Discovery kit for the ST25R3916B high performance NFC universal device and EMVCo reader

Features

- ISO 18092 (NFCIP-1) active and passive initiator and target modes
- NFC Forum NFC-A, NFC-B, NFC-F and NFC-V reader
- ISO 14443A, ISO 14443B and ISO15693 reader
- FeliCa™ reader
- Support for all five NFC forum tag types in reader mode
- NFC forum type 3 tag (NFC-F) host card emulation
- NFC forum type 4A tag (NFC-A) host card emulation
- Stream modes to implement other standard and custom protocols
- Integrated inductive sensing system for low power detection of tag presence using phase or amplitude measurement
- High output power
- User selectable and automatic gain control
- Serial peripheral interface (SPI) up to 10 Mb/s
- I²C with up to 400 kbit/s in fast-mode, 1 Mb/s in fast-mode plus

Description

The STEVAL-25R3916B kit allows the user to evaluate the features and capabilities of the ST25R devices, which are a series of high performance HF readers. The kit comes with application notes, software applications, drivers, bill of materials (BOM), board schematics, Gerber files, and firmware schematics. These documents are downloadable from www.st.com.

The STEVAL-25R3916B consists of two boards: STEVAL-M25R16B and STEVAL-D25R16B.

The STEVAL-M25R16B is a microprocessor motherboard, which embeds a 32-bit Arm® Cortex™-M4 CPU with an FPU high-performance microcontroller. This board is powered through the USB bus. It is based on an STM32L476 microcontroller and includes: an ST-LINK embedded debug tool interface, a 2.4" TFT LCD, LEDs, push buttons (reset and user), a mini USB debug connector, an user-dedicated micro USB connector, features for ST NFC TAG boards not used with the ST25R HF reader series.

The STEVAL-D25R3916B is a daughter board, which embeds the ST25R3916 highly integrated HF reader/NFC initiator/NFC target IC with an antenna etched on the PCB and the related VHBR tuning circuit.
Figure 1. STEVAL-ST25R3916B main board circuit schematic (1 of 10)
Figure 2. STEVAL-ST25R3916B main board circuit schematic (2 of 10)
Figure 3. STEVAL-ST25R3916B main board circuit schematic (2 of 10)
Figure 4. STEVAL-ST25R3916B main board circuit schematic (3 of 10)
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Figure 8. STEVAL-ST25R3916B main board circuit schematic (7 of 10)
Figure 9. STEVAL-ST25R3916B main board circuit schematic (8 of 10)
Figure 10. STEVAL-ST25R3916B main board circuit schematic (9 of 10)
Figure 11. STEVAL-ST25R3916B main board circuit schematic (10 of 10)

![Main Board Circuit Schematic]

Figure 12. STEVAL-ST25R3916B reader expansion board circuit schematic (1 of 3)

![Reader Expansion Board Circuit Schematic]
Figure 13. STEVAL-ST25R3916B reader expansion board circuit schematic (2 of 3)
Figure 14. STEVAL-ST25R3916B reader expansion board circuit schematic (3 of 3)

Antenna Circuit incl. EMI Filter and Matching

Antenna Connection

External Load Modulation Circuit
2 Kit versions

Table 1. STEVAL-ST25R3916B versions

<table>
<thead>
<tr>
<th>PCB version</th>
<th>Schematic diagrams</th>
<th>Bill of materials</th>
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<tr>
<td>The evaluation kit with order code STEVAL-ST25R3916B contains the STEVAL$M25R16BA main board plus the STEVAL$D25R16BA reader expansion board (1)</td>
<td>STEVAL-ST25R3916B schematic diagrams</td>
<td>STEVAL-ST25R3916B bill of materials</td>
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1. These codes identify the first version of the boards contained in the kit. They are printed on the boards PCB.
## Revision history

**Table 2. Document revision history**

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Changes</th>
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<tbody>
<tr>
<td>05-Dec-2022</td>
<td>1</td>
<td>Initial release.</td>
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