

MS26210GC 系列程控泄漏电流测试仪

MS26210GC Series Programmable Leakage Current Tester

使用说明书 Manual

欢迎使用本公司仪器，打开仪器包装后请参照说明书后的随机附件清单核对配件。使用前请仔细阅读本说明书。

Thank you for choosing our instrument. After unpacking, please refer to the accessory checklist at the end of this manual to verify all included items. Please read this manual carefully before use.

一、概 述 Overview

MS26210GC 系 列 泄 漏 电 流 测 试 仪 主 要 用 于 医 用 设 备 泄 漏 电 流 或 实 验 室 标 准 设 备 泄 漏 电 流 的 检 测，该 仪 器 测 试 各 种 类 型 (I 类、II 类、内 部 电 源 和 B 型、BF 型、CF 型) 医 用 电 气 设 备 的 对 地 漏 电 流、对 接 触 电 流、患 者 漏 电 流、患 者 漏 电 流 (信 号 部 分 加 压)、患 者 漏 电 流 (应 用 部 分 加 压) 和 患 者 辅 助 电 流 (直 流 和 交 流) 或 符 合 实 验 室 标 准 的 外 壳 泄 漏 电 流 及 对 地 泄 漏 电 流 等 项 目 的 检 测。该 仪 器 符 合 医 用 电 气 设 备 安 全 通 用 要 求 GB9706.1-2020、实 验 室 要 求 GB4793.1-2007 标 准 的 测 试 要 求，是 医 疗 器 械 生 产 厂 家 和 检 测 部 门 必 备 的 安 规 检 测 仪 器。

The MS26210GC Series Leakage Current Tester is primarily designed to measure leakage current in medical equipment or laboratory-standard devices. This instrument tests various types of medical electrical equipment, including Class I, Class II, internally powered, and B, BF, and CF types. It can measure ground leakage current, touch current, patient leakage current, patient leakage current with applied signal voltage, patient leakage current with applied part voltage, and patient auxiliary current (both AC and DC). It also supports leakage current testing for laboratory-standard equipment, including enclosure and ground leakage current tests. The instrument complies with the safety requirements of **GB9706.1-2020** for medical electrical equipment and **GB4793.1-2007** for laboratory equipment, making it an essential safety compliance tester for medical device manufacturers and testing departments.

主要特性：Key Features

1、可按类别设置测试项目,同一测试项目自动组合测试,同步显示测量电压值、外来电压值、

正常状态泄漏电流值、单一故障状态泄漏电流值;

Configurable Test Settings: Allows you to set test parameters by category. Tests of the same type can be automatically combined, with simultaneous display of measured voltage, with simultaneous display of measured voltage, external voltage, normal state leakage current, and single-fault state leakage current.

2、可一键完成对地漏电流、对接触电流、患者漏电流(应用部分加网电源电压)、患者漏电流(直流和交流)等项目的测试,也可分项目测试;

One-Button Testing: Enable single-button testing of ground leakage current, touch current, patient leakage current (with applied part mains voltage), and patient leakage current (both AC and DC). Tests can also be conducted individually if desired.

3、具有供电回路过压、过流及 MD 测量装置过流保护,具有泄漏电流超限声光报警功能。

Safety Protection: Equipped with over-voltage and over-current protection for the power circuit and MD measurement device, along with audio-visual alarms for excess leakage current.

4、具有 PLC 接口,可通过外部控制;具有 RS232 接口,可实时上传测试数据。

Interface and Connectivity: Includes a PLC interface for external control and an RS232 interface for real-time data upload.

二、主要技术指标及参数

Main Technical Specifications and Parameters

1. 工作环境: Operating Environment:

- a. 温度 Temperature: $0^{\circ}\text{C}\sim 40^{\circ}\text{C}$ 。
- b. 相对湿度 Relative Humidity: 不大于 80%。 $\leq 80\%$
- c. 周围无强烈电磁场干扰源,无大量灰尘和腐蚀气体,通风良好。Free from strong electromagnetic interference, dust, and corrosive gases, with good ventilation

2. 供电电源 Power Supply: AC $110\text{V}\pm 5\%$; $60\text{Hz}\pm 2\text{Hz}$ 。

3. 仪器功耗 Power Consumption: 不大于 50W。 $\leq 50\text{W}$

4. 测量装置 Measurement Device: 自动量程转换,真有效值测量。Automatic range switching, true RMS measurement

(1) a. 泄漏电流测量范围: Leakage Current Measurement Range

I $3\sim 99.9 (\mu\text{A})$ 分辨率 resolution $0.1\mu\text{A}$

II 100.0~999.9 (μA) 分辨率 resolution 0.1μA

III 1000~9999 (μA) 分辨率 resolution 1μA

b. 患者漏电流、患者辅助电流 Patient Leakage Current and Auxiliary Current: DC 测量范围 measurement range: 3~99.9 (μA) 分辨率 resolution: 0.1μA

c. 测量精度 Measurement Accuracy: ±5% 读数。 注: 精度范围为电流大于 10μA 以上。 Note: Accuracy is applicable for currents above 10 μA

d. 频响范围 Frequency Response Range: DC~1MHz

e. 输入阻抗 Input Impedance: ≥1MΩ

f. 测量阻抗电路(MD) Measurement Impedance Circuit: 电阻 Resistance: R1=10kΩ ; R2=1kΩ。 电容 Capacitance: C1=0.015μF。

(2) 医用 GB9706.1-2020 (未加权) Medical Standard GB9706.1-2020 (Unweighted)

a. 泄漏电流测量范围 AC: Leakage Current Measurement Range

I 3~99.9 (μA) 分辨率 resolution 0.1μA

II 100.0~999.9 (μA) 分辨率 resolution 0.1μA

III 1000~9999 (μA) 分辨率 resolution 1μA

b. 测量精度 Measurement Accuracy: ±5% 注: 精度范围为电流大于 50μA 以上。 Note: Accuracy is applicable for currents above 50 μA

(3) 实验室 GB4793.1-2007 标准 Laboratory Standard

a. 泄漏电流测量范围 AC: Leakage Current Measurement Range

I 3~99.9 (μA) 分辨率 resolution 0.1μA

II 100.0~999.9 (μA) 分辨率 resolution 0.1μA

III 1000~9999 (μA) 分辨率 resolution 1μA

b. 测量精度 Measurement Accuracy: ±5% 注: 精度范围为电流大于 50μA 以上。 Note: Accuracy is applicable for currents above 50 μA

c. 测量阻抗电路(MD) Measurement Impedance Circuit: 符合 GB4793.1-2007 图 A.1 Compliant with Figure A.1 in GB4793.1-2007

5. 输出电压: Output Voltage

a. 测量供电电源的电压输出范围: 50V~130V 分辨率 1V。 Voltage output range for measurement power supply: 50V to 130V, resolution 1V

b. 精度 Accuracy: ±5%。

c. 容量 Capacity: 300VA

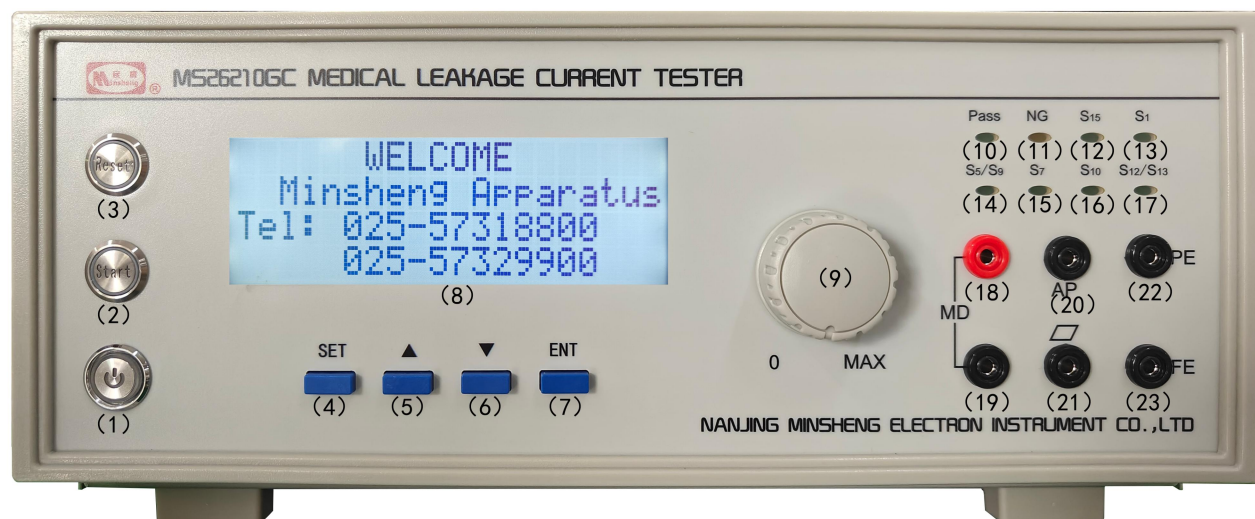
6. 定时装置 Timing Device:

1) 范围 Range: 1~9999 (s) 分辨率 resolution 1s

2) 精度 Accuracy: ±5%

三、仪器面板结构 Instrument Panel Structure

1. MS26210GC 系列泄漏电流测试仪面板结构图(1)和图(2)所示 The panel structure of the MS26210GC series leakage current tester is shown in Figure (1) and (2).



图(1) MS26210GC MEDICAL LEAKAGE CURRENT TESTER前面板示意图
Figure (1) Front Panel



图(2) MS26210GC MEDICAL LEAKAGE CURRENT TESTER后面板示意图
Figure (2) Back Panel

2. 面板各部分说明: Description of Each Panel Component

- (1) “电源”开关: 电源开关, 按下则仪器电源打开。"Power" Switch: Turns the instrument on when pressed.
- (2) “Start”按键: 按下则仪器开始测试, 启动灯亮。"Start" Button: Starts the test when pressed; the start light

illuminates.

(3) “Reset”按键：按下则停止测试，如超漏报警，按下则停止报警。"Reset" Button: Stops the test when pressed. In case of an over-leakage alarm, pressing this button stops the alarm.

(4) “SET”按键：仪器设置按键，按下则进入参数设置状态。"SET" Button: Enters the parameter setting mode when pressed.

(5) “^”按键：在设置参数时的数据增加键，按下数据增加。"^" Button: Increases the data value in parameter settings when pressed.

(6) “v”按键：在设置参数时的数据减少键，按下数据减少。"v" Button: Decreases the data value in parameter settings when pressed.

(7) “ENT”按键：确定键，按下则使设置的数据保存，并返回待机状态。"ENT" Button: Confirms and saves the set parameters, returning to standby mode.

(8) “液晶显示屏”：信息显示窗口。LCD Display: Displays information.

(9) “调压旋钮”：调节输出电压大小。顺时针升压，逆时针降压，平时应逆时针调到底。Voltage Adjustment Knob: Adjusts the output voltage. Turn clockwise to increase voltage and counterclockwise to decrease it. Typically, it should be turned fully counterclockwise when idle.

(10) “PASS”灯：该灯亮，表示被测物测试合格。"PASS" Light: Lights up to indicate that the tested item has passed.

(11) “NG”灯：该灯亮，表示被测物超漏报警不合格。"NG" Light: Lights up to indicate an over-leakage failure.

(12) “S15”灯：对应标准 9706 中的“S15”开关。"S15" Light: Corresponds to the "S15" switch in Standard 9706.

(13) “S1”指示灯：仪器处于电源单一故障状态测试时，该指示灯亮，对应标准 9706 中的“S1”开关。"S1" Indicator Light: Lights up when testing in single fault mode, corresponding to the "S1" switch in Standard 9706.

(14) “S5/S9”指示灯：换相指示灯，对应标准 9706 中的“S5/S9”开关。"S5/S9" Indicator Light: Indicates polarity switching, corresponding to the "S5/S9" switch in Standard 9706.

(15) “S7”指示灯：该指示灯亮表示“PE”端口接通，对应标准 9706 中的“S7”开关。"S7" Indicator Light: Lights up to indicate that the "PE" port is connected, corresponding to the "S7" switch in Standard 9706.

(16) “S10”指示灯：该指示灯亮表示“FE”端口接通，对应标准 9706 中的“S10”开关。"S10" Indicator Light: Lights up to indicate that the "FE" port is connected, corresponding to the "S10" switch in Standard 9706.

(17) “S12/S13”指示灯：该指示灯亮表示“AP”端口接通，对应标准 9706 中的“S12”、“S13”开关。"S12/S13" Indicator Light: Lights up to indicate that the "AP" port is connected, corresponding to the "S12" and "S13" switches in Standard 9706.

(18) “MD”插孔：MD 高端。"MD" Jack: High-end MD port.

(19) “MD”插孔：MD 低端。"MD" Jack: Low-end MD port.

(20) “AP”插孔：对应 9706.1 标准的 S12 或 S13。"AP" Jack: Corresponds to the "S12" or "S13" in Standard 9706.1.

(21) “”插孔：连接被测仪器机箱底部放置的金属板的插口，对应标准 9706 中的“S15”。 Jack: Connects to the metal plate placed at the bottom of the device under test, corresponding to the "S15" switch in Standard 9706.

(22) “PE”插孔：保护地插孔。"PE" Jack: Protective earth jack.

(23) “FE”插孔：功能地插孔。"FE" Jack: Functional earth jack.

(24) “Ground”插孔：MD 高端，多模式组合测试时，接被测设备的“PE”端，测量的是对地漏电流。"Ground"

Jack: High-end MD port; used in multi-mode combination testing, connected to the "PE" terminal of the device under test to measure ground leakage current.

(25) “Shell”插孔: MD 高端, 多模式组合测试时, 接被测设备的“除患者连接以外的在正常使用时患者或操作者可触及的外壳或部件”, 测量的是接触电流。"Shell" Jack: High-end MD port; used in multi-mode combination testing, connected to accessible parts or casing of the device under test, other than patient connections, to measure touch current.

(26) “Patient”插孔: MD 高端, 多模式组合测试时, 接被测设备的“应用部分”。"Patient" Jack: High-end MD port; used in multi-mode combination testing, connected to the "Applied Part" of the device under test.

(27) H 开关: 切换 MD 低端与隔离变压器的开关。H Switch: Switches the low-end MD and the isolation transformer.

(28) “Weighted、Unweighted”切换开关: 如图所示是 Weighted。"Weighted/Unweighted" Switch: Toggles between weighted and unweighted settings, as shown in the figure.

(29) 输出电源插座: 测试电压输出端。Output Power Socket: Test voltage output terminal.

(30) “PLC”接口: 一个标准的九芯插座。"PLC" Interface: A standard nine-pin socket.

(31) “RS232”接口: RS232 串口通信接口。"RS232" Interface: RS232 serial communication port.

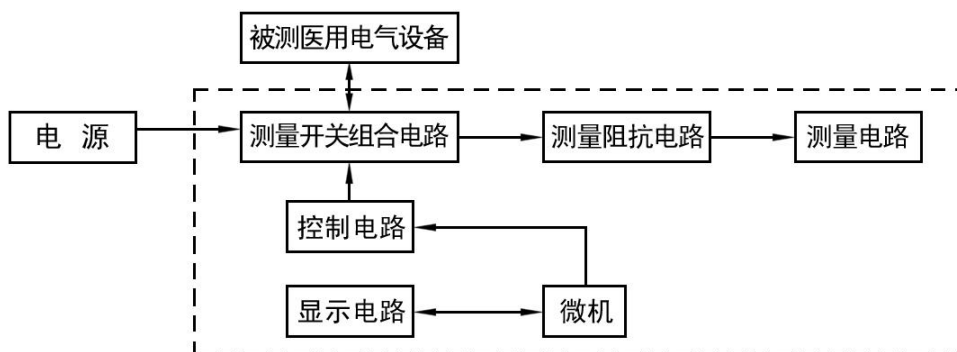
(32) “Auxiliary Power Supply”: 辅助电压输出。"Auxiliary Power Supply": Auxiliary voltage output.

(33) “Auxiliary Power Supply”: 辅助电压输出。"Auxiliary Power Supply": Auxiliary voltage output.

(34) 接地端: 外壳接地端。Grounding Terminal: Chassis grounding terminal.

(35) 电源插座: 输入 AC110V、60Hz 电源, 内装保险丝。Power Socket: For AC 110V, 60Hz input, with a built-in fuse.

四、工作原理框图 Working Principle Diagram



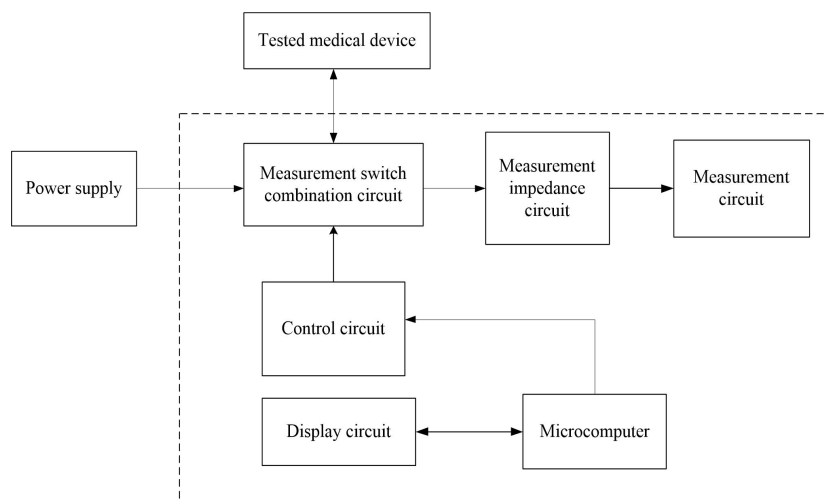


图3 MS26210GC 系列泄漏电流测试仪原理框图

Figure 3 MS26210GC Series Leakage Current Tester Working Diagram

五、具体操作步骤及功能 Detailed Operating Steps and Functions

本仪器使用液晶菜单显示，智能化程度高，使用方便，操作简单，具体操作步骤如下 This instrument uses an LCD menu display with a high level of automation, making it easy to use and operate. The detailed steps are as follows:

1. 插上电源，按下电源开关，则上电显示开机画面，如图4所示。 Plug in the power and press the power switch to turn on the instrument. The startup screen will be displayed as shown in Figure 4.



图4 Figure 4

2、设置仪器参数 Set Instrument Parameters

总共有 Mod1:EL（对地漏电流）、Mod2:PL（接触电流）、Mod3:EV（应用部分加网电源电压的漏电流）、Mod4:AC（患者、患者辅助漏电流 AC）、Mod5:DC（患者、患者辅助漏电流 DC） There are five testing modes available: Mod1: EL (Earth Leakage Current); Mod2: PL

(Contact Current); Mod3: EV (Leakage Current with Applied Part Mains Voltage); Mod4: AC (AC Leakage Current for Patient and Patient Auxiliary); Mod5: DC (DC Leakage Current for Patient and Patient Auxiliary)

1、按任意键后，按“SET”进入设置页面，起始如图 5 显示，按“SET”移动光标，可依次选中须设置各项如图 6、7、8、9 所示，各项按“↑”“↓”键则改变其中数据，按“ENT”则保持设置并保存。Press any key, then press "SET" to enter the settings page. The initial screen is shown in Figure 5. Press "SET" to move the cursor, allowing selection of each parameter to set, as shown in Figures 6, 7, 8, and 9. Use the "↑" and "↓" keys to change the values, and press "ENT" to save the settings.

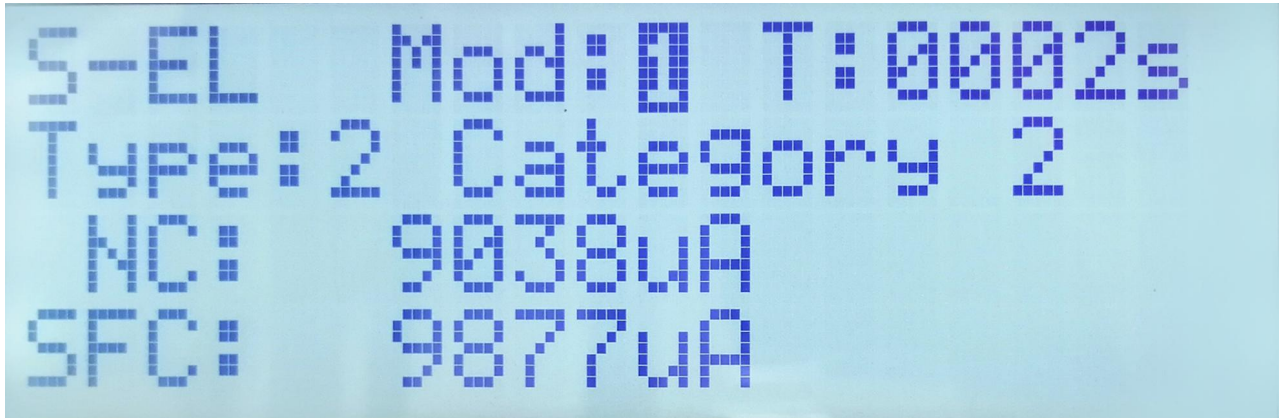


图 5 Figure 5

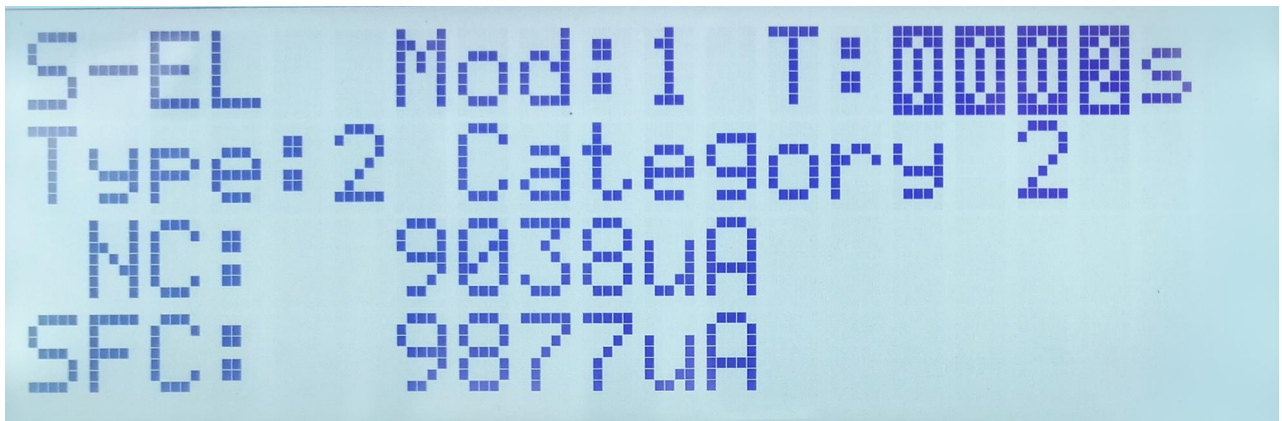


图 6 Figure 6

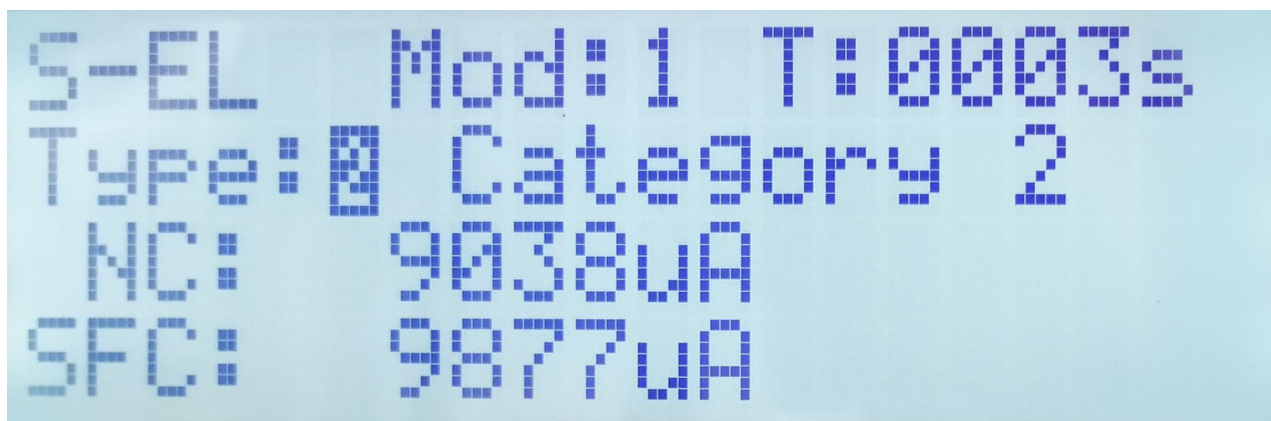


图 7 Figure 7

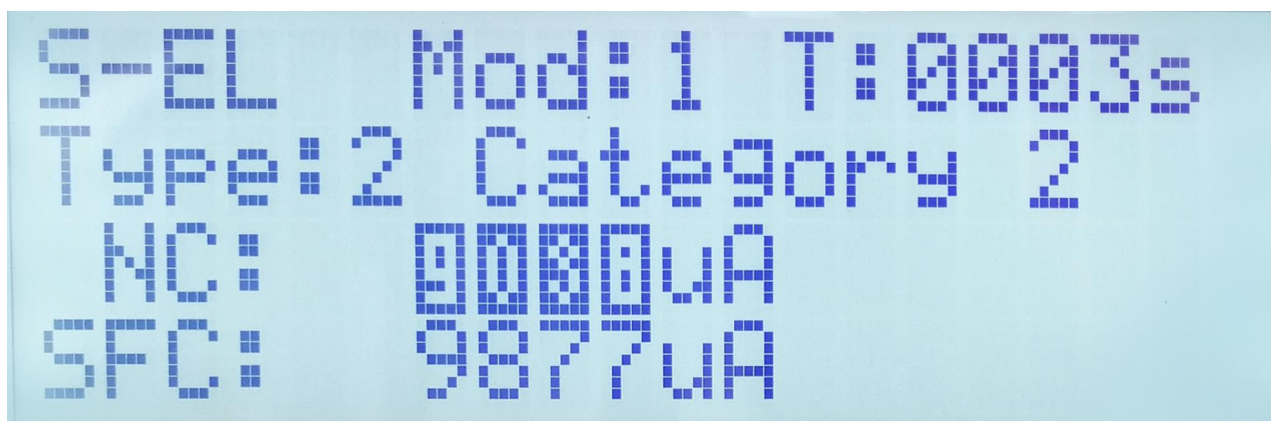


图 8 Figure 8

2、参数设置完成后按附录接线图连接仪器与被测设备的连线。After setting parameters, connect the instrument to the device under test as per the wiring diagram in the appendix.

3、按“启动”键，先调节调压器将电压调制规定值。仪器会自动各种组合的测试，如图 9 所示。一次测试完后按“启动”重新开始测试。若遇不合格仪器会发出声光报警，停止测试，按复位键可清除。Press the "Start" button and adjust the voltage regulator to the specified value. The instrument will automatically perform various combination tests, as shown in Figure 9. After one test cycle, press "Start" to begin a new test. If there is a failure, the instrument will emit an audible and visual alarm and stop the test. Press the "Reset" button to clear the alarm.

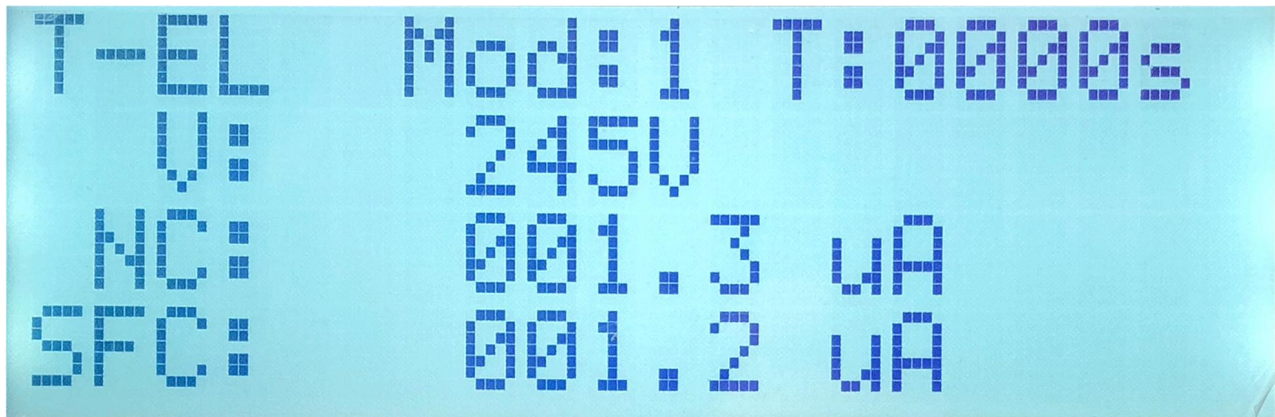


图9 Figure 9

仪器界面说明: Explanation

“Mod”代表测试模式: 共有 6 种测试模式, 其中 1~5 模式分别是 EL (对地漏电流)、M2:PL (接触电流)、M3:EV (应用部分加网电源电压的漏电流)、M4:AC (患者、患者辅助漏电流 AC)、M5:DC (患者、患者辅助漏电流 DC), 模式 6 为拓展模式;

Mod - Test Mode: There are six test modes in total, with modes 1~5 corresponding to: EL (Earth Leakage Current); PL (Contact Current); EV (Leakage Current with Applied Part Mains Voltage); AC (AC Leakage Current for Patient and Patient Auxiliary); DC (DC Leakage Current for Patient and Patient Auxiliary); Mode 6 is an extended mode.

“T”为测试时间; T - Test Duration

“Type”为类别设定, 共有 1~7 种工作方式: Type - Category Setting: There are seven working modes:

“Type 1”后面对应的字母“Category 1”, 代表被测设备属于 I 类, 单一模式测试; Type 1 - Category 1: Device under test is Class I, single-mode testing.

“Type 2”后面对应的字母“Category 2”, 代表被测设备属于 II 类, 单一模式测试; Type 2 - Category 2: Device under test is Class II, single-mode testing.

“Type 3”后面对应的字母“Category 3”, 代表被测设备属于内部电源供电, 单一模式测试; Type 3 - Category 3: Device under test is powered by an internal power source, single-mode testing.

“Type 4”后面对应的字母“Category 1 Au”, 代表被测设备属于 I 类, 连续综合测试; Type 4 - Category 1 Au: Device under test is Class I, continuous combined testing.

“Type 5”后面对应的字母“Category 2 Au”, 代表被测设备属于 II 类, 连续综合测试; Type 5 - Category 2 Au: Device under test is Class II, continuous combined testing.

“Type 6”后面对应的字母“Category 3 Au”, 代表被测设备属于内部电源供电, 连续综合测试; Type 6 - Category 3 Au: Device under test is powered by an internal power source, continuous combined testing.

“Type 7”后面对应的数字“4793” 代表被测设备采用 GB4793 的测量网络进行测试。Type 7 - 4793: Device under test is measured using a network according to GB4793 standards.

单一模式:指的是, 就在当前模式测试; Single-Mode Testing: Testing is performed only in the current mode.

连续综合测试:指的是, 仪器从模式 1 自动测试到模式 5, 如果被测设备属于 II 类或内部供

电电源仪器会自动识别从模式 2 自动测试到模式 5，但是无论是 I 类设备还是 II 类、内部供电电源设备都是从模式 1 开始测试仪器才能启动。Continuous Combined Testing: The instrument automatically tests from mode 1 to mode 5. If the device under test is Class II or has an internal power source, the instrument will automatically proceed from mode 2 to mode 5. However, for any class (I, II, or internal power source), the instrument always starts from mode 1 for testing to activate.

“NC”为正常状态的漏电流值; NC - Leakage Current Value in Normal Condition

“SFC”为单一故障状态漏电流值。SFC - Leakage Current Value in Single-Fault Condition

六、安全操作规程 Safety Instructions

1. 本仪器必须接地良好。The instrument must be properly grounded.
2. 操作人员必须熟悉本仪器的使用方法，及熟悉 GB9706.1 并按安全规程操作本仪器。Operators must be familiar with the instrument's usage and the GB9706.1 standard, and operate according to safety procedures.
3. 尽可能使用非导电材质的工作台，操作人员和待测试物之间不得使用任何金属。Use a non-conductive workbench whenever possible, and avoid using any metal between the operator and the device under test.
4. 在测试过程中，即“启动”指示灯亮时，绝对不允许碰到被测品或任何与被测品有连接的物件。During testing, when the "Start" indicator light is on, it is strictly forbidden to touch the device under test or any objects connected to it.
5. 在测试过程中，即“启动”指示灯亮时，不允许随意按动仪器面板上与测量无关的按钮。During testing, when the "Start" indicator light is on, do not press any buttons on the instrument panel that are unrelated to measurement.
6. 如发现仪器工作有异常，可按下“复位”键或关机暂停测试，待恢复之后重新开始测试。If any abnormalities occur during operation, press the "Reset" button or turn off the power to pause the test. Resume testing after resolving the issue.
7. 为保证测试电压的稳定，建议用户使用与仪器容量相匹配的交流稳压器。To ensure stable test voltage, it is recommended to use an AC voltage stabilizer with a capacity matching the instrument.

七、随机附件 Accessories Included

1. 测试线(红) Test leads (red)	伍根 5 pieces
2. 测试线 (黑) Test leads (black)	陆根 6 pieces
2. 电源插头线 Power cord	壹根 1 piece
3. 保险丝 Fuses	贰只 2 pieces
4. 合格证 Certificate of Conformity	壹份 1 copy
5. 保修单 Warranty card	壹份 1 copy
6. 使用说明书 Manual	壹份 1 copy

八、附录 Appendix

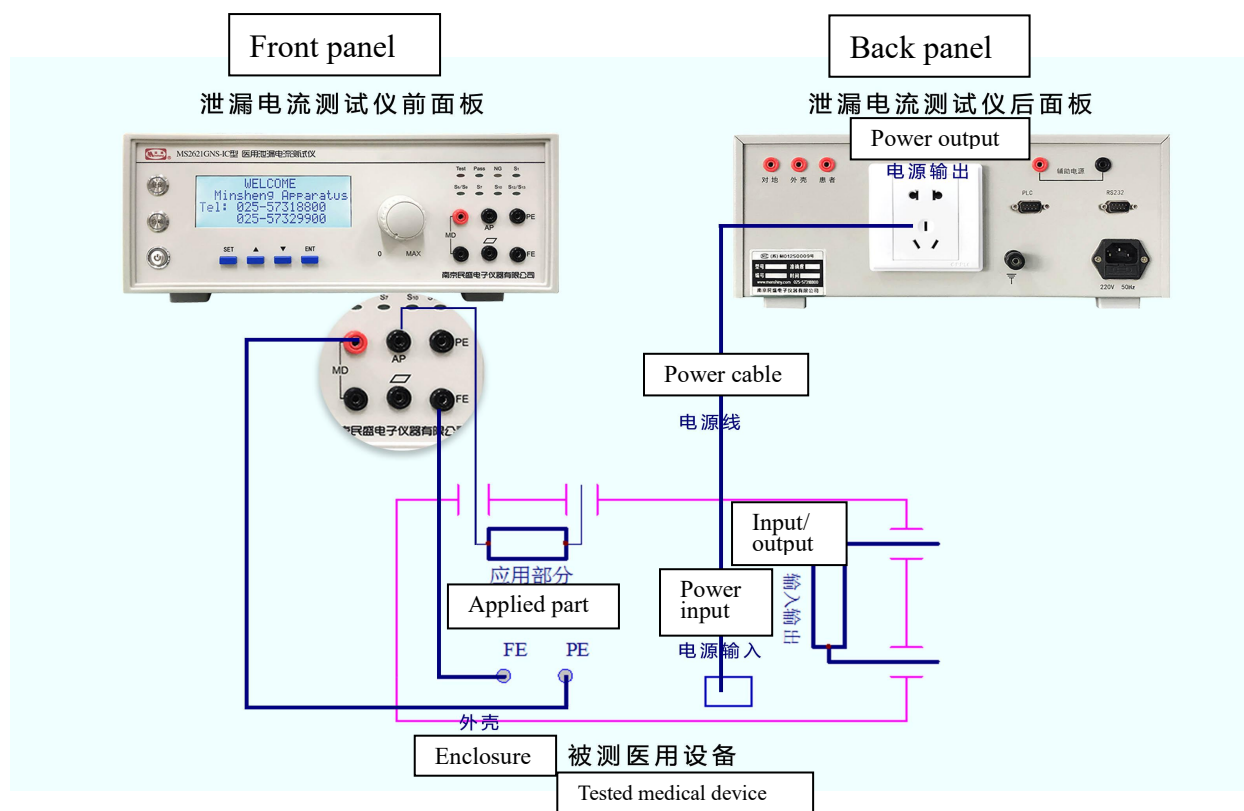
MS26210GC series test wiring diagram

MS26210GC 系列测试接线图，参考标准 GB9706.1—2020、GB4793-2007,仅供参考如测试项目有增删，请致电联系

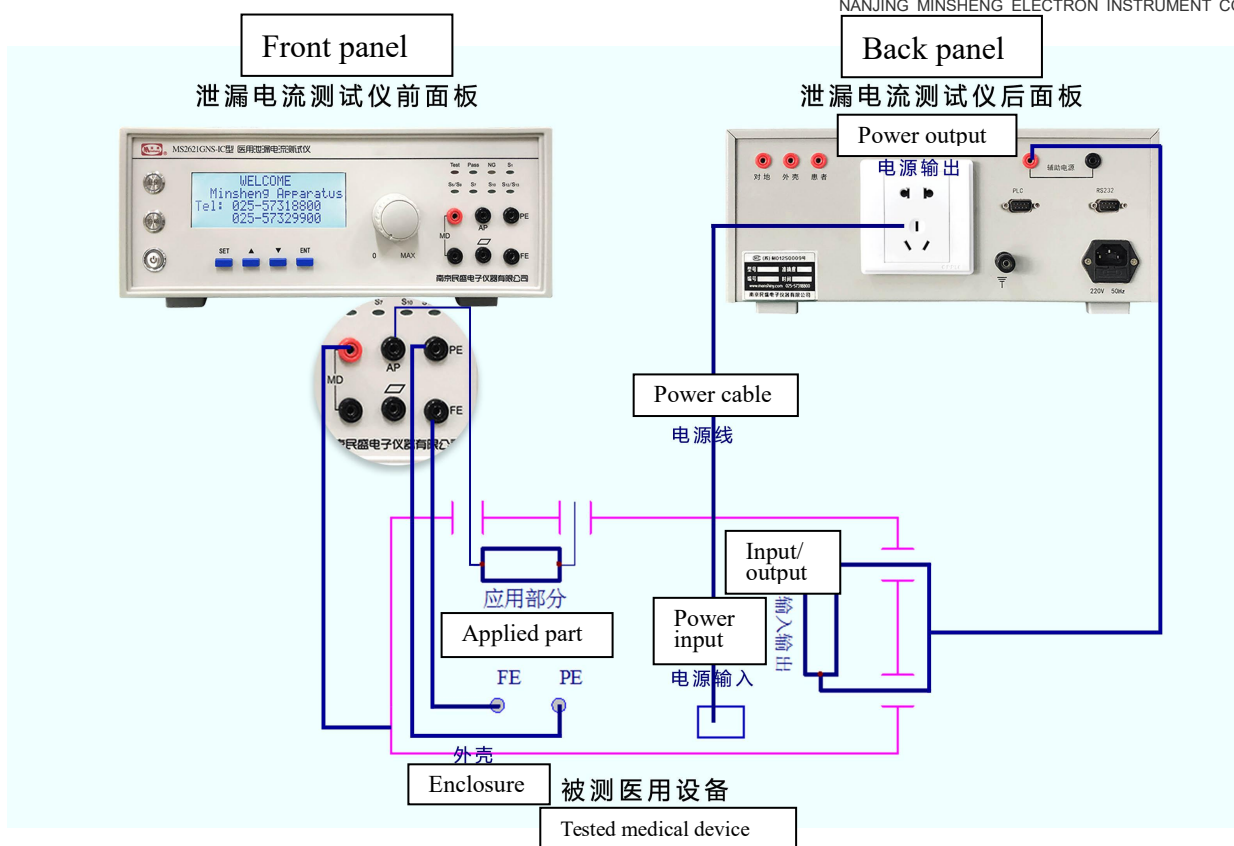
The , based on standards GB9706.1-2020 and GB4793-2007, is provided for reference. Please contact us if there are any changes to the test items.

一、单一模式组合测试 (*H* 键按下) Single-Mode Combination Testing (*Press H Key*)

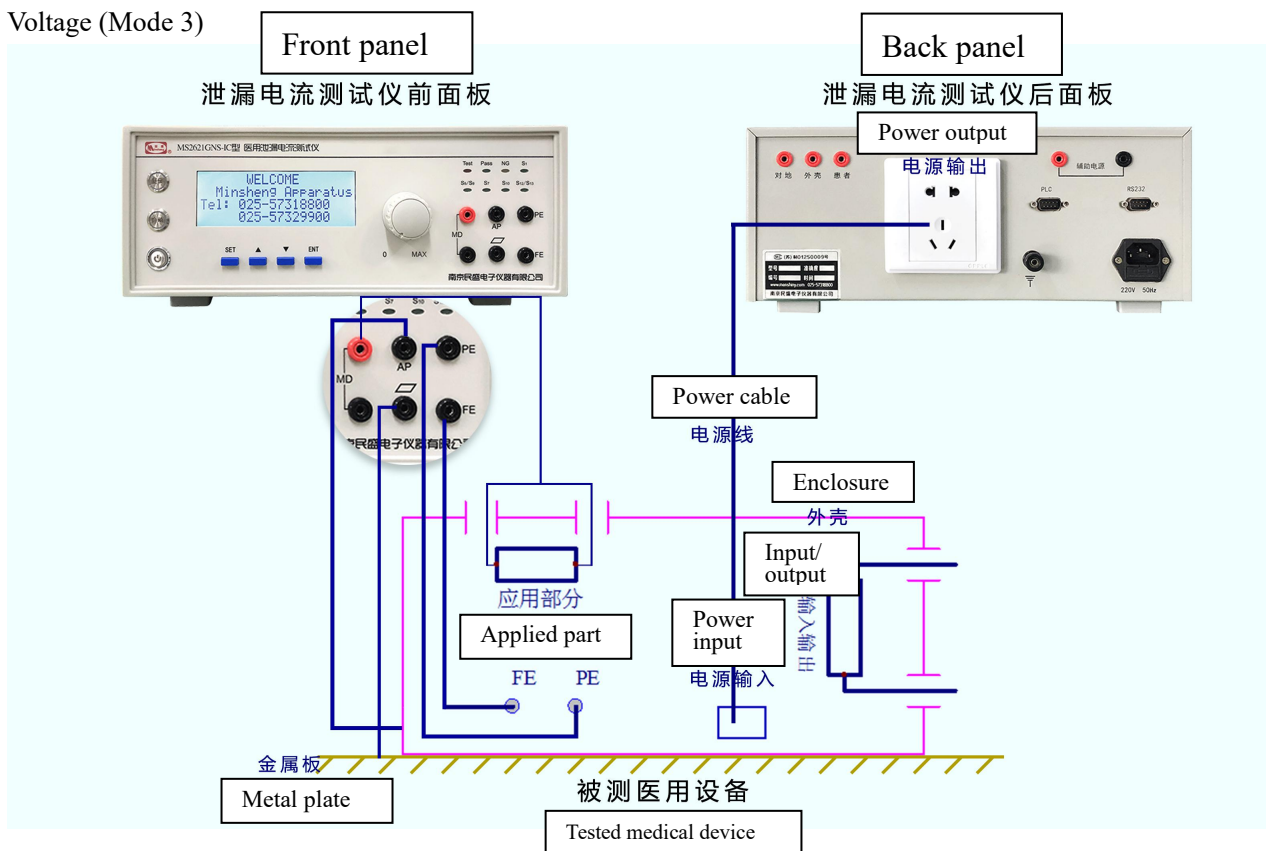
1、对地漏电流(模式 1) Earth Leakage Current (Mode 1)



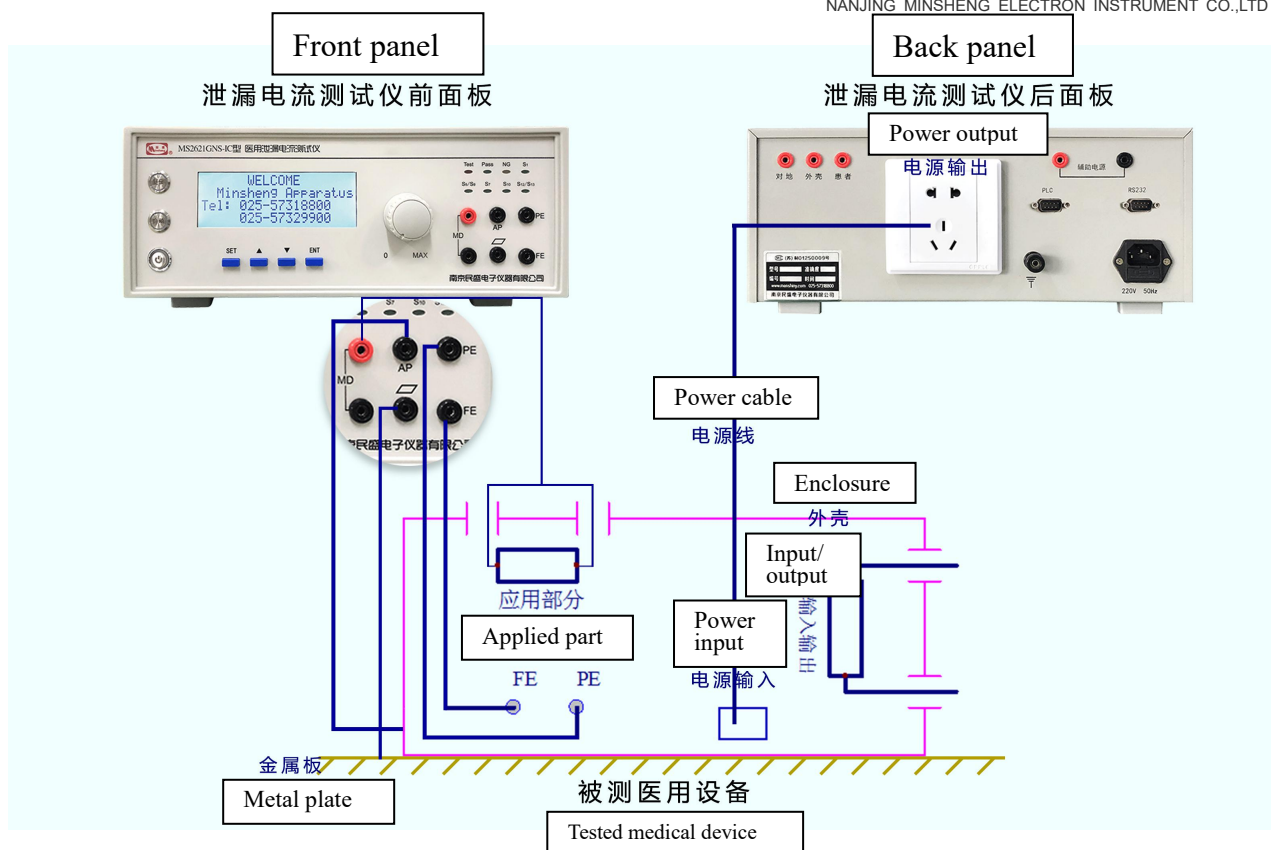
2、接触电流 (模式 2) Contact Current (Mode 2)



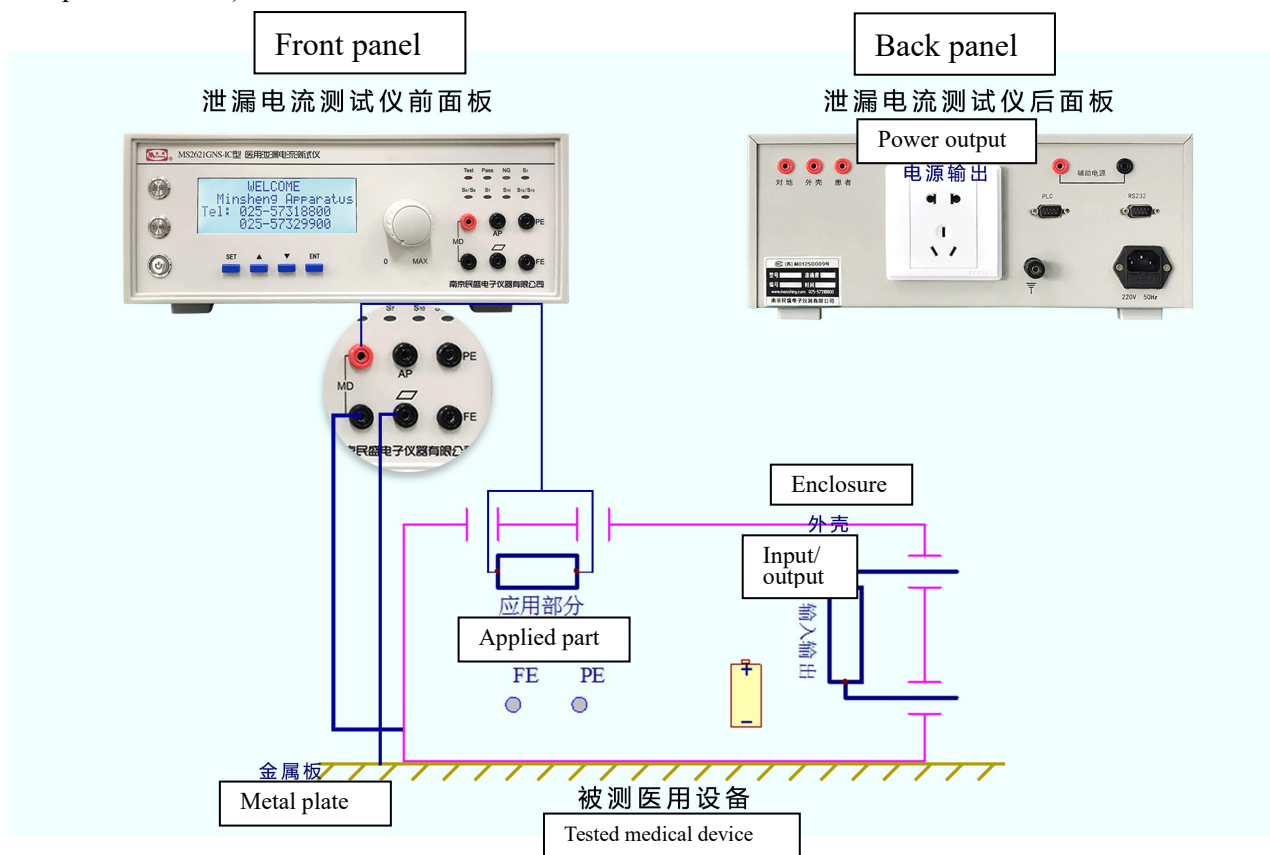
3、从 F 型应用部分加网电源电压的泄漏电流(模式 3) Leakage Current from F-Type Applied Part with Mains Voltage (Mode 3)



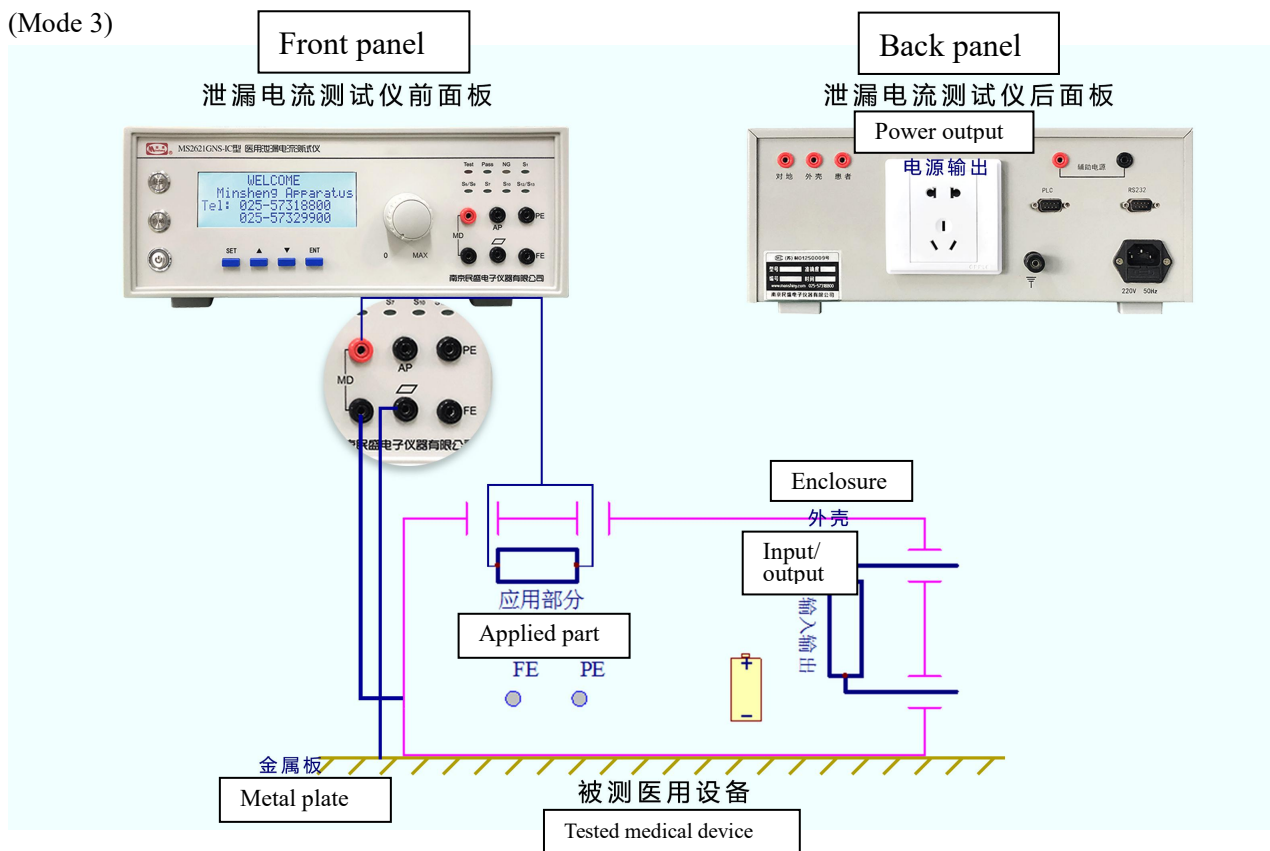
4、应用部分至地患者漏电流(交流分量模式 4、直流分量模式 5) Patient Leakage Current from Applied Part to Ground (AC Component Mode 4, DC Component Mode 5)



5、内部电源供电设备从应用部分至外壳的患者漏电流(交流分量模式4、直流分量模式5) Patient Leakage Current from Applied Part to Enclosure for Internally Powered Devices (AC Component Mode 4, DC Component Mode 5)



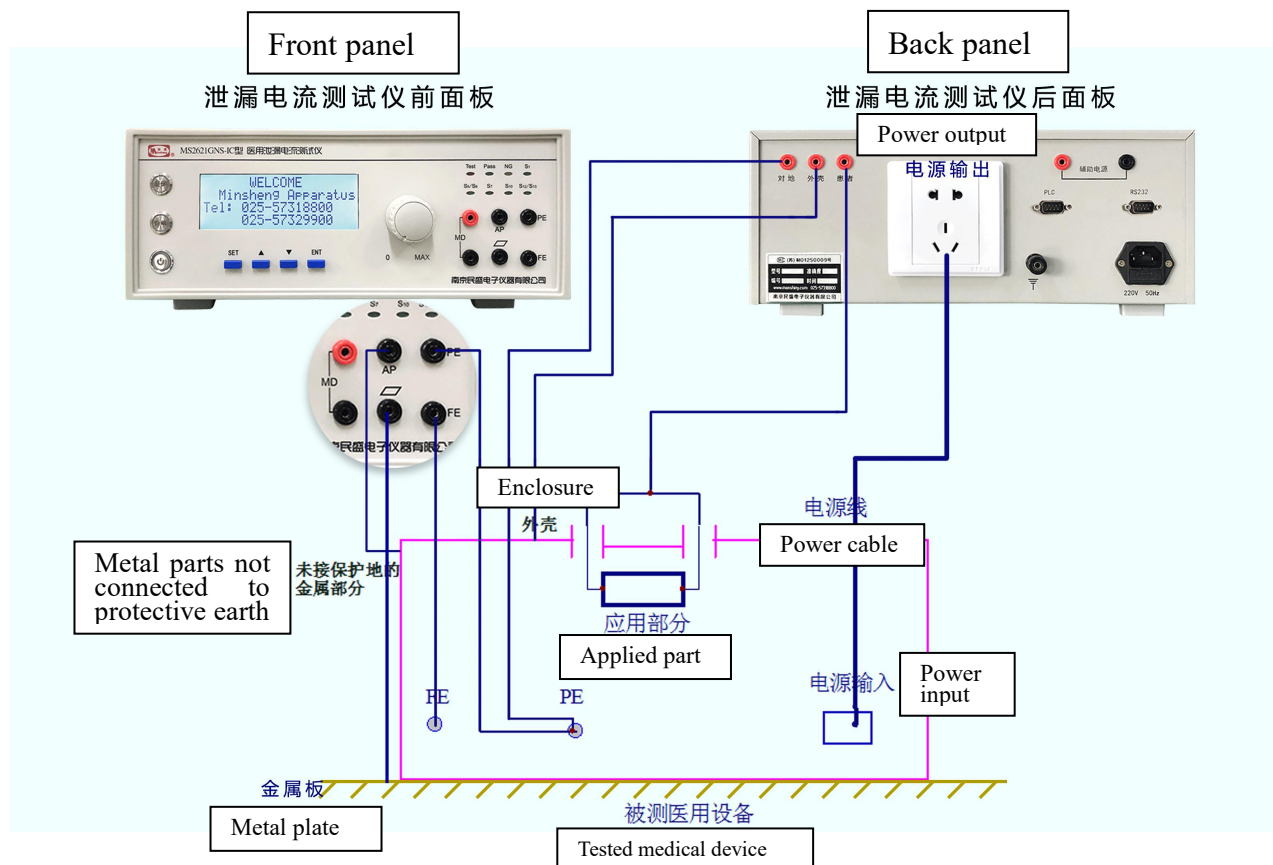
6、内部电源供电设备由外来电压引起的从 F 型应用部分至外壳的患者漏电流（模式 3） Patient Leakage Current from F-Type Applied Part to Enclosure Caused by External Voltage for Internally Powered Devices (Mode 3)



7、患者辅助漏电流（交流分量模式 4、直流分量模式 5） Patient Auxiliary Leakage Current (AC Component Mode 4, DC Component Mode 5)

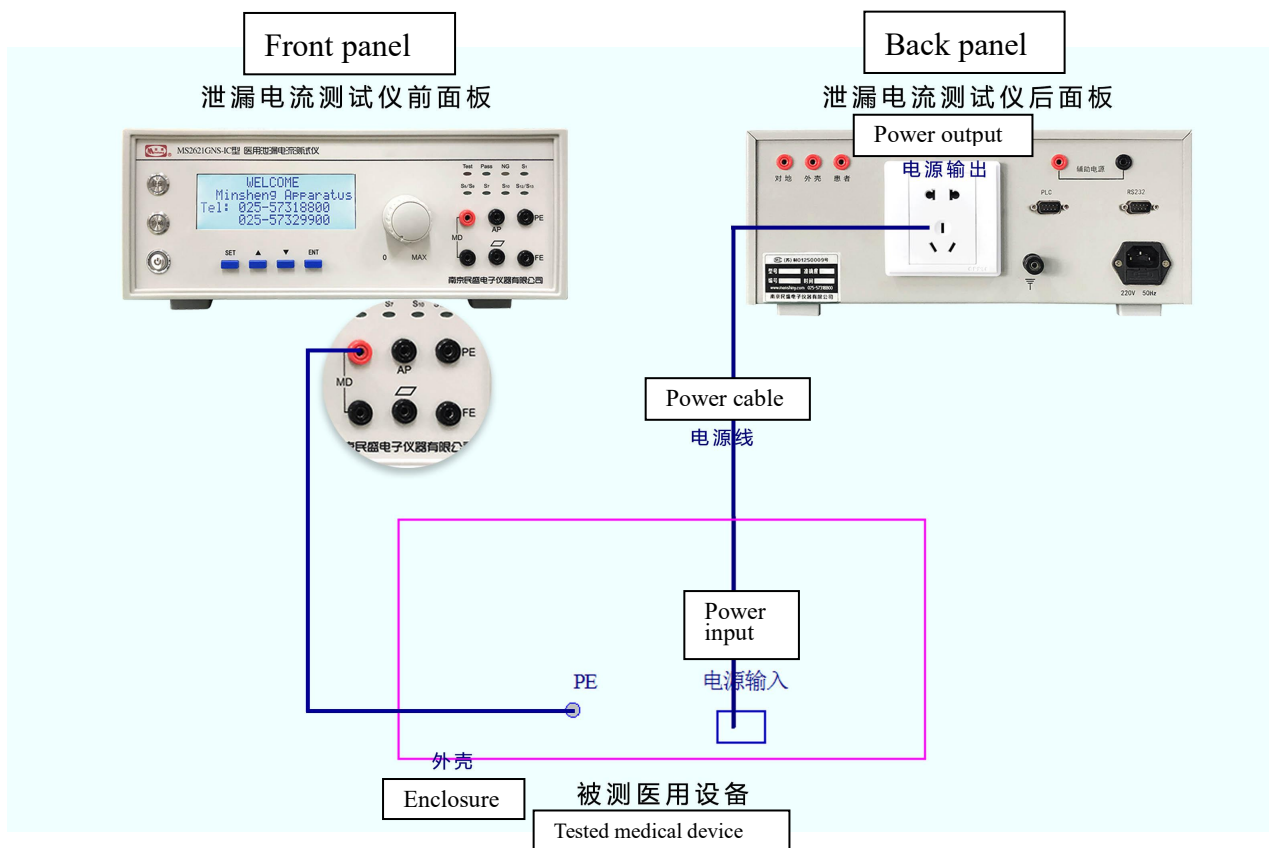


二、多模式连续组合测试 (*H* 键按下) Multi-Mode Continuous Combination Testing (*Press H Key*)

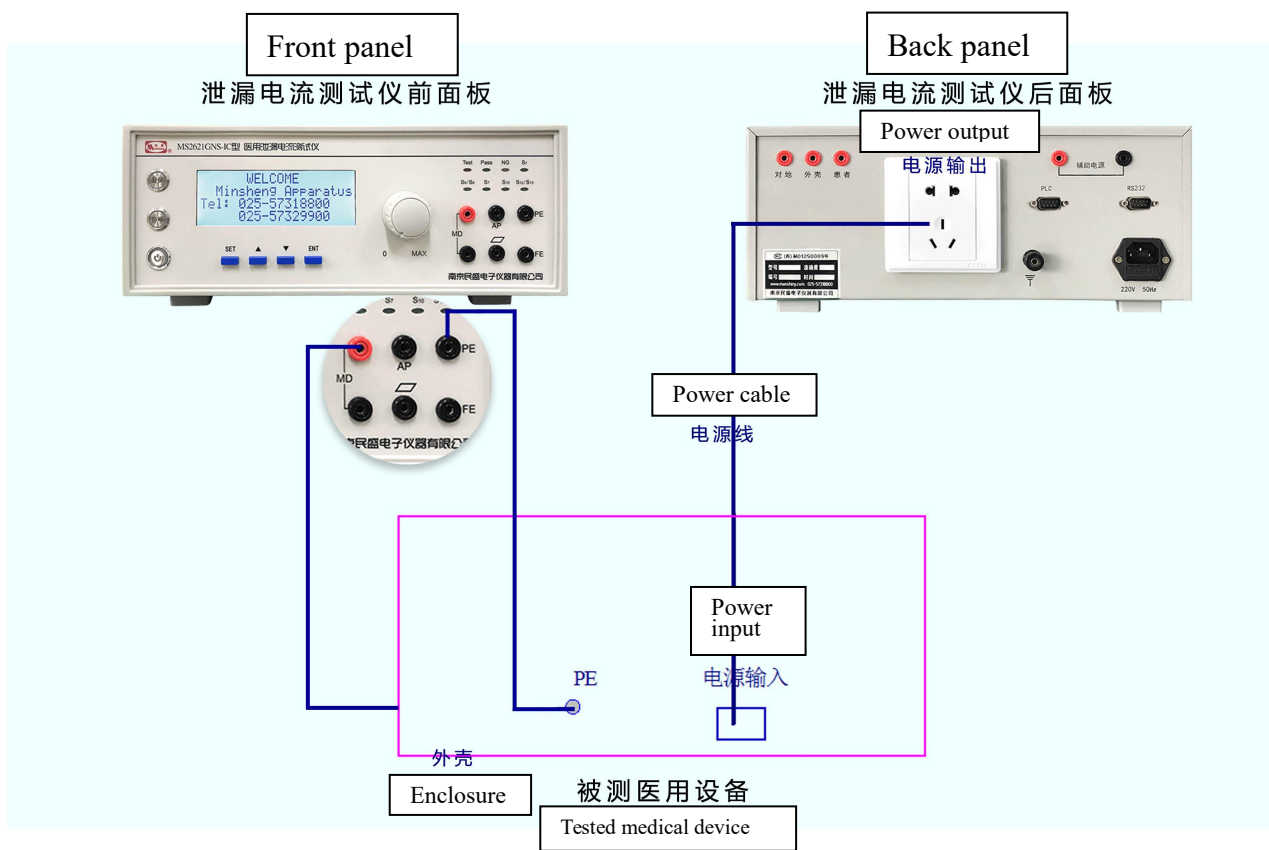


三、参考标准 GB 4793.1-2007 (*H* 键按下) Reference Standard GB 4793.1-2007 (*Press H Key*)

对地漏电流 (模式 1) Earth Leakage Current (Mode 1)

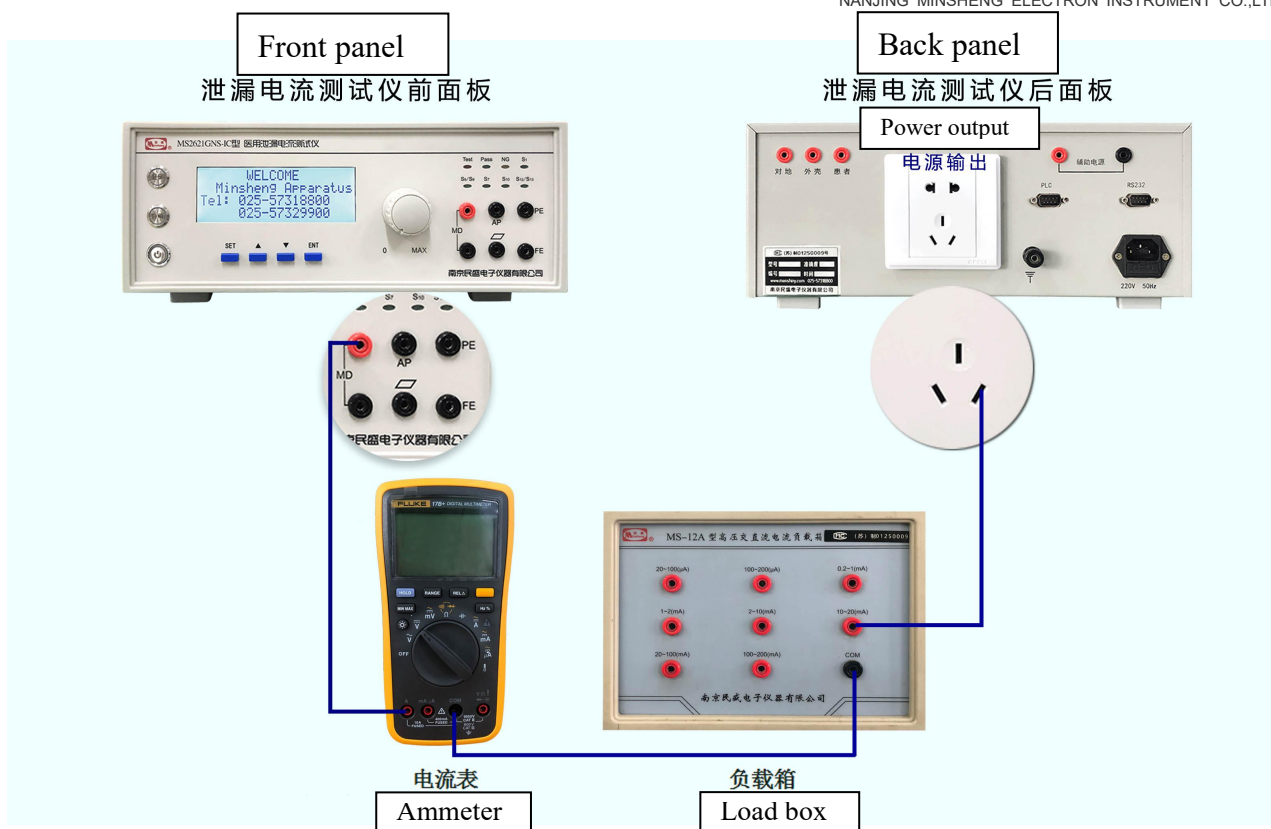


外壳漏电流（模式 2）Enclosure Leakage Current (Mode 2)

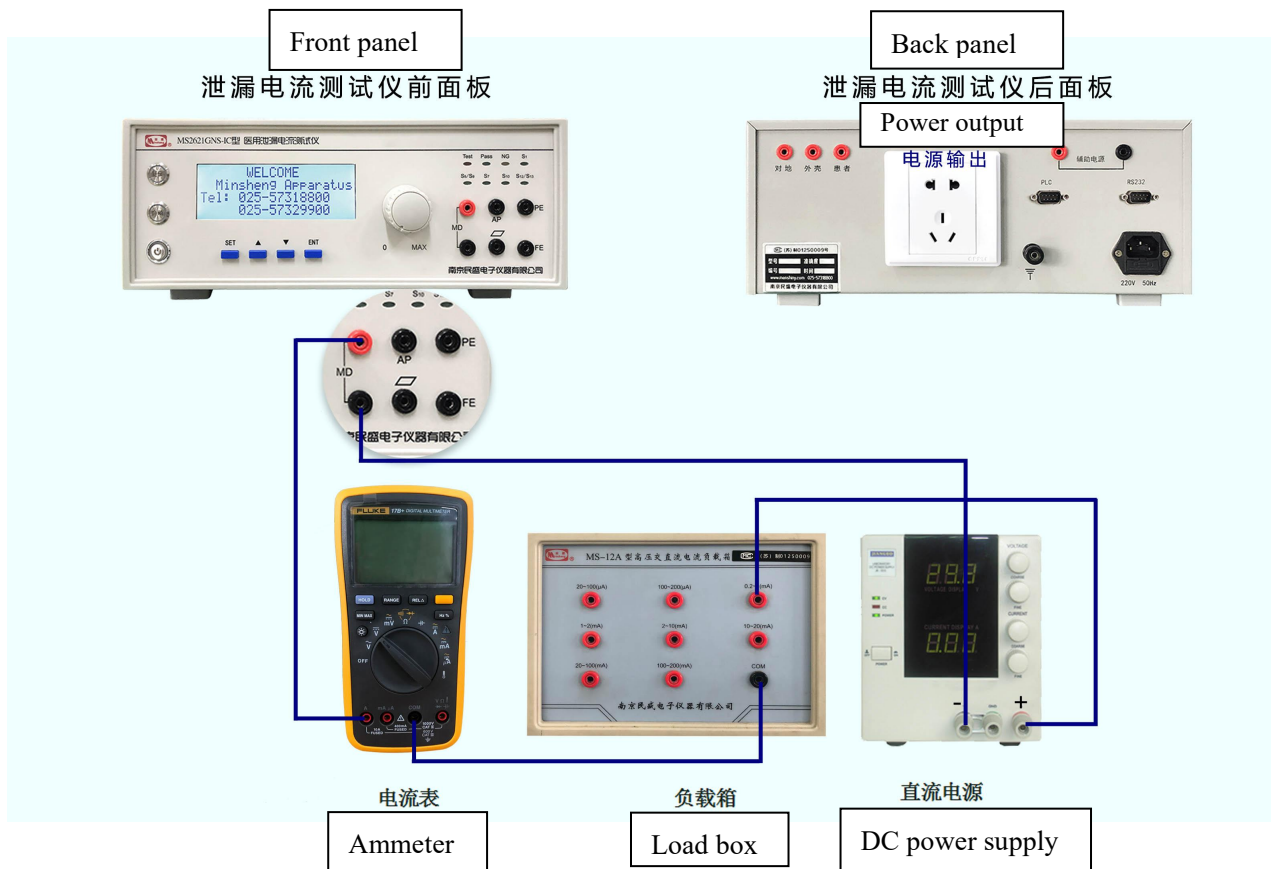


四、校准接线图（校准时建议将测试时间修改为 50S）Calibration Wiring Diagram (It is recommended to set the test duration to 50 seconds during calibration)

电流校准图（H 键按下）Current Calibration Diagram (Press H Key)

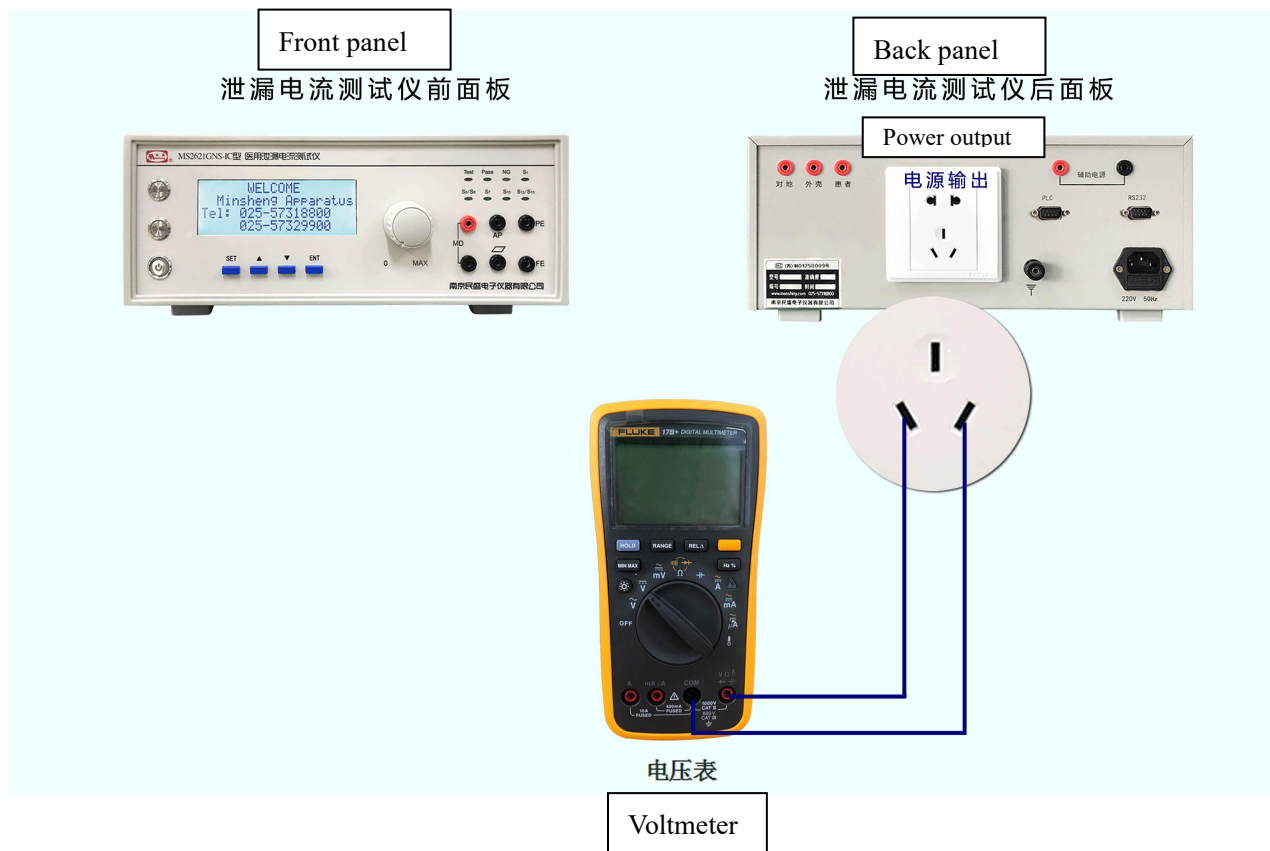


交流电流校准 AC Current Calibration

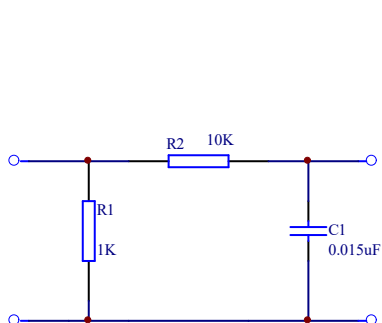


直流电流校准 DC Current Calibration

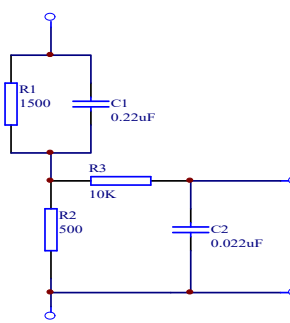
1、电压校准图 Voltage Calibration Diagram



五、MD 网络图 MD Network Diagram



GB9706.1-2020 图 12 Figure 12



GB4793.1-2007 图 A.1 Figure A.1

三、接口 Interfaces

1、RS232 串口协议 RS232 Serial Protocol

数据上传通信协议 Data Upload Communication Protocol

仪器发送 PC 机测试数据: The instrument sends test data to the PC with the following structure

01 数据头 55 Data Header

02	测试模式 (01 模式 1; 02 模式 2; 03 模式 3; 04 模式 4; 05 模式 5; 06 模式 6) Test Mode (01 Mode 1; 02 Mode 2; 03 Mode 3; 04 Mode 4; 05 Mode 5; 06 Mode 6)
03	电流状态位 (正常状态还是单一故障状态, 01 正常状态; 02 故障状态) Current State (01 Normal; 02 Fault)
04, 05	测试工作时间 (0204 代表 24S) Test Duration (0204 represents 24 seconds)
06, 07, 08	测试电压(010306 代表 136V) Test Voltage (010306 represents 136V)
09, 10, 11, 12, 13	测试电流(O1O1O42E01 代表 114.1uA) Test Current (O1O1O42E01 represents 114.1uA)
14	测试状态位 (00 测试中; 01 合格; 02 不合格) Test Status (00 Testing; 01 Pass; 02 Fail)
15	数据尾 0B Data End

举例: Example

55 02 01 00 04 02 04 02 01 01 04 2E 03 00 0B

说明: 这一组数据代表为测试模式 2; 正常状态; 测试时间: 4s; 测试电压: 242V; 泄漏电流: 114.3uA; 测试状态: 测试中。Explanation: This data set indicates Mode 2 in normal state; test duration 4 seconds; test voltage 242V; leakage current 114.3uA; test status: testing.

其中 2E 代表小数点, 其中数据尾前一位为状态位 The 2E represents the decimal point, with the penultimate byte indicating the status.

2、PLC 接口定义 PLC Interface Definition

有 PROCESSING (测试执行中)、PASS (测试通过)、FAIL (测试失败) 三个监视信号输出和 TEST、RESET 二个摇控信号输入。接线如下: This interface includes three monitoring signal outputs—PROCESSING (testing in progress), PASS (test passed), and FAIL (test failed)—and two remote control signal inputs, TEST and RESET. Connections are defined as follows:

PROCESSING 输出信号: PIN1 和 PIN4 之间。(有信号时两点间导通) PROCESSING output signal: Between PIN1 and PIN4 (closed when signal is active).

PASS 输出信号: PIN6 和 PIN7 之间。(有信号时两点间导通) PASS output signal: Between PIN6 and PIN7 (closed when signal is active).

FAIL 输出信号: PIN8 和 PIN9 之间。(有信号时两点间导通) FAIL output signal: Between PIN8 and PIN9 (closed when signal is active).

TEST 输入信号: PIN2 和 PIN5 之间。(两点间导通起控) TEST input signal: Between PIN2 and PIN5 (activates when closed).

RESET 输入信号: PIN3 和 PIN5 之间。(两点间导通起控) RESET input signal: Between PIN3 and PIN5 (activates when closed).