X1-PCBC

http://www.gigahertz-optik.de/en-us/product/X1-PCBC

Product tags:

Description

System Integration Meter

The X1-PCB is remote-control-only variant of the X1 hand held meter with housing and no display.

X1-PCBCL-RM

USB Powered

In remote control operation the $X1_1$ is powered through the USB or RS232 interface (special adapter cable).

Four-channel Meter

The unique feature of all X1s 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 X1s 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.

X1-PCB, X1-PCBCL for System Integration

Specifications

	Product
Power Supply	Powered by USB-Interface or by RS232 with external +5VDC with adapter cable
Detector interface	9pin MDSM9 socket, 4 inputs (USB V1.1 or RS232, depends on variant)

Measurement range	Seven (200 µA to 0.1 pA) manual or auto range which can be set by the user. The default setting depends on the customer specific configuration. Range / max. — Slew-Rate (10 - 90)% — Resolution± calibration uncertainty *) (at 24 °C) — Permissible detector capacity — Typical linearity error — Typ. temperature coefficient 200.0 µA ***) — 3 ms — ±0.1 µA ± 0.3% — 2 nF — < ±0.5% — < ±0.03%/°C 20.00 µA — 3 ms — ±0.01 µA ± 0.3% — 2 nF — < ±0.2% — < ±0.03%/°C 2.000 µA — 3 ms — ±0.001 µA ± 0.3% — 2 nF — < ±0.2% — < ±0.03%/°C 200.0 nA — 3 ms — ±0.1 nA ± 0.3% — 10 nF — < ±0.2% — < ±0.03%/°C 20.00 nA — 3 ms — ±0.01 nA ± 0.3% — 10 nF — < ±0.2% — < ±0.03%/°C 2.000 nA — 30 ms — ±0.001 nA ± 0.4% — 10 nF — < ±0.3% — < ±0.1%/°C 200.0 pA — 30 ms — ±0.1 pA ± 0.4% — 10 nF — < ±0.6% ****) — < ±0.3%/°C ±Bias current (max.1,0pA) **) *) The measurement uncertainty is usually below the calibration uncertainty, but must also be considered. At very low currents, a detailed examination of the measurement uncertainty analysis is recommended, because in this case the measurement uncertainty can predominate. **) internal zero adjustment can reduce the bias current. Maximum zero adjusted bias current = ±0,2pA. ***) only for instrument versions with 7 measuring ranges ****) valid for currents above 10pA
CW integration time	1 ms - 1 s
sampling rate	internal sampling rate ADC 250 µs
Offset correction	Correction range transcending
Remote Control	Remote control, set values permanently stored (eeprom)
Calibration information	up to 256 Datasets stored in Eeprom
Miscellaneous	
temperature range	Operation: (5 to 40) °C Storage: (-10 to 50) °C
Humidity	<80%, non-condensing
Info	Regular recalibration of the current calibration is recommended. Especially when very small measurement currents have to be measured. In the case of very high humidity, fault currents of the radiometer are possible at low measuring currents and should be taken into account.

Configurable with

Produktname	Product Image	Description	Show product
VL-3701		Detector head for the measurement of photopic illuminance in Lux [lx]. Features: f1 ≤ 3 %, f2 ≤ 1.5 %, 0.5 nA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate	http://www.gigahertz-optik.de/en-us/product/VL-3701

Produktname	Product Image	Description	Show product
VL-3702		Detector head for the measurement of photopic illuminance in Lux [lx]. Features: f1 ≤ 6 %, f2 ≤ 3 %, 0.5 nA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate	http://www.gigahertz-optik.de/en-us/product/VL-3702
VL-3704		Detector head for the measurement of photopic illuminance in Lux [lx]. Features: f1 ≤ 5 %, f2 ≤ 3 %, 20pA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate	http://www.gigahertz-optik.de/en-us/product/VL-3704
VL-3705		Detector head for the measurement of scotopic illuminance in Lux [lx]. Features: f1 ≤ 5 %, f2 ≤ 3 %, 0.2nA/lx, 20mm height, for the usage with Optometers and amplifiers, calibration certificate	http://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 ≤ 3 %, 2.8nA/lx, 20mm diffuser, for the usage with optometers and amplifiers, calibration certificate	http://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 ≤ 6 %, 2.8nA/lx, 20mm diffuser, for the usage with optometers and amplifiers, calibration	http://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 ≤ 3 %, 28nA/lx, no diffuser, for the usage with optometers and amplifiers, calibration	http://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	http://www.gigahertz-optik.de/en-us/product/VL-1101uUMPA-05-11-RD
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	http://www.gigahertz-optik.de/en-us/product/VL-6001

Produktname	Product Image	Description	Show product
VL-3701 with SRT-M37-L		Detector head to measure the photopic illuminance in lx and the luminance in cd/m². Features: front lenses with 1°, 2° or 5° viewing angle, for the usage with Optometers and amplifiers, calibration certificate	http://www.gigahertz-optik.de/en-us/product/VL-3701 with SRT-M37-L
PD-9310 with SRT-M37-L		High sensitive detector head to measure the photopic luminance in cd/m². Features: front lense for 1°, 2°, 5° or 10° viewing angle, for the usage with Optometers and amplifiers, calibration certificate	http://www.gigahertz-optik.de/en-us/product/PD-9310 with SRT-M37-L
VL-1101		Photometric detector head with VL-11 mount. Features: modular detector for use with integrating spheres, front lenses etc. For use with optometers and signal amplifiers	http://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	http://www.gigahertz-optik.de/en-us/product/VL-1101 -2
PD-9304		Universal detector head for LASER power, illuminance and 400-1100 nm iiradiance. Features: Si-photodiode with 1 cm², exchange able filters and cosine diffuor, for the usage with optometers and signal amplifiers	http://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.	http://www.gigahertz-optik.de/en-us/product/PD-9310A-2
RW-3701		Detector head for the measurement of irradiance in W/m². Features: spectral responsivity from 400-500nm (BLUE), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/RW-3701
RW-3702		Detector head for the measurement of irradiance in W/m². Features: spectral responsivity from 700-800nm (RED), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/RW-3702

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

Produktname	Product Image	Description	Show product
UV-3716		Detector head for the measurement of irradiance of UV radiation in W/m². Features: spectral responsivity from 305-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/UV-3716
UV-3717		Detector head for the measurement of irradiance of UV radiation in W/m². Features: spectral responsivity from 325-400nm (UV-A), low cross talk from radiation > 400 nm, cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/UV-3717
UV-3719		Detector head for the measurement of irradiance of UV radiation in W/m². Features: spectral responsivity from 250-400nm (UV), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/UV-3719
UV-3720		Detector head for the measurement of irradiance of UV radiation in W/m². Features: spectral responsivity from 240-320nm (UV), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/UV-3720
UV-3721		Detector head for the measurement of irradiance of UV radiation in W/m². Features: spectral responsivity from 350-400nm (UV-A), cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/UV-3721
UV-3711-308		Detector head for the measurement of irradiance of 308nm Eximer Lasers in W/m². Features: flat spectral responsivity besite 308nm. cosine field-of-view, dose measurement in conjuntion with P-9710-2 optometer, calibration certificate	http://www.gigahertz-optik.de/en-us/product/UV-3711-308
UV-3718		Detector head for the measurement of high irradiance of UV-C 254nm radiation in W/m². Features: pre-aging for long time stability, cosine field-of-view, metal shielded cable, for the usage with optometers and amplifiers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/UV-3718
UV-3725 not active		Detector for the measurement of UV-C 254 nm irradiance in air disinfection applications. 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.	http://www.gigahertz-optik.de/en-us/product/UV-3725-1

Produktname	Product Image	Description	Show product
RCH-0		Detector head for high intensity irradiation as in UV or blue light curing processes. 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.	http://www.gigahertz-optik.de/en-us/product/RCH-0
RCH-102		Detector head for high intensity irradiation in UV or blue light curing processes. 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.	http://www.gigahertz-optik.de/en-us/product/RCH-1
PD-9304		Detector head to measure low intensity LASER radiant power in W. Features: 11.28mm dia (1cm²) active area, 400 to 1100nm, for the usage with optometers and signal amplifiers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/PD-2
PD-11 series		Detector head with DP-11 mount. Features: modular detector for use with integrating spheres, front lenses etc, Si, SiLP, InGaAs, SiC, GaP photodiodes, for use with optometers and signal amplifiers	http://www.gigahertz-optik.de/en-us/product/PD-11-Serie
UV-3706		Detector head to measure irradiance W/m2 in Bilirubin phototherapy. Features: Bilirubin actinic responsivity, cosine field-of-view, for usewith optometers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/UV-3706
UV-3711-308		Detector head for the measurement of irradiance of 308nm Eximer Lasers in W/m². Features: flat spectral responsivity besite 308nm. cosine field-of-view, dose measurement in conjuntion with P-9710-2 optometer, calibration certificate	http://www.gigahertz-optik.de/en-us/product/UV-3711-2
UV-3724		Detector head for the measurement of UV-B irradiance of TL1 sources in W/m². Features: calibrated with TL1 source, cosine field-of-view, for the usage with optometers and amplifiers, calibration certificate.	http://www.gigahertz-optik.de/en-us/product/UV-3724
UV-3709		Detector for Blue-light hazard measurements. Features: Single-cell detector, BLH actinic irradiance, for the use with optometer, calibration certificate	http://www.gigahertz-optik.de/en-us/product/UV-3709

Produktname	Product Image	Description	Show product
UV-3725		Detector for the measurement of UV-C 254 nm irradiance in air disinfection applications. 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.	http://www.gigahertz-optik.de/en-us/product/UV-3725
RW-37 with SRT-M37-L		Detector heads to measure the irradiance in W/m² and the radiance in W/(m²*sr). Features: front lenses with 1°, 2° or 5° viewing angle, for the usage with Optometers and amplifiers, calibration certificate	http://www.gigahertz-optik.de/en-us/product/RW-37uSRT-M37-L
S-SDK-X20		Software Development Kit for X20 variants (X1 and HCT99).	http://www.gigahertz-optik.de/en-us/product/S-SDK-X20
S-X1		Application software for X1 variants.	http://www.gigahertz-optik.de/en-us/product/S-X1

Purchasing information

Article-Nr	Modell	Description
	Product	
15298890	X1-1	Meter, 2 x 1.5 V AA batteries, USB cable, manual
15298904	X1-RM	Meter, manual
15298894	X1-PCB	PCB, USB interface, no metal housing, manual
15298895	X1-PCBCL	Meter with RS232 interface, metal housing, manual
15298896	X1-PCBCL-RM	Meter with RS232 interface, metal housing with rack mount face plate, manual
15298897	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
15298167	S-X1	X1 user 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.
	Accessories	
15296381	X1-Z02	Adapter cable (2m) to connect light detectors with -1 BNC connector to the -4
15296387	X1-Z03	Adapter to connect up to four detectors with BNC connector to X1

Article-Nr	Modell	Description
15297973	X1-Z04	Adapter cable 12inch with ITT (-4) connector for X1. Al box with -4 socket
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.
15295292	BHO-04	Hard case for meter and accessories
15295239	BHO-05	Hard case for meter and accessories
15295680	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