

# Two Line V-Network

GLN-5040A

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## USER MANUAL

GW INSTEK PART NO.



ISO-9001 CERTIFIED MANUFACTURER

**GW INSTEK**

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# VERVIEW

The GLN-5040A Two Line V-Network is used for EMI testing. It provides a stable impedance for the EUT terminals and the reference ground within the conducted emissions range. The GLN-5040A also isolates the unwanted network signals from the power supply unit and only couples the disturbance voltage of the measured device to the receiver. The product's performance is in compliance with the standard requirements of CISPR16-1-2 for V-networks with a simulated impedance of  $50\mu\text{H} + 5\ \Omega$  ||  $50\ \Omega$  in the frequency range of 9kHz to 30MHz. It uses standard BNC output connector with  $50\ \Omega$  output impedance to match any measurement devices such as receivers and spectrum analyzers. The product is equipped with an artificial hand function that simulates a handheld type measurement, a 9kHz and 150kHz high pass filter selection function that allows the product to select the correct filters according to the relevant standard. The GLN-5040A is also suitable for signal phase device conduction (disturbance voltage) measurement. Due to design principles, there may exist a great deal of leakage current. It is recommended that the unit is grounded when used, and if necessary, it should also be used with an isolation transformer. You may use the GIT-5060, which has an output capacity of 900VA, meeting the requirements of most test equipment.

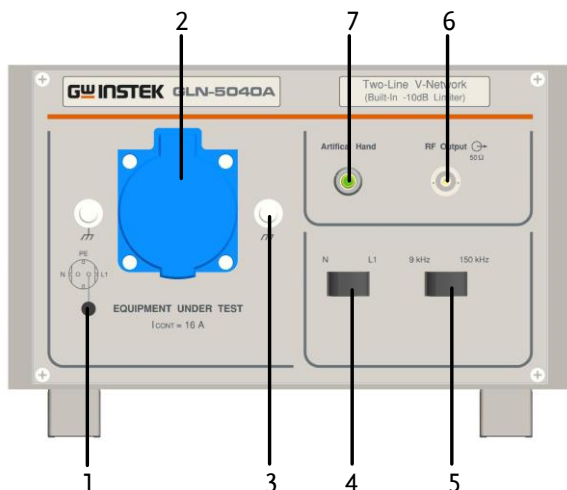
# P PACKAGE CONTENTS

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| Item                         | Quantity |
|------------------------------|----------|
| Two line V-network main unit | 1 Unit   |
| German standard to GB socket | 1 Pcs    |
| BNC connecting wire          | 1 Pcs    |
| Adaptor BNC-F to N type-M    | 1 Pcs    |
| User instruction manual      | 1 Book   |
| Warranty card                | 1 Sheet  |
| Test report                  | 1 Sheet  |

# APEARANCE

## Front Panel

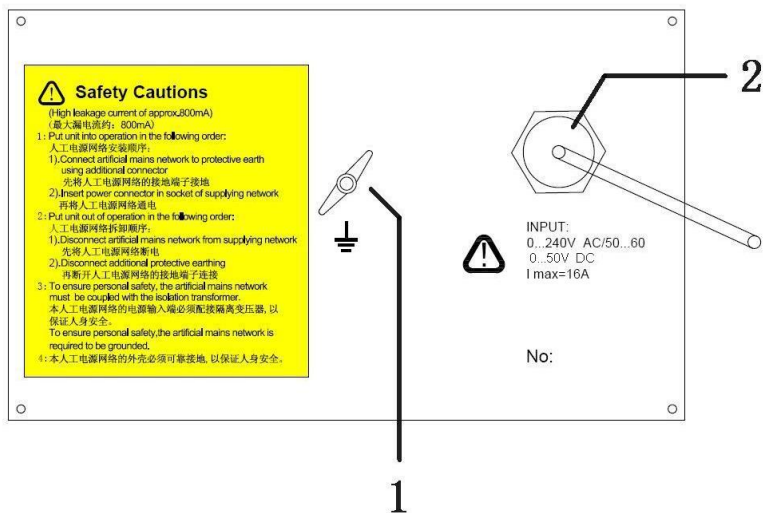


- |   |   |  |
|---|---|--|
| 1 | L1 indicator light                                | When the correct power supply is connected, the blue indicator light turns on.   |
| 2 | Equipment Under Test (EUT) power supply interface | German standard power supply connector, standard GB adapter is included in the product accessories.  |
| 3 | Reference Ground Interface                        | 4mm Jack. The Reference ground is used to connect to the EUT earth terminal. If there is an independent earth terminal for the EUT that needs to be grounded, connect it to this terminal. |

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|   |  |  |
|---|--|--|
| 4 | N/L1   | Selector switch for phase line under test.   |
| 5 | 9KHZ, 150 KHz high pass (HP) filter selection switch | You can select the correct filter for the desired product standard.  |
| 6 | RF OUPUT connector                                   | Standard BNC RF female plug which is used to connect to the receiver. It includes a built-in 10dB attenuator and pulse limiter.  |
| 7 | ARTIFICIAL HAND                                      | This function simulates the effect of a human hand touching metal on a handheld device. It made up of a 510Ω and 220pF network. In practical applications, the 4mm jack terminal should be connected to the human-touched metal part of the handheld device. |

## Rear Panel



1 Ground terminal

The ground terminal is 4mm with a butterfly wing nut. This terminal is used for applying ground protection, not for applying a ground reference

2 Power input socket

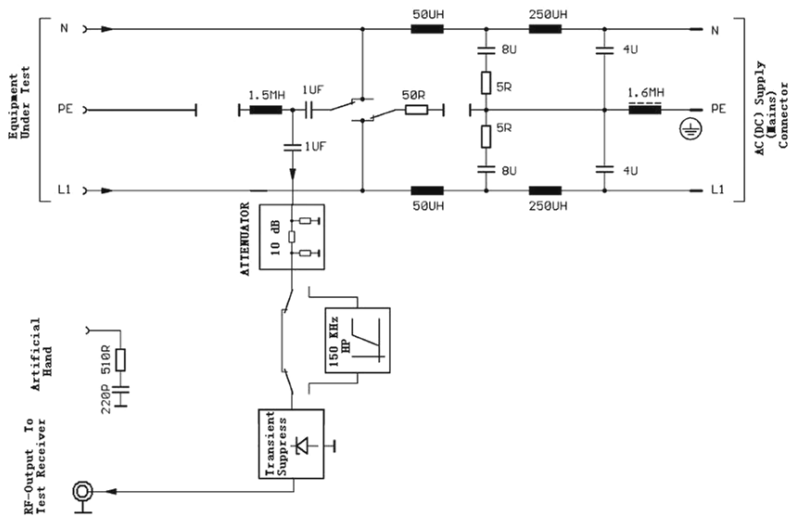
It is mainly used to supply power for the DUT.

## Accessories





# MAIN SCHEMATIC DIAGRAM



# T EST EQUIPMENT SET-UP

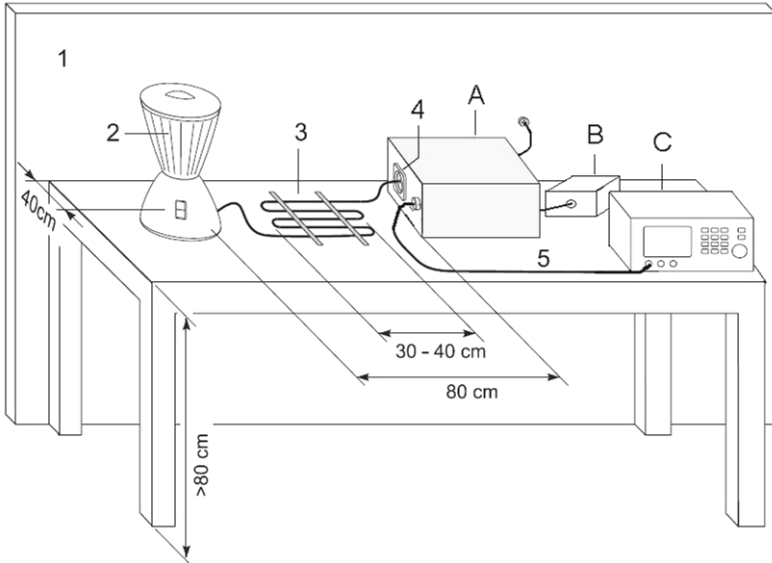
## Safety Cautions

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1. Artificial mains network must use the isolation transformer to isolate to ensure personal safety.
2. The GLN-5040A must be grounded to ensure personal safety, especially when there is no isolation transformer connected. If the GLN-5040A is not grounded it may lead to serious electrical shock.

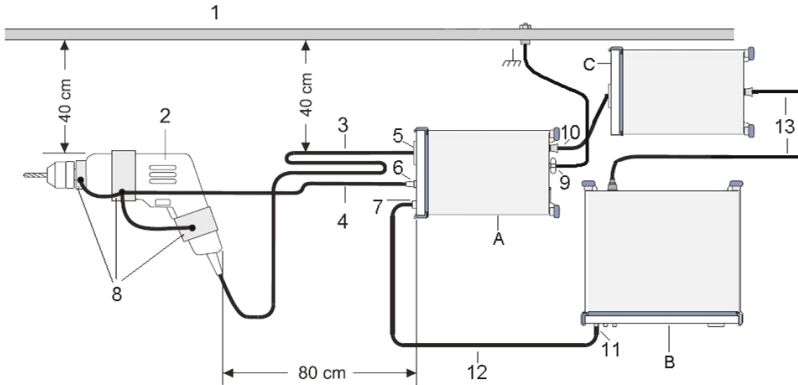
# Test Equipment Set-up Schematic Diagram

## Non-handheld Equipment Conduction Testing Diagram



| Item | Description                                      |
|------|--|
| 1    | Minimum 2m x 2m metal board                      |
| 2    | (EUT) Equipment Under Test                       |
| 3    | Folding method for power supply wire length > 1m |
| 4    | EUT power supply interface                       |
| 5    | Output shielded wire                             |
| A    | Artificial Mains Network                         |
| B    | Isolated Transformer                             |
| C    | Receiver   |

Handheld Equipment Conduction Testing Schematic Diagram (the ETU handheld part has metal shell, it is required to use artificial hand)



| Item | Description  |
|------|--|
| 1    | Minimum 2mx2m metal board  |
| 2    | (EUT) Equipment Under Test   |
| 3    | Folding method for power supply wire length>1m                                   |
| 4    | Artificial hand function connecting wires  |
| 5    | ETU power supply interface   |
| 6    | Artificial hand connecting terminals   |
| 7    | Conducted interference signal output interface                                   |
| 8    | Handheld metal parts, made up of several sections, connected by conducting wires |
| 9    | Grounding terminal   |
| 10   | Artificial mains network power supply interface                                  |
| 11   | Input interface  |
| 12   | BNC Cable  |

- 13      Power Supply Cable
- A      Artificial Mains Network
- B      Receiver
- C      Isolated Transformer

## Set up

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- Procedure
1. Ground the GLN-5040A with the testing receiver ground wire.
  2. Connect the isolated transformer and the GLN-5040A two line V-network.
  3. Connect to the EUT; please place the equipment with the reference to the above schematic diagram.
  4. Connect the GLN-5040A interference signal output terminal to the EMI receiver input terminal.
  5. Select the correct filter for the testing standard.
  6. Connect the GLN-5040A to the isolation transformer, which is connected to the power grid, and power on to test.
  7. Use the phase line switch on the GLN-5040A to select different phase lines during the test.
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- Note
- When using the equipment, don't open the case, don't in a humid, explosive or inflammable environment. Please ensure the equipment surface is dry and clean before use.
  - The maximum voltage should be under 50V when using the AC power supply.
  - Please read the user manual carefully before use to become familiar with the safety the requirements and to test correctly.
  - It is recommended to use an isolation

transformer, in case of emergencies.

- Please contact us if any problems occur. In case of an accident, do not attempt to open the case for repair.

# APPENDIX

## GLN-5040A Specifications

|   |  |
|---|--|
| Frequency range   | 9kHz-30MHz                                 |
| Line impedance  | (50uH+5Ω)  50Ω V type, Two-Line V-Network  |
| Tested circuit phase number                                     | Single phase                               |
| AC voltage range  | 0~240V AC+10%                              |
| AC frequency range  | 50~60Hz ±5%                                |
| DC voltage range  | 0~50V DC                                   |
| Maximum permitted current(continuous)                           | Model 1: For Germany(Schuko connector) 16A |
| Country-specific connector models                               | Model 2: For United Kingdom 13A            |
| Refer to figure 1 or models                                     | Model 3: For France 16A                    |
|   | Model 4: For China/Australia 10A           |
|   | Model 5 For USA 15A                        |
| High-pass filter (alternative)                                  | 150kHz                                     |
| Voltage division factor between EUT and measuring receiver port | 10dB                                       |
| Response threshold of built-in pulse limiter                    | 130dBuV                                    |
| RF output   | BNC(female)/50Ω                            |
| Artificial hand function  | Embodied                                   |
| EUT power supply interface                                      | German standard power supply socket        |
| Working temperature range                                       | +5°C~+45°C                                 |
| Storage temperature   | -40°C~+70°C                                |
| Safety standard   | Confirm to EN61010                         |
| EMC   | Confirm to EN61326                         |
| Size  | 338mm(L)×237mm(W)×133mm(H)                 |
| Weight  | 4.2kg                                      |
| BNC coaxial cable   | 2m   |



|               |  |
|---------------|--|
| Certification | CE(EN61010-1:2010<br>EN61326-1:2013<br>EN61000-3-2:2014<br>EN61000-3-3:2013) |
|---------------|--|

|                 |   |  |
|-----------------|---|--|
| <b>Model 1:</b> |  | Germany as well as Austria, Finland, the Netherlands, Norway, Russia, Sweden, Korea; occasionally: Portugal, Spain |
| <b>Model 2:</b> |  | UK, Ireland, Hong Kong, Malaysia, Singapore  |
| <b>Model 3:</b> |  | France, Belgium and Czech Republic   |
| <b>Model 4:</b> |  | China, Australia, New Zealand  |
| <b>Model 5:</b> |  | USA, Canada, Japan, Taiwan, Mexico, Central America  |

Figure 1 Country-specific connector models