

# Cooling Systems Division

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Electronic equipment and devices, particularly telecommunication equipment and computers, are necessary for the current information society and are becoming increasingly compact and high performance. This trend shows no signs of stopping, thus anti-heat measures are still an important topic of consideration for the equipment. Cooling fans that are used

for cooling the equipment should have large air flow, high static pressure, low noise, and low power consumption. In addition to these features, modern models also aim for miniaturization and ability to handle specialized applications, while also providing high reliability and environmental compatibility.

The following products introduce the

main technical developments for the Cooling Systems Division in 2006. Based on the above market demands, our company promotes technological developments and product developments to make the products easier to use for our customers and to continuously provide higher performance with high reliability.

## ■ “San Ace 38” GV type

This 38 mm sq., 28 mm thick DC fan was developed to be the most appropriate size for 1U size power units. Compared to the conventional 40 mm sq., 38 mm thick Sanyo Denki fan, this new development is more compact while providing almost the exact same performance (max. air flow:

0.58 m<sup>3</sup>/min, max. static pressure: 315 Pa). The PWM control function can be added (optional).

Application: Servers, storage systems, switching power supply, telecommunication equipment, industrial equipment, etc.



## ■ “San Ace 150” GV type

This is the first 150 mm sq., 50 mm thick cooling DC fan for the market. It is smaller than the conventional  $\Phi 172$  mm  $\times$  150 mm  $\times$  51 mm thick (aluminum frame) Sanyo Denki fan but has achieved nearly the same performance with maximum air flow 8.54 m<sup>3</sup>/min, maximum static pressure 210 Pa, and sound pressure level during

maximum air flow 61 dB(A). Furthermore, by adopting a plastic frame the mass was reduced by 40%. The PWM control function can be added (optional).

Application: Servers, storage systems, telecommunication equipment, industrial equipment, etc.



## ■ “San Ace 60” CR type

When two of the conventional 60 mm sq., 38 mm thick fans were connected in series for a 2U server or similar device, the cooling performance was insufficient in an increasing number of cases. Often, there were requests to improve performance further, or the operation points overlapped in the depressed area for static pressure in the axial flow fan. This 60 mm sq., 76 mm thick counter rotating fan was developed to correct these situations. Compared to when using two conventional 60 mm sq., 38 mm

thick Sanyo Denki fans in series, the system impedance passing through the maximum efficiency point achieves 20% higher air flow and 46% higher static pressure. The PWM control function can be added (optional).

Application: Servers, storage systems, telecommunication equipment, industrial equipment, etc.

Additional details on this product are given in the Special Feature article in this Technical Report.



## ■ “San Ace 40 L”

This is the first 40 mm sq., 28 mm thick fan to achieve an expected life of 100,000 hours, which is 25% longer than the expected life for conventional Sanyo Denki products. Performance was achieved of maximum air flow 0.52 m<sup>3</sup>/min, maximum static pressure 206 Pa, and sound pressure

level during maximum air flow 48 dB(A) (J speed product).

Application: Servers, telecommunication equipment, industrial equipment, etc.



## ■ Intel® 775-land LGA Package compatible<sup>(\*)1</sup>

### BTX<sup>(\*)2</sup> compliant CPU cooler “SAN ACE MC” Thermal module Type I /Type II

The BTX<sup>(\*)2</sup> compliant CPU cooler (thermal module) was developed to handle cooling for the Intel® 775-land LGA Package<sup>(\*)1</sup>. The thermal module cools the CPU by vacuuming up air through the front of the device’s case and blowing the air stream through heat producing parts.

Two types were developed. Type I is 97.7 mm high with a thermal resistance 0.260 K/W and sound pressure level 52 dB(A) at the rated rotating speed 4,700 min<sup>-1</sup>. Type II is 72.3 mm high with a thermal resistance 0.280 K/W and

sound pressure level 46 dB(A) at the rated rotating speed 5,000 min<sup>-1</sup>.

Application: CPU coolers

Additional details on Type II are given in the Special Feature article in this Technical Report.

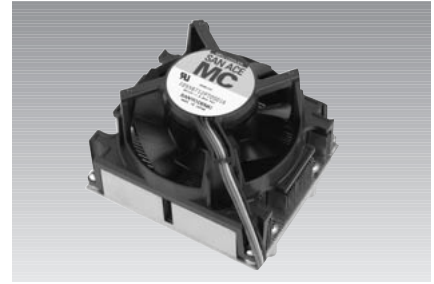


## ■ Intel® 775-land LGA Package compatible <sup>(\*)1</sup> “SAN ACE MC”

This CPU cooler for Intel® 775-land LGA Package<sup>(\*)1</sup> has one of the top cooling performs in the industry with a thermal resistance 0.229 K/W and sound pressure level 55 dB(A) at the rated rotating speed 6,300 min<sup>-1</sup>. Two functions can be used to reduce the noise and power consumption

from the CPU cooler. The thermal speed control function enables the fan to adjust the rotating speed depending on the temperature, while the PWM control function controls the fan's rotating speed from an external device.

Application: CPU coolers



\*1 Intel® is a registered trademark of Intel Corporation.

\*2 BTX is the computer standard announced by Intel® in 2003.



### **Yoshihiko Aizawa**

Joined Sanyo Denki in 1989.

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Worked on the development and design of fan motors.