

FDR-800 Series Non-Contact Diffuse Reflectance Probes

Fiber-optic coupled Near-IR probes for use in product and process development and on-line process analysis.



FDR-800 Series diffuse reflectance probes have been designed to provide optimum performance in the non-contact analysis of powders and other diffusely reflecting materials. The series includes three models.

Model FDR-803 is optimized for substantial sample offsets (60 – 120 mm). This, combined with its reduced diameter and stainless steel construction, make it ideal for the analysis of materials in reaction vessels such as glass vessels with 24-40 tapered joints. A proprietary optical design effectively minimizes stray light due to reflection from the probe's optics.¹ The probe's integral bifurcated 80 fiber bundle provides an ideal combination of sensitivity and economy.

Model FDR-805 employs the same optical design as the FDR-803. However, its larger diameter enables it to be optimized for use with reduced sample distances. This, in turn, results in a reduced illuminated spot diameter and increased sensitivity.

Model FDR-810 is optimized for viewing a sample through thick windows such as those found on pharmaceutical dryers and blenders. The key is the use of a coaxial array of optical fibers in conjunction with a single lens to overlap the illuminating and receiving fields of view at a desired distance in front of the probe. By effectively minimizing optical divergence, this design eliminates stray light, resulting in an excellent photometric accuracy. The FDR-810 uses a fiber bundle for illumination and a single fiber for collection, allowing the probe to be coupled to a spectrometer a substantial distance from the measurement point.

The three probes in the FDR-800 Series can be optimized for use with diverse spectrometers and sampling requirements. For more information, or to discuss your specific application, please do not hesitate to contact us at (949)757-9300 or visit us on the web at www.goaxiom.com.

Ref. 1: U.S. Patent 5,818,996

Features:

FDR-803^(Ref. 1):

- Optimized for reduced diameter and maximum sample offset
- Sample offsets from 60 to 120 mm
- 316 stainless steel body
- Compatible with 24-40 fittings
- Suitable for vacuum operation

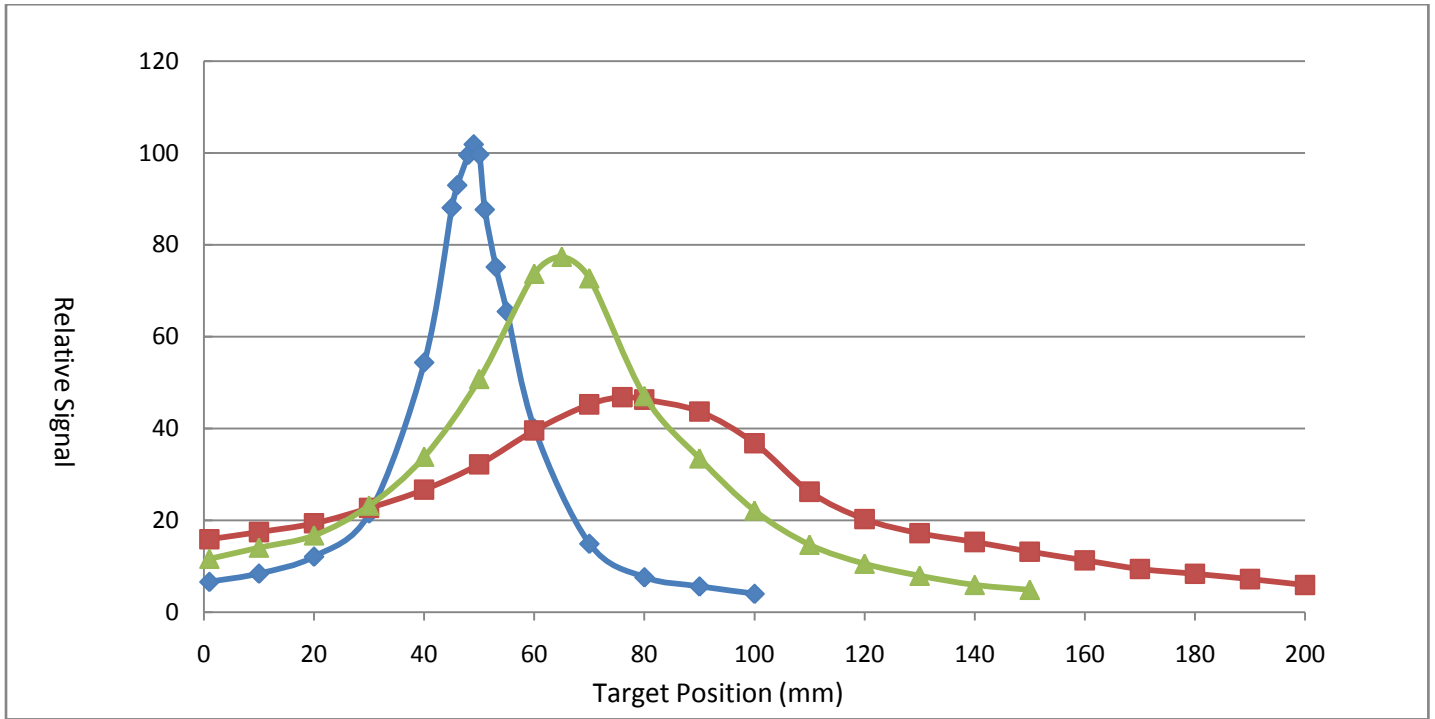
FDR-805^(Ref. 1):

- Optimized for sensitivity and flexibility
- Sample offsets from 25 to 100 mm
- Low stray light

FDR-810:

- Immune to reflection from window surfaces
- Optimum sample offset: 7 – 15 mm
- Large viewed spot diameter
- Suitable for remote sensing





Signal level vs. sample position for three different adjustments of an FDR-803 probe, illustrating the large sample offsets and depth of field available with the FDR Series.

FDR-800 Series Specifications

	FDR-803	FDR-805	FDR-810
Spectral Response:	400-2200 nm	400-2200 nm	400-2200 nm
Optimum Sample Offset:	40 – 120 mm	25 – 100 mm	7 - 15 mm
Illuminated Spot Diameter:	10 mm @ 100 mm offset	5 mm @ 50 mm offset	8 mm @ 12 mm offset
Probe Diameter:	19 mm	28.6 mm	28.6 mm
Length:	300 mm (200 mm insertion length)	180 mm	160 mm
Inserted Material of Construction:	316 stainless steel	NA (External Mounting)	NA (External Mounting)
Lens/Window Material:	SF 5 glass	SF 5 glass	SF 5 glass
Illumination Fiber-Optic Cable:	40 fiber bundle, 1.7 mm diam. active area	40 fiber bundle, 1.7 mm diam. active area	7 fiber bundle, 2 mm diam. active area
Receiving Fiber-Optic Cable:	40 fiber bundle, 1.7 mm diam. active area	40 fiber bundle, 1.7 mm diam. active area	Single fiber, 0.6 mm core diam.

