

Idaho Technology LightScanner® 32 System

Information Sheet



The Fastest Real-Time PCR Technology

The LightScanner 32 (LS 32) instrument is an air thermocycler capable of automatically analyzing samples for the presence of targeted nucleic acid. It combines real-time, rapid thermocycling technology and Hi-Res Melting™ on a single format and is capable of analyzing 32 samples per run in less than 60 min. The LS 32 instrument is configured for three-color detection for real-time and single-color detection for Hi-Res Melting. It can be optimized for use with the LCGreen® family of fluorescent dyes. Labeled probe chemistry such as SimpleProbes® and fluorescence resonance energy transfer (FRET) probes (HybProbe®) can be used for basic genotyping or real-time PCR with genotyping, respectively.

A computer is included with the system that comes pre-loaded with easy-to-use run and analysis software. The software automatically collects and interprets data, then reports the results. The software's wizard will walk the user through the steps of setting up a run.

The LightScanner 32 offers a versatile application suite without sacrificing performance.

- Rapidly generate high quality gene expression data.
- Accurately discriminate even the most subtle DNA mutations.
- Affordably genotype samples with the same specificity as TaqMan® genotyping at a fraction of the cost.

By choosing Hi-Res Melting® you are staying ahead of the curve

Why settle for less when you can have real results using proven technology and exceptional customer support.



Innovative solutions for pathogen identification and DNA research

390 Wakara Way, Salt Lake City, Utah 84108, USA | 1-800-735-6544 | www.idahotech.com

Temperature Control

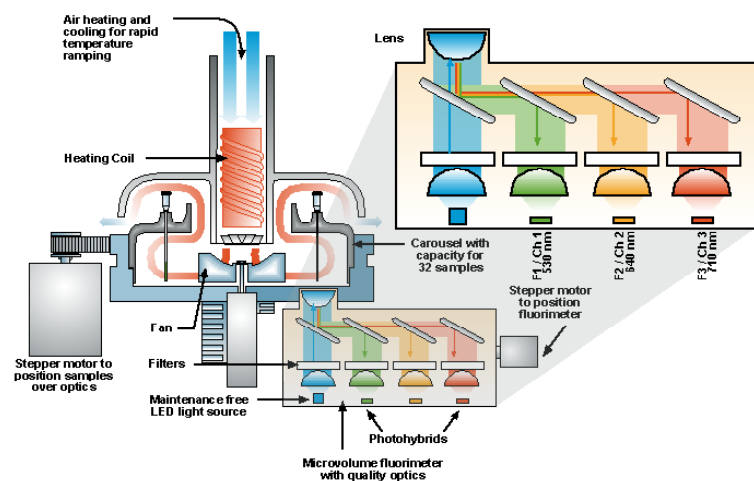
Temperature control of the instrument is modulated by a temperature sensor in the cycling chamber. Ambient temperature air is pulled into the instrument by the intake fan, causing positive pressure to force the air through the heating duct and into the carousel chamber. The air is heated at the end of the duct by a heat coil and dispersed in the chamber by the secondary chamber fan. Cooling is done in a similar manner by forcing unheated ambient air into the chamber to cool the samples.

The Fluorimeter Component

A three-channel fluorimeter block is used for the real-time detection of the dyes/probes in each amplification reaction. The fluorimeter reads and stores data for each sample simultaneously in all three channels with every fluorescence acquisition. Excitation of each sample is from a light emitting diode (LED) that is filter tuned and passed through a dichroic mirror at 470 nm. The three detection channels are filter tuned and correspond to 530 nm, 640 nm, and 710 nm, respectively.

For fluorescence excitation, the instrument is equipped with an LED light source. This LED requires no maintenance and has an extremely long life span.

The fluorimeter provides three channels, which detect emitted light with varying wavelengths. Because of the high quality optics, the measurement is both extremely



fast and sensitive. In a normal amplification run, measurement of a single sample takes about 20 milliseconds.

Hi-Res Melting

Hi-Res Melting analysis with the dye LCGreen Plus identifies heterozygous single-base changes in PCR products with a sensitivity and specificity comparable or superior to non-homogeneous techniques. Variants are detected independent of their position within the fragment. Sensitivity is highest in fragments 400 bp or fewer. In addition to identifying anonymous heterozygous variants, Hi-Res Melting can often identify the specific mutation, in such cases scanning and genotyping can be combined into one simple melting analysis. A more challenging applica-

tion is the homogeneous identification of homozygous sequence alterations without reference DNA mixing: most other mutation scanning methods are unable to distinguish these homozygous alterations from wild type sequences. By contrast, Hi-Res Melting has been shown to be capable of identifying homozygous sequence alterations in several different types of amplicons. Certainly, not all homozygous changes can be detected this way, but many will be.

In the LS 32 a Hi-Res Melt is performed after PCR. A temperature controlled melter optically positions itself under the sample to be melted then ascends onto the capillary and thermally denatures (melts) the PCR product while simultaneously collecting high-density fluorescence data. When the target denaturation temperature has been reached, the melter lowers itself off the sample while being cooled by a high-velocity fan. The process repeats until all samples have been melted. The ingot then lowers, which initiates the cooling process, and moves to the next capillary.

System Specifications

Sample Description

- Sample Capacity: 32 10 μ L samples
- Sample Volume: Up to 20 μ L
- Composite glass/plastic reaction vessel

Fluorescence Acquisition

- Blue LED excitation with peak emission of 470 nm
- Emission wavelengths: 530, 640, and 705 nm

Instrument Specifications

- Power Supply: 110/220 V auto-switching power supply unit
- 220/110 V, 50/60 Hz, 7.0/6.0 A, 650 W

Instrument Dimensions and Weight (w x d x h)

- Size: 30.4 x 40.6 x 40.6 cm (12 x 16 x 16 in.)
- Weight: 11.3 kg (25 lb.)

Performance Parameters

- Instrument/System set-up time \leq 30 min.
- Sample run time \leq 60 minutes

Temperature Control

- Operating: 40 $^{\circ}$ C to 99 $^{\circ}$ C at 20 to 80% humidity
- Storage: -30 $^{\circ}$ C to 65 $^{\circ}$ C

Computer Hardware

- Laptop computer with pre-loaded LightScanner 32 software
- Windows-based instrument control and data analysis software
- Automated qualitative analysis and reporting
- Separate advanced analysis software