BiLT System module: BE2811

High Stability Current Source ±5A ±18V

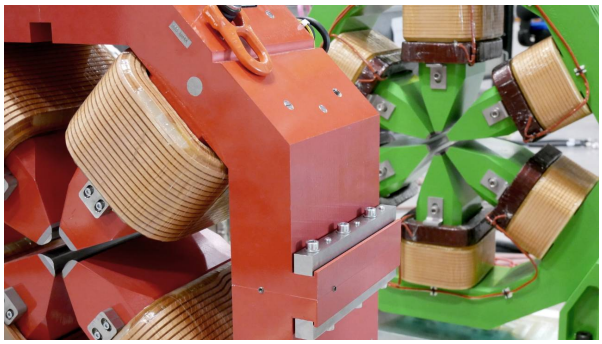
- ✔ ***Magnet or Diode Power Supply***
- ✔ ***Operates from 0µH to 200mH***
- ✔ ***19 bits programming resolution***
- ✔ ***Very high proven MTBF***

Main features

- Bipolar current source with no zero-crossing distortion
- Analog and digital control loops offer outstanding noise and stability performances
- Very Low noise: <25ppm peak-to-peak
- Voltage and current read-back
- Programmable current slope from 0,01A/s to 100A/s
- Parallelable power supplies for higher current
- No transient when powering on/off or switching on/off
- Safe stop even in case of power outage
- Proven MTBF > 1M hour
- Synchronization between multiple sources using:
  - module's hardware trigger input
  - chassis' hardware trigger input
- Custom version on-demand

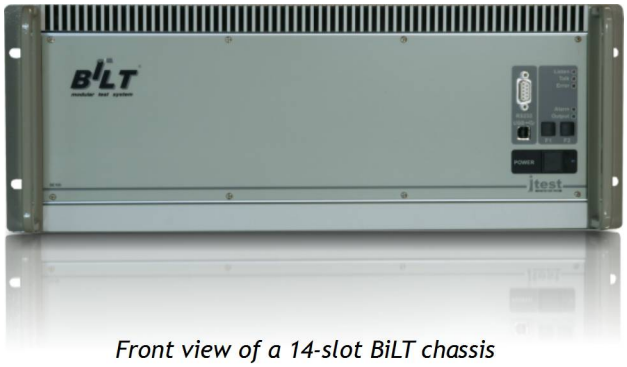
Application examples

- Magnet Power supply for beam correctors in particle accelerators
- Low noise supply for superconducting coils
- Alignment coils in Scanning Electron Microscope
- Laser or Power Diode biasing and ageing test



BiLT® System features

- Module to be inserted in a BiLT® chassis, 5 to 14-slot versions available, up to 1000W output power, no external bulk power supply needed
- Chassis standard interface: Ethernet and USB
- Cost effectiveness for multiple channels: up to 14 BE2811 housed into a single 19" BiLT® chassis
- Complete software package provided, including a free turnkey control PC software (Windows™ or Linux) and NI Labview® driver. TANGO and EPICS drivers available
- Easy remote firmware update of modules and chassis control board

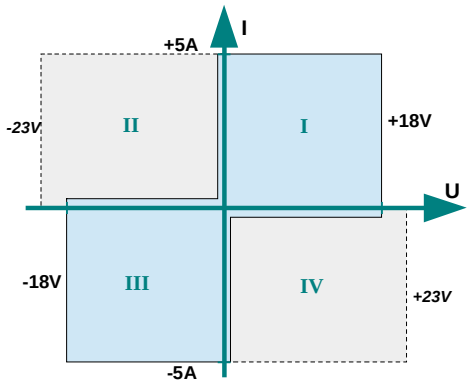


Front view of a 14-slot BiLT chassis

BE2811 module

Operating Area

Parameters	Conditions/Comments	Min	Max
Current	Programming range	**-5A**	**+5A**
Voltage limit	Programming range (absolute value), source stops if exceeded	**1V**	**18V**
Load inductance		**0µH**	**200mH**
Source power	DC power		**90W**
Temperature	in front of the chassis rear openings, derate power if exceeded	**10°C**	**30°C**



Blue: DC area Grey: transient area

Accuracy and Drift Performances

For better performances, please contact us

Parameters	Conditions/Comments	Specification
Programming resolution	including polarity bit	**19bit (4ppm)**
Differential linearity error	Guaranteed monotonic	**2ppm**
Integral linearity error		**<100ppm**
Long term drift (stability)[2]	After 30mn self-heating, at constant ambient temp. - at ±5A, for 8 hours - at ±3A, for 8 hours	 **<20ppm** **<4ppm**
Thermal drift (TCR)	Max. value	**±15ppm/°C**
Absolute accuracy[1]	1 year, ppm of range + ppm of programmed value	**±200ppm ± 500ppm**
Line regulation	Line voltage steps between 180Vac and 230Vac	**<2ppm**
Read-back resolution	Current voltage	**19 bits** **16 bits**
Reproducibility	24 hrs ON then 24 hrs OFF, measured at 3A	**<8ppm**

(1) Ambient temperature: 23°C±5°C
(2) drift figures are non cumulative.

Dynamic Performances

Parameters	Conditions/Comments	Specification	
		Min	Max
Current Settling time[1]	To 99%, 100mA step, max slope To 1LSB, 100mA step, max slope	**10ms**	**13ms** **60ms**
Current Slope	Programming range	**0,01A/s**	**100A/s**
Current Noise (ripple)[1]	0,1Hz-10Hz, peak-to-peak value 10Hz-10kHz, peak-to-peak value, measured at 5A	**8ppm** **25ppm**	
Current programming rate	Ethernet, USB		**10Hz to 50Hz**
	Internal buffer reading a recorded waveform	**10Hz**	**200Hz**

(1) Used loads: 20mH+1Ω

Parallel operation

Several BE2811 current sources can be connected in parallel. Parallel operation requires no complex configuration. Any number of paralleled modules will be seen as a single power supply when using iTest control software or drivers. Outputs of several BE2811 can be directly connected together, thus easing cabling.

BE2811 module

Source description

The BE2811 module is a non-isolated high performance true current source designed to safely and reliably drive magnet loads up to 1H with excellent noise and stability performances. It is also perfectly suited to drive diodes in burn-in or characterization benches for instance.

The BE2811 is a 2-quadrant current source with transient 4-quadrant operation in order to sink the energy stored in the magnet when stopping the power supply or when applying large current changes.

Unlike competitor products, the architecture does not require tuning by complex algorithm to get control loop stability on a very large load inductance range.
Moreover, the BE2811 source benefits from a greater control loop bandwidth to better reject the output noise coupled by the environment, it exhibits lower wide-band noise, very low noise at switching frequency and exceptional MTBF.

An internal relay shorts the output while the source is off or in case of power outage, protecting the current source. Both the BE2811 module and the BiLT chassis offer an interlock input. The chassis Interlock Input controls all inserted modules. Both the BE2811 module and the BiLT chassis also offer a trigger input. All the BE2811 of the same chassis or several chassis can thus be triggered at the same time thanks to the trigger inputs or a command sent by Ethernet or USB.

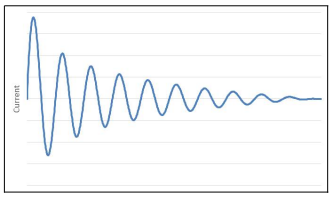
Connectors

• Industry-standard screw terminal block:
  - locks to the module with screws
  - long-life contact
  - no crimping tool required

• 15-pin D-SUB connector including power output, voltage sensing, trigger, interlock and status signals.

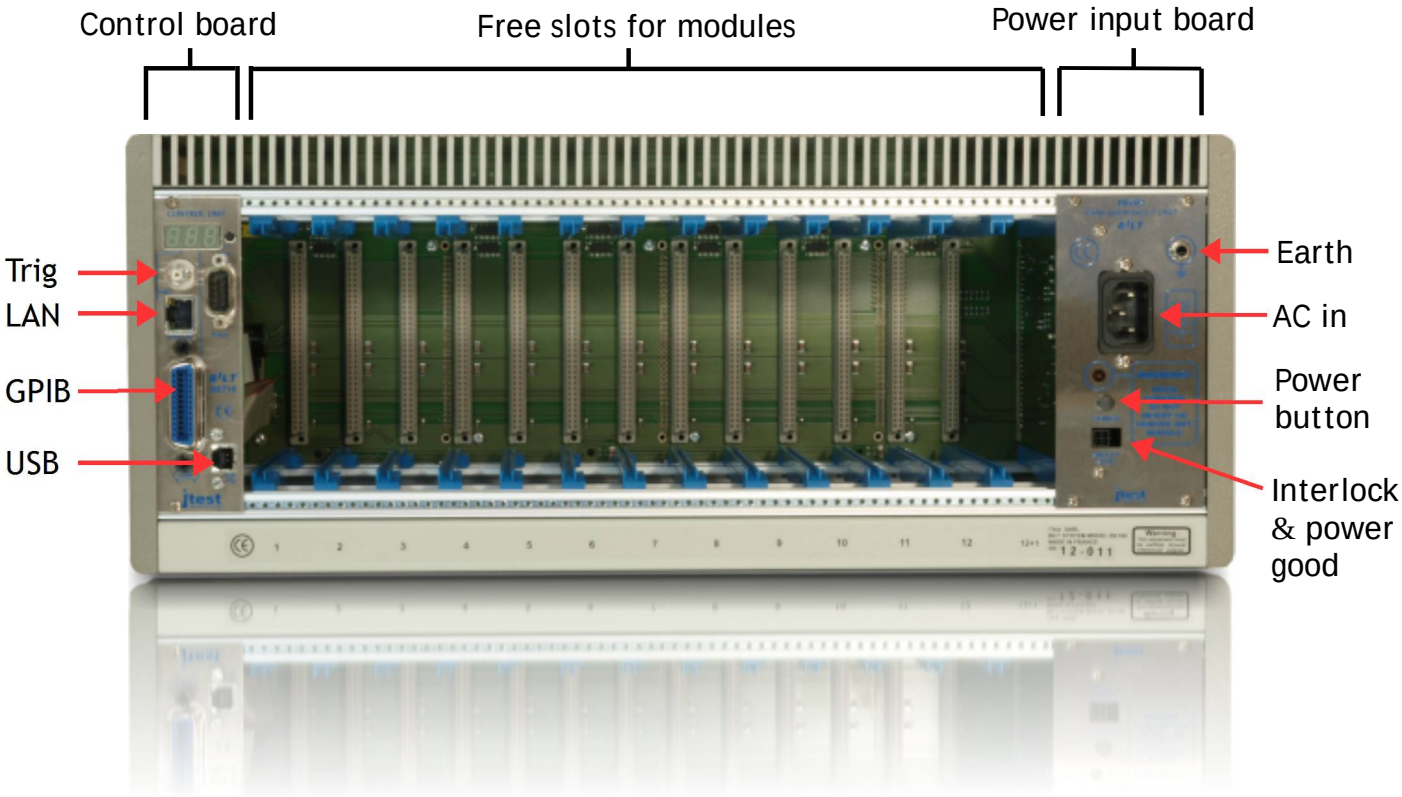
Waveform Generator

A setting buffer allows the user to output any kind of waveform.
The sampling period is programmable from 5ms to 100ms.
The buffer can be read once or looped.



The BiLT System

The best companion for the BE2811 module is the BN120 BiLT chassis. This 19", 4U chassis is self-ventilated and offers 13 slots to insert modules, the maximum output power is up to 1000W.



Similar products

According to the customer needs, any other combination of specification can be used to design a new model.

Model	Channel	Current	Voltage	DC power	Application	Inductance range	Settling time	Noise	Drift	Module size
BE2710	1	±10A	24V	120W	Fast orbit feedback corrector magnets in synchrotrons	customizable	60µs	100ppm	100ppm	Double-slot
BE2720	1	±2A	50V	40W		customizable	75µs	100ppm	100ppm	Double-slot
BE2812	1	±15A	8V	120W	General purpose	0µH to 20mH	10ms	24ppm	<24ppm	Double-slot
BE2811	1	±5A	18V	90W	General purpose	0µH to 200mH	10ms	24ppm	<24ppm	Single-slot
BE2860	4	±1,5A	3V	4 x 4,5W	Ultra low noise	0µH to 1mH	100ms	5ppm	10ppm	Single-slot

Documentation			
BE2811 Brochure	2.0	29 March 2019	module data sheet / specifications and main features
BE2811 User Manual			module user manual including chassis, network, software, connections description
http://www.bilt-system.com/			bilt user manual and any other Bilt modules specification

Standards, Calibration, Warranty and Maintenance

Bilt system is compliant with the applicable European Directives and holds the CE mark.
Any iTest product comes with a two-year parts and labour guarantee and a calibration certificate if applicable. A telephone support service is also available for the same period.
Our calibration laboratory performs according to ISO/CEI 17025 "*General requirements for the competence of testing and calibration laboratories*". All measurements are traceable to the International System of Unit.
The recommended calibration interval of this product is 1 year.
On request, Itest can proceed to scheduled calibration (in our workshop or at the customer's site).
Maintenance can also be performed on-site or in our workshop.

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