

# PFR-100 Series

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## Fanless Multi-Range Programmable DC Power Supply

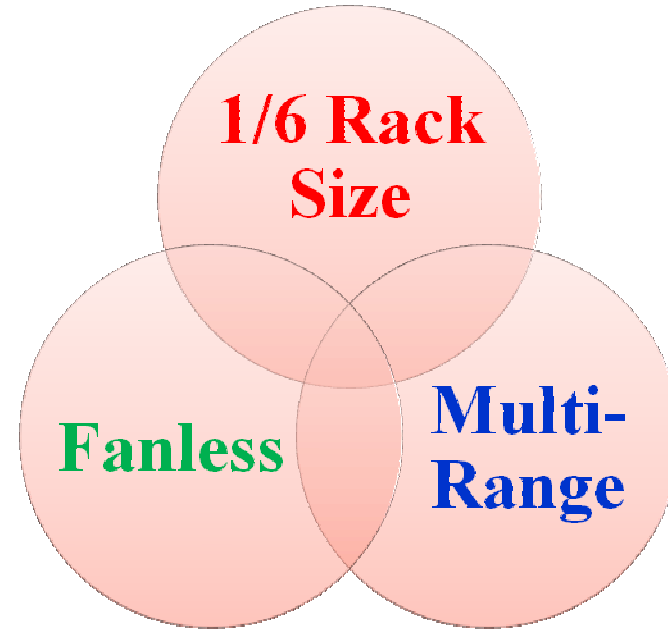


**GW INSTEK**

Made to Measure

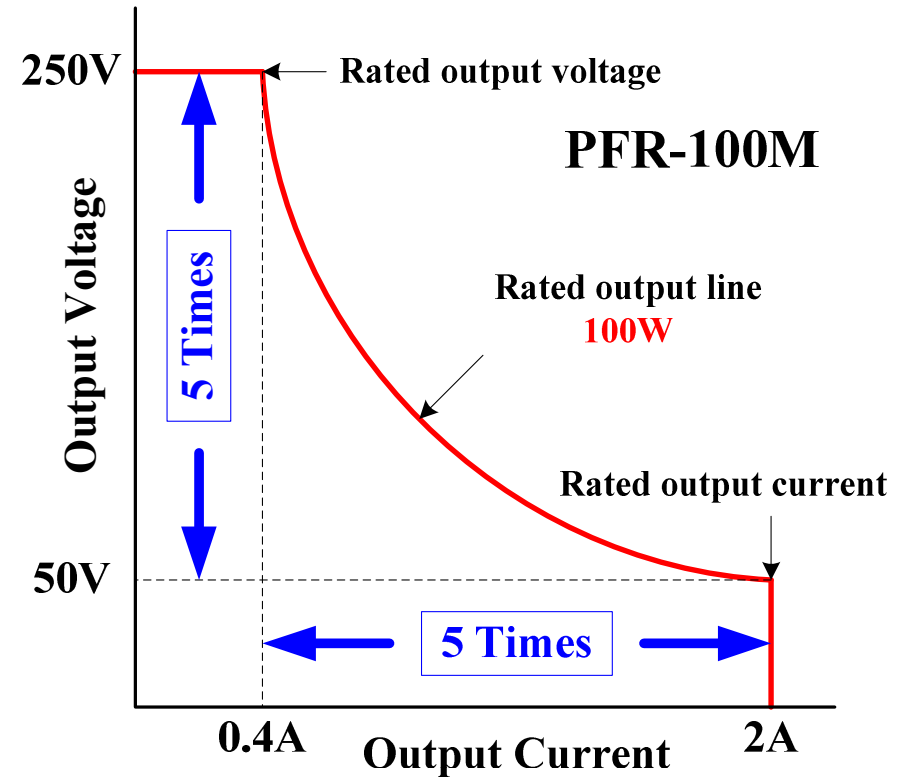
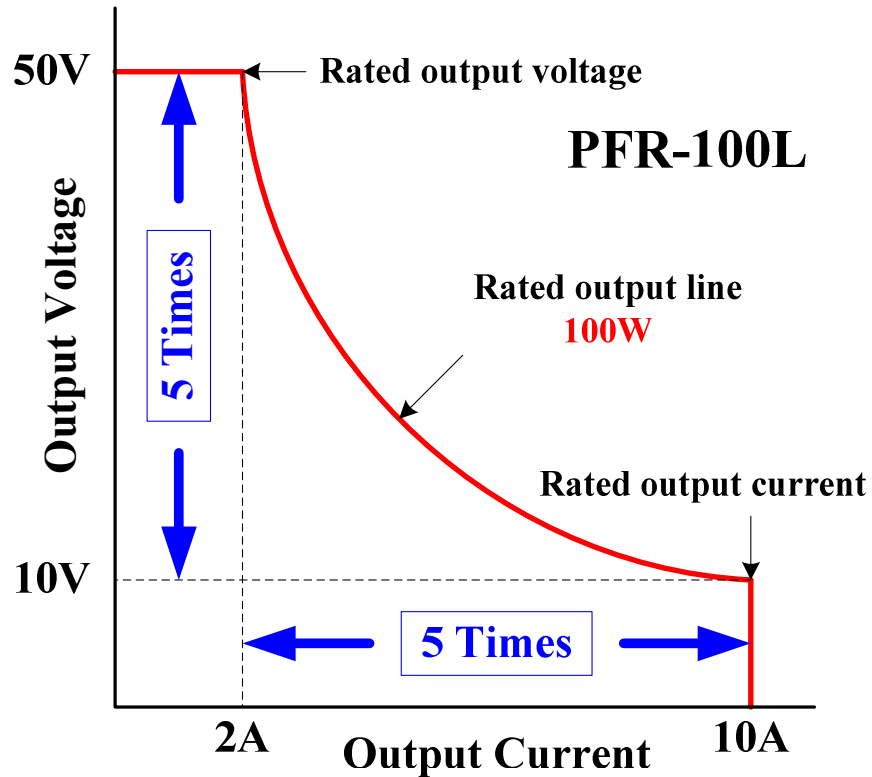
固緯電子實業股份有限公司

# Series Lineup



Model Name	Voltage	Current	Power	Power Ratio
	(V)	(A)	(W)	(Times)
PFR-100L	0 - 50	0 - 10	100	5
PFR-100L (with GPIB & LAN)				
PFR-100M	0 - 250	0 - 2	100	5
PFR-100M (with GPIB & LAN)				

# Operating Area



# Key Features

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- 1. Fanless**
- 2. Multi-Range Operation (Constant Power Output )**
- 3. C.C/C.V Priority**
- 4. Sequence Control**
- 5. Variable Slew Rate**
- 6. Bleeder resistor**
- 7. Support 19” Rack mount (EIA/JIS Standard)**
- 8. Flexible Remote Interface (USB, RS-232/485, Analog Control)  
Option GPIB+LAN**

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# Market Positioning

# Segmentation

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- LED Lighting: Multi Channel
- Plating: Fan less
- Battery: Multi Channel, Collective Control
- Electrical production (40%); Plating (30%); Battery (10%); Others (20%)

# Targeting

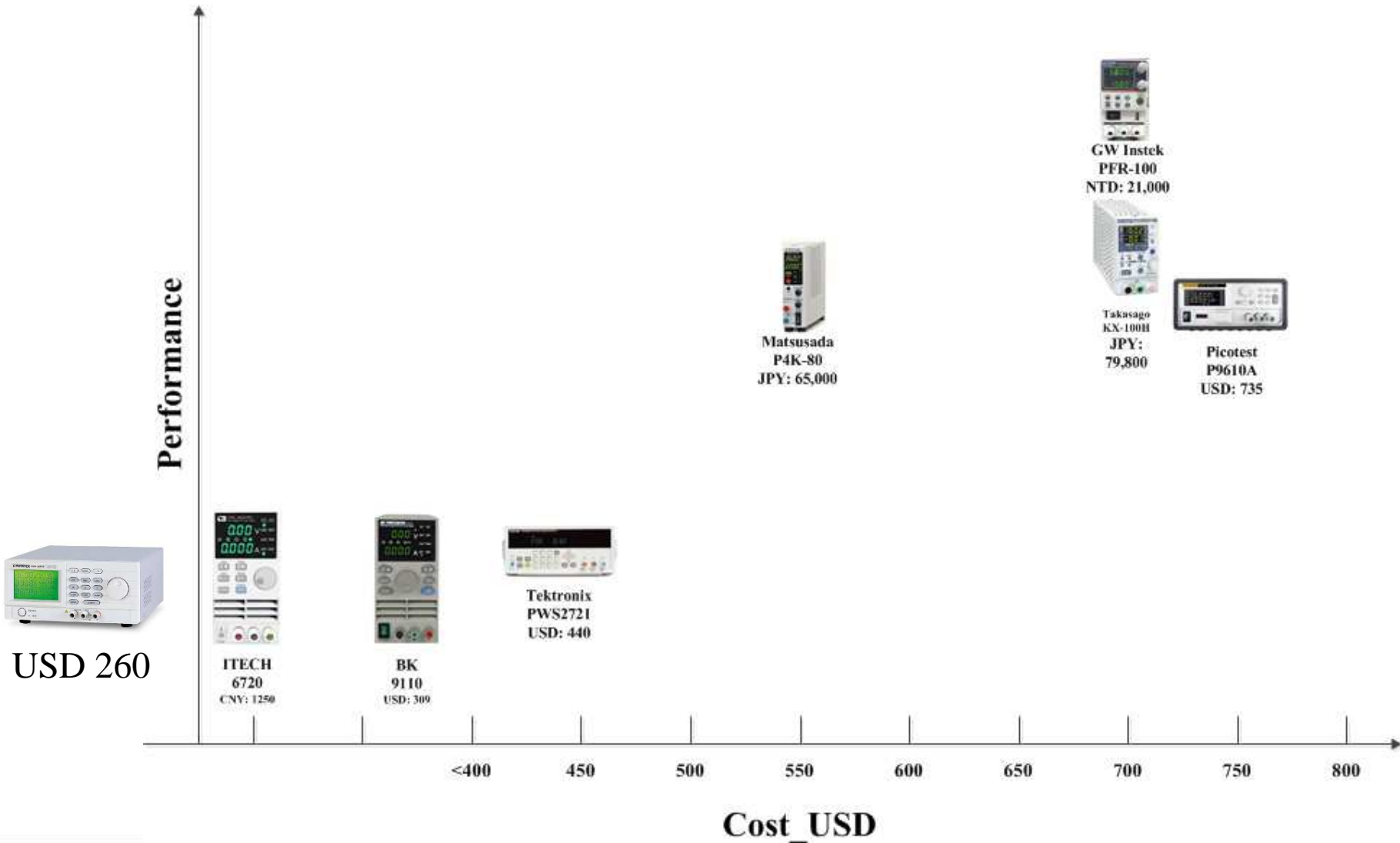
PFR-100L	50V	LED	It is for an LED module test. It is for a white LED reliability test.
		In-car device	Test of the actual survey board
		Secondary battery	The charge of the single cell. The charge of the battery pack.
		Motor	The design of the motor. Inspection of the product line.
		Semiconductor	Semiconductor testing system use. Power semiconductor testing system use.
		Projector	Production line.
		Sensor	Current sensor product line.
PFR-100M	250V	LED	It is for LED module production experimentally. It is for aging
		Solar Panal	It is for the experiment of the solar panel
		Semiconductor	Power semiconductor testing system use.
		Secondary battery	It is for charge

# Targeting

- R&D / Production Lin
  - ✓ Multi-Range, Small&Light, Front Panel Output
- Electronic parts: Semiconductor, Sensor, Motor
  - ✓ Multi-Range, External Control, Small
- Automotive Electrical Components
  - ✓ Multi-Range, External Control, Fan less, Small
- LED, OLED, Panel (Display)
  - ✓ High resolution (1mA), Small&Light, CC Priority
- Plating
  - ✓ Fan less, High resolution (1mA), CC Priority, Time Stamp, External Control
- Battery, Capacitor
  - ✓ High resolution (1mA), Small&Light, Time Stamp



# Positioning



# Competitor

◎: Excellent / ○: Good / ▲: Bad / X: None

Items	GW Instek/TTC	Takasago	Mastusada	ITECH/B&K	Picotest	
	PFR-100	KX-100	P4K	6720/9110	P9610A	
Maximum Output Voltage	250 V	160 V	320 V (◎)	60 V	36 V (▲)	
Maximum Output Current	10 A	10 A	10 A	5 A	7 A	
Maximum Output Power	100 W	100 W	80 W (▲)	100 W	108 W	
Multi-Range	5 (◎)	4	2	1.8 - 2.3	2.3	
Front Panel Display	LED	LED	LED	LED	LCD (◎)	
Output ON/OFF Delay	◎	X	◎	X	X	
CV/CC Priority	◎	X	X	X	X	
CV/CC Slew Rate	◎	X	◎	X	X	
Bleeder ON/OFF	◎	◎	X	X	X	
OCP Delay Setting	◎	X	X	X	X	
Measurement Average Setting	◎	X	X	X	X	
Test Scrip (Sequence) on Front Panel	◎	X	X	X	X	
Memory Function on Front Panel (3 Sets)	◎	◎	◎	X	X	
Interface	Front USB	◎	X	X	X	
	Rear USB	◎	▲ (Adaptor)	▲ (Adaptor)	X	○ (Factory)
	LAN	○ (Factory)	▲ (Adaptor)	▲ (Adaptor)	X	X
	RS-232	◎	◎	▲ (Adaptor)	▲ (Factory Only)	X
	RS-485	◎	▲ (Adaptor)	▲ (Adaptor)	X	X
	GPIB	○ (Factory)	▲ (Adaptor)	▲ (Adaptor)	X	○ (Factory)
	External Analog Control	◎	▲ (Output Only)	▲ (Output Only)	X	X

# Competitor

◎: Excellent / ○: Good / ▲: Bad / X: None

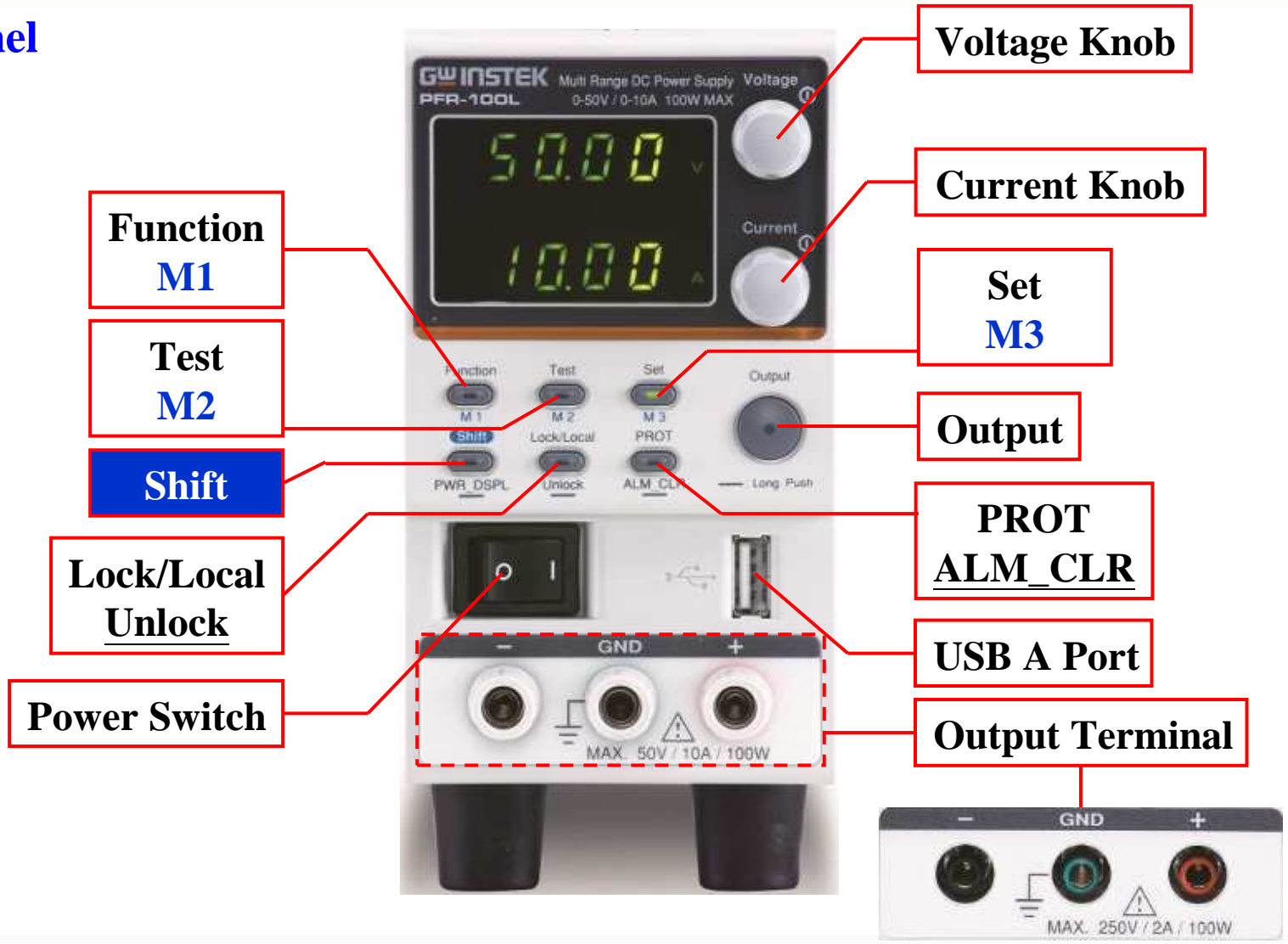
Items		GW Instek/TTC	Takasago	Mastusada	ITECH/B&K	Picotest
		PFR-100	KX-100	P4K	6720/9110	P9610A
Protection	OVP	○	○	○	○	○
	UVL	○	X	X	X	X
	OCP	○	○	○	○	○
	OTP	○	○	○	○	○
	AC Fail	○	X	○	X	X
Others	Dimensions (W×H×D) mm	3U (70 × 124 × 300)	3U (71 × 130 × 300)	3U (35 × 124 × 270)	4U (▲) (88 × 175 × 282)	2U (214.6 × 88.6 × 280)
	Power Density (W/cm <sup>3</sup> )	0.038	0.036	0.068	0.023	0.020
	Fanless	◎	◎	◎	X	X
	Output Terminal	◎ Front / Rear	◎ Front / Rear	◎ Front / Rear	○ Front	○ Front
	Universal Input	◎	X (Factory)	◎	○ (Switch)	○ (Switch)
	CE Mark	◎	X	X	X	◎

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# Features

# Panel Description

## Front Panel



Function  
M1

Test  
M2

Shift

Lock/Local  
Unlock

Power Switch

Voltage Knob

Current Knob

Set  
M3

Output

PROT  
ALM\_CLR

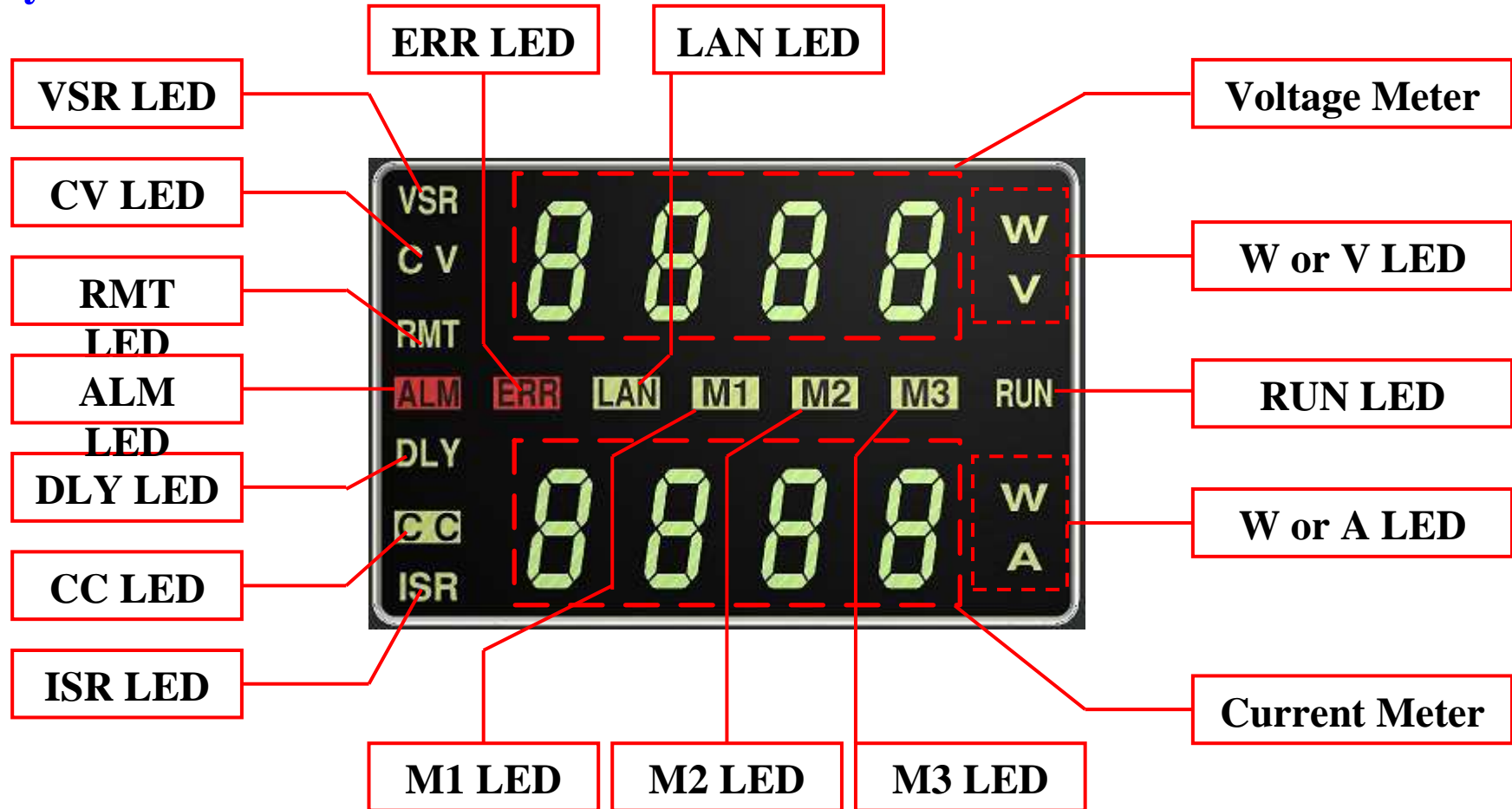
USB A Port

Output Terminal

100M

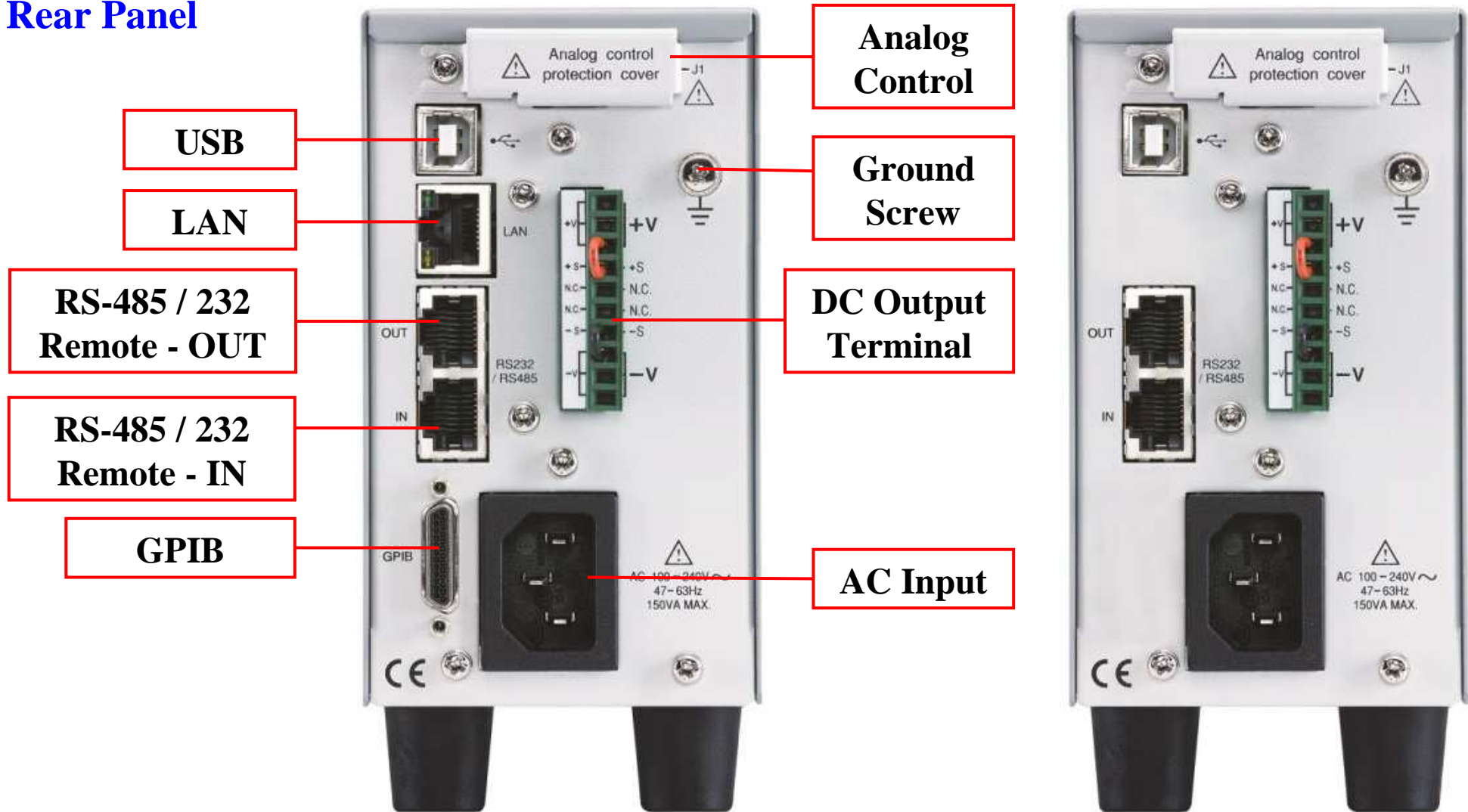
# Panel Description

## Display Area



# Panel Description

## Rear Panel



**Full Interface**

**Standard Interface**

# CV, CC Priority Start Function

Function	Description	Setting Range
F-03	V-I Mode Slew Rate Select	0 = CV high speed priority (CVHS) 1 = CC high speed priority (CCHS) 2 = CV slew rate priority (CVLS) 3 = CC slew rate priority (CCLS)
F-04, F-05	Rising / Falling Voltage Slew Rate	0.1V/s ~ 100.0V/s (PFR-100L) 0.1V/s ~ 500.0V/s (PFR-100M)
F-06, F-07	Rising / Falling Current Slew Rate	0.01A/s ~ 20.00A/s (PFR-100L) 0.001A/s ~ 4.000A/s (PFR-100M)



## CV Mode:

(A)(D) F-03 = 0 : CV High Speed (Slew Rate OFF)

(B)(E) F-03 = 2 : CV Slew Rate Enable

F-04 = 100V/s : Rising Slew Rate

F-05 = 100V/s : Falling Slew Rate

(C)(F) F-03 = 2 : CV Slew Rate Enable

F-04 = 20V/s : Rising Slew Rate

F-05 = 20V/s : Falling Slew Rate

## CC Mode:

(A)(D) F-03 = 1 : CC High Speed (Slew Rate OFF)

(B)(E) F-03 = 4 : CC Slew Rate Enable

F-06 = 10A/s : Rising Slew Rate

F-07 = 10A/s : Falling Slew Rate

(C)(F) F-03 = 4 : CC Slew Rate Enable

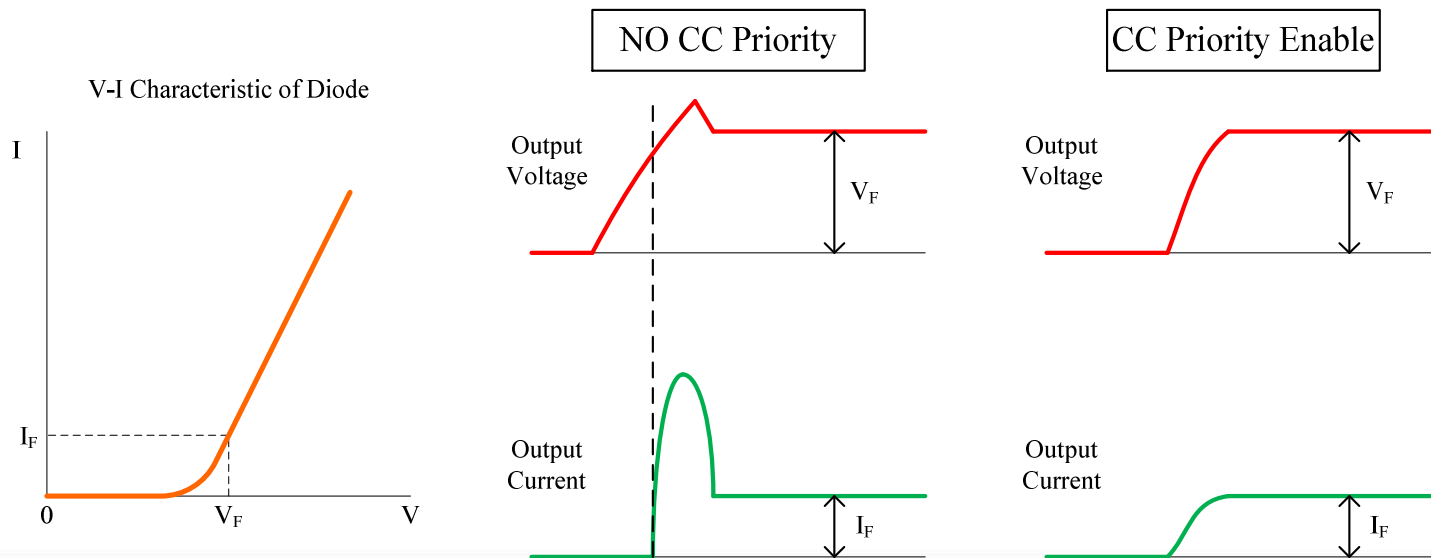
F-06 = 2A/s : Rising Slew Rate

F-07 = 2A/s : Falling Slew Rate



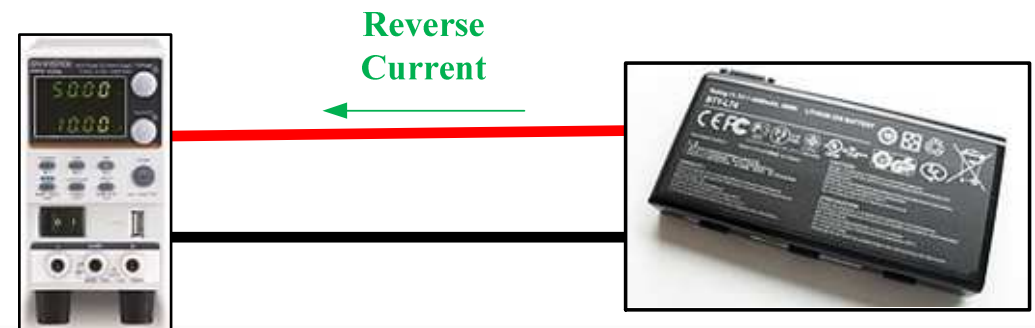
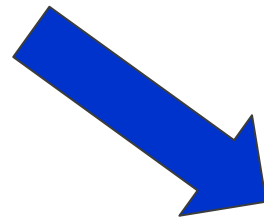
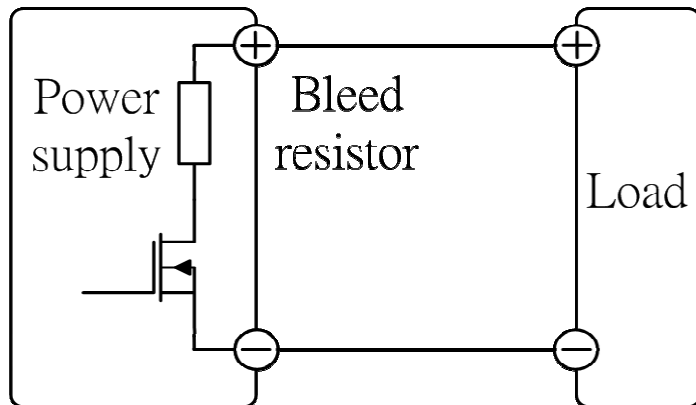
# CV, CC Priority Start Function

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F-06, F-07	Rising / Falling Current Slew Rate	0.01A/s ~ 20.00A/s (PFR-100L) 0.001A/s ~ 4.000A/s (PFR-100M)



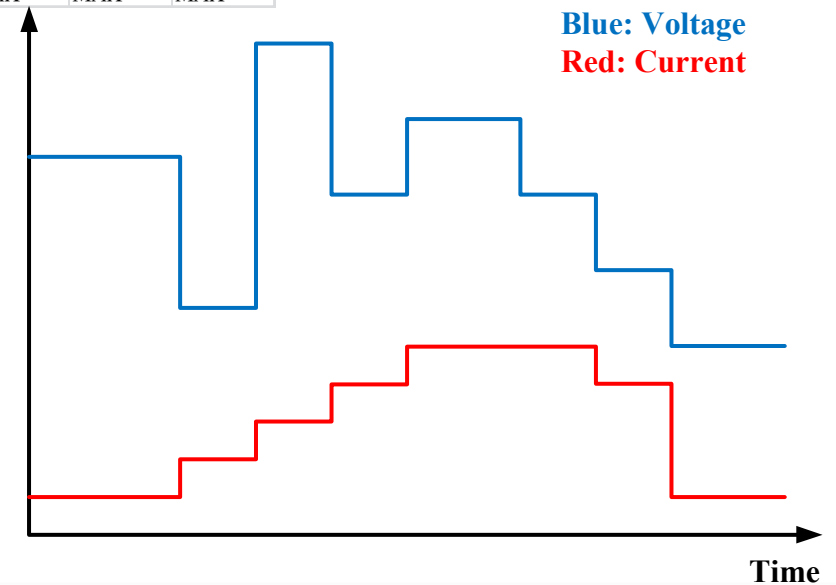
# Bleeder ON/OFF Control Setting

Function	Description	Setting Range
F-09	Bleeder ON/OFF	0 = OFF 1 = ON 2 = AUTO



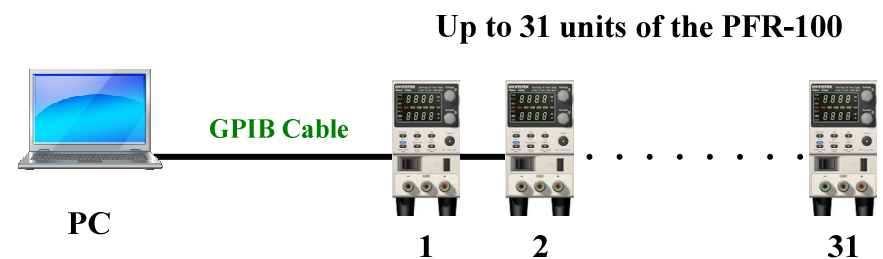
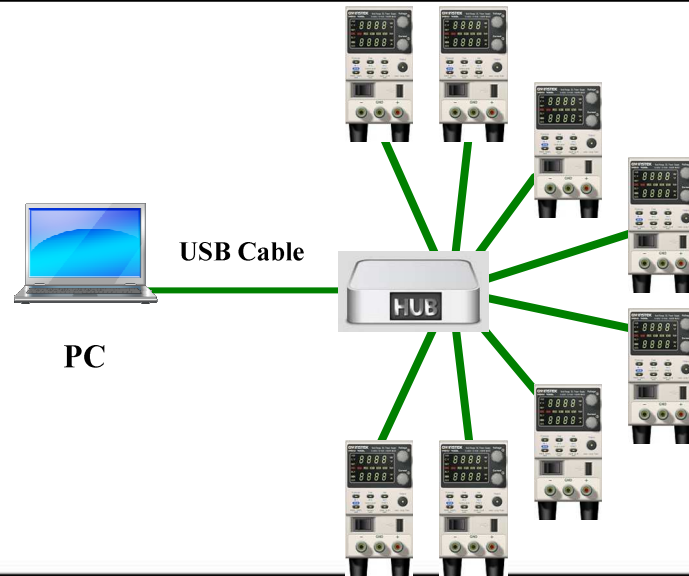
# Sequence Control Function

Cycle	Items Number	Start Step	End Step										
	2												
Step	Point	Output	Time(sec)	Voltage (V)	Current (A)	OVP(V)	OCP(A)	Bleeder	IV Mode	Vsr up(V/s)	Vsr down(V/s)	Isr up(A/s)	Isr down(A/s)
1		On	1	MIN	MIN	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
2		On	1	0.1	0.1	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
3		On	1	0.2	0.2	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
4		On	1	0.3	0.3	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
5		On	1	0.4	0.4	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
6		On	1	0.5	0.5	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
7		On	1	0.6	0.6	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
8		On	1	0.7	0.7	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
9		On	1	0.8	0.8	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
10		On	1	0.9	0.9	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
11		On	1	1	1	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX
12		On	1	1.1	1.1	MAX	MIN	ON	CVHS	MAX	MAX	MAX	MAX



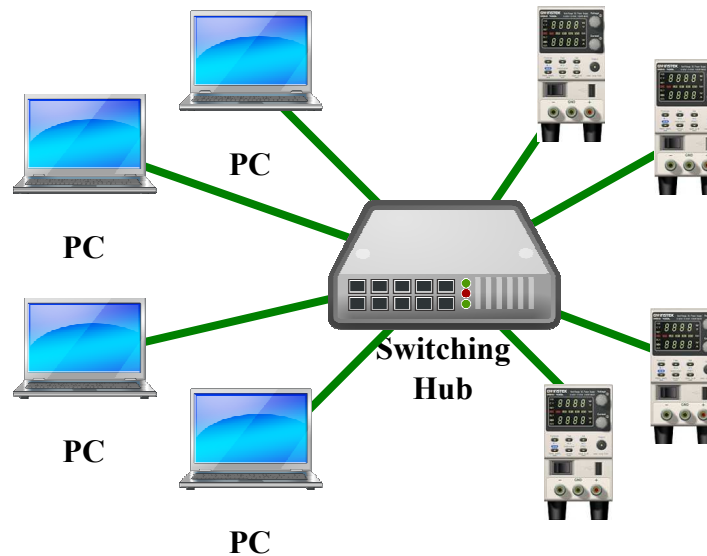
# USB / GPIB Setting

Function	Description	Setting Range
F-20	Front panel USB State	0 = None, 1 = Mass Storage
F-21	Rear panel USB State	0 = None, 1 = Linking to PC
F-23	GPIB Address	0 ~ 30
F-25	Show GPIB available status	0 = No GPIB, 1 = GPIB is available
F-29	Interface Select	0 = Disable; 1 = RS232; 2 = R485; 3 = USB-CDC / NO Mass Storage; 4 = GPIB; 5 = LAN SOCKET; 6 = LAN WEB; 7 = USB-TMC / NO Mass Storage



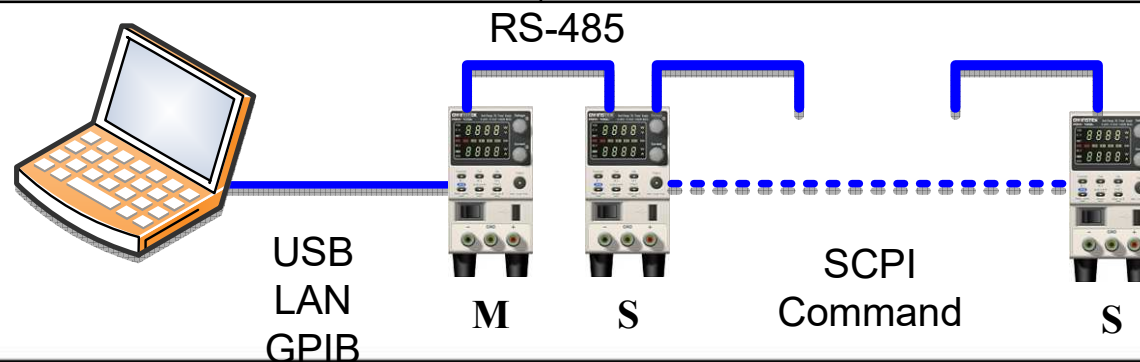
# LAN Setting

Function	Description	Setting Range
F-30 ~ 35	MAC Address	0x00~0xFF
F-37	DHCP	0 = Disable, 1 = Enable
F-39 ~ 42	IP Address	0~255
F-43 ~ 46	Subnet Mask	0~255
F-47 ~ 50	Gateway	0~255
F-51 ~ 54	DNS address -1	0~255
F-60	Web password active	0 = Disable, 1 = Enable
F-61	Web setting password	0000~9999



# UART Remote Interface

Function	Description	Setting Range
F-71	UART Baud Rate	0 = 1200, 1 = 2400, 2 = 4800, 3 = 9600, 4 = 19200, 5 = 38400, 6 = 57600, 7 = 115200
F-72	UART Data Bits	0 = 7bit, 1 = 8bit
F-73	UART Parity	0 = None, 1 = Odd, 2 = Even
F-74	UART Stop Bit	0 = 1bit, 1 = 2bits
F-75	UART TCP	0 = SCPI
F-76	UART Address	0 ~ 30
F-77	UART Multi-Drop Control	0 = Disable, 1 = Master, 2 = Slave, 3 = Display Information
F-78	UART Multi-Drop Status	Displayed Parameter: AA-S AA: 0 - 30 (Address) S: 0 - 1 (Off-line / On-line Status)



# Support Network-based Remote Control

**\*Only support via LAN(option)**

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- [Welcome Page]
- [Network Configuration]
- [Measurement]
- [Normal Function]
- [Power On Configuration]

**Measurement**

<b>249.98</b> V	<b>0.00</b> A												
VSR CV ISR CC RMT DLY ERR ALM RUN													
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>Voltage</b> SET</td> <td style="width: 50%;"><b>Current</b> SET</td> </tr> <tr> <td style="text-align: center;">250.00 V</td> <td style="text-align: center;">2.00 A</td> </tr> <tr> <td><b>OVP</b> SET</td> <td><b>OCP</b> SET</td> </tr> <tr> <td style="text-align: center;">275.00 V</td> <td style="text-align: center;">2.20 A</td> </tr> <tr> <td><b>UVL</b> SET</td> <td>Voltage Setting Limit <input type="radio"/> ON <input checked="" type="radio"/> OFF</td> </tr> <tr> <td style="text-align: center;">0.00 V</td> <td>Current Setting Limit <input type="radio"/> ON <input checked="" type="radio"/> OFF</td> </tr> </table>	<b>Voltage</b> SET	<b>Current</b> SET	250.00 V	2.00 A	<b>OVP</b> SET	<b>OCP</b> SET	275.00 V	2.20 A	<b>UVL</b> SET	Voltage Setting Limit <input type="radio"/> ON <input checked="" type="radio"/> OFF	0.00 V	Current Setting Limit <input type="radio"/> ON <input checked="" type="radio"/> OFF	
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250.00 V	2.00 A												
<b>OVP</b> SET	<b>OCP</b> SET												
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0.00 V	Current Setting Limit <input type="radio"/> ON <input checked="" type="radio"/> OFF												
ALM_CLR	<b>OUTPUT OFF</b>												

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**Normal Function**

**Delay Time**  
Output ON: 0.00 s SET  
Output OFF: 0.00 s SET

**OCP Filter**  
0.00 s SET

**V-I mode & slew rate**  
V-I mode: CV high speed priority  
Rising Voltage: 500.00 V/s SET  
Falling Voltage: 500.00 V/s SET  
Rising Current: 4.00 A/s SET  
Falling Current: 4.00 A/s SET

**Measure Average**  
 Low  
 Middle  
 High

**Lock Mode**  
 Mode 0  Mode 1

**Bleeder Control**  
 ON  OFF

**Buzzer**  
 ON  OFF

**CV high speed priority**  
CV high speed priority  
CC high speed priority  
CV slew rate priority  
CC slew rate priority

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# Rack mount adapter (Optional)

## Rack mount adapter (EIA)



### GRA-431-E

## Rack mount adapter (JIS)



### GRA-431-J

# Optional Accessories

**GPIB Cable, 2000mm**



**GTL-258**

**RS-232 Cable with DB9 Connector Kit**



**PSU-232**

**RS-485 Cable with DB9 Connector Kit**



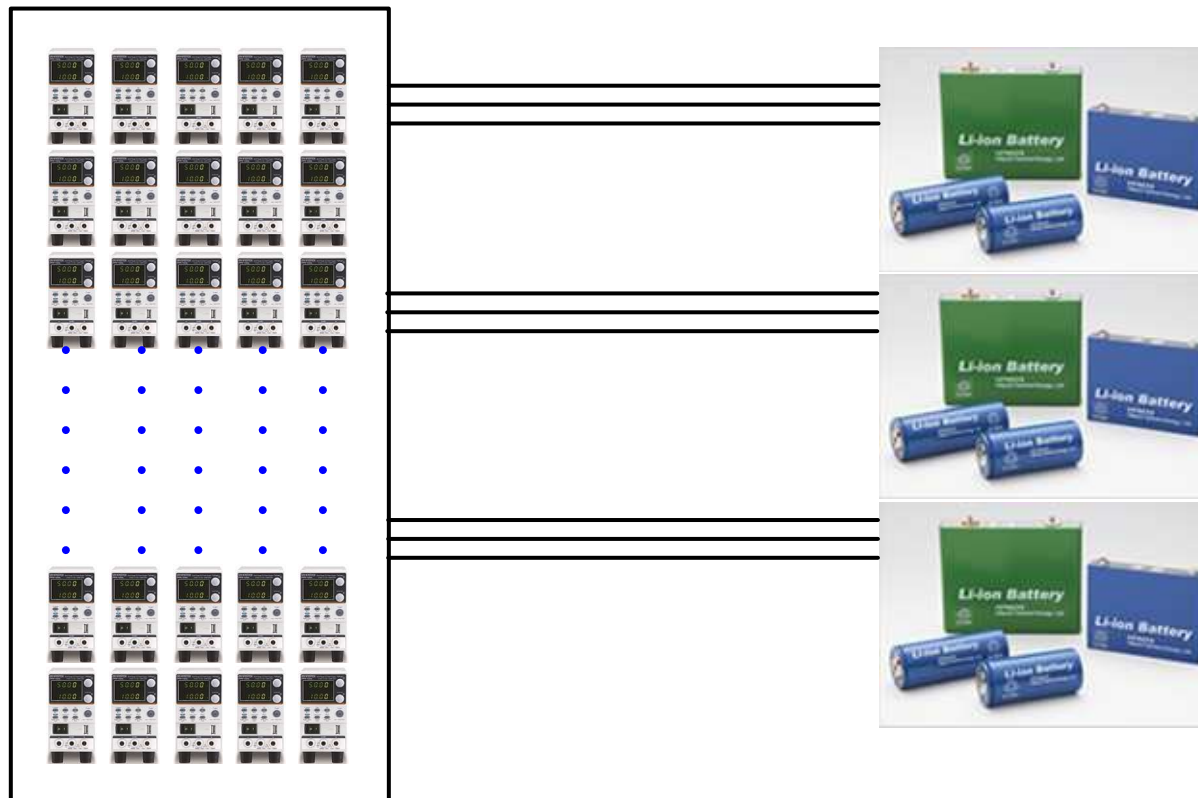
**PSU-485**

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# Application

# Application1: Battery Testing

- EV Battery Pack: It is used to evaluate the battery management circuit.
- Qty.: 100 Units.



# Application2: In-vehicle LED lamp

