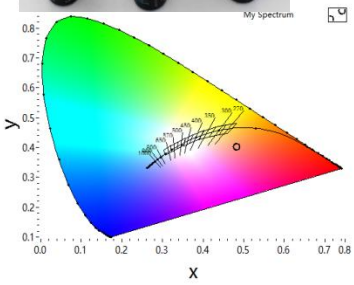
Probe30-CL2xx series Product Manual

Overview:



> A smart chroma illumination probe
> Designed for industrial field automatic measurement of LED
> Color coordinates according to the standard of CIE1931, CIE1960, CIE1976
> Output data format (Lux,xy, uv, CCT, HSL, RGB, DomiWave)
> illumination resolution is up to 0.01~0.05lx
> High Accuracy and excellent repeatability
> Wide voltage,Wide temperature range Operating environment
> Communication interface (USB/RS485/DIO/AO)
> OneKey learning function
> Provide secondary development SDK, can be embedded ICT, FCT, ATE machine

Application:

>LED color temperature illumination requires higher measurement;
>Automotive lighting and interior fixtures;
> Projector light distribution measurement, 9 grids
> Product shell logo lamp test
> Embedded ICT / FCT / ATE machine

List of electrical optics specifications:

Type	Item	Parameter	description	Remark
Electrical specification	power supply	DC9-26V/60MA	USB5.0V/100MA	Only one of the interfaces can be selected
	Environment	Operating temperature range T:（-30~60℃), H<90%	Recommended operation at 25 ℃ Humidity below 80%	Storage environment : （-30~60℃), H<80%
	Communication Interface	RS485/USB (USB: USB-RS232)	The two communication interfaces have the same protocol,You do not need to replace the software when replacing a hardware port	If there is strong electromagnetic interference in the working environment, you are advised to use the RS485 port. USB may be interfered and disconnected
	Communication protocol	8,1,None,baud(2400-921600) (8 data bits, 1 stop bit, no check)	ID, baud can be configured, The maximum baud of the RS485 port is 460800	ID is the software address

	Data type	Lux, xy, u'v', CCT,dominant, RGBI etc.	CIE1931, CIE1960, CIE1976	
	Parallel expansion	RS485 interface supports 64 modules in parallel	The software ID should be different	USB ports can be distinguished only by virtual COM
	DIO	Optional DIO interface can be connected with PLC	Configure the upper and lower limits, DIO automatically output the results, offline running	Only RS485 interface products
	AO	3AO Channel	0-5V/4-20 mA Can choose	Only RS485 interface products
	Special function	LED flashing frequency (f <50Hz)		
Software programming	Programming language	Labview,C, C++, C#, VB, etc.	String instruction Communication	
	SDK	Programming manual USB driver support WINDOWS, LINUX, Wince etc.	MODBUS-ASCII protocol RS485 port instructions support any hardware and software	development can be done just by looking at the programm manual
	Debug software	Equipped with official debugging software	You can configure product parameters and visually view data	Baidu web disk can be downloaded
Data characteristics (Measuring light Source: @LED **1000Lx** x=0.3127,y=0.3340 CCT=6472K, Ra=84 T=25℃)	Calibrated light source	Default selection Full spectrum LED light source (@400Lx,x=0.3953,y=0.3892,CCT=3717K, Ra=97)	LED light source calibration is selected to improve the accuracy of measurement of LED light source	It can also be calibrated with standard illuminance A light source before delivery
	Ev illumination(Lx)	Accuracy：4%+0.05 linearity:2% repeatability: 0.3%+0.05	Ex-factory accuracy=4% Linearity=2% is measured at 3lx~30000lx	The greater the illuminance value,the Better repeatability;
	xy(CIE1931)	Accuracy：0.01 repeatability：0.0005	Accuracy is 0.002 under calibrated light source	The greater the illuminance value,the Better repeatability;
	CCT	Accuracy：4% repeatability：10K	Accuracy is 1% under calibrated light source	CCT&DomiWave is calculated by xy
	DomiWave	Accuracy:+-3nm @470nm Blue Led Accuracy：+-4nm @523nm Gree Led Accuracy:+-5nm @630nm Red Led	repeatability：0.3nm @ 200Lx R-G-B LED	When measuring R-G-B single-color light sources, illuminance accuracy decreases
	Temperature drift	Ev: 0.5%@(20~40℃) Ev: 1%@(15~45℃) Ev: 2%@(0~50℃) Ev: 3%@(-20~60℃)	xy: 0.0005@(20~40℃) xy: 0.001@(15~45℃) xy: 0.002@(0~50℃) xy: 0.004@(-20~60℃)	The greater the illuminance value,the The smaller Temperature drift; The lower the temperature, the more stable the data
	Humidity drift	Ev:1%@(H=0~85%)	xy: 0.001@(H=0~85%)	no Condensation ,@T=33℃
	Response time (Sampling time)	Time can be programmed default 0.6s	The fastest is 5ms, the slowest is 8s	The less light, the longer it takes
	Sensitivity (gain)	Time can be programmed	The lower the illumination, the greater the gain	The default configuration is the most gain
	RGB(HSL)	no international reference standard	Repeated measurement：1%+1	RGB:(0-255)
	Optical data support secondary calibration， After calibration, data accuracy depends on repeatability			

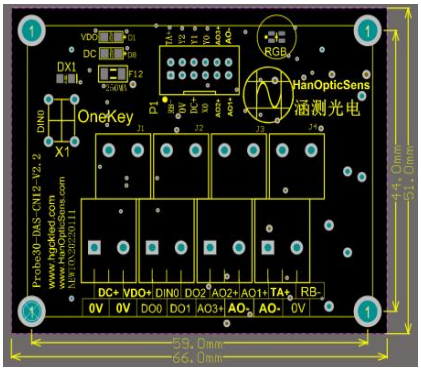
Optical characteristics	Illuminance meter class	Conforms to requirements for Class AA of JIS C 1609-1:2006"Illuminance meters Part 1:	General measuring instruments"Conforms to CIE1931/DIN **5033** Part 7 Class B	But not as a standard laboratory meter
	Wavelength range	395-725nm	Visible light band measurement	IR and UV light effect is less than 1%
	Cosine lighting head size (f1:Relative Spectral ResPonsivity, f2:cosine correction)	Diameter=16,Spherical roof ; Ev minimum range is **0.05lx**; f1<6%; f2<3%; (Mode:xxxxx-CL211)	Diameter=6 & thickness=2mm; Ev minimum range is **0.025lx**; f1<6%; f2<3%; (Mode:xxxxx-CL210)	Diameter=6 & thickness=0.5mm; Ev minimum range is **0.01lx**; f1<6%; **f2<6%;** (Mode:xxxxx-CL205)
	Long-term stability of optical data	Less than 1% deviation within one year	@indoor use, clean air, no UV, T<40℃,H<75%	Calibration is recommended once a year
Shell size	Shape Size	Diameter:M30*1.5mm Length=90mm Double nut clamping	CL211 and CL210 have a little difference in appearance; CL210 has the same appearance as CL205;	Please refer to assembly drawing file
	Shape Material	Stainless steel+Aluminum piece		

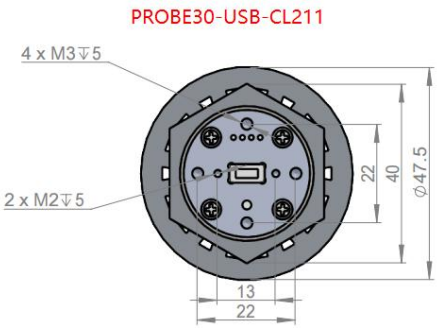
Electrical parameters - physical picture

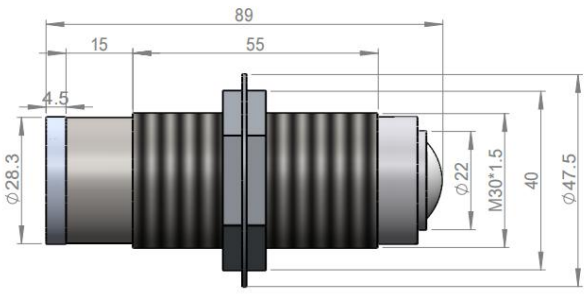
PHB2.0-12P connector	Port definitions	Functional description	note
1	B-	RS485/B-	115200,1,8,N
2	A+	RS485/A+	ID=1(Modbus-ASCII)
3	0V	Digital ground	Power cathode
4	Y2	Optocoupler OC gate output	Blue led
5	DC+	DC9-26V+	Power positive
6	Y1	Optocoupler OC gate output	Green led
7	X0	Optocoupler Intput	Short DC+ conduction X0
8	Y0	Optocoupler OC gate output	Red led
9	AO2+	Chroma2 analog output 0-5V	Can choose 4-20 ma
10	AO3+	Lux analog output 0-5V	Can choose 4-20 ma
11	AO1+	Chroma1 analog output 0-5V	Can choose 4-20 ma
12	AO-	Analog ground	
the miniUSB interface does not support the port definition function, only supports USB-RS232 protocol, USB_5V power supply			

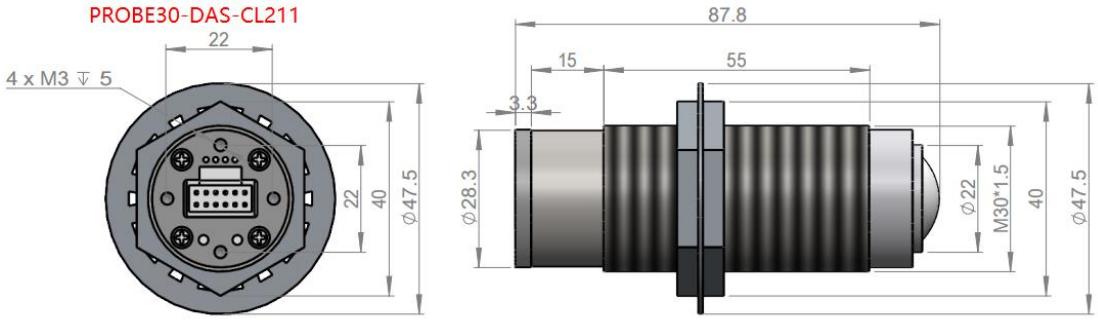
Switch board port label	Functional description	note
DC+	*DC9-26V+*	Power positive
VDO+	PNP DO port output voltage(3V-26V+)	The DO port is converted into the positive pole of the power

		supply for PNP output, and it is not connected for NPN output
0V	Digital ground	Power cathode
DIN0	Optocoupler Intput (X0)	DIN0 short DC+ conduction, on-board button, one key learning function
DO0	Optocoupler NPN output Y0(Red led)	Default is NPN optocoupling output, DO0 directly connected to Y0,DO1 directly connected to Y1,DO2 directly connected to Y2, the current is less than 20mA; PNP type output is optional, and the output voltage is determined by the user's external VDO+, The current is extended to 250mA;
DO1	Optocoupler NPN outpu Y1(Green led)	
DO2	Optocoupler NPN outpu Y2(Blue led)	
AO2+	Chroma2 analog output 0-5V	Can choose 4-20 ma
AO3+	Lux analog output 0-5V	Can choose 4-20 ma
AO1+	Chroma1 analog output 0-5V	Can choose 4-20 ma
AO-	Analog ground	
TA+	RS485/A+	ID=1(Modbus-ASCII)
RB-	RS485/B-	115200,1,8,N
The miniUSB probe does not support the adapter board		









①Notes on Use

This is a precision instrument, and should be handled with due care. Read through this manual before powering up this instrument for the first time. Take care to keep the receptor window clean ； This instrument is designed for use at ambient temperature between -30 and 65C at relative humidity no higher than 90%. Keep in mind that the instrument may become considerably hotter than the surrounding environment if left under direct sunlight or near a heater or other such device. Exercise due care when using the instrument in these types of locations. The spherical summit of the receptor window is used as the illuminance reference plane. Exposure to strong external electromagnetic noise may in rare cases interfere with the correct functioning of the instrument's internal microprocessor, resulting in misoperation. Do not use this instrument at altitudes above 2000 meters (6560 ft) This instrument is a Pollution degree II product. Avoid use in environments where the instrument may be exposed to metallic dust or condensation.

②How to Clean

If the instrument gets dirty, wipe it with a dry cloth or silicon cloth. Never use solvents such as thinner and benzene. If the receptor window gets very dirty, wipe it gently with a soft dry cloth. In cases of malfunction, do not disassemble the meter or attempt to repair it yourself. Contact the HanOpticSens service facility.

③How to Store

This instrument should be stored at temperatures of between -30 and 60C at 90% or less relative humidity (at 33C). Do not store this instrument in hot and humid areas orareas where condensation is likely to occur. It is recommended that this instrument be stored at normal temperatures and humidities.

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