



MPX- the next generation embedded *miriac*[™] Modules

How small is small?

With the ever increasing complexity of Microcontrollers and the unlimited number of applications in this area, there is a strong demand to have an easy way to deploy these technologies fast and cost effective.

One way to do so, is the use of Standard boards. In the area of the x86 architecture, there are a number of standards existing and new ones coming up, to cover the need for smaller size boards. In the area of PowerPC there is no such standard existing or evolving and customers always have to redesign their existing systems or start new designs.

To overcome this rather expensive approach, MicroSys offers a new, modular family of products.

This new *miriac*[™] MPX (**M**icroSys **P**PC **E**x^undable Module) boards are a family of scalable CPU Modules, which currently cover a wide range from the low end PowerQUICC[™] II Pro processors up to the high end of PowerQUICC[™] III processor family and the MPC 5200 from Freescale.

These CPU Modules are a perfect fit for applications in the automotive, industrial automation, communication, medical, defence or aerospace industry.

The MPX Modules combine a variety of I/Os (DUART, Ethernet, I²C, PCI) with the power and Software compatibility of the PowerPC kernel.

With a minimum size of 77 x 66 mm, the MPX Modules fit even in the smallest systems (compared to the ETX formfactor of 114 x 100 mm)

They are also available in the extended temperature range of - 40° to +85°C.

Concept:

The modular concept enables you to choose a module with a certain functionality e.g. only standard I/O and change later on or in more demanding applications to a different module (more I/O or additional interfaces).

You even can upgrade to a different processor.

More I/O functionality can be used for FPGA, graphics or an user specific requirements as well.

Porting the software should be transparent, as all the modules are based on the well proven Power PC e300 or e500 kernel.

Product Highlights:

- latest CPU Technology ready to run
- smallest form factor 77 x 66 mm
- modular growth from low end to high performance
- same customer baseboard possible for a number of different modules
- SW compatibility
- broad range of RTOS support

- Customer specific I/O extensions possible
- used in a broad range of applications
- cost effective

It is obvious that different applications have different needs for I/O interfaces and CPU performance. Therefore the *miriac*[™] MPX family was designed. You can choose from a broad range of PowerQUICC[™] II Pro and PowerQUICC[™] III processors as well as the MPC5200 family. This gives you always the right balance between performance, price and I/O capabilities. In addition you have the choice to even extend the standard I/O functions with additional customer specific functionality. Industry Standard Interfaces allow an easy interaction with other distributed nodes as well.

Connector Technology

As the number of pins for the modules is increasing to a range of 500 + , it is obvious that standard connectors are no longer the right choice for these boards.

Elastomeric connectors are a reliable, cost effective connector alternative for inter-board electrical connections. They are ideally suited for applications requiring high pad densities, close board separations, high frequency signal transmission and ease of assembly. By considering elastomeric connectors early in the packaging design, higher packaging densities, a solderless connection, and environmental sealing can be realized.

Elastomeric connectors are made of alternating layers of conductive gold plated wires and non-conductive silicone rubber. Electrical contact is made by "sandwiching" the elastomeric element between the interconnecting substrates.

As it does not require any insertion force, it is a perfect way to achieve high pin count with zero insertion force.

In addition to these features there are some more important key advantages of this approach.

- Stackability

As the connector pads are available on both sides of the modules, there is the choice to stack the boards in 2 directions, which gives a lot of headroom for expansion.

- Scalability is achieved in 2 ways. For more performance you can just exchange the CPU Module and keep the rest of the system. For more I/O functionality you can add another module or replace an existing one with more functionality.

- Expandability can be done by adding more functionality at a later stage or using extended functionality for more complex applications.

- Flexibility : the *miriac*[™] modules can either be used as a stand alone system or in any other slot based system. Proper cooling normally can be achieved by using passive heat sinks which simplifies the system design a lot. For closed systems without any airflow, conduction cooling can be implemented.

Availability

First samples based on Freescales MPC83xx processors will be shown at the Embedded World 2006 .

About MicroSys:

MicroSys Electronics GmbH located in Sauerlach close to Munich designs and

developes Single Board Computer (SBC) based on Motorola Processors for VMEbus and CompactPCI for more than 25 years.
Since 2000, the miriac™ CPU Module Family expands the Product Portfolio. This flexible and modular Module-Carrier-Concept can be used for both, evaluation purposes of Processor Technology and serial production.
From the beginning, customized solutions were a strong part of MicroSys business.