



Accessories

Spool pieces for Free Space Spectrometers

- 915** **8" on-line stainless steel sampling spool with ANSI flanges**
System includes $\phi 1.5''$ model 698 sapphire window assembly, $\phi 5''$ service flange, bracket for Free Space optical head and ANSI flanged spool
- 916** **12" on-line stainless steel sampling spool with ANSI flanges**
System includes $\phi 1.5''$ model 698 sapphire window assembly, $\phi 5''$ service flange, bracket for Free space optical head, ANSI flanged spool, air/liquid window cleaning nozzle and interface port for sample take-out valve
- 917** **12" on-line stainless steel sampling spool with ANSI flanges**
System includes $\phi 1.5''$ model 698 sapphire window assembly, $\phi 5''$ service flange, bracket for Free space optical head and ANSI flanged spool
- 918** **3" on-line stainless steel sampling spool with ANSI flanges**
System includes $\phi 3/4''$ sapphire window assembly for free space optical head 701 or 705, $\phi 1.4''$ service flange and ANSI flanged spool



To be specified:

- material of the spool
- schedule of the pipe
- design pressure and temperature for the spool

Stainless steel spool with sanitary flanges, AAA approved, 303 stainless steel

- 630** 4" reflectance flow cell, 82.6 mm long
- 631** 2" reflectance flow cell, 82.6 mm long
- 632** 6" reflectance flow cell, 82.6 mm long
- 633** 1 1/2" reflectance flow cell, 82.6 mm long
- 636** 2" transfectance flow cell, 82.6 mm long
- 639** 1-1/2" transmission flow cell, 82.6 mm long
- 401** 2 1/2" reflectance flow cell, 82.6 mm long
- 402** 3" reflectance flow cell, 82.6 mm long
- 403** Sanitary flanged reflectance probe



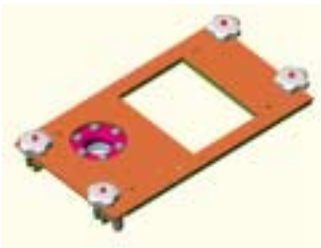


To be specified:

- pathlength for transreflectance or transmission flow cell
- material other than 303 stainless steel

Sapphire Window Assembly with customized mounting plate.

698-00
699-00



1.5" Sapphire Window Assembly

For on-line free space applications, 304 stainless steel, $\phi 1.5''$ clear aperture, 1/2" thick, Klingersil C4430 gasket

Optional:

Customized Mounting plate (installed on pipes, tanks, etc.) for Quick dismount of Spectrometer from measuring point.

Flow cell with ANSI Flanges or Swagelok Fitting.

672



Cross-flow side-stream liquid flow cell.

Connector to single fiber or micro fiber bundle terminated by SMA connectors, single path, 316 stainless steel, 1/2" Swagelok fitting connection

To be specified:

- material other than 316 stainless steel
- O-ring material other than Kalrez

677



Transmission on-line flow cell with ANSI flanges.

Connector to single fiber or micro fiber bundle terminated by SMA connectors, single path, 316 stainless steel

To be specified:

- pipe size (1.5"-6")
- pipe schedule
- material other than 316 stainless steel
- O-ring material other than Kalrez
- flange other than 150 LB



Probes (Diffuse Reflectance, Transflectance, Dual Purpose)

810

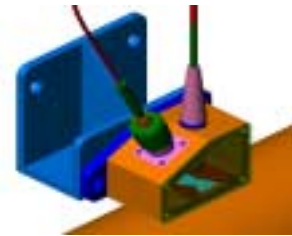


Remote Diffuse Reflectance Head

Head 70mm X 70mm X 75mm with choice of Single fibers or mini fiber bundles) depends on application), 6 mm diameter sample area at 12 mm working distance from the Probe to Sample, 304 stainless steel

To be specified:

- fiber types
- material other than 304 stainless steel



670



Angled diffuse reflectance probe

$\phi 5/8$ " shaft diameter, 8" shaft length, 1.5 meter bifurcated fiber bundle terminated by TNC connectors, 316 stainless steel, sapphire window, 15° angled

To be specified:

- shaft length other than 8"
- fiber length other than 1.5 meters
- material other than 316 stainless steel

679B



Dark-field diffuse reflectance/transmission probe

Dual purpose for transmission and reflection, $\phi 1/2$ " shaft diameter, 8" shaft length for reflectance measurement; $\phi 7/8$ " shaft diameter and 9" shaft length for transflectance measurement with adjustable pathlength. Sapphire window, 316 stainless steel, Kalrez o-ring seal, 1.5 meter bifurcated fiber bundle terminated by TNC connectors and push-button triggering switch.

679E

Diffuse reflectance probe with Sapphire ball

$\phi 12.7$ mm shaft diameter, 250 mm shaft length for reflectance measurement. Sapphire Ball, 316 stainless steel, Kalrez o-ring seal, 1.5 meter bifurcated MINI (37x37) fiber bundle terminated by SMA connectors and push-button triggering switch and 2 LEDs (Green and Red) controlled via Software

679F

Diffuse reflectance probe with Sapphire ball

$\phi 12.7$ shaft diameter, 250 mm shaft length for reflectance measurement. Sapphire Ball, 316 stainless steel, Kalrez o-ring seal, 1.5 meter bifurcated FULL (157x122) fiber bundle terminated by TNC connectors and push-button triggering switch and 2 LEDs (Green and Red) controlled via Software

To be specified:

- gold brazing seal if no O-ring seal
- shaft length other than 8" (for 679B) and 250 mm (for 679E and 679F)
- fiber length other than 1.5 meters
- material other than 316 stainless steel
- O-ring material other than Kalrez



Sapphire ball tipped diffuse reflectance probe

Sapphire ball tip, ϕ 1.0" shaft diameter, 8" shaft length, 316 stainless steel, Kalrez O-ring seal, 1.5 meter bifurcated fiber bundle terminated by TNC connectors

To be specified:

- shaft length other than 8"
- fiber length other than 1.5 meters
- material other than 316 stainless steel
- O-ring material other than Kalrez

675



Transflectance probe

Single fiber terminated by SMA connectors, selectable or adjustable pathlength, ϕ 1" shaft diameter, 10" shaft length, 316 stainless steel, sapphire window, Kalrez o-ring seal, a pair of 1.5 meter single fibers

Pathlength can be selectable and changable

To be specified:

- Specific pathlength or 1,2,3,4,5,mm pathlength set.
- shaft length other than 10"
- fiber length other than 1.5 meters
- material other than 316 stainless steel
- O-ring material other than Kalrez

685

Bubble shedding transreflectance probe

Sapphire ball tip, 1.5 meter bifurcated fiber bundle terminated by TNC connectors, ϕ 12 mm shaft diameter, 8" shaft length, 316 stainless steel, Kalrez o-ring seal, variable pathlength

To be specified:

- multiple pathlengths
- shaft length other than 8"
- fiber length other than 1.5 meters
- material other than 316 stainless steel
- O-ring material other than Kalrez



- 691** **Retractable transfectance probe**
Sapphire ball tip, 1.5 meter bifurcated fiber bundle terminated by TNC connectors, ϕ 12 mm shaft diameter, 13.2" shaft length, 316 stainless steel, Kalrez o-ring seal, variable pathlength, 5" insertion length of retractable housing, Ingold fitting

To be specified:

- multiple pathlengths
- fiber length other than 1.5 meters
- material other than 316 stainless steel
- O-ring material other than Kalrez

- 671** **Variable long-path gas cell**

To be specified:

pathlength 0.4, 0.8, 1.2, 1.6, 2.0, 2.4 or 2.8 meters

- 673** **Cuvette holder without heater**
Anodized aluminum body, dual purpose for single fiber or fiber bundles

Fibers.

- 660-10** Set of 1 meter of 600 micron, low OH, single fiber terminated by SMA connectors from both sides, PVC jacket for Flow cells, Transfectance probes .
- 660-11** Extra length of 600 micron, low OH, single fiber PVC jacket
- 660-20** Set of 1 meter of mini fiber bundle terminated by SMA connectors from both sides, PVC jacket for Flow cells, Transfectance probes .
- 660-21** Extra length of mini fiber bundle (37 of 200 micron fibers), PVC jacket
- 660-22** Extra length of Bifurcated mini fiber bundle (37 x 37), PVC jacket for diffuse reflectance probes.
- 660-23** Extra length of Bifurcated FULL fiber bundle (125 x 125), PVC jacket for diffuse reflectance probes.
- 660-30** Bifurcated full bundle terminated by three TNC connectors for 630-639, 401-403 flow cells, PVC jacket
- 660-40** Bifurcated mini bundle terminated by two SMA and one TNC connectors, for 630-639, 401-403 flow cells, PVC jacket



Pre-aligned Lamp Module assemblies

- 664** Pre-aligned lamp module assembly for Laboratory Spectrometers :
Luminar 2000, 3000, 2040, 3040
- 665** Pre-aligned lamp module assembly for Process Spectrometers:
Luminar 2010, 3010, 2060, 3060
- 644** Pre-aligned lamp module assembly for Free space and Film Spectrometers:
Luminar 2020, 3020, 2030,3030, 2040, 3040, 3070,3075, 3076, 3077
- 732-01** Pre-aligned lamp module assembly for Miniature Spectrometers :
Luminar 4030, 5030, 6000, 4020, 4060, 4010
- 644-20** Pre-aligned lamp module assembly with 20 Watts lamp for Free space and Film Spectrometers: Luminar 2020, 3020, 2030,3030, 2040, 3040, 3070,3075, 3076, 3077

Additional options for Spectrometers.

(Climate control accessories, Purging systems, Connection to DCS, etc)

- 500** Z purging system, Class I, Div II, group A through D. System includes 2 cubic feet Z purging systems, wiring conduit sealing fittings and packing materials
- 501** X purging system, Class I, Div I, group C, D, B. System includes 2 cubic feet X purging system, wiring conduit sealing fittings, signal disconnect module and packing materials
- 510** 400 BTU Vortex cabinet cooler for free space head
Air Consumption: 8 SCFM Air Pressure: 80-120 PSI
- 511** 1500 BTU Vortex cabinet cooler for Hoffman NEMA enclosure
Air Consumption: 25 SCFM Air Pressure: 80-120 PSI
- 512** Vortex cooled heat exchanger for Hoffman NEMA enclosure
Air Consumption: 8 SCFM Air Pressure: 80-120 PSI
- 520** Dust filter insert for Vortex cooler
- 521** Moisture filter for Vortex cooler
- 522** Solenoid valve for Vortex cooler (specify: 120 VAC or 230 VAC)
- 9200** Capability for MODBUS communication with DCS via installed RS422/485 Serial interface in the Spectrometer. Includes hardware and software.
- 9201** Additional 4-20 mA output channels for the connecting with DCS. (Maximum: 16)



Additional accessories (External PCs, Software, Documentation)

- 9400** Desktop data control system (General brand name)
Configuration : TBD
- 9401** Desktop data control system (DELL)
Configuration : TBD
- 9402** Notebook data control system (General brand name)
Configuration : TBD
- 9403** Notebook data control system (DELL)
Configuration : TBD
- 9404** **Smart UPS -700** Uninterruptible power supply (700 VA, 110 VAC or 230 VAC)
- 9410** PERFTEST Software
- 9411** NIRPQMS Software Package (21 CFR 11 Compliant)
- 9412** Unscrambler Software (from CAMO)
- 9413** TRANSCAL Calibration Transferr Software
- 9414** Installation Qualification (IQ), Operational Qualification (OQ) Documentation

Spare parts.

- 9300** External Floppy Disk Drive
- 9301** CPU Board with Ethernet, Display interfaces and Flash memory.
- 9302** Fax/modem Card
- 9303** Ethernet Board for the remote PC
- 9305** A/D Converter for Luminar 3XXX Series Spectrometers.
- 9307** I/O Board (up to 8 analog outputs)
- 9308** Brimrose Interface Board
- 9309** Brimrose Radio Frequency DDS Board
- 9310** ISA Bus Power supply
- 9311** Lamp Power supply
- 9312** Detector Power supply



Training Courses, Installation, Application, Engineering Supports, Upgrades and Service packages.

- 9600** **3-days Installation Support (Exclude or Include: Travel and Living expenses)**
Additional days are available.
- 9601** **3-days Hardware and Software Training in Brimrose or customer sites. (Exclude or Include: Travel and Living expenses)**
Additional days are available.
- 9602** **3-days Chemometrics and software training (Exclude or Include: Travel and Living expenses)**
Additional days are available.
- 9603** **Application support by days training (Exclude or Include: Travel and Living expenses)**
- 9605-XX** **Service contracts with different response time (48-96 hours).**
Include: - Service for repairs Spectrometer.
 - On-line diagnostics.
 - 50% discount on Damaged parts.
 - 1 preventive maintenance visit (upon agreement from both sides with Travel and living expenses included)
Exclude: - Travel and living expenses for additional visits (if required)
 - Fibers, Probes.
 - Damages caused by catastrophes and higher natural forces.
 - Mechanical Damages on enclosures, Paint

Reference Information.

1. Wavelength range (nm)

First preference	Second preference	Customer specified
600-1100	850-1700	
900-1700	900-1800	
1100-2300	1100-2200	
	1200-2400	