# 3JTech-iPP2 Modem Documents

➢ iPP2 Modem Features

● Supports remote firmware update by host, Email or direct modem to modem communications.

● Driven by the simple " AT+I " extension to the AT command set.

● Standalone Internet communication capabilities.

● Internet Protocols and related formats:

PPP, SMTP, POP3, TCP, IP, LCP, IPCP, UDP, DNS, HTTP and PAP,CHAP or Script authentication .

● Binary Base64 encoding and MIME.

● Supports data modems with throughput up to 56K bps.

● Optional Ethernet interface.

● Supports power-saving standby and sleep modes.

● Supports nonvolatile memory to store all functional and Internet-related parameters.

● Supports several layers of status reports.-

● Internal self-test procedures.

● Internal "Watch-Dog" guard circuit.

➢ iPP2 Modem Diagrom
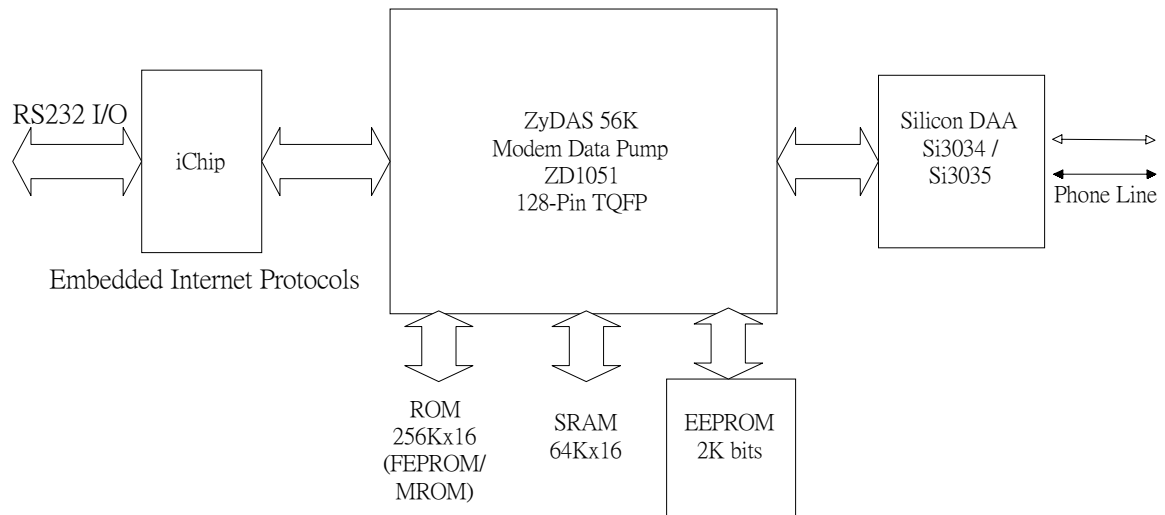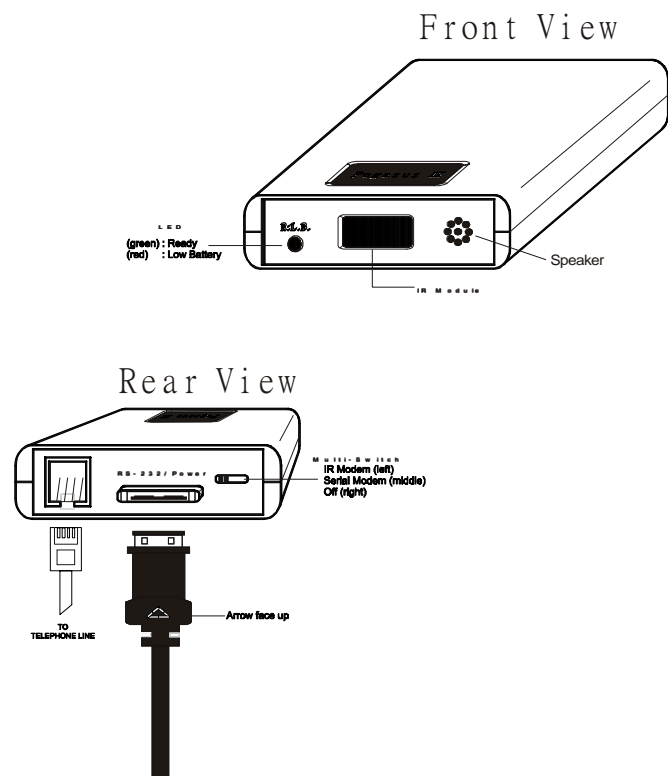

➢ Technical Specifications

iChip constitutes a complete Internet messaging solution for non-PC embedded devices. It acts as a mediator device to completely offload the host processor of Internet related software and activities. An industry-standard asynchronous serial link connects iChip to the host processor. Programming, monitoring and control are fully supported using AT+i extension to the standard AT command set.

iChip supports standard baud rate configurations from 4800 bps up to 38400 bps on the host asynchronous serial communications bus. As shipped, iChip defaults to a preliminary connection rate of 9600 bps. The default baud rate may be changed permanently by using the AT+iBDR command. In serial modem configurations, a rate of 38400 bps is used to accommodate modems with communication speeds up to V.90 56K bps.

➢ **Hardware installation**

You will need these items in your iPP2 Modem Box

- IPP2 Modem.
- Power & RS-232 Cable.
- Telephone Cable.

Front View

LED
(green) : Ready
(red)   : Low Battery

M.B.

IR Module

Speaker

Rear View

RS-232/ Power

Multi-Switch
IR Modem (left)
Serial Modem (middle)
Off (right)

Arrow face up

TO
TELEPHONE LINE

➢ **iChip Description**

iChip is a low-cost intelligent peripheral device, which provides Internet connectivity solutions to a myriad of embedded devices. A serial bus interfaces iChip to a device's host processor, via an on-chip UART. An optional 8/16-bit interface to a host processor is supported as well, by adding an external UART for low-bandwidth applications or a dual-port-RAM for high bandwidth applications. iChip also directly interfaces a serial or parallel data modem, through which it supports independent communications on the Internet via a dial-up ISP connection. An optional Ethernet connection is supported by adding an external,16-bit,MAC.

As an embedded, self-contained Internet engine, iChip acts as mediator device between a host processor and an Internet communications platform. By completely offloading Internet connectivity and standard protocols, it relieves the host from the burden of handling Internet communications. From the perspective of a host device, the complexity of establishing and maintaining Internet-related sessions are reduced to simple, straightforward commands, which are entirely dealt with within iChip's domain. Through its host Application Program Interface, iChip accepts commands formatted in 〝 AT+i 〞 extension to the renowned Hayes AT command set.

Commands are available to store and manipulate functional and Internet-related nonvolatile parameter data; transmit and receive textual Email messages; transmit and receive binary (MIME encoded)Email messages, fetch HTML web pages; and download parameter and firmware updates for the host device or iChip itself. Send command variants exist for immediate communications or scheduled "store-and-forward 〞.

iChip supports several levels of status reporting to the host. In addition, the iChip is connected to a modem device, the host may issue standard AT commands to gain direct access to the modem. In the presence of AT commands, iChip automatically operates in transparent mode, thus emulating a direct host to modem environment.

Using the attached communications platform, iChip gains access to the Internet to independently manage standard Internet protocols that transmit and receive messages. When hooked up to a standard data modem device, iChip provides all the necessary procedures to dial-up an ISP, authenticate the user and establish a PPP connection.

➢ iChip complies with the following Internet standards:

RFC 1331	Point-to-Point Protocol (PPP)
RFC 1661	Point-to-Point Protocol (PPP)
RFC 1332	PPP Internet Protocol Control Protocol (IPCP)
RFC 1334	PPP Authentication Protocols (PAP)
RFC 791	Internet Protocol (IP)
RFC 793	Transmission Control Protocol (TCP)
RFC 768	User Datagram Protocol (UDP)
RFC 821	Simple Mail Transfer Protocol (SMTP)
RFC 1939	Post Office Protocol - Version 3 (POP3)
RFC 1957	Some Observations on the Implementations of the Post Office Protocol (POP3)
RFC 822	Standard for the Format of ARPA Internet Text Messages
RFC-2045	Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies
RFC-2046	Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types
RFC-2047	MIME (Multipurpose Internet Mail Extensions) Part Three: Message Header Extensions for Non-ASCII Text
RFC-2048	Multipurpose Internet Mail Extensions (MIME) Part Four: Registration Procedures
RFC-2049	Multipurpose Internet Mail Extensions (MIME) Part Five: Conformance Criteria and Examples

➢ List of Terms and Acronyms

Base64	**Encoding scheme**, which converts arbitrary binary data into a 64-character subset of US_ASCII. The encoded data is 33% larger than the original data.
DNS	**Domain Name System**. Defines the structure of internet names and their association with IP addresses
iChip^{TM}	Internet-in-a-chip module for embedded Internet connectivity.
IP	**Internet Protocol**. Provides for transmitting blocks of data, called datagrams, from sources to destinations, which are hosts identified by fixed length addresses. Also provides for fragmentation and reassemble of long datagrams, if necessary.
IPCP	**Internet Protocol Control Protocol**. Establishes and configures the Internet Protocol over PPP. Also negotiates Van Jacobson TCP/IP header compression with PPP
ISP	**Internet Service Provider**. Commercial company that provides internet access to end (mostly PC) users through a dial-up connection.
LCP	**Link Control Protocol**. Negotiates data link characteristics and tests the integrity of the link.
MIME	**Multipurpose Internet Mail Extensions**. Extends the format of mail message bodies to allow multi-part textual and non-textual data to be represented and exchanged between internet mail servers.
PAP	**Password Authentication Protocol**. Used optionally by the PPP protocol to identify the user to the ISP.
CHAP	**Challenge Authentication Protocol.** Extends the PAP procedure by introducing advanced elements of security.
POP3	**Post Office Protocol Version 3**. Allows a workstation/PC to dynamically retrieve mail from a mailbox kept on a remote server.
PPP	**Point-to-Point Protocol**. Communications protocol used to send data across serial communication links, such as modems.
RFC	**Request For Comments**. Collections of standards that define the way remote computers communicate over the internet.
SMTP	**Simple Mail Transfer Protocol**. Provides for transferring mail reliably and efficiently over the internet.
TCP	**Transmission Control Protocol**. Provides reliable stream-oriented connections over the internet. Works in conjunction with its underlying IP protocol.
AT+i	Internet extension to the industry-standard Hayes AT command set. Supports simplified Internet connectivity commands in the spirit of the AT syntax.
"Leave on Server"	An option designating whether retrieved Email messages are to be left intact on the server for subsequent downloads or are to be deleted from the server after a successful download.