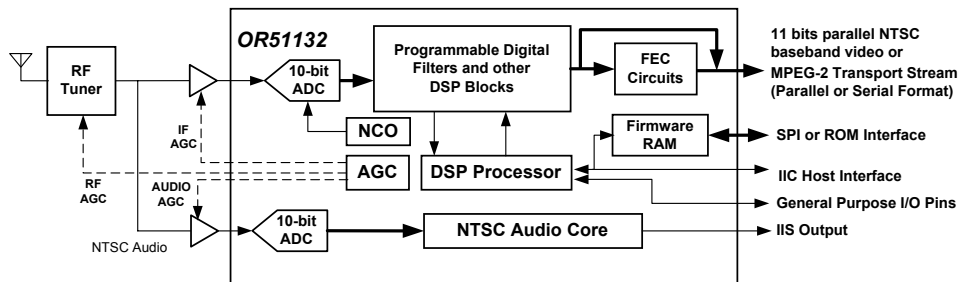


The OR51132 is a sophisticated DSP-based demodulator IC for digital ATSC 8-VSB, QAM and analog NTSC/BTSC TV transmission, builds on Oren's powerful and efficient demodulator DSP and adaptable filter blocks technology. The OR51132 is an ideal device for iDTVs, STBs and PC products.

OR51132 Simplified Block Diagram



The OR51132 features:

Superior Modulation Flexibility

- VSB ATSC demodulation
- DOCSIS compliant 64/256-QAM demodulation for OpenCable™ applications (ITU-T J.83 Annex B), SCTE DVS-031
- NTSC video demodulation with digital baseband output
- BTSC audio decoder – stereo, mono and SAP decoding with dBX noise reduction

Excellent 8-VSB Performance

- Superior VSB multi-path rejection with adjustable -15.5 to $+45.5 \mu\text{s}$ 576-tap equalizer, and adaptive control loops according to channel conditions.
- Fast channel acquisition and recover algorithms, with both blind and trained data
- Superior field performance using enhanced pre-equalizer coverage and NTSC co-channel rejection of $D/U < 1\text{dB}$.
- Fast channel auto search by carrier lock range of $(\pm 500\text{KHz})$, and NTSC channel detection.

Excellent QAM Performance

- 64QAM and 256QAM, 5.059641 and 5.360537MHz symbol rates.
- 72 taps adaptive equalizer, 216 taps available for special requirements
- Integrated de-interleaver RAM for all 64/256QAM DI modes up to $I=128$ $J=6$
- Fast channel auto-search by auto 64/256 QAM detection, and carrier lock of $\pm 500\text{KHz}$.

Comprehensive FEC Integration

- Soft Viterbi decoder
- De-Interleaver
- Reed-Solomon decoder
- De-randomizer

NTSC demodulation

- High quality signal with 50dB SNR
- Controlable frequency response and group delay compensation
- Carrier lock range of -0.5MHz to $+1.5\text{MHz}$
- H_sync and V_sync lock indication to Host
- Automatic clamp out based on H_sync level

Ghost Reduction in NTSC reception

- Ghost reduction in accordance with ITU-R BT.1124-1 system C
- Automatic GCR detection
- GR coverage of $-4.9\mu\text{s}$ to $+20\mu\text{s}$ with less than -35dB residue for -10dBc ghost

BTSC Audio decoding

- Mono, stereo and SAP decoding
- Direct 41.25MHz IF sampling or Low-IF 4.5MHz sampling
- Forced Mono option
- IIS master/slave with output clock of 48KHz, 44.1KHz, 32KHz. Optional over sampling rates of 96KHz and 88.2KHz.

Autonomous Operation

- Internal firmware execution eliminates supervision and operation by the system host

Advanced System Functions

- Accepts 44MHz or low-IF from the tuner eliminating external base-band demodulation
- Separate RF and IF AGC outputs with adaptive tuner gain delay and loop parameters
- Master or Slave IIS digital audio output, selectable data rates
- Full internal digital recovery loops eliminate external VCXO requirements
- Via IIC, the OR51132 independently calculates and reports FEC statistics, receiver status, and channel data such as S/N ratio, equalizer taps, carrier offset, and more.

Flexible Firmware Initialization Options

- Three firmware loading options:
 - IIC serial bus from host
 - Auto-boot from SPI memory IC
 - Auto-boot from parallel ROM interface

Low Power, less than 1.0 Watt

Standard 128-pin LQFP package

GENERAL DESCRIPTION

The OR51132 is multi-standard demodulator and decoder for terrestrial and cable DTV and legacy analog TV reception. It is designed to support 8/16-VSB in full compliance with the ATSC Digital Television Standard and ITU-T J.83 Annex B. Its basic function is to recover the digital data encoded into the broadcast signal, which includes video and audio program information and ancillary data service.

The OR51132 is designed to reduce system cost by using a single tuner for DTV and the analog NTSC reception. The OR51132 demodulates video and audio in NTSC channels.

A typical OR51132 system application is shown in Figure 1. The device directly accepts analog IF or low IF from the tuner section via an internal ADC (Analog to Digital Converter). Following demodulation and error correction, it provides the MPEG-2 transport stream to the transport demultiplexer.

The OR51132's small size and low power make it well suited for any system designed to receive information from DTV broadcasts. This includes stand-alone SDTV or HDTV sets, STB's, PC-TV cards or data reception appliances.

Figure 1: Application of the OR51132 in Typical DTV Receiver

