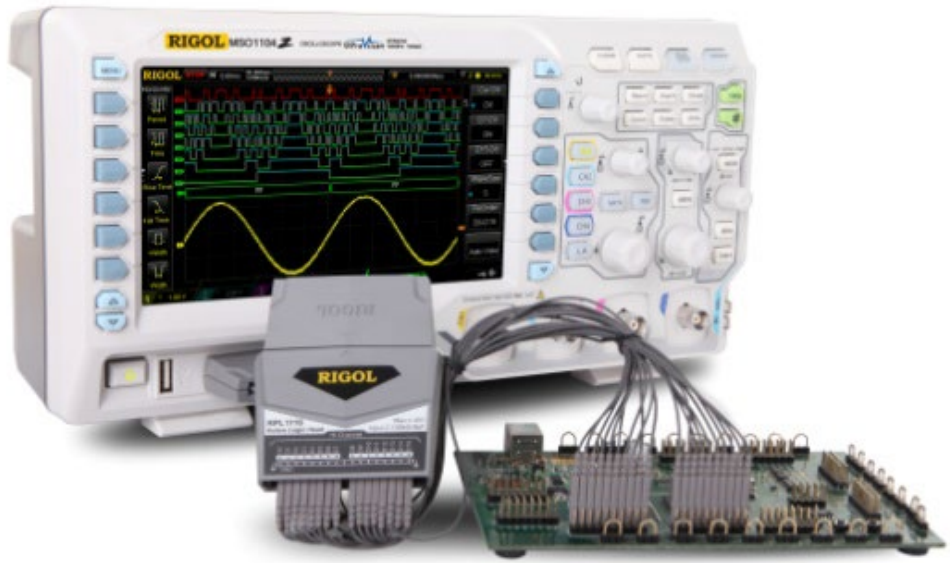
RIGOL

用户手册
User Guide



RPL1116 有源逻辑探头
RPL1116 Active Logic Probe

一般安全概要

- 正确的连接与断开探头。
- 遵循所有终端额定值。
- 电源接通后，请勿接触外露的线路和元件。
- 怀疑产品出故障时，请勿进行操作。
- 切勿开盖操作。
- 请勿在易燃易爆的环境下操作。
- 请勿在潮湿的环境下操作。
- 请保持产品表面干燥。
- 请注意搬运安全。

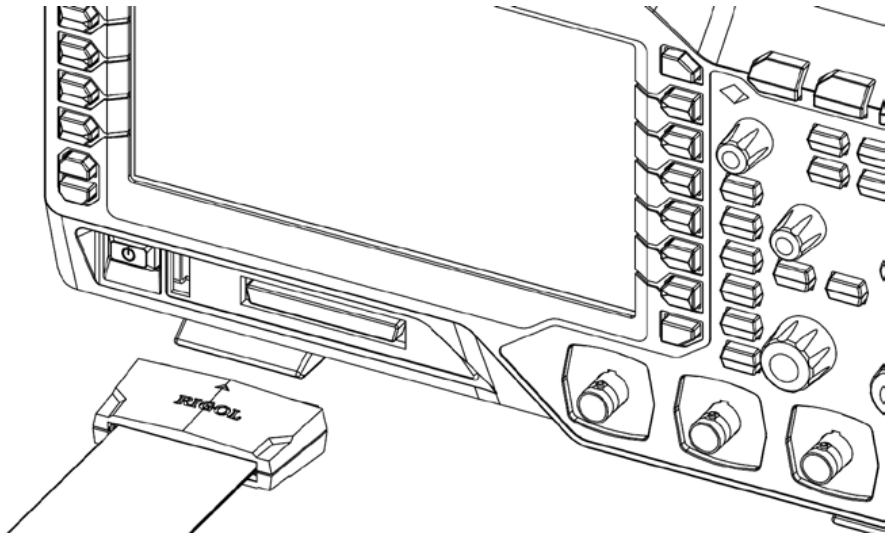
产品简介

RPL1116 是一款高性能有源逻辑探头，可将待测系统上的数字信号连接至 **RIGOL** MSO1000Z 系列数字示波器，实现逻辑分析仪功能。

RPL1116 共有 16 个数字通道（D0-D15），分为两个通道组（D0-D7 和 D8-D15）。每个数字通道组包含信号接口和地接口。同时，RPL1116 标配 20 根信号引线以及 20 个探头钩，可用于灵活的连接被测信号和参考地。利用示波器 LA 菜单中的自校准功能可以校准探头的零点。

逻辑探头的使用方法

1. **连接 RPL1116 至示波器：**将 RPL1116 前端连接至主线输入端，然后将主线输出端连接至示波器前面板的数字信号输入端，如下图所示。



2. **连接被测信号至 RPL1116:** 用户可以根据测试需要将任意数量（≤16）的被测信号连接至 RPL1116。连接时需要注意，输入信号的幅度不能超过探头的最大工作电压范围。RPL1116 提供了两种连接方式方便用户灵活探测信号。

- 方法一：用户可通过前端引线单独连接各个被测信号。通过前端引线上的通道标示以及探头前端上的颜色信息可方便地识别每个信号所对应的通道号，如图 1 所示。

注意：使用过程中若出现串扰或地弹，可能是多通道共用地线导致。因此建议您尽可能为每通道的信号线配一根地线并双绞。

- 方法二：在方法一的基础上，可为前端引线连接上探头测试夹，然后通过测试夹内的金属钩连接被测信号节点，如图 2 所示。

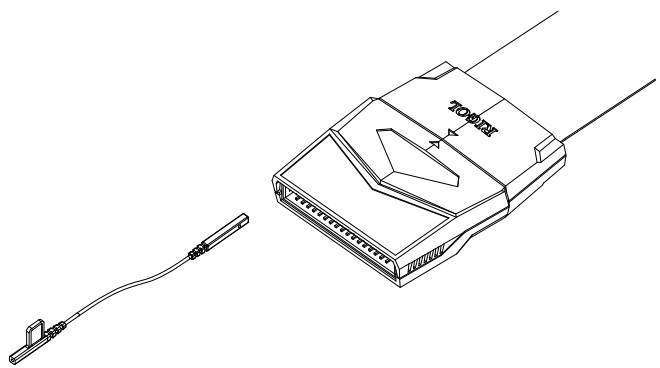


图 1

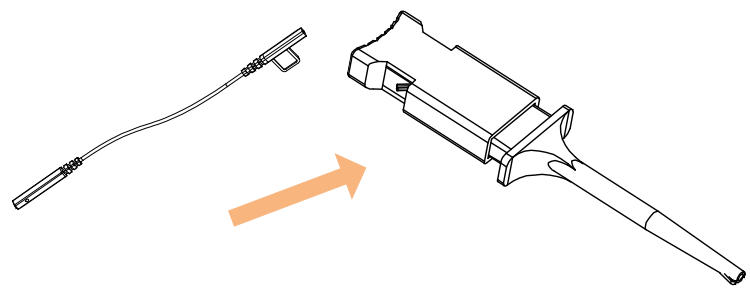


图 2

3. **设置探头：**按示波器前面板上的 **LA** 按键进入探头设置菜单，用户可在该菜单下查看和设置如下参数：阈值电平(D0-D7 与 D8-D15 分组阈值电平独立调节)、波形大小(应用于所有通道，其中 L 选项只在屏幕活动通道数不多于 8 时可用)、通道标签和探头校准等。

注意：若探头第一次连接到该示波器或者环境温度变化 5℃以上，建议利用 LA 菜单下自校准功能进行零点自校准，校准时保持 RPL1116 输入端不接信号。

4. **功能检查：**完成上述操作后，被测信号将显示在示波器屏幕上相应的数字通道上。如果看不到信号，请调节示波器选择合适的触发方式和时基等常规设置。如果仍然看不到信号，请再次检查电气连接和参数设置，或者尝试使用其他探头(如模拟探头)来验证测试点的信号状态。

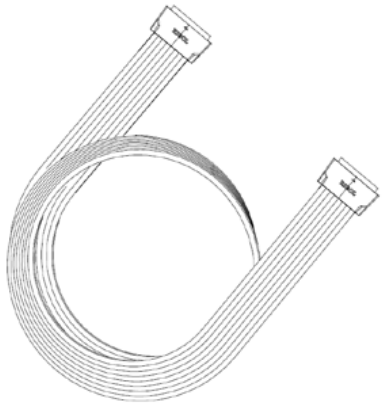
探头指标

输入通道数	16
阈值范围	±15 V
阈值精度	±100m V + 阈值的 3%
最大输入电压	±40 V
最大输入动态范围	±10 V + 阈值
最小电压摆动	500 mV
最小可检测脉宽	10 ns
输入阻抗	100 kΩ±2%
输入电容	约 8 pF
探头主缆长度	约 90 cm
前端引线长度	约 25 cm
操作环境	0℃~50℃，0~80%RH
存放环境	-20℃~60℃，0~90%RH

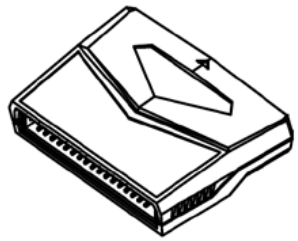
附件

编号	名称描述	数量
1	主线	1
2	有源逻辑探头前端	1
3	引线	20
4	探头钩	20
5	中英文用户手册	1
6	RPL1116 包装盒	1

附件示意图

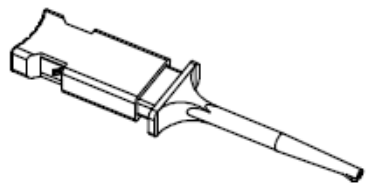


主线



有源逻辑探头前端

引线



探头钩

联系我们

如您在使用此产品或本手册的过程中有任何问题或需求，可与 **RIGOL** 联系：

电子邮箱：service@rigol.com

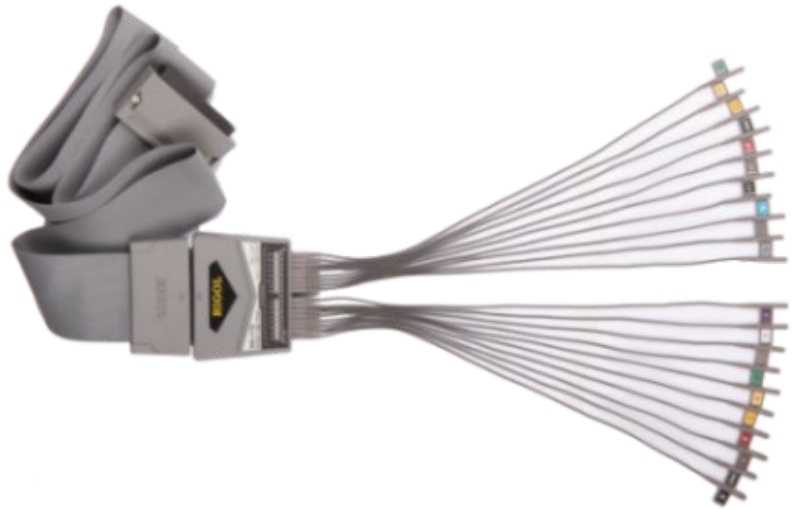
网址：www.rigol.com

General Safety Summary

- Connect and disconnect the probe properly.
- Observe all terminals ratings.
- Do not touch exposed junctions and components when the instrument is powered on.
- Do not operate with suspected failures.
- Do not operate without covers.
- Do not operate in an explosive atmosphere.
- Do not operate in wet conditions.
- Keep product surface clean and dry.
- Handle with caution.

Product Overview

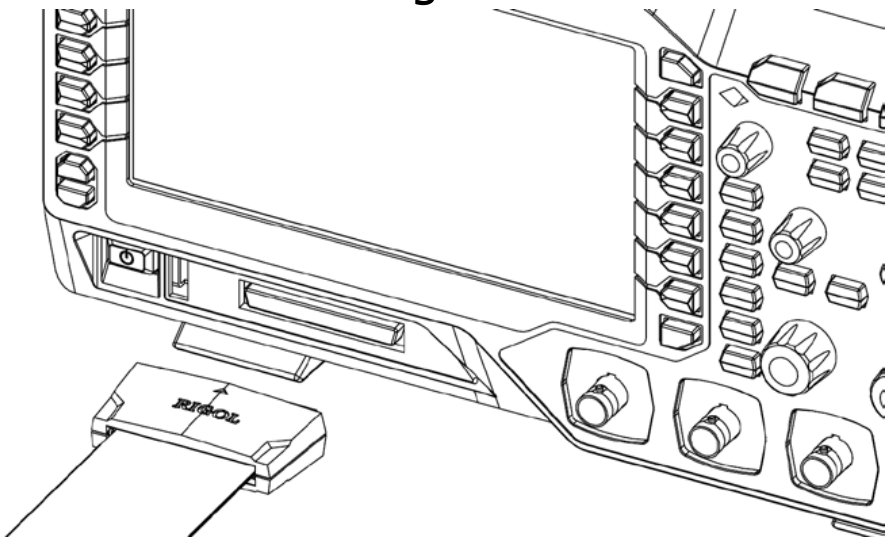
As a high-performance active logic probe, RPL1116 connects the digital signals under test to the MSO1000Z series digital oscilloscope to realize the logic analyzer function.



The 16 digital channels (D0-D15) of RPL1116 are divided into two channel groups (D0-D7 and D8-D15) each of which includes signal interfaces and ground interfaces. 20 input signal leads and 20 grabbers are provided as standard configurations for RPL1116 to realize flexible connection of signals and reference ground. Users can calibrate the probe zero by using the auto-calibration function in the LA menu of the oscilloscope.

How to Use the Logic Probe

1. **Connect RPL1116 to the oscilloscope:** connect the active logic probe head to the main cable input, and then connect the main cable output to the digital signal input terminal on the front panel of the oscilloscope, as shown in the figure below.



2. **Connect the signals under test to RPL1116:** users can connect any number (≤16) of the signals under test to RPL1116 according to the test requirements. Note that the amplitude of the input signal should not exceed the maximum working voltage range of the probe. RPL1116 provides two connection methods to realize convenient and flexible detection.

   - Method 1: users can connect the signals under test through the probe leads separately. You can easily identify the corresponding channel of each signal by the channel label on the probe leads and the color information on the probe head as shown in Figure 1.

     Note: The crosstalk or ground bounce during use may be caused by the fact that the channels share a single ground lead. Therefore, you are recommended to add one ground wire to the signal lines of each channel and twist them.
   - Method 2: on the basis of Method 1, you can connect a grabber to each lead and connect it to the device under test as shown in

Figure 2.

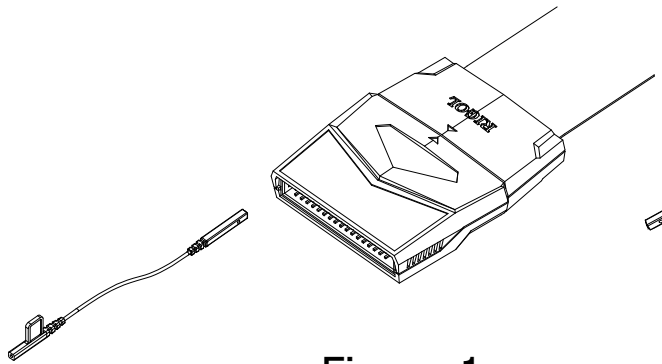


Figure 1

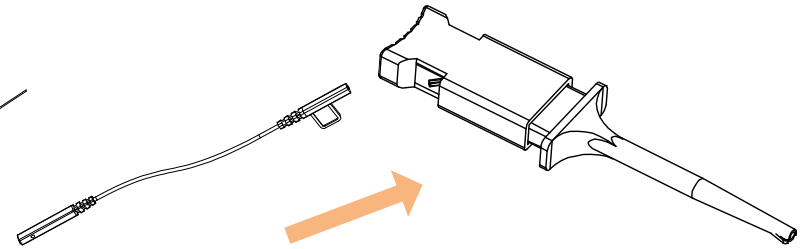


Figure 2

3. **Set the probe:** press **LA** on the front panel of the oscilloscope to enter the probe setting menu. Users can view and set the following parameters under this menu: threshold level (the threshold levels of D0-D7 and D8-D15 can be adjusted independently), waveform size (applicable to all the channels; wherein, L is only available when the number of active channels is no more than 8), channel label, probe calibration and so on.

   Note: When the probe is connected to the oscilloscope for the first

time or the temperature change is more than 5 degrees, you are recommended to calibrate the probe zero using the auto-calibration function in the LA menu. Please disconnect all the signals from the RPL1116 input terminal during the calibration.

4. **Function Inspection:** after finishing the above operations, the signal under test will be displayed on the corresponding digital channel on the oscilloscope screen. If no signal is displayed, please adjust the oscilloscope to select proper general settings (such as the trigger mode and timebase). If the problem still persists, please check the electric connection and parameter settings again or please try to use other probes (such as analog probe) to check the signal state of the test point.

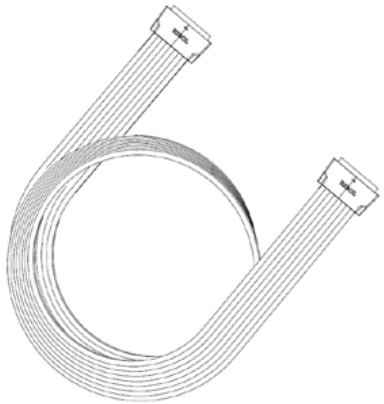
Probe Specifications

Input channels	16
Threshold range	±15 V
Threshold accuracy	±100m V+3% of threshold setting
Max. input voltage	±40 V
Max. input dynamic range	±10 V + threshold setting
Min. voltage swing	500 mV
Min. detectable pulse	10 ns
Input impedance	100 kΩ±2%
Input capacitance	About 8 pF
Cable length	About 90 cm
Lead length	About 25 cm
Operation environment	0℃~50℃, 0~80%RH
Storage environment	-20℃~60℃, 0~90%RH

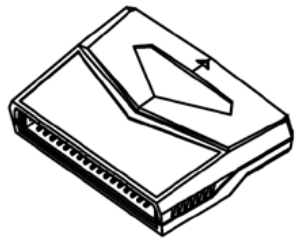
Accessories

Item	Description	Quantity
1	Main Cable	1
2	Active Logic Head	1
3	Lead	20
4	Grabber	20
5	Chinese and English Version of User Guide	1
6	RPL1116 Packing Box	1

Accessories Sketch Map

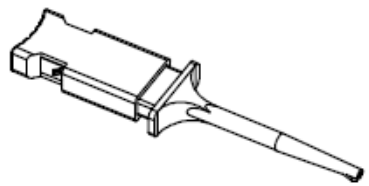


Main Cable



Active Logic Head

Lead



Grabber

Contact Us

If you have any problem or requirement when using our products or this manual, please contact **RIGOL**.

E-mail：service@rigol.com

Website：www.rigol.com

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