



**Key Features**

- Low cost single chip solution
- Compliant with USA, European, Australian and RSA spectrum allocations
- Dual frequency (Transmit 125 kHz / Receive 6.8 MHz)
- Long read range - 0.6 m (can be more depending on reader/tag configuration)
- Robust anti-collision protocol (up to 120 tags read simultaneously)
- Fast moving tags (10 m/sec) can reliably be read using the STK Elite or STK Lite readers
- Factory programmed 64 bit ID number
- High tag transmission rate (128 kbits/sec)
- High tag read rate - up to 155 tags/sec
- Passive - no battery
- -40 to +85 °C temperature range
- Four holes for lace-up
- 35x20 mm area to place race number label
- Soft and flexible
- Waterproof

## IP-X Read-Only Dual Frequency RFID Tag—Laminated Sports Time Keeping Type

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 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 128kbit/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 because the tag data carrier frequency (6.8 MHz) is much higher than the power-up frequency (125 kHz).

Because of these unique features and the robust multi-read anti-collision properties of the IP-X protocol, Dual Frequency technology lends itself ideally to "Free-Flow" people tracking, which means that the tag does not need to be specially presented to the reader. Sport Time-Keeping is just one application. Others are access control and attendance monitoring (e.g., at conferences).

**Construction:**

Consists of a chip attached to 125 kHz and 6.8 MHz antenna coils, enclosed in a 1.8 mm laminated plastic card.

**Chip set:**

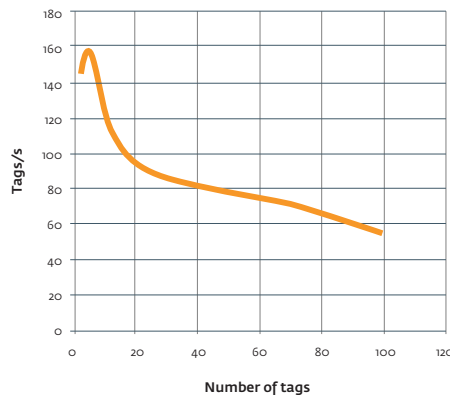
IP-X3 / EM4322

**Multi-Read Performance (Tag numbers and Tag Speed)**

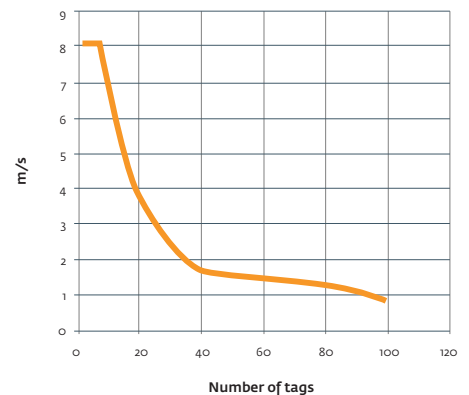
Version	Data rate	Maximum Interval	Speed	Number of tags readable
V39	128 kbit/s	16 kbits	8 m/s)	8
			2 m/s)	36

(Maximum speed is not limited by the protocol, but by the tag start-up time, typ 30 - 100 msec.)

Average static reading rate



Maximum speed (100 ms startup, 1 m beam)





CHANGING THE WAY THE WORLD VIEWS SPORTS

**Dual Frequency Tags: Laminated Sports Time Keeping Type**

Item	Specification
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 (STK Elite or STK Lite Reader)	0.6 m/min
Data rate	128 kbit/s
Moving tags, readability	10 tags @ 8 m/sec; 35 tags @ 2 m/sec
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 (including 16 bit CRC)
Antenna	Air wound (125 kHz and 6.8 MHz coil)
Programmability	Read-only, factory programmed ID, 64 bits
Size and weight	46 x 57 x 1.8 mm, 6.3 grams
Environmental	Operating temperature range: -30 to +70 °C
	Storage temperature range: -40 to +85 °C
	Waterproof
	IP rating: IP 68
Housing material	UV resistant: Yes
	PVC, black and printed

Simulated

Order Information	Product Code	Description
X3 DF tag, STK, laminated printed	IP3453	IP-X X3-V39-ST57x46x1.8