Hyperband television tuner KS-H-131

FEATURES

- Member of the KS-H-130 family small sized VHF/Hyperband/UHF tuner
- Systems CCIR: B/G, H; OIRT: D/K
- Voltage synthesized tuning (VST)
- Off-air channels, S-cable channels and Hyperband
- World standardized mechanical dimensions and world standard pinning
- Compact size
- Comply to “CENELEC EN55020” and “EN55013”

DESCRIPTION

The KS-H-131 tuner belongs to the KS-H-130 family of tuners, which are designed to meet a wide range of applications. It is a combined VHF/Hyperband/ UHF tuner suitable for CCIR systems B/G, H, or OIRT systems D/K. The low IF output impedance has been designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

The tuners comply with the requirements of radiation, signal handling capability and immunity conforming with:

- CISPR 13 (1990) include. amendment 1 (1992) and amendment 2 (1993)
- European standards CENELEC EN55013, EN55020

MARKING

The following items of information are printed on a sticker that is on the top cover of the tuner or printed directly on the top cover:

- Company logo
- Type number
- Year and month code
- Quality inspection print

ORDERING INFORMATION

TYPE	SYSTEM	DESCRIPTION
KS-H-131 E	CCIR	symmetrical IF output; IEC connector (14.5 mm)
KS-H-131 O	OIRT	symmetrical IF output; IEC connector (14.5 mm)

INTERMEDIATE FREQUENCIES

SIGNAL	FREQUENCY (MHz)	
	SYSTEM B/G, H	SYSTEM D/K
Picture carrier	38.90	38.00
Colour	34.47	33.594, 33.75
Sound	33.40	31.5

Note
The oscillator frequency is above the input signal frequency.

CHANNEL COVERAGE

Type	BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
		CHANNELS	FREQUENCY RANGE (MHz)	CHANNELS	FREQUENCY RANGE (MHz)
KS-H-131 E	Low band	E2 to C	48.25 to 82.25[1]	S01 to S10	69.25 to 168.25
	Mid band	E5 to E12	175.25 to 224.25	S11 to S41	231.25 to 463.25
	High band	E21 to E69	471.25 to 855.25[2]		
KS-H-131 O	Low band	1 to 5	49.75 to 93.25	SK1 to SK8	111.25 to 167.25
	Mid band	6 to 12	175.25 to 223.25	SK11 to SK40	231.25 to 463.25
	High band	21 to 69	471.25 to 855.25		

Notes
1. Enough margin is available to tune down to 45.25 MHz.
2. Enough margin is available to tune up to 863.25 MHz.

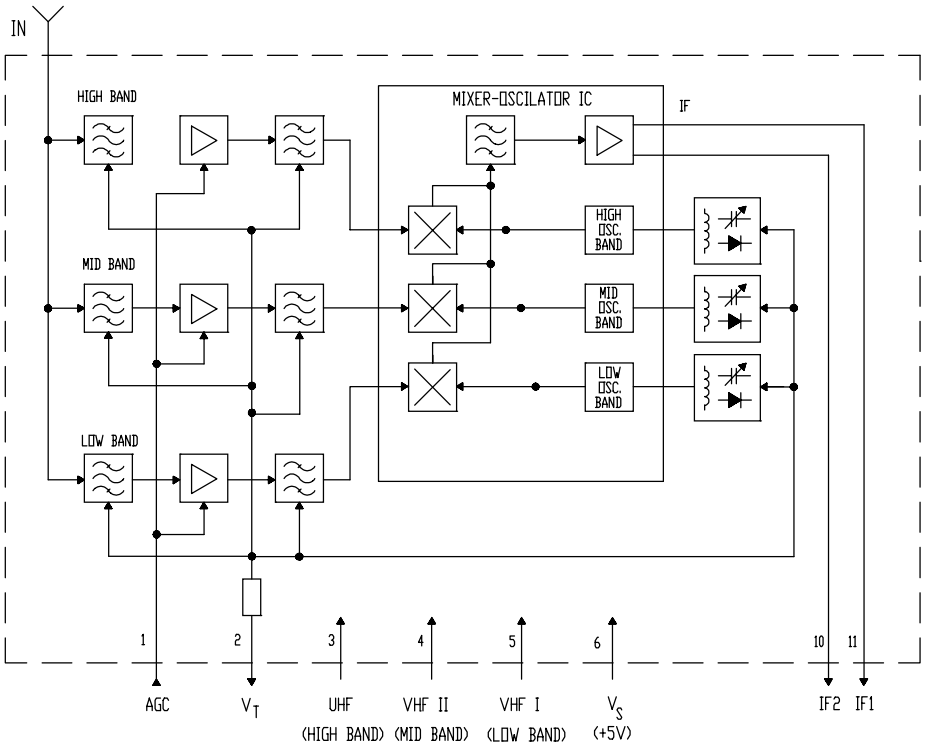

Fig.1 Electrical block diagram

PINNING

SYMBOL	PIN	DESCRIPTION
AGC	1	gain control voltage
V_T	2	tuning voltage
UHF	3	high band switch
VHF II	4	mid band switch
VHF I	5	low band awitch
V_S	6	supply voltage +5 V
n.c.	7	Not connected
n.c.	8	Not connected
n.c.	9	Not connected
IF2	10	symmetrical IF output
IF1	11	symmetrical IF output
GND	MT1, MT2	mounting tags (ground)
IN		aerial input connector IEC (14.5 mm)

LIMITING VALUES

Environmental conditions

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
Non-operational conditions				
T_{amb}	ambient temperature	-40	+60	^{0}C
RH	relative humidity	-	100	%
Operational conditions				
T_{amb}	ambient temperature	-15	+60	^{0}C
RH	relative humidity	-	93	%

Limiting values under operational conditions

The tuner can be guaranteed to function properly under the following conditions

SYMBOL	PARAMETER	PIN	MIN.	TYP.	MAX.	UNIT
V_S	supply voltage	6	4.75	5.0	5.5	V
I_S	supply current		-	-	65	mA
ΔV_T	tuning voltage range	2	0.5	-	28	V
I_T	tuning current		-	-	0.5	µA
V_{AGC}	AGC input voltage	1	-	4.0	4.5	V
ΔV_{AGC}	AGC input voltage range		0.3	-	4.0	V
I_{AGC}	AGC input current		-	-	20	µA
V_{BS}	bandswitching voltage	3,4 and 5	4.75	5.0	5.5	V
I_{BS}	bandswitching current		-	-	20	mA

Bandswitching

BAND	PIN 3	PIN 4	PIN 5	UNIT
Low	0 or open	0 or open	5	V
Mid	0 or open	5	0 or open	V
High	5	0 or open	0 or open	V

ELECTRICAL DATA

Conditional data

Unless otherwise specified, all electrical values for Chapter “Electrical data” apply at the following conditions and the electrical performance is related both to systems B, G, H and D, K.
A proper function is guaranteed within the specified operational conditions but a certain deterioration of performance parameters may occur at the limits of operational conditions.

SYMBOL	PARAMETER	VALUE	UNIT
T_{amb}	ambient temperature	25 +/- 5	^{0}C
RH	relative humidity	60 +/- 15	%
V_S	supply voltage	5.0 +/- 0.1	V
V_{AGC}	AGC input voltage	4.0 +/- 0.1	V
t_{pr}	pre-heating time (+5 V at pin 7)	10	minute
$Z_{S(AE)}$	aerial source impedance (unbalanced)	75	Ω

Aerial input characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
VSWR	reflection coefficient	referred to 75 Ω impedance	-	2	4	
V_{ant}	antenna connection disturbance voltage	< 1.75 GHz; comply to “EN55013 section 3.3”	-	-	46	dBµV

General characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
f_p	frequency range:					
	KS-H-131 E					
	low band		48.25	-	168.25	MHz
	mid band		175.25	-	463.25	MHz
	high band		471.25	-	855.25	MHz
	KS-H-131 O		49.75	-	167.25	MHz
	low band		175.25	-	463.25	MHz
	mid band		471.25	-	855.25	MHz
	high band					
G_V	voltage gain:	The IF output is loaded with a test circuit				
	all channels	according diagram fig.2	40	45	52	dB
	gain taper		-	-	7	dB
F	noise:	The IF output is loaded with a test circuit				
	low band	according diagram fig.3	-	6.0	9	dB
	mid band		-	6.0	9	dB
	high band		-	6.0	8	dB
ΔV_{AGC}	AGC input voltage range:					
	low and mid band		45	60	-	dB
	high band		40	50	-	dB
α_i	image rejection:					
	low band		66	70	-	dB
	mid band		60	69	-	dB
	high band		50	60	-	dB
α_{IF}	IF rejection (picture):					
	channel E2		55	68	-	dB
	low, mid and high bands		65	71	-	dB
V_{ESD}	electrostatic discharge (ESD):	note 1				
	protection on pins 1 to 5 and 6 to 11		2	-	-	kV
	protection on antenna socket		8	-	-	kV
Δf	oscillator drift:					
	Ambient temperature range	$\Delta T=25^oC+/-2^oC$				
	low band	(25^oC to 50^oC)			+/-500	kHz
	mid band				+/-750	kHz
	high band				+/-1200	kHz
	Supply voltage change	+/-5%				
	low band				+/-250	kHz
	mid band				+/-500	kHz
	high band					

Note

1. The tuner meets specifications IEC 1000-4-2 level 1 for pins and level 4 for antenna socket.

Visibility test

The tuners meet the requirements of the European norm “EN55020”, when measured in an adequate television receiver.

Recommended adjustment of Tuner AGC in TV chassis:

Channel: E21 (471.25 MHz PC-frequency)
Input level: 70 dBµV/75 Ω
IF output level: 105 dBµV
Gain reduction: 10 dB
AGC-Voltage: 2.6 V +/-0.2V

Radiation

The tuners meet the requirements of the European norm “EN55013” and “CISPR13” (1990), when measured in an adequate television receiver.

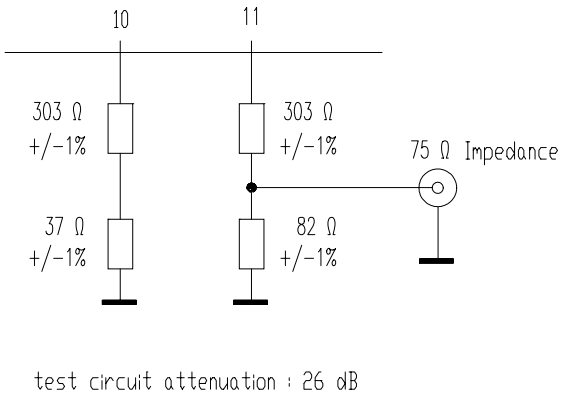

Fig. 2 Test circuit for voltage gain.

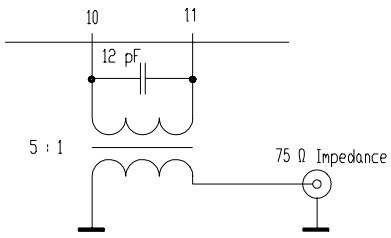

Fig. 3 Test circuit for noise figure.

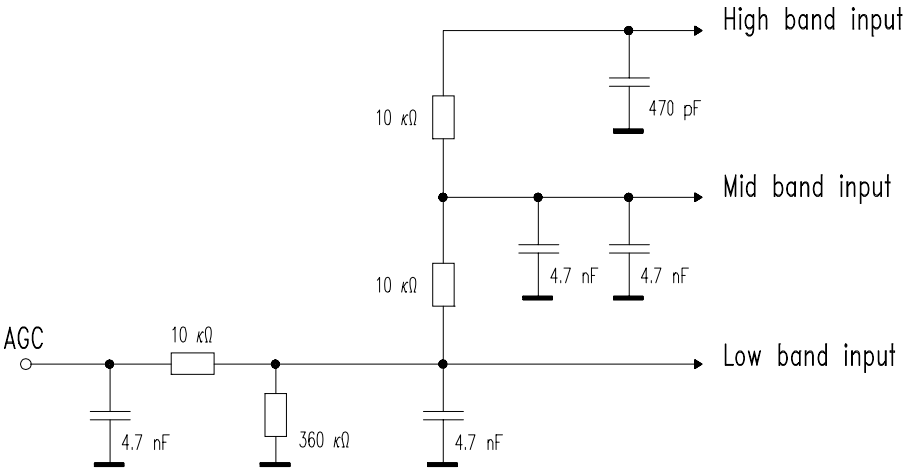

Fig.4 Internal AGC circuit.

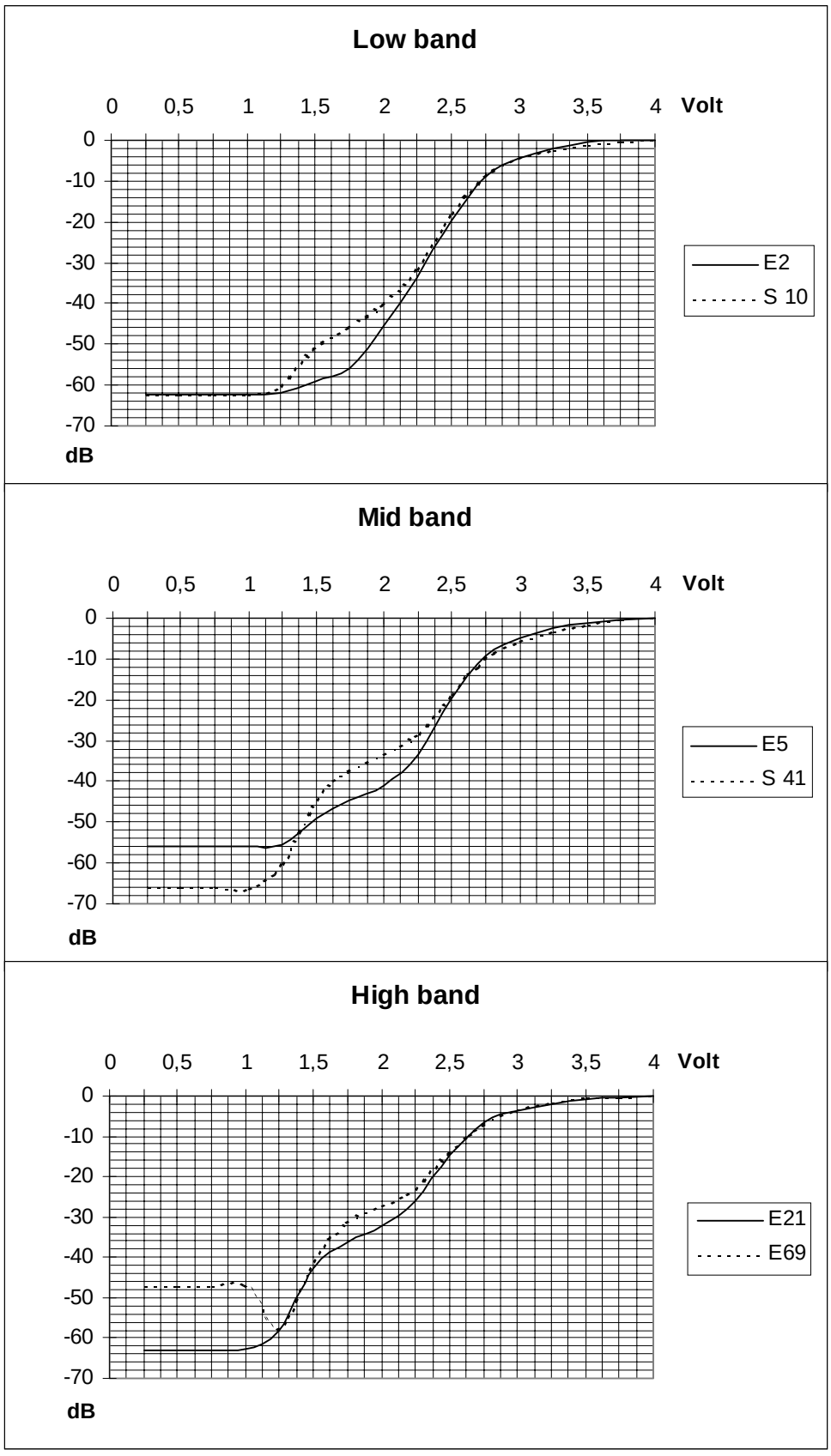

Fig.5 AGC characteristics.

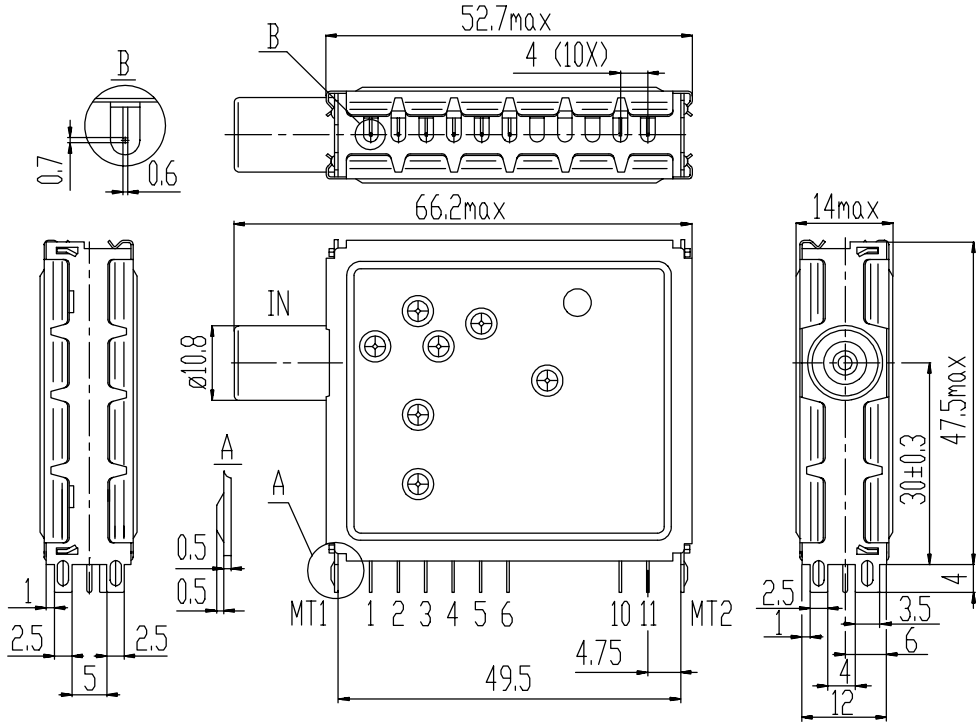

Fig.6 Mechanical outline

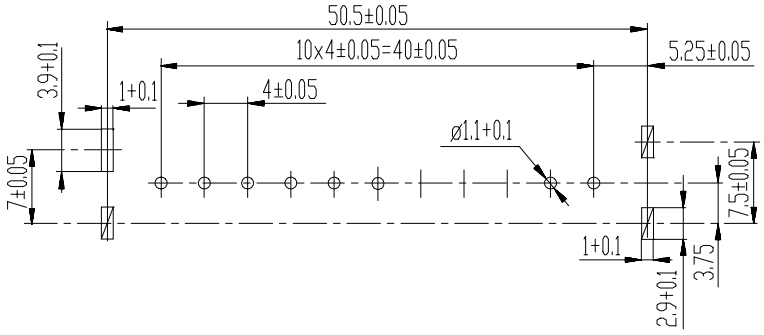

Fig.7 Punching pattern seen from solder side

Aerial connections

Standard IEC socket female 75 Ω.

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Selteka customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnity Selteka for any damages resulting from such improper use or sale.