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# User Manual

## LotTrack DisTag G4

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## 1. Functional Use

The LotTrack DisTag G4 is the smart device attached to each wafer-box in the a semiconductor fab. Depending on the DisTag G4 Type, the DisTag G4 is used to perform different key functions within the LotTrack System. These functions are e.g. Operator Assistance (using the display and the LED), Discrete Position Detection (using the optical reader module (OR module) that detects Position Identifiers attached to storage positions on racks/ carts) or Free Air Localization (using e.g. the UWB technology to perform 2D and 1D global localization).



*Figure 1: LotTrack DisTag G4 Types with UWB (Types 01, 05, 06)*



*Figure 2: LotTrack DisTag G4 Types with Ultra-sound (Types 02, 03, 04)*

## LotTrack DisTag G4 – Datasheet – Technical Specifications

| Wireless Communication Overview              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technology                                   | <ul style="list-style-type: none"> <li>• Passive RFID LF to interact with a LotTrack LoadPort Identifier/ Doorway Identifier.</li> <li>• Active RFID UHF to transfer data to the LotTrack Antenna Infrastructure.</li> <li>• Active UWB to receive and send radio UWB signals for localization.</li> <li>• Passive infrared (IR) to receive data from a LotTrack LoadPort Identifier.</li> <li>• Passive ultrasonic (US) to receive ultrasonic signals for localization.</li> </ul> |
| Communication LF (receive only)              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Frequency                                    | 125 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Antenna Type                                 | 3D integrated LF receiver coils (x, y z)                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Modulation                                   | 7,8 kbit/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Communication UHF                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Frequency band Europe                        | 867.2 – 869.85 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Frequency band USA                           | 919.2 – 920.8 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Transmit Output Power                        | < 1 mW                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Antenna Type                                 | omnidirectional                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Modulation                                   | 115.2 Kbit/s, GFSK, 64 kHz Deviation; bi-directional                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Communication UWB                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Frequency                                    | 6.5 GHz (center frequency) 6.2400 – 6.7392 GHz (Range)                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Transmit Channel Power                       | < -17 dBm/500MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Antenna Type                                 | omnidirectional                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Communication infrared (IR) (receive only)   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Receiver Type                                | Infrared light                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Communication ultrasonic (US) (receive only) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Frequency                                    | 39 kHz to 41 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Receiver Type                                | Ultrasonic                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Display                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Display Type                                 | MIP / extremely low power consumption/ ultra high resolution                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Capability                                   | graphic                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Display Resolution                           | 536 x 336 (179 dpi)                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Display Size                                 | 80.3 mm (3.16in.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Display Update Rate                          | Full display < 2s                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Energy                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Battery                                      | 2 AA Li / SOCl <sub>2</sub> cells (exchangeable)                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Overall Voltage/ Capacity                    | 3.6V / 5'000mAh nominal                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Environmental         |                                                                        |
|-----------------------|------------------------------------------------------------------------|
| Operating temperature | 10°C ... +40°C                                                         |
| Storage temperature   | 0°C ... +60°C                                                          |
| Dimensions            |                                                                        |
| LxWxH                 | 94 x 62 x 21.5 mm                                                      |
| Material              | ABS antistatic                                                         |
| Weight                | approx. 100g                                                           |
| Mounting              | different mounting solutions resp. back covers for each wafer-box type |

## 2. General handling instructions

**Important Notice:** Before starting to use the **LotTrack DisTag G4** in the fab, carefully read all general handling and user instructions documented in this section.

General terms of use for cleaning, storage and transport of the DisTag G4

- The DisTag G4 is intended to be solely used indoor when implemented in a fab.
- The DisTag G4 is intended to be solely used when attached to boxes.
- When the DisTag G4 is attached to a box, never use the DisTag G4 as a handle device to move or carry the box.
- Do in no event insert the DisTag G4 into any semiconductor equipment, such as for example implanter, stepper or wet benches.
- Do not drop, kick or throw the DisTag G4.
- Do not hit the DisTag G4 against surfaces of e.g. desks, push carts or equipments, nor impose strong mechanical pressure, e.g. on the display or optical reader.
- Do not expose the DisTag G4 to water or other liquids, varnishes, gases, heat or steam.
- Do not contaminate the DisTag G4, especially not the optical reader.
- Do not open the DisTag G4.
- Gently wipe the surface using a clean room compliant towel that is moistened with Isopropanol. Do not spray the Isopropanol directly on the DisTag G4.
- Do not use sharp devices for cleaning.
- For storage and transport, only use the recommended storage and transport devices for the DisTag G4. All storage and transport devices shall be kept clean before use; the environment shall be kept dry.

## 3. Compliance Information

### 3.1 USA: Regulatory Notes

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

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**Class B digital device.** A digital device that is marketed for use in a residential environment notwithstanding use in commercial, business and industrial environments. Examples of such devices include, but are not limited to, personal computers, calculators, and similar electronic devices that are marketed for use by the general public.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**CAUTION:**

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

**RF exposure warning**

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

## 3.2 Europe: Declaration of Conformity (DoC)

[Name of manufacturer] = Intellion AG

[designation of type of radio equipment] = DisTag G4

[Your web site address] = [www.intellion.com/en/eu-doc/](http://www.intellion.com/en/eu-doc/)

BG

С настоящото [Name of manufacturer] декларира, че този тип радиосъоръжение [designation of type of radio equipment] е в съответствие с Директива 2014/53/ЕС. Цялостният текст на ЕС декларацията за съответствие може да се намери на следния интернет адрес: [Your web site address]

CS

Tímto [Name of manufacturer] prohlašuje, že typ rádiového zařízení [designation of type of radio equipment] je v souladu se směrnicí 2014/53/EU. Úplné znění EU prohlášení o shodě je k dispozici na této internetové adrese: [Your web site address]

DA

Hermed erklærer [Name of manufacturer], at radioudstyrstypen [designation of type of radio equipment] er i overensstemmelse med direktiv 2014/53/EU. EU-overensstemmelseserklæringens fulde tekst kan findes på følgende internetadresse: [Your web site address]

DE

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Hiermit erklärt [Name of manufacturer] , dass der Funkanlagentyp [designation of type of radio equipment] der Richtlinie 2014/53/EU entspricht. Der vollständige Text der EU-Konformitätserklärung ist unter der folgenden Internetadresse verfügbar: [Your web site address]

EL

Με την παρούσα ο/η [Name of manufacturer] , δηλώνει ότι ο ραδιοεξοπλισμός [designation of type of radio equipment] πληροί την οδηγία 2014/53/ΕΕ. Το πλήρες κείμενο της δήλωσης συμμόρφωσης ΕΕ διατίθεται στην ακόλουθη ιστοσελίδα στο διαδίκτυο: [Your web site address]

EN

Hereby, [Name of manufacturer] declares that the radio equipment type [designation of type of radio equipment] is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: [Your web site address]

ES

Por la presente, [Name of manufacturer] declara que el tipo de equipo radioeléctrico [designation of type of radio equipment] es conforme con la Directiva 2014/53/UE. El texto completo de la declaración UE de conformidad está disponible en la dirección Internet siguiente: [Your web site address]

ET

Käesolevaga deklareerib [Name of manufacturer] , et käesolev raadioseadme tüüp [designation of type of radio equipment] vastab direktiivi 2014/53/EL nõuetele. ELi vastavusdeklaratsiooni täielik tekst on kättesaadav järgmisel internetiaadressil: [Your web site address]

FI

[Name of manufacturer] vakuuttaa, että radiolaitetyyppi [designation of type of radio equipment] on direktiivin 2014/53/EU mukainen. EU-vaatimustenmukaisuusvakuutuksen täysimittainen teksti on saatavilla seuraavassa internetosoitteessa: [Your web site address]

FR

Le soussigné, [Name of manufacturer] , déclare que l'équipement radioélectrique du type [designation of type of radio equipment] est conforme à la directive 2014/53/UE. Le texte complet de la déclaration UE de conformité est disponible à l'adresse internet suivante: [Your web site address]

HR

[Name of manufacturer] ovime izjavljuje da je radijska oprema tipa [designation of type of radio equipment] u skladu s Direktivom 2014/53/EU. Cjeloviti tekst EU izjave o sukladnosti dostupan je na sljedećoj internetskoj adresi: [Your web site address]

HU

[Name of manufacturer] igazolja, hogy a [designation of type of radio equipment] típusú rádióberendezés megfelel a 2014/53/EU irányelvnek. Az EU-megfelelőségi nyilatkozat teljes szövege elérhető a következő internetes címen: [Your web site address]

IT

Il fabbricante, [Name of manufacturer] , dichiara che il tipo di apparecchiatura radio [designation of type of radio equipment] è conforme alla direttiva 2014/53/UE. Il testo completo della dichiarazione di conformità UE è disponibile al seguente indirizzo Internet: [Your web site address]

LT

Aš, [Name of manufacturer] , patvirtinu, kad radijo įrenginių tipas [designation of type of radio equipment] atitinka Direktyvą 2014/53/ES. Visas ES atitikties deklaracijos tekstas prieinamas šiuo interneto adresu: [Your web site address]

LV

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Ar šo [Name of manufacturer] deklarē, ka radioiekārta [designation of type of radio equipment] atbilst Direktīvai 2014/53/ES. Pilns ES atbilstības deklarācijas teksts ir pieejams šādā interneta vietnē: [Your web site address]

MT

B'dan, [Name of manufacturer] , niddikjara li dan it-tip ta' tagħmir tar-radju [designation of type of radio equipment] huwa konformi mad-Direttiva 2014/53/UE. It-test kollu tad-dikjarazzjoni ta' konformità tal-UE huwa disponibbli f'dan l-indirizz tal-Internet li ġej: [Your web site address]

NL

Hierbij verklaar ik, [Name of manufacturer] , dat het type radioapparatuur [designation of type of radio equipment] conform is met Richtlijn 2014/53/EU. De volledige tekst van de EU-conformiteitsverklaring kan worden geraadpleegd op het volgende internetadres: [Your web site address]

PL

[Name of manufacturer] niniejszym oświadcza, że typ urządzenia radiowego [designation of type of radio equipment] jest zgodny z dyrektywą 2014/53/UE. Pełny tekst deklaracji zgodności UE jest dostępny pod następującym adresem internetowym: [Your web site address]

PT

O(a) abaixo assinado(a) [Name of manufacturer] declara que o presente tipo de equipamento de rádio [designation of type of radio equipment] está em conformidade com a Diretiva 2014/53/UE. O texto integral da declaração de conformidade está disponível no seguinte endereço de Internet: [Your web site address]

RO

Prin prezenta, [Name of manufacturer] declară că tipul de echipamente radio [designation of type of radio equipment] este în conformitate cu Directiva 2014/53/UE. Textul integral al declarației UE de conformitate este disponibil la următoarea adresă internet: [Your web site address]

SK

[Name of manufacturer] týmto vyhlasuje, že rádiové zariadenie typu [designation of type of radio equipment] je v súlade so smernicou 2014/53/EÚ. Úplné EÚ vyhlásenie o zhode je k dispozícii na tejto internetovej adrese: [Your web site address]

SL

[Name of manufacturer] potrjuje, da je tip radijske opreme [designation of type of radio equipment] skladen z Direktivo 2014/53/EU. Celotno besedilo izjave EU o skladnosti je na voljo na naslednjem spletnem naslovu: [Your web site address]

SV

Härmed försäkrar [Name of manufacturer] att denna typ av radioutrustning [designation of type of radio equipment] överensstämmer med direktiv 2014/53/EU. Den fullständiga texten till EU-försäkran om överensstämmelse finns på följande webbadress: [Your web site address]