

# RtcMasterClock

A low-footprint, highly configurable, 100% hardware only Real Time Clock (RTC) Master Clock solution, specifically designed for long time availability. Allows reading and writing of the RTC via I2C as well as standalone synchronization with compensation of input circuit delays.

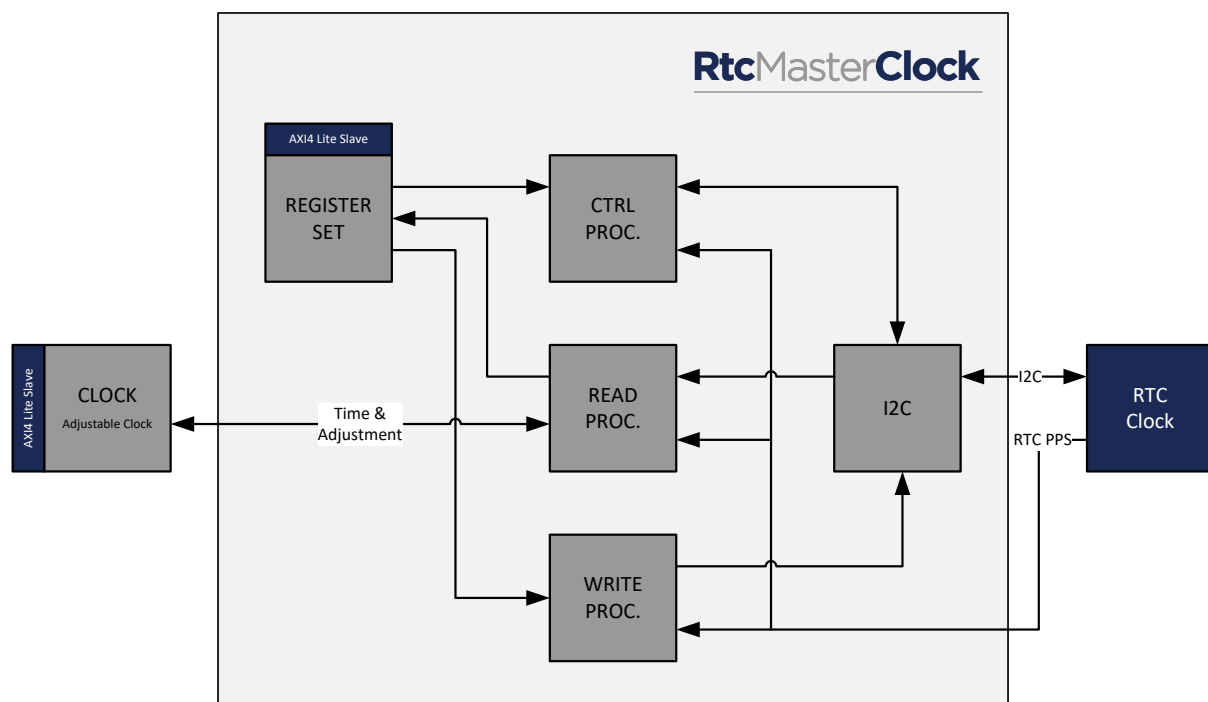
## Key Features:

- RTC Master Clock
- 100% hardware only solution
- Vendor independent
- Read/Write Clock via I2C
- PI Servo Loop in hardware
- Hardware time conversion

## Typical Applications:

- Time servers
- Time converters
- Sensors
- Clocks
- Distributed data acquisition
- Test and measurement
- Etc.

## IP Core Architecture:



## Specification:

RTC	Supports DS1307 and MCP7941x (and compatible) Real Time Clocks (RTC) and self-configuration at startup Hardware I2C controller with frequencies up to 400kHz. Reading and writing of RTC aligned with RTC PPS output Compensation of input circuits delays Offset and drift calculation for adjusting the clock
Performance	Timestamp accuracy of RTC PPS is 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 I2C bus and 1 RTC PPS input
  - Top level VHDL file
  - Timing Constraint SDC files
  - Vivado/Quartus Project file

## Related Products:

- |                         |                      |
|-------------------------|----------------------|
| • NMEA Slave            | • IRIG Master/Slave  |
| • PTP Grandmaster Clock | • Adjustable Clock   |
| • PPS Master/Slave      | • Signal Timestamper |
| • PPS Slave             | • Signal Generator   |



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