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KIM1

KINÉIS ARGOS-2 ®
TRANSMITTER MODULE

(rev 1.12 - January 2019, subject to modifications)

LOW POWER SATELLITE TRANSMITTER MODULE

- ARGOS2 RF signal and protocol processing
- Enabling GPS-free Doppler localization by satellite
- UART processor interface

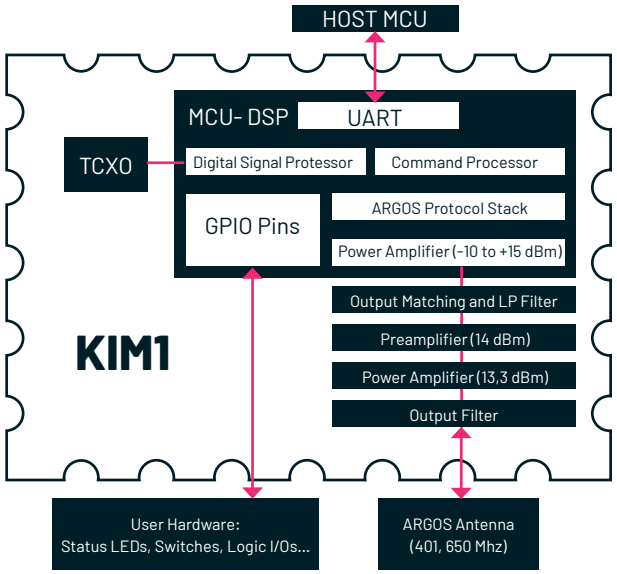
DEVICE OVERVIEW

Kinéis KIM1 is a low power transmitter module based on ARGOS-2 technology and fully-certified by the CNES. It enables communication with all the Kineis-Argos satellites to provide satellite connectivity and localization for IoT devices. The use of ARGOS RF signals and protocols ensures very low power consumption when sending data from anywhere around the world.

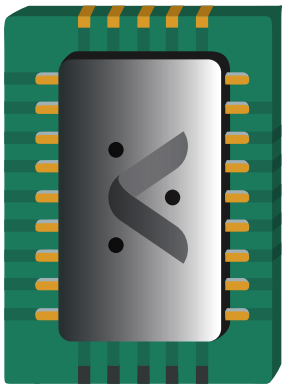
The module is specially designed for ease of use, to shorten development time and speed up time to market. The advanced command interface (AT command), as well as available GPIOs ensures that designers can quickly and easily integrate their end devices into ARGOS network.

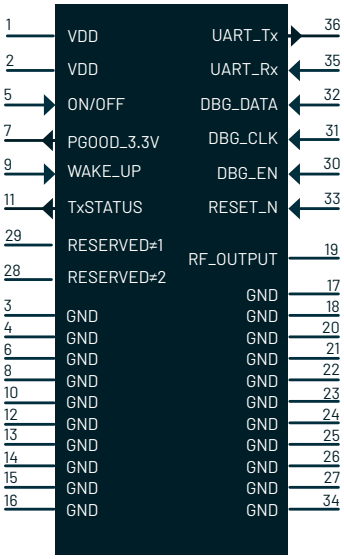
CLS
COLLECTE LOCALISATION SATELLITES

BLOCK DIAGRAM



PIN ASSIGNEMENTS

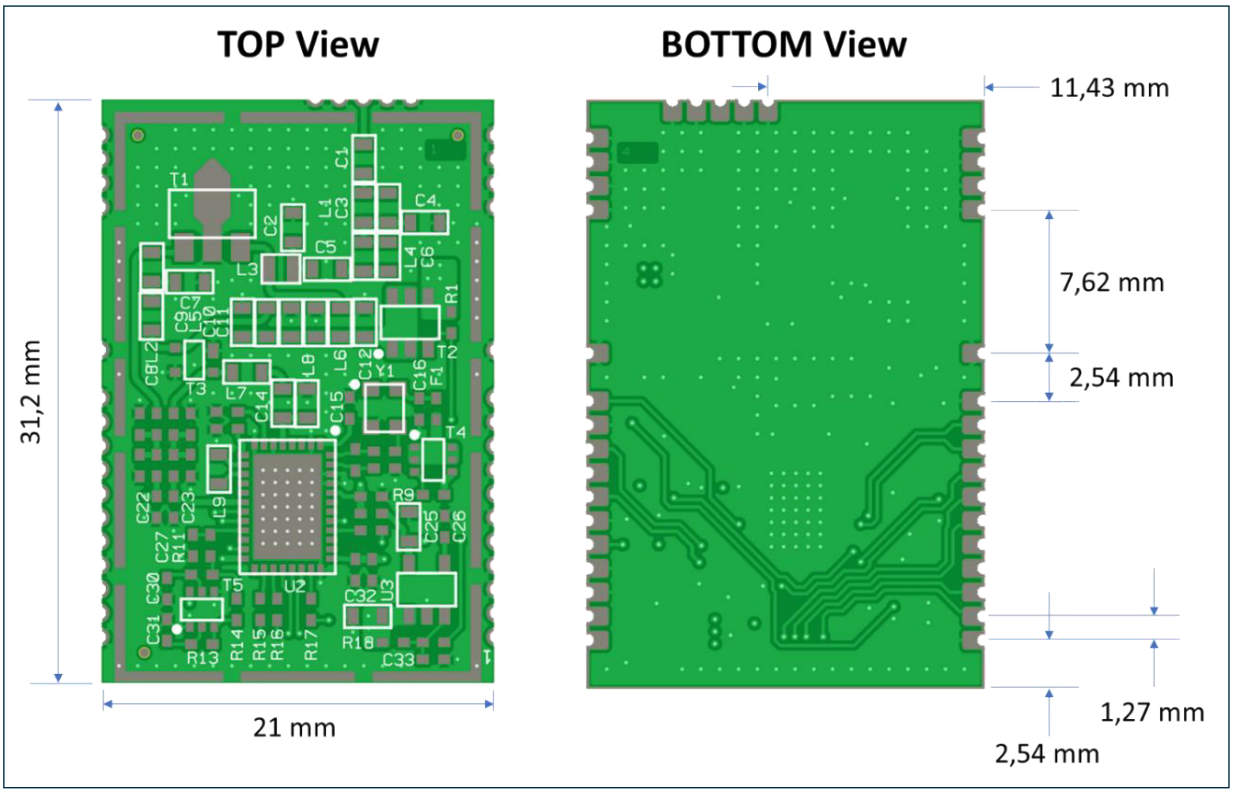




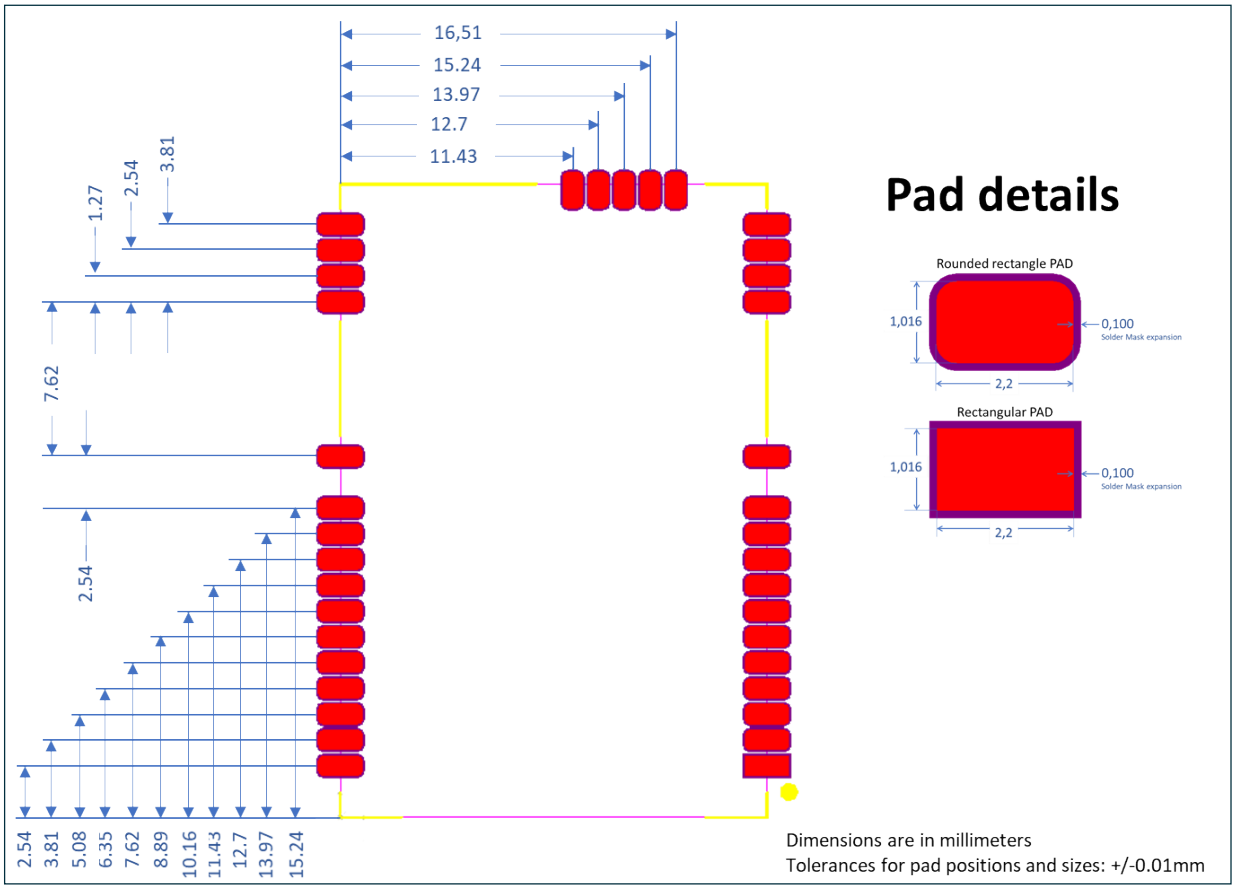
GENERAL SPECIFICATION

SPECIFICATION	DESCRIPTION
Supply Voltage	5V (+/-0,3V)
Frequency Band	399,910 - 401,680 Mhz
Modulation Method	BPSK
Maximun Over the Air data rate	400bps
RF Connection	Board edge connection
Interface	UART
RF Tx Power	Adjustable: 0.25 to 2 Watts (24 to 33dBm)
Package	Surface-mount module
Temperature (operating)	-20°C to +55°C
Temperature (storage)	-40°C to +115°C
Humidity	10% - 90% non-condensing
Size	31,2 x 21 x 3,5 mm
Certification	CNES

PHYSICAL DIMENSIONS (Dimension are in millimeters)



RECOMMENDED PCB FOOTPRINT (Dimension are in millimeters)



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TRANSMISSION STRATEGY

Kineis system offers the possibility to collect short messages of up to 31 Bytes per sending. With 7 satellites available today and more to come Kinéis system provides many timeslots per day during which data can be sent and collected by our satellites, enabling to send up to 2kB of useful data per day.

Kineis can provide you some support in defining the best transmission strategy to optimize power consumption and maximize satellite the probability of good reception of your data in our system.

INTERFACE COMMAND

KIM1 transmitter module serial interface is using a basic TTL 3.3V level signals with UART protocol. UART interface uses fixed parameters.

DEFAULT UART SETTINGS:

SPECIFICATION	DESCRIPTION
Baud Rate	4800 bps
Packet Length	8 bits
Parity Bit	No
Stop Bits	1 bit
Hardware Flow Control	No

INTERFACE COMMAND

UART COMMAND DESCRIPTION:

TX – Transmit one Argos message	
AT+TX= <band>, <freq>,<pwr>,<data>	Transmit one Argos message Parameters: **<band>** - B1, B2, B3 ... B9 that specifies the transmission frequency band • B1 [401.620-401.680] • B2 [401.540-401.600] • B3 [401.470-401.530] • B4 [401.390-401.460] • B5 [401.320-401.390] • B6 [401.120-401.180] • B7 [401.020-401.080] • B8 [399.980-400.040] • B9 [399.910-399.970] **<freq>** - an integer that specifies the transmission frequency the integer should be: - between 0 and 700 for B4 and B5 - between 0 and 600 for other band *exp: for B1* 0 – 401 620 000 Hz ... 300 – 401 650 000 Hz ... 600 – 401 680 000 Hz **<pwr>** - an integer that specifies the transmission power in mW 250 – 250 mW 500 – 500 mW 750 – 750 mW 1000 – 1000 mW 1500 – 1500 mW 2000 – not implemented yet **<data>** - user data in an hexadecimal string of maximum length: - 64 Hexa character when the ID number* is 7-digit hexadecimal number (28 bits) - 62 Hexa character when the ID number* is a 5-digit hexadecimal number (20 bits) **The ID number provided by CLS User Office* *Remark: When the data is not multiple of 32 bits, padding is performed*
AT+TX=?	Read command returns the previous AT+TX command that have been executed
Return message +TX_INFO: <transmission status>	After sending a correct transmission command, an asynchronous message is sent by the module <transmission_status> - an integer that specifies the transmission state 1 >Done 0 >Fail

PIN DESCRIPTION

PIN	NAME	TYPE	DESCRIPTION
1	VDD	Power	Positive supply terminal
2	VDD	Power	Positive supply terminal
3	GND	Power	Ground supply terminal
4	GND	Power	Ground supply terminal
5	ON/OFF	Input	ON/OFF control of the module
6	GND	Power	Ground supply terminal
7	PGOOD_3,3V	Output	3,3V power supply presence indicator
8	GND	Power	Ground supply terminal
9	WAKE_UP	Input	Activate or deactivate standby mode
10	GND	Power	Ground supply terminal
11	Tx_STATUS	Output	Transmition in progress or not
12	GND	Power	Ground supply terminal
13	GND	Power	Ground supply terminal
14	GND	Power	Ground supply terminal
15	GND	Power	Ground supply terminal
16	GND	Power	Ground supply terminal
17	GND	Power	Ground supply terminal
18	GND	Power	Ground supply terminal
19	RF_OUTPUT	RF Analog	RF signal pin (ARGOS)
20	GND	Power	Ground supply terminal
21	GND	Power	Ground supply terminal
22	GND	Power	Ground supply terminal
23	GND	Power	Ground supply terminal
24	GND	Power	Ground supply terminal
25	GND	Power	Ground supply terminal
26	GND	Power	Ground supply terminal
27	GND	Power	Ground supply terminal
28	RESERVED#2	Input/Output	Do not connect
29	RESERVED#1	Input/Output	Do not connect
30	DBG_EN	Input/Pull-down	In-circuit debugger enable
31	DBG_CLK	Input/Pull-up	Debug CLOCK
32	DBG_DATA	Input/Pull-down	Debug DATA
33	RESET_N	Input/Pull-up	Device Reset imput.
34	GND	Power	Ground supply terminal
35	UART_Rx	Input	Communication UART Receive (Data Rx)
36	UART_Tx	Output	Communication UART Transmit (Data Tx)
37	GND	Power	Ground supply terminal

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TECHNICAL SUPPORT

At Kinéis we work very closely with device manufacturers and integrators, enabling them to best use ARGOS connectivity. We can provide support for transmitter module integration, transmission strategy or any question that you may have.

Please contact us at:

www.kineis.com

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