



Operating instructions
RF-identification system

GB

ANT515
ANT516

Read/write head



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1 Preliminary note

You will find instructions, technical data, approvals and further information using the QR code on the unit / packaging or at www.ifm.com.

1.1 Symbols used

- ✓ Requirement
- ▶ Instructions
- ▷ Reaction, result
- [...] Designation of keys, buttons or indications
- Cross-reference
-  Important note
Non-compliance may result in malfunction or interference.
-  Information
Supplementary note

1.2 Warnings used

ATTENTION

Warning of damage to property

1.3 Legal and copyright information

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All product names, pictures, companies or other brands used on our pages are the property of the respective rights owners.

2 Safety instructions

General

- The unit described is a subcomponent for integration into a system.
 - The system architect is responsible for the safety of the system.
 - The system architect undertakes to perform a risk assessment and to create documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the architect of the system.
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ → Intended use).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, operation and maintenance of the product must be carried out by qualified personnel authorised by the machine operator.
- Protect units and cables against damage.

Radio equipment

In general, radio equipment must not be used in the vicinity of petrol stations, fuel depots, chemical plants or blasting operations.

- ▶ Do not transport and store any flammable gases, liquids or explosive substances near the unit.

Interference of electronic and medical devices

Operation can affect the function of electronic devices that are not correctly shielded.

- ▶ Disconnect the device in the vicinity of medical equipment.
- ▶ Contact the manufacturer of the corresponding device in case of any interference.

3 Intended use

The read/write head reads and writes ID tags without contact. For use, the read/write head must be connected to the DTE10x evaluation unit.

The data is converted into digitally coded values and provided to the evaluation unit.

4 Function

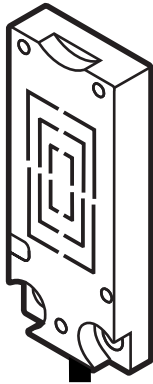
4.1 ID tags

The **ID tags** are passively operated without a battery. The energy required for operation is provided by the read/write head.

The energy is provided via an inductive coupling. The integrated antenna coil in the read/write head generates a magnetic field which partly penetrates the antenna coil of the ID tag. A voltage is generated by induction that supplies the data carrier with energy.




The device supports ID tags according to ISO 15693.

4.2 Device overview

	Article number:	ANT515 / ANT516
	Function:	read/write head
	Type designation:	DTRHF KQRWIDUS03
	Type:	rectangular

5 Installation

5.1 Notes on the unit installation

-  When mounting several RFID units adhere to the minimum distances between the systems.
-  Flush mounting of a read/write head in metal reduces the read/write distance.
-  Device performance can be affected if positioned in the immediate vicinity of powerful HF emission sources such as welding transformers or converters.

5.2 Avoiding interference

The device generates a modulated electrical field with a frequency of 13.56 MHz.

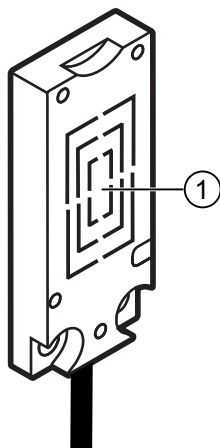
Avoid interference with data communication:

- ▶ Do not operate any devices in the vicinity that use the same frequency band.
- ▷ Such devices are for example frequency converters and switched-mode power supplies.

If there are other devices in the same frequency band in the vicinity:

- ▶ The mounting distances between the devices should be as large as possible.
- ▶ Use the devices in alternating operation.
- ▶ Switch the HF field of the device on/off.

5.3 Mechanical design



1 Sensing face

5.4 Installation of the device with the mounting adapter on tanks

The mounting adapter for tanks is available as accessory: article number E12153.

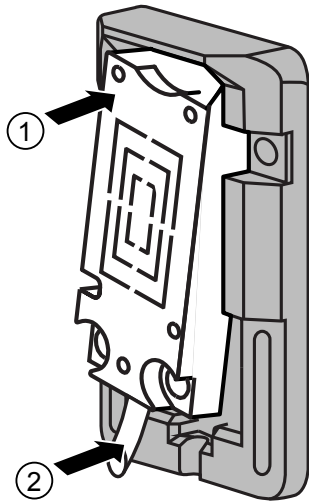


Fig. 1: Insert the device in the mounting adapter

1 Upper edge of the device

2 Lower edge of the device

- ▶ Insert the upper edge of the device (1) into the mounting adapter.
- ▶ Insert the lower edge of the device (2) into the mounting adapter.



The device can be inserted into the mounting adapter E12153 in both directions.

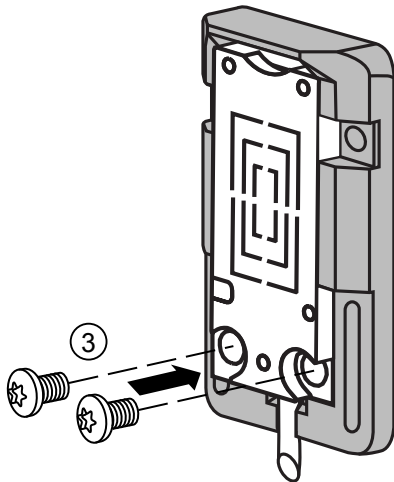


Fig. 2: Attach the device to the mounting adapter

3 Screws

- ▶ Use the enclosed screws (3) to attach the device to the mounting adapter.

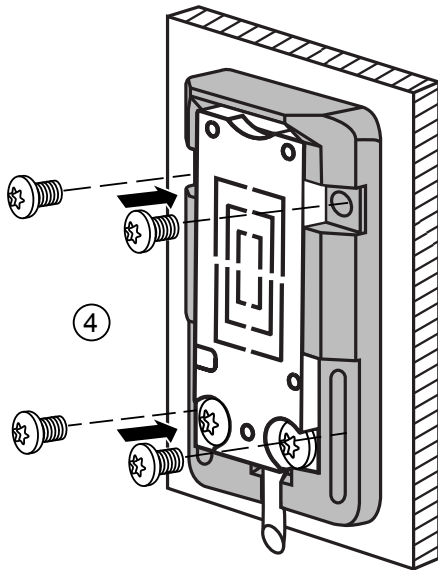


Fig. 3: Attach the mounting adapter to the tank
4 Screws

- ▶ Attach the mounting adapter to a tank with suitable screws (4).

5.5 Installation of the device with mounting adapter on the pipe

The mounting adapter for pipes is available as accessory: article number E12163.

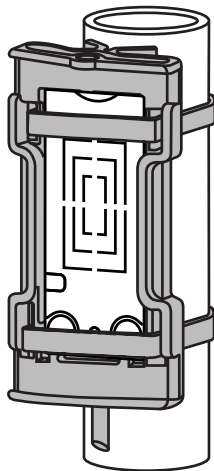


Fig. 4: Installation with cable ties

- ▶ Pull the cable ties through the openings of the mounting adapter.
- ▶ Secure the device with cable ties to a pipe.



Metal cable ties may influence the degree of efficiency of the sensor.

- ▶ Use plastic cable ties.

5.6 Installation of the device without mounting adapter

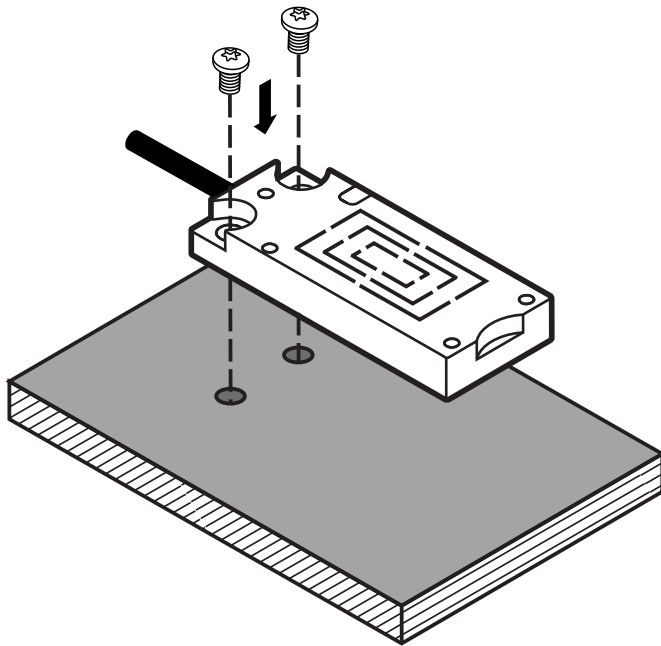
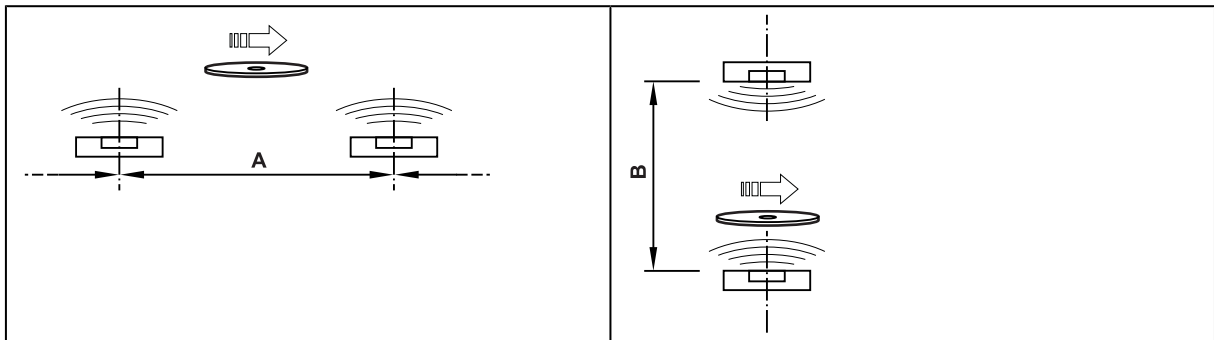


Fig. 5: Install the device using screws




- ▶ Attach the device at the mounting location with suitable screws or glue.

5.7 Mounting distances



Operating mode	Distance side (A)	Distance front (B)
For reading and writing	≥ 160 mm	≥ 170 mm

5.8 Positioning of the ID tags

-  The sensing face marks the centre of the integrated antenna coil of the read/write head.
 - ▶ Align the sensing face of the read/write head and the ID tag in the same way.
-  For installation in or on metal use the ID tags provided for this purpose.
-  Position the ID tag in the area of the sensing face. When doing so, the angle of aperture and the operating distance must be adhered to (→ Data sheet of the device).

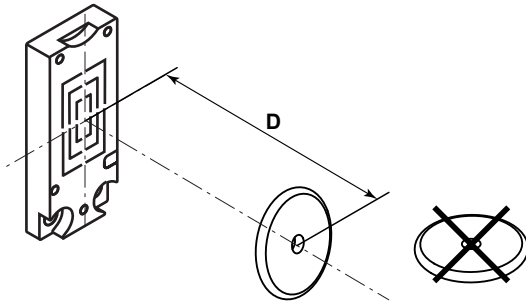


Fig. 6: Position the ID tag

► Align the ID tag on the central axis of the antenna of the device.

▷ The distance “D” is indicated in the data sheet.



The indications in the table apply to static read/write operations.

6 Electrical connection



The device must be connected by a qualified electrician.

Device of protection class III (PC III).

The electrical supply must only be made via PELV/SELV circuits.

- ▶ Disconnect power before connecting the device.

6.1 Wiring

- ▶ Connect the unit to a DTE10x evaluation unit via the M12 connector.

- ▷ Voltage is supplied via the evaluation unit.

Pin assignment	Wiring



Information on available sockets see: www.ifm.com.

Cables with the following characteristics are suitable for the connection:

Length	Ohmic resistance (feed + return line)	Effective cable capacity
< 20 m	max. 3 Ω	max. 3 nF

7 Operating and display elements

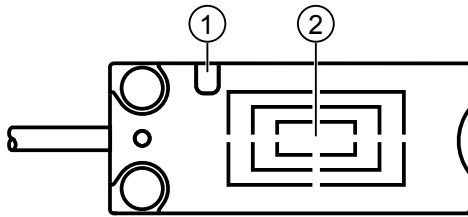


Fig. 7: Operating and display elements

1 LED

2 Sensing face

LED	State	Description
green	On	Operating voltage OK
	Off	Operating voltage missing
	Flashing slowly	deactivated
yellow	On (permanently)	ID tag detected
	On (pulse)	ID tag read/written successfully
	Flashing quickly	Error when reading/writing on ID tag
	Off	<ul style="list-style-type: none"> • no ID tag in the field • faulty ID tag in the field • invalid ID tag in the field
green and yellow	Flashing alternately	Error in communication or device fault

8 Maintenance, repair and disposal

The unit is maintenance-free.

- ▶ Contact ifm in case of malfunction.
- ▶ Do not open the housing as the unit does not contain any components which can be maintained by the user. The unit must only be repaired by the manufacturer.
- ▶ Clean the device using a dry cloth.
- ▶ Dispose of the unit in accordance with the national environmental regulations.

9 Approvals/standards

For approvals and standards, the following information is available:

- Test standards and regulations: documentation.ifm.com
- EU declaration of conformity and approvals: documentation.ifm.com
- Notes relevant for approval: package inserts of the device

Glossary

ID tag

An ID tag is used to identify objects. A read/write device is used to read the ID tag via a high-frequency radio signal. An ID tag consists of an antenna, an analogue circuit for receiving and transmitting (transceiver), a digital circuit and a non-volatile memory.



Funkzulassung
Radio approval
Agrément radio

ANTxxx
DTCxxx
DTExxx
DTIxxx
DTMxxx

RFID 13,56 MHz



Hinweis / Note / Remarque

Deutsch



Die aktuell gültigen Zulassungen der Geräte sind als Download verfügbar: documentation.ifm.com

English



The currently valid approvals of the units are available for download: documentation.ifm.com

Français



Les homologations actuellement en vigueur des appareils sont disponibles en téléchargement : documentation.ifm.com

Europäische Union / European Union / L'Union Europe

Deutsch

Vor Inbetriebnahme die Bedienungsanleitung lesen und während der Einsatzdauer aufbewahren.

- Hiermit erklärt die ifm electronic GmbH, dass die Geräte in der folgenden Tabelle der Richtlinie 2014/53/EU entsprechen.
- Der vollständige Text der EU-Konformitätserklärung, Technische Daten, Anleitungen, Zulassungen, Kontakte und weitere Informationen unter documentation.ifm.com.

WARNUNG! Der Betrieb des Gerätes kann Funkstörungen in Wohngebieten verursachen.

Gerät	Frequenz	Max. H-Feldstärke
ANT410, ANT411, ANT420, ANT421, ANT424, ANT425, ANT430, ANT431, ANT434, ANT435, ANT513, ANT515, ANT516, DTC124, DTC125, DTC510, DTI410, DTI411, DTI420, DTI421, DTI424, DTI425, DTI430, DTI431, DTI434, DTI435, DTI513, DTI515, DTI516, DTM424, DTM425, DTM426, DTM427, DTM428, DTM434, DTM435, DTM436, DTM437	13,56 MHz	5 dB μ A/m @ 10 m
ANT600, DTC600, DTE601, DTE602, DTE604, DTE605, DTI600	13,56 MHz	30 dB μ A/m @ 10 m

English

Read the operating instructions before set-up and keep them for the duration of use.

- ifm electronic gmbh hereby declares that the devices indicated in the following table corresponds to the directive 2014/53/EU.
- The full text of the EU Declaration of Conformity, technical data, instructions, approvals, contacts and further information is available at documentation.ifm.com.

WARNING! The operation of this device can cause radio interference in residential areas.

Device	Frequency	Max. H-field strength
ANT410, ANT411, ANT420, ANT421, ANT424, ANT425, ANT430, ANT431, ANT434, ANT435, ANT513, ANT515, ANT516, DTC124, DTC125, DTC510, DTI410, DTI411, DTI420, DTI421, DTI424, DTI425, DTI430, DTI431, DTI434, DTI435, DTI513, DTI515, DTI516, DTM424, DTM425, DTM426, DTM427, DTM428, DTM434, DTM435, DTM436, DTM437	13,56 MHz	5 dB μ A/m @ 10 m
ANT600, DTC600, DTE601, DTE602, DTE604, DTE605, DTI600	13,56 MHz	30 dB μ A/m @ 10 m

Français

Lire la notice d'utilisation avant l'utilisation et conserver-la pendant toute la durée d'utilisation.

- ifm electronic gmbh déclare par la présente que les appareils indiqués dans le tableau ci-après sont conformes à la directive 2014/53/UE.
- Vous trouverez le texte intégral de la déclaration de conformité de l'UE, les données techniques, les instructions, les homologations, les contacts et d'autres informations sur le site documentation.ifm.com.

AVERTISSEMENT ! Le fonctionnement de cet appareil peut causer des interférences radio dans les zones résidentielles.

Appareil	Fréquence	Intensité max. du champ H
ANT410, ANT411, ANT420, ANT421, ANT424, ANT425, ANT430, ANT431, ANT434, ANT435, ANT513, ANT515, ANT516, DTC124, DTC125, DTC510, DTI410, DTI411, DTI420, DTI421, DTI424, DTI425, DTI430, DTI431, DTI434, DTI435, DTI513, DTI515, DTI516, DTM424, DTM425, DTM426, DTM427, DTM428, DTM434, DTM435, DTM436, DTM437	13,56 MHz	5 dB μ A/m @ 10 m
ANT600, DTC600, DTE601, DTE602, DTE604, DTE605, DTI600	13,56 MHz	30 dB μ A/m @ 10 m

Great Britain

English

Read the operating instructions before set-up and keep them for the duration of use.

- ifm electronic gmbh hereby declares that the devices indicated in the following table are in compliance with the relevant statutory requirements.
- The full text of the Declaration of Conformity, technical data, instructions, approvals, contacts and further information is available at documentation.ifm.com.

WARNING! The operation of this device can cause radio interference in residential areas.

Device	Frequency	Max. H-field strength
ANT410, ANT411, ANT420, ANT421, ANT424, ANT425, ANT430, ANT431, ANT434, ANT435, ANT513, ANT515, ANT516, DTC124, DTC125, DTC510, DTI410, DTI411, DTI420, DTI421, DTI424, DTI425, DTI430, DTI431, DTI434, DTI435, DTI513, DTI515, DTI516, DTM424, DTM425, DTM426, DTM427, DTM428, DTM434, DTM435, DTM436, DTM437	13,56 MHz	5 dB μ A/m @ 10 m
ANT600, DTC600, DTE601, DTE602, DTE604, DTE605, DTI600	13,56 MHz	30 dB μ A/m @ 10 m

USA

English

ANT410 / ANT411 / ANT420 / ANT421 / ANT424 / ANT425 / ANT430 / ANT431 / ANT434 / ANT435 / ANT513 / ANT515 / ANT516 / ANT600 / DTC124 / DTC125 / DTC510 / DTC600 / DTE601 / DTE602 / DTE604 / DTE605 / DTI410 / DTI411 / DTI420 / DTI421 / DTI424 / DTI425 / DTI430 / DTI431 / DTI434 / DTI435 / DTI513 / DTI515 / DTI516 / DTI600 / DTM424 / DTM425 / DTM426 / DTM427 / DTM428 / DTM434 / DTM435 / DTM436 / DTM437

FCC information

The devices comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

Changes or modifications to this device that have not been expressly approved by ifm could void the user's authority to operate the equipment.

RF Exposure Info

Due to radio frequency exposure limits this device should be installed and operated with a minimum distance of 20 cm between the device and the body of the user or nearby persons.

Note

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada / Canada

English

ANT410 / ANT411 / ANT420 / ANT421 / ANT424 / ANT425 / ANT430 /
ANT431 / ANT434 / ANT435 / ANT513 / ANT515 / ANT516 / ANT600 /
DTC124 / DTC125 / DTC510 / DTC600 / DTE601 / DTE602 / DTE604 /
DTE605 / DTI410 / DTI411 / DTI420 / DTI421 / DTI424 / DTI425 / DTI430 /
DTI431 / DTI434 / DTI435 / DTI513 / DTI515 / DTI516 / DTI600 / DTM424 /
DTM425 / DTM426 / DTM427 / DTM428 / DTM434 / DTM435 / DTM436 /
DTM437

ISED note

The devices contain licence-exempt transmitters/receivers that comply with Innovation, Science and Economic Development Canada's licence-exempt RSSs.

Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

RF Exposure Info

Due to radio frequency exposure limits this device should be installed and operated with a minimum distance of 20 cm between the device and the body of the user or nearby persons.

Français

ANT410 / ANT411 / ANT420 / ANT421 / ANT424 / ANT425 / ANT430 /
ANT431 / ANT434 / ANT435 / ANT513 / ANT515 / ANT516 / ANT600 /
DTC124 / DTC125 / DTC510 / DTC600 / DTE601 / DTE602 / DTE604 /
DTE605 / DTI410 / DTI411 / DTI420 / DTI421 / DTI424 / DTI425 / DTI430 /
DTI431 / DTI434 / DTI435 / DTI513 / DTI515 / DTI516 / DTI600 / DTM424 /
DTM425 / DTM426 / DTM427 / DTM428 / DTM434 / DTM435 / DTM436 /
DTM437

Avis ISDE

L'émetteur/récepteur exempt de licence contenu dans les présent appareils est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Informations sur l'exposition RF

En raison des limites d'exposition aux radiofréquences, cet appareil doit être installé et utilisé à une distance minimale de 20 cm entre l'appareil et le corps de l'utilisateur ou des personnes à proximité.

Taiwan / Taiwan

English

ANT410: 📶 CCAE13LP0740T6 / ANT411: 📶 CCAE13LP0750T9 /
ANT420: 📶 CCAM18LP1460T8 / ANT421: 📶 CCAM18LP1461T0 /
ANT424: 📶 CCAM20LP0660T8 / ANT425: 📶 CCAM20LP0661T0 /
ANT430: 📶 CCAE14LP1890T2 / ANT431: 📶 CCAE14LP1900T2 /
ANT434: 📶 CCAM20LP0662T2 / ANT435: 📶 CCAM20LP0663T1 /
DTI410: 📶 CCAM18LP1060T5 / DTI411: 📶 CCAM18LP1061T7 /
DTI420: 📶 CCAM18LP1090T1 / DTI421: 📶 CCAM18LP1091T3 /
DTI424: 📶 CCAN22LP0130T5 / DTI425: 📶 CCAN22LP0131T7 /
DTI430: 📶 CCAM18LP1070T8 / DTI431: 📶 CCAM18LP1071T0 /
DTI434: 📶 CCAN22LP0132T9 / DTI435: 📶 CCAN22LP0133T1 /
DTM424: 📶 CCAE15LP2930T1 / DTM425: 📶 CCAE15LP0970T0 /

DTM426: 🌀 CCAE15LP293AT0 / DTM427: 🌀 CCAE15LP293BT2 /
DTM428: 🌀 CCAE17LP0170T0 / DTM434: 🌀 CCAE15LP2940T1 /
DTM435: 🌀 CCAE15LP294AT3 / DTM436: 🌀 CCAE15LP294BT5 /
DTM437: 🌀 CCAE15LP294CT7

Without permission granted by the NCC, any company, enterprise, or user is not allowed to change frequency, enhance transmitting power or alter original characteristic as well as performance to approved low power radio-frequency devices.

The low power radio-frequency devices shall not influence aircraft security and interfere legal communications; If found, the user shall cease operating immediately until no interference is achieved. The said legal communications mean radio communications is operated in compliance with the Telecommunication Management Act.

The low power radio-frequency devices must be susceptible with the interference from legal communications or ISM radio wave radiated devices.

繁體中文

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。


Korea / 한국어


English


Sellers and users shall be noticed that this equipment is a business (Class A) electromagnetic wave device, and it is intended to be used outside residential areas.


한국어

이 기기는 업무용(A급)으로 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

	상호 : ifm electronic gmbh 기자재명칭 : RFID용 무선기기 (13.56 MHz 주파수 대역) 모델명 : DTE601 제조사 및 제조국가 : ifm electronic gmbh/독일
	R-R-ifm-DTE605

	상호 : ifm electronic gmbh 기자재명칭 : RFID용 무선기기 (13.56 MHz 주파수 대역) 모델명 : DTE602 제조사 및 제조국가 : ifm electronic gmbh/독일
	R-R-ifm-DTE605

	상호 : ifm electronic gmbh 기자재명칭 : RFID용 무선기기 (13.56 MHz 주파수 대역) 모델명 : DTE604 제조사 및 제조국가 : ifm electronic gmbh/독일
	R-R-ifm-DTE605

	상호 : ifm electronic gmbh 기자재명칭 : RFID용 무선기기 (13.56 MHz 주파수 대역) 모델명 : DTE605 제조사 및 제조국가 : ifm electronic gmbh/독일
	R-R-ifm-DTE605

Australia

English

Use in Australia: 

Singapore

English

Complies with IMDA standards.

DB 103032

The “Equipment Registration” is available on our website at:
documentation.ifm.com

South Africa

English

The Radio Equipment Type Approval Certificates for approved devices are available at: documentation.ifm.com.

