BID4R Charging Station Detailed Requirements List

1. Structural Requirements

• The charging station must have a base that securely holds the Qi transmitter in a visible position to ensure direct alignment with the robot’s Qi receiver.
• The base must include a rising edge and block to integrate seamlessly with the robot's alignment component, preventing the robot from sliding too far during docking.
• A fan mount must be attached to the base to hold a fan positioned directly above the robot for cooling during charging.
• The base must include a rectangular compartment to house all wiring, circuit boards, and other internal equipment securely and neatly.
• The charging station must accommodate the robot's height of 16mm from the ground to ensure proper docking and alignment with the Qi transmitter.

2. Functional Requirements

• The Qi transmitter must be positioned on the base in a visible and accessible manner to allow efficient wireless charging when the robot docks.
• The charging station must provide precise docking guidance using the alignment system (rising edge and block) to ensure correct positioning of the robot.
• The charging station must integrate a fan system to cool the Qi transmitter during operation, with the fan mounted on the fan mount attached to the base.
• All station wiring and equipment must be securely housed inside the base’s rectangular compartment, with no loose wires visible.

3. Robot-Specific Requirements

• The robot must have an alignment component that includes a circular docking feature to properly engage with the charging station’s base.
• The robot’s alignment component must contain a Qi receiver that perfectly aligns with the charging station’s Qi transmitter for wireless power transfer.
• The charging station must accommodate the robot’s 16mm ground clearance to ensure proper alignment during docking.
• The robot must dock securely with the charging station to ensure efficient power transfer without risk of damage to the Qi transmitter or receiver.