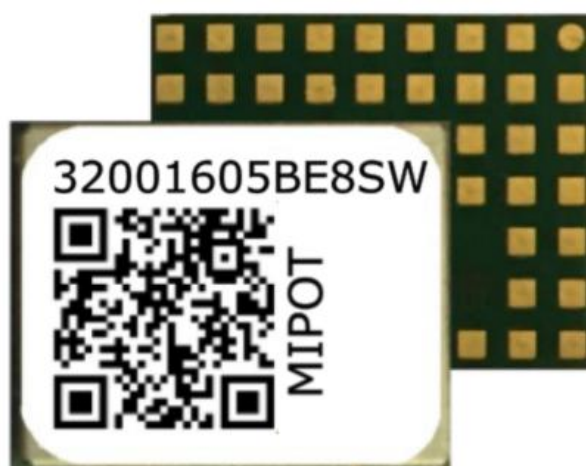


Wireless Protocol Modules MiP Series

32001605BE8SW

Host Based wM-Bus Module

Datasheet



Overview

The 32001605BE8SW is a Wireless M-Bus transceiver operating in the 868 MHz SRD Band.

Thanks to its small LGA form factor (11.3 mm x 8.9 mm) and its low power consumption, this module allows the implementation of highly integrated low power (battery operated) solutions for water, gas, heat or electricity metering applications, both on meter or concentrator devices.

The module supports various operating modes (S, T, R, C) to meet the requirements of one-way or two-way data communication, in stationary and mobile systems.

I²C and UARTs allow integration flexibility and easy development of customer products.

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1. Product Features

Mechanical highlights:

- ✓ Extremely compact dimensions
- ✓ LGA pattern

Low power characteristics:

- ✓ Sleep (Deep Stop) current consumption 1.5 μ A
- ✓ Shutdown current consumption 14 nA

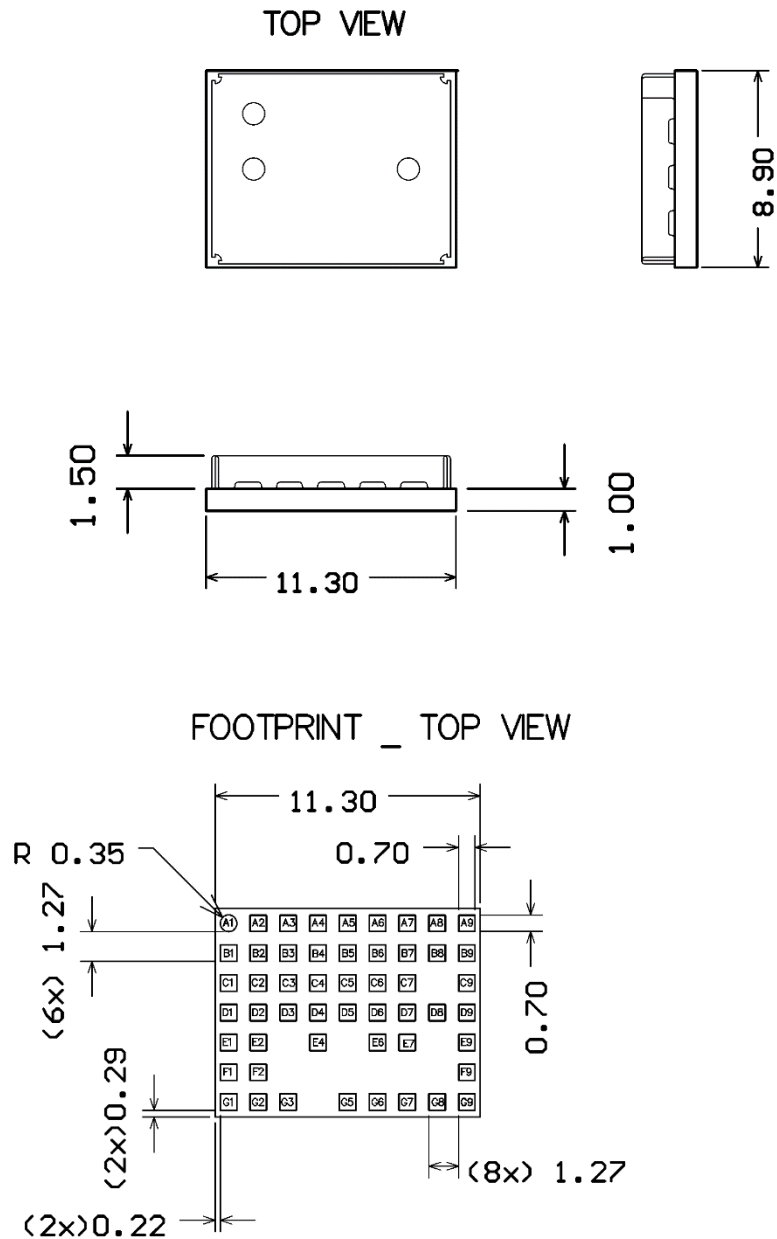
RF performances:

- ✓ Up to -115 dBm Sensitivity
- ✓ +14 dBm Output Power

Additional features:

- ✓ Smart serial interface selector (UART, LPUART, I²C)

2. Mechanical Dimensions



Note: Dimension in mm. General tolerance $\pm 0.1\text{mm}$. The tolerance is not cumulative

3. Pin Definition

Top View

Ⓐ1	A2	A3	A4	A5	A6	A7	A8	A9
B1	B2	B3	B4	B5	B6	B7	B8	B9
C1	C2	C3	C4	C5	C6	C7		C9
D1	D2	D3	D4	D5	D6	D7	D8	D9
E1	E2		E4		E6	E7		E9
F1	F2							F9
G1	G2	G3		G5	G6	G7	G8	G9

Bottom View

A9	A8	A7	A6	A5	A4	A3	A2	Ⓐ1
B9	B8	B7	B6	B5	B4	B3	B2	B1
C9		C7	C6	C5	C4	C3	C2	C1
D9	D8	D7	D6	D5	D4	D3	D2	D1
E9		E7	E6		E4		E2	E1
F9							F2	F1
G9	G8	G7	G6	G5		G3	G2	G1

Pad	Name	Type	Pad	Name	Type
A1	RFU	-	D1	GND	S
A2	NC	-	D2	NC	-
A3	RFU	-	D3	NC	-
A4	LPUART1 TX	I/O	D4	GND	S
A5	LPUART1 RX	I/O	D5	NC	-
A6	RFU	-	D6	NC	-
A7	I ² C1 SCL	I/O	D7	NC	-
A8	I ² C1 SDA	I/O	D8	NC	-
A9	VDD	S	D9	RFU	-
B1	NWAKE	I	E1	GND	S
B2	NDATA INDICATE	O	E2	GND	S
B3	NC	-	E4	NC	-
B4	NC	-	E6	NC	-
B5	USART1 TX	I/O	E7	NC	-
B6	USART1 RX	I/O	E9	NC	-
B7	NC	-	F1	ANT	RF I/O
B8	NC	-	F2	GND	S
B9	VDD	S	F9	NC	-
C1	RFU	-	G1	GND	S
C2	NC	-	G2	GND	S
C3	NC	-	G3	GND	S
C4	GND	S	G5	NRST	I
C5	NC	-	G6	NC	-
C6	NC	-	G7	NC	-
C7	NC	-	G8	NC	-
C9	GND	S	G9	NC	-

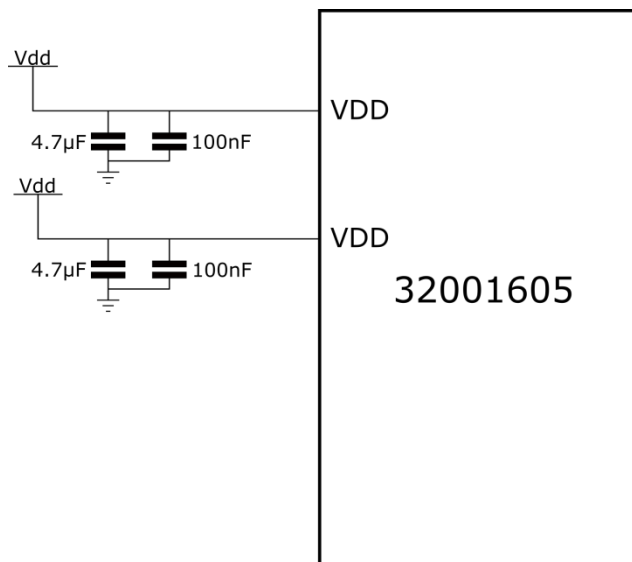
Note: NC means “do not connect”, leave the pin floating.

RFU means “Reserved for Future Use”.

4. Hardware Integration

4.1. Decoupling capacitors

Each power supply pin must be decoupled with capacitors with the values suggested in the figure.



4.2. Layout guidelines

For better noise rejection, put the decoupling capacitors as close as possible to the power pins of the module, giving precedence to the low value ones.

The trace connecting to the RF pin must have an impedance of 50 Ω . For better performance, connect the GND pads around the RF pin without thermals.

5. Electrical Characteristics

5.1. Absolute Maximum Ratings

Parameter	Max.	Unit
Supply Voltage (VDD)	3.9	V
Radio Frequency Input Level, pin F1	0	dBm
Voltage Standing Wave Ratio (VSWR) at RF Input, ANT, pin F1	10:1	
I/O Pin voltage	VDD + 0.3	V
Storage Temperature	-40 ÷ 100	°C
Operating Temperature	-40 ÷ 85	°C

5.2. Operating Condition

Note: All RF parameters measured with input (pad F1, ANT) connected to a 50 Ω impedance signal source or load.

5.2.1. GENERAL ELECTRICAL CHARACTERISTICS @ 25 °C

Parameter	Min.	Typ.	Max.	Unit	Notes
Supply Voltage (VDD)	2.3	-	3.6	V	
Deep Stop DC Current	-	1.5	-	μ A	1
Shutdown DC Current	-	14	-	nA	1
Data Rate 2-FSK	-	-	100	kbit/s	

5.2.2. RECEIVER ELECTRICAL CHARACTERISTICS @ 25 °C

Parameter	Min.	Typ.	Max.	Unit	Notes
DC Current Drain	-	14	-	mA	1
Operating Frequency	868.03	-	869.95	MHz	2
Sensitivity mode S	-	-110	-	dBm	3, 4
Sensitivity mode T	-	-108	-	dBm	3, 5
Sensitivity mode R	-	-115	-	dBm	3, 6
Sensitivity mode C	-	-108	-	dBm	3, 7
Output Logic Low	GND	-	0.05	V	
Output Logic High	VDD – 0.2	-	VDD	V	

5.2.3. TRANSMITTER ELECTRICAL CHARACTERISTICS @ 25 °C

Parameter	Min.	Typ.	Max.	Unit	Notes
Current Drain (CW @14 dBm)	-	53	-	mA	1
Operating frequency	868.03	-	869.95	MHz	2
Maximum Output power (50 Ω load)	-	14	-	dBm	1, 3, 8
RF Output Impedance	-	50	-	Ω	
Input Logic Low	GND	-	0.05	V	
Input Logic High	VDD – 0.2	-	VDD	V	

Notes:

- 1) Measured at power supply level of 3.0 V.
- 2) According to EN13757-4, modes S, T, R, C.
- 3) All RF parameters measured with input (pin F1, ANT) connected to 50 Ω impedance signal source or load.
- 4) Measured @ PER < 0.8 according to EN13757-4 Paragraph 5.
- 5) Measured @ PER < 0.8 according to EN13757-4 Paragraph 6.
- 6) Measured @ PER < 0.8 according to EN13757-4 Paragraph 7.
- 7) Measured @ PER < 0.8 according to EN13757-4 Paragraph 8.
- 8) In order to not exceed the maximum power permitted by the ETSI EN 300 220 regulation, choose an appropriate antenna system and power supply.

6. Safety note

To meet safety requirements, the module must be powered by an external power source that meets limits of ES1 and PS1 according to IEC 62368-1.

7. Application Notes

Title	Description	Doc
Manufacturing Process Information for LGA MiP Series Modules	Packaging information, Tape & Reel Specification, Reflow soldering information	AN_MNF002

8. Revision History

Revision	Date	Description
0.0	21.10.2025	Draft
0.1	20.11.2025	Updated sensitivity values
0.2	11.02.2026	Updated RX current drain value Updated sleep current value Updated supply voltage values Updated data rate value Updated “Pin Definition” table Changed module’s image
0.3	13.03.2026	Updated supply voltage min value
0.4	12.05.2026	Updated maximum output power value Updated TX current consumption value Added Shutdown current consumption