

Upconverters 94198, 94199, 94312, 94313

IF-to-RF Upconverters for Analog and Digital Channels

These upconverters are microprocessor controlled, frequency agile IF upconverters. 94312 and 94313 can be used for both analog and digital channels. 94198 and 94199 can be used for analog channels only. 94198 and 94312 cover the range 7-470 MHz. 94199 and 94313 cover the range 470-862 MHz.

With only two frequency agile IF upconverters any channel in the entire frequency range of 7-862 MHz may be selected. This means that the reverse path frequency range is also covered. This limits the need for spare units tremendously because fixed channel converters are avoided.

Being frequency agile these upconverters are equipped with high-quality tracking and switching filters. This lowers the out-of-channel noise floor making the upconverters most suitable for adjacent channel operation with a large number of channels.

All Standards Covered

In 94312 and 94313 the IF can be selected between 36.15 MHz for digital channels and 38.9 MHz for analog channels. In the NTSC-PAL M, N version the IF can be selected between 45.75 MHz for analog channels and 44.0 MHz for digital channels. 94198 and 94199 have an IF of 38.9 MHz and a version with 45.75 MHz for NTSC-PAL M,N systems.

This means that the standard versions cover all TV standards.

Off-air Conversion

Off-air conversion to the same output channel as the input channel is possible using a common external reference oscillator. The upconverters are used together with a terrestrial downconverter.

Easy Settings and Adjustment

The functions of the frequency agile upconverter are selected by only three push-buttons. Stepping through a menu, the output frequency, the application of an external reference oscillator, and the input signal intermediate frequency are selected. Finally, the output voltage is adjusted.

Ideal Output Termination

As the upconverters are correctly terminated throughout the entire frequency range, output combining can be made with symmetrical splitters instead of directional-coupled taps. This saves losses in the combining network. The result is higher output level for the distribution network. See separate section for output combining networks part number A541268.

Transmission Network Control System (TNCS) Element Management System

The TNCS can remotely control and monitor the settings and adjustment of the Upconverters 94312 and 94313. Furthermore, it makes the upconverters ideal for backup purposes delivering the same high signal quality as the main channel.



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Specifications

Parameter	Unit	94198, 94199 and 94313, 94312	Notes
IF vision carrier, analog, B/G, D/K, L, I	MHz	38.9 (M, N: 45.75)	
IF center frequency, digital	MHz	36.15 (M, N version: 44)	
Input level, analog	dB μ V	103 (L: 99)	
Input level, digital, RMS	dB μ V	99	
Output Analog			
Output frequency range			
94198/94312	MHz	7.25 - 63.75 and 118.00 - 463.75	1
94199/94313	MHz	470.00 - 856.00	
Output operation level, adjacent chan.	dB μ V	112 (L: 111)	
Intermodulation, EN 50083-5, 3.1	dB	min.76	
Intermodulation, EN 50083-5, 3.4	dB	< 63	3
C/N for 1 channel, typ.	dB	\geq 77 (L: 73)	4
C/N combined max. no. of channels	dB	\geq 65 (L: 61)	4
Output Digital, 94312 and 94313 only			
Output frequency range center frequency			1
94312	MHz	9.50 - 66.00 and 120.25 - 466.50	
94313	MHz	472.75 - 858.75	
Output level, max. RMS	dB μ V	111	
C/N, 8 MHz, typ.	dB	\geq 71	2
C/N combined, max. no. of channels	dB	\geq 60	2
Phase noise			
10 kHz offset	dBc	-90	
20 kHz offset	dBc	-96	
100 kHz offset	dBc	-110	
Output General, All Types			
Tuning steps, output frequency	kHz	50	
Frequency stability (int. reference)	ppm	\pm 50	
Level attenuator, 64 steps	dB	0 – 10	
Linearity in 8 MHz channel	dB	\pm 0.5	
Unmodulated spurious	dB	\leq -70	
Group delay	ns	\leq \pm 25	
External Reference Input, All Types			
Input frequency range	MHz	0.5 - 10	
Step external frequency	kHz	100	
General Specifications, All Types			
Input/output	F	female	
External reference, power, TNCS	pin	8-male	
Power consumption, +12 V DC	W	\leq 4	
Temperature range	$^{\circ}$ C	-10 to +55	
Dimensions, H x W x D	mm	3 U x 6 HP x 182	

Notes:

1. In the frequency range is 7.25 to 47.00 MHz for analog vision carrier and 9.50 to 47.00 MHz for digital center frequencies, an external filter type 75073 should be used at the output of the upconverter to avoid 2nd harmonic distortion in other channels
2. Output level \geq 105 dB μ V
3. Out-of-channel intermodulation. Vision/sound carrier ratio 10 dB
4. Output level \geq 109 dB μ V

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Ordering Information

Upconverters	B/G PAL	D/K PAL SECAM	I PAL	L SECAM	M.N NTSC PAL
94198	A94198.10	A94198.10	A94198.10	A94198.10	A94198.102
94199	A94199.10	A94199.10	A94199.10	A94199.10	A94199.102
94312	A94312.10	A94312.10	A94312.10	A94312.10	A94312.102
94313	A94313.10	A94313.10	A94313.10	A94313.10	A94313.102



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