



RIGOL

# DP900<sub>Series</sub>

Programmable  
Linear DC Power Supply

Data Sheet

DSH08104-1110

Jul. 2024

# DP900 Series

## Programmable Linear DC Power Supply

### DP900 Features

- 4.3-inch LCD color touch screen
- 3 independent channels: 32V/3A || 32V/3A || 6V/3A
- Auto series/parallel connections
- Command processing time <10 ms
- Low output ripple and noise <350  $\mu$ Vrms/2 mVpp
- Minimum dwell time in Arb editor: 100 ms
- Safety sockets at front panel (available on some models)
- LAN, USB, and Digital I/O
- Over voltage, over current, and over temperature protection

### Applications

Higher Education

Research Institutes

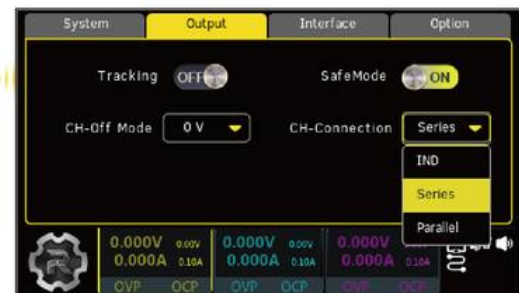
Manufacturing

Electronic Design

### 4.3-inch Touch Screen



### Auto Series/Parallel Connections



### Minimum Dwell Time: 100 ms



### Safety Sockets



# DP900 Series

## Programmable Linear DC Power Supply



| Item | Description                                                                                         |
|------|-----------------------------------------------------------------------------------------------------|
| 1    | 4.3-inch LCD color touch screen                                                                     |
| 2    | Channel selection keys and output On/Off keys                                                       |
| 3    | Parameter input area                                                                                |
| 4    | Enter key (used to confirm the entry; long press the key to lock the touch screen)                  |
| 5    | Back key (used to cancel the entry; press the key to return to local operation from remote control) |
| 6    | Earth ground reference                                                                              |
| 7    | Function menu                                                                                       |
| 8    | Output terminal                                                                                     |
| 9    | USB port                                                                                            |
| 10   | Power switch key                                                                                    |

# DP900 Series

## Programmable Linear DC Power Supply



| Item | Description                                                                  |
|------|------------------------------------------------------------------------------|
| 1    | LAN port                                                                     |
| 2    | USB DEVICE (connect the instrument as "slave" device to external USB device) |
| 3    | Digital I/O port                                                             |
| 4    | USB HOST (connect the instrument as "host" device to external USB device)    |
| 5    | AC selector                                                                  |
| 6    | AC power inlet socket                                                        |
| 7    | Fuse                                                                         |
| 8    | Fan ventilation hole                                                         |

# Product Introduction

## Product Features

- Three models available in the series:
  - DP932A (Standard): 32 V/3 A || 32 V/3 A || 6 V/3 A
  - DP932U (University-with safety sockets): 32 V/3 A || 32 V/3 A || 6 V/3 A
  - DP932E (E-commerce): 30 V/3 A || 30 V/3 A || 6 V/3 A
- 3 electrically isolated independent channels with a maximum total power of up to 210 W
- 4.3-inch LCD color touch screen
- Front-panel safety sockets available on some models
- Internal series/parallel connections for CH1 and CH2
- Excellent programming/readback accuracy
- Transient response time  $<50 \mu\text{s}$
- Low output ripple and noise  $<350 \mu\text{V}_{\text{rms}}/2 \text{ mV}_{\text{pp}}$
- Command processing time  $<10 \text{ ms}$
- Three rack-units (3U), 1/2-rack form factor
- PC control
- Timing output, data logging and analysis
- A maximum of 512 arbitrary points with dwell time down to 100 ms; various built-in basic waveforms
- Over voltage, over current, and over temperature protection
- Various interfaces available: USB, LAN, and Digital I/O

## Comparison of the Features Available in Each Model

|                                                     | DP932A        | DP932U                     | DP932E                      |
|-----------------------------------------------------|---------------|----------------------------|-----------------------------|
| Model                                               | Standard      | University                 | E-commerce                  |
| Display resolution                                  | 1 mV/1 mA     | 10 mV/1 mA<br>(upgradable) | 10 mV/10 mA<br>(upgradable) |
| Minimum dwell time<br>between 2 arbitrary<br>points | 100 ms        | 1000 ms (upgradable)       | Not available               |
| Communication<br>interfaces                         | USB Device    | USB Device                 | USB Device                  |
|                                                     | USB Host      | USB Host                   | USB Host                    |
|                                                     | LAN           | LAN                        | LAN                         |
|                                                     | Digital IO    | Digital IO (optional)      |                             |
| Safety sockets at<br>front panel                    | Not available | Available                  | Not available               |

## Comparison of the Features Available in Each Model

|                   |                                       |                 |             |
|-------------------|---------------------------------------|-----------------|-------------|
| Options available | Full-featured,<br>needless of options | DP900-ARB       | DP900-HIRES |
|                   |                                       | DP900-HIRES     |             |
|                   |                                       | DP900-DIGITALIO |             |

---

# RIGOL DP Family Overview

|                                                  | DP800                                                                                    | DP900                                                                                    | DP2000                                                                                                             |
|--------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
|                                                  |         |         |                                 |
| <b>Number of Channels</b>                        | 1/2/3                                                                                    | 3                                                                                        | 3                                                                                                                  |
| <b>Channel-to-channel Isolation</b>              | Partially isolated                                                                       | Fully isolated                                                                           | Fully isolated                                                                                                     |
| <b>Auto Series/Parallel Connection</b>           | Not available                                                                            | Available (CH1, CH2)                                                                     | Available (CH1, CH2)                                                                                               |
| <b>Screen</b>                                    | 3.5-inch screen                                                                          | 4.3-inch touch screen                                                                    | 4.3-inch touch screen                                                                                              |
| <b>Total Power</b>                               | 140 W to 200 W                                                                           | 210 W                                                                                    | 222 W                                                                                                              |
| <b>Output Ripple and Noise</b>                   | $<350 \mu V_{rms}/2 \text{ mV}_{pp}$<br>$<2 \text{ mA}_{rms}$                            | $<350 \mu V_{rms}/2 \text{ mV}_{pp}$<br>$<2 \text{ mA}_{rms}$                            | $<350 \mu V_{rms}/2 \text{ mV}_{pp}$<br>$<2 \text{ mA}_{rms}$                                                      |
| <b>Programming Accuracy 12 Months (25°C±5°C)</b> | CH1, CH2:<br>0.05%+20 mV<br>0.2%+5 mA<br>CH3:<br>0.1%+5 mV<br>0.2%+5 mA <sup>[2]</sup>   | CH1, CH2:<br>0.05%+10 mV <sup>[1]</sup><br>0.2%+5 mA<br>CH3:<br>0.1%+5 mV<br>0.2%+5 mA   | CH1, CH2:<br>0.03%+8 mV<br>0.15%+5 mA<br>CH3:<br>0.04%+4 mV<br>0.15%+10 mA                                         |
| <b>Readback Accuracy 12 Months (25°C±5°C)</b>    | CH1, CH2:<br>0.05%+10 mV<br>0.15%+5 mA<br>CH3:<br>0.1%+5 mV<br>0.15%+5 mA <sup>[2]</sup> | CH1, CH2:<br>0.05%+10 mV <sup>[1]</sup><br>0.15%+5 mA<br>CH3:<br>0.1%+5 mV<br>0.15%+5 mA | CH1, CH2:<br>0.05%+8 mV<br>0.15%+5 mA<br>0.25%+28 $\mu A$ (low range current)<br>CH3:<br>0.08%+3 mV<br>0.15%+10 mA |

|                                | DP800                                             | DP900                      | DP2000                                     |
|--------------------------------|---------------------------------------------------|----------------------------|--------------------------------------------|
| <b>Programming Resolution</b>  | 1 mV/1 mA <sup>[2]</sup>                          | 1 mV/1 mA                  | CH1, CH2: 1 mV/0.1 mA<br>CH3: 1 mV/1 mA    |
| <b>Readback Resolution</b>     | 0.1 mV/0.1 mA <sup>[2]</sup>                      | 0.1 mV/0.1 mA              | 0.1 mV/0.1 mA<br>(Low range current: 1 µA) |
| <b>Command Processing Time</b> | 118 ms                                            | 10 ms <sup>[3]</sup>       | 10 ms <sup>[3]</sup>                       |
| <b>Minimum Dwell Time</b>      | 1000 ms                                           | 100 ms (the highest level) | 1 ms (the highest level)                   |
| <b>Interface</b>               | USB/LAN/RS232/Digital IO                          | USB/LAN/Digital IO         | USB/LAN/RS232/Digital IO                   |
| <b>GPIB</b>                    | Optional (USB-GPIB)                               | Not available              | Optional <sup>[4]</sup>                    |
| <b>Rear Output Terminals</b>   | Available on DP811 and DP813 only (for 1 channel) | Not available              | Available (for 3 channels)                 |
| <b>Weight</b>                  | 9.75 kg to 10.5 kg                                | 9.15 kg                    | 9.95 kg                                    |
| <b>Dimension (W x H x D)</b>   | 239 mm×157 mm×418 mm                              | 239 mm×157 mm×419 mm       | 239 mm×157 mm×419 mm                       |

**Note[1]:** Voltage readback/programming accuracy 12 months for DP932U: 0.05%+20 mV.

**Note[2]:** for DP832A.

**Note[3]:** the time required for the output to change accordingly after receiving the APPLy and SOURce commands.

**Note[4]:** The optional GPIB interface can be installed in place of the RS232 interface. Those two interfaces cannot be used concurrently.

# Specifications

All the specifications<sup>[1]</sup> can only be guaranteed when the instrument is operated continuously for more than 30 minutes under the specified operation temperature.

## Number of Channels

| Model  | Number of Channels |
|--------|--------------------|
| DP932A | 3                  |
| DP932U | 3                  |
| DP932E | 3                  |

## DC Output (0°C~40°C)

| DC output (0°C~40°C) |     |                    |                              |
|----------------------|-----|--------------------|------------------------------|
|                      |     | Voltage/Current    | OVP/OCP                      |
| DP932A/<br>DP932U    | CH1 | 0 to 32 V/0 to 3 A | 1 mV to 35.2 V/1 mA to 3.3 A |
|                      | CH2 | 0 to 32 V/0 to 3 A | 1 mV to 35.2 V/1 mA to 3.3 A |
|                      | CH3 | 0 to 6 V/0 to 3 A  | 1 mV to 6.6 V/1 mA to 3.3 A  |
| DP932E               | CH1 | 0 to 30 V/0 to 3 A | 1 mV to 33 V/1 mA to 3.3 A   |
|                      | CH2 | 0 to 30 V/0 to 3 A | 1 mV to 33 V/1 mA to 3.3 A   |
|                      | CH3 | 0 to 6 V/0 to 3 A  | 1 mV to 6.6 V/1 mA to 3.3 A  |

## Internal Series/Parallel Mode

| Internal series/parallel mode |      |
|-------------------------------|------|
| Series mode voltage           | 64 V |
| Parallel mode current         | 6 A  |

## Load Regulation Rate

| Load regulation rate, ± (% of output + offset) |               |
|------------------------------------------------|---------------|
| Voltage <sup>[2]</sup>                         | <0.01%+2 mV   |
| Current                                        | <0.01%+250 µA |

## Line Regulation Rate

### Line regulation rate, $\pm$ (% of output + offset)

|         |                                  |
|---------|----------------------------------|
| Voltage | $<0.01\%+2\text{ mV}$            |
| Current | $<0.01\%+250\text{ }\mu\text{A}$ |

## Output Ripple and Noise

### Output ripple and noise (20 Hz to 20 MHz)

|                     |                                                                |
|---------------------|----------------------------------------------------------------|
| Normal mode voltage | $<350\text{ }\mu\text{V}_{\text{rms}}/2\text{ mV}_{\text{pp}}$ |
| Normal mode current | $<2\text{ mA}_{\text{rms}}$                                    |

## Accuracy 12 months (25°C $\pm$ 5°C)

### Accuracy 12 months (25°C $\pm$ 5°C)<sup>[3]</sup>, $\pm$ (% of output + offset)

|               |     | Programming |           | Readback    |            |
|---------------|-----|-------------|-----------|-------------|------------|
|               |     | Voltage     | Current   | Voltage     | Current    |
| DP932A/DP932E | CH1 | 0.05%+10 mV | 0.2%+5 mA | 0.05%+10 mV | 0.15%+5 mA |
|               | CH2 | 0.05%+10 mV | 0.2%+5 mA | 0.05%+10 mV | 0.15%+5 mA |
|               | CH3 | 0.1%+5 mV   | 0.2%+5 mA | 0.1%+5 mV   | 0.15%+5 mA |
| DP932U        | CH1 | 0.05%+20 mV | 0.2%+5 mA | 0.05%+20 mV | 0.15%+5 mA |
|               | CH2 | 0.05%+20 mV | 0.2%+5 mA | 0.05%+20 mV | 0.15%+5 mA |
|               | CH3 | 0.1%+5 mV   | 0.2%+5 mA | 0.1%+5 mV   | 0.15%+5 mA |

## Resolution

### Resolution

|        |          | Programming |         | Readback |         | Display |         |      |
|--------|----------|-------------|---------|----------|---------|---------|---------|------|
|        |          | Voltage     | Current | Voltage  | Current | Voltage | Current |      |
| DP932A | Standard | CH1         | 1 mV    | 1 mA     | 0.1 mV  | 0.1 mA  | 1 mV    | 1 mA |
|        |          | CH2         | 1 mV    | 1 mA     | 0.1 mV  | 0.1 mA  | 1 mV    | 1 mA |
|        |          | CH3         | 1 mV    | 1 mA     | 0.1 mV  | 0.1 mA  | 1 mV    | 1 mA |

| Resolution |                             |     |       |       |        |        |       |       |
|------------|-----------------------------|-----|-------|-------|--------|--------|-------|-------|
| DP932U     | Standard                    | CH1 | 10 mV | 1 mA  | 10 mV  | 1 mA   | 10 mV | 1 mA  |
|            |                             | CH2 | 10 mV | 1 mA  | 10 mV  | 1 mA   | 10 mV | 1 mA  |
|            |                             | CH3 | 10 mV | 1 mA  | 10 mV  | 1 mA   | 10 mV | 1 mA  |
|            | With high resolution option | CH1 | 1 mV  | 1 mA  | 0.1 mV | 0.1 mA | 1 mV  | 1 mA  |
|            |                             | CH2 | 1 mV  | 1 mA  | 0.1 mV | 0.1 mA | 1 mV  | 1 mA  |
|            |                             | CH3 | 1 mV  | 1 mA  | 0.1 mV | 0.1 mA | 1 mV  | 1 mA  |
| DP932E     | Standard                    | CH1 | 10 mV | 10 mA | 10 mV  | 10 mA  | 10 mV | 10 mA |
|            |                             | CH2 | 10 mV | 10 mA | 10 mV  | 10 mA  | 10 mV | 10 mA |
|            |                             | CH3 | 10 mV | 10 mA | 10 mV  | 10 mA  | 10 mV | 10 mA |
|            | With high resolution option | CH1 | 1 mV  | 1 mA  | 0.1 mV | 0.1 mA | 1 mV  | 1 mA  |
|            |                             | CH2 | 1 mV  | 1 mA  | 0.1 mV | 0.1 mA | 1 mV  | 1 mA  |
|            |                             | CH3 | 1 mV  | 1 mA  | 0.1 mV | 0.1 mA | 1 mV  | 1 mA  |

## Transient Response Time

### Transient response time

Less than 50  $\mu$ s of time to recover to within the  $\pm 15$  mV settling band following a load change from 50% to 100% or from 100% to 50% of full load.

## Command Processing Time

### Command processing time<sup>[4]</sup>

<10 ms

## OVP/OCP Accuracy

### OVP/OCP accuracy, $\pm$ (% of output + offset)

OVP accuracy,  $\pm$  (% of output + offset)    0.2%+20 mV

OCP accuracy,  $\pm$  (% of output + offset)    0.5%+20 mA

## Voltage Programming Response Time (Within 99% of the Total Variation Range)

### Voltage programming response time (within 99% of the total variation range)

| Channel | Full Load (Up) | No Load (Up) | Full Load (Down) | No Load (Down) |
|---------|----------------|--------------|------------------|----------------|
| CH1     | <50 ms         | <40 ms       | <50 ms           | <400 ms        |
| CH2     | <50 ms         | <40 ms       | <50 ms           | <400 ms        |
| CH3     | <15 ms         | <14 ms       | <30 ms           | <100 ms        |

## Temperature Coefficient Per °C

### Temperature coefficient per °C, ± (% of output + offset)

| Channel | Voltage    | Current    |
|---------|------------|------------|
| CH1     | 0.01%+4 mV | 0.01%+2 mA |
| CH2     | 0.01%+4 mV | 0.01%+2 mA |
| CH3     | 0.01%+4 mV | 0.01%+3 mA |

## Mechanical Characteristics

### Mechanical characteristics

|                |                                             |
|----------------|---------------------------------------------|
| Dimension      | 239 mm (W) x 157 mm (H) x 419 mm (D)        |
| Weight         | 9.15 kg                                     |
| Rack mount kit | Three rack-units (3U), 1/2-rack form factor |

## Power Source

### Power source

|                           |                                                      |
|---------------------------|------------------------------------------------------|
|                           | 100 V <sub>ac</sub> ±10%                             |
|                           | 120 V <sub>ac</sub> ±10%                             |
|                           | 220 V <sub>ac</sub> ±10%                             |
|                           | 230 V <sub>ac</sub> ±10% (max. 250 V <sub>ac</sub> ) |
| AC input (50 Hz to 60 Hz) |                                                      |
| Maximum input power       | 650 VA                                               |

## Interface

| Interface  |                                                   |
|------------|---------------------------------------------------|
| USB DEVICE | 1                                                 |
| USB HOST   | 2 (1 for front panel and 1 for rear panel)        |
| LAN        | 1                                                 |
| Digital IO | 1 (optional for DP932U; not available for DP932E) |

## Environmental Conditions

| Environmental conditions |                                                             |
|--------------------------|-------------------------------------------------------------|
| Cooling Method           | Fan cooling                                                 |
| Operating Temperature    | 0°C to +40°C                                                |
| Storage Temperature      | -40°C to +60°C                                              |
| Humidity                 | 5% to 80% relative humidity                                 |
| Altitude                 | Below 1500 meters                                           |
| IP Rating                | IP20                                                        |
| Pollution Degree         | PD2                                                         |
| Overvoltage Categories   | OVC II                                                      |
| Operating Environment    | For indoor use only and non-operating in humid environment. |

## Regulation Standards

| Regulation Standards          |                                           |
|-------------------------------|-------------------------------------------|
| Electromagnetic Compatibility | Compliant with EMC Directive (2014/30/EU) |
|                               | EN IEC 61326-1:2021                       |
|                               | EN IEC 61000-3-2:2019+A1                  |
|                               | EN 61000-3-3:2013+A1+A2                   |
|                               | BS EN IEC 61326-1:2021                    |
|                               | BS EN IEC 61000-3-2:2019+A1               |
|                               | BS EN 61000-3-3:2013+A1+A2                |

## Regulation Standards

|        |                                                       |
|--------|-------------------------------------------------------|
|        | EN 61010-1:2010+A1                                    |
|        | BS EN 61010-1:2010+A1                                 |
| Safety | IEC 61010-1:2010+A1                                   |
|        | UL 61010-1: 2012 R6.23                                |
|        | CAN/CSA-C22.2 NO. 61010-1-12 + GI1 + GI2 (R2017) + A1 |

## Warranty and Calibration Interval

### Warranty and calibration interval

|          |                                     |
|----------|-------------------------------------|
| Warranty | 3 years (excluding the accessories) |
|----------|-------------------------------------|

|                                  |                 |
|----------------------------------|-----------------|
| Recommended calibration interval | Every 12 months |
|----------------------------------|-----------------|

#### Note[1]:

- Unless otherwise stated, the specifications are applicable to all the channels of the specified model.
- Not applicable in series/parallel connection mode.

**Note[2]:** Limited by the terminal structure, the voltage load regulation rate cannot be guaranteed for DP932U.

**Note[3]:** The accuracy parameters are acquired via calibration under 25°C after 1-hour warm-up.

**Note[4]:** the time required for the output to change accordingly after receiving the APPLy and SOURce commands.

# Order Information and Warranty Period

## Order Information

| Order Information                                                                   | Order No.           |
|-------------------------------------------------------------------------------------|---------------------|
| <b>Model</b>                                                                        |                     |
| Programmable linear DC power supply, triple-output, high resolution                 | DP932A              |
| Programmable linear DC power supply, triple-output, University, safety sockets      | DP932U              |
| Programmable linear DC power supply, triple-output, E-commerce                      | DP932E              |
| <b>Standard Shipped Accessory</b>                                                   |                     |
| USB cable (standard for DP932A and optional for other models)                       | CB-USBA-USBB-FF-150 |
| One fuse                                                                            | — —                 |
| Power cord (based on destination country)                                           | — —                 |
| Three pairs of connecting wires (10 A)                                              | 10A-Testing-Cable   |
| <b>Optional Accessory</b>                                                           |                     |
| 1 mA&1 mV high-resolution setting                                                   | DP900-HIRES         |
| Arbitrary function with the minimum dwell time of 100 ms (available on DP932U only) | DP900-ARB           |
| 4-pin trigger in/out function (available on DP932U only)                            | DP900-DIGITALIO     |
| USB cable                                                                           | CB-USBA-USBB-FF-150 |
| DP900 Rack Mount Kit (for a single instrument)                                      | RM-1-DP800          |

| Order Information                                       | Order No.  |
|---------------------------------------------------------|------------|
| DP900 Rack Mount Kit (for two instruments side-by-side) | RM-2-DP800 |

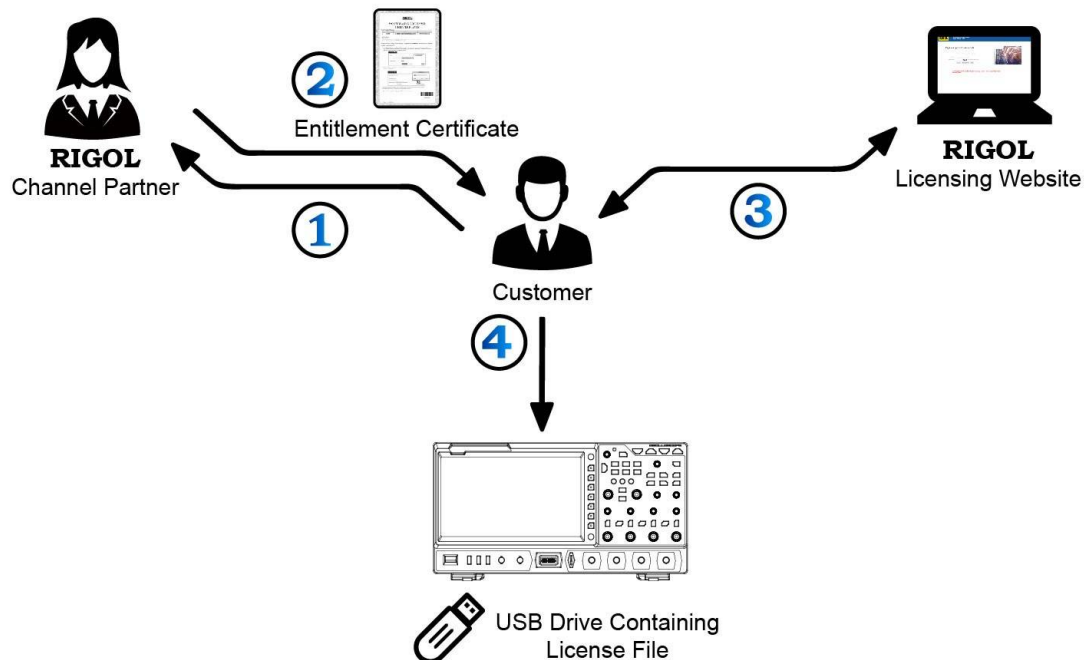
**NOTE:**

For purchasing models, accessories, and options, please contact local RIGOL office.

## Warranty Period

Three years for the mainframe, excluding the accessories.

# Option Ordering and Installation Process



1. According to the usage requirements, please purchase the specified function options from **RIGOL Sales Personnel**, and provide the serial number of the instrument that needs to install the option.
2. After receiving the option order, the **RIGOL** factory will mail the paper software product entitlement certificate to the address provided in the order.
3. Log in to **RIGOL** official website for registration. Use the software key and instruments serial number provided in the entitlement certificate to obtain the option license code and the option license file.
4. Download the option license file to the root directory of the USB storage device, and connect the USB storage device to the instrument properly. After the USB storage device is successfully recognized, the **Option install** menu is activated. Press this menu key to start installing the option.

# Boost Smart World and Technology Innovation

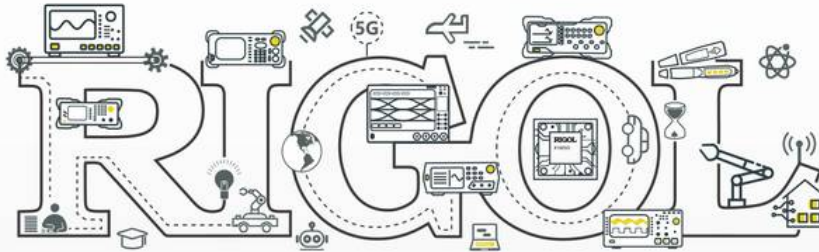
Industrial Intelligent  
Manufacturing



Semiconductors



Education &  
Research



Communication

System Integration



New Energy



- 5G Cellular-5G/WIFI
- UWB/RFID/ ZIGBEE
- Digital Bus/Ethernet
- Optical Communication

- Digital/Analog/RF Chip
- Memory and MCU Chip
- Third-Generation Semiconductor
- Solar Photovoltaic Cells

- New Energy Automobile
- PV/Inverter
- Power Test
- Automotive Electronics

*Provide Testing and Measuring Products  
and Solutions for Industry Customers*

## HEADQUARTER

**RIGOL TECHNOLOGIES CO., LTD.**  
No.8 Keling Road, New District,  
Suzhou, JiangSu, P.R.China  
Tel: +86-400620002  
Email: info@rigol.com

## JAPAN

**RIGOL JAPAN CO., LTD.**  
5F, 3-45-6, Minamitsuka, Toshima-Ku,  
Tokyo, 170-0005, Japan  
Tel: +81-3-6262-8932  
Fax: +81-3-6262-8933  
Email: info.jp@rigol.com

## EUROPE

**RIGOL TECHNOLOGIES EU GmbH**  
Carl-Benz-Str.11  
82205 Gilching  
Germany  
Tel: +49(0)8105-27292-0  
Email: info-europe@rigol.com

## KOREA

**RIGOL KOREA CO., LTD.**  
5F, 222, Gonghang-daero,  
Gangseo-gu, Seoul, Republic of Korea  
Tel: +82-2-6953-4466  
Fax: +82-2-6953-4422  
Email: info.kr@rigol.com

## NORTH AMERICA

**RIGOL TECHNOLOGIES, USA INC.**  
10220 SW Nimbus Ave.  
Suite K-7  
Portland, OR 97223  
Tel: Tel: +1-877-4-**RIGOL**-1  
Fax: +1-877-4-**RIGOL**-1  
Email: info@rigol.com

**RIGOL®** is the trademark of **RIGOL TECHNOLOGIES CO., LTD.** Product information in this document is subject to update without notice. For the latest information about **RIGOL's** products, applications and services, please contact local **RIGOL** channel partners or access **RIGOL** official website: **www.rigol.com**