

# Uplift Desk Automation

## Message Syntax

### Transmit

A transmitted message has the following syntax.

```
0xF1, 0xF1, <cmd>, 0x00, <crc>, 0x7E
```

- 0xF1, 0xF1 indicates the message start
- cmd is one of:
  - 0x01 - Up
  - 0x02 - Down
  - 0x03 - Save preset 1
  - 0x04 - Save preset 2
  - 0x05 - Recall preset 1
  - 0x06 - Recall preset 2
  - 0x07 - Sync
  - 0x25 - Save preset 3
  - 0x26 - Save preset 4
  - 0x27 - Recall preset 3
  - 0x28 - Recall preset 4
  - 0x2B - Stop
- crc is the sum of the bytes at index 2 and 3.
- 0x7E indicates the end of message.

### Receive

A received message has the following syntax.

```
0xF2, 0xF2, <cmd>, <len>, <data...>, 0x0F, <crc>, 0x7E
```

- 0xF2, 0xF2 indicates the message start
- cmd is one of:
  - 0x01 - Height value
  - 0x25 - Preset 1 height
  - 0x26 - Preset 2 height
  - 0x27 - Preset 3 height
  - 0x28 - Preset 4 height
- len indicates how many messages will be sent next, excluding the CRC and EOT.
- data will contain the incoming data values, explained for height readings below.

- 0x0F - Unknown
- crc will be the sum of bytes at index 2 up to the CRC.
- 0x7E indicates the end of message.

## Example: Received Height Reading

When a new height value comes in, the message will look something like this:

```
0xF2, 0xF2, 0x01, 0x03, 0x01, 0x1B, 0x0F, 0x2F, 0x7E
```

In this case, the desk was at 28.3". Here is how we can calculate that.

1. First off, the command is 0x01, so we know we're about to receive height data.
2. The next byte tells us to listen for 3 data bytes.
3. The relevant data comes in as 0x01, 0x1B. This will be converted to a height value later. (Unclear what 0x2F does here)
4. Then, we add all of the previous bytes (other than the header) to verify the CRC is correct.  
 $0x01 + 0x03 + 0x01 + 0x1B + 0x0F = 0x2F$
5. The actual height is a two-byte word, so the first number needs to be bitshifted. In this example, we received 0x01, 0x1B, so the height calculation looks like:  $0x01 \ll 8 \mid 0x1B = 283$ .
6. Divide the received value by 10 to convert to inches. The result is  $283 / 10.0 = 28.3\text{in}$ .

## Preset Heights

A sync request will get a response with cmd 0x25, 0x26, 0x27, 0x28, then a regular 0x01 height. The 0x01 value is understood, but the preset height values are not yet understood. There is a two-word response, and the words change with the saved height value. The second word seems to be a decimal. I have not yet determined how to parse these into the stored heights.

Here is a table of example values. For heights that are the same, I would slightly adjust the table height and save again. The changed values suggest these are more specific than inches.

Height	data[4]	data[5]
25.3	20	5
25.3	20	8
25.3	20	11
25.3	20	54
28.3	25	62
28.3	25	67
28.3	25	82
38.?	42	207
39.9	45	153
39.9	45	156
40.0	45	168
42.4	50	7
42.8	50	188

Height	data[4]	data[5]
42.9	50	231
43.0	51	8
43.1	51	27
43.2	51	104
50.8	64	161

# References

## Hardware

1. ["2ANKDJCP35NBLT Bluetooth Box by ZHEJIANG JIECANG LINEAR MOTION TECHNOLOGY CO., LTD".](#) (2018, January 25). FCC ID. Retrieved January 19, 2021.
2. [Jiecang Bluetooth Dongle Product Listing.](#) Retrieved January 19, 2021.

## Images from /u/deadman96385

1. <https://imgur.com/a/MUbXwnM>
2. <https://i.imgur.com/DyMf3Ee.jpg>
3. <https://i.imgur.com/KtsWpVQ.jpg>
4. <https://i.imgur.com/BS62C1E.jpg>
5. <https://i.imgur.com/woWoQMe.jpg>
6. <https://i.imgur.com/Lta5Nab.jpg>

## Software

1. Justintout. (2020, April 16). GitHub - ["justintout/uplift-reconnect: A Flutter app to control Uplift desks with Uplift Connect BLE modules installed"](#). GitHub. Retrieved January 19, 2021.
2. Deadman96385. (2020, March 6). ["uplift\\_desk\\_controller\\_app/BluetoothHandler.java at a58bcadfb77ac993751758465f1cf20f71d6d8fd · deadman96385/uplift\\_desk\\_controller\\_app"](#). GitHub. Retrieved January 23, 2021.
3. Phord. (2021, August 12). ["phord/Jarvis: Hacking the Jarvis standup desk from fully.com for home automation using an ESP8266 arduino interface"](#). GitHub. Retrieved December 5, 2021.
4. Ramot, Y. (2015, February 4). ["UpLift Desk wifi link"](#). Hackaday.io.
5. Horacek, L. (2019, April 14). ["Standing desk remote control"](#). Hackaday.io.
6. Hunleth, F. (2019, January 18). ["Nerves At Home: Controlling a Desk"](#). Embedded Elixir. Retrieved January 2021.