NFC card reader expansion board based on ST25R3916B for STM32 and STM8 Nucleos

Features

• On-board NFC card reader IC: ST25R3916B
• 47 mm x 34 mm, four turns, 13.56 MHz inductive antenna etched on PCB and associated tuning circuit
• Six general-purpose LEDs
• ISO 18092 passive and active initiator, ISO 18092 passive, and active target
• NFC-A and NFC-F card emulation
• ISO 14443A and ISO14443B
• ISO 15693
• FeliCa™
• Up to 1.7 W output power with differential antenna
• Possibility of driving two antennas in single-ended configuration
• Inductive wake-up
• Automatic antenna-tuning system
• Transparent and stream modes to implement MIFARE™ classic compliant or other custom protocols
• Equipped with Arduino UNO R3 connector
• Free comprehensive development firmware library compatible with STM32Cube and samples for ST25R3916B
• Scalable solution for multiple board cascade
• FCC certified
• RoHS and WEEE compliant

Description

The X-NUCLEO-NFC08A1 NFC card reader expansion board is based on the ST25R3916B device.
The expansion board is configured to support ISO14443A/B, ISO15693, FeliCa™, and AP2P communication.
The ST25R3916B manages frame coding and decoding in reader mode for standard applications, such as NFC, proximity, and vicinity HF RFID standards. It supports ISO/IEC 14443 type A and B, ISO/IEC 15693 (single subcarrier only) and ISO/IEC 18092 communication protocols as well as the detection, reading and writing of NFC forum type 1, 2, 3, 4, and 5 tags.
The on-board low-power capacitive sensor performs ultra-low power wake-up without switching the reader field on and traditional inductive wake-up to select amplitude or phase measurement.
The automatic antenna tuning (AAT) technology enables operation close to metallic parts and/or in changing environments.

Product summary

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<thead>
<tr>
<th>NFC card reader expansion board based on ST25R3916B for STM32 and STM8 Nucleos</th>
<th>X-NUCLEO-NFC08A1</th>
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<tbody>
<tr>
<td>High-performance NFC universal device and EMVCo reader</td>
<td>ST25R3916B-AQWT</td>
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<tr>
<td>High-performance HF reader/NFC initiator IC software expansion for STM32Cube</td>
<td>X-CUBE-NFC6</td>
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Applications

Wireless Connectivity
Figure 2. X-NUCLEO-NFC08A1 circuit schematic (2 of 3)
Figure 3. X-NUCLEO-NFC08A1 circuit schematic (3 of 3)

Antenna Circuit incl. EMI Filter and Matching

Antenna Connection
## Revision history

Table 1. Document revision history

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
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<tbody>
<tr>
<td>14-Sep-2022</td>
<td>1</td>
<td>Initial release.</td>
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