ProMetric® Software provides equipment control, data acquisition, and image analysis when used with ProMetric Imaging Photometers and Colorimeters. A ProMetric solution provides rapid and accurate measurement of luminance and color for a broad range of light sources, displays, and optical materials.

PM-HL™, the headlamp evaluation module for ProMetric® Software, enables accurate evaluation of headlamp beam patterns. The module also permits conversion of headlamp beam patterns into roadway illumination distributions. Includes pre-configured point-of-interest sets to support testing to US and ECE standards, including:

- Illuminance (ECE R20)
- Intensity (FMVSS108, ECE R112, ECE R123)

A typical PM-HL system consists of:

- ProMetric Imaging Colorimeter or Photometer
- PM-AC4001 Metal Halide Illumination Calibration Lamp
- PM-HL software module

Applications

- Capture an illuminance distribution measurement
- Convert illuminance measurement to a luminous intensity distribution
- Perform headlamp cut-off gradient calculations
- Perform US Standard Headlight Analysis, based on luminous intensity measurements
  - US point-of-interest set examples: low-beam headlamp, high-beam headlamp
- Perform European (ECE) Headlight Analysis, based on illuminance measurements
  - Low beam, high beam, LH and RH drive
- Define custom test points for other automotive tests with a stop lamp example provided

Benefits

- Quickly and economically qualify the illuminance, luminous intensity, luminous flux, chromaticity, and color temperature of lighting products versus lighting regulations or alternative lamps
- Reduce capital investment and measurement expense over goniometric methods
- Provide finely-resolved, quantitative and graphical analysis

Software module with tests for headlamp evaluation to US and ECE standards

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PM-HL™ System Requirements

- ProMetric® Imaging Colorimeter or Photometer
- PM-AC4001 Calibration Lamp
- Windows® 10, 64 bit
- 16-32 GB RAM
- Additional system requirements vary by camera. See hardware specification sheet for more information.

Key Features

- Built-in point-of-interest sets to support testing to US and ECE standards
- Conversion between illuminance distribution, luminous intensity distribution, and roadway illumination distribution
- Representation of a road overlaid on the measurement bitmap
- Automatic determination of the “beam elbow” datum position and alignment of camera image to that position
- Evaluation of ECE R20 test points for left- or right-hand drive
- Headlamp cut-off gradient calculation per regulation
- Multiple data analysis functions, including bitmaps, isoplots, cross-sections, gradient lines, and more
- Simplified pass / fail testing
- Headlamp Analysis Report to document results of evaluations

Examples of PM-HL analyses:

- The Gradient Line POI is a line analysis sampling tool with 3 parameters: Start Point, End Point, and Detector Size. The value, Lv, of maximum gradient along the line is displayed.

- The 2D Isometric plot can be used to display the Road Illumination plot, overlaid here with a representation of the road.

- A PM-HL analysis form used to evaluate ECE Reg. 20 test points or Custom test points. Shown here is the ECE Reg. 20 Left-Hand Traffic Test.