

OEM Serial Contactless Couplers

K663

K663-TTL / K663-232 / K663-485

TwistyWriter

SpringCard 'K' Series

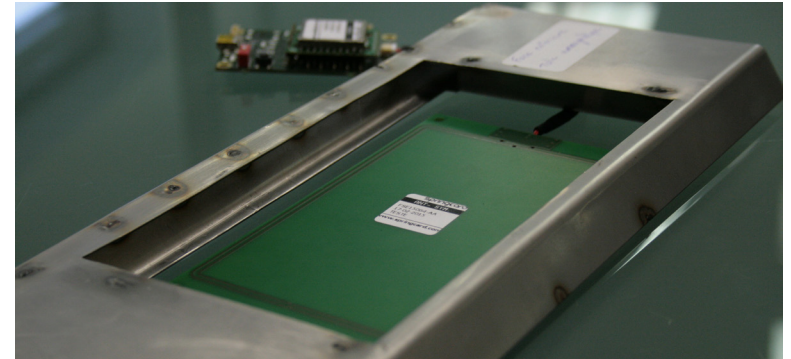
WHY CHOOSING SPRINGCARD 'K' SERIES?

SpringCard 'K' Series is a complete family of OEM readers/writers covering **13.56MHz RFID and NFC standards**.

Designed with **ease of use, interoperability** and **compliance to standards** as primary objectives, **SpringCard 'K' Series** takes benefit of a fast CPU to ensure **short transaction times**, a key feature when it comes to card reading or issuing in-the-field.

Moreover, special attention was paid on consumption: **SpringCard 'K' Series** is designed to work in **low power modes**. Applications using the coupler modules in battery mode are possible.

SpringCard 'K' Series requires only a simple serial line to operate. The feature-rich **SpringProx API is available freely** within the SDK, and allows a seamless integration from virtually any hardware or system featuring no more than a serial link. In-field firmware upgrade is even possible provided that two module's control lines are driven by the host.

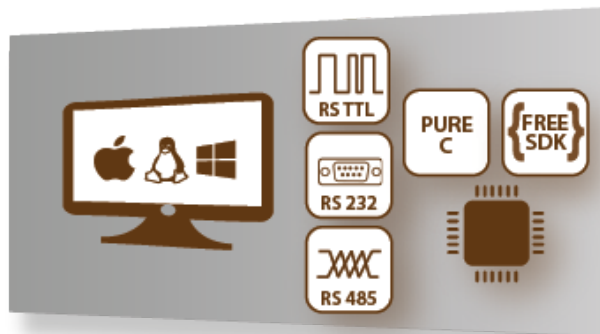


MADE FOR OEMS

The SpringCard OEM Couplers are designed to be integrated in a larger equipment: automated vending machine, POS, turnstyle at a gate, card printer, card issuing machine, kiosk...

SpringCard has a strong experience and commitment in providing industrial-grade solutions. This Couplers family is a guaranteed long-life product line.

Most products in our portfolio share the same dimensions and electrical characteristics, which allows a smooth transition from one generation to the next one.



springcard

OEM Serial Couplers

Associated services

Product customization
Consultation
Expertise
Training



NFC / RFID @ 13.56MHz
Reader/Writer

MIFARE® Classic, MIFARE DESFire®, MIFARE Plus®,
MIFARE UltraLight®, SmartMX®, NTAG®...
FeliCa (ID only), FeliCa Lite-S
Calypso CD21, CD97, GTML (incl. Innovatron Radio Protocol)
Infineon SLE66, ST MicroElectronics ST19, Atmel AT88
ST MicroElectronics SR, SRI, SRIX, Atmel CryptoRF
Inside Secure PicoTag / HID iClass
etc.

ISO/IEC
14443

JIS
X6319-4

NfcA
NfcB
NfcF

MIFARE®

ISO/IEC
15693

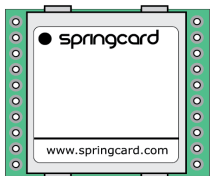
NfcV

NXP ICODE®-SLI
Texas Instrument Tag-it™
ST MicroElectronics LR
etc.

NFC Tags types 1, 2, 3 and 4
Reader mode

NFC objects
in card emulation mode





K663 A&S

RFID/NFC Coupler module without antenna

KEY POINTS

- The **K663S** and **K663A** are 'bare' NFC / RFID (HF) modules : they require the addition of a matched antenna to operate.
- Both modules accept either 3.3V or 5V as single power supply source, with preserved performance.
- I/O and communication lines supports both TTL (5V) and CMOS (3.3V) logic levels, allowing to connect the module directly to a MCU's UART.
- No external component is needed.

K663S for balanced antenna

The **K663S** targets a **balanced antenna**, which provides the best performance but must remain in short distance of the module.

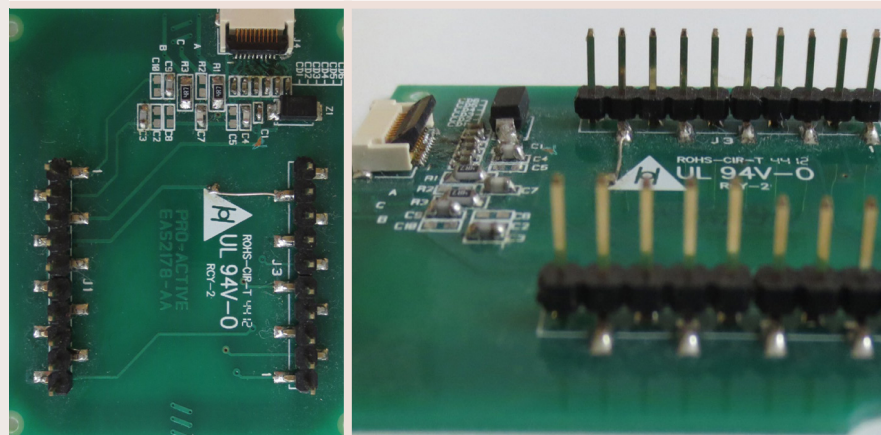
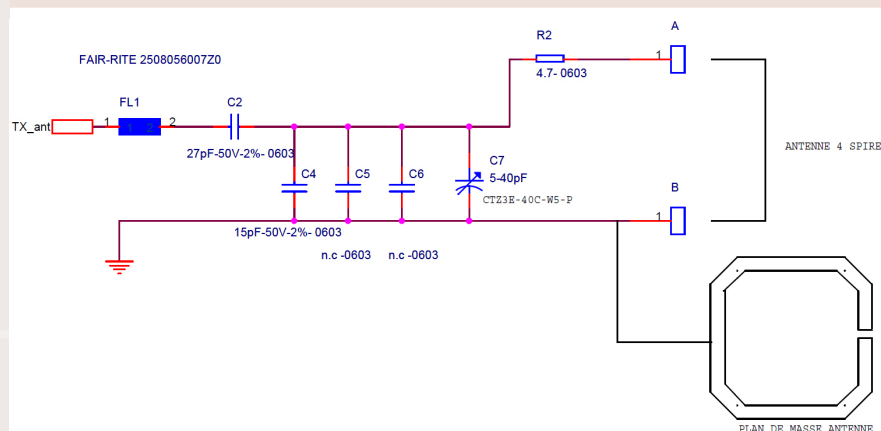
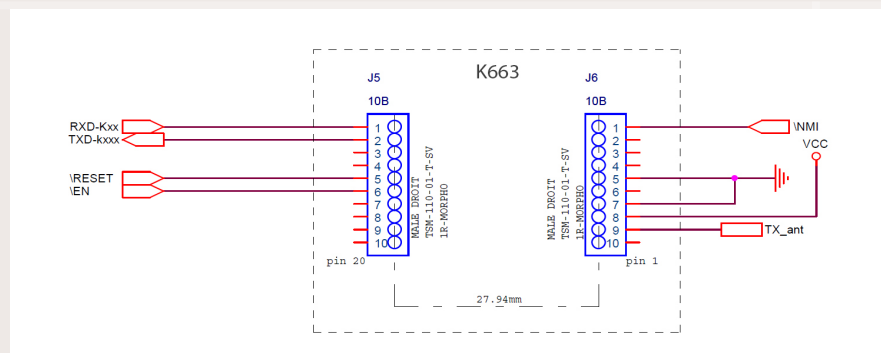
K663A for unbalanced antenna

The **K663A** targets an **unbalanced antenna**, that must be 50-ohm matched and could be connected through a longer distance with a coaxial cable.

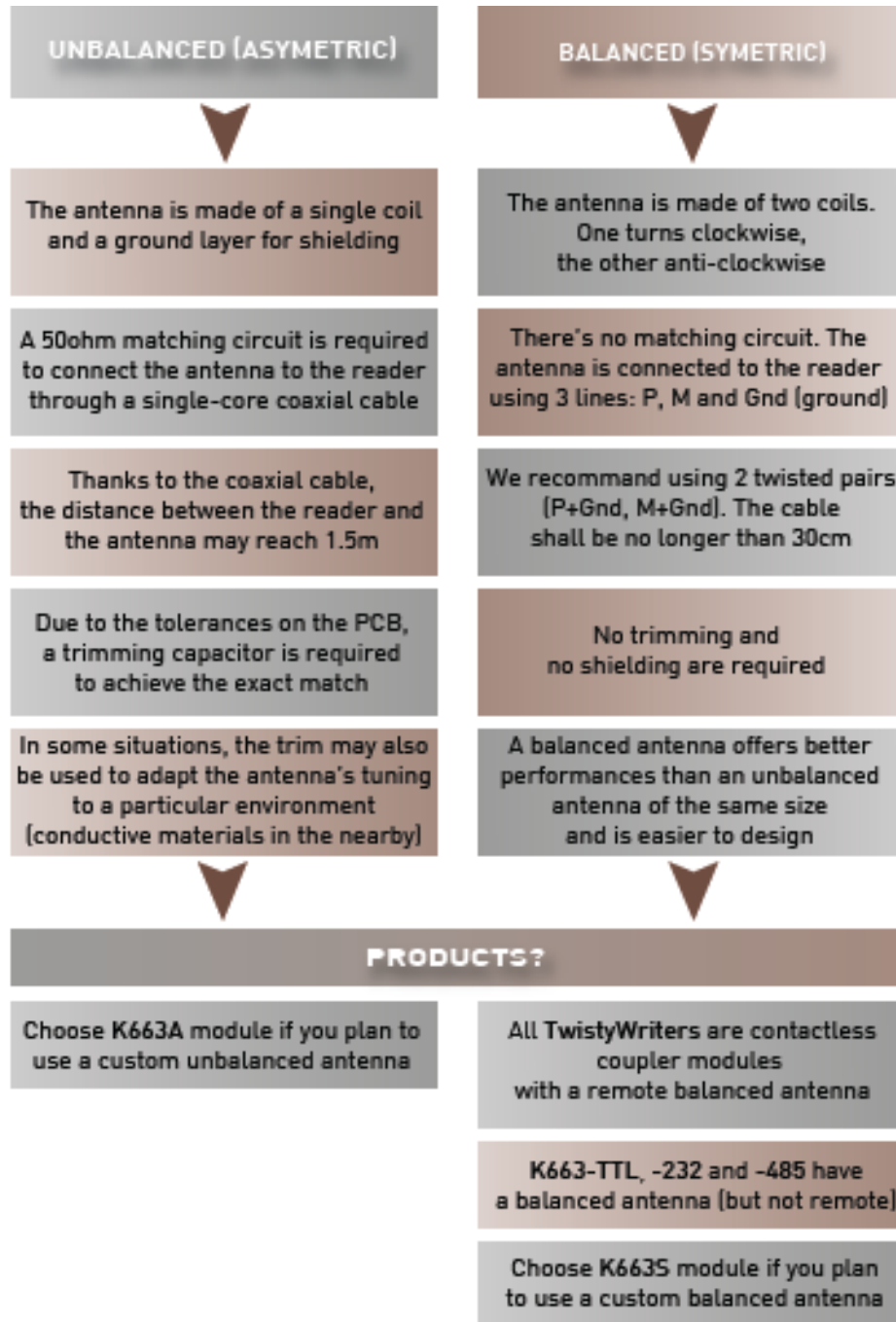
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Versions and order codes

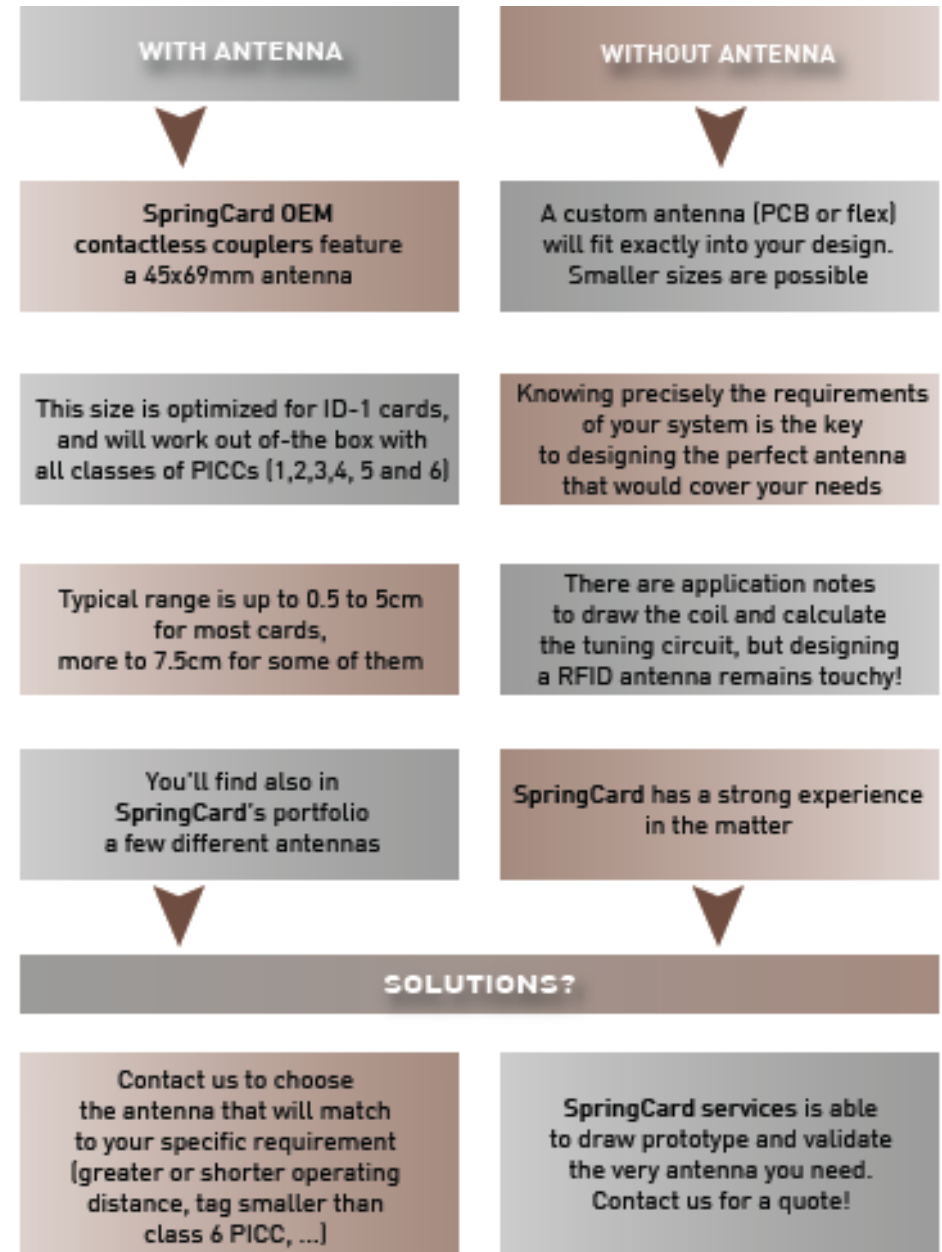
- **SC2193: K663S** RFID/NFC Coupler core (serial) - designed for a balanced antenna
- **SC3028: K663A** RFID/NFC Coupler core (serial) - designed for an unbalanced antenna



CHOOSING BETWEEN A BALANCED OR AN UNBALANCED ANTENNA



'BARE' MODULE WITHOUT ANTENNA OR READY-TO-USE COUPLER WITH ANTENNA?





K663-TTL, -232, -485

Ready-to-use RFID/NFC Coupler module
with integrated antenna

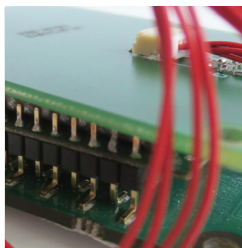
KEY POINTS

- The **K663-TTL**, **K663-232** and **K663-485** are ready-to-use NFC / RFID (HF) coupler boards, designed for a fast and easy integration by OEMs.
- Based on industrial-grade state-of-the-art components and SpringCard's know-how in versatile and high-performance contactless readers, these couplers are the solution of choice to add an NFC / RFID interface into an existing device, kiosk or machine.
- Thanks to the integrated ferrite shielding at the rear of the antenna, the performances are preserved in most environments and remain consistent with even with various sizes of card/tag.
- In most situations, the **K663-TTL**, **-232** and **-485** could be used as substitutes of previous K531- and K632-based products.



Versions and order codes

- **SC13137: K663-TTL** RFID/NFC coupler with integrated antenna - RS-TTL
- **SC3064: K663-232** RFID/NFC coupler with integrated antenna - RS-232
- **SC14180: K663-485** RFID/NFC coupler with integrated antenna - RS-485



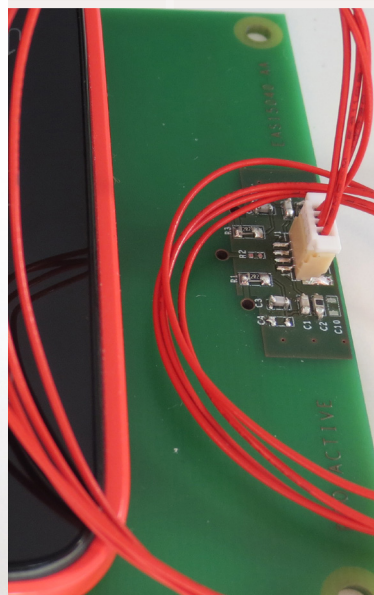
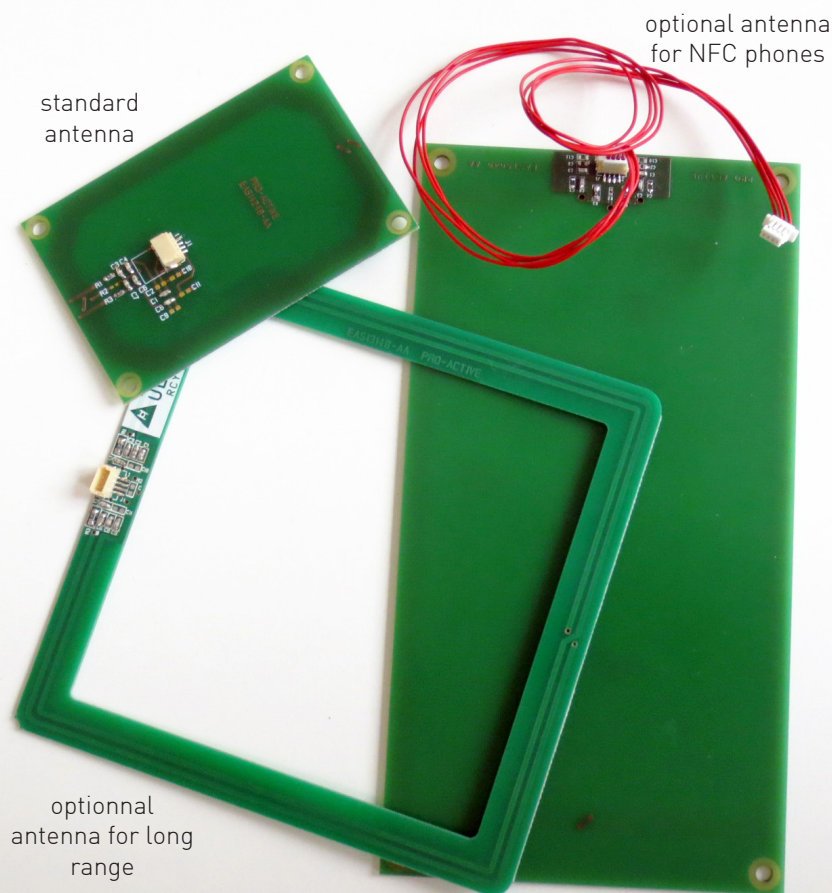
TwistyWriter-TTL, -232, -485

Ready-to-use RFID/NFC Coupler module with remote antenna

KEY POINTS

The **TwistyWriter-TTL, -232** and **-485** are ready-to-use NFC / RFID (HF) coupler assemblies, that mix the key characteristics of **K633-TTL, -232** and **-485** with the benefits of a remote antenna:

- ability to place the 'flat' antenna virtually anywhere in the target machine or kiosk,
- ability to choose a different antenna size in SpringCard's portfolio, or to design easily a custom antenna in order to match a specific card/tag size,
- improved performance with NFC mobile phones.



Versions and order codes

- **SC15111: TwistyWriter-TTL** RFID/NFC coupler with remote balanced antenna - RS-TTL
- **SC14303: TwistyWriter-232** RFID/NFC coupler with remote balanced antenna - RS-332
- **SC15109: TwistyWriter-485** RFID/NFC coupler with remote balanced antenna - RS-485

Technical data

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(1) The actual max. operating distance depends heavily on the card/tag's characteristics, on the baudrate and on the environment.
(2) SpringCard's portfolio contains various antenna sizes and shapes. Don't hesitate to contact our sales team in order to select the best antenna for your very project.
(3) Other lengths available on request.

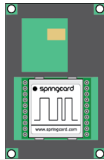
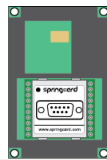
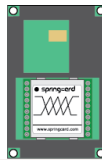
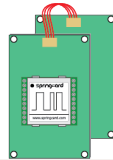
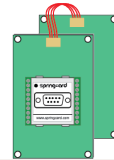
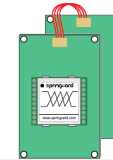
K663S



K663A



RFID/NFC Standards	ISO 14443 A-B, ISO 15693, NFC peer-to-peer (ISO 18092 initiator, passive communication mode)	
Carrier frequency	13.56MHz (RFID HF, NFC)	
RF field level - Operating distance	Depends on antenna	
Card/tag baudrate	26kbps (ISO 15693), 106/212/424/848kbps (ISO 14443)	
Antenna	Balanced, not included	Unbalanced, not included
Distance antenna/module	Up to 25cm (using 2 twisted pairs)	Up to 150cm using a 50Ω coax.
Connectors	2 x 10 pins, 2.54mm step	
Communication with host	Serial communication - Baudrate 38400 or 115200bps	
Standard	RS at TTL level (0-5V), CMOS compatible (0-3V)	
Protocol	'SpringProx' binary or ASCII protocol	
SDK	Free SDK feat. 'SpringProx API' (full ANSI C source code + binary for Windows & Linux)	
In-field firmware upgrade	Yes (external computer required)	
I/O lines - Beeper	4 output lines (for LEDs) - 1 PWM output (for beeper)	
Control lines	/RESET, /FLASH, /SUSPEND	
Power	3 to 5V DC	
Power requirement	LPCD: 3V→10mA / 5V→6mA, RF OFF: 3V→60mA max / 5V→35mA max, RF ON: 3V→250mA typ., 420mA peak / 5V→150mA typ., 250mA peak	
Size (WxHxD)	27 x 31 x 9mm	
Environment		
Temperature	Operating: -20°C – +70°C / Storage: -40°C – +80°C	
Humidity	0 – 90% (non condensing)	
MTBF	500 000 hours	
Approvals	Radio : EN 300 330 - EMC : EN 301 489 - CE mark – FCC class B part 15 (pending/on request)	
Environmental	RoHS, WEEE	
Warranty	2 years	

	K663-TTL	K663-232	K663-485	TwistyWriter-TTL	TwistyWriter-232	TwistyWriter-485
						
RFID/NFC Standards	ISO 14443 A-B, ISO 15693, NFC peer-to-peer (ISO 18092 initiator, passive communication mode)					
Carrier frequency	13.56MHz (RFID HF, NFC)					
RF field level - Op. dist.	Typ. 3A/m at 0.5cm - Typ.: 0.5-5cm, up to 10cm ^[1]					
Card/tag baudrate	26kbps (ISO 15693), 106/212/424/848kbps (ISO 14443)					
Antenna	Integrated - Size optimised for communication with ID-1 sized cards/tags. Ferrite shield on the back ^[2]			Remote - Size optimised for communication with ID-1 sized cards/tags. Ferrite shield on the back ^[2]		
Dist. antenna/module	N/A			25cm: 2 twisted pairs cord included ^[3]		
Connectors	JST SHR-8			JST SHR-8 (serial link) - JST SHR-4 (antenna)		
Comm. with host		Serial communication - Baudrate 38400 or 115200bps				
Standard	RS at TTL level (0-5V) CMOS compatible (0-3V)	RS-232	RS-485	RS at TTL level (0-5V) CMOS compatible (0-3V)	RS-232	RS-485
Protocol	‘SpringProx’ binary or ASCII protocol					
SDK	Free SDK feat. ‘SpringProx API’ (full ANSI C source code + binary for Windows & Linux)					
In-field firm. upgrade	Yes					
I/O lines - Beeper	-					
Control lines	/RESET, /FLASH					
Power	3 to 5V DC					
Power requirement	LPCD: 3V→10mA / 5V→6mA, RF OFF: 3V→60mA max / 5V→35mA max, RF ON: 3V→250mA typ., 420mA peak / 5V→150mA typ., 250mA peak					
Size (WxHxD)	69 x 45 x 13mm			Main board: 69 x 45 x 13mm / Antenna: 69 x 45 x 1,5mm		
Environment						
Temperature	Operating: -20°C – +70°C / Storage: -40°C – +80°C					
Humidity	0 – 90% (non condensing)					
MTBF	500 000 hours					
Approvals	Radio : EN 300 330 - EMC : EN 301 489 - CE mark – FCC class B part 15 (pending/on request)					
Environmental	RoHS, WEEE					
Warranty	2 years					

YOUR EXPERT IN SMARTCARDS, RFID AND NFC

SpringCard offers a wide range of products to meet as many as possible of needs and use cases.

With a 15-year experience in contactless smartcards, communication technologies and development on embedded or mobile systems, SpringCard R&D Team is also a valuable partner to design your own solution or product.

Paris – Angers – San Diego – Tokyo – Sydney



www.springcard.com



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