

# Microfiber Head

## HFR/HFS Series

### Operation Guide

Thank you for purchasing a CCS product. To ensure proper use of the product, please read this instruction guide before use and keep it for your future reference.

#### 1 Introduction

##### Microfiber Head Series Lineup

The product lineup consists of the Ring type light guide and the Straight type light guide. It is used by attaching a special CCS HLV2/HLV series light source. Refer to the following table to select the appropriate light source.

Note: For the use of light source, read its instruction guide thoroughly.

Microfiber Head	Model	Light source	
		HLV2 series	HLV series
Straight type light guide	HFS-14-500	HLV2-22-NR-3W series HLV2-3M-RGB-3W	HLV-24-NR series HLV-24-NR-3W series
	HFR-25-10		HLV-3M-RGB-3W
	HFR-25-30		HLV-3M-RGB-3W
	HFR-40-20	HLV2-22-NR-3W series	HLV-24-NR series HLV-24-NR-3W series
*Uses three light sources.			

##### Dedicated Power Supply

Select a power supply from the following dedicated power supplies. No other power supplies can be used. Be sure to connect the product to a dedicated power supply.

Note: Read the instruction guide of the power supply for the LED light before use.

Rated output voltage		100 to 240V AC		24V DC
No. of channels	2ch	PJ-1505-2CA	PJ-1505-2CD24	
	3ch	PJ-1505-3CA	PJ-1505-3CD24	

##### Extension Cables

To extend a cable between a light source and a power supply, use one of the optional cables, standard type or robot-cable type. A robot cable is more durable for repeated cycles.

Note: To use a robot-cable type for extension, fix it to the cable of lighting side where the connector is embedded.

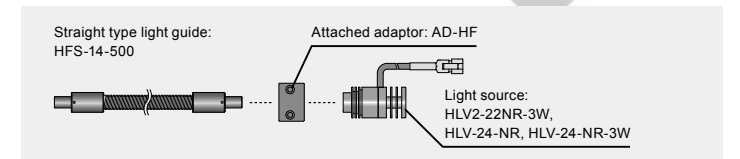
	1m	2m	3m	5m
Standard type	FCB-1	FCB-2	FCB-3	FCB-5
Robot-cable type	FRCB-1	FRCB-2	FRCB-3	FRCB-5

#### 2 Operating Instructions for the Straight Type Light Guide

**Caution** Handle the optical fibers carefully when fixing and leading them. Repeated bending may cause breaking or deterioration of the fibers, and the optical guidance ratio will be decreased.

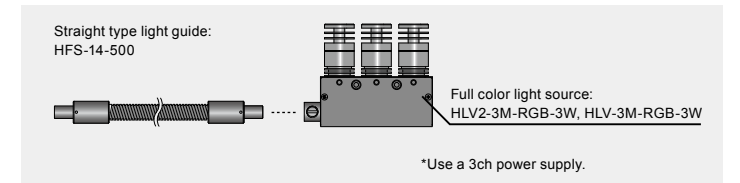
##### Connecting the Straight Type Light Guide

An adaptor is attached for connecting and fixing a light source and a light guide.



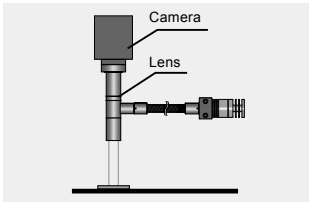
##### Requiring a full color light

Use the full color light source, which includes individual light sources and a blending unit. This unit enables stepless, independent intensity control of each color. Connect the full color light source to the light guide and secure them.



##### Application Examples of the Straight Type Light Guide

The HFS-14-500 can be attached directly into the coaxial lens, since the shape of the tip of halogen straight light guides is the same size. Less heat conductivity, compact leading tip provides a wide use in various applications.

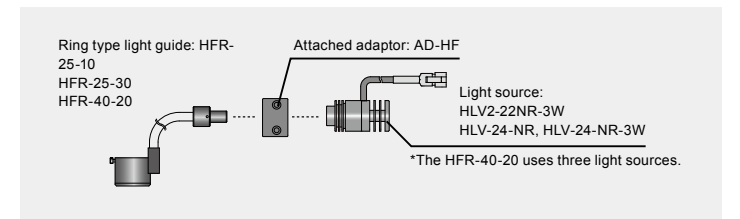


#### 3 Operating Instructions for the Ring Type Light Guide

**Caution** Handle the optical fibers carefully when fixing and leading them. Repeated bending may cause breaking or deterioration of the fibers, and the optical guidance ratio will be decreased.

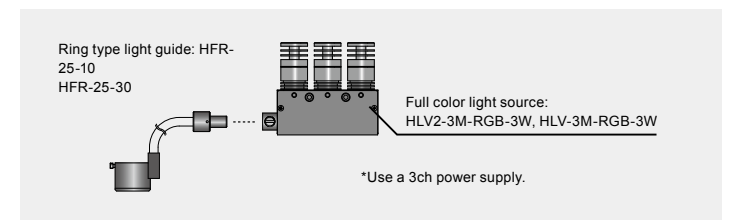
##### Connecting the Ring Type Light Guide

An adaptor is attached for connecting and fixing a light source and a light guide.



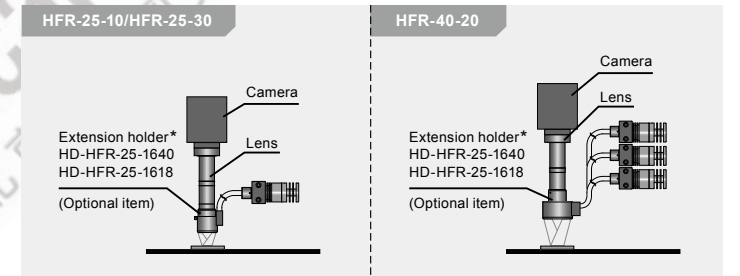
##### Requiring a full color light

Use the full color light source, which includes individual light sources and a blending unit. This unit enables stepless, independent intensity control of each color. Connect the full color light source to the light guide and secure them.



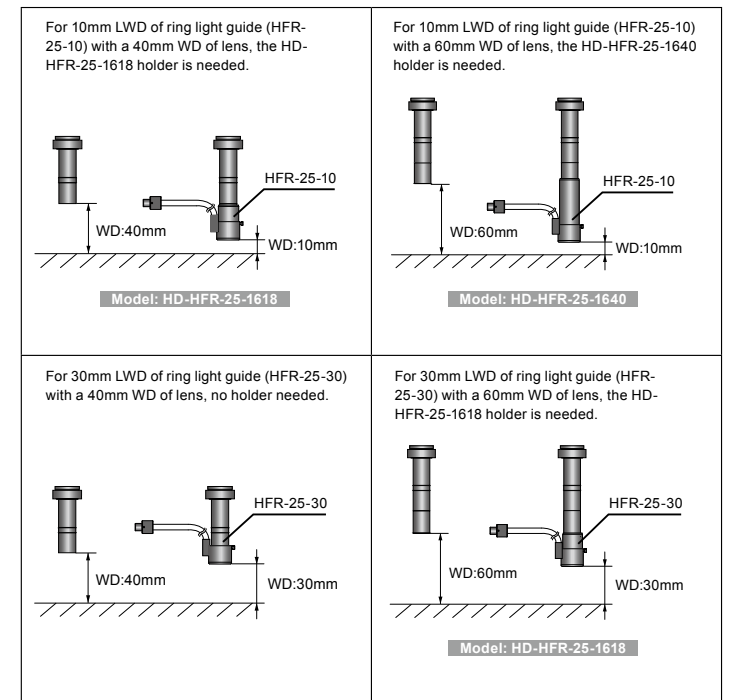
##### Application Examples of the Ring Type Light Guide

HFR-25-10: Light is focused at the point of 10 mm LWD. (Focal area is approx. 5 mm dia.)  
HFR-25-30: Light is focused at the point of 30 mm LWD. (Focal area is approx. 8 mm dia.)  
HFR-40-20: Light is focused at the point of 20 mm LWD. (Focal area is approx. 10 mm dia.)



\*Extension holders (Optional item, sold separately)

Depending on the working distance of the micro lenses, it may be needed to use a lens holders to attach the ring type fiber heads to the micro lenses. The HD-HFR-25-1618/1640 are available in option. Refer to the following information to determine the most appropriate setup for your system according to the working distance of the lens and the focal distance of the ring type light guide.



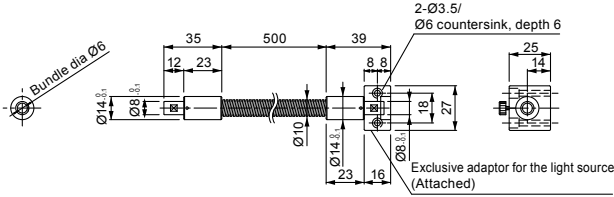
Note: Please contact CCS Inc. for other variations.

4 Specifications

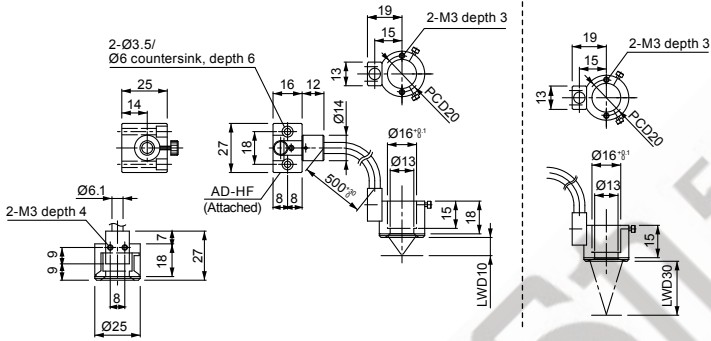
Model	HFS-14-500	HFR-25-10/30	HFR-40-20
Materials of fibers	Multi-component glass	Plastic	Plastic
Fiber size	50µm	500µm	500µm
Fiber arrangement	Random-spec.	-	-
Numerical aperture (NA)	0.56	0.5	0.5
Acceptance angle	68°	60°	60°
Spectral transmittance	300-1300nm	400-700nm	400-700nm
Operating temperature limit of the both ends	200°C	70°C	70°C
Inside min. bend radius	50mm	30mm	30mm
Weight	115g max.	60g max.	250g max.

5 Dimensional Diagrams (mm)

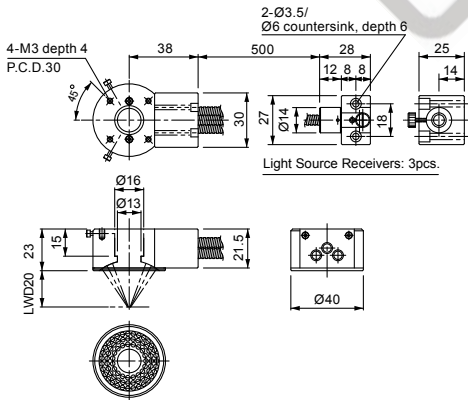
HFS-14-500



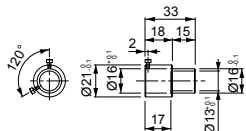
HFR-25-10/HFR-25-30



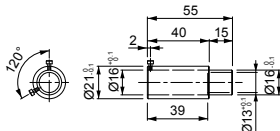
HFR-40-20



HD-HFR-25-1618 (Optional item, sold separately)



HD-HFR-25-1640 (Optional item, sold separately)



6 Environmental Regulation

EU RoHS Directive

The RoHS Directive is short for the "restriction of use of certain hazardous substances in electrical and electronic equipment." As a directive, it restricts the use of specific hazardous substances for new electrical and electronic equipment marketed in the EU on or after July 1, 2006, and restricts the use of six substances, which are (1) lead, (2) mercury, (3) cadmium, (4) hexavalent chromium, (5) polybrominated biphenyl (PBB), and (6) polybrominated diphenyl ether (PBDE).

\*Standards for "RoHS Directive-Compliant Products"

Lead	Mercury	Cadmium	Hexavalent chromium	PBB	PBDE
1000ppm max.	1000ppm max.	100ppm max.	1000ppm max.	1000ppm max.	1000ppm max.

(Items that are exempted in the RoHS Directive are excluded from these standards.)

China RoHS Directive

China RoHS Directive is formally known as "Management Methods for Restricting Hazardous Substances Used in Electric and Electronic Products", which was implemented on July 1, 2016 in China. Same as EU RoHS Directive, this regulation restricts the usage of six substances such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyl (PBB), and polybrominated diphenyl ether (PBDE). This regulation requires electronic information products which are manufactured or imported, and sold in China, to clearly disclose contents of the 6 restricted substances listed below.

Names and contents of hazardous substances

Usage Deadline for Environmental Protection	Product name	Names and contents of hazardous substances					
		Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr(VI))	PBB	PBDE
10	Fiber Head	×	○	×	○	○	○

(This table is made in compliance with SJ/T11364 regulations.)

○: Indicates that this toxic or hazardous substances contained in all the homogeneous materials for this part, according to GB/T26572 is within the limit requirement.

×: Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to GB/T26572, is over the limit requirement.

\*Lead and cadmium are excluded in EU RoHS.

Usage deadline for environmental protection

The number used in this logo is based on "Management Methods for Restricting Hazardous Substances Used in Electric and Electronic Products" and related regulations from People's Republic of China. It shows the product usage duration in years for environmental protection. After finishing a product usage, the product needs to be reused or discarded appropriately following local law and regulations, complying with safety and usage caution.

产品中有害物质的名称及含量

环保使用期限	产品	有害物质的名称及含量					
		铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
10	光纤射头	×	○	×	○	○	○

(本表格依据 SJ/T11364 的规定编制。)

○: 表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T26572 标准规定的限量要求以下。

×: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 GB/T26572 标准规定的限量要求。

(注) 铅和镉中的 "×", 因欧洲 RoHS 没限定, 故用 "○" 表示。

环保使用期限

此标志的数字是根据中华人民共和国电器电子产品有害物质限制使用管理办法以及有关标准等, 表示该产品的环保使用期限的年数。遵守产品的安全和使用上的注意, 在产品使用后采取适当的方法根据各地法律, 规定, 回收再利用或进行废弃处理。

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2 CCS Inc. WILL CHARGE A REPAIR FEE UNDER THE FOLLOWING CONDITIONS:

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- 2) IF THE PRODUCT HAS BEEN DAMAGED FROM IMPACTS DUE TO INAPPROPRIATE HANDLING.
- 3) IF DAMAGE TO THE PRODUCT RESULTS FROM EXTERNAL CAUSES INCLUDING ACCIDENTS, FIRE, POLLUTION, RIOTS, COMMUNICATION FAILURES, EARTHQUAKES, THUNDERSTORMS, WIND AND FLOOD DAMAGE, OR ANY OTHER ACT OF PROVIDENCE, OR FROM ANY EXTRAORDINARY CONDITIONS SUCH AS ELECTRICAL SURGES, WATER LEAKAGE, CONDENSATION, OR THE USE OF CHEMICALS.
- 4) IF THE DAMAGE RESULTS FROM CONNECTION TO ANY POWER SUPPLY OR TO ANY EQUIPMENT WHICH CCS INC. DOES NOT MANUFACTURE OR DOES NOT SPECIFY FOR USE.

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THIS WARRANTY INFORMATION PROVIDES THE SCOPE OF CCS'S PRODUCT WARRANTY WITHIN THE SPECIFIED PERIOD, AND DOES NOT INDICATE OR IMPLY ANY FURTHER GUARANTEE BEYOND THE WARRANTY TERMS.

CONTACT CCS FOR INQUIRIES OR INFORMATION ON REPAIRS TO THE PRODUCT AFTER THE EXPIRATION OF THE WARRANTY.

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Ask any product queries to the following address or to your nearest CCS representative.

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Use our website to find your nearest CCS representative. <http://www.ccs-grp.com/mvad>