APP COMMUNICATION COMMANDS

Revision: 3
Date: March 19nd, 2019
Title: TenkaLabs CircuitCubes

1. Motor Driving Commands

Format: <+/-><000~255><a/b/c> <CR/LF>
Return: nil

Description protocol for BLE module to communicate with APP.

Assumptions
- Battery is fully charged, Vmax = 4.2V
- Analog to Digital converter is 8 bit (0-255)
- Serial communication UART
- You can send commands to all three channels at one time

Program definition, it has three parts.

+255a

Part 1: one ASCII character to indicate voltage polarity. Only "+" or "-" supported..

Part 2: three ASCII characters, represent a number that can range from 0 to 255.

Part 3: one ASCII character, lowercase letter to indicate what channel to program. Only "a", "b" or "c" supported.

Scenario	Description	Command	CH A, volts	CH B, volts	CH C, volts
1	Send forward 100% voltage to channel A, no power to B or C.	"+255a"	4.2V	0V	0V
2	Send reverse 100% voltage to channel A, no power to B or C.	"-255a"	-4.2V	0V	0V
3	Send forward 100% voltage to channel A, B and C.	"+255a+255b+255c"	4.2V	4.2V	4.2V
4	Send reverse 100% voltage to channel A, B and C	"-255a-255b-255c"	-4.2V	-4.2V	-4.2V
5	Send forward 50% voltage to channel A, no power to B or C.	"+127a"	2.1V	0V	0V
6	Send forward 25% voltage to channel A, no power to B or C	"+064a"	1.05V	0V	0V
6	Turn off power to all channels	"0"	0V	0V	0V

Remark:

- <+/->: either + or –
- <a/b/c>: either a, b, or c
- <000~255>: 3-digit ASCII in range of 0 to 255
- <CR/LF> is optional
- Invalid command (e.g. +255d, -127, *255a) are ignored and status remain unchanged
- ASCII number greater than 255 is truncated (e.g. +258a = +002a)

2. Battery Status Command

Format: <b>
Return: battery voltage in V (e.g. 3.75)

3. BLE Module Naming Command

a. Read BLE Module
Format: <n?>
Return: BLE Module Device Name
Remark: default <Tenka><4-digit ASCII for last 4 digit of MAC address>

b. Rename the device
Format: <n><20 byte ASCII><CR/LF>
Return: 1-byte Error code
Remark:

- Device name string should compose of A~Z, a~z, 0~9, <space/-/_> only. No double-byte character is allowed
- Error codes
  0: No error. Indicates successful completion of the operation
  1: Invalid character(s) in device name string

4. Output Short Circuit Current & Overload Current Command

a. Read the settings of SCC & OC threshold value
Format: <thd get>
Return: <thd getXX,XX> (e.g. thd get30,10 3A SCC & 1A OC)
Remark: XX*100mA, XX*100mA

b. Set SCC & OC threshold value
Format: <thd setXX,XX> (e.g. thd set30,10)
Return: nil

REVISION HISTORY

Date	Rev	Details	by
2/14/2019	1	Update from BLE Module supplier	Richard
2/15/2019	2	Add 3a and 3b	Richard
2/22/2019	2a	Update 3b with return information	Richard
3/19/2019	3	Document the current setting commands under 4a, 4b	Richard