



spydaq

is here...

The affordable new wireless data logging and monitoring system from

Signatrol.com
Data Logging Solutions


...and here...
... in pharmaceutical storage


...and here...
... in storage and warehousing


...and here...
... with food and perishables


...and here...
... in blood and vaccine storage


...and here...
... in heating and ventilation

...and here...

...at your desk!

Introducing **spYdaq** - a brand-new, world-class wireless monitoring system from Signatrol, that is adaptable, efficient, easy to use, reliable, and highly cost-effective.

With **spYdaq**, you can deploy sensors in all kinds of situations and locations - including many where hard-wired systems cannot go - and monitor everything directly from a PC desktop with our easy-to-use software. You can even monitor remotely from a laptop, or any computer anywhere in the world, using our special GPRS/web link.

Monitoring has never been so easy!

Signatrol.com
Data Logging Solutions

Contents

Introduction	4
The Basics	6
The Detail	8
Reliable Radio Transmission	10
The BaseStation	12
Common Specifications	30
The Software	32
Owning spydaq	38

The Basics

At the heart of the **spYdaq** system is the BaseStation, which receives data from up to 16 remote transmitters, and passes it to a PC, either via a Modbus RTU, USB, or by GPRS direct to the **spYdaq** website, whch can be accessed anywhere in the world. Each transmitter can have up to three inputs - temperature, relative humidity and universal - and sends it via a licence-free ISM radio band, using a sophisticated data redundancy system (patent pending), to ensure virtually error-free data acquisition.

spYdaq *systems come with a variety of sensor types, for all manner of applications.*

Let us advise you on what's best for your needs.

spYdaq is the affordable wireless system that could revolutionise your monitoring requirements.

- Low cost
- Quick and easy to install
- Simple to use
- Secure, inviolate data
- Reliable radio transmission
- Battery life in excess of 6 years
- GPRS/web link for world-wide remote access
- Modbus/USB for local use
- 400 metre line-of-sight range

The Detail

spYdaq's wide range of inputs means that by connecting an appropriate sensor, virtually any parameter can be measured and logged, including:

- Temperature
- Humidity
- Pt 100, Ni100, Ni120,Cu100 & Ohms
- Thermocouple Types J, K, T, R, S
- 4/20 mA
- Voltage (0 to 10VDC)
- Contact Closure

The BaseStation checks locally for alarm conditions with inbuilt audio and visual alarms, as well as providing a switched contact output that can be used to trigger external devices. There is even an SMS message option available (GPRS version only). Alarming locally means that potential trouble spots can be quickly detected and corrected - which can often save vulnerable goods and commodities from damage or rapid decay.

Set-up and commissioning is easily done on-site. All that's needed is that the device address, sensor type and transmission rate are set using the on-board DIP switches. The BaseStation comes supplied with **spYconfig** software, which is used for initial configuration via USB, and for setting up such things as sensor type, alarm levels, engineering ranges, etc. A fast transmit mode (of 20 seconds) enables the system to be checked very quickly to ensure that is all fully functional, after which logging can begin.

After this initial set-up, the system is ready to work ***either*** via a GPRS/web link to our dedicated website at **spydaq.com** - ***or*** connected to a local PC running compatible software.

Reliable radio transmission
that won't let you down

With the advent of new techniques, radio-based data transmission systems have advanced dramatically in recent years, and are now more reliable than ever before, virtually eliminating missed readings.

spYdaq has been researched, developed and exhaustively tested to make full use of all the most sophisticated technologies, which inlcude:

- **Error Correcting Code with Manchester Encoding.** Each transmission is encoded and sent complete with a check-sum, so that single bit errors are automatically detected and corrected. Even multi-bit errors can be corrected in certain circumstances.
- **Multiple Messaging** *(patent pending)*. Each transmission contains the last five measured data readings - so if any part of a transmission has been lost, the missing reading is automatically provided on the next transmission.
- **Antenna Diversity.** The BaseStation uses multiple antennas, which compensate for variations in signal strength due to location and orientation. It will automatically select the strongest signal, thus extending the usable range, and ensuring reliable signal integrity.
- **Sample Rate 'Wobble'.** Multiple Messaging will ensure no data is lost if two or more readings are sent at the same time and interfere - but this could be problematic if the transmission intervals are perfectly synchronised. So to ensure this never happens, **spYdaq** adds a randomised 'wobble' to the transmission interval of ±1 second, in 50ms intervals.

(GPRS version shown)

The BaseStation

The BaseStation is the heart of the system, and is the key to making **spYdaq** as capable, flexible and reliable as it is.

After the incoming signals reach the BaseStation, they pass through an error checking algorithm to ensure data integrity (see page 11). Then the BaseStation ***either*** saves the readings in internal registers ready for integration by the Modbus master, ***or*** transmits the data via GPRS to the **spYdaq** website, accessible from anywhere in the world.

The front panel features 16 LEDs - one for each transmitter within the system - which show red if a pre-programmed alarm condition has been encountered, and green if not. Additional LEDs indicate power on, alarm or warning present, etc. If an alarm condition is present, an internal buzzer and relay contact can be configured to activate - or there is even an SMS message option (GPRS version only).

The top of the BaseStation features a large back-lit LCD screen, which displays a variety of functions and processes as they are happening within the system.

On the rear of the unit are various connectors and devices:

- 2 x BNC connectors for the twin antennas - part of the antenna diversity system.
- A relay output connector, which can activate external devices in an alarm situation.
- A USB port for the configuration of the BaseStation.
- A 9 Pin 'D' type RS232 port for serial (Modbus) communications.
- A GPRS transmission aerial (GPRS version only).
- A push-button switch to toggle the LCD screen though its various functions.

The Transmitters

Room Sensor
Temperature-only

SPYDAQ-1001-T

Wall-mounted temperature-only transmitter - for internal use only, where aesthetic appearance is important.

Specification

Sensor	Thermistor
Measuring Range	-30°C to +55°C
Accuracy	±0.5°C
Dimensions :	80 x 80 x 27mm (L x W x H)

Room Sensor
Temperature and Relative Humidity

SPYDAQ-1001-TH

Wall-mounted temperature and relative humidity transmitter - for internal use only, where aesthetic appearance is important.

Specification

Measuring Range	-30°C to +55°C 0 to 100% RH
Temperature Accuracy	±0.5°C
Humidity Accuracy	±2% (10% to 90%RH)
Dimensions	80 x 80 x 27mm (L x W x H)

Room Sensor
Temperature, Relative Humidity and Universal

SPYDAQ-1001-THU

Wall-mounted temperature, relative humidity and universal input transmitter - for internal use only, where aesthetic appearance is important.

General Specification

Measuring Range	-30°C to +55°C (Internal Temperature) 0 to 100% RH (Internal RH)
Temperature Accuracy	±0.5°C (Internal Temperature only)
Humidity Accuracy	±2% (10% to 90%RH)
Dimensions	80 x 80 x 27mm (L x W x H)

The universal input can be configured to accept the following sensors:

- **Thermocouple**

Type	Range			Accuracy	
J	-180°C	to	+850°C	±0.1% FSD	±0.5°C
K	-160°C	to	+1200°C	±0.1% FSD	±0.5°C
R	+100°C	to	+1760°C	±0.25% FSD	±0.5°C
S	+100°C	to	+1760°C	±0.15% FSD	±0.5°C
T	-200°C	to	+400°C	±0.1% FSD	±0.5°C

- **RTD**

Type	Range			Accuracy	
Pt100 EN60571	-200°C	to	+550°C	±0.2°C	±0.1% rdg
Pt100 JISC	-100°C	to	+450°C	±0.2°C	±0.1% rdg
Ni100	-55°C	to	+175°C	±0.2°C	±0.1% rdg
Ni120	+20°C	to	+200°C	±0.2°C	±0.1% rdg
Cu100	-90°C	to	+250°C	±0.2°C	±0.1% rdg
Ohms	0	to	300Ω	±0.08Ω	±0.1% rdg

- **Current**

Type	Range	Accuracy	
4-20mA	4-20mA	±5µA	±0.1% rdg

- **Voltage**

Type	Range	Accuracy	
0-10V	0-10V	±10mV	±0.1% rdg

- **Switch / Contact Closure**

Duct Sensor
Temperature and Relative Humidity

SPYDAQ-1002-TH

Duct-mounted temperature and relative humidity transmitter with 187mm x 20mm sheath. Supplied with IP65 enclosure.

Specification

Measuring Range		-30°C to +75°C 0 to 100% RH
Temperature Accuracy		0 to 50°C ±0.5°C -30 to +75°C ±1°C
Humidity Accuracy		±2% (10% to 90%RH)
Dimensions;	Enclosure	108mm Dia x 60mm High
	Sensor	20mm Dia x 187mm
	Antenna	172mm

External Sensor
Temperature only

SPYDAQ-1003-T

External temperature transmitter with lagged response time. Supplied with IP65 enclosure.

Specification

Measuring Range		-30°C to +75°C
Temperature Accuracy		±0.5°C
Response Time		15 minutes (63% of step change)
Dimensions;	Enclosure	108mm Dia x 60mm High
	Antenna	172mm

External Sensor
Temperature and Relative Humidity

SPYDAQ-1003-TH

External temperature and relative humidity transmitter with 50 x 20mm sheath. Supplied with IP65 enclosure.

Specification

Measuring Range		-30°C to +75°C 0 to 100% RH
Temperature Accuracy		0 to 50°C ±0.5°C -30 to +75°C ±1°C
Humidity Accuracy		±2% (10% to 90%RH)
Dimensions;	Enclosure	108mm Dia x 60mm High
	Sensor	20mm Dia x 187mm
	Antenna	172mm

Immersion Sensor
Temperature only

SPYDAQ-1004-P

Immersion temperature transmitter with 250 x 6mm sheath. Supplied with 1/4" BSP brass compression gland and IP65 enclosure.

Specification

Measuring Range		-40°C to +200°C
Temperature Accuracy		±0.3°C ±0.35% rdg
Dimensions;	Enclosure	108mm Dia x 60mm High
	Sensor	6mm Dia x 250mm
	Antenna	172mm

Please note: higher accuracies are available to order

External Sensor
Temperature only

SPYDAQ-1005-P

Immersion temperature transmitter with 75 x 6mm sheath. Supplied with IP65 enclosure.

Specification

Measuring Range		-40°C to +200°C
Temperature Accuracy		±0.3°C ±0.35% rdg
Dimensions;	Enclosure	108mm Dia x 60mm High
	Sensor	6mm Dia x 75mm
	Antenna	172mm

Please note: higher accuracies are available to order

Remote Sensor
Temperature and Relative Humidity

SPYDAQ-1009-TH

Duct-mounted temperature and relative humidity transmitter with 1.5m cable. Supplied with IP65 enclosure.

Specification

Measuring Range		-30°C to +75°C 0 to 100% RH
Temperature Accuracy		0 to 50°C ±0.5°C -30 to +75°C ±1°C
Humidity Accuracy		±2% (10% to 90%RH)
Dimensions;	Enclosure	108mm Dia x 60mm High
	Sensor	20mm Dia x 187mm
	Antenna	172mm

External Sensor
Universal Input

SPYDAQ-1006-U

External transmitter with universal input. Supplied with IP65 gland and enclosure ideal for mounting outside or in harsh environments.

General Specification

Ambient Temperature	-30°C to +75°C	
Dimensions;	Enclosure	108mm Dia x 60mm High
	Antenna	172mm

The universal input can be configured to accept the following sensors:

- **Thermocouple**

Type	Range			Accuracy	
J	-180°C	to	+850°C	±0.1% FSD	±0.5°C
K	-160°C	to	+1200°C	±0.1% FSD	±0.5°C
R	+100°C	to	+1760°C	±0.25% FSD	±0.5°C
S	+100°C	to	+1760°C	±0.15% FSD	±0.5°C
T	-200°C	to	+400°C	±0.1% FSD	±0.5°C

- **RTD**

Type	Range			Accuracy	
Pt100 EN60571	-200°C	to	+550°C	±0.2°C	±0.1% rdg
Pt100 JISC	-100°C	to	+450°C	±0.2°C	±0.1% rdg
Ni100	-55°C	to	+175°C	±0.2°C	±0.1% rdg
Ni120	+20°C	to	+200°C	±0.2°C	±0.1% rdg
Cu100	-90°C	to	+250°C	±0.2°C	±0.1% rdg
Ohms	0	to	300Ω	±0.08Ω	±0.1% rdg

- **Current**

Type	Range	Accuracy	
4-20mA	4-20mA	±5µA	±0.1% rdg

- **Voltage**

Type	Range	Accuracy	
0-10V	0-10V	±10mV	±0.1% rdg

- **Switch / Contact Closure**

Pipe Mount Sensor
Flying Lead
Temperature only

SPYDAQ-1007-P

Flying lead sensor for monitoring pipe temperatures. Supplied with 1m flying lead and IP65 enclosure.

Specification

Measuring Range	-40°C to +200°C
Temperature Accuracy	±0.3°C ±0.35% rdg
Dimensions; Enclosure	108mm Dia x 60mm High
Antenna	172mm

Please note: higher accuracies are available to order

Fridge/Freezer/ Oven Sensor
Temperature only

SPYDAQ-1008-P

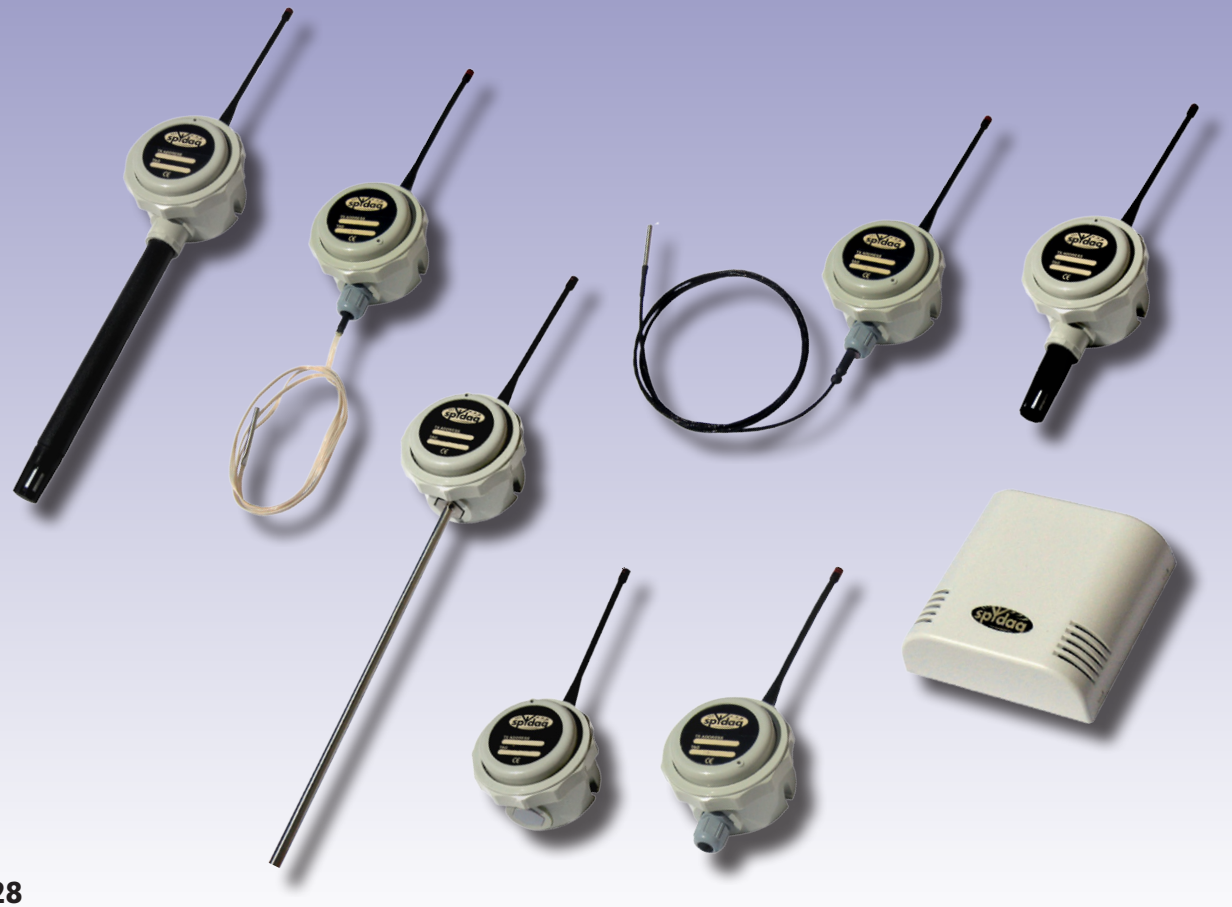
Temperature transmitter with 1.5m flat cable ideal for passing through door seals on fridges / freezers or ovens. Supplied with IP65 enclosure.

Specification

Measuring Range	-40°C to +200°C
Temperature Accuracy	±0.3°C ±0.35% rdg
Dimensions; Enclosure	108mm Dia x 60mm High
Antenna	172mm

Please note: higher accuracies are available to order

Common Specifications



All spYdaq transmitters

Power Supply	1 AA Size Lithium Thionyl Chloride 2.2 AH, 3.6VDC
Battery Life:	Typically 6 Years @ 10 minute transmit rate
Transmission Frequency	433.55 MHz or 434.29MHz conforms to ETSI EN300 220-1
Transmission Rate	Switch selectable - 20 seconds, 60 seconds, 10 minutes or 30 minutes
Encoding	Multiple message, Manchester encoding with error correction and check sum
Range	Typically 400m line of sight with standard antennas Range reduces within buildings etc.
Output Power	Conforms to current legislation

GPRS version

Standard version

The BaseStation

The **spYdaq** BaseStation accepts up to 16 transmitters with LED and LCD indication, and features audio annunciator, alarm relay, USB configuration port, RS232 Modbus RTU serial port, 2 antennas, a GPRS aerial, and serial lead and mains power supply.

Specification

Power Supply	10 to 28 VDC (Mains adaptor supplied)
Alarms	Audible, LED & Relay (1A @ 24VDC. 100,000 operations), SMS message option (GPRS version only)
LEDs	Bi-Colour. Showing data received and alarm condition.
LCD Display	4 line x 20 character displaying system, alarm and realtime information. Backlight has 60 second timeout.
Antenna Diversity	Selects the strongest signals from two antennas.
GPRS	Uses internal mobile network modem and GPRS antenna
Dimensions	Enclosure: 240 x 135 x 45mm High

The Software

spYdaq is easy to use because of its intuitive software, which gives a total information overview on your desktop. There are two elements to the software provision:

Firstly: spYdaq itself comes bundled with **spYconfig** software, a Windows-based programme used to configure the system via standard USB connections.

For data access, the spYdaq BaseStation offers two options:

1 an industry-standard Modbus RTU output, which allows easy integration with existing software solutions, or

2 a standard USB output, using Signatrol software

3 a GPRS output using mobile phone networks to transmit the data to the **spydaq** website, accessible anywhere in the world.

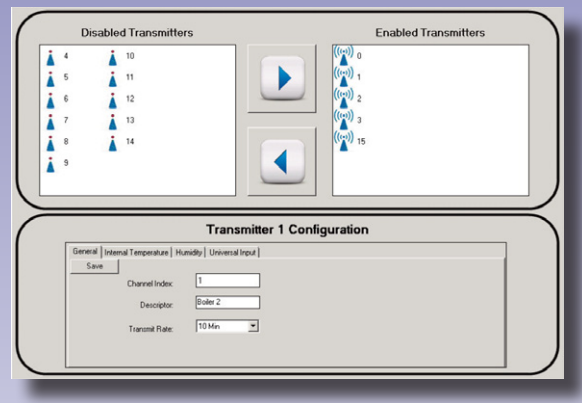
Secondly: For data processing and analysis, we offer a choice of out-of-the-box software solutions to deliver a range of information, which typically includes:

System Health

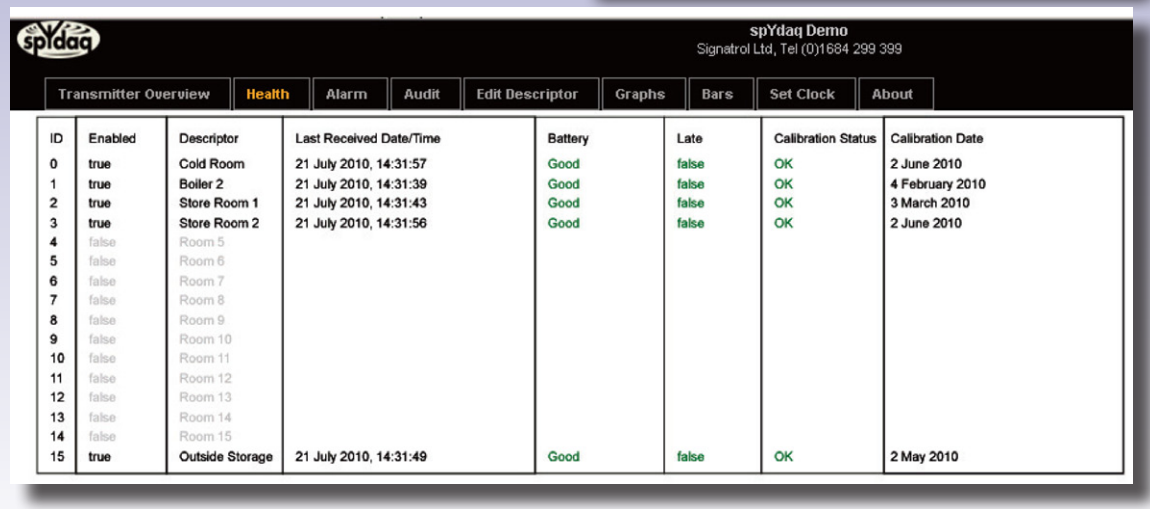
The System Health screen shows the current state of all transmitters in the system, and for each transmitter shows:

- The date and time of the last received reading
- If the calibration is due and the last date of calibration
- Any late readings
- State of the battery

Typical review screen for **spyconfig**



System Health screen



ID	Enabled	Descriptor	Last Received Date/Time	Battery	Late	Calibration Status	Calibration Date
0	true	Cold Room	21 July 2010, 14:31:57	Good	false	OK	2 June 2010
1	true	Boiler 2	21 July 2010, 14:31:39	Good	false	OK	4 February 2010
2	true	Store Room 1	21 July 2010, 14:31:43	Good	false	OK	3 March 2010
3	true	Store Room 2	21 July 2010, 14:31:56	Good	false	OK	2 June 2010
4	false	Room 5					
5	false	Room 6					
6	false	Room 7					
7	false	Room 8					
8	false	Room 9					
9	false	Room 10					
10	false	Room 11					
11	false	Room 12					
12	false	Room 13					
13	false	Room 14					
14	false	Room 15					
15	true	Outside Storage	21 July 2010, 14:31:49	Good	false	OK	2 May 2010

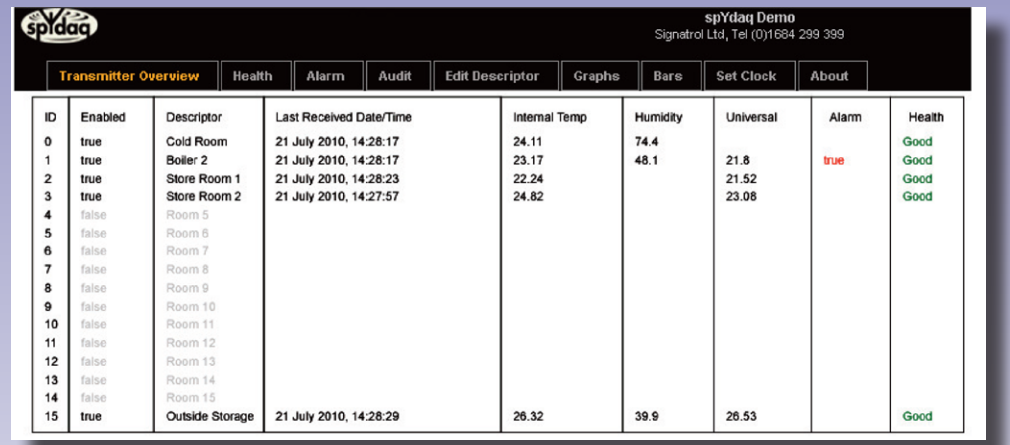
Transmitter Overview

The Transmitter Overview screen shows the current readings of all transmitters in the system, and for each transmitter shows:

- Transmitter descriptor
- The date and time of the last received reading
- Current readings
- Any triggered alarms
- Transmitter health

Bar Graph View

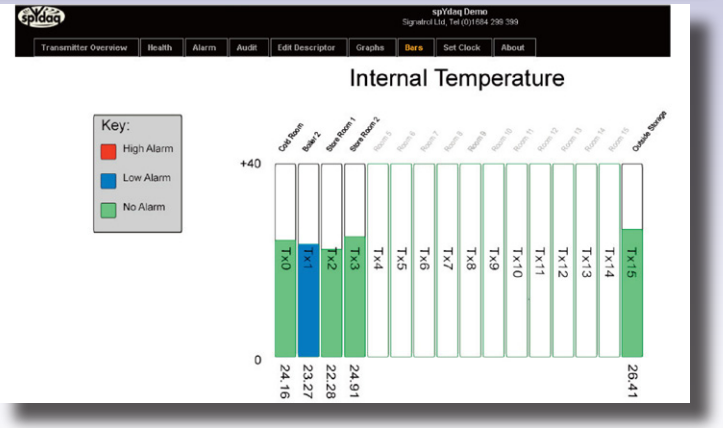
This facility will display the current readings in a traditional bar graph format.



ID	Enabled	Descriptor	Last Received Date/Time	Internal Temp	Humidity	Universal	Alarm	Health
0	true	Cold Room	21 July 2010, 14:28:17	24.11	74.4			Good
1	true	Boiler 2	21 July 2010, 14:28:17	23.17	48.1	21.8	true	Good
2	true	Store Room 1	21 July 2010, 14:28:23	22.24		21.52		Good
3	true	Store Room 2	21 July 2010, 14:27:57	24.82		23.08		Good
4	false	Room 5						
5	false	Room 6						
6	false	Room 7						
7	false	Room 8						
8	false	Room 9						
9	false	Room 10						
10	false	Room 11						
11	false	Room 12						
12	false	Room 13						
13	false	Room 14						
14	false	Room 15						
15	true	Outside Storage	21 July 2010, 14:28:29	26.32	39.9	26.53		Good

Transmitter Overview screen

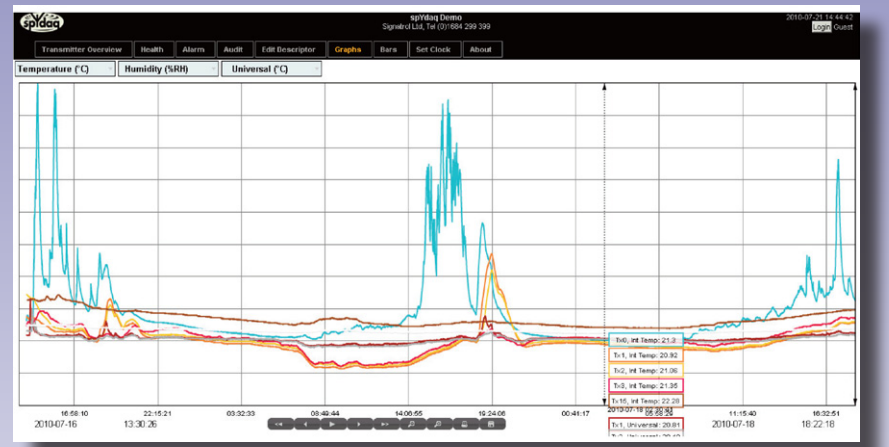
Bar Graph View screen



Historical Trending

This graph screen is used to show historical trends. Individual transmitters can be added or removed, and the time base can be set to any particular time and date.

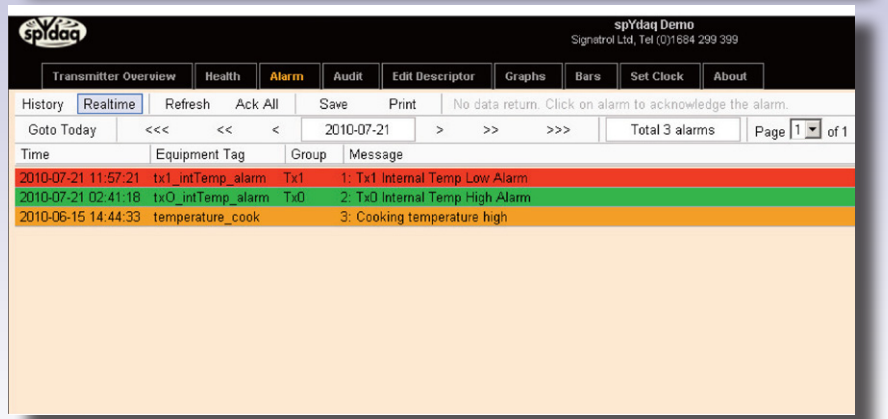
Historical Trending screen



Alarm Reporting

The alarm screen show all current alarms. Alarms can be acknowledged from this screen and there is also a historical record of all alarms.

Alarm Reporting screen



Signatrol offer software solutions to suit different needs. Please ask our sales team for further details.

Owning spYdaq

spYdaq is not only easy to use, it's easy to own. And Signatrol offer three methods to do so:

1 Purchase, with Modbus link and USB

You can purchase a complete system outright, with Basestation and as many sensors as you require, using a standard local-based Modbus link or USB connection. This will include access to our usual support services.

2 Purchase, with GPRS link and website access

As with option 1, this option is for the purchase of a complete system, but on the basis of using the remote GPRS/web link. A nominal monthly fee gives you access to the **spydaq** website for data downloads, the necessary SIM card, and again, our standard support package.

3 spYdaq Fully Managed Solution for GPRS

This is a **unique ownership option** from Signatrol - a complete worry-free package-deal for a GPRS-based system, that involves **no capital purchase**. Not only do you avoid any up-front costs, but we maintain and update your entire system as part of the package. We call this **Signatrol Managed Solutions.**

For an all-in monthly fee, we will supply you with a complete system tailored and specified to your exact requirements. You will have full access to the **spydaq** website, we will provide the appropriate SIM card, arrange and carry out annual re-calibrations (traceable to UKAS), and even replace any hardware items free of charge. Needless to say, our full support services are available to you as well.

The **Signatrol Managed Solutions** package* is administered via a 3-year renewable contract, and offers a level of provision and support that is unique and unrivalled in our industry.

Talk to our sales team soon about these ownership options. You'll be glad you did!

* *Please note: for countries outside the UK, some details of provision may vary. Please ask our sales team for further information.*

Signatrol have been designing and building data logging systems and instrumentation for over 15 years, and have acquired a solid reputation for quality, integrity and affordability.

spYdaq is a major advance in the field of data monitoring and recording, and offers customers old and new the chance to have efficient, reliable, cost-effective monitoring systems which offer simple installation and easy day-to-day usage.

Signatrol.com

Data Logging Solutions

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Dedicated website: **spYdaq.com**