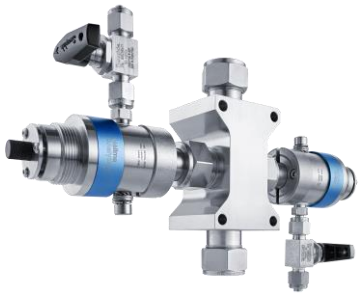
EXCALIBUR HD FCP User-Configurable Spectroscopic Transmission Cell



Robust flow-through cell for precise spectroscopic online measurements in the manufacturing process

The Hellma Excalibur HD FCP transmission cell brings high performance chemical composition monitoring to a wide range of demanding applications – in the process or in the pilot plant. The sampling interface consists of two standard optical fingers combined with either off-the shelf Swagelok components or the highly precise H-Cell central part.
The Excalibur HD FCP measurement cell employs robust construction combined with a patented welded metal sealing technology[1], enabling them to withstand widely varying chemical conditions, high pressures, and extremes of both high and low temperature.

ROBUST OPTICS

The measurement cell is particularly pressure and temperature resistant (up to 250 bar / 300 °C) by using wear-free metal seals and sapphire optics. This provides an extremely robust and permanent optical seal, virtually eliminating the possibility of window breakage, chemical attack, or mechanical seal failure. Maintenance-related failures or downtimes are eliminated – process costs are reduced.

Each optical finger is sealed, evacuated, and backfilled with high grade nitrogen, preventing contamination as well as condensation within the optics at low temperatures. The slight overpressure and the presence of a second barrier prevent the medium from leaking. These additional safety features make the measuring cell predestined for demanding process environments.

Beam direction adjustments allow the signal transmission of the optics to be optimized, even for quite long path lengths.

The Excalibur HD FCP is available for the near-IR, visible, and UV ranges.

HIGH FLEXIBILITY USING STANDARD SWAGELOK™ COMPONENTS

The use of Swagelok™ components enables the configuration of flow cells having path lengths from 2 mm to over 2 meters, allowing for both liquid and gas phase analysis. Since the cells employ standard Swagelok connections, they can easily be removed for cleaning or service.
A Swagelok™ X-Cross can be used to construct a robust liquid sample cell with a 2 mm path length. Gas phase cells can be assembled by using a pair of Swagelok T-Pieces and a length of straight tubing.

H-CELL CENTRAL PART

The FCP probes can also be used with the H-Cell central part. This typically provides precise fixed path lengths of 2, 5 or 10 mm and a choice of flow diameters and fittings.

[1] References: US Patent: 6,587,195 B1

FEATURES

- Excellent chemical resistance
- Welded seals for extreme robustness
- Compatible with both high and low temperature as well as thermal shock
- Withstand high pressure and viscosity
- Minimum possible flow restriction
- Configurable using standard Swagelok components
- Compatible with standard conduit termination housings

PRODUCT CONFIGURATION

Model series	**Excalibur HD FCP**		
Measuring principle	Transmission		
Path lengths central	with H-Cell	with X-Cross	with T-Piece
Optical path length	2 mm / 5 mm /10 mm	2.5 mm	100 mm – 2,000 mm
Optical material	Sapphire		
Central parts material	Stainless Steel 1.4435/1.4404 (316L) /		
Sealing technology	Gold-plated high-nickel alloy C-Ring		
Spectral range	NIR / UV/Vis		
Optical connection	F-SMA socket and ATEX PMA housing (NW 29) / FC/PC socket and ATEX PMA housing (NW 29) / F-SMA socket and conduct termination (1“ NPT male fitting) / FC/PC Typ-N socket and conduct termination (1“ NPT male fitting)		
Process connection	0.75 inch Swagelok		
Pressure range	-1 to 200 bar (class 1500)		-1 to 250 bar
Temperature range	-30 to 300°C		
Additional functions	Optional: Inertization with cover gas (N2)		

SELECTION OF DIFFERENT CENTRAL PARTS FOR DIFFERENT PATH LENGTHS

for liquid media

H-Cell with high precision path length accuracy (2 mm, 5 mm or 10 mm)

Cost effective and readily available **X-Cross** variant for liquid measurements (path length 2.5 mm)

for gaseous media

T-Piece for gas measurements in hazardous areas (path length from 100 mm to 2.000 mm)