Serial Protocol for LED light source

- Valid for firmware v2.09 and higher
- Serial communication: USB virtual serial port or RS-232 (9600 baud, 8n1)
- each command must be ended with <CR> (ASCII code 13 decimal) or <LF> (ASCII code 10 decimal) character, or both. Space is not a valid separator between commands.
- there is no receive timeout for serial communications; only <CR> and <LF> are used to end input
- commands and parameters are case insensitive (lower and upper characters can be mixed)
- numeric parameters and return data are in ASCII decimal representation
- extra space or underscore ("_") characters are allowed inbetween command and parameters
- commands are echoed in standard format to confirm execution, if they have been accepted
- *"Error: <reason>"<CR>* is returned if a command or parameter is invalid, or the transmission has been disturbed. <reason> is *"syntax"* for unknown or misspelled commands, *"value"* for wrong parameter data
- changes made from the control panel of the device or other inputs are indicated by the appropriate status report, unless status reporting is turned off

Example:
command "B75"<CR> sets brightness to 75%, and returns "B75"<CR>
command "S?"<CR> returns "S0"<CR> (shutter status: off, not in standby)

Command	Parameter(s)	Mode	Function	Data	Default value	Examples:
basic commands:						
B	0 .. 100 or ? or: -1 .. -100 or +1 .. +100 (relative mode)	set/get	Brightness (effective until power down) additionally ends strobe/flash mode, if active	Brightness in %	20	"B75" or "B 75" or "b75" or "B_75" -> set brightness to 75% "B?" or "B" or "b?" or "B ?" -> get current brightness value (returns "B75"<CR>) relative mode: "B+5" or "B +5" -> increase brightness value by 5% -> returns new brightness value ("B80"<CR>)
S	0, 1, 2 or ?	set/get	Shutter/Standby (effective until power down)	1 = Standby/Light Off 0 = Enable/Light On 2 = Toggle On/Off	0	"S1" -> turn off light output (standby mode) "S?" or "S" -> get Shutter status
L	0, 1 or ?	set/get	Panel Lock (effective until power down)	1 = Panel Locked 0 = Panel Unlocked	0	"L1" -> lock panel (user can no longer change brightness with controls at device until unlocked by: serial command, menu setting, or power down)
P	1 .. 10 or ?	set/get	Recall or Read Brightness Preset Number	preset number	0 (no preset active)	"P3" -> set brightness to preset 3 value (default: 40%) "P?" or "P" -> get currently active preset (or zero, if none) (returns "P3"<CR>)
maintenance commands:						
V	? only	get	Device Type and Version	ASCII String, max. 128 chars	"F3000 v2.00"	"V?" or "V" -> returns ASCII string with device name and version
R	0,1 or ?	set/get	Report Status	1 = Report Status On 0 = No Automatic Reports	1	"R0" -> turn off automatic status reports (until power down) "R?" or "R" -> get current reporting mode (returns "R0"<CR>") reports include: brightness and shutter change, presets, panel lock, and errors Note: commands are still echoed, but automatic transmission (on manual brightness change for example) is disabled
E	? only	get	Error State	ASCII String	"No Error"	"E?" or "E" -> returns "Light Guide"<CR> when no Light Guide is inserted "E?" or "E" -> returns "Temp."<CR> on LED overheat condition "E?" or "E" -> returns "No Error"<CR> when no errors are pending
SM	0, 1 or ?	set/get	Strobe-mode enable	1 = Device in Strobe-mode 0 = Device in Normal-mode	0	"SM1" -> Device enters Strobe-mode and shows the Strobe menu page "SM0" -> Device leaves Strobe-mode and continues lighting with the normal brightness settings
SS	0, 1 or ?	set/get	Strobe run/stop	1 = Strobe is running 0 = Strobe is in standby	0	"SS1" -> Equivalent to setting "RUN/STOP" to "ACTIVE" in the Strobe menu page "SS0" -> Equivalent to setting "RUN/STOP" to "STOPPED" in the Strobe menu page

SL	1 .. 100 or ?	set/get	Strobe Brightness Level	Brightness in %	100	"SL90" -> set strobe mode brightness level to 90% ATTENTION: Some devices will not support Strobe Brightness Levels down to 1% and will override this value with the supported minimum. e.g. “SL20” will be responded by the device with “SL30” since 30% is the minimum possible Strobe Brightness Level
SP	0.1 .. 5000.0 or ?	set/get	Strobe Pulse On Time	Time in ms	20.0	"SP15.0" -> sets the Pulse On Time to 15.0ms
SE	0.2 .. 5000.0 or ?	set/get	Strobe Periode Time	Time in ms	200.0	"SE30.4" -> sets the Periode Time to 30.4ms