

Falcom Introduces First GSM Modems with Integrated Internet Connectivity

“We selected Connect One’s iChip for two main reasons. First, it is more sophisticated and offers more functionality than any other hardware or software solution when adding Internet connectivity to our GSM modems. Second, Connect One’s iChip gives us faster time-to-market, enabling us to be the first company to start shipping mass-produced, Internet-enabled GSM modems.”

- Ralf Leipoldt, Managing Director of Falcom GmbH

Originally founded as Funkanalagen Leipoldt in 1990, Falcom GmbH is a privately-owned enterprise headquartered in Langewiesen, Germany. Falcom is focused on design, development and high-volume production of standard and customized GSM- and GPS-based hardware platforms for the wireless communications industry. The company has the capacity to produce 400,000 dual-band GSM modems in its ultra-modern manufacturing facilities in Germany and in Malta.

Falcom has doubled its annual sales over the last four years, selling DM 40 million in 2000. Falcom’s continuing success in the fiercely competitive field of telecommunications is due to their willingness to respond to customers’ needs, their readiness to embrace leading-edge technology and their commitment to quality products and services. The driving force behind this process is Falcom’s highly skilled engineering and production team that constantly looks for new and imaginative ways to improve and optimize their products and services.

The Challenge

Adding Internet connectivity to GSM modems can lower the cost and improve the efficiency of wireless applications like telemetry, fleet management, vehicle tracking, meter reading and data collection. Since GSM modems use the same Hayes AT command set as dial-up modems, adding wireless capability to a dial-up application is simple.

But adding Internet connectivity is more complicated. First it requires adding the Internet protocols. Next, the protocols must be integrated with the host application. In order to run the Internet protocols, it may be necessary to upgrade to a more powerful host processor. A new operating system may be required for the new processor. More memory may be needed for storing the Internet protocols and configuration parameters, and for buffering the messages. The application must be rewritten to include the Internet commands and configuration parameters. Then the hardware and

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application must be integrated and debugged until they are proven to be reliable. Finally, the Internet protocols must be maintained in order to assure constant interoperability.

In December 2000, Connect One approached Ralf Leipoldt, Falcom's founder and CEO, with the idea of adding Internet connectivity to his company's GSM modems. Although he had not been thinking previously about Internet-enabling their wireless products, he found the concept of Connect One's iChip to be intriguing. With iChip inside their modems, Falcom's customers could gain Internet access from their remote or mobile devices without connecting them to a PC.

The Solution

Over the next month, Falcom's management, which includes Mr. Leipoldt, his son Thomas, and R&D Manager Martin Kirilov, reviewed iChip documentation and the benefits and practicality of adding Internet connectivity to their products. Ralf immediately saw the potential for iChip in his product line, saying, "It's a very interesting product. I'm very optimistic about its potential."

Ralf liked the fact that iChip is a completely integrated plug-and-play solution that required minimal integration into his existing product design. His engineering staff had no embedded Internet development experience and they had a deadline of June for introducing a new line of products.

In February, Falcom ordered and received Connect One's serial-to-serial evaluation package, which enabled evaluation of iChip with an external modem, such as a wireless modem. The technical evaluation went well. In the beginning of March, Falcom ordered a batch of Connect One's iChip CO561AD-S 3.3-volt versions, which were received at the end of March.

Technical Implementation

Falcom decided to put iChip into two products as options. The new Falcom 35(i) is an embedded module that uses the new Siemens TC35 GSM engine. It provides a powerful combination of wireless and Internet technology, and enables quick and easy implementation of these core technologies into existing or new hardware designs.

The new A3D concept brings together three of the most powerful state-of-the-art technologies (GSM/GPRS, GPS, Internet) and makes them available for immediate and flexible integration into many applications for the vertical and horizontal market. Typical applications include telemetry, vehicle tracking, data collection and fleet management.

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The A3D is based on Wavecom's WISMO GSM engine. The A3D comes standard with an AMD 186ES host processor with DOS-like monitoring system software, 1MB flash memory, 256KB SRAM, 4 KB EEPROM, RTC, a flash card reader, integrated battery backup, Hands-Free-Kit, 8 digital I/Os, and four serial ports. Optional features include Connect One's iChip and a GPS receiver, both of which interface the 186 via a dual-UART. iChip connects to the GSM engine via an asynchronous serial connection.

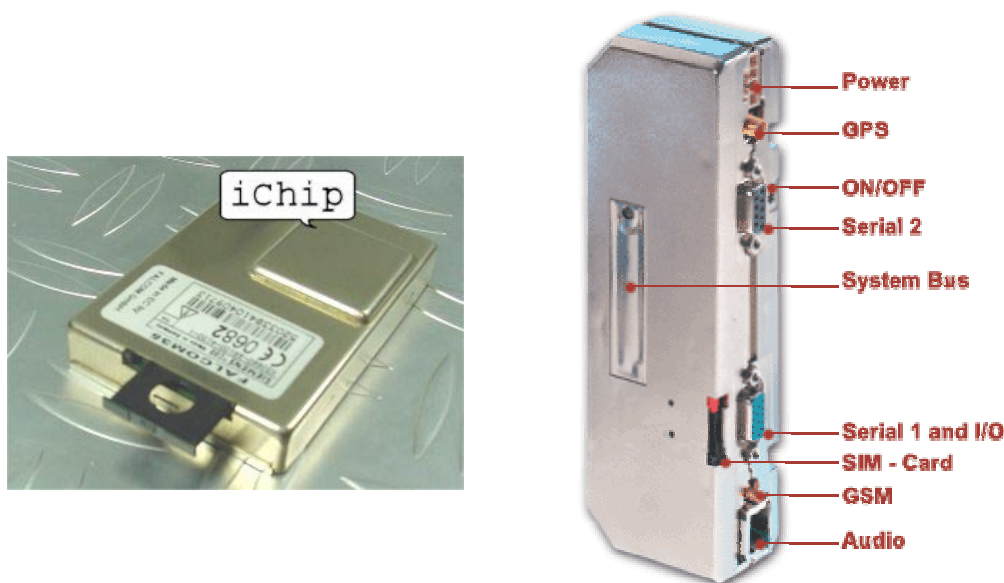


Photo: Falcom 35(i) (left) and A3D (right)

Prototypes of iChip with the A3D were assembled in April and received European CE and CTR21 approvals within two months. Prototypes of iChip with the Falcom 35(i) were assembled in June and received European CE and CTR21 approvals in August. Connect One's R&D staff worked closely with Falcom's engineers during the prototyping process to add features that enhanced the performance of iChip in a wireless environment.

Mass production of both iChip-enabled products started in October 2001. Falcom's distributors are busy quoting projects that call for tens of thousands of GSM modems with Internet connectivity.

Falcom's engineers are currently designing their next-generation GPRS modems that will be based on Siemens' MC35 GPRS engine and will also include iChip as an option. This new model is scheduled for release around the beginning of 2002.

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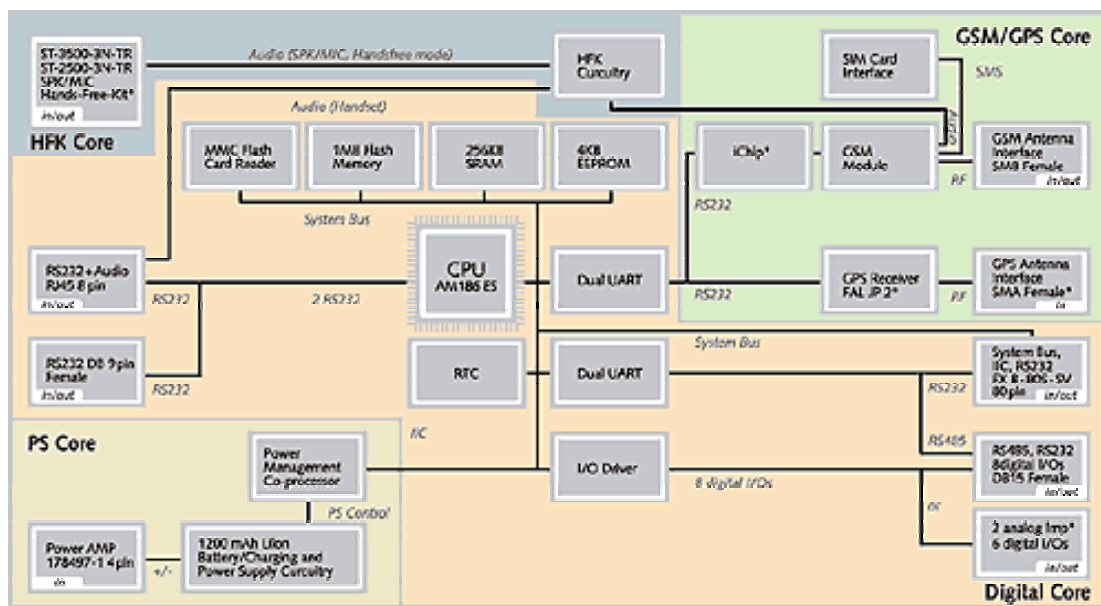


Figure: Falcom A3D Block Diagram

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