



Digital Media & Consumer Products



Digital Media Devices



Image and Information Equipment



Consumer Appliances

Slim-block LED Backlight LCD Televisions that Dramatically Improve Image Quality and Energy Saving

Demand for LCD televisions has increased as the full switchover to digital broadcasting approaches. Also, as high definition content becomes more widespread, customers want LCD televisions with even better image quality. In response, Hitachi has developed a slim-block LED backlight that achieves both high contrast and gradation expression. Business operation departments and research departments across Hitachi worked together to apply this technology, resulting in our 2010 premium models. These LCD televisions are also excellent in terms of energy saving.



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Slim-block LED Backlight Achieves Image Quality Better than Plasma

LCD (liquid crystal display) televisions currently in the market have a better energy saving performance than plasma televisions, but from the perspective of image quality, its lower contrast is a weakness. To address this issue, dramatic improvements were required in the panel module. Our response was to research LED (light emitting diode) backlighting, resulting in the completion of our slim-block LED backlight system, which uses unique Hitachi technology and is different from conventional direct systems and edge systems. Models are equipped with this backlight system, utilizing a new optical system and signal processing technology for saving energy and improving image quality, while also using other technology that we have cultivated over the years.

Improved Image Quality and Energy Saving Using an Optical Engine and Area Control

Our first objective with this product was to create a high-contrast image on an LCD panel. In previous LCD televisions, because the

backlight on the back of the display panel is always illuminating, "true black" could not be depicted. However, in the slim-block LED backlight display that we developed, light emission is controlled precisely for each individual block. This makes the dark sections of an image blacker, while maintaining the high intensity of the bright areas, which gives a high contrast and creates an image with a feeling of depth. To do this, we needed to develop an LED backlight system that made full use of both the software and hardware technologies that Hitachi has cultivated over the years. The algorithm development team and image quality team worked together as one, and succeeded in depicting all images crisply and clearly. Further, by using Hitachi's unique flag pattern in the light guide plate, which is a key device of the optical engine in the slim block system, we succeeded in controlling the light sources and improving the image quality.

Environmental issues were also important. The previous main light source for backlighting, CCFL (cold cathode fluorescent lamp), contain mercury. For this reason, in recent years, LEDs that do not contain mercury have become more widespread as a light source for LCD televisions. Slim-block backlighting not only uses LEDs as the light source, but also reduces wasteful light through precise area control using an image brightness signal. This achieves a low energy consumption that ranks among the top class in the industry.

However, many new parts were needed for LCD televisions using our unique new system. LEDs can be highly variable and so had to be handled correctly. The Yokohama Research Laboratory was in charge of evaluating reliability as a product and improving performance. Our ability to overcome these various hurdles can be attributed to the collective efforts of Hitachi, and also partnerships with external organizations, such as an overseas manufacturer that processed our key device, the light guide plate.

Our Goal: Establishing the Global Standard for LCD Televisions

We are satisfied because although this project originated in the development of LED backlighting, it resulted in the commercialization of a groundbreaking product. Currently, we are evolving the system further using software for area control, while starting work on reducing costs, including the use of optical technology. For consumer products, it is important not only to make good products, but also to spread these products and permeate the market with them. We will continue efforts toward our goal of making our independently developed system the global standard for LCD televisions.

New High-definition Plasma/LCD Televisions

XP07 Series digital HD (high-definition) plasma and LCD (liquid crystal display) televisions have been released to the market one by one since May 2011 in Japan. To make recording more convenient and easy to use, these televisions have a program recommendation function that recommends programs that the user will like, and a parallel long-recording function of two programs at the same time that can record more programs on the HDD (hard disk drive).

[Key features]

(1) Program recommendation function

Hitachi's original algorithm analyzes user preferences from programs they have recorded in the past and the recorded program information (program name, performer, genre, broadcast time), and then recommends programs automatically for the next week. Users can select programs from the program recommendation screen and set them for viewing or recording.

(2) Parallel long-recording of two programs at the same time

In this product series, the ability to process HD transcoding/translation with XCodeHD^{*1} in two systems simultaneously enables parallel long-recording for the HD 8x recording^{*2} of two programs at the same time. This means that the recording



XP07 Series digital high-definition plasma/LCD televisions

capacity is used efficiently when recording two programs simultaneously, enabling the recording of approximately 3.7 times^{*3} more programs than previous models (XP05 series).

(3) Technology for high image quality

Image quality is enhanced by the use of the further-evolved high image quality technology, which is based on super-resolution technology.

(Hitachi Consumer Electronics Co., Ltd.)

^{*1} XCodeHD is an HD transcoding/translation technology created by ViXS Systems Inc.

^{*2} 8x recording: In TSX8 mode. Compared with the recording of BS (broadcasting satellite) digital HD broadcasts in TS mode. The recording time may be shorter depending on the program.

^{*3} Approximately 3.7 times: Comparing the remaining HDD space when recording terrestrial digital broadcasts simultaneously in TSX8 mode and TS mode, and when recording them simultaneously in TSX8 mode and TSX8 mode.

CP-AW250N Ultimate Short Throw Projector



CP-AW250N ultimate short throw projector

Hitachi released the CP-A100 ultimate short throw projector, which uses the world's first free-form surface lens and mirror, in

2007. Hitachi has now released the CP-AW250N ultimate short throw projector that has an even shorter throw distance, achieved by enhancing Hitachi's unique free-shaped surface optical technology, and high-precision mould processing and shaping technology.

[Key features]

(1) Able to project a 1,280×800 resolution WXGA (wide extended graphics array) image of 2,500 lm onto an 80-inch wide screen from as little as 56 cm away. This is the world's shortest throw distance* for an LCD (liquid crystal display) projector.

(2) A new free-form surface lens/mirror has enabled the size of the optical engine to be reduced, making the body more lightweight with a 20% reduction in the number of parts compared with the previous model. This makes it the most lightweight and compact ultimate short throw projector in the world.*

Also, Hitachi released the dedicated HAS-K250 wall mount unit at the same time, which has a six-axis adjustment mechanism that makes it easy to install the projector on a wall and adjust the screen.

(Hitachi Consumer Electronics Co., Ltd.)

* As of September 2010

HD Camera for Teleconference Systems

Hitachi has developed and started high-volume production of an HD (high-definition) camera for teleconference systems, which supports full HD with two million pixels and is equipped with a 10x optical zoom.

[Key features]

- (1) A CMOS (complementary metal-oxide semiconductor) sensor enables high-precision HD video output.
- (2) HDMI* (high-definition multimedia interface) port, which supports digital signal output and so enables the transmission of high quality images
- (3) Support of various video signals [1,080i (interlace), 720p (progressive)] to suit different applications and higher resolutions
- (4) A serial interface that enables the external control of various camera functions
- (5) A pan-tilt mechanism that uses a direct drive motor to reduce noise and increase the drive speed

Hitachi is currently planning the development of a model that supports 1,080p to meet the demand for higher HD resolution.



HD camera for teleconference systems

(Hitachi Consumer Electronics Co., Ltd.)

* See "Trademarks" on page 83.

"Frost Recycle Cooling and Vacuum Compartment W (Wide)" High-capacity Refrigerator



"Frost recycle cooling and vacuum compartment W (wide)" refrigerator (Japan model: R-A6200)

Hitachi has released "frost recycle cooling and vacuum compartment W (wide)" high-capacity refrigerators, including the R-A6200 (Japan model), in which the storage space of the "vacuum compartment" has been increased by about 1.5 times^{*1}. This "vacuum compartment" is a unique Hitachi function that preserves freshness by minimizing food oxidization.

[Key features]

- (1) In the R-A6200, a new structure with high pressure resistance is used for the vacuum compartment, and the storage space has been increased by widening the horizontal width to about 48 cm^{*2}. This allows for long food, such as saury fish, to be stored whole.
- (2) Continued use is made of "frost recycle cooling" function, which utilizes the cold air of the frost that adheres to the evapora-

tor. The design has evolved to include a refrigerant valve that minimizes evaporator temperature increases. In addition, the use of "eco intelligent control" function that cools more efficiently in accordance with the usage conditions reduces annual power consumption by about 22%^{*3} as compared with previous models.

(3) Although the refrigerator is large, enhanced "easy storage" features make it easy to use. For example, eggs can be stored by the pack in the case, which can be placed in the user's preferred location.

(4) Newly released are a new, easy-to-install slim type (Japan model:

R-S50AM) with a body width of 62 cm and high capacity of 501 L, and a slim and low type (Japan model: R-SL47AM) with a top shelf that is easy to reach and a body width of 62 cm and height of 173.5 cm^{*4}.

(Hitachi Appliances, Inc.)

^{*1} Comparison between the 13.8 L volume in the food storage area inside the vacuum compartment in the new R-A6200 and the 9.1 L volume in the previous model

^{*2} Comparison between the approximately 48-cm width inside the vacuum compartment in the new R-A6200 and the approximately 32.4 cm in the previous model

^{*3} Comparison between the 280-kWh annual power consumption of the new R-A6200 and the 360 kWh of the previous model

^{*4} 8.3 cm lower than the 181.8-cm height of the previous model

Premium Vacuum Cleaner with Easier Filter Cleaning and Quieter Operation



Cyclonic cleaner with a two-stage boost cyclone chamber (left) and paper bag vacuum cleaner (right)

Hitachi has released a cyclonic cleaner with a two-stage boost cyclone chamber together with a new paper bag vacuum cleaner.

been eliminated as far as possible.
(Hitachi Appliances, Inc.)

[Key features]

(1) The two-stage boost cyclone chamber features long-lasting suction power and uses tissue paper to simplify filter cleaning and make the vacuum cleaner easier to empty.

(2) The cyclonic cleaner captures 99.999% of household dust and fine particles from the intake air. This performance was confirmed by a third-party certifying body in Germany in accordance with the IEC (International Electrotechnical Commission) 60312-1 standard.

(3) Quiet operation without loss of suction power is achieved through the use of proprietary noise-reduction technologies that minimize suction, vibration, fan, and motor noise.

The cyclonic cleaner has been released in conjunction with the paper bag vacuum cleaner, a premium class model that achieves high dust capture performance in a small, lightweight body by using a high-density design in which wasted space has

Big-drum Washer-dryers Featuring Heat Recycling and Air Iron

Hitachi has released drum-type washer dryers that are equipped with a new drum boasting the world's largest* diameter of about 63 cm. This further enhances the finishing, washing, and energy saving performance.

[Key features]

(1) Hitachi's new big-drum washer-dryer has the largest diameter in the industry at about 63 cm, which enhances the finish of clothes when using "air iron" function, the cleaning performance of beat washing, and the energy conservation through increased drying efficiency. Using this drum in combination with technology such as "heat recycle drying," the power consumption for 6 kg of clothes from washing to drying is as low as about 930 Wh. Also, Hitachi's low vibration technology minimizes vibration, maintaining the width of the unit the same as previous models.

(2) A unique sensor system is used that comprises four sensors; a "water hardness sensor," "water temperature sensor," "clothes type sensor," and "clothes volume sensor." By detecting the home's water hardness and temperature, and the type and volume of the clothes, the detergent amount display, washing time, and water amount are adjusted to make washing more environmentally conscious.

(3) A "spin/dry level" button has been added that allows the selection of the spin rpm during washing, which is convenient when drying clothes indoors. Three levels can be selected; "high" or "normal" when spinning before indoor drying, and "low" for a



Big-drum washer-dryer featuring heat recycling and air iron

soft spin.
(Hitachi Appliances, Inc.)

* As of September 17, 2010, applies to household washer-dryers.

Room Air Conditioner with Radiation Sensor and Human Movement and Sound Detection Sensor for Energy Saving Operation



Room air conditioner with radiation sensor and human movement and sound detection sensor for energy saving operation

Hitachi has released a room air conditioner that precisely detects the living environment with sensors to operate automatically at a low-energy and comfortable level suitable for the room and the people inside.

[Key features]

(1) In addition to sensors that detect the indoor temperature, indoor humidity, and outdoor temperature, this air conditioner is equipped with a radiation sensor and a sensor that detects the movement and sounds of people. The air conditioner uses these sensors to achieve energy-saving operation without detracting

from comfort. A single press of the button on the remote controller instructs the air conditioner to automatically operate in a way that suits the room and the people inside.

(2) Stainless steel with effective antibacterial and dirt resistance is used in the pre-filter, ventilating flue, and louver (lower side). Also, the indoor unit's fan uses silver ions to sterilize bacteria, and the titanium heat exchanger has antibacterial, deodorizing, and antifungal properties. Furthermore, the inside of the air conditioner is designed to be clean, with

an automatic cleaning function that spares the owner the hassle of cleaning.

(3) The "ion mist" preserves the skin's moisture and improves hair cuticles. This feature reduces the movement of allergenic pollen substances and suspended mold particles.

(4) The power consumption during standby is almost zero, enhancing the low energy performance when the air conditioner is not in use.

(Hitachi Appliances, Inc.)

New Premium Outdoor Unit and Indoor Unit in Packaged Air Conditioning Systems for Stores and Offices

New premium outdoor units from type 40 (cooling capacity 4 kW) to type 280 (cooling capacity 28 kW) achieve a high efficiency in terms of APF (annual performance factor), which indicates energy consumption efficiency over a year. Type 140 (cooling capacity 14 kW), which is in the segment of the highest sales volume in this product range, has an APF of 6.0.

A new motor is used in the compressor to improve efficiency. In new 4-way cassette type indoor unit (type 40 to type 160), a small-diameter pipe heat exchanger and new turbo fan are used. The unit continues to use Hitachi's unique air blowing structure. This enables precise air flow settings with a louver setting function that can individually adjust the angle of four air deflection plates. In addition, to automatically minimize wasteful operations, the unit is equipped with human detection sensors that detect the movement of people indoors. In previous models, an individual operation function that enabled the operation of multiple indoor units to be controlled separately with a single out-

New 4-way cassette type indoor unit



New premium outdoor unit (type 140)



Hitachi's packaged air conditioning system for stores and offices

door unit is equipped as standard. For the new models, the function is combined with the human detection function, reducing power consumption compared with normal operation. Also, the number of indoor units that can be connected has been increased. (Hitachi Appliances, Inc.)