CypherTAG®

SITE MANUAL

IDENTEC READER TYPE RELV1

Identec Ltd.,
Mercantile Road,
Rainton Bridge Industrial Estate,
Houghton-le-Spring,
County Durham,
England, DH4 5PH

Tel: +44 (0)191 584 4084
Fax: +44 (0)191 584 9077
Web: www.identec.com
E-mail: info@identec.com

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 to read.

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

$$CE$$

This product is in conformity with the requirements of 2004/108/EC covering EMC.

Low Voltage Directive

Cyphertag® Loop Controllers and accessories have been designed and manufactured in accordance with EN60950, following the provisions of the Low Voltage Directive.

Waste from Electrical and Electronic Equipment (WEEE) Directive

We encourage the recycling of Identec products at the end of their life. Equipment can be returned to Identec Ltd for safe disposal. However we recommend any metal cases be recycled locally. For further information contact Identec Ltd.

United States of America

FCC Approval pending

Operation is subject to the following two conditions:
(1) this device must not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

ISO 9001:2008

Identec's Quality System conforms to ISO 9001:2008. (Certificate Number - FM36029)

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1. CYPHERTAG READER

1.1 Introduction

Cyphertag® is a high performance tag identification system which offers, fast long range multiple tag reading. Complementing the top end RV1 and RVR1 readers is the short range REV1 reader. The **RELV1** (which this manual covers) is an easy to install, mid-range unit. Its size means it can be mounted unobtrusively to give read ranges of up to 1.3m.

For most applications the instruction sheet provided with each reader should suffice. Installers should rarely (if ever) need to refer to this manual, which should be treated as a reference document. This manual complements the Identec website (www.identec.com) which contains more detailed technical information on the whole **Cyphertag**® range of products.

1.2. The RELV1 reader

A **Cyphertag**® reader identifies tags (sometimes referred to as tokens or cards) using low frequency radio signals. The RELV1 transmits to the tag at 125 kHz and the tags respond at 4MHz.

The RELV1 reader is configurable, and this is normally done in the factory. Configuration controls the output format, timings etc. A separate document is available from Identec on the configuration settings for the RELV1 and software is also available for on-site configuration changes, this software is covered in separate manual.

1.3 Unpacking

Check that the package contains
- Reader
- Mounting plate
- Fixing screw
- Cover label
- Terminal screw driver
- Configuration sheet
- Installation sheet

2. Reader Location

The RELV1 reader has a range up to 1.3m, the read field will propagate from both faces of the reader as this is a magnetic field, it will pass through all non-metallic surfaces. The reader should not be mounted where a tag can be read from inside a building by mistake or positioned where the reader can interfere with another reader from Identec or, another manufacturer. Since most users will treat it in the same way as a proximity reader the installer may need to point out the benefits to the end user, of the additional read range over a traditional proximity reader. It should be noted the reading range may be reduced if the RELV1 is mounted directly on metal. Although the reader has an IP rating of 54. If the reader needs to be mounted where it will be exposed to water (rain) then following final commissioning it would be advisable to run a small bead of good quality silicon sealant over the terminal blocks to stop water ingress and then following the final install after the reader is fitted to the back plate a bead of silicon is run around the top and side edges. There are water drain holes in the bottom and lower side edges which must be kept clear.

2.1   Back to Back Operation

It is possible to mount two RELV1 readers on either side of a door frame in a back to back situation. The two readers should be connected together via the RS422/485 lines (Pin 1 to Pin 1 and Pin 2 to Pin 2) this assumes the readers have the correct configuration. The two readers should be placed back to back so they are in line horizontally and vertically and spaced by at least 30cm. This will ensure that a tag on the Entry side of the door is always closer to the reader on the Entry side than the reader on the Exit side. Connecting two readers in this way will give some reduction in range, depending on how far apart the two readers are. Both readers must have the range set at the same level.

When tags are being carried by people, the best height for the reader should be selected with regard to the way in which tags will be carried and read. The best height is generally where tags will naturally be presented face on to the RELV1 (except TV3).

RELV1 reader has a set of defused LEDs which show when a tag has been read. There is a buzzer and relay, but these may be disabled at factory configuration.

3.   INSTALLATION AND COMMISSIONING

3.1   Installation

Back Plate Fixing –

The back plate should be mounted level and flat on a clean dry surface such that the drain holes are at the bottom. There are four fixing points, the back plate is supplied with these blind so that the plate can be mounted on glass if required with a double sided adhesive pad (not supplied).

The hole centres are 133mm horizontal and 174mm vertical.

Note - there are recesses for cable exits on each edge and a central exit point, these are also left blind to be used as necessary. The cable exits on the edges match with the cable exits on the main reader which can be removed as necessary.

Figure 1.

Cable Routes

Fixing Holes

Drain Holes
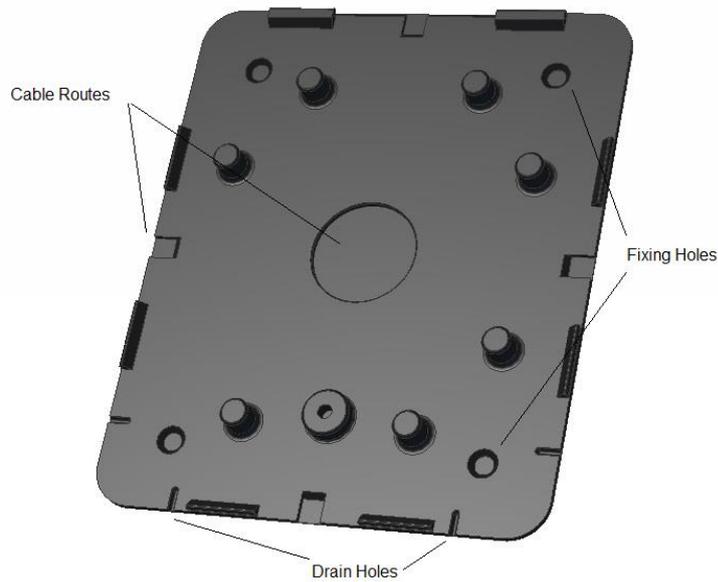
Wiring -

Use screened cable, with the cable screen earthed at the other end from the reader (the controller end). The cable should not be more than 100 metres (330 ft.) long for Wiegand interface or RS422/485, or 10 metres (33 ft.) for the RS232 interface.

Connections should be made before the reader is finally fixed to the back plate.
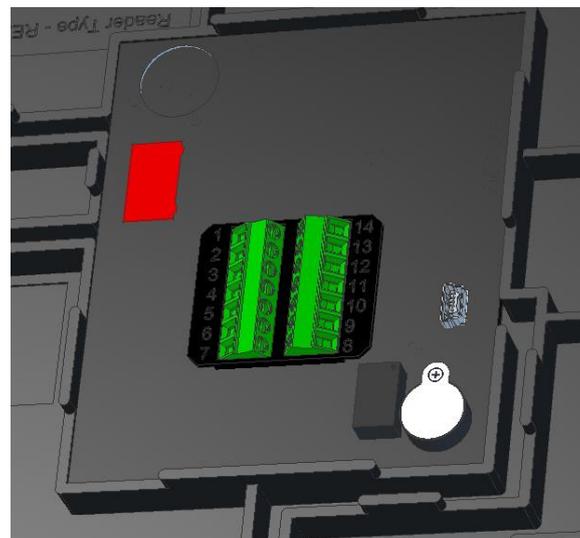
Figure 2.

Connections

Pin 1	RS422/485-A	**Pin 8**	Relay – NO
Pin 2	RS422/485-B	**Pin 9**	Relay – Common
Pin 3	Range	**Pin 10**	Relay – NC
Pin 4	RS232 Rx	**Pin 11**	Wiegand Data 1
Pin 5	RS232 Tx	**Pin 12**	Wiegand Data 0
Pin 6	- V	**Pin 13**	Hold
Pin 7	+V (12-26VDC)	**Pin 14**	LED

(See Appendix A for a full definition of each pin)

The RELV1 has some protection against connection faults, but they do not cover all circumstances.

Final Assembly – *It is recommended this stage is only completed after the reader has been fully tested.*

Once the base plate has been mounted and the reader connect to a controller as required and tested as per section 3.2, the main reader part can be fixed to the back plate. The back plate has two main points on the top edge. The reader part has mating points on the underside of its top edge, the reader part must be positioned over the base plate and lowered on to these points. The reader part can then be swung down and clipped in to position - Care must be take the cable is correctly routed through one of the cable exits. An M6 screw is provided to secure the reader to the base plate and finally the cover label can be placed in the label recess.
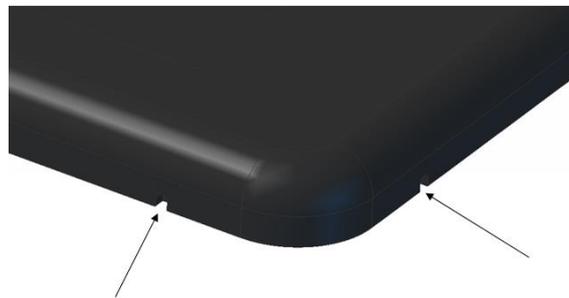
Figure 3.

Reader Removal

If, the reader needs to be removed from the back plate at any time the cover label must be removed if in place (a new one can be sourced either from Identec or the Installer). The M6 screw also needs to be removed.

Along the bottom edge and to the lower part of the side edges are water drain holes, if two terminal screw drivers or 2mm round rods are inserted into at least two drain holes by at least 10mm and a light leverage pressure is used, this will overcome the force of the retaining clips on the bottom and side edges and the reader part will hinge on the main top cover points. Once the reader is free from the bottom and side clips it can easily be removed from the top clips.

Figure 4.

3.2   Commissioning

Commissioning the RELV1 is a simple process, consisting of first making sure the reader is working, and then checking that the data from the reader is reaching the controller.

1.   Connect power to the RELV1. (See figure 2 page 7 for connections)
       The supply should be at least 12V, and should not exceed 26V.
       The *Cyphertag*® Logo LED will come on RED

2.   The reading range is approx. 130cm (51 inches) for a TV1 tag.
       The *Cyphertag*® Logo LED will flash RED on detection of a tag. If, the access control system is able to control the GREEN LED this can be used to signify a valid tag.

3.   The RELV1 sends the identity of the tag once when the tag is first identified. To get another report, take the tag away from the RELV1 for a few seconds (refer to the configuration sheet supplied with the reader for the actual tag time out) and then bring it back in towards the reader.

4.   A set of 10 test messages can be sent from the reader to the controller by linking RS232-a to RS232-b and power cycling the reader. By using this method the interburst delay can be tested.

If there are any problems, refer to the troubleshooting guide in the next section.

4. TROUBLESHOOTING

It is rare for the reader to fail, so check the installation before proceeding.

The LED does not come on

This will normally mean that the reader is not receiving power or the polarity is incorrect. Check the voltage on the reader terminals using a Volt meter.

If there is very bright sun light, it may not be possible to see the LEDs. If this is the case, the reader may need relocating.

If the LED is still off, replace the reader.

The RED LED does not FLASH when a tag is brought into the field of the reader.

This suggests that the tag is not being read.

Check the HID is valid for the reader.

Make sure that the tag you are using is a working **Cyphertag**® tag, and that it is programmed to work on this site.

The RED LED FLASHES but there is no response by the controller (i.e. no output message)

Is the tag being removed from the reading zone for sufficient time? Normally a few seconds will be sufficient, but it is possible for the RELV1 to be programmed to wait for longer. (In this case you should have been informed.)

Check the wiring to the controller.

Has the controller been programmed to respond to the tag being used?

LED does not change from RED to GREEN.

Check how the LED should operate. (This depends on how the reader is configured.)

Disconnect any wires to the LED terminal, and connect a wire from the 0V terminal to the LED terminal. The LED should change to GREEN. If it does, check the wiring to the LED terminal.

Does the signal to the LED terminal have the correct polarity? (0V to turn on)

Tag numbers reported incorrectly (Wiegand)

The most likely cause is the Wiegand wires are reversed.
Is the controller set up for the format used by the reader? If the system uses Site Codes, are these set up correctly?

Tag numbers reported incorrectly (RS232 – RS422/485)

If the data appears to be presented incorrectly or no data is received, check the baud rate etc. The normal format for RELV1 readers is 9600 baud, 8 data bits, one stop bit and no parity.

If using RS232 check the line is not too long, and that connections are properly made. This will often give occasional errors.

If using RS422/485 check the format is compatible with the receiving unit.

Repair

The reader is designed to be "Installer-Friendly", and is rarely damaged, so please check the installation thoroughly. In the unlikely event that you find that the RELV1 is faulty you should replace it.

Identec encourages its customers to return faulty equipment, as investigation of faults may help us improve the product.

12 month "no-quibble" guarantee
All Identec readers and tags are guaranteed for 12 months from the date of despatch from the factory.

Appendix A   TECHNICAL DATA

For more information on *Cyphertag*® in general, refer to the manuals available on the Identec website (www.identec.com).

The reading range of RELV1 is specified at about 130cm with a TV1 tag. This range assumes that the tag is in the optimum orientation.

Reader mechanical details

Dimensions	240 x 200 x 18mm	$9\,^1/_2$ x $7\,^7/_8$ x $^{11}/_{16}$ inches
Weight`	500g	18oz.
Colour/Material	Black/Polycarbonate.	
LEDs	Red (internal control) - Green (internal/external control)	
Operating Environment	-20^0C to $+60^0$C (Standard readers)	
IP Rating	54	

Electrical connections

Screened cables are required to meet EMC requirements.

RS422/485 – Pins 1 and 2

RS422/485 communication is via these pins. RS485 output is available in OSDP format on request.

Back to Back Link Pins 1 and 2. (When RS422/485 is not used)

Maximum cable length between readers is 100m.
Check reader configuration and range setting.

Range – Pin 3

Leaving Pin 3 floating gives max range, linking to 0v will give minimum range (approx. 20cm 10") and linking to +V will give medium range (approx. 65cm – 20")

Serial data/RS232 – Pin 4 and 5

Operates true RS232.
Baud Rate and format configurable

The reader reports a power up message, identifying itself.
Each tag is reported in ASCII code, e.g.   HID=00014 PID=01234

The numbers are reported in decimal or hexadecimal, refer to configuration sheet.

Power input – Pin 6 and 7.

12-26V D.C.   150mA typical. (Current depends on LED status.)

The RELV1 power connection is reverse voltage protected.

Relay – Pins 8, 9 and 10.

Pin 8 is Normally Open
Pin 9 is Common
Pin 10 is Normally Closed

The relay is rated at 1A at 24VDC and 0.5A at 125VAC.

Wiegand output – Pin 11 and 12

Data on D0 and D1.
Low going pulses 100µs long. (All timings are potentially configurable.)
1.6ms pulse separation
Internal 1k pull-ups.

Clock/Data output

This uses the same circuitry as the Wiegand output.

Hold – Pin 13

The Hold function can be used by the controller to individually release tag reports, if the pin is held low following the initial tag report another will not be sent until the pin is released, it can then be held low again until the controller is ready for the next tag report.

If pin 13 (Hold) is taken low midway through a tag report that report will continue, once finished the reader will go in to Hold mode until pin 13 is released.

LED – Pin 14

This would be driven from the access control system to control the Green LED. If its high (+5v), the red is on, low (0V) then the green is on.

Configuration

RELV1 readers are normally configured by Identec. For advice on equipment to configure RELV1 readers, contact Identec. A USB port is visible on the back of the reader, this is for configuration only and ***not*** for normal use. There is a configuration programme available from Identec for onsite changes, this is covered in a separate manual.

Cover label

The RELV1 reader is supplied with a cover label, if the installer or end-user wish to have a custom label made, the size of the recess is show below. We recommend the label size is 0.5mm under the sizes shown (99.5 x 39.5mm). The depth of the recess is 0.6mm.
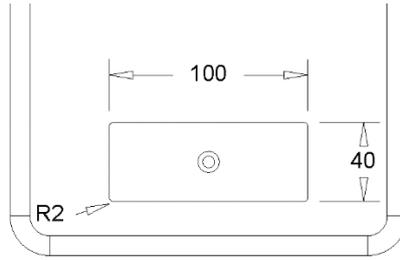
Appendix B   APPROVALS

RELV1 generally requires some form of approval, as it is an intentional emitter of radio frequency. This section describes the status of the product in various countries at the time of writing. For more up to date information contact Identec.

Low Voltage Directive
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Waste from Electrical and Electronic Equipment (WEEE) Directive
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European Union and other ETSI countries
ETSI 300330

United States of America
FCC Approval pending

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Appendix C   USER INSTRUCTIONS

C.1   After installing *Cyphertag*®, it is a good idea to make sure that the customer understands how the system works, and how to get the best out of it. What they are told depends on the type of application. This section provides information that will be useful to the manager responsible for the system, as well as the basis for information to give to all tag holders (if applicable).

If personnel are carrying tags, show them how to present a tag to a reader face on. Explain that tags are much less likely to be read if they are on their side (for instance lying in the bottom of a bag).

Tags do not read as well inside bags with metal frames, or surrounded by keys and coins. The identity of the tag will not be incorrectly reported, but the range may be affected.

Once a tag has been reported, most software versions will not report that tag again until it has been taken right out of the reading zone for several seconds, then brought back. If you need the door to unlock again, you must walk well away from the reader before returning to it.

C.2   Tag disposal

When a tag reaches the end of its life, it should be disposed of properly. As there may be considerable time before this happens, and environmental policy may have changed in the meantime, we recommend:

Tags contain a small lithium battery, and should be disposed of accordingly.

If you are uncertain about how to dispose of tags, they may be returned to Identec for disposal.

C.3   End User Instructions

This section can be used to generate simple instructions for end users.

You have been provided with a *Cyphertag*® tag.

To get the best out of your tag, would you please spare a few moments to read this.

This tag has been designed and built to work under conditions met in normal daily use, but for reliable operation the following precautions should be observed:-

1. Do not bend the tag excessively. It should not be kept in the back pocket of trousers, or other places where it may be subject to bending.
2. Do not immerse in water, or allow it to come in contact with solvents.
3. Do not leave the tag in a hot place (e.g. on a radiator).
4. This tag contains a small battery, which under normal circumstances will last 5 years. Battery life will be reduced if the tag is left for long periods within range of a *Cyphertag*® reader.