x1982 - Backlight

Version 2

Backlight

This feature allows a very simple configuration of a backlight.

[0] **getBacklightConfig**() → configuration, supported options, backlightEffectList
[1] **setBacklightConfig**(configuration, options, backlightEffect)
[2] **getBacklightInfo**() → nbLevels, currentLevel,backlightStatus, backlightEffect
[3] **setBacklightEffect**(backlightEffect)
[event0] **backlightInfoEvent**() → nbLevels, currentLevel,backlightStatus, backlightEffect

Overview

This features gives the possibility to play various effects or waveforms.
The configuration consists to enable / disable the backlight or the effects and to choose the backlight effect.
An event is generated whenever user changes the backlight.

This feature also can be used by keyboard that has similar backlight sytem.

Functions and Events

[0] getBacklightConfig() → configuration, supported options, backlightEffectList

The function returns the current configuration as well as the options that can be set through SW

Parameters

none

Returns

bcklEn

Enable backlight; when 0, the whole backlight system is totally disabled, all other settings are not applicable, and no event is sent.
This option must always be supported by the device.

wow

Enable the "wow" effect at power-on.

wow_s

The "wow" option is supported by the device. If not (wow_s = 0), the wow flag (byte #1) is always 0

crown

Enable the "crown" effect whenever the crown is touched

crown_s

The "crown" option is supported by the device. If not (crown_s = 0), the crown flag (byte #1) is always 0

pwrSave

Enable "pwrSave" when 1, the whole backlight system is totally disabled at critical battery level

pwrSave_s

The "pwrSave" option is supported by the device. If not (pwrSave_s = 0), the pwrSave flag (byte #1) is always 0

backlightEffectist

list of predefined effects supported by the device

```
bit 0 : "Static" effect
bit 1 : "None" effect
bit 2 : "Breathing light" effect
bit 3 : "Contrast" effect
bit 4 : "Reaction" effect
bit 5 : "Random" effect
bit 6 : "Waves" effect
other values: RFU
```

Table 1. getBacklightConfig() response packet

byte \ bit	7	6	5	4	3	2	1	0
0	configuration							
	—	—	—	—	—	—	—	bcklEn
1	supported options							
	—	—	—	—	—	pwrSave	crown	wow
2	—	—	—	—	—	pwrSave_s	crown_s	wow_s
3	backlightEffectList (LSB)							
	—	Waves	Random	Reaction	Contrast	Breathing light	None	static
4	backlightEffectList (MSB)							
	—	—	—	—	—	—	—	—

[1] setBacklightConfig(configuration, options, backlightEffect)

Set the configuration in persistent manner (written in NVM)
If an option is not supported, the setting for that option is just discarded (and read back as "0")

NOTE	This configuration is only active when there is no active keymap customization. In case of active keymap customization, the backlight effect defined in the active keymap customization will be used.

Parameters

bcklEn

Enable backlight; when 0, the whole backlight system is totally disabled, all other settings are not applicable, and no event is sent.

wow

Enable the "wow" effect at power-on.

crown

Enable the "crown" effect whenever the crown is touched

pwrSave

Enable "pwrSave" disable the whole backlight system at critical level

backlightEffect

Set the effect to apply for FADE-IN/FADE-OUT phases

```
0x00 : apply the "Static" effect (default)
0x01 : apply the "None" effect
0x02 : apply the "Breathing light" effect
0x03 : apply the "Contrast" effect
0x04 : apply the "Reaction" effect
0x05 : apply the "Random" effect
0x06 : apply the "Waves" effect
0xFF : Do not change the current effect
other values: RFU
```

Table 2. setBacklightConfig() request packet

byte \ bit	7	6	5	4	3	2	1	0
0	configuration							
	—	—	—	—	—	—	—	bcklEn
1	options							
	—	—	—	—	—	pwrSave	crown	wow
2	backlightEffect							

Returns

none

[2] getBacklightInfo() → nbLevels, currentLevel,backlightStatus, backlightEffect

The function returns various backlight information

Parameters

none

Returns

nbLevels

The number of light intensity levels that user can set.
Levels are starting from lowest level 0 (backlight off or at 0%) to highest level nbLevels-1 (backlight at 100%).
For example, if nbLevels = 16, valid levels are 0, 1, 2 … 14, 15.
These levels are either set automatically by the ALS system, or forced manually (Backlight +/- buttons are used to switch from one level to another one). Note that effects as "wow" or "crown" may actually use much more levels.

currentLevel

The current backlight intensity

backlightStatus

The following values are possible:

```
Disabled by SW                          = 0
Disabled by critical battery            = 1
ALS (automatic) mode                    = 2
ALS mode, saturated (backlight is off)  = 3
Manual mode                             = 4
```

backlightEffect

current effect applied to FADE-IN/FADE-OUT phases. See setBacklightConfig

NOTE	Manual mode is entered as soon as user sets the backlight trough the "backlight +/-" buttons. Manual mode is then kept until next power-on or deep sleep exit, where ALS mode is resumed. The device doesn't enter in Manual mode if the user changes the backlight effect

NOTE	Current level is relevant only if status is "ALS" or "Manual" mode; in all other cases backlight is off and reported level is 0.

Table 3. getBacklightInfo() response packet

byte \ bit	7	6	5	4	3	2	1	0
0	nbLevels							
1	currentLevel							
2	backlightStatus							
3	backlightEffect							

[3] setBacklightEffect(backlightEffect)

Set the backlight effect in temporary manner (written in RAM).

NOTE	This modification is only possible when there is no active onboard keymap customization. In case of an active onboard keymap customization, the backlight effect defined in the active keymap customization will be used and this command will be ignored.

Parameters

backlightEffect

Set the effect to apply for FADE-IN/FADE-OUT phases.
see setBacklightConfig for details

Table 4. setBacklightEffect() request packet

byte \ bit	7	6	5	4	3	2	1	0
0	backlightEffect							

Returns

none

[event0] backlightInfoEvent() → nbLevels, currentLevel,backlightStatus, backlightEffect

This event is sent whenever:

- CurrentLevel is changed **in manual mode**.
- We enter or exit "Disabled by critical battery" state.
- When there is a change of backlight effect

This list is exhaustive.

Table 5. backlightInfoEvent() event packet

byte \ bit	7	6	5	4	3	2	1	0
0	nbLevels							
1	currentLevel							
2	backlightStatus							
3	backlightEffect							

ChangeLog

- Version 2: add backlight effect management
- Version 1: Add new "pwrSave" mode to disable the whole backlight system at critical level
- Version 0: Initial version