

**Product Bulletin**

# TNETV2502 IP Phone Solution



TI's TNETV2502 is a new turnkey IP phone solution enabling fast time-to-market in the low-end market segment. Typically, IP phones in this segment offer simple features such as either one or two Ethernet ports, a single codec channel and a low cost bill of materials (BOM) of less than \$30. With TI's introduction of the TNETV2502, manufacturers will be able to offer a full portfolio of products, including those targeted at low-end enterprise, small and medium business (SMB) or residential markets.

Along with the TNETV2502 solution, TI and Adaptive Digital Technologies (Adaptive Digital), a leading provider of embedded software for TI's digital signal processors (DSPs), also offer

turnkey software, as well as a reference design and a software verification board. The base software offers everything needed for a basic IP phone with simple features. Base software cost is bundled with the device and TI provides broad indemnification for customers purchasing the TNETV2502 solution.

**TNETV2502 IP Phone Platform**

Based on TI's TMS320C55x DSP technology, the 300MHz TNETV2502 delivers high performance at a low price. With a wide variety of peripherals, the TNETV2502 is able to seamlessly interface with other system devices, reducing BOM costs.

**Key Features of the TNETV2502 include:**

- TMS320C55x™ DSP core
- Three McBSPs
- I<sup>2</sup>C
- UART
- Four timers: two 64-bit general purpose timers, one watchdog, one 64-bit DSP/BIOS™ counter
- Eight general-purpose I/Os
- 16-KB I-cache
- 64-KB RAM
- Glueless external memory interface to SRAM and SDRAM
- 176 LQFP package

**Key Features**

- Single-processor, DSP-core platform with base software to meet the needs of low-end IP phone market
- Turnkey IP phone solution reduces time-to-market by offering:
  - Reference design with schematics and bill of materials (BOM)
  - Proven TI C55x™ DSP architecture
  - Turnkey software solution
- No external RAM needed for base software
- Enables BOM less than \$30
- TI provides broad indemnification with purchase of TNETV2502 solution

**IP Phone Software**

Adaptive Digital's low end IP phone software is a turnkey solution allowing manufacturers to quickly bring new IP phones to market. The software includes voice processing, call control, call management, and networking features.

- The TNETV2502 voice processing software features single voice channel with G.711 and G.729AB codecs
  - Conferencing is handled by the network
  - Additional channels or codecs possible via customization through Adaptive Digital
- RTP packetization with configurable periods of 10, 20, and 30 milliseconds
- Handset support with an Acoustic Echo Suppressor (AES), which meets requirements specified in TIA/EIA-810-A
- Group listen speaker mode with volume control
- RFC 2833 DTMF relay support
- Configurable 100-millisecond jitter buffer

- Tone generation
  - DTMF or fixed tone for echoing key presses on keypad
  - Allows for configurable sequence of tones to be generated toward the phone or network or both
- Packet loss concealment compliant with G.711 appendix I
- Comfort noise generation
- Voice activity detection
- Gain control
- Support for:
  - Single Ethernet interface
  - 3x4 keypad
  - Hook-switch and other control switches
  - LEDs
  - 2x24 LCD

### **TNETV2502 Call Control and Management Software Features**

- RFC 3261 and 3550 SIP signaling and RTP media stream protocols
- SIP authentication, invite, ring, ack, ok, bye, and termination messages
- Supports all supplementary services implemented in the network
- Configurable, unique, SIP username and password (credentials) protected in non-volatile memory
- MD5 algorithm digest authentication
- SIP user agent interoperability with proxy servers for outgoing calls, incoming calls, call waiting, conferencing, call forwarding, and call transfer
- Configurable digit map for dialing support

### **TNETV2502 Networking Software Features**

- DHCP and DNS clients, IPv4/UDP/TCP protocols supported
- STUN for NAT traversal behind a firewall for packet routing

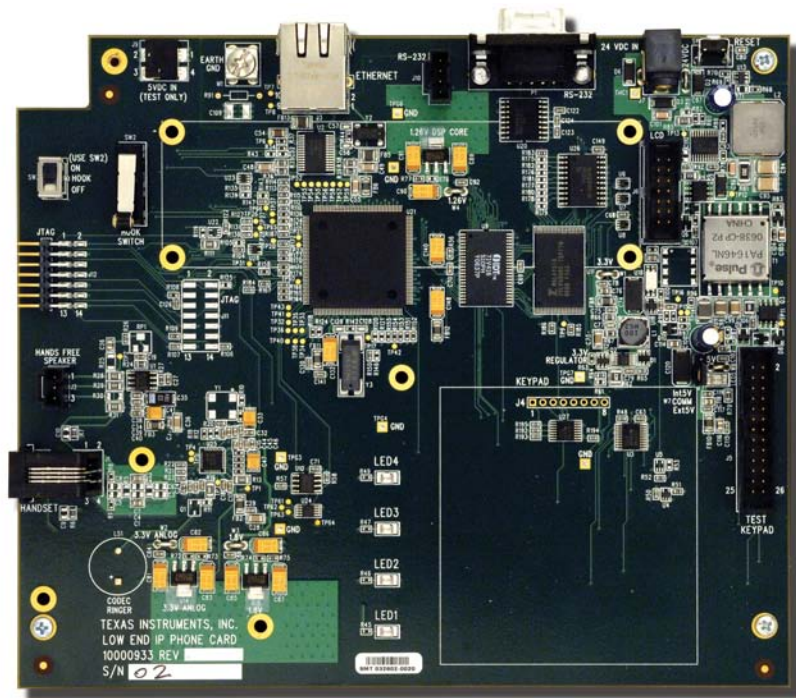
### **TNETV2502 Reference Design and Software Verification Board**

TI offers an IP phone reference design to shorten manufacturers' time to market. The reference design includes complete schematics and BOM, which dramatically decreases design costs and time. The software

verification board, created from the reference design, can be leveraged to quickly prototype a low-end phone design, and is available for purchase. The board includes a keypad, enclosure, handset, speaker, wall and Power over Ethernet (PoE) power supplies, and LCD.

### **For More Information**

To find out more about how TI's TNETV2502 IP phone solution can help speed your design to market, please contact your TI sales representative or visit [www.ti.com/voip](http://www.ti.com/voip).



**Important Notice:** The products and services of Texas Instruments Incorporated and its subsidiaries described herein are sold subject to TI's standard terms and conditions of sale. Customers are advised to obtain the most current and complete information about TI products and services before placing orders. TI assumes no liability for applications assistance, customer's applications or product designs, software performance, or infringement of patents. The publication of information regarding any other company's products or services does not constitute TI's approval, warranty or endorsement thereof.

Technology for Innovators, the black/red banner, DSP/BIOS™, TMS320C55x, and C55x are trademarks of Texas Instruments. All other trademarks are the property of their respective owners.

A010307

## IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

### Products

Amplifiers	<a href="http://amplifier.ti.com">amplifier.ti.com</a>
Data Converters	<a href="http://dataconverter.ti.com">dataconverter.ti.com</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>
RFID	<a href="http://www.ti-rfid.com">www.ti-rfid.com</a>
Low Power	<a href="http://www.ti.com/lpw">www.ti.com/lpw</a>
Wireless	

### Applications

Audio	<a href="http://www.ti.com/audio">www.ti.com/audio</a>
Automotive	<a href="http://www.ti.com/automotive">www.ti.com/automotive</a>
Broadband	<a href="http://www.ti.com/broadband">www.ti.com/broadband</a>
Digital Control	<a href="http://www.ti.com/digitalcontrol">www.ti.com/digitalcontrol</a>
Military	<a href="http://www.ti.com/military">www.ti.com/military</a>
Optical Networking	<a href="http://www.ti.com/opticalnetwork">www.ti.com/opticalnetwork</a>
Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
Telephony	<a href="http://www.ti.com/telephony">www.ti.com/telephony</a>
Video & Imaging	<a href="http://www.ti.com/video">www.ti.com/video</a>
Wireless	<a href="http://www.ti.com/wireless">www.ti.com/wireless</a>



**Kane Computing Ltd**  
7 Theatre Court, London Road,  
Northwich, Cheshire, CW9 5HB, UK.  
Tel: +44(0)1606 351006  
Fax: +44(0)1606 351007/8  
Email: [sales@kanecomputing.com](mailto:sales@kanecomputing.com)  
Web: [www.kanecomputing.co.uk](http://www.kanecomputing.co.uk)