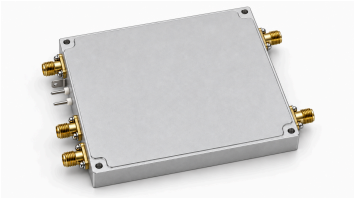
6–8.5 GHz Integrated RF Up/Downconverter Module



LCMIXUD-6000-8500 integrates upconversion and downconversion between a 6–8.5 GHz RF band and a 3–5.5 GHz IF band. TTL control enables one conversion direction at a time for microwave communication, RF platforms and frequency-translation systems.

The upconversion inputs IF_T1 and IF_T2 combine internally and feed RF_T. The downconversion path runs from RF_R to IF_R, with 25 dB typical conversion gain and 2 dB maximum noise figure. Recommended input drive for upconversion is −15 dBm.

RF filtering, amplification, a crystal oscillator and PLL synthesis are integrated in the module. The functional diagram shows a 50 MHz internal reference and an 11.5 GHz internal LO. Five SMA signal ports, a +5 V nominal supply and separate TTL control support system integration.

Outline-based structural illustration, not a product photograph. Surface appearance does not specify housing material or finish.

RF conversion specifications

Parameter	Specification	Unit
RF operating frequency	6–8.5	GHz
IF operating frequency	3–5.5	GHz
Downconversion gain	25; Typical	dB
Downconversion noise figure	2; Maximum	dB
Upconversion input drive	−15 (Recommended input drive; not a maximum limit)	dBm
Saturated output power	10; Typical (Channel and reference plane not specified)	dBm
Output spurious level	−45; Typical (Within 6–8.5 GHz at RF output power 0 dBm)	dBc
Leakage level	−40; Typical (Leakage origin and measurement reference not specified)	dBc

Power and environmental specifications

Temperature ranges do not establish a full-temperature electrical guarantee or completed qualification.

Parameter	Specification	Unit
Supply voltage	+5 (Nominal; 6 V; Maximum)	V
Operating current	600 (Typical)	mA
Operating temperature	−40–+70	°C
Storage temperature	−40–+85	°C

RF, IF and control interfaces

Five SMA signal ports.

Interface	Specification
RF-port connectors [1]	SMA
IF-port connectors [2]	SMA
TTL control connection [3]	Feed-through capacitor
Power and ground interface [4]	Feed-through capacitor / Grounding metal sheet

[1] Upconversion output: RF_T; Downconversion input: RF_R

[2] Upconversion inputs: IF_T1 / IF_T2; Downconversion output: IF_R

[3] 0 V / 3.3 V

[4] +5 V / GND

Integrated frequency synthesis

Parameter	Specification	Unit
Internal reference frequency	50	MHz
Internal LO frequency	11.5	GHz

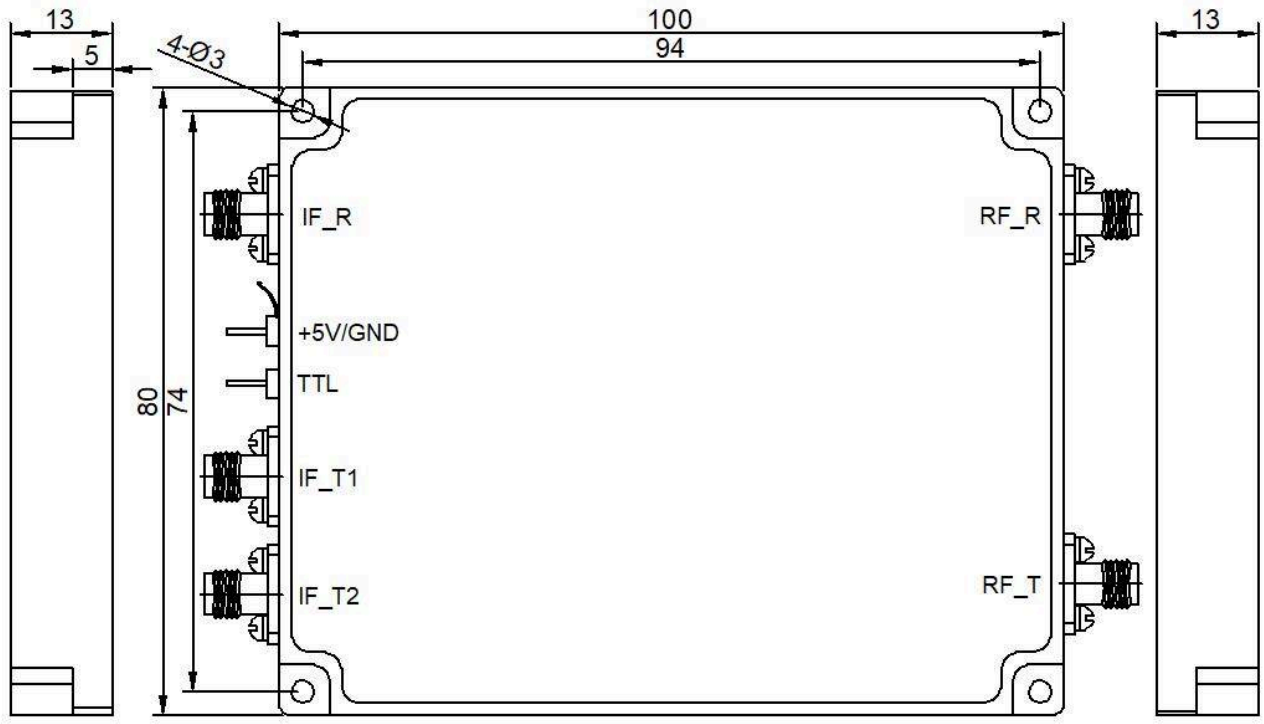
TTL direction selection

TTL control connection	Upconversion	Downconversion	Notes
3.3 V	Enabled	Disabled	-
0 V	Disabled	Enabled	Internally pulled low

Mechanical specifications

Body dimensions exclude connector and pin projections.

Parameter	Specification	Unit
Body dimensions	100×80×13	mm
Mounting-hole diameter	Ø3	mm
Mounting-hole centers	94×74	mm



Current publication record · 1.5 · 2026-11-11. Product description or editorial content updated. Replaces revision 1.4.

Product overview

LCMIXUD-6000-8500 integrates upconversion and downconversion between a 6–8.5 GHz RF band and a 3–5.5 GHz IF band. TTL control enables one conversion direction at a time for microwave communication, RF platforms and frequency-translation systems. The upconversion inputs IF_T1 and IF_T2 combine internally and feed RF_T. The downconversion path runs from RF_R to IF_R, with 25 dB typical conversion gain and 2 dB maximum noise figure. Recommended input drive for upconversion is −15 dBm. RF filtering, amplification, a crystal oscillator and PLL synthesis are integrated in the module. The functional diagram shows a 50 MHz internal reference and an 11.5 GHz internal LO. Five SMA signal ports, a +5 V nominal supply and separate TTL control support system integration. Outline-based structural illustration, not a product photograph. Surface appearance does not specify housing material or finish.

RF and IF ports and installation

The IF edge has IF_R, IF_T1 and IF_T2; the opposite edge has RF_R and RF_T. IF_T1 and IF_T2 are upconversion inputs, IF_R is the downconversion output, RF_T is the upconversion output and RF_R is the downconversion input. All five signal ports use SMA connectors. The body measures 100×80×13 mm, excluding connector and pin projections. Four Ø3 mm mounting holes have 94×74 mm center spacing. The IF edge also carries the power and TTL feed-through connections and a grounding metal sheet. Use the outline drawing to plan mounting and cable clearance.

TTL direction selection and integrated synthesis

A TTL level of 3.3 V enables upconversion and disables downconversion. At 0 V, downconversion is enabled and upconversion is disabled. The input has an internal pull-down. Use the specified control levels. Both conversion paths share the internal crystal reference and the PLL-synthesized LO.

RF ratings and measurement conditions

Typical output spurious level is −45 dBc within the 6–8.5 GHz band at 0 dBm RF output power. Typical leakage is −40 dBc and typical Psat is 10 dBm. For acceptance testing against either figure, confirm the applicable channel and measurement reference with LCRF. The recommended −15 dBm upconversion drive is not a maximum safe-input rating. Supply is +5 V nominal, 6 V maximum, with 600 mA typical operating current. Operating temperature is −40 to +70 °C and storage is −40 to +85 °C. Confirm full-temperature electrical performance and environmental qualification requirements with LCRF.

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.