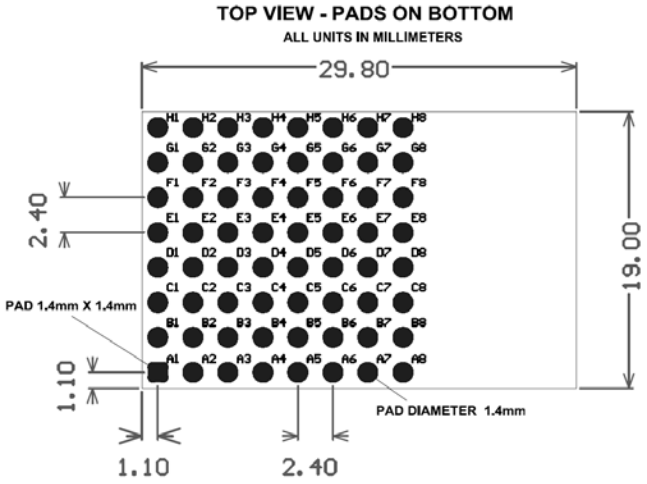
Wireless Technology to Control and Monitor Anything from Anywhere™

SYNAPSE SM200P81 RF Engine

Synapse's SM200P81 RF Engine® is a reliable, IEEE802.15.4, surface mount module reaching data rates up to 2Mbps. This small, low-powered, 2.4 GHz transmitter-receiver module can have a range of up to 1500ft and power consumption as low as 0.250 µA. The SM200P81 RF Engine come pre-loaded with the Synapse SNAP® mesh network operating system and provide interoperability with other SNAP RF Engines.

SM200P81 Features:

- 33 GPIO and up to 8 A/D inputs
- Two UART ports for control or transparent data
- Low power modes: 0.250 µA with internal timer running
- 128k flash, 58.5k free for over-the-air uploaded user apps
- Spread spectrum (DSSS) technology surmounts noisy environments
- Small form factor surface mount
- Up to 2 Mbps Data Rate



SM200P81 Specifications:

Performance	Indoor Range	Up to 100 ft.	**General**	Frequency	ISM 2.4 GHz
	Outdoor LOS Range	Up to 1,500 ft.		Spreading Method	Direct Sequence
	Transmit Power Output	3dBm		Modulation	O-QPSK
	RF Data Rate	250kbps, 500kbps, 1Mbps, 2Mbps		Dimensions	19.00mm X 29.80mm
	Receiver Sensitivity	-100dBm (1%PER)		Operating Temperature	-40 to 85 deg C.
Power Requirements	Supply Voltage	1.8 – 3.4V		Antenna Options	Chip
	Transmit Current (Typ)	<20mA	**Available I/O**	UARTS with HW Flow Control	2 ports – 8 total I/O
	Receive Current (Typ)	<20mA		GPIO	33 Total, 8 with 10-bit ADC
	Sleep Current (Typ)	0.250µA	**Agency Approvals**	FCC Part 15.247	Yes, Class B
Networking	Topology	Mesh (SNAP)		Industry Canada (IC)	Yes
	Number of Channels	16			

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SM200P81 RF Engine

Please refer to the SNAP User's Guide for the I/O pin-mappings used by the SNAP-OS.

Pin Number	Pin Name	Pin Number	Pin Name
A1	GND	E1	PB2_MOSI_PDI_PCINT2
A2	VCC	E2	PB3_MISO_PDO_PCINT3
A3	VCC	E3	PB4_OC2A_PCINT4
A4	PF0_ADC0	E4	NC
A5	PF2_ADC2_DIG2	E5	NC
A6	PF4_ADC4_TCK	E6	NC
A7	PF6_ADC6_TDO	E7	NC
A8	GND	E8	RF OUT (Special Order)
B1	PE2_XCK0_AIN0	F1	PB0_SSN_PCINT0
B2	PE3_OC3A_AIN1	F2	PB1_SCK_PCINT1
B3	PE5_OC3C_INT5	F3	PD1_SDA_INT1
B4	PF1_ADC1	F4	PD0_SCL_INT0
B5	PG1_DIG1	F5	NC
B6	PF5_ADC5_TMS	F6	NC
B7	PF7_ADC7_TDI	F7	NC
B8	GND	F8	GND
C1	PE0_RXD0_PCINT8	G1	CLKI
C2	PE1_TXD0	G2	PD7_T0
C3	PE4_OC3B_INT4	G3	PD4_ICP1
C4	PE6_T3_INT6	G4	PD2_RXD1_INT2
C5	PE7_ICP3_INT7_CLK0	G5	PG5_OC0B
C6	NC	G6	NC
C7	NC	G7	NC
C8	GND	G8	GND
D1	PB5_OC1A_PCINT5	H1	GND
D2	PB6_OC1B_PCINT6	H2	PD6_T1
D3	PB7_OC0A_OC1C_PCINT7	H3	PD5_XCK1
D4	NC	H4	PD3_TXD1_INT3
D5	NC	H5	RESET#
D6	NC	H6	TST
D7	NC	H7	NC
D8	GND	H8	GND

More technical details are in SNAP Hardware Technical Manual, Synapse Customer Forum: forums.synapse-wireless.com.

