

SSL LC-800, command protocol

Bits per second: 115200
Data bits: 8
Parity bit: None
Stop bits: 1
Flow control: None

All commands should be ended \r\n.

Return data ends in \r\n.

Possible values for channel Ch: X, XR, XB, Y, Z.

Possible values for gain Gain: 1 - 6

Numbers in return data or in command line do not include square brackets.

1. MEASURE

Measures the channel [Ch].

Measures currently active channel if channel parameter is left empty.

- Commands: MEA[Ch], MEA
- Return data: [Value];[Gain];[Voltage]

Value is channel value in scientific format with three (3) digits after decimal point.

Gain is a decimal integer value (1 – 6).

Voltage value has five (5) digits after decimal point.

Example:

- Command: "MEAY"
- Return data: "2.023E-07;5;2.02334E+00"

2. MEASURE COLOR 3

Measures current illuminance in lux, color coordinates from 3-channel measuring head SSL CHxx-3 by LC-800.4 or LC-800.3

- Command: MEAC3
- Return data: x2=[x] y2=[y] Y=[Ev] Y[Gy]=[Yi] Z[Gz]=[Zi] X[Gx]=[Xi]

Ev is an illuminance (lx) value in scientific format with four (4) digits after decimal point.

x and y are CIE1931 color coordinates.

Gy, Gz, Gx are gains of channels.

Yi, Zi, Xi are voltages of channels.

Example:

- Command: "MEAC3"
- Return data: "x2=0.0000 y2=0.0000 Y=1.9964E+02 Y4=1.42749E+00 Z5=2.04523E+00 X5=2.44451E+00"

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3. MEASURE COLOR 4

Measures current illuminance in lux, color coordinates from 4-channel measuring head SSL CHxx-4 by LC-800.4

- Command: MEAC4
- Return data: $x2=[x]$ $y2=[y]$ $Y=[Ev]$ $Y[Gy]=[Yi]$ $Z[Gz]=[Zi]$ $Xr[Gxr]=[Xri]$
 $Xb[Gxb]=[Xbi]$

Ev is an illuminance (Ix) value in scientific format with four (4) digits after decimal point.

x and y are CIE1931 color coordinates.

Gy , Gz , Gxr , and Gxb are gains of channels.

Yi , Zi , Xri , and Xbi are voltages of channels.

Example:

- Command: "MEAC4"
- Return data: "x2=0.0000 y2=0.0000 Y=1.99644E+02 Y4=1.42746E+00
 $Z5=2.04506E+00 XR5=2.44452E+00 XB5=1.90895E+00"$

4. INTEGRATION TIME

Defines measuring time in milliseconds (ms).

Command without parameters returns measurement duration of active channel.

Command channel parameter returns measurement duration of channel [Ch].

Command with channel parameter and time parameter sets a new integration time for given channel.

- Commands: INT, INT[Ch], INT[Ch][x]
- Return data: [Ch]:[y]

[x] is integration time in milliseconds between 0.01 – 1000000.0.

[y] is integration time in use with channel [Ch].

[x] = [y] if [x] is a valid number.

Example:

- Command: "INTXR12.34"
- Return data: "XR:12.340"

5. DEVICE INFORMATION

Returns device information.

- Command: D
- Return data: "SSL_[Device]_[Version]_[SN]_[Device Cal]_[Sensor]_[Sensor Cal], [Date]. EvResp: [0.000000E+00] Ix/A"

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6. GAIN LOCK

Deactivates auto ranging and sets channel [Ch] and gain [Gain] specified.
Gain definitions can be found in chapter 12.

- Command: LG[Ch], LG[Ch][Gain]
- Return data: LG:[Ch][Gain]

Example:

- *Command:* “LGY6”
- *Return data:* “LG:Y6”

7. AUTOMATIC GAIN SWITCHING

Query, activate or deactivate auto range functionality.

Sets auto range if status parameter given.

Returns status of auto range function. ‘1’ if ON and ‘0’ if OFF.

- Commands: AR, AR[status]
- Return data: AR:[status]

Example:

- *Command:* “AR1”
- *Return data:* “AR:1”

8. BANDWIDTH FILTER

Query, activate or deactivate bandwidth filter of 4kHz.

Sets bandwidth filter if status parameter given.

Returns status of bandwidth filter. ‘1’ if ON and ‘0’ if OFF.

- Commands: BWF, BWF[status]
- Return data: BWF:[status]

Example:

- *Command:* “BWF0”
- *Return data:* “BWF:0”

9. MEASUREMENT MODE

Query or change measurement mode.

Sets measurement mode if mode [mode] parameter given.

Returns measurement mode. “ACC” if accuracy and “OTF” if on-the-fly.

- Commands: MM, MM[mode]
- Return data: MM:[mode]

Example:

- *Command:* “MMOTF”
- *Return data:* “MM:OTF”

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10. SVM

Measures light signals for SVM analysis.

- Command: SVM[time],[freq],[Ch]
- Return data: [st] \n [Y₁] \n [Y₂] \n ... [Y_{max}]

st = Status indicates whether the gain is ok and the command input is ok.

Returns “level ok” when the status is accepted.

Y_x is photocurrent

time is signal length in microseconds (μ s). Recommended value 1 seconds.

Freq is sampling frequency in Hz. Recommended value 20kHz.

Example: SVM1000000,20000,1

The maximum nr is Freq * time*1000000.

11. PstLM

Measures light signals for PstLM analysis.

In case of 3-4 channel (LC-800.4 or LC-800.3), use USB port.

- Command: PstLM[Nr],[dT],[Ch]
- Return data: [st] [Y₁] \n [Y₂] \n ... [Y_{max}] \n [t]

st= Status indicates whether the gain is ok and the command input is ok.

Returns “level ok” when the status is accepted.

Y_x is photocurrent

t = elapsed time in milliseconds (ms)

Nr = Nr of samples. (Nr = Measuring time * 1E6 / dT). Recommended value 225 000 (Measuring time = 180s).

dT = time interval in microseconds

Ch = channel nr. If empty, all channels in use

Example: PstLM225000,800,1 (measures PstLM from photodiode #1)

Example: PstLM225000,800 (measures PstLM from all photodiodes)

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12. Gain Table

Gain #	Gain
1	1.6E+2
2	2.8E+3
3	4.9E+4
4	7.2E+5
5	1.0E+7
6	2.5E+8