



piSmart-Gateway-LE

Article number: 911131018



Unique features

- 1x CAN-Bus
- 1x RS485
- NFC interface
- Ultra Low Energy (wake up at the touch of the button)
- Charging via bicycle dynamo
- active rim lock control
- vehicle-Wakeup
- Buzzer
- brightly lit RGB LED
- USB-C charging

Overview

The piSmart-Gateway-LE is an energy-saving IoT gateway. It is used for sharing services, access control or as a retrofit module for upgrading older machines.

- › RFID for reading RFID cards or tags
- › Digital/analogue I/Os for the connection of further sensors
- › Multiple communication interfaces for data exchange with various devices
- › Possible periodic wake-up of the system for a long runtime

Examples of application

As a low-power module, it is predestined for applications that require low maintenance. Sharing services are supported by:

- › Sharing, e.g. car, bike, scooter, watercraft
- › Access control
- › Data logging
- › Asset tracking
- › Control of industrial plants
- › Control of vehicles
- › Emergency switch

The gateway is specifically designed for extreme environments with limited space and can withstand water, shock, vibration and extreme temperature conditions.

Application-specific modifications are possible - the form factor, interfaces as well as the performance can be customized.



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Technical specifications

Microcontroller/Processor

Processor	ESP32-S3-WROOM-1 32bit Xtensa LX7 Mikroprozessor up to 240MHz, Dual-Core
SRAM	512KB
Flash	4MB, 8MB oder 16MB
ROM	384KB
SRAM in RTC	16KB

Additional Features

Sensors	3G-Sensor: · 3 axis · 12-bit · $\pm 2g$ / $\pm 4g$ / $\pm 8g$ / $\pm 16g$
other integrated circuits	RTC 4x ideal Diodes
Optical Features	3x RGB-LED Buzzer
Control Features	2x Taster (Boot und Reset)

Enviromental Conditions

Operating Location	Indoor, Outdoor: only within the limits mentioned below, protect from direct sun
Operating Temperature	with Voltage Supply: -40°C to +60°C when used with Battery Pack: -10°C to 40°C
Storage Temperature	-40°C bis +60°C
Transport Temperature	-40° to +80 °C (61131-2, Ch. 6.2 Duration 16 h +/- 1h)
Gradient of Temperature	5 K/min (avoid dew)
Relative Humidity	Max. 70%, avoid dew
Height above Sea Level	up to 2000m
Height above Sea Level (Storage/Transport)	up to 3000 m, DIN 60204 / IEC 61131-2; at least 70kPa Air Pressure
Verschmutzungsgrad	Pollution Degree 2



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Interfaces

USB-C 2.0	1x USB-C for Charging of the battery/Voltage supply
NFC	supports ISO14443 und ISO15693
CAN	1x CAN Transceiver, up to 1Mbit/s
Programming Interface	USB-C
Digital GPIO P1:3 "COM_A"	
Operating Voltage	[0V-3,3V]
Withstand Voltage	3,6V
Low-Level VL (log. "0")	[0V-0,825V]
High-Level VH(log. "1")	[2,475-3,3V]
I @ log. 1	I_IN: max. 50nA, I_OUT: max. 40mA
Reference Potential	piSmart-Gateway-LC2 Ground potential
Protection	Short-Circuit to ground
Digitaler GPIO P1:4 "COM_B"	
Operating Voltage	[0V-3,3V]
Withstand Voltage	3,6V
Low-Level VL (log. "0")	[0V-0,825V]
High-Pegel UH(log. "1")	[2,475-3,3V]
I @ log. 1	I_IN: max. 50nA, I_OUT: max. 40mA
Reference Potential	piSmart-Gateway-LC2 Ground potential
Protection	Short-Circuit to ground
digital GPIO P1:5 "Status"	
Operating Voltage	[0V-3,3V]
Withstand Voltage	3,6V
Low-Level VL (log. "0")	[0V-0,825V]
High-Level VH(log. "1")	[2,475-3,3V]
I @ log. 1	I_IN: max. 50nA, I_OUT: max. 40mA
Reference Potential	piSmart-Gateway-LC2 Ground potential
Protection	Short-Circuit to ground
Analog Output P1:1 "VCC_Lock"	
Operating Voltage	nom. 9V, [5,1V - 14,1V]
Withstand Voltage	14V continuous
Output Current	max. 0,5A
Digitaler Output P13:3 "Optorelais" (Open Drain)	
Operating Voltage	[0V - 90V]
Withstand Voltage	100V continuous
Nominal Voltage VOUT	V_OPTO (max. 90V)
Low-Level VL (log. "0")	[0V]
High-Level VH(log. "1")	Voltage at P13:3
I @ log. 1	max. 100mA
Reference Potential	piSmart-Gateway-LC2 Ground potential
Protection	galvanically isolated, 1.5kV isolation voltage, short-circuit to ground and supply



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Voltage Supply

Voltage VDC	12V nom., [9V-45V]
max. Power Pmax	6,65W
max. Current Imax	0,9A
max. Current @ Booting	0,9A
Battery	Lithium-Ion Battery Pack, 2750mAh / 3,7V (optional)
Withstand Voltage	48V continuous
VB(t) - Turn-Off Threshold	5VDC
VB - Turn-Off Threshold Time	> 10 ms
VB(t) - Turn-On Threshold	6VDC
VB(t) - Undervoltage Lookout	< 9VDC
VB(t) - Overvoltage Lookout	> 45 V
Reverse Polarity Protection	yes

Electrical Safety

EN 61010-1:2011-07	Safety requirements for electrical equipment for measurement, control and laboratory use
EN 60730-1:2014-07	Automatic electrical controls

Electromagnetic Compatibility

Directive 2014/30/EU	Radio Equipment Directive
EN 300 328 V2.2.2 (2019-07)	Wideband transmission systems - Data transmission equipment operating in the 2,4 GHz band
EN 300 440-2 V1.4.1 (2012-08)	Radio equipment to be used in the 1GHz to 40GHz frequency range, Part 1
EN 300 440-2 V1.4.1 (2012-08)	Radio equipment to be used in the 1GHz to 40GHz frequency range, Part 2
EN 300 330 V2.1.1	Radio equipment to be used in the 9kHz to 40MHz frequency range

Additional Directives

2011/65/EU	Restriction of certain Hazardous Substances (ROHS)
2012/19/EU	Waste of Electrical and Eletronic Equipment (WEEE)
EC 1907/2006	Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)



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Mechanic

Measurement	88,2mm x 111mm x 30 mm
Weight	tbd
IP-Class	IP65 (DIN EN 60529:2014-09; VDE 0470-1:2014-09)
Material	ABS or PA6, Aluminium
Resistance of the Housing against aggressive chemicals	cooling lubricants and hydraulic fluids
Resistance of the Housing against UV-Light	yes
Mounting Type	screws

Technical drawing (dimensions in mm)

