IrigSlaveClock

A low-footprint, highly configurable, 100% hardware only IRIG Slave Clock solution, specifically designed for high-performance distributed systems. Allows standalone synchronization with compensation of cable and input circuit delays and time base correction to work with UTC or TAI time bases.

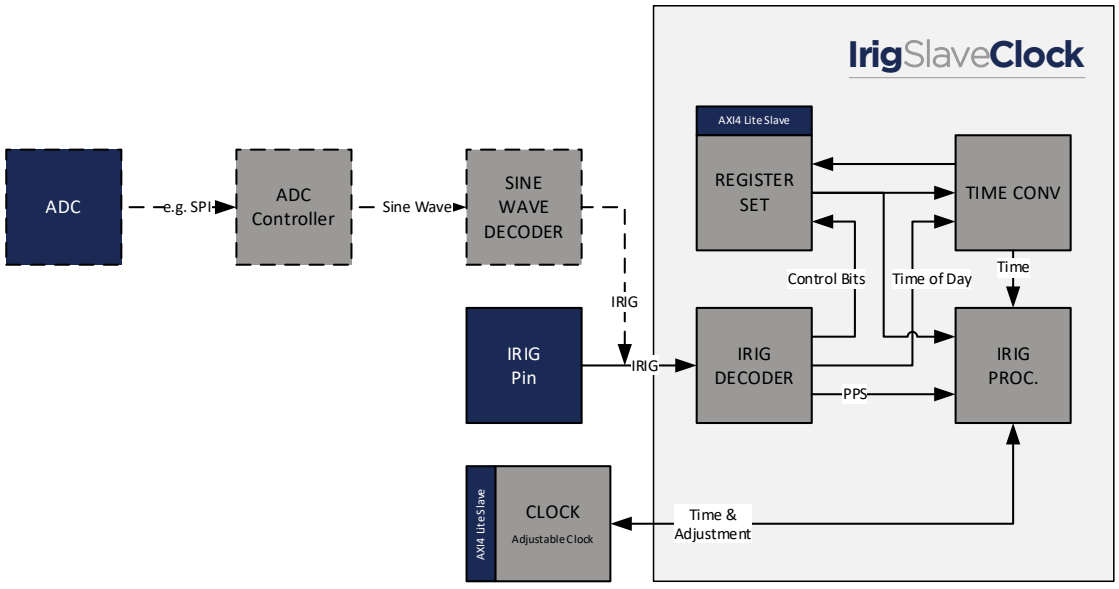
Key Features:

- IRIG-B006/G006 Slave Clock (IRIG-B126/G146 with ADC)
- Extraction of Control Bits
- 100% hardware only solution
- Vendor independent
- Time base correction
- Cable and Input delay compensation
- PI Servo Loop in hardware
- Time frame encoding

Typical Applications:

- Legacy Networks
- Time converters
- Robot control
- Substation automation
- Distributed data acquisition
- Test and measurement
- Etc.

IP Core Architecture:



Specification:

IRIG	IRIG synchronization, supports IRIG-B006/G006 format (compatible with B004, B005, B006 and B007 IRIG-B Masters) PWM and DCLS decoding for IRIG-B006 and IRIG-G006 AC and AM decoding with ADC for IRIG-B126 and IRIG-G146 (IRIG-G requires >= 1MSPL ADC) Extracts Control Bits and provides it to user Time base conversion from TAI to UTC (or any other time base) Time frame encoding and supervision in hardware Compensation of input circuits and cable delays Cable delays can be changed at runtime Offset and drift calculation for adjusting the clock
Performance	Timestamp accuracy of rising edge IRIG +/- an input clock period, offload synchronization
Portability	100% hardware only solution, no dependency on external CPU or external driver circuitry features Vendor independent, written in plain VHDL Low footprint and low frequency requirements
Modularity	Slim and standardized interfaces are used
Configuration	No CPU required, standalone configuration with signals Axi4 lite slave support, for status and configuration

Deliverables:

- Ip core in plain VHDL
- Testbench in plain VHDL
- Reference Design with 1 IRIG input and 1 PPS output
  - Top level VHDL file
  - Timing Constraint SDC files
  - Vivado/Quartus Project file

Related Products:

- PTP Ordinary Clock
- PTP Grandmaster Clock
- PTP Hybrid Clock
- IRIG Master
- TOD Master/Slave
- Adjustable Clock
- Signal Timestamper
- Signal Generator

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