



# AD20msp930 ADSL Chipset

## NEW ADSL CHIPSET IS FULLY INTEGRATED

Analog Devices, the market leader in ADSL silicon solutions, now offers a third generation, DMT-based ADSL chipset — the AD20msp930. Incorporating higher integration levels, the AD20msp930 reduces overall system and operating costs, and significantly lowers power consumption.

The AD20msp930 is designed to meet current ANSI T1.413 Issue 2, ETSI TR328 and ITU G.992.1 and G.992.2 industry standards. Full functionality in this three-chip set includes an integrated DSP/interface/framer, analog front-end, driver/receiver, and object code software for user adaptability and control. Based on the industry standard AD20msp918, the AD20msp930 improves and simplifies next-generation designs and reduces equipment manufacturing costs.

*The AD20msp930 is a next-generation solution that can push the speed of data transmission over conventional telephone lines to 10 Mbps—90 times faster than traditional ISDN and over 200 times faster than V.90 voice-band modems.*



## FEATURES

- Flexible bin assignment: supports ADSL over ISDN (per ETSI TM6 & ITU G.992.1 Annex B), enhanced upstream or symmetric data rates
- ATM (UTOPIA 1 or 2) or STM interfaces. Complete software control protocol stack/API
- Complete data pump in three compact ICs (225 BGA DSP/interface and analog front end—80 pqfp, 20 PSOP/24 SOIC) line driver
- Standards compliant: supports ANSI T1.413 Issue 1 and 2, ETSI TR328, ITU G.992.1 and G.992.2 (G.lite)
- Implements DMT (discrete multitone) technology as adopted by ANSI, ETSI and ITU
- Normal or reduced overhead framing modes
- Supports configurable data rates: 6.1 Mbps simplex, 224 kbps duplex over carrier serving area loop; optimum Internet access at 4.5 Mbps downstream/450 kbps upstream; absolute maximum 12 Mbps/1 Mbps
- Category 2 functionality: Trellis code and echo cancellation
- Fully compatible with AD20msp918 and AD20msp910
- Power: 1.0 W (excluding driver)
- -40° to +85°C operation



## FUNCTIONALLY COMPLETE

Unlike functionally deficient solutions, the AD20msp930 combines all the essential hardware and software needed to build a complete ADSL modem, including a DMT (discrete multitone) engine, analog front end, line driver, DSP host processor and interface/framer circuitry.

Bundled with data pump firmware and software to provide a full protocol stack for data control and management, the result is a complete solution that can push the speed of data transmission over existing telephone lines to 10 Mbps – 90 times faster than ISDN and over 200 times faster than V.90 voice-band modems.

## INDUSTRY STANDARDS COMPLIANT: Full Rate ADSL and G.lite Internet Connectivity

The AD20msp930 chipset is fully compliant with industry standards set by the American National Standards Institute under ANSI T1.413 Issue 1 and 2, the European Telecommunications Standards Institute ETSI TR328, and International Telecommunications Union standards for G.dmt (G.922.1) and splitterless G.lite (G.992.2). The AD20msp930 offers configurable data rates to 6.1 Mbps simplex, 224 kbps duplex over carrier serving area loop, and optimum Internet access at 4.5 Mbps downstream/450 kbps upstream. On short loops, an AD20msp930-based modem can achieve speeds in excess of 10 Mbps.

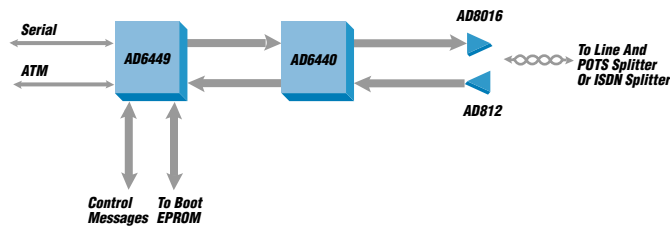
## IMPROVED QUALITY OF SERVICE LEVELS

A new DMT coprocessor replaces the first generation's DMT accelerator for dual-line, two-way simultaneous transmission of data, voice and video. Specifically designed for superior Quality of Service (QoS) levels, the AD20msp930 features a rate-adaptive design that automatically adjusts to line characteristics and delivers the best possible performance, regardless of indigenous line conditions.

## RATE ADAPTIVE FOR OPTIMUM THROUGHPUT

As a rate adaptive chipset, the AD20msp930 ensures the highest data throughput by assessing the condition and transport capacity of each line. It continuously adapts its operation to achieve the best possible data rate.

The AD20msp930 comprises an integrated digital driver, analog front end, line driver and receiver to speed and simplify the development of ADSL systems.



The AD20msp930 adjusts to line characteristics and noisy environments and offers a low-noise solution when neighborhood wires are within the same cable trunk. More importantly, it ensures seamless interoperability with other standards-based systems.

In equipment built for Internet service providers (ISPs) and central offices, the AD20msp930 will maximize a subscriber's downstream network access and speed the transmission of multi-service (DSL, Frame Relay and ATM) data, voice and video alike.

Many equipment manufacturers of datacom and telecom ADSL modems, switches, routers and CPE systems already use Analog Devices' ADSL chipsets as their core signal processing engines. There are good reasons to join our growing list of customers.

## CUT TIME TO MARKET AND SAVE DEVELOPMENT COSTS

The AD20msp930 can reduce the engineering investment required to design and test your next-generation ADSL modem. As a complete solution, the AD20msp930 eases the development of custom interfaces and eliminates the need to design around additional support components. In the end, your standards-based modem will more quickly be ready for market.

## NEW PRODUCT R&D

Analog Devices is constantly working to develop new products that meet the changing needs of the telecom infrastructure. Research and development has enabled this new chipset to address the need for lower power consumption for subscriber-side equipment, ATM (asynchronous transfer mode) handshaking for backbone switches and routers, and nonstandard 1.544 Mbps Symmetrical DSL (SDSL) systems.

## REFERENCE DESIGNS AND TECHNICAL SUPPORT

Analog Devices—the company with a legacy in high-performance DSP, analog and mixed-signal processing—has the design expertise and in-house manufacturing processes to give your next-generation ADSL product the support and technical backing it deserves. We provide a full range of support for modem manufacturers, including a fully functional reference design complete with PC board layout, schematics and off-the-shelf component lists. Documentation includes detailed data sheets and application notes.

On-line applications assistance is available over the phone. Product demonstrations can be arranged at your facility or at one of ADI's many sales offices.

Analog Devices is a semiconductor supplier with a consistent record of dependable, on-time delivery. We maintain full control over the manufacturing process from raw wafer to finished product. And we have ample capacity for high volume analog and digital productions.

## FIRST TO MARKET

While other vendors scramble to develop standards-compliant ADSL solutions, Analog Devices has everything you need now, off the shelf. From full-featured DSP to analog and software. We meet the needs of today's broadband wired and wireless markets with leadership in analog, digital, mixed-signal processing, RF signal processing, data conversion, interfacing and total system design. So if time to market is important to you, it's time to connect with Analog Devices.

## THE AD20msp930 CHIPSET FEATURES:

### Echo Cancellation

The combination of digital EC path (in AD6649) and second DAC (in AD6440) enables an analog echo-cancellation signal to be generated. In FDM mode this can eliminate the need for hardwired up/down filters, replacing filter with software controlled cancellation. Alternatively, it can be used to enable overlapped spectra eg for Category 2 "echo cancelled" mode, or even SDSL (not standardised).

### Improved Performance

Significant changes in the AD6440 improve performance, including lower noise floor, less distortion and improved resolution on converters.

### Analog Equalizer

Supplementing the flat PGA from the AD6437 with a programmable analog equalizer improve reach and performance on long loops.

### JTAG Test Port

Eases manufacturing test on AD6449 digital IC.

### Increased MIPS

The embedded core has >40 MIPS, compared to 26 MIPS of external ADTSP2183.



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