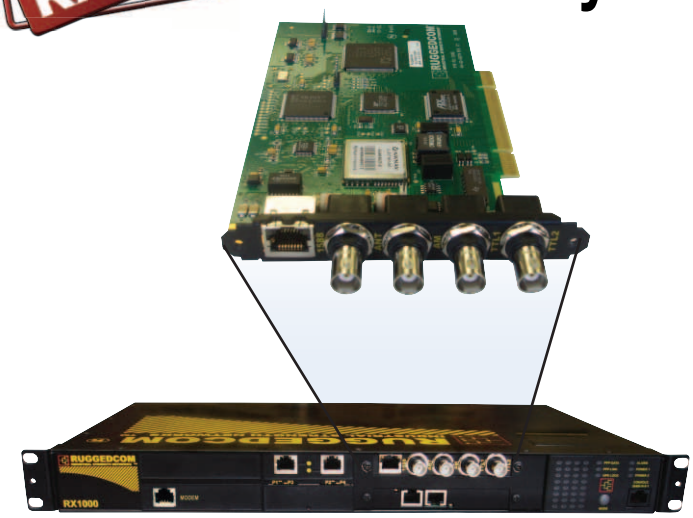
Precision Time Protocol (PTP)

Accurate Network Time Synchronization Using NTP, GPS, and/or IEEE1588



RuggedRouter™ RX1000/RX1100 Network Router and Cyber Security Appliance

The Precision Time Protocol (PTP) card option for the RuggedRouter™ (RuggedCom's industrially hardened Ethernet network router) provides accurate time synchronization across local area and wide area networks. The PTP card is capable of using a variety of time synchronization methods including network time protocol (NTP), GPS (IRIB-B), and IEEE 1588, making it a flexible product for existing and new installations.

NTP is the defacto standard for synchronizing the clocks of computer systems through the internet network and is suitable for systems that require accuracies in the order of 1ms. IRIG-B time synchronization relies on the Global Positioning System (GPS) as the source of accurate time and requires an external GPS antenna input to provide accurate time signals in the order of 100microseconds. IEEE 1588 is designed to fill a niche not well served by either of the two dominant protocols, NTP and GPS. IEEE 1588 is designed for local systems requiring very high accuracies beyond those attainable using NTP and GPS (on the order of 100 nanoseconds). IEEE 1588 is also designed for applications that cannot bear the cost of a GPS receiver at each node, or for which GPS signals are inaccessible.

The PTP card option is an ideal product for use in existing installations already well served by NTP or GPS. It also provides a migration path for the use of the new IEEE 1588 standard. As more end devices enter the market with IEEE 1588 compatibility this card provides an easy transition to this new time synchronization standard.

Features and Benefits

Overall Features

- Optional card for the RuggedRouter™
- Supports NTP, IRIG-B, NTP time synchronization simultaneously
- Accuracy:
  - ± 1ms – NTP
  - ± 100ns – IEEE 1588
  - ± 100us – GPS (IRIG-B)
- RuggedRated™ reliability and protection
- -40 to +85°C operating temperature

NTP Features

- Supports NTP/SNTP (RFC1305/RFC2030)
- NTP Server and NTP Client
- Stratum "1" NTP server

GPS Input

- GPS receiver for global time reference input
- NEMA 0183 protocol compatible
- Frequency stability: 0.5ppm
- PPS accuracy: +/- 1us
- 50 ohm BNC female connector RF input with remote antenna suitable for low-loss coaxial cable
- Support active antenna with +5V DC power feed

IRIG-B Outputs

- User selectable outputs:
  - Two IRIG-B unmodulated (TTL) or PPS
  - IRIG-B modulated (AM)
- Supports TTL levels PWM output (Format B002, B003), 50 ohm BNC female connector
- Supports 1kHz AM output (Format B122, B123), 6Vp-p, ratio 3:1 ± 10%, 600 ohm BNC female connector

IEEE 1588 Support

- IEEE STD 1588-2002 compliant
- One 10/100BaseTX IEEE 1588 master or slave port
  - RJ45 Ethernet interface
  - Autonegotiating and auto-crossover
  - Hardware-assist time-stamping and clock synchronization
- Provides Grandmaster clock source (GPS timing source)
- 100ns time accuracy

Ordering

- Order as part of the RuggedRouter RX1000/RX1100 order code.

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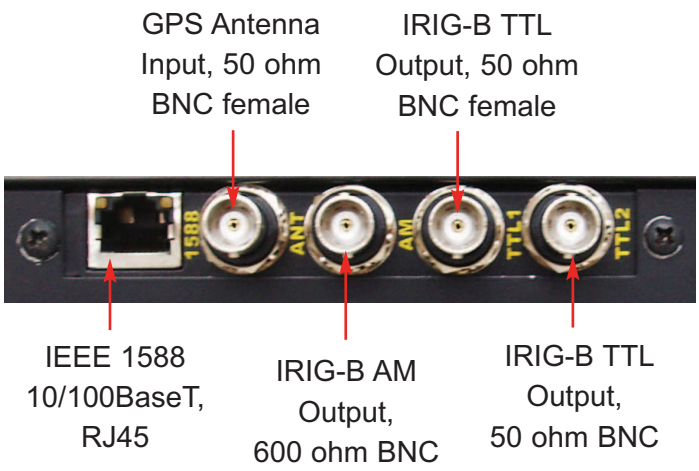
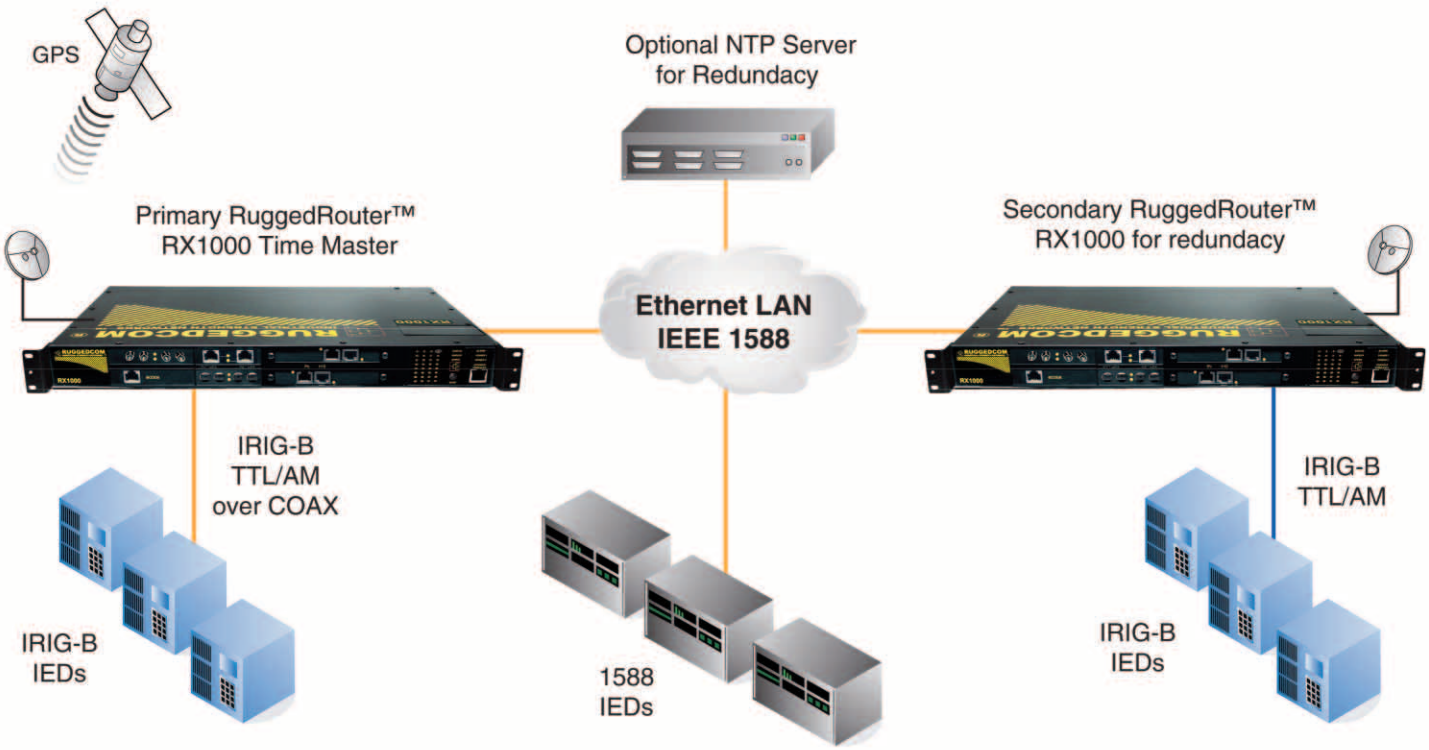
Physical Ports



Network Architecture



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