Marine ECDIS Navigation Systems

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eAutomation/HMI
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What’s ECDIS ??

- Electronic Chart Display and Information Systems (ECDIS) are computer-based navigation systems that integrate information from GPS and automatic identification systems (AIS). Advantech's ECDIS solution combines HMI, UNO and EKI products to create a reliable navigation solution for marine vessels of all kinds.
World Marine Market

- 2007 boating industry totals its activity in the States: $1.6 Billion
- ...96,000 boats are in used in the States.....
  
  Source: Connecticut Marine Trade Association

- ...85% market share of Marine in Asia, Europe, and N. America....
  
  Source: Douglas-Westwood Associates

![Geographic segmentation of the $747 bn global marine market](image)

Fig. 1: Geographic segmentation of the $747 bn global marine market
Source: Douglas-Westwood Associates
ECDIS Navigation System Architecture

FPM-8192V
19" SXGA Transflective Marine Grade Monitor with Resistive Touchscreen

FPM-8232V
23" UXGA Transflective Marine Grade Monitor with Resistive Touchscreen

Open eAutomation, Boundless Integration
Marine Grade Monitors

**FPM-8192V** - 19” SXGA Transflective Marine Grade Monitor with Resistive Touchscreen

- **FPM-8192V-R1AE**
  19” SXGA Marine Grade Monitor w/ TS (RS232)

- **FPM-8192V-X0AE**
  19” SXGA Marine Grade Monitor

**FPM-8232V** - 23” UXGA Marine Grade Monitor with Direct-VGA, S-Video and DVI Ports

- **FPM-8232V-X0AE**
  23” UXGA Marine Grade Monitor

**Trusted ePlatform Services**
Rear I/O View

Certified by DNV standard 2.4, IEC 60945, IACS-E10

FPM-8192V

FPM-8232V
# Marine Grade Display Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunlight Readable Technology</td>
<td>- 5 wire Resistive touchscreen with Anti-reflective glass</td>
</tr>
<tr>
<td></td>
<td>- Sunlight readable display with transflective technology</td>
</tr>
<tr>
<td>Backlight fully dimmable controls</td>
<td>- PWM control inverter</td>
</tr>
<tr>
<td></td>
<td>- Nearly 0% ~ 100% duty ratio</td>
</tr>
<tr>
<td></td>
<td>- Front side control VR knob</td>
</tr>
<tr>
<td>Anti-Corrosion / IP65 Proof</td>
<td>- Anti-salt/corrosion in aluminum housing with coating</td>
</tr>
<tr>
<td></td>
<td>- IP Grade proof in front IP65 &amp; rear IP54</td>
</tr>
<tr>
<td>Wide Voltage Power Input</td>
<td>- 18-36VDC wide voltage range acceptable</td>
</tr>
<tr>
<td>Ease of use OSD front panel control</td>
<td>- VR knob control brightness manually</td>
</tr>
<tr>
<td></td>
<td>- Multi-scan PIP (Picture in Picture) function</td>
</tr>
</tbody>
</table>
OSD Control – PiP & Dim

- **PiP (Picture In Picture)**
  - Allow dual input indicate in one display
  - Gathering piloting information

- **Dimming Knob for 0~100% brightness**
  - Reducing backlight of display for security while piloting at night time

Navigate Indicate (Through VGA Input)

Video Indicate (Through Video Input)

Under-sea Terrain (Through DVI-D Input)

Trusted ePlatform Services
## Competitor Comparison

<table>
<thead>
<tr>
<th>Photo</th>
<th>Make</th>
<th>Model</th>
<th>LCD Panel</th>
<th>Power Supply</th>
<th>Signal Inputs</th>
<th>PIP</th>
<th>Certification</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advantech</td>
<td>FPM-8192V</td>
<td>19&quot; Transflective 1280*1024 TFT LCD</td>
<td>24 VDC</td>
<td>DVI-D, RGB</td>
<td>Yes</td>
<td>DNV, EN60945</td>
<td><strong>$2,650</strong></td>
</tr>
<tr>
<td></td>
<td>Lauer</td>
<td>MT 219 Nautic</td>
<td>19&quot; 1280*1024 TFT LCD</td>
<td>24VDC or 115/230 VAC</td>
<td>DVI-I, RGB-in, RGB out</td>
<td>-</td>
<td>DNV, BV, ABS, GL, LR, EN60945,</td>
<td><strong>$3,960</strong></td>
</tr>
<tr>
<td></td>
<td>Baytek</td>
<td>BPM-DA</td>
<td>19&quot; 1280*1024 TFT LCD</td>
<td>24/48 VDC</td>
<td>DVI-I RGB in, RGB out</td>
<td>-</td>
<td>EN60945</td>
<td><strong>$4,005</strong></td>
</tr>
<tr>
<td></td>
<td>Hatteland</td>
<td>JH 19T14 MMD</td>
<td>19&quot; 1280*1024 TFT LCD</td>
<td>24VDC or 115/230 VAC</td>
<td>DVI-I, RGB in, RGB out, USB I/O</td>
<td>Yes</td>
<td>DNV, BV, ABS, GL, ClassNK, EN60945</td>
<td><strong>$6,247</strong></td>
</tr>
</tbody>
</table>

**Higher Specifications with a More Attractive Price!**
Where To Approach ??

Control Room

Bridge

Accommodation

Water level
## Open System Components with DNV Certification

- **DNV standard 2.4** - environmental test specification
- **IEC 60945** - for maritime navigation and radio communication equipment and systems
- **IACS-E10** - Unified environmental test specification for testing procedure for electrical, control and instrumentation equipment, marine computers and peripherals covered by classification

### Location Classes Selection Guide

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Location within main area</th>
<th>Machinery spaces</th>
<th>Control room, Accommodation</th>
<th>Bridge</th>
<th>Pump room, Halls, Rooms with no heating</th>
<th>Open Deck</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperatures</strong></td>
<td>Inside cubicles, desk, etc. with temp. rise of 6°C or more</td>
<td>Ambient Temp. +5°C to 70°C</td>
<td>Ambinet Temp. +5°C to 70°C</td>
<td>Ambinet Temp. +5°C to 70°C</td>
<td>Ambinet Temp. +5°C to 70°C</td>
<td>Ambinet Temp. +5°C to 70°C</td>
</tr>
<tr>
<td>All other locations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>Location where special precautions are taken to avoid condensation/condensed water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All other locations</td>
<td></td>
<td></td>
<td>up to 95% at all relevant temp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vibration</strong></td>
<td>On machinery such as internal combustion engines, compressors, pumps, including piping on such machinery</td>
<td>Frequency range: 3 - 25Hz, Amplitude: 1.6 mm (peak value) Frequency range: 25 - 100Hz, Acceleration amplitude: 4.0 g</td>
<td></td>
<td></td>
<td>Frequency range: 3 - 25Hz, Amplitude: 1.6 mm (peak value) Frequency range: 25 - 100Hz, Acceleration amplitude: 4.0 g</td>
<td></td>
</tr>
<tr>
<td>Mast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Frequency range: 3 - 13.2Hz, Amplitude: 1.0 mm (peak value) Frequency range: 13.2 - 50Hz, Acceleration amplitude: 2.1 g</td>
<td></td>
</tr>
<tr>
<td>All other locations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EMC</strong></td>
<td>All locations within specified main areas</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td><strong>Enclosures</strong></td>
<td>Submerged application</td>
<td>IP68</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below floor plates in engine</td>
<td>IP68</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All other locations</td>
<td>IP44</td>
<td>IP22</td>
<td>IP22</td>
<td>IP44</td>
<td>IP68</td>
<td></td>
</tr>
</tbody>
</table>
IACS-E10 Association

IACS-E10 included below associations. DNV is more popular one in this market. Advantech can support to transfer from DNV to below anyone

- ABS (American Bureau of Shipping) 美國船級協會
- BV (Bureau Veritas) 法國船級協會
- CCS (China Classification Society) 中國船級協會
- DNV (Det Norske Veritas) 挪威船級協會
- GL (Germanischer Lloyd) 德國船級協會
- KR (Korean Register of Shipping) 韓國船級協會
- LR (Lloyd's Register) 英國船級協會
- NK (Nippon Kaiji Kyokai) 日本船級協會
- RINA (Registro Italiano Navale) 義大利船級協會
- RS (Russian Maritime Register of Shipping) 蘇聯船級協會
**No. A-11100 DNV Certified**

http://exchange.dnv.com/tari/

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### Approved Products and Manufacturers

This database provides you with more than 13,000 certificates issued by DNV within the marine and offshore area. The certificates contain information about products and manufacturers found to comply with international standards, regulations and the DNV Rules. See "Info" for more details.

(Certificates last updated: 2009-01-20)

- Type Approval / Type Examination
- Design Assessment for Type Approval
- Marine Equipment Directive (MED)
- Recreational Craft (RCO) / Type Examination
- Maritime and Coastguard Agency (MCA/USA)
- Pressure Equipment Directive (PED)
- Approval of Manufacturers

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<table>
<thead>
<tr>
<th>Company</th>
<th>Country</th>
<th>Certificate</th>
<th>Type Designation</th>
<th>Product line/areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADVANTECH CO. LTD.</td>
<td>Taiwan (TWN)</td>
<td>A-11100</td>
<td>Industrial Monitor</td>
<td>Peripheral Equipment</td>
</tr>
</tbody>
</table>

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### Product description

Advantech CO., LTD. TFT LCD Industrial Monitors as listed below:

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Enclosure class</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPM-5192V</td>
<td>19.0 inch Marine Bridge System Display</td>
<td>C / IP66 (front panel)</td>
</tr>
<tr>
<td>FPM-5252V</td>
<td>25.1 inch Marine Bridge System Display</td>
<td>D / IP44 (front panel)</td>
</tr>
</tbody>
</table>

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**Open eAutomation, Boundless Integration**