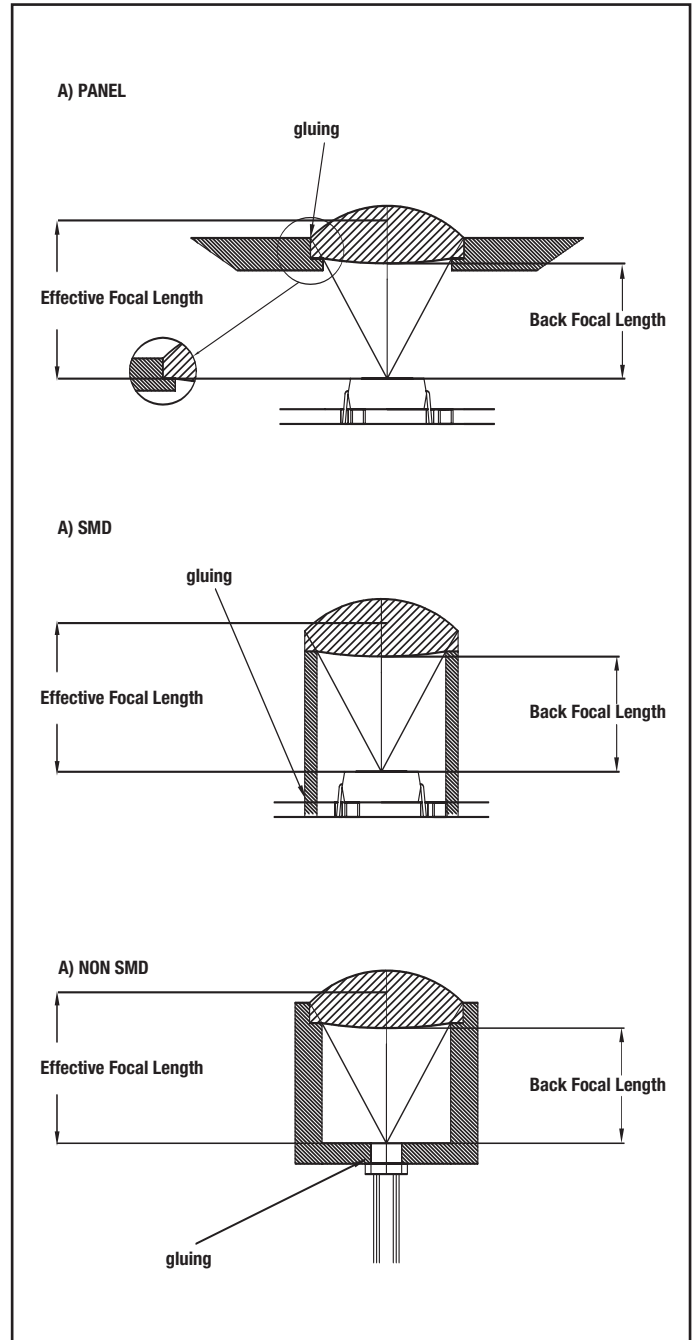


Code	Dia (mm)	Page
KE0300XB	lenses dia 3.0 mm	3
KE0350XB	lenses dia 3.5 mm	3
KE0400XB	lenses dia 4.0 mm	3
KE0450XB	lenses dia 4.5 mm	3
KE0500XB	lenses dia 5.0 mm	4
KE0550XB	lenses dia 5.5 mm	4
KE0600XB	lenses dia 6.0 mm	4
KE0650XB	lenses dia 6.5 mm	4
KE0700XB	lenses dia 7.0 mm	5
KE0750XB	lenses dia 7,5 mm	5
KE0800XB	lenses dia 8.0 mm	5
KE0850XB	lenses dia 8.5 mm	5
KE0900XB	lenses dia 9.0 mm	6
KE0950XB	lenses dia 9.5 mm	6
KE1000XB	lenses dia 10.0 mm	6
KE1050XB	lenses dia 10.5 mm	6
KE1100XB	lenses dia 11.0 mm	7
KE1150XB	lenses dia 11.5 mm	7
KE1200XB	lenses dia 12.0 mm	7
KE1250XB	lenses dia 12.5 mm	7
KE1300XB	lenses dia 13.0 mm	8
KE1350XB	lenses dia 13.5 mm	8
KE1400XB	lenses dia 14.0 mm	8
KE1450XB	lenses dia 14.5 mm	8
KE1500XB	lenses dia 15.0 mm	9
KE1550XB	lenses dia 15.5 mm	9
KE1600XB	lenses dia 16.0 mm	9
KE1650XB	lenses dia 16.5 mm	9
KE1700XB	lenses dia 17.0 mm	10
KE1750XB	lenses dia 17.5 mm	10
KE1800XB	lenses dia 18.0 mm	10
KE1850XB	lenses dia 18.5 mm	10
KE1900XB	lenses dia 19.0 mm	11
KE1950XB	lenses dia 19.5 mm	11
KE2000XB	lenses dia 20.0 mm	11
KIT SAMPLES	lenses kit	11

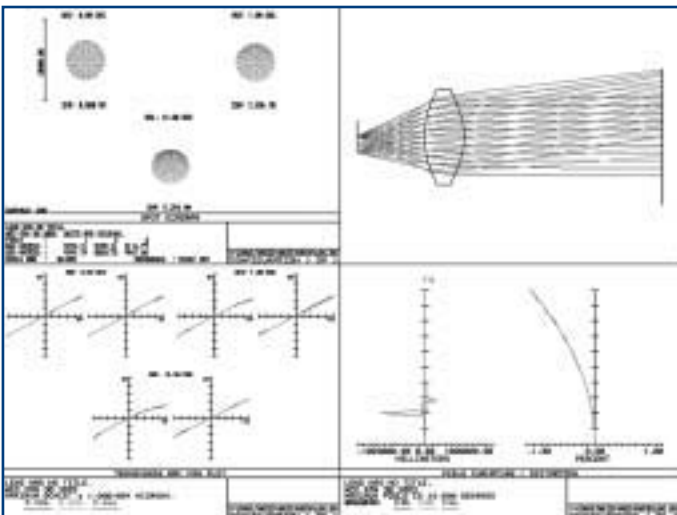
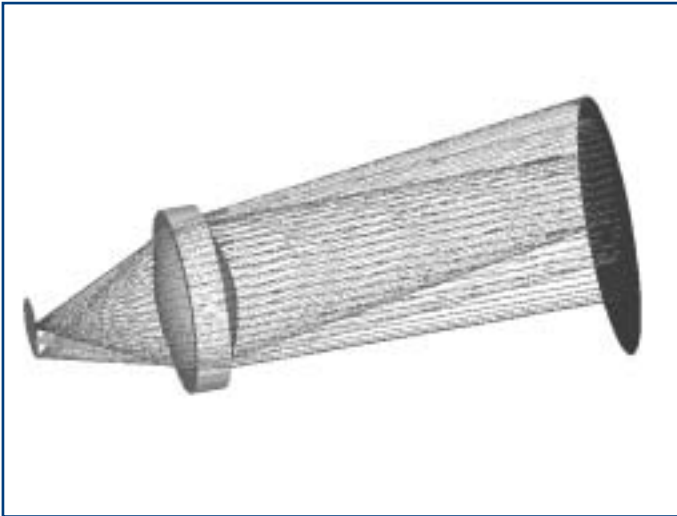


Custom Optical Solutions Development

Besides requiring an high level of competence on materials and on the production process, the development of an optical system involves an accurate engineering based on a deep knowledge of optics: this is also true for quite simple systems, such as a single lens, to allow the most efficient, compact and cheap solution to be chosen.

In addition, this approach guarantees that the correct solution to a specific problem will be given in the shortest time and with no technological risk for the customer, that means saving time and money. To meet this need, Khatod can now offer to its worldwide customers a direct optical engineering support that will lead them to rapidly understand and chose which is the component to be developed and produced.

Our *Optical Engineering Service* can provide You with any kind of optical solution projecting Your components with the most advanced software, such as ZEMAX and OSLO. Please help us in understanding exactly what Your need is, filling in the forms below.



Plastic Moulded Lenses

Applications:

Common applications of plastic lenses:

Automation, Instrumentation and Telecommunications.

- ▶ Interface to LEDs
- ▶ Interface to photodiodes, phototransistors
- ▶ Interface to laser diodes

Lighting

- ▶ Searchlights
- ▶ Car lighting systems
- ▶ Displays, image intensifiers
- ▶ Infrared Lighting for Security Systems

Imaging

- ▶ Photographic and CCTV camera objectives (also of a very high quality)
- ▶ Optical Instrumentation, binoculars, telescopes,..
- ▶ Magnifying lenses, eyepieces

Eyewear

- ▶ Goggles, spectacles, sun glasses, visors, protection eyewear
- ▶ Ophthalmic lenses

Thousands of other applications ...

Advantages:

In comparison to glass made lenses, plastic lenses offer:

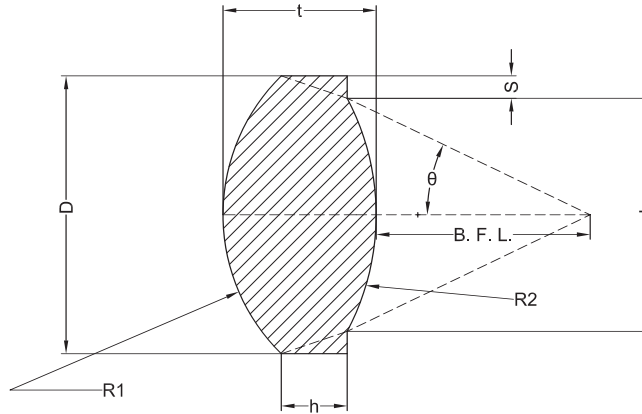
- ▶ Mass replication capability
- ▶ Low cost
- ▶ Ease of mechanical interface and mounting (lens+holder built into one piece)
- ▶ Standard quality warranty
- ▶ Low weight
- ▶ High Infrared Radiation Transmission
- ▶ Uncommon optical shapes, like aspheres, Fresnel lenses, cylinders
- ▶ Difficultness to be copied in absence of a project
- ▶ Easily produced coloured plastics

Possible System Configurations: (check Your application and, where possible, fill in the system data)

The most important feature of a lens is what is called its “focal length” *f*: this parameters describes the capability of the lens to “shape” the light. The shorter the focal length the higher its power to magnify, enlarge and focus light on very small spots. The *f* of a lens depends on:

- ▶ its shape
- ▶ the kind of material the lens is made of

A good choice of both these characteristics is what makes a plastic molded lens the best solution for Your optical task.



See page 13 for material specification and geometric tolerance

KE030 - Biconvex Lenses Ø 3,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE03001B	PC	3,00	2,50	0,25	2,50	2,17	587	6,0	4,5
KE03002B	SAN	3,00	2,50	0,25	2,50	2,17	587	6,0	4,5
KE03003B	PC-IR	3,00	2,50	0,25	2,50	2,17	850	6,2	4,6
KE03004B	PMMA	3,00	2,50	0,25	2,50	2,17	587	7,1	5,5
KE03005B	PMMA-IR	3,00	2,50	0,25	2,50	2,17	850	7,5	5,6

KE035 - Biconvex Lenses Ø 3,50 mm.

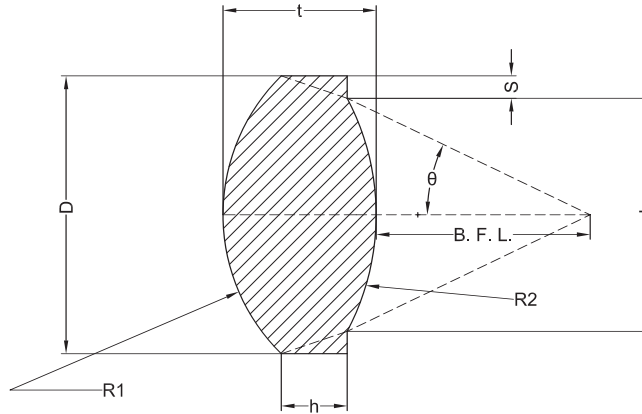
Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE03501B	PC	3,50	3,00	0,25	2,50	2,12	587	7,0	5,4
KE03502B	SAN	3,50	3,00	0,25	2,50	2,12	587	7,0	5,4
KE03503B	PC-IR	3,50	3,00	0,25	2,50	2,12	850	7,2	5,6
KE03504B	PMMA	3,50	3,00	0,25	2,50	2,12	587	8,3	6,7
KE03505B	PMMA-IR	3,50	3,00	0,25	2,50	2,12	850	8,4	6,8

KE040 - Biconvex Lenses Ø 4,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE04001B	PC	4,00	3,50	0,25	2,50	2,06	587	8,0	6,4
KE04002B	SAN	4,00	3,50	0,25	2,50	2,06	587	8,0	6,4
KE04003B	PC-IR	4,00	3,50	0,25	2,50	2,06	850	8,2	6,6
KE04004B	PMMA	4,00	3,50	0,25	2,50	2,06	587	9,5	7,8
KE04005B	PMMA-IR	4,00	3,50	0,25	2,50	2,06	850	9,6	7,9

KE045 - Biconvex Lenses Ø 4,50 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE04501B	PC	4,50	4,00	0,25	3,00	2,50	587	9,0	7,1
KE04502B	SAN	4,50	4,00	0,25	3,00	2,50	587	9,0	7,1
KE04503B	PC-IR	4,50	4,00	0,25	3,00	2,50	850	9,2	7,3
KE04504B	PMMA	4,50	4,00	0,25	3,00	2,50	587	10,7	8,7
KE04505B	PMMA-IR	4,50	4,00	0,25	3,00	2,50	850	10,8	8,8



See page 13 for material specification and geometric tolerance

KE050 - Biconvex Lenses Ø 5,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE05001B	PC	5,00	4,50	0,25	3,00	2,45	587	10,0	8,1
KE05002B	SAN	5,00	4,50	0,25	3,00	2,45	587	10,0	8,1
KE05003B	PC-IR	5,00	4,50	0,25	3,00	2,45	850	10,3	8,3
KE05004B	PMMA	5,00	4,50	0,25	3,00	2,45	587	11,9	9,8
KE05005B	PMMA-IR	5,00	4,50	0,25	3,00	2,45	850	12,0	10,0

KE055 - Biconvex Lenses Ø 5,50 mm.

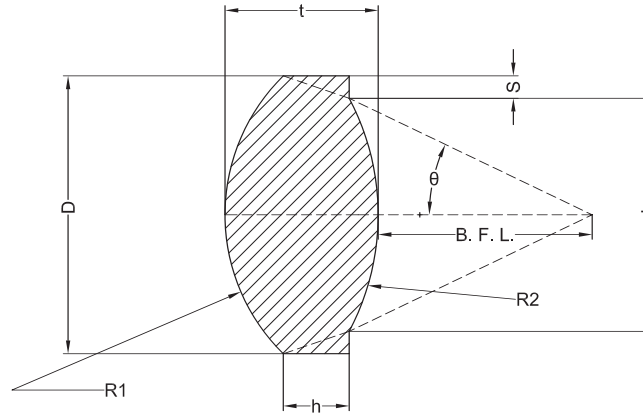
Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE05501B	PC	5,50	5,00	0,25	3,00	2,40	587	11,0	9,0
KE05502B	SAN	5,50	5,00	0,25	3,00	2,40	587	11,0	9,0
KE05503B	PC-IR	5,50	5,00	0,25	3,00	2,40	850	11,3	9,3
KE05504B	PMMA	5,50	5,00	0,25	3,00	2,40	587	13,1	11,0
KE05505B	PMMA-IR	5,50	5,00	0,25	3,00	2,40	850	13,3	11,2

KE060 - Biconvex Lenses Ø 6,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE06001B	PC	6,00	5,50	0,25	3,00	2,34	587	12,0	10,0
KE06002B	SAN	6,00	5,50	0,25	3,00	2,34	587	12,0	10,0
KE06003B	PC-IR	6,00	5,50	0,25	3,00	2,34	850	12,3	10,3
KE06004B	PMMA	6,00	5,50	0,25	3,00	2,34	587	14,3	12,1
KE06005B	PMMA-IR	6,00	5,50	0,25	3,00	2,34	850	14,5	12,3

KE065 - Biconvex Lenses Ø 6,50 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE06501B	PC	6,50	5,00	0,75	4,50	2,95	587	6,5	3,5
KE06502B	SAN	6,50	5,00	0,75	4,50	2,95	587	6,5	3,5
KE06503B	PC-IR	6,50	5,00	0,75	4,50	2,95	850	6,7	3,7
KE06504B	PMMA	6,50	5,00	0,75	4,50	2,95	587	7,7	4,5
KE06505B	PMMA-IR	6,50	5,00	0,75	4,50	2,95	850	7,8	4,6



See page 13 for material specification and geometric tolerance

KE070- Biconvex Lenses Ø 7,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE07001B	PC	7,00	5,50	0,75	4,50	2,80	587	7,0	4,0
KE07002B	SAN	7,00	5,50	0,75	4,50	2,80	587	7,0	4,0
KE07003B	PC-IR	7,00	5,50	0,75	4,50	280	850	7,2	4,1
KE07004B	PMMA	7,00	5,50	0,75	4,50	2,80	587	8,3	5,0
KE07005B	PMMA-IR	7,00	5,50	0,75	4,50	2,80	850	8,4	5,1

KE075 - Biconvex Lenses Ø 7,50 mm.

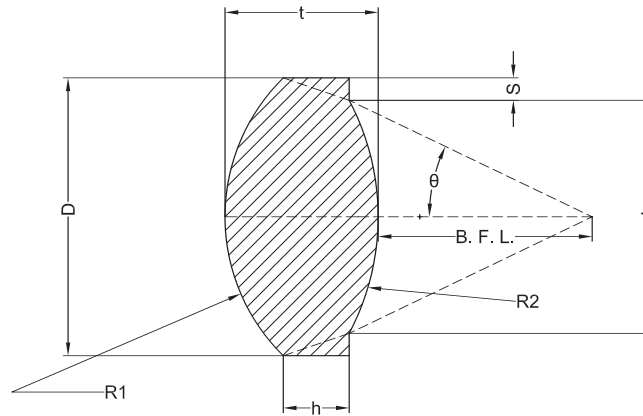
Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE07501B	PC	7,50	6,00	0,75	4,50	2,67	587	7,5	4,4
KE07502B	SAN	7,50	6,00	0,75	4,50	2,67	587	7,5	4,4
KE07503B	PC-IR	7,50	6,00	0,75	4,50	2,67	850	7,7	4,5
KE07504B	PMMA	7,50	6,00	0,75	4,50	2,67	587	8,9	5,5
KE07505B	PMMA-IR	7,50	6,00	0,75	4,50	2,67	850	9,0	5,6

KE080 - Biconvex Lenses Ø 8,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE08001B	PC	8,00	6,50	0,75	4,50	2,56	587	8,0	4,9
KE08002B	SAN	8,00	6,50	0,75	4,50	2,56	587	8,0	4,9
KE08003B	PC-IR	8,00	6,50	0,75	4,50	2,56	850	8,2	5,0
KE08004B	PMMA	8,00	6,50	0,75	4,50	2,56	587	9,5	6,1
KE08005B	PMMA-IR	8,00	6,50	0,75	4,50	2,56	850	9,6	6,2

KE085 - Biconvex Lenses Ø 8,50 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE08501B	PC	8,50	7,00	0,75	4,50	2,42	587	8,5	4,7
KE08502B	SAN	8,50	7,00	0,75	4,50	2,42	587	8,5	4,7
KE08503B	PC-IR	8,50	7,00	0,75	4,50	2,42	850	8,7	5,4
KE08504B	PMMA	8,50	7,00	0,75	4,50	2,42	587	10,0	6,6
KE08505B	PMMA-IR	8,50	7,00	0,75	4,50	2,42	850	10,2	6,7



See page 13 for material specification and geometric tolerance

KE090 - Biconvex Lenses Ø 9,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE09001B	PC	9,00	8,00	0,50	4,00	1,78	587	9,0	5,3
KE09002B	SAN	9,00	8,00	0,50	4,00	1,78	587	9,0	5,3
KE09003B	PC-IR	9,00	8,00	0,50	4,00	1,78	850	9,2	6,1
KE09004B	PMMA	9,00	8,00	0,50	4,00	1,78	587	10,7	7,4
KE09005B	PMMA-IR	9,00	8,00	0,50	4,00	1,78	850	10,8	7,5

KE095 - Biconvex Lenses Ø 9,50 mm.

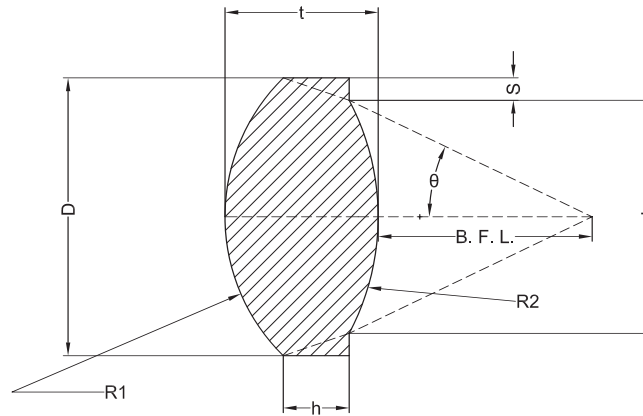
Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE09501B	PC	9,50	7,50	1,00	6,00	3,70	587	9,5	5,5
KE09502B	SAN	9,50	7,50	1,00	6,00	3,70	587	9,5	5,5
KE09503B	PC-IR	9,50	7,50	1,00	6,00	3,70	850	9,7	5,6
KE09504B	PMMA	9,50	7,50	1,00	6,00	3,70	587	11,2	6,9
KE09505B	PMMA-IR	9,50	7,50	1,00	6,00	3,70	850	11,4	7,0

KE100 - Biconvex Lenses Ø 10 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE10001B	PC	10,00	8,00	1,00	6,00	3,61	587	10,0	5,9
KE10002B	SAN	10,00	8,00	1,00	6,00	3,61	587	10,0	5,9
KE10003B	PC-IR	10,00	8,00	1,00	6,00	3,61	850	10,3	6,1
KE10004B	PMMA	10,00	8,00	1,00	6,00	3,61	587	11,8	7,4
KE10005B	PMMA-IR	10,00	8,00	1,00	6,00	3,61	850	12,0	7,6

KE105 - Biconvex Lenses Ø 10,50 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE10501B	PC	10,50	9,00	0,75	5,00	2,42	587	10,5	6,1
KE10502B	SAN	10,50	9,00	0,75	5,00	2,42	587	10,5	6,1
KE10503B	PC-IR	10,50	9,00	0,75	5,00	2,42	850	10,7	7,0
KE10504B	PMMA	10,50	9,00	0,75	5,00	2,42	587	12,4	8,4
KE10505B	PMMA-IR	10,50	9,00	0,75	5,00	2,42	850	12,6	8,6



See page 13 for material specification and geometric tolerance

KE110 - Biconvex Lenses Ø 11,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE11001B	PC	11,00	9,50	0,75	5,50	2,84	587	11,0	6,5
KE11002B	SAN	11,00	9,50	0,75	5,50	2,84	587	11,0	6,5
KE11003B	PC-IR	11,00	9,50	0,75	5,50	2,84	850	11,3	7,2
KE11004B	PMMA	11,00	9,50	0,75	5,50	2,84	587	13,0	8,7
KE11005B	PMMA-IR	11,00	9,50	0,75	5,50	2,84	850	13,2	8,9

KE115 - Biconvex Lenses Ø 11,50 mm.

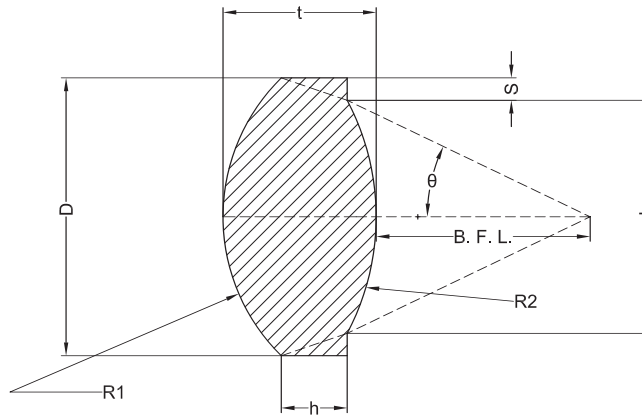
Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE11501B	PC	11,50	9,50	1,00	6,00	3,25	587	11,5	7,2
KE11502B	SAN	11,50	9,50	1,00	6,00	3,25	587	11,5	7,2
KE11503B	PC-IR	11,50	9,50	1,00	6,00	3,25	850	11,8	7,4
KE11504B	PMMA	11,50	9,50	1,00	6,00	3,25	587	13,6	9,0
KE11505B	PMMA-IR	11,50	9,50	1,00	6,00	3,25	850	13,8	9,1

KE120 - Biconvex Lenses Ø 12,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE12001B	PC	12,00	10,00	1,00	6,00	3,12	587	12,0	7,6
KE12002B	SAN	12,00	10,00	1,00	6,00	3,12	587	12,0	7,6
KE12003B	PC-IR	12,00	10,00	1,00	6,00	3,12	850	12,3	7,9
KE12004B	PMMA	12,00	10,00	1,00	6,00	3,12	587	14,2	9,5
KE12005B	PMMA-IR	12,00	10,00	1,00	6,00	3,12	850	14,4	9,7

KE125 - Biconvex Lenses Ø 12,50 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE12501B	PC	12,50	11,00	0,75	6,00	2,96	587	12,5	8,0
KE12502B	SAN	12,50	11,00	0,75	6,00	2,96	587	12,5	8,0
KE12503B	PC-IR	12,50	11,00	0,75	6,00	2,96	850	12,8	8,3
KE12504B	PMMA	12,50	11,00	0,75	6,00	2,96	587	14,8	10,0
KE12505B	PMMA-IR	12,50	11,00	0,75	6,00	2,96	850	15,0	10,2



See page 13 for material specification and geometric tolerance

KE130 - Biconvex Lenses Ø 13,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE13001B	PC	13,00	11,50	0,75	6,00	2,80	587	13,0	7,6
KE13002B	SAN	13,00	11,50	0,75	6,00	2,80	587	13,0	7,6
KE13003B	PC-IR	13,00	11,50	0,75	6,00	2,80	850	13,3	8,7
KE13004B	PMMA	13,00	11,50	0,75	6,00	2,80	587	15,4	10,5
KE13005B	PMMA-IR	13,00	11,50	0,75	6,00	2,80	850	15,6	10,7

KE135 - Biconvex Lenses Ø 13,50 mm.

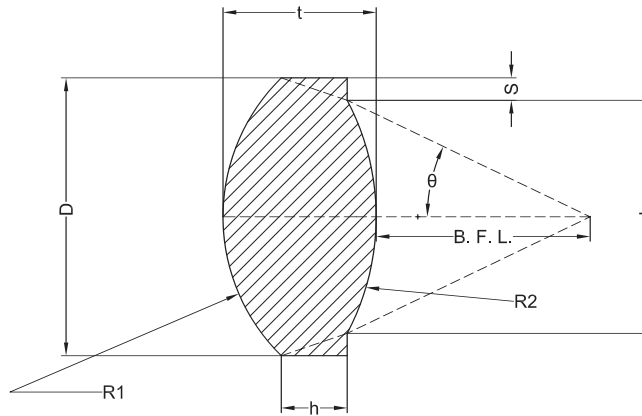
Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE13501B	PC	13,50	12,00	0,75	6,00	2,72	587	13,5	8,9
KE13502B	SAN	13,50	12,00	0,75	6,00	2,72	587	13,5	8,9
KE13503B	PC-IR	13,50	12,00	0,75	6,00	2,72	850	13,9	9,2
KE13504B	PMMA	13,50	12,00	0,75	6,00	2,72	587	16,0	11,1
KE13505B	PMMA-IR	13,50	12,00	0,75	6,00	2,72	850	16,2	11,3

KE140 - Biconvex Lenses Ø 14,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE14001B	PC	14,00	12,50	0,75	6,00	2,60	587	14,0	9,4
KE14002B	SAN	14,00	12,50	0,75	6,00	2,60	587	14,0	9,4
KE14003B	PC-IR	14,00	12,50	0,75	6,00	2,60	850	14,4	9,7
KE14004B	PMMA	14,00	12,50	0,75	6,00	2,60	587	16,6	11,7
KE14005B	PMMA-IR	14,00	12,50	0,75	6,00	2,60	850	16,8	11,9

KE145 - Biconvex Lenses Ø 14,50 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE14501B	PC	14,50	13,00	0,75	6,00	2,42	587	14,5	9,7
KE14502B	SAN	14,50	13,00	0,75	6,00	2,42	587	14,5	9,7
KE14503B	PC-IR	14,50	13,00	0,75	6,00	2,42	850	14,9	10,1
KE14504B	PMMA	14,50	13,00	0,75	6,00	2,42	587	17,2	12,1
KE14505B	PMMA-IR	14,50	13,00	0,75	6,00	2,42	850	17,4	12,3



See page 13 for material specification and geometric tolerance

KE150 - Biconvex Lenses Ø 15,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE15001B	PC	15,00	13,00	1,00	7,00	3,38	587	15,0	9,8
KE15002B	SAN	15,00	13,00	1,00	7,00	3,38	587	15,0	9,8
KE15003B	PC-IR	15,00	13,00	1,00	7,00	3,38	850	15,4	10,1
KE15004B	PMMA	15,00	13,00	1,00	7,00	3,38	587	17,8	12,2
KE15005B	PMMA-IR	15,00	13,00	1,00	7,00	3,38	850	18,0	12,4

KE155 - Biconvex Lenses Ø 15,50 mm.

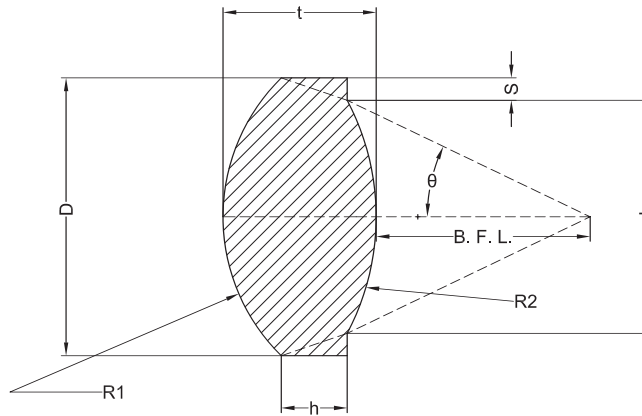
Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE15501B	PC	15,50	14,00	0,75	7,00	5,30	587	31,0	26,3
KE15502B	SAN	15,50	14,00	0,75	7,00	5,30	587	31,0	26,3
KE15503B	PC-IR	15,50	14,00	0,75	7,00	5,30	850	31,7	27,0
KE15504B	PMMA	15,50	14,00	0,75	7,00	5,30	587	36,8	31,8
KE15505B	PMMA-IR	15,50	14,00	0,75	7,00	5,30	850	37,4	32,3

KE160 - Biconvex Lenses Ø 16,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE16001B	PC	16,00	15,00	0,50	7,00	5,24	587	32,0	27,2
KE16002B	SAN	16,00	15,00	0,50	7,00	5,24	587	32,0	27,2
KE16003B	PC-IR	16,00	15,00	0,50	7,00	5,24	850	32,8	28,0
KE16004B	PMMA	16,00	15,00	0,50	7,00	5,24	587	38,0	33,0
KE16005B	PMMA-IR	16,00	15,00	0,50	7,00	5,24	850	38,6	33,5

KE165 - Biconvex Lenses Ø 16,50 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE16501B	PC	16,50	15,00	0,75	7,00	5,18	587	33,0	28,2
KE16502B	SAN	16,50	15,00	0,75	7,00	5,18	587	33,0	28,2
KE16503B	PC-IR	16,50	15,00	0,75	7,00	5,18	850	33,8	29,0
KE16504B	PMMA	16,50	15,00	0,75	7,00	5,18	587	39,2	34,1
KE16505B	PMMA-IR	16,50	15,00	0,75	7,00	5,18	850	39,8	34,6



See page 13 for material specification and geometric tolerance

KE170 - Biconvex Lenses Ø 17,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE17001B	PC	17,00	16,00	0,50	7,00	5,12	587	34,0	29,2
KE17002B	SAN	17,00	16,00	0,50	7,00	5,12	587	34,0	29,2
KE17003B	PC-IR	17,00	16,00	0,50	7,00	5,12	850	34,9	30,0
KE17004B	PMMA	17,00	16,00	0,50	7,00	5,12	587	40,4	35,3
KE17005B	PMMA-IR	17,00	16,00	0,50	7,00	5,12	850	40,9	35,8

KE175 - Biconvex Lenses Ø 17,50 mm.

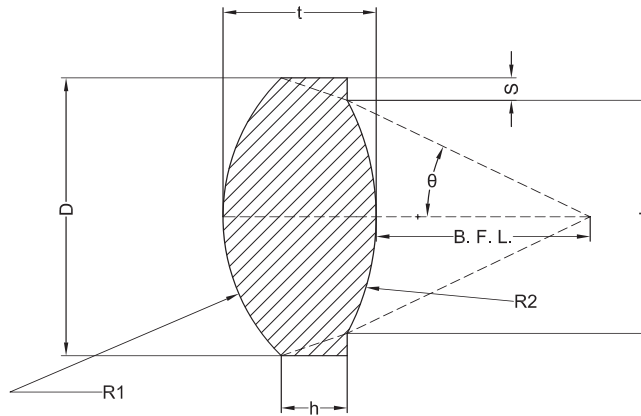
Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE17501B	PC	17,50	16,00	0,75	7,00	5,00	587	35,0	30,1
KE17502B	SAN	17,50	16,00	0,75	7,00	5,00	587	35,0	30,1
KE17503B	PC-IR	17,50	16,00	0,75	7,00	5,00	850	35,9	31,0
KE17504B	PMMA	17,50	16,00	0,75	7,00	5,00	587	41,6	36,4
KE17505B	PMMA-IR	17,50	16,00	0,75	7,00	5,00	850	42,2	37,0

KE180 - Biconvex Lenses Ø 18,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE18001B	PC	18,00	16,50	0,75	7,00	5,00	587	36,0	31,1
KE18002B	SAN	18,00	16,50	0,75	7,00	5,00	587	36,0	31,1
KE18003B	PC-IR	18,00	16,50	0,75	7,00	5,00	850	36,9	32,0
KE18004B	PMMA	18,00	16,50	0,75	7,00	5,00	587	42,8	37,6
KE18005B	PMMA-IR	18,00	16,50	0,75	7,00	5,00	850	43,4	38,2

KE185 - Biconvex Lenses Ø 18,50 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE18501B	PC	18,50	17,50	0,50	7,00	4,95	587	37,0	32,1
KE18502B	SAN	18,50	17,50	0,50	7,00	4,95	587	37,0	32,1
KE18503B	PC-IR	18,50	17,50	0,50	7,00	4,95	850	37,9	33,0
KE18504B	PMMA	18,50	17,50	0,50	7,00	4,95	587	44,0	38,8
KE18505B	PMMA-IR	18,50	17,50	0,50	7,00	4,95	850	44,6	39,3



See page 13 for material specification and geometric tolerance

KE190 - Biconvex Lenses Ø 19,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE19001B	PC	19,00	18,00	0,50	7,00	4,90	587	38,0	33,1
KE19002B	SAN	19,00	18,00	0,50	7,00	4,90	587	38,0	33,1
KE19003B	PC-IR	19,00	18,00	0,50	7,00	4,90	850	39,0	34,0
KE19004B	PMMA	19,00	18,00	0,50	7,00	4,90	587	45,2	39,9
KE19005B	PMMA-IR	19,00	18,00	0,50	7,00	4,90	850	45,8	40,5

KE195 - Biconvex Lenses Ø 19,50 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE19501B	PC	19,50	18,50	0,50	7,00	4,80	587	39,0	34,0
KE19502B	SAN	19,50	18,50	0,50	7,00	4,80	587	39,0	34,0
KE19503B	PC-IR	19,50	18,50	0,50	7,00	4,80	850	40,0	35,0
KE19504B	PMMA	19,50	18,50	0,50	7,00	4,80	587	46,4	41,1
KE19505B	PMMA-IR	19,50	18,50	0,50	7,00	4,80	850	47,0	41,7

KE200 - Biconvex Lenses Ø 20,00 mm.

Code	Material	D (mm)	d (mm)	S (mm)	t (mm)	h (mm)	Lambda (nm)	EFFL (mm)	BFL (mm)
KE20001B	PC	20,00	19,00	0,50	7,00	4,78	587	40,0	33,8
KE20002B	SAN	20,00	19,00	0,50	7,00	4,78	587	40,0	33,8
KE20003B	PC-IR	20,00	19,00	0,50	7,00	4,78	850	41,0	34,8
KE20004B	PMMA	20,00	19,00	0,50	7,00	4,78	587	47,6	41,0
KE20005B	PMMA-IR	20,00	19,00	0,50	7,00	4,78	850	48,2	41,6

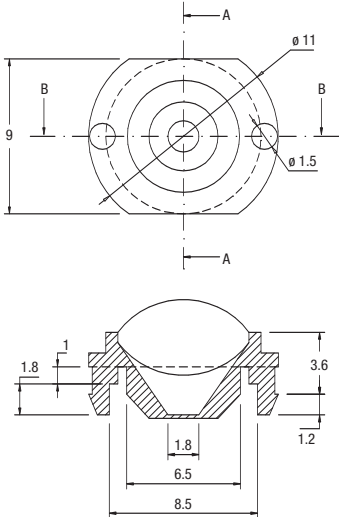
KIT SAMPLES - Biconvex Lenses Kit (Choose five type of lenses)

Code
Code
Code

Code
Code

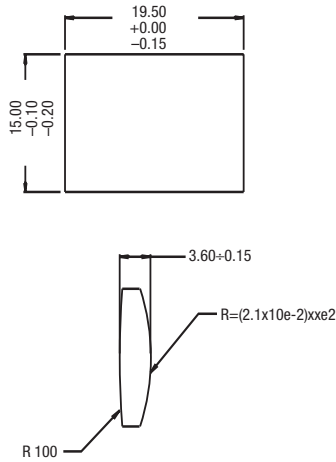
Fill the box and fax this page to +39 02 66013500.
For any other information please visit our web site

K22199_NT



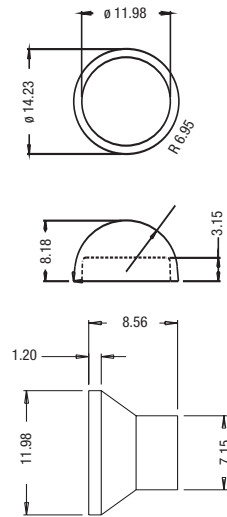
Dimensions in mm (typical)

K40201



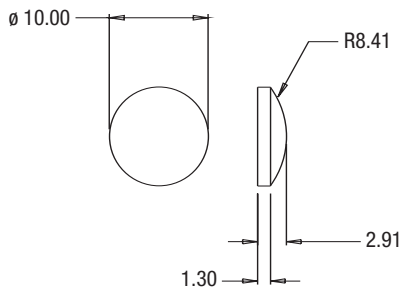
Dimensions in mm (typical)

K77603



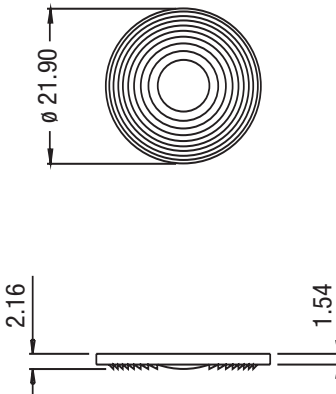
Dimensions in mm (typical)

K71903



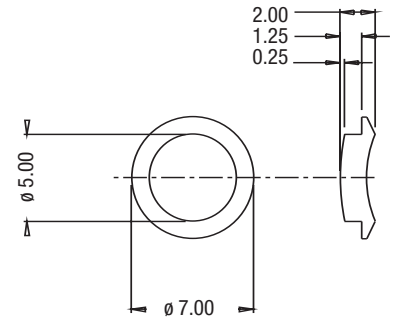
Dimensions in mm (typical)

K71038B



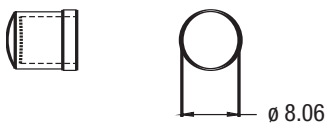
Dimensions in mm (typical)

K54702



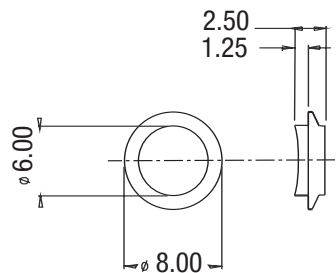
Dimensions in mm (typical)

XXXX



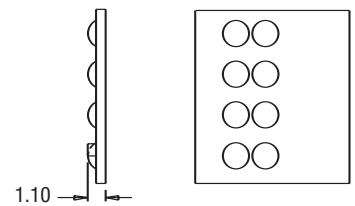
Dimensions in mm (typical)

XXXX



Dimensions in mm (typical)

XXXX



Dimensions in mm (typical)

		PC	SAN	PC-IR	PMMA	PMMA-IR
Transmission Factor for transparent material	%	89	89	-	92	-
Refractive index		1.586	1.565	1.586	1.49	1.49
Haze for transparent material	%	< 0.8	< 0.8	-	< 0.5	-
Tensile modulus	MPa	2400	3700	2400	3300	3300
Yeld stress	MPa	65*	70*	65*	77**	77**
Yeld strain	MPa	6.0*	> 2.0*	6.0*	5.5**	5.5**
Glass transition temperature	°C	145	108	148	117	117
Temperature of deflection under load (1.8 Mpa)	°C	124	101	125	98	98
Temperature of deflection under load (0.45 Mpa)	°C	137	103	137	103	
Density	Kg/m3	1200	1070	1200	1190	1190

* 50 mm/min

** 5 mm/min

Geometric Tolerance

t $t \pm 0,05\%$

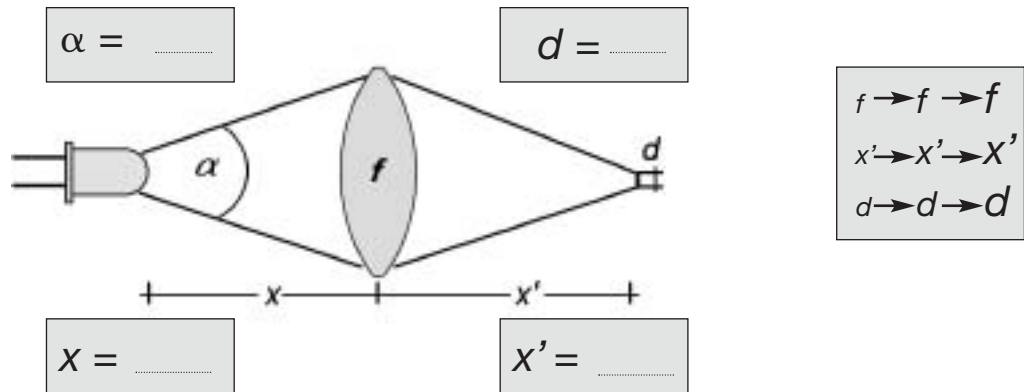
R $R \pm 3\%$

D $D \begin{matrix} +0,00 \\ -0,1 \end{matrix}$

EFFL $EFFL \pm 5\%$

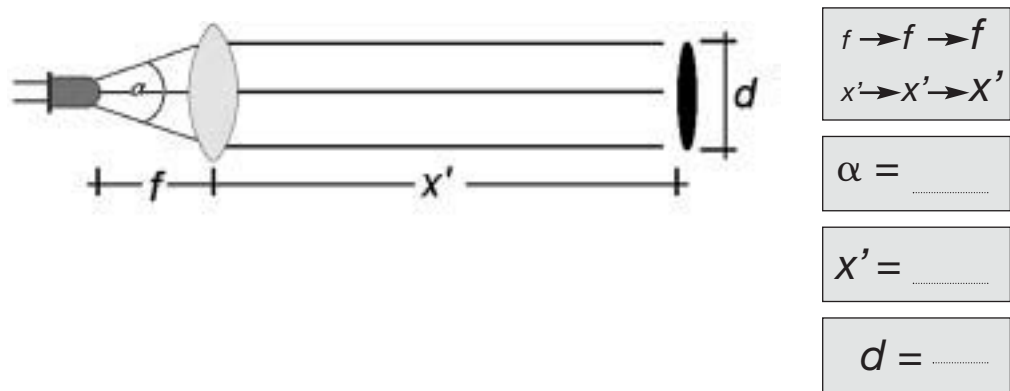
BFL $BFL \pm 5\%$

Focusing: projecting light form a source to a small point (or line)



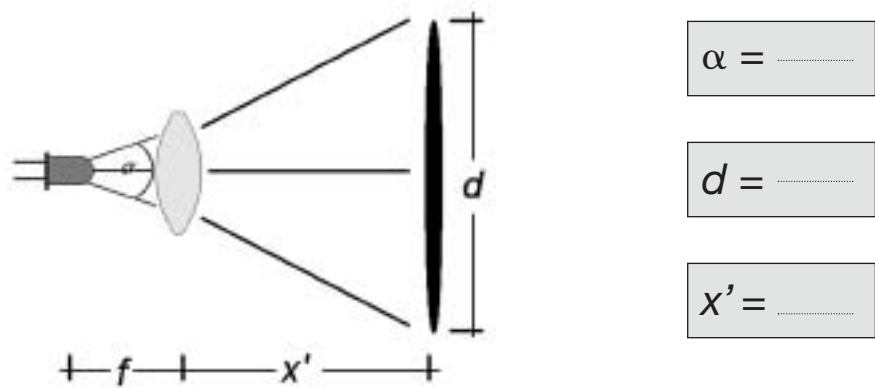
Examples: optical encoders, LEDs or lasers optical fiber couplers, laser pointers, bar code readers, optical instruments, telecommunication systems,..

Collimating: projecting light from a source as far as possible



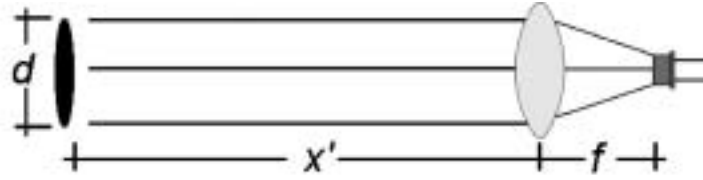
Examples: presence checkers, photocells, optical barrier, profile evaluation systems, lighting system for industrial control, telemeters, laser pointers,..

Diffusing: projecting light from a source onto a large area



Examples: IR Security systems, IR imaging systems, lighting systems,..

Single element detector: the light from an object/source is projected onto an optical sensor:

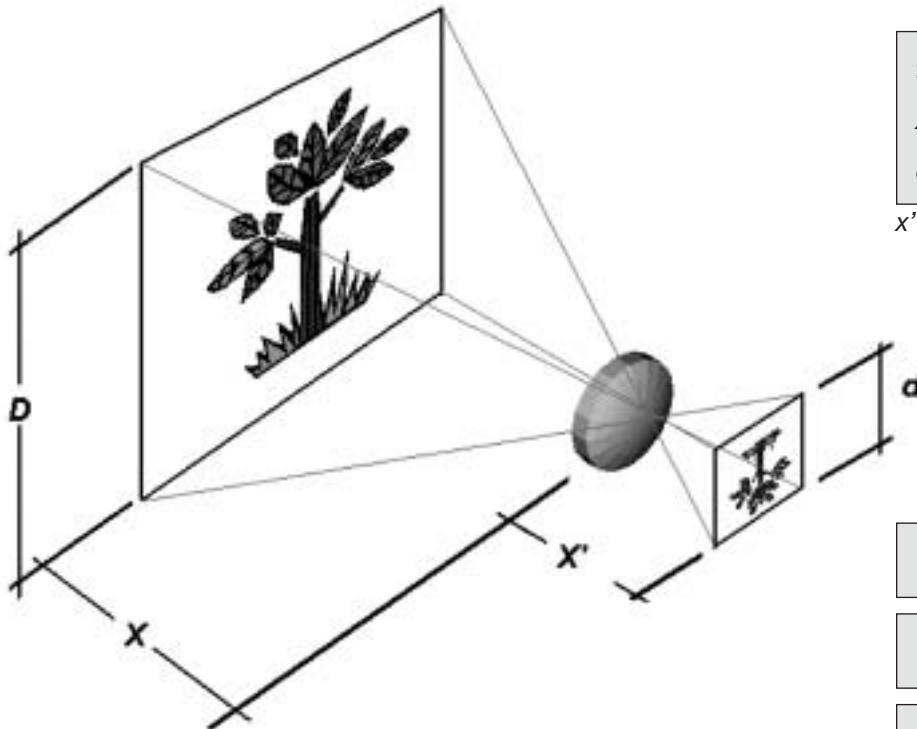


$d = \dots\dots\dots$

$x' = \dots\dots\dots$

Examples: photocells, industrial control sensors, proximity sensors, active and passive presence checking sensors, color sensors, industrial and scientific instrumentation,..

Imaging Detector: the image of an object is projected onto a 2D detector:



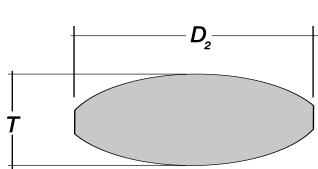
$f \rightarrow f \rightarrow f$
 $x' \rightarrow x' \rightarrow x'$
 $d \rightarrow d \rightarrow d$
 $x' \sim f \quad D/x = d/f$

$D = \dots\dots\dots$

$x = \dots\dots\dots$

$d = \dots\dots\dots$

Examples: digital or analogical photographic objectives, CCTV camera objectives, projectors, magnifiers, eyepieces, telescopes, glasses,...

Company Name	_____
Company Production Field (medical, automotive, TLC, ...)	_____
Commercial Reference	Title: _____ Name: _____ Surname: _____ Telephone: _____ e-mail: _____
Technical Reference	Title: _____ Name: _____ Surname: _____ Telephone: _____ e-mail: _____
Kind of Application	<input type="checkbox"/> Optical sensors <input type="checkbox"/> Lighting <input type="checkbox"/> Imaging <input type="checkbox"/> Signaling <input type="checkbox"/> Other
Application purpose	<input type="checkbox"/> Focusing $\alpha =$ $x =$ $x' =$ $d =$ <input type="checkbox"/> Collimating $\alpha =$ $x' =$ $d =$ <input type="checkbox"/> Diffusing $\alpha =$ $x' =$ $d =$ <input type="checkbox"/> Single element detector $x' =$ $d =$ <input type="checkbox"/> Imaging detector $D =$ $x =$ $d =$
Object to be interfaced	<input type="checkbox"/> LEDs <input type="checkbox"/> Laser Diode <input type="checkbox"/> Photodetector <input type="checkbox"/> Lamp <input type="checkbox"/> Eye <input type="checkbox"/> Image Detector <input type="checkbox"/> Other
Wavelength range	<input type="checkbox"/> Visible (400-700 nm) <input type="checkbox"/> NIR (700- 1500 nm) <input type="checkbox"/> MWIR (2-5;8-14 μ m)
Working Temperature	From °C to °C
Chemical compounds that could damage the lens	<input type="checkbox"/> A) _____ <input type="checkbox"/> B) _____ <input type="checkbox"/> C) _____
Lens Maximum Thicknes (T)	_____
Lens Maximum Diameter (D_2)	_____
	 <p>The diagram shows a lens with a diameter labeled D_2 and a thickness labeled T.</p>