



Wistron NeWeb Corp.

DFCN-H1 NFC MOUDULE

USER MANUAL & Operational description

I. Introduction

DFCN-H1 is a kind of NFC (Near Field Communication) module that could be embedded in one IT system by simply connecting the module to his target microcontroller and start developing his application software.

II. DESIGN REFERENCE

DFCN-H1 reference design module consists of the following:

- Reference Design:

When the user wishes to incorporate the DFCN-H1 to their device, it is strongly recommended that this reference design is copied “as is” in the final application board to guarantee optimum performance, regulatory compliance and lowest development time and design effort.

- MCU FPC/FFC Connector:

Allow user to connect the DFCN-H1 module to the host board via FPC/FFC connector.

- Antenna Connector:

Connect to FPC antenna.

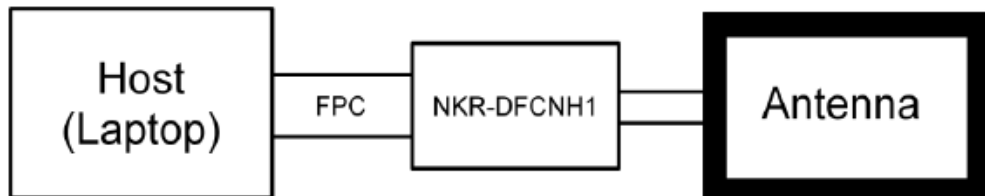
III. FEATURE

- Contactless protocols:
 - ISO14443 A/B
 - ISO15693
 - ISO18092
- Contactless transmission of data and RF energy
- Peer-to-peer communication
- Card emulation
- NFC card reader/writer
- Programmable receiver sensitivity
- Carrier frequency: 13.56 MHz
- RF Field detection
- Single ended external antenna connection

IV. Operation Conditions

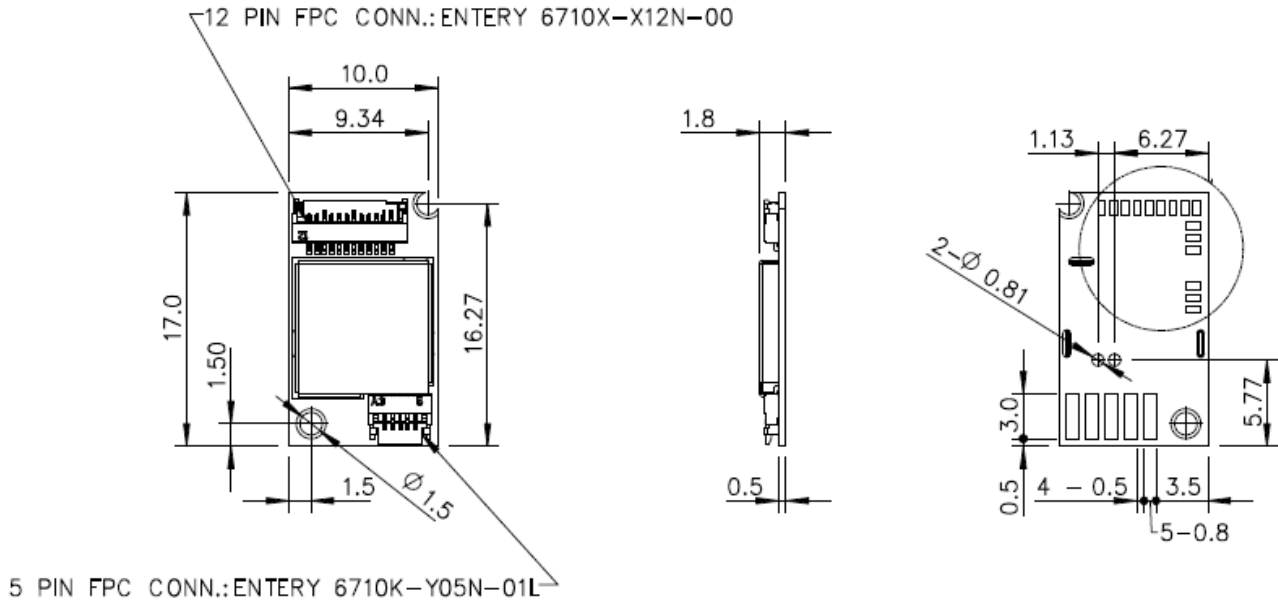
| | | | |
|----------------------|-------------------------------------------------|---------------------------------------------------------|--------------------------------------------------|
| Supply voltage | <input type="checkbox"/> AC mains | <input checked="" type="checkbox"/> DC | |
| Type of DC Source | <input type="checkbox"/> Internal DC supply | <input checked="" type="checkbox"/> External DC adapter | <input type="checkbox"/> Battery |
| Operational Climatic | <input checked="" type="checkbox"/> Tnom (20°C) | <input checked="" type="checkbox"/> Tmax (55°C) | <input checked="" type="checkbox"/> Tmin (-20°C) |

V. Assembly Guideline



Note: Both the FPC connectors (5-pin & 12-pin) are bottom contact type

VI. MECHANICAL DIMENSION



VII. Certifications and Regulatory

| Item | Feature | Description |
|------|---------|--------------------------------------------------------------------------------|
| 6.1 | FCC | RF: FCC part 15C EMI: FCC part 15B FCC grant: TCB Filing fee |
| 6.2 | CE | RF: EN302291 Class B EMC: EN301489-1/-3 Safety: EN 60950-1:2006/A11:2009 |
| 6.3 | IC | RSS-210 ISSUE 8 RSS-GEN ISSUUE 3 |

General:

This modular approval is limited to OEM/Integrators installation only.

OEM integrators are responsible for ensuring that the end-user has no manual instructions to remove or install module.

End Product Labeling (FCC)

When the module is installed in the host device, the FCC ID label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily re-moved. If not, a second label must be placed on the outside of the final device that contains the following text: “Contains FCC ID: NKR-DFCNH1”.

The grantee's FCC ID can be used only when all FCC compliance requirements are met.

Required FCC Compliance Statement for Host Integration

To integrate this module into the host, the host manufacturer is responsible for the applicable FCC rules, including the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

In the user manual of the host device, the following statements are required to be included.

- 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.
- This device 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 radiated 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.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

FCC Module Integration Restriction:

This module has been certified by FCC as single module approval with the following restrictions:

1. The Loop antenna was verified in the conformity testing, and for compliance the antenna shall not be modified. A separate approval is required for all other operating configurations, including different antenna configurations.
2. If any other simultaneous transmission radio is installed in the host platform together with this module, or above restrictions cannot be kept, a separate RF exposure assessment and FCC equipment authorization is required.

End Product Labeling (IC)

Labeling Requirements for the Host Device (from Section 3.2.1, RSS-Gen, Issue 3, December 2010): The host device shall be properly labeled to identify the module within the host device. The Industry Canada certification label of a module shall be clearly visible at all times when installed in the host device, otherwise the host device must be labeled to display the Industry Canada certification number of the module, preceded by the words —Contains transmitter module, or the word —Contains, or similar wording expressing the same meaning, as follows: "Contains transmitter module IC: 4441A-DFCNH1".

Required IC Compliance Statement for Host Integration

To integrate this module into the host, the host manufacturer is responsible for the applicable Industry Canada rules, including the limits for a Class B digital device, pursuant to ICES-003 of the Industry Canada Rules

In the user manual of the host device, the following statements are required to be included.

- This device complies with Industry Canada license-exempt RSS standard(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.
- This Class B digital apparatus complies with Canadian ICES-003.
- Le présent appareil est conforme aux CNR d'Industrie 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."
- Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

IC Module Integration Restriction:

This module has been certified by Industry Canada as modular approval with the following restrictions:

1. The Loop antenna was verified in the conformity testing, and for compliance the antenna shall not be modified. A separate approval is required for all other operating configurations, including different antenna configurations.
2. If any other simultaneous transmission radio is installed in the host platform together with this module, or above restrictions cannot be kept, a separate RF exposure assessment and IC equipment certification is required.

