

# EMB-LR1276S

Long Range 868 MHz  
LoRaWAN® OEM Micro Module



## Technical Specifications

**EMB-LR1276S** is the new ultra-low power wireless OEM module featuring the Semtech LoRa® long range modulation providing ultra-long range communication and high interference immunity on the 868 MHz radio band. The **EMB-LR1276S** with its 11,5mm x 11,5mm form factor is the smallest LoRaWAN® module available on the market. It embeds a full LoRaWAN® compliant Class A and Class C protocol enabling the connection to any LoraWAN® network infrastructure.

**EMB-LR1276S** is based on the new Microchip SAMR34 SiP, a 32-bit ARM Cortex M0+ coupled with a sub- 1GHz RF transceiver based on Semtech SX1276 which fully supports 868 MHz bands. The MCU is equipped with up to 256 KBytes of FLASH and up to 40 KBytes of SRAM memory. The module integrates two crystals, one at 32MHz and one at 32KHz and a Crypto Unit protect the communication between the module and external interfaces.

**EMB-LR1276S** can communicate with other devices through a wide range of interfaces: UART, I2C and SPI ports, up to 17 digital and 8 analog I/O ports useful for the management of external devices and interfaces. Thanks to the extremely reduced power consumption of the Microchip SAMR34 (less than 1  $\mu$ A in XLS sleep mode), the **EMB-LR1276S** is a perfect solution to implement long life battery powered devices.

**EMB-LR1276S** firmware can be easily developed starting from the Embit SDK, allowing to establish LoRaWAN® compliant end-nodes or custom point-to-point networks.

The Embit evaluation kit (**EMB-LR1276S-EVK**) contains all the documentation, software and hardware tools to get started with the **EMB-LR1276S** module.

With the LoRaWAN® disruptive long range wireless technology, the **EMB-LR1276S** delivers dramatic performance improvements for the AMI, IoT, M2M mobile and consumer markets. It offers a unique network scalability and 10x range extension over existing sub-1GHz solutions.

<b>MCU</b>	Microchip SAMR34 SiP (ATSAMD20Gxx + SX1276)
<b>Transceiver</b>	Semtech SX1276
<b>Memory</b>	40 KB RAM/ 265 KB Flash
<b>Frequency</b>	863 ÷ 870 MHz
<b>Tx output power</b>	up to +14 dBm (868 MHz)
<b>Rx sensitivity</b>	up to -136 dBm
<b>Data Rate</b>	0.3 ÷ 37.5 kbps LoRa® 0.6 ÷ 300 kbps (G) FSK
<b>Interfaces</b>	USB/UART/I2C/SPI/ADC
<b>Digital I/O</b>	Up to 17 lines
<b>Analog I/O</b>	8 ADC channels
<b>Outdoor link range</b>	Up to 15 km
<b>Supply voltage</b>	1.8 – 3.6 V
<b>Tx current</b>	39 mA @+14 dBm
<b>Rx current</b>	9.9 to 12 mA
<b>Sleep Current</b>	$\leq 1 \mu$ A XLP sleep mode
<b>Antenna</b>	U.FL connector GSG pcb pads
<b>Dimensions</b>	11.5mm x11.5mm x 2.0mm
<b>Connector</b>	32 PINS LGA Connector
<b>Temperature Range</b>	-40 °C +85 °C
<b>Certifications</b>	CE
<b>Ordering information:</b>	EMB-LR1276S/PC with GSG PADS only EMB-LR1276S/UL with U.FL connector for external antenna



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