

Product Datasheet - Technical Specifications



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High Speed Multi-channel DC Electronic Load



Your Power Testing Solution

ITECH

IT8700P+ High Speed **Multi-channel DC Electronic Load**



IT8700P+ series high-speed multi-channel DC electronic load is an upgraded version of the original IT8700P series with higher speed and higher precision. Its modules support master-slave paralleling connection for power extension. It's compatible with IT8700P mainframe, the new modules and old modules can work together. The IT8700P+ modules have faster dynamic response and the current rising and falling slope of a single module can reach 12A/µs. In addition, the low internal resistance makes it suitable for low-voltage loading test. Faster loop speed can accurately control current without overshoot which improves test efficiency. Furthermore, it has three current ranges for higher accuracy and lower ripple. The voltage and current measurement speed of this series has been upgraded to 250kHz. It has built-in LAN, USB and RS232 interfaces, and supports SCPI protocol. Therefore, IT8700P+ is good for system integration and is suitable for R&D and production line testing of super capacitors, fuel cells, lithium ion batteries, high-speed AC-DC and DC-DC power supplies such as computer power supplies and communication power supplies.

FEATURE

- Three-stage current range, higher accuracy and lower ripple
- Supports master-slave parallel connection of 16-channel modules, flexibly extends power
- Faster dynamic response, the current rising and falling slope of a single module can reach 12A/µs
- · Stable operation down to zero volts, suitable for low-voltage capacitors, solar cells, fuel cells, and other low-voltage high current power supplies
- Faster loop speed, precise control of current without overshoot
- The voltage and current measurement speed is upgraded to 250kHz, good for system integration
- Comprehensive protection functions: OVP/OCP/OPP/OTP, Sense protection

Model	Voltage	Current	Power
IT8721P+*2	150 V	20 A	MAX 150W*2CH
IT8731P+	150 V	40 A	200 W
IT8722P+*1	150 V	20 A	MAX 250W*2CH
IT8723P+	150 V	45 A	300W*2CH
IT8732P+	150 V	60 A	400 W
IT8733P+	150 V	120 A	600 W
IT8722BP+*1	600 V	15 A	MAX 250W*2CH
IT8732BP+	600 V	20 A	300W
IT8733BP+	600 V	30 A	500W

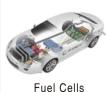
- Compatible with IT8700P mainframe, old and new modules can be matched
- Short-circuit peak current measurement function
- Available front/rear terminals*1
- 8 operating modes: CC/ CV/ CR/ CW/ CV+CC/ CR+ CC/ CW+CC/ CV+CR (CR-LED)
- Automatic test function to tell whether the test results exceed the set specifications
- Built-in LAN, USB, RS232 interfaces*2
- CV loop speed is adjustable to match different DUTs
- Multi channel synchronous control
 - *1 Current is no more than 15A if connecting with front terminals
 - *2 Models with (G) includes GPIB, please consult ITECH for details.

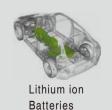
Main Frame	
IT8701P	Mainframe for 2 modules (including three interfaces)
IT8702P	Mainframe for 4 modules (including three interfaces)
IT8703P	Expansion mainframe for 4 modules

- *1 It is a dual-channel dynamic power distribution module. The parameters of the two channels are the same. The maximum power of a single channel is 250W. The total power of the two channels is not more than 300W. The average power of a single channel is 150W.
- *2 is a dual-channel dynamic power distribution module. The parameters of the two channels are the same. The maximum power of a single channel is 150W. The total power of the two channels is not more than 200W. The average power of a single channel is 100W.

Applications









power supply



DC-DC converter or PSU



High speed AC-DC converter or PSU

IT8700P+ High Speed Multi-channel DC Electronic Load

Flexible modules combination

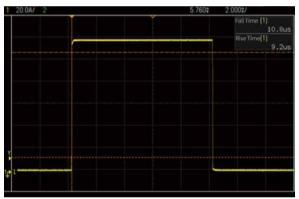
The IT8700P+ series is designed with removable modules, so that you can choose different modules according to your needs. These modules can work with the original IT8700P series modules too. There are high-performance microprocessor chips in each load module and mainframe. Parallel architecture is adopted to achieve faster testing. The load modules are controlled synchronously by the system, and the power supply with multiple outputs can also be tested synchronously.

Low voltage loading, stable operation down to zero volts

The IT8700P+ module has ultra-low on-resistance and three ranges. Under the medium and small range, the minimum load voltage is <0.1V. In the high current range, the minimum load voltage at full current is <0.5V, and lower input impedance can be obtained after parallel connection. It is suitable for testing fuel cells, supercapacitors, solar cells, DC-DC converters and other low voltage and high current electronic devices.

Fast dynamic response

Power supplies often have high requirements for instantaneous signals and dynamic response. In order to meet faster and faster testing requirements, IT8700P+ series provides high-speed, programmable dynamic sequence control. The current rising and falling slope of a single module can reach 12A/ μ s, much faster than the last generation. So it can be used for high-speed dynamic test of communication power supply and computer power supply. There are three modes of the dynamic test function, namely continuous mode, pulse mode and toggle mode.



IT8733P+(150V, 120A, 600W) dynamic current curve(1A-120A), curren slew 12A/us

Master-slave parallel connection

The IT8700P+ series supports master-slave parallel connection, 8 units (16 channels) at most can be connected in parallel, and the power can be extended to 4800W. The synchronization time error is 4us between paralleled units, and current equally assigning accuracy is 0.1%+0.1%F.S. Thanks to the flexible power extension, it can be used to test various DUTs and increase equipment utilization. The current sharing mode makes no sacrifice of the dynamic performance after parallel connection.

3 current ranges, well applied to Energy Star standard test for consumer electronics products

IT8700P+ provides 3 current ranges and higher measurement accuracy for DUTs that require high current accuracy like batteries. No need to build a complex test bench, the low current range of the IT8700P+ can be used for Energy Star standard testing in sleep, idle and standby modes of consumer electronics products. Actually it is suitable for almost all consumer electronics products that require precise current setting and measurement at the μ A and mA levels.

Fast measurement of I-V characteristic

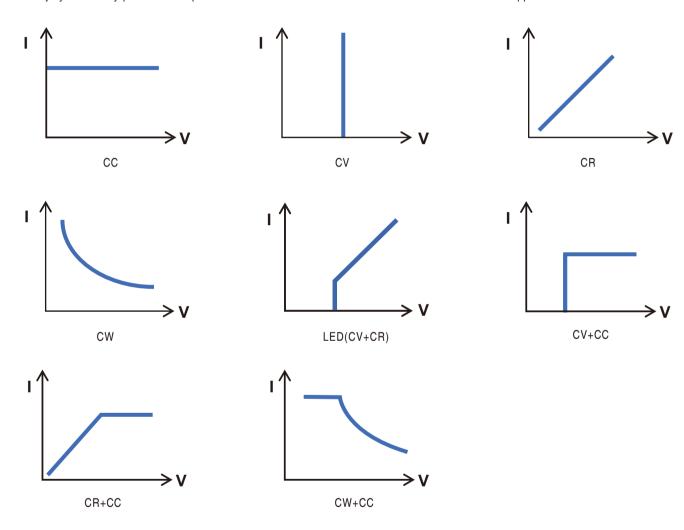
The voltage and current measurement of IT8700P+ is fast (up to 250kHz). It can be applied to various testing applications such as charging piles, automotive electronics; renewable energy and so on.



IT8700P+ High Speed Multi-channel DC Electronic Load

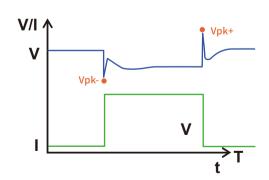
8 operation modes

Besides the four basic operation modes of CC/CV/CR/CW, IT8700P+ provides additional 4 compound operation modes : CV/ CC/ CR+CC/CW+CC/CV+CR(CR-LED). Under CV/CR/CW operation mode, the maximum current (I-Limit) is settable. This can effectively solve the problem of instantaneous surge current during testing and avoid triggering DUT's protection, or even burning out or any other injury caused by possible misoperation or environmental factors. So it can be used in various applications.



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.



IT8700P+ High Speed Multi-channel DC Electronic Load

Para	meter			IT8721P+		
	Voltage		0.1~18V			0.1~150V
	Current	0∼0.6A		0∼3A		0~20A
	Power	0~30W		0 0/1	0~150W *7	0 2011
Datadoulos	Resistance		0.05Ω~10Ω		0~130VV	10Ω~7500Ω
Rated value	Min. resistance	≒100mΩ	0.0012 1012		⇒20mΩ	1012 100012
	MOV	0.09V at 0.6A		0.09V at 3A	2011142	0.6V at 20A
	Input leak current		0.06mA	0.00 V at 0/1		0.2mA
	Voltage		1mV			10mV
	•	0.1mA	IIIIV	0.1mA		1mA
Set resolution	Current Power	U. IIIIA		10mW		IIIIA
				16bit		
	Resistance Voltage		0.1mV	TODIL		1mV
Readback		0.1mA	U. IIIIV	0.1mA		1mA
resolution	Current	U. IIIIA				IIIIA
	Power	(0.4	2050/ 2 2050/50	10mW		(0.0050/_0.0050/_50)
	Voltage	,	025%+0.025%FS)	. (0.050/ . 0.050/ 50)		±(0.025%+0.025%FS)
.	Current	±(0.1%+0.1%FS)		±(0.05%+0.05%FS)		±(0.05%+0.05%FS)
Set accuracy	Power *3		019/ +0.000*2	0.2%+0.2%FS		0.040/ +0.00000
	Resistance*1	0	.01%+0.08S*2	(0.0050/_0.0050/.50)		0.01%+0.0008S
Readback	Voltage	(0.40) 0.40(50)		±(0.025%+0.025%FS)	(2.050/ 0.050/50)	
	Current	±(0.1%+0.1%FS)		(0.00) 0.5::=0:	±(0.05%+0.05%FS)	
accuracy	Power			±(0.2%+0.2%FS)		
Set temperature drift coefficient(% of	Voltage			≤50ppm/°C + 50ppm/°C*FS		
coefficient(% of Output/ C +Offset)	Current			≤50ppm/°C + 50ppm/°C*FS		
Readback Temperature drift coefficient((% of	Voltage			≤50ppm/°C + 50ppm/°C*FS		
Output/ C +Offset)	Current		≤	≤50ppm/°C + 50ppm/°C*FS		
	Rising	0.0001∼0.06A/µs		0.0001∼0.3A/µs		0.001∼2A/μs
Dynamic	Falling	0.0001∼0.06A/µs		0.0001∼0.3A/µs		0.001∼2A/µs
response *4	Min.rising time*5	≒ 10μs		≒ 10μs		≒ 10μs
·	Dynamic frequency	1		0.001∼20kHz		
	Voltage			110V ±10%or220V ±10%		
AC parameter	Frequency			50/60Hz		
AC parameter	Imax.			0.3A		
	Power factor			1		
Set stability-30min($\%$	Voltage		±(0.02%+0.02%F	FS)		±(0.02%+0.02%FS)
of Output/°C +Offset)	Current	±(0.05%+0.08%FS)		±(0.03%+0.03%FS)		±(0.03%+0.03%FS)
Set stability-8h($\%$ of	Voltage		/			1
Output/ C+Offset)	Current	1		/		1
Readback stability-30min	Voltage			±(0.02%+0.02%FS)		
(% of Output/ C+Offset)	Current	±(0.05%+0.08%FS)			±(0.03%+0.03%FS)	
Readback stability-8h	Voltage			1		
(%of Output/ C +Offset)	Current	1			1	
Sense voltage				≤2V		
Storage temperature				-20°C∼70°C		
	OPP	33W		165W		165W
Protection	OCP	0.66A		3.3A		22A
1 TOLOGION	OVP		18.5V			155V
	OTP			85°C		
Interfaces*6				LAN, USB, RS232		
Isolation(output to ground)				500V/DC/1mA		
Isolation(input to ground)				1.5KV/AC/5mA		
Units parallel connected				≤16(channel)		
Protection level				IP20		
Safety regulation				IEC 61010		
Cooling				fan		
Working temperature				0~40°C		
Dimension(mm)				82mm*183mm*573mm		
N.W.				5kg		
				-··y		

^{*1} Input voltage/current is not less than 10%FS (FS is full scale)

 $^{^*}$ 2 Range of resistance readback value: ($1/(1/R+(1/R)^*0.01\%+0.08), 1/(1/R-(1/R)^*0.01\%-0.08)$)

 $^{^{*}3}$ Input voltage/current is not less than 10%FS

^{*4} The loading current is not less than 2%FS

^{*5} Minimum rise time: 10%~90% of current rise time

^{*6} Each module does not have a separate communication interface and can be controlled through the host frame interface

^{*7} It is a dual-channel dynamic power distribution module. The parameters of the two channels are the same. The maximum output of a single channel is 150W. The total power of the dual channels is not more than 200W. The average power of a single channel is 100W.

				IT8731P+			
	Voltage		0.1~18V		0.1~150V		
	Current	0~0.8A		0∼4A	0~40A		
	Power	0~60W		V - 11 (0~300W		
Rated value	Resistance	0 0011	$0.05\Omega\sim10\Omega$		10Ω~7500Ω		
ialeu value	Min. resistance	≒75mΩ			⇒20mΩ		
	MOV	0.06V at 0.8A		0.08V at 4A	0.8V at 40A		
	Input leak current	0.001 0.001	0.06mA	0.000 at 11.	0.3mA		
	Voltage		1mV		10mV		
	Current	0.1mA		0.1mA	1mA		
Set resolution	Power	o.ma		10mW	ША		
	Resistance			16bit			
	Voltage		0.1 mV	TODIL	1mV		
Readback	Current	0.1mA	0.11111	0.1mA	1mA		
resolution	Power	U. IIIIA		10mW	IIIIA		
	Voltage		±(0.025%+0.025%		. (0.025% . 0.025% ES)		
	Current	1/0.19/ 10.19/ EC)	±(0.023/0+0.023/0	•	±(0.025%+0.025%FS)		
Set accuracy	Power*3	±(0.1%+0.1%FS)		±(0.05%+0.05%FS) 0.2%+0.2%FS	±(0.05%+0.05%FS)		
not accuracy	Resistance *1		0.01%+0.08S *		0.010/ .0.0000		
			0.01%+0.088		0.01%+0.0008S		
Readback	Voltage			±(0.025%+0.025%FS)			
accuracy	Current			±(0.05%+0.05%FS)			
Set temperature drift	Power			±(0.2%+0.2%FS)			
oefficient(%of	Voltage			≤50ppm/°C + 50ppm/°C*FS			
Output/ C+Offset)	Current			≤50ppm/°C + 50ppm/°C*FS			
Readback Temperature Irift coefficient((% of Output/ C +Offset)	Voltage	≤50ppm/°C + 50ppm/°C*FS					
Output/ C+Offset)	Current			≤50ppm/°C + 50ppm/°C*FS			
	Rising *4	0.0001∼0.08A/µs		0.0001∼0.4A/µs	0.001∼4A/µs		
Dynamic	Falling*4	0.0001∼0.08A/µs		0.0001∼0.4A/µs	0.001∼4A/µs		
response	Min.rising time*5	≒ 10μs		≒ 10μs	≒ 10μs		
	Dynamic frequency			0.001~20kHz			
	Voltage			110V ±10%or220V ±10%			
AC parameter	Frequency			50/60Hz			
AC parameter	Imax.			0.3A			
	Power factor			1			
Set stability-30min(%	Voltage	±	:(0.02%+0.02%FS)		±(0.02%+0.02%FS)		
of Output/ C+Offset)	Current	±(0.05%+0.08%FS)		±(0.03%+0.03%FS)	±(0.03%+0.03%FS)		
Set stability-8h($\%$ of	Voltage		/		1		
Output/ C+Offset)	Current			1	1		
eadback stability-30min	Voltage			±(0.02%+0.02%FS)			
% of Output/ C +Offset)	Current	±(0.05%+0.08%FS)		±(0.0	03%+0.03%FS)		
eadback stability-8h	Voltage			1			
% of Output/ C+Offset)	Current				1		
Sense voltage				≤2V			
Storage temperature				-20°C∼70°C			
	OPP	65W		210W	210W		
Protection	OCP	0.88A		4.4A	44A		
TOLOGUION	OVP		18.5V		155V		
	OTP			85°C			
nterfaces*6				LAN, USB, RS232			
solation(output to ground)				500V/DC/1mA			
solation(input to ground)				1.5KV/AC/5mA			
Jnits parallel connected				≤16(channel)			
Protection level				IP20			
Safety regulation				IEC 61010			
, ,		fan					
Cooling							
, ,				0∼40°C 82mm*183mm*573mm			

 $^{^{\}star}1$ Input voltage/current is not less than 10%FS (FS is full scale)

^{*2} Range of resistance readback value: (1/(1/R+(1/R)*0.01%+0.08), 1/(1/R-(1/R)*0.01%-0.08))

^{*3} Input voltage/current is not less than 10%FS

^{*4} Rise/fall slew rate: 10%~90% of current rising from 0 to Max.current

^{*5} Minimum rise time: 10%~90% of current rise time

^{*6} Each module does not have a separate communication interface and can be controlled through the host frame interface

			IT8722P+					
	Voltage		0.1~18V		0.1~150V			
	Current	0~0.6A		0~3A	0~20A			
	Power	0~48W			0~250W* ⁷			
Rated value	Resistance	U. 348VV	$0.05\Omega\sim10\Omega$		10Ω~7500Ω			
taleu value	Min. resistance	≒80mΩ	0.0012 1012		÷20mΩ			
	MOV	0.05V at 0.6A	0.0	5V at 3A	0.4V at 20A			
		0.05V at 0.0A		ov at sA				
	Input leak current		0.06mA 1mV		0.2mA			
	Voltage	24.4	IIIIV	0.4. A	10mV			
Set resolution	Current	0.1mA		0.1mA	1mA			
oct resolution	Power			10mW				
	Resistance			16bit				
Readback	Voltage		0.1mV		1mV			
esolution	Current	0.1mA		0.1mA	1mA			
Coolution	Power			10mW				
	Voltage	±	(0.025%+0.025%FS)		±(0.025%+0.025%FS)			
	Current	±(0.1%+0.1%FS)	±(0.05%	+0.05%FS)	±(0.05%+0.05%FS)			
,	Power*3		0.29	%+0.2%FS				
	Resistance *1		0.01%+0.08S*2		0.01%+0.0008S			
	Voltage		±(0.025%	+0.025%FS)				
Readback	Current	±(0.1%+0.1%FS)		±(0.05°	%+0.05%FS)			
accuracy	Power	,	±(0.29	%+0.2%FS)	·			
et temperature drift	Voltage		≤50ppm/°C +	,				
pefficient(%of output/C+Offset)	Current		≤50ppm/°C +					
eadback Temperature	Voltage		· · · · · · · · · · · · · · · · · · ·					
ift coefficient((% of utput/ C +Offset)	Current	≤50ppm/°C + 50ppm/°C*FS ≤50ppm/°C + 50ppm/°C*FS						
ulpul/ C+Olisel)	Rising *4	0.0001 0.0064/00		~0.3A/µs	0.001∼2A/µs			
) mamia	Falling*4	0.0001∼0.06A/µs		~0.3A/µs	0.001∼2A/µs 0.001∼2A/µs			
Dynamic		0.0001∼0.06A/µs			'			
esponse	Min.rising time*5	≒ 10μs		=10µs	≒ 10μs			
	Dynamic frequency			~20kHz				
	Voltage			6or220V ±10%				
C parameter	Frequency	50/60Hz						
o parameter	Imax.			0.3A				
	Power factor			/				
et stability-30min(%	Voltage	,	1.02%+0.02%FS)		±(0.02%+0.02%FS)			
f Output/ C+Offset)	Current	±(0.05%+0.08%FS)	±(0.03%+	0.03%FS)	±(0.03%+0.03%FS)			
	Voltage		1		I			
utput/ ℃ +Offset)	Current	1		1	/			
eadback stability-30min	Voltage		±(0.02%+0	0.02%FS)				
of Output/ C+Offset)	Current	±(0.05%+0.08%FS)		±(0.03%	%+0.03%FS)			
eadback stability-8h	Voltage			1				
% of Output/ C+Offset)	Current	/			1			
Sense voltage				≤2V				
Storage temperature			-20°	°C∼70°C				
	OPP	52.8W		275W	275W			
	OCP	0.66A		3.3A	22A			
rotection	OVP	0.007	18.5V	0.07	155V			
	OTP			90°C	1001			
	011			SB, RS232				
nterfaces ¹⁶								
		500V/DC/1mA						
solation(output to ground)			1.5KV/AC/5mA					
solation(output to ground) solation(input to ground)								
colation(output to ground) colation(input to ground) Units parallel connected			1.5KV. ≤16(cha	annel)				
colation(output to ground) colation(input to ground) Inits parallel connected Protection level			≤16(cha	annel) IP20				
solation(output to ground) solation(input to ground) Jnits parallel connected Protection level Safety regulation			≤16(cha	annel) IP20 C 61010				
solation(output to ground) solation(input to ground) Inits parallel connected Protection level Safety regulation Cooling			≤16(cha	annel) IP20 C 61010 fan				
solation(output to ground) solation(input to ground) Juits parallel connected Protection level Safety regulation Cooling Vorking temperature			≤16(cha	annel) IP20 C 61010				
nterfaces "6 solation(output to ground) solation(input to ground) Jnits parallel connected Protection level Safety regulation Cooling Working temperature Dimension(mm) N.W.			≤16(ch:	annel) IP20 C 61010 fan				

^{*1} Input voltage/current is not less than 10%FS (FS is full scale)

 $^{^*2}$ Range of resistance readback value: ($1/(1/R+(1/R)^*0.01\%+0.08), 1/(1/R-(1/R)^*0.01\%-0.08)$)

^{*3} Input voltage/current is not less than 10%FS

^{*4} Rise/fall slew rate: 10%~90% of current rising from 0 to Max.current

^{*5} Minimum rise time: 10%~90% of current rise time

^{*6} Each module does not have a separate communication interface and can be controlled through the host frame interface

^{*7} It is a dual-channel dynamic power distribution module. The parameters of the two channels are the same. The maximum output of a single channel is 250W. The total power of the dual channels is not more than 300W. The average power of a single channel is 150W.

Para	meter		IT8723P+			IT8732P+			
	Voltage	0.1~	-18V	0.1~150V	(0.1~18V	0.1~150V		
	Current	0 ~ 0.9A	0∼4.5A	0~45A	0∼1.2A	0∼6A	0~60A		
	Power	0 ~ 60W	0~3	00W	0∼96W		0~400W		
Rated value	Resistance	0.05Ω~	~ 10Ω	$0.05\Omega\!\sim\!7500\Omega$		5Ω~10Ω	$0.05\Omega \sim 7500\Omega$		
i iaica vaiac	Min. resistance	≔50mΩ		$5m\Omega$	≒50mΩ		≒15mΩ		
	MOV	0.06V at 0.9A	0.07V at 4.5A	0.7V at 45A	0.06V at 1.2A	0.05V at 6A	0.5V at 60A		
	Input leak current	0.06	mΑ	0.2mA	().06mA	0.2mA		
	Voltage	1n		10mV		1mV	10mV		
	Current	0.1mA	0.1mA	1mA	0.1mA	0.1mA	1mA		
Set resolution	Power		10mW			10mW			
	Resistance		16bit			16bit			
	Voltage	0.1		1mV		0.1mV	1mV		
Readback	Current	0.1mA	0.1mA	1mA	0.1mA	0.1mA	1mA		
resolution		U. IIIIA	10mW	IIIIA	U.IIIIA	10mW	IIIIA		
	Power	. (0.0050/ . 0.4		. (0.0050/ . 0.0050/ 50)	./0.0050		. (0.0050(.0.0050(FO)		
	Voltage	±(0.025%+0.0	,	±(0.025%+0.025%FS)	,	%+0.025%FS)	±(0.025%+0.025%FS)		
	Current	±(0.1%+0.1%FS)	±(0.05%+0.05%FS)	±(0.05%+0.05%FS)	±(0.1%+0.1%FS)	±(0.05%+0.05%F	, , , , , , , , , , , , , , , , , , , ,		
Set accuracy	Power *3	0.040/_6	0.2%+0.2%FS			0.2%+0.2%FS			
	Resistance*1	0.01%+0		0.01%+0.0008S	0.01	1%+0.08S*2	0.01%+0.0008S		
Readback	Voltage		±(0.025%+0.025%FS)			±(0.025%+0.025%l	· ·		
	Current	±(0.1%+0.1%FS)	±(0.05%+0	.05%FS)	±(0.1%+0.1%FS)	,	05%+0.05%FS)		
accuracy	Power		±(0.2%+0.2%FS)			±(0.2%+0.2%F	,		
Set temperature drift coefficient(% of	Voltage	≤5	50ppm/°C + 50ppm/°C*FS	3		≤50ppm/°C + 50ppm	l/℃*FS		
Output/ C+Offset)	Current	≤5	50ppm/°C + 50ppm/°C *F\$	3		≤50ppm/°C +50ppm	ı/℃*FS		
Readback Temperature	Voltage	≤50	ppm/°C + 50ppm/°C *FS		≤50ppm/°C +50ppm/°C*FS				
drift coefficient((% of Output/ C+Offset)	Current	≤ 5	50ppm/°C + 50ppm/°C *FS	3	≤50ppm/°C +50ppm/°C*FS				
	Rising	0.0001∼0.09A/µs	0.0001 ~ 0.45A/µs	0.001∼4.5A/µs	0.0001∼0.1A/µs	0.0001 ~ 0.5A/µs	s 0.001∼5A/µs		
Dynamic	Falling	0.0001∼0.09A/µs	0.0001 ~ 0.45A/µs	0.001∼4.5A/µs	0.0001∼0.1A/µs	0.0001 ~ 0.5A/µs	s 0.001~5A/µs		
response *4	Min.rising time*5	≒10µs	≒10µs	≒10µs	≒10µs	≒10µs	≒10µs		
георопос	Dynamic frequency		0.001~20kHz		·	0.001~20kHz			
	Voltage		10V ±10%or220V ±10%			110V ±10%or220V ±10			
	Frequency		50/60Hz			50/60Hz			
AC parameter	Imax.		0.3A			0.3A			
	Power factor		≥0.99			≥0.99			
Set stability-30min(%	Voltage	±(0.02%+0.0		±(0.02%+0.02%FS)	±(0.02%-	+0.02%FS)	±(0.02%+0.02%FS)		
of Output/ C+Offset)	Current	±(0.05%+0.08%FS)	±(0.03%+0.03%FS)	±(0.03%+0.03%FS)	±(0.05%+0.08%FS)	±(0.03%+0.03%FS			
Set stability-8h(%of	Voltage	=(0.0070.0.0070.0)	=(0.007010.007010)	((((((((((((((((((((=(0.007010.007010)	=(0.0070.0.0070.0	(0.00%,		
Output/ C+Offset)	Current		/		1		/		
Readback stability-30min			±(0.02%+0.02%FS)		,	±(0.02%+0.02%FS)	,		
% of Output/ C +Offset)	Voltage	±(0.05%+0.08%FS)	±(0.02%+0.02%) 5)	020/ EQ)	±(0.05%+0.08%FS)	,			
Readback stability-8h	Current	1(0.007010.007010)	±(0.03%+0.	.03%F3)	1	±(0.0	03%+0.03%FS)		
% of Output/ C+Offset)	Voltage		1		/	1			
_	Current		/ ~ 0\/			-0V			
Sense voltage			≤2V			≤2V			
Storage temperature	ODD	00111	-20°C ~70°C	2/21/	, 0011	-20 °C ~70 °C			
	OPP	66W	310W	310W	100W	410W	410W		
Protection	OCP	0.99A	4.95A	49.5A	1.32A	6.6A	66A		
	OVP	18.	.5V	155V		18.5V	85V		
	OTP		105°C			95℃			
**			LAN, USB, RS232			LAN, USB, RS232	2		
Interfaces 6		500V/DC/1mA				500V/DC/1mA			
		1.5KV/AC/5mA				1.5KV/AC/5mA			
solation(output to ground)			1.5KV/AC/5MA				≤16(channel)		
solation(output to ground) solation(input to ground)			≤ 16(channel)			≤16(channel)			
solation(output to ground) Isolation(input to ground) Units parallel connected						≤16(channel) IP20			
Isolation(output to ground) Isolation(input to ground) Units parallel connected Protection level			≤16(channel)			. ,			
Isolation(output to ground) Isolation(input to ground) Units parallel connected Protection level Safety regulation			≤16(channel) IP20			IP20			
Isolation(output to ground) Isolation(input to ground) Units parallel connected Protection level Safety regulation Cooling			≤16(channel) IP20 IEC 61010			IP20 IEC 61010 fan			
Interfaces *6 Isolation(output to ground) Isolation(input to ground) Units parallel connected Protection level Safety regulation Cooling Working temperature Dimension(mm)		83	≤16(channel) IP20 IEC 61010 fan			IP20 IEC 61010	om.		

^{*1} Input voltage/current is not less than 10%FS (FS is full scale)

^{*2} Range of resistance readback value: (1/(1/R+(1/R)*0.01%+0.08),1/(1/R-(1/R)*0.01%-0.08))

^{*3} Input voltage/current is not less than 10%FS

^{*4} The loading current is not less than 2%FS

^{*5} Minimum rise time: 10%~90% of current rise time

^{*6} Each module does not have a separate communication interface and can be controlled through the host frame interface

IT8700P+ High Speed Multi-channel DC Electronic Load

Para	meter		IT8733P+			IT8722BP+	
	Voltage	0.1	~18V	0.1~150V	0.	1~60V	0.1~600V
	Current	0∼2.4A	0∼12A	0~120A	0∼0.3A	0∼3A	0~15A
	Power	0∼120W		600W	0~120W	0.	-250W *7
Rated value	Resistance	0.05Ω		10Ω~7500Ω		$\Omega \sim 10\Omega$	$0.05\Omega\!\sim\!7500\Omega$
nateu value	Min. resistance	⇒50mΩ		13mΩ	≔400mΩ		=200mΩ
	MOV	0.12V at 2.4A	0.15V at 12A	1.5V at 120A	0.12V at 0.3A	0.6V at 3A	3V at 15A
	Input leak current	0.06		0.3mA		0.01 at 0.1	0.7mA
	Voltage		nV			1mV	10mV
	Current	0.1mA	1mA	10mV 10mA	0.1mA	0.1mA	1mA
Set resolution		U. IIIIA	10mW	IUIIA	O. IIIIA	10mW	IIIIA
001.000.01.01.	Power					16bit	
	Resistance	0.4	16bit 1 mV	1\/		1mV	10mV
Readback	Voltage			1mV	0.4		
resolution	Current	0.1mA	0.1mA	1mA	0.1mA	0.1mA	1mA
	Power		10mW			10mW	/·· -
	Voltage	±(0.025%+0		±(0.025%+0.025%FS)	,	+0.025%FS)	±(0.025%+0.025%FS)
_	Current	±(0.1%+0.1%FS)	±(0.05%+0.05%FS)	±(0.05%+0.05%FS)	±(0.1%+0.1%FS)	±(0.05%+0.05%FS)	±(0.05%+0.05%FS)
Set accuracy	Power *3		0.2%+0.2%FS			0.2%+0.2%FS	
	Resistance*1	0.01%+	0.08S*2	0.01%+0.0008S	0.01%	+0.08S*2	0.01%+0.0008S
Daadhaal	Voltage		±(0.025%+0.025%FS)			±(0.025%+0.025%FS)	
Readback	Current	±(0.1%+0.1%FS)	±(0.05%+	0.05%FS)	±(0.1%+0.1%FS)	±(0.05%-	-0.05%FS)
accuracy	Power		±(0.2%+0.2%FS)			±(0.2%+0.2%FS)	
Set temperature drift	Voltage	≤50	ppm/°C + 50ppm/°C*FS		≤	30ppm/°C + 50ppm/°C *FS	8
coefficient(% of Output/ C +Offset)	Current	≤50	ppm/°C + 50ppm/°C*FS		≤	50ppm/°C + 50ppm/°C *FS	3
Readback Temperature	Voltage		ppm/°C + 50ppm/°C*FS		≤30ppm/°C +50ppm/°C*FS		
drift coefficient((% of Output/ C +Offset)	Current		50ppm/°C + 50ppm/°C*FS			50ppm/°C + 50ppm/°C *F\$	
Output © (Onlock)	Rising *4	0.0001~0.24A/µs 0.0001~1.2A/µs 0.001~12A/µs			0.0001∼0.03A/µs	0.0001 ~ 0.3A/µs	0.001 ∼ 1.5A/µs
Dynamic	Falling*4	0.0001~0.24A/µs	0.0001~1.2A/μs	0.001~12A/μs	0.0001 ~ 0.03A/us	0.0001 ~ 0.3A/μs	0.001 ~ 1.5A/μs
•	Min.rising time*5	÷10μs	≒10μs	·	5.0001 0.00Aγμ3 ≒10μs	≒10µs	≒10µs
response	Dynamic frequency	- τομο	0.001∼20kHz	≒10µs	Τομο	0.001∼20kHz	⊸τυμ5
	Voltage	110V ±10%or220V ±10%				110V ±10% or 220V ±10%	
	_	1	50/60Hz			50/60Hz	
AC parameter	Frequency Imax.				0.3A		
'			0.3A		U.SA		
0	Power factor	(0.000/ 0.00	≥0.99	(0.000/ 0.000/ 50)		(0.000/ 0.000/ 50)	
Set stability-30min(%	Voltage	±(0.02%+0.02	,	±(0.02%+0.02%FS)	(0.050/ 0.000/50)	±(0.02%+0.02%FS)	(0.000/ 0.000/ 50)
of Output/ C +Offset)	Current	±(0.05%+0.08%FS)	±(0.03%+0.03%FS)	±(0.03%+0.03%FS)	±(0.05%+0.08%FS)	±(0.03%+0.03%FS)	±(0.03%+0.03%FS)
Set stability-8h(% of	Voltage	,	/	/	,	1	/
Output/ C+Offset)	Current	1	/	/	/	/	1
Readback stability-30min	Voltage		±(0.02%+0.02%FS)			±(0.02%+0.02%FS)	
% of Output/ C +Offset)	Current	±(0.05%+0.08%FS)	±(0.03%+	0.03%FS)	±(0.05%+0.08%FS)	±(0.03%+	0.03%FS)
Readback stability-8h	Voltage		1			1	
% of Output/ C+Offset)	Current	1		/	1		/
Sense voltage			≤2V			≤2V	
Storage temperature			-20°C∼70°C			-20°C ∼70°C	
	OPP	125W	610W	610W	132W	275W	275W
Protection	OCP	2.64A	13.2A	132A	0.33A	3.3A	16.5A
1 1010011011	OVP	18	3.5V	155V	(63V	630V
	OTP		105°C			90℃	
Interfaces*6			LAN, USB, RS232			LAN, USB, RS232	
Isolation(output to ground)			500V/DC/1mA			500V/DC/1mA	
Isolation(input to ground)			1.5KV/AC/5mA			1.5KV/AC/5mA	
Units parallel connected			≤16(channel)			≤16(channel)	
Protection level			IP20			IP20	
Safety regulation			IEC 61010			IEC 61010	
						fan	
Cooling			fan				
Working temperature			0~40°C			0~40℃	
Dimension(mm)			82mm*183mm*573m	m		82mm*183mm*573mm	
N.W.			5kg			5kg	

^{*1} Input voltage/current is not less than 10%FS (FS is full scale)

 $^{^*}$ 2 Range of resistance readback value: ($1/(1/R+(1/R)^*0.01\%+0.08), 1/(1/R-(1/R)^*0.01\%-0.08)$)

^{*3} Input voltage/current is not less than 10%FS

 $^{^{\}star}4$ Rise/fall slew rate: 10%~90% of current rising from 0 to Max.current

^{*5} Minimum rise time: 10%~90% of current rise time

^{*6} Each module does not have a separate communication interface and can be controlled through the host frame interface

^{*7} It is a dual-channel dynamic power distribution module. The parameters of the two channels are the same. The maximum output of a single channel is 250W. The total power of the dual channels is not more than 300W. The average power of a single channel is 150W.

Para	meter		IT8732BP+		
	Voltage		0.1~60V	0.1~600V	
	Current	0∼0.3A	0~3A	0~20A	
	Power	0∼120W	0 OA	0~300W	
Rated value	Resistance	5 .25	$0.2\Omega \sim 10\Omega$	$10\Omega\!\sim\!7500\Omega$	
Haleu value	Min. resistance	≒500mΩ	0.249 1049	≒180mΩ	
	MOV	0.15V at 0.3A	0.54V at 3A	3.6V at 20A	
	Input leak current	0.15V at 0.3A			
			0.06mA	0.7mA	
	Voltage Current		1mV	10mV	
Set resolution		0.1mA	0.1mA	1mA	
oct resolution	Power		10mW		
	Resistance		16bit		
Readback	Voltage		1 mV	10mV	
resolution	Current	0.1mA	0.1mA	1mA	
0001011011	Power		10mW		
	Voltage	±(0.	025%+0.025%FS)	±(0.025%+0.025%FS)	
	Current	±(0.1%+0.1%FS)	±(0.05%+0.05%FS)	±(0.05%+0.05%FS)	
Set accuracy	Power *3		0.2%+0.2%FS		
	Resistance*1		0.01%+0.08S *2	0.01%+0.0008S	
.	Voltage		±(0.025%+0.025%FS)		
Readback	Current	±(0.1%+0.1%FS)	, , , , , , , , , , , , , , , , , , , ,	0.05%+0.05%FS)	
accuracy	Power		±(0.2%+0.2%FS)	,	
Set temperature drift	Voltage		≤30ppm/°C + 20ppm/°C*FS		
coefficient(%of Output/ C+Offset)	Current		≤50ppm/°C + 20ppm/°C*FS		
Readback Temperature	Voltage		≤30ppm/°C + 20ppm/°C*FS		
drift coefficient((% of	Current				
Output/ C+Offset)	Rising *4	0.0004 0.004/	≤50ppm/°C + 20ppm/°C*FS	0.004 .004	
.	•	0.0001 ~ 0.02A/µs	0.0001∼0.2A/µs	0.001 ~ 2A/µs	
Dynamic	Falling*4	0.0001 ~ 0.02A/μs	0.0001~0.2A/µs	0.001 ∼ 2A/µs	
response	Min.rising time*5	≒10µs	≒ 10μs	≒10μs	
	Dynamic frequency	0.001~20kHz			
	Voltage		110V ±10% or 220V ±10%		
AC parameter	Frequency		50/60Hz		
to paramotor	Imax.		0.3A		
	Power factor		/		
Set stability-30min(%	Voltage	±(0.02	2%+0.02%FS)	±(0.02%+0.02%FS)	
of Output/°C +Offset)	Current	±(0.05%+0.08%FS)	±(0.03%+0.03%FS)	±(0.03%+0.03%FS)	
Set stability-8h(%of	Voltage		1	1	
Output/ C+Offset)	Current	1	/	1	
Readback stability-30min	Voltage		±(0.02%+0.02%FS)		
% of Output/ C+Offset)	Current	±(0.05%+0.08%FS)	±(0	.03%+0.03%FS)	
Readback stability-8h	Voltage		,		
% of Output/ C+Offset)	Current	/		/	
Sense voltage			≤2V		
Storage temperature			-20°C∼70°C		
	OPP	125W	310W	310W	
	OCP				
Protection	OVP	0.33A	3.3A 63V	22A 630V	
	OTP		85°C	030 V	
Interfaces*6	UIF				
			LAN, USB, RS232		
solation(output to ground)			500V/DC/1mA		
Isolation(input to ground)			1.5KV/AC/5mA		
Units parallel connected			≤16(channel)		
Protection level			IP20		
Safety regulation			IEC 61010		
OII			fan		
Cooling					
Cooling Working temperature			0~40°C		
			0∼40°C 82mm*183mm*573mm		

^{*1} Input voltage/current is not less than 10%FS (FS is full scale)

^{*2} Range of resistance readback value: (1/(1/R+(1/R)*0.01%+0.08),1/(1/R-(1/R)*0.01%-0.08))

^{*3} Input voltage/current is not less than 10%FS

^{*4} Rise/fall slew rate: 10%~90% of current rising from 0 to Max.current

^{*5} Minimum rise time: 10%~90% of current rise time

^{*6} Each module does not have a separate communication interface and can be controlled through the host frame interface

			IT8733BP+	
	Voltage	0.1~1	60V	0.1~600V
	Current	0~0.3A	0∼3A	0~30A
	Power	0 ~0.3A 0∼120W	J 0/1	000A
tated value	Resistance	0~120W 0.2Ω~`	10Ω	$10\Omega\!\sim\!7500\Omega$
ated value	Min. resistance	÷500mΩ	1000	1077 100072
	MOV	0.15V at 0.3A	0.3V at 3A	3V at 30A
	Input leak current	0.06r		0.7mA
	Voltage	1m		10mV
t resolution	Current	0.1mA	0.1mA	10mA
it resolution	Power		10mW	
	Resistance		16bit	
eadback	Voltage	1 m ¹		10mV
solution	Current	0.1mA	0.1mA	1mA
Solution	Power		10mW	
	Voltage	±(0.025%+0.	.025%FS)	±(0.025%+0.025%FS)
	Current	±(0.1%+0.1%FS)	±(0.05%+0.05%FS)	±(0.05%+0.05%FS)
et accuracy	Power*3	, , , , , , , , , , , , , , , , , , ,	0.2%+0.2%FS	
,	Resistance *1	0.01%+0	.08S *2	0.01%+0.0008S
	Voltage	5.01/610	±(0.025%+0.025%FS)	
eadback	Current	±(0.1%+0.1%FS)	=(0.020 /0.000 /01 0)	
curacy	Power	2(0.17010.17010)		
t temperature drift	Voltage		±(0.2%+0.2%FS) ≤30ppm/°C +20ppm/°C*FS	
t temperature drift efficient(% of	Current			
adback Temperature			≤50ppm/°C +20ppm/°C*FS	
t coefficient((% of httput/ C +Offset)	Voltage		≤30ppm/°C + 20ppm/°C *FS ≤50ppm/°C + 20ppm/°C *FS	
itput/ C+Offset)	Current			
	Rising *4	0.0001∼0.02A/µs	0.0001∼0.2A/µs	0.001∼2A/µs
ynamic	Falling*4	0.0001∼0.02A/µs	0.0001 ∼ 0.2A/µs	0.001∼2A/µs
esponse	Min.rising time*5	≒ 10μs	≒10µs	≒10μs
	Dynamic frequency		0.001~20kHz	
	Voltage		110V ±10% or 220V ±10%	
	Frequency		50/60Hz	
C parameter	Imax.		0.3A	
	Power factor		≥0.99	
t stability-30min(%	Voltage	±(0.02%+0.029	%FS)	±(0.02%+0.02%FS)
Output/ C+Offset)	Current	±(0.05%+0.08%FS)	±(0.03%+0.03%FS)	±(0.03%+0.03%FS)
	Voltage	(11111111111111111111111111111111111111	/	(, , , , , , , , , , , , , , , , , , ,
itput/°C+Offset)	Current	1	,	1
dback stability-30min	Voltage	,	±(0.02%+0.02%FS)	,
of Output/ C +Offset)	Current	±(0.05%+0.08%FS)	1	,
adback stability-8h	Voltage	1(0.00 /010.00 /01 0)	/ /	
of Output/ C+Offset)			,	
	Current		701	
ense voltage			≤2V	
orage temperature	0.00		-20 °C ∼70 °C	
	OPP	125W	510W	510W
rotection	OCP	0.33A	3.3A	33A
	OVP	63\		630V
	OTP		85 °C	
terfaces ^{*6}			LAN, USB, RS232	
ation(output to ground)			500V/DC/1mA	
ation(input to ground)			1.5KV/AC/5mA	
its parallel connected			≤16(channel)	
rotection level			IP20	
afety regulation			IEC 61010	
			fan	
ooling				
orking temperature			0~40°C	
imension(mm)			82mm*183mm*573mm	
I.W.			5kg	

^{*1} Input voltage/current is not less than 10%FS (FS is full scale)

 $^{^{*}2\ \}text{Range of resistance readback value: (}1/(1/R+(1/R)^{*}0.01\%+0.08),1/(1/R-(1/R)^{*}0.01\%-0.08)\)$

^{*3} Input voltage/current is not less than 10%FS

^{*4} Rise/fall slew rate: 10%~90% of current rising from 0 to Max.current

^{*5} Minimum rise time: 10%~90% of current rise time

^{*6} Each module does not have a separate communication interface and can be controlled through the host frame interface