

RFID & NFC Module

RF-NR30N

Copyright

©2023 TSC Auto ID Technology Co., Ltd.

The copyright in this manual, the software and firmware in the printer described are owned by TSC Auto ID Technology Co., Ltd. All rights reserved.

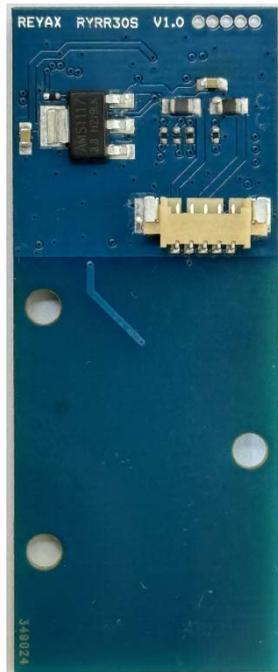
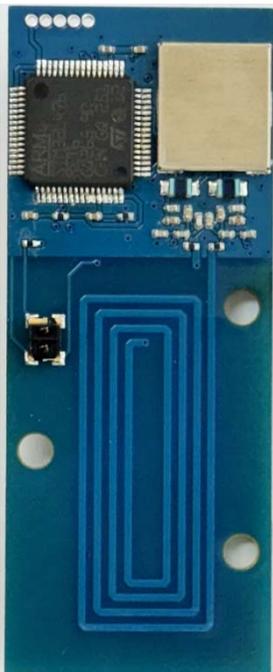
CG Triumvirate is a trademark of Agfa Corporation. CG Triumvirate Bold Condensed font is under license from the Monotype Corporation. Windows is a registered trademark of Microsoft Corporation.

All other trademarks are the property of their respective owners. Information in this document is subject to change without notice and does not represent a commitment on the part of TSC Auto ID Technology Co. No part of this manual may be reproduced or transmitted in any form or by any means, for any purpose other than the purchaser's personal use, without the expressed written permission of TSC Auto ID Technology Co.



RF-NR30N

Multiprotocol Fully
Integrated 13.56MHz
RFID & NFC Module
Datasheet



PRODUCT DESCRIPTION

RF-NR30N module is a 13.56MHz RFID and Near Field Communication (NFC) system. Built-in programming options make the device suitable for a wide range of applications for proximity and vicinity identification systems.

FEATURES

- Supports Near Field Communication (NFC) Standards NFCIP-1 (ISO/IEC 18092) Active P2P.
- Completely Integrated Protocol Handling for ISO15693, ISO14443A, ISO14443B and FeliCa®.
- Capacitive sensing - Wake-up
- Industrial NFC/RFID Engine.
- Firmware upgrade via UART Interface.
- Operation Temperature range: -40 to +85°C.

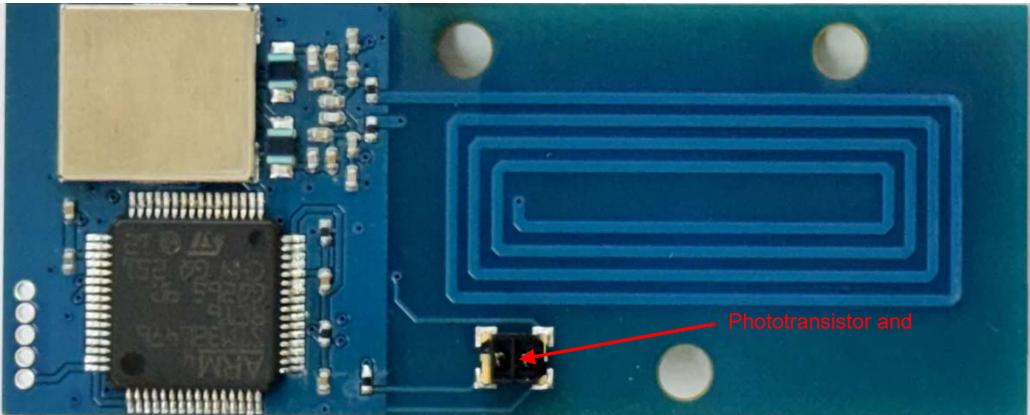
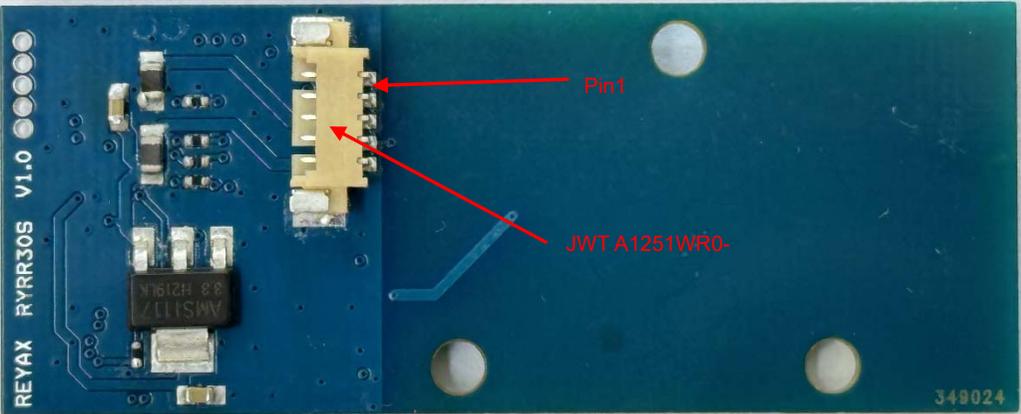
• **SPECIFICATION**

Item	Min.	Typical	Max.	Unit	Condition
Operation Voltage	4.5	5	5.5	V	VDD
V _{IO}		3.3		V	
V _{OH}	0.8*V _{IO}		V _{IO}	V	TXD High-level output voltage
V _{OL}	0	0	0.1*V _{IO}	V	TXD Low-level output voltage
V _{IH}	0.8*V _D		V _{IO}	V	RXD High-level input voltage
V _{IL}	0	0	0.3*V _{IO}	V	RXD Low-level input voltage
RF Transmit Peak current		550		mA	
Average Current		33		mA	
Reset Time		100		ms	
Baud Rate		115200		bps	8,N,1
RF Frequency Range	13.553	13.56	13.567	MHz	
Operating Temperature	-40	25	+85	°C	
Antenna					Internal
Weight		5		g	

- ANTENNA SPECIFICATION**

Item	Min.	Typical	Max.	Unit	Condition
Frequency		13.56		MHz	
Return Loss	10	3.3		dB	
Impedance		50		ohm	
VSWR			2		
MAX Power			2	W	
Electrical Type					Loop Antenna

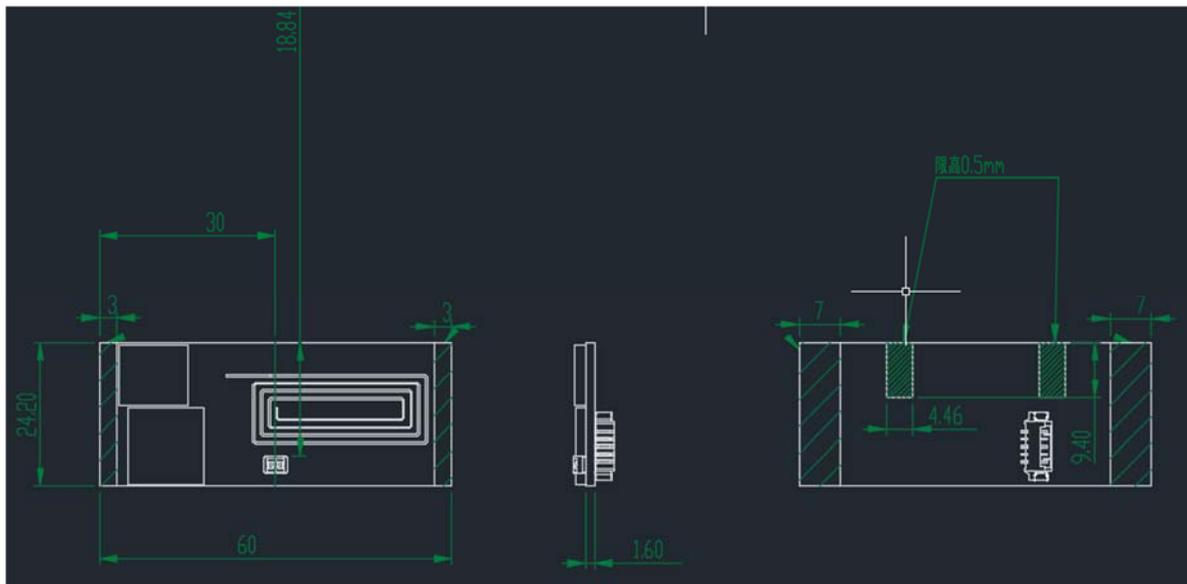
PIN DESCRIPTION



JWT A1251WR0-NPS-05 Connector

Pin	Name	I/O	Condition
1	+3.3V RXD	I	Serial data input
2	+3.3V TXD	O	Serial data Output
3	GND	P	Power Ground
4	PR	O	Sharp GP2S700HCP pin4 Anode output
5	+5V VDD	P	Power Input

DIMENSIONS



unit: mm

FCC

This module has been tested and found to comply with the following requirements for Modular Approval.

Part 15.225 Operation within the band 13.110–14.010 MHz (NFC)

(KDB 996369 D03 section 2.2 List of applicable FCC rules)

RF exposure considerations

In the end product, the antenna(s) used with this transmitter must not be co-located or operation in conjunction with any other antenna or transmitter except in accordance with multi-transmitter product procedures. User and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying the RF exposure compliance.

(KDB 996369 D03 section 2.6 RF Exposure considerations)

Antennas

This radio transmitter has been approved by the FCC and ISED to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Antennes

Cet émetteur radio a été approuvé par la FCC et ISED pour fonctionner avec les types d'antennes répertoriés ci-dessous avec le gain maximal autorisé indiqué. Les types d'antennes non inclus dans cette liste, ayant un gain supérieur au gain maximum indiqué pour ce type, sont strictement interdits pour une utilisation avec cet appareil.

Radio	Antenna Type	Freq. (MHz)
NFC	PCB Loop antenna	13.56

(KDB 996369 D03 section 2.7 Antennas)

Required End Product Labeling

Any device incorporating this module must display an external, visible, permanently affixed label with the FCC ID and the ISED certification number preceded by the term as follows.

“ **Contains FCC ID: VTV-RFNR30N**”

“ **Contains IC: 10524A-RFNR30N** ”

Obligation d'étiquetage du produit final:

Tout appareil intégrant ce module doit afficher une étiquette externe, visible et apposée en permanence avec le numéro de certification ISDE précédé du terme comme suit.

« **Contient IC : 10524A-RFNR30N** »

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as shown in User manual.

(KDB 996369 D03 section 2.8 Label and compliance information)

Test Modes (FCC)

This device uses various test mode programs for test set up which operate separate from production firmware. Host integrators should contact the grantee for assistance with test modes needed for module/host compliance test requirements.

(KDB 996369 D03 section 2.9 Information on test modes and additional testing requirements)

Additional testing, Part 15 Subpart B disclaimer (FCC)

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

(KDB 996369 D03 section 2.10 Additional testing, Part 15 Subpart B disclaimer)

Note EMI Considerations

Note that a host manufacture is recommended to use KDB996369 D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties.

For standalone mode, reference the guidance in KDB996369 D04 Module Integration Guide and for simultaneous mode; see KDB996369 D02 Module Q&A Question 12, which permits the host manufacturer to confirm compliance.

(KDB 996369 D03 section 2.11 Note EMI Considerations)

How to make changes

Only Grantees are permitted to make permissive changes, if the module will be used differently than granted conditions, please contact us to ensure modifications will not affect compliance.

(KDB 996369 D03 section 2.12 How to make changes)

FCC

15.19

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.

Federal Communications Commission (FCC) Statement

15.105(b)

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.

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement:

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. For portable operation, this device has been tested and meets FCC RF exposure guidelines. When used with an accessory that contains metal may not ensure compliance with FCC RF exposure guidelines.

ISED

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

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

L'émetteur/récepteur exempt de licence contenu dans le présent appareil 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, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Caution: Exposure to Radio Frequency Radiation

1. To comply with the Canadian RF exposure compliance requirements, this device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.
2. For portable operation, this device has been tested and meets RF exposure guidelines when used with an accessory that contains no metal. Use of other accessories may not ensure compliance with RF exposure guidelines.

Attention: exposition au rayonnement radiofréquence

1. Pour se conformer aux exigences de conformité RF canadienne l'exposition, cet appareil et son antenne ne doivent pas être co-localisés ou fonctionnant en conjonction avec une autre antenne ou transmetteur.
2. Pour portable utilisation, cet appareil a été testé et respecte les directives sur l'exposition aux RF lorsqu'il est utilisé avec un accessoire sans métal. L'utilisation d'autres accessoires peut ne pas garantir la conformité aux directives d'exposition aux RF.