

UHF Read Write ISO 18000-6c / EPC / ISO 17712-2 compliant

Intermodal Container Seal V11



Description

Applications

The Tenacent Intermodal V11 RFID Seals are used in applications where long-range, multi-read, container, rail cars or truck identification, tamper evidence and authentication are required

- 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 installation.
- Intermodal Seals can be read up to 14m depending on reader power output and other environmental conditions. The optimal container seal reading distance is approximately 5-6 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 Intermodal Container Seal with a handheld or other compatible RFID reader.

Chipset

Alien Higgs-3 Single chip UHF Tag IC. The chip conforms to the EPCglobal Class 1 Gen 2 specifications and provides state-of-the-art performance for a broad range of UHF RFID tagging applications

Tag Construction

- The Seal consists of an UHF RFID tag array inserted in an ISO 17712-2 compliant container bolt with modified locking mechanisms to detect tamper by disabling communications. High impact plastic mouldings provide visual evidence of Tampering.
- Bolt : Carbon steel with zinc plate and chromate finish.
- Lockbody: A metal insert with high impact ABS case.



Key Features

- Low cost single chip passive RFID solution
- Available for most spectrum allocations, including FCC, ETSI, ICASA, ACA, WPC
- Compatible with all EPC / ISO18000-6c UHF compliant readers
- Fast moving tags can be read up to 80km/h
- Factory programmed Unalterable 64-bit unique serial number
- User memory can be Block Perma-Locked as well as read password protected in 64 Bit Blocks
- Good read range, up to 14m with the appropriate antenna power and conditions
- Designed to comply with Customs-Trade Partnership Against Terrorism (C-TPAT) Container Security Initiative (CSI) and ISO28000 security methodologies
- Minimum strength characteristics, including pull-out strength, tensile, shear, bending and impact strengths comply with ISO/PAS 17712-2 requirements
- Minimum strength characteristics, including pull-out strength, tensile, shear,
- Plastic cover on locking chamber cracks and shatters on compromise attempt.
- Remove with bolt cutters.

Container Identification and trails of custody

The Tenacent Intermodal Container Seal V11 enables RFID integrators and container security solution providers to:

- Communicate unique container ID, status and user-defined information written to the chip between the Intermodal Seal V11, RFID readers and a central database.
- Use memory for user-defined information for limited audit and security purposes in line with World Shipping Council's (WSC) recommendations in a simple and secure fashion .
- Ensure end-to-end integrity in supply chains by securely sealing containers at origin after confirming the contents and using an "Off-Line" hand over audit at each change of culpability within the supply chain and ports of transit
- Verify the complete chain of responsibility of goods at points of destination, including the authorised sealing at the point of origin and security inspections conducted at various points of transit; Source authenticity and traceability of custody prevents the cloning of the Intermodal seals and enables offline verification of the source
- Automate seal inspections allowing for automated date and time-stamps facilitating security exception reporting
- Automate gate and third party security facilities such as booms and camera inspections.

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Specifications

Device name	Tenacent Intermodal Seal V11				
Power requirements	No batteries (passive RFID technology)				
Read Range	2 - 14 m Dependant on reader power output and antenna configuration				
Data rate	256 kbit/s typical				
Max tag speed	Dependant on number of tags read simultaneously; up to 80 km/h for tags mounted on container				
Memory Map	User	00h - 1FFh	User	NVM	512
	TID	60h - BFh	Device configuration	ROM-NVM	96
		20h - 5Fh	Unique Tag ID Unalterable	NVM	64
		00h - 1Fh	TID EPC/TMD/TMDID/TMN	ROM	32
	EPC	20h - 7Fh	EPC#	NVM	96
		10h - 1Fh	EPC-PC	NVM	16
		00h - 0Fh	EPC-CRC	RAM	16
	Reserved	20h - 3Fh	RES- Access Pwd, EPC optional	NVM	32
		00h - 1Fh	RES-Kill Pwd	NVM	32
Antenna	Dipole antenna with integrated reflector and transmission lines				
Enclosure	Intermodal container bolt that complies with ISO/PAS 17712-2 and other ISO specifications				
Life Expectancy	Virtually indefinite				
Environmental	Operating temperature range: -50 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 27 x 27 mm (Pin diam 9.5mm); mass 57 g				

Typical Performance



Typical read distance chart - Using a CSL101-2 handheld reader @ 90 deg from target seal

