

Bluetooth Communication Protocol

1. Pick UUID Glove:
 - i. Online generator: 837ee2f0-d412-4af9-b847-c5ffd223640f
2. Control commands (from app to glove)
 - i. Used by the Android app to send commands to the glove, like starting an exercise or setting resistance.
3. Response commands (from glove to app)
 - i. Used by the glove to send data back to the app, like sensor readings.
 - ii. We need sensor data + ACK.
 - iii. Warnings:
 - i. To send warnings to the glove. The app will show a dialog about the warning type and the glove will be set to Stop exercise.
 - ii. Glove send 2 bytes (1 byte for warning and the other for the type of warning)
 - iii. 0x01: Motor Failure
 - iv. 0x02: if needed we can add a second warning
 - v. 0x04: if needed we can add a third warning
4. Communication flow:
 - i. From Android to Glove: The app writes a command to the Control. For example, to set the resistance to level 3, it writes opcode for setting resistance.
 - ii. From Glove to Android: The glove notifies the Android app via the Response with sensor data or acknowledgments. If sending a sensor value of 120, it might notify with 0x81, <value>.

Example:

1. Setting Resistance:
 - a. Android writes 0x0205 to Control Commands to set resistance to level 5.
2. Android App Sends Command to Start Exercise:
 - a. Writes to Control Commands: EX: 0x01 (start command).
3. Glove Acknowledges and Starts Exercise:
 - a. writes 0x82 (ACK) to Acknowledge.
 - b. Begins the exercise.
4. Glove Sends Sensor Data:
 - a. Glove notifies the Response Commands with 0x81<sensor_value> periodically, allowing the Android app to track the user's performance.

Opcodes

Empty	Empty	C	S	W	EMPTY	EMPTY	SR	ST	SE
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SE: 0: power down mode, 1: start exercise (if connected 001000 0001 -> 0x81)

ST: 0: power down mode - no effect, 1: stop exercise (if connected 001000 0010 -> 0x82)

SR: 0: power down mode, 1: setting resistance + value (10 bits) = 2 bytes for SR (001000 0101 -> 0x85, value (0xvalue))

S: 0: power mode down, 1: searching for Bluetooth devices (000100 0000 -> 0x40)

W: 0: no warning detected, 1: warning is detected (001010 0001, 0xA1), (0xvalue)

C: 1 connected device (if connected, 0x80)

Default value: 001000 0000 iff connected (0x80)

0100 0000 → search
 1000 0000
 0100 0001 ← connected
 1000 0101 ← set R
 0000 0101 → 5
 1000 0010 → stop
 0000 0000 → disconnect

*When warning
detected

0010100001 ← Warning

ST → 0000000001

→ 0000000010

→ 0000000100

→ 0010000010