ITECH
YOUR POWER TESTING SOLUTION

AC

Electricity under test

Regenerate Power AC

DC

IT8300
Regenerative DC Electronic Load

APPLICATIONS

- DC/DC converters
- Large capacity battery
- Motors, fuses, relays
- High-power DC power supply test
- Natural energy
- Fuel cell

Your Power Testing Solution

IT8300 Series
## Regenerative
DC Electronic Load

27U

3U

ITECH newly launched IT8300 Regenerative DC Electronic Load, it not only can simulate various load characteristics, but also can feed power back to grid without pollution. IT8300 series unique regenerative function can convert the absorbed DC power into AC power and feed it back to local grid. This eliminates the usual heat dissipation to a minimum and saves energy costs, adapts requirements of global energy-saving and emission reduction at the same time. IT8300 adopts high power density design, e.g. for 3 U size, it can absorb power up to 10.5 kW. IT8300 supports master-slave paralleling and current equalized distribution, which can expand the power up to 105KW or more. Moreover IT8300 has multiple functions such as the automatic grid-state detection, on-grid electricity accumulation, anti-islanding protection, battery-test function, dynamic mode, LIST function, etc. The built-in interfaces include LAN/USB/RS232/RS485/CAN interfaces. The various functions make IT8300 series suitable for high-power power supply, storage battery, photovoltaic battery, electric vehicle, energy storage system, etc.

Features

- Voltage range: 80V
- Stand-alone input current up to 3570A
- Stand-alone input power up to 73.5KW
- Support master-slave paralleling, current equalized distribution, maximum output power up to 105 kW or more *1
- Energy-regenerative efficiency Max. 95% *2
- 3 U size, high power density up to 10.5 kW
- On-grid electricity accumulation function
- Automatic grid-state detection, achieve reliable on-grid function, anti-islanding protection
- 4 testing modes: CC/CV/CR/CP

- Dynamic loading mode
- Battery test function, automatic test function, short circuit test function
- Multiple parameters measurement & display : Vdc、Idc、Pdc、Vac、Pac、Fac、Wac
- With pre-charging function, prevent dc loading current overshoot
- Full protection : OVP/OCP/OPP/OTP and power grid fault protection, fault storage
- Built-in standard LAN/USB/RS232/RS485/CAN communication interface
- support SCPI protocol, LabVIEW

*1 Please consult with ITECH for higher power requirement
*2 The regenerative power is for in-plant reuse, not for feeding back to public grid
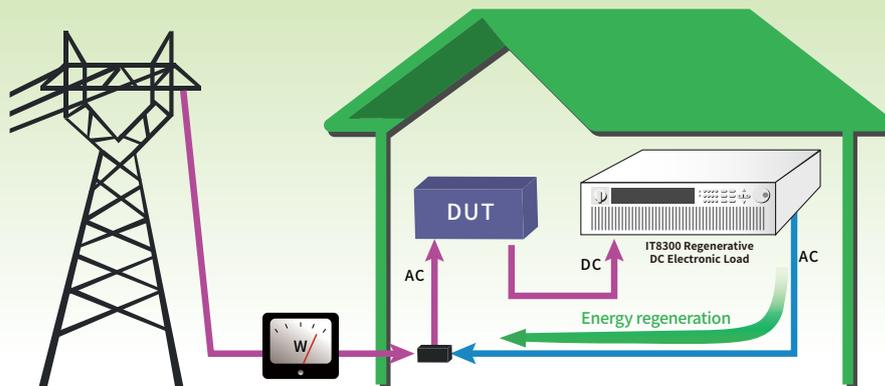
DUT

AC

DC

IT8300 Regenerative
DC Electronic Load

AC

Energy regeneration

W

Model	Voltage	Current	Power	Size	Model	Voltage	Current	Power	Size
IT8311	80V	170A	3.5kW	3U	IT8361	80V	2040A	42kW	15U
IT8321	80V	340A	7kW	3U	IT8371	80V	2550A	52.5kW	27U
IT8331	80V	510A	10.5kW	3U	IT8381	80V	3060A	63kW	27U
IT8341	80V	1020A	21kW	6U	IT8391	80V	3570A	73.5kW	27U
IT8351	80V	1530A	31.5kW	15U					

Applications

- Discharge testing for different types of batteries (lead, lithium, power and energy storage batteries)
- The virtual load test of natural energy (solar cell array, wind power generation)
- Aging life testing for AC/DC, DC/DC converters
- Aging testing for motor, fuse and relay under automobile high voltage (e.g., 36 v, 42 v) and small motor testing
- Security testing for mechanical systems with large capacity battery (e.g. agv, health care electric chair)
- Testing for large DC power supply, e.g. ground power test
- Evaluation testing for fuel cells and stacks
- Detection and aging for power electronic equipments

Alternators

Various batteries

Battery powered machines

Natural energy
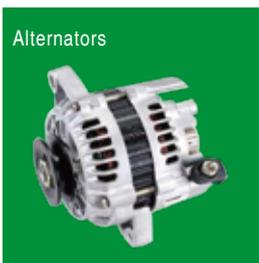
Power supply

Power accumulation function

IT8300 series regenerative DC electronic load uses the power electronic transformation technology on the premise of completing test power experiment to make output energy of measured power supply regenerative recycled and reused. Through the inside fast sampling of voltage and current, the regenerative power value can be observed on the front panel of IT8300 series, including voltage, frequency and power of each phase, as well as total power, total current regenerative and total historical regenerative power, which makes the energy saving effect much easier. Re-open after power failure, IT8300 series will continue to accumulate the regenerative power value based on the last power off value.

IT8331 80V/510A/10.5KW
ITECH REGENERATIVE DC ELECTRONIC LOAD

CC
19.65V   500.0A
P= 8.90kW   W=   29.9kWh

Your Power Testing Solution

IT8300 Series Regenerative DC Electronic Load

IT8332 (800V/63A/10.5KW)
Input Power

Relationship curve between input power and power regeneration

Ultra high power regeneration efficiency up to about 95%

IT8300 series regenerative DC electronic load is different from other conventional consumed loads, regenerative function is the most important feature of IT8300 series. It can regenerate power to grid and provides low heat dissipation, which will be converted with an efficiency of approximately 95%. This way of energy regeneration helps to lower energy costs and avoids expensive cooling systems, and also reduces the noise.

Energy-saving and emission-reduction

Conventional type electronic load is mostly energy consumption type load. In addition to the high cost of electricity, power generation process will also produce a lot of carbon dioxide, sulfur dioxide, nitrogen oxides and other greenhouse gases or harmful gases, causing harm to the environment. Using IT8300 series can reduce power consumption, not only save money, but also reduce greenhouse gas and harmful gas emissions. According to preliminary estimates, each 10.5KW IT8331 can reduce about 80 tons of CO_2 emissions per year, in line with global environmental protection and emission reduction requirements.

Eco-friendly

High Power Density Design

Conventional electronic loads are not only with high energy consumption, its own size and weight is also very large. Energy consumption electronic load with 10KW load is at least 12U, not only difficult to transport, the higher the cost. IT8300 series regenerative DC electronic load adopts high power density design, e.g. for 3 U size, it can absorb power up to 10.5 kW. Compared to traditional electronic loads, the size for IT8300 series will be able to decrease by 76.9% under the same output power.

Traditional Electronic load 10 kW — 15 U

IT8800 10 kW — 12 U

size reduced by **76.9%**

IT8331 10.5 kW — 3U
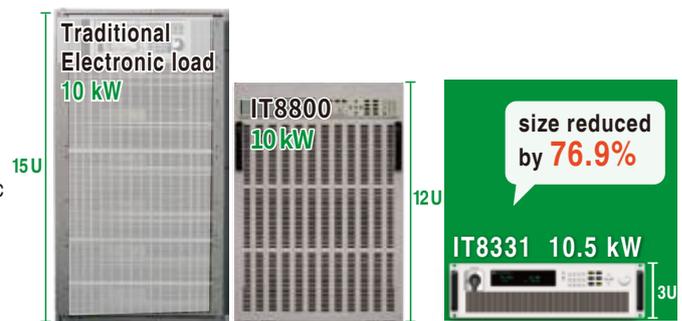
Dynamic test function

IT8300 series regenerative DC electronic load provides dynamic test function under CC mode. Electronic load switches between two settable parameters according to set rule, it is for testing dynamic characteristics of power supply and checking the stability of power supply during step change of loading current. Dynamic testing mode can be divided into continuous mode, pulse mode and reverse mode.
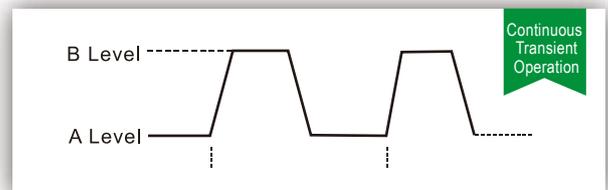

B Level

A Level

Continuous Transient Operation

List function

IT8300 series regenerative DC electronic load provides list mode, it can complete the complex arbitrary current change mode accurately and fast, and can synchronize with internal or external signals to complete multi-level loading precision test, which greatly save cost for customers. By editing the step value, pulse width and the slope of each step, IT8300 can generate a variety of complex sequences and help users to complete various loading waveforms test. In the CC mode, IT8300 series can set rising and falling speed.
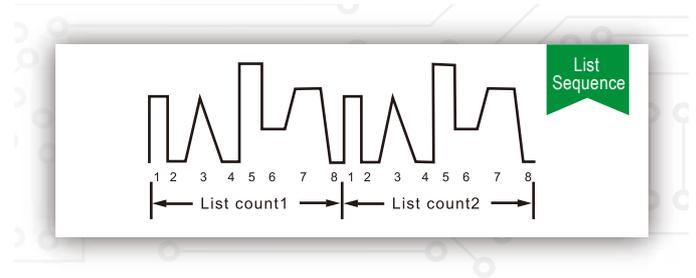
Battery test function

IT8300 series regenerative DC electronic load simulate battery discharge test under CC mode, and support settable discharge cut-off conditions, such as cut-off voltage, cut-off capacity and cut-off time. When any of the three conditions are met, the discharge test will be stopped. Moreover, the battery voltage, discharge time and the discharged capacity can be observed during the test, which reflects the reliability of the battery and its remaining life.

discharge test   Capacity test
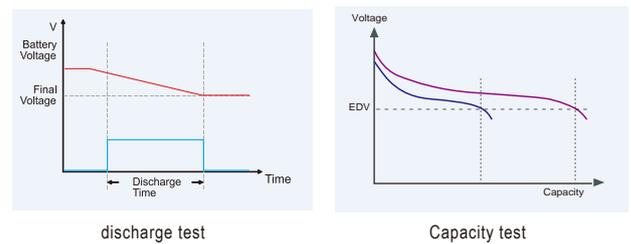
Full protection function

IT8300 series regenerative DC electronic load can detect the grid state automatically. When grid connection is suddenly disconnected or power down, products will be turned off. IT8300 series can achieve reliable on-grid function and anti-islanding protection function. IT8300 also provide monitor on DC input voltage and frequency, and support OCP, OVP, OTP, OPP.

Support master-slave paralleling, current equalized distribution

IT8300 series regenerative DC electronic load supports master-slave paralleling and current equalized distribution function. Under the premise of three-phase power balanced, output power can be extended up to 105kW or higher via multiple loads paralleling, so as to meet the customers' higher power test requirements.

Master

Slave

Slave
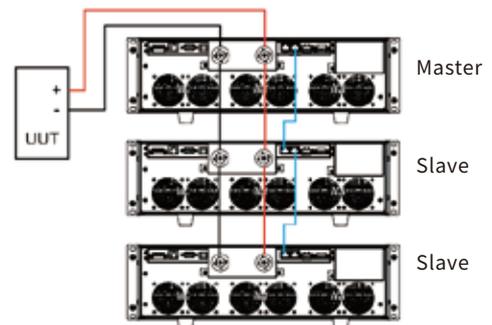
Built-in multiple interfaces

IT8300 series regenerative DC electronic load provides 5 types built-in interfaces: RS232, USB, LAN, CAN and RS485, supports SCPI protocol, facilitates power extending, computer or PLC remote control and system setting up etc. IT8300 series is also equipped with functions of remote measurement, current monitoring and external analog control, making it easy for users to conduct comprehensive and accurate measurement.
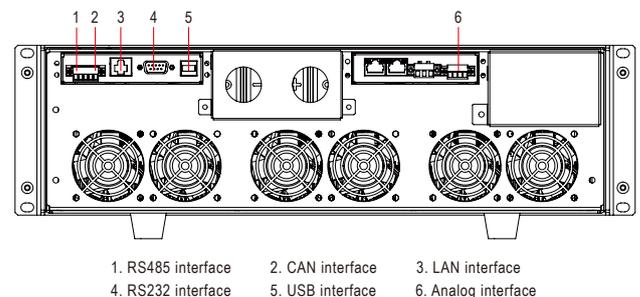
1. RS485 interface   2. CAN interface   3. LAN interface
4. RS232 interface   5. USB interface   6. Analog interface

Specification

Model		IT8311	IT8321	IT8331
		Input parameters		
Input rating (0~40℃)	Input voltage	0~80V	0~80V	0~80V
	Input current	0~170A	0~340A	0~510A
	Input power	0~3.5kW	0~7kW	0~10.5kW
CC mode	Range	0~170A	0~340A	0~510A
	Resolution	100mA	100mA	100mA
	Accuracy	<0.4% Imax	<0.4% Imax	<0.4% Imax
CV mode	Range	0~80V	0~80V	0~80V
	Resolution	10mV	10mV	10mV
	Accuracy	<0.3% Umax	<0.3% Umax	<0.3% Umax
CR mode	Range	0.01~1200Ω	0.005~500Ω	0.003~400Ω
	Resolution	0.001Ω	0.001Ω	0.001Ω
	Accuracy	Rmax*2%：（0.01~80Ω）；Rmax*5%：（80~1200Ω）	Rmax *2%：（0.005~60Ω）；Rmax *5%：（60~600Ω）	Rmax *2%：（0.003~40Ω）；Rmax *5%：（40~400Ω）
CP mode	Range	0~3.5kW	0~7kW	0~10.5kW
	Resolution	1W	1W	1W
	Accuracy	<1.3% Pmax	<1.3% Pmax	<1.3% Pmax
		Input readback		
Current Readback	Range	0~170A	0~340A	0~510A
	Resolution	100mA	100mA	100mA
	Accuracy	<0.4% Imax	<0.4% Imax	<0.4% Imax
Voltage Readback	Range	0~80V	0~80V	0~80V
	Resolution	10mV	10mV	10mV
	Accuracy	<0.3% Umax	<0.3% Umax	<0.3% Umax
Power Readback	Range	0~3.5kW	0~7kW	0~10.5kW
	Resolution	1W	1W	1W
	Accuracy	<1.3% Pmax	<1.3% Pmax	<1.3% Pmax
		Output parameters		
Output voltage range		190VAC~260VAC	190VAC~260VAC	190VAC~260VAC
OVP		260VAC	260VAC	260VAC
UVP		190VAC	190VAC	190VAC
Output frequency range		45Hz~65Hz	45Hz~65Hz	45Hz~65Hz
Maximum output current(rms)		17Aac	17Aac	17Aac
Power Factor		>0.99（Leg or lag））	>0.99（Leg or lag）	>0.99（Leg or lag）
DC component		-0.5A~+0.5A	-0.5A~+0.5A	-0.5A~+0.5A
Harmonic THDI		<3%	<3%	<3%
Anti-islanding protection		active anti-islanding protection	active anti-islanding protection	active anti-islanding protection
		efficiency		
Max. input voltage full load efficiency		92.5%	92.5%	92.5%
		other		
Interfaces		RS232/USB/RS485/CAN/LAN	RS232/USB/RS485/CAN/LAN	RS232/USB/RS485/CAN/LAN
Dimension		3U	3U	3U
Net weight		20kg	30kg	40kg

Note：Resistance readback range

IT8311	IT8321	IT8331
0.01~80Ω	0.005~60Ω	0.003~40Ω
Lower limit value：1/(1/R+(1/R)*0.02+0.002)； Upper limit value：1/(1/R-(1/R)*0.02-0.002)		

IT8311	IT8321	IT8331
80~1200Ω	60~600Ω	40~400Ω
Lower limit value：1/(1/R+(1/R)*0.05+0.002)； Upper limit value：1/(1/R-(1/R)*0.05-0.002)		

Specification

Model		IT8341	IT8351	IT8361
Input parameters				
Input rating (0~40℃)	Input voltage	0~80V	0~80V	0~80V
	Input current	0~1020A	0~1530A	0~2040A
	Input power	0~21kW	0~31.5kW	0~42kW
CC mode	Range	0~1020A	0~1530A	0~2040A
	Resolution	100mA	100mA	100mA
	Accuracy	<0.4% Imax	<0.4% Imax	<0.4% Imax
CV mode	Range	0~80V	0~80V	0~80V
	Resolution	10mV	10mV	10mV
	Accuracy	<0.3% Umax	<0.3% Umax	<0.3% Umax
CR mode	Range	0.002~200Ω	0.002~133Ω	0.001~0.1kΩ
	Resolution	0.001Ω	0.001Ω	0.001Ω
	Accuracy	Rmax *2%：（0.002~2Ω）； Rmax *5%：（2~200Ω）	Rmax *2%：（0.002~2Ω）； Rmax *5%：（2~133Ω）	Rmax *2%：（0.001~2Ω）； Rmax *5%：（2~100Ω）
CP mode	Range	0~21kW	0~31.5kW	0~42kW
	Resolution	1W	1W	1W
	Accuracy	<1.3% Pmax	<1.3% Pmax	<1.3% Pmax
Input readback				
Current Readback	Range	0~1020A	0~1530A	0~2040A
	Resolution	100mA	100mA	100mA
	Accuracy	<0.4% Imax	<0.4% Imax	<0.4% Imax
Voltage Readback	Range	0~80V	0~80V	0~80V
	Resolution	10mV	10mV	10mV
	Accuracy	<0.3% Umax	<0.3% Umax	<0.3% Umax
Power Readback	Range	0~21kW	0~31.5kW	0~42kW
	Resolution	1W	1W	1W
	Accuracy	<1.3% Pmax	<1.3% Pmax	<1.3% Pmax
Output parameters				
Output voltage range		190VAC~260VAC	190VAC~260VAC	190VAC~260VAC
OVP		260VAC	260VAC	260VAC
UVP		190VAC	190VAC	190VAC
Output frequency range		45Hz~65Hz	45Hz~65Hz	45Hz~65Hz
Maximum output current (rms)		34Aac	51Aac	68Aac
Power Factor		>0.99（Leg or lag）	>0.99（Leg or lag）	>0.99（Leg or lag）
DC component		-0.5A~+0.5A	-0.5A~+0.5A	-0.5A~+0.5A
Harmonic THDI		<3%	<3%	<3%
Anti-islanding protection		active anti-islanding protection	active anti-islanding protection	active anti-islanding protection
efficiency				
Max. input voltage full load efficiency		92.5%	92.5%	92.5%
other				
Interfaces		RS232/USB/RS485/CAN/LAN	RS232/USB/RS485/CAN/LAN	RS232/USB/RS485/CAN/LAN
Dimension		6U	15U	15U
Net weight		95kg	186kg	228.5kg

Note：Resistance readback range

IT8341	IT8351	IT8361
0.002~2Ω	0.001~2Ω	0.001~2Ω
Lower limit value：1/(1/R+(1/R)*0.02+0.002)；Upper limit value：1/(1/R-(1/R)*0.02-0.002)		

IT8341	IT8351	IT8361
2~200Ω	2~133Ω	2~100Ω
Lower limit value：1/(1/R+(1/R)*0.05+0.002)；Upper limit value：1/(1/R-(1/R)*0.05-0.002)		

Specification

Model	IT8371	IT8381	IT8391
		Input parameters		
Input rating (0~40℃) Input voltage	0~80V	0~80V	0~80V
Input current	0~2550A	0~3060A	0~3570A
Input power	0~52.5kW	0~63kW	0~73.5kW
CC mode Range	0~2550A	0~3060A	0~3570A
Resolution	100mA	100mA	100mA
Accuracy	<0.4% Imax	<0.4% Imax	<0.4% Imax
CV mode Range	0~80V	0~80V	0~80V
Resolution	10mV	10mV	10mV
Accuracy	<0.3% Umax	<0.3% Umax	<0.3% Umax
CR mode Range	0.001~80Ω	0.001~50Ω	0.001~50Ω
Resolution	0.001Ω	0.001Ω	0.001Ω
Accuracy	Rmax *2%：（0.001~1Ω）； Rmax *5%：（1~80Ω）	Rmax *2%：（0.001~1Ω）； Rmax *5%：（1~50Ω）	Rmax *2%：（0.001~1Ω）； Rmax *5%：（1~50Ω）
CP mode Range	0~52.5kW	0~63kW	0~73.5kW
Resolution	1W	1W	1W
Accuracy	<1.3% Pmax	<1.3% Pmax	<1.3% Pmax
		Input readback		
Current Readback Range	0~2550A	0~3060A	0~3570A
Resolution	100mA	100mA	100mA
Accuracy	<0.4% Imax	<0.4% Imax	<0.4% Imax
Voltage Readback Range	0~80V	0~80V	0~80V
Resolution	10mV	10mV	10mV
Accuracy	<0.3% Umax	<0.3% Umax	<0.3% Umax
Power Readback Range	0~52.5kW	0~63kW	0~73.5kW
Resolution	1W	1W	1W
Accuracy	<1.3% Pmax	<1.3% Pmax	<1.3% Pmax
		Output parameters		
Output voltage range	190VAC~260VAC	190VAC~260VAC	190VAC~260VAC
OVP	260VAC	260VAC	260VAC
UVP	190VAC	190VAC	190VAC
Output frequency range	45Hz~65Hz	45Hz~65Hz	45Hz~65Hz
Maximum output current (rms)	85Aac	102Aac	119Aac
Power Factor	>0.99（Leg or lag）	>0.99（Leg or lag）	>0.99（Leg or lag）
DC component	-0.5A~+0.5A	-0.5A~+0.5A	-0.5A~+0.5A
Harmonic THDI	<3%	<3%	<3%
Anti-islanding protection	active anti-islanding protection	active anti-islanding protection	active anti-islanding protection
		efficiency		
Max. input voltage full load efficiency	92.5%	92.5%	92.5%
		other		
Interfaces	RS232/USB/RS485/CAN/LAN	RS232/USB/RS485/CAN/LAN	RS232/USB/RS485/CAN/LAN
Dimension	27U	27U	27U
Net weight	321.5kg	363.5kg	405.5kg

Note：Resistance readback range

IT8371	IT8381	IT8391
0.001~1Ω	0.001~1Ω	0.001~1Ω
Lower limit value：1/(1/R+(1/R)*0.02+0.002)； Upper limit value：1/(1/R-(1/R)*0.02-0.002)		

IT8371	IT8381	IT8391
1~80Ω	1~50Ω	1~50Ω
Lower limit value：1/(1/R+(1/R)*0.05+0.002)； Upper limit value：1/(1/R-(1/R)*0.05-0.002)		

YOUR POWER TESTING SOLUTION
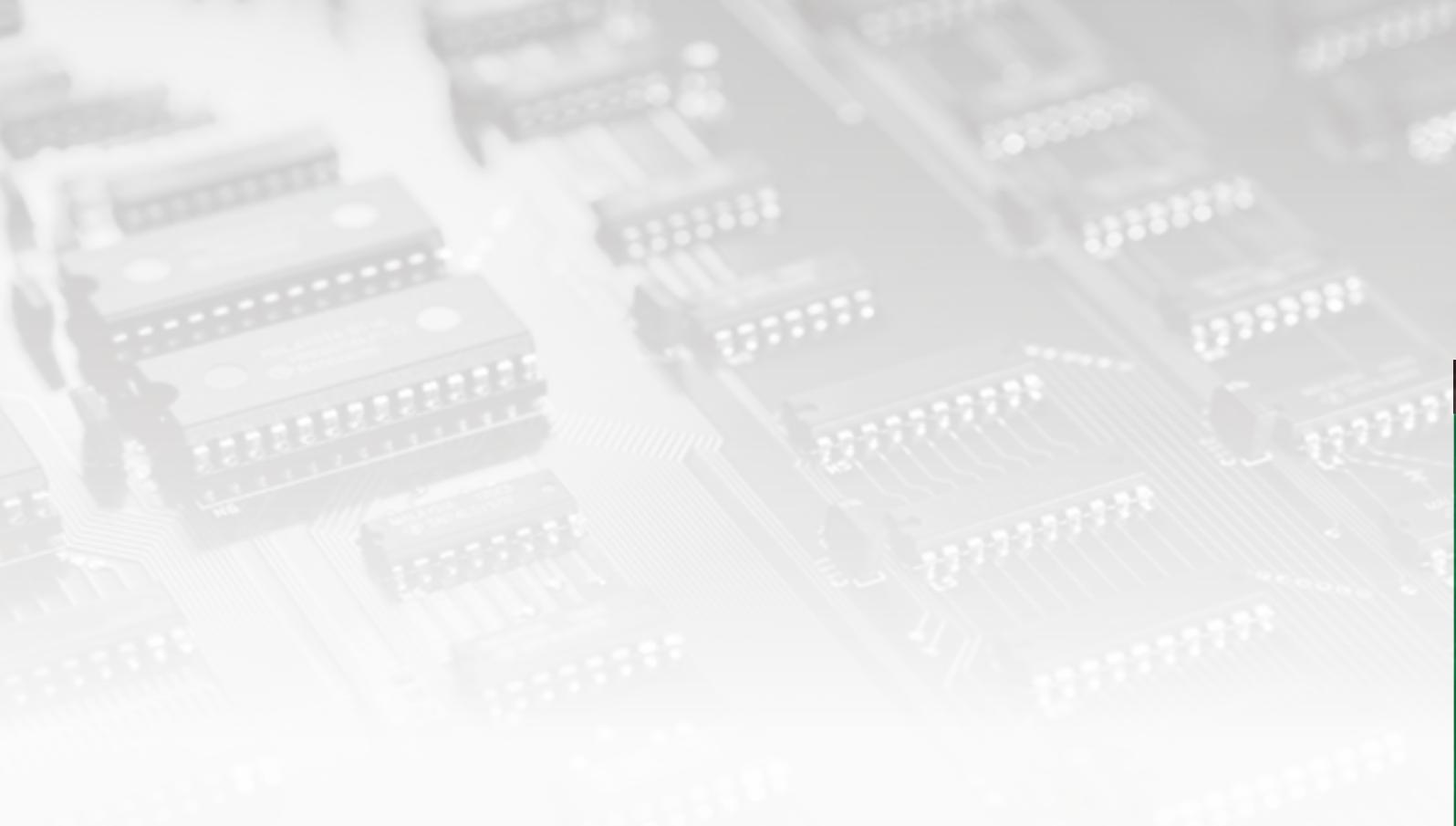
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For more information, please contact ITECH.

www.itechate.com

Taiwan

TEL: 03-668-4333
FAX: 03-667-6466
E-mail: taiwan@itechate.com.tw

China

TEL: +86-25-52415098
FAX: +86-25-52415268
E-mail: info@itechate.com

ITECH