

## **CO<sub>2</sub>mpact** Beam Delivery System

The CO<sub>2</sub>mpact range from ULO Optics is a cost-effective solution to low-power beam delivery that is easy to understand, easy to use and easy to order.

Laser users require high quality, low maintenance beam delivery components priced in proportion to their laser investment. Complex beam delivery systems can prove to be expensive if a skilled technician is required to spend many hours on alignment and maintenance. The CO<sub>2</sub>mpact range has been specifically designed to address this issue.

CO<sub>2</sub>mpact is a complete series of products that fulfil beam handling requirements from the laser mount to the nozzle tip. The units are suited to most CO<sub>2</sub> lasers up to 500W with beam sizes up to 17mm.



# **CO<sub>2</sub>mpact Beam Delivery System**

The range includes standard items like mirror blocks, nozzles, pipes, shutter units and also more advanced products such as reflection isolators. Each unit is described briefly here with its external dimensions and main part numbers.

More detailed data for each unit can be downloaded from our dedicated CO<sub>2</sub>mpact website at www.ulooptics.com.

#### Building your system is easy.

Logon to our website where you will find freely available datasheets and 3D models. Registration is not required.

Contact us for a price list. Most parts are held in stock for immediate despatch.

#### Beam Expanders (Fixed and Zoom)

Not every system will need a beam expander. In general they can provide a benefit, if the beam path is longer than 2m, or if a smaller focus spot is required. Various magnifications are available, but it is important you know the input size of the beam so the output does not exit too big for the clear aperture of the system (ie 25mm output). The compact beam expander has a slide and lock focus setting. Normally this is set to infinity during manufacture. However if a customer needs to adjust this to suit their system, the output should be coupled to the adjustable pipe (C-BPE85/125) so this too can be adjusted and maintain an overall fixed length. If required, ULO Optics have software that can trace your beam through the system, so if you are in doubt please contact us.

#### C-BE x 1.3 to 7 (Fixed)

Diam = 44, L = 70 +5/-4 Diam = 96, L = 242 C-ZBE x 1 to 8 Mag (Zoom)

#### undertake to check every inquiry to ensure all parts requested will connect together and make a complete system. If we think for any reason that something may have been overlooked, you will be contacted to discuss all the available options.

**Retractable Mounts** 

components are coupled

in a certain orientation. The

locking ring is free to rotate

and once uncoupled can be

part can be lifted free of the

assembly. This item is also

supplied with an internal

coupling ring.

C-RM

removed back so its matching

Diam = 31, L = 35

These will be required if several

together and need to be locked

As part of our standard service, we

### NFW V9 Series for use at 9.3 and 9.4um

C-BE/V9	Beam Expanders (Same magnifications as C-BE Series)	
C-LN/V9	Lens Nozzle Assemblies (Same focal lengths as C-LN Series)	
<b>C-CM/V9</b>	Mirror Blocks	
C-MA/V9	Uncoated Manual Attenator	
C-RI/V9		
C-SU/V9		
All other parts are compatible with 9.3 and 9.4 $\!\mu m$		

#### Guide to dimensions



#### Mirror Block

Designed to provide easy alignment and low maintenance. Each mirror block is supplied pre-aligned to a 45° angle of incidence to within  $\pm 1$ arc minute. Therefore, many systems may not need alignment. Any adjustments that are required can be carried out through the main block. This enables the mirror to be removed, cleaned or replaced without losing alignment.

C-CM H=45, W=38, L=45

#### **Extender Pipe**

See Beam Pipes and Supports

#### **Fine Focus Adjustment**

A rotary adjustment which provides fine focus control of the lens and nozzle assembly. Although maintaining the compact size of the family, its notched adjustment ring provides easy handling, and the clear engraving allows the user to measure the ±10mm focus range in 0.1mm increments

## C-FA

C-LN

C-LN

C-LN

Diam = 44, L = 130 ±10

#### **Lens Nozzles Assemblies**

Four different focal lengths are available as standard. These are 38, 63, 100mm and 127mm. The lens is mounted in a separate cell, Which allows for easy removal and cleaning of both surfaces. Adjustment of the nozzle standoff is independent, giving a total of +3mm. The gas inlet is via a standard 6/4pipe fitting.

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38 (38FL)	
63 (63FL)	
100 (100FL)	

Diam = 38, L = 60 Diam = 31, L = 86.1 Diam = 31, L = 123.9

#### Manual Attenuator This device will allow the user to

externally vary the power delivered from the laser. Many lasers only vary their output power by pulsing full power on and off, and this does not always provide the fine control needed for some materials. The device will give infinitely variable control of the transmitted beam from approx. 6% to 100%. A water jacket is also available.

Rang C-MA Diam = 55, L = 120 C-MA-WJ

**Laser Mounts** 

A range of laser mounts have been

any of the compact range directly

to the laser of their choice. Mounts

to suit the most popular lasers are

on request. Two types are offered. A

fixed version for short beam paths or

an adjustable unit for longer paths or

**C-LM (Standard)** Diam = 100, L = 15

C-LMA (Adjustable) Diam = 100, L = 23

systems without mirror blocks.

designed to enable the user to connect

available, others could be manufactured

# CO LASE

#### **Beams Pipes and Supports**

**Reflection Isolators** 

Small sealed lasers can run the risk of

suffering serious damage to the cavity if the

emitted beam is back reflected directly into

the laser. (More common at approx. 250W

pulsed and above). Therefore, if you intend

to process a material which is reflective.

this device should be considered. It must

however be used in conjunction with a

down the system. At powers exceeding

250W an additional cooling jacket

may be required.

Ranne

C-RI

Polarising mirror, (or phase retarder) further

Diam = 55. L = 120

Pipes are supplied in standard lengths as shown in the parts list. Each pipe is supplied with one internal coupling ring. The extender pipe can be used to fill the in-between sizes, or could be used as a coarse focus adjustment. Pipe supports are available in various optical axis heights. These are to suit the exit heights at which the beam leaves the appropriate laser. (Typically 73, 78, 81, and 123mm are available as standard). Others can be supplied on request.

#### C-BPXX Diam = 31, L = XX C-BPE50/70

Diam = 31. L = 50-70 **C-BPE85/125** Diam = 31, L = 85-125 C-PSXX Diam = XX, W = 95, L = 16

#### **Shutter Unit**

This unit can be used to externally switch the beam on and off by directing it into an internally mounted beam dump. A mirror is actuated by a rotary solenoid, the open & closed indicated by red and green LEDs respectively. Power is supplied and the shutter triggered via a 9-way D plug connector.

**C-SU** H = 100, W = 90, L = 100 LSCO1 Controller

This uses a low power laser diode to inject a visible beam into the system. It can be used as an aid for system alignment or spot alignment of the focused beam (note: the visible beam first has to be aligned coaxial to the CO2 laser beam). As supplied will provide a visible exit beam on axis, but small adjustments may be required to align with the CO<sub>2</sub> beam.

C-BI

**Injector Unit** 

H = 90, W = 85, L = 110



# Leading the way in laser optics and beam delivery systems.

ULO Optics has over twenty years experience in designing and fabricating beam handling solutions. We meet the needs of many types of customers from end-users with specialist requirements to large laser manufacturers.

#### **Quality Management**

Our stringent QA procedures ensure that any product shipped to our customers meets our strict inspection criteria.

ULO Optics' quality management system has been certified to the ISO 9001: 2000 quality standard, reaffirming that the refined methods we use are of the necessary high standard.

#### **Research & Innovation**

ULO Optics continues to develop new technology and set new standards such as our unique high power reflective focusing systems or our Dual Focus lenses which greatly improve the speed, efficiency and economy of cutting many types of materials. Products such as our range of pre-objective 2-axis galvo-scanner lenses have brought new levels of performance to the demanding scanner systems market.

Our optical and beam delivery engineers continue to be involved in a range of exciting projects, both internally and in partnership with academic institutions, that help to move the industry forward.

#### **Comprehensive Product Range**

ULO Optics manufactures components such as lenses, cavity optics, scanner optics and more, where necessary using the latest high performance coatings including our UltraLO AR/AR coating for high-power lasers.

ULO Optics also manufactures a range of beam delivery systems for industrial applications. We are leading the drive to make sophisticated beam delivery equipment much more affordable without compromising on quality, bringing it to the sub-500W laser market by means of our easy to use and economical CO<sub>2</sub>mpact range.

#### **Further Information**

The most up-to-date product information is released on our website at: www.ulooptics.com.

Stay on top of all of the news from ULO Optics by visiting regularly.

#### ULO Optics Limited, UK & Worldwide

Unit 2, Caxton Place, Caxton Way Stevenage, Herts SG1 2UG, UK Telephone +44 (0)1438 767 500 Facsimile +44 (0)1438 767 555 e-mail: sales@ulooptics.com

#### www.ulooptics.com