

# IT8700 Multi-channel Programmable DC Electronic Load



## Applications

Multiple or single output AC / DC power supplies, DC / DC power converters, chargers, batteries and other power supply electronic components performance test, ATE test system, solar cells, LED, communications testing, commercial aviation and other fields.

## Feature

- Removable modules for easy system configurability
- Dual-channel module can display each channel information simultaneously
- Single frame up to max.8 channels, extended frame up to max.16 channels
- Dynamic power distribution function for dual channels
- Measurement resolution: 0.1mV/0.01mA
- Measure short-circuit peak current value and peak voltage value
- Measurement speed for voltage, current up to 50kHz
- Adjustable current rising / falling slope
- Auto-test function, with automatic judgement whether the test result exceeds the set specification
- Simulate various waveforms with load under List mode
- Up to 25kHz dynamic mode
- 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 function
- Built-in Ether Net / USB / RS232 communication interface
- Support anti-reverse alarm function

IT8700 series programmable DC electronic load adopts removable modules design, with single frame control 8 channels, and 16 channels with extended mainframe extension transient mode up to 25 kHz, which improves your test efficiency, with high resolution and accuracy. Users can freely choose in the 8 load modules according to the number of channels and power requirements, controlled by mainframe control panel, or controlled by IT9000-PV8700 software via built-in LAN / RS232 / USB interface.

IT8700, with adjustable slope, list function, automatic test and other functions, automatic test function can be set to work under CC / CV / CR / CP can be used in the application of R&D and production line.

IT8700 has self-diagnosis and comprehensive OVP, OCP, OPP, OTP, etc., ensure the operator safety.

| Model   | Specification     | Size(D*H*W)  |
|---------|-------------------|--------------|
| IT8731  | 80V/40A/200W      | 573*183*85mm |
| IT8732  | 80V/60A/400W      | 573*183*85mm |
| IT8732B | 500V/20A/300W     | 573*183*85mm |
| IT8733  | 80V/120A/600W     | 573*183*85mm |
| IT8733B | 500V/30A/500W     | 573*183*85mm |
| IT8722  | 80V/20A/250W*2CH  | 573*183*85mm |
| IT8722B | 500V/15A/250W*2CH | 573*183*85mm |
| IT8723  | 80V/45A/300W*2CH  | 573*183*85mm |

## Matching frame

|        |   |
|--------|---|
| IT8701 | Two-load module main control unit (including three interfaces)  |
| IT8702 | Four-load module main control unit (including three interfaces) |
| IT8703 | Four-load module expansion unit                                 |

\*1: The total power of dual channel for IT8722/IT8722B is 300W, if the two channel of IT8722/IT8722B work at the same time, need to meet:  $50W \leq PCH1/PCH2 \leq 250W$ ;  $PCH1+PCH2 \leq 300W$

\*2: IT8700 modules should be equipped with IT8701/IT8702 mainframe

\*3: Interface of mainframe: RS232, USB, Ether Net

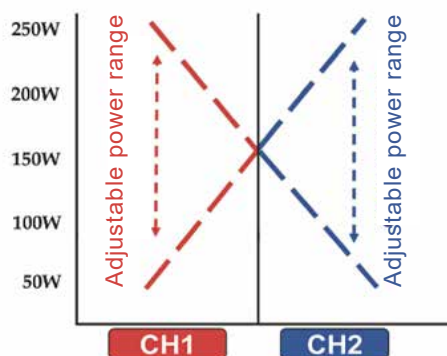
\*4: For any GPIB interface option request, check with ITECH for availability.

## Freely configurable modular system architecture

IT8700 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.

## Dynamic power distribution function

Usually, one module require high power while another require low power in battery testing. IT8722/IT8722B has dynamic power distribution function, that means within 300W, any channel which power over 50W and less than 250W, the power can be distributed freely, one module can be used as multiple standard modules.



## With ITECH test system

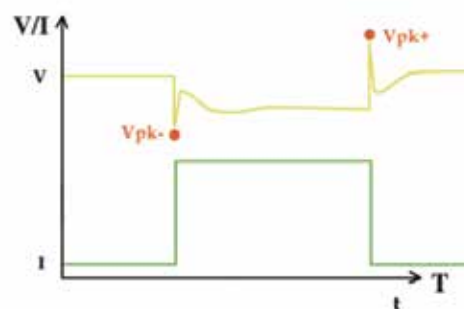
ITS5300 battery test system can be formed by IT8700, ITECH power supply, battery resistance tester and temperature data logger, which makes hundreds of channels run at the same time, record voltage and current waveforms in real-time. Test data can be exported to EXCEL.

IT8700 can also equip with ITECH AC and DC power supply, relay card, I / O Card, DSO card to set up ITS9500 power supply test system, which achieves multi-supply modules simultaneously test or multiplex output AC / DC or DC / DC power supply module test.

IT8700 with IT9380 software can achieve multi-channel solar cell test, the test interface can be switched freely, support the sampling time settings, export test data, and with up to 50KHz I-V sampling rate, achieving high efficient and fully automated testing for solar panel.

## Peak voltage, peak current measurement function

Dynamic current testing of switching power supply often requires oscilloscope to capture instantaneous voltage and current waveforms to obtain the value of the peak voltage  $V_{pk}$  and the peak current  $I_{pk}$ . IT8700 is with digital data acquisition function, users can easily get the values of  $V_{pk}$  and  $I_{pk}$  without oscilloscope.



## High resolution and accuracy

IT8700 has the best product features with 0.1mV / 0.01mA resolution and 50kHz measurement speed, so that your test is fast and accurate.

## High power density

Maximum power density - 600W single module with ITECH advanced cooling technology, making IT8700 has ultra-high power density, 4u height up to 2400W.

## Auto test

This function can be applied in the automated production test, users can set measurement mode and pull load value of each step for panel or PC software, and the upper and lower limits of test parameters, and display whether the test results have exceeded the set specifications.

## PC communication Interface

IT8700 series of electronic load provide IT9000 PC software, users can easily set and monitor voltage & current waveform of each channel and operation of test, simplify automatic test and battery charge & discharge test. IT8700 has built-in Ethernet / USB / RS232 interface, support SCPI communication protocol, provide Labview bottom Layer driver to help customers achieve system structures and remote control.



## IT8722/22B/23 Specification

|                             |                                 | IT8722 <sup>*8</sup>                         |               | IT8722B <sup>*8</sup> |               | IT8723 <sup>*8</sup>       |               |
|-----------------------------|---------------------------------|--|---------------|-----------------------|---------------|----------------------------|---------------|
| Rated parameter<br>(0~40℃)  | Input voltage                   | 0~80V  |               | 0~500V                |               | 0~80V                      |               |
|                             | Input current                   | 0~20A  |               | 0~15A                 |               | 0~45A                      |               |
|                             | Input power                     | 250W <sup>*1</sup>                           |               | 250W <sup>*1</sup>    |               | 300W                       |               |
| CV mode                     | Min operating voltage           | 0.15V/3A                                     | 1.0V/20A      | 0.8V/3A               | 4.0V/15A      | 0.14V/4.5A                 | 1.4V/45A      |
|                             | Range                           | L: 0~18V; H: 0~80V                           |               | 0.1~50V               | 0.1~500V      | L: 0~18V; H: 0~80V         |               |
|                             | Resolution                      | L: 1mV; H: 10mV                              |               |                       |               |                            |               |
|                             | Accuracy                        | ±(0.05%+0.025%FS)                            |               | ±(0.05%+0.05%FS)      |               | ±(0.05%+0.025%FS)          |               |
| CC mode                     | Range                           | 0~3A   | 0~20A         | 0~3A                  | 0~15A         | 0~4.5A                     | 0~45A         |
|                             | Resolution                      | L: 0.1mA; H: 1mA                             |               |                       |               |                            |               |
|                             | Accuracy                        | ±(0.05%+0.05%FS)                             |               |                       |               |                            |               |
| CR mode <sup>*2</sup>       | Range                           | L: 0.05Ω~10Ω; H: 10Ω~7.5KΩ                   |               | 0.3Ω~10Ω              | 10Ω~7.5KΩ     | L: 0.05Ω~10Ω; H: 10Ω~7.5KΩ |               |
|                             | Resolution                      | 16bit  |               |                       |               |                            |               |
|                             | Accuracy                        | 0.01%+0.08S <sup>*3</sup> ; H: 0.01%+0.0008S |               |                       |               |                            |               |
| CP mode <sup>*5</sup>       | Range                           | 250W <sup>*4</sup>                           |               | 250W <sup>*4</sup>    |               | 300W                       |               |
|                             | Resolution                      | 10mW   |               |                       |               |                            |               |
|                             | Accuracy                        | ±(0.2%+0.2%FS)                               |               |                       |               |                            |               |
| Dynamic mode                | CC mode                         |  |               |                       |               |                            |               |
|                             | T1&T2                           | 20μS~3600S / Res: 1μS                        |               |                       |               |                            |               |
|                             | Accuracy                        | 5μS±100ppm                                   |               |                       |               |                            |               |
|                             | Rise / fall slope <sup>*6</sup> | 0.0001~0.2A/μS                               | 0.001~1.6A/μS | 0.0001~0.1A/μS        | 0.001~0.5A/μS | 0.0001~0.25A/μS            | 0.001~2.5A/μS |
|                             | Min rise time <sup>*7</sup>     | ≒10μS  |               | ≒20μS                 |               | ≒12μS                      |               |
|                             | Range                           | Measuring range                              |               |                       |               |                            |               |
| Voltage readback value      | Resolution                      | 0~18V  | 0~80V         | 0~50V                 | 0~500V        | 0~18V                      | 0~80V         |
|                             | Accuracy                        | L: 0.1 mV; H: 1mV                            |               | L: 1 mV; H: 10mV      |               | L: 0.1 mV; H: 1mV          |               |
|                             | Range                           | ±(0.025%+0.025%FS)                           |               |                       |               |                            |               |
| Current readback value      | Resolution                      | 0~3A   | 0~20A         | 0~3A                  | 0~15A         | 0~4.5A                     | 0~45A         |
|                             | Accuracy                        | L: 0.01mA; H: 0.1mA                          |               | L: 0.01mA; H: 0.1mA   |               | L: 0.1mA; H: 1mA           |               |
|                             | Range                           | ±(0.05%+0.05%FS)                             |               |                       |               |                            |               |
| Power readback value        | Resolution                      | 250W   |               | 250W                  |               | 300W                       |               |
|                             | Accuracy                        |  |               | 10mW                  |               |                            |               |
|                             |                                 |  |               | ±(0.2%+0.2%FS)        |               |                            |               |
|                             |                                 | Protected range                              |               |                       |               |                            |               |
| Over power protection       |                                 | ≒250W  |               | ≒260W                 |               | ≒310W                      |               |
| Overcurrent protection      |                                 | ≒3.3A  | ≒22A          | ≒3.3A                 | ≒16.5A        | ≒5A                        | ≒50A          |
| Over voltage protection     |                                 | ≒82V   |               | ≒530V                 |               | ≒82V                       |               |
| Over temperature protection |                                 |  |               | ≒85℃                  |               |                            |               |
|                             |                                 | Specification                                |               |                       |               |                            |               |
| Short circuit               | Current                         | ≒3.3/3A                                      | ≒22/20A       | ≒3.3/3A               | ≒16.5/15A     | ≒5/4.5A                    | ≒50/45A       |
|                             | Voltage                         | 0V   |               |                       |               |                            |               |
|                             | Resistance                      | ≒50mΩ  |               | ≒260mΩ                |               | ≒30mΩ                      |               |
| Input terminal impedance    |                                 | 300KΩ  |               | ≒1MΩ                  |               | 300KΩ                      |               |
| Size(mm)                    |                                 | 82*183*573                                   |               |                       |               |                            |               |
| Weight                      |                                 | 5KG  |               |                       |               |                            |               |

\*1 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.

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

\*3 Resistance read-back value range: ((1/(1/R+(1/R)\*0.01%+0.08).1/(1/R-(1/R)\*0.01%-0.08))

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

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

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

\*7 The minimum rise time: 10% ~ 90% current rise time

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

## IT8731/32/32B/33B/33 Specification

|                             |                        | IT8731                           |                 | IT8732              |                   | IT8732B             |                   | IT8733B             |                   | IT8733                     |                  |
|-----------------------------|------------------------|----------------------------------|-----------------|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|----------------------------|------------------|
| Rated parameter<br>(0~40℃)  | Input voltage          | 0~80V                            |                 |                     |                   | 0~500V              |                   |                     |                   | 0~80V                      |                  |
|                             | Input current          | 0~40A                            |                 | 0~60A               |                   | 0~20A               |                   | 0~30A               |                   | 0~120A                     |                  |
|                             | Input power            | 200W                             |                 | 400W                |                   | 300W                |                   | 500W                |                   | 600W                       |                  |
|                             | 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        |
| CV mode                     | Range                  | L: 0~18V; H: 0~80V               |                 |                     |                   | L: 0~18V; H: 0~500V |                   |                     |                   | L: 0~18V; H: 0~80V         |                  |
|                             | Resolution             |                                  |                 |                     |                   | L: 1mV; H: 10mV     |                   |                     |                   |                            |                  |
|                             | Accuracy               |                                  |                 |                     |                   | ±(0.05%+0.025%FS)   |                   |                     |                   |                            |                  |
| CC mode                     | 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    |                   |                     |                   | 1mA                        | 10mA             |
|                             | Accuracy               |                                  |                 |                     |                   | ±(0.05%+0.05%FS)    |                   |                     |                   | ±(0.05%+0.05%FS)           | ±(0.1%+0.05%FS)  |
| CR mode <sup>*1</sup>       | Range                  | L: 0.05Ω~10Ω; H: 10Ω~7.5KΩ       |                 |                     |                   | 0.25Ω~10Ω           | 10Ω~7.5KΩ         | 0.2Ω~10Ω            | 10Ω~7.5KΩ         | L: 0.05Ω~10Ω; H: 10Ω~7.5KΩ |                  |
|                             | Resolution             | 16bit                            |                 |                     |                   |                     |                   |                     |                   |                            |                  |
|                             | Accuracy               | L: 0.01%+0.08S; H: 0.01%+0.0008S |                 |                     |                   |                     |                   |                     |                   |                            |                  |
| CP mode <sup>*2</sup>       | Range                  | 200W                             |                 | 400W                |                   | 300W                |                   | 500W                |                   | 600W                       |                  |
|                             | Resolution             | 10mW                             |                 |                     |                   |                     |                   |                     |                   |                            |                  |
|                             | Accuracy               | ±(0.2%+0.2%FS)                   |                 |                     |                   |                     |                   |                     |                   |                            |                  |
| Dynamic mode                | CC mode                |                                  |                 |                     |                   |                     |                   |                     |                   |                            |                  |
|                             | T1&T2                  | 20μs~3600s / Res: 1μs            |                 |                     |                   |                     |                   |                     |                   |                            |                  |
|                             | Accuracy               | 5μs±100ppm                       |                 |                     |                   |                     |                   |                     |                   |                            |                  |
|                             | Rise / fall slope      | 0.0001<br>~0.2A/μs               | 0.001<br>~2A/μs | 0.0001<br>~0.25A/μs | 0.001<br>~2.5A/μs | 0.0001<br>~0.1A/μs  | 0.001<br>~0.8A/μs | 0.0001<br>~0.08A/μs | 0.001<br>~0.8A/μs | 0.001<br>~0.25A/μs         | 0.01<br>~2.5A/μs |
|                             | Min rise time          | ≒15μS                            |                 |                     |                   | ≒20μS               |                   | ≒25μS               |                   | ≒35μS                      |                  |
|                             | Voltage readback value | Range                            | 0~18V           | 0~80V               | 0~18V             | 0~80V               | 0~18V             | 0~500V              | 0~18V             | 0~500V                     | 0~18V            |
| Resolution                  |                        | L: 0.1 mV; H: 1mV                |                 |                     |                   | L: 1 mV; H: 10mV    |                   |                     |                   | L: 0.1 mV; H: 1mV          |                  |
| Accuracy                    |                        | ±(0.025%+0.025%FS)               |                 |                     |                   |                     |                   |                     |                   |                            |                  |
| Current readback value      | 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: 0.01mA; H: 0.1mA |                   |                     |                   | L: 0.1mA; H: 1mA           |                  |
|                             | Accuracy               | ±(0.05%+0.05%FS)                 |                 |                     |                   |                     |                   |                     |                   |                            |                  |
| Power readback value        | Range                  | 200W                             |                 | 400W                |                   | 300W                |                   | 500W                |                   | 600W                       |                  |
|                             | Resolution             | 10mW                             |                 |                     |                   |                     |                   |                     |                   |                            |                  |
|                             | Accuracy               | ±(0.2%+0.2%FS)                   |                 |                     |                   |                     |                   |                     |                   |                            |                  |
| Protected range             |                        |                                  |                 |                     |                   |                     |                   |                     |                   |                            |                  |
| Over power protection       |                        | ≒210W                            |                 | ≒410W               |                   | ≒310W               |                   | ≒510W               |                   | ≒610W                      |                  |
| Overcurrent protection      |                        | ≒4.4A                            | ≒44A            | ≒6.6A               | ≒66A              | ≒3.3A               | ≒22A              | ≒3.3A               | ≒33A              | ≒13.2A                     | ≒132A            |
| Over voltage protection     |                        | ≒82V                             |                 |                     |                   | ≒530V               |                   |                     |                   | ≒82V                       |                  |
| Over temperature protection |                        | ≒85℃                             |                 |                     |                   |                     |                   |                     |                   |                            |                  |
| Specification               |                        |                                  |                 |                     |                   |                     |                   |                     |                   |                            |                  |
| Short circuit               | Current                | ≒4.4/4A                          | ≒44/40A         | ≒6.6/6A             | ≒66/60A           | ≒3.3/3A             | ≒22/20A           | ≒3.3/3A             | ≒33/30A           | ≒13.2/12A                  | ≒132/120A        |
|                             | Voltage                | 0V                               |                 |                     |                   |                     |                   |                     |                   |                            |                  |
|                             | Resistance             | ≒30mΩ                            |                 | ≒25mΩ               |                   | ≒240mΩ              |                   | ≒180mΩ              |                   | ≒20mΩ                      |                  |
| Input terminal impedance    |                        | 300KΩ                            |                 |                     |                   | 1MΩ                 |                   |                     |                   | 300KΩ                      |                  |
| Size(mm)                    |                        | 82*183*573                       |                 |                     |                   |                     |                   |                     |                   |                            |                  |
| Weight                      |                        | 5KG                              |                 |                     |                   |                     |                   |                     |                   |                            |                  |
| AC Input                    | Voltage                | 220V ±10%/110V ±10%              |                 |                     |                   |                     |                   |                     |                   |                            |                  |
|                             | Frequency              | 50Hz/60Hz                        |                 |                     |                   |                     |                   |                     |                   |                            |                  |

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

\*2: When input voltage and current value &gt;= 10% of FS

\*This information is subject to change without notice notice

