

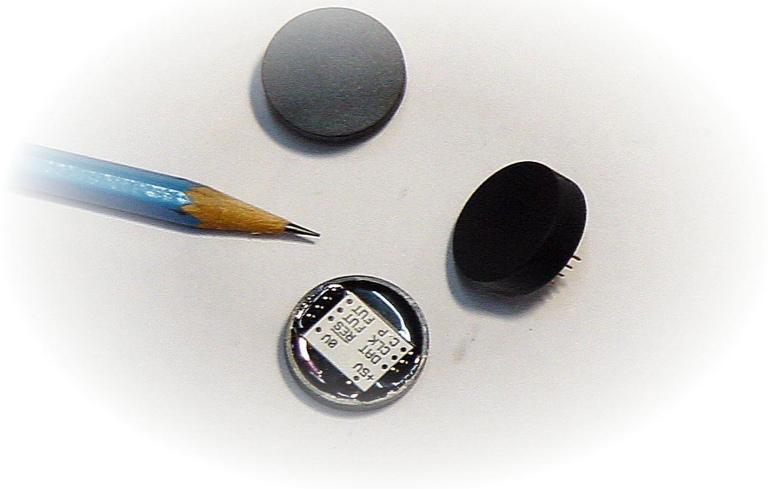
PICOmax READER MANUAL

Low Cost Proximity Reader

Ordering Code:	PICOmax-1	[No Antenna]
	PICOmax-2	[With Internal Antenna]

00	New Manual	27.04.01	Tatz	Joseph Ng	TK Goh
Rev	Description	Date	Prepared	Reviewed	Approved

Low Cost Proximity Reader



System Overview

- √ Size : 22.5mm x 6.5mm
- √ Read Range 4.5 – 6.5 cm using Sokymat 50mm Coil “Unique”
- √ Coding : Manchester 64 bit, Modulus 64
- √ Frequency : 125 kHz
- √ Enclosure : Glass filled ABS
- √ Weight : 8 Kg
- √ Outputs available :
 - Magnetic emulation, simulated to 50 ips
 - Serial ASCII
 - Weigand 26/34 1mS/50uS

Introduction

The *PICOmax*, with integrated antenna is a truly affordable low power proximity reader suitable for access control and general industrial applications. It is really tiny and may even be fitted on metal surfaces. The low power and very low cost makes it suitable for a very wide range of applications.

PICOmax will provide ranges up to 15cm with a suitable antenna.

PRODUCT DESCRIPTION

The reader can be used in one of 3 ways, (see Output Format)

- Magnetic Emulation
- Serial ASCII and
- Wiegand

The reader consumes only 65mW yet achieves a read range of 5cm with a standard *Sokymat ISO card*. The **PICOmax** series are considered to be the smallest complete readers available today. Using technology and highly efficient mass production techniques, we are able to provide you with the lowest cost reader in the global arena.

OPERATIONAL CHARACTERISTICS

Absolute Maximum Ratings

Caution : The figures below are absolute maximum ratings. Continuously using these ratings will exert stress on the device and may cause permanent damage.

Parameter	Test Conditions
I/O Output Current	20mA Sink source
Supply Voltage	6 Volt DC
Voltage on Output Pins	Vsupply + 0.5v, 0v – 0.5v
Drive Current	300mA
Antenna Volt Pin 7	100v P-P

Electrical Characteristics

Parameter	Test Conditions
Power Requirements	5 Volt @ 13mA nominal
Frequency	125 Khz
Antenna Current Pin 7	150mA Pk

Other Characteristics

Read Range	4.5 - 6.5 using <i>Sokymat 50mm coil</i>
Transponder Format	<i>Sokymat</i> Unique or compatible
Encoding	Manchester 64 bit, Modulus 64
Enclosure	Glass Filled ABS
Outputs Selectable	<ul style="list-style-type: none">• Magnetic Emulation – Simulated to 50ips• Serial ASCII 9600, 8, 1• Wiegand26/34, 1mS/50uS

DATA FORMAT

Output Format – ASCII

02	10 ASCII Data Characters	Checksum	CR	LF	03
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The checksum is the result of the ‘exclusive or’ of the 5 Binary Data bytes (The 10 ASCII data characters)

Output Format – Magnetic

10 leading Zeros	SS	14 Data Digits	ES	LRC	10 Trailing Zeros
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The leading zeros allow the receiver to prepare to accept the data. SS is the usual Start Sentinel of 11010. ES is the usual End Sentinel of 11111. The LRC is the Longitudinal Redundancy Check. There are 10 terminating zeros.

To overcome the problem of transmitting data with ‘F’ characters that would be seen as a terminator (11111) the data is converted into ordinary numerical base 10 string. See example below.

A hexadecimal code of **00004567AF** will be converted into **00000000354223**. Note that this string is always 14digits long and is calculated as:

$$(F * 16^0 + A * 16^1 + 7 * 16^2 + 6 * 16^3 + 5 * 16^4 + 0 * 16^5 + 0 * 16^6 + 0 * 16^7 + 0 * 16^8) = 15 + 160 + 1792 + 24576 + 327680 + 0 + 0 + 0 + 0 = 00000000354223$$

Data Structure Wiegand26 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	E	O	O	O	O	O	O	O	O	O	O	O	O	O	P
EVEN PARITY (E)												ODD PARITY (O)														

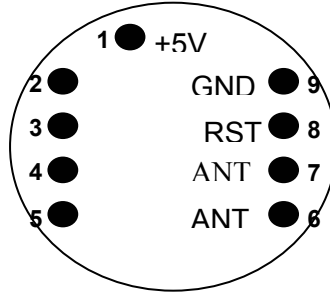
P = Parity Start Bit and Stop Bit

Data Structure Wiegand34 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	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	P
EVEN PARITY (E)																	ODD PARITY (O)																	

P = Parity Start Bit and Stop Bit

PICOMax Pinout Bottom View



Programming the Output Format

Magnetic

Pin 1	+4.6 through +5.5V	Supply DC volts
Pin 2	Beeper/Led	2.7KHz Logic.
Pin3	Data	Magnetic Emulation
Pin4	Clock	Magnetic Emulation
Pin5	Card Present	Magnetic Emulation
Pin6	Antenna	To External Antenna
Pin7	Antenna	To External Antenna and Tuning Capacitor
Pin8	Reset Bar	Strap to +5v
Pin9	Ground 0v	Zero volts and Tuning Capacitor Ground

ASCII

Pin 1	+4.6 through +5.5V	Supply DC volts
Pin 2	Beeper/Led	2.7KHz Logic.
Pin3	TTL Data	Serial ASCII inverted
Pin4	CMOS	Serial ASCII
Pin5	Strap to Ground	
Pin6	Antenna	To External Antenna
Pin7	Antenna	To External Antenna and Tuning Capacitor
Pin8	Reset Bar	Strap to +5v
Pin9	Ground 0v	Zero volts and Tuning Capacitor Ground

Wiegand26

Pin 1	+4.6 through +5.5V	Supply DC volts
Pin 2	Beeper/Led	2.7KHz Logic.
Pin3	One Output	
Pin4	Zero Output	
Pin5	Strap to Pin2	
Pin6	Antenna	To External Antenna
Pin7	Antenna	To External Antenna and Tuning Capacitor
Pin8	Reset Bar	Strap to +5v
Pin9	Ground 0v	Zero volts and Tuning Capacitor Ground

Wiegand34

Pin 1	+4.6 through +5.5V	Supply DC volts
Pin 2	Beeper/Led	2.7KHz Logic.
Pin3	One Output	
Pin4	Zero Output	
Pin5	Strap to Pin3	
Pin6	Antenna	To External Antenna
Pin7	Antenna	To External Antenna and Tuning Capacitor
Pin8	Reset Bar	Strap to +5v
Pin9	Ground 0v	Zero volts and Tuning Capacitor Ground

We reserve the right to change these specifications without notice