

# MPC-2190 Series

## 19 inch ECDIS color calibrated and fanless panel computers



- > 19 inch panel computer
- > Color calibrated for ECDIS compliant
- > Fanless system design with FloTHERM®
- > SavvyTouch Controls™
- > 3rd Generation Intel® Core™ to Celeron® processor (Default: Celeron® 1047UE, 1.40 GHz with Intel® HD Graphics)
- > Built-in NMEA0183 and 3-in-1 software selectable RS-232/422/485 interfaces (DI/DO and LPT available on request)
- > Multi-power supplies (AC & DC)
- > Optical bonded and touch panel models available on request



### Introduction

The MPC-2190 series of panel computers features an Intel 3rd generation processor matched to 4 GB of system memory, delivering a reliable, high-performance platform of wide versatility for use in industrial marine environments. With its two RS-232/422/485 serial ports, four NMEA 0183 ports, and two Gigabit Ethernet LAN ports, the MPC-2190 panel computer supports a wide variety of serial and marine-specific interfaces as well as high speed IT communications, all with native network redundancy.

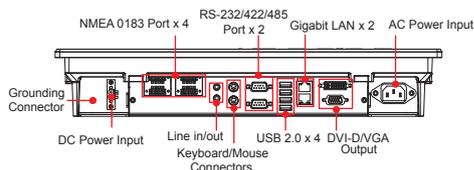
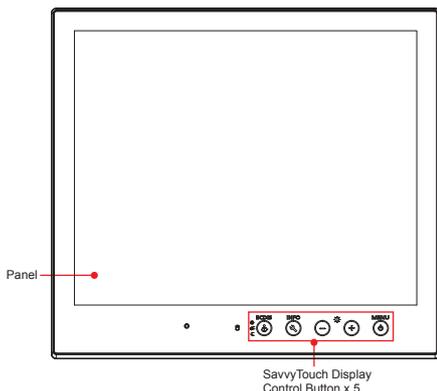
The MPC-2190 series comes with a range of standard display enhancements useful in industrial environments (including full range dimming, wide viewing angles, and optional optical bonding), as well as a few innovations especially deployed for maritime environments: user-friendly OSD controls, called SavvyTouch, featuring a proximity sensor for convenient adjustment in dark situations, immediate BIOS-level reports on hardware status (useful for determining why

a machine will not boot up), and a quick-switch ECDIS button (for color-calibrated ECDIS models only) that allows instant brightness adjustments to any of the three pre-set calibrations dictated by the ECDIS standard. In addition to all of this, the MPC-2190 series features a modular design that makes device integration into either new or existing industrial systems much simpler, reducing deployment costs and overall time-to-market.

The MPC-2190 series of panel computers are compliant with several industrial marine standards, such as IEC 60945, IEC 61162, IEC 61174, DNV, and IACS E10, verifying their resilience in maritime operations. The IP54 (front panel) and IP22 (rear panel) rated unibody shell provides strong additional protection against the harsh conditions found in marine environments.

Color-calibrated ECDIS models are available upon request, providing an ideal HMI alternative for ECDIS charting and navigation stations.

### Appearance



## Specifications

### Computer

**CPU:** Intel Celeron® Processor 1047UE (2M Cache, 1.4 GHz)  
**OS:** Windows 7 Professional, Windows XP Embedded, Windows Embedded Standard 7, Windows XP SP3, Linux Debian 7 (models with OS pre-installed available by request)  
**System Chipset:** Intel BD82HM65 platform controller hub  
**System Memory:** 4 GB pre-installed: 1 slots of 4 GB DDR3-1066 204 pin SO-DIMM SDRAM  
**Storage:** 2 SATA-III connectors  
**USB:** USB 2.0 hosts x 4, type A connectors, supporting system boot up  
**BIOS:** 64 Mbit Flash BIOS SPI type, ACPI function supported  
**Graphics Controller:** Intel HM65 Express chipset built-in  
**Video Output:** DVI-D x 1, VGA x 1 (female)  
**Digital Input/Output:** 4 DIs, 4 DOs, or 8 DIs, 8 DOs (optional)  
**LPT Port:** 1 (available on request)  
**Buzzer:** 75 to 85 db (IEC 60945 complied)

### Other Peripherals

**Audio:** Line-in and line-out interface, with 3.5 mm mini jack  
**KB/MS:** 2 PS/2 interface supporting standard PS/2 keyboard and mouse

### Display

**Panel Size:** 19 inch wide viewable image size  
**Aspect Ratio:** 5:4  
**Pixels:** 1280 x 1024 (SXGA)  
**Response Time:** 20 ms  
**Contrast Ratio:** 2000:1  
**Light Intensity:** 300 cd/m<sup>2</sup>  
**Viewing Angles:** 178°/178°  
**Active Display Area:** 376.32 (H) x 301.06 (V) mm  
**Max Colors:** 16.7M (8 bits/color)  
**Display Interface:** Dual channel LVDS  
**Resolution:**

- VGA: 640 x 480
- SVGA: 800 x 600
- XGA: 1024 x 768
- SXGA: 1280 x 1024

**Panel Type:** MVA

### Ethernet Interface

**LAN:** 2 auto-sensing 10/100/1000 Mbps ports (RJ45)  
**Magnetic Isolation Protection:** 1.5 kV built-in

### Serial Interface

**Serial Standards:** 2 RS-232/422/485 ports, software-selectable (DB9 male)

### Serial Communication Parameters

**Data Bits:** 5, 6, 7, 8  
**Stop Bits:** 1, 1.5, 2  
**Parity:** None, Even, Odd, Space, Mark  
**Flow Control:** RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485  
**Baudrate:** 50 bps to 115.2 Kbps (supports non-standard baudrates; see user's manual for details)

### Serial Signals

**RS-232:** TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND  
**RS-422:** TxD+, TxD-, RxD+, RxD-, GND  
**RS-485-4w:** TxD+, TxD-, RxD+, RxD-, GND  
**RS-485-2w:** Data+, Data-, GND

### NMEA Interface

**Serial Standards:** 4 NMEA 0183 ports  
**Base Serial Standard:** RS-422  
**Optical Isolation Protection:** ±6kV contact discharge, ±8kV air discharge  
**Voltage Differential:** -15 V to + 15 V

**Baudrate:** 4800 bps

**Data Bits:** 8

**Stop Bits:** 1, 1.5, 2

**Parity:** None

**Handshake:** None

### LEDs

**System:** Storage, Power

**LAN:** 100M/Link x 2, 1000M/Link x 2 (on connector)

### Front Panel

**LEDs:** MENU, Brightness, INFO, ECDIS, Day/Dusk/Night, Storage

**Smart OSD:** Yes

### Physical Characteristics

**Housing:** Aluminum sheet metal

**Weight:** 7.8 kg

**Dimensions:** 429 x 387 x 74.5 mm (16.89 x 15.24 x 2.93 in)

**Mounting:** Flush mounting

**System Cooling:** Fanless thermal design

### Environmental Limits

**Operating Temperature:** -15 to 55°C (5 to 131°F)

**Storage Temperature:** -20 to 60°C (-4 to 140°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

**IP Rating:**

• Front: IP 54

• Rear: IP 22

**Anti-Vibration:**

• 0.7 g @ DNV 2.4 (Class A), sine wave, 2-100 Hz, 1 Oct./min., 1.5 hr per axis

• 1 Grms @ DNV 2.4, random wave, 3-100 Hz, 2.5 hr per axis

• 2.1 g @ DNV 2.4 (Class C), sine wave, 2-50 Hz, 1 Oct./min., 1.5 hr per axis

### Power Requirements

**Input Voltage:** 115 to 230 VAC, 50/60 Hz, 24 VDC

**Power Consumption:** 40 W to 125 w (max.)

### Standards and Certifications

**Safety:** UL/cUL, CCC

**EMC:** EN 55022 Class B, EN 55024-4-2, EN 55024-4-3, EN 55024-4-4, FCC Part 15 Subpart B Class A

**Marine Standard:** IEC-60945 4th, IEC-61162, IEC-61174

**Marine Type Approval:** DNV 2.4 and IACS E10, ABS, MR-A003

**Green Product:** RoHS, cRoHS, WEEE

### Reliability

**Automatic Reboot Trigger:** Built-in WDT (watchdog timer) supporting 1-255 levels for time interval system reset, software programmable

**MTBF (mean time between failures):** 202,309 hrs

### Warranty

**Warranty Period:** 1 year

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

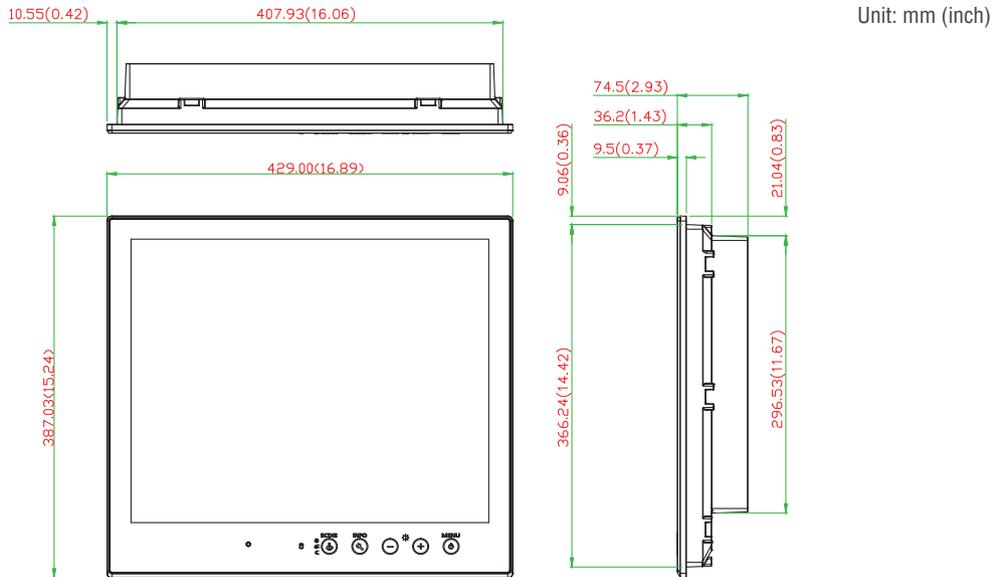
We recommend taking the following precautions to minimize heat build-up within the display:

- Position the display within  $\pm 40^\circ$  of the vertical.
- Install an external fan to increase airflow upwards through the display if (a) the display is not positioned within  $\pm 40^\circ$  of the vertical, (b) the ambient temperature exceeds  $25^\circ\text{C}$ , or (c) the display is used in a location with minimal ventilation.

**Important Safety Precaution:**

Even though the display is rated to operate within the IEC 60945 standard of  $-15$  to  $55^\circ\text{C}$  for bridge applications, it is best to ensure that the ambient temperature does not exceed  $25^\circ\text{C}$ . Doing so will increase the life of your display and minimize service costs.

**Dimensions**



**Ordering Information**

**Available Models**

**MPC-2190X:** 19 inch fanless panel computer with Intel Celeron 1047UE 1.4 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit LAN ports, USB 2.0 ports, dual AC/DC power inputs, tape bonding

**MPC-2190Z:** 19 inch fanless panel computer with Intel Celeron 1047UE 1.4 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit LAN ports, USB 2.0 ports, dual AC/DC power inputs, tape bonding, projected capacitive touch screen

**MPC-2197X:** 19 inch fanless panel computer with Intel Core i7 2610UE 1.5 GHz processor, NMEA 0183, RS-232/422/485 serial ports, Gigabit LAN ports, USB 2.0 ports, dual AC/DC power inputs, tape bonding

Customized Options:

- Optical bonding
- 2.5" HDD/SSD drives
- CPU
- RAM
- Operating system

**Package Checklist**

- 1 MPC-2190 Series panel computer
- 1 terminal block for DC power input
- 4 5-pin Euroblock terminals for NMEA 0183 v2 interfaces
- Documentation and driver DVD
- Quick installation guide (printed)
- Warranty card