

iPC Series & nPC300
Ultra-Thin Industrial Computers w/ i-Processors

User's Guide

Document No. DOC-IPC-003,
User Manual iPC-Series & nPC300, Rev A Rel. 10-2012

Nematron

Revision List

Revision Number	Description of Change	Release Date
R1	Preliminary Release	8-2012
A	Initial Release	10-2012
B	Added ATOM N2800 and –EN Options	12-2013

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WARRANTY

Nematron warrants to Customer that the Products will be free from defects in material and workmanship under normal use and service for a period of two years from date of invoice. Customer's exclusive remedy for breach of this warranty is that Nematron will either (i) repair or replace, at its option, any Product which fails during the warranty period because of such defect (if Customer promptly reported the failure to Nematron in writing) or, (ii) if Nematron is unable to repair or replace, Nematron will refund the purchase price of the Product upon its return to Nematron. This warranty does not apply to any Product which has been subjected to misuse, abnormal service or handling, or which has been altered or modified in design or construction, or which has been serviced by anyone other than Nematron. The warranty set forth herein is in lieu of, and exclusive of, all other warranties, express or implied.

Chapter 1 - Introduction

The iPC Series products are high performance embedded ultra-thin industrial computers specifically designed for harsh industrial environments including Class I & II, Division 2 Hazardous Locations.

The iPC Series offers four versions with 12.1" SVGA (800 x 600), 15" XGA (1024 x 768), 17" SXGA (1280 x 1024), or 19" SXGA (1280 x 1024) LED backlit TFT Color LCD panels. A stand alone "node" version without an integrated display is also available (nPC300). These high-performance embedded industrial PCs offer processor options up to a state of the art Intel Core i7 Processor and DRAM options up to 4 GB. With a multitude of I/O included on the standard unit many automation applications are ideally suited for use with this series. The Ultra-Thin panel depth (2.7" to 3.42") also makes this series ideal for space constrained applications. With Class I and II Division 2 approvals this industrial PC makes installation in Hazardous Locations applications simple.

Features

- Processor Options up to Intel i7 options
    - Intel ATOM N2800 – 1.86 GHz, 1 MB Cache, 2 Cores & 4 Threads, Fanless
    - Intel Celeron P4500 – 1.86 GHz, 2 MB Cache, 2 Cores & 2 Threads
    - Intel i5-520M – 2.4 GHz, 3 MB Cache, 2 Cores and 4 Threads
    - Intel i7-620M – 2.66 GHz, 4 MB Cache, 2 Cores and 4 Threads
- DRAM Options up to 4 GB
- 80 GB (minimum) easily removable SATA solid state drive
    - Larger Solid State SATA drive upgrade options
    - 500 GB (min) SATA hybrid hard drive with Solid State Adaptive Memory Cache Option
- Numerous I/O Ports
    - Two Gigabit Ethernet ports
    - 6 USB 2.0 ports (4 on N2800 CPU option)
    - 2 RS-232 serial port
    - 1 RS-422/485 Serial port
    - Analog VGA or HDMI port for dual screen applications
- UL 508 and ANSI/ISA 12.12.01-2012 listed for Hazardous Locations: Class I, Division 2, Groups A, B, C, D and Class II, Division 2, Groups F and G, Class III when installed in a NEMA Type 1/4/4x/12 enclosure (N/A to Enclosed Options)
- NEMA 4/4X/12 front bezel
- 2-Year warranty
- European CE mark compliant
- Contains no Lead
- Integral 100 -240 VAC power supply
- Simplified installation with no studs
- Ultra-Thin design – less than 3.25" behind front panel
- VESA compliant – all modes up to SXGA, 75Hz (SVGA on 12" and XGA on 15" unit)
- Optional 5-wire resistive touch screen
- Optional NEMA 1 Enclosure
- Optional 304 stainless steel front bezel
- Optional iPC1900 Rack Mount front bezel (not NEMA sealed)
- Optional 24 VDC input power
- Windows 7 Professional 32-bit standard
    - Windows XP Professional 32-bit optional
    - Windows 7 Ultimate 64-bit (includes multi-language support) optional

Specifications

Front Panels

The iPC series has NEMA 4/4X/12 sealed front panels when mounted in an appropriate NEMA rated enclosure. The front panels and required cutouts are exactly the same as the appropriate size ePC-Series or M-Series units for easy migration to the iPC-Series from the other units See Chapter 2 for more details on installation and selection of an appropriate enclosure. All four sizes have very similar front panels with different dimensions.

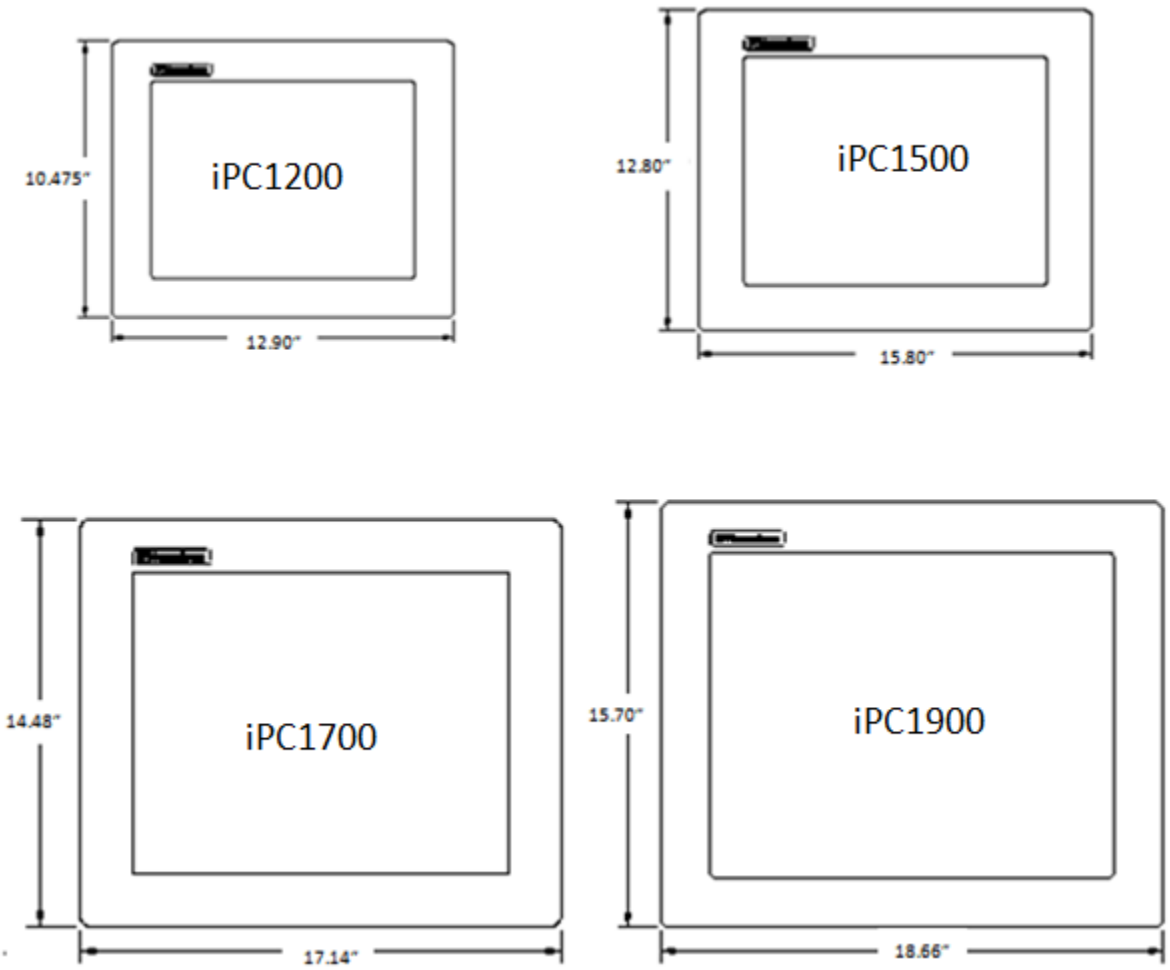


Figure 1.0: iPC Series Front Panel Comparison

The standard front panels are powder coated aluminum. The optional Stainless Steel front panel is type 304 and will not contain a logo pocket or logo on the front. The window area is clear polycarbonate when ordered without a touchscreen. The touchscreen option is chemically strengthened glass covered by a polyester overlay. The polyester overlay has better resistance to chemicals than the polycarbonate window. Depending on the chemicals involved in your application consideration should be given to choosing the proper window material. In addition there is a Rack Mount front panel option for the iPC1900 (19" unit) only. This front panel is powder coated aluminum and is 9U high with four rack mount spaced counter-bored mounting holes on each side of the panel. This panel is not NEMA sealed when installed.

I/O Panel

All four versions of the iPC series and the nPC300 have a common Input/Output configuration. Figure 2.0 shows the base configuration of the iPC-Series (not Fanless) units.

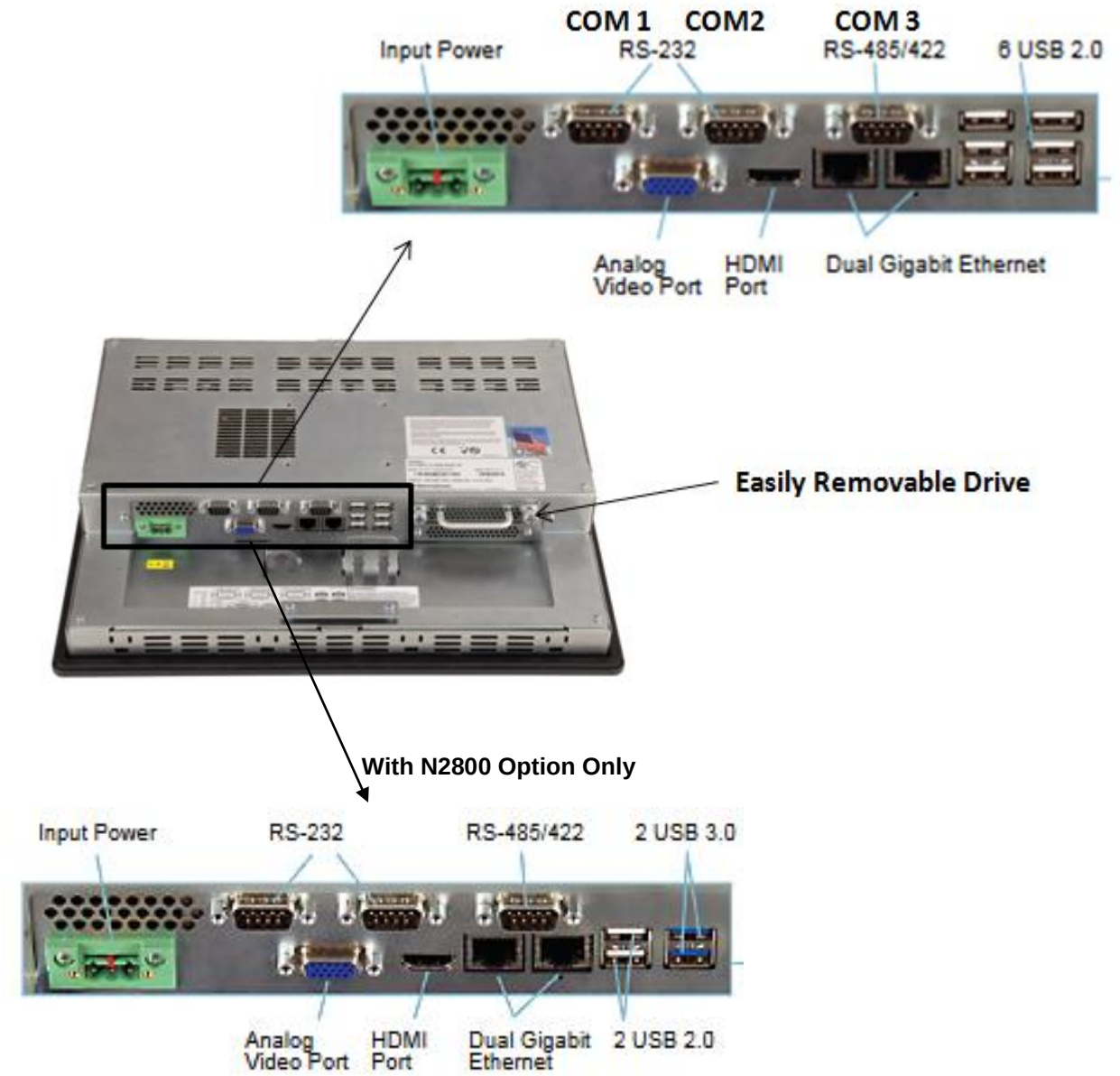


Figure 2.0: iPC Series I/O configuration

Feature	Description
Analog Video Port	A standard 15-pin analog VGA is provided. This connection allows a second screen to be easily added to the iPC. In addition the iPC allows this second screen to be utilized in an extended desktop configuration. See CPU manual section on configuring the video for more details on this feature.
HDMI Port	An HDMI port is provided. This connection allows a second screen to be easily added to the iPC. In addition the iPC allows this second screen to be utilized in an extended desktop configuration. See CPU manual section on configuring the video for more details on this feature.
Com 1	Com 1 is a standard 9-pin RS-232 serial port.
Com 2	Com 2 is a standard 9-pin RS-232 serial port.
Com 3	Com 3 utilizes a standard 9-pin serial port. The iPC default configuration for this port is RS-485 or RS-422. This port automatically switches between 485 and 422 depending on the connections utilized. See CPU manual for more detailed instructions and information on the configuration of this port.
Gigabit Ethernet	Two Ethernet ports are provided that are both capable of 10/100/1000 Base-T communications.
USB 2.0	Six ports capable of USB 1.1 and USB 2.0 are provided. (2 USB 2.0 and 2 USB 3.0 on ATOM N2800 unit only)
Input Power	Input power, whether AC or DC, is supplied via a Phoenix connector. See Chapter 2 on Installation for more details on how to wire this connection.
Easily Removable SATA Drive	An easily removable high speed Serial ATA drive is provided. The captive retention hardware, lack of cumbersome cables, and handle make changing hard drives an easy task.

DISPLAY

	ePC1200	ePC1500	ePC1700	ePC1900
Display Diagonal	12.1” (307.34mm)	15.0” (381.0mm)	17.0” (431.8mm)	19.0” (482.6mm)
Display Size (Active Area HxV)	9.69” x 7.26” (246.0mm x 184.5mm)	11.97” x 8.98” (304.0mm x 228.1mm)	13.30” x 10.64” (337.8mm x 270.3mm)	14.82” x 11.85” (376.4mm x 301.0mm)
Native Resolution	SVGA, 800 x 600	XGA, 1024 x 768	SXGA, 1280 x 1024	SXGA, 1280 x 1024
Displayable Colors	16M	16M	16M	16M
Brightness, Typical	450 Nit	400 Nit	350 Nit	300 Nit
Contrast Ratio, Typical	600:1	600:1	1000:1	2000:1
Horizon/Vertical View Angle, CR>5, Typical	140°/120°	140°/120°	170°/170°	178°/178°
Backlight Life, Typical	50,000 hrs	50,000 hrs	50,000 hrs	50,000 hrs

TOUCH SCREEN (Optional)

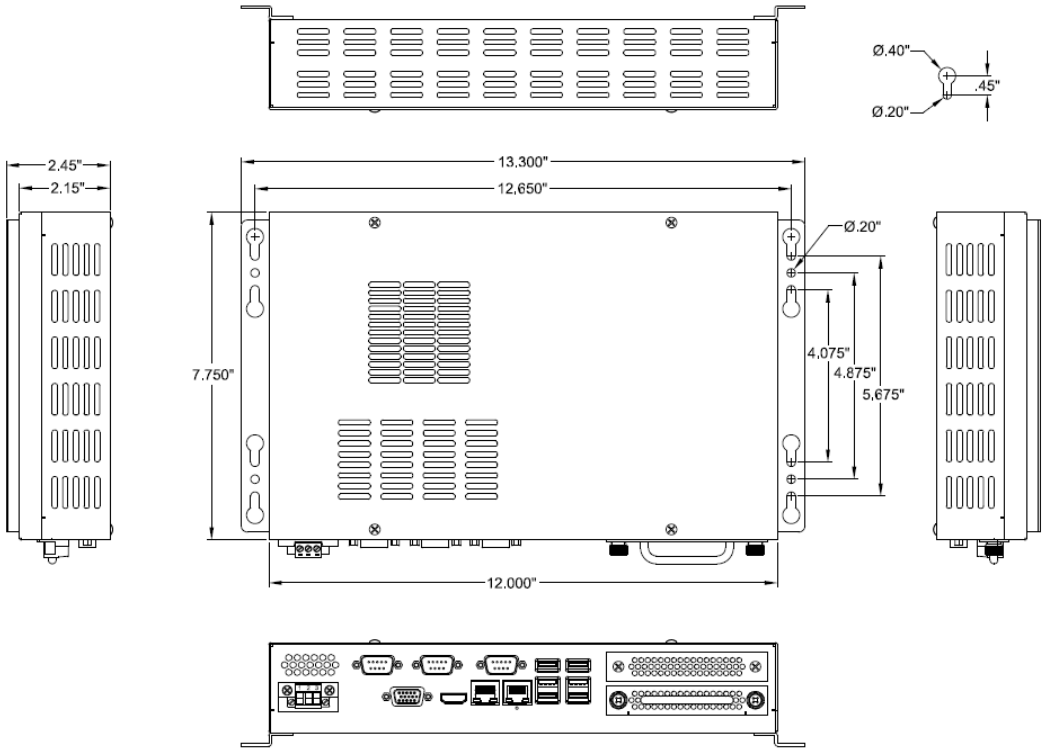
Touch Screen Technology	5- Wire Analog Resistive
Interface	Internally via USB
Resolution	4096 x 4096
Positional Accuracy (Maximum Error)	0.18” (0.19” ePC1900) 4.57mm (4.83mm ePC1900)
Positional Accuracy (Standard Deviation of Error)	< 0.08” (< 2.0 mm)
Expected Life	>35,000,000 Activations

PHYSICAL

	iPC1200	iPC1500	iPC1700	iPC1900
Over All Dimensions (H x W x D)	10.475” x 12.9” x 3.42” (266.1mm x 327.2mm x 86.75mm)	12.80” x 15.80” x *2.95*” (325.1mm x 401.3mm x 74.9mm)	14.48” x 17.14” x 3.10” (367.8mm x 442.0mm x 78.7mm)	15.70” x 18.66” x 3.25” (398.8mm x 474.0mm x 82.6mm)
Panel Mounting Depth	3.165” (80.4mm)	2.70” (68.6mm)	2.90” (73.7mm)	3.00” (76.2mm)
Cutout Dimensions (H x W)	9.68” x 12.10” (245.9mm x 307.3mm)	12.00” x 15.00” (305mm x 381mm)	13.70” x 16.35” (348mm x 415.3mm)	14.90” x 17.75” (378.5mm x 450.9mm)
Weight	10.5 lbs (4.76kg)	15.0 lbs (6.80kg)	19.0 lbs (8.63kg)	22.5 lbs (10.22kg)
Shipping Weight	14.0 lbs (6.35kg)	19.5 lbs (8.84kg)	23.5 lbs (10.67kg)	27.5 lbs (12.49kg)
Option Weight (-SS)	+2.5 lbs (1.13kg)	+3.5 lbs (1.58kg)	+3.75 lbs (1.70kg)	+4.0 lbs (1.81kg)

The nPC300 is essentially the rear of the panel mount versions. It is supplied with mounting brackets so that it can be easily attached to wall or shelf in a NEMA 1 or better enclosure. The nPC300 is not a standalone device and must be installed in an enclosure to protect operators.

The dimensions of the nPC300 unit are as follows:



ELECTRICAL

AC Input Voltage	100 – 240 VAC, 50/60 Hz
AC Input Current	1.0 A Maximum
DC Input Voltage (Optional)	18 – 36 VDC
DC Input Current (Optional)	6.0 A Max @ 24VDC
Input Power	nPC300 – 60 W Typical* (40 W for N2800 Option) iPC1200 - 70 W Typical* (50 W for N2800 Option) iPC1700 – 80 W Typical* (60 W for N2800 Option) iPC1700 – 85 W Typical* (65 W for N2800 Option) iPC1900 – 90 W Typical* (70 W for N2800 Option)

* Typical Power is measured without any additional I/O or expansion options. Any additional I/O installed during application can increase this value.

ENVIROMENTAL

Operating Temperature	0°C to 55°C (50°C for Enclosed Options
Non-Operating Temperature	-20°C to 60°C
Operating & Non-Operating Humidity	20% to 80% RH, non-condensing
Operating Shock*	15g peak acceleration, 11msec
Non-Operating Shock	30g peak acceleration 11msec
Operating Vibration (5-2000 Hz) [1]	0.006” peak to peak displacement, 1g maximum acceleration
Non-Operating Vibration (5-2000 Hz) [1]	
Operating Altitude [2]	Sea level – 10,000 feet
Non-Operating Altitude [2]	Sea level – 40,000 feet

1 Shock and Vibration specifications are established using Solid State drives and non-rotating media.
2 Altitude Specification is established by using all internal component specifications.

AGENCY

Front Panel NEMA Rating	NEMA 4/4X/12, IP65
FCC	47 CFR, Part 15, Class A
EU CE Marking Compliance	CE, EN 55022: Class A, EN 61000-3-2: Class A, EN 61000-3-3, EN 61000-6-2,
Safety Agency Approvals	UL 508 Listed, cUL Listed CSA C22.2, #142, ANSI/ISA 12.12.01-2012 Listed* & CSA C22.2, #213*

* See appropriate note below for the applicable unit or option being utilized.

NOTE (PANEL MOUNT VERSIONS):

SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C AND D, CLASS II DIVISION 2, GROUPS F AND G, CLASS III HAZARDOUS LOCATIONS, OR NONHAZARDOUS LOCATIONS ONLY

FOR USE ON A FLAT SURFACE OF A TYPE 1, 4, 4X, OR 12 ENCLOSURE WITH PROVISIONS FOR CLASS I DIVISION 2 WIRING METHODS

TEMPERATURE CODE: T6 (T4A FOR N2800 OPTION)

NOTE (NP300 UNITS):

SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C AND D HAZARDOUS LOCATIONS, OR NONHAZARDOUS LOCATIONS ONLY

FOR USE ON A FLAT SURFACE OF A TYPE 1 ENCLOSURE WITH PROVISIONS FOR CLASS I DIVISION 2 WIRING METHODS

TEMPERATURE CODE: T6 (T4A FOR N2800 OPTION)

NOTE (RACK MOUNT VERSIONS):

SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C AND D, CLASS II DIVISION 2, GROUPS F AND G, CLASS III HAZARDOUS LOCATIONS, OR NONHAZARDOUS LOCATIONS ONLY

FOR RACK MOUNT INSTALLATION ON A TYPE 1 ENCLOSURE WITH PROVISIONS FOR CLASS I DIVISION 2 WIRING METHODS

TEMPERATURE CODE: T6 (T4A FOR N2800 OPTION)

WARNING – EXPLOSION HAZARD – SUBSTITUTION OF ANY COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2

WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOW TO BE FREE OF IGNITABLE CONCENTRATIONS.

WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT THE USB PORTS UNLESS THE POWER HAS BEEN SWITCHED OFF AND THE AREA IS KNOWN TO BE NON-HAZARDOUS

NOTE: (ENCLOSED IPC VERSIONS):

A LISTED VESA STYLE MOUNT SUITABLE WITH A MINIMUM LOAD RATING OF 40 POUNDS SHALL BE USED IN THE END INSTALLATION

FOR USE IN NONHAZARDOUS LOCATIONS ONLY

TYPE 1 ENCLOSURE

Chapter 2 - Installation of Computer

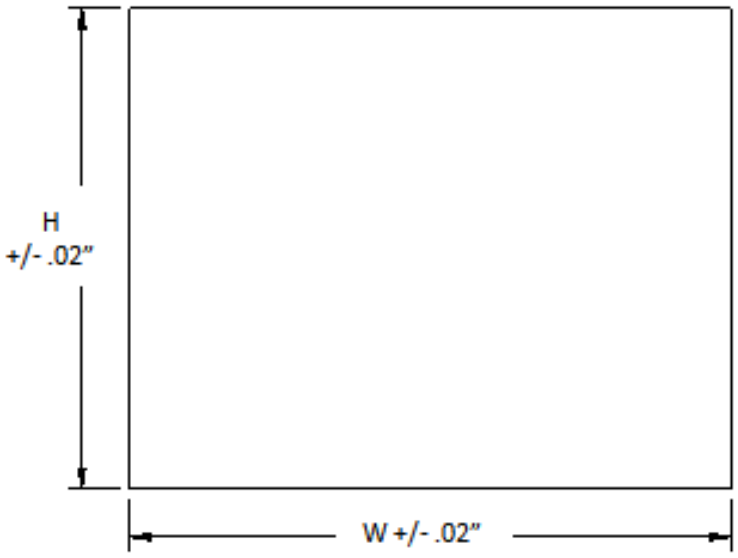
Panel Mount iPC-Series Unit installation

The panel mount versions of the iPC-Series are intended to be mounted in and used where NEMA 1, NEMA 4/4x and NEMA 12 type enclosures are employed. Enclosures made of heavier gauge metal work better because they won't deform or bend as easily when the monitor's sealing gasket is compressed. The monitor meets NEMA 4/12 sealing specifications when properly installed in an approved NEMA enclosure constructed from 14-gauge or heavier steel. The computer uses "U"-shaped clips and a special gasket to achieve the proper seal.

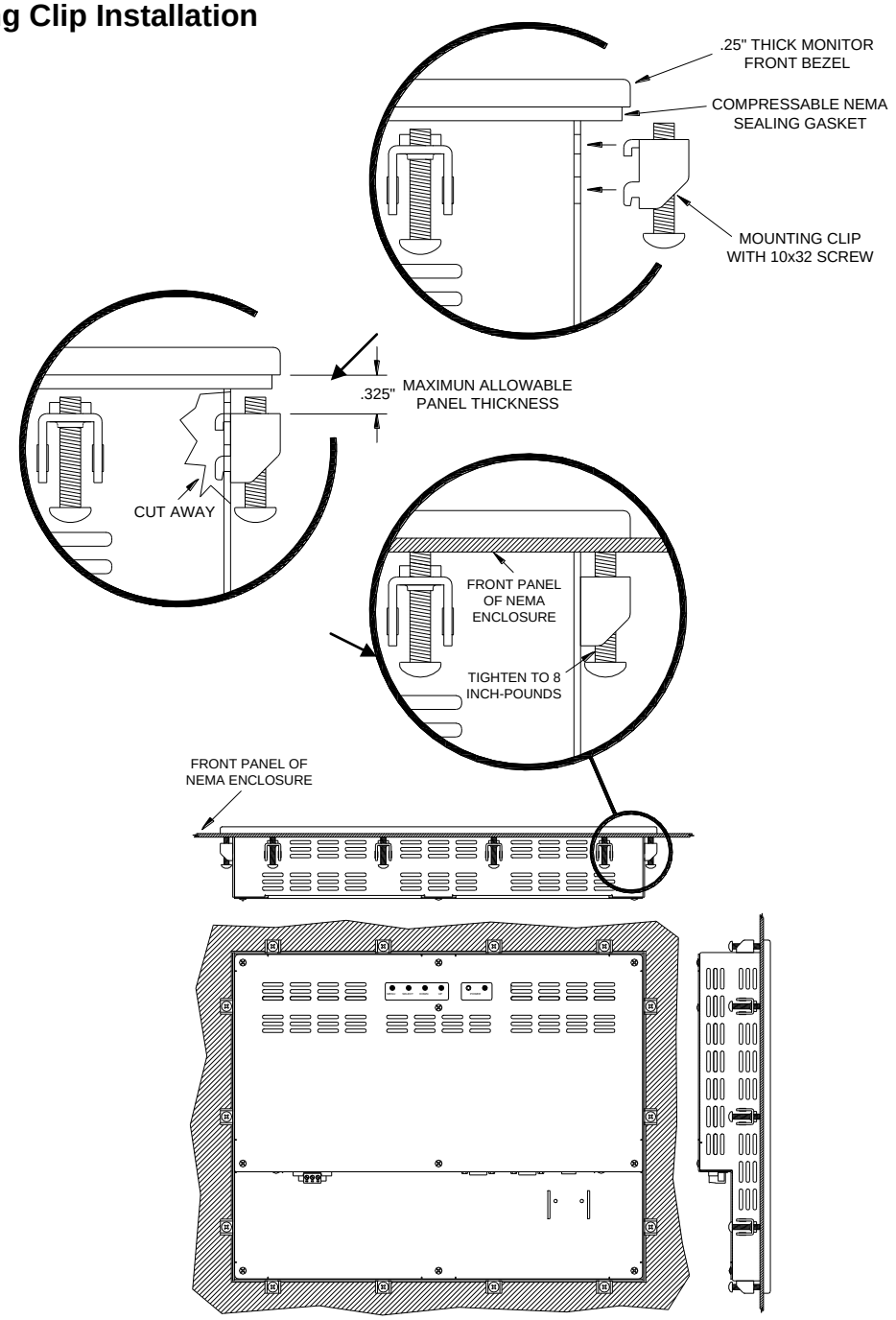
When selecting an enclosure remember to allow adequate space around the rear of the computer for good air flow. Do not block air flow from below or above the monitor. If possible mount the computer in a vertical orientation. The unit is designed to work in environments up to 50 degrees Centigrade ambient temperature inside the enclosure. Remember to account for heat dissipated from other equipment that may be installed inside the same enclosure.

To install the computer, make a cutout according to the diagrams below in one of the walls of your NEMA enclosure. Next hold the unit in place while you install the mounting clips. Tighten the clips to the point were the back of the unit's front bezel just begins to contact the front of the NEMA enclosure. The use of an adjustable torque driver is recommended. The screws should be tightened to 8 inch-pounds. Tighten the clips in a cross pattern. This will help to develop an even pressure on the sealing gasket. **DO NOT OVER TIGHTEN AS DAMAGE CAN RESULT IN THE COMPUTER CAUSING LOSS OF SEALING INTEGRITY.**

	iPC1200	iPC1500	iPC1700	iPC1900
Cutout Dimensions (H x W)	9.68" x 12.10" (245.9mm x 307.3mm)	12.00" x 15.00" (305mm x 381mm)	13.70" x 16.35" (348mm x 415.3mm)	14.90" x 17.75" (378.5mm x 450.9mm)



Mounting Clip Installation



REAR VIEW OF PANEL
MOUNTED *e*PC

NOTE: WHEN INSTALLING THE MOUNTING CLIPS TIGHTEN THE SCREWS TO **8-10 INCH-POUNDS MAXIMUM**. OVERTIGHTENING THE SCREWS WILL RESULT IN A COMPRIMISED NEMA SEAL AND MAY CAUSE TOUCH SCREEN BREAKAGE.

nPC300 Unit Installation

The nPC300 is intended to be mounted on the flat surface on the inside of a NEMA Type 1, 4/4x or NEMA 12 enclosure. See the specifications section for the dimensions and mounting dimensions required for mounting this unit.

When selecting an enclosure remember to allow adequate space around the computer for good air flow. Do not block air flow around the unit except for the mounting surface. The computer can be mounted on a horizontally or vertically to a wall or shelf within the enclosure. The unit is designed to work in environments up to 50 degrees Centigrade ambient temperature inside the enclosure. Remember to account for heat dissipated from other equipment that may be installed inside the same enclosure.

Rack Mount Unit Installation

The iPC1900 with a rack mount front panel is intended to be mounted to a 19.0" wide rack in a NEMA Type 1 or better enclosure. The unit can be mounted using standard rack mount hardware (not supplied) via the eight (4 each side) counter-bored holes in the front of the panel. The front panel is intended to be mounted in a vertical height of 9 U (16.0") on the rack. This unit is not NEMA sealed when mounted like the panel mount versions.

When selecting an enclosure remember to allow adequate space around the rear side of the computer for good air flow. The unit is designed to work in environments up to 50 degrees Centigrade ambient temperature inside the enclosure. Remember to account for heat dissipated from other equipment that may be installed inside the same enclosure.

Enclosed Unit Installation

The enclosed iPC-Series products are intended to be stand-alone NEMA Type 1 units. These are required to be mounted to a VESA style mount with a minimum load rating of 40 pounds. A desktop stand, wall mount, or articulating arms are examples of VESA style mounts that can be utilized. These units are vented for air flow and are not dust or water proof. Care should be taken to not utilize these units in areas where high concentration of particulate matter or moisture are present. If these conditions do exist then the use of the panel mount versions in an appropriate NEMA 4, 4x, or 12 enclosure should be considered. The warranty may be voided if high levels of moisture or particulate matter are determined to be the cause of a failure. The ePC-Series –EN units (except fanless version) have a filter over the CPU fansink to filter incoming air. This filter should be carefully removed and cleaned periodically depending on service conditions. In some applications this may need to be checked and cleaned often.

These units are designed to work in environments up to 50 degrees Centigrade ambient temperature around the enclosure. Impeding the airflow around this unit or clogged filters will severely affect the reliability of the unit by raising the internal temperature. Assure that there is adequate airflow around the unit.

NEMA Type 1 is not sealed against water and/or dust; it is simply provides protection from operators shocking themselves. It also offers a certain amount of fire containment it the event of a catastrophic failure inside the unit. As stated previously NEMA 1 is not waterproof or dust proof and is not intended to be utilized in environments exhibiting high levels of these conditions.

Example of an Enclosed Unit Mounted To an Articulating Arm



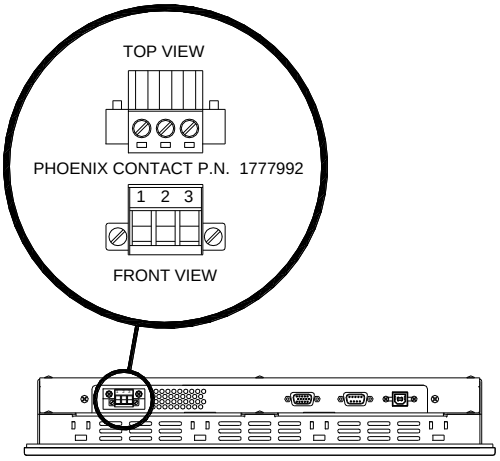
Connecting Power to the iPC-Series

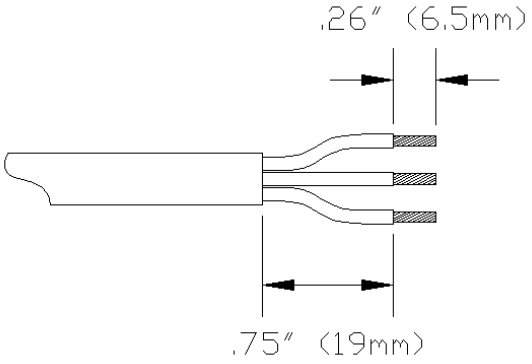
Connecting power to the Panel Mount, Rack Mount, and nPC300 units:

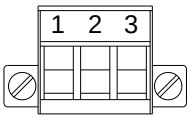
The iPC-Series and nPC300 units are powered from 100-240 VAC, 50/60 Hz or optionally from 24 VDC. ***Damage will occur if 100-240 VAC power is connected to an iPC-Series unit equipped with the 24 VDC input power option.*** iPC-Series equipped units with the 24 VDC option will have a "-DC" suffix in their model number (such as *i*PC1500T-i5-4GB-80SS-W7-DC)

Because the iPC-Series (not –EN option) is UL 1604 listed for Hazardous Location use, (Class I Division2, Groups A, B, C, D; Class II Division 2 Groups F and G: Temperature Code T6 or T4A), the units do not have a power switch for switching off supplied power. Consideration should be give to the installation of an appropriately rated external power switch if the application requires powering off the iPC-Series unit.

Power is connected to the units through a removable Phoenix Contact plug (Phoenix Contact P.N. 1777992) that allows for screw termination of field wiring. This plug is included with each unit and is keyed to prevent installation in a unit with the wrong input voltage rating. **When Field Wiring to these terminals the use of 18 AWG or greater (12 AWG maximum) copper wire with 60ºC or 60/75ºC wire insulation and the terminal tightening torque of 7.0 lb/in. (0.79 Nm) is required.** The terminal screws are shown in "Top View" below. Connect the field wiring according to the appropriate voltage in the table below. Strip the wire insulation back on each conductor **6.5 mm (0.26 in)** and assure that the remaining wire is twisted together, not frayed, and clean. If an outer jacket over each conductor is utilized then strip the outer jacket back an additional **19.0 mm (0.75 in)** as shown in figure below. When installing the conductors take care that there are not any stray strands of wire that can contact an adjoining connection. Tinning of each lead can be utilized to prevent frays if desired. Optionally the included protective cover can be utilized to prevent electrical shocks when handling the power connector and provide strain relief for each conductor connection (see the following section for installation instructions). After the connections are made, make sure the plug retention screws (the two screws shown in the "Front View" below) are securely tightened. This will prevent the plug from pulling out. The use of these screws is mandatory when the unit is utilized in applications requiring hazardous locations approvals.





	PIN NUMBER	100 VAC – 240 VAC INPUT	18 VDC – 36 VDC INPUT
 FRONT VIEW	1	AC Line Input	+ DC Input
	2	AC Neutral Return	- DC Return
	3	Protective Earth Ground	Protective Earth Ground

NOTE: WHEN USING USB CONNECTIONS THE USE OF THE USB RETENTION BRACKET IS REQUIRED FOR HAZARDOUS LOCATIONS AND HIGHLY RECOMMENDED FOR NONHARDAOUS LOCATIONS.

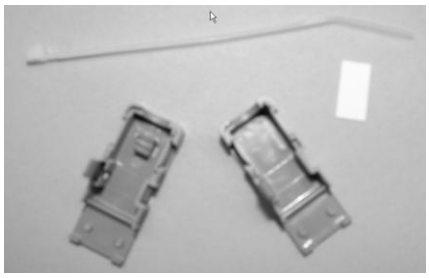
NOTE: TO PREVENT INADVERTENT DISCONNECTION OF VIDEO AND/OR SERIAL TOUCHSCREEN CABLES ASSURE THAT THE THUBSCREWS ARE SUFFICIENTLY TIGHTENED.

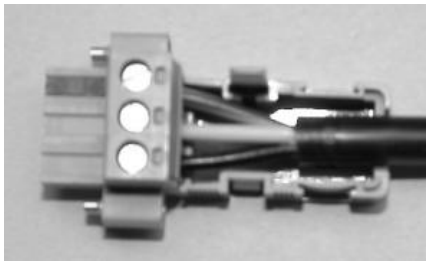
WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOW TO BE FREE OF IGNITABLE CONCENTRATIONS.

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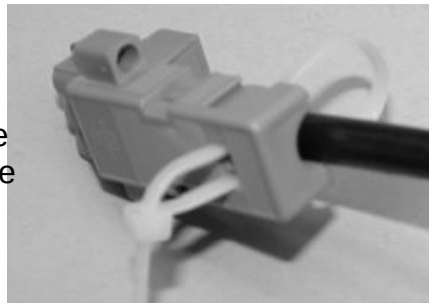
Protective Cover Installation
(Optional if desired)

Step 1: Gather the parts of the protective cover; top shell, bottom shell, label insert, and wire tie. The picture shows wire tie (top), label insert (right), bottom shell (left), and top shell (lower right).

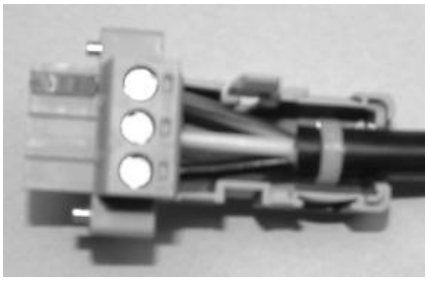




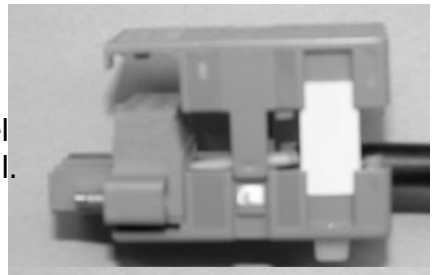
Step 2: Insert your pre-wired connector (with the screws facing up) into the bottom shell. (See manual for cable wiring instructions).



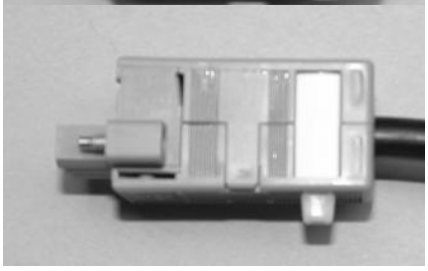
Step 3: Insert the wire tie from the bottom shell, loop around the cable and come back out of the opposite hole in the bottom shell.



Step 4: Tighten the wire tie around the cable and the bottom shell.



Step 5: Seat the top shell onto the bottom as shown. Insert label strip (if desired) in slot on top shell and bottom shell.



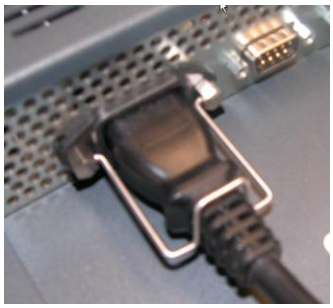
Step 6: Snap the top and bottom shells together.

Connecting Power to Enclosed (-EN) units:

The enclosed *i*PC-Series are powered from 100-240 VAC, 50/60 Hz only. Because these are stand alone Type 1 devices and do not require an additional NEMA type enclosure, a different type power connection is required. These units use a more standard IEC type power cord like found on most computers. There is a retention clip that can be utilized to help retain the cord from falling out. A US three prong cord is supplied. If another country connection method is required then an appropriate UL recognized power cord can be chosen locally (not supplied by Nematron). Optionally available is an IEC type connector that can be directly wired to for field wiring. This can be ordered separately from Nematron and is part number PWR-AC-EN



Enclosed ePC-Series IEC Power Cable



Power Cable Retention Clip Installed

I/O Cable Management

The iPC-Series units include retention mechanisms for securing USB and HDMI cable connections. USB and HDMI connections are not secure and can easily fall out. Use of the brackets is suggested for all applications, and is required for any hazardous locations installations. Simply remove the bracket(s) insert your USB and/or HDMI cables through the bracket. Connect your cables to the unit and move the bracket into position. Snugly push the bracket toward the USB and/or HDMI connector and secure with the screws provided.

On the iPC panel mount and Rack Mount units, the USB and HDMI brackets are simple L shaped brackets with cutouts to retain up to six USB cables and one HDMI connector. On the nPC300 the there are three pieces; one (flat piece) is secured to the bottom of the unit using two #4-40 screws and then the other two brackets are the same as on the iPC unis.



nPC300 USB and HDMI Retention Brackets



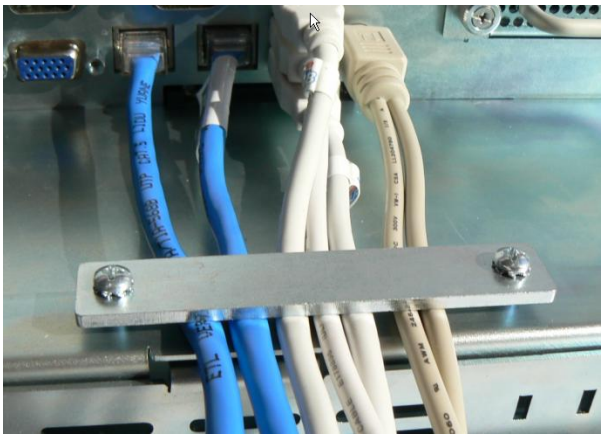
iPC-Series HDMI & USB Retention Bracket



With HDMI & USB Cables Installed

Video and the Serial connections have jack screws in the connectors that can be utilized to secure your cable end to the unit. Ethernet connections have a plastic tab that prevents the connection from falling out.

See the connecting power section for details on securing the power connections. In addition to the USB and HDMI Brackets there is an additional cable management bracket at the bottom of the units (N/A on iPC1200 or nPC300) that can be utilized to strain relief cables. This is a flat bracket attached by 2 screws which can be utilized to hold down cables or provides an attachment point for a cable tie to be used for securing cables. Care should be taken to provide an adequate radius for any cable being utilized. Too tight a radius can damage the conductors. When tightening this securing bar care should be taken not to over crush cables; this can damage conductors.



Cable Securing Bar Installed

NOTE: WHEN USING USB OR HDMI CONNECTIONS THE USE OF THE RETENTION BRACKETS IS REQUIRED FOR HAZARDOUS LOCATIONS AND HIGHLY RECOMMENDED FOR NONHARDAOUS LOCATIONS.

NOTE: TO PREVENT INADVERTENT DISCONNECTION OF VIDEO AND/OR SERIAL TOUCHSCREEN CABLES ASSURE THAT THE THUBSCREWS ARE SUFFICIENTLY TIGHTENED.

WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOW TO BE FREE OF IGNITABLE CONCENTRATIONS.

WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT UNLESS THE POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS USB AND HDMI CONNECTIONS MUST BE SECURED WITH INCLUDED RETENTION BRACKETS – SEE INSTALLATION INSTRUCTIONS

Drive Removal and Replacement

These products are equipped with an easily removable SATA drives. They are designed so that there is no need to remove the cover on these units to change a drive. There is no reason to remove the rear cover from the unit. The drive is simply removed by loosening the two thumbscrews and pulling the drive out. Remove all power to the unit before removing the drive.

There are no cables to remove when pulling the drive from the chassis. Once the drive is removed there are four screws on the back of the bracket that hold the drive. If the drive is being replaced these screws secure the drive to the plate. To reinstall the drive simply insert the bracket with drive attached into the chassis and slide forward. Completely push the drive in and secure the thumbscrews before reapplying power to the unit.

Solid State Drives mount directly to the bracket; however a thin plastic insulator is required to be inserted between the bracket and a standard rotating media hard drive. When the unit is ordered with a rotating hard drive these insulators are pre-installed.

Various drive options with a mounting bracket pre-installed are available for purchase from Nematron. If a spare drive is required these are recommended. These spare drives can be used with third party software to create complete system backups for your installation.



Drive Removal

Installing the Touch Screen Driver Software

If your iPC is ordered with a touchscreen and an operating system the drivers will be pre-installed. The iPC-Series utilizes a USB connection for the touchscreen, therefore the touchscreen will only function with operating systems that can recognize and utilize USB connections. The driver included with these units functions with Windows 2000, XP, VISTA, and Windows 7. If using the nPC300 with a touchscreen monitor the appropriate driver will be included with the monitor.

Operating System Recovery

If for some reason your operating system needs to be reinstalled Nematron provides an Operating System or Recovery disk. The procedure for this is dependent on the operating system. Because this series does not have an integrated DVD you will need a USB DVD-ROM drive. In some cases you will also need the "Documentation and Driver" disk that is included with each unit.

The iPC-Series products are shipped with Windows XP Professional SP3, Windows 7 Professional 32-bit, or Windows 7 Ultimate 64-bi. The units can also be ordered with No Operating Systems installed. Use of other operating systems is not recommended and not supported.

Windows XP Professional SP3 for Embedded Systems

Standard Windows XP operating system disks are no longer available from Microsoft. In order to continue shipping Windows XP for Automation applications, Nematron had to switch to a different license scheme, Windows XP Professional SP3 for Embedded Systems. This is not Embedded XP it is simply a different license procedure. By switching to this license Nematron had to create a system recovery disk. This disk is very specific to the platform and options that are included on your unit. Do not attempt to use a recovery from one type of unit on another, it may not work. This recovery disk installs the factory image with all drivers installed. On these units you will need an USB DVD-ROM. Follow the instructions on the recovery DVD for installation. When installing the image from this DVD it will not be "Activated", unlike when you received the unit. You may need to set the video resolution after loading the image depending on the unit you are loading.

Windows 7 Professional (32-bit) and Windows 7 Ultimate (64-bit)

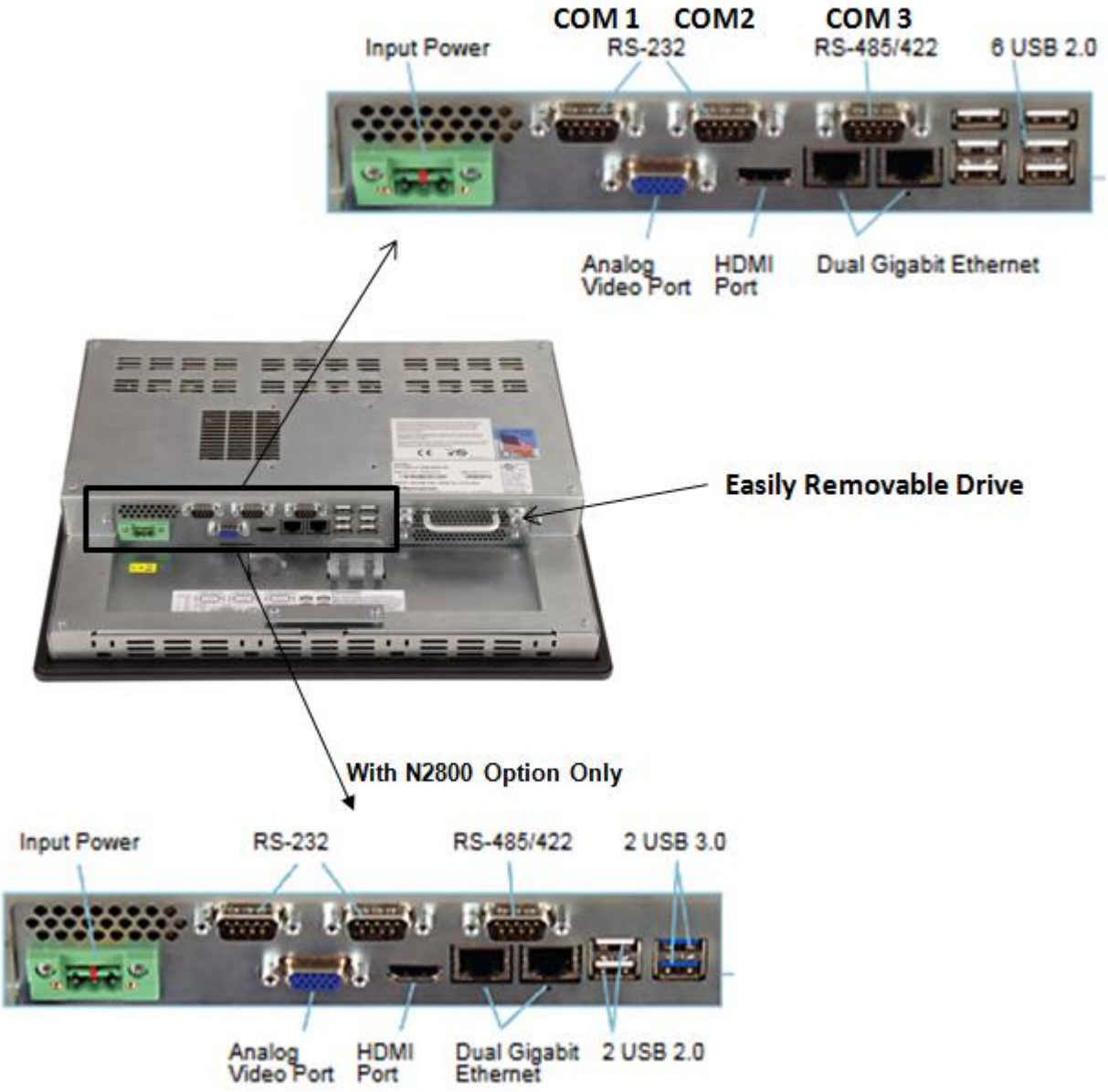
Windows 7 Professional and Ultimate are also supplied with a recovery disk as is done with Windows XP (see XP section above). This recovery disk installs the factory image with all drivers installed. On these units you will need an USB DVD-ROM. Follow the instructions on the recovery DVD for installation. When installing the image from this DVD it will not be "Activated", unlike when you received the unit. You may need to set the video resolution after loading the image depending on the unit you are loading.

Chapter 3. – iPC CPU and BIOS

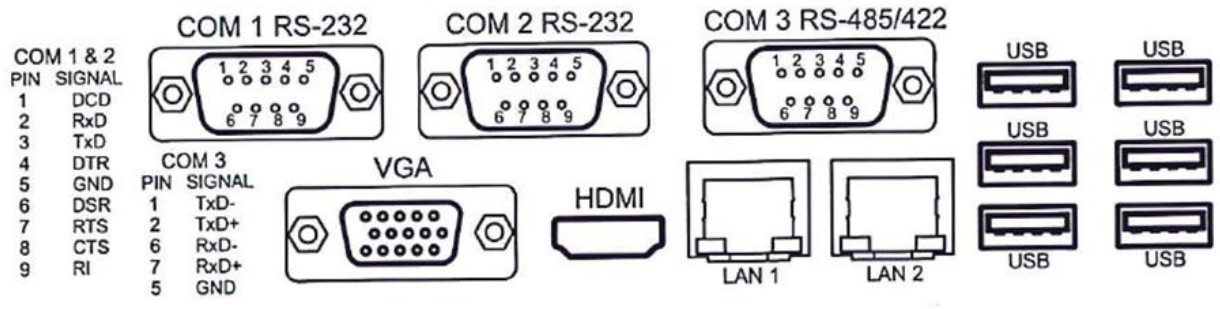
Consult the appropriate iPC-Series CPU Board User manuals for more detailed specifications of the CPU board and BIOS details. This section will concentrate on the features of the iPC-Series units that are externally accessible.

External I/O Connections

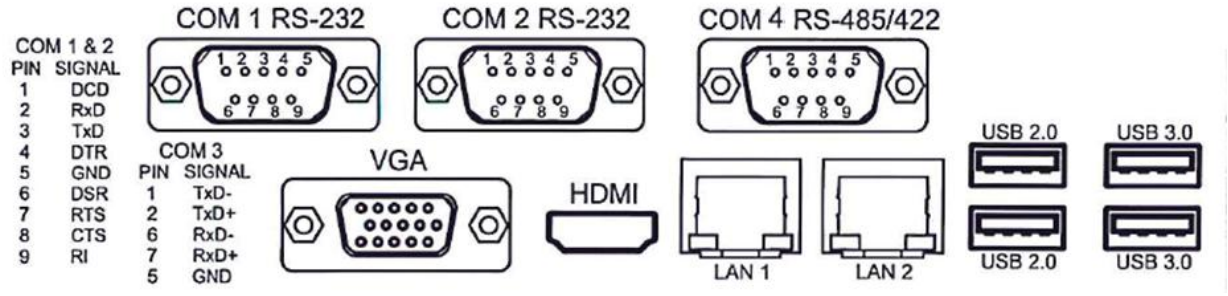
The following figure shows the externally accessible connections.



Pinouts (With Celeron, i5 and i7 Options)



Pinouts (With Intel N2800 Option Only)



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