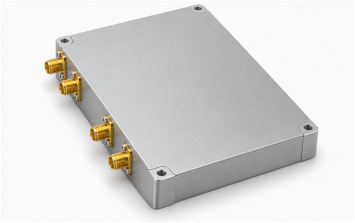
2–18 GHz Broadband Upconverter with SPI Filter Control



LCMIXU-2000-18000 produces 2–18 GHz RF from a 1.8 GHz IF input using external LO1 at 22–40 GHz and LO2 at 20.2 GHz. Both LO inputs specify –3 to +3 dBm drive. Small-signal gain is at least 15 dB and output P1dB at least 5 dBm.

SPI selects seven documented filter states and controls a 5-bit calibration attenuator over 0–15.5 dB in 0.5 dB steps. The typical SPI rate is 2 Mbps, maximum 10 Mbps; all data bits must be zero when powered down. The nickel-plated aluminum body measures 87 × 70 × 13.5 mm and weighs no more than 500 g.

Electrical specifications

Parameter	Value	Unit
RF output frequency	2–18	GHz
IF input frequency	1.8	GHz
IF input passband	1.8±0.5	GHz
Small-signal gain	≥15	dB
Output P1dB	≥5	dBm
Calibration attenuation range [1]	0–15.5	dB
Attenuation step	0.5	dB
Attenuator bit count	5	-
Spurious rejection	≥47	dBc
Harmonic rejection	≥30	dBc
Supply voltage [2]	+12	VDC
Supply current	450 (Typical)	mA

[1] Range derived from the explicit binary weights 8, 4, 2, 1 and 0.5 dB.

[2] Typical: 12 VDC.

Environmental limits

Parameter	Value	Unit
Operating temperature	–40–+70	°C
Storage temperature	–55–+125	°C

Interfaces and contacts

Interface	Specification	Unit
LO1 input frequency	22–40	GHz
LO2 input frequency	20.2	GHz

Interfaces and contacts

Interface	Specification	Unit
LO1 input power	−3–+3	dBm
LO2 input power	−3–+3	dBm
Supply contacts	1, 2: +12 V	-
Ground contacts	3, 4: GND	-
SPI data contact	1: SPI_MOSI	-
SPI clock contact	2: SPI_SCK	-
SPI select contact	3: SPI_NSS	-
SPI ground contact	4: GND	-

Control and filter selection

Parameter	Value	Unit
SPI data rate [1]	2 / 10	Mbps
SPI frame [2]	0xAA 0x55 | Data[15:0] | 0x44 0xBB	-
SPI filter-selection bits	8:C2; 7:C1; 6:C0	-
Filter code 000 passband [3]	000 → 1.9–3.2	GHz
Filter code 001 passband [3]	001 → 2.2–3.7	GHz
Filter code 010 passband [3]	010 → 2.7–4.6	GHz
Filter code 011 passband [3]	011 → 3.6–6.1	GHz
Filter code 100 passband [3]	100 → 5.1–8.9	GHz
Filter code 101 passband [3]	101 → 7.9–13.8	GHz
Filter code 110 passband [3]	110 → 12.8–18	GHz
SPI module-enable bit [4]	5: EN	-
SPI attenuation bits [5]	4:8; 3:4; 2:2; 1:1; 0:0.5	dB
SPI unused bits [6]	9–15	-
SPI power-down data state [7]	0	-

[1] Typical: 2 Mbps. Maximum: 10 Mbps.

[2] Data[15:0] occupies two bytes; further byte order is unspecified.

[3] Selected filter passband; overall RF operating range remains 2–18 GHz.

[4] 1: module on; 0: module off.

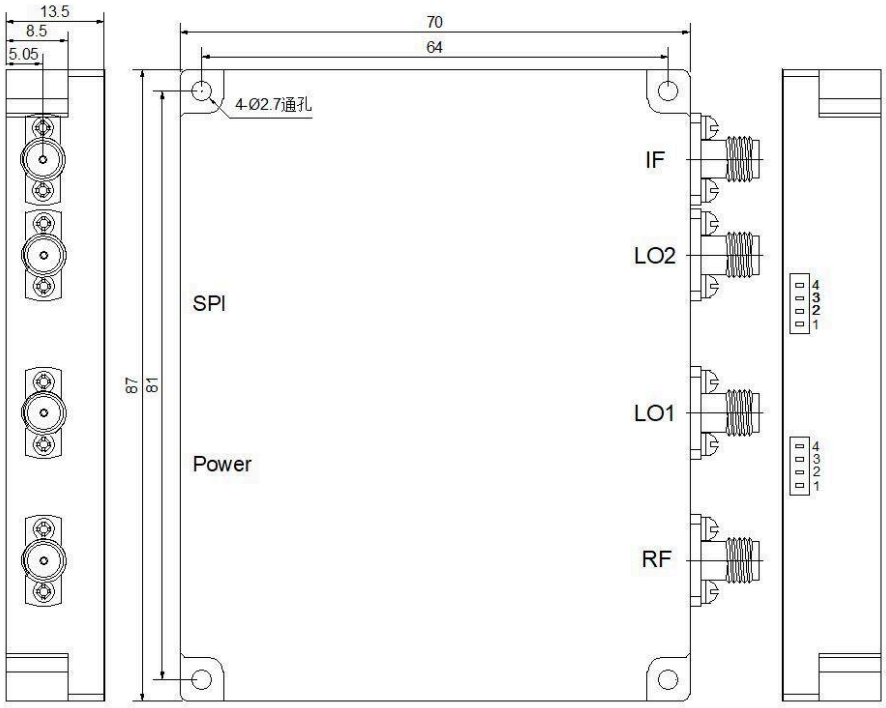
[5] Each bit: 1 enables its attenuation step; 0 disables it.

[6] Source marks these data bits as having no meaning.

[7] Set all data bits to 0 when powered off.

Mechanical specifications

Parameter	Value	Unit
Body dimensions	87 × 70 × 13.5	mm
Weight	≤500	g
Housing material	Nickel-plated aluminum.	-
Mounting-hole center spacing	81 × 64	mm
Mounting holes	4 × Φ2.7 (Through holes.)	mm



Document notice

Specifications are subject to revision. Before design release, confirm the current document revision and product-specific requirements with LCRF. The approved quotation and order documentation define the supplied configuration.