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RKDT Dual Technology Proximity Readers and Standalones



RKDT-SA-S / RKDT-SA-M

In answer to many requests from its resellers, Secura Key has developed the RKDT (Radio Key® Dual Technology) line of HID compatible readers and stand-alone units. Secura Key dealers frequently need to upgrade or merge existing systems where HID proximity cards and readers are being used. At Secura Key, we use the term Dual Technology to describe a reader that reads both HID¹ and Radio Key® Proximity cards. Some manufacturers use the term Dual Technology to describe readers that read both low and high frequency cards. Secura Key's Dual Technology readers do not read high frequency cards, such as Secura Key e*Tag® or HID iCLASS®.

Proprietary Protocols

When digital proximity technology was developed, each manufacturer created their own protocols and standards and patented them – there were no published ISO standards and no interoperability for proximity technology. HID, originally called Hughes Identification Devices, purchased the intellectual property of a company called Destron, which included patents for using RFID transponders with FSK modulation combined with a commonly used technique called a “Manchester Violation” to indicate the start of the data frame for transmitting an ID number.



RKDT-WS / RKDT-WM

While HID's proprietary technology was technically equivalent to competing proximity products, through effective sales and marketing, HID grew to become the leading manufacturer of proximity cards and readers in the world. HID proximity became the de-facto standard in the security industry, and competing technologies were regarded as being proprietary or non-standard.

Through vigorous defense of its patents, HID also successfully prevented unauthorized compatible cards and readers from being marketed. HID offered technology licenses to competing companies, with the condition that the licensee must purchase all of its cards from HID. Many companies signed up for license agreements, or purchased RFID reader modules from HID, which allows them to display the “Genuine HID™” logo. Other companies, such as Secura Key, simply waited for the patents to expire, which occurred in 2009.

Secura Key Development

Card and reader manufacturers, such as Secura Key and HID do not manufacture the integrated circuits (ICs) in their cards. There are only a few companies who manufacture RFID chips for cards and keytags, and both Secura Key and HID purchase the same or similar type of chip from Atmel Corporation (formerly Temic).

Because Secura Key already used Atmel technology in its cards, development of the Dual Technology Reader consisted of redesigning the RF front end of the Secura Key proximity reader to accept a wider range of sideband information, and then modifying the firmware to process the data and determine the start of the data frame for the HID cards. Secura Key also upgraded the reader's performance with a 50 MHz Texas Instruments Luminary ARM Cortex processor.

Card Data Formats

Most of HID's card data formats are "pass-through" type formats, which means that once the reader determines where the data starts, it can simply transmit all the bits exactly as they are encoded on the card. The access control panel is pre-configured for the card format being used, which allows it to correctly interpret the bits as the Card ID number and Facility Code, which are used to verify the cardholder's access control privileges for the controlled door.

HID also has proprietary OEM card formats, where the reader performs additional calculations, offsets or manipulations to the card data before transmitting. Without this proprietary knowledge, a reverse-engineered reader such as Secura Key's will not be able to output the correct data. These formats are relatively rare, but it is recommended that customers needing a reader or standalone to read non-26 bit HID cards should contact Secura Key Technical Support to verify that the cards can be read before making their reader purchases.

Secura Key can provide OEMs with custom firmware to read HID cards with proprietary data formats, provided that the OEMs can show exclusive ownership of those formats, and supply the technical details to Secura Key.

Standalone and Wiegand Output Reader Compatibility

Secura Key's RKDT-SA-M and RKDT-SA-S Standalone Access Control Units will accept HID proximity cards encoded with the SIA standard 26-bit format. While we do not guarantee compatibility in all cases, they can also accept other HID pass-through proximity formats that have a 16-bit binary sequential ID number in the LSB position (maximum number is 65,535), with beginning and ending parity bits. It is recommended to contact Secura Key Technical Support before purchasing RKDT Standalones to read any non-26 bit HID proximity cards.

HID Prox cards with random-numbered or non-16-bit IDs cannot be used with the RKDT standalone reader, but they can be used with the any RKDT reader for a Wiegand output application, provided they have a pass-through format.

HID Compatible Cards

Secura Key is capable of supplying its Radio Key® cards and key fobs encoded in 26-bit HID compatible formats. Because Secura Key uses Atmel proximity transponder chips in its Radio Key® proximity credentials, they will work with all HID and Secura Key Dual Technology readers. To order HID compatible credentials, choose RKCI-02 (ISO Card), RKCM-02 (Clamshell Card) or RKKT-02 (Keytag), and order the cards with Format 701 encoding (HID 26-bit).

Secura Key's RKCM and RKKT credentials feature high-Q antennas and heavy copper wire, providing better read range than many competing brands.

To order HID compatible cards in non-26-bit formats, contact the Factory. Proprietary format cards can only be sold through an OEM with exclusive ownership of that format. Secura Key will not produce cards in any proprietary format that violates copyright laws. Secura Key does not manufacture iCLASS® or Indala®-compatible cards or tags.

Secura Key is also capable of combining proximity with other technologies (such as HF or UHF) in multi-technology credentials. Secura Key also has the latest digital color printing technology, offers laser engraving and ink-jet numbering, and can produce cards to meet virtually any requirement.



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