

## 1. Overview

- 1.1 A temperature monitoring system making use of low-power radio to transfer data digitally from the point of measurement to the point of storage.
- 1.2 Comprises of
  - Five Scouts
  - One Bridge connected to user's PC
  - Manual
  - Software CD
- 1.3 Intended for self-installation.
- 1.4 Provision of both real-time and historical access to acquired data.
- 1.5 Full alarm facilities while PC is running
- 1.6 Ability to recall data from Scouts (by radio link) after periods when PC is not running or Scouts temporarily out of radio range.
- 1.7 Persistent data storage in industry-standard database format.

## 2. Functions

- 1.8 Points of measurement:
  - Measurement parameter : temperature.
  - Scouts Battery-powered, to run for at least 5 years
  - Bridge powered by user's PC USB port.
  - Accuracy over specified ranges: see 'Constraints' below
  - Resolution of measurement: temperature 0.1°C or better
  - Five points of measurement in an installed system
  - Expandable number of measurement points to a maximum of 120 with the addition of further Scouts or ScoutPlus
  - Expandable for an experienced user to add measurement of humidity, and door opening events.
  - Expandable to a full System5 with the addition of Base or BasePlus
- 1.9 Provision of Data:
  - User-friendly data views
  - All points of measurement can be allocated into logical named groups (zones) for viewing and alarm purposes
  - Changes (e.g. alarm settings) via user-friendly interface, only allowed to authorized user
- 1.10 Alarms (available only when PC is powered up):
  - All points of measurement can have upper and lower alarm limits set
  - All points of measurement can have alarm delay time set
  - Choice of one-shot (single alarm per alarm event) or repeat (snooze) alarms
  - Choice of alarm if communication link(s) fail
  - Choice of notification of end of alarm events
  - Relaying of remote alarms (by email or text message) to different personnel for each zone
  - Relaying of alarms can be inhibited at settable time during the week
  - Relaying of alarms to different personnel depending on time of week.
  - Alarms acknowledged via PC

## 3. Data

- 1.11 No data loss during periods of power-down on PC: backup batteries provide secure and consistent records for 2000 records of 10-minute and 2000 records of 1-hour logging rates of sensors
- 1.12 Central server storage, using SQL database
- 1.13 SQL database enables user-defined queries (by authorized users) at any time, to easily enable integration with other PC tools.

## 4. Interfaces

- 1.14 Automatic transfer of data by low-power radio link from points of measurement to PC via Bridge, connected to USB port of PC
- 1.15 Open-site transmitter range (per single 'jump') of up to 1000 meters
- 1.16 By making use of optional extra 'Echo' repeater units, no limit on practical radio range as long as mains power is available at repeater points.
- 1.17 System provides indication of signal strengths and routing information through all radio links

## 5. Environmental

- 1.18 Sensor Electronics:
  - Operates at -40C to +70C at 100% humidity,
  - Waterproof / dustproof enclosures to IP67

- 1.19 Bridge Electronics
- Operates at -40C to +40C at 0 - 90% humidity
  - Waterproof IP65

## 6. Constraints

- 1.20 Temperature Accuracy:
- +/-0.5C between -40C and +70C (all instrument errors combined)
- 1.21 Optional calibrations available to provide +/- 0.2C at up to 5 predetermined temperatures
- 1.22 Clock accuracy: (Scouts) +/- 5 seconds per day. System accuracy depends on PC time
- 1.23 Regulatory Approvals:
- European Radio and Telecommunication Terminal Equipment (R&TTE) Directive 99/5/EC
  - CE Marking Directive 93/68/eec
  - EN 300 220 European Radio Transmission regulations
  - EN12830

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