



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

Applications

BiT (Brooks-IPICO-Tenacent) Intermodal Seals are used in applications where long range, multi-read, high-speed container identification, tamper evidence and authentication are required

- § BiT Intermodal Seals are used to secure ocean containers, trailers, rail cars, air cargo and other containers in the same way as a traditional seal, without any special training being necessary for its use.
- § BiT Intermodal Seals can be read up to 8m depending on reader power output and other environmental conditions. The optimal container seal reading distance is approximately 6 meters, which is adequate for unmanned portals or gates. Where portals are manned, this distance ensures that staff are also in a position to verify that a container has not been tampered with, both visually and by reading the tamper status of the BiT Intermodal Seal with a handheld or other portable IP-X RFID reader.

Chipset

IP-X4 TTO passive RFID Integrated Circuit with sensor input (BiT Intermodal Seal employs passive tamper switch functionality). Downwards compatible with EM4122/4222 and EM4442/4444 Integrated Circuits, tags and IP-X readers.

Tag Construction

- § Consists of a chip attached to a tamper detection printed antenna integrated into an EJ Brooks container bolt
- § The BiT Intermodal Seal consists of an UHF RFID tag inserted in an ISO compliant container bolt with modified locking mechanisms to detect tamper.



Key Features

- § Low cost single chip passive RFID solution
- § Available for most spectrum allocations, including FCC, ETSI, ICASA, ACA, WPC
- § Robust anti-collision protocol – up to 240 tags can be read simultaneously
- § Fast moving tags can be read – up to 300km/h
- § Compatible with all IPICO UHF readers
- § Factory programmed 64-bit unique ID number in EEPROM, locked
- § 1 kbit with 14 pages of user programmable and lockable memory (64 bit pages)
- § User written pages can be transmitted with the UID in TTO (Tag-Talks-Only) mode
- § High tag data transmission rate – up to 256 kbit/sec
- § Comply with Customs-Trade Partnership Against Terrorism (C-TPAT) requirements, Container Security Initiative (CSI) and EU governed security protocols
- § Minimum strength characteristics, including pull-out strength, tensile, shear, bending and impact strengths comply with ISO/PAS 17712 requirements

Container Identification, Tampering, and Trails of Custody

Enables container security solutions to -

- § Communicate unique container ID, tamper status and user-defined information on the tag between the passive BiT Intermodal Seal, RFID readers and a central database.
- § Use 1 kbit of user-defined information for limited audit and security purposes in line with World Shipping Council's (WSC) recommendations in a simple and secure way.
- § Enforce end-to-end integrity in container supply chains by securely sealing containers at ports of departure after verification of the contents, verifying the untampered status of container seals and the true origin of security seals, in offline mode at ports of transit.
- § Verify the complete chain of custody of containers at ports of destination, including the authorised sealing at the port of origin and security inspections conducted at various ports of transit; tamper evidence or authentic *Container Trails of Custody* prevents the cloning of security seals and enables offline verification of the authenticity of seals.



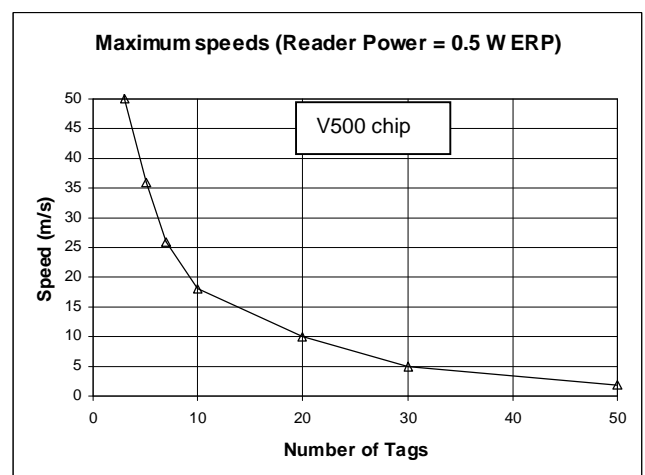
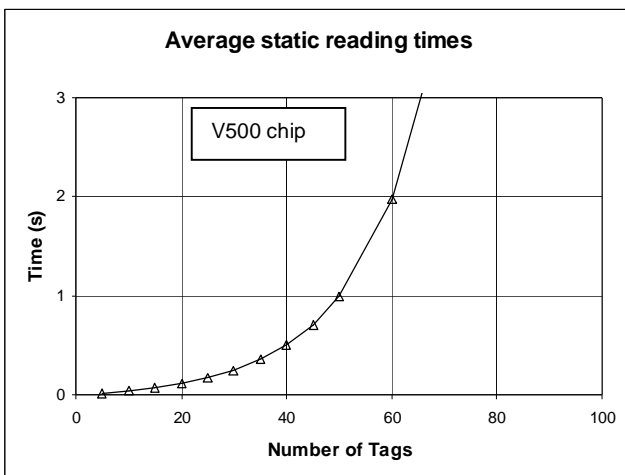
IPICO
RFID REALISED

Specifications

Device name	IP-UHF-BiT Intermodal Seal
Part Number	IP-X X4t-rff-V500-CS-BiT
Power requirements	No batteries (passive back-scatter)
Read Range	2 - 8 m (Depends on reader power output and configuration)
Data rate	256 kbit/s typical
Max tag speed	Depends on number of tags present simultaneously; up to 160 km/h for tags mounted on container
ID Length	64 bits (16 bit CRC)
Memory	1 kbit of user defined (One-Time-Programmable [OTP] or Write-Once Read-Many [WORM] and multiple Read/Write [R/W]) data can be written to the tag in 14 pages of 64-bit blocks Tag can be configured to transmit only its 64-bit unique ID (UID), spontaneously after power-up, or its UID and one or more data pages contiguously in a TTO mode Can implement EPC Class 1 (Gen 2) standard for data formats
Protocol Saturation	Protocol optimized for various applications for a few fast moving tags rather than large a number of slow moving tags Average transmission rate is 120 per sec.
Multi-read rate	Up to 240 tags/s (Average ID reading rate is nearly 200 tags/s)
Antenna	Dipole, antenna with integrated tamper circuitry printed on PET substrate
Enclosure	EJ Brooks intermodal container bolt that complies with ISO/PAS 17712 and other ISO specifications
Life Expectancy	Virtually indefinite
Environmental	Operating temperature range: -30 to +85C Storage temperature range: -40 to +90C Waterproof, UV resistant and shock resistant Electromagnetic radiation: As per ISO 17363, Annexure A, Item j
Physical	215 x 26 x 26 mm (Pin diam 9.5mm); mass 56 g

Configuration	Regulatory Requirements		Reader Performance (Reliable reading range)
	Frequency	Power output	BIT Intermodal Seal
Japan	UHF bandwidth allocation in progress.	Not available	Not available
CE (Europe)	Fixed frequency 869.4 - 869.65MHz	500mW ERP	2m – 3m
FCC (USA)	Frequency Hopping 902 - 928MHz	4W EIRP unlicensed	6m
ICASA (SA)	Fixed frequency 915.3MHz	4W EIRP	6m

V500 parameters
Bit rate = 256 kbit/s
Max Delay = 4 kbits
Tamper switch normally closed. Tag transmits a modified ID code when switch open.



Ordering Information

Product name	Ordering code	Description
X4TTO UHF tag, Bit Seal RW	IP3316D	IP-X X4t-869-V500-CS-BiT
X4TTO UHF tag, Bit Seal RW	IP3314	IP-X X4t-915-V500-CS-BiT

X4t = X4TTO R/W chip (EM4444)