


光波面計測システム

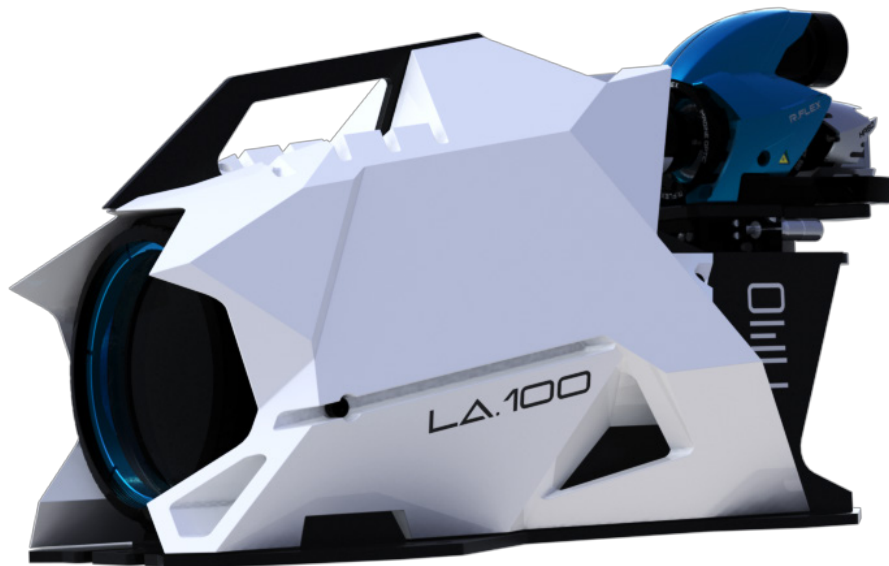
OEC

Optical Engineer Companion

Metrology solution
The all-rounder

Metrology on-the-go
Modular system
Upgradable

 compatible

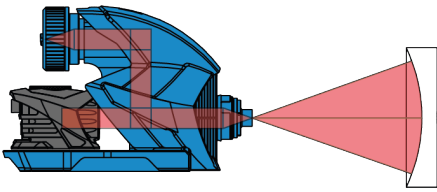


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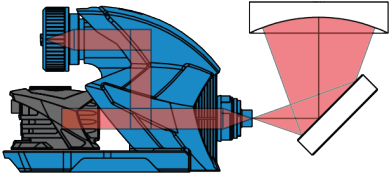
imagine
optic

OPTICAL SETUPS

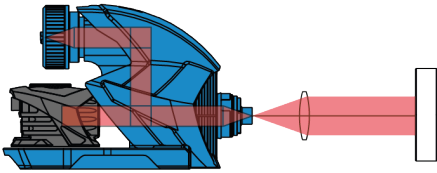
Concave surfaces / refractive optics testing: use R-FLEX™



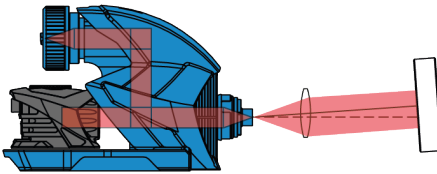
(Uncoated) Small to large concave mirrors



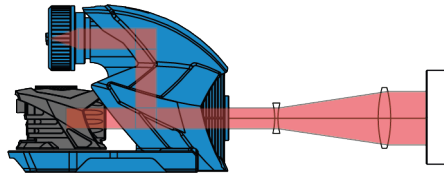
(Very) Large telescopes and collimators characterization and alignment



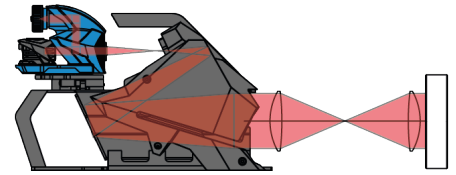
Lenses of any diameter, on-axis



Lenses of any diameter, in the field

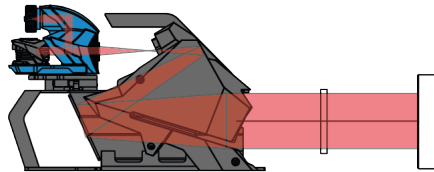


Beam expanders characterization and alignment

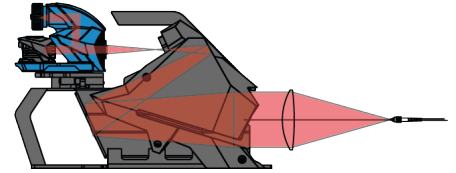


Beam expanders, afocal systems characterization and alignment

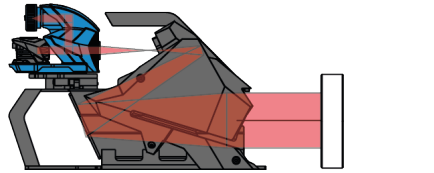
Flat wavefront / surfaces testing: use R-FLEX™ + R-FLEX LA™



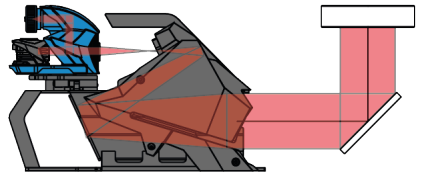
Filters, windows in transmission



Collimated lasers and external sources



Mirrors, filters in reflection



Head-Up displays, dichroics, beamsplitters



- R-FLEX2
イルミネーションアクセサリ
(MOD集光モジュールに接続)
- HASO or LIFT
光波面センサー
- LA
ビームエキスパンダー

光波面計測システム R-FLEXの構成

OPTICAL ENGINEER COMPANION +

Our family of products now teams up to support your optical metrology



Compatible with the **Optical Engineer Companion** modular system: easily combine the accessories you need.

CONFIGURATION

The OEC refers to a family of standard sensors and accessories that can be instantaneously combined to create the configuration you need for your optical tests.

Select the modules among:

- 1
a variety of metrology sources from UV to SWIR
- 2
a large range of HASO™ or LIFT wavefront sensors
- 3
several R-FLEX™ illumination systems
- 4
a choice of R-FLEX LA™ beam expanders

...and use them in combination or separately.

#1 測定用光源 METROLOGY SOURCE: MS-λ



MS-λ
400 - 1550 nm

Perfect-wavefront metrology source:

- + Laser Diode or SLED
- + Monomode fiber
- + FC/APC output
- + Manual or remote (USB) control
- + Adjustable intensity output
- + Trigger input
- + Optical power: 5 mW

Reference	Wavelength (nm)
MS-405	405
MS-488	488
MS-520	520
MS-635	635
MS-785	785
MS-830	830
MS-1064	1064
MS-1550	1550
MS-CUSTOM	contact us for specific wavelength

#2 光波面センサー WAVEFRONT SENSOR: HASO™ & LIFT



HASO LIFT 680
680 x 504 phase points



HASO LIFT 272
272 x 200 phase points



HASO4 126
350 - 1100 nm
HASO4 126 BROADBAND
13.8 x 10.2 mm



HASO4 BROADBAND
350 - 1100 nm



HASO4 FIRST
λ/100 RMS at custom wavelength



HASO4 FAST
1.25 kHz



HASO SWIR LIFT
160 x 128 phase points



HASO SWIR
0.9 - 1.7 μm

#3 R-FLEX、集光モジュール ILLUMINATION SYSTEM: R-FLEX™



R-FLEX2 VIS (BB)
400 - 750 nm (400 - 1100 nm)



R-FLEX2 SWIR
1 - 1.7 μm

R-FLEX VIS and SWIR are illumination systems coupling our sources with our wavefront sensors for testing:

- + in double pass optical configuration
- + concave surfaces or refractive optics of any f/# choosing the appropriate focusing module (MOD F) below:

Compact, lightweight, insensitive to vibrations and atmospheric turbulences, R-FLEX is easy to align onto the optics to be tested.

It is the perfect solution for large telescopes, optics in vacuum chambers.

Reference	Focal length (mm)	Back power required (%)	Working distance ¹ (mm)	Module length ² (mm)	HASO LIFT 680	HASO LIFT 272	HASO4 126 / BROADBAND	HASO4 BROADBAND	HASO4 FIRST	HASO4 FAST	HASO SWIR LIFT	HASO SWIR
					f/#, (wfe ³) (nm RMS)	f/#, (wfe ³) (nm RMS)	f/#, (wfe ³) (nm RMS)	f/#, (wfe ³) (nm RMS)	f/#, (wfe ³) (nm RMS)	f/#, (wfe ³) (nm RMS)	f/#, (wfe ³) (nm RMS)	f/#, (wfe ³) (nm RMS)
MOD F4.5	4.5	50	0.6	205.9	-	0.9 (120)	-	0.9 (120)	1.3 (30)	3.8 (5)	-	-
MOD F9	8.9	50	1.2	250.0	-	1.8 (40)	-	1.8 (40)	2.5 (10)	7.5 (5)	-	-
MOD F9 HR	9	50	0.6	247.8	0.9 (130)	-	0.9 (130)	-	-	-	-	-
MOD F18 HR	17.8	50	1.2	247.2	1.8 (50)	-	1.8 (50)	-	-	-	-	-
MOD F20	20.4	3	10.4	50.3	-	4 (160)	-	4 (160)	5.6 (40)	17.2 (5)	-	-
MOD F20 SWIR	20	3	10	71.8	-	-	-	-	-	-	2.7 (250)	2.7 (250)
MOD F31	30.3	3	-0.7	66.6	3 (250)	5.9 (20)	3 (250)	5.9 (20)	8.4 (10)	25.5 (5)	-	-
MOD F31 SWIR	31	3	10	114.7	-	-	-	-	-	-	4.2 (150)	4.2 (150)
MOD F40	41.7	3	8	40.8	4.1 (150)	8.1 (15)	4.1 (150)	8.1 (15)	11.5 (10)	35.1 (5)	-	-
MOD F40 SWIR	40	3	3.3	62.2	-	-	-	-	-	-	5.4 (100)	5.4 (100)
MOD F50	51.7	3	3.6	103.1	5.1 (100)	10 (10)	5.1 (100)	10 (10)	14.2 (5)	43.5 (5)	-	-
MOD F50 SWIR	50	3	3.3	92.1	-	-	-	-	-	-	6.8 (25)	6.8 (25)
MOD F60	60.1	3	15.2	42.5	5.9 (30)	11.7 (8)	5.9 (30)	11.7 (8)	16.5 (5)	50.5 (5)	-	-
MOD F60 SWIR	60	3	12.8	45	-	-	-	-	-	-	8.1 (50)	8.1 (50)
MOD F75	75.1	3	12.8	73.6	7.4 (20)	14.6 (5)	7.4 (20)	14.6 (5)	20.6 (5)	63.1 (5)	-	-
MOD F76 SWIR	75.3	3	12.8	74.3	-	-	-	-	-	-	10.2 (25)	10.2 (25)
MOD CUSTOM					contact us for specific aperture, working distance, etc.							

All focusing modules have pupil imaging: the microlens array of the wavefront sensor is imaged at the infinity by the focusing modules

¹Distance between the focal plane and the first mechanical interface of the module (with centering tool removed)

²Distance from the mounting interface of the module to the first mechanical interface of the module (with centering tool removed)

³Wavefront Error (wfe) at the output of the module for a circular pupil corresponding to the nominal f-number (f/#)

#4 ビームエキスパンダー (必要であれば) BEAM EXPANDER: R-FLEX LA™



R-FLEX LA VIS (BB)
400 - 750 nm (400 - 1100 nm)



R-FLEX LA SWIR
1 - 1.7 μm

R-FLEX LA VIS and SWIR are beam expander coupling our R-FLEX for testing:

- + in double pass optical configuration or single pass for large beam lasers
- + flat wavefront or surfaces of any diameter choosing the appropriate platform reference below:

At wavelength, easy alignment and characterization of

beam expanders
filters, dichroic beamsplitter
flat mirrors
optical windows
polarization scramblers.

Reference	Test diameter (mm)	Spectral range
LA.30	30	VIS, SWIR
LA.50	50	VIS, SWIR
LA.75	75	VIS, SWIR
LA.100	100	VIS, SWIR
LA.150	150	VIS, SWIR
LA.200	200	SWIR
LA.CUSTOM	contact us for specific diameter	