

white bream

CARGO mobile computer system

preliminary



Introduction:

CARGO is a new way of mobile computing. By employing a split motherboard architecture combined with an industry-standard processor module, a very flexible system is realized.

Many configurations are possible on the processor side, from low cost Geode™ and Via Eden™ processors up to high-performance Intel® Pentium® M processors running at 2GHz with 1GB of memory.

The split part of the **CARGO** motherboard provides the I/O capabilities of the computer, except for the primary connections such as display, power, global positioning (GPS) and build-in wireless network or cellphone for wireless data communications.

CARGO contains a modified version of the Nano-ITX power supply. This allows **CARGO** to operate from most common car, boat and truck board nets of 12 and 24V.

Application specific connections:

Industrial and mobile computer solution often require specific interfaces like RS485 or CAN to connect with various peripheral devices.

Thanks to the modular structure of the I/O connections on the **CARGO**, these specific requirements can be designed at relative low non-recurring engineering cost.

On the **CARGO** motherboard a variety of interfaces is present, ready to be wired to outside connections. Among these interfaces are 4 x RS232C, CAN, 4 x USB 2.0, I²C and parallel. In case these are not enough, there is still the possibility to add a dedicated PCI-based extension board to implement additional interfaces.

The default board for industrial and logistic applications provides one standard serial port, USB ports, one switchable RS232 or RS485 port and ethernet.

Applications:

- Data management in logistics,
- Industrial automation,
- Navigation computer,
- Mobile data acquisition.

Power management:

The on board power controller takes care of starting and shutting down **CARGO**. When power is applied to the remote control input line, the system is started.

After this remote control input line is deactivated and the programmable delay has expired, a shutdown event is issued to the operating system. A watchdog forces system power off after three minutes when the system fails to shutdown inadvertently.

To safeguard the battery against drainage, the input voltage is monitored. When this voltage gets too low, the system is switched off completely. First gently by a system power event, later by cutting power if necessary.

Dedicated circuitry protects the electronics against high voltage spikes that may occur in car applications.

Software:

Since **CARGO** is based on normal Intel processors, most Intel-compatible software and operating systems can be executed on **CARGO**, including, but not limited to Microsoft® Windows® XP, XPe, CE and Linux.

Logistic opportunity:

1. collect data from truck or van,
2. merge this with GPS position information,
3. store data at hard drive or solid state storage,
4. send high-priority data to back-office with GSM/GPRS,
5. upload low-priority data at 5pm using wireless LAN.

At the same time the driver can be provided with navigation features, coordinated by GPS positioning data combined with TMC traffic information.

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Specifications and product appearance are subject to change. Background image shows front panel at true size.

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Base unit specifications:

- Intel® Mobile Celeron® M processor 1.5GHz,
- Optionally with Intel® Mobile Pentium® M, Via Eden™ or AMD Geode™ processors,
- 128MB to 1024MB SODIMM memory,
- Up to 160GB 2.5" hard disk storage,
- Internal Compact Flash type I socket (typically up to 8GB),
- Build-in fast-rate (4Hz) GPS receiver with high sensitivity (-158dBm),
- Build-in FM RDS/TMC tuner,
- DVI analog/digital monitor out (digital optional),
- Power, USB and audio over DVI technology,
- Optional build-in GSM/GPRS modem,
- Optional build-in wireless network,
- Optional 3-axis compass/acceleration module,
- Front USB 2.0 socket,
- Mini USB 2.0 with host-to-host support,
- Proprietary PCI expansion socket,
- CAN Interface (SJA1000) with silent mode support,
- Remote control in- and output, 4 auxiliary in- and 2 outputs,
- Power, inputs, outputs and CAN on 14-pin Molex® MicroFit,
- Heater for hard disk at sub 5 °C temperatures,
- 9 to 36V input range (operating), 65 Watt max,
- Power Properties shell extension for Windows XP,
- Programmable startup and shutdown control,
- Flexible power-off delay times,
- Adjustable low battery protection for battery,
- Operating temperature range : 0 to +50 °C,
- Non-operating temperature range: -45 to +125 °C,
- 108 x 45 x 168 mm aluminum case,
- Mounting flanges available.

Standard industrial connection specifications:

- RS232C Serial port (Sub-D 9-pin male),
- 3 x RS232A/RS485 port (4-pin Molex® MicroFit),
- Dual USB 2.0 (Standard A-socket),
- 10/100Mbps Ethernet (RJ45).

Standard logistic connection specifications:

- RS232C Serial port (Sub-D 9-pin male),
- RS232A/RS485 port (4-pin Molex® MicroFit),
- USB 2.0 (Standard A-socket),
- Parallel port (Mini D Ribbon 26-pin).

Custom connection possibilities:

- 4 x RS232/RS422/RS485,
- 4 x USB 2.0, CAN,
- Parallel, I²C, Audio line out, TV-out,
- Rear panel area 95 x ~13 mm max.

It's in a name:

The name **CARGO** has been chosen as the marketing name for this mobile computer because this name binds the two most appealing mobile computing areas together. First there is the typical car computer implementation for navigation and entertainment purposes. This kind of computers is often referred to as 'carpc'. Second, we have the relation with logistics. A field of work where cargo is usually the single most important business objective.

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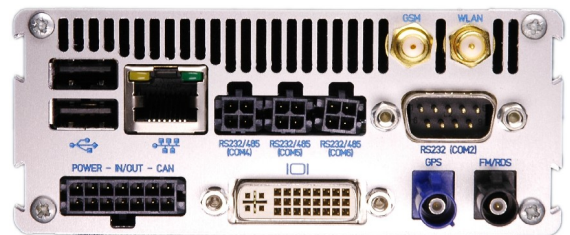
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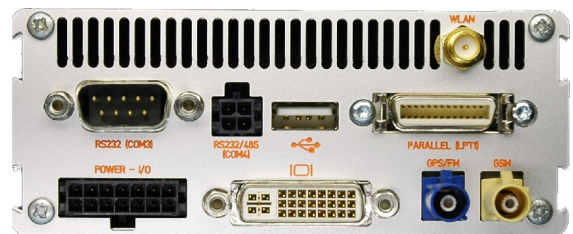
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Base unit rear panel connections (rectangle shows available area for custom connections)



Industrial rear panel connections



Logistics rear panel connections (subject to change)

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