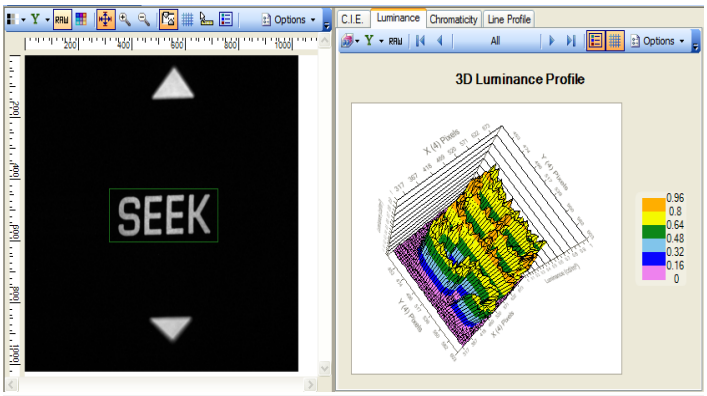
PR-920 Digital Video Photometer

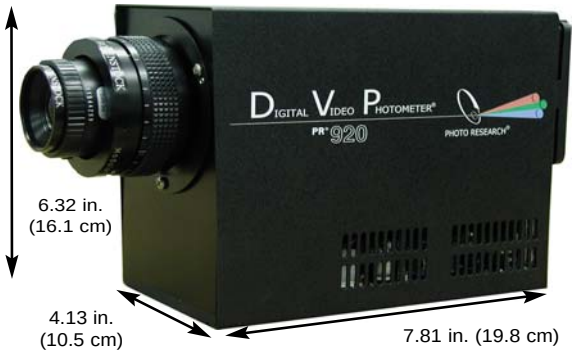
Innovation - Photo Research developed the first commercially available video photometer over 15 years ago. We are proud to introduce our newest and most advanced video photometer - the ***PR-920 Digital Video Photometer (DVP)***. Our video photometers feature the patented Synthetic Aperture data analysis method and numerous other patents and are being used world-wide for applications ranging from FAA testing of radar screens to ISO certification of information displays.

Digital Precision - The heart of the ***PR-920*** is a thermo-electrically cooled, 1024 x 1024 element digital CCD camera which helps to make it the most accurate, sensitive and repeatable video photometer in its class. Because the ***PR-920*** detector consists of 1.048 million pixels, excellent spatial resolution is guaranteed.



VideoWin 3* with 3D luminance graph

Hand Matched Filters - In addition to the proprietary camera design, the detector response of each ***PR-920*** is painstakingly matched to the CIE V(λ) (photopic) response by our proprietary filter matching techiques that have been developed over the last 50 years. Our filter matching experience, combined with an individual calibration of each and every detector element means that the ***PR-920*** delivers the most accurate measurement results of any commercially available video photometer. In addition to the standard photopically matched filter, the ***PR-920*** can be equipped with high-accuracy, hand-matched CIE Tristimulus filters (option CFS-302).



Versatility - The ***PR-920*** is the only commercially available video photometer that utilizes a focusable objective lens as standard equipment providing the capability of addressing virtually any application without changing lenses. The ***PR-920*** is also the only video photometer that includes 5 internally mounted, fully automated neutral density filters giving it the widest standard luminance range of any instrument in it's class.

Standard Equipment - System - Optical Head, PCI Frame Grabber and Cables; **Optical Head -** CCD Camera, Dual Filter Turrets (CIE Photopic and 5 Neutral Density filters); **Calibration - Certification** and **Instruction Manual.**

** **VideoWin™3** software must be ordered separately.*

Features:

- Luminance measurements
- Psuedo Color Luminance Display
- 3D Luminance Profile graph
- Active X Control from other applications (e.g. Microsoft Excel, Visual C++)
- Symbol Luminance - Automatically select images for analysis based on luminance value

Options:

- CIE Tristimulus (Xr, Xb, Z) Filters (P/N CFS-302)
- Controller: Pentium based PC running MS Windows XP.
- High Resolution Positioning Stages
- Absolute spatial calibration (line width, proflie capability)

Measurement Capabilities

- Luminance
- Luminance Uniformity and Profile
- Pseudo Color Luminance Representation
- Multiple Area of Regard (AOR) Analysis
- Line Width, Profile (opt.)
- CIE Chromaticity (opt.)

PR-920 Performance Specifications

Resolution:	16 Bit CCD Pixels - 1024 x 1024
CCD Pixel Size:	0.012 mm x 0.012 mm - 100% fill factor
Standard Filters:	Photopic (f1' ± 3%), ND-0.2, 0.5, 1.0, 1.5, 2.0, OPEN
Variable Focusing Range:	73 mm to infinity with standard MS-60 Lens
Minimum Measuring Area:	≥ 0.06 mm with MS-60 using 5 x 5 pixels
Field of View:	≥ 12.2 mm with standard MS-60 Lens (see Lens chart)
Measurement Time Range:	100 msec to 60 sec
Calibration Uncertainty:	± 5% (Absolute) ± 2% (Relative to NIST traceable 2856 K standard)
Luminance Precision:	± 1.0% at 0.4 cd/m^2 against 2856K standard (10x10 pixel avg.)
Linearity (f3):	≤ 0.2% per ND filter position, ≤ 1% Overall (10x10 pixel avg.)
Polarization (f8):	≤1%
Spatial Uniformity:	± 2% (10x10 pixel avg.)
Luminance Range (10x10 pixel):	0.03 to 85,000 cd/m2
Color Accuracy @ 0.3 cd/m2 (10x10 pixel average):	± 0.0015 x, ± 0.001 y at 2856K- (CFS-302 option) ± 20 Kelvin meas. blackbody @ 2000K-3000K - (CFS-302 option)
Color Repeatability (10x10 pixel):	± 0.0008 for CIE x,y at 0.3 cd/m2, 2856K - (CFS-302 option)
Power Requirements:	90 to 240 VAC 50 - 60 Hz
Operating Temps. / Humidity:	5° to 30° C (41° to 86° F) / ≤ 90% Non-Condensing

PR-920 Lens Capability Chart

Objective Lens Magnification	Working Distance	Minimum Resolution	Minimum Measurable Line Width	Field of View Horizontal x Vertical
MS-60 @1:1 mag.	73 mm	0.012 mm	0.06 mm	12.2 x 12.2 mm
MS-60 @ 1:2 mag.	120 mm	0.024 mm	0.12 mm	24.5 x 24.5 mm
MS-60 @ 1:5 mag.	275 mm	0.06 mm	0.300mm	61.4 x 61.4 mm
MS-60 @ Infinity	Infinity	0.20 mrad	1.00 mrad	202.5 x 202.5 mrad
OL-2X (2:1 mag.)	34 mm	0.006 mm	0.030 mm	6.1 x 6.1 mm
MS-28 @1:10 Mag	277 mm	0.120 mm	0.60 mm	123 x 123 mm
MS-28 @ 1:50 Mag	1.42 m	0.60 mm	3 mm	614 x 614 mm
MS-28 @ infinity		0.44 mrad	2.2 mrad	434 x 434 mrad
OL-5X (5:1 mag.)	34 mm	0.0024 mm	0.012 mm	2.4 x 2.4 mm
OL-10X (10:1 mag.)	33.5 mm	0.0012 mm	0.006 mm	1.2 x 1.2 mm
OL-20X (20:1 mag.)	20 mm	0.0007 mm	0.0035 mm	0.6 x 0.6 mm
OL-50X (50:1 mag.)	13 mm	0.00024 mm	0.0012 mm	0.24 x 0.24 mm
TL-210 @ 1:2 mag.	59 cm	0.024 mm	0.120 mm	24.5 x 24.5 mm
TL-210 @ 1:5 mag.	1.20 m	0.06 mm	0.300 mm	61.4 x 61.4 mm
TL-210 @ 1:10 mag.	2.25 m	0.12 mm	0.600 mm	123 x 123 mm
TL-210 @ infinity	Infinity	0.057 mrad	0.285 mrad	58.5 x 58.5 mrad

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