Packet Baler44

NETWORK-AWARE RUGGED USB FIELD RECORDING SYSTEM FOR Q330

The Quanterra model Baler44 Packet Baler is a modular, field-ready high-capacity recording system for the Quanterra Q330 ultralow-power high-resolution seismic data acquisition system. Using sophisticated power management, and advanced telemetry for reliable data delivery, the B44 stores up to32GB of ready-to-use data in internationally-standardized Federation of Digital Seismic Networks MSEED format. The MSEED data are accessible either by simple media removal or through all-new advanced easy-to-use high-level HTTP and FTP interfaces.

Low Power
Incorporating an advanced power management technology, a Q330 & B44 have a typical average power consumption of less than 1W, continuous 3 channels @ 40sps with GPS!

Internet-Ready Industry Standards
The telemetry protocols use industry standard stateless IP communications, enabling the use of commercial off-theshelf IP equipment and service providors. Serial IP and Ethernet 10/100BaseT are built-in.

Streamlined Administration
The B44 administration is fully backward compatible with the prior Baler systems for recording configuration – your data tokens may be used unchanged.

Remote Data Collection Friendly
The B44's HTTP & FTP servers allow data to be downloaded to a network at up to 1Mbyte/s, limited only by media speed. Local or remote retrieval of data from the simple flat file structure may be automated by simple scripts or FTP engines.

Applications
STAND ALONE RECORDING: FAST FIELD ROTATION. In this mode, either the entire intelligent B44 module or simply the rugged USB media is rapidly exchanged – the operation takes a few minutes.
FULLY-REMOTE Q330: TELEMETRY BACKUP &: BALER AS ROUTER.
The advanced telemetry capability of the Q330 permits a Baler to be installed on site with the Q330 to record an independent data stream, including any super or subset of data telemetered from the Q330. In addition, the B44 may act as transparently as an integrated communications management system allowing only one IP link to provide both real-time access to the Q330 *and* access to the recorded data. All new HTTP, FTP data access modes are accommodated, as well as both UDP and TCP communications handling for access to the Q330. Recorded data and real-time data may be simultaneously delivered to multiple recipients.

FEATURES

- New ease of use in data storage. Exchange the entire intelligent module or rugged USB media.
- Fast efficient high-level recording unit for the Q330. High-level industry standards: 100BaseT, HTTP, FTP.
- No "processing" is required to use the MSEED data stored on the B44. The B44 fully negotiates communications with the Q330 and produces accurately time-labelled MSEED data directly in the field, ready for archival. No conversion of non-standard intermediate formats is required.
- Low Power. Continuous operation requires about 1W, providing advanced communications features where telemetry is available. Stand-alone field recording may be power cycled: effective 10mW power consumption!
- Up to 32 GByte field removable USB drive storage
- Hot swappable media, no need to shut down the system. Media will failover to alternate when full.
- Internet savvy communications and security. B44 supports HTTP, FTP, SSH, DHCP, DNS, and other protocols through its Linux operating system.
- Fully compatible with the Q330S internal Baler.
- 4-pin USB interface; not fragile CF.
- Media compartment is sealed and accessible under the rubber shock-isolation end caps.
- Flat MSEED file structure, no need for special software to read the files: Linux, Solaris, MS Windows and MacOS can directly read the media.
- Extended temperature options available for media: USB thumb drive storage is available in versions rated for full industrial temperature range: -40°C to +85°C
- Compact and super rugged. No moving parts. Rugged IP67 Q330-style package.

Simple Preparation
Unlike previous generation Baler products, no special software tools are required for preparing media to record data. The B44 uses a simple WYSIWYG interface with a single "mode" locking toggle switch, allowing an operator to RUN or to FORMAT media. An informative set of panel LED's show the state of the formatting engine. Brand new media may be formatted directly in the B44 without any special equipment.

Simple Software Upgrade
The B44 supports automatic software installation from certified digitally-signed files contained on the recording media. To upgrade, simply insert a USB drive containing the appropriate upgrade file, and the B44 will automatically install it if necessary. The B44 prevents inadvertent software reversion. No special software tools or procedures are required. Remote software upgrade is accomplished by sending the upgrade file to a remote B44 using secure copy.

Continued

⚙ SPECIFICATIONS

Safe Power Removal
The B44 contains a super-capacitor based uninterruptible power supply and extensive power management logic. It will power up only when the internal UPS is charged to sufficient capacity to ensure that the media can be gracefully shut down. Field work often results in unexpected power losses. Loss of power initiates a graceful shutdown.

Simple Data Access
Flat files and basic HTTP & FTP protocols make data access simple and operable across a wide range to OS platforms and applications programs. No special software tools are required to retrieve the B44's MSEED data.

Rugged Package
The new B44 features an internal floating suspension for the electronics package, IP67 sealed, contained in an extremely rugged milled solid aluminum block with elastomer end bumpers. The media are housed in a separate compartment beneath one bumper, quickly accessible with no tools.

Channels Capacity	No limit. Defined by Q330 Dual USB media supported, 16GB each. Dual 128GB in development
Format Retrieval Functions	Federation of Digital Seismic Networks MSEED Data may be recovered by a HTTP or FTP access to time-stamped flat files
File sizes	4MB standard. 4096-byte MSEED standard
Offload	Up to 1Mbyte/s over 100BaseT, defined by media rate
Rate Routing and Network Connectors	Baler routes IP packets between its independently addressed serial IP and 10BaseT Ethernet ports
Serial Configure Mode	Special ASCII terminal using serial port to select some configuration options. Not normally required.
Network Protocols	IP, UDP, TCP, HTTP, FTP, SSH, DHCP, DNS. At QNET connector
Telemetry from Q330	Full Duplex, efficient positive acknowledge with error control. UDP/IP over serial and Ethernet. Burst or continuous from Q330.
Temperature	Specified -40 to +85 °C Operating range media defined. Fully rated media available.
Operating Modes	Continuous or Power-Cycled (standard) Typical duty cycle < 1%
Operational Data	Baler monitors its own power consumption & media temperature
Memory	64MB RAM standard
Network	IEEE 802 100Base-T Ethernet UDP/IP. TCP/IP Protocol Stack
Serial Ports	1 serial telemetry (up to 230kbaud) and 1 internal debug port (115200 baud)
Technology	Embedded Linux ARM
Power	<1W typical when running 11-18VDC reverse, over, and under protected. Internal UPS
Physical	Rugged Aluminum extrusion with protective boots and floating internal suspension, 11.5 X 6.25 X 3.25 in., 6 lbs., Externally visible LED status and fault indicators.