

F2250



TECHNICAL SPECIFICATIONS

F2250 POWER SYSTEM SIMULATORS

General Specifications

Source Operation:

Accuracy specifications include all errors contributed by variations in power line voltage, load regulation, stability, and temperature, up to full output power. Stable source operation in four quadrants: load power factor from 1 to 0, leading or lagging. The F2250 Family is supplied with a Certificate of Calibration traceable to the National Institute of Standards and Technology.

Source Power:

May be lower than the maximum rating at frequencies other than 50/60 Hz or DC.

Electrostatic Discharge Immunity:

IEC 801-2: I.E.C. performance level 1 @ 10 KV: normal performance within specifications. I.E.C. performance level 2 @ 20 KV: no permanent damage.

Surge Withstand Capability:

ANSI/IEEE C37.90. The F2250 functions as a source during surge withstand capability tests, when the specified isolating circuit is interposed between the F2250 and the test relay.

AC Amplitude Accuracy:

From 20° to 30° C, $\pm 0.4\%$ of reading maximum at 50/60 Hz From 0° to 50° C, $\pm 0.5\%$ of reading absolute maximum Typically 0.2% of reading.

Distortion:

Low distortion sine waves; total harmonic distortion: 0.2% typical; 2% maximum at 50/60 Hz.

Noise:

-80 dB of range

Phase Angle:

Range: 0 to + 359.9° (Lead) / 0 to -359.9° (Lag)

Accuracy: $\pm 0.25^\circ$ at 50/60 Hz

Resolution: $\pm 0.1^\circ$ at 50/60 Hz

Frequency:

Range: dc; ac from 0.1 Hz to 10 kHz

Accuracy: From 0° to 50° C, $\pm 0.0005\%$ or ± 5 PPM; at 60 Hz frequency accuracy is ± 0.0003 Hz

Manual Ranges: dc; ac: base frequency of 50/60 Hz, up to 20th and the 100th harmonic

F2010 Minicontroller/Automation Ranges and Resolutions:

Range: 0.1 to 9999.9 Hz

Range is dependent on the frequency selection on the simulator. When the frequency selection on the simulator is 60 (50) Hz, range is 0.1 Hz to 99.999 Hz with 0.001 Hz resolution. When a higher level of harmonic is selected on the simulator, then the range is the base range (0.1 - 99.999 Hz) multiplied by the selected level of harmonic, and the resolution is equal to the order of the harmonic times (0.001 Hz).

Example 1: If the base frequency selection is 120 (or 100) Hz, which is the second harmonic, then the range is 0.2 Hz to 199.99 Hz with a resolution of 0.002 Hz.

Example 2: If the base frequency selection is 300 (or 250) Hz, which is the fifth harmonic, then the range is 0.5 to 499.99 Hz with a resolution of 0.005 Hz.

RAMP/SET:

RAMP: Continuously increments/decrements voltage, current, and phase angle at different ramp rates. Insures smooth, linear changes in value carried to next significant digit, by changing the least significant digit.

Ramp Rates: \gg Least Significant Digits per Second (L.S.D./s).

Amplitude: 1,5,10, 100 and 1000 L.S.D./s

Phase Angle: 1,2,5, 360 L.S.D./s.

SET: Individually sets each digit, with next significant digit carry over.

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General Specifications — continued

Logic Outputs:

Two sets of galvanically isolated Logic Outputs, each set has a normally open (Form A) terminal, shared common terminal, and a normally closed (Form B) terminal.

Switching Power: 10 watts maximum

Input Voltage: 300 V-dc and (or) ac peak maximum

Switching Current: 0.2 A make or break maximum

Carry Current: 0.3 A maximum

Operate Time: 1 millisecond maximum

Logic/Signal Inputs:

Two sets of galvanically isolated Logic/Signal Inputs, each set has a voltage sensing terminal for ac or dc voltage, a shared common terminal, and a dry contact sensing terminal.

Contact Sense Mode, for dry contacts:

Open Circuit Test Voltage: 30 volts nominal
Short Circuit Test Current: 90 mA nominal
Threshold: 460 ohms nominal

Voltage Sense Mode, for ac and dc voltages:

Input Voltage: 420 volts dc and (or) peak ac maximum

Input Impedance: 100 K ohms nominal

Threshold: 1.5 volts nominal

Multi-Mode Digital Timer:

Accuracy: $\pm 0.0005\%$ of reading, \pm one least significant digit, ± 50 microSeconds.

Resolution: 10 microSeconds. (1 least significant digit).

Ranges: 0 - 9999.99 milliseconds;
 0 - 9999.99 seconds;
 0 - 9999.99 cycles;

GPS time of day may be displayed when using the F2895 GPS Option

Line Power Supply:

105 - 132 V or 210 - 264 V (field selectable) at 47-63 Hz

Operating Temperature: 0° to 50° C

Storage Temperature: -25° to +70° C

Humidity: Up to 95% relative humidity, non-condensing.

Displays: 0.3" High Intensity filtered LED

Interfaces:

RS232 remote control to PC

IEEE 488 instrument inter-communications network

D232 for F2010 Minicontroller

External Signal inputs for voltage and current conditioning amplifier

Battery Simulator (optional):

Range: 48 V, 125 V, 250 V-dc

Power: 60 w

Enclosure:

High impact, molded, flame retardant ABS - Meets National SafeTransit Association testing specification

No. 1A for immunity to severe shock and vibration

Dimensions:

9.5 x 19.75 x 22 inches or 24 x 50 x 55.8 cm

Weight:

50 lbs./22.7 kg

Audible Noise:

Measured at 2 meters: ANSI Type 2

Typically: Front: 52.5 dBA Rear: 55 dBA
 L.H.: 54 dBA R.H.: 52.5 dBA



F2253 VOLTAGE AND CURRENT SOURCES

MODE 1: Source 1 Voltage Source 2 Current

	Power 50/60/Hz & DC	Ranges (Resolution)
Source 1 AC Voltage Continuous Power	150 VA-rms	75, 150, 300 V-rms (0.01V)
Source 1 DC Voltage Continuous Power	150 watts	106, 212, 424 V-dc (0.01V)
Source 2 AC Current 1.5 second Transient Continuous Power	675 VA-rms 450 VA-rms	15, 30, 45, 60, 90 (0.01A), 180 A-rms (0.1A) 7.5, 15, 22.5, 30, 45 (0.001A), 90 A-rms (0.01A)
Source 2 DC Current 1.5 second Transient Continuous Power	675 watts 450 watts	15, 30, 45, 60, 90 (0.01A), 180 A-dc (0.1A) 5, 10, 15, 20, 30 (0.001A), 60 A-dc (0.01A)

MODE 2: Source 1 Current Source 2 Current

	Power 50/60/Hz & DC	Ranges (Resolution)
Source 1 AC Current 1.5 second Transient Continuous Power	225 VA-rms 150 VA-rms	15, 30, 60 A-rms (0.01A) 7.5, 15, 30 A-rms (0.001A)
Source 1 DC Current 1.5 second Transient Continuous Power	225 watts 150 watts	15, 30, 60 A-dc (0.01A) 5, 10, 20 A-dc (0.001A)
Source 2 AC Current 1.5 second Transient Continuous Power	450 VA-rms 300 VA-rms	15, 30, 60 (0.01A), 120 A-rms (0.1A) 7.5, 15, 30, 60 A-rms (0.001A)
Source 2 DC Current 1.5 second Transient Continuous Power	450 watts 300 watts	15, 30, 60 (0.01A), 120 A-dc (0.1A) 5, 10, 20, 40 A-dc (0.001A)

F2252 VOLTAGE AND CURRENT SOURCES

MODE 1: Source 1 Voltage Source 2 Current

	Power 50/60/Hz & DC	Ranges (Resolution)
Source 1 AC Voltage Continuous Power	150 VA-rms	75, 150, 300 V-rms (0.01V)
Source 1 DC Voltage Continuous Power	150 watts	106, 212, 424 V-dc (0.01V)
Source 2 AC Current 1.5 second Transient Continuous Power	450 VA-rms 300 VA-rms	15, 30, 60 (0.01A), 120 A-rms (0.1A) 7.5, 15, 30, 60 A-rms (0.001A)
Source 2 DC Current 1.5 second Transient Continuous Power	450 watts 300 watts	15, 30, 60 (0.01A), 120 A-dc (0.1A) 5, 10, 20, 40 A-dc (0.001A)

**MODE 2: Source 1 Current
Source 2 Current**

	Power 50/60/Hz & DC	Ranges (Resolution)
Source 1 AC Current		
1.5 Second Transient	225 VA-rms	15, 30, 60 A-rms (0.01A)
Continuous Power	150 VA-rms	7.5, 15, 30 A-rms (0.001A)
Source 1 DC Current		
1.5 Second Transient	225 watts	15, 30, 60 A-dc (0.01A)
Continuous Power	150 watts	5, 10, 20 A-dc (0.001A)
Source 2 AC Current		
1.5 second Transient	225 VA-rms	15, 30, 60 A-rms (0.01A)
Continuous Power	150 VA-rms	7.5, 15, 30 A-rms (0.001A)
Source 2 DC Current		
1.5 second Transient	225 watts	15, 30, 60 A-dc (0.01A)
Continuous Power	150 watts	5, 10, 20 A-dc (0.001A)

F2251 VOLTAGE AND CURRENT SOURCES

	Power 50/60/Hz & DC	Ranges (Resolution)
Source 1 AC Voltage		
Continuous Power	150 VA-rms.	75, 150, 300 V-rms (0.01V)
Source 1 DC Voltage		
Continuous Power	150 watts	106, 212, 424 V-dc (0.01V)
Source 2 AC Current		
1.5 second Transient	225 VA-rms	15, 30, 60 A- rms (0.01A)
Continuous Power	150 VA-rms	7.5, 15, 30 A-rms (0.001A)
Source 2 DC Current		
1.5 second Transient	225 watts	15, 30, 60 A-dc (0.01A)
Continuous Power	150 watts	5, 10, 20 A-dc (0.001A)

Specifications are subject to change without notice.

For more information, contact fserieshelp@doble.com



**Doble is certified ISO 9001:2000
Doble is an ESCO Technologies Company**

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