

X1

<https://www.gigahertz-optik.de/en-us/product/X1>

Product tags: **Optometer , Multi-Channel , Broadband-meter**



Description

Hand-held Meter

The X1₁ (Xone-one) and X1₂ (Xone-two) optometers are two of the most versatile hand-held light measurement instruments available. They combine a powerful electronic design packaged in a light-weight ergonomic housing. Their compact size makes them ideal for field service applications. A unique feature of the X1's is their capability to operate detector heads housing up to four photodiodes with all four signals displayed on the four line display with on/off backlighting. When more than one detector head is used simple and faultless selection of the calibration data is accomplished using the X1's menu mode.



X1₁ and X1₂ Hand-held meter differ by their interfaces

Simple to Use

Operating the X1 is simple. The meter set-up is supported by an easy to use menu. The menu allows selection of the operating mode, the detector and measurement parameter. Once set-up all settings are stored and recalled on next power-up unless reinitialized. Measurement values are displayed in absolute quantities for the particular detector connected.

Battery or USB powered

For on-site applications the X1's are operated with two standard 1.5 V AA batteries. In remote control operation the X1₁ is powered through the USB interface.

Four-channel Meter

The unique feature of all X1's is their capability to operate multi-cell detector heads with up to four photodiodes with all four signals displayed or read-out via the USB or RS232 interfaces.

Multipurpose Light Measurement Instrument

All X1's can be combined with most of the Gigahertz-Optik single cell or multi cell light detector heads for use in a wide application range of radiometric, photometric and colorimetric measurements

Interfaces

The X1₁ and X1₂ only differ in their interfaces. The X1₁ features a USB interfaces, whereas the X1₂ features a RS232 interface.

Specifications

General









X1 ₁																															
X1 ₂																															
Specification																															
Detector interface	9pin MDSM9 socket, 4 inputs																														
Measurement range	Seven (200µA to 200.0pA) manual or auto range																														
CW integration time	1 ms – 1s																														
Offset correction	Correction range transcending																														
Parameter adjustment	Remote control or front panel buttons (menu), set values permanently stored (EEPROM)																														
Calibration information	Max. 256 Datasets stored in EEPROM																														
Menu guide	<table border="1"> <thead> <tr> <th>Menu item</th> <th>Submenu item</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td rowspan="4">1. Mode</td> <td>CW</td> <td>Measures respective of any offset and calibration factors programmed</td> </tr> <tr> <td>Dose</td> <td>Accumulates the single readings as exposure for measured quantity</td> </tr> <tr> <td>CIE Yxy & T</td> <td>Measures the CIE Color Values Yxy and T</td> </tr> <tr> <td>CIE Yuv & T</td> <td>Measures the CIE Color Values Yuv and T</td> </tr> <tr> <td rowspan="4">2. Setup</td> <td>Zero Adjust</td> <td>Performs a zero adjustment of the internal amplifier and ADC</td> </tr> <tr> <td>Integration</td> <td>Sets the measurement (integration) time</td> </tr> <tr> <td>Meas. Mode</td> <td>Selects measurement mode (DC, Chopper, Pulse Synchronisation, Peak-Peak)</td> </tr> <tr> <td>Dose Time</td> <td>Sets max. dose measurement time</td> </tr> <tr> <td>3. Detector</td> <td colspan="2">Selects calibration data to calculate the measurement result</td> </tr> <tr> <td>4. Offset</td> <td colspan="2">Performs an automatic offset adjustment ("Offset = CW" or "Offset = 0")</td> </tr> <tr> <td>5. Range</td> <td colspan="2">Sets the measurement range (auto, manual)</td> </tr> </tbody> </table>	Menu item	Submenu item	Function	1. Mode	CW	Measures respective of any offset and calibration factors programmed	Dose	Accumulates the single readings as exposure for measured quantity	CIE Yxy & T	Measures the CIE Color Values Yxy and T	CIE Yuv & T	Measures the CIE Color Values Yuv and T	2. Setup	Zero Adjust	Performs a zero adjustment of the internal amplifier and ADC	Integration	Sets the measurement (integration) time	Meas. Mode	Selects measurement mode (DC, Chopper, Pulse Synchronisation, Peak-Peak)	Dose Time	Sets max. dose measurement time	3. Detector	Selects calibration data to calculate the measurement result		4. Offset	Performs an automatic offset adjustment ("Offset = CW" or "Offset = 0")		5. Range	Sets the measurement range (auto, manual)	
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Miscellaneous																															
Size / Weight	145 mm x 63 mm x 30 mm / 150 g																														
Remote interface	X1 ₁ : USB V1.1 (HID Device) X1 ₂ : RS232 (USB type socket, special adaptor-cable required) 19200B, 1S, N																														
Temperature	Operating: 5 to 40°C Storage: -10 to 50° C																														
Power	Two AA batteries ~ 250 hrs. operation time - backlit display off X1 ₁ powered by USB-Interface X1 ₂ powered by RS232 with external +5VDC with adapter cable																														
Display	LCD graphic display 97 x 32 pixel Display area 14.3 mm x 35.8 mm Switchable LED-backlight Text display 4 rows each 14 characters																														
Front panel control	3 buttons, menu system																														
CE conformity	The device conforms with the requirements set out in the council directive on the approximation of the laws of the member states relating to electromagnetic compatibility (89/336/EEC). For the evaluation regarding electromagnetic compatibility, the following standards were applied: EN 61326-1 - Class B																														
RoHS	Compatible																														

Configurable with




Produktname	Product Image	Description	Show product
VL-3701		Detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f1 \leq 3 \%$, $f2 \leq 1.5 \%$, 0.5 nA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/VL-3701
VL-3702		Detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f1 \leq 6 \%$, $f2 \leq 3 \%$, 0.5 nA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/VL-3702
VL-3704		Detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f1 \leq 3 \%$, $f2 \leq 1.5 \%$, 20pA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/VL-3704
VL-3705		Detector head for the measurement of scotopic illuminance in Lux [lx]. Features: $f1 \leq 3 \%$, $f2 \leq 1.5 \%$, 0.2nA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/VL-3705
PD-9310A		High sensitive detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f1 \leq 3 \%$, 2.8nA/lx, 20mm diffuser, for the usage with optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/PD-9310A
PD-9310B		High sensitive detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f1 \leq 3 \%$, 2.8nA/lx, 20mm diffuser, for the usage with optometers and amplifiers, calibration	https://www.gigahertz-optik.de/en-us/product/PD-9310B
PD-9310B-N		Very high sensitive detector head for the measurement of photopic illuminance in Lux [lx]. Features: $f1 \leq 3 \%$, 28nA/lx, no diffuser, for the usage with optometers and amplifiers, calibration	https://www.gigahertz-optik.de/en-us/product/PD-9310B-N
VL-1101 + UMPA-0.5-11-RD Detector head		Module detector head for the measurement of photopic illuminance in Lux [lx]. Features: UMPA adapter for usage with integrating spheres, for the usage with optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/VL-1101+UMPA-05-11-RD

Produktname	Product Image	Description	Show product
VL-6001		Very high sensitive illuminance detector head for spotlamps Features: Large diameter lens zur Erhöhung der Empfindlichkeit, for the usage with optometers and amplifiers, calibration	https://www.gigahertz-optik.de/en-us/product/VL-6001
VL-3701 with SRT-M37-L		Detector head to measure the photopic illuminance in lx and the luminance in cd/m ² . Features: front lenses with 1°, 2° or 5° viewing angle, for the usage with Optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/VI-3701-with-SRT-M37-L
PD-9310 with SRT-M37-L		High sensitive detector head to measure the photopic luminance in cd/m ² . Features: front lens for 1°, 2°, 5° or 10° viewing angle, for the usage with Optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/PD-9310-with-SRT-M37-L
VL-1101		Photometric detector head with DP-11 mount. Features: modular detector for use with integrating spheres, front lenses etc. For use with optometers and signal amplifiers	https://www.gigahertz-optik.de/en-us/product/VL-1101
VL-1101 module light detectors with photometric V(λ) responsivity		Photometric detector head with DP-11 mount. Features: modular detector for use with integrating spheres, front lenses etc. For use with optometers and signal amplifiers	https://www.gigahertz-optik.de/en-us/product/VI-1101-2
PD-9304		Universal detector head for LASER power, illuminance and 400-1100 nm irradiance. Features: Si-photodiode with 1 cm ² , exchange able filters and cosine diffuor, for the usage with optometers and signal amplifiers	https://www.gigahertz-optik.de/en-us/product/PD-9304
PD-9310A		PD-9310A measurement head with GB-GD-360 photogoniometer for measurement of the luminous intensity distribution of 2π spot lamps and LEDs. Goniometer bench with adjustable measurement distance of up to 2000 mm. PD-9310A photometric detector corresponding to the DIN 5032 quality class A. Calibration certificate conformng to the ISO 17025 specifications. For use with all optometers and signal amplifiers from Gigahertz-Optik GmbH.	https://www.gigahertz-optik.de/en-us/product/PD-9310A-2
RW-3701		Detector head for the measurement of irradiance in W/m ² . Features: spectral responsivity from 400-500nm (BLUE), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/RW-3701
RW-3702		Detector head for the measurement of irradiance in W/m ² . Features: spectral responsivity from 700-800nm (RED), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/RW-3702

Produktname	Product Image	Description	Show product
RW-3703		<p>Detector head for the measurement of irradiance in W/m².</p> <p>Features: spectral responsivity from 400-800nm (VIS), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/RW-3703
RW-3704		<p>Detector head for the measurement of irradiance in W/m².</p> <p>Features: spectral responsivity from 800-1000nm (NIR), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/RW-3704
RW-3705		<p>Detector head for the measurement of irradiance in W/m².</p> <p>Features: spectral responsivity from 400-1000nm (VISNIR), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/RW-3705
RW-3708		<p>Detector head for the measurement of irradiance in W/m².</p> <p>Features: spectral responsivity from 950-1700nm (NIR), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/RW-3708
UV-3701		<p>Detector head for the measurement of irradiance of UV radiation in W/m².</p> <p>Features: spectral responsivity from 315-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3701
UV-3702		<p>Detector head for the measurement of irradiance of UV radiation in W/m².</p> <p>Features: spectral responsivity from 280-315nm (UV-B), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3702
UV-3703		<p>Detector head for the measurement of irradiance of UV radiation in W/m².</p> <p>Features: spectral responsivity from 200/250-280nm (UV-C), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3703
UV-3710		<p>Detector head for the measurement of irradiance of UV radiation in W/m².</p> <p>Features: spectral responsivity from 320-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3710
UV-3711		<p>Detector head for the measurement of irradiance of UV radiation in W/m².</p> <p>Features: spectral responsivity from 280-320nm (UV-B), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3711

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UV-3716		<p>Detector head for the measurement of irradiance of UV radiation in W/m².</p> <p>Features: spectral responsivity from 305-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3716
UV-3717		<p>Detector head for the measurement of irradiance of UV radiation in W/m².</p> <p>Features: spectral responsivity from 315-400nm (UV-A), low cross talk from radiation > 400 nm, cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3717
UV-3719		<p>Detector head for the measurement of irradiance of UV radiation in W/m².</p> <p>Features: spectral responsivity from 250-390nm (UV), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3719
UV-3720		<p>Detector head for the measurement of irradiance of UV radiation in W/m².</p> <p>Features: spectral responsivity from 240-320nm (UV), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3720
UV-3721		<p>Detector head for the measurement of irradiance of UV radiation in W/m².</p> <p>Features: spectral responsivity from 350-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3721
UV-3711-308		<p>Detector head for the measurement of irradiance of 308nm Eximer Lasers in W/m²</p> <p>Features: flat spectral responsivity beside 308nm. cosine field-of-view, dose measurement in conjunction with P-9710-2 optometer, calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/UV-3711-308
UV-3718		<p>Detector head for the measurement of high irradiance of UV-C 254nm radiation in W/m².</p> <p>Features: pre-aging for long time stability, cosine field-of-view, metal shielded cable, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3718
UV-3725		<p>Detector for the measurement of UV-C 254 nm irradiance in air disinfection applications</p> <p>Features: wide dynamic range for UV hazard and effective irradiance, wide angle cosine F.O.V. for straylight measurements, for the usage with optometers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3725-1

Produktname	Product Image	Description	Show product
RCH-0		<p>Detector head for high intensity irradiation as in UV or blue light curing processes.</p> <p>Features: Separate light integrator and detector with flexible fiber coupling, light, 320-460nm UVABLUe responsivity, wide viewing angle, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/RCH-0
RCH-102		<p>Detector head for high intensity irradiation in UV or blue light curing processes.</p> <p>Features: Separate light integrator and detector with rigid fiber coupling, (320-460)nm UVABLUe responsivity, wide viewing angle, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/RCH-1
PD-9304		<p>Detector head to measure low intensity LASER radiant power in W.</p> <p>Features: 11.28mm dia (1cm²) active area, 400 to 1100nm, for the usage with optometers and signal amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/PD-2
PD-11 series		<p>Detector head with DP-11 mount.</p> <p>Features: modular detector for use with integrating spheres, front lenses etc, Si, SiLP, InGaAs, SiC, GaP photodiodes, for use with optometers and signal amplifiers</p>	https://www.gigahertz-optik.de/en-us/product/PD-11-Series
UV-3706		<p>Detector head to measure irradiance W/m² in Bilirubin phototherapy.</p> <p>Features: Bilirubin actinic responsivity, cosine field-of-view, for use with optometers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3706
UV-3711-308		<p>Detector head for the measurement of irradiance of 308nm Eximer Lasers in W/m²</p> <p>Features: flat spectral responsivity beside 308nm. cosine field-of-view, dose measurement in conjunction with P-9710-2 optometer, calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/UV-3711-2
UV-3724		<p>Detector head for the measurement of UV-B irradiance of TL1 sources in W/m²</p> <p>Features: calibrated with TL1 source, cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3724
UV-3709		<p>Detector for Blue-light hazard measurements.</p> <p>Features: Single-cell detector, BLH actinic irradiance, for the use with optometer, calibration certificate</p>	https://www.gigahertz-optik.de/en-us/product/UV-3709
UV-3725		<p>Detector for the measurement of UV-C 254 nm irradiance in air disinfection applications</p> <p>Features: wide dynamic range for UV hazard and effective irradiance, wide angle cosine F.O.V. for straylight measurements, for the usage with optometers, calibration certificate.</p>	https://www.gigahertz-optik.de/en-us/product/UV-3725

Produktname	Product Image	Description	Show product
RW-37 with SRT-M37-L		Detector heads to measure the irradiance in W/m ² and the radiance in W/(m ² *sr). Features: front lenses with 1°, 2° or 5° viewing angle, for the usage with Optometers and amplifiers, calibration certificate	https://www.gigahertz-optik.de/en-us/product/RW-37uSRT-M37-L
S-SDK-X20		Software Development Kit for X20 variants (X1 and HCT99)	https://www.gigahertz-optik.de/en-us/product/S-SDK-X20
S-X1		Application software for X1 variants	https://www.gigahertz-optik.de/en-us/product/S-X1

Purchasing information

Article-Nr	Modell	Description
Product		
101568	X1-1	Meter, 2 x 1.5 V AA batteries, USB cable, manual
15297419	X1-2	Meter, 2 x 1.5 V AA batteries, USB cable, manual
101454	X1-RM	Meter, manual
15297298	X1-PCB	PCB, USB interface, no metal housing, manual
15297295	X1-PCBCL	Meter with RS232 interface, metal housing, manual
15297296	X1-PCBCL-RM	Meter with RS232 interface, metal housing with rack mount face plate, manual
15297297	X1-PCBCL-PM	Meter with RS232 interface, metal housing with "L" bracket, manual
Options		
	Light Detectors	Please check the light detector datasheets for specification and purchasing information
Software		
15298071	S-SDK-X20	For software implementation of the X20 optometer board or X1 device into custome made software. Supply of .dll's and LabView VI's for device communication.
15298167	S-X1	User software for the X1
Accessories		
101120	X1-Z02	Adapter cable (2m) to connect light detectors with -1 BNC connector to the -4
101126	X1-Z03	Adapter to connect up to four detectors with BNC connector to X1
15297973	X1-Z04	Adapter cable 12inch with ITT (-4) connector for X1. AI box with -4 socket

Article-Nr	Modell	Description
15298036	X1-Z05	Adapter cable to connect light detectors with -2 calibration data connector to the ITT (-4) socket of the optometer X1 1. Cable length 0.2 m.
100066	BHO-04	Hard case for meter and accessories
100020	BHO-05	Hard case for meter and accessories
100441	BHO-06	Hard case for meter and accessories
15297539	BHO-11	Hard case for meter and accessories
15298236	BHO-15	Hard case for meter and accessories