

3M Touch Solution Offers Clear Sailing for Marine Navigation Device

The Application

The amateur boat industry is seeing an increasing number of different electronic devices to assist in piloting crafts of all sizes. These devices include navigation or global positioning satellite (GPS) equipment, fish finders, chart plotters, and more complex multi-function devices. Traditionally these devices have all relied upon a mechanical button interface with a few devices using the joystick to aid with the user interface. One of the most widely used devices in the amateur boat industry is the navigation device with a mechanical button interface.

The Problem

A global marine navigation OEM wanted to enhance its electronic navigation device interface and a touchscreen was seen as a way to simplify the device controls while providing a new and unique user interface. The OEM was concerned about maintaining the high optical characteristics of the LCD in the presence of the touchscreen overlay. There were additional concerns about product robustness, which included system noise, electromagnetic interference (EMI) and radio frequency interference (RFI).

The Solution

The 3M™ MicroTouch™ System SCT3250EX (see figure 1) proved to be the best solution for touch-enabling this OEM's next generation navigation device. 3M's proprietary optical coatings on the SCT3250 touch sensor limit light reflection and refraction from the front of the LCD and the back of the touchscreen. These coatings enable the touchscreen to maximize the amount of light that reaches the user's eye, providing 91.5% light transmittance to help maintain the high brightness and high contrast of the original LCD display. The SCT3250 sensor can also be optically bonded to the LCD face to further decrease the amount of light refraction between the LCD display and the touch sensor. 3M's proprietary optical coatings and the ability to optically bond the SCT3250 touch sensor to the LCD face provided the OEM with a solution that maximized light transmission and optimized the optical clarity of the LCD.



Figure 1: 3M MicroTouch Sensor SCT3250 and 3M MicroTouch Electronics EX Chip Set

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Another factor of the OEM's touch requirement was a compact electronics solution for their small device footprint. The 3M MicroTouch Electronics EX Chip Set (see Figure 1) allowed the OEM to incorporate 3M touch electronics directly onto their existing circuit board. This enabled the OEM to minimize parts and keep a thin and sleek design. The EX chip set offers excellent noise reduction and EMI/RFI resistance, which became increasingly important as the device was put together and noise profiles were analyzed. It was the chip design's robustness that made it unnecessary for the OEM to find alternatives for handling EMI and RFI susceptibility.

The Result

The marine navigation OEM was able to offer customers an enhanced user interface by adding of a touchscreen that maximized the LCD's brightness and contrast. The robustness of EX electronics and chip set design enabled the OEM to incorporate 3M touch electronics on an existing board design and allowed the OEM to minimize the footprint of the overall product design. The resulting marine navigation GPS was successfully launched and is setting a new standard for optical clarity and product performance in the marine navigation market.

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