

# iTiles Connection

Connectivity: BLE

Tile will act as a BLE server using the following parameters:

SERVICE\_UUID: 6E400001-B5A3-F393-E0A9-E50E24DCCA9E

CHARACTERISTIC\_UUID\_RX: 6E400002-B5A3-F393-E0A9-E50E24DCCA9E

CHARACTERISTIC\_UUID\_TX: 6E400003-B5A3-F393-E0A9-E50E24DCCA9E

Main tile will advertise itself with device name "iTiles"

## iTiles Command List

Format

Start Byte	Tile ID	Command	Length	Parameters	End Byte
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Start Byte: 0xAA

Tile ID: A unique identifier for each tile from 0 to 127. A MASTER tile has a default ID of 0. To send a command to all tiles, use a tile ID of 0xFF

Command: Byte command instruction

Length: The number of bytes for Length + Parameters

Parameters: Additional parameters for different commands

End Byte: 0xEF

### Detailed Command List

1. BROADCAST (App -> MASTER -> STANDARD)  
Description: Broadcast main tile ID to all sub-tiles. For initiating pairing  
Command: 0x01  
Parameters: 6 bytes MASTER tile mac address
2. REQUEST\_TILE\_ID (STANDARD -> MASTER)  
Description: STANDARD tile sends a command to request for a tile id to be assigned  
Command: 0x02

Parameters: 6 byte STANDARD tile mac address

3. ASSIGN\_ID (MASTER -> STANDARD)  
Description: MASTER tile assigns and sends a tile ID to the STANDARD tile that made the request  
Command: 0x03  
Parameters: 1 bytes tile ID (0x01 – 0x7F)
4. UNPAIR (App -> MASTER -> STANDARD)  
Description: Unpair a tile from the MASTER tile  
Command: 0x04  
Parameters: Nil
5. QUERY\_PAIRING\_TILES (App -> MASTER)  
Description: App to request for a list of tiles that are paired to the MASTERTILE  
Command: 0x05  
Parameters: Nil
6. QUERY\_ONLINE\_TILES (App -> MASTER -> STANDARD)  
Description: App to request for a list of tiles that are online  
Command: 0x06  
Parameters: Nil
7. REPLY\_PAIRING\_TILES (MASTER -> App)  
Description: MASTERTILE to send a list of pair tiles to app  
Command: 0x07  
Parameters 1: Total Number of tiles paired  
Parameter 2 onwards: Tile ID of paired tiles
8. REPLY\_ONLINE\_TILES (STANDARD -> MASTER -> App)  
Description: All tiles to send a message to inform the app that they are online  
Command: 0x08  
Parameter 1: Battery Level (lower byte)  
Parameter 2: Battery Level (upper byte)  
Parameter 2: Hardware Version  
Parameter 3: Firmware Version  
\*Battery level ranges from 420 (4.2V) to 330 (3.3V)
9. TRIGGER\_LIGHT (App -> MASTER -> STANDARD)  
Description: Trigger one or all tiles to light up in a single color  
Command: 0x0B  
Parameter 1:  
    0x00 – 0xFF: Red intensity  
Parameter 2:  
    0x00 – 0xFF: Green intensity

Parameter 3:

0x00 – 0xFF: Blue intensity

Parameter 4:

0x00: Stay on forever

0x01 – 0xFF: Off after X seconds

Parameter 5:

0x00: Don't log reaction time

0x01: Log reaction time for touch/step only

0x02: Log reaction time for shake only

0x03: Log reaction time for both touch/step and shake

0x04: Log reaction time for side pairing

Parameter 6:

0x00: No timeout response

0x01 – 0xFF: Timeout response after X seconds

#### 10. TRIGGER\_SOUND (App -> MASTER -> STANDARD)

Description: Trigger one or all tiles to play a specific sound

Command: 0x0C

Parameter 1:

0x01 – 0xFF: Sound track ID

Parameter 2:

0x01 – 0x9: Repeat 1 to 9 times

Parameter 3:

0x00: Don't log reaction time

0x01: Log reaction time for touch/step only

0x02: Log reaction time for shake only

0x03: Log reaction time for both touch/step and shake

0x04: Log reaction time for side pairing

Parameter 4:

0x00: No timeout response

0x01 – 0xFF: Timeout response after X seconds

#### 11. TRIGGER\_VIBRATE (App -> MASTER -> STANDARD)

Description: Trigger one or all tiles to vibrate a specific pattern

Command: 0x0D

Parameter 1:

0x01 – 0xFF: Vibration pattern ID

Parameter 2:

0x01 – 0x9: Repeat 1 to 9 times

Parameter 3:

0x00: Don't log reaction time

0x01: Log reaction time for touch/step only

0x02: Log reaction time for shake only

0x03: Log reaction time for both touch/step and shake

0x04: Log reaction time for side pairing

Parameter 4:

0x00: No timeout response

0x01 – 0xFF: Timeout response after X seconds

## 12. TRIGGER\_SIDE (App -> MASTER -> STANDARD)

Description: Trigger sides of tile to light up. Can have multiple sides with different colours

Command: 0x0E

Parameter 1:

0x00 – 0xFF: Side 1 Red intensity

Parameter 2:

0x00 – 0xFF: Side 1 Green intensity

Parameter 3:

0x00 – 0xFF: Side 1 Blue intensity

Parameter 4:

0x00 – 0xFF: Side 2 Red intensity

Parameter 5:

0x00 – 0xFF: Side 2 Green intensity

Parameter 6:

0x00 – 0xFF: Side 2 Blue intensity

Parameter 7:

0x00 – 0xFF: Side 3 Red intensity

Parameter 8:

0x00 – 0xFF: Side 3 Green intensity

Parameter 9:

0x00 – 0xFF: Side 3 Blue intensity

Parameter 10:

0x00 – 0xFF: Side 4 Red intensity

Parameter 11:

0x00 – 0xFF: Side 4 Green intensity

Parameter 12:

0x00 – 0xFF: Side 4 Blue intensity

Parameter 13:

0x00 – 0xFF: Side 5 Red intensity

Parameter 14:

0x00 – 0xFF: Side 5 Green intensity

Parameter 15:

0x00 – 0xFF: Side 5 Blue intensity

Parameter 16:

0x00 – 0xFF: Side 6 Red intensity

Parameter 17:

0x00 – 0xFF: Side 6 Green intensity

Parameter 18:

0x00 – 0xFF: Side 6 Blue intensity

Parameter 19:

0x00: Stay on forever

0x01 – 0xFF: Off after X seconds

Parameter 20:

0x00: Don't log reaction time

0x01: Log reaction time for touch/step only

0x02: Log reaction time for shake only

0x03: Log reaction time for both touch/step and shake

0x04: Log reaction time for side pairing

Parameter 21:

0x00: No timeout response

0x01 – 0xFF: Timeout response after X seconds

#### 13. TRIGGER\_EFFECT (App -> MASTER -> STANDARD)

Description: (Not implemented yet)

Command: 0x0F

Parameter 1:

#### 14. ADVANCE\_TRIGGER (App -> MASTER -> STANDARD)

Description: Trigger one or more tiles to generate a combination of light sound and vibration

Command: 0x10

Parameter 1:

0x00 – 0xFF: Red intensity

Parameter 2:

0x00 – 0xFF: Green intensity

Parameter 3:

0x00 – 0xFF: Blue intensity

Parameter 4:

0x00: Light stay on forever

0x01 – 0xFF: Light off after X seconds

Parameter 5:

0x00: No sound

0x01 – 0xFF: Sound track ID

Parameter 6:

0x01 – 0x09: (Not implemented yet – Just put 0x00 or any value. It will be ignored)

Parameter 7:

0x00: No vibration

0x01 – 0xFF: Vibration pattern ID

Parameter 8:

0x01 – 0x09: Repeat 1 to 9 times (Not implemented yet)

Parameter 9:

0x00: Don't log reaction time

0x01: Log reaction time for touch/step only

0x02: Log reaction time for shake only  
0x03: Log reaction time for both touch/step and shake  
0x04: Log reaction time for side pairing

Parameter 10:

0x00: No timeout response  
0x01 – 0xFF: Timeout response after X seconds

15. OFF\_LIGHT (App -> MASTER -> STANDARD)

Description: Off LED on 1 or more tiles

Command: 0x11

Parameters: Nil

16. TOUCH (STANDARD -> MASTER -> App)

Description: Notify app that a tile has been touched

Command: 0x12

Parameter 1: Reaction Time (Lower Byte)

Parameter 2: Reaction Time (Upper Byte)

17. SIDE\_UPDATE (STANDARD -> MASTER -> App)

Description: Notify app that the side of tile has been paired/unpaired

Command: 0x13

Parameter 1:

0x01 – 0x06: which side of the tile

Parameter 2:

0x00: Unpair

0x01: Pair

Parameter 3: Reaction Time (High Byte)

Parameter 4: Reaction Time (Low Byte)

18. STEP\_CHANGE (STANDARD -> MASTER -> App)

Description: Notify app that a tile has been step on/off (Not implemented yet)

Command: 0x14

Parameter 1:

0x00: Step off

0x01: Step on

Parameter 2: Reaction Time (High Byte)

Parameter 3: Reaction Time (Low Byte)

19. SHAKE (STANDARD -> MASTER -> App)

Description: Notify app that a tile been shaken

Command: 0x15

Parameter 1: Reaction Time (Lower Byte)

Parameter 2: Reaction Time (Upper Byte)

## 20. SUPER\_TRIGGER (App -> MASTER -> STANDARD)

Description: Super Trigger Command for everything in 1 single command

Command: 0x16

Parameter 1:

0x00 – 0xFF: Side 1 Red intensity

Parameter 2:

0x00 – 0xFF: Side 1 Green intensity

Parameter 3:

0x00 – 0xFF: Side 1 Blue intensity

Parameter 4:

0x00 – 0xFF: Side 2 Red intensity

Parameter 5:

0x00 – 0xFF: Side 2 Green intensity

Parameter 6:

0x00 – 0xFF: Side 2 Blue intensity

Parameter 7:

0x00 – 0xFF: Side 3 Red intensity

Parameter 8:

0x00 – 0xFF: Side 3 Green intensity

Parameter 9:

0x00 – 0xFF: Side 3 Blue intensity

Parameter 10:

0x00 – 0xFF: Side 4 Red intensity

Parameter 11:

0x00 – 0xFF: Side 4 Green intensity

Parameter 12:

0x00 – 0xFF: Side 4 Blue intensity

Parameter 13:

0x00 – 0xFF: Side 5 Red intensity

Parameter 14:

0x00 – 0xFF: Side 5 Green intensity

Parameter 15:

0x00 – 0xFF: Side 5 Blue intensity

Parameter 16:

0x00 – 0xFF: Side 6 Red intensity

Parameter 17:

0x00 – 0xFF: Side 6 Green intensity

Parameter 18:

0x00 – 0xFF: Side 6 Blue intensity

Parameter 19:

0x00: Stay on forever

0x01 – 0xFF: Off after X seconds

Parameter 20:

0x00: No sound

0x01 – 0xFF: Sound track ID

Parameter 21:

0x01 – 0x09: (Not implemented yet – Just put 0x00 or any value. It will be ignored)

Parameter 22:

0x00: No vibration

0x01 – 0xFF: Vibration pattern ID

Parameter 23:

0x01 – 0x09: Repeat 1 to 9 times (Not implemented yet)

Parameter 24:

0x00: Don't log reaction time

0x01: Log reaction time for touch/step only

0x02: Log reaction time for shake only

0x03: Log reaction time for both touch/step and shake

0x04: Log reaction time for side pairing

Parameter 25:

0x00: No time out reply required from tile

0x01 – 0xFF: Tile to reply with timeout command after X seconds if not touched/shake

#### 21. TILE\_TIMEOUT (STANDARD -> MASTER -> App)

Description: Notify app that a tile has timeout from a command

Command: 0x17

Parameter 1: Nil

#### 22. ENABLE\_DISABLE\_ACCEL (App -> MASTER -> STANDARD)

Description: Enable or disable accelerometer shake interrupt

Command: 0x18

Parameter 1:

0x00: Disable

0x01: Enable

#### 23. SET\_ACCEL\_THRESHOLD (App -> MASTER -> STANDARD)

Description: Set threshold for shake interrupt

Command: 0x19

Parameter 1:

0x00 – 0xFF: Accelerometer threshold

#### 24. ENABLE\_DISABLE\_TOUCH (App -> MASTER -> STANDARD)

Description: Enable or Disable touch

Command: 0x1A

Parameter 1:

0x00: Disable touch

0x01: Enable touch



25. SET\_VOLUME (App -> MASTER -> STANDARD)

Description: Set tile audio volume

Command: 0x1B

Parameter 1: (Not implemented yet)

26. STOP\_EFFECT (App -> MASTER -> STANDARD)

Description: Stop tile Light Effect

Command: 0x1C

Parameter 1: Nil