

FLASHLINK® Wireless Systems

Cold Chain Monitoring, Alarming and Reporting

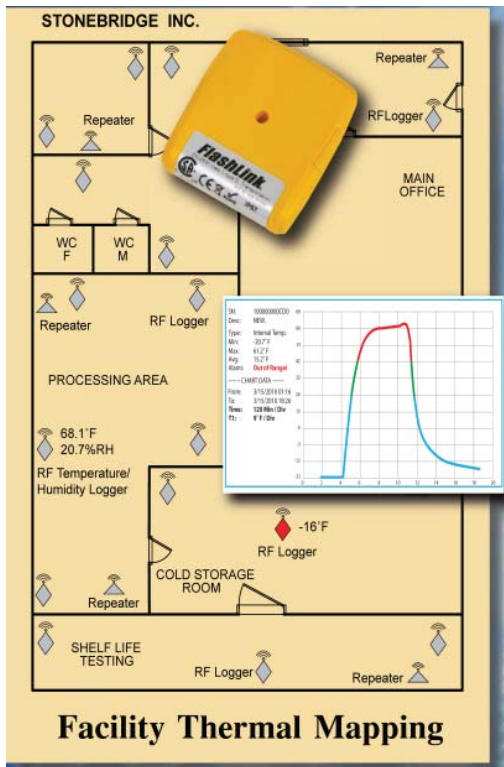


FlashLink® RF 2.4GHz Wireless System

DeltaTRAK® offers a state-of-the-art wireless monitoring network designed to help customers qualify temperature and humidity conditions throughout their environment: warehouses, storage areas, refrigerators, freezers, walk-in coolers, clean rooms, processing areas and labs. The FlashLink RF 2.4GHz Wireless System uses modern ZigBee technology with unique floor plan mapping software. The System is a wide area, real-time monitoring, recording and alarm system with user-defined set up, continuous monitoring and complete management reporting for temperature and humidity. It meets or exceeds QA and regulatory guidelines for the maintenance of environmental monitoring records.



FlashRF Manager Software



DeltaTRAK's custom software, the FlashRF Manager, is used to set up and navigate the network of FlashLink Wireless RF Loggers which feature temperature logging capability to ensure data continues to be recorded even during communication interruption. The software works with GUI images of custom floor plan topology, creating multi-level structures of your facilities. Icons placed on the floor plan represent RF Wireless Loggers, Repeaters, and Receivers, and are bound directly to the actual system components to allow for viewing of real-time data. Users can easily navigate to any logger by clicking on its icon and displaying an info window showing the last 30 hours of temperature and humidity readings for that sensor. Data is reported, archived, and emailed as a graph or table, using Excel and Text formats. Out-of-range conditions are alerted on the PC screen, with the option of sending email notices and text messages to appropriate personnel. Corrective actions can be taken immediately in order to avoid compromising product integrity.

FlashLink® 2.4GHz RF System

Model 20170 FlashLink RF Receiver

The FlashLink RF Receiver is a network control module, enables all communication between RFID components and back office system.

Operating Temperature Range	-20°C to +50°C
Frequency Range	2.405 to 2.475 GHz, IEEE 802.15.4 PHY compliant
Transmit	+13.0 dBm (including 2.2 dBi gain of the antenna)
Receive	-103.0 dBm
Backup Battery	3 rechargeable AA nickel metal hybrid
Battery Backup Life	5 days
Typical Range	indoor: 164 feet (50m), outdoor: 328 feet (100m)
Antenna	External omni-directional swivel antenna, SMA connector
Waterproof Rating	IP20
Weight	8.2 oz (232 g)
Dimension	2.0 x 2.7 x 3.9 inch (50.0 x 68.0 x 100.0 mm)
Certification	CE mark, RoHS, FCC ID



Model 20171 FlashLink RF Repeater

The FlashLink RF repeater is a wireless data transport module, 3rd generation active RFID

Operating Temperature Range	-40°C to +85°C
Frequency Range	2.405 to 2.475 GHz, IEEE 802.15.4 PHY compliant
Transmit	+13.0 dBm (including 2.2 dBi gain of the antenna)
Receive	-103.0 dBm
Typical Range	Indoor: 164 feet (50m), Outdoor: 328 feet (100m)
Battery Backup Life	5 days
Backup Battery	3 rechargeable AA nickel metal hybrid batteries
Antenna	External omni-directional swivel antenna, SMA connector
Waterproof Rating	IP65
Weight	8.2 oz (232 g)
Dimension	2.0 x 2.7 x 3.9 inch (50.0 x 68.0 x 100.0 mm)
Certification	CE mark, RoHS, FCC ID



Model 20172 FlashLink RF Temperature Logger

This temperature monitoring, active RFID sensor/logger has user-configurable parameters including time intervals, °F/°C, alarm limits, security and alerts. A back-up memory ensures continuous logging of temperature even during communication interruption. Stored data is automatically transmitted to the Receiver when the network is restored.

Frequency Range	2.405 to 2.475 GHz, IEEE 802.15.4 PHY compliant
Typical Range	Indoor: 82 feet (25m). Outdoor: 164 feet (50m)
Reporting Rate	User configurable
Accuracy	± 1.8°F (±1.0 °C)
Resolution	0.1°F (0.1°C)
Measurement Range	-40°F to 185°F (-40°C to 85°C)
Battery	2 AAA lithium batteries
Antenna	Integrated on PCB, Omni-directional
Weight	1.5 oz (44 g)
Dimension	2.3 x 2.2 x 0.5 inch (59.6 x 56.6 x 14.0 mm)
Certification	CE mark, RoHS, FCC ID, WEEE



Model 20173 FlashLink RF Temperature and Humidity Logger

This temperature and humidity monitoring, active RFID sensor/logger has user-configurable parameters including time intervals, °F/°C, alarm limits, security and alerts. A back-up memory ensures continuous logging of temperature and humidity even during communication interruption. Stored data is automatically transmitted to the Receiver when the network is restored.

Frequency Range	2.405 to 2.475 GHz, IEEE 802.15.4 PHY compliant
Typical Range	Outdoor: 164 feet (50m)
Reporting Rate	User configurable, typical 5 minute interval
Temperature Accuracy	± 0.9°F (±0.5°C) from -13°F to 185°F (-25°C to 85°C) ± 1.8°F (±1.0°C) from -40°F to 185°F (-40°C to 85°C)
Humidity Accuracy	±3.5%RH from 20%RH to 80%RH @25°C, ±5%RH at <20%RH or >80%RH
Resolutions	Temperature: 0.0625°C Humidity: 0.0244%RH
Measurement Range	Temperature: -40°F to 185°F (-40°C to 85°C); Humidity: 10% to 90%RH
Response Time	30 seconds
Battery	2 AAA lithium batteries
Antenna	Integrated on PCB, Omni-directional
Weight	1.5 oz (44 g)
Dimension	2.3 x 2.2 x 0.5 inch (59.6 x 56.6 x 14.0 mm)
Certification	CE, RoHS, FCC ID, WEEE



Model 20175 FlashLink RF Logger, External RTD Sensor

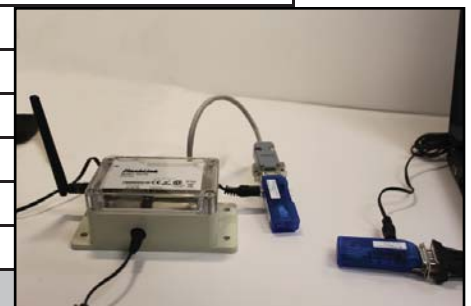
Frequency Range	2.405 to 2.475 GHz, IEEE 802.15.4 PHY compliant
Typical Range	Indoor: 82 feet (25m). Outdoor: 164 feet (50m)
Probe dimensions	Stainless steel, 75mm length, 6 mm diameter, conical tip, black epoxy encapsulated termination
Data Points	8000
Accuracy	± 1.8°F (±1.0 °C)
Resolution	0.1°F (0.1°C)
Internal Temperature Sensor Range	-112°F to 200°F (-80°C to 96°C)
External Probe Temperature Sensor Range	-112°F to 392°F (-80°C to 200°C)
Waterproof Rating	IP67
Cable	3m cable length, tin plated wires, gray Teflon coating
Dimension	3.6" length x 2.25" width x 2.0" height
Certification	CE mark, RoHS, FCC ID, WEEE



Model 20188 FlashLink RF Bluetooth Range Extender

The Blue Tooth Range Extender allows for flexibility in placement of the Receiver within the network. Optimal transmission range is achieved when the Receiver can be centrally located within the network of Loggers and Repeaters.

Serial Interface	
Data Rates	1200, 2400, 4800, 9600, 19.2k, 38.4k, 57.6k, 115.2k, 230k
Characters	7 or 8 data bits
Parity	odd, even, or none
Stop Bits	1 or 2
Control Signals	CTS, RTS
Flow Control	Hardware (RTS/CTS) or None
Connector	DB9 - DTE (male) or DCE (female)
Bluetooth Interface	
Protocol	Bluetooth Specification 2.0 (with high EDR data rate!), compatible with 1.1 and 1.2
Connection Modes	Master, Slave, Instant Cable Replacement
Profiles	Serial Port Profile (SPP)
Security	FHSS (Frequency Hopping Spread Spectrum)
Radio	Class 1 Bluetooth; Up to 330 feet (100 meters)
Dimensions, Weight	L 2.3" x W 0.8" x H 0.5"; 0.6 oz. without power supply
Operating Temp.	-40°C to 70°C
Power Supply	+5V external power supply (included), 4-11 VDC 50mA max

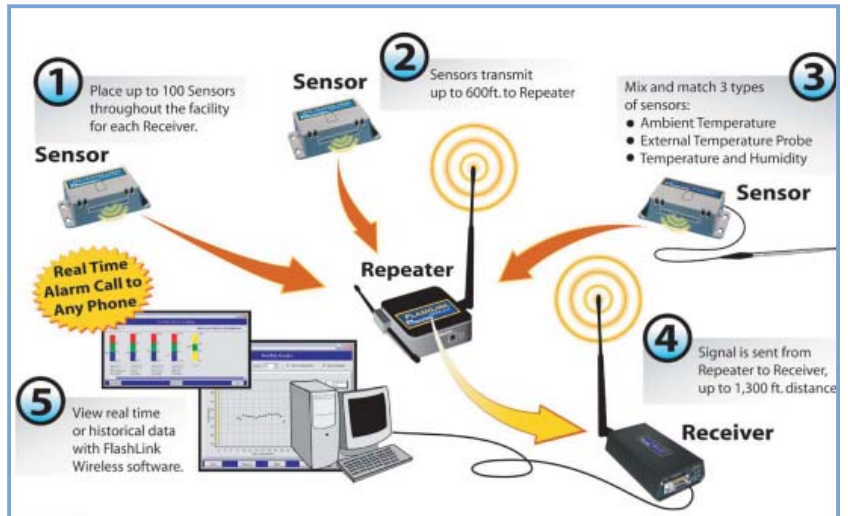


(FlashLink RF High Gain Antenna is optional for range extension)

FlashLink® 900MHz Wireless System

FlashLink Wireless is a wide area, realtime monitoring, recording and alarm system with user-defined set up, continuous monitoring and complete management reporting for temperature and humidity. It meets or exceeds QA and regulatory guidelines for the maintenance of environmental monitoring records. Observations are collected around the clock, with no human intervention. When a temperature excursion is recorded, the alarm feature calls each person on a user-defined phone alert list until contact is made. FlashLink Wireless has a reliable, secure database management system. Logged data

is reviewed, signed out and printed as needed. Accurate observations are received every 60 seconds and the system tracks and logs all collected data. The FlashLink Wireless System is available with a 418MHz or 900MHz Ethernet receiver.



Model 20121 FlashLink Wireless Repeater

This repeater accepts signals from sensors and other repeaters for superior scalability. It receives readings from all FlashLink Wireless sensors from up to 600 feet away and sends signals either to another repeater or to a receiver. It has up to 1,300 feet of networking distance from Repeater-to-Repeater or Repeater-to-Receiver.

Channel Capacity	Hops through 25 channels. Features 7 different hop sequences
Enclosure (Casing)	High impact acrylonitrile butadiene styrene (ABS)
Frequency Control	Direct FM
Frequency Range	418 MHz(Rx) and 900MHz unlicensed ISM Band
Accessories	6.5in (165mm) reverse polarity SMI antenna
	9VDC power supply
Network Topology	Mesh networking
Power Supply	6W 9VDC 300mA 120V power supply with 2.5 mm x 5.0 mm x 9.5 mm output plug
Transmission Range	Indoor: 1300ft. (396 m) (max)
Receiving Range (from sensor)	Indoor: 600ft. (183 m) (max)
Size	4.25in (L) 3.25in (W) 1.375in (H) (108 x 83 x 35mm)
Transceiver Type	Frequency hopping spread spectrum transceiver



FlashLink® 900MHz Wireless System

Model 20124 FlashLink Ambient Temperature Sensor

This sensor provides highly reliable temperature measurements and data transmission. It sends signal up to 600 feet distance to a 418MHz Receiver, or a 900MHz Repeater with 900MHz Receiver

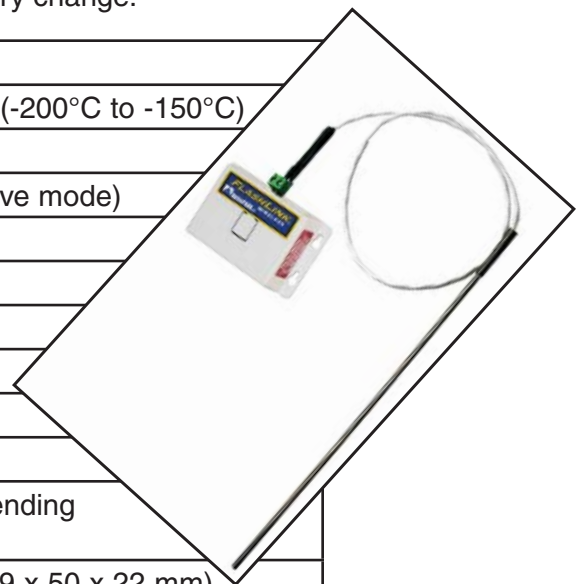
Temperature Measurement Range	-40°F to 185°F (-40°C to 85°C)
Temperature Accuracy	±0.9°F (±0.5°C) from 32°F to 185°F (0°C to 85°C) ±1.8°F (±1°C) < 32°F (0°C)
Temperature Resolution	0.1°F/°C
Battery Type/Life	3-Volt Lithium/ (2 to 3 years in live mode)
Data Throughput	9600 or 19200bps
Compliance	FCC Part 15
Enclosure (Casing)	High impact acrylonitrile butadiene styrene (ABS)
Unique Identifier	22-character unique ID
Operating Temperature	-22°F to 185°F (-30°C to 85°C)
Tx (Transmission) Range	600ft (183 m) max.
Size	3.063in (L) 1.938in (W) 0.875in (H) (79 x 50 x 22 mm)
Transmission Intervals	10 to 17 seconds random



Model 20125 FlashLink Ultra-Low Cryogenic Sensor


External stainless steel thermistor probe with 3" (76.2mm) Teflon covered sensor. Low power consumption for years of non-stop operation before battery change.

Measurement Range	-328°F to -238°F (-200°C to -150°C)
Accuracy	±1.0°F (±0.5°C) from -328°F to -238°F (-200°C to -150°C)
Resolution	0.1° (F or C)
Battery Type/Life	3.6 Volt Lithium battery(6-10 years in live mode)
Data Throughput	9600 or 19200 bps
Compliance	N.I.S.T. traceable, FCC part 15
Frequency Control	FM
Frequency Range	418 MHz
Unique Identifier	22-character unique ID
Operating Range	-40°F to 185°F (-40°C to 85°C)
Transmitting Range	600 feet (183 meters) line of sight depending on environmental conditions
Size	3.063in (L) 1.938in (W) 0.875in (H) (79 x 50 x 22 mm)
Transmitter Type	Frequency hopping spread spectrum transmitter
Transmission Interval	10 to 17 seconds random
Transport Protocol	Various monitoring and addressing modes




FlashLink® 900MHz Wireless System


Model 20126 FlashLink Temperature and Humidity Sensor

Temperature Measurement Range	-40°F to 158°F (-40°C to 70°C)	
Temperature Accuracy	±0.9°F (±0.5°C) from 32°F to 158°F (0°C to 70°C) ±1.8°F (±1°C) < 32°F (0°C)	
Temperature Resolution	0.1°F/°C	
Humidity Measurement Range	0% to 100% non-condensing	
Humidity Measurement Accuracy	±5% from 20% to 80% from 32°F to 158°F (0°C to 70°C)	
Battery Type/Life	3.6 volt Lithium/ (2 to 3 years in live mode)	
Compliance	FCC part 15	
Operating Temperature	-40°F to 158°F (-40°C to 70°C)	
Transmission Range	600ft (183 m) max.	
Size	3.063in (L) 1.938in (W) 0.875in (H) (79 x 50 x 22 mm)	
Transmission Intervals	10 to 17 seconds random	

Model 20129 FlashLink External Sharp Temperature Probe

Temperature measurement range	-40°F to 185°F (-40°C to 85°C)	
Temperature Accuracy	±0.9°F (±0.5°C)	
Temperature Resolution	0.1°F/°C	
Battery Type/ Life	3.6 Volt Lithium (6 to 10 years)	
Compliance	FCC part 15	
Operating Temperature	-40°F to 185°F (-40°C to 85°C)	
Power Supply	Battery powered	
Transmission Range	600ft (183 m) max.	
Probe	5.18in. (132mm) stainless steel thermistor sharp probe on 5 ft.	
Size	3.063in (L) 1.938in (W) 0.875in (H) (79 x 50 x 22 mm)	
Transmission Intervals	10 to 17 seconds random	

Model 20132 FlashLink Wireless Receiver

Channel Capacity	Hops through 25 channels. Features 7 different hop sequences and 65,000 network identifiers.	
Data Throughput	19200bps	
Radio Frequency	900 MHz, unlicensed ISM band	
Accessories	6.5 in (165mm) reverse polarity SMI antenna, 9V DC	
Interface Rejection	70 dB at pager and cellular phone frequencies	
Range	Indoor: 1300 ft (from repeater) maximum	
Reception Sensitivity	-110dBm	
Serial Data Interface	19200bps	
Size	4.125 in (L) 2.625 in (W) 1.125 in (H) (1-5 x 67 x 29mm)	