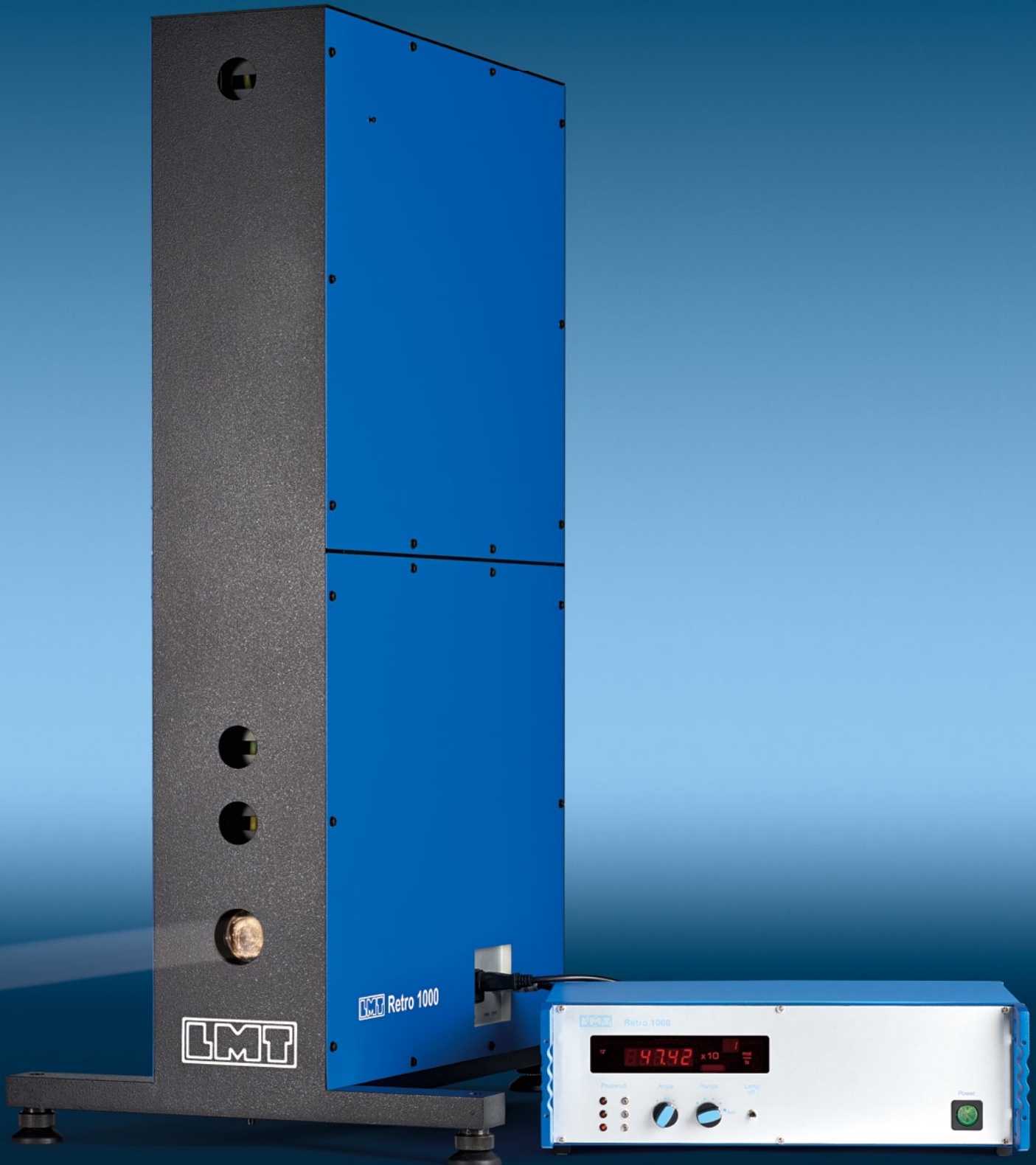


Retroreflection Measuring Unit LMT Retro 1000



LMT Retro 1000

Technical Data



Marking	LMT Retro 1000 Retroreflection Measuring Unit					
Field of application	High-accuracy measurement of reflex reflectors, e.g. reflex reflectors on vehicles, or for emergency warning devices					
Standard versions	Type	ECE	ECE + SAE*	SAE	SAE + ECE	DIN 65 720
	Distance E	10 m	10 m	100 ft.	100 ft.	10 m
	Measuring Field	250 mm Ø	250 mm Ø	10 inch Ø	10 inch Ø	250 mm Ø
	Observation angle	20', 1°30'	12', 20', 1°30'	12', 1°30'	12', 20', 1°30'	20', 2°
	Projector aperture	6' (\triangleq 17.5 mm)	6' (\triangleq 17.5 mm)	5.4' (\triangleq 48 mm)	5.4' (\triangleq 48 mm)	6' (\triangleq 17.5 mm)
	Observation aperture	6' (\triangleq 17.5 mm)	6' (\triangleq 17.5 mm) for $\alpha = 12^\circ$: 2.9' x 1.4' (\triangleq 8.3x4.2mm ²)	2.9' x 1.4' (\triangleq 1 x 1/2 inch ²)	2.9' x 1.4' (\triangleq 1 x 1/2 inch ²)	6' (\triangleq 17.5 mm)
* Measuring geometries at 10m are similar to but not conform with SAE requirements						
Projector (part of measuring unit)	<ul style="list-style-type: none"> • Illuminant: Color temperature equivalent to Standard Illuminant A (2856 K) from tungsten halogen lamp • Uniformity: ECE and DIN $\leq 2\%$ within 200 mm Ø, SAE $\leq 5\%$ within 225 mm according to requirements • Adjustment of uniformity: Adjustable lamp socket Dimmer for visual control of filament position • Control: Luminous flux control circuit by feedback via Si-photovoltaic cell • Power supply: Built-in regulated power supply for 220/230V AC or 110/120 V AC, 50-60 Hz 					
Photometer heads (part of measuring unit)	<ul style="list-style-type: none"> • Arrangement: Exactly positioned photometer heads with lens system for each observation angle, warning sign for luminous flux control • Receptor: Si-photoelement • Spectral sensitivity: fine adaption to $v(\lambda)$-curve with individual measuring plot $f_1 < 3\%$ according to DIN EN 13032-1, DIN 5032-7, and CIE S 023/E:2013 • Straylight: Influence minimized by built-in straylight stops • Converter: Precision photocurrent amplifier for short circuit operation 					
Display and control unit (measuring console)	<ul style="list-style-type: none"> • Display area: LED-display, 0 – 199.9 digit with exponent and unit, observation angle, warning sign for luminous flux control • Ranges: 4, graduated in steps of ten, in all ranges overload protected • Measuring range: Coefficient of luminous intensity $R = 0.1 - 199900$ mcd/lx, coefficient of retroreflection for samples with a size of 10×10 cm² $R' = 0.01 - 19990$ cd/lx/m² • Range selection: Manually, automatically, or remote controlled • Control functions: Setting of observation angle, switching off the projector to control zero setting • Outputs: Analogue output 0 – 2 V DC, BCD-data output parallel (TTL-level) • Resolution: 0.05 % of full scale value of selected range • Absolute measuring error: $\leq \pm 1.5\% \pm 1$ digit • Calibration: Against standard Illuminant A and 25°C, re-calibration period < 2 years / PTB traceable • Temperature coefficient: $\alpha_0 < 0.1\%/K$ • Reproducibility error: $\leq \pm 0.2\% \pm 1$ digit • Linearity error: $\leq \pm 0.15\% \pm 1$ digit • Rated supply voltage: 220 / 230 V or 110 / 120 V, 50 - 60 Hz 					
Extent of delivery	• Measuring unit, connection cable, display and control unit, power cables, illuminance meter, spare lamp, manual					
Options	• IEEE-488 bus interface instead of BCD output, listener and talker for computer controlled operation					
Additionally available	• Goniometer, computer system for automatic operation and for evaluation of measuring values, software, luminance standard for absolute calibration without retroreflection standard					
Environmental specifications	<ul style="list-style-type: none"> • Storage temperature range: -5 to +60°C • Relative humidity: 75 % or less, non-condensing 					
Dimensions	<ul style="list-style-type: none"> • Projector unit: 105 (± 5) cm x 50 cm x 72 cm (H x W x D) • Display unit: 13 cm x 45 cm x 30 cm (H x W x D) 					