Voltage Output

Range ..... ±10 V
Output coupling ..... DC
Output impedance
  NI 783xR ..... 1.25 Ω
  NI 784xR/785xR ..... 0.5 Ω
Current drive ..... ±2.5 mA
Protection ..... Short-circuit to ground
Power-on state ..... User configurable

Accuracy Information

Absolute Accuracy						
Nominal Range (V)		% of Reading				
Positive Full Scale	Negative Full Scale	24 Hours	1 Year	Offset (µv)	Temp Drift (%/°C)	Absolute Accuracy at Full Scale (mV)
10.0	-10.0	0.0335	0.0351	2.366	0.0005	5.88

Note: Accuracies are valid for analog output following an internal calibration. Analog output accuracies are listed for operation temperatures within ±1 °C of internal calibration temperature and ±10 °C of external or factory calibration temperature. Temperature drift applies only if ambient is greater than ±10 °C of previous external calibration.

DC Transfer Characteristics

INL ..... ±0.5 LSB typ, ±4.0 LSB max
DNL ..... ±0.5 LSB typ, ±1 LSB max
Monotonicity ..... 16 bits, guaranteed

Settling Time

Step Size	Accuracy		
	16 LSB	4 LSB	2 LSB
±20.0 V	6.0 µs	6.2 µs	7.2 µs
±2.0 V	2.2 µs	2.9 µs	3.8 µs
±0.2 V	1.5 µs	2.6 µs	3.6 µs

Dynamic Characteristics

Slew rate ..... 10 V/µs
Noise ..... 150 μV_{rms}, DC to 1 MHz
Glitch energy at midscale transition ..... ±200 mV for 3 µs

Digital I/O

Number of channels
  NI 7811R/7813R 160
  NI 7830R 56
  NI 7831R/7833R/784xR/785xR 96
Digital logic levels ..... 3.3 V TTL, 5 V TTL Compatible

Level	Min (V)	Max (V)
Input low voltage (V_{IL})	0.0 V	0.8 V
Input high voltage (V_{IH})	2.0 V	5.5 V
Output low voltage (V_{OL}), where I_{OUT} = -4 mA	–	0.4 V
Output high voltage (V_{OH}), where I_{OUT} = 4 mA	2.4 V	3.3 V

Output current
  Source ..... 4.0 mA
  Sink ..... 4.0 mA
Input leakage current ..... ±10 µA
Power-on state ..... Programmable, by line
Data transfers ..... DMA, interrupts, programmed I/O

Protection
  Input
    NI 781xR/783xR ..... -0.5 to 7.0 V, single line
    NI 784xR/785xR ..... -20.0 to 20.0 V, single line
  Output ..... Short-circuit (up to eight lines may be shorted at a time)
Minimum pulse width
  Input ..... 25 ns
  Output ..... 12.5 ns
Minimum sampling period ..... 5 ns

Reconfigurable FPGA

NI 7811R/7830R/7831R

FPGA type ..... Virtex-II 1000
Number of flip-flops 10,240
Number of 4-input LUTs 10,240
Number of 18x18 multipliers 40
Embedded block RAM ..... 720 kb

NI 7813R/7833R

FPGA type ..... Virtex-II 3000
Number of flip-flops 28,672
Number of 4-input LUTs 28,672
Number of 18x18 multipliers 96
Embedded block RAM ..... 1,728 kb

NI 7841R/7851R

FPGA type Virtex-5 LX30
Number of flip-flops 19,200
Number of 6-input LUTs 19,200
Number of DSP48 slices (25x18 multipliers) 32
Embedded block RAM ..... 1,152 kb

NI 7842R/7852R

FPGA type Virtex-5 LX50
Number of flip-flops 28,800
Number of 6-input LUTs 28,800
Number of DSP48 slices (25x18 multipliers) 48
Embedded block RAM ..... 1,728 kb

NI 7853R

FPGA type Virtex-5 LX85
Number of flip-flops 51,840
Number of 6-input LUTs 51,840
Number of DSP48 slices (25x18 multipliers) 48
Embedded block RAM ..... 3,456 kb

NI 7854R

FPGA type Virtex-5 LX110
Number of flip-flops 69,120
Number of 6-input LUTs 69,120
Number of DSP48 slices (25x18 multipliers) 64
Embedded block RAM ..... 4,608 kb