

**CRYPTAG<sup>®</sup>**  
**SITE SURVEY METER MANUAL**  
**TYPE MS1**

IDENTEC LIMITED  
Mercantile Road  
Rainton Bridge Industrial Estate  
Houghton-le-Spring  
County Durham  
United Kingdom  
DH4 5PH

Tel: +44 (0) 191 584 4084  
Fax: +44 (0) 191 584 9077  
Technical Support: 0800 018 1661  
Web Site: [www.identec.co.uk](http://www.identec.co.uk)  
e-mail: [info@identec.co.uk](mailto:info@identec.co.uk)

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***WARNING NOTICE***

This product uses radio frequency signals, and is therefore subject to possible interference. Any application should bear this in mind, and in particular it should not be possible for personal safety to be jeopardised by a failure of the device.

This device neither uses nor generates hazardous voltages. You should not connect any such voltage to it.

The Cryptag Site Survey Meter MS1 is a hand held diagnostic instrument useful for the following:

- 1) Pre-installation Site Survey
- 2) Site Investigation
- 3) Range Analysis

### **Principles of Operation**

Each of the two push buttons have 4 associated LED indicators. The “Battery Low” LED indicator (See Fig. 1), will automatically indicate that the internal battery needs changing.

The left-hand button is used to measure the level of 66kHz interference. This is the main type of interference that affects Cryptag installations. When the button is pressed, one of the four LED’s, marked ‘66kHz’, will come on. Green means that the level of interference is low, yellow amber and red show progressively worse levels of interference signals at 66kHz.

The right hand button operates in the same way, but at 132kHz, and with the LED’s marked ‘132kHz’.

No current is consumed by the unit until either of these is pressed.

In a Cryptag system, a strong 132kHz signal is sent to the tag, which responds at 66kHz at a much lower level. The 66kHz signal, being much weaker is much more likely to be affected by interference.

### **Switching Levels / LED Indicators.**

The switching levels are to be treated as indicative. At 132kHz a red LED indicates the signal will activate a TM1 tag.

At 66kHz, a green LED changes to yellow at about 1 metre from a transmitting tag.

#### **1) Pre-installation Site Survey**

The purpose of such a survey is to detect possible problems prior to installation.

Press the right-hand (132kHz) button and move the meter around the proposed reader site. You should also rotate the meter. At no time should you see anything but a green LED.

Repeat the same procedure with the 66kHz button pressed. Move the meter around the proposed reader site. The LED’s should always stay green, whether the building is occupied during the working day or not.

## 2) Site Investigation

The most likely causes of reading difficulties or range reduction are:

- a) Noise
- b) Metal very near to the reader

With the Reader switched off, use the Site Survey Meter to investigate noise sources that are interfering with the reader's ability to 'hear' the response from the tag.

Nearby computer monitors and very poor quality low voltage light sources can cause problems.

The presence of metal in the reader's interrogation zone can also cause problems by absorbing energy and re-directing it into the reader's receiver.

## 3) Range Analysis

### Reader Transmission (132kHz)

Holding the tag and the MS1 almost together as you approach a powered up reader can give important information. If the 66kHz button is held down as you approach the reader, the tag will start transmitting at some point which will result on the 66kHz LED's jumping from green to red. This is the range that the reader is transmitting. If this is less than specified you might find that the transmitted range has been turned down inside the reader - Please refer to your manual.

Another factor affecting transmit range will be metal absorption as previously mentioned.

### Reader Receive (66kHz)

If the transmit range is as specified, then clearly the factor affecting the poor performance of the reader under investigation, is the Receive Range - this is most likely to be Noise, in which case it is necessary to investigate sources of 66KHz interference, WITH THE READER SWITCHED OFF.

### Use with Installed Readers

Useful information on the reader reading range is available by holding a tag near to the MS1 while holding down the 66kHz button and observing the 66kHz LED's.

Refer to the table below:

State	LED Indicator (66kHz)
Tag not detecting 132kHz	GREEN
Tag responding, but reader not picking this up	RED/AMBER. Very rapid intermittent flashing.
Tag being read properly	RED/AMBER. Pulsing a few times a second.

You will quickly learn to distinguish these indicators.

**Battery Test**      Low Battery Indicator

Press the 66kHz search button.

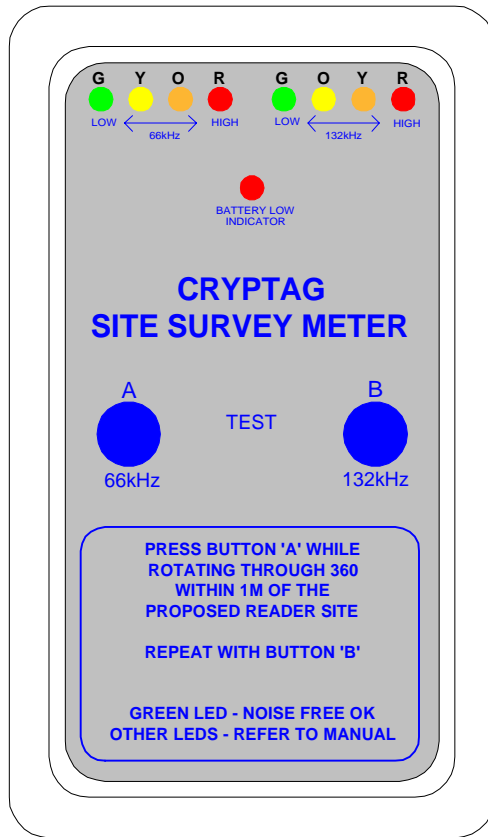
Low battery is indicated by erratic behaviour of the four indicator lights and the central red LED “Blinking”. Replace the battery immediately.

### **Power Requirements**

9 volt, PP3 Battery

66kHz search                      30mA typically

132kHz search                      20mA typically



**Figure 1: MS1 Site Survey Meter**