

# 2730GS DC Voltage (Generation or Measurement)

## Accuracy (note 1)

Range	Resol.	Standard 2730GS			2730GS with Option "UP1"		
		24hr ± 1°C Relative	90day ± 5°C Absolute	1year ± 5°C Absolute	24hr ± 1°C Relative	90day ± 5°C Absolute	1year ± 5°C Absolute
22mV**	10nV	2.2ppm ± 0.4uV	6.5ppm ± 0.4uV	9.0ppm ± 0.4uV	1.0ppm ± 0.4uV	3.6ppm ± 0.4uV	5.0ppm ± 0.4uV
220mV	10nV	2.2ppm ± 0.4uV	6.5ppm ± 0.5uV	9.0ppm ± 0.5uV	1.0ppm ± 0.4uV	3.6ppm ± 0.5uV	5.0ppm ± 0.5uV
2.2V	10nV	2.2ppm ± 0.8uV	6.5ppm ± 1.0uV	9.0ppm ± 1.0uV	1.0ppm ± 0.8uV	3.6ppm ± 1.0uV	5.0ppm ± 1.0uV
11V	100nV	0.9ppm ± 2.0uV	4.3ppm ± 2.4uV	6.8ppm ± 2.4uV	0.7ppm ± 2.0uV	3.3ppm ± 2.4uV	4.8ppm ± 2.4uV
22V	100nV	2.1ppm ± 3.8uV	5.5ppm ± 4.5uV	8.0ppm ± 4.5uV	1.0ppm ± 3.8uV	3.6ppm ± 4.5uV	5.0ppm ± 4.5uV
275V	1uV	2.3ppm ± 40uV	5.7ppm ± 50uV	8.2ppm ± 50uV	1.2ppm ± 40uV	3.7ppm ± 50uV	5.2ppm ± 50uV
1200V	10uV	2.6ppm ± 200uV	6.0ppm ± 300uV	8.5ppm ± 300uV	1.7ppm ± 200uV	4.1ppm ± 300uV	5.5ppm ± 300uV

\*\*Generation only

## Stability, Linearity, Drive Capability and Noise (note 2)

Range	24 Hour Stability		Linearity	Temperature Coefficient 10-40°C	Drive	Noise 0.01-10Hz Peak-to-Peak
	Standard Unit	Option "UP1"				
22mV	0.8ppm ± 0.3uV	0.35ppm ± 0.3uV	0.1uV	0.5ppm ± 0.05uV/°C	9.08Ω Zo	0.25uV
220mV	0.8ppm ± 0.3uV	0.35ppm ± 0.3uV	0.15uV	0.4ppm ± 0.05uV/°C	8.26Ω Zo	0.25uV
2.2V	0.8ppm ± 0.5uV	0.35ppm ± 0.3uV	0.25uV	0.2ppm ± 0.1uV/°C	70mA peak	0.35uV
11V	0.4ppm ± 1.5uV	0.3ppm ± 0.3uV	1.2uV	0.1ppm ± 0.2uV/°C	70mA peak	1uV
22V	0.8ppm ± 3uV	0.35ppm ± 0.3uV	2.5uV	0.2ppm ± 0.4uV/°C	70mA peak	2uV
275V	0.8ppm ± 25uV	0.35ppm ± 0.3uV	35uV	0.2ppm ± 3uV/°C	70mA peak	20uV
1200V	0.9ppm ± 150uV	0.4ppm ± 0.3uV	200uV	0.3ppm ± 30uV/°C	70mA peak*	100uV

\*Reduces linearly above 35°C to 40mA peak at 50°C Ambient.

## DC Current

### Accuracy (note 1, 3)

Range	Resol.	24hr ± 1°C	90day ± 5°C	1year ± 5°C	Temp. Coeff.
220uA	100pA	15ppm ± 2nA	25ppm ± 2nA	50ppm ± 2nA	3ppm ± 200pA/°C
2.2mA	1nA	8ppm ± 7nA	20ppm ± 10nA	40ppm ± 10nA	3ppm ± 1.5nA/°C
22mA	10nA	8ppm ± 70nA	20ppm ± 100nA	40ppm ± 100nA	3ppm ± 10nA/°C
220mA	100nA	8ppm ± 700nA	20ppm ± 1uA	40ppm ± 1uA	4ppm ± 80nA/°C
2.2A	1uA	13ppm ± 15uA	50ppm ± 20uA	80ppm ± 20uA	8ppm ± 500nA/°C
12A	10uA	80ppm ± 150uA	100ppm ± 200uA	200ppm ± 200uA	15ppm ± 5uA/°C

## DC Current

### Stability, Linearity, Drive Capability and Noise (note 2)

Range	Stability	Linearity	Compliance Voltage	0.01-10 peak-pe
220uA	6ppm ± 500pA	100pA	10V peak	200pA
2.2mA	4ppm ± 3nA	1nA	10V peak	1nA
22mA	3ppm ± 25nA	15nA	9V peak	10nA
220mA	4ppm ± 250nA	200nA	7V peak	80nA
2.2A	6ppm ± 2.5uA	4uA	3V peak	800nA
12A	10ppm ± 50uA	100uA	2V peak	100uA

## Resistance 2730GS with Option "UP-1"

### Accuracy (note 5)

Nominal Value	Deviation from Nom.	Max. Current	90 days ± 5°C	1 year ± 5°C	Voltage Offset	Temp. Coef.	Power Coef.	24 Hour Stability ± 1°C
Short	500uΩ	500mA	50uΩ	50uΩ	1.5uV	5ppm/°C	0.5ppm/mW	25ppm
1Ω	500uΩ	500mA	70ppm	90ppm	1.5uV	3ppm/°C	0.3ppm/mW	23ppm
10Ω	5mΩ	160mA	35ppm	45ppm	1.5uV	2ppm/°C	0.2ppm/mW	12ppm
100Ω	25mΩ	50mA	17ppm	25ppm	1.5uV	1.5ppm/°C	0.15ppm/mW	6ppm
1KΩ	100mΩ	16mA	12ppm	15ppm	1.5uV	1.5ppm/°C	0.15ppm/mW	4ppm
10KΩ	1Ω	5mA	10ppm	13ppm	1.5uV	1.5ppm/°C	0.15ppm/mW	6ppm
100KΩ	25Ω	1.6mA	10ppm	13ppm	2uV	3ppm/°C	0.5ppm/mW	8ppm
1MΩ	500Ω	300uA	20ppm	30ppm	6uV	5ppm/°C	1ppm/mW	15ppm
10MΩ	5KΩ	30uA	35ppm	45ppm	50uV	10ppm/°C	10ppm/mW	30ppm
100MΩ	100KΩ	3uA	95ppm	120ppm	500uV			

# 2730GS AC Voltage (Generation or Measurement)

## Accuracy

Accuracies are for the temperature range shown, from the previous 2730GS calibration temperature and are **absolute specifications**. It should be noted that these figures include the

effects of load and line regulation, linearity, noise and temperature coefficient. These accuracy figures also assume the use of the 2730GS Internal Calibration function at least every 90 days.

Range	Resolution	Frequency	24hr ± 1°C	90day ± 5°C	1year ± 5°C
22mV*	10nV	10-30Hz 30-50Hz 50Hz-30kHz 30-100kHz 100-300kHz 300-600kHz 600-1250kHz	220ppm ± 5uV 120ppm ± 5uV 100ppm ± 5uV 120ppm ± 8uV 400ppm ± 15uV 0.1% ± 30uV 0.2% ± 35uV	235ppm ± 5uV 135ppm ± 5uV 115ppm ± 5uV 135ppm ± 8uV 450ppm ± 15uV 0.15% ± 30uV 0.3% ± 35uV	250ppm ± 5uV 150ppm ± 5uV 130ppm ± 5uV 150ppm ± 8uV 465ppm ± 15uV 0.15% ± 30uV 0.3% ± 35uV
220mV*	10nV	10-30Hz 30-50Hz 50Hz-30kHz 30-100kHz 100-300kHz 300-600kHz 600-1250kHz	210ppm ± 8uV 110ppm ± 8uV 90ppm ± 8uV 110ppm ± 10uV 400ppm ± 15uV 0.1% ± 30uV 0.2% ± 35uV	225ppm ± 8uV 125ppm ± 8uV 105ppm ± 8uV 125ppm ± 10uV 450ppm ± 15uV 0.15% ± 30uV 0.3% ± 35uV	240ppm ± 8uV 140ppm ± 8uV 120ppm ± 8uV 140ppm ± 10uV 465ppm ± 15uV 0.15% ± 30uV 0.3% ± 35uV
2.2V(22V)	100nV(1uV)	10-30Hz 30-50Hz 50-30kHz 30-100kHz 100-300kHz 300-600kHz 600-1250kHz	200ppm ± 20uV( ± 150uV) 90ppm ± 20uV( ± 150uV) 50ppm ± 20uV( ± 150uV) 100ppm ± 30uV( ± 250uV) 250ppm ± 100uV( ± 1mV) 0.1% ± 200uV( ± 2mV) 0.2% ± 400uV( ± 4mV)	215ppm ± 20uV( ± 150uV) 105ppm ± 20uV( ± 150uV) 65ppm ± 20uV( ± 150uV) 125ppm ± 30uV( ± 250uV) 300ppm ± 100uV( ± 1mV) 0.15% ± 200uV( ± 2mV) 0.25% ± 400uV( ± 4mV)	230ppm ± 20uV( ± 150uV) 120ppm ± 20uV( ± 150uV) 80ppm ± 20uV( ± 150uV) 140ppm ± 30uV( ± 250uV) 315ppm ± 100uV( ± 1mV) 0.15% ± 200uV( ± 2mV) 0.25% ± 400uV( ± 4mV)
220V	10uV	10-30Hz 30-50Hz 50Hz-30kHz 30-100kHz 100-300kHz 300-600kHz 600-1250kHz	200ppm ± 800uV 90ppm ± 800uV 60ppm ± 800uV 150ppm ± 1.5mV 350ppm ± 5mV 0.25% ± 10mV 0.5% ± 20mV	215ppm ± 800uV 105ppm ± 800uV 75ppm ± 800uV 200ppm ± 1.5mV 500ppm ± 5mV 0.4% ± 10mV 0.85% ± 20mV	230ppm ± 800uV 120ppm ± 800uV 90ppm ± 800uV 215ppm ± 1.5mV 515ppm ± 5mV 0.4% ± 10mV 0.85% ± 20mV
1100V	100uV	10-30Hz 30-50Hz 50Hz-30kHz 30-100kHz 100-300kHz 300-1000kHz	200ppm ± 4mV 100ppm ± 4mV 80ppm ± 4mV 110ppm ± 10mV 120ppm ± 6mV 400ppm ± 10mV	215ppm ± 4mV 115ppm ± 4mV 100ppm ± 4mV 125ppm ± 10mV 160ppm ± 6mV 500ppm ± 10mV	230ppm ± 4mV 130ppm ± 4mV 115ppm ± 4mV 140ppm ± 10mV 175ppm ± 6mV 515ppm ± 10mV

## AC Current

### Accuracy

The accuracies shown below are for the temperature range shown, from the temperature at which the 2730GS was previously calibrated, and are absolute specifications. It should be noted that these figures include the effects of load and line regulation, linearity, noise and temperature coefficient, and also

assume the use of the Internal Calibration function of the 2730GS at least every 90 days.

### Drive Capability and Noise

The distortion figures given below are measured at a nominal 0.5V compliance using a current shunt having a passive response to at least 1MHz, and are measured using a 10HZ to 100KHz bandwidth.

Range	Resol.	Frequency	24hr ± 1°C	90day ± 5°C	1year ± 5°C	Compliance Voltage	Distortion
220uA	1nA	10-30Hz 30Hz-10kHz 10-30kHz*	200ppm ± 6nA 150ppm ± 10nA 500ppm ± 50nA	250ppm ± 6nA 200ppm ± 10nA 550ppm ± 50nA	300ppm ± 6nA 250ppm ± 10nA 600ppm ± 50nA	10V peak 10V peak	0.1% ± 50nA 0.15% ± 50nA
2.2mA	10nA	10-30Hz 30Hz-10kHz 10-30kHz*	120ppm ± 10nA 80ppm ± 10nA 300ppm ± 50nA	170ppm ± 10nA 130ppm ± 10nA 350ppm ± 50nA	220ppm ± 10nA 180ppm ± 10nA 400ppm ± 50nA	10V peak 9V peak	0.1% ± 12nA 0.18% ± 120nA
22mA	100nA	10-30Hz 30Hz-10kHz 10-30kHz*	100ppm ± 100nA 70ppm ± 100nA 200ppm ± 200nA	150ppm ± 100nA 120ppm ± 100nA 250ppm ± 200nA	200ppm ± 100nA 170ppm ± 100nA 300ppm ± 200nA	9V peak 8V peak*	0.1% ± 1uA 0.2% ± 1uA
220mA	1uA	10-30Hz 30Hz-10kHz 10-30kHz*	125ppm ± 1uA 100ppm ± 1uA 300ppm ± 5uA	175ppm ± 1uA 150ppm ± 1uA 350ppm ± 5uA	225ppm ± 1uA 200ppm ± 1uA 400ppm ± 5uA	7.5V peak 7V peak 5V peak*	0.1% ± 10uA 0.15% ± 100uA 0.25% ± 10uA
2.2A	10uA	10-30Hz 30Hz-10kHz 3-10kHz* 10-20kHz*	225ppm ± 10uA 200ppm ± 10uA 250ppm ± 20uA 500ppm ± 50uA	275ppm ± 10uA 250ppm ± 10uA 300ppm ± 20uA 550ppm ± 50uA	325ppm ± 10uA 300ppm ± 10uA 350ppm ± 20uA 600ppm ± 50uA	3V peak 2.5V peak 1.5V peak	0.15% ± 100uA 0.35% ± 100uA 0.8% ± 100uA
12A	100uA	10-30Hz 30Hz-1kHz 1-5kHz* 1-5kHz 5-10kHz*	500ppm ± 100uA 450ppm ± 100uA 650ppm ± 500uA 0.1% ± 1mA 0.4% ± 5mA	600ppm ± 100uA 550ppm ± 100uA 750ppm ± 500uA 0.12% ± 1mA 0.4% ± 5mA	650ppm ± 100uA 850ppm ± 500uA 0.13% ± 1mA 0.4% ± 5mA	3V peak 2.5V peak 1V peak	0.25% ± 1mA 0.5% ± 1mA 0.8% ± 1mA

\*Denotes Option "UP-1"