IP-X Read-Only Dual Frequency RFID Tag
Laminated Credit Card Type

Group

IPICO INC
Ontario, Canada
tel: +1 905 631 6310
fax: +1 905 631 6614
info.can@ipico.com
www.ipico.com

Operations

South Africa

Pretoria
tel: +27 12 345 9520
fax: +27 12 345 5834
info.sa@ipico.com

Australasia

Redcliffe, Queensland
tel:+61 7 3889 5799
fax: +61 7 3889 5980
info.aus@ipico.com

North Asia

Shanghai, China
tel: +86 21 5080 0345
fax: +86 21 5027 8271
info.cn@ipico.com

China

Beijing, China
tel: +86 10 8280 0541
fax: +86 21 8280 0546
info.cn@ipico.com

Europe

Valence, France
tel: +33 475 443 238
fax: +33 475 443 238
info.europe@ipico.com

USA

Atlanta, USA
tel: +1 770 552 9654
fax: +1 404 601 9679
info.usa@ipico.com

Description

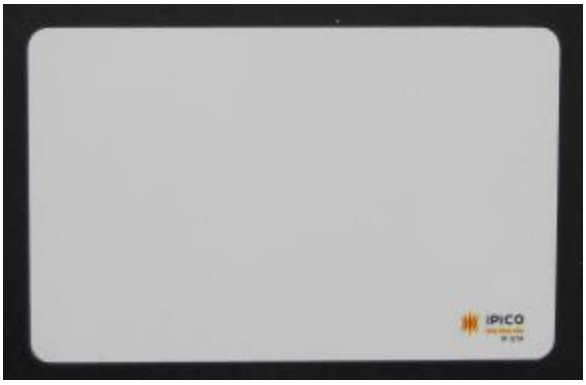
IPICO's Dual Frequency RFID Technology uses the same IP-X multi-read protocol as its UHF products, but the low frequencies used, (125kHz power-up and 6.8MHz return signal), can penetrate through "lossy" media without the problems of tag antenna detuning, and the high attenuation encountered with UHF systems. Because of the high tag transmit carrier frequency, high data rates are achievable (up to 256kbit/sec), resulting in fast reading of multiple tags in the beam. Dual Frequency technology allows for longer ranges to be achieved than single frequency low frequency technologies, e.g. 125 kHz or 13.56 MHz. This is mainly because the tag data carrier frequency (6.8 MHz) is much higher than the power-up frequency (125 kHz).

Applications

- "Free-Flow" people tracking (no conscious action required)
- Personalized card authentication
- Access control and asset control
- Sport time-keeping (running, cycling, swimming, triathlon)
- Supply Chain Management (wooden pallets, containers, crates)
- Paper and document management (files, library, inventory)
- Animal tracking (sheep, cattle, pigs)
- Tracking of foodstuffs, in bins or bags
- Mining tracers (ore, diamonds)
- Electronic labelling of RF-unfriendly materials (rock samples, trees, etc)

Tag Construction

- Consists of a chip module attached to 125kHz and 6.8MHz coil antennas, laminated in a 1.2 mm plastic card.



DF Laminated Credit Card size tag.

Key Features

- Low cost single chip solution
- Compliant with USA, European, Australian, and RSA spectrum allocations
- Dual frequency (Transmit 125kHz / Receive 6.8MHz)
- Long read range in electrically noisy environments - 1.0 m with "Medium Range" Reader or anywhere within a 1.8 m wide portal made up of two such Readers
- Printable surface
- Robust Anti-collision protocol (up to 120 tags read simultaneously)
- Fast moving tags (8 m/sec) can reliably be read
- Factory programmed 64 bit ID number
- High tag transmission rate (128 kbits/sec)
- High tag read rate – up to 155 tags/sec
- On-chip oscillator and 6.8 MHz antenna driver
- Low chip power consumption
- Passive – no battery
- -40 to +85 ^{O}C temperature range
- Can be repackaged in custom enclosures

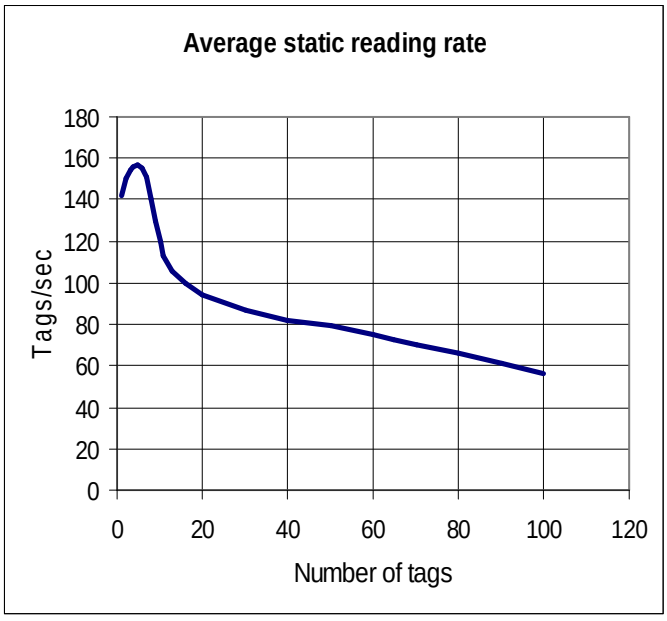
Multi-Read Performance (Tag numbers & Tag Speed)

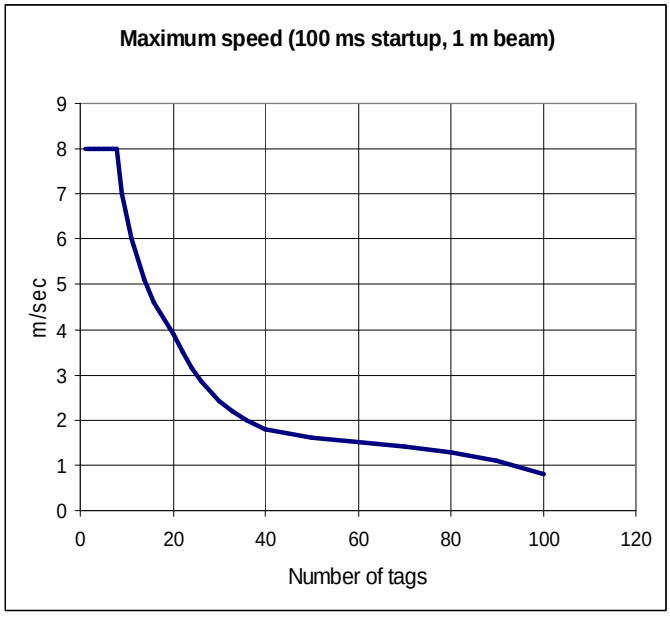
Speed grade	Data Rate	Maximum Interval	Performance	
			Speed	Number of tags readable
V39	128 kbit/sec	64 kbit	8 m/sec	8
			2 m/sec	35

Maximum speed is not limited by the protocol, but by the start-up time (30 – 100 msec) typical of low carrier frequency tags

Specifications

Device Name	Dual Frequency Tags: Laminated Credit Card Type	
Part Numbers	**IP-X X3-V39-CL85x54x1.2**	
Power requirements	Passive No batteries (inductive coupling at 125 kHz, which is received and rectified to generate a supply voltage for the chip)	
Read Range ("Medium Range" Reader)	0.9 m (tag parallel to reader antenna)	
Data rate	128 kbit/s	
Moving Tags, readability	10 tags @ 8m/sec; 20 tags @ 4 m/sec	Simulated
Multi-Read rate	20 tags in beam: 90 tags/sec; 100 tags in beam, 55 tags/sec	
Protocol Saturation	Time to read 20 tags = 0.2 sec; time to read 100 tags = 1.8 sec	
ID Length	64 bits (16 bit CRC)	
Antenna	Printed or air wound (125kHz and 6.8MHz coil / printed antenna)	
Programmability	Read-only, factory programmed ID, 64 bits	
Enclosure	Credit Card: 85 x 54 x 1.8 mm	
Environmental	Operating temperature range: -30 to +70C Storage temperature range: -40 to +85C Humidity: 100% IP rating: IP 68 UV resistant: Yes	
Physical	Material used: PVC, white, with IPICO logo	





Ordering Information

Product Name	Product Code	Description
X3 DF tag, Credit Card, Laminated, Printable 1.2mm	IP3278	IP-X X3-V39-CL85x54x1