# GW INSTEK

# QUICK START
# GUIDE

## ASR-2000

**ASR-2050/2100**
**ASR-2050R/2100R**

EN

**GW INSTEK**

# SAFETY INSTRUCTIONS

## Safety Symbols

These safety symbols may appear in the user manual or on the instrument.

| | |
|---|---|
| ⚠ Warning | Warning: Identifies conditions or practices that could result in injury or loss of life. |
| ⚠ Caution | Caution: Identifies conditions or practices that could result in damage to the instrument or to other properties. |
| ⚡ | DANGER High Voltage |
| ⚠ | Attention Refer to the Manual |
| ⏚ | Protective Conductor Terminal |
| 🗑 | Do not dispose electronic equipment as unsorted municipal waste. Please use a separate collection facility or contact the supplier from which this instrument was purchased. |

**GW INSTEK**

# GETTING STARTED

## Main Features

| | |
|---|---|
| Performance | • Maximum AC output voltage is 350 Vrms |
| | • Maximum DC output voltage is 500 Vdc |
| | • Maximum output frequency is 999.9 Hz in AC mode |
| | • Supported AC+DC waveform application |
| | • DC full capacity output ability |
| | • Output voltage total harmonic distortion is less than 0.5% at all frequency |
| | • Crest factor reached 4 times high |
| Features | • Include sine, square, triangle, arbitrary and DC output waveforms |
| | • Variable voltage, frequency and current limiter |
| | • Harmonic voltage and current analysis ability |
| | • Excellent and feature-rich measurement capacity |
| | • Sequence and simulate function |
| | • External input amplification |
| | • AC line synchronized output |
| | • Preset memory function |
| | • USB memory support |
| | • Remote sense |
| | • OCP, OPP and OTP protection function |
| Interface | • Built-in LAN, USB host, USB device and RS232 |
| | • External control I/O |
| | • External signal input |
| | • Factory option GPIB interface |

# GW INSTEK

## Appearance

Front Panel Overview
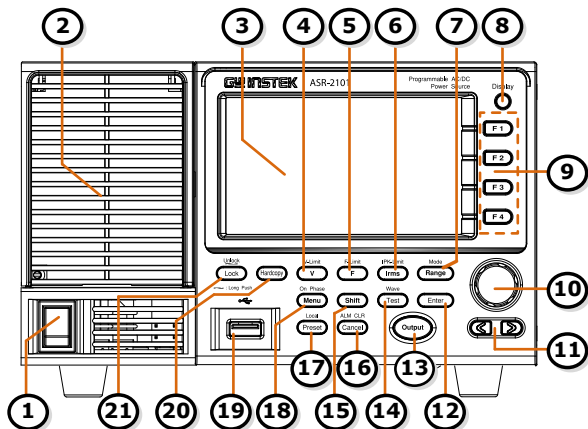


| Description | |
|---|---|
| 1. Power switch | 2. Air Inlet |
| 3. LCD Screen | 4. V and V-Limit key |
| 5. F and F-Limit key | 6. Irms and IPK-Limit key |
| 7. Range Key | 8. Display Mode Select Key |
| 9. Function Keys | 10. Scroll Wheel |
| 11. Arrow Keys | 12. Enter Key |
| 13. Output Key | 14. Test Key |
| 15. Shift Key | 16. Cancel Key |
| 17. Preset Key | 18. Menu Key |
| 19. USB A Port | 20. Hardcopy Key |
| 21. Lock/Unlock Key | |

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Rear Panel Overview



| Description | |
|---|---|
| 1. GPIB Connector (25 pins Micro-D) | 2. RS232C Connector |
| 3. Ethernet Port | 4. USB Port |
| 5. External Control I/O Connector | 6. Exhaust Fan |
| 7. Remote Sensing Input Terminal | 8. Output Terminal |
| 9. AC Line Input | 10. External Signal Input Connector |

# SET UP

## Power Up

1. Connect the power cord to the rear panel socket.

2. Press the POWER key. The splash screen will appear momentarily before the continuous mode screen appears with the settings loaded.



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Made to Measure

www.gwinstek.com
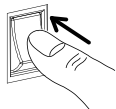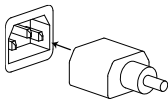
| ⚠️ CAUTION | The power supply takes around 15 seconds to fully turn on and shutdown. |
| --- | --- |
| | Do not turn the power on and off quickly. |

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## How to Use the Instrument

Background             The ASR AC power supplies generally use the *scroll wheel*, *Arrow* keys and *Enter* keys to edit numerical values or to select menu options. Menu navigation is performed using the menu keys and function keys on the front panel. The following section will explain some of these concepts in detail.

Selecting Menu        1.  Turn the scroll wheel to select
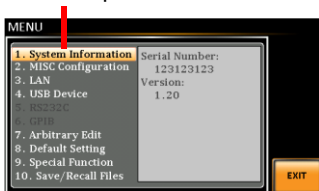Items                      parameters in menus and lists.
                           The selected parameter will be
                           highlighted in orange. The scroll
                           wheel is also used to
                           increment/decrement setting
                           values.

                       2.  Press the *Enter* key to edit the
                           parameter or to enter the
                           selected menu.

                           Enter
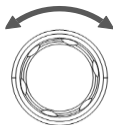
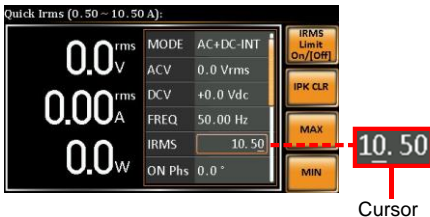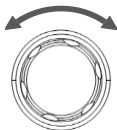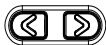Example                The following is an example of the menu list that appears when the Menu key is pressed.

Selected parameter

MENU

1. System Information    Serial Number:
2. MISC Configuration        123123123
3. LAN                   Version:
4. USB Device                1.20
5. RS232
6. GPIB
7. Arbitrary Edit
8. Default Setting
9. Special Function
10. Save/Recall Files

EXIT

Using the Arrow Keys and Scroll Wheel to Edit Parameter Values

Use the *Arrow* keys to select a digit power and then use the scroll wheel to edit the value by that power.

1. Use the Arrow keys to move the cursor to the digit of the desired value.

2. Turn the scroll wheel to edit the value by the resolution of the selected digit.

Quick Irms (0.50 ~ 10.50 A):

| | MODE | AC+DC-INT |
|---|---|---|
| 0.0 Vrms | ACV | 0.0 Vrms |
| 0.00 rms A | DCV | +0.0 Vdc |
| | FREQ | 50.00 Hz |
| | IRMS | 10.50 |
| 0.0 W | ON Phs | 0.0 ° |

IRMS Limit On/[Off]
IPK CLR
MAX
MIN

10. 50

Cursor

3. Repeat the steps above for all the relevant digits.

4. Press the *Enter* key to confirm the edit.

Enter

⚠ Note    By default the cursor starts at the lowest digit of value.

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Using the
Function Keys

The function keys are quick settings keys, the function of which depends on the current menu or operation.

1. Press the Function key that corresponds to the setting directly to its left side.

2. The setting or parameter is immediately executed.

Function keys



Corresponding
quick settings
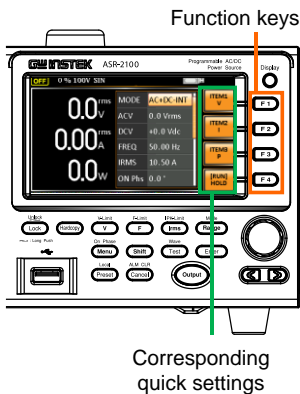
3. Repeat the steps above for all the relevant digits.

# STATUS BAR

Status bar

Status bar



| | | |
|---|---|---|
| **OFF** / **ON** | Indicates if the output is ON or OFF. | |
| **100%** | Indicates the output power as a percentage of full scale. | |
| **100V** | Indicates if the output range is 100V, 200V or AUTO. | |
| **SIN** | Indicates if the output waveform is Sine, Square, Triangle or ARB 1 - 16. | |
| **ALM** | The alarm icon will appear on the status bar when one of the protection functions is tripped. | |
| **Shift** | Indicates the shift key is pressed which enables shortcut operations with each key. | |
| **RMT** | Indicates that the ASR is under remote mode. | |
| **SENS** | Indicates that the Remote Sense function is active. | |
| | Indicates that a USB flash drive is detected in the front panel host port. | |
| **LAN** | Indicates that the LAN interface is activated. | |
| | Indicates that the front panel lock is active. | |

# **O**UTPUT TERMINALS
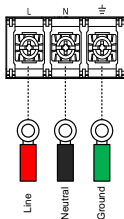
Rear Panel Output Connection

The rear panel output is used to supply higher power DUTs.

1.  Disconnect the unit from the mains power socket and turn the power switch off.

2.  Remove the protective lid from the output terminals by loosening the screw.
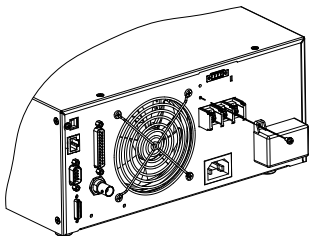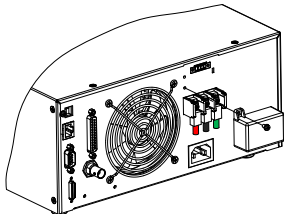


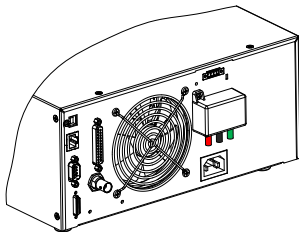3.  Connect the output AC power wires to the AC output terminals.

    *   Red → Line (L)

    *   Black → Neutral (N)

    *   Green → GND ( ⏚ )

4. Cover the protective lid onto the output terminals as the figure below shown.



5. Fasten the screw of protective lid with the unit.



6. Turn the power on. The AC power supply is now ready to power the DUT.

⚠ Note — Grounded Neutral Output:

ASR allows for a grounded return on the neutral output. It is suit for the medical industry that required between ground with neutral is 0 V essentially. And possible to mitigate ground loops that is ideal for reduce ground noise and isolate sensitive equipment from the effects of ground loops.

⚠ WARNING — Because the neutral has been referenced to the chassis ground, be careful electric shock by yourself.

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## Grounding

The output terminals of the ASR are isolated with respect to the protective grounding terminal. The insulation capacity of the load, the load cables and other connected devices must be taken into consideration when connected to the protective ground or when floating.

| | |
|---|---|
| Grounded Neutral Output | Basically, grounded return on the neutral output is allowed for ASR and electric shock may occur if not following the grounding procedure based on the local electrical safety codes. In some cases, 0 V is specifically required between ground and neutral, which can substantially moderate ground loops, thus keeping sensitive equipment from effects of ground loops and reducing ground noise. |

Ground &
Neutral Shortcut
Illustration
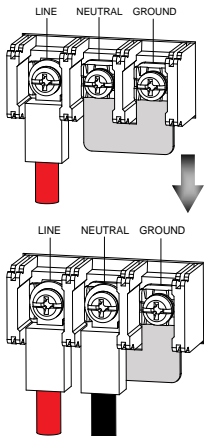


| | |
|---|---|
| ⚠ CAUTION | Owning to the fact that the neutral has been shortcut with the ground which is referenced to the chassis ground, few electric shocks may still take place from time to time, for which we sincerely ask your additional attention. |

# **S**PECIFICATIONS

### General Specifications

| Interface | Standard | USB | Type A: Host, Type B: Device, Speed: 1.1/2.0, USB-CDC |
|---|---|---|---|
| | | LAN | MAC Address, DNS IP Address, User Password, Gateway IP Address, Instrument IP Address, Subnet Mask |
| | | EXT Control | External Signal Input External Control I/O |
| | | RS232C | Complies with the EIA-RS232 specifications |
| | ASR-GPIB-2K | GPIB | SCPI-1993, IEEE 488.2 compliant interface |
| Insulation resistance | Between input and chassis, output and chassis, input and output | | 500 Vdc, 30 MΩ or more |
| Withstand voltage | Between input and chassis, output and chassis, input and output | | 1500 Vac, 1 minute |
| EMC | | | EN 61326-1 (Class A) EN 61326-2-1/-2-2 (Class A) EN 61000-3-2 (Class A, Group 1) EN 61000-3-3 (Class A, Group 1) EN 61000-4-2/-4-3/-4-4/-4-5/-4-6/-4-8/-4-11 (Class A, Group 1) EN 55011 (Class A, Group1) |
| Safety | | | EN 61010-1 |

| Environment | Operating environment | Indoor use, Overvoltage Category II |
|---|---|---|
| | Operating temperature range | 0 °C to 40 °C |
| | Storage temperature range | -10 °C to 70 °C |
| | Operating humidity range | 20 % RH to 80 % RH (no condensation) |
| | Storage humidity range | 90 % RH or less (no condensation) |
| | Altitude | Up to 2000 m |
| Dimensions (mm) | | 213(W)×124(H)×480(D) (not including protrusions) |
| Weight | | Approx. 10.5 kg |

**Others**

| Protections | OCP, OTP, OPP, FAN Fail |
|---|---|
| Display | TFT-LCD, 4.3 inch |
| Memory Function | Store and recall settings, Basic settings: 10 |
| Arbitrary Wave | 16 (nonvolatile) 4096 words |

A value with the accuracy is the guaranteed value of the specification. However, an accuracy noted as reference value shows the supplemental data for reference when the product is used, and is not under the guarantee. A value without the accuracy is the nominal value or representative value (shown as type).

# INFORMATION OF NAME ORDER

The name order of ASR-2000 series has its rules in definition for each character by order. Refer to the following contents for details.

| Background | The definitions below describe the meanings behind each group of alphanumeric characters, in varied colors, of naming code for ASR models. |
|---|---|
| Naming Definition | **ASR** Switching Mode AC Power Source |
| | **2** Series Name |
| | **XX** Output Capacity |
| | **05**: 500VA |
| | **10**: 1000VA |
| | **0** Fixed number |
| | **X** Front Outlet (factory option) |
| | **Blank**: Desktop |
| | **R**: Rack Mount |
| Lineup of ASR Models | **ASR-2050** |
| | **ASR-2100** |
| | **ASR-2050R** |
| | **ASR-2100R** |

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# Declaration of Conformity

We
GOOD WILL INSTRUMENT CO., LTD.
declare that the below mentioned product
satisfies all the technical relations application to the product within the scope of council:
Directive: EMC; LVD; WEEE; RoHS
The product is in conformity with the following standards or other normative documents

| ◎ EMC | |
|---|---|
| EN 61326-1 : | Electrical equipment for measurement, control and laboratory use — EMC requirements |
| Conducted & Radiated Emission EN 55011 / EN 55032 | Electrical Fast Transients EN 61000-4-4 |
| Current Harmonics EN 61000-3-2 / EN 61000-3-12 | Surge Immunity EN 61000-4-5 |
| Voltage Fluctuations EN 61000-3-3 / EN 61000-3-11 | Conducted Susceptibility EN 61000-4-6 |
| Electrostatic Discharge EN 61000-4-2 | Power Frequency Magnetic Field EN 61000-4-8 |
| Radiated Immunity EN 61000-4-3 | Voltage Dip/ Interruption EN 61000-4-11 / EN 61000-4-34 |
| ◎ Safety | |
| EN 61010-1 : | Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements |

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