





# Comparison of StepOne Real-Time PCR System to the 7300 Real-Time PCR System



**Greener by design™**

-  **More energy efficient:** uses 72% less energy to complete a run
-  **Less waste:** contains 15% less material
-  **Extended life:** designed to be upgradable

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## Introduction

We are committed to designing our products with the environment in mind. This fact sheet provides the rationale behind the environmental claims that the Applied Biosystems™ StepOne™ Real-Time PCR System is more energy efficient, utilizes less raw material, and is designed to be upgradeable as compared to its predecessor, the 7300 Real-Time PCR System.

## Product description

The StepOne Real-Time PCR System makes it simple and easy to get publication-ready, high-quality real-time PCR results on day one. This simple 48-well, 3-color real-time PCR system is designed with a powerful yet user-friendly interface for researchers of all experience levels. The StepOne Real-Time PCR System can be upgraded to an Applied Biosystems™ StepOnePlus™ Real-Time PCR System, minimizing waste while still meeting our customers' needs.

## Green features

### More energy efficient

The StepOne Real-Time PCR System draws 29% less energy when idling (Table 1) and 72% less energy to process one

sample plate (Table 2), compared to the 7300 Real-Time PCR System. To compare energy usage during a run, the default protocols for each instrument were used, despite the differences in well number, volume, and run time, to better represent actual use. For the StepOne instrument, each well of a 48-well plate was prepared with 10 µL of Applied Biosystems™ TaqMan™ Fast Universal PCR Master Mix (2X) and 10 µL water, for a total of 20 µL. The default "Fast Protocol" was selected. For the 7300 instrument, each well of a 96-well plate was prepared with 12.5 µL of Applied Biosystems™ TaqMan™ Gene Expression Master Mix (2X) and 12.5 µL water, for a total of 25 µL. The default "Standard Protocol" was selected.

**Table 1. Energy usage during idling.**

Instrument/model	Average power usage (kW)	Run time (hr)	Energy consumption (kW-hr)
7300 system	0.17	1.00	0.17
StepOne system	0.12	1.00	0.12
<b>Energy conservation</b>			<b>29%</b>

### Less waste

The StepOne Real-Time PCR System contains less material than its predecessor, the 7300 Real-Time PCR System. Furthermore, the instrument has an 18% smaller footprint, which helps improve laboratory space efficiency (Table 3).

### Extended life

The StepOne Real-Time PCR System was engineered to be upgradable to the StepOnePlus Real-Time PCR System. The instrument can be sent in for an upgrade that converts it to

a StepOnePlus system by replacing the 48-well block with a 96-well Applied Biosystems™ VeriFlex™ Block and expanding the dye flexibility to four colors. The color of the bar above the block is also updated to indicate that the instrument is now a StepOnePlus system. All other components remain the same, and the instrument keeps its original serial number. Thus, as customers' needs grow, we can support them while minimizing hazardous waste.

**Table 2. Energy usage during a run.\***

Run protocol	Average power usage (kW)	Run time (hr)	Energy consumption (kW-hr)
7300 system, default "Standard Protocol"	0.28	1.63	0.46
StepOne system, default "Fast Protocol"	0.20	0.63	0.13
<b>Energy conservation</b>			<b>72%</b>

\* The instruments completed a 48- or 96-well sample plate run from a heated start (i.e., the heated cover was at 105°C when the run was started). We recommend starting the protocol after the instrument has been in a heated state. Both instruments were set up at 100 VAC at 60 Hz.

**Table 3. Instrument weight and footprint.**

	Weight (kg)	Footprint (cm <sup>2</sup> )
7300 Real-Time PCR System	27.8	1,530 cm <sup>2</sup> (34 cm x 45 cm)
StepOne Real-Time PCR System	23.6	1,259 cm <sup>2</sup> (25 cm x 51 cm)
<b>Reduction</b>	<b>15%</b>	<b>18%</b>

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