

# Dryer Monitor for Pharmaceutical Manufacturing



## Description

Our Dryer Monitor consists of a NIR spectrometer, a sampling head, computer, and software. Our spectrometer is based on a 256 element T.E. cooled InGaAs array which is coupled to the sample head via a fiber optic bundle. All of our monitor spectrometers include our AutoCal feature. A built-in line source calibrates the spectrometer for wavelength continuously and automatically, ensuring wavelength accuracy at all times.

The spectrometer connects via a fiber optic bundle to our sample probe head, PNIR-1000. The head produces a beam of light approximately 25mm in diameter, projected through a sapphire window which is in contact with the materials being measured. Several fibers pick up the diffuse reflectance signal and transmit it to the spectrometer. The probe head has a built in spectralon disk that is used as a 100% white reference. The spectralon disk is also used to conduct linearity tests and low/high flux noise measurements as per USP <1119>. Combined with our AutoCal feature, USP <1119> requirements are met by the system. All testing can be done at any time, without having to move the system after it is installed on a dryer. The probe head has two light bulbs - one as a backup - to avoid failure during an operation. The probe head is made of 304 SS. Teflon or BUNA-N O-Ring seals are used to prevent dust and other contaminants from getting in.

The Dryer Monitor is battery-operated and has wireless communications, 802.11g. This makes the system networkable and accessible from anywhere in the plant.

## Benefits of Real Time Monitoring

- Cost savings
- Improve yield and reduce scrap by getting it right the first time
- Improve product quality Reduce cost through increased plant utilization, monitoring of end-points allows more batches to be run
- Faster analysis at point of manufacturing speeds time to market and reduces inventory
- Improve safety. On-line spectroscopy techniques are non-invasive and allow measurement of hazardous chemicals without exposing operators and analysts to them
- Improve measurement control and increase knowledge of your process
- Low maintenance
- Minimal operator involvement

## Dryer Monitor Specifications:

(for system based on a 256 element, T.E. cooled InGaAs Array spectrometer)

### Spectrometer

Optics _____	f/3
Detector _____	256 element InGaAs, T.E. cooled
Wavelength Range _____	900nm to 1700nm
Linear Dispersion _____	3.125 nm/pixel
Bandwidth _____	6.25 nm
Wavelength Accuracy _____	<0.5 nm
Electronics _____	16Bit
Input _____	905 SMA
AutoCal _____	Built-in Line Source for automated Wavelength Calibration

### Probe Head

Light Source _____	Dual Tungsten Lamps, 5.4 Watts each
Lifetime of Lamps _____	~9,000.00 hrs
Working Distance _____	10 mm from window
Sensing Area _____	25 mm
Reference Disk _____	Spectralon, 100% reference Can add custom standards

### Computer

Operating System _____	Windows XP, 2000
Communication _____	802.11.g wireless
Style _____	SBC

### USP <1119> Specs

Baseline Noise _____	<0.3 X 10 <sup>-3</sup> for high light flux <1 X 10 <sup>-3</sup> for low light flux
Photometric Accuracy _____	+/- 1% for all levels
Wavelength Accuracy _____	+/- 1 nm
NIST SRM 1920 Equivalent	

### The following specifications have been met

### Documentation

I/Q and O/Q _____	Documentation included
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### Dimensions

Body _____	9.5" L x 6 1/2" H x 7 3/4" W
Probe _____	6" L x 2 3/4" Diameter
System Weight _____	26 lbs

### Ordering Information:

**DM-1000**

*All dimensions are approximate*

*Control Development, Inc. reserves the right to change specifications without notice.*



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