New Product

ID-125 MK1

MANUAL

Huge Range Reader

ID Innovations

Advanced Digital Reader Technology

------Better by Design

Manual Rev 02 – 1st Jan 2005

PRODUCT DESCRIPTION

Introduction

The ID-125 is our latest advanced reader for the popular EM4001 format 125KHz tags to be introduced by ID-Innovations. Read ranges of up to 125 cm are possible with our Long Range Cards and up to 80cm with our ISO cards. Advanced features include auto-tuning and DSP capabilities to increase read range and to reduce unwanted vibration and interference. The ID-125 also features RS232, Wiegand26, Wiegand34, Magnetic ABA Track2 10digit and Magnetic ABA Track2 14digit output formats. Furthermore, the reader is encapsulated for environmental protection. The ID-125 has special anti-interference software that allows readers that are set more than 150cm apart to work without significant loss of range. The ID-125 is thus ideal for car park applications administration and assembling line functions.

Features

- Very Long Read Range
- Through-wall and hands free applications
- Auto-Tuning
- Strong Water Resistant Enclosure
- Readers can operate 150cm apart
- Five Output Formats
- Blue LED for customer use
- Ideal for Car Park Applications

Description

DSP (Digital Signal Processing) is used to provide superior range and reduce vibration and electrical noise effects. These effects are not eliminated so care should still be taken to position the equipment away from sources of electrical noise and vibration.

Temperature changes can affect accuracy of the antenna tuning. The ID-125 is equipped with a sophisticated self-tune facility or auto-tune. The reader performs an auto-tune shortly after power-up.

The normal temperature in using ID-125 is -10～55℃. For low temperature functioning use the ID-125 'Low Temperature' version which is rated to work down to –40℃.

The blue LED in ID-125 is for customer use and may be lit by shorting orange wire to ground.

Installation

Position the ID-125 away from sources of interference such as main wiring. Do not fix the reader antenna on solid steel objects or range loss will occur and the auto-tuning may even run out of range. Moderate metal fixtures are acceptable. Computer monitors used in DOS mode can result in powerful interference especially when older monitors are used. Vibration can also cause loss of range.

If possible use a 1amp regulated linear Power Supply. Most Switching regulators are excellent but some can sometimes produce powerful interference and can reduce read-range.

The ID –125 reader should be positioned to avoid direct sunlight and away from lightning discharges. A lightning strike on the DC supply or data cables will take out the readers along with anything thing else on the lines

SPECIFICATIONS

Table 1. ID-125 Operational & Physical Characteristics

Parameter	Conditions
Power Requirements	12V DC
Current Consumption	0.28 Amperes nominal
Frequency	125 KHz
Read Range	≥80cm ISO cards
Interfaces	RS232 (9600, n, 8, 1) and Wiegand26/34
Transponder	Read-only 64 bits, Manchester encoded
Auto-tune	Internal upon switch-on and every 10 minutes

Read Indication	Green LED and Beeper
Power On Indication	Red LED
Blue LED (for customers)	Control indication from customers (By shorting orange wire to ground. Pulse signal only)
Dimensions	265mm x 265mm x 35mm
Nominal Weight	1.5 Kg

DATA FORMATS

Output Data Structure – ASCII

STX (02h)	DATA (10 ASCII)	CHECK SUM (2 ASCII)	CR	LF	ETX (03h)

[The 1byte (2 ASCII characters) Check sum is the arithmetic addition of the 5 hex bytes (10 ASCII) Data characters.]

Output Data Structure – Wiegand26   (P = Parity start bit and stop bit)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
P	E	E	E	E	E	E	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	P
Even parity (E)												Odd parity (O)													

Output Data Structure – Wiegand34   (P = Parity start bit and stop bit)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
P	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	P
Even parity (E)																	Odd parity (O)																

Output Data Magnetic ABA Track2 10Decimal Characters

10 Leading Zeros	SS	Data (10 ASCII Char)	ES	LCR	10 Ending Zeros

[SS is the Start Character of 11010, ES is the end character of 11111, LRC is the Longitudinal Redundancy Check.]

Output Data Magnetic ABA Track2 14Decimal Characters

10 Leading Zeros	SS	Data (14 ASCII Char)	ES	LCR	10 Ending Zeros

[SS is the Start Character of 11010, ES is the end character of 11111, LRC is the Longitudinal Redundancy Check.]

Report Format
Upon switch-on the reader sends a report via the RS232 line. The report indicates the Software Revision and the Tuning Variable. A typical report will be as follows (hex values):

Day	Month	Year	Revision #	Tune Variable	Arithmetic Checksum
01	01	01	08	04	1F

The Tune Variable indicates the Tuning Capacity. A figure between 01h-0Dh is OK. A figure outside this range can be caused by environmental demands, possibly due to fixing directly onto sheet steel.

Cable Signal Definitions

Wire color	Signal	Description
Red	PWR	+12V DC input
Black	GND	Ground
Yellow	Program1	Program line1 (format selector)
Violet	Program2	Program line2 (format selector)
Grey	-	Used to Select Magnetic Emulation
Green	Data 1	Weigand data 1, Magnetic ABA clock [*]
Brown	Data 0	Weigand data 0, Magnetic ABA data [*]
White	CP	Card Present
Blue	RS232	Serial RS232 output (9600, n, 8, 1)
Orange	-	Customer LED.
Screen	GND	Earth Screen

[*] In Weigand Mode 1.5k pull-up resistors for Data0 and Data1 signals are required. In Magnetic Mode 1.5K pull-ups to Data, Clock and Card Present are required. Note that these resistors are usually already provided in the controller and generally do not need to be added.

Table 3. Output Format Programming

Output Format	Programming
RS232	Connect PRGM (Yellow wire) to RS232 (Blue wire)
Weigand26	Connect Yellow wire to Black wire. Connect Violet to Black wire
Weigand34	Connect Yellow wire to Red wire
Wiegand42	Connect Yellow wire to Black wire. Connect Violet to Red wire
Magnetic ABA Track2 10 digit	Connect Yellow wire to Grey wire. Connect Violet to Red wire
Magnetic ABA Track2 14 digit	Connect Yellow wire to Grey wire. Connect Violet to Back wire

Calculation of ASCII Check sum.

Suppose a card ID = 12, 34, 56, 78, 90 Adding in hex gives:-

        12
        34
        56   Thus 2+4+6+8 = 1**4**(20 decimal). The 1 is carried. The **4** is the low sum.
        78   and 1+3+5+7+9+ carry (+1) = 1**A**(26 decimal). The 1 is discarded. The **A** is
        90   the high sum. This gives **A4**.
        A4

ID Innovations
Advanced Digital Reader Technology
----*Better by Design*

Customer enquiry help@id-innvations.com