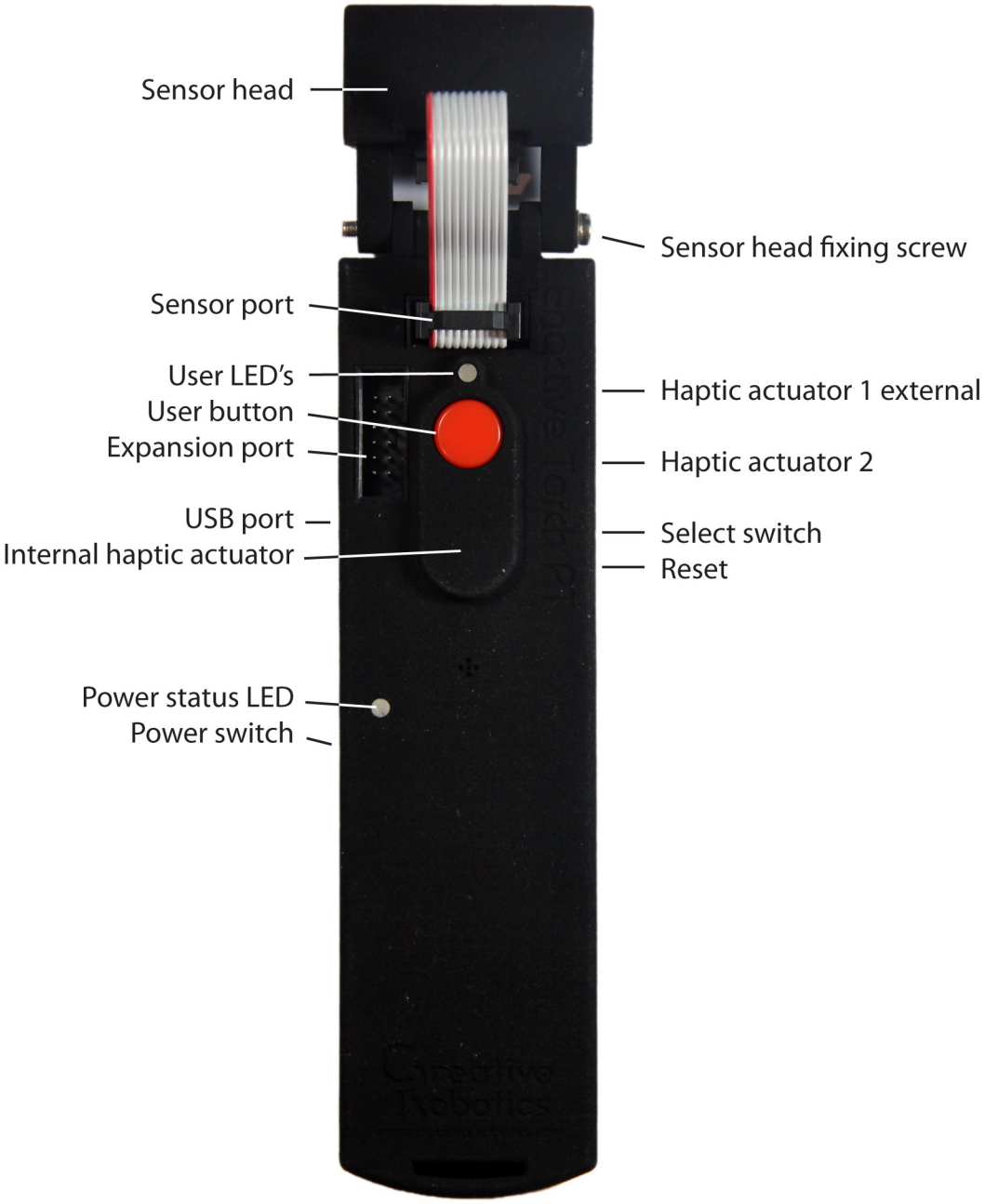
Device overview

The Enactive Torch contains an internal inertial measurement unit and Bluetooth module allowing data to be streamed from the device to a computer. The internal battery is charged via the USB port. The standard sensor head contains a rangefinder with a maximum 1.5 meter range, a narrow beam LED and a light sensor, and the sensor angle relative to the body of the ET-RT can be adjusted.

The device is equipped with an internal haptic actuator called a Linear Resonant Actuator or LRA. This is mounted in the case just below the user button. A pair of 3.5mm jack sockets on the right of the device allow for two external LRA's to be plugged in and independently controlled. When an LRA is plugged into 'Haptic Actuator 1' socket it will disconnect the internal one and prevent it from operating.



Connecting to Bluetooth

The device should be marked with its Bluetooth name on a label on the rear of the case. When connecting to it via Bluetooth ensure that the ET-RT is switched on and look for the device name. Data is transferred over Bluetooth using the Synchronous Serial Protocol (SSP). The serial port needs to be configured as follows:

- Baud rate 38400
- 1 stop bit
- No parity.

Commands

The ET software incorporates a limited set of commands for configuring the device remotely. These can be sent from a serial terminal or suitable piece of software using the Bluetooth link. By default the device will begin by transmitting a device information statement that includes the firmware version and the status of the internal sensors and user input.

The following serial commands are available and should be sent as ASCII characters followed by a line feed character. These commands are defined in the ETRT-System.h file used to compile the firmware.

Software name	Description	Character
CMD_GET_DEVICE_INFO	Get device information	?
CMD_PRINT_CALIBRATION_DATA	Print calibration values for gyroscopes and accelerometers	c
CMD_DATA_STREAM_ON	Turn data streaming on	D
CMD_DATA_STREAM_OFF	Turn data streaming off	d
CMD_SET_DATA_STREAM_RAW	Set data stream type to raw data	r
CMD_SET_DATA_STREAM_YPR	Set data stream type to YPR (Yaw Pitch Roll)	y
CMD_SET_DATA_STREAM_QUATERNION	Set data stream type to Quaternion data	q

Using the ET-RT

This section applies to devices with the default demo firmware installed

Switch the ET-RT on. It will begin transmitting raw data from the gyroscopes, accelerometers and sensor.

Press the red button to enable the haptic actuator (LRA)

If the external LRA is plugged into haptic actuator socket 1 then it will respond. If no external actuator is plugged in then the internal one will respond.

The firmware has two modes of operation that can be changed with the selector switch.

Position 0: (switch pushed to the rear of the device) The range of an object is translated into vibration intensity where a shorter range will equate to greater intensity.

Position 1: (Switch pushed forward) The range translates into intensity but the haptic actuator delivers pulses rather than a continuous signal.