484-52 OEM Proximity Reader with Keypad
Manual REV1

Overview

The 484-52 proximity keypad reader provides pin code identification
to be used together with a proximity identification card.
The 484-52 consists a fixed 10 way colour-coded cable protrudes from
the back of the unit.
The reader will read the code from an RFID
transponder and output the code in one of many user
selectable formats.
The unit also allows for user control of the two LEDs
and sounder. A 6-way DIP switch under the back metal plate
is used to select the required output format and
LED operational modes.

Specifications

- Power requirements: +12V DC . Current consumption is 200 mA typical
- RF Frequency: 125 kHz.
- Sensitive touch keypad with blue backlight suit able for various locations.
- 40 bit read-only transponders supported: EM4102 family, Atmel ATA 55XX series.
- Output formats supported: Wiegand (42-bit, 34-bit, and 26-bit), Mag Stripe emulation, Clock/Data, RS232 (9600,n,8,1) EIA and TTL levels, Crosspoint card decoding.
- Continuous (while tag in the field) or single transmission.
- Typical reading range with supply voltage 12V DC: keyring tag with 20mm coil - 50mm, ISO card with 50mm coil - 120mm.
- 2 colour LED (GREEN, RED,).
- Sounder emits a 60ms beep at 4 kHz when a transponder is read.
- Operating temperature range: -10ºC - +55ºC.
- 10 way cable: 3m long
- Weight: 140 grams.
- Dimensions: Reader 120 x 77 x 22 mm

Dimensions
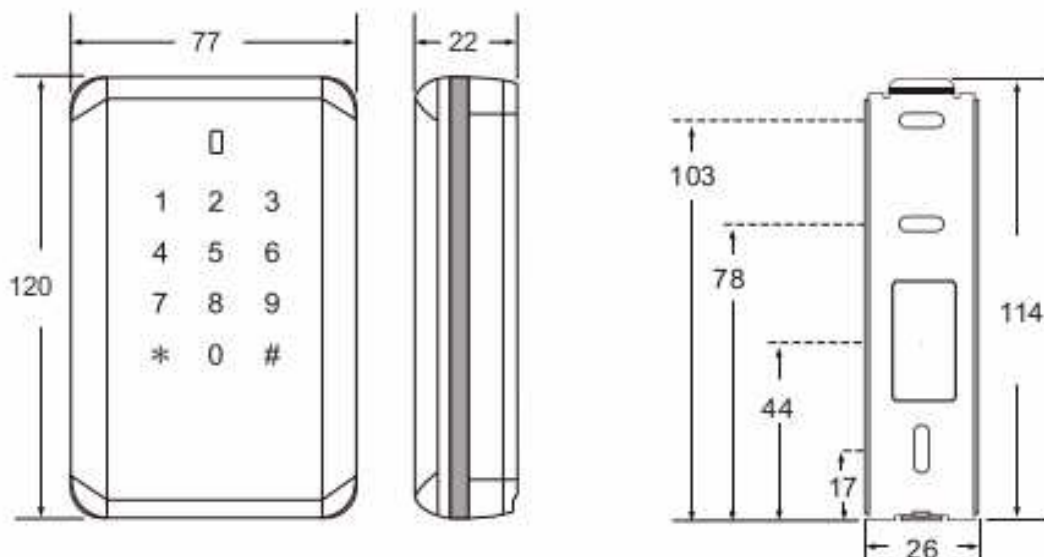
Wiring Connections

Colour	Name	Function
YELLOW	W0/DATA/TX	Outputs RFID tag code in selected format.
BLUE	W1/CLOCK	Outputs RFID tag code in selected format.
WHITE GREEN	CASE SENSOR	To Controller GND To Controller Case Sensor
Light BLUE	RED-LED	Controls Red LED
BROWN	GRN-LED	Controls Green LED
PURPLE	SOUND	Controls Sounder
GREY	RS-232	RS-232 output
RED	+VDC	Connect +12V from power supply.
BLACK	0V	Connect 0V from power supply.

Keypad Transmission

The Reader will transmit the PIN data when it receives the last key (#) press after PIN code.

Format: PIN Code (any 4~8 digits between 0000 ~ 99999999)

Example: PIN code: 1000

Press: **1000 #** and the output format will be:

RS232 - 24bit	00001000
RS232 - 32bit	0000001000
RS232 - 40bit	00000003E8
Magstripe - 40bit	0000000001000
Magstripe - 32bit	0000001000
Magstripe - 24bit	00001000
Wiegand - 42bit	00000001F44
Wiegand - 34bit	000001F44
Wiegand - 26bit	0001F44
Crosspoint	000003459
Fast Magstripe - 8 digit	00001000
Fast Magstripe - 40bit	000000001000

Output Mode Selection

The 6-way switch is used to select the output format and LED mode. The required setting is selected from the following tables:

Output Format Table

SW 2	SW 3	SW 4	SW 5	Output Format
ON	ON	ON	ON	Inhibit - turn off coil
ON	ON	ON	OFF	RS232 - 24 bit
ON	ON	OFF	ON	RS232 - 32 bit
ON	ON	OFF	OFF	RS232 - 40 bit
ON	OFF	ON	OFF	Fast Mag Stripe - 8 digit
ON	OFF	OFF	ON	Crosspoint
OFF	ON	ON	ON	Fast Mag Stripe - 40 bit
OFF	ON	ON	OFF	Mag Stripe - 24 bit
OFF	ON	OFF	ON	Mag Stripe - 32 bitS
OFF	ON	OFF	OFF	Mag Stripe - 40 bit
OFF	OFF	ON	ON	Basic Clock/Data
OFF	OFF	ON	OFF	Wiegand - 26 bit
OFF	OFF	OFF	ON	Wiegand - 34 bit
OFF	OFF	OFF	OFF	Wiegand - 42 bit

SW1 = always OFF

Mode	SW 6	Operation
Continuous	ON	While a tag is in the reader's field the reader will continuously transmit the code in the format chosen by DIP switches 2-5. The repetition period is dependent on the format chosen but varies between 65ms and 230ms.
Single	OFF	Single transmission when tag is brought into the field. Tag must be removed from field for at least 1 second before a read of this tag is possible again.

RS232 Output modes

There are two RS232 outputs from the reader. The RS232 wire (purple) outputs EIA voltage levels: 5V for a binary '1' state and +5V for a binary '0' state. This output is suitable to connect directl to the serial COM port of a PC. The TX wire (white) outputs TTL levels: +5V for a binary '1' state and 0V for a binary '0' state. This output is suitable to connect directly to the USART of a microprocessor. RS232 format data is outputted from both wires when the RS232 modes are selected.

The baud rate is 9600. Data format is 8 bits, no parity, and 1 stop bit.

The tag code is output in the following structure:

STX (02h)	DATA (ASCII)	CR (0Dh)	LF (0Ah)	ETX (03h)

The DATA bytes vary according to the number of bits being output:

40 bit mode
DATA = 10 ASCII characters representing the 40 bit hexadecimal code of the tag e.g. '0410B2F12A' (30 34 31 30 42 32 46 31 32 41 hex)

32 bit mode
DATA = 10 ASCII characters representing the least significant 32 bits of the tag converted to a decimal number e.g. '0280162602' (30 32 38 30 31 36 32 36 30 32 hex)

24 bit mode
DATA = 8 ASCII characters representing the least significant 24 bits of the tag converted to a decimal number e.g. '11727146' (31 31 37 32 37 31 34 36 hex)

Clock/Data Mode

In this mode all 40 bits of the tag are clocked out with an eight bit header and an eight bit checksum.

Header (11111110)	Data (40 bits)	Checksum
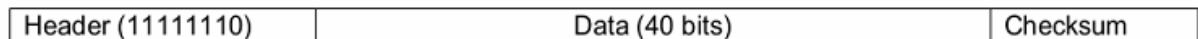
The header is hex FE. The data consists of all 40 tag bits sent MSB first. The checksum is a byte addition of the 5 bytes of tag data e.g tag 0410B2F12A has a checksum of 04+10+B2+F1+2A=1.
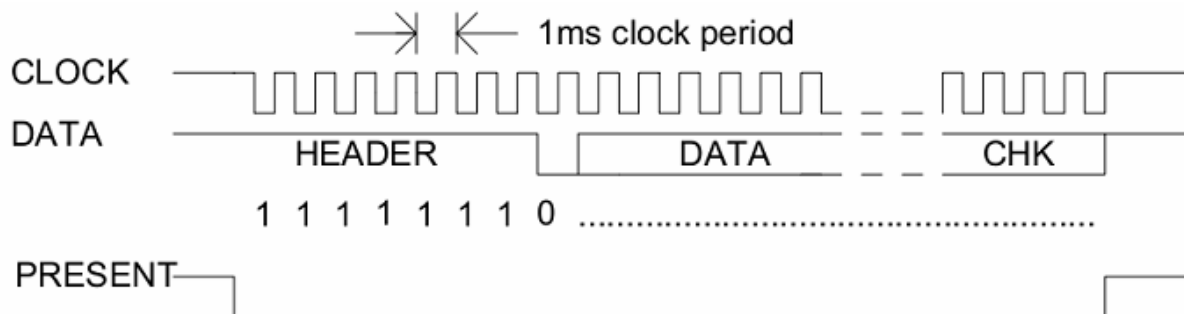

Data is set up on the falling edge of the clock and is stable on the rising edge of the clock.

Wiegand Output Modes

In this mode the tag code is pulsed out on DATA0 (white wire) and DATA1 (brown wire). Both are normally high. When a tag is presented to the reader 26/34/42 bits are transmitted in the following way:

A binary 1 is represented by a 100 us pulse low on DATA1. A binary 0 is represented by a 100 us pulse low on DATA0. There is a 2 ms inter bit delay.
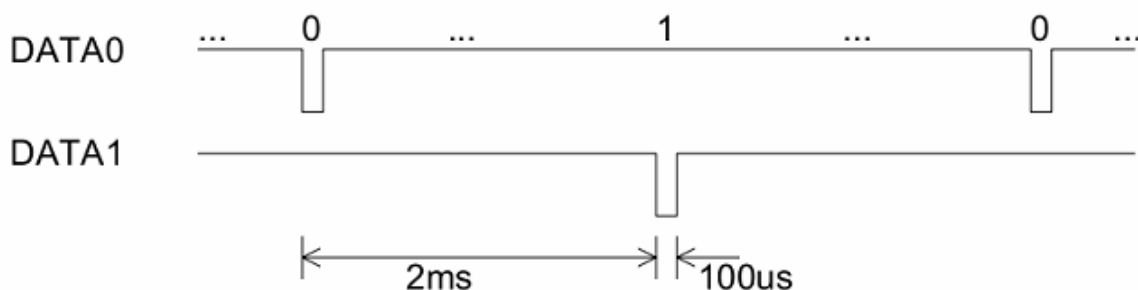
<u>42 bit mode</u>
42 pulses are transmitted:
- The first bit is the even parity of tag bits 1-20.
- All 40 bits of the tag code (MSB first).
- The last bit is the odd parity of tag bits 21-40.

<u>34 bit mode</u>
34 pulses are transmitted:
- The first bit is the even parity of tag bits 9-24.
- The least significant 32 bits of the tag code (MSB first).
- The last bit is the odd parity of tag bits 25-40.

<u>26 bit mode</u>
26 pulses are transmitted:
- The first bit is the even parity of tag bits 17-28.
- The least significant 24 bits of the tag code (MSB first).
- The last bit is the odd parity of tag bits 29-40.

Mag Stripe Modes

In this mode the decimal tag number is clocked out on CLOCK (white wire) and DATA (brown wire) at 100 characters per second. The format is standard as found on Track 2 of a magnetic card:

10 leading 0's	SS	DATA	ES	LRC	5 trailing 0's

SS = start sentinel (B hex).
ES = end sentinel (F hex).
LRC = longitudinal redundancy check.
DATA varies according to the number of bits selected:
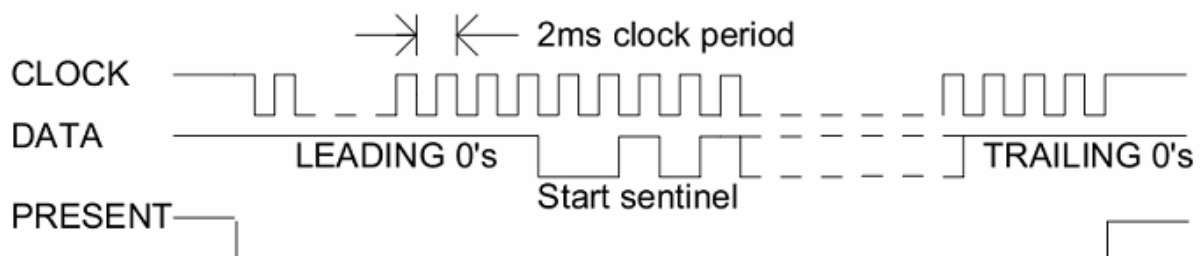
<u>40 bit mode</u>
DATA = 13 decimal digits with leading zeros.   The most significant decimal digit is   transmitted first.

<u>32 bit mode</u>
DATA = 10 decimal digits with leading zeros.   The most significant decimal digit is transmitted first.

<u>24 bit mode</u>
DATA = 8 decimal digits with leading zeros.   The most significant decimal digit is transmitted first.

Each character is 5 bits long.   The first four bits are the hex digit (0F) least significant bit first.   The fifth bit is an odd parity bit.   A 0 is represented by a high level on the DATA wire and a 1 is represented by a low level on the DATA wire.   Data is set up on the falling edge of the clock and is stable on the rising edge of the clock.   The PRESENT output goes low for the duration of the transmission simulating the CARD PRESENT from a mag card reader.

<u>Fast 40 bit mode</u>
This mode differs from the standard 40bit magstripe mode in the following ways:
- DATA=14 decimal digits with leading zeros.
- The clock period is 250us.
- 10 trailing 0's
All other aspects of this format are the same as the other magstripe formats.

<u>Fast 8-digit mode</u>
This mode differs from the standard 40bit magstripe mode in the following ways:
- DATA=8 decimal digits (which are the bottom 8 digits of the full decimal number of the card).
- The clock period is 250us.
- 10 trailing 0's
All other aspects of this format are the same as the other magstripe formats.

Crosspoint mode

In this mode the reader assumes the card is encoded as per the Crosspoint bit scrambling algoithm. The unscrambled decimal tag number is clocked out on CLOCK and DATA at 800 characters per second. The clock period is 250us. The format is standard as found on Track 2 of a magnetic card

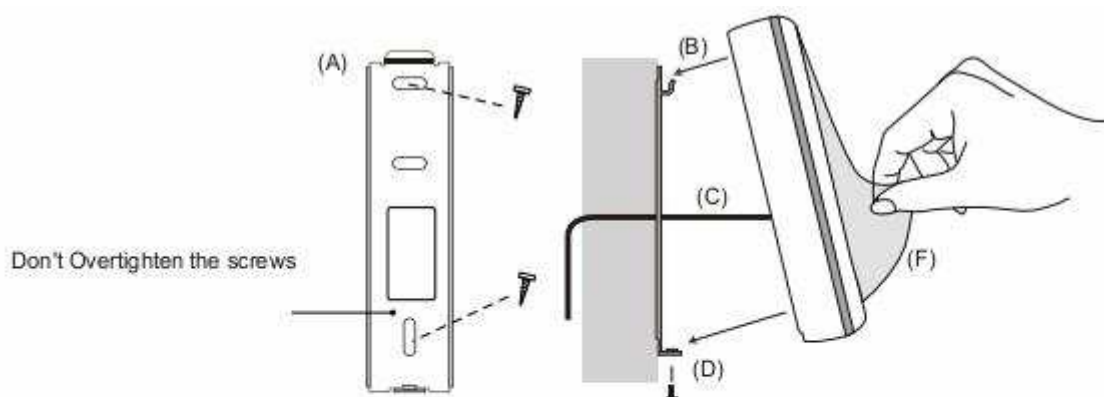| 10 leading 0's	SS	DATA	ES	LRC	10 trailing 0's

SS = start sentinel (B hex).
ES = end sentinel (F hex).
LRC = longitudinal redundancy check.

DATA = 9 decimal digits with leading zeros. The most significant decimal digit is transmitted first.


Installation

- Kindly refer to the " 4 wiring connections".
- Do not over tighten the back plate screws during installation to prevent distortion.
  (A). Mount the back plate onto the wall or other desired location.
  (B). Connect the wires in accordance with the wiring instruction below.
  (C). Make sure the back plate and the reader upper cover guides are aligned.
  (D). Install the reader upper cover to the back plate.
  (E). Use the hex key wrench to fasten the screw onto the bottom of the reader.
  (F). Tear off the protective film.

Testing

To avoid interference self-detection of sensitive touch keypad, please do not touch the keypad when input power.
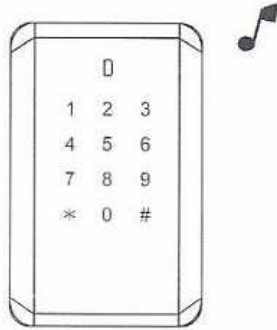
When the power is on, the reader's green LED and the reader will beep concurrently.
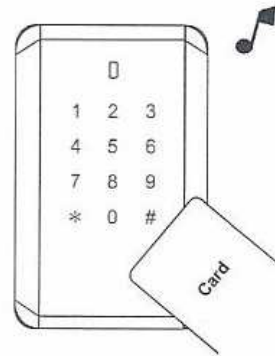
Place the card provided near the reader. The reader will beep concurrently.