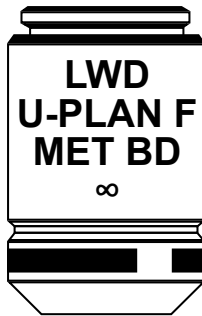
They are designed to ensure field flatness up to F.N. 25.

IOS LWD U-PLAN F MET objectives are designed for inverted and upright modular systems used in metallurgical applications.



- **M-1171** IOS LWD U-PLAN F MET objective 5x/0.15
- **M-1172** IOS LWD U-PLAN F MET objective 10x/0.30
- **M-1173** IOS LWD U-PLAN F MET objective 20x/0.50
- **M-1174** IOS LWD U-PLAN F MET objective 50x/0.80
- **M-1175** IOS LWD U-PLAN F MET objective 100x/0.100

## Plan Semi-APO Objectives - IOS LWD U-PLAN F MET BD Series



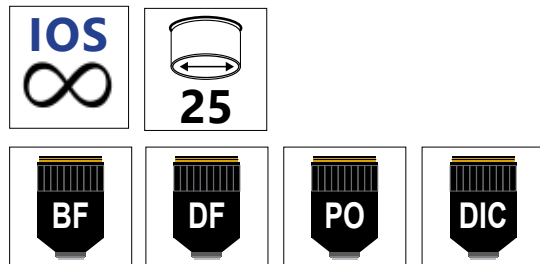
OPTIKA IOS LWD U-PLAN F MET BD objectives represent the state-of-the-art lenses for upright and inverted microscopes, specifically delivering excellent performance in the material science field both for brightfield and darkfield techniques, without the need of cover glass, being NCG (no cover glass).

Long Working Distance provides a wider working space between the lens surface and the object, a benefit for a variety of samples.

The PLAN-Fluorite (or Semi-Apochromatic) design ensures additional spherical aberration correction for superior resolution and greater numerical apertures.

They are designed to ensure field flatness up to F.N. 25.

IOS LWD U-PLAN F MET BD objectives are designed for inverted and upright modular systems used in metallurgical applications with darkfield.



- **M-1180** IOS LWD U-PLAN F MET BD objective 5x/0.15
- **M-1181** IOS LWD U-PLAN F MET BD objective 10x/0.30
- **M-1182** IOS LWD U-PLAN F MET BD objective 20x/0.50
- **M-1183** IOS LWD U-PLAN F MET BD objective 50x/0.80
- **M-1184** IOS LWD U-PLAN F MET BD objective 100x/0.90





# Objective Benchmark Table

OPTICAL CORRECTION	OBJECTIVE SERIES	CODE	NUMERICAL APERTURE	WORKING DISTANCE (mm)	FIELD NUMBER (mm)	OPTICAL SYSTEM	COVER GLASS THICKNESS (mm)	
ACHROMATIC	ACH	4x	M-131	0.10	18	18	160	0.17
		10x	M-132	0.25	7	18	160	0.17
		20x	M-133	0.40	2	18	160	0.17
		40x	M-134	0.65	0.53	18	160	0.17
		60x	M-135	0.85	0.13	18	160	0.17
		100x	M-136	1.25	0.13	18	160	0.17
	HC	4x	M-137	0.10	18	18	160	0.17
		10x	M-138	0.25	7	18	160	0.17
		20x	M-139	0.40	2	18	160	0.17
		40x	M-141	0.65	0.53	18	160	0.17
		60x	M-142	0.80	0.45	18	160	0.17
		100x	M-143	1.25	0.13	18	160	0.17

OPTICAL CORRECTION	OBJECTIVE SERIES	CODE	NUMERICAL APERTURE	WORKING DISTANCE (mm)	FIELD NUMBER (mm)	OPTICAL SYSTEM	COVER GLASS THICKNESS (mm)	
PLAN	N-PLAN	4x	M-164	0.10	15.2	20	160	0.17
		10x	M-165	0.25	5.5	20	160	0.17
		20x	M-166	0.40	3.5	20	160	0.17
		40x	M-167	0.65	0.45	20	160	0.17
		60x	M-168	0.80	0.45	20	160	0.17
		100x	M-169	1.25	0.13	20	160	0.17
	IOS N-PLAN	4x	M-144	0.10	16.8	20	∞	0.17
		10x	M-145	0.25	5.8	20	∞	0.17
		20x	M-146	0.40	5.1	20	∞	0.17
		40x	M-147	0.65	0.43	20	∞	0.17
		60x	M-149	0.80	0.14	20	∞	0.17
		100x	M-148	1.25	0.13	20	∞	0.17
	IOS N-PLAN POL	4x	M-144P	0.10	16.8	20	∞	0.17
		10x	M-145P	0.25	5.8	20	∞	0.17
		20x	M-146P	0.40	5.1	20	∞	0.17
		40x	M-147P	0.65	0.43	20	∞	0.17
		60x	M-149P	0.80	0.14	20	∞	0.17
		100x	M-148P	1.25	0.13	20	∞	0.17
	W-PLAN	100x	M-059	0.36-1.25	0.1	22	160	0.17
	IOS W-PLAN	2x	M-1049	0.08	19.4	22	∞	0.17
		4x	M-1125	0.10	17.3	22	∞	0.17
		10x	M-1126	0.25	10	22	∞	0.17
		20x	M-1127	0.40	5.1	22	∞	0.17
		40x	M-1128	0.65	0.54	22	∞	0.17
		60x	M-1129	0.80	0.14	22	∞	0.17
		100x	M-1130.1	0.36 - 1.25	0.18	22	∞	0.17
		100x	M-1130	1.25	0.13	22	∞	0.17
	W-PLAN PH	10x	M-170	0.25	12.2	22	160	0.17
		20x	M-171	0.40	5	22	160	0.17
		40x	M-172	0.65	0.37	22	160	0.17
		100x	M-182	1.25	0.13	22	160	0.17
	IOS W-PLAN PH	10x	M-1120.N	0.25	10	22	∞	0.17
		20x	M-1121.N	0.40	5.1	22	∞	0.17
		40x	M-1122.N	0.65	0.54	22	∞	0.17
		100x	M-1123.N	1.25	0.13	22	∞	0.17
	IOS LWD W-PLAN MET	2.5x	M-1099	0.08	11.3	22	∞	-
	IOS W-PLAN MET	4x	M-337	0.10	17.3	22	∞	-
		5x	M-336	0.12	15.5	22	∞	-
		10x	M-338	0.25	10	22	∞	-
		20x	M-339	0.40	5.8	22	∞	-
		50x	M-335	0.75	0.32	22	∞	-
	IOS W-PLAN POL	4x	M-1080	0.10	20.8	22	∞	0.17
		10x	M-1081	0.25	5.3	22	∞	0.17
		20x	M-1081.5	0.45	1.56	22	∞	0.17
		40x	M-1082	0.65	0.36	22	∞	0.17
		60x	M-1083	0.85	0.30	22	∞	0.17

IMMERSION	SPRING	BF	DF	DIC	PH	PO	FL (B,G)	FL (UV)	OB	SCREW THREAD	REMARKS
		★★	-	-	-	-	-	-	-	RMS	
		★★	-	-	-	-	-	-	-	RMS	
		★★	-	-	-	-	-	-	-	RMS	
	●	★★	-	-	-	-	-	-	-	RMS	
	●	★★	-	-	-	-	-	-	-	RMS	
OIL	●	★★	-	-	-	-	-	-	-	RMS	
		★★	★	-	-	★	-	-	-	RMS	
		★★	★	-	-	★	-	-	-	RMS	
		★★	★	-	-	★	-	-	-	RMS	
	●	★★	★	-	-	★	-	-	-	RMS	
	●	★★	★	-	-	★	-	-	-	RMS	
OIL /WATER	●	★★	★	-	-	★	-	-	-	RMS	

IMMERSION	SPRING	BF	DF	DIC	PH	PO	FL (B,G)	FL (UV)	OB	SCREW THREAD	REMARKS
		★★	★★	-	-	-	-	-	-	RMS	
		★★	★★	-	-	-	-	-	-	RMS	
		★★	★★	-	-	-	-	-	-	RMS	
	●	★★	★★	-	-	-	-	-	-	RMS	
	●	★★	★★	-	-	-	-	-	-	RMS	
OIL /WATER	●	★★	★★	-	-	-	-	-	-	RMS	
		★★	★★	-	-	-	★★	-	-	RMS	
		★★	★★	-	-	-	★★	-	-	RMS	
		★★	★★	-	-	-	★★	-	-	RMS	
	●	★★	★★	-	-	-	★★	-	-	RMS	
	●	★★	★★	-	-	-	★★	-	-	RMS	
OIL /WATER	●	★★	★★	-	-	-	★★	-	-	RMS	
		★★	★★	-	-	★★	★★	-	-	RMS	
		★★	★★	-	-	★★	★★	-	-	RMS	
		★★	★★	-	-	★★	★★	-	-	RMS	
	●	★★	★★	-	-	★★	★★	-	-	RMS	
	●	★★	★★	-	-	★★	★★	-	-	RMS	
OIL /WATER	●	★★	★★	-	-	★★	★★	-	-	RMS	
OIL	●	★★	★★	-	-	-	★★	-	-	RMS	IRIS
		★★	★★	-	-	-	★★	-	-	RMS	
		★★	★★	-	-	-	★★	-	-	RMS	
		★★	★★	-	-	-	★★	-	-	RMS	
		★★	★★	-	-	-	★★	-	-	RMS	
	●	★★	★★	-	-	-	★★	-	-	RMS	
	●	★★	★★	-	-	-	★★	-	-	RMS	
OIL	●	★★	★★	-	-	-	★★	-	-	RMS	IRIS
OIL	●	★★	★★	-	-	-	★★	-	-	RMS	
		★★	★★	-	★★★★	-	-	-	-	RMS	
		★★	★★	-	★★★★	-	-	-	-	RMS	
	●	★★	★★	-	★★★★	-	-	-	-	RMS	
OIL	●	★★	★★	-	★★★★	-	-	-	-	RMS	
		★★	★★	-	★★★★	-	-	-	-	RMS	
		★★	★★	-	★★★★	-	-	-	-	RMS	
	●	★★	★★	-	★★★★	-	-	-	-	RMS	
OIL	●	★★	★★	-	★★★★	-	-	-	-	RMS	
		★★	-	-	-	★★★★	-	-	-	RMS	DEPOLARIZER
		★★	-	-	-	★★	-	-	★★	RMS	
		★★	-	-	-	★★	-	-	★★	RMS	
		★★	-	-	-	★★	-	-	★★	RMS	
		★★	-	-	-	★★	-	-	★★	RMS	
	●	★★	-	-	-	★★	-	-	★★	RMS	
		★★	★★	-	-	★★★★	★★	-	-	RMS	
		★★	★★	-	-	★★★★	★★	-	-	RMS	
		★★	★★	-	-	★★★★	★★	-	-	RMS	
	●	★★	★★	-	-	★★★★	★★	-	-	RMS	
	●	★★	★★	-	-	★★★★	★★	-	-	RMS	

# Objective Benchmark Table

OPTICAL CORRECTION	OBJECTIVE SERIES	CODE	NUMERICAL APERTURE	WORKING DISTANCE (mm)	FIELD NUMBER (mm)	OPTICAL SYSTEM	COVER GLASS THICKNESS (mm)	
PLAN	IOS W-PLAN POL	4x	M-1131	0.10	17.3	22	∞	0.17
		10x	M-1132	0.25	10.0	22	∞	0.17
		20x	M-1133	0.45	0.40	22	∞	0.17
		40x	M-1134	0.65	0.54	22	∞	0.17
		60x	M-1135	0.80	0.14	22	∞	0.17
	IOS LWD W-PLAN POL	5x	M-1136	0.12	15.5	22	∞	-
		10x	M-1137	0.25	10.0	22	∞	-
		20x	M-1138	0.40	5.8	22	∞	-
		50x	M-1139	0.75	0.32	22	∞	-
	IOS LWD W-PLAN	4x	M-782	0.10	10.4	22	∞	1.2
		40x	M-773	0.60	3.10	22	∞	1.2
		60x	M-786	0.70	1.70	22	∞	1.2
	IOS LWD W-PLAN PH	4x	M-782.1	0.13	10.4	22	∞	1.2
		10x	M-783N	0.25	7.3	22	∞	1.2
		20x	M-784N	0.40	6.8	22	∞	1.2
		40x	M-785	0.60	3.00	22	∞	1.2
	IOS LWD W-PLAN MET BD	5x	M-1109	0.12	12	22	∞	-
		10x	M-1110	0.25	10	22	∞	-
		20x	M-1111	0.40	4.3	22	∞	-
		40x	M-1112	0.60	2.9	22	∞	-
		50x	M-1113	0.75	0.32	22	∞	-
		100x	M-1114	0.80	2	22	∞	-
	IOS LWD U-PLAN POL	5x	M-1090	0.15	10.8	25	∞	-
		10x	M-1091	0.30	10	25	∞	-
		20x	M-1092	0.45	4	25	∞	-
		50x	M-1093	0.55	7.9	25	∞	-
	IOS LWD U-PLAN MET	5x	M-1100	0.15	10.8	25	∞	-
		10x	M-1101	0.30	10	25	∞	-
		20x	M-1102	0.45	4	25	∞	-
		50x	M-1103	0.55	7.9	25	∞	-
		100x	M-1104	0.80	2.1	25	∞	-
	IOS LWD U-PLAN MET BD	5x	M-1094	0.15	9	25	∞	-
10x		M-1095	0.30	9	25	∞	-	
20x		M-1096	0.45	3.4	25	∞	-	
50x		M-1097	0.55	7.5	25	∞	-	
100x		M-1098	0.80	2	25	∞	-	
PLAN SEMI APO	IOS W-PLAN F	4x	M-1060	0.13	4.7	22	∞	0.17
		10x	M-1061	0.30	4.1	22	∞	0.17
		20x	M-1062	0.50	1.45	22	∞	0.17
		40x	M-1063	0.75	0.5	22	∞	0.17
		100x	M-1064	1.30	0.08	22	∞	0.17
	IOS U-PLAN F	4x	M-1075	0.13	16.5	25	∞	0.17
		10x	M-1076	0.30	8.1	25	∞	0.17
		20x	M-1077	0.50	2.1	25	∞	0.17
		40x	M-1078	0.75	0.7	25	∞	0.17
		100x	M-1079	1.30	0.15	25	∞	0.17
	IOS LWD U-PLAN F	4X	M-800	0.13	18.52	25	∞	1.2
		10x	M-801	0.30	7.11	25	∞	1.2
		20x	M-802	0.45	5.91	25	∞	1.2
		40x	M-803	0.65	1.61	25	∞	1.2
		60x	M-804	0.75	1.04	25	∞	1.2
	IOS LWD U-PLAN F PH	20x	M-1177	0.45	5.91	25	∞	1.2
		40x	M-1178	0.65	1.61	25	∞	1.2
	IOS LWD U-PLAN F MET	5x	M-1171	0.15	19.5	25	∞	-
		10x	M-1172	0.30	10.9	25	∞	-
		20x	M-1173	0.50	3.2	25	∞	-
		50x	M-1174	0.80	1.2	25	∞	-
		100x	M-1175	0.90	1	25	∞	-
	IOS LWD U-PLAN F MET BD	5x	M-1180	0.15	13.5	25	∞	-
		10x	M-1181	0.30	9	25	∞	-
20x		M-1182	0.50	2.5	25	∞	-	
50x		M-1183	0.80	1	25	∞	-	
100x		M-1184	0.90	1	25	∞	-	

IMMERSION	SPRING	BF	DF	DIC	PH	PO	FL (B,G)	FL (UV)	OB	SCREW THREAD	REMARKS
		★★	★★	-	-	★★★	★★	-	-	RMS	
		★★	★★	-	-	★★★	★★	-	-	RMS	
		★★	★★	-	-	★★★	★★	-	-	RMS	
	●	★★	★★	-	-	★★★	★★	-	-	RMS	
	●	★★	★★	-	-	★★	★★	-	-	RMS	
		★★	-	-	-	★★★	★★	-	-	RMS	
		★★	-	-	-	★★★	★★	-	-	RMS	
		★★	-	-	-	★★★	★★	-	-	RMS	
		★★	-	-	-	★★★	★★	-	-	RMS	
		★★	-	-	-	-	★★	-	-	RMS	
		★★	-	-	-	-	★★	-	-	RMS	
		★★	-	-	-	-	★★	-	-	RMS	
		★★	-	-	★★★	-	★★	-	-	RMS	
		★★	-	-	★★★	-	★★	-	-	RMS	
		★★	-	-	★★★	-	★★	-	-	RMS	
		★★	-	-	★★★	-	★★	-	-	RMS	
		★★	★★★	-	-	★★	-	-	-	M25	
		★★	★★★	-	-	★★	-	-	-	M25	
		★★	★★★	-	-	★★	-	-	-	M25	
		★★	★★★	-	-	★★	-	-	-	M25	
		★★	★★★	-	-	★★	-	-	-	M25	
		★★	★★★	-	-	★★	-	-	-	M25	
		★★★	-	-	-	★★★	-	-	-	RMS	
		★★★	-	-	-	★★★	-	-	-	RMS	
		★★★	-	-	-	★★★	-	-	-	RMS	
		★★★	-	-	-	★★★	-	-	-	RMS	
		★★★	-	★★★	-	★★★	-	-	★★	RMS	
		★★★	-	★★★	-	★★★	-	-	★★	RMS	
		★★★	-	★★★	-	★★★	-	-	★★	RMS	
		★★★	-	★★★	-	★★★	-	-	★★	RMS	
		★★★	★★★	★★★	-	★★	-	-	-	M25	
		★★★	★★★	★★★	-	★★	-	-	-	M25	
		★★★	★★★	★★★	-	★★	-	-	-	M25	
		★★★	★★★	★★★	-	★★	-	-	-	M25	
		★★★	★★	-	-	-	★★★	★★★	-	RMS	
		★★★	★★	-	-	-	★★★	★★★	-	RMS	
		★★★	★★	-	-	-	★★★	★★★	-	RMS	
OIL	●	★★★	★★	-	-	-	★★★	★★★	-	RMS	
OIL	●	★★★	★★	-	-	-	★★★	★★★	-	RMS	
		★★★	★★★	★★★	-	★★	★★★	★★★	-	RMS	
		★★★	★★★	★★★	-	★★	★★★	★★★	-	RMS	
		★★★	★★★	★★★	-	★★	★★★	★★★	-	RMS	
	●	★★★	★★★	★★★	-	★★	★★★	★★★	-	RMS	
OIL	●	★★★	★★★	★★★	-	★★	★★★	★★★	-	RMS	
		★★★	-	-	-	-	★★★	★★★	-	RMS	
		★★★	-	-	-	-	★★★	★★★	-	RMS	
		★★★	-	-	-	-	★★★	★★★	-	RMS	
		★★★	-	-	-	-	★★★	★★★	-	RMS	
		★★★	-	-	-	-	★★★	★★★	-	RMS	
		★★★	★★	-	★★★	-	★★★	★★★	-	RMS	
		★★★	★★	-	★★★	-	★★★	★★★	-	RMS	
		★★★	-	★★☆	-	★★	-	-	-	RMS	
		★★★	-	★★★	-	★★	-	-	-	RMS	
		★★★	-	★★★	-	★★	-	-	-	RMS	
		★★★	-	★★★	-	★★	-	-	-	RMS	
		★★★	-	★★★	-	★★	-	-	-	RMS	
		★★★	★★★	★★☆	-	★★	-	-	-	M25	
		★★★	★★★	★★★	-	★★	-	-	-	M25	
		★★★	★★★	★★★	-	★★	-	-	-	M25	
		★★★	★★★	★★★	-	★★	-	-	-	M25	
		★★★	★★★	★★★	-	★★	-	-	-	M25	





---

## Headquarters and Manufacturing Facilities

---

**OPTIKA® S.r.l.** Via Rigla, 30 - 24010 Ponteranica (BG) - ITALIA - Tel.: +39 035.571.392 - Fax: +39 035.571.435 - [info@optikamicroscopes.com](mailto:info@optikamicroscopes.com)

## Optika Sales branches

---

**OPTIKA® Spain** [spain@optikamicroscopes.com](mailto:spain@optikamicroscopes.com)  
**OPTIKA® China** [china@optikamicroscopes.com](mailto:china@optikamicroscopes.com)  
**OPTIKA® India** [india@optikamicroscopes.com](mailto:india@optikamicroscopes.com)

**OPTIKA® USA** [usa@optikamicroscopes.com](mailto:usa@optikamicroscopes.com)  
**OPTIKA® Hungary** [hungary@optikamicroscopes.com](mailto:hungary@optikamicroscopes.com)