



iM891A-XL

LOW COST AND HIGH RANGE

iM891A-XL is a low cost and high output power radio module supporting LoRa®, LoRaWAN® and wireless M-Bus.

With an integrated +22 dBm power amplifier and a sensitivity of -149 dBm, a sensational link budget of approx. 170 dB can be reached. With this, ranges well beyond 15 km can be achieved.

The iM891A-XL supports the wireless M-Bus modes S, C, T and C/T with packet formats A and B as well as the OMS security modes 5 and 7. In addition, the sophisticated IMST ProLink protocol stack is also available. It combines compliant LoRaWAN functions and proprietary LoRa functions within one stack.

This makes the iM891A-XL an ideal solution

for numerous applications such as meter reading, wireless M-Bus gateway expansion, LPWAN and IoT sensors, as well as home-, building- and industrial- automation.



ORIGINAL SIZE

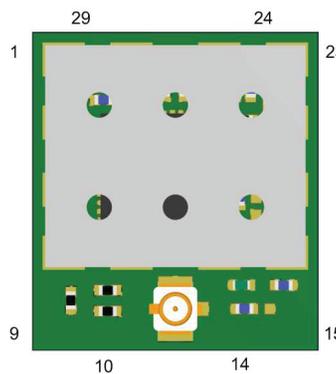
NEW FEATURES

- Frequency 863 - 870 MHz
- Small footprint 16.8 x 18.6 mm
- 32-Bit MCU ARM® Cortex® M4
- Unique device identifier 64 bit UID
- 256 Kbyte Flash
- 64 Kbyte RAM
- 128/256 bit AES hardware encryption
- True random number generator (RNG)
- 32 MHz MCU TCXO
- Integrated +22 dBm power amplifier
- Max. sensitivity down to -149 dBm
- Modulations CSS¹, LR_FHSS², (G)FSK
- Spreading factors 5 to 12
- Bandwidth LoRa 7.6 – 500 kHz
- Ultra low power 1 μ A
- Voltage 1.8 – 3.6 V
- High range > 15 km

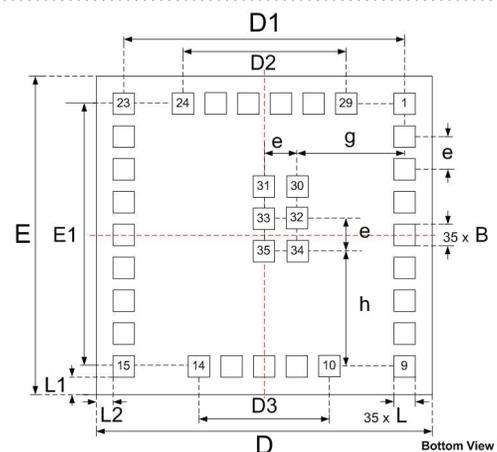
1: Chirp Spread Spectrum
2: Long Range Frequency Hopping Spread Spectrum



DIMENSION	MIN.	TYP.	MAX.
B	0.75	0.8	0.85
D	16.6	16.8	17.0
D1		15.0	
D2		10.5	
D3		8.4	
e		2.1	
g		5.4	
h		7.35	
E	18.4	18.6	18.8
E1		16.8	
L	0.75	0.8	0.85
L1		0.5	
L2		0.5	
H	-	3.3	-



Top View



Bottom View

Notes:

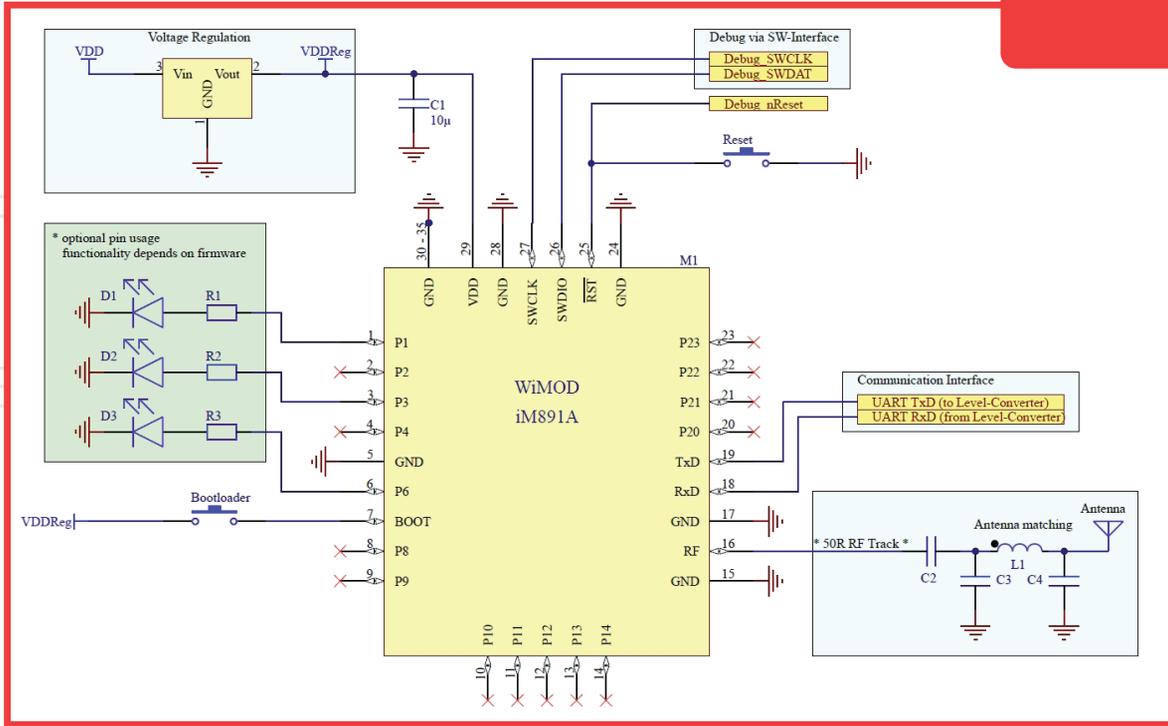
1) All dimensions are in mm, unless otherwise noted.

2) All pitches are represented by(e), unless otherwise noted.

• Available with antenna connector (u.fl) or with 50 Ohm



TYPICAL APPLICATION SCHEMATIC



PIN	NAME	MCU PIN	DESCRIPTION	PIN	NAME	MCU PIN	DESCRIPTION
1	P1	PA12	DIO / ADC_IN8*	17	GND	-	Ground connection
2	P2	PB12	DIO*	18	RxD	PA11 PA10	USART1_RX
3	P3	PC13	DIO / WKUP2*	19	TxD	PA9	USART1-TX
4	P4	PA15	DIO*	20	P20	PA5	DIO / SP11_SCK*
5	GND	-	Ground connection	21	P21	PA6	DIO / SP11_MISO*
6	P6	PB3	DIO / ADC_IN2*	22	P22	PA7	DIO / SP11_MOSI*
7	BOOT	PH3-BOOT0	High active Bootloader Pin 0, internally pulled down by 47 kΩ	23	P23	PA4	DIO / SP11_NSS*
8	P8	PB8	DIO / I2C1_SCL*	24	GND	-	Ground connection
9	P9	PB7	DIO / I2C1_SDA*	25	nRST	NRST	Low active Reset, internally pulled up by approx. 40 kΩ
10	P10	PB4	DIO / ADC_IN3*	26	SWDIO	PA13	SWDIO
11	P11	PA0	DIO / WKUP1*	27	SWCLK	PA14	SWCLK
12	P12	PA1	DIO*	28	GND	-	Ground connection
13	P13	PA2	DIO / USART2_TX*	29	VDD	-	Supply voltage
14	P14	PA3	DIO / USART2_RX*	30-35	GND	-	Ground connection
15	GND	-	Ground connection				
16	RF	-	External 50 Ω port for monostatic antenna connection				

*depends on used firmware, available on request

HARDWARE	SOFTWARE	PART NUMBER	DESCRIPTION
iM891A-XL	LoRaWAN	404925	iM891A-XL with 50 Ohm Pad and LoRaWAN ProLink firmware
	Wireless M-Bus	404921	iM891A-XL with 50 Ohm Pad and wireless M-Bus firmware
iM891A-XL u.fl	LoRaWAN	404923	iM891A-XL with u.fl connector and LoRaWAN ProLink firmware
	Wireless M-Bus	404922	iM891A-XL with u.fl connector and wireless M-Bus firmware

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