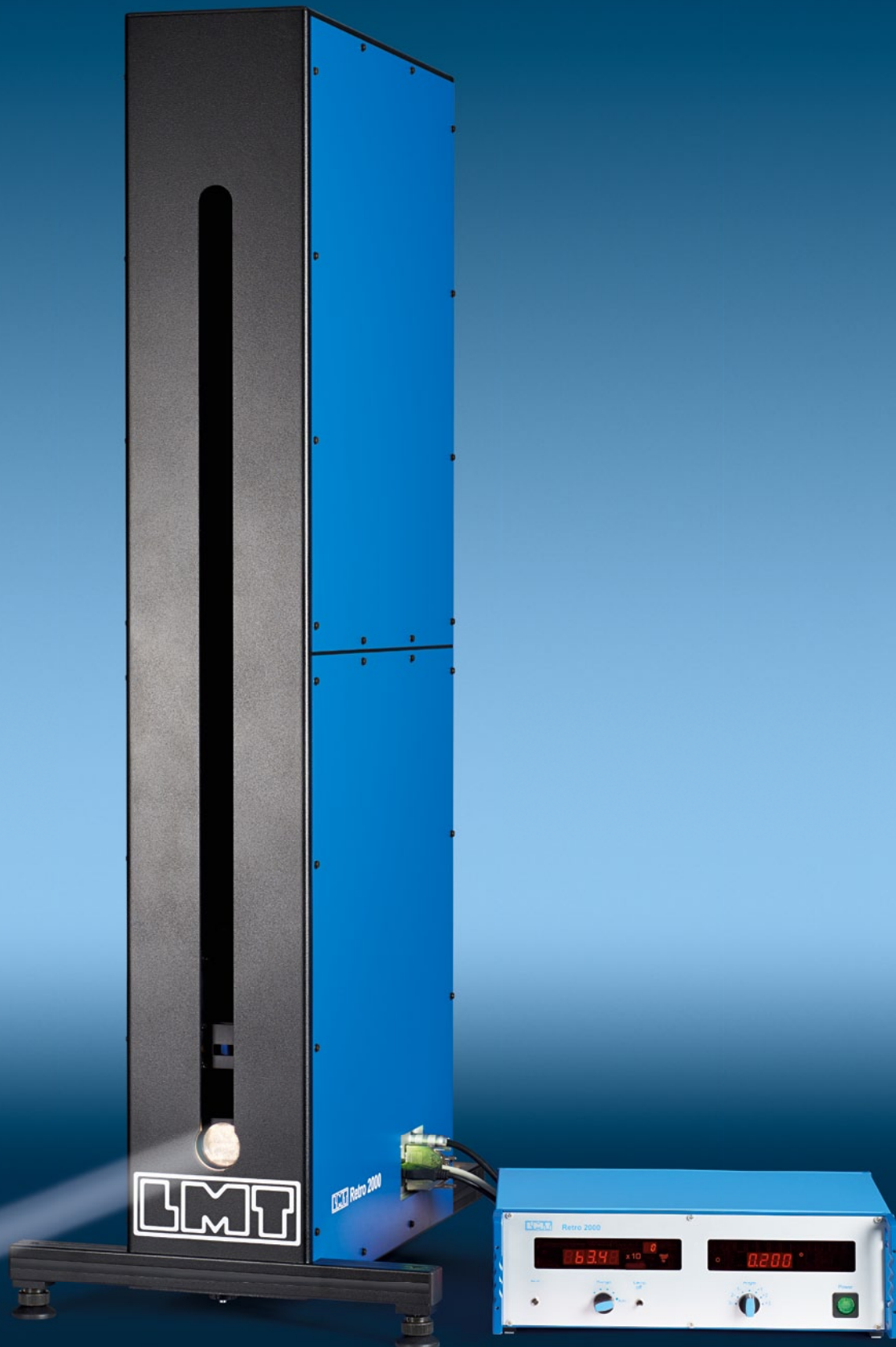


# LMT Retro 2000

## Retroreflection Measuring Unit



# LMT Retro 2000

## Technical Data



<b>Marking</b>	LMT Retro 2000 Retroreflection Measuring Unit			
<b>Field of application</b>	high-accuracy measurement of reflex reflectors, e.g. reflex reflectors on vehicles, or for emergency warning devices			
<b>Standard versions</b>	<b>Type</b>	<b>ECE</b>	<b>(SAE)*</b>	<b>SAE</b>
	Distance E	15 m	24 m	30 m / 100 ft.
	Measuring Field	250 mm Ø	250 mm Ø	10 inch Ø
	Observation angle	0.200° – 2.000° (0.100° – 4.000°)	0.200° – 2.000° (0.100° – 2.000°)	0.100° – 2.000°
	Projector aperture	6' (± 26 mm)	6' (± 42 mm)	5.4' (± 48 mm)
	Observation aperture	6' (± 26 mm) 3' (± 13 mm) [option]	2.9' x 1.4' (± 20 x 10 mm <sup>2</sup> )	2.9' x 1.4' (± 1 x ½ inch <sup>2</sup> )
* Measuring geometries at 24m are similar to but not conform with SAE requirements				
<b>Projector (part of measuring unit)</b>	<ul style="list-style-type: none"> <li>· Illuminant:</li> <li>· Uniformity:</li> <li>· Adjustment of uniformity:</li> <li>· Control:</li> <li>· Power supply:</li> </ul>	Color temperature equivalent to Standard Illuminant A (2856 K) from tungsten halogen lamp ECE and DIN ≤ ± 2 % within 200 mm Ø, SAE ≤ ± 5 % within 225 mm Ø according to requirements Adjustable lamp socket Dimmer for visual control of filament position Luminous flux control circuit by feedback via Si-photovoltaic cell Built-in regulated power supply for 220/230V AC or 110/120 V AC, 50-60 Hz		
<b>Photometer heads (part of measuring unit)</b>	<ul style="list-style-type: none"> <li>· Arrangement:</li> <li>· Receptor:</li> <li>· Spectral sensitivity:</li> <li>· Straylight:</li> <li>· Converter:</li> </ul>	Photometer head with lens system, motor-drive system and angle encoder Si-photoelement Fine adaption to v(λ)-curve with individual measuring plot f <sub>1</sub> < 3 % according to DIN EN 13032-1, DIN 5032-7, and CIE S 023/E:2013 Influence minimized by built-in straylight stops Precision photocurrent amplifier for short circuit operation		
<b>Display and control unit (measuring console)</b>	<ul style="list-style-type: none"> <li>· Display area:</li> <li>· Ranges:</li> <li>· Measuring range:</li> <li>· Range selection:</li> <li>· Control functions:</li> <li>· Outputs:</li> <li>· Resolution:</li> <li>· Absolute measuring error:</li> <li>· Calibration:</li> <li>· Temperature coefficient:</li> <li>· Reproducibility error:</li> <li>· Linearity error:</li> <li>· Rated supply voltage:</li> </ul>	LED-display, 0 – 199.9 digit with exponent and unit, observation angle 4-digit, warning sign for luminous flux control, status sign for shutter 4, graduated in steps of ten, in all ranges overload protected Coefficient of luminous intensity R = 0.1 – 199900 mcd/lx, calculated coefficient of retroreflection for samples with a size of 10 x 10 cm <sup>2</sup> R' = 0.01 – 19990 cd/lx/m <sup>2</sup> Manually, automatically, or remote controlled Setting of observation angle, switching off the projector to control zero setting Analogue output 0 – 2 V DC, IEEE-488 interface, listener and talker 0.05 % of full scale value of selected range ≤ ± 1.5 % ± 1 digit Against standard Illuminant A and 25°C, re-calibration period < 2 years / PTB traceable α <sub>0</sub> < 0.1 %/K ≤ ± 0.2 % ± 1 digit ≤ ± 0.15 % ± 1 digit 220 / 230 V or 110 / 120 V, 50 - 60 Hz		
<b>Extent of delivery</b>	· Measuring unit, connection cable, display and control unit, power cables, spare lamp, manual			
<b>Options</b>	· Illuminance meter			
<b>Additionally available</b>	· Goniometer, computer system for automatic operation and for evaluation of measuring values, software, luminance standard for absolute calibration without retroreflection standard			
<b>Environmental specifications</b>	<ul style="list-style-type: none"> <li>· Operating temperature range: 0 to +40°C</li> <li>· Storage temperature range: -5 to +60°C</li> <li>· Relative humidity: 75 % or less, non-condensing</li> </ul>			
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>· Projector unit: 145,7 cm x 46 cm x 68 cm (H x W x D)</li> <li>· Display unit: 15 cm x 45 cm x 36 cm (H x W x D)</li> </ul>			