CLAIMS

1. A charging protection method, comprising:

measuring a charging voltage, a charging current, and a temperature rise of a charging interface of a charged device;

detecting whether the charging voltage falls beyond a preset voltage range;

detecting whether the charging current is less than a preset current threshold;

detecting whether the temperature rise is greater than a preset temperature rise threshold; and

disconnecting a charging circuit of a charger when at least one of:

the charging voltage falls beyond the preset voltage range,

the charging current is less than the preset current threshold, or

the temperature rise is greater than the preset temperature rise threshold;

wherein detecting whether the charging voltage falls beyond a preset voltage range; detecting whether the charging current is less than a preset current threshold; detecting whether the temperature rise is greater than a preset temperature rise threshold comprises:

detecting whether a voltage on an identity ID pin of the charging interface falls beyond the voltage range;

detecting whether a current on a power bus VBUS pin of the charging interface is less than the current threshold;

obtaining a temperature measured by a temperature sensor disposed on the micro USB interface; and

detecting, according to the obtained temperature, whether the temperature rise of the charging interface is greater than the temperature rise threshold;

wherein the disconnecting a charging circuit of a charger comprises:

controlling a current transmitted, by the charger, on the VBUS pin of the micro USB interface to be grounded by using a metal oxide semiconductor MOS transistor.

2. The method according to claim 1, wherein the charging interface is a micro Universal Serial Bus micro USB interface.

3. The method according to claim 1, wherein the disconnecting a charging circuit of a charger comprises:

sending circuit disconnection instruction information to the charger by using the D+ pin and the D– pin, wherein the circuit disconnection instruction information is used to instruct the charger to disconnect the charging circuit; and

controlling the VBUS pin of the micro USB interface to be grounded by using a MOS transistor when the charger failed to disconnect the charging circuit.

4. The method according to any one of claims 1 to 3, wherein the disconnecting a charging circuit of a charger comprises:

outputting alarm prompt information, wherein the alarm prompt information comprises audio information and text information.

5. The method according to claim 4, wherein the outputting alarm prompt information comprises:

displaying text information indicating that a charging exception occurs on the charged device, and outputting audio information indicating that a charging exception occurs on the charged device.

6. A charging protection apparatus, comprising a voltage detection unit, a current detection unit, a temperature detection unit, a charging management unit, a temperature sensor, and a micro USB interface, wherein

the voltage detection unit is connected to a D+ pin, a D– pin, and an ID pin of the micro USB interface, and is configured to detect whether a voltage on the D+ pin, the D– pin, or the ID pin falls beyond a preset voltage range;

the current detection unit is connected to a VBUS pin of the micro USB interface, and is configured to detect whether a current on the VBUS pin is less than a preset current threshold;

the temperature detection unit is connected to the temperature sensor, and is configured to obtain a temperature measured by the temperature sensor, and detect, according to the obtained temperature, whether a temperature rise of the micro USB interface is greater than a preset temperature rise threshold; and

the charging management unit is separately connected to the voltage detection unit, the current detection unit, and the temperature detection unit, and is configured to disconnect a charging circuit of a charger when at least one of:

the voltage on the ID pin falls beyond the preset voltage range,

the current on the VBUS pin is less than the preset current threshold, or

the temperature rise of the micro USB interface is greater than the preset temperature rise threshold;

wherein the apparatus further comprising: a MOS transistor and a diode, wherein a gate of the MOS transistor is connected to the charging management unit, a drain of the MOS transistor is grounded, a source of the MOS transistor is connected to the VBUS pin of the micro USB interface, a cathode of the diode is connected to the drain of the MOS transistor, and an anode of the diode is connected to the source of the MOS transistor;

wherein the charging management unit is further configured to:

control the VBUS pin of the micro USB interface to be grounded by using the MOS transistor.

7. The apparatus according to claim 6, wherein the charging management unit is configured to:

send instruction information to the charger by using the D+ pin and the D– pin, wherein the instruction information is used to instruct the charger to disconnect the charging circuit; and

control the VBUS pin of the micro USB interface to be grounded by using the MOS transistor when the charger failed to disconnect the charging circuit.

8. The apparatus according to claim 6 or 7, wherein the charging management unit is further configured to: send alarm prompt information to a charged device, wherein the alarm prompt information is used to instruct the charged device to use a display device to display text information indicating that a charging exception occurs on the charged device, and instruct the charged device to use an audio apparatus to output audio information indicating that a charging exception occurs on the charged device.

9. A charging protection apparatus, comprising a temperature sensor, and a micro USB interface, a memory configured to store instructions, and a processor coupled to the memory, wherein the processor is configured to execute the instructions to:

detect whether a voltage on an ID pin of the micro USB interface falls beyond a preset voltage range;

detect whether a current on the VBUS pin is less than a preset current threshold;

obtain a temperature measured by the temperature sensor;

detect, according to the obtained temperature, whether a temperature rise of the micro USB interface is greater than a preset temperature rise threshold; and

disconnect a charging circuit of a charger when at least one of:

the voltage on the ID pin falls beyond the preset voltage range,

the current on the VBUS pin is less than the preset current threshold, or

the temperature rise of the micro USB interface is greater than the preset temperature rise threshold;

wherein the apparatus further comprising: a MOS transistor and a diode, wherein a gate of the MOS transistor is connected to the processor, a drain of the MOS transistor is grounded, a source of the MOS transistor is connected to the VBUS pin of the micro USB interface, a cathode of the diode is connected to the drain of the MOS transistor, and an anode of the diode is connected to the source of the MOS transistor;

wherein the disconnect a charging circuit of a charger, comprises: control the VBUS pin of the micro USB interface to be grounded by using the MOS transistor.

10. The apparatus according to claim 9, wherein the processor is further configured to:

send instruction information to the charger by using the D+ pin and the D– pin, wherein the instruction information is used to instruct the charger to disconnect the charging circuit; and

control the VBUS pin of the micro USB interface to be grounded by using a MOS transistor when the charger failed to disconnect the charging circuit.

11. The apparatus according to claim 9 or 10, wherein the processor is further configured to: display text information indicating that a charging exception occurs on the charged device, and output audio information indicating that a charging exception occurs on the charged device.