



PHOTO RESEARCH®

PR-880 Automated Filter Photometer / Colorimeter

Full automation - The PR-880 is the only fully automated filter photometer available today. We've automated the measuring apertures (5 standard sizes), the filter turrets, the measuring (zero) shutter and viewing (eyepiece) shutter. All of these features are controlled by an on-board computer and are accessed via 8 push buttons on the integral control panel. After setting up the measurement from menus on the 4 x 20 back lit LCD display, making a measurement is as easy as pushing a button. The corrected measurement value (e.g. luminance) is auto-matically displayed following the measurement. There is no need to apply correction factors for optical accessories, the PR-880 does it all for you. This helps remove any possible "cockpit" errors that could yield false results.

Pritchard Optics – The PR-880, like all of Photo Research's photometers and spectroradiometers, utilizes Pritchard measuring and viewing optics. Pritchard optics assures accurate, non-ambiguous target alignment every time, regardless of the sample size.



Remote Mode software – This powerful tool allows you to control the PR-880 measurement and data functions from virtually any computer using simple ASCII (text) commands reports over the built-in RS-232 interface. Combined with the full-automation capabilities of the PR-880, Remote Mode software makes an easy task of creating an Automated Test Environment (ATE) for hands off testing – an ever increasing need to help reduce the time to verify that a product meets stringent international specifications.

Sensitivity / Versatility – Like it's predecessor, the PR-1980A, the PR-880 is the most sensitive filter photometer in it's class. Combined with standard multiple apertures and a wide range of optical accessories, virtually any measurement requirement can be met. The sensitivity range of the PR-880 is extended by using *four decades* of Neutral Density (ND) filters – ND-1, ND-2, ND-3, ND-4 located in a second, fully automated filter turret.

Color it Better – Photo Research is among the small minority of filter colorimeter manufacturers that provides 4-filter colorimetry. The majority of filter colorimeters utilize three filters – CIE X (Red), Y (Green or Photopic) and Z (Blue). The CIE X function has two peaks, a minor peak at 442 nm (blue region) and a major peak at 599 nm. 3-filter colorimeters ignore the part of the CIE X function that peaks at 442 nm. This can yield significant errors especially for blue rich sources.

When ordered with the matched CIE Tristimulus filter option (X_b, X_r, and Z filters in addition to the standard Photopic filter), the PR-880 can be commanded to speed up color measurements by making these measurements using two or three filters instead of all four filters - yielding time reductions of up to 60% (for two filter measurements). For accuracy, correction factors are used that are established based on a full, 4-filter measurement.

Typical Applications

- Automotive Lighting
- Photometric Reflectance Studies
- CRT Luminance and Contrast
- Photometric Transmittance Studies
- LCD Luminance and Contrast
- LED Measurements
- Military and Commercial Aerospace Display Measurements
- Color Temperature Determination
- Electroluminescent (EL) Panel Evaluation
- Human Factors Testing
- Head-Up Display Measurement
- GO/NO GO Testing
- MIL-SPEC Testing



PHOTO RESEARCH[®], Inc.

9731 Topanga Canyon Place Chatsworth, CA 91311-4125
 PH: (818) 725-9750 • FAX: (818) 725-9770
 www.photoresearch.com
 e-mail: sales.pr@photoresearch.com

Specifications

| | |
|-------------------------------|--|
| A/D Resolution | 14 bits (1 part in 16.384) |
| Local Control | 8 push buttons |
| Display | 4 x 20 character super-twist LCD (4 levels of back lighting including OFF) |
| Standard Apertures | Automated 3°, 1°, 1/2°, 1/4°, 1/8° (angular subtense calculated with MS-55 lens focused at infinity) |
| Optional Apertures | Automated 2°, 1/4°, 1/8°, 0.4' x 40', 2' (angular subtense calculated with MS-55 lens focused at infinity) |
| Filter Turrets | Two six position turrets (automated) |
| Standard Filters | Photopic, Red, Blue, Open, ND-1, ND-2, ND-3, ND-4 |
| Interface | RS-232 (IEEE-488 optional) |
| Analog Output | 0 – 10 volt DC @ 50 Ω impedance |
| Field of View | 8.5° with MS-55 lens focused at infinity |
| Photometric Accuracy | ±2% of reading at 2856 Kelvin (Illuminant A) when measuring NIST standard |
| Colorimetric Accuracy | ±.0015 CIE 1931 xy measuring Illuminant A with optional P/N 6880-0006-01 |
| Power | Input: 100 – 230 Volts AC / 50 – 60 Hz |
| Operating Temperature | 41° F (5° C) to 95° F (35° C) |
| Storage Temperature | 0° F (-32° C) to 130° F (54° C) |
| Humidity | 0 – 90% non-condensing |
| Weight | 9.4 lbs. (4.3 kg) with MS-55 lens |
| Measuring Capabilities | Luminance, illuminance, luminous intensity, tristimulus colorimetry, L*u*v*, correlated color temperature, chromaticity (opt.) |

Measuring Field Coverage Chart

| ACCESS | DISTANCE | UNITS | APERTURE SIZE IN DEGREES | | | | |
|---------|----------------------|-------------|--------------------------|----------------|----------------|-----------------|-----------------|
| | | | 3° | 1° | 1/2° | 1/4° | 1/8° |
| MS-55 | 1.75 in. to ∞ | inches (mm) | 0.114 (2.89) | 0.038 (0.97) | 0.019 (0.48) | 0.009 (0.24) | 0.005 (0.12) |
| MS-55 | 10 ft. (3.05 meters) | inches (mm) | 6.3 (160) | 210 (53.3) | 105 (26.7) | 52.5 (13.3) | 26.3 (6.6) |
| MS-1X | 3.80 in. (97 mm) | inches (mm) | 0.114 (2.89) | 0.038 (0.97) | 0.019 (0.48) | 0.009 (0.24) | 0.005 (0.12) |
| MS-165 | 6.5 in. (165 mm) | inches (mm) | 0.114 (2.89) | 0.038 (0.97) | 0.019 (0.48) | 0.009 (0.24) | 0.005 (0.12) |
| MS-2.5X | 1.76 in. (45 mm) | inches (mm) | 0.030 (0.76) | 0.015 (0.38) | 0.008 (0.19) | 0.004 (0.10) | 0.002 (0.05) |
| MS-5X | 1.11 in. (28 mm) | inches (mm) | 0.016 (0.38) | 0.008 (0.19) | 0.004 (0.10) | 0.002 (0.05) | 0.001 (0.02) |
| MS-77 | 4.25 in. (108 mm) | inches (mm) | 0.026 (0.64) | 0.013 (0.32) | 0.006 (0.16) | 0.003 (0.08) | 0.002 (0.04) |
| MS-7X | 0.7 in. (17.8 mm) | inches (mm) | 0.016 (0.41) | 0.0054 (0.138) | 0.0027 (0.069) | 0.0014 (*0.034) | 0.00068 (0.017) |
| MS-10X | 0.6 in. (15.2 mm) | inches (mm) | 0.0114 (0.289) | 0.0038 (0.097) | 0.0019 (0.048) | 0.0009 (0.024) | 0.0005 (0.012) |

Sensitivity Chart

| ACCESS | DISTANCE | UNITS | APERTURE SIZE IN DEGREES | | | | |
|-------------------------|----------------------------|----------------------|--|--|--|--|--|
| | | | 3° | 1° | 1/2° | 1/4° | 1/8° |
| MS-55 | 1.75 in. (44 mm) | ft cd/m ² | 1x10 ⁻⁴ (3x10 ⁻⁴) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻² (3x10 ⁻²) | 1x10 ⁻² (3x10 ⁻²) |
| MS-1X | 3.80 in. (97 mm) | ft cd/m ² | 1x10 ⁻⁴ (3x10 ⁻⁴) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻² (3x10 ⁻²) | 1x10 ⁻² (3x10 ⁻²) |
| MS-165 | 6.5 in. (165 mm) | ft cd/m ² | 1x10 ⁻⁴ (3x10 ⁻⁴) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻² (3x10 ⁻²) | 1x10 ⁻² (3x10 ⁻²) |
| MS-2.5X | 1.76 in. (45 mm) | ft cd/m ² | 1x10 ⁻⁴ (3x10 ⁻⁴) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻² (3x10 ⁻²) | 1x10 ⁻² (3x10 ⁻²) |
| MS-5X | 1.11 in. (28 mm) | ft cd/m ² | 1x10 ⁻⁴ (3x10 ⁻⁴) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻² (3x10 ⁻²) | 1x10 ⁻² (3x10 ⁻²) |
| MS-77 | 4.25 in. (108 mm) | ft cd/m ² | 1x10 ⁻⁴ (3x10 ⁻⁴) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻² (3x10 ⁻²) | 1x10 ⁻² (3x10 ⁻²) |
| MS-7X | 0.7 in. (17.8 mm) | ft cd/m ² | 1.2x10 ⁻⁴ (3.6x10 ⁻⁴) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻² (3x10 ⁻²) | 1x10 ⁻² (3x10 ⁻²) |
| MS-10X | 0.6 in. (15.2 mm) | ft cd/m ² | 2x10 ⁻⁴ (9x10 ⁻⁴) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻³ (3x10 ⁻³) | 1x10 ⁻² (3x10 ⁻²) | 1x10 ⁻² (3x10 ⁻²) |
| FP-880 Fiber Probe | Contact | ft cd/m ² | 3x10 ⁻³ (9x10 ⁻³) | 3x10 ⁻² (9x10 ⁻²) | 3x10 ⁻² (9x10 ⁻²) | 3x10 ⁻¹ (9x10 ⁻¹) | 3x10 ⁻¹ (9x10 ⁻¹) |
| CR-880 Cosine Receptor | N/A | fc lux | 4x10 ⁻⁴ (1.2x10 ⁻³) | 4x10 ⁻³ (1.2x10 ⁻²) | 4x10 ⁻³ (1.2x10 ⁻²) | 4x10 ⁻² (1.2x10 ⁻¹) | 4x10 ⁻² (1.2x10 ⁻¹) |
| IB-880 Incidence Baffle | 1.75 in. to ∞ (44 mm to ∞) | fc lux | N/A | 1x10 ⁻⁷ (1x10 ⁻⁶) | N/A | N/A | N/A |

