Integration guide for Scheidt & Bachmann Smartcard Reader 2.0

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Revisions

Version:	***Bearbeiter:***	***Datum:***	***Abteilung:***	***Grund:***
00.01.00	Nils Hündgen	28.07.2017	GSHW	Erstellung
00.01.01	Nils Hündgen	15.08.2017	GSHW	Corrections
00.01.02	Nils Hündgen	13.09.2017	GSHW	Updated Statements for documentation
00.01.03	Nils Hündgen	13.09.2017	GSHW	Corrections in Chapter 5
00.01.04	Nils Hündgen	27.10.2017	GSHW	Update PMN

1 The Module

Product Marketing Name: **Smartcard Reader 2.0**

HVIN: **03740300**

FVIN: **07337130**

FCC ID: **O5K-SCR2**

IC: **8312A-SCR2**

1.1 Connections

Pinning of the 52 pin PCIe Edge Connector (ST1)

PIN	Description	Netlabel	PIN	Description	Netlabel
1	Trace Clock (Trace Debug Port)	Trace_CLK	27	Ground	GND
2	3.3 V DC Input	+3V3	28	+5V Input (buffered by GoldCap)	+5V_RTC_BATT
3	Trace Data 0 (Trace Debug Port)	Trace_D0	29	Ground	GND
4	Ground	GND	30	Universal I²C Bus Clock	TWCK2
5	Trace Data 1 (Trace Debug Port)	Trace_D1	31	SAM4 ISO 7816 I/O	IO4
6	+5 V DC Input	+5V	32	Universal I²C Bus Data	TWD2
7	Trace Data 2 (Trace Debug Port)	Trace_D2	33	JTAGSEL	JTAGSEL
8	SAM 3 card supply	VCC3	34	Ground	GND
9	Ground	GND	35	Ground	GND
10	SAM3 ISO 7816 I/O	IO3	36	USB signal D-	USB_DATA_N
11	Trace Data 3 (Trace Debug Port)	TRACE_D3	37	Ground	GND
12	SAM3 ISO 7816 CLK	CLK3	38	USB signal D+	USB_DATA_P
13	JTAG TST	TST	39	5V DC supply input	+5V
14	SAM3 ISO 7816 RESET	RST3	40	Ground	GND
15	Ground	GND	41	3.3 V DC supply input	+3V3
16	PD0 ATSAME70 JTAG Compliance Pin	PD0	42	Digital I/O to control a piezo buzzer	BUZZER
17	VBUS Detect	VBUS	43	Ground	GND
18	Ground	GND	44	RXD UART0	Boot_TTL_RXD
19	SAM4 card supply	VCC4	45	JTAG TDI	TDI
20	ERASE Input (reinitialising of Flash)	ERASE	46	TXD UART0	Boot_TTL_TXD
21	Ground	GND	47	JTAG TMS	TMS
22	Reset ATSAME70 (Active-low)	NRST	48	5V DC supply input	+5V
23	SAM4 ISO 7816 RESET	RST4	49	JTAG TCK	TCK
24	3.3 V DC supply input	+3V3	50	Ground	GND
25	SAM4 ISO 7816 CLK	CLK4	51	JTAG TDO	TDO
26	Ground	GND	52	3.3V DC supply input	+3V3

1.2 Interfaces

The main communication Interface to the Host system is USB 2.0. Make sure that requirements made by the USB-Standard are considered.

1.3 Environmental conditions

Temperature:

- Operating temperature: -25 to +60°C
- Storage temperature: -30 to +60°C

Humidity:

- 5% to 95% not condensing.

The module is sensitive to ESD. Take care while handling these modules.

2 Power supply

Supply voltage for digital circuits: 3.3V +/-5%.

Make sure the voltage is accurate. Good filter practice has to be used.

RF Supply voltage: 5V +/-5%.

Make sure the voltage is accurate. Good filter practice has to be used.

RFID systems require a very high level supply quality. Use linear regulators with high precision and high control speed whenever possible. When using switching power supplies make sure the switching speed is above 500 kHz and use an EMC optimized layout as well as shielded inductors.

The voltage for digital circuits should be applied first.

Current consumption:

Max. 300mA at 3.3V.

Max. 800mA at 5V.

3 Antennas

There are two RF paths with different antenna connectors. That ensures the right connections for antenna installation.

Antennas made by the grantee used for this certification are the only Antennas which should be used in combination with the device.

The antenna of the module should not be removed, replaced nor modified. The antenna must not be co-located or operating in conjunction with any other antenna or transmitter within 20cm. No other antenna than the ones from the certification must be used.

4 Compliance statements

In the manual of the host product the following statements have to be written in a prominent location:

NOTE: *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.*

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s).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.

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:

Changes or modifications made to this equipment not expressly approved by

(Scheidt & Bachmann GmbH) may void the FCC authorization to operate this equipment.

5 Certification

5.1 FCC (USA)

The FareGo SCR Module complies with Part 15 of the FCC Rules. To fulfill all FCC requirements the integrator must comply with the following regulations:

- The integrator must make sure that the end device is labeled according to FCC requirements. This means that the end device must have a clearly visible label on the outside of the product with at least the following content:
  Contains FCC ID: O5K-SCR2
  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.

- The integrator must test the final product to comply with FCC regulations regarding unintentional radiators (FCC section 15.107 and 15.109) before declaring FCC compliance of his own product.

ATTENTION:
Changes or modifications not expressly approved by Scheidt & Bachmann GmbH could void the user's authority to operate the equipment.

5.2 IC (Canada)

Labeling requirements for Industry Canada (IC) are similar to those of the FCC. A clearly visible label on the outside of the final product must display at least the following text:
Contains Model QR15 RFID Module, IC: 8312A-SCR2
The integrator is responsible for its product to comply with IC ICES-003 & FCC Part 15, Sub. B - Unintentional Radiators. ICES-003 is the same as FCC Part 15 Sub. B and Industry Canada accepts FCC test report or CISPR 22 test report for compliance with ICES-003.

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