



## 12.1" Industrial Grade NEMA 4 (IP65) LCD Flat Panel Displays

### Model AS121P4



AbraxySys Industrial LCD Flat Panel Displays are ideally suited for various harsh environments where dust, dirt, moisture, splashing water, hose directed spray, and various other caustic contaminants like oil, chemicals, etc.

Model AS121P4 is a high-quality industrial LCD system offering NEMA 4 (IP65) level protection at the front bezel. The product boasts a 12.1" display size with 1024 x 768 pixels, 400 NITS brightness and 500:1 contrast ratio. The unit is constructed of an all steel nickel plated rear chassis design and aluminum gasket-sealed front bezel. Model AS104P4 rugged panel mount display is designed to provide hassle free and easy integration. The unit features three mounting locations per side allowing for super-sealed panel mount protection.

#### PRODUCT SPECIFICATIONS

Display Size	12.1"
Display Type	Active Matrix TFT LCD
Brightness	400 nits (cd/m2)
Contrast Ratio	500:1
Aspect Ratio	4:3
Resolution (Max)	1024 x 768 (XGA)
Colors Supported	16 million
Dot Size	0.207
Viewing Angles	60° up 60° down, 70° left 70° right
Video Inputs	1x DVI & 1x HD15 (VGA) Optional NTSC/PAL, S-video
Power Source	110VAC @ 0.12A, 220VAC @ 0.06A, 12VDC @ 1.5A

## PHYSICAL ATTRIBUTES

Front Bezel	Black Powder-Coated Aluminum
Overall Dimensions W/H/D	12.6 x 10.03 x 2.06 in (320 x 254.8 x 52.4 mm)
Panel Cutout W/H	11.96" x 9.38" (303.8 x 238.3 mm)
Weight	8.8 lbs. (4 Kg)
Sealability	NEMA 4 (IP65)
Warranty Period	3 Years

## ENVIRONMENTAL

Operating Temperature Range	0° to 50°C (32°F to 122°F)
Storage Temperature	-20° to 60° (-4°F to 140°F)
Humidity	5% to 95% RH (non-condensing)
Rating	NEMA 4 (IP65)

## AVAILABLE ADD-ON OPTIONS

Touch Screen Technology (USB or Serial)
Sunlight Readability Technology
NEMA 4X (IP66) Stainless Steel Front Bezel
Extended Operational Temperature Ranges
Optical Bonding
AC or DC Power
Private Labeling Services

## WHAT MAKES A DISPLAY RUGGED?

What exactly is a rugged display? How do you ruggedize your products? How are your displays different than a consumer display? These are questions that often arise when we are talking to potential customers so we thought that we would take the time to address them in this article. There are several key design features that distinguish a rugged display from a similar consumer monitor. Make sure you consider these before purchasing a rugged monitor:

### Metal Enclosure:

Most consumer displays are enclosed in plastic. Plastic is typically not a suitable material for use in a rugged product because it cracks under heavy vibration or shock and has a relatively low melting point compared to metal. It's also more challenging to minimize electro-magnetic interference (EMI) when using a plastic enclosure. As a result, most rugged monitors are housed in a lightweight aluminum enclosure.

### Corrosion & Scratch Resistance:

Most rugged products are housed in a metal enclosure so it's important to coat or seal the metal with a finish that it is scratch and corrosion resistant. This is typically done with powder coating or anodizing. All of

AbraxSys' displays are treated with an industrial grade, high-thermal set powder coating finish. The coating is typically applied electrostatically and is then cured under heat to allow it to flow and form a "skin". It is usually used to create a hard finish that is tougher than conventional paint. There are several advantages of powder coating over conventional liquid coatings: (1) Powder coatings emit zero or near zero volatile organic compounds (VOC), (2) Powder coatings can produce much thicker coatings than conventional liquid coatings without running or sagging, (3) Powder coating overspray can be recycled and thus it is possible to achieve nearly 100% use of the coating, (4) Powder coating production lines produce less hazardous waste than conventional liquid coatings.

**Industrial Components and Conformal Coating:**

A circuit board won't survive in an extreme environment unless it's designed with components that can handle the wide operating temperature that the product may be exposed to. Additionally, certain components and connectors may need to be attached to the board using through-hole components instead of surface mount so that they don't detach from the board in high vibration or shock conditions. All of the components on the circuit boards should be covered with a layer of transparent conformal coating to protect the components against moisture, dust, and external chemicals.

**Optically Bonded Glass with Anti-Reflective Coating:**

When sunlight readability is important or when changing temperatures are commonplace throughout the environment or additional protection is needed at the front LCD window, most consumer displays are not viewable in direct sunlight since they aren't normally used outdoors. Rugged displays are typically used in outdoor environments so they must be designed to be sunlight readable. This is done by attaching a piece of glass to the front of the display that has been covered with a special coating to minimize reflection. Such coatings will typically reduce the glare and reflection on the glass by 95%. This glass also protects the LCD from the elements and increases the contrast of the display.

**Options:**

Many traditional displays (both consumer and rugged) are designed and offered in a manner which limits the amount of add-on features available. AbraxSys realizes that each customer's application is unique and as such has engineered its products to be very versatile and configurable. A multitude of various optional features are available for ALL of its products without the need to totally customize from scratch each and every model for each and every environment.



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