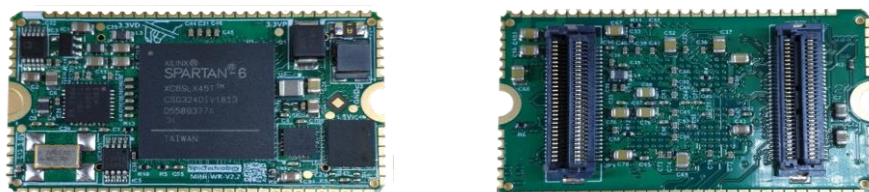


## Mini-WR 精简的模块式 WR 节点



**WR (White Rabbit)** 是基于同步以太网和 PTP 协议的时钟同步技术, 可实现长距离、多节点亚纳秒级同步准确度, 数十皮秒同步精度。WR 节点是 WR 网络的末端授时设备, 可为用户提供高性能同步时钟和千兆数据传输通道。**Mini-WR** 是最精简的模块级 WR 节点, 提供丰富灵活的信号连接方式, 能够适应不同场合的使用要求。

### 产品特点

- 亚纳秒时间同步准确度, <30 皮秒同步精度
- 同步距离 20km (最高可支持 160km)
- 支持 SNMP 网络管理协议、远程更新
- 提供类 GMII 数据传输端口, 支持以太网协议处理引擎, UDP>900Mbps、TCP>255Mbps

### 接口信息

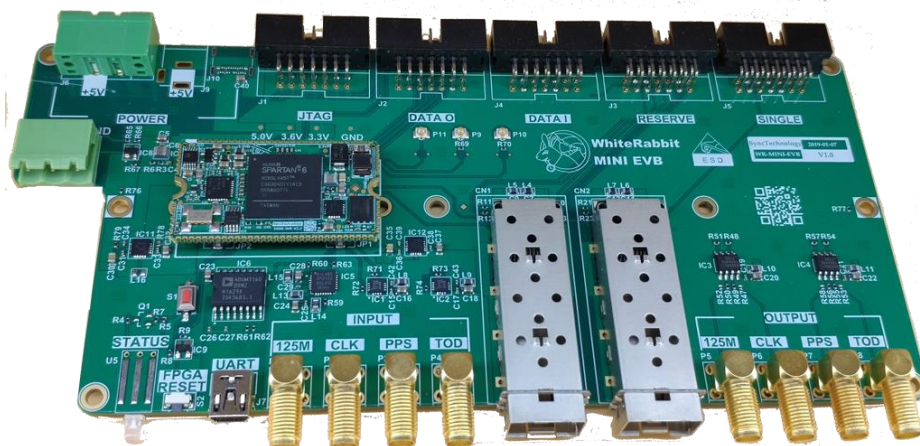
- 3.3V 供电, 最大电流 2A
- 高速 FCI 连接器, 60 个触点, 0.5mm 间距
- 板边邮票孔连接, 1.27mm
- 紧固定位半孔
- 42mm X 24mm

### 功能信息

- 可实现 2 个同步端口, 支持级联连接
- 提供 10MHz/125MHz+PPS+UTC/TAI 输出
- 提供类 GMII 数据传输接口
- 提供 JTAG 和调试串口

## Mini-WR-EVB

## Mini-WR评估板



Mini-WR-EVB 用于评估 Mini-WR，与 Mini-WR 一起构成完整的 WR 节点。Mini-WR-EVB 提供 PPS/10M/TOD IN, PPS/10M/TOD OUT 等时钟接口，还提供数据传输、串口调试等接口。

- 可作为 Mini-WR 扩展底板参考设计
- 提供 PPS/10M/125M/TOD 输入
- 提供 PPS/10M/125M/TOD 输出

### 产品特点

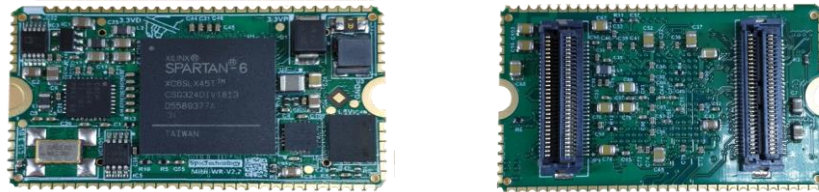
- 两个 SFP 接口
- 串口调试接口，数据传输接口
- 扩展其他保留端口，便于用户自定义开发
- 状态指示灯、复位按键



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## Mini-WR Compact WR Module

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WR (White Rabbit) is the enhancement of the Ethernet based on Sync-E and PTP technology that can achieve synchronization up to sub-ns accuracy, pico-second accuracy among multiple nodes over tens of kilometers distance.

The WR node is the endpoint of WR network that provides synchronized clock and giga-bit data transmission interface for user logic. Mini-WR module is the most compact WR node with flexible connectors that can easily integrated with custom electronics.

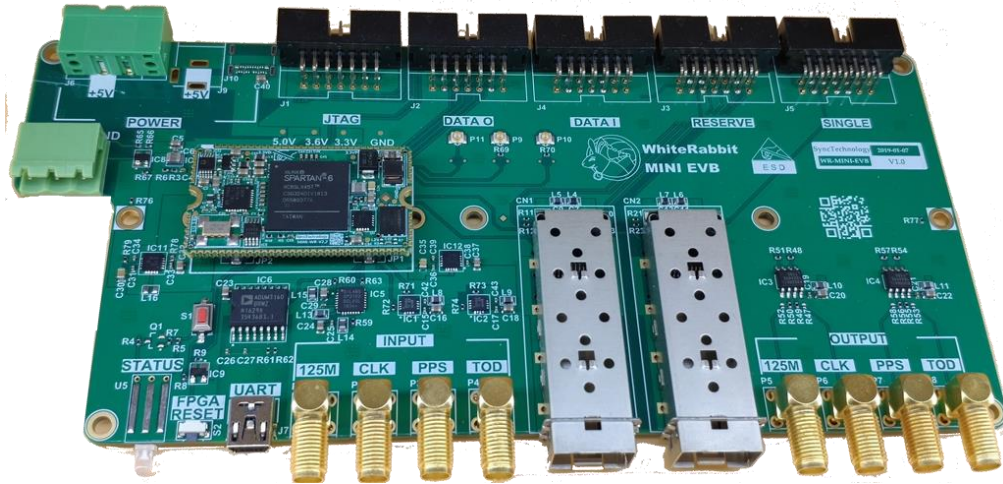
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- |                          |   |
|--------------------------|---|
| <b>Product Highlight</b> | <ul style="list-style-type: none"><li>✓ Sub-ns Accuracy and pico-second precision</li><li>✓ 20Km distance (up to 160Km by special SFP module)</li><li>✓ with embedded ethernet protocol process engine written in HDL, 900Mbps for UDP, 255Mbps for TCP</li></ul> |
|--------------------------|---|
- 

- |                  |  |
|------------------|--|
| <b>Interface</b> | <ul style="list-style-type: none"><li>✓ 3.3V(max 2A)</li><li>✓ High-speed FCI connectors on back side, 60Pin each, with 0.5mm pitch</li><li>✓ Stamp-holes on board edge, 1.27mm pitch</li><li>✓ Fix half-hole on both ends</li><li>✓ 42mm X 24mm</li></ul> |
|------------------|--|
- 

- |                   |  |
|-------------------|--|
| <b>expandable</b> | <ul style="list-style-type: none"><li>✓ Support Dual WR ports for Cascade topology</li><li>✓ Provides 10/125 MHz, PPS, TOD input/output</li><li>✓ GMII like interface for data transmission</li><li>✓ JTAG connector and debug serial port</li></ul> |
|-------------------|--|
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## Mini-WR-EVB Mini-WR Evaluation Board



Due to the compact dimension of Mini-WR, it is essential to provide necessary power jack, SFP cage and SMA connectors to make the Mini-WR as a complete WR node.

Mini-WR-EVB is the evaluation board that expand the signals from the FCI connector on the bottom of Mini-WR.

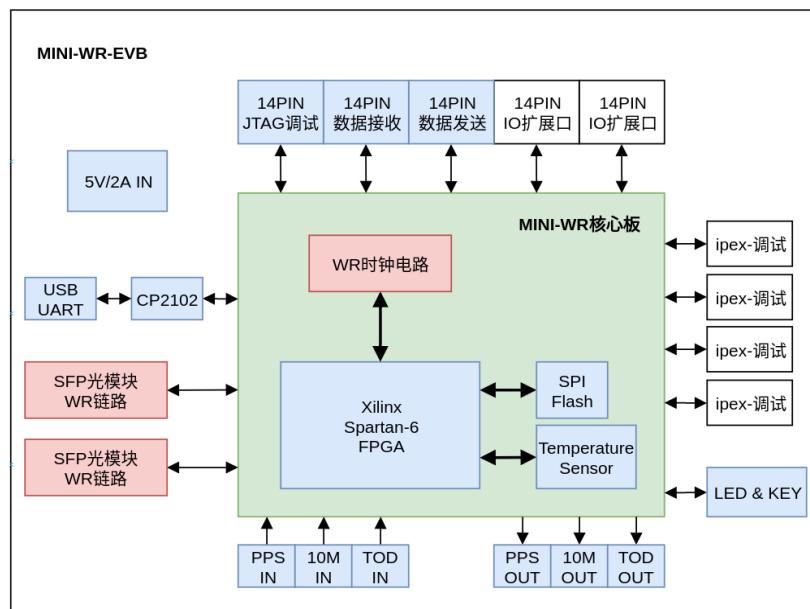
- |                          |  |
|--------------------------|--|
| <b>Product Highlight</b> | ● Reference design for Mini-WR carrier board         |
|                          | ● SMA connectors for PPS/10M/125M/TOD in/out         |
|                          | ● Two SFP cages                                      |
|                          | ● Serial port for debug, data transmission connector |
|                          | ● expand connectors for custom usage                 |
|                          | ● Status LED, reset button                           |



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Power	5V , 2A
PPS/TOD Input	LvTTL/LvCMOS 2.5V/3.3V/5V
10MHz Input	SINE/LVCMOS 247mV(rms)@50ohm, ~0.87dBm
PPS/TOD Output	3.3Vpp@50ohm (High Voltage : +3.3V, Low Voltage : 0V)
10MHz Output	3.3Vpp@50ohm ~20.4dBm (High Voltage : 3.3V, Low Voltage : 0V)

### Mini-WR-EVB Specification



### Mini-WR-EVB Structure Diagram