

LabStrong EA00351 NFC Controller

OPERATOR'S MANUAL

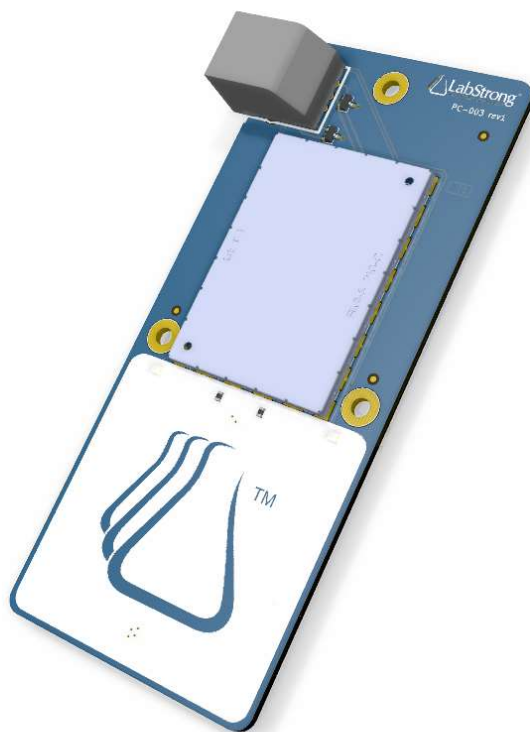


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Safety Information – Read This First!

Throughout this manual, the signal words *Warning*, *Caution*, and *Notice* are used to draw your attention to important messages about the proper use of this product. Carefully read all the safety messages in this manual. If you do not understand any part of this manual and need assistance, contact LabStrong.

Tout au long de ce manuel, les mots *Warning*, *Caution*, et *Notice* servent à attirer votre attention sur des messages importants concernant l'utilisation correcte de ce produit. Lisez attentivement tous les messages de sécurité de ce manuel. Si vous ne comprenez aucune partie de ce manuel et avez besoin d'assistance, contactez LabStrong.



Warning statements describe situations where potentially hazardous conditions exist that, if not avoided, could result in the death or serious injury of you, the operator, or of bystanders.



Caution statements describe situations where potentially hazardous conditions exist that, if not avoided, could result in minor or moderate injuries to you, the operator, or to bystanders.

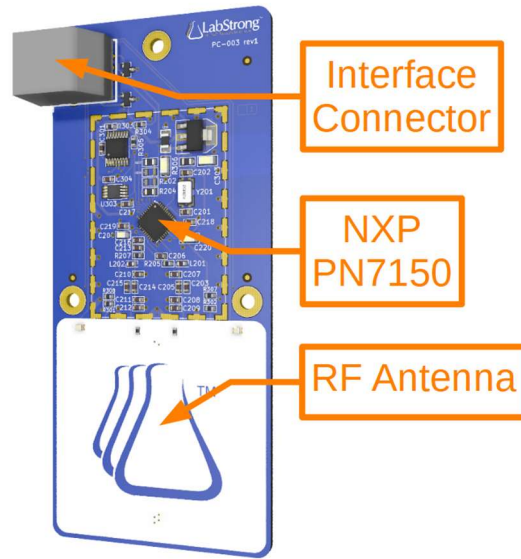


Notice statements inform you of housekeeping and maintenance rules which, if not followed, may result in property damage, but not in personal injury.

Introduction

The LabStrong model EA00351 NFC Controller is a standalone NFC interface board based on the NXP PN7150, a full NFC controller solution with integrated firmware and NCI interface designed for contactless communication at 13.56MHz. It is compatible with NFC forum requirements, meeting compliance with Reader mode, P2P mode, and Card Emulation mode standards.

The EA00351 NFC Controller features an integrated high-performance RF antenna to ensure high interoperability levels with NFC devices.



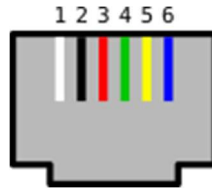
In addition, the EA00351 NFC Controller includes two LED indicators on each side of the board, and built-in ambient temperature sensing. All communication takes place over a 3.3V I2C bus.

Specifications

Symbol	Parameter	Conditions	Min	Typical	Max	Unit
V_{BUS}	Supply Voltage		4.0	4.75	5.5	V
I_{BUS}	Supply Current	$V_{BUS} = 4.0V$		150		mA
		$V_{BUS} = 5.5V$		175		mA
T_{amb}	Ambient Temperature		-20	20	50	°C
f_{OP}	Operating Frequency			13.56		MHz

Interface Connector

The interface connector is a female RJ25 (6P6C) jack connected as follows:



Pin	Color	Symbol	Parameter
1	White	VEN	Enable
2	Black	SDA	I2C Data
3	Red	GND	Supply Voltage Return
4	Green	SCL	I2C Clock
5	Yellow	VBUS	Supply Voltage
6	Blue	IRQ	Interrupt Request

References

- NXP PN7150: High performance NFC controller with integrated firmware for smart devices
<https://www.nxp.com/products/identification-security/rfid/nfc-hf/nfc-readers/pn7150-high-performance-nfc-controller-with-integrated-firmware-for-smart-devices:PN7150>

Regulatory Information

FCC Notices (United States of America)

This device using the integrated antenna has been tested to comply with part 15 of the FCC Rules. The device meets the requirements for modular transmitter approval as detailed 47 CFR §15.212. It has been assigned the FCC ID 2ASQK-EA00351.

NOTICE

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.

NOTICE

Changes or modifications to this device not expressly approved by LabStrong Corp. could void the user's authority to operate the equipment.

NOTICE

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.

NOTICE

The FCC requires the OEM to be notified that any changes or modifications not expressly approved by LabStrong may void the user's authority to operate the equipment. While an application of the EA00351 NFC Controller in a product is not required to obtain a new FCC authorization for the module, this does not preclude the possibility that some other form of authorization or testing may be required for that end product.

NOTICE

The Original Equipment Manufacturer (OEM) must ensure that FCC labeling requirements are met. The EA00351 NFC Controller module is labeled with its own FCC ID and IC Certification Number. The FCC ID and IC certification numbers are not visible when the module is installed inside another device. The final end product must be labeled in a visible area with the following: "Contains FCC ID: 2ASQK-EA00351" and "Contains IC: 24977- EA00351". The EA00351 NFC Controller module has been certified with its own integrated antenna and must not be used with any other antenna.

IC Notices (Canada)

This device using the integrated antenna has been tested to comply with the regulatory requirements of Innovation, Science, and Economic Development (ISED) Canada. It has been assigned the IC ID 24977- EA00351.

NOTICE

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.

NOTICE

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.

NOTICE

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

NOTICE

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

WarrantyNew Equipment Limited Warranty:

LabStrong Corp. warrants that this product is free from defects in materials and workmanship and for any unit sold in the continental United States or Canada the warranty period for labor is ninety (90) days, and for a period

of twelve (12) months, the parts required to repair such defect. Outside the continental United States or Canada, the warranty period covers for twelve (12) months the parts required to repair such defect. Labor outside of the continental United States or Canada is not covered. The warranty period for this product begins from date of shipment to the original buyer.

The exclusive remedy of buyer in the event of a breach of the foregoing warranty is expressly limited to the replacement or repair (at LabStrong Corp.'s option) of any product that malfunctions in conditions of normal use. An authorized agent or representative of LabStrong Corp. must perform all warranty inspections and work. No goods shall be returned to LabStrong Corp. for inspection, repair or replacement pursuant to this warranty without prior written approval. All cleaning, decontamination, and shipping costs shall be the sole responsibility of the buyer together with any damage to the goods that might occur in transit to or from LabStrong Corp. LabStrong Corp.'s warranty as stated herein is rendered null and void if the defect or malfunction occurred because of misuse, neglect, accident, improper service or other reasons unrelated to defects in materials or workmanship.

Under no circumstances does LabStrong Corp.'s responsibility or warranty extend to products other than those manufactured or distributed by LabStrong Corp.; nor does LabStrong Corp.'s liability extend to any products, articles or parts which are furnished by buyer or obtained from other manufacturers or suppliers at buyer's request and/or in accordance with buyer's specifications. In the event that LabStrong Corp. is unwilling or unable to repair or replace any defective or nonconforming product during the warranty period due to change in technical standards, technical modifications, non-availability of material or parts, or any other reason, buyer shall be entitled to a return of the purchase price paid for such product as its sole and exclusive remedy. LabStrong Corp. assumes no responsibility whatsoever for the accuracy of designs, specifications or materials furnished or specified by buyer.

THE WARRANTIES EXPRESSLY STATED HEREIN ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE WARRANTIES OF DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE BUYER ACKNOWLEDGES THAT IT IS NOT RELYING ON LABSTRONG CORP.'S SKILL OR JUDGEMENT TO SELECT OR FURNISH GOODS SUITABLE FOR ANY PARTICULAR PURPOSE. IN NO EVENT WILL LABSTRONG CORP. BE LIABLE TO ANY PARTY FOR ANY DAMAGES CAUSED BY USE OR POSSESSION OF THE PRODUCT OR THE FAILURE OF THE PRODUCT TO PERFORM, INCLUDING ANY LOST PROFITS OR SAVINGS, ANTICIPATED OR OTHERWISE, OR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND. LABSTRONG CORP. IS NOT LIABLE FOR ANY CLAIM MADE BY A THIRD PARTY OR MADE BY YOU FOR A THIRD PARTY.

Service Warranty:

Accessory Limited Warranty: The accessories manufactured by LabStrong Corp. have a warranty period of 90 days from the date of purchase. Consumables (i.e. cartridges, drive belts, filters, heating elements, and thermistors) are not considered accessories and do not have a warranty period, except for an out of box failure.



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