

Optimizer[®] Point-of-use Photochemical Filters

Liquid photochemical filters designed for developer, DI water, and solvent applications in POU photolithography processes

Optimizer[®] point-of-use (POU) liquid photochemical filters deliver high-purity filtration to photolithography processes. Optimizer ST-LX DEV 10 nm filter is the latest filter to join the Optimizer product family.

Optimizer ST filters use Entegris' Connectology[®] technology to quickly connect and seal with compatible manifolds. Easy to install or retrofit, Optimizer ST's compact design saves space and enables faster startup with minimal exposure to process chemicals. Utilizing a pleated UPE membrane, the hydrophilic filter achieves maximum flow with minimal risk of contamination, all without the need for prewetting. The added surface area yields lower pressure drop and maintains filter lifetime as the filters become more retentive over time.

Optimizer DEV and DI disposable filters use a capsule form factor that enables high purity with minimal contamination. Because no manifolds are needed, these filters occupy less space for filter changeouts. The integrated polypropylene (PP) housing minimizes downtime and limits the handling of hazardous chemicals during installation. The surface-modified UPE membrane matches the surface energies and surface tensions of base fluids. Consequently with less potential for dewetting, the filters achieve maximum flow with minimal risk of micro-bubble formation.



Optimizer ST with Connectology Technology



Optimizer Disposable

Superior Cleanliness with Optimizer ST-LX DEV 10 nm

Built on Entegris' DEV technology, Optimizer ST-LX DEV 10 nm filter enables advanced POU filtration to aqueous chemistries at sub-30 nm technology nodes. Utilizing a surface-modified, asymmetric UPE membrane with a 10 nm retention rating, Optimizer ST-LX DEV reduces on-wafer defects and improves yield, while maintaining the highest level of cleanliness and particle retention. The hydrophilic membrane eliminates pre-wetting, enables a stable process, and prevents the likelihood of microbubble formation.

APPLICATIONS

Filter type	POU applications
ST	Solvent filtration
ST DEV	Positive developer DI water filtration
ST DI	DI water filtration
ST-L	Solvent filtration
ST-L DEV	Positive developer DI water filtration
ST-L DI	DI water filtration
ST-LX	Solvent filtration
ST-LX DEV	Positive developer DI water filtration Aqueous
ST-LX PCM	Surfactanated DI water filtration TARC
DEV	Positive developer DI water filtration
DI	DI water filtration

*Surface-modified hydrophilic UPE

FEATURES AND BENEFITS

Rapid filter changeout

Optimizer ST filters with Optimizer ST2 manifold (with Connectology):

- Filter changeout in less than a minute
- Minimal dripping
- No need for tools or draining

Optimizer disposable filters (without manifold):

- Require less space for filter changeouts
- Membrane eliminates chemical usage while reducing system downtime during filter changeouts

Highly retentive UPE membrane

- Ensure maximum flow and limit microbubble formation
- Promote excellent small particle retention
- Advanced surface modification chemistry for improved hydrophilic performance and instant wettability
- Requires no prewetting

Maximum performance

Filter structure of Optimizer ST filters combined with Optimizer ST2 Manifold (with Connectology):

- Minimizes the risk of contamination when handling membrane cartridges
- Limits handling of hazardous chemicals during installation
- Speeds up installation and reduces downtime

Optimizer ST Filters with Connectology (Manifold Design)

SPECIFICATIONS

Optimizer ST UPE Filter

Materials	Membrane	UPE	
	Supports, core, sleeve	HDPE	
	Housing	PP	
	O-ring	Kalrez®	
Filtration area	ST	0.05 µm short	2200 cm ² (2.37 ft ²)
		0.1 µm, 20 nm	2600 cm ² (2.80 ft ²)
	ST-L	5 nm	4300 cm ² (4.63 ft ²)
		10 nm	4500 cm ² (4.84 ft ²)
ST-LX	20 nm	6300 cm ² (6.78 ft ²)	
Manifold connections*	¾" and ½" male Flaretek® inlet/outlet ¼" male Flaretek vent		
Operating conditions	Maximum inlet pressure: 0.39 MPa (3.9 bar, 57 psi) @ 25°C (77°F) Maximum forward/reverse pressure: 0.28 MPa (2.8 bar, 40 psi) @ 25°C (77°F) Operating temperature: 40°C (104°F)		

Optimizer ST DEV Filter

Materials	Membrane	DEV (Hydrophilic UPE**)	
	Supports, core, sleeve	HDPE	
	Housing	PP	
	O-ring	EPDM, Kalrez	
Filtration area	ST DEV	1600 cm ² (1.72 ft ²)	
	ST-L DEV	10 nm	3000 cm ² (3.23 ft ²)
		30 nm	4400 cm ² (4.74 ft ²)
		4500 cm ² (4.84 ft ²)	
	ST-LX DEV	20 nm	6300 cm ² (6.78 ft ²)
10 nm		6800 cm ² (7.32 ft ²)	
Manifold connections*	¾" and ½" male Flaretek inlet/outlet ¼" male Flaretek vent and drain		
Operating conditions	Maximum inlet pressure: 0.39 MPa (3.9 bar, 57 psi, 4.01 kg/cm ²) @ 25°C (77°F) Maximum forward/reverse pressure: 0.28 MPa (2.8 bar, 40 psi, 2.8 kg/cm ²) @ 25°C (77°F) Operating temperature: 40°C (104°F)		

* Contact your local sales representative for information on additional manifold connections.

** Surface-modified UPE

SPECIFICATIONS (CONTINUED)

Optimizer ST DI and ST-L DI Filters

Materials	Membrane	DI (Hydrophobic UPE**)
	Supports, core, sleeve	HDPE
	Housing	PP
	O-ring	EPDM, Kalrez
Filtration area	ST DI	1800 cm ² (1.94 ft ²)
	ST-L DI	3400 cm ² (3.66 ft ²)
Retention ratings	0.2, 0.1, 0.05 µm	
Manifold connections*	¾" and ½" male Flaretek inlet/outlet ¼" male Flaretek vent and drain	
Operating conditions	Maximum inlet pressure: 0.39 MPa (3.9 bar, 57 psi, 4.01 kg/cm ²) @ 25°C (77°F) Maximum forward/reverse pressure: 0.28 MPa (2.8 bar, 40 psi, 2.8 kg/cm ²) @ 25°C (77°F)	

Optimizer ST-LX PCM 10 nm Filter

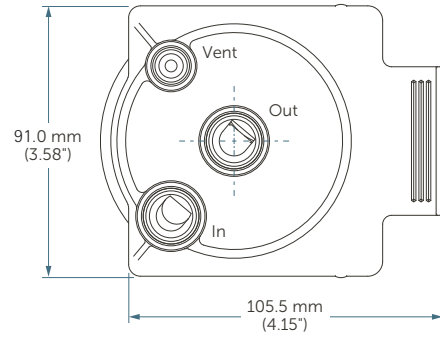
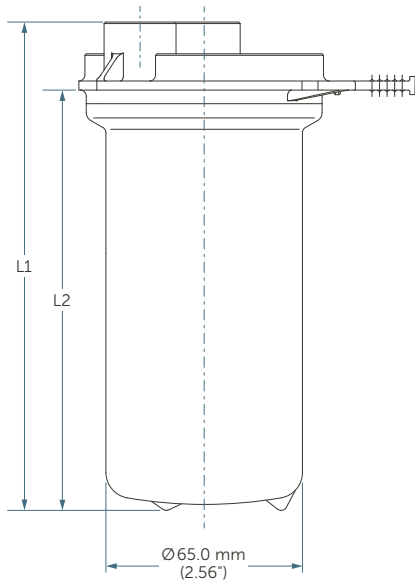
Materials	Membrane	PCM (Hydrophilic UPE**)
	Supports, core, sleeve	HDPE
	Housing	PP
	O-ring	EPDM, Kalrez
Filtration area	6800 cm ² (7.32 ft ²)	
Manifold connections*	¾" and ½" male Flaretek inlet/outlet ¼" male Flaretek vent	
Operating conditions	Maximum inlet pressure: 0.39 MPa (3.9 bar, 57 psi) @ 25°C (77°F) Maximum forward/reverse pressure: 0.27 MPa (2.7 bar, 39 psi) @ 25°C (77°F)	

* Contact your local sales representative for information on additional manifold connections.

** Surface-modified UPE

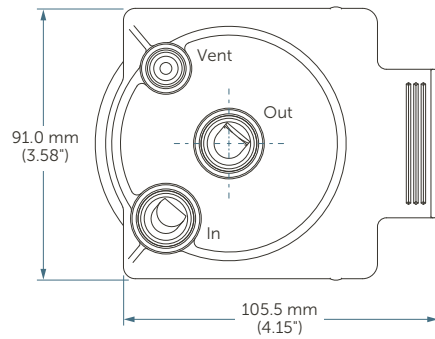
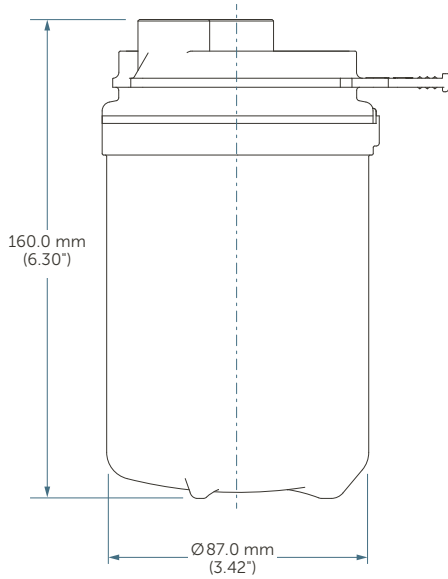
DIMENSIONS

Optimizer ST Filter Types (applies to ST, ST DI, and ST DEV)



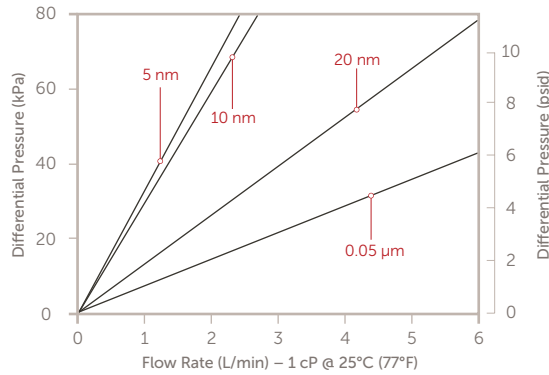
	ST (short type)	ST-L (long type)
L1	108.0 mm (4.25")	162.0 mm (6.37")
L2	87.0 mm (3.42")	137.0 mm (5.39")

Optimizer ST-LX Filter Types (applies to ST-LX UPE, ST-LX PCM, and ST-LX DEV)

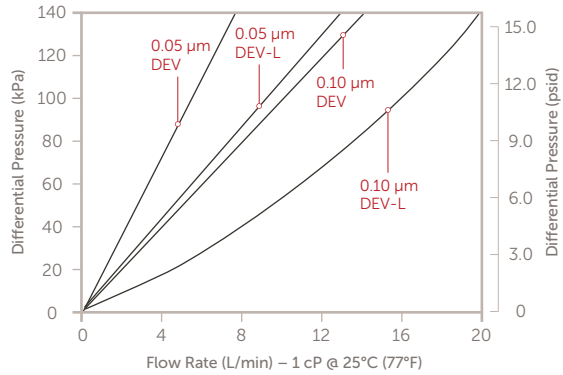


PERFORMANCE DATA

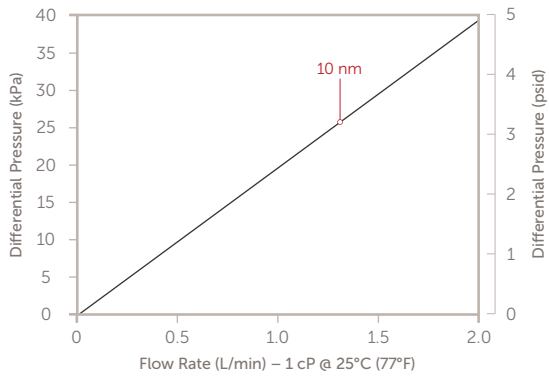
Optimizer ST-L Filter
1/2" Tube Connection Fitting



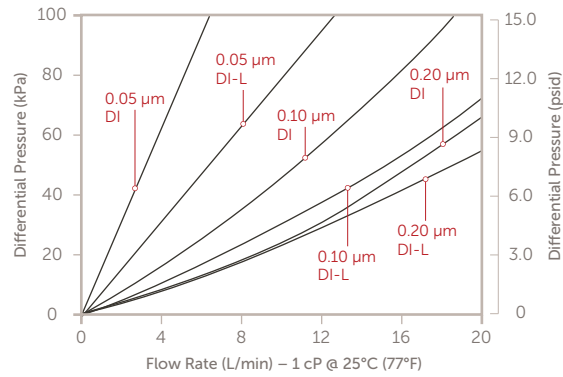
Optimizer ST DEV and ST-L DEV Filters
1/2" Tube Connection Fitting



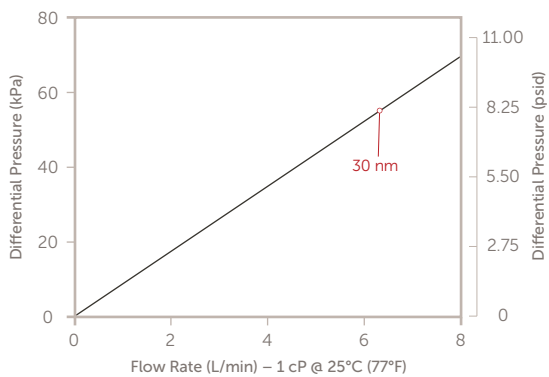
Optimizer ST-LX PCM Filter
1/2" Tube Connection Fitting



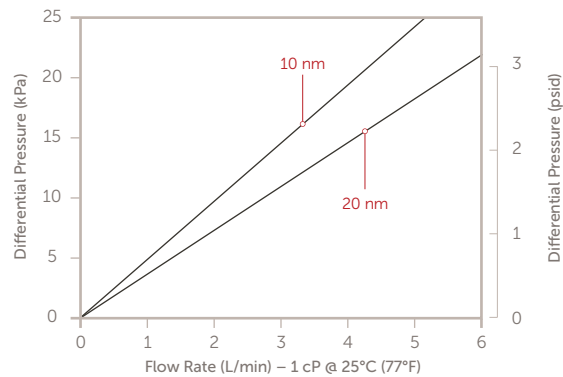
Optimizer ST DI and ST-L DI Filters
1/2" Tube Connection Fitting



Optimizer ST-L DEV Filter
1/2" Tube Connection Fitting

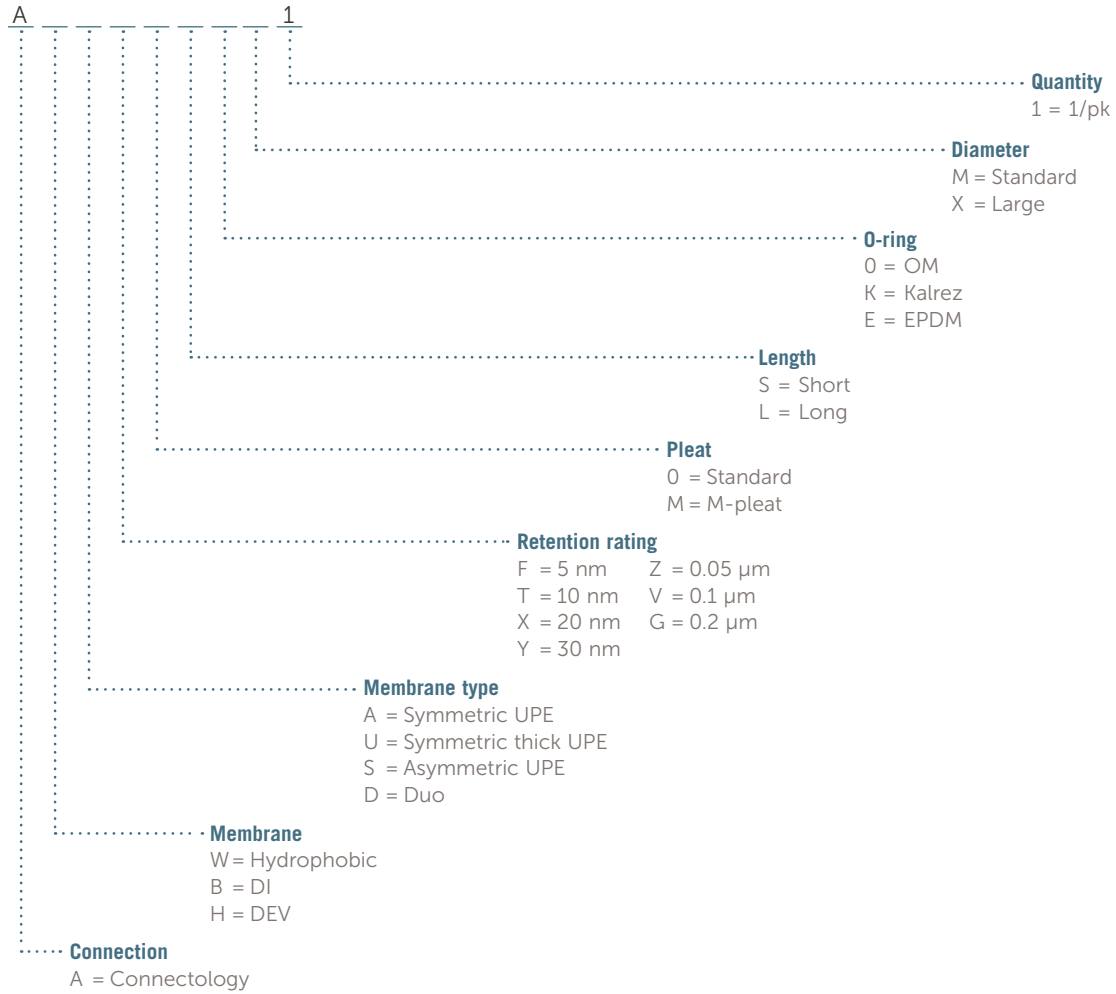


Optimizer ST-LX DEV Filter
1/2" Tube Connection Fitting



ORDERING INFORMATION*

Optimizer Point-of-use Photochemical Filters: part number



*This information serves as a guide. Please contact your local representative to confirm part numbers.

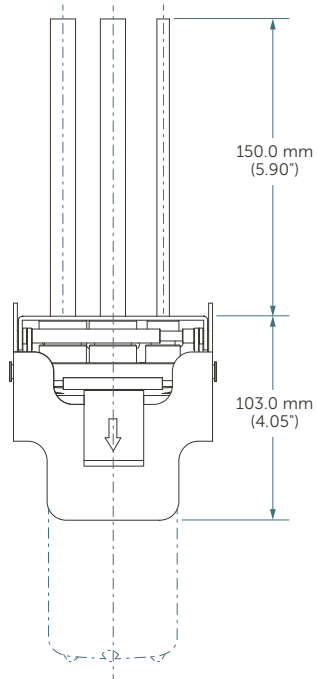
Optimizer ST2 Manifold

SPECIFICATIONS

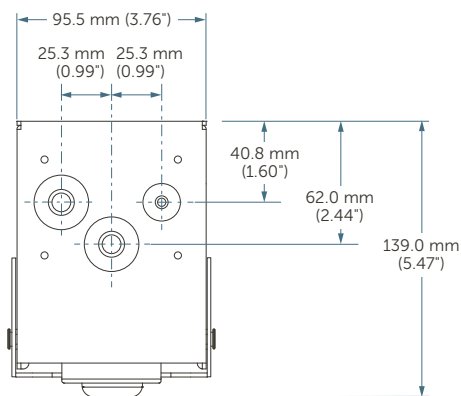
Materials	Tubes and wetted surfaces	PFA
	Nonwetted components	Stainless steel
	Release tab	POM
	O-rings	See Ordering Information for Optimizer ST2 Manifold
Operating conditions	Maximum inlet pressure: 0.39 MPa (3.9 bar, 57 psi) @ 25°C (77°F)	

DIMENSIONS

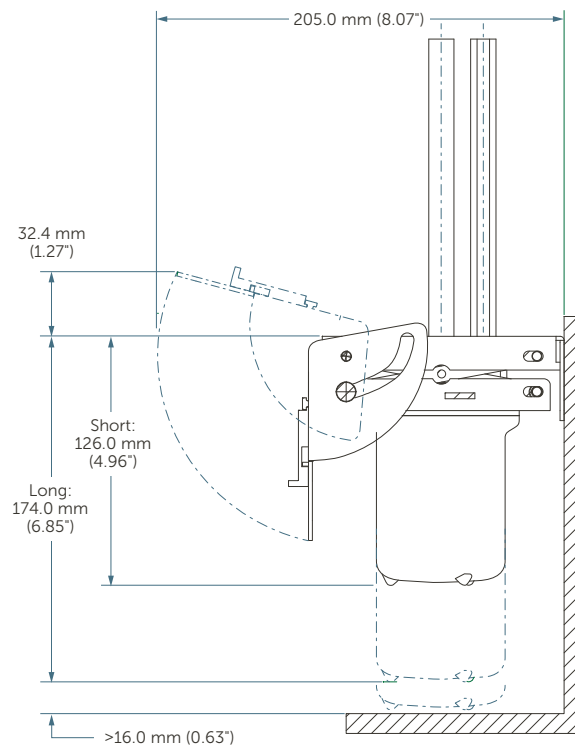
Front View



Top View



Side View



ORDERING INFORMATION

Optimizer ST2 Manifold

O-RING MATERIAL		TUBE TYPE (STANDARD) SIZE	
EPDM Part number	Kalrez Part number	Inlet/outlet	Vent
AMVT442E1	AMVT442K1	12.70 mm (0.50")	6.35 mm (0.25")
AMVT332E1	AMVT332K1	9.53 mm (0.38")	6.35 mm (0.25")
AMVT222E1	AMVT222K1	6.35 mm (0.25")	6.35 mm (0.25")
AMVT884E1	AMVT884K1	8.00 mm (0.31")	4.00 mm (0.16")
AMVT664E1	AMVT664K1	6.00 mm (0.24")	4.00 mm (0.16")
		THIN TUBE TYPE	
AMVT442ET	AMVT442KT	12.70 mm (0.50")	6.35 mm (0.25")
AMVT332ET	AMVT332KT	9.53 mm (0.38")	6.35 mm (0.25")
AMVT222ET	AMVT222KT	6.35 mm (0.25")	6.35 mm (0.25")
		FLOWELL 60 THIN TUBE TYPE	
AMVXL42ET(T)	AMVXL42KT	12.70 mm (0.50")	6.35 mm (0.25")
AMVXL32ET(T)	AMVXL32KT	9.53 mm (0.38")	6.35 mm (0.25")
AMVXL22ET(T)	AMVXL22KT	6.35 mm (0.25")	6.35 mm (0.25")
AMVT332KT	AMVT222KT	9.53 mm (0.38")	6.35 mm (0.25")

Accessories

Part number	Description
P03993J	Kalrez o-ring AS-568A-016
P03994J	Kalrez o-ring AS-568A-012

Optimizer ST2 Manifold No O-ring (Easy Change) O-ring Types

TUBE TYPE SIZE		
Part number	Inlet/outlet	Vent
AMVT44201	12.70 mm (0.50")	6.35 mm (0.25")
AMVT33201	9.53 mm (0.38")	6.35 mm (0.25")
AMVT22201	6.35 mm (0.25")	6.35 mm (0.25")
AMVT88401	8.00 mm (0.31")	4.00 mm (0.16")
AMVT66401	6.00 mm (0.24")	4.00 mm (0.16")
THIN TUBE TYPE		
AMVT442NT	12.70 mm (0.50")	6.35 mm (0.25")
AMVT332NT	9.53 mm (0.38")	6.35 mm (0.25")
AMVT222NT	6.35 mm (0.25")	6.35 mm (0.25")

Optimizer DEV and DI Filters (Non-manifold)

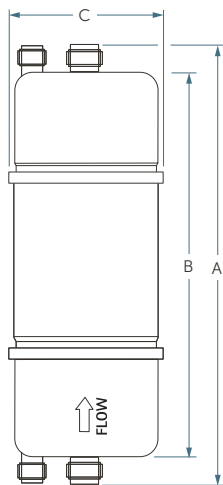
SPECIFICATIONS

Materials	Membrane	UPE*
	Supports, core, sleeve	HDPE
	Housing	PP
Filtration area	DI/DEV	1800 cm ² (1.94 ft ²)
	DI-L/DEV-L	3600 cm ² (3.88 ft ²)
	DI-L (20 nm)	2100 cm ² (2.26 ft ²)
	DEV (30 nm)	2600 cm ² (2.80 ft ²)
	DEV-L (30 nm)	4500 cm ² (4.84 ft ²)
Retention ratings	DEV, DEV-L	0.1, 0.05 μm, 30 nm, 20 nm
	DI, DI-L	0.2, 0.1, 0.05 μm, 20 nm
Fittings	Available in a wide range of fittings including Super Type Pillar® fittings, compression seal (Swagelok® compatible fittings) and Flaretek fittings	
Operating conditions	<p>Maximum inlet pressure: 0.345 MPa (3.45 bar, 50 psi, 3.52 kg/cm²) @ 25°C (77°F)</p> <p>Maximum forward/reverse differential pressure: 0.345 MPa (3.45 bar, 50 psi, 3.52 kg/cm²) @ 25°C (77°F) 0.28 MPa (2.8 bar, 40 psid, 2.8 kg/cm²) @ 25°C (77°F)</p> <p>Maximum operating temperature: 60°C (140°F)</p>	

* Surface-modified UPE

DIMENSIONS

Optimizer DEV-L/DI-L Filter

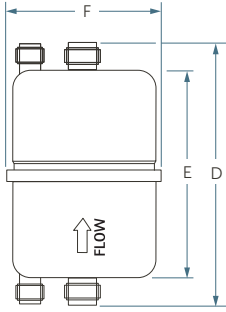


Optimizer DEV-L/DI-L filters

Fitting	In/out size	DIMENSIONS		
		A	B	C
Compression seal	6.35 mm (¼")	189 mm (7.44")	169 mm (6.65")	69 mm (2.72")
	9.53 mm (⅜")	192 mm (7.56")	169 mm (6.65")	69 mm (2.72")
Super Type Pillar	8 mm	205 mm (8.07")	175 mm (6.89")	71 mm (2.80")
	9.53 mm (⅜")	209 mm (8.23")	175 mm (6.89")	71 mm (2.80")
	12.7 mm (½")	185 mm (7.28")	145 mm (5.71")	82 mm (3.23")

DIMENSIONS (CONTINUED)

Optimizer DEV/DI Filter

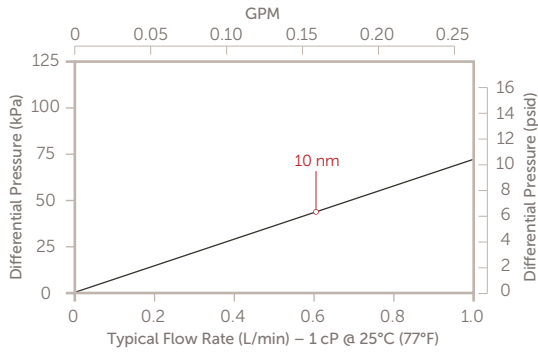


Optimizer DEV/DI filters

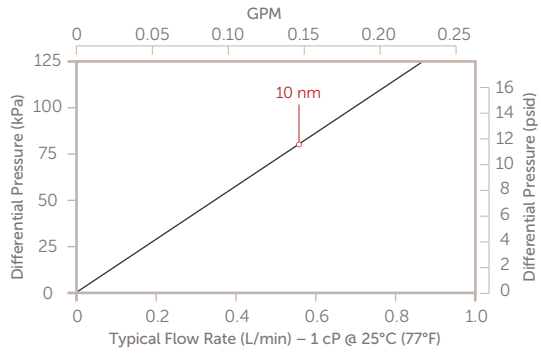
Fitting	In/out size	DIMENSIONS		
		D	E	F
Compression seal	6.35 mm (1/4")	113 mm (4.45")	92 mm (3.62")	69 mm (2.72")
Super Type Pillar	6 mm	122 mm (4.80")	92 mm (3.62")	71 mm (2.80")
	6.35 mm (1/4")	122 mm (4.80")	92 mm (3.62")	71 mm (2.80")
	8 mm	127 mm (5.00")	92 mm (3.62")	71 mm (2.80")

PERFORMANCE DATA

Optimizer DEV Cartridges

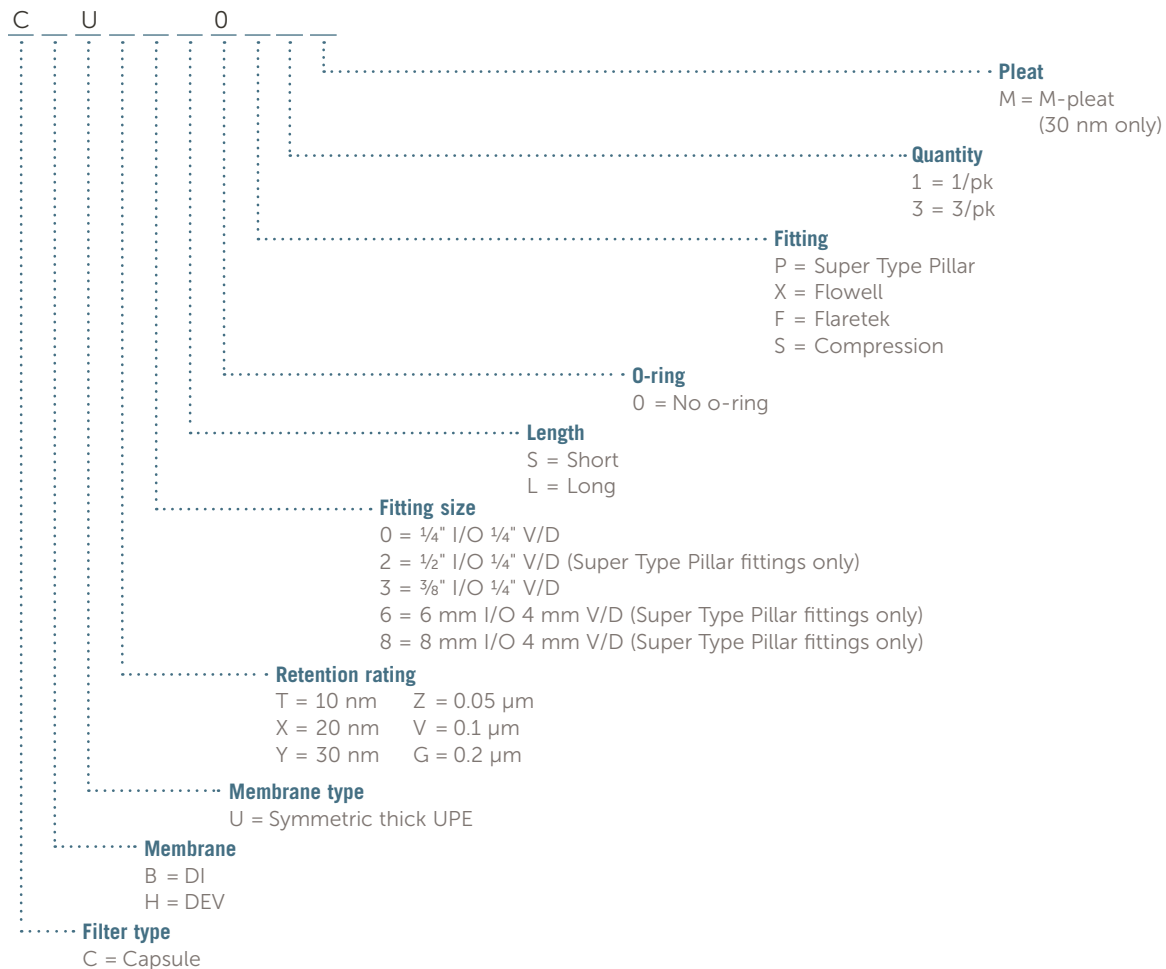


Optimizer DEV-L Cartridges



ORDERING INFORMATION*

Optimizer DEV and DI Filters: part number



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FOR MORE INFORMATION

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