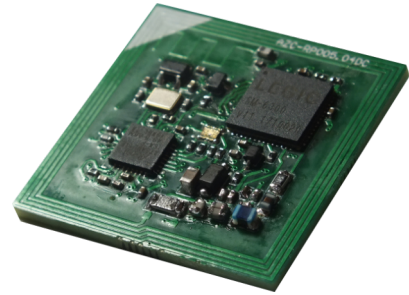


# Security RFID/BLE Module

## RM3030V3485

- Wide range of supported radio standards
- LEGIC Master-Token System Control (MTSC) system
- Small OEM PCB dimensions with antenna
- Low power consumption
- Communication via RS-485



## Introduction

The RM3030V3 is OEM Module based on the LEGIC SM-6300 chip, small dimensions RF card reader with Bluetooth communication. Reader support: ISO 14443A, ISO 14443B, ISO15693, INSIDE Secure, LEGIC RF, Sony FeliCa subset (NFC Forum Type 3 Tag), ST SR series and Bluetooth V5.0 (Bluetooth Low Energy). Small board dimensions (30x30mm) and large numbers of GPIO make it great for application in more complex system where RF and BLE communication are required.

Supported radio standards		
Radio standard	Legic	Other vendors
<b>LEGIC RF (ADVANT i PRIME)</b>	MIM22, MIM256, MIM1024, CTC4096-MP410, CTC4096-MM410	---
<b>ISO 14443A</b>	ATC512-MP, ATC2048-MP, ATC4096-MP, CTC4096-MP410, CTC4096-MM410, AFS4096-JP	Infineon SLE, SmartMX, MIFARE Ultralight, MIFARE Classic, MIFARE Plus, MIFARE DESFire, NFC P2P
<b>ISO 14443B</b>	---	Infineon SLE
<b>ISO 15693</b>	ATC128-MV, ATC256-MV210, ATC256-MV410, ATC1024-MV110, ATC1024-MV010, CTC4096-MM410	EM 4035, Infineon SRF55VxxP, Tag-It HFI
<b>INSIDE Secure (inly UID)</b>	---	INSIDE Secure
<b>SONY FeliCa</b>	---	SONY FeliCa, NFC P2P

Technical specification		
Parameter	Values	
Radio frequency	13.56 MHz	
Reading distance	ISO 14443A	3,5 cm
	ISO 14443B	4 cm
	ISO 15693	5 cm
	LEGIC RF	5 cm
Communication interfaces	Rs-485 OSDP (v2.1.7), Modbus	
Signalization	LED diodes (green, red, blue), piezoelectric buzzer	
Supply voltage	Min 5 V DC	Max 24 V DC
Power consumption	Up to 60 mA	
Surge protection	Power line	60V
	RS-485	Yes
Working temperature	Min -25°C	Max +65°C
Dimensions	30x30 mm	

## Device Description

Communication between the reader and the identifiers uses transmission in the 13.56 MHz band. Its main purpose is systems and applications that require the recording and reading of information stored in the card memory, such as: access control, electronic ticket, data access authorization, work time recording, etc. The output data format can be easily adjusted to different systems. Data on the card can be saved and read by the reader.

## Security

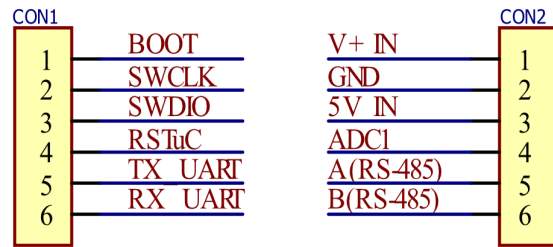
The security of the solution is based on the LEGIC Master-Token System Control (MTSC) system, allowing only designated cards and readers to work together within specially generated codes. This security system is based on physical Master-Token cards. The cardholder fully controls the security of the system. No passwords or access codes are used, which effectively prevents unauthorized disclosure of data. Data and applications are protected in various parts of the system with cryptographic methods using AES 128/256 bit, DES, 3DES algorithms.

## I/O description

All signals are provided on 2 connectors CON1 and CON2.

Pin description	
Function	Comment
<b>CON1 (testing and development) If unused, keep pins open.</b>	
BOOT	Force uC to software update
SWCLK	SWD clock
SWDIO	SWD data input/output
RST	uC Reset (active low)
RxUart	Independent debug port RX
TxUart	Independent debug port RX
<b>CON2</b>	
7V - 24V (max 30V)	Power supply DC
GND	GND Power
5V	Power supply DC
ADC1	Analog to digital converter
A	RS-485
B	RS-485

I/O Pins Voltage Characteristics		
Input low-level voltage	MAX	0,99 V
Input high-level voltage	MIN	1,8 V
Output low-level voltage	TYP	0,3 V
	MAX	0,6 V



User can identify available hardware configuration by checking configuration on uC pins. More information are shown in table below.

Pin description		
Pin PA10	Pin PA11	Variant
0	0	RS-485
0	1	RS-232
1	0	I2C
1	1	Wiegand

## RS-485

The RS-485 serial bus interface standard transmits differential balanced signals. This has strong anti-interference ability in the common mode, allows a twisted pair transmitter driver on a number of connected devices. The communication distance is up to 1200 meters, the rate is up to 20Mbps, and it can be used in high noise environments, such as industrial automation. In an RS485 network at any time only one device is in the sending state, and all other equipment should be in the receiving state.

RS-485 works on pins A and B on connector 2.

Standard defining the electrical characteristics for use in serial communications systems. Default baudrate RM3030v3 RS-485 is 115200 b/s. Pins A and B are secured protected against overvoltage.

## Microcontroller

The device uses the ATSAM11E16A microcontroller.

## MODBUS

The MODBUS protocol is a communication protocol based on master/slave or client/server architecture. The primary purpose of the protocol is facilitating reliable, fast communication between automation and field devices.

Appropriate firmware is required for proper use of the reader with this protocol. Please check ordering information.

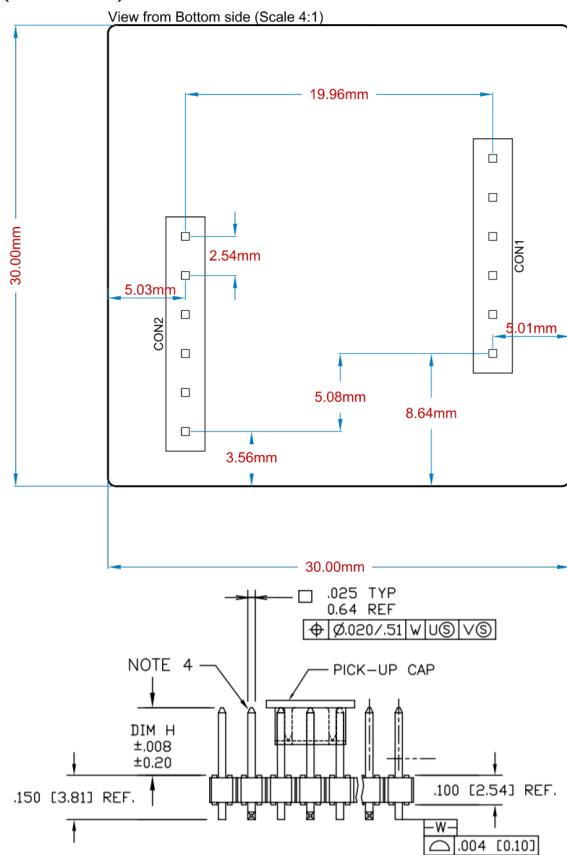
## OSDP

OSDP is an open security standard that ensures two-way communication between readers and controllers. Such integrated devices can support advanced data encryption applications during transmission.

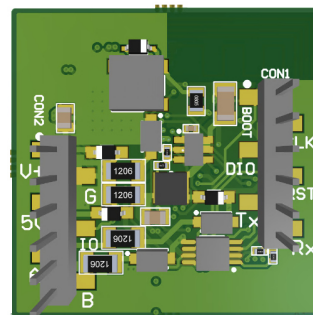
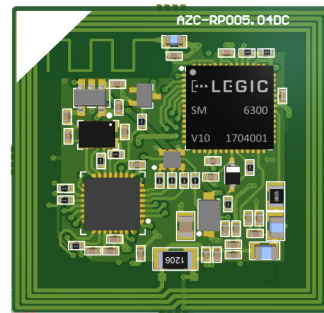
Appropriate firmware is required for proper use of the reader with OSDP (v2.1.7) Please check ordering information.

## Dimensions

Below you can find drawing of the bottom side (scale 4:1) with dimensions.



Connector properties	
<b>Function</b>	
Square headers	0.64 mm
Pin Material	Copper Alloy
Boday Material	High-temperature thermoplastic (UL94V-0)
Mating cycles	50
Pitch	2,54 mm
Rohs	Yes
Operating Temperature	-55°C ~ 105°C
Tolerance	ISO 406, ISO1101
<b>Electrical properties</b>	
Insulation Resistance	1000MΩ min
Withstanding Voltage	1500V AC
Current Rating	3A continuous
Low Level Contact Resistance	20mΩ max



## Ordering

The device should be ordered in the configurations given in the table below, by sending the form to the email address:

**biuro@rcse.pl.**

Product code	Firmware	Interface
RM3030V3485	No	485
RM3030V3485FO	Yes (OSDP)	485
RM3030V3485FM	Yes (Modbus)	485