Features of the Golden Harvest v3

Technical Specifications

- ➢ tiny dimensions of 28.5 mm x 18.5 mm x 3.7 mm / 1.12 ” x 0.73 ” x 0.15 ”
- ➢ powered by 3.7 V (single 18650 Li-ion cell for example)
- ➢ provides 9 LED channels that can be customized independently from each other:
    - o 4 LED channels can deliver up to 9 A each:
        - ▪ can drive SingleCrees, DualCrees, TriCrees and QuadCrees
        - ▪ can drive Neopixel
    - o 5 LED channels can deliver up to 20 mA each:
        - ▪ can drive accent, crystal chamber or switch LEDs for example
    - o capable of delivering up to 36 A in sum (in practice, both battery and heat dissipation are the limiting factors here)
    - o full customizability even of accent LEDs such as switch LEDs or crystal chamber LEDs using the whole range of our effect engine
- ➢ optional USB charging and file transfer feature (using our Seedling module, see below)
- ➢ microSD card slot

Installation and Use

- ➢ huge solder pads for easiest installation possible
- ➢ your hardware setup can be easily chosen per drag-and-drop on the microSD card
- ➢ full functionality accessible even if used with only one momentary switch
- ➢ can also be used with one momentary and one latching switch as well as with two momentary switches
- ➢ customizable deep sleep (hibernation mode)

Audio Engine

- ➢ maximum audio amplifier power output: 4 W
    - o supported speaker power: 1 W - 6 W
    - o supported speaker impedance: 4 Ohm, 8 Ohm, 16 Ohm and 32 Ohm
    - o high dynamic range: 115 dB
    - o real-time dynamic range compression
    - o high signal-to-noise ratio: 100 dB
    - o 16 bit audio sample resolution
    - o integrated speaker protection algorithms:
        - ▪ exceeding voice coil excursion protection
        - ▪ overtemperature protection
        - ▪ overcurrent protection
        - ▪ undervoltage protection
        - ▪ 15 kV ESD protection of speaker output
- ➢ full-blown sound effect engine:
    - o unlimited smooth swing pair sounds
    - o unlimited smooth swing accent sounds
    - o unlimited swing sounds
    - o unlimited clash sounds
    - o unlimited stab sounds
    - o unlimited spin sounds
    - o unlimited begin lockup sounds

- o unlimited lockup sounds
- o unlimited end lockup sounds
- o unlimited begin melt sounds
- o unlimited melt sounds
- o unlimited end melt sounds
- o unlimited begin drag sounds
- o unlimited drag sounds
- o unlimited end drag sounds
- o unlimited blaster sounds
- o unlimited force sounds
- o unlimited boot sounds
- o unlimited pre-on sounds
- o unlimited power on sounds
- o unlimited power off sounds
- o unlimited post-off sounds
- o unlimited hum sounds
- o menu sounds
- o unlimited sound fonts that contain all these sound effects
- o the following sound fonts are supported without needing to rename any files:
  http://www.saberfont.com/Optimized-for-Plecter-CFX-Smooth-Swing-Compatible-by-Era-_c_92.html
- ➢ background music engine:
  - o unlimited tracks
  - o playlist feature
  - o can be controlled on the fly
  - o default package comprising 4 music tracks that come with the board:
    - ▪ "Fate and Fortune" by Scott Buckley
    - ▪ "Inflection" by Scott Buckley
    - ▪ "Light in Dark Places" by Scott Buckley
    - ▪ "Helios" by Scott Buckley
- ➢ default package comprising 15 sound fonts that come with the board:
  - o "Balance" by LordBlako Saber Fonts
  - o "Psy-Borg" by CrystalSoniX
  - o "Daddy Issues Complete" by Fourzze FX
  - o "Guardian" by LDN Sabers
  - o "Cryo Carbon" by Repulse Custom Sounds
  - o "Peace" by Kyberphonic Fonts
  - o "Violence" by Kyberphonic Fonts
  - o "Son of Darkness" by Dark Path Media
  - o "Eternal Prince" by Repulse Custom Sounds
  - o "The Phantom" by Project Fonts
  - o "The Shadow" by Project Fonts
  - o "Shadows" by Echo Studio
  - o "The Classic Villain" by Fourzze FX
  - o "Energy Pike" by The Proplicator
  - o "Knighthood" by Fourzze FX

Motion Detection
- ➢ both Smooth Swing and legacy motion detection supported

- ➤ Smooth Swing enhanced by Accent Swings and Accent Spins
- ➤ highly sophisticated legacy motion engine:
  - o customizable sensitivity
  - o ultra low motion-to-sound latency
  - o detects swings
  - o detects clashs
  - o detects stabs
  - o detects spins
- ➤ real-time measurement of orientation of the saber:
  - o display of drag light and sound effects according to orientation of the saber
  - o usage of pre-on sounds can be controlled by orientation of the saber
  - o usage of post-off sounds can be controlled by orientation of the saber
  - o responsive light effects
  - o interactive menu navigation using orientation of the saber

Light Effects
- ➤ both in-hilt LEDs and Neopixel (ws2812b) are supported
- ➤ game-changing effect fonts:
  - o introduced as an analogue to sound fonts
  - o contain all customizable light effect parameters
  - o can define certain effect styles just as sound fonts define certain sound styles
  - o can be changed on the fly
  - o unlimited number of effect fonts supported, i.e. you can have as many saber effect styles as you want, not only different colors
  - o pairable with sound fonts on the fly as the Golden Harvest board remembers with which effect font a sound font was lastly used
  - o default effect fonts and manual available on https://sabertec.net/downloads
- ➤ in-hilt LED effects:
  - o overwhelming light effect engine
  - o full customizability of the effects
  - o each LED channel can have completely independent light effects
  - o customizability of crystal chamber effects for example
  - o pulse effects:
    - ▪ conventional pulse
    - ▪ speed transition pulse, a.k.a. "HyperPulse"
    - ▪ intensity transition pulse, a.k.a. "ÜberPulse"
    - ▪ color transition effects
    - ▪ 6 different pulse shapes: sine, impulse, inverted impulse, rising sawtooth, falling sawtooth, rectangular
  - o flicker effects:
    - ▪ conventional flicker
    - ▪ intensity transition, a.k.a. "PhaseFlicker"
    - ▪ 3 different flicker types: subtractive, additive and mixed
    - ▪ flicker synchronization
  - o configurable fade out
  - o configurable effect duration
  - o independent basic effects
  - o independent clash effects
  - o independent stab effects

- o independent swing effects
- o independent spin effects
- o independent lockup effects
- o independent melt effects
- o independent blaster effects
- o independent force effects
- o as there are more than 600 parameters, you can literally invent your own light effects
- o assuming there are 1000 possible values for each parameter (which is a hard under-estimation), you could create 10^{1800} (a one with 1800 zeros) possible effect fonts – that's more than there are atoms in the universe!
- o ingenious online configuration tool for designing, saving and sharing your light effects (will be released very soon)
- o also default parameter settings available, so you get already epic light effects even without having to change any of the parameters:
  - 10 presets for dedicated color LED
  - 120 presets for RGB LED
  - 120 presets for RGBW LED
  - 120 presets for RGBA LED
- ➢ Neopixel effects:
  - o overwhelming light effect engine
  - o full customizability of the effects
  - o comes with three effect packages comprising more than 900 presets for Neopixel effects that can be changed on the fly:
    - basic effect package: includes 30 presets
    - default effect package: includes 140 presets
    - extended effect package: includes 924 presets
  - o all Neopixel effects consist of background effects and on top effects that can be arbitrarily combined with each other
  - o 6 different background effect categories:
    - Classic (e. g. Red, Green, Blue, Flicker, Pulse, …)
    - Color Flow (e. g. Rainbow, Dual Transition, Blizzard Transition, …)
    - Frozen Pulse (e. g. Spatial Pulse, Color Pulse, …)
    - Wave (e. g. Railgun, Pulsing Wave, Tiger Tail, Rattlesnake, Candy Stick, …)
    - Flame Blade (e. g. Red Flame, Green Flame, Blue Flame, …)
    - Gradient (e. g. Dual Phase, Pulsing Phase, …)
  - o 7 different on top effect categories:
    - None
    - Focus Deflection
    - Thunder Storm
    - Unstable Blade
    - Kylo Blade
    - Magnetic Flare
    - Shockwave
  - o configurable fade out
  - o configurable effect transition:
    - configurable transition time
    - configurable transition type:
      - Basic

- Window
- Unstable Blade
- Flame Blade
  - configurable effect duration
  - localized lockup
  - localized drag
  - localized melt
  - localized blaster block
  - independent basic effects
  - independent clash effects
  - independent stab effects
  - independent swing effects
  - independent spin effects
  - independent lockup effects
  - independent blaster effects
  - independent force effects
- 5 independent channels to drive standard accent LEDs
- capability of defining unique light effects even for standard accent LEDs
- sequencer for standard accent LEDs:
  - up to 16 different steps
  - duration of each step customizable
  - break between steps customizable
- up to 8 independent Neopixel accent LEDs
- capability of defining unique light effects even for Neopixel accent LEDs
- sequencer for Neopixel accent LEDs:
  - up to 16 different steps
  - duration of each step customizable
  - break between steps customizable

Firmware Updates

- there will be free firmware updates on a regular basis which you can simply install yourself by saving a file on your microSD card
- many more features will be introduced with firmware updates in future
- you're invited to take part in planning new features by discussing them with us or providing your own ideas in our Golden Harvest soundboard group on Facebook

USB Charging and File Transfer

- using our Seedling USB module, the Golden Harvest can be recharged and the microSD can be accessed via microUSB
- charging with up to 1.5 A
- you can use any wall adapter independent from the maximum current it can supply thanks to a smart charging algorithm
- easy to install as the module needs only 4 wires to be connected to the Golden Harvest
- smaller than 11 mm x 19 mm / 0.433" x 0.748"