

MPO-2000 Multi-function Programmable Oscilloscope



5 in one

DSO、AWG、DMM、Power Supply
Spectrum Analysis



7 Innovative Function
Diversity Application

Beyond Your Imagination

MPO-2000 Multi-function Programmable Oscilloscope

Bandwidth	Record Length	Analog Channels	Sample Rate	Waveform Update Rate
Up to 200 MHz	10 M points	2 or 4	Up to 1 GS/s	Up to 120,000 Waveform/s

Created by Stephen Wu

Python is hot!

8.2 million programmers
Estimated at least

Why Python so popular?



Top **2** programming language
From 2019~2023



Beginner-Friendly



Versatility of Use



Libraries and Frameworks



Active and Supportive Community



Automation Made Easy

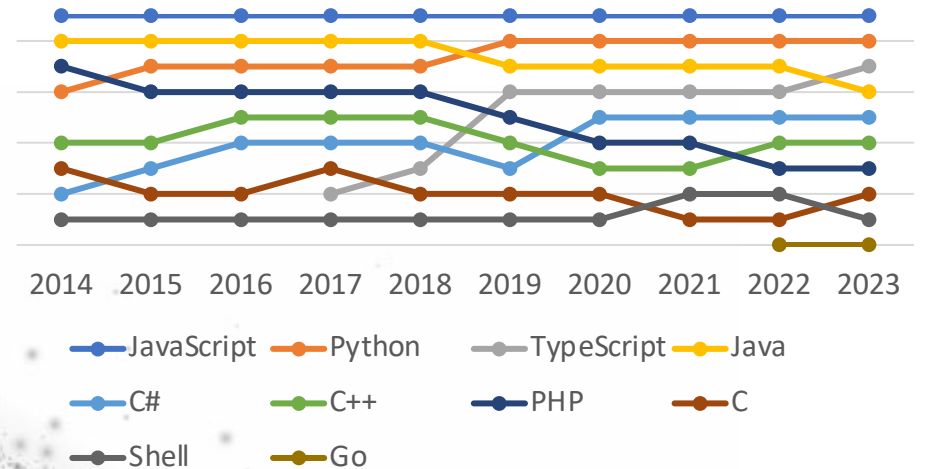


Python Works with the IoT



Efficient and Reliable

Top 10 programming languages on GitHub



Same result



Beginner-Friendly

■ Python example

■ C example

```
python Copy code  
  
# Python  
my_list = [1, 2, 3, 4, 5]  
print(my_list)
```

```
c Copy code  
  
#include <stdio.h>  
  
int main() {  
    // C  
    int my_array[] = {1, 2, 3, 4, 5};  
    int i;  
  
    for (i = 0; i < 5; i++) {  
        printf("%d ", my_array[i]);  
    }  
  
    return 0;  
}
```




Beginner-Friendly



Created by Stephen Wu

Web Edit



Beginner-Friendly

The screenshot displays the MicroPython Editor web interface. The browser address bar shows the URL 172.16.5.234:10180. The interface is divided into three main sections: a file explorer on the left, a code editor in the center, and a terminal on the right.

File Explorer (Left): Shows a file named `test_led_pwr_lvgl.py` selected. Other files listed include `send_line.py`, `WebREPL_Start.py`, `test.py`, `WebIDE_Start.py`, `abc.py`, `decode.json`, and `pyerror.txt`.

Code Editor (Center): Contains the following Python code:

```
1 import serial
2 import time
3 import gc
4
5 INST_NAME = 'DMM' #Instrument name
6 PWR_NUM = 1
7 valV = 1
8
9 def GDS_SET_PWR_OUTPUT(dso, num, onoff):
10     cmdstr = ':POWERSupply:OUTPut%d %s\n' % (num, onoff)
11     dso.write(cmdstr)
12 def GDS_SET_PWR_V(dso, num, value):
13     cmdstr = ':POWERSupply:OUTPut%d:VOLTage %f\n' % (num, value)
14     dso.write(cmdstr)
15
16 if __name__ == '__main__':
17     import sys
18     sys.path.reverse()
19     try:
20         import gds_info as gds
21     except ImportError:
22         import dso2ke_plus as gds
23     import dso_gui as draw
24     import dso_colors as color
25
26     d = gds.Dso()
27     d.connect()
28
29     size = gds.Screen()
30     gds_color = gds.Theme()
31
32     draw = draw.Draw_Widget()
33
34     draw.draw_fillrect_ex(0,0,size.width-1,size.height-1,gds_color.bg_color)
35     draw.draw_rect_ex(0,0,size.width-1,size.height-1,gds_color.grid_color)
36
37     draw_v_i = draw.Draw_A_B(120, 50, 630, 350)
38     draw_v_i.set_style_xy(str_color=gds_color.text_color)
39     draw_v_i.add_a_b_data(data_color=color.GREEN)
40
41     draw.draw_text(130, 55, "(mA)", color=gds_color.text_color)
42     draw.draw_text(110+630-20, 50+350-25, "(V)", color=gds_color.text_color)
```

Terminal (Right): Shows the output of the program execution:

```
RUN Reconnect
Welcome to MicroPython!
Password:
WebREPL connected
>>>
>>>
>>>
>>>
>>>
>>>
>>>
```

On Screen Edit



Beginner-Friendly

```
bjt_char_curve_pro.py
    if drawcurve == True:
        draw_xy_curve(i)

    if save2csv == True:
        dso.hardcopy.hard_copy(wfmt='FCSV', mode='WAVEform')
        print('Save waveform to csv')
except:
    dso.dsodraw.draw_poptext('Characteristic curve test failed!')
    pass

dso.power.set_voltage(1, 1.0)
dso.power.set_voltage(2, 1.0)
dso.power.set_off(1)
dso.power.set_off(2)

if __name__ == '__main__':
    os.chdir(sys.path[0])
    if not sys.implementation.name == "micropython":
        raise ValueError('This Demo can only be used on DSO')
    from dso_const import *
    import dso_gui
    import dso_colors as color
    try:
        import gds_info as gds
    except ImportError:
        import dso2kp as gds

    dso = gds.Dso()
Ctrl+S:Save  Esc:Exit                                     Line:142
```

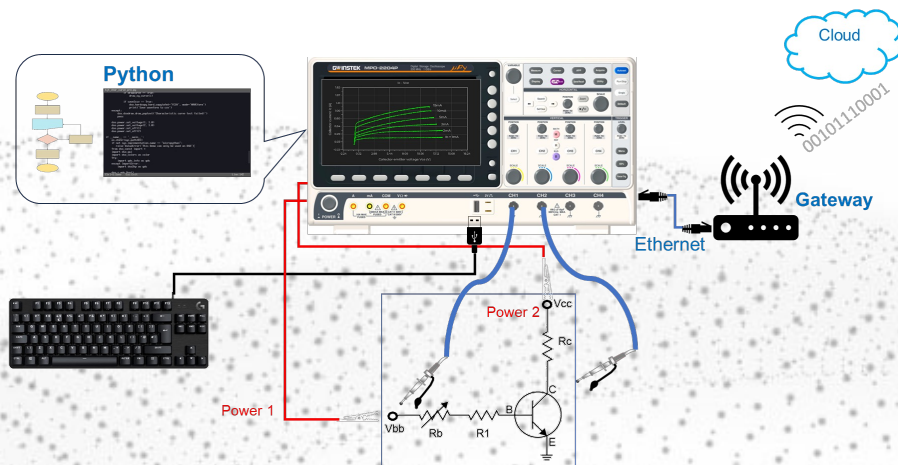

Saving time & cost



Automation Made Easy

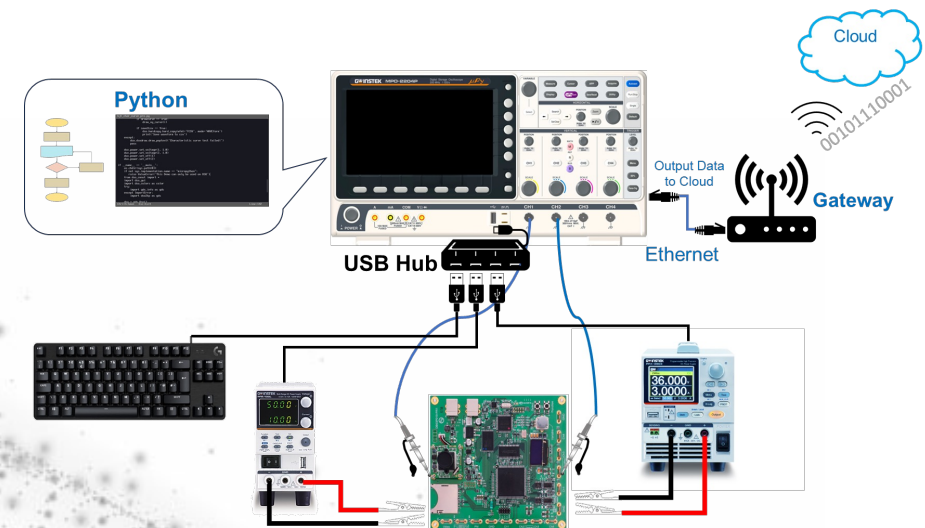
Time is Money

Simplify routine or complex measurement tasks
Stand alone auto-measurement



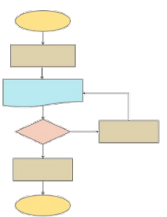
Money is Money

You don't need PLC or PC to configure test system.
As Console : Control other instruments



Python example : Stand Alone Auto-measurement

Python



```
#!/usr/bin/perl
use strict;
use warnings;

my $device = "MPO-2204P";
my $mode = "DC";

if ($device =~ /MPO-2204P/) {
    if ($mode =~ /DC/) {
        do_collect($device, $mode);
    }
}

sub do_collect {
    my ($device, $mode) = @_;
    my $vcc = 1.8;
    my $vbe = 1.8;
    my $vce = 1.8;
    my $ic = 1mA;

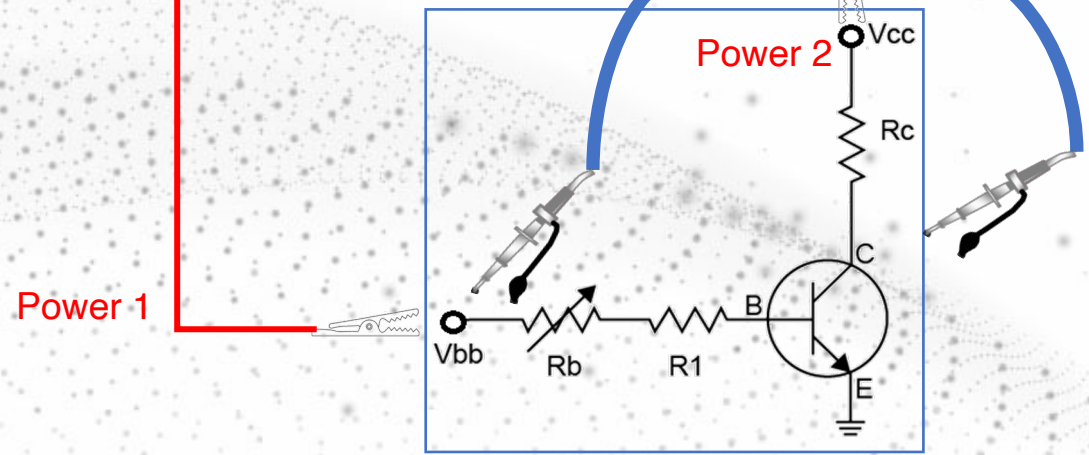
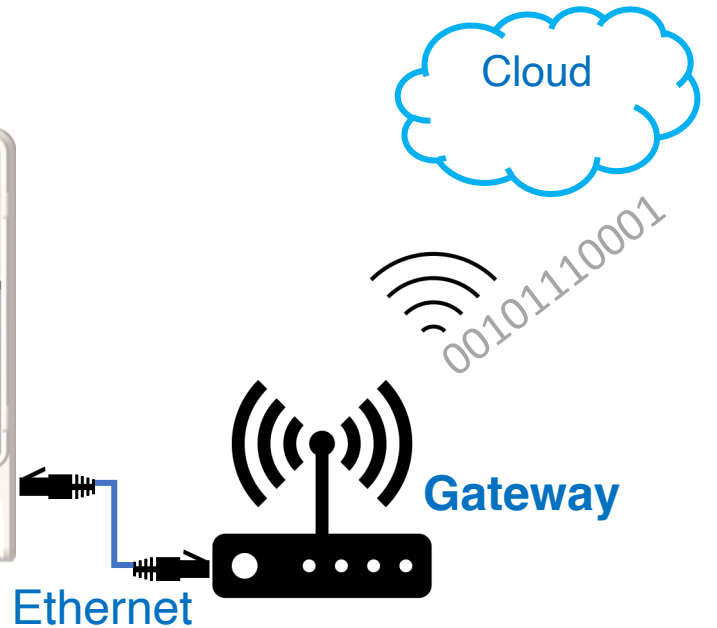
    do_power_set_voltage($vcc);
    do_power_set_voltage($vbe);
    do_power_set_voltage($vce);
    do_power_set_current($ic);

    do_collect_data($device, $mode);
}

sub do_collect_data {
    my ($device, $mode) = @_;
    my $vcc = 1.8;
    my $vbe = 1.8;
    my $vce = 1.8;
    my $ic = 1mA;

    do_collect_data($device, $mode);
}

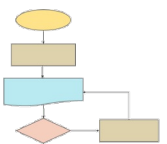
do_collect($device, $mode);
```



Created by Stephen Wu

Python example : As Console

Python



```
#!/usr/bin/env python
import sys
import time
import random

def draw_curve():
    # ... (omitted code) ...

if __name__ == '__main__':
    draw_curve()
    # ... (omitted code) ...
```



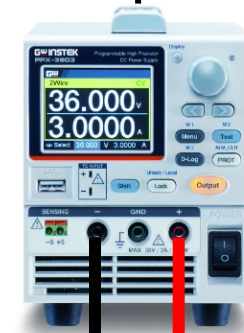
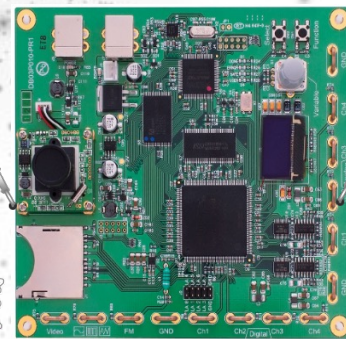
USB Hub

Output Data to Cloud

Ethernet



00101110001

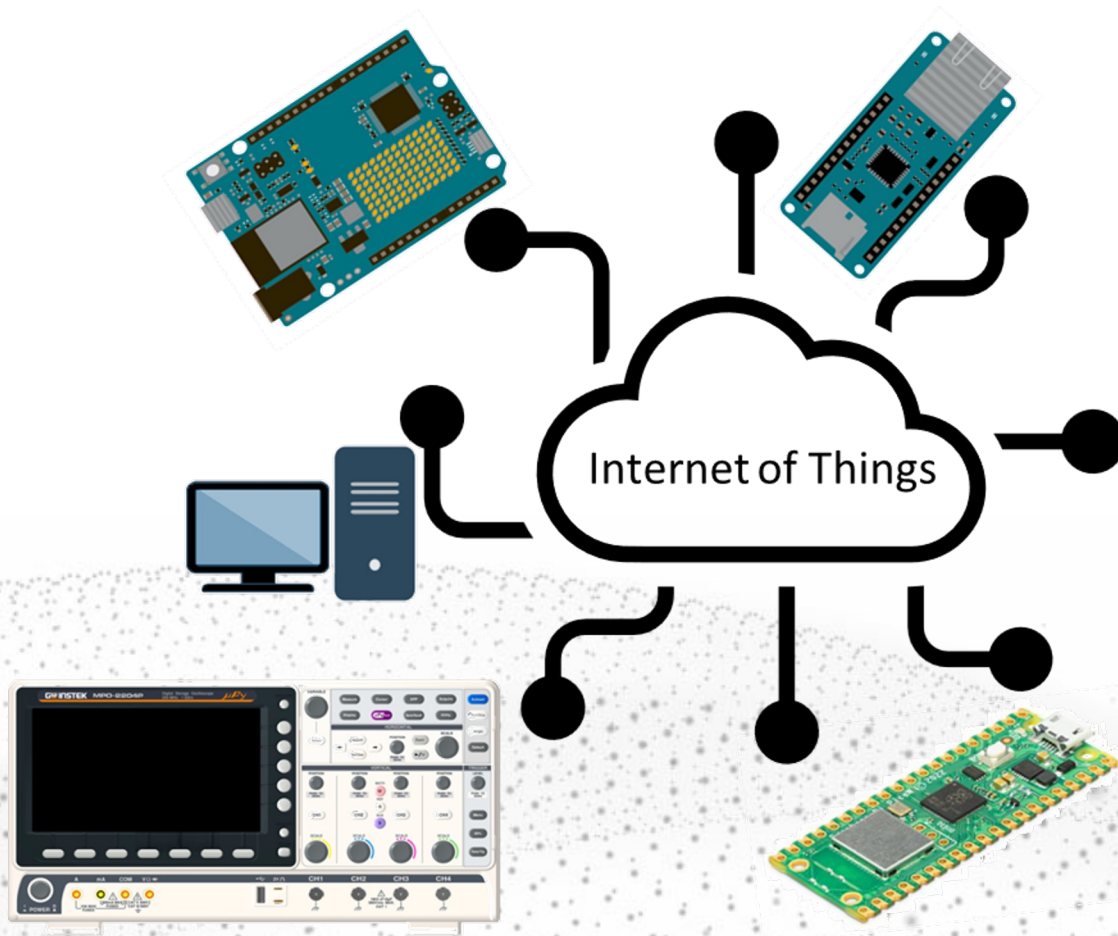


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Data availability



Python Works with the IoT

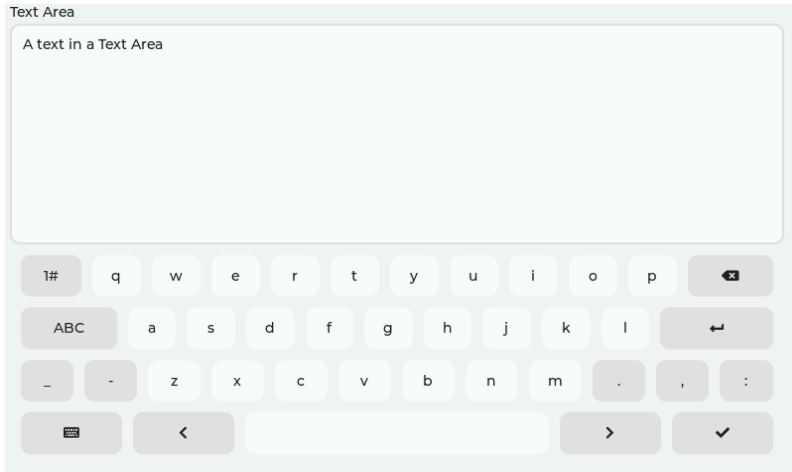


- Message Queuing Telemetry Transport is supported which including the “Publish” and “Subscribe” pattern.
 - Publish : submit measurement data to cloud.
 - Subscribe : Cloud remote control MPO.
- Data availability
 - IoT applications
 - IoT lab. course

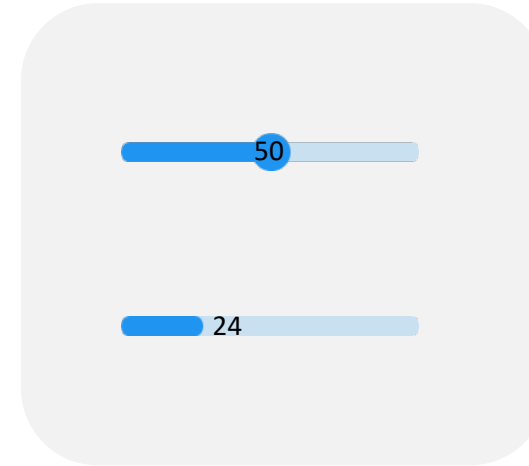
Python GUI (Graphical User Interface)



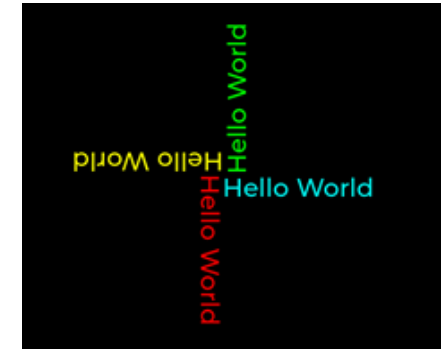
Libraries and Frameworks



Text Input



Slider



Message

Lab. Asset	Oscilloscope	DMM	Function Generator
Quantity	25	25	25
Unit Price	1000	200	400
Total	25000	5000	10000

Table

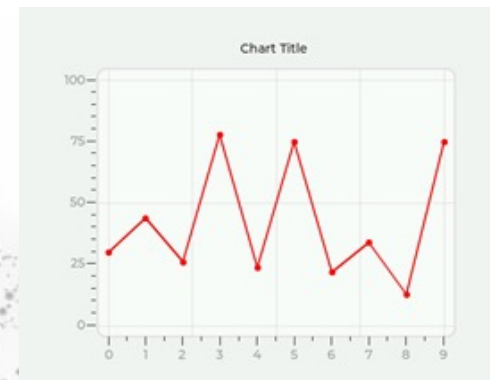
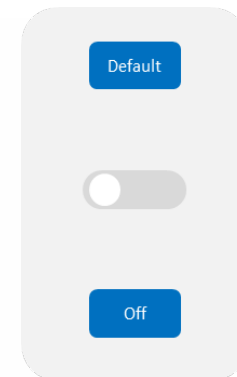


Chart & Scale



Buttons

5 in one

DSO、AWG、DMM、Power Supply
Spectrum Analysis



7 Innovative Function
Diversity Application

Beyond Your Imagination

MPO-2000 Multi-function Programmable Oscilloscope

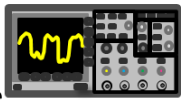
Bandwidth	Record Length	Analog Channels	Sample Rate	Waveform Update Rate
Up to 200 MHz	10 M points	2 or 4	Up to 1 GS/s	Up to 120,000 Waveform/s

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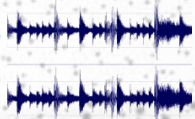
5 in one

DSO、AWG、DMM、Power Supply
Spectrum Analysis

Digital Storage Oscilloscope
100MHz(Basic)
200MHz(Professional)



Arbitrary Waveform Generator
2 CH · 25MHz
200MS/s · 14 bits

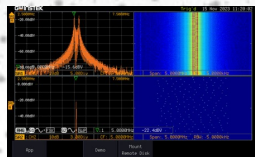


DC Power Supply
2 CH · 1V~5V/1A;
5V~10V/0.5A; 10V~20V/0.25A



Digital Multi-Meter
5000 counts
50mV, 500mV,
5V, 50V, 500V,
1000V 6 ranges

Dual Channel Spectrum Analysis



Same Channel cloud upgrade from Basic to Professional



- MPO-2102B/2104B (Basic version)
- CAN-FD/USB 2.0 (FS) Decode
- Program memory space : 1M
Python could access 1000 pts of waveform data length.
- Oscilloscope bandwidth : 100MHz
- Python API for DSO/SA/AWG/DMM/PWR
Running above 5 preload Python APPs.
Third-party Python APPs executable.
Running Python source code (.py file) from internal disk or USB flash disk.
Ethernet socket protocol
Edit Method : Web or On-screen editor
Could run Packaged USB CDC or GUI APPs

5 preload Python APPs

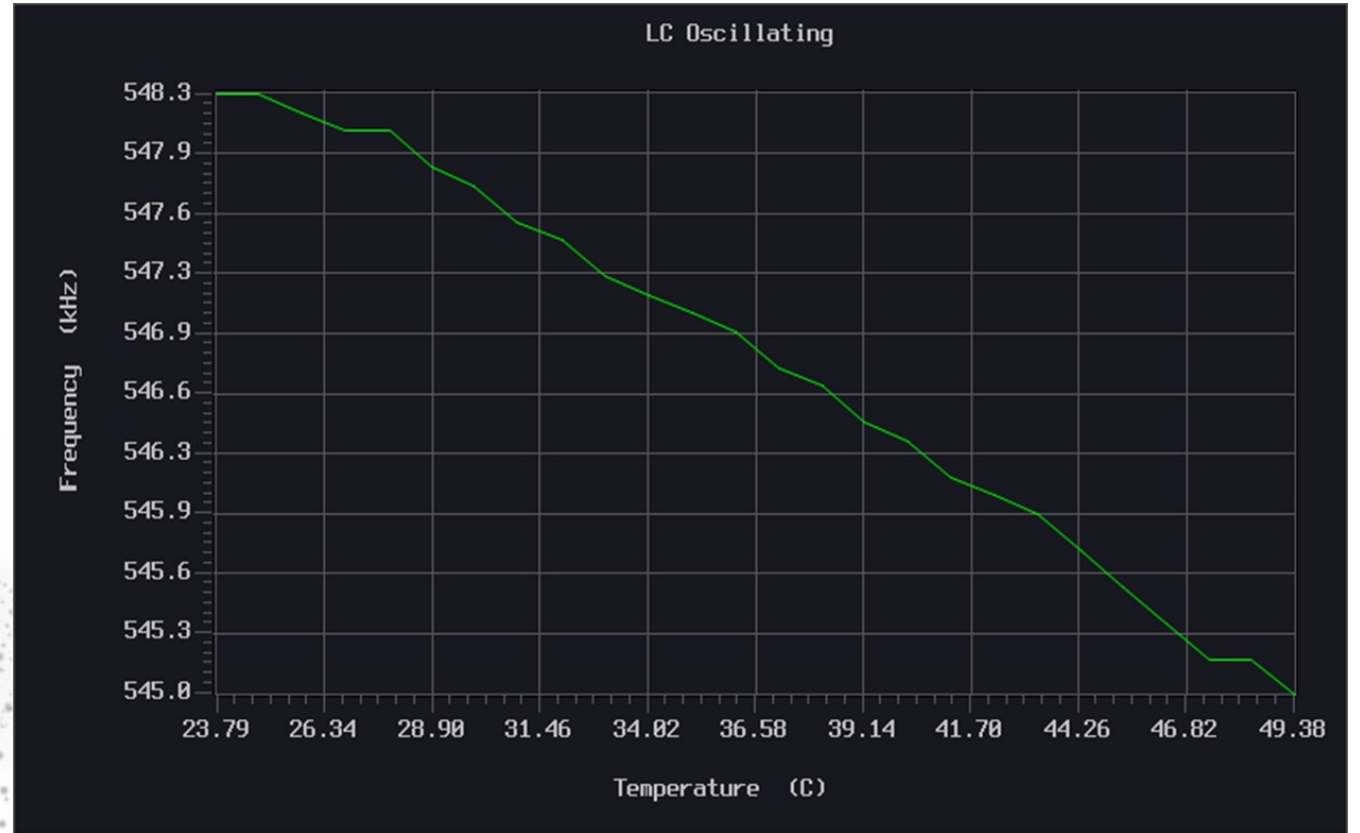
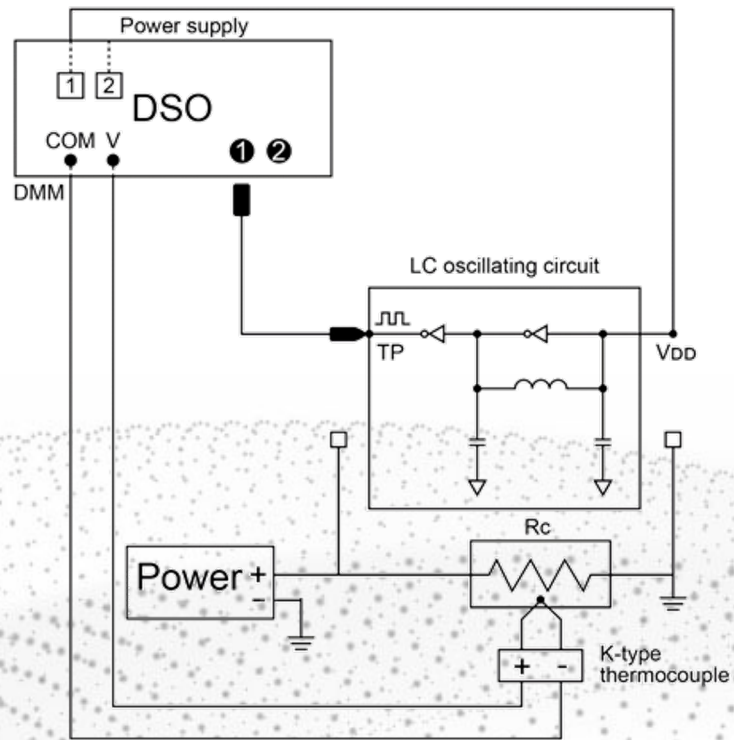
1. LC Oscillator Circuit Frequency and Temperature Characteristics Curve
2. Barcode Scanner Measurement Applications
3. BJT Output Characteristics Curve
4. Fuse Endurance Test
5. LED Forward Voltage Characteristics Curve

MPO-2202P/2204P (Professional)
Support USB CDC device control (E.g. PSW/PFR/PPX) Support Python GUI library Support USB Keyboard, mouse, scanner
CAN-FD/USB 2.0(FS) Additional FlexRay/USB-PD/ I ² S Decode
Program memory space : 20M Python could access 100k pts of waveform data length. 100 times of Basic
Oscilloscope bandwidth : 200MHz
Could Package Python program to MPO-Python APP Python API for DSO/SA/AWG/DMM/PWR Running above 5 preload Python APPs. Third-party Python APPs executable. Running Python source code (.py file) from internal disk or USB flash disk. Ethernet socket protocol Edit Method : Web or On-screen editor Could run and develop Packaged USB CDC or GUI APPs



5 preload Python APPs

1. LC Oscillator Circuit Frequency and Temperature Characteristics Curve
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5. LED Forward Voltage Characteristics Curve

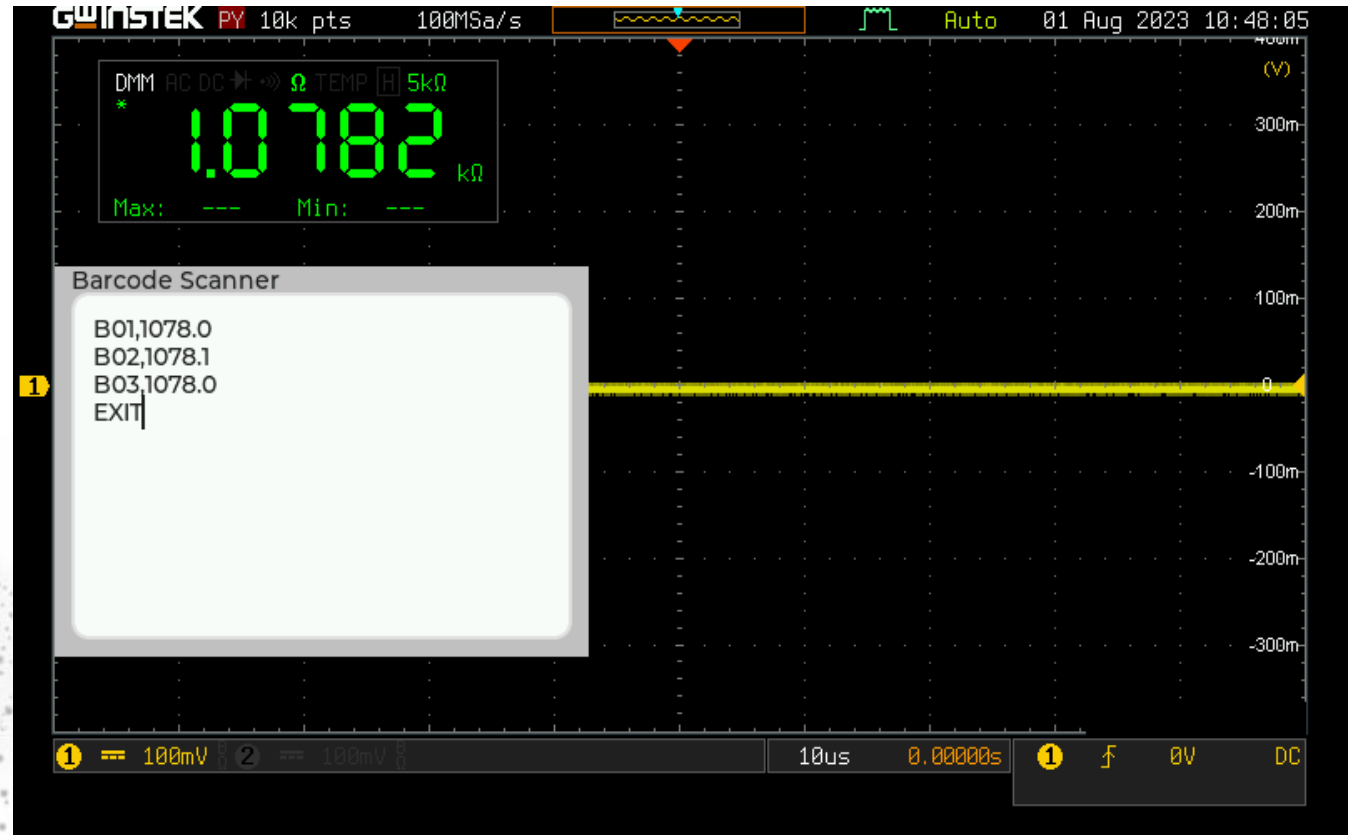




5

preload Python APPs

1. LC Oscillator Circuit Frequency and Temperature Characteristics Curve
2. **Barcode Scanner Measurement Applications**
3. BJT Output Characteristics Curve
4. Fuse Endurance Test
5. LED Forward Voltage Characteristics Curve

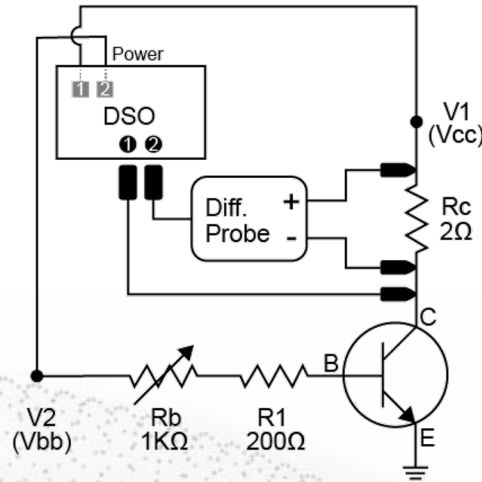
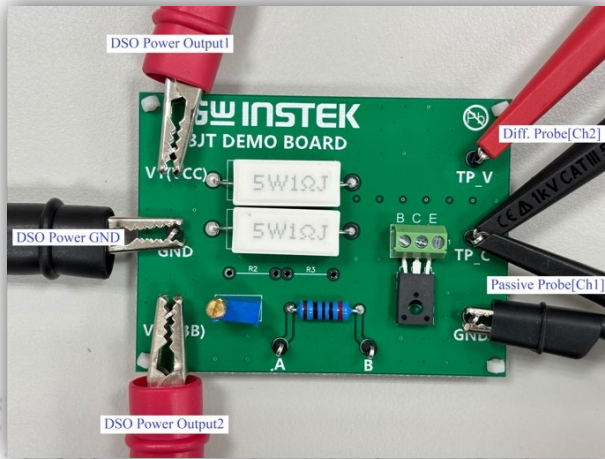




5 preload Python APPs

1. LC Oscillator Circuit Frequency and Temperature Characteristics Curve
2. Barcode Scanner Measurement Applications
3. **BJT Output Characteristics Curve**
4. Fuse Endurance Test
5. LED Forward Voltage Characteristics Curve

MPO2102B (Basic version) result
Using MPO internal two channel power supply

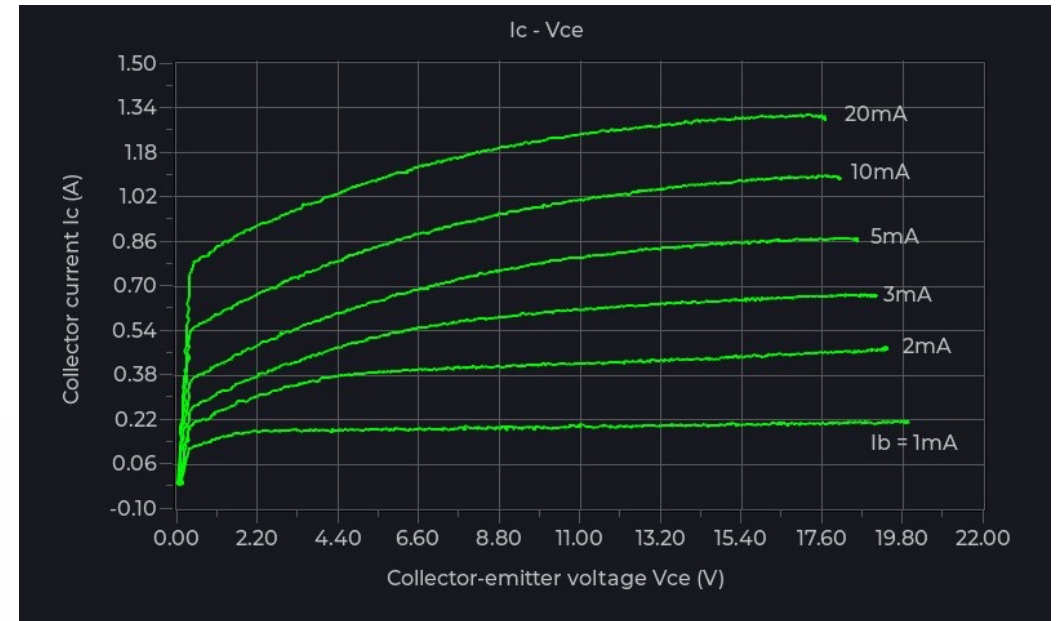
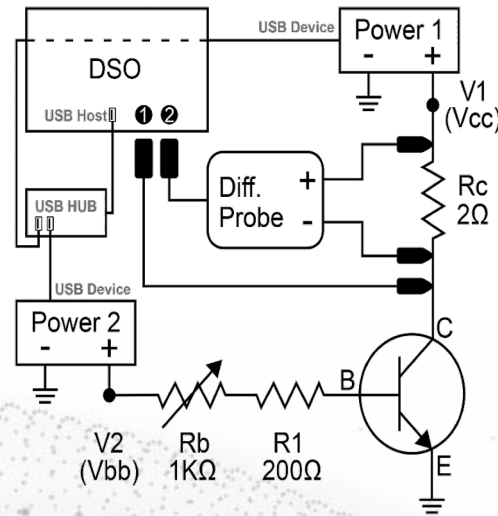
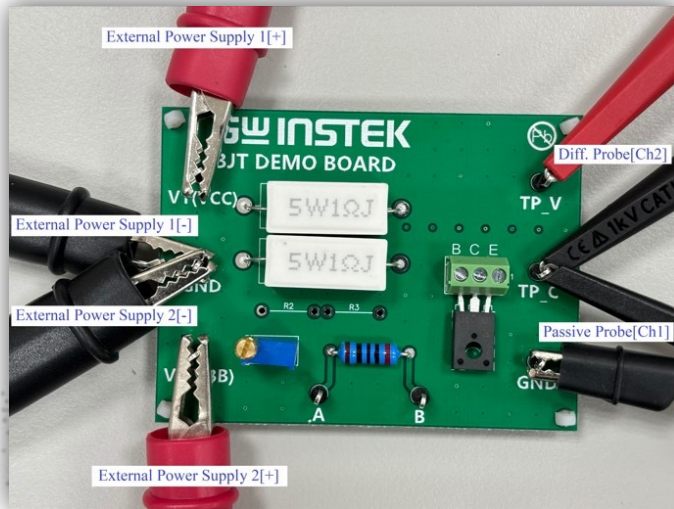




5 preload Python APPs

1. LC Oscillator Circuit Frequency and Temperature Characteristics Curve
2. Barcode Scanner Measurement Applications
3. **BJT Output Characteristics Curve**
4. Fuse Endurance Test
5. LED Forward Voltage Characteristics Curve

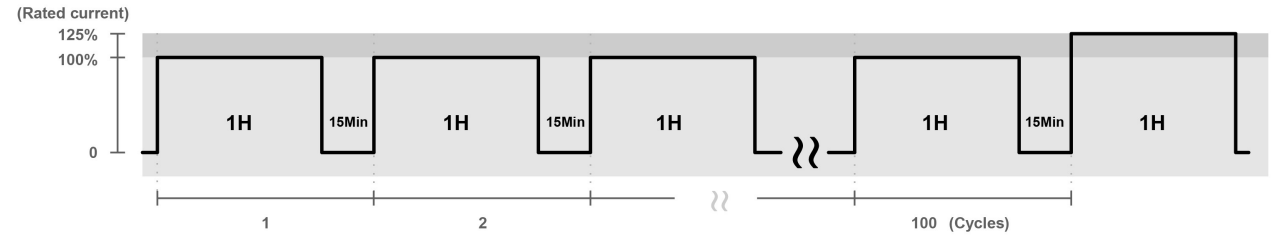
MPO2202P (Professional version) GUI library result
Using MPO control external power supply





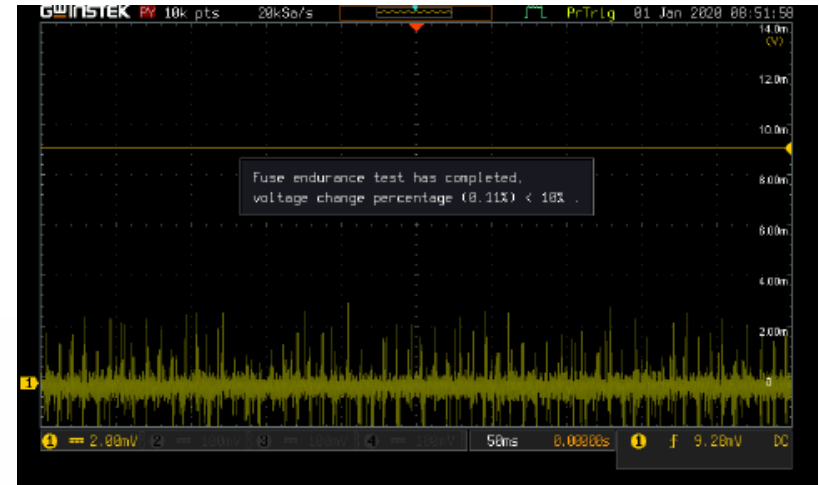
5 preload Python APPs

1. LC Oscillator Circuit Frequency and Temperature Characteristics Curve
2. Barcode Scanner Measurement Application
3. BJT Output Characteristics Curve
4. **Fuse Endurance Test**
5. LED Forward Voltage Characteristics Curve



Python Script Workflow

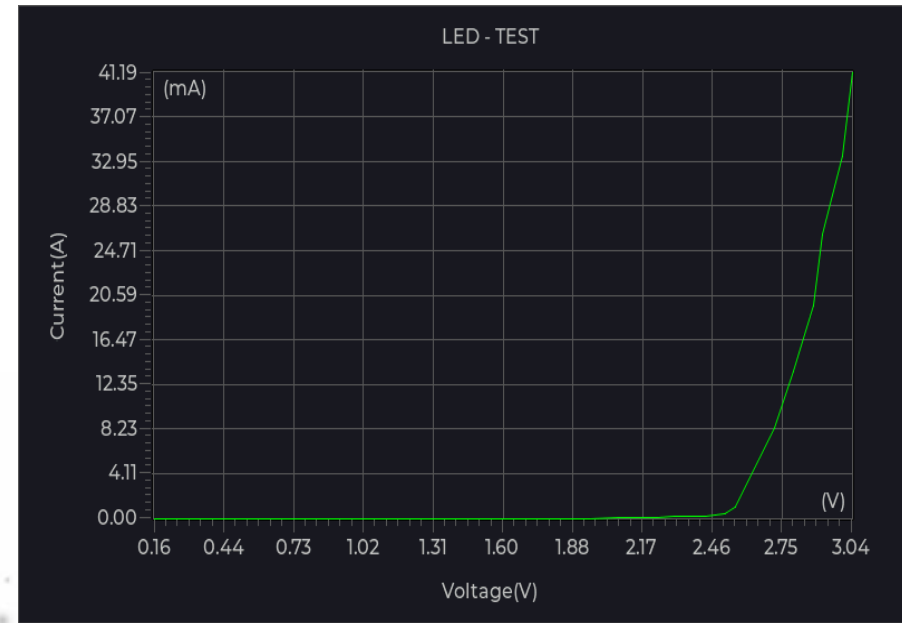
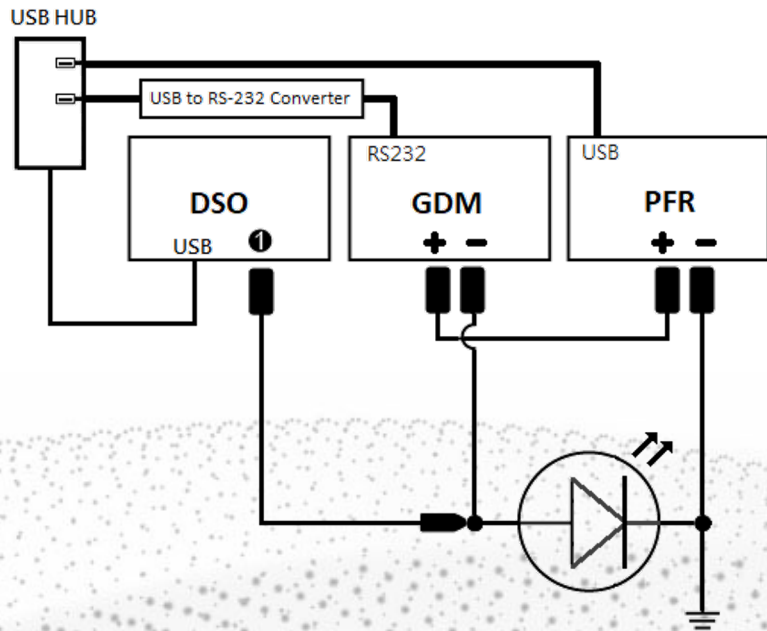
1. Load parameter configuration file.
2. Perform the initial setup for MPO-2000 and external power supply (e.g., PFR-100M).
3. Execute the fuse endurance testing script
4. Verify whether the voltage difference before and after the test procedure has changed by less than 10%.





5 preload Python APPs

1. LC Oscillator Circuit Frequency and Temperature Characteristics Curve
2. Barcode Scanner Measurement Applications
3. BJT Output Characteristics Curve
4. Fuse Endurance Test
5. **LED Forward Voltage Characteristics Curve**



5 in one

DSO、AWG、DMM、Power Supply
Spectrum Analysis



7 Innovative Function
Diversity Application

Beyond Your Imagination

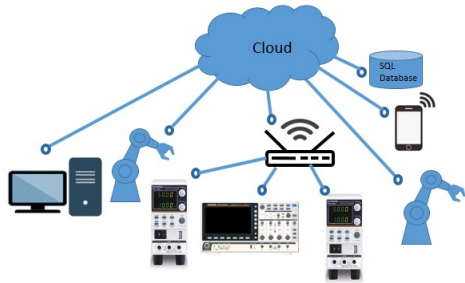
MPO-2000 Multi-function Programmable Oscilloscope

Bandwidth	Record Length	Analog Channels	Sample Rate	Waveform Update Rate
Up to 200 MHz	10 M points	2 or 4	Up to 1 GS/s	Up to 120,000 Waveform/s

Created by Stephen Wu

1 Python Script Execution

Maximum number of installable python APPs : 100 sets (including pre-installed Python APPs)
Running Python source code (.py file) from internal disk or USB flash disk.



4 Serial Bus decode

Basic version : CAN-FD、USB2.0(Full Speed)
Professional version : Plus FlexRay、I²S、USB-PD

CAN

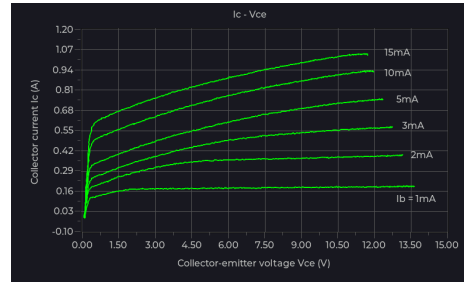


FlexRay™

I²S

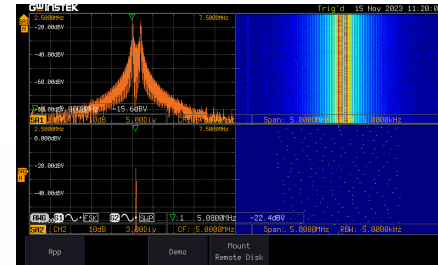
2 Component Tester I-V curve

Providing I-V characteristic curve (Curve Tracer) with readout scale.



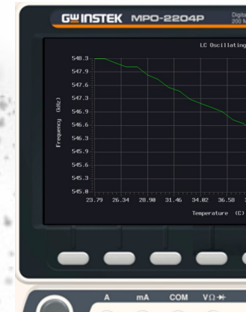
5 Spectrogram

Dual Channel Spectrum Analysis with Spectrogram



6 Support Python GUI Library

Professional version only

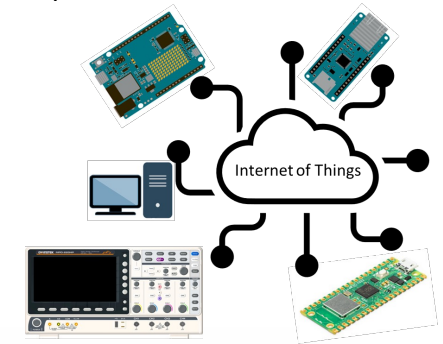


7 Innovative Function

Extend Diversity Application

3 Support MQTT Protocol

Message Queuing Telemetry Transport is supported which including the "Publish" and "Subscribe" pattern.



7 Support USB CDC-ACM, USB HID Protocol (Professional version only)



PSW-30-108



PEL-3031AE



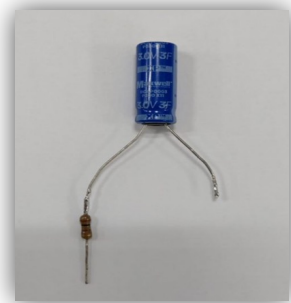
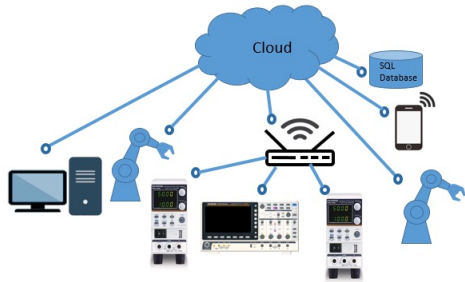
PFR-100L



GW INSTEK

1 Python Script Execution

Maximum number of installable python APPs :
100 sets (including pre-installed Python APPs)
Running Python source code (.py file) from
internal disk or USB flash disk.



DUT: Maxwell 3.0V 3F super capacitor

```
Use Ctrl-D to exit, Ctrl-E for paste mode
>>> import math
>>> t=261
>>> r=100
>>> v=2.01
>>> e=3.3
>>> c=-t/(r*math.log(1-v/e))
>>> print(c)
2.778723389239062
```

7 Innovative Function
Extend Diversity Application

■ Edge Computing – don't need local PC for advanced computing

- Example : RC circuit charging formula

$$V(t) = E \times (1 - e^{-t/(R \times C)})$$

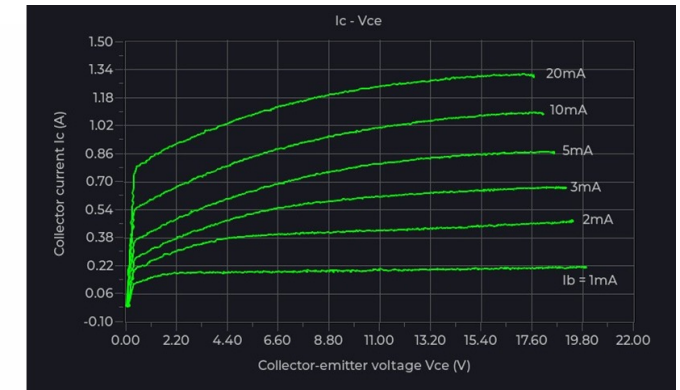
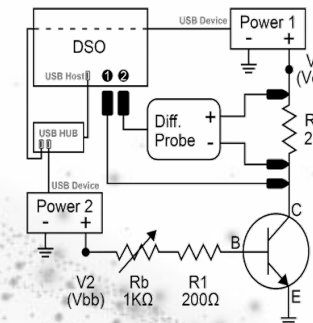
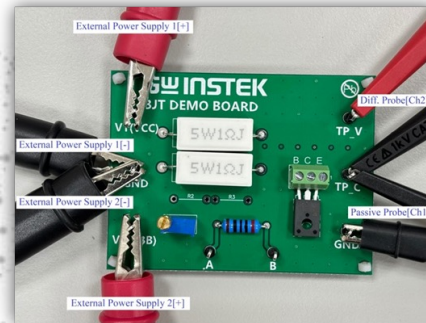
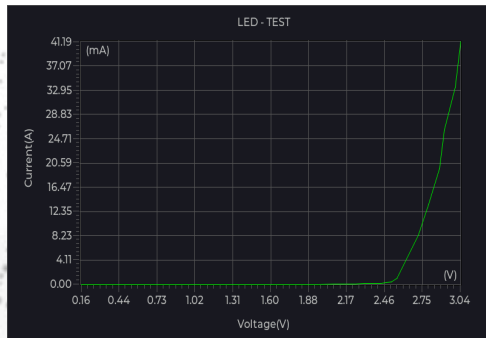
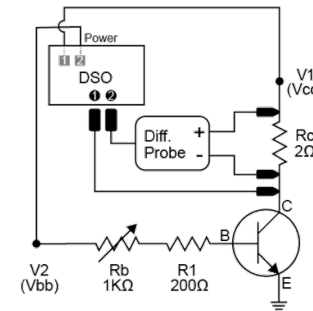
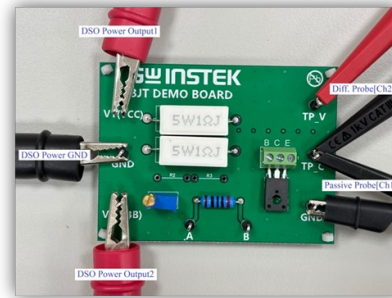
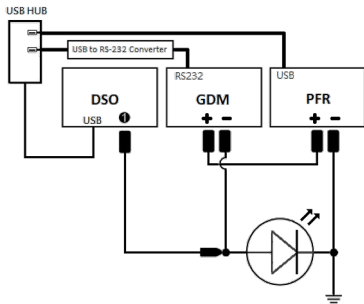
■ Benefit :

- Cost saving
- Increasing productivities.

2 Component Tester I-V curve

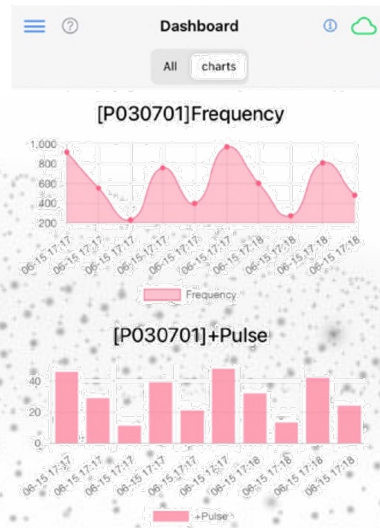
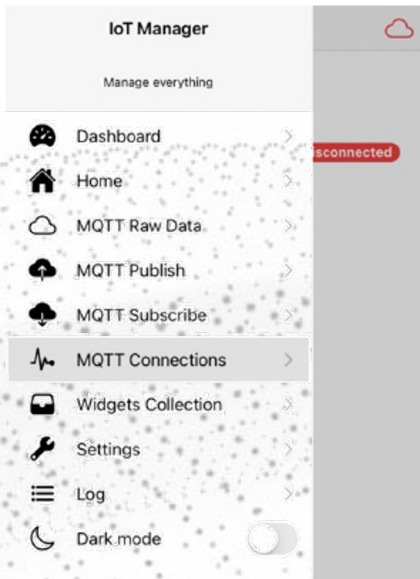
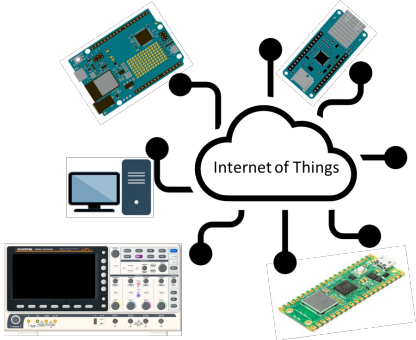
Providing I-V characteristic curve (Curve Tracer) with readout scale.

7 Innovative Function Extend Diversity Application



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Message Queuing Telemetry Transport is supported which including the “Publish” and “Subscribe” pattern.



7 Innovative Function Extend Diversity Application

■ Message Queuing Telemetry Transport is supported which including the “Publish” and “Subscribe” pattern.

- Publish : submit measurement data to cloud.
- Subscribe : Cloud remote control MPO.

■ Data availability

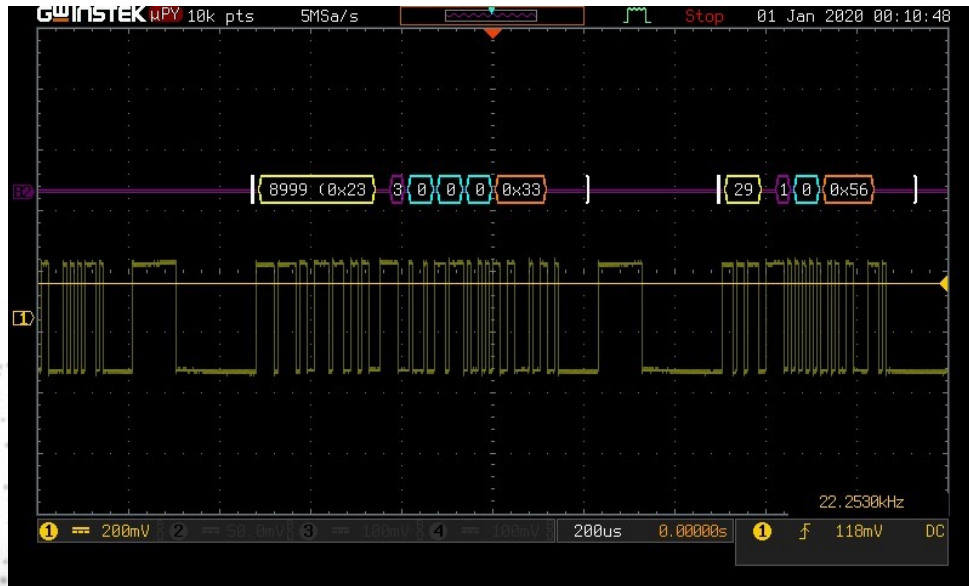
- IoT applications
- IoT lab. course

4 Serial Bus decode

Basic version : CAN-FD 、 USB2.0(Full Speed)
Professional version : Plus FlexRay 、 I²S 、 USB-PD



CAN-FD decode result

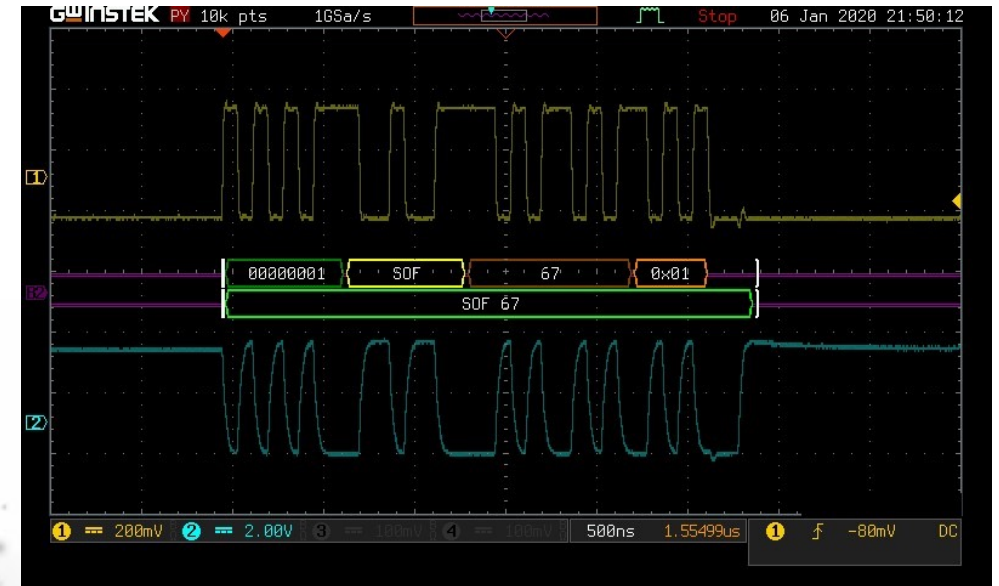


MPO-2000B/P Basic version & Professional version

7 Innovative Function Extend Diversity Application



USB2.0(Full Speed) decode result

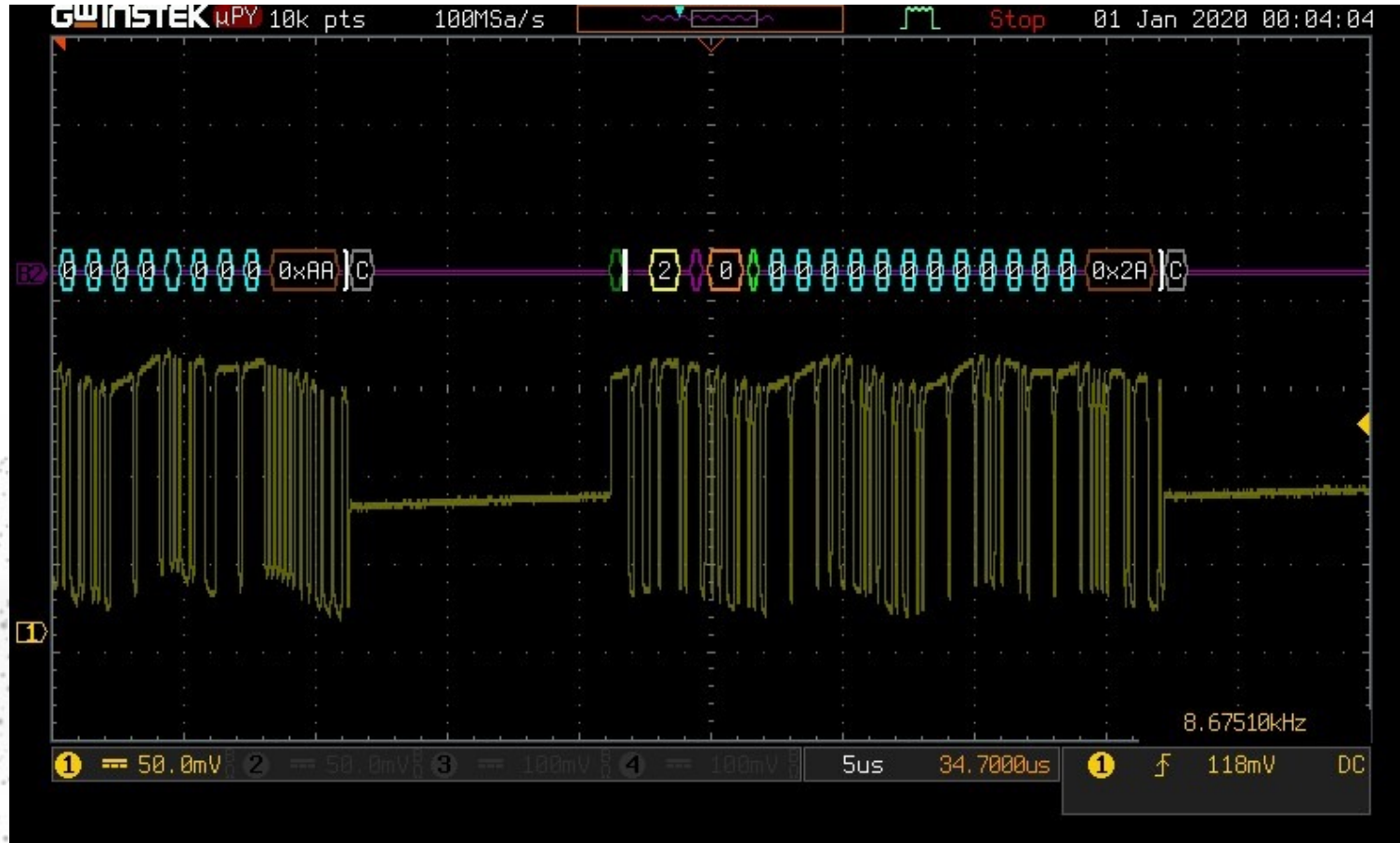


4 Serial Bus decode

Basic version : CAN-FD 、 USB2.0(Full Speed)
Professional version : Plus FlexRay 、 I²S 、 USB-PD

7

Innovative Function
Extend Diversity Application



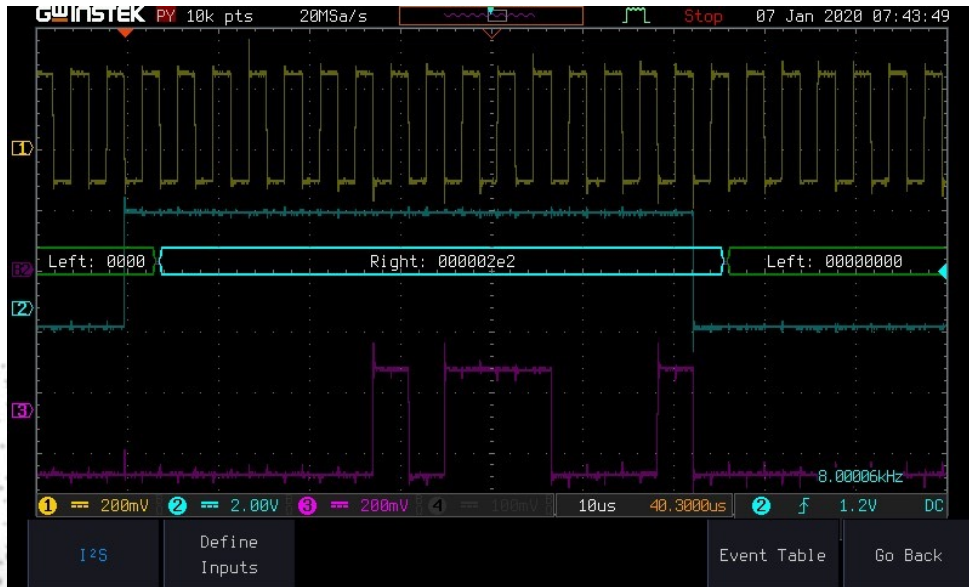
4 Serial Bus decode

Basic version : CAN-FD 、 USB2.0(Full Speed)
Professional version : Plus FlexRay 、 I²S 、 USB-PD

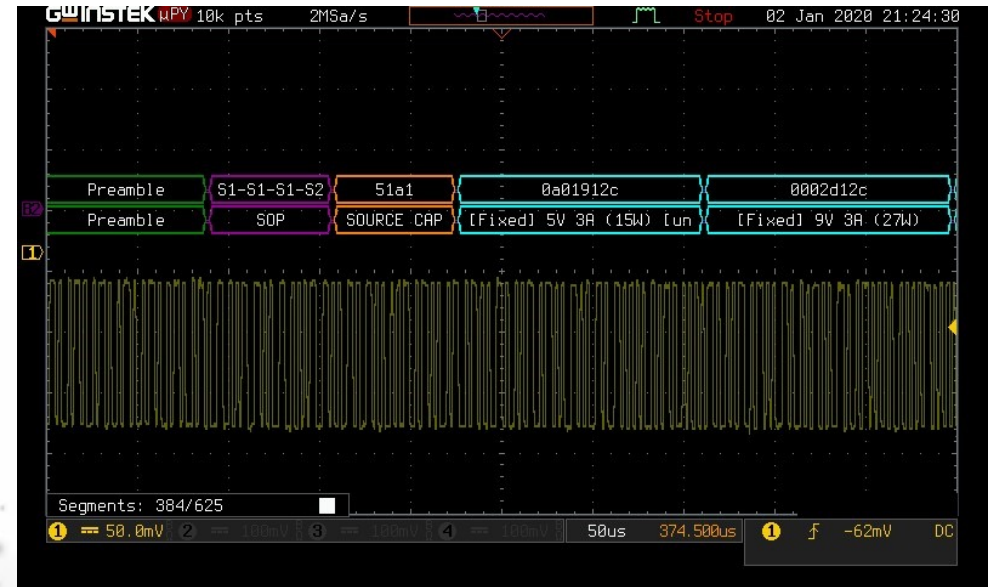
7 Innovative Function Extend Diversity Application



I²S decode result

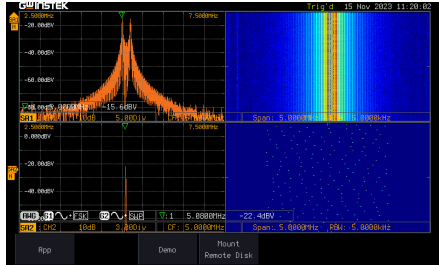


USB2.0 PD decode result

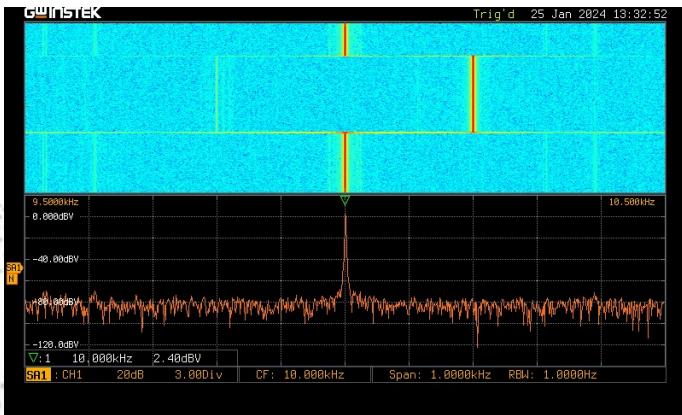


5 Spectrogram

Dual Channel Spectrum Analysis with Spectrogram



Modulation domain analysis
(time v.s frequency)



7 Innovative Function Extend Diversity Application

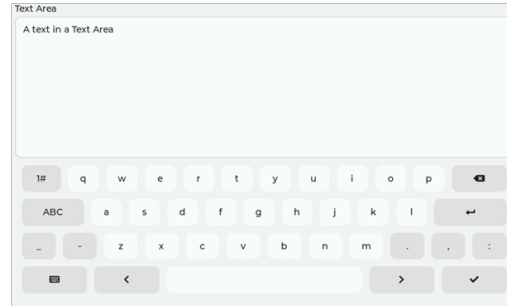
- Span : 1kHz~500MHz (Max.)
- Resolution Bandwidth : 1Hz~500kHz (Max.)
- Applications
 - Modulation domain analysis (time v.s frequency)
 - Low Frequency ~ VHF wireless communication.
 - Audio Frequency or Supersonic detection
 - Vibration analysis (mechanical resonance)
- Near field antenna is optional

6 Support Python GUI Library

Professional version only



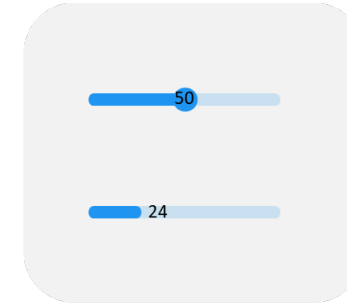
- ★ Professional version could develop and packaging Python GUI library.
- ★ Basic version support running Packaged Python GUI APP



Text Input

Lab. Asset	Oscilloscope	DMM	Function Generator
Quantity	25	25	25
Unit Price	1000	200	400
Total	25000	5000	10000

Table



Slider

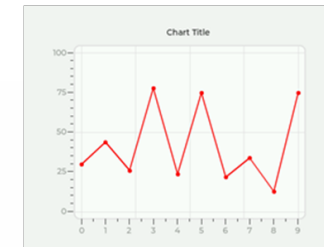
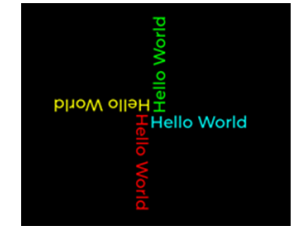
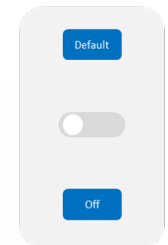


Chart & Scale



Message



Buttons

7 Innovative Function Extend Diversity Application

7 Support USB CDC-ACM, USB HID Protocol (Professional version only)



PSW-30-108



PEL-3031AE



PFR-100L



ASR-3400



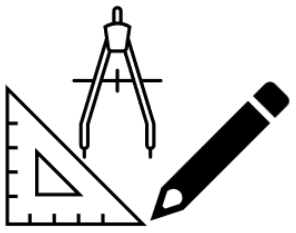
GDM-8261A



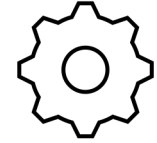
PPX-3603

7 Innovative Function Extend Diversity Application

- USB Host could control other USB equipment (USB CDC-ACM protocol) like following products.
 - Power : PSW 、 PPX 、 PFR 、 ASR-3000
 - DMM : GDM-8261A
 - Load : PEL-3000AE
- USB Host could control USB peripherals (USB HID protocol equipment, like keyboard/mouse/bar code scanner)
- ★ Professional version could develop above USB scripts.
- ★ Basic version support running above USB Python APP



APPLICATIONS



■ Educational Application

- It Reduces The Time Required for Students to Conduct Electronic Experiments (Course packaging design is required).
- Measurement Automation Tutorial (Python Programming)
- MQTT Publisher / Subscriber (IoT Course)

■ Industrial Application

- Small-scale Automated Testing (Production Lines)
- Component Durability Testing (Quality Assurance)
- Engineers Automate Data Collection and Testing (R&D)

Specifications (1)

MPO-2000 series Specifications

	MPO-2102B	MPO-2104B	MPO-2202P	MPO-2204P
Channels	2ch+Ext	4ch	2ch+Ext	4ch
Bandwidth	DC~100MHz (-3dB)	DC~100MHz (-3dB)	DC~200MHz (-3dB)	DC~200MHz (-3dB)
Rise time(Calculated)	3.5ns	3.5ns	1.75ns	1.75ns
Bandwidth Limit	20MHz	20MHz	20M/100MHz	20M/100MHz
Python Script Execution (μPy)	Basic version	Basic version	Professional version	Professional version
Vertical Sensitivity				
Resolution	8 bit			
Input Coupling	1mV~10V/div			
Input Impedance	AC, DC, GND			
DC Gain Accuracy	1MΩ// 16pF approx.			
Polarity	±(3%)when 2mV/div or greater is selected			
Maximum Input Voltage	±(5%)when 1mV/div is selected;			
Offset Position Range	Normal & Invert			
Waveform Signal Process	300Vrms, CAT I			
	1mV/div ~ 20mV/div : ±0.5V			
	50mV/div ~ 200mV/div : ±5V			
	500mV/div ~ 2V/div : ±25V			
	5V~10V/div : ±250V			
	+, -, ×, ÷, FFT, User Defined Expression.			
	FFT: Spectral magnitude. Set FFT Vertical Scale to Linear RMS or dBV RMS, and FFT Window to Rectangular, Hamming, Hanning, or Blackman.			

Specifications (2)

Trigger	
Source	CH1 ,CH2, CH3*, CH4*, Line, EXT** * four channel models only **dual channel models only
Trigger Mode	Auto (supports Roll Mode for 100 ms/div and slower), Normal, Single
Trigger Type	Edge, Pulse Width(Glitch), Video, Pulse Runt, Rise & Fall(Slope), Alternate, time out, Event-Delay(1~65535 events), Time-Delay(Duration,4ns~10s), Bus (UART,I ² C, SPI*, CAN, LIN) *This bus decoder is only available on 4 channel models.
Holdoff range	4ns~10s
Coupling	AC,DC,LF rej. ,HF rej. ,Noise rej.
Sensitivity	1div
External Trigger	
Range	±15V
Sensitivity	DC ~ 100MHz Approx. 100mV 100MHz ~ 200MHz Approx. 150mV
Input Impedance	1MΩ±3%~16pF
Horizontal	
Time base Range	1ns/div ~ 100s/div (1-2-5 increments) ROLL: 100ms/div ~ 100s/div
Pre-trigger	10 div maximum
Post-trigger	2,000,000 div maximum.
Time base Accuracy	±50 ppm over any ≥ 1 ms time interval
Real Time Sample Rate	Max.:1GSa/s (4ch models) Per channel 1GSa/s (2ch models)
Record Length	Max. 10M pts
Acquisition Mode	Normal, Average, Peak Detect, Single
Peak Detection	2ns (typical)
Average	selectable from 2 to 512

Specifications (3)

AWG Specifications	
Channels	2
Sample Rate	200 M sa/s
Vertical Resolution	14 bits
Max. Frequency	25 MHz
Waveforms	Arbitrary, Sine, Square, Pulse, Ramp, DC, Noise, Sinc, Gaussian, Lorentz, Exponential Rise, Exponential Fall, Haversine, Cardiac
Output Range	20 mVpp to 5 Vpp, HighZ; 10 mVpp to 2.5 Vpp, 50 Ω
Output Resolution	1mV
Output Accuracy	2% (1 kHz)
Offset Range	$\pm 2.5V$, High Z; $\pm 1.25V$, 50 Ω
Offset Resolution	1mV
Sine	
Frequency Range	100mHz to 25MHz
Flatness (relative to 1 kHz)	± 0.5 dB<15MHz ± 1 dB 15MHz~25MHz
Harmonic Distortion	-40 dBc
Stray (Non-harmonic)	-40 dBc
Total Harmonic Distortion	1%
S/N Ratio	40 dB
Square/Pulse	
Frequency Range	100 mHz to 15MHz
Rise/Fall time	<15ns
Overshoot	<3%
Duty cycle	Square:50%; Pulse:0.4%~99.6%
Min. Pulse Width	30 ns
Jitter	500 ps
Ramp	
Frequency Range	100mHz~1MHz
Linearity	1%
Symmetry	0 to 100%

Specifications (4)

DMM Specifications

Reading	5,000 counts
Voltage Input	CAT II 600Vrms, CAT III 300Vrms
	Below are the basic conditions required to operate the DMM within specifications:
	*Calibration: Yearly.
	*Operating Temperature Specification: 18~28°C (64.4~82.4°F).
	*Relative humidity: 80%. (Non condensing)
	*Accuracy: \pm (% of Reading + % of Range).
	*AC measurement are based on a 50% duty cycle.
DC VOLTAGE	50mV, 500mV, 5V, 50V, 500V, 1000V 6 ranges
Accuracy	50mV, 500mV, 5V, 50V, 500V, 1000V \pm (0.1% +0.1%)
Input Impedance	10M Ω
DC CURRENT	50mA, 500mA, 10A 3 ranges
Accuracy	50mA - 500mA \pm (0.5% + 0.1%) 10A \pm (0.5% + 0.5%)
AC VOLTAGE	50mV, 500mV, 5V, 50V, 700V 5 ranges
Accuracy	50mV, 500mV, 5V, 50V, 700V \pm (1.5% +1.5%) at 50Hz-1kHz
AC CURRENT	50mA, 500mA, 10A 3 ranges
Accuracy*	50mA, 500mA, \pm (1.5% + 0.1%) at 50Hz-1kHz 10A \pm (3% +0.5%) at 50Hz-1kHz * Measure range: >10mA
RESISTANCE	500 Ω , 5k Ω , 50k Ω , 500k Ω , 5M Ω , 5 ranges
Accuracy*	500 Ω , 5k Ω , 50k Ω , 500k Ω , 5M Ω : \pm (0.3% + 0.01%) *Measure range: 50 Ω to 5M Ω
Diode Test	Maximum forward voltage 1.5V, Open voltage 2.8V
Temperature (Thermocouple)*	Range: -50°C ~ + 1000°C Resolution: 0.1°C * Specifications do not include probe accuracy.
Continuity Beeper	15 Ω

Created by Stephen Wu

Specifications (5)

Power supply Specifications

Output Channel	CH1 & CH2
Output range	1V~5V/1A; 5V~10V/0.5A; 10V~20V/0.25A* Peak current: 1A @250ms
Voltage Step	0.1V Continuously Adjustable
Output Voltage Accuracy	±3%
Ripple and Noise	50mVrms

Specifications (6)

Spectrum Analyzer Specifications

Frequency range	DC~500MHz Max., dual channel with spectrogram (based on Advanced FFT). Notice: Frequency which exceeds analog front end bandwidth is uncalibrated)
Span	1kHz~500MHz(Max.)
Resolution bandwidth	1Hz ~ 500kHz(Max.)
Reference level	-50 dBm to +40dBm in steps of 5dBm
Vertical units	dBV RMS; Linear RMS; dBm
Vertical position	-12divs to +12divs
Vertical scale	1dB/div to 20dB/div in a 1-2-5 Sequence
Display average noise level	1V/div < -50dBm, Avg : 16 100mV/div < -70dBm, Avg : 16 10mV/div < -90dBm, Avg : 16
Spurious response	2nd harmonic distortion < 40dBc 3rd harmonic distortion < 45dBc
Frequency domain trace types	Normal ; Max Hold ; Min Hold ; Average (2 ~ 512)
Detection methods	Sample ; +Peak ; -Peak ; Average
FFT Windows	FFT Factor : Hanning 1.44 Rectangular 0.89 Hamming 1.30 Blackman 1.68

Order information

- MPO-2204P 200MHz, 4-channel, Digital Storage Oscilloscope, Spectrum analyzer, dual channel 25MHz AWG, 5,000 counts DMM and power supply
- MPO-2202P 200MHz, 2-channel, Digital Storage Oscilloscope, Spectrum analyzer, dual channel 25MHz AWG, 5,000 counts DMM and power supply
- MPO-2104B 100MHz, 4-channel, Digital Storage Oscilloscope, Spectrum analyzer, dual channel 25MHz AWG, 5,000 counts DMM and power supply
- MPO-2102B 100MHz, 2-channel, Digital Storage Oscilloscope, Spectrum analyzer, dual channel 25MHz AWG, 5,000 counts DMM and power supply
- EAN code:

– Model name	Part No.	EAN-13 code	
– MPO-2204P (CE)		01MP224P00GS	4711458120757
– MPO-2202P (CE)		01MP222P00GS	4711458120740
– MPO-2104B (CE)		01MP214B00GS	4711458120733
– MPO-2102B (CE)		01MP212B00GS	4711458120726
- Standard Accessories
 - Power Cord, Certificate of Calibration,
 - Passive probe (one probe per channel)
 - GTL-110 BNC-BNC cable*2
 - GTL-105A Alligator Clip test lead
 - GTL-207 Banana plug test lead
- Option
 - MP2-PRO: Basic version upgrade to Professional version Part No:11MP-2PRO0C01
- Free Download
 - OpenWave software; LabVIEW driver



Website



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