HMI Solutions

Touch Screens / Machine Automation Solution / NEMA4 & IP Protection / HMI Touch Screen Monitors

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Overview

Human-machine interface (HMI) solutions can vary in sophistication and cost, which depends mostly on the amount of interaction and information exchange is needed between the human operator and the machine. Computation-intensive tasks must be taken into account when choosing an HMI solution since HMI usually doubles as a data collection and supervisory communications hub. As with the other aspects of industrial automation, HMI display and input technologies have chased the curve of commercial computing technology, adapting the latest consumer advances to the unique demands of the industrial environment.

Touch Screens

Touch screens are now ever-present in the HMI marketplace. Configurable keys, trackballs, and sealed or protected keyboards have their share, but from an ergonomic viewpoint the touchscreen is uniquely suited to plant-floor environments: it has no moving parts, takes up no incremental space, and is readily accessible by a standing operator. Further, even as costs have lowered, advances in underlying technology allow capacitive devices to be calibrated for use even by gloved operators. More lately, HMI touch screens have even added the multi-touch capabilities popularized on smart phones and tablets to the industrial mix.

When it comes down to deciding between an operator panel and an industrial PC, the first is configurable to perform a relatively fixed set of HMI functions, typically through a proprietary software package provided by the hardware manufacturer. Industrial PCs used as HMIs can even be used as controllers as well, communicating with I/O and eliminating the need for a separate PLC.

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Machine Automation Solution

HMI is the foundational component of any machine automation solution. Local HMIs can differ widely in sophistication depending mainly on how much interaction and information exchange is needed between the human operator and the machine itself. Also because the HMI often doubles as a data collection and supervisory communications hub, these computation-intensive tasks must be taken into account when selecting an HMI solution.

It doesn't matter what the HMI platform is chosen, a reliable performance in an industrial environment is needed in an increased tolerance for vibration and temperature extremes, we well as dust, dirt, water, and other potentially damaging or hazardous elements. More than 80% rate extended temperatures, shock/vibration tolerance and harsh/dirty environmental capabilities as important or very important characteristics of their HMI solutions.

NEMA 4 / IP Protection

Because most local HMI solutions are built to be mounted on a panel or door of an enclosure for installation in industrial environments, the HMI front panel, the enclosure and the bezel where they meet must be appropriately sealed against the elements they're likely to encounter. Both National Electrical Manufacturers Association (NEMA) and the International Electrotechnical Commission (IEC) have developed systemic classifications that describe the overall performance requirements of the enclosure/HMI system.

Rating	Protects against
NEMA 1	General Purpose Indoor, prevents accidental contact of personnel with the enclosed equipment
NEMA 3R	Windblown dust, vertical rain, severe external corrosion
NEMA 4	dust, watertight, splashing rain, hose directed water, severe external condensation
NEMA 4X	dust, rain, splashing rain, hose directed water, ice, corrosion resistant
NEMA 12	Indoor, dust, falling dirt, dripping non corrosive material
NEMA 7	Withstands the pressure from an internal explosion from the specified gas ignited

As with other focus of industrial automation, HMI display and input technologies have followed the arc of commercial computing technology, adapting the latest consumer advances to the unique demands of the industrial environment.

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Acnodes' HMI Touch Screen Monitors

Acnodes HMI touch screens come in a wide range of LCD sizes for your industrial needs. Panel mount sizes include, 7, 8, 10, 12, 15, 17, 18.5, and 21.5 inch touch screens. They also feature new LED backlights to save power. One of the biggest problems that drain your monitor's power consumption is the luminance the monitor light gives off. Monitors that incorporate LED backlights are not only energy efficient and better for the environment, but also produce accurate colors and color gamut. Have more color gamut increases the range of colors that are available on the monitor.

These rugged monitors have taken into account of outdoor-settings and highly lit environments as well as optical bonding. Acnodes HMI monitors include options for high brightness features to compensate for highly lit environments like in sunlight. Optical bonding is useful for touch screen monitors that are not weatherproof or ready for extreme environments. Optical bonding uses silicone or urethane to cover the LCD for better protection against harmful substances like dust and moisture. It can also improve the LCD's ability to endure shocks and vibrations. And finally, optical bonding does not just protect the LCD physically, it allows for clearer views of the screen by removing internal reflections. Optical bonding with high brightness (1000-nit) gives users excellent visibility.

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