

Illumination

Exploring the inaccessible



ILLUMINATION SYSTEM

Good illumination is essential for any Vision application. This is why FORT offers complete illumination solutions. An illumination system is made up of various different components. FORT will help you to combine these components into one single solution that is perfectly adapted to your application. Together, we will determine what your real requirements are. Once we have defined these requirements, we will help you to choose a light source with a perfectly adapted light intensity, function and size. We can also help you to choose the type of light guide that will help you to position the light on your subject as effectively as possible. Then, we will help you to choose any additional components that your application requires, such as lenses, filters or supports. When all of the components have been carefully selected, you will have a customised illumination system that perfectly meets your expectations.



Contents	
- Light generators	1
- Light guides	2-4
- Fibering to order	5

Light Generators

FORT offers a complete range of light generators designed to be connected to all of the illumination systems set out in this documentation. Below are 2 halogen and 2 Xenon arc light sources for microscopy, endoscopy and any optical fibre illumination (Machine Vision etc.). Our generators are all fitted with a light variation system based on a diaphragm.

The Lumino 500 is a 50 W light source characterised by a long-lasting arc lamp and powerful white light.

The SX200 is the most powerful light source on the market with its 180 X arc Xenon lamp, with a brightness 10 times more important than a Lumino 100 and 5 times more than a Lumino 500.

The Lumino 100 is a low cost, light and compact generator. Its 100 W halogen lamp and its progressive diaphragm fit most of customers needs for industrial applications.



Sources de lumière à Arc Xénon



Characteristics	LUMINO 500	SX 200
Brightness adjustment	progressive diaphragm	diaphragm
Lamp	50 watts Xenon arc	180 watts Xenon arc
Colour temperature	4500 K	5600 K
Usefull life of lamp	1500 hours	500 hours
Dimensions (mm)	h:100/ l:170/ p:200	h:130/ l:300/ p:300
Weight	2,5 kg	6 kg
Conditions of use	0 to +40° C	0 to +40° C
Storage conditions	0 to +60° C	0 to +60° C

Sources de lumière à lampes Halogène



Characteristics	LUMINO 100	LUMINO 12	GLI 154
Supply	230 V - 50-60 Hz	12 VDC	230 V - 50 Hz
Brightness adjustment	progressive diaphragm	progressive diaphragm	progressive diaphragm
Lamp	100 w - 12 V Halogen	100 w - 12 V Halogen	150 w Halogen
Colour température	3200° K	3200° K	3200° K
Usefull life of lamp	50 ou 1500 hours	50 or 1500 hours	100 to 800 hours
Dimensions (mm)	h:100/ l:170/ p:200	h:100/ l:170/ p:200	h:140/ l:170/ p:190
Weight	2 kg	1,5 kg	3,6 kg
Conditions of use	0 to +40° C	0 to +40° C	0 to +40° C
Storage conditions	0 to +60° C	0 to +60° C	0 to +60° C

Light Guides

How can you illuminate your required location perfectly? Quite simply with the appropriate light guide! FORT will help you to determine the guide that is best suited to your requirements. We offer a vast selection of standard light guides, ranging from straight guides to more exotic guides. Furthermore, FORT will be at your service for developing with you specialised lights guides designed for OEM applications. In this section, you can look at the products on offer in further detail.

Additional characteristics for light guides

Heat-resistant light guides.

The normal heat resistance ranges for light guides made of fibre glass with multiple components, quartz fibres or plastic fibres range from -40° to 180, respectively. Subject to order, however, FORT can manufacture light guides with a greater resistance to heat and cold.

Moisture-resistant light guides.

Standard FORT light guides are not designed to withstand high degrees of moisture. At 130° C, with a 100% degree of moisture and a pressure of

2 kg/cm, a light guide will have only demonstrate a 5% light capacity after 20 hours of use. As an option, FORT can manufacture light guides with autoclave fibres. In similar conditions of use, these light guides have a light capacity of more than 90% after 100 hours of use.

High-performance light guides for very demanding applications.

FORT has designed high-performance light guides. The specific design of the internal structure and the fibre coating

of these guides increase their useful life by 10 times in comparison to standard light guides.

Chemically resistant light guides.

For applications where chemical resistance is important, FORT can supply light guides with structures and components that are specially designed to increase chemical resistance.

Longer-length light guides.

Quartz fibres are recommended for light guides with lengths greater than 5 m.

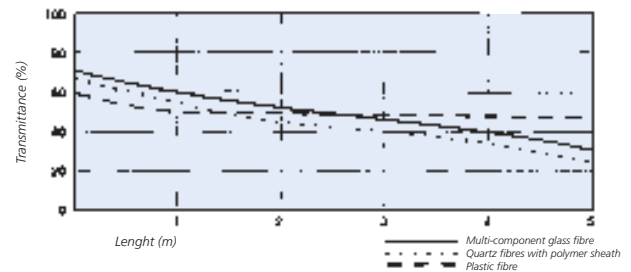
General characteristics of light guides

CHARACTERISTICS OF OPTICAL FIBRES

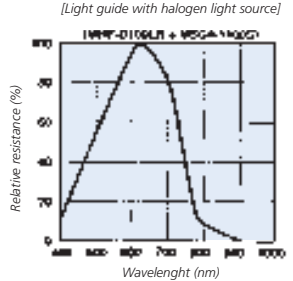
Materials	Multi-component glass fibre	Plastic fibre	Quartz fibres
Fiber diameter	50µ, 75µ, 100µ, 125µ, 150µ, 200µ, 250µ, 300µ, 400µ, 500µ, 600µ, 700µ, 800µ, 900µ, 1000µ	200µ, 300µ, 400µ, 500µ, 600µ, 700µ, 800µ, 900µ, 1000µ	200µ, 300µ, 400µ, 500µ, 600µ, 700µ, 800µ, 900µ, 1000µ
Core diameter	25µ, 37.5µ, 50µ, 75µ, 100µ, 125µ, 150µ, 200µ, 250µ, 300µ, 400µ, 500µ, 600µ, 700µ, 800µ, 900µ, 1000µ	125µ, 150µ, 200µ, 250µ, 300µ, 400µ, 500µ, 600µ, 700µ, 800µ, 900µ, 1000µ	200µ, 300µ, 400µ, 500µ, 600µ, 700µ, 800µ, 900µ, 1000µ
Input angle	30°, 45°, 60°, 75°, 90°, 105°, 120°, 135°, 150°, 165°, 180°	30°, 45°, 60°, 75°, 90°, 105°, 120°, 135°, 150°, 165°, 180°	30°, 45°, 60°, 75°, 90°, 105°, 120°, 135°, 150°, 165°, 180°
Heat resistance	Standard: -40°C to 180°C Special order: -100°C to 300°C	Standard: -40°C to 180°C	Standard: -40°C to 180°C Special order: -100°C to 300°C
Durability	Excellent	Satisfactory	Not recommended
Visible light transmittance	Excellent	Satisfactory	Not recommended

● Excellent ▲ Satisfactory ■ Not recommended
1 Characteristics of fibre bundles (characteristics of single fibres unavailable)
2 Please contact FORT for further details.

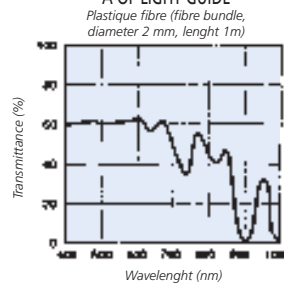
LENGTH OF LIGHT GUIDES AND TRANSMITTANCE



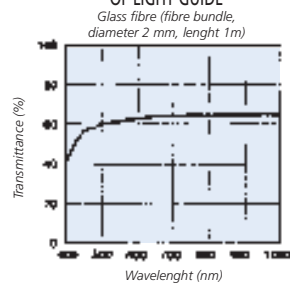
SPECTROSCOPIC CHARACTERISTICS



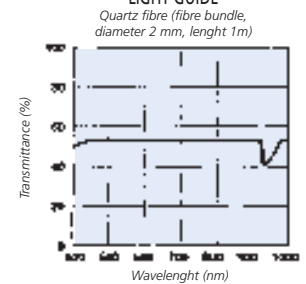
SPECTROSCOPIC TRANSMITTANCE A OF LIGHT GUIDE



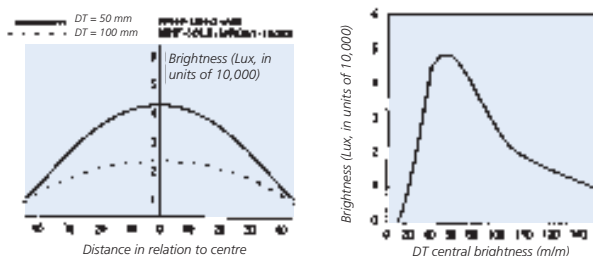
SPECTROSCOPIC TRANSMITTANCE B OF LIGHT GUIDE



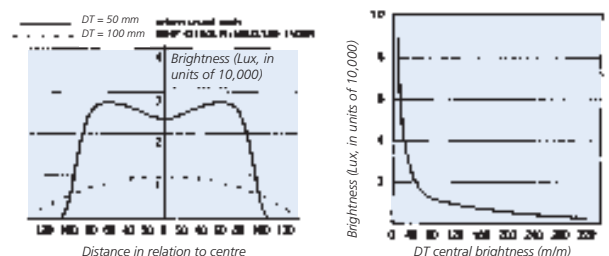
SPECTROSCOPIC TRANSMITTANCE C OF LIGHT GUIDE



EXAMPLE OF THE BRIGHTNESS DISTRIBUTION OF ANNULAR LIGHT GUIDES



EXAMPLE OF THE BRIGHTNESS DISTRIBUTION OF ANNULAR LIGHT GUIDES





Standard light guides

Universal cables

Very flexible (silicon or plastic sheath), good chemical resistance, good tensile strength, light, source adaptation and optical adaptation

Reference	Length	Fibre ø
CLU1G 18S	1,8 m	4 mm
CLU1G 18M	1,8 m	4 mm

Optical adaptation: WOLF, STORTZ, OLYMPUS, FORT, etc.

Source adaptation: OLYMPUS, VOLPI, MORITEX, FORT, WOLF, STORZ etc.



Connection Cable

Very flexible, good chemical resistance, good tensile strength, light, source adaptation and optical adaptation.

Reference	Length	Fibre ø
LCL1G 18S	1.8 m	4 mm
LCL1G 24S	2.4 m	4 mm
LCL1G 36S	3.6 m	4 mm
LCL2G 18S	1.8 m double	4 mm x 2



Flexible and semi-rigid illumination cable

Good crush-resistance, very flexible, good chemical resistance, good tensile strength, light, source adaptation and optical adaptation

Reference	Length	Fibre ø
LCL1R12	1,2 m	8 mm
LCL1R24	2.4 m	8 mm
LCE1G 12F	1,2 m	4 mm
LCE2G 12F	1.2 m	2 x 3 mm



Semi-rigid illumination cable

Reference	Length	Fibre ø
LCF1G 06F	0,6 m	4 mm
LCF2E 06F	0.6 m	2 x 3 mm



Annular illumination cable

Reference	Length	Internal ø	External ø
LCA20C12	1,2 m	51 mm	87 mm



Fibering to Order



Within the shortest possible deadlines, we will carry out any specific fibering requests for

- industrial
- advertising
- illumination, or
- signalling applications

We will manufacture the products on the basis of the following procedure:

- specification-based definition of the product by the client
- product drawings and proposal by FORT followed by client acceptance
- creation of two prototypes
- execution of the series



Illumination

Exploring the inaccessible



FORT France

ZI de la Gaudrée - 3, rue Lambert - BP 100
91415 DOURDAN cedex - FRANCE
Tél.: +33 (0) 1 60 81 18 18
email: info@fort-fr.com

Inspection Optics - FORT U.K.

Garston Bridge - Garsdale
Frome, Somerset. BA11 1RU
Tel: +44 (0) 13 73 466 147
email: enquiries@inspectionoptics.co.uk

FORT Fibre Ottiche

Via W. Tobagi, 5
24035 Curno BG - Italia
Tel: +39 035 460150
email: fort.ita@mediacom.it

internet: www.fort-fr.com