rt.buffer — Remote Telemetry Unit

The Scannex rt.buffer is a rugged, ultra-low-power 2G/3G/4G remote telemetry logging unit providing a flexible solution for harsh environmental conditions such as water services and marine. It has a powerful range of collection, delivery and management options.

The rt.buffer is effectively a "platform" that provides fully scriptable operations for collecting, manipulating, calculating, and delivering data from a variety of sensor types.

You can respond quickly to your market needs and build innovative multi-sensor solutions using the embedded scripting – with no firmware development required.

Sample Lua Apps are available for evaluation.

A fast 96MHz ARM Cortex CPU with highly efficient power management enables long battery life even when performing complex scripts and calculations.

Markets

- Water and waste water
- Environment and climate
- Utilities
- Industrial
- Oceanographic
- Coastal monitoring
- Railway trackside

Operating Modes

For battery operation, the rt.buffer stays in ultra low-power sleep mode and wakes up on a variety of triggers or internal timers to collect data from external sensors.

It will deliver the data to the Cloud periodically, or on scripted conditions.

Data Collection Options

- 2 x serial: RS232, RS485, ModBus & SDI-12 options
- 2 x digital/pulse-count/event detection inputs
- 1 x 24-bit differential ADC (e.g. pressure transducers etc)

Data Delivery Options

The rt.buffer can deliver to Cloud services, like Amazon AWS or Microsoft Azure, in a fully transactional manner over 3G by:

- HTTP / HTTPS Post
- FTP Push
- FTP+TLS Secure Push

The outbound connection from the rt.buffer can also query the server to request updates (e.g. firmware, configurations, Lua apps) as well as requesting diagnostic data and logs.

Lua Scripting

The flexible Lua scripting engine has full control to accept or collect sample data from serial/ModBus/SDI-12/analog/pulse.

Data can be calculated and formatted in any ASCII (e.g. CSV, XML, JSON, etc) or binary format, and any alarm conditions can be detected.

It also provides full control over delivery schedules and triggers.

Configuration and Setup

Configuration and administration of the rt.buffer via:

- USB on Windows (no driver needed)
- Over the air with IoT server
- Over the air with Terminal (ToA) access

Connected devices can be configured locally, or remotely, with full pass-through facilities.

Remote Management & Update

Can be controlled through the IoT server for:

- Firmware and Lua App upgrades
- Configuration changes
- Diagnostic requests
- Cellular survey requests
- Executing arbitrary Lua code
  (e.g to control and reconfigure connected devices)

Terminal-Over-the-Air (ToA)

The Terminal Over the Air mechanism connects a TCP/TLS socket to an Internet server and provides a full remote link to the rt.buffer's terminal interface.

Specifications

Storage

128MB of non-volatile flash memory (chip-on-board for maximum reliability)

Data Transmission

3G (UMTS/HSPA+) and 2G (GSM/GPRS/EDGE) global modem; 4G on request

Band: 800/850/900/1900/2100MHz @UMTS
          850/900/1800/1900MHz @ GSM

SMS: Fully scriptable binary/text SMS bi-directional transmission

Data Collection

Serial input: 300 to 460800 baud (optional flow control and fast wake-up from sleep on received data)

Analog: 3V excitation reference output

                  24-bit resolution

                  Single-ended: 0V to 1.5V / differential: ± 1.5V

Digital/Pulse   64Hz max

Data Delivery

Internet protocols: FTP, FTP+TLS, HTTP, HTTPS

Servers: Cloud: Amazon AWS, Microsoft Azure
                  SCADA FTP, private server

Data formats: CSV, XML, JSON, Binary – all with optional gzip compression

Hardware Options

Daughter-board PCBs for RS485/SDI-12/Power Output controls, and custom requirement, etc (by request).

Power Supply

Can run from internal batteries and/or external DC supply and automatically powers from the highest voltage:

a)   Internal primary Lithium 7.2VDC battery pack (1 or 2 packs of 2xLSH20)
b)   External 9-28VDC (not internally isolated)
c)   4 x alkaline D-cells (long life)

Typical power levels at 7.2VDC are:

- Sleep Mode: 40µA
- Collecting: 3 to 25mA
- Transmitting: 200mA approx.

More than 5 year battery life with a single 7.2V Lithium battery pack (2 x LSH20 D-cells), based on:

- Sampling every 15 seconds
- Transmitting every 24 hours

The rt.buffer can also provide a 3.6V output (or 12V with accessory) to the connected device under script control.

Physical

Case: Rugged IP68 (2 metres for 72 hours) die-cast aluminium case with pressure vent

Size: 250mm x 210mm x 65mm

Weight: 1.3kg (excluding batteries)

Temperature: -20℃ to +70℃

Connectors

Bulgin 400 series Buccaneer IP68 connectors

Approvals

FCC 47 CFR Part 15B -USA

ICES-3 (B) /NMB-3 (B) -Canada

CE RE Directive 2014/53/EU -Europe

RoHS