



## IT8700PMulti-channel Programmable DC Electronic Load

#### **APPLICATIONS**

- ATE Test System
- Civil Aviation

- Solar Cell
- Communication Test

LED



# IT8700P Multi-channel Programmable DC Electronic Load



IT8700P series multi-channel programmable DC electronic load has been improved and upgraded on the basis of IT8700. It keeps the original modular design. A single frame can reach 8 channels, and extended frame can reach 16 channels. It is equipped with both front and rear terminals, which can meet various testing requirements of users.

Same as IT8700, IT8700P also has the functions of slope adjustment and waveform editing. Besides, IT8700P has increased the functions including maximum current limit, PLC setting and CV loop adjustment. Users can set the automatic test function in the upgraded 7 operating modes, which is convenient for fast and accurate testing on R&D and production lines. At the same time, IT8700P series has full protection such as OVP,OCP,OPP,OTP, etc., which can prevent damage or injury caused by miss operation or environmental factors.

#### **FEATURE**

- Removable modules for easy system configurability
- Dual-channel module can display each channel data simultaneously
- Single frame up to max.8 channels, extended frame up to max.16 channels
- Dynamic power distribution function for dual channels
- Arbitrary selection of front/rear terminal
- Users can customize the left and right modules
- 7 operation modes: CC/CV/CR/CP/CV+CC/CR+C-C/CW+CC
- CV loop speed is adjustable to match different power supplies
- Resolution and high accuracy up to 0.1mV/0.01mA

- Measurement of short-circuit peak current and peak voltage
- Voltage and current measurement, up to 50kHz
- Adjustable current rise/fall slope
- Simulate various waveforms with load under List mode
- Up to 25kHz dynamic mode, 100kHz List mode setting
- Automatic test function can automatically determine whether the test results exceed the set specifications
- Simultaneously perform multiple sets of electronic load modules
- OVP/OCP/OPP/OTP/anti-reverse protection
- Built-in Ethernet/GPIB/USB/RS232 communication interface

Model	Specification
IT8731P	80V/40A/200W
IT8732P	80V/60A/400W
IT8732BP	500V/20A/300W
IT8733P	80V/120A/600W
IT8733BP	500V/30A/500W
IT8722P	80V/20A/250W*2CH
IT8722BP	500V/15A/250W*2CH
IT8723P	80V/45A/300W*2CH

Matching frame						
IT8701P	Two-load module main control unit (including four interfaces)					
IT8702P	Four-load module main control unit (including four interfaces)					
IT8703P	Four-load module expansion unit					

<sup>\*1:</sup> The total power of dual channel for IT8722P/IT8722BP is 300W, namely PCH1+PCH2  $\leq$  300W Two channels working range (0W  $\leq$  PCH1/PCH2  $\leq$  250W); Upper limit of two channels setting range (50W  $\leq$  PCH1/PCH2  $\leq$  250W)

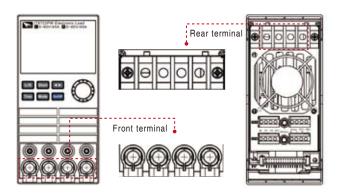
<sup>\*2:</sup>IT8700P modules should be equipped with IT8702P main frame

<sup>\*3:</sup> Interfaces of main frame: RS232, USB, GPIB, Ethernet

#### IT8700P Multi-channel Programmable DC Electronic Load

#### Arbitrary selection of front/rear termin

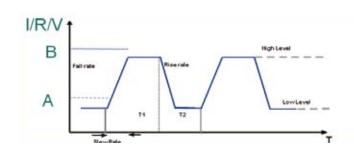
IT 8 7 0 0 P is equipped with both front and rear terminals. Both of them can be connected for testing. It meets different test requirements and helps to avoid operational errors as well, which lead to higher test efficiency. At the same time, IT8700P is only 4U in height, making it easy to be rack mounted, which good for system integration.



#### Dynamic testing and control

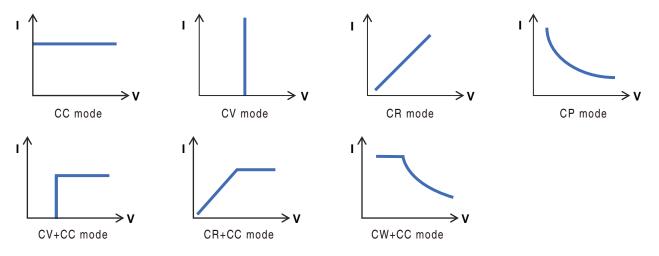
The operation of dynamic load is periodically switched between the two levels. the power supply The adjustment rate and instantaneous response of the power supply monitor its output voltage waveform under the mixed changes of high and low current levels, continuous time and rise/fall rates.

The dynamic test function of IT8700P series can be divided into continuous mode, pulse mode and flip transfer mode.



#### 7 operation modes

Besides the four basic operation modes of CC /C V/C R /CP, there are another 3 new compound operation modes included in IT 8700 P series: C V + CC /C R + CC /C W + CC. Under CV/CR/CW operation mode, the maximum 9/current (I-Limit) can be set. This can effectively solve the problem of instantaneous surge current during testing and avoid the protection triggering, damage of the instrument or any other injury caused by possible miss operation or environmental factors.. So it can be used in various applications.



#### Freely configurable modular system architecture

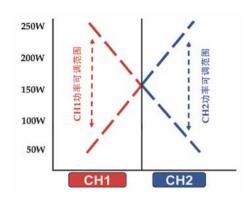
IT8700P adopts modular design, which has a high-performance microprocessor in every module and mainframe. It has high measurement speed because of parallel architecture. The mainframe controls each models synchronously and show the testing values in real time.

## Your Power Testing Solution

#### IT8700P Multi-channel Programmable DC Electronic Load

#### Dynamic power distribution

The model of dual-channel IT8700P has dynamic power distribution function, which helps to save equipment purchasing cost. Different from traditional distribution mode, when the total power is not more than 300W and the single channel power is less than 250W, its power can be freely allocated to the two channels. The user can adjust the two-channel load power of IT8700P to the required power ratio according to the actual test requirements, so that the utilization can be optimized. For example, when you need 130W+170W or 50W+250W dual-channel load, only a single IT8700P module can fulfill the test.

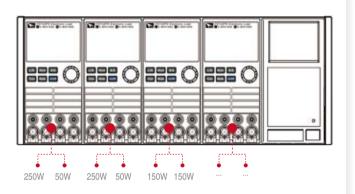


#### Application

PC ATX 6-channel power supply test -Only 3 IT8700P modules needed

#### Recommended solution

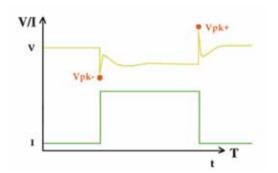
- -IT8722P module 1: +12V1DC (250W) / -12VDC (50W)
- -IT8722P module 2: +12V2 DC (250W) / +5V SB (50W)
- -IT8722P module 3: +5VDC (150W) / +3.3VDC (150W)



\* When the total power is not more than 300W and the single channel power is less than 250W, its power can be freely allocated to the two channels.

#### Peak voltage measurement (Vpk)

When measuring the dynamic current of a switching power supply, an oscilloscope was usually necessary to capture the instantaneous voltage and current waveforms and obtain Vpk+ and Vpk- accordingly. But with digital data acquisition function, IT8700P can directly obtain the Vpk+ and Vpk- values without an oscilloscope.



#### Fast measurement of I-V characteristic curve

The voltage and current measurement of IT8700P is fast (up to 50kHz). It can be applied to various testing applications such as charging piles, automotive electronics; renewable energy and so on.



#### IT8700P Multi-channel Programmable DC Electronic Load

#### List function, up to 100kHz

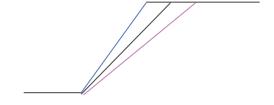
Compared with the dynamic mode, the LIST mode can complete more complex and arbitrary current modes at a high speed instead of the simple double-level changes, so IT8700P can realistically fulfill multi-level load precision tests than other loads. Its built-in waveform generator can simulate multiple waveforms under LIST mode. IT8700P can store 55X7 sets of files to simulate various real loading conditions. In addition, each module can operate independently or synchronously, which means that each module can execute its own timing independently and start working simultaneously.

#### Application -Loading test

In the actual test, the product manufacturer tends to load at different current level, such as at 25%, 50%, 75%, 100% of the full-range current, to evaluate whether the value of the voltage fluctuation meets the design purpose. IT8700P can simulate the various complex states of the product in actual working conditions which helps to analyze the performance of the product and then improve it accordingly. IT8700P is especially suitable for complex application environments such as electronic product development, aging of production line, and quality inspection.

#### Adjustable rise/fall slope

IT8700P has a built-in current slope adjustment loop, users can adjust current rise/fall speed according to different test requirements. Under CC mode, you can set the current rise/fall slope (0.0001-2.5A/7.5A/us)



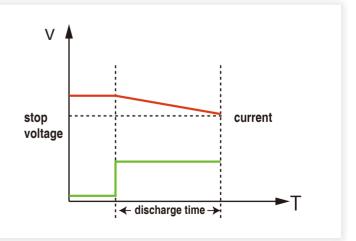
#### Time measurement

IT8700P has powerful and accurate measurement function, the measurement range is 0.1ms -100,000s. This feature can be applied to battery discharge test, super capacitor discharge

Electrical time measurement, fuse and circuit breaker trip time measurement, ATX power supply voltage rise time measurement, etc.

#### Application -Battery discharge test

IT8700P can display battery test mode, users can set the cut-off condition of battery discharge on the front panel easily. The user can complete the automatic battery charge and discharge test with a simple button operation. For example: when the battery voltage is lower than the first voltage value set by the user, the internal timer of the IT8700P will automatically count, and the timer will not stop counting until the battery voltage drops to the second set voltage.



## Your Power Testing Solution IT8700P Multi-channel Programmable DC Electronic Load

#### IT8722P/22BP/23P Specification

		IT8	722P <sup>*8</sup>	IT87	22BP *8	IT8723P '8			
D	Input voltage	0~8	30V	0~50	00V	0~80V			
Rated parameter	Input current	0~2	20A	0~1	5A	0~45A			
parameter (0~40°C)	Input power	250	W *1	250\	N *1	300	)W		
(0 .0 - )	Min operating voltage	0.15V/3A	1.0V/20A	0.8V/3A	4.0V/15A	0.14V/4.5A	1.4V/45A		
CV mode	Range	L: 0~18V;	H: 0~80V	0.1~50V	0.1~500V	L: 0~18V;	H: 0~80V		
	Resolution	L: 1mV; H: 10mV		L: 1mV; F	H: 10mV	L: 1mV; H: 10mV			
	Accuracy	±(0.05%+0.025%FS)		±(0.05%+0	0.05%FS)	±(0.05%+0.025%FS)			
	Range	0~3A	0~20A	0~3A 0~15A		0~4.5A	0~45A		
CC mode	Resolution	L: 0.1mA; H: 1mA		L: 0.1mA	; H: 1mA	L: 0.1mA; H: 1mA			
	Accuracy	±(0.05%+0.05%FS)		±(0.05%+0	0.05%FS)	±(0.05%+0	.05%FS)		
	Range	L: 0.05Ω~10Ω;	Η: 10Ω~7.5ΚΩ	0.3Ω~10Ω	0.3Ω~10Ω 10Ω~7.5ΚΩ		Η: 10Ω~7.5ΚΩ		
CR mode*2	Resolution	16bit		168	bit	16bit			
	Accuracy	0.01%+0.08S *3;	H: 0.01%+0.0008S	0.01%+0.08S *3; H	: 0.01%+0.0008\$	0.01%+0.08S *3; H:	0.01%+0.0008\$		
	Range	250	W *4	250	W *4	300	W		
CP mode*5	Resolution	10mW		10m	ηW	10mW			
	Accuracy	±(0.2%+0	).2%FS)	±(0.2%+0	0.2%FS)	±(0.2%+0.2%FS)			
				CC mo	ode				
	T1&T2	20μS~3600	S / Res: 1µS	20μS~3600S	S / Res: 1µS	20μS~3600S / Res: 1μS			
Dynamic	Accuracy	5μS±100ppm		5μS±10	00ppm	5μS±100ppm			
mode	Rise / fall slope*6	0.0001~0.2A/µS	0.001~1.6A/µS	0.0001~0.1A/µS		0.0001~0.25A/µS			
	Min rise time *7	≒10μS			20μS	≒12μS			
					ing range				
Voltage	Range	0~18V	0~80V	0~50V	0~500V	0~18V	0~80V		
readback value	Resolution	L: 0.1 mV; H: 1mV		L: 1 mV; F		L: 0.1 mV; H: 1mV			
	Accuracy	±(0.025%+	· · · · · · · · · · · · · · · · · · ·	±(0.025%+0		±(0.025%+0.025%FS)			
Current	Range	0~3A 0~20A		0~3A	0~15A	0~4.5A 0~45A			
readback value	Resolution	L: 0.01mA; H: 0.1mA			; H: 0.1mA	L: 0. 1mA; H: 1mA			
- Value	Accuracy	±(0.05%+	,	,	+0.05%FS)	±(0.05%+0.05%FS)			
Power	Range Resolution	250 10n		250 10r		300W 10mW			
readback value	Accuracy	±(0.2%+0		±(0.2%+		±(0.2%+0.2%FS)			
value	ricouracy	±(0.2%+0	1.270F3)		ed range	±(0.2%+0.2%F5)			
Over nower	protection	± 21	50W	<b>≒</b> 260	· ·	÷ 9	10W		
Over power protection Overcurrent protection		≒3.3A	≒22A	⇒3.3A	≒16.5A	⇒5A	≒50A		
	er voltage protection =3.3A =22A			⇒530V		-5A -50A =82V			
Over temperature protection			85°C	≒85		÷85°C			
ovor tompora	tare protection			Specific	-				
Short circuit	Current	≒3.3/3A	≒22/20A	≒3.3/3A	≒16.5/15A	≑5/4.5A	≒50/45A		
	Voltage	0V		0V		0V			
	Resistance	⇒50mΩ		≒260	$0$ m $\Omega$	≒30mΩ			
Input terminal impedance		300ΚΩ		≒1		300ΚΩ			
Size(mm)		82*183*573		82*18	3*573	82*183*573			
Weight		5KG		5K	G	5KG			

<sup>\*1</sup> Support dynamic distribution power, single way can reach max 250W, two ways total power is no more than 300W, single way average power is 150w.

<sup>\*2</sup> Voltage/current input value is not less than 10% FS (FS is full scale).

 $<sup>^*3</sup>$  Resistance read-back value range: ((1/(1/R+(1/R)\*0.01%+0.08),1/(1/R-(1/R)\*0.01%-0.08))

<sup>\*4</sup> Support dynamic distribution power, single channel can reach max 250W, two way total power is no more than 300W

<sup>\*</sup>This information is subject to change without notice notice

<sup>\*5</sup> Voltage/current input values are not less than 10% FS

<sup>\*6</sup> Up/down slope: 10% ~ 90% current rising slope when from 0 to maximum current

 $<sup>^\</sup>star 7$  The minimum rise time: 10% ~ 90% current rise time

<sup>\*8</sup> IT8722 / IT8722B are dual channel dynamic power allocation module, 2 channels' specification is the same.

# Your Power Testing Solution IT8700P Multi-channel Programmable DC Electronic Load

#### IT8731P/32P/32BP/33BP/33P Specification

		IT8731P		IT8732P		IT8732BP		IT8733BP		IT8733P		
Rated	Input voltage	0~	80V	0~80V		0~5	0~500V		0~500V		0~80V	
parameter	Input current	0~40A		0~6	60A	0~2	0~20A		0~30A		0~120A	
(0~40℃)	Input power	200W		400W		300	)W	500W		600	OW	
	Min operating voltage	0.12V/4A	1.2V/40A	0.15V/6A	1.5V/60A	0.72V/3A	4.8V/20A	0.54V/3A	5.4V/30A	0.24V/12A	2.4V/120A	
	Range	L: 0~18V	H: 0~80V	L: 0~18V; H: 0~80V		L: 0~18V; H: 0~500V		L: 0~18V; H: 0~500V		L: 0~18\	L: 0~18V; H: 0~80V	
CV mode	Resolution	L: 1mV; H: 10mV		L: 1mV;	H: 10mV	L: 1mV; H: 10mV		L: 1mV; H: 10mV		L: 1m\	L: 1mV; H: 10mV	
	Accuracy	±(0.05%+0.025%FS)		±(0.05%+0.025%FS)		±(0.05%+0.025%FS)		±(0.05%+0.025%FS)		±(0.05%+0.025%FS)		
	Range	0~4A	0~40A	0~6A	0~60A	0~3A	0~20A	0~3A	0~30A	0~12A	0~120A	
	Resolution	L: 0.1mA	; H: 1mA	L: 0.1mA;	H: 1mA	L: 0.1m/	A; H: 1mA	L: 0.1m/	A; H: 1mA	1mA	10mA	
CC mode	Accuracy	±(0.05%+0.05%FS)		±(0.05%+0.05%FS)		±(0.05%+0.05%FS)				±(0.05%+0.05%FS)	±(0.1%+0.05%FS	
	Range	L: 0.05Ω~10Ω;	H: 10Ω~7.5KΩ	L: 0.05Ω~10Ω;	H: 10Ω~7.5KΩ	0.25Ω~10Ω	10Ω~7.5KΩ	0.2Ω~10Ω	10Ω~7.5ΚΩ	L: 0.05Ω~10Ω;	H: 10Ω~7.5KΩ	
CR mode <sup>1</sup>	Resolution	16bit		16	6bit	16bit		16bit		16b	oit	
011111000	Accuracy	L: 0.01%+0.08S; F	H: 0.01%+0.0008S	L: 0.01%+0.08S; H	H: 0.01%+0.0008S	L: 0.01%+0.08S; H	: 0.01%+0.0008S	L: 0.01%+0.08S;	H: 0.01%+0.0008S	L: 0.01%+0.08S; H:	0.01%+0.0008\$	
	Range	20	0W	40	0W	300	W	500	OW	600	OW	
CP mode <sup>2</sup>	Resolution	10r	nW	10	10mW		10mW		10mW		10mW	
CF IIIoue	Accuracy		+0.2%FS)	±(0.2%+	-0.2%FS)	±(0.2%+	0.2%FS)	±(0.2%+		±(0.2%+		
		=(0:270	10.2701 07	=(0.2701	0.2701 0)	,	node	I(0.2 /0+0.2 /01 O)		,	mode	
	T1&T2	20us~360	Os / Res: 1µs	20µs~3600s / Res: 1µs		20μs~3600s / Res: 1μs		20μs~3600s / Res: 1μs		20µs~3600s / Res: 1µs		
Dynamic	Accuracy		100ppm	5μs±100ppm		5µs±100ppm		5µs±100ppm		5µs±100ppm		
mode	Rise / fall	0.0001	0.001	0.0001	0.001	0.0001	0.001	0.0001	0.001	0.001	0.01	
	slope	~0.2A/us	~2A/us	~0.25A/us	~2.5A/us	~0.1A/us	~0.8A/us	~0.08A/us	~0.8A/us	~0.25A/us	~2.5A/us	
	Min rise time	÷1	- 1		15µS		0μS	÷2			5uS	
Voltage	Range	0~18V	0~80V	0~18V	0~80V	0~18V	0~500V	0~18V	0~500V	0~18V	0~80V	
readback	Resolution	L: 0.1 mV; I		L: 0.1 mV; H: 1mV		L: 1 mV; H: 10mV		L: 1 mV; H: 10mV		L: 0.1 mV; H: 1mV		
value	Accuracy	±(0.025%+0.		±(0.025%+0.025%FS)		±(0.025%+0.025%FS)		±(0.025%+0.025%FS)		±(0.025%+0.025%FS)		
Current	Range	0~4A	0~40A	0~6A	0~60A	0~3A	0~20A	0~3A	0~30A	0~12A	0~120A	
readback	Resolution	L: 0.1mA;	H: 1mA	L: 0.1mA;	H· 1mA	I: 0.01m	A; H: 0.1mA	I:001m	A; H: 0.1mA	L: 0.1mA	· H· 1mΔ	
value	Accuracy	,	-0.05%FS)	±(0.05%+0.05%FS)		±(0.05%+0.05%FS)		±(0.05%+0.05%FS)		±(0.05%+0.05%FS)		
Power	Range	200\	,	,	0W	30		500W		600W		
readback	Resolution	10m	W	101	mW	101	nW	10mW		10mW		
value	Accuracy	±(0.2%+0.2%FS)		±(0.2%+0.2%FS)		±(0.2%+0.2%FS)		±(0.2%+0.2%FS)		±(0.2%+0.2%FS)		
	,	1(0.27010.27010)		_(0.2777 0.2771 0)		Protected range				_(0.2.2.0.2.0.0)		
Over power	protection	<b>≒</b> 210	)W	≒4	10W	<b>≒</b> 3 <sup>-</sup>		≒5	10W	<b>≒</b> 61	10W	
Overcurrent		≒4.4A	≒44A	≒6.6A	≒66A	≒3.3A	≒22A	≒3.3A	≒33A	≒13.2A	≒132A	
Over voltage		≒82		±	₹82V		30V		530V	=8	32V	
Over temperature protection ÷85°C			÷85°C		-	÷85°C		550V 85°C		⇒85°C		
						_	ification					
Short circuit	Current Voltage	≒4.4/4A 0	≒44/40A V	≒6.6/6A	≑66/60A 0V	≒3.3/3A	≑22/20A	≒3.3/3A	≒33/30A 0V	≒13.2/12A	≒132/120A	
	Resistance	≒30mΩ		≒25mΩ		≒240mΩ		≒180mΩ		⇒20mΩ		
Input terminal impedance		300ΚΩ		300ΚΩ		1ΜΩ		1ΜΩ		300ΚΩ		
Size(mm)			3*573		82*183*573		82*183*573		82*183*573		82*183*573	
Weight		51	(G	5K	5KG		5KG		5KG		5KG	
AC Input	Voltage		0%/110V ±10%	220V ±10%/110V ±10%		220V ±10%/110V ±10%		220V ±10%/110V ±10%		220V ±10%/110V ±10%		
	Frequency	50Hz/60Hz		50Hz/60Hz		50Hz/60Hz		50Hz/60Hz		50Hz/60Hz		

<sup>\*1:</sup> Accuracy refers to specifications is %+n%FS (Full Scale) of set value

<sup>\*2:</sup> When input voltage and current value > = 10% of FS

<sup>\*</sup>This information is subject to change without notice notice



This information is subject to change without notice. For more information, please contact ITECH.

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