RDL - Product Specifications RevD6

Work in progress

"RDL CONTROLLER" ONLY

- 1 Resistor Data Logger (RDL) controller
- 1 USB cable, male, type A (PC side) to male type Mini B (RDL side), 0.9m (3 ft) length
- Access to all our design documentation (public)

"RDL STARTER KIT" PACKAGE CONTENT

- 1 Resistor Data Logger (RDL) controller
- 8 calibrated temperature probes, with 1 m lead wire
- 2 capillary wicks
- 1 small plastic container for wet bulb temperature measurements
- 1 waterproof photoresistor
- 1 weatherproof enclosure
- 1 flat mini-screwdriver
- 1 extension wire, 28 AWG, 2 m length
- 1 high-accuracy resistor, 10 kΩ +/- 0.1%
- Electrolytic capacitors (3) for optional noise filter
- 1 USB cable, male, type A (PC side) to male type Mini B (RDL side), 0.9m (3 ft) length
- 1 calibration certificate
- Access to all our design documentation (public)

OVERALL SYSTEM

Jericho model number: RDL-RevD6
Multiplexer: CD74HC4067
Real-Time-Clock: DS1307ZN+T&R (No temperature compensation)
USB cable length: 0.9 m
Number of resistive channels: 16
Number of I2C channels: 2
Outdoor use: Yes (Weatherproof only)
Overall measurement accuracy (with TH-1/TH-2 calibrated thermistors):
+/- 0.5°C (+/- 1°F) in the 0-100°C range (-32°F to 212°F)
Maximum resolution (temperature): 0.01°C (0.02°F)
Maximum resolution (resistance): 2 Ω
Measurement range (resistance): 0 Ω to 10 MΩ
Output format: ASCII (serial communication only)

Storage: Varies with computer/smartphone. Typical: 1,000,000 temperatures = 28 MB text file.
Device maximum acquisition rate for revD3 with various conditions:

RTC Active ?	MUX_Delay (ms)	Probe Quantity	Display	Baudrate	Real Speed (Hz)	Real Interval (mS)
No	0	1	T_only	115200	666	1.5
No	0	1	T_only	57600	374	2.7
Yes	0	1	T_only	57600	125	8
Yes	0	16	T_only	57600	9	110
Yes	0	16	All Displays	57600	6	157

Maximum measurement interval: 96 400 000 ms (24 hr)
Default microcontroller baud rate: 115200 bits per sec
Calibration type: end-to-end 3-point characterization (ice bath (0°C / 32°F), warm bath (typically 37°C/99°F), steam point (typically 100°C/212°F)

CONTROLLER

Outside dimensions (controller): 162 x 94 x 19 mm
Weight (assembled controller only): 150g
Voltage input: 5V DC (USB)
Operating temperature (controller): -40°C to 85°C (-40°F to 185°F)
Maximum operating relative humidity for the controller: 95%
Microcontroller: ATMega328P-U-KR (with old bootloader)
Analog-to-digital converter (ADC) accuracy: 10-bit
Tension divider circuit resistor value: 10 kΩ +/- 0.1%
Microcontroller total memory available (Flash): 30.7 kB
SRAM memory available: 2 kB
EEPROM memory available: 1 kB

TH-1 PROBE (small probe)

Probe-Generic NTC thermistor 10kΩ, very small diameter, made in China
Probe-Operating temperature range: -40°C to 125°C (-40°F to 257°F)
Lead wire length: 1m (3 ft)
Lead wire operating temperature range: -30°C to 110°C (-22°F to 230°F)
Probe-Thermal time constant (Probe): Unknown
Probe-Tolerated pH: Unknown
Probe typical power consumption per probe (continuous measurement, 3.3V circuit): 0.1 W
Probe typical power consumption per probe (slow speed (1 S/s), 3.3V circuit): 0.01 W
Wire gauge: 26 AWG, 300V, 105°C. Copper multiple conductors.

TH-2 PROBE (large probe)

Probe-Generic NTC thermistor 10kΩ, 0.026 x 0.005 m diameter, made in China
Probe-Operating temperature range: -40°C to 125°C (-40°F to 257°F)
Lead wire length: 1m (3 ft)

Lead wire operating temperature range: -30°C to 110°C (-22°F to 230°F)
Probe-Thermal time constant (Probe): Unknown
Probe-Tolerated pH: Unknown
Probe typical power consumption per probe (continuous measurement, 3.3V circuit): 0.1 W
Probe typical power consumption per probe (slow speed (1 S/s), 3.3V circuit): 0.01 W

Wet bulb temperature measurement accuracy:

- Dry bulb temperature: +/- 0.5°C;
- Aspirated wet bulb temperature: +/- 0.6°C;
- Relative humidity: to be determined;
- Absolute humidity: to be determined unknown at the moment;
- Dew point temperature: unknown at the moment.