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PendoTECH UV Absorbance Sensor & Monitor™

Background

In bioprocess operations, the UV absorbance of a liquid solution can identify the absence or presence of the molecule of interest. The measurement, typically at 280nm, is made by a spectrophotometer or photometer either in-line or off-line in a cuvette. A collimated beam of light passes through a sample with a defined path length and the absorbance is determined as the ratio of the light applied from the source to what passed through the sample. The PendoTECH Single Use UV Flow Cell enables the measurement to be made non-invasively. The flow cell is connected to tubing, and the measurement is made by use of a compact photometer with fiber optic cables. This flow cell contains a special silica glass lens on the wall and compartments to attach the light source and detector. The stream to be measured flows between the lenses by way of tubing attached to the hose barb ends of the flow cell. The flow cell is low cost for single use applications and may be repeatedly cleaned and re-used. Additionally, stainless steel flow cell options are available.

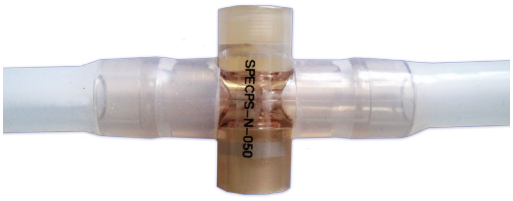
CE

Single Use UV Flow Cell Technical Details

The flow cell is shown in the pictures below with the tubing installed on the hose barb fitting. There are two sizes available- a 1/4 inch hose barb with a 0.5cm path length and a 1/2 inch hose barb with a 1cm path length. The optical interface couplers are inserted into the receptacles so the measurement can be made on the sample flowing through the cell. All polymeric materials in fluid path meet USP Class VI and it is assembled in an ISO13485 facility. The flow cell may be autoclaved to 121°C or gamma irradiated up to 50KGy.

There is no display or readout on the compact photometer because via its transmitter function, it is designed to be integrated to a monitor with data acquisition capability or a control system. The raw output of the transmitter output in is a 4-20mA signal spanned to 0-2 AUs. The standard wavelength is 280 nm but other wavelengths from 240-1000 nm (with 260 being common) are available, but may not be interchanged by user.

Flow Cell



Flow Cell Installed with Tubing

Optical Couplers Installed to Flow Cell

Product Information

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Photometer/Transmitter Models Available:

There are two models available, the benchtop and panel mount models.

SPEC-XXXP

Screw Terminal Connect For:
- *-Power*
- *-Baseline Tare*
- *-mA Output*

Flange for Panel Mount

SPEC-XXXL

Field wireable connector for mA output

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PendoTECH also offers data acquisition capability with stand-alone system shown on next page, PC based PressureMAT Software and PressureMAT-PLUS products, PendoTECH DAQ, or it may be integrated to other PendoTECH Control System products.

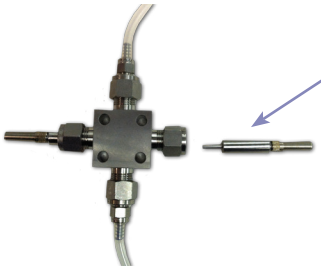
Compact Photometer and Transmitter - Benchtop Version

Stainless Steel Flow Cell Options:

PART #: SPEC-880-1CM

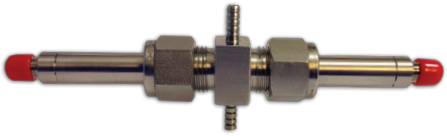
Shown with Micro couplers installed different inlet/outlet options available, sanitary flange shown. Path length from 5mm to 10mm

PART #: SPECSS-N-ADJ-M



Nano coupler removed - with a micrometer included the path length can be adjusted without obstructing the fluid flow from 0.05 - 2 mm.

PART #: SPEC-880-1CMLH
SPEC-880-5MMLH



Low hold-up volume cell shown with 1/8" hosebarb inlet and outlet and micro coupler installed. Available with 1 cm and 0.5 cm path length.

Product Information

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Photometer Specifications:

Optical Configuration:	Absorbance, with LED Light Source and UV Silicone Photodiode; Internal Source Reference (wavelengths available from 240-1100, contact PendoTECH for details) LED lifetime > 5 years
Transmitter Box	Optical connectivity via SMA905 Power by 12mm plug (bench mount) or screw terminals (panel mount) Dimensions (WxDxH): L version 3.25 x 4.51 x 2.69 inch (not including connectors/buttons) - 82.55 x 114.55 x 68.33 mm P version 3.25 x 5.51 x 2.71 inch (not including connectors/buttons) - 82.55 x 139.95 x 68.83 mm Weight: .75 lbs (340 g)
Power requirement	20-30 Volts DC (100-250VAC to 24VDC supply included with bench top unit)
Output signal	4-20mA sourcing with 400ohm maximum at 24VDC via screw terminals (panel mount) or field wireable connector (bench top) Scaled to 0-2 AU with repeatability of 1% of full scale (0.02 AU) Typical Response Time: 1 second Maximum Zero Shift: < 2% of full scale (<0.040AU) Long Term Output Drift: <5% per month of full scale (<0.100 AU)

Single Use Flow Cell Specifications:

Material	Polysulfone and fused silica with silicone - ring
Pressure range	Rated for pressure up tp 75psi (5bar)
Biocompatibility	All materials in contact with product fluid path meet USP Class VI requirements
Manufacturing Environment	FDA Registered, ISO 13485 certified facility; Class 100,000 clean room
Gamma Irradiation	Up to 50 kiloGrays
Operating temperature	2° C to 50° C (other ranges with process qualification)
Storage temperature	-25° C to 65° C

Universal Power Supply for SPEC-XXXL	

Ordering Information:

SPEC-XXXL	Photometer with XXXnm light source, 4-20mA output, 2 fiber optic cables, 2 optical couplers to connect to single use flow cell, 24VDC universal power supply. XXX = 280, 260 or other
SPEC-XXXP	Photometer with XXXnm light source, 4-20mA output, 2 fiber optic cables, 2 optical couplers to connect to single use flow cell, panel mount. XXX = 280, 260 or other
SPEC-XXXL-PHOTO	UV Photometer w/XXXnm Light Source, 4-20mA Output, benchtop model, with 24VDC Supply. XXX = 280, 260 or other
SPEC-XXXP-PHOTO	UV Photometer w/XXXnm Light Source, 4-20mA Output, panel model. XXX = 280, 260 or other
SPECPS-N-025	Single Use UV Flow Cell, 0.5cm path length, non-sterile, polysulfone, 1/4 inch hose barb
SPECPS-N-050	Single Use UV Flow Cell, 1cm path length, non-sterile, polysulfone, 1/2 inch hose barb
SPEC-OC-SUT	One Replacement optical coupler for Single Use Flow Cell
SPEC-OC-FIBER	One Replacement Fiber Optics Cable (3ft / 1M)
SPEC-OC-FIBER-2M	One Replacement Fiber Optics Cable (6ft / 2M)
SPEC-OC-FIBER-3M	One Replacement Fiber Optics Cable (9ft / 3M)
SPEC-OC-MICRO	One Replacement Micro optical coupler for Stainless flow cell
SPEC-OC-PANEL	Panel mount SMA-905 connector (for pass through)
SPEC-880-1CM	Absorbance flow cell, stainless steel with 1 cm path length (with path length adjustable down to 0.5cm)- inlet / outlets must be specified (3/4" sanitary flange, hose barb in sizes: 1/8, 1/4, 3/8, 1/2in)
SPEC-880-1CMLH	Low hold-up Absorbance flow cell, stainless steel with 1 cm path length, 0.75ml hold up. 1/8inch barb inlet / outlets
SPEC-880-5MMLH	Low hold-up Absorbance flow cell, stainless steel with 0. 5cm path length, 0.75ml hold up, 1/8inch barb inlet / outlets
SPECSS-N-ADJ-M	Stainless steel UV Flow Cell, with nano couplers 0.05 to 2 mm path length; inlet outlet fittings to be specified by user (3/4" sanitary flange, hose barb in sizes: 1/8, 1/4, 3/8, 1/2in); fibers ordered separate
SPEC-XXXP-BOX	Photometer with XXXnm light source, 2 fiber optic cables, 2 optical couplers to connect to flow cell, mounted with integral display and chart recorder. XXX = 280, 260 or other

For warranty information see our website at http://www.pendotech.com/warranty

