RCEI-830A-TB

Thunderbolt™ 3-equipped ARINC 429 Portable Device

Overview
The RCEI-830A-TB combines Abaco's industry-leading ARINC 429 capability with the performance and convenience of Intel®'s Thunderbolt 3 interface to establish a new benchmark for portable ARINC 429 devices. It is designed for data loading and applications where low latency and real-time data is essential.

Thunderbolt 3 supports data transfer rates of up to 40 Gbps with extremely low latency that overcomes the chronic latency issues inherent in USB- and Ethernet-based remote devices. Thunderbolt 3 also provides a long-term solution that is compatible with the newest laptops and PCs, many of which no longer support legacy PCMCIA, ExpressCard™ slots or even USB 2.0 ports.

Hardware
Available in a range of flexible configurations supporting up to 16 Tx/16 Rx channels, the RCEI-830A-TB provides complete, integrated databus functionality for ARINC 429, ARINC 615-3 data loader, ARINC 575 and selected 2-wire, 32-bit protocols. The RCEI-830A-TB supports maximum data throughput on all channels while providing on-board message scheduling, label filtering, multiple buffering options, time-tagging and error detection.

Options include ARINC 717, ARINC 573, and IRIG-B receiver (AM or DC/ TTL) and generator (DC/TTL) support. The IRIG-B DC level signal can be used to synchronize time stamps across multiple boards. Several RCEI-830A-TB

configurations offer combinations of ARINC 429 channels along with ARINC 717/573 dual-mode functionality. Dual-mode functionality programmatically supports either HBP (Harvard Bi-Phase) or BPRZ (Bi-Polar Return to Zero) across a very wide range of bit rate/subframe combinations.

Software
Abaco's software tools and solutions significantly reduce the time required to integrate ARINC 429 and other avionics protocols into an application. Included with the RCEI-830A-TB is Abaco's flexible and feature-rich API with multi-card support. Optional software includes Lab-VIEW™ support, ARINC 615-3 data loader GUI and BusTools/ARINC, Abaco's ready-to-use, Windows™-based GUI solution for ARINC 429 analysis, simulation and data logging..

Architecture
The RCEI-830A-TB features include independent, software programmable data rates, parity, error detection and automatic transmit channel slew rate adjustment. It includes 2 MB of on-board RAM. All channels operate independently.

Data Handling
On-board firmware, large data buffers, and a high-level API are integrated to provide total flexibility in monitoring and generating ARINC bus traffic. Simultaneous scheduled and burst mode (FIFO) messaging is supported on all ARINC 429 transmit channels. Each ARINC 429 receive channel provides simultaneous dedicated and buffered mode storage, along with label/SDI filtering.

Three different methods are provided to buffer received data:

- Buffered mode utilizes a separate circular buffer for each channel.
- Merged mode combines all received data into a single, time-sequenced circular buffer.
- Dedicated mode provides a snapshot of the latest data.

FEATURES:

- Thunderbolt port
  - Power over Thunderbolt
  - Max data rate: 40 Gbps
- Up to 16 Rx and 16 Tx ARINC 429 channels
- Compact and portable (85 mm x 160 mm x 24 mm)
- Rugged, mountable and stackable aluminum enclosure.
- High performance, high density interface with large buffers
- Thunderbolt 3 overcomes the latency issues of USB and Ethernet-based remote devices.
- Supports maximum data throughput on all channels simultaneously.
- Independent, software-programmable bit rates for all channels.
- Fully independent channel operation.
- IRIG-B receiver/generator optional.

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Specifications

ARINC 429 Receive Channels
- Maximum channels: 16 Rx
- Data rates: 12.5 KHz, 100 KHz or 5 KHz to 150 KHz programmable
- Standard input levels: ± 6.5 to ±13 VDC (A to B)
- Filtering: label and/or SDI
- Parity: odd, even or none
- Error reporting: parity

ARINC 429 Transmit Channels
- Maximum channels: 16 Tx
- Data rates: 12.5 KHz, 100 KHz or 5 KHz to 150 KHz programmable
- Automatic slew rate adjustment
- Output level: ±10 VDC (A to B)
- Parity: odd, even or none
- Error injection option: parity, gap, high or low bit count

Software
- API – High-level libraries with source code included.
- GUI - Optional BusTools/ARINC GUI bus analyzer
- LabVIEW - Optional CEI-LV support is available
- Optional ARINC 615-3 data loader GUI

Physical
- 85mm x 160mm x 24mm aluminum enclosure
- 68 pin SCSI I/O connector
- Thunderbolt 3 connector

Environmental
- Standard operating temperature range: 0°C to +70°C
- Relative humidity: 5 to 95% (non-condensing)
- Storage temperature range: -55°C to +105°C

Option Configurations
- Optional 1 Tx/1 Rx ARINC 717
- Optional Discrete IO
- Optional IRIG-B receiver (AM or DC/TTL) and generator (DC/TTL)

Power (typical)
- Power supplied over Thunderbolt interface. No external power required.

Thunderbolt 3 Interface
- Single port, up to 20 Gbps data rate
- USB power delivery up to 100W
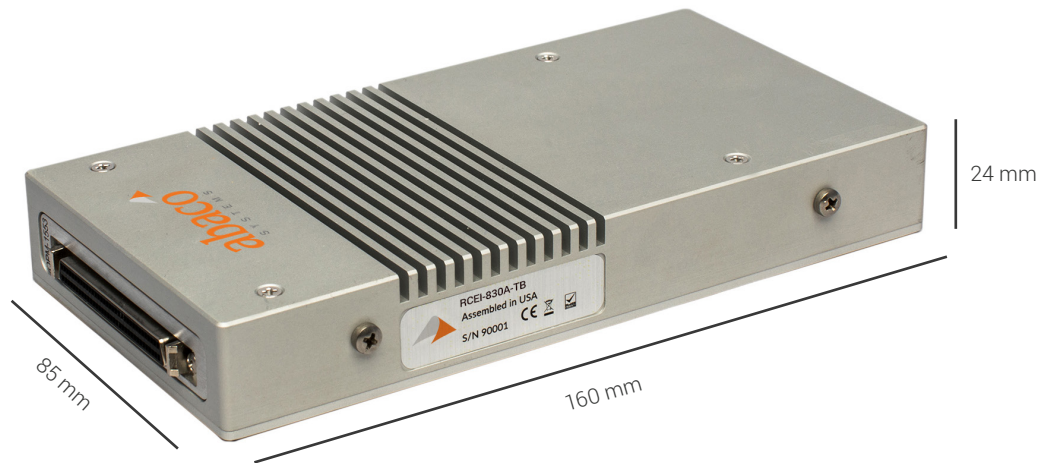
Ordering information

RCEI-830A-22TB	2 Rx, 2 Tx channels
RCEI-830A-22JTB	2 Rx, 2 Tx channels, 1 Rx, 1 Tx ARINC 717 channels
RCEI-830A-44TB	4 Rx, 4 Tx channels
RCEI-830A-44JTB	4 Rx, 4 Tx channels, 1 Rx, 1 Tx ARINC 717 channels
RCEI-830A-88TB	8 Rx, 8 Tx channels
RCEI-830A-88JTB	8 Rx, 8 Tx channels, 1 Rx, 1 Tx ARINC 717 channels
RCEI-830A-1313JTB	13 Rx, 13 Tx channels, 1 Rx, 1 Tx ARINC 717 channels
RCEI-830A-1616TB	16 Rx, 16 Tx channels
RCEI-830A-0116TB	1 Rx, 16 Tx channels
RCEI-830A-1601TB	16 Rx, 1 Tx channels

Optional Hardware

-W suffix	IRIG-B Receiver (AM or DC/TTL) Generator (DC/TTL)
-N suffix	Discretes 4 in / 4 out (required for data loader functionality)
-K suffix	Conformal coated

Optional Software

BT-ARINC	BusTools/ARINC Windows GUI software for ARINC Bus Analysis, Simulation and Datalogging.
CEI-DL	ARINC 615-3 Data Loader GUI
CEI-LV	LabVIEW support for ARINC 429

24 mm
85 mm
160 mm

RCEI-830A-TB
Assembled in USA
S/N 90001

WE INNOVATE. WE DELIVER. YOU SUCCEED.

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