



White Paper

Outline of EcoView Sense and Energy Savings

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EIZO NANA O CORPORATION

Introduction

With an increasing interest in ecology, we have formulated the “EcoView” concept for our FlexScan series. This Technical Overview explains the “EcoView Sense” function, a power saving function that uses an infrared sensor, and the expected power savings.

What is EcoView Sense?

“EcoView Sense” is a power saving function that uses an infrared sensor. The sensor detects the presence of a user within a specified distance. If the user is away, the monitor goes into power saving mode. When the user returns, the monitor will resume normal operation.

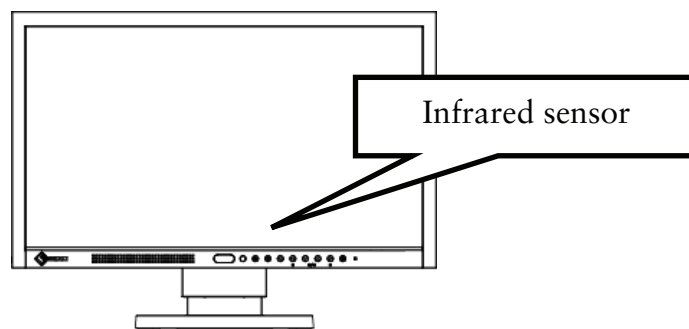


Fig 1: An infrared sensor is mounted on the front of the monitor.

Outline of EcoView Sense

Algorithms for judgment

The monitor utilizes three algorithms for EcoView Sense to accurately judge the user's presence.

Judgment by distance

If the measured distance is longer than the limited value, the monitor goes into power saving mode. The default limit value can be set to about 120 cm or 90 cm.

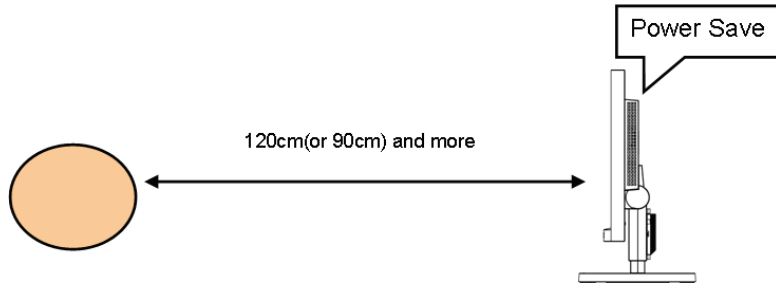


Fig.2: Judgment by distance

Judgment by fluctuation

If the measured distance is out of the fluctuation range for a few seconds, the monitor detects the user's absence and goes into power saving mode. This algorithm is effective especially in a narrow environment in which 'judgment by distance' does not work well.

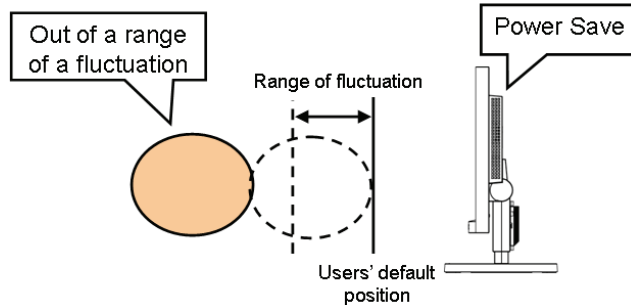


Fig.3: Judgment by fluctuation

Judgment of still objects

To prevent incorrect detection, this function can distinguish between still and moving objects. If this function does not detect any movement in an object for about one minute, it determines the object to be a still one like the backrest of a chair, and then switches to power saving mode.

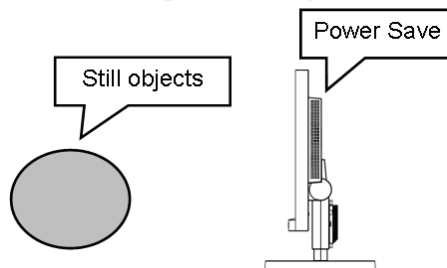


Fig 4: Judgment of still objects

Transition to power saving mode

The transition to power saving mode is as follows (in the case of the FlexScan EV2333W and EV2313W).

1. EcoView Sense does not detect the user's presence for 45 seconds.
2. Warning icon is displayed for 15 seconds.
3. OSD notice is displayed for 10 seconds and the contrast of the monitor drops to 30%.
4. The monitor goes into the power saving mode. Total elapsed time is 70 seconds.

If the user returns at any time during the first three phases, the monitor resumes normal operation.

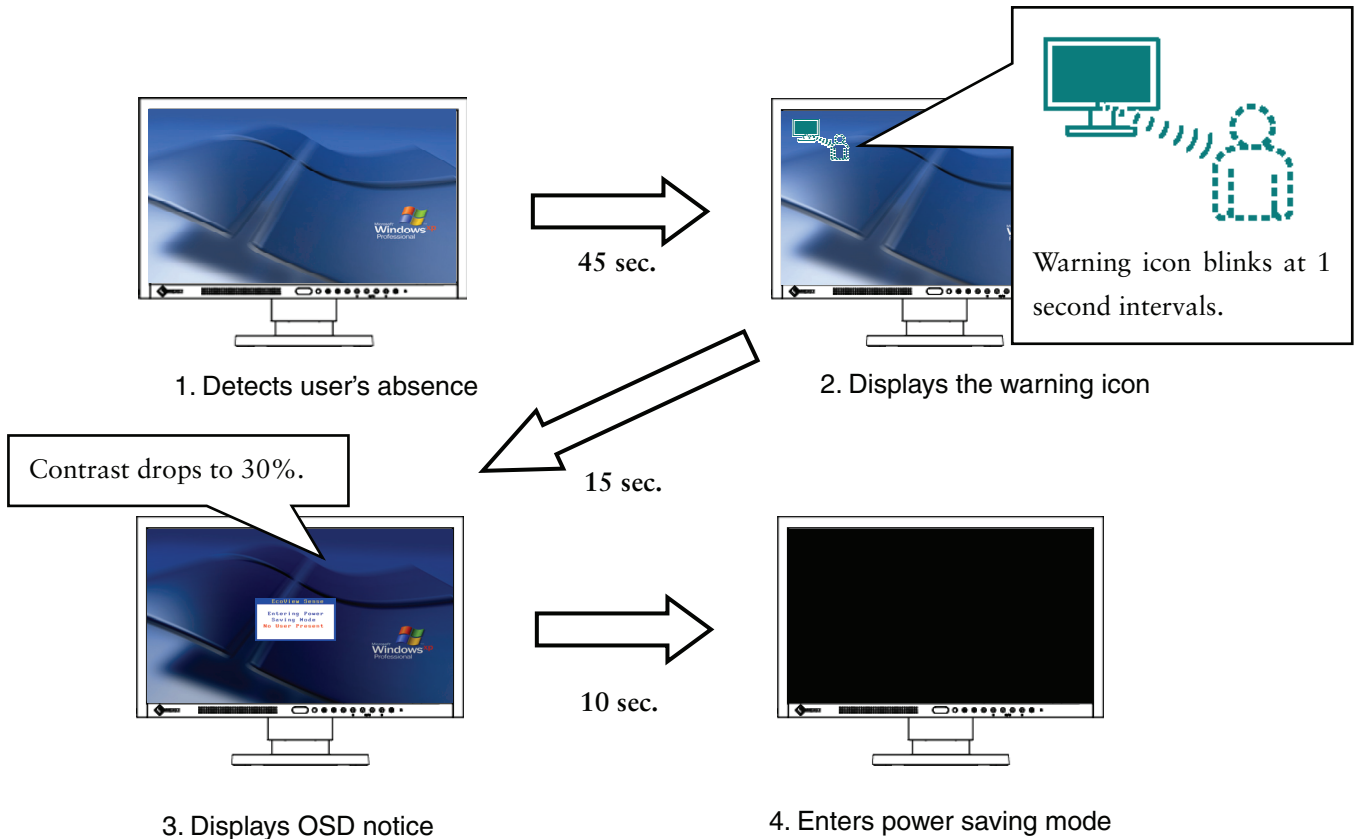


Fig 5: Transition to power saving mode

Detection level

EcoView Sense has four detection levels – “Auto”, “Manual 1”, “Manual 2” and “Manual 3”. The details are follows. The default setting is “Auto”.

Setting Value	Judgment by distance	Judgment by fluctuation	Judgment of still objects
Auto	120 cm	Yes	Yes
Manual 1	90 cm	Yes	Yes
Manual 2	120 cm	No	No
Manual 3	90 cm	No	No

If EcoView Sense does not operate as desired, changing the detection level is recommended. For example, the warning icon often appears even if the user is seated.

Estimation of energy savings

This section explains the estimated effect on energy saving by using EcoView Sense.

Usage time of the PC/monitor at the office (in-house survey result)

The results of a survey conducted at Eizo Nanao Corporation regarding the usage time of PCs/monitors in the office are as follows. According to this survey, office workers did not use PCs/monitors for up to about 30% of their day.

Survey procedure:

- Number of staff: 114
- Survey period: 10 days
- The survey was conducted with an application created in-house which set the screensaver to come on after three minutes of inactivity. The application measured the amount of time the screensaver was on. We estimated this time as the amount of time the user was absent.

Average

Item	Value
Percentage of time absent per day	29%
Number of absences per day	13
Total time of absences per day	172 min.
Time of one absence	794 sec.

Distribution

Zone(sec.)	Frequency	%
0 - 200	6127	40.42%
200 - 400	2523	57.06%
400 - 600	1529	67.14%
600 - 800	973	73.56%
800 - 1000	710	78.25%
1000 - 1200	551	81.88%
3400 - 3600	49	96.21%
7200 - 7400	13	99.22%
7400 - 7600	10	99.29%
7600 - 7800	9	99.35%
7800 - 8000	6	99.39%

- On average, user's were absent from their desk for about 29% of the day.
- More than 80% of all absences were less than 20 minutes and absences longer than two hours accounted for only 0.78% of the total.

Estimated calculation of energy saving

We calculated the energy savings by EcoView Sense based on the above results. The conditions are as follows.

Item	Value
Operation time per day	8 hours
Percentage of time absent per day	29%
Operating days per year	240 days
Number of installed monitors	100 units

The conditions of the monitors are as follows. The power management functions of the PCs are not considered.

Item	Condition 1	Condition 2	Condition 3
Product name	EV2333W		
EcoView Sense	OFF	ON	ON
Auto EcoView (Automatic brightness control)	OFF	OFF	ON
Power consumption	41 W	41 W	25 W

The estimated savings are as follows.

Item	Condition 1	Condition 2	Condition 3
Power Reductions (kWh per year)	7,872	5,589	3,408
Electricity expenses (JPY per year) ¹	173,184	122,961	74,976
CO2 emissions (kg per year) ²	4,369	3,102	1,891
Cost for an emission credit (JPY per year) ³	5,580	3,962	2,416
Trees needed to consume this CO2 ⁴	234.5	166.5	101.5
Total cost (JPY)	180,611	128,234	78,191

¹Calculated at a cost of 22 JPY/kWh based on figures published by the Tokyo Electric Power Company.

²Calculated from figures obtained from the Japan Environmental Management Association for Industry where one kWh of electricity produces 0.555 kg of CO2.

³Calculated at a cost of 1.7 JPY/kg of CO2 for an emission credit.

⁴Calculated from figures obtained from the Japanese Ministry of Agriculture, Forestry and Fisheries where one tree (Japanese cedar) absorbs approximately 14 kg of CO2 per year.

The cost savings of Condition 2 are 52,377 JPY compared to Condition 1. If Auto EcoView is ON, an additional 50,043 JPY is reduced. Thus, the cost savings of Condition 3 are 102,420 JPY compared to Condition 1.

Summary

1. EcoView Sense is a power-saving function that uses an infrared sensor so users can save energy without consciously having to do anything.
2. EcoView Sense has three algorithms to accurately detect a user's presence or absence: judgment by distance, Judgment by fluctuation, and judgment of still objects.
3. Using EcoView Sense not only leads to energy savings, but further savings can be achieved if it is used in tandem with Auto EcoView (automatic brightness control function).

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