

# N6180 Vehicle PC

## Product Overview

In-CarPC's N6180 vehicle PC is powered by an efficient dual-core Intel Atom processor running at 1.8 GHz, and offers excellent value for money with good levels of performance in a compact form factor. The PC is compatible with both 12V and 24V\* vehicles, turns on and off automatically with the vehicle ignition, and does not reboot when the vehicle's engine is cranked during starting. The N6180 has been awarded "e-mark" certification, making it fully approved for in-vehicle use, and carries a 2-year warranty as standard.

## Product Highlights

- Intel Atom 1.8 GHz Dual Core Processor
- Up to 4 GB DDR3 RAM
- Hard drives from 160 GB to 750 GB (twin internal hard drives on selected chassis)
- Up to 7 x USB2.0 ports
- 2 x RS-232 ports
- 1 x Gigabit Ethernet port
- Optional internal 3G, GPS, Wi-Fi, Bluetooth, CAN & video capture modules
- Optional anti-vibration mounting platform
- Optional internal optical drive on selected chassis
- PCI slot on selected chassis, with further Mini PCI Express slot
- Auto on/off with vehicle ignition, configurable shut down delays, low battery detection
- 7-36V peak input voltage range
- Regulated 12V output for accessories
- e11 certified - fully approved for automotive use
- 2-year extendable RTB warranty
- Available in a range of chassis options
- Excellent value for money



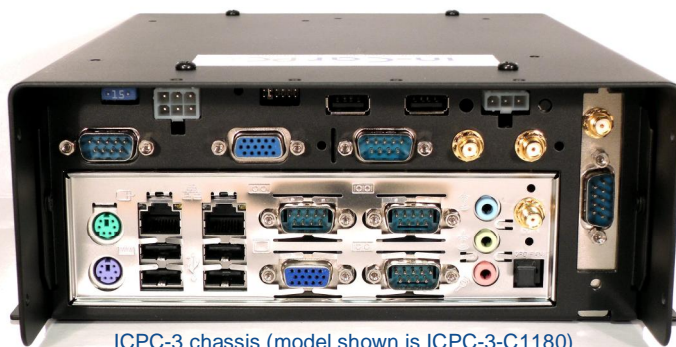
ICPC-1 chassis (model shown is ICPC-1-N5160)



ICPC-4 chassis (model shown is ICPC-4-C2266)



Integrated 3G options



ICPC-3 chassis (model shown is ICPC-3-C1180)



Internal optical drive or removable hard drive options

[More images on Page 4]

**N6180 Technical Specifications**

|                       |   |                           |   |        |        |        |        |        |
|-----------------------|---|---------------------------|---|--------|--------|--------|--------|--------|
| <b>CPU</b>            | Intel Atom D525 1.8 GHz Dual Core with Hyper-Threading technology, 1MB cache  |                           |   |        |        |        |        |        |
| <b>RAM</b>            | Up to 4 GB DDR3 800 MHz   |                           |   |        |        |        |        |        |
| <b>Hard Drives</b>    | <table border="0"> <tr> <td>160 GB</td> <td rowspan="7"> <b>Hard Drive Specifications:</b><br/> <ul style="list-style-type: none"> <li>• 2.5" form factor</li> <li>• 350G operating shock tolerance</li> <li>• 5400 RPM as standard</li> <li>• 7200 RPM optional</li> <li>• 7200 RPM hybrid SSD optional</li> <li>• 8-16 MB cache</li> </ul> </td> </tr> <tr><td>250 GB</td></tr> <tr><td>320 GB</td></tr> <tr><td>500 GB</td></tr> <tr><td>640 GB</td></tr> <tr><td>750 GB</td></tr> </table> <p>SSD drives (MLC &amp; SLC) are available upon request.</p> <p><b>ICPC-3 chassis</b><br/>Optional second internal hard drive</p> <p><b>ICPC-4 chassis</b><br/>Optional second internal hard drive or removable hard drive module (occupies optical drive slot)</p> | 160 GB                    | <b>Hard Drive Specifications:</b><br><ul style="list-style-type: none"> <li>• 2.5" form factor</li> <li>• 350G operating shock tolerance</li> <li>• 5400 RPM as standard</li> <li>• 7200 RPM optional</li> <li>• 7200 RPM hybrid SSD optional</li> <li>• 8-16 MB cache</li> </ul> | 250 GB | 320 GB | 500 GB | 640 GB | 750 GB |
| 160 GB                | <b>Hard Drive Specifications:</b><br><ul style="list-style-type: none"> <li>• 2.5" form factor</li> <li>• 350G operating shock tolerance</li> <li>• 5400 RPM as standard</li> <li>• 7200 RPM optional</li> <li>• 7200 RPM hybrid SSD optional</li> <li>• 8-16 MB cache</li> </ul>   |                           |   |        |        |        |        |        |
| 250 GB                |   |                           |   |        |        |        |        |        |
| 320 GB                |   |                           |   |        |        |        |        |        |
| 500 GB                |   |                           |   |        |        |        |        |        |
| 640 GB                |   |                           |   |        |        |        |        |        |
| 750 GB                |   |                           |   |        |        |        |        |        |
| <b>LAN</b>            |   | 1 x Gigabit Ethernet port |   |        |        |        |        |        |
| <b>Audio</b>          | 6-channel HD audio with 3 x audio ports (line-out/line-in/mic-in or 5.1 surround sound).<br>Optional S/PDIF output connector  |                           |   |        |        |        |        |        |
| <b>Graphics</b>       | Intel GMA 3150 integrated graphics with VGA output.   |                           |   |        |        |        |        |        |
| <b>USB</b>            | Up to 7 x USB2.0 ports (6 as standard)<br>Configuration with 8 x USB2.0 ports available, with 8th port providing power only.  |                           |   |        |        |        |        |        |
| <b>Serial</b>         | <p><b>All chassis</b><br/>2 x serial ports as standard</p> <p><b>ICPC-3/4 chassis</b><br/>Up to 5 (ICPC-3) or 6 (ICPC-4) serial ports optional, occupies 1 x Mini PCIe slot</p>   |                           |   |        |        |        |        |        |
| <b>Parallel</b>       | 1 x parallel port   |                           |   |        |        |        |        |        |
| <b>PS/2 interface</b> | 2 x PS/2 ports  |                           |   |        |        |        |        |        |
| <b>Expansion</b>      | <p><b>ICPC-1 chassis</b></p> <ul style="list-style-type: none"> <li>• 1 x Mini PCI Express slot</li> </ul> <p><b>ICPC-3 chassis</b></p> <ul style="list-style-type: none"> <li>• 1 x Mini PCI Express slot</li> <li>• 1 x low profile PCI slot</li> </ul> <p><b>ICPC-4 chassis</b></p> <ul style="list-style-type: none"> <li>• 1 x Mini PCI Express slot</li> <li>• 2 x full-size PCI slots (use of more than 1 PCI card not supported - 2nd PCI slot for back plate only)</li> </ul> <p>[See below for expansion cards available during build]</p>  |                           |   |        |        |        |        |        |
| <b>GPS</b>            | <p>Optional internal GPS module</p> <ul style="list-style-type: none"> <li>• Ublox5 chipset</li> <li>• 1 x SMA connector for GPS antenna (supports active &amp; passive antennas, available separately)</li> <li>• Occupies 1 x Mini PCIe slot</li> </ul> <p>[See below for 3G module which includes GPS]</p>   |                           |   |        |        |        |        |        |

|                  |  |
|------------------|--|
| <b>3G / HSPA</b> | <p><b>All chassis</b><br/>Optional internal 3G / GPS / Wi-Fi module</p> <ul style="list-style-type: none"> <li>• Internal SIM slot. SIM slot is <b>not</b> externally accessible - we advise customers to provide SIM cards for inclusion during PC build.</li> <li>• Occupies 1 x Mini PCIe slot</li> <li>• 3G, GPS &amp; Wi-Fi specifications detailed below</li> </ul> <p><b>ICPC-3/4 chassis</b><br/>Optional internal 3G / GPS module with external SIM</p> <ul style="list-style-type: none"> <li>• Externally accessible SIM slot</li> <li>• Does not occupy any expansion slots</li> <li>• In ICPC-3 chassis the module may obstruct low profile PCI cards where components on the PCI card protrude by more than approx 7 mm</li> <li>• 3G &amp; GPS specifications detailed below</li> </ul> <p><b>3G &amp; GPS Specifications:</b></p> <ul style="list-style-type: none"> <li>• Supports HSUPA/HSDPA/UMTS/EDGE/GPRS/GSM network technologies</li> <li>• Supports world-wide frequency bands 800-850/900/1900/2100 MHz (B1, B2, B5, B6, B8)</li> <li>• Voice capable</li> <li>• Maximum downlink 14.4 Mbps (HSDPA)</li> <li>• Maximum uplink 5.76 Mbps (HSUPA)</li> <li>• 1 x SMA connector for 3G antenna (available separately)</li> <li>• GPS receiver supporting Standalone GPS, Assisted GPS and more</li> <li>• 1 x SMA connector for GPS antenna (supports passive antennas only, available separately)</li> </ul> <p><b>Wi-Fi Specifications:</b></p> <ul style="list-style-type: none"> <li>• 802.11b/g/draft-n</li> <li>• 2.4 GHz operation</li> <li>• Up to 150 Mbps</li> <li>• 2 x SMA connectors for Wi-Fi diversity antennas (available separately)</li> </ul> |
| <b>Wi-Fi</b>     | <p>Optional internal Wi-Fi module</p> <ul style="list-style-type: none"> <li>• 802.11 a/b/g/n</li> <li>• 2.4 &amp; 5.0 GHz operation</li> <li>• Up to 300 Mbps</li> <li>• 2 x SMA connectors for Wi-Fi diversity antennas (available separately)</li> <li>• Occupies 1 x Mini PCIe slot</li> </ul> <p>[See above for 3G module that includes Wi-Fi, and below for Bluetooth module that includes Wi-Fi]</p>  |
| <b>Bluetooth</b> | <p>Optional internal Bluetooth &amp; Wi-Fi module</p> <ul style="list-style-type: none"> <li>• 802.11 b/g/n</li> <li>• 2.4 GHz operation</li> <li>• Up to 150 Mbps (Wi-Fi)</li> <li>• Bluetooth v3.0 +HS</li> <li>• 2 x SMA connectors for concurrent Bluetooth &amp; Wi-Fi diversity antennas (available separately)</li> <li>• Occupies 1 x Mini PCIe slot</li> </ul>  |

[Specifications continued on next page]

**N6180 Technical Specifications (cont)**

|   |  |  |
|---|--|--|
| <b>CAN-bus</b><br><small>[CAN-bus configurations pending e11 certification]</small> | <b>ICPC-3/4 chassis</b><br>Optional single-channel or dual-channel CAN interface <ul style="list-style-type: none"> <li>Occupies 1 x PCI slot</li> </ul>   | <b>Power Supply</b><br>Internal intelligent automotive power supply <ul style="list-style-type: none"> <li>PC automatically turns on and off with vehicle ignition</li> <li>Supports the use of Standby as well as Shut Down and Hibernate (jumper configurable)</li> <li>Compatible with 12V and 24V* vehicles</li> <li>Normal input voltage: 7.5V to 30V</li> <li>Peak input voltage: 7V to 36V</li> <li>Idle power consumption &lt;3mA</li> <li>High efficiency for extended battery life</li> <li>PC will not reboot during engine cranking</li> <li>Protection against transients and load dumps</li> <li>Reverse polarity protection</li> <li>Automatic shutdown with low battery (jumper configurable)</li> <li>Automotive mini blade input fuse (externally accessible)</li> <li>Regulated 12V accessory output for powering peripherals (up to 1A)</li> <li>Remote output for turning on and off external devices, with 1 second "anti-thump" delay. The behaviour of this output can be configured at order time.</li> <li>Configurable shut-down delay. The time between the ignition being turned off and the PC powering down can be changed using externally accessible jumpers.</li> <li>Configurable start-up and shut-down voltages to reflect the fact that battery levels and conditions vary between vehicles</li> <li>Wake on LAN compatible. The PC can be woken up for up to 20 minutes at a time without the ignition being turned on.</li> <li>Hard Power Off. In the event of a software crash during shut down the power will be cut to prevent draining of the vehicle battery</li> <li>Post-boot lock-down. If the ignition is turned off having only just been turned on, a delay will be applied before issuing the shut down command, in order to allow the PC to fully boot before attempting to shut down.</li> <li>Ignition input behaviour is configurable. By default the PC will turn on when the ignition input is active, and remain on until the ignition input is no longer active, at which point the PC will shut down. Alternatively a push-button power switch can be installed on the chassis for non-ignition-switched behaviour.</li> <li>LED indicates PC status and assists with troubleshooting.</li> <li>Externally accessible jumper block for configuring power supply options</li> <li>Reset switch in chassis (recessed)</li> <li>6-pin power input and 3-pin power output locking connectors (break-out cables supplied)</li> <li>Modified PSU firmware can be loaded for customers with special requirements - please contact us for more information.</li> </ul> |
| <b>Video Capture</b>  | <b>ICPC-3/4 chassis</b><br>Optional 8-port or 16-port video capture card <ul style="list-style-type: none"> <li>Max 120 fps shared between all channels</li> <li>Occupies 1 x PCI slot</li> </ul> Optional high performance 4-port video capture card <ul style="list-style-type: none"> <li>Occupies 1 x PCI slot</li> </ul>  |  |
| <b>O/S</b>  | Microsoft Windows 7 Professional SP1 32-bit<br>Microsoft Windows XP Professional SP3 32-bit*<br>Other O/S may be available on request<br><small>*available until 2016</small>  |  |
| <b>Mounting</b>   | Mounting flanges included on all chassis   |  |
| <b>Anti-vibration</b>   | <b>All chassis</b><br>Optional anti-vibration mounting platform <ul style="list-style-type: none"> <li>suitable for horizontal mounting applications only</li> </ul> <b>ICPC-1/3 chassis</b><br>Optional anti-vibration mounting platform <ul style="list-style-type: none"> <li>suitable for horizontal &amp; vertical mounting applications</li> </ul>   |  |
| <b>Dust filter</b>  | Optional dust filter covering system fan   |  |
| <b>CD/DVD</b>   | <b>ICPC-4 chassis</b><br>Optional internal slot-loading DVD-RW drive   |  |
| <b>Removable HDD</b>  | <b>ICPC-4 chassis</b><br>Optional removable hard drive module <ul style="list-style-type: none"> <li>Occupies optical drive slot</li> </ul>  |  |
| <b>Dimensions</b>   | <b>ICPC-1 chassis:</b> 223W* x 251L x 76H mm<br><b>ICPC-3 chassis:</b> 222W* x 251L x 84H mm<br><b>ICPC-4 chassis:</b> 232W x 359L* x 78H mm<br><small>*These figures include mounting flanges at base (total length occupied by mounting flanges: 26mm)</small> <ul style="list-style-type: none"> <li>Horizontal anti-vibration mounting platform adds approx 20 mm to height.</li> <li>Horizontal &amp; vertical anti-vibration mounting platform (ICPC-1/3 chassis only) adds approx 3 mm to height</li> </ul> |  |
|   | <b>Recovery</b>  |  |
|   | <b>Warranty</b>  | 2 years RTB (extendable if required)   |
|   | <b>Certifications</b>  | e11 ("e-mark")<br>CE   |
|   | <b>Environmental</b>   | RoHS compliant   |

\* Customers should advise if 24V operation is required when ordering  
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**Chassis Features**

|   | ICPC-1                 | ICPC-3          | ICPC-4        |
|---|------------------------|-----------------|---------------|
| <b>PCI slot</b>                                       | No                     | 1 x low profile | 2 x full-size |
| <b>Externally accessible SIM slot for internal 3G</b> | No (SIM card internal) | Yes             | Yes           |
| <b>2nd internal hard drive option</b>                 | No                     | Yes             | Yes           |
| <b>Internal optical drive option</b>                  | No                     | No              | Yes           |
| <b>Removable hard drive option</b>                    | No                     | No              | Yes           |

**Model Numbers**

In-CarPC model numbers follow this format:

*ICPC-[Chassis Type]-N6180-[Amount of RAM]-[Size of Hard Drive]*

E.g. "ICPC-1-N6180-4-750" is the N6180 PC in the ICPC-1 chassis, with 4 GB RAM and a 750 GB HDD.

Images

ICPC-1 Chassis



Pictured model is ICPC-1-N5160 with optional rear USB ports

ICPC-3 Chassis



Pictured model is ICPC-3-C1180 with optional internal 3G module with externally accessible SIM card slot on rear

Optional rear USB ports

ICPC-4 Chassis



Pictured model is ICPC-4-C2266 with optional internal slot-loading DVD-RW drive. Optional removable hard drive or externally accessible SIM slot for internal 3G module available (shown right) in place of optical drive.

Anti-vibration Mounting Platforms



Anti-vibration platform supporting horizontal and vertical mounting (for ICPC-1 and ICPC-3 chassis).

Anti-vibration platform supporting horizontal mounting (for all chassis)