

Example of Requirements

1. Wearable Fitness Tracker

Name	Wearable Fitness Tracker
Purpose	Consumer-grade wearable device for monitoring daily fitness activity
Inputs	Power button, touch button, heart rate sensor, motion sensor (accelerometer)
Outputs	OLED display 128×64 , vibration alert, Bluetooth data transmission
Functions	Tracks steps, heart rate, calories burned, and sleep activity; displays daily activity summary; synchronises with a smartphone application
Performance	Updates step count within 1 second of movement; heart rate refreshed every 5 seconds
Manufacturing cost	£28
Power	Rechargeable lithium-polymer battery, average consumption 80 mW
Physical size and weight	No more than $45 \text{ mm} \times 20 \text{ mm} \times 12 \text{ mm}$, 50 grams

2. Smart Door/Window Sensor

Name	Smart Door/Window Sensor
Purpose	Consumer-grade security sensor for monitoring door or window activity
Inputs	Power button, magnetic reed switch sensor, reset button
Outputs	LED status indicator, audible alert, wireless signal to smartphone hub
Functions	Detects door/window open and close events; sends alerts to connected devices; stores event history in memory
Performance	Sends alert notification within 2 seconds of sensor activation
Manufacturing cost	£18
Power	Replaceable CR2032 battery, average consumption 40 mW
Physical size and weight	No more than $70 \text{ mm} \times 25 \text{ mm} \times 15 \text{ mm}$, 40 grams

Name	Smart Irrigation Timer
Purpose	Consumer-grade irrigation controller for gardens and small outdoor spaces
Inputs	Power button, manual override button, soil moisture sensor, water flow sensor
Outputs	LCD display 320×240 , LED status indicator, water valve control signal
Functions	Automatically waters plants based on programmed schedules and soil moisture levels; allows manual watering mode; stores user settings in memory
Performance	Activates watering within 1 second of scheduled time; soil moisture readings updated every 30 seconds
Manufacturing cost	£35
Power	Rechargeable 3.7 V lithium-ion battery, average consumption 120 mW
Physical size and weight	No more than $120 \text{ mm} \times 80 \text{ mm} \times 35 \text{ mm}$, 350 grams