PRIMO-B

Contactless identification system as an attachable universal module without integrated antenna

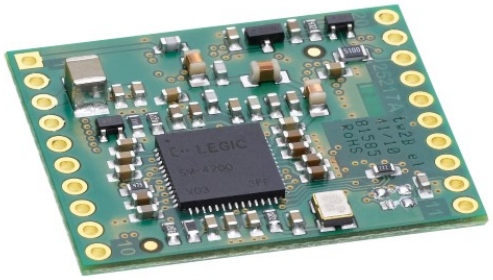


Image above shows PRIMO-B-1210-A exemplarily

Product designation

Variant	Power supply	RFID technology	Special feature
PRIMO-B-1210-A	5,0 V_{DC}	LEGIC® prime / advant (Basis LEGIC® 4200M) Note: LEGIC media **cannot** be initialized	Multi-ISO platform ▪ LEGIC prime/advant ▪ MIFARE Classic DESFire / EV1 / EV2 ▪ ISO14443 A+B ▪ ISO15693
PRIMO-B-1410-A		LEGIC® prime / advant (Basis LEGIC® 4500M) Note: LEGIC media can be initialized	
PRIMO-B-2010-A		125kHz	
PRIMO-B-3110-A		Mifare classic Mifare DESFire / EV1 / EV2	

Interfaces

- Asynchronous serial (RxD, TxD) TTL level
- Magstripe Clock / Data
- Wiegand D0 / D1

Special features

- Compact design
- simple integration
- low power consumption
- **external antenna required**

Firmware / Software protocols

- phg_crypt_SE
- OSDP
- Modbus
- customer specific

The support and availability of the different software protocols depends on the current RFID technology.
Detailed information on request

Fields of application

- Access control
- Time and attendance
- Data collection
- Parking system
- Gas station systems
- General user identification
- Catering / canteen and cash systems
- Vending machines
- Leisure time facilities
- ÖPNV
- General user identification

Frequencies

- 13,56 MHz (PRIMO-B-12XX, PRIMO-B-14XX, PRIMO-B-31XX)
- 125 kHz (PRIMO-B-20XX)

Technical data

Product designation	Nominal voltage	Power consumption	Temperature range Operation mode	Dimensions	Type of connection
PRIMO-B-1210-A	5,0 V_{DC} ±5%	max. 0,74 W	-20 … +70 °C	see below	solderable on two 10 pin header (grid 2,54 mm)
PRIMO-B-1410-A					
PRIMO-B-2010-A					
PRIMO-B-3110-A					

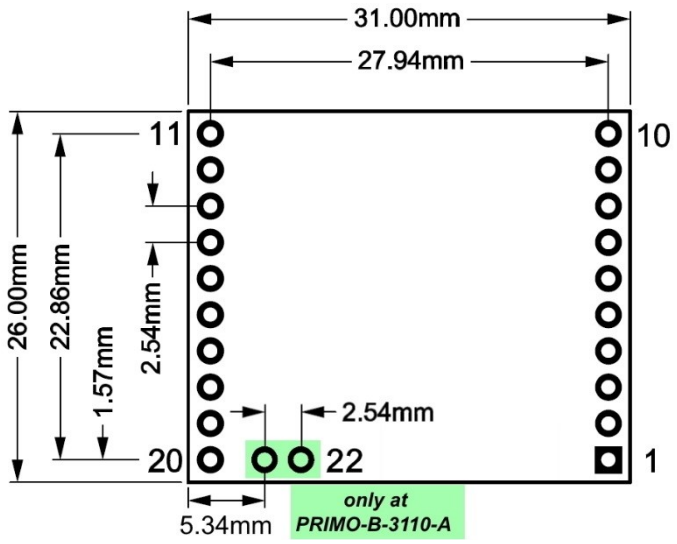
Optional accessories

- phg standard built-in antenna part No. 32562 (others on request)
- customized coaxial cable (on request)
- Adapter board with voltage control, integrated antenna and interface

Dimensions

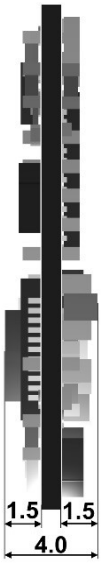
All dimensions shown are in mm.

Top view



Lateral views

PRIMO-B-1210-A
PRIMO-B-1410-A



PRIMO-B-2010-A

PRIMO-B-3110-A

Terminal assignment

Pin assignment of the two 10-pin headers (Pin 1 to 20)			
Pin	Function	Description	
1	Antenna signal ANT	External detached 50 Ω antenna	
2	Antenna signal ANT_GND		
3	U_{IN} + (+U_B)	External Power supply 3,3V/DC ± 5% resp. 5V/DC ± 5% (same potential like Pin 19 and Pin 20)	
4	U_{IN} - (GND)		
5	I/O-Signal	Processor Port, function depends on firmware	CMOS-TTL I_{max} 5mA “Active Low”
6	I/O-Signal	Processor Port, function depends on firmware	
7	I/O-Signal	Processor Port, function depends on firmware	
8	I/O-Signal	Processor Port, function depends on firmware	
9	I/O-Signal	Processor Port, function depends on firmware	
10	/RST	External reset signal = “active low”	
11	RxD / Data Input	Interface serial asynchronous	CMOS-TTL, with serial protective resistor 390 Ω
12	TxD / Data Output		
13	I/O-Signal	Processor Port, function depends on firmware	CMOS-TTL I_{max} 5mA “Active Low”
14	I/O-Signal	Processor Port, function depends on firmware	
15	I/O-Signal	Processor Port, function depends on firmware	
16	RST	External reset signal = “active high”	
17	Output	Processor Port, function depends on firmware	CMOS-TTL I_{max} 5mA “Active Low”
18	Ausgang	Over 270 Ω resistor on + 3,3V respective. Over 510 Ω resistor on + 5V	e.g. LED
19	U_{IN} – (GND)	External Power supply 3,3V/DC ± 5% resp. 5V/DC ± 5% (same potential like Pin 3 and Pin 4)	
20	U_{IN} + (+U_B)		
for PRIMO-B-3110-A:			
21	*SAM /RST*	*Connection of ext. SAM module* ***(only at PRIMO-B-3110-A)***	
22	*SAM DATA*		

Reset (RST)
The internal reset signal is generated by the module and need not be made available from the user. These signals can be used for synchronization, etc. The external signal overmodulate the internal.

Firmware download
Firmware download via serial asynchronous interface (RxD/TxD) with an own PC bootloader program.

Connection / further processing
The built-in module is directly solderable (e. g. with 2 pin headers)

- Grid 2,54 mm
- pin ∅ max. 1,0 mm

Detached external antenna

- Customized antenna designs are possible and can be developed by phg.

Technical integration and design support is offered on request

Functionally tested transponder media

Transponder type	PRIMO-B-1210-A PRIMO-B-1410-A (LEGIC prime/advant)	PRIMO-B-3110-A (MIFARE classic/DESFire)	PRIMO-B-2010-A (125 kHz)
LEGIC MIM 256	X		
LEGIC MIM 1024	X		
LEGIC ATC256-MV410 (ISO 15693)	X		
LEGIC ATC2048-MP110 (ISO 14443A)	X	X (nur CSN/UID)	
LEGIC ATC4096-MP310 (ISO 14443A)	X	X (nur CSN/UID)	
LEGIC ATC4096-MP311 (ISO 14443A)	X	X (nur CSN/UID)	
LEGIC AFS4096-JP10/11/12 (ISO 14443A)	X	X (nur CSN/UID)	
LEGIC ATC1024-MV010 (ISO 15693)	X		
LEGIC ATC1024-MV110 (ISO 15693)	X		
LEGIC CTC4096-MP410 (Prime)	X		
LEGIC CTC4096-MP410 (ISO 14443A)	X		
LEGIC CTC4096-MM410 (Prime)	X		
LEGIC CTC4096-MM410 (ISO 14443A)	X		
LEGIC CTC4096-MM410 (ISO 15693)	X		
ISO 14443A-Transponder (UID/CSN)	X	X	
ISO 15693-Transponder (UID/CSN)	X		
SONY FeliCa subset	X		
INSIDE Secure (UID/CSN)	X		
Mifare Classic 1k	X	X	
Mifare Classic 4k	X	X	
Mifare DESFire EV1	X	X	
Mifare DESFire EV1 70pF	X	X	
Mifare DESFire EV1 120pF Speed	X	X	
Mifare DESFire EV1 8K	X	X	
Mifare DESFire EV1 8K 70pF Speed	X	X	
Mifare DESFire EV2 4K	X	X	
Mifare DESFire EV2 8K	X	X	
Transparent, ISO14443A		X	
Transparent, ISO14443A Layer 3	X		
Transparent, ISO14443A/B Layer 4 subset	X		
Transparent, ISO15693 Layer 3	X		
Transparent, NFC Forum Type 2 Tag	X		
Transparent, NFC Forum Type 3 Tag	X		
hitag 1			X
hitag 2			X
hitag S			X
µem 4102 (read only)			X
µem V4150			X

Notes on the selection of transponder media

The support of the transponder media listed below is generally dependent on the respective variant reader technology (hardware platform) and on the respective reader firmware.
The listing of the transponder media is without guarantee of completeness.
Further information can be received on request

Attention:
Recommendation by using of Smart Card chips for LEGIC “card in card“ solutions:
Before use or planned application an aptitude test and functional test of the suitable medium should be carried out.
Detailed information about the approach on request.

When required we offer support in the transponder media analysis as well as the aptitude test and functional test.

General information

Note on the soldering process

A reflow or hot air soldering process should be avoided. Only hand or selective soldering is recommended.
The phg company expressly excludes all liability for damage caused by a soldering process that is not recommended.

Conformity statement

This product complies to the common legal requirements if used according to regulations. We provide you the EU declaration of conformity on demand.
The integrator is responsible that his products with built-in PRIMO-B-XX1X-X are according to the country-specific guidelines. It is a country-specific conformity assessment carried out by applying the relevant standards.

Waste Disposal

This product **must not** be disposed in normal household waste!