SpringPark SD

NFC / RFID HF
wall mounted reader for
PLCs and terminals

Certified CEN/TS 16794 & RCTIF 5.0

PMU21015-AA / 02 2021

SpringPark SD
NFC/ RFID HF READER FOR PLC AND TERMINAL

SpringPark SD is a 13.56 MHz contactless reader that is hardened and optimized for front-end installations, in space public and/or outdoor.

SpringPark SD consists of two parts:

> A wall mounted antenna that sits on facades, automata and terminals or on a door post
> An electronic module that interfaces with Ethernet, USB or serial

EXAMPLES OF APPLICATIONS

> Car or bicycle parking, charging stations
> Self-service dispensers, electronic wallet
> Events and leisure, ticketing
> Access control, NFC / RFID identification
> Reading NFC passes (Apple VAS / Google SmartTap)

MAIN FEATURES

> 10x10cm surface-mounted antenna offering optimal RF performance even on metal surfaces
> Supports most 13.56 MHz proximity and neighborhood cards (NFC tags, RFID tags, MIFARE, DESfire, Calyspo, CIPURSE cards, etc)
> Autonomous reading (SmartReader mode) supporting up to 4 card models for easy implementation, without software development effort
> Operation as a PC / SC coupler for complete control of the transaction
> An ID-000 slot for implementations with SAM
> Integrated Secure Element (DES / 3DES, AES, RSA, ECC) for securing transactions and the link with the host system
> Certified CEN/TS 16794 & RCTIF 5.0

SpringPark SD - Antenna

The SpringPark SD surface-mounted antenna is easy to install on the front of a PLC or terminal, or on a door jamb.
It has 4 green LEDs and a buzzer to ensure effective interaction with the user.
As an option, the front face can be personalized with a specific lexan.

HARDENED

It is suitable for outdoor environments thanks to its total waterproofing and withstands the most extreme climates. Its operating range extends from -20 ° C to + 70 ° C and up to 100% humidity.

ROBUST

Its bevelled edges and finesse leave little grip on the vandalism. Fixing is done from behind by means of 4 stainless steel studs.

EFFICIENT

It provides RF communication up to 5 to 12 cm depending on the type of card and is certified on the CEN/TS 16794 template class A. Its integrated ferrite allows installation on metal surfaces without disturbing the quality of the RF link.

100mm

100mm

10mm

30mm

Filétage M5

springcard
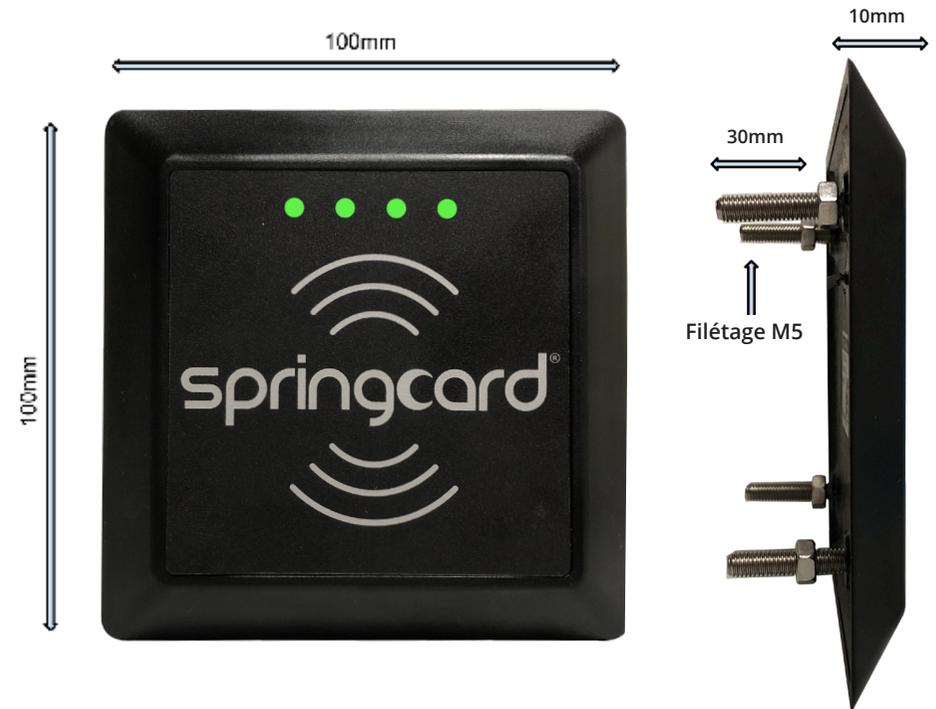
springcard

SpringPark SD - Electronic Module

The SpringPark SD electronic module is a concentrate of SpringCard know-how.

It is delivered in a box (SpringBox) but can also be installed on its own in electronic integrations where space is limited.

UNIVERSAL AND SCALABLE

The SpringPark SD electronic module integrates 2 types of interfaces physical (Ethernet and USB) and allows a wide range of implementations, both as a coupler (PC/SC mode) and as a stand-alone reader (SmartReader mode).

It supports a wide voltage range (5V - 24V DC) and can be powered by the network (optional POE daughter card).

For a smooth evolution, it takes the dimensions of previous products and can reuse the same interfaces.

EFFICIENT AND SECURE

With its 32bits core at 120MHz, the SpringPark SD electronic module optimizes transaction times.

Its Secure Element protects secret keys and private keys, and further optimizes secure transactions. Its ID-000 slot also makes it possible to use the SAMs requested in certain implementations.

Based on the latest NXP PN5180 chipset, it ensures optimal RF performance, full support for ISO / IEC 14443 contactless cards, ISO/IEC 15693, HF RFID (ISO/IEC 18000-3 modes 1 and 3); the NFC (ISO/IEC 18092, ISO/IEC 21481), and its protocol stack is EMV-ready.

ANTENNA

10mm

Interface

INTERFACE

86

47

84

2

30

2
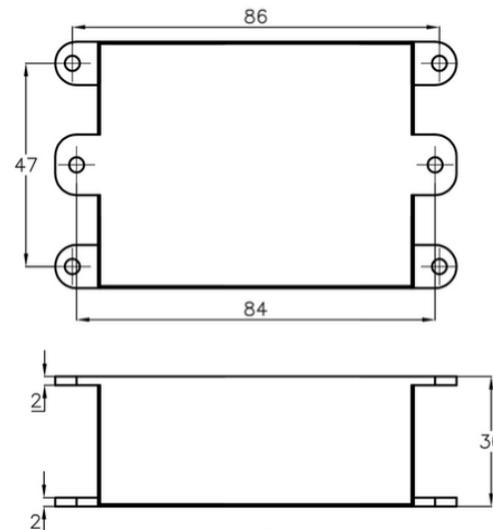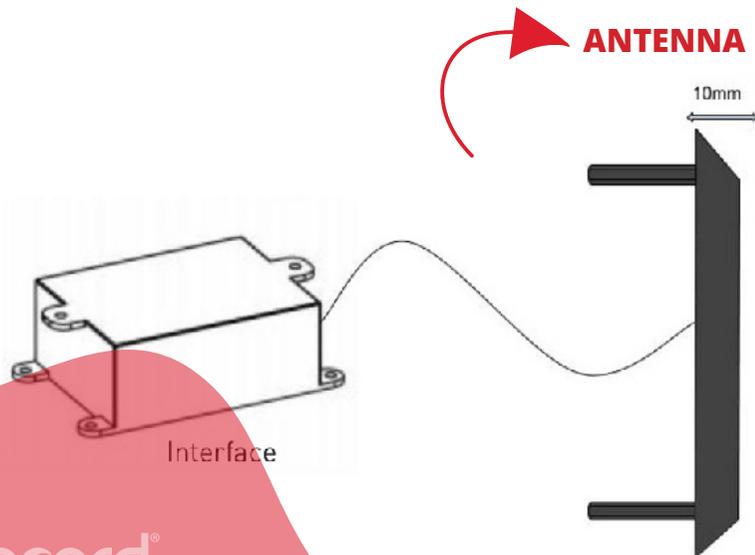
SpringPark SD- Implementation #1
PC/SC COUPLER MODE

To adapt to all uses, the SpringPark SD electronic module supports a large number of implementations.

The shift from an operation mode to another is simply done by the loading a new configuration in the product.

In coupler mode (PC/SC), SpringPark SD is a "passive" gateway between an application that runs on the host system and cards without touching.

Depending on the host system, the physical link used or the performance required, it is possible to go through a pilot PC/SC or communicate directly with the SpringPark SD coupler.

WITH PC/SC DRIVER

This open implementation and interoperable allows existing applications to exploit all the possibilities of SpringPark SD as easily as if it were a desktop PC/SC reader.

Available free of charge, the SpringCard SDK for PC/SC offers a wide range of examples for operating contactless cards through the standard PC/SC API.

> Windows host, USB link:
PC/SC driver on USB SpringCard Microsoft certified and available on Windows Update

> Windows host, link Ethernet (TCP):
PC/SC driver on SpringCard network (NetPcsc)

> Linux host, USB link:
CCID driver for PC/SC-Lite (third-party open-source project, integrated in most distributions)

> Linux host, Ethernet link (TCP):
specific driver for PC/SC-Lite (available on SpringCard's GitHub)

WITHOUT PC/SC DRIVER

For greater responsiveness or for host systems that do not integrate the PC/SC stack, it is possible to directly access the SpringPark SD coupler.

> In USB connection:
CCID standard

> In Ethernet link (IPv4):
SpringCard CCID protocol over TCP

INHERITED PROTOCOL

Partial compatibility with the SpringProx API on the serial link.

SPECIFIC CHARACTERISTICS TO THIS MODE
* PC/SC v2 standard compliance
* Encapsulation of the T=CL protocol (ISO/IEC 14443-4) in T=1, block size 256 bytes, support for bit rates up to 848kbit/s
* Support of wired logic memory cards (MIFARE etc) by an APDU interpreter 7816-4

springcard®

SpringPark SD - Implementation #1
SELF-READER SMARTREADER MODE

In Smart Reader mode, the SpringPark SD takes place automatically a transaction reading, secure or not, before transmitting the data of interest to the host system.

The reader has 4 models of cards (templates) for allow the cohabitation of several types of badges or NFC objects within the same usage pattern.

MQTT INTEGRATION

MQTT is a protocol for standardized network communication (OASIS and ISO/IEC 20922) optimized for the world of connected objects.

In Ethernet/IPv4 link, the SpringPark SD can function as a client of an MQTT server (broker), thus making its data accessible by any high-level language and allows the application development cloud-based.

PROTOCOL $SCRDR

A text-based protocol for sending data to a lightweight host system.

> In USB connection:
in serial port emulation (CDC-ACM)

> In Ethernet link (IPv4):
TCP server port putting the data available

CHARACTERISTICS
## SPECIFIC TO THIS MODE

* Reading templates for all uses: ID (protocol serial number of the card), static data, NFC Forum NDEF message stored on an NFC tag or received by an SNEP push, Mifare secure reading, Mifare Plus SL1 & SL3, Desfire, Apple VAS (Passkit), Google VAS (SmartTap), Orange NFC Retail & Orange NFC Office, ...
* Data formatting widely configurable: decimal, raw hexadecimal, textual data, forward or reverse direction, truncation, prefix or suffix ...
* Configuration change possible by secure master card (Master Card)

SpringPark SD - Implementation #2
CONNECTION AND POWER

Connection available #1
RS232 connection
* DB9 option

Protocol $SCRDR

Inherited protocol from SpringProx

INTERFACE RS232

* DB9 Option

Connection available #2
USB-B connection

Direct protocol

CCID protocol (PC/SC)
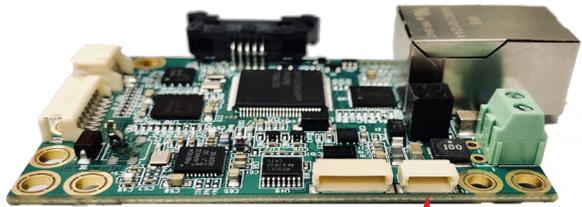
USB-B

Connection available #3
IP connection
* POE option

If the POE option has not been chosen, power the product on the screw terminal block

Direct Protocol

CCID Protocol (PC/SC)

ETHERNET

* POE Option

springcard®

Layout Plan - CPU Board

FACE TOP

69
33 · 14 · 22
17 · 10
3 · 6.5 · 6.5 · 3

XF4 · XF5 · XF7 · XF3
J5 · P1
Hmax =2.3mm
3
6.5
13
J6
1
XF8
J4 · J7
1 3 · 1 3
2 4 · 2 4
J3
S1
45
J2
24
M1
J8
11.5
2 · 1
1 · 2
E1
3 · 4.5
XF1 · XF6 · XF9 · XF2
J1
Origine PCB
42

Ø 3.5 mm

FACE BOTTOM

LDY · LDB
LDV · LDR
19
Hmax =2.8mm
1 · 2
SAM2
J9
SW1
on
41.5
61.9
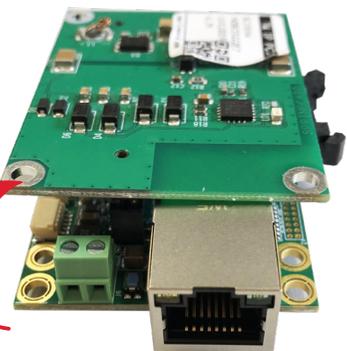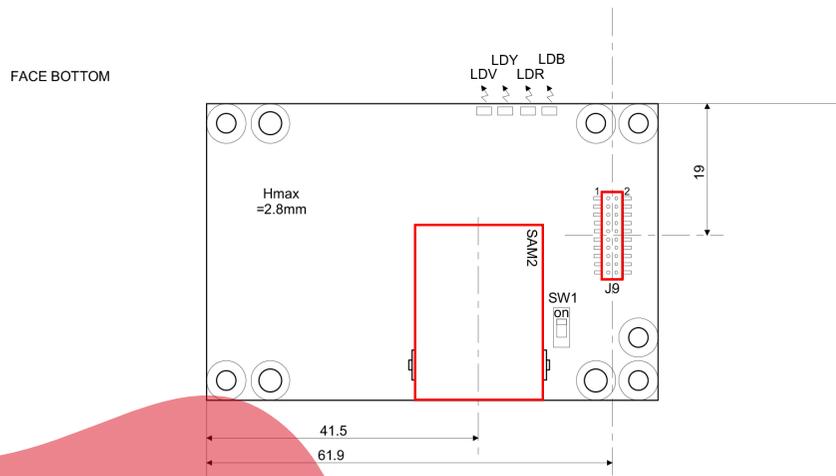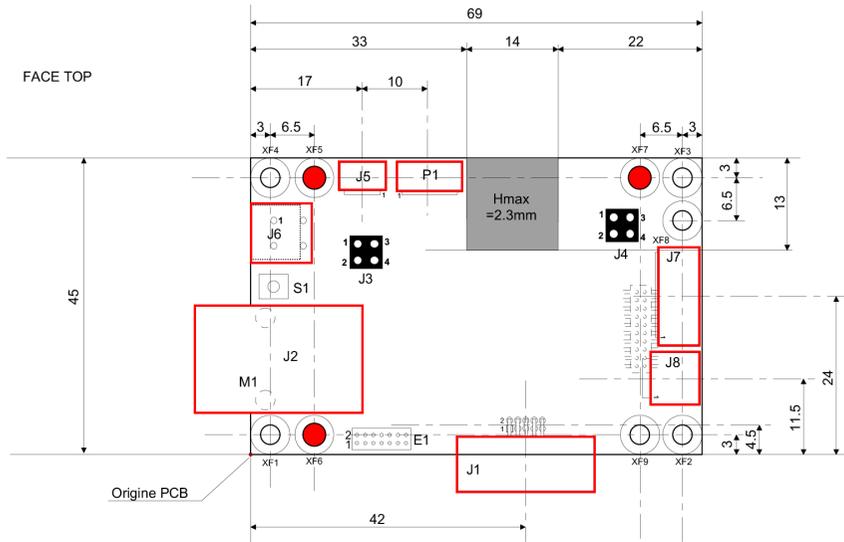
LEGEND

P1 PORT INTERFACE RS232 JST 8 PTS PAS 1MM (0 inch)

S1 RESET REINITIALIZING THE DRIVE

J1 LOCKING CONNECTOR FOR ANTENNA

J2 ETHERNET PORT

J3 CONNECTOR FOR ANNEX CARD (POE) POWER OVER ETHERNET

J4 CONNECTOR FOR ANNEX CARD (POE) POWER OVER ETHERNET

J5 USB PORT JST 5 PTS PAS 1MM (0 inch)

J6 2 PTS SCREW TERMINAL FOR POWER SUPPLY

J7 CARD PRESENCE CONNECTOR FOR SLOT SMART EXTERNAL CARD

J8 CONNECTOR FOR SIGNAL OF PRESENCE OF EXTERIOR CARD

SAM2 SLOT CARD SAM

J9 CONNECTOR FOR ANNEX CARD 3 SAM SLOTS SC0169

LDY-LDB 4 GREEN LEDS
LDV-LDR

springcard®

Detail of Connectors

	CONNECTOR REFERENCES (Not supplied)
J5 USB PORT JST 5 PTS PAS 1MM (O inch)	SC15152 Cord USB / A Black - Ferrite Overmolded - JST connector 5 pts 1 mm (0 inch) pitch
J6 2 PTS SCREW TERMINAL FOR POWER SUPPLY	Terminal 1 is the positive (+) terminal and terminal 2 is the negative (-)

Technical Data

MODULE	
RFID/NFC Standards	ISO/IEC 14443-A & B PCD, Innovatron (B'), ISO/IEC 15963 VCD, ISO/IEC 18092 initiator (passive mode), ISO/IEC 18000-3M1 & 3M3
Fréquence Porteuse	13.56MHz (RFID HF, NFC)
Output Power	1W max (200mA @ 5V)
NFC/RFID bitrates	26, 106, 212, 424 or 848 kbps (depending on card)
USB interface	USBv2 device, compliant with USBv3, 5-pin connector SM05B-SRSS-TB(LF) , connector mounted on the pcb.
Network interface	Ethernet 10/100Mbps, TCP/IPv4, RJ45 female. POE class 1 (0.44 to 3.84 W)
Power supply	3.3V - 24V DC or POE (option)
Power requirement (with standard antenna)	9 - 24 VDC I = 500mA
Dimensions (PCB)	69 x 45 x 22 mm (2,36 x 1,57 x 0,78 inch) - weight 150 g (5,29 once)
Dimensions (incl. SpringBox shell)	94 x 57 x 38.5 mm (3,54 x 1,97 x 1,18 inch) - weight 200 g (7,05 once)
Environment: temperature operation	Operation: -20 +70°C - storage: -40 +85°C - humidity: 100 % (non condensing)

ANTENNA	
RF field level	2 A/m with SpringPark SD module
Operating distance	0 to 5-12cm (0 to 1,97-4,72 inch) depending on card technology and size
User interface	4 LEDs (color: green, luminosity: 224 mcd lumen) - single tone beeper (frequency: 4000 Hz, power: 85 dBA @ 1 m)
Dimensions	108.5 x 108.5 x 11mm (3,94 x 3,94 x 0,39 inch) - weight 250 g (8,82 once)
Environment temperature operation	-20-+70°C - storage: -40-+85°C - IP65

COMMON SET	
Certifications	CEN/TS 16794 class A1, RCTIF 5.0
CE mark	EN300330-2
Other homologations	RoHS
MTBF	500 000 hours
Warranty	2 years

ABOUT SPRINGCARD

springcard®

CONTACTLESS & 13.56MHZ
RFID & NFC SOLUTIONS AND READERS

SpringCard is a French company that designs and produces contactless readers by combining different technologies. With 20 years of field experience in 13.56 MHz systems, we offer more than just technical skills.

PARIS (FR) - ANGERS (FR) - SAN DIEGO (USA)

www.springcard.com