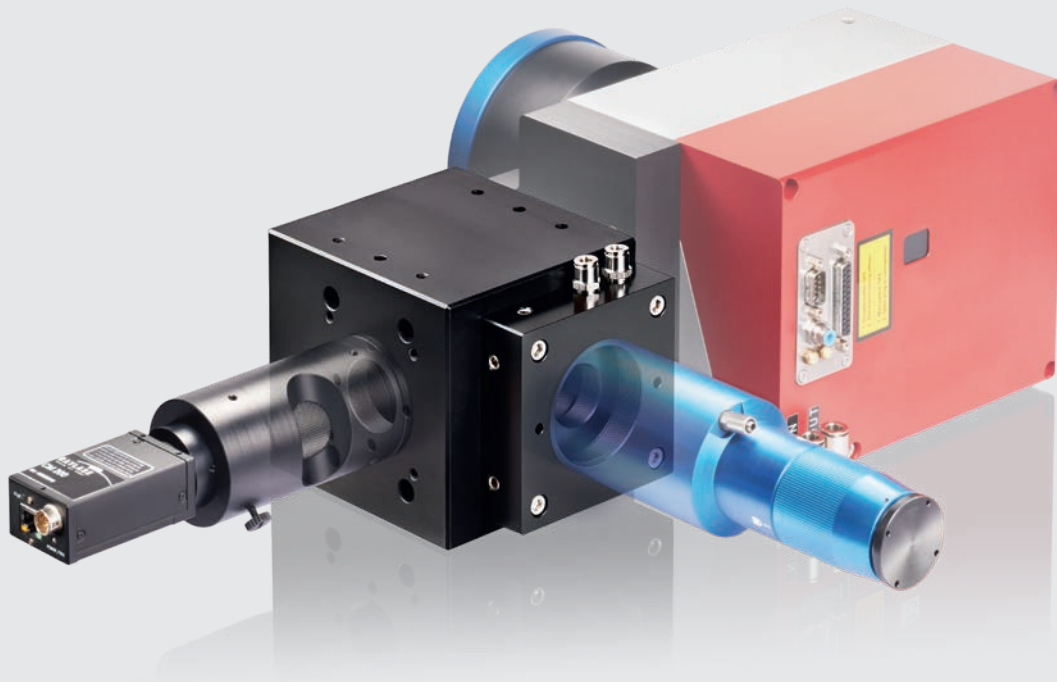


# CAMERA ADAPTER HP



MVC ACCESSORY

FOR CHALLENGING INDUSTRIAL APPLICATIONS



- Compatible with all RAYLASE 2-axis systems with 20 mm (L) and 30 mm apertures
- Water-cooled fiber collimator connection for all standard collimators
- On-axis camera and/or sensors for position monitoring or monitoring of weld seam parameters
- Different laser and observation wavelengths
- Input aperture: 30 mm. Laser power up to 6 kW (8 kW/75 % duty cycle)

## THE BEST COMBINATION OF CAMERA AND HIGH LASER POWER

### ADVANTAGES TO YOU

Used in combination with our On-Axis camera lenses, the RAYLASE Camera Adapter HP allows digital cameras to be connected, enabling the "On-Axis" observation of workpieces via the mirrors in the deflection unit. The active process can be observed and detected "online", while the process result can be observed and detected "offline". Additional sensors can be adapted as an alternative or extra option.

### CONFIGURABLE THROUGH AND THROUGH

Thanks to a wide range of water-cooled "screen plate sets CA HP", all standard fiber collimators can be adapted. All water-bearing components are also available in stainless steel as an alternative for cooling circuits without corrosion protection. Optional mounting adapters are available for machine integration.

On-Axis camera lenses are available for various resolutions, fields of view and observation wavelengths. We would be happy to provide a customized configuration for your application.

### INNOVATION AND QUALITY

Innovation and maintaining high product quality standards are our priorities at RAYLASE. All our products are developed, built and tested in our own laboratories and production facilities. Through our world-wide support network we can offer best maintenance and rapid service for our customers.

# CAMERA ADAPTER HP

## TYPICAL APPLICATIONS

- Workpiece inspection at high field resolution < 10 µm
- "Online" or "offline" process monitoring
- Downstream machine vision:
  - RAYLASE CLICK&TEACH application for production setup
  - RAYLASE weldMARK Vision for determining the position of the workpiece with automatic adjustment of the process file
  - Automated IO/NIO – measurements (quality)
  - Readout of serial numbers and codes

## GENERAL SPECIFICATIONS

Ambient temperature	+15°C to +35°C
Storage temperature	-10°C to +60°C
Humidity	≤ 80 % non-condensing

## TYPE-DEPENDENT SPECIFICATIONS – MECHANICAL VALUES

CAMERA ADAPTER HP	HP 1030 001	HP 1030 002	HP 1070 001	HP 1070 002
Input aperture (mm)	30.0			
Weight with adapter plates (kg)	approx. 5.8 (excluding camera lens)			
Dimensions (L x W x H) (mm)	122 x 122 x 130 (excluding screen plate set and mounting plate set)			
Materials used in water-conducting components (screen plate set and cooling block)	Aluminum	Stainless steel	Aluminum	Stainless steel
Camera lens connection thread / sensor adaptation	M36 x 1			
Water connections to screen plate and cooling block	2 x 8 mm plug connections			

## TYPE-DEPENDENT SPECIFICATIONS – LASER DATA AND WAVELENGTHS

CAMERA ADAPTER HP	HP 1030 001	HP 1030 002	HP 1070 001	HP 1070 002
Laser wavelength (reflective) (nm)	1,020 – 1,040		1,060 – 1,080	
Max. laser power (BPP > 3) <sup>1</sup> (water-cooled) (W)	8,000, 75% duty cycle			
Max. laser power (BPP < 3) <sup>1</sup> (water-cooled), (W)	5,000			
Min. input beam diameter at maximum power (1/e <sup>2</sup> ) (mm)	15.0			
Recommended input beam diameter (1/e <sup>2</sup> ) (mm)	18.0 – 20.0			
Observation wavelength range (nm)	450 – 880			

<sup>1</sup> BPP = beam parameter product.

## WATER TEMPERATURE CONTROL

CAMERA ADAPTER HP	HP 1030 001	HP 1030 002	HP 1070 001	HP 1070 002
Water <sup>1</sup>	Clean mains water with additive			
Temperature	22°C – 28°C			
Max. water pressure	< 3 bar			
Min. pressure drop for minimum water flow 2 l/min	0.4 bar			

<sup>1</sup> **Caution:** When using cooling water (also deionized water), appropriate accessories must be employed in order to prevent the growth of algae and protect the aluminum parts from corrosion. **Exception:** If using stainless steel components (type 002)

### Additive recommendations (please refer to the manufacturer's instructions):

**Standard industrial applications:** Products manufactured by NALCO, e.g. CCL105

**Applications in the food industry/packaging:** Propylene glycol manufactured by Dow Chemical, e.g. DOWCAL N

## ON-AXIS CAMERA LENSES

On-Axis camera lenses are available for various resolutions and fields of view (FOVs). The camera lenses have special steep-slope filters that ensure a sharp and brilliant image of the field of view on the camera chip. The average wavelength of these filters is available in two versions for 640 nm and 850 nm. The camera lenses (Camera Lens 00X) are equipped with a manual, lockable focus setting, allowing image sharpness to be adjusted within a wide range, depending on the F-Theta lens. An additional lockable setting allows the field of view to be aligned with the laser field orientation.

## SPECIFICATIONS FOR ON-AXIS CAMERA LENSES

ON-AXIS CAMERA LENS	CAMERA LENS 002	CAMERA LENS 003	CAMERA LENS 004	CAMERA LENS 005
Input aperture (mm)	20			
Camera connection on lens	C-Mount			
Weight (kg)	0.67			
Observation wavelength (nm) <sup>1</sup>	640 ± 6.5		850 ± 6.5	
Typical field of view (FOV) (mm) <sup>2,3</sup>	2.9 x 1.9	11 x 7	11 x 7	2.9 x 1.9
Max. optical field resolution (µm) <sup>3</sup>	5.9 (up to f = 340 mm)	5.9	5.9	5.9 (up to f = 340 mm)

<sup>1</sup> Observation wavelength = required monochromatic illumination wavelength.

<sup>2</sup> Based on focal length of F-Theta lens f = 100 mm.

<sup>3</sup> Camera chip size 1:1.2 inches, 2.35 megapixels.

The FOV (field of view) increases in proportion to the focal length at a constant camera chip size. The field resolution decreases simultaneously.

**Note:** As the fields of view and field resolutions depend on the F-Theta lenses used, the On-Axis camera objective and the camera's size and number of pixel chips, a range of different combinations is possible. Customer specific configurations are also possible. Please contact the RAYLASE support team for specific information and possible combinations on +49 8153 88 98-0 or support@raylase.de.

To improve image quality, cameras should be used without infrared filters. This filtering is achieved in the camera lens itself with less light loss. In addition to camera adapters and On-Axis lenses, RAYLASE also offers cameras, lighting packages and complete machine vision packages for On-Axis and Off-Axis monitoring.

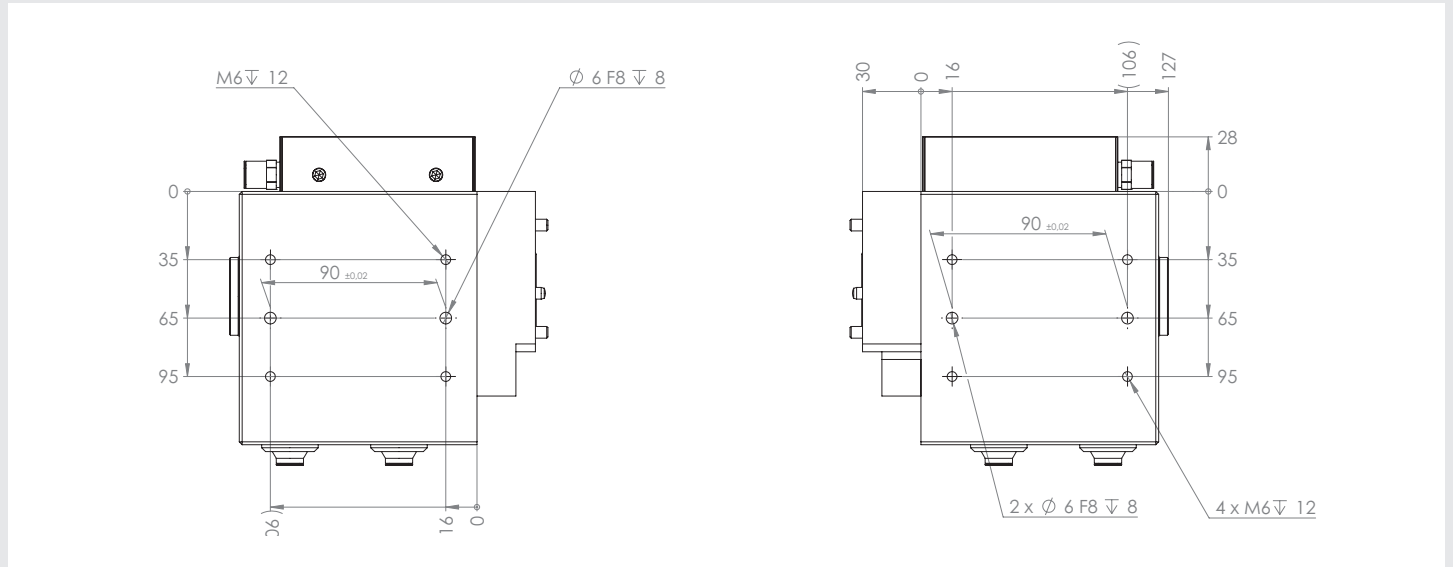
# CAMERA ADAPTER HP



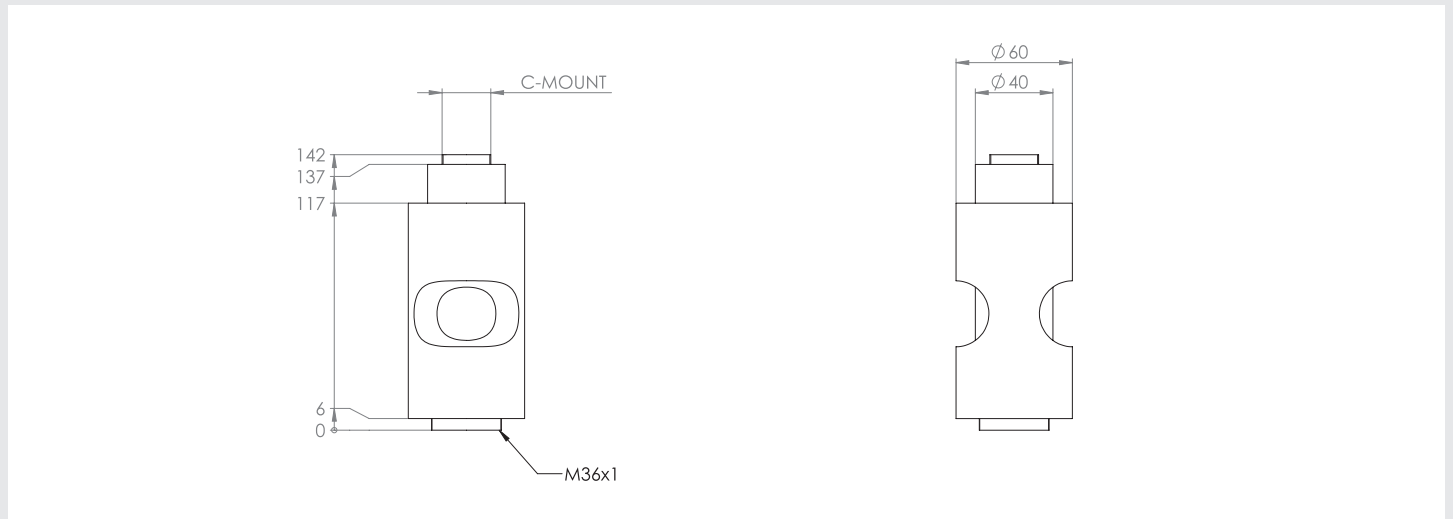
MVC ACCESSORY

FOR CHALLENGING INDUSTRIAL APPLICATIONS

## SAMPLE CONFIFURATION SCREEN PLATE SET CA HP 001/003



## OUTLINE CAMERA LENS 00X



All dimensions in mm.

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