General Description

128-channels fast digital-to-analog conversion card.

The conversion board is integrated into a 19-inch rack and allows the generation of 128 16-bit analog channels. This board has been designed to offer an extremely high refresh rate of 85kHz for the 128 channels and a low latency between the end of writing and the global application of commands: 10 µs.

The voltage range is ±10V by default and can be set to 0-10V or 0-5V. The system has 2 USB interfaces. The first one allows fast writing of channels by sending binary data while the second one allows emulation of a serial port for sending commands or configuration data.

Technical Specifications

Analog Outputs	
Number of channels	128
Resolution	16 bits
Update rate	85 kHz for the 128 channels
Latency	10 µs after the first channel write for the 128 channels
Type of D/A	double-buffered
Relative Accuracy	±4 LSB max
DNL	±1 LSB max
Monotonicity over temp.	16 bits, -40 to 85°C
Uncalibrated Full-Scale error	±20 mV
Uncalibrated Zero-Scale error	±15 mV
Calibrated Full-Scale error	1 LSB typ
Calibrated Zero-Scale error	1 LSB typ
Nominal Range	±10 V
Output coupling	DC
Output impedance	0.5 Ω max
Short Circuit current	15 mA
Current drive	±1 mA min
Capacitive loads	2200 pF max
Settling time	20 µs FS change
Slew rate	1 V/µs
Noise	250 nV/√Hz
Power-on state	0.0000V ±15mV
Temperature coefficient	5 ppm FSR/°C

Digital I/O	
Number of channels	1 inputs, 4 outputs
Compatibility	CMOS 3.3V
Input termination	100kΩ pull-up to 3.3V
Output high level	2.6V @ -2mA
Output low level	0.6V max @ 3.4mA
Input low voltage	0.0 - 0.5V
Input high voltage	0.8 – 3.3V

The board uses USB2.0 for the fast writing of channels data. The interface is based on a FTDI chip and software drivers are provided for Windows and Linux O.S. We also provide sample softwares written in C and C# for an easy interfacing with the system.

Configuration data can be stored in EEPROM using the serial emulated port and this port enables also a complete functionning of the system at a reduced refresh rate. Adaptation boards for different connectors can also be provided on request.