

**Hyperband television tuner****KS-H-95****FEATURES**

- Member of the KS-H-90 family VHF/Hyperband/UHF tuner
- System CCIR: B/G
- 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"

**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

**DESCRIPTION**

The KS-H-93 tuner belongs to the KS-H-90 family of tuners, which are designed to meet a wide range of applications. It is a combined VHF/Hyperband/ UHF tuner. The IF output is designed for direct drive of a variety of SAW filters. The output impedance of the asymmetrical IF terminals is approximately 75  $\Omega$  to ensure sufficient triple transient suppression of the SAW filter.

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

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

**ORDERING INFORMATION**

TYPE	SYSTEM	DESCRIPTION
KS-H-95 E	CCIR	asymmetrical IF output; IEC connector (14.5 mm)
KS-H-95 EL	CCIR	asymmetrical IF output; IEC connector (32.2 mm)

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INTERMEDIATE FREQUENCIES

SIGNAL	FREQUENCY (MHz)
Picture carrier	38.90
Colour	34.47
Sound	33.40

**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-93 E	Low band	E2 to C	48.25 to 82.25 <sup>(1)</sup>	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 <sup>(2)</sup>	S40 and S41	455.25 to 463.25

- 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.

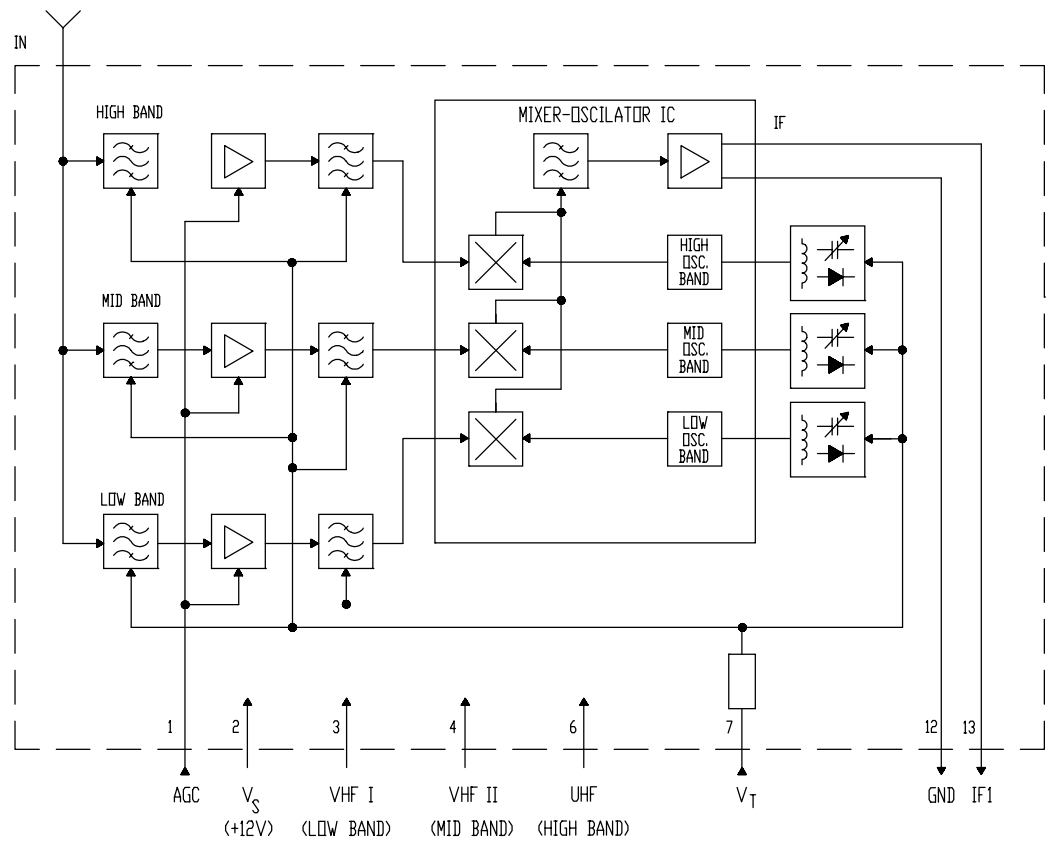


Fig.1 Electrical block diagram

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## PINNING

SYMBOL	PIN	DESCRIPTION
AGC	1	gain control voltage
$V_s$	2	supply voltage +12 V
VHF I	3	low band switch +12 V
VHF II	4	mid band switch +12 V
n.c.	5	not connected
UHF	6	high band switch +12 V
$V_T$	7	tuning voltage 0.5 to 28 V
n.c.	8	not connected
n.c.	9	not connected
n.c.	10	not connected
n.c.	11	not connected
GND	12	ground
IF1	13	asymmetrical IF output
GND	MT1, MT2	mounting tags (ground)
IN		aerial input connector IEC (14.5 mm for KS-H-93) (32.2 mm for KS-H-93 L)

## LIMITING VALUES

## Environmental conditions

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
<b>Non-operational conditions</b>				
$T_{amb}$	ambient temperature	-40	+60	$^{\circ}\text{C}$
RH	relative humidity	-	100	%
<b>Operational conditions</b>				
$T_{amb}$	ambient temperature	-15	+60	$^{\circ}\text{C}$
RH	relative humidity	-	93	%

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## 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	2	11.4	12.0	12.6	V
$I_S$	supply current		-	-	65	mA
$\Delta V_T$	tuning voltage range	7	0.5	-	28	V
$I_T$	tuning current		-	-	0.5	$\mu$ A
$V_{AGC}$	AGC input voltage	1	-	9.2	9.7	V
$\Delta V_{AGC}$	AGC input voltage range		0.85	-	9.2	V
$I_{AGC}$	AGC input current		-	-	30	$\mu$ A
$V_{BS}$	bandswitching voltage	3,4 and 6	11.4	12.0	12.6	V
$I_{BS}$	bandswitching current		-	-	18	mA

## Bandswitching

BAND	PIN 3	PIN 4	PIN 6	UNIT
Low	12	0 or open	0 or open	V
Mid	0 or open	12	0 or open	V
High	0 or open	0 or open	12	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	$^{\circ}$ C
RH	relative humidity	60 +/- 15	%
$V_S$	supply voltage	12.0 +/- 0.1	V
$V_{AGC}$	AGC input voltage	9.2 +/- 0.1	V
$t_{pr}$	pre-heating time (+12 V at pin 2)	10	minute
$Z_{S(AE)}$	aerial source impedance (unbalanced)	75	$\Omega$

## Aerial input characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
VSWR	reflection coefficient	referred to 75 $\Omega$ impedance	-	2	4	
$V_{ant}$	antenna connection disturbance voltage	< 1.75 GHz; comply to "EN55013 section 3.3"	-	-	46	dB $\mu$ V

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## General characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$f_b$	frequency range:  low band mid band high band		48.25 175.25 455.25	- - -	168.25 463.25 855.25	MHz MHz MHz
$G_V$	voltage gain:  all channels gain taper	The IF output is loaded with 75 $\Omega$ impedance	38 -	44	50 7	dB dB
F	noise:  low band mid band high band	The IF output is loaded with 75 $\Omega$ impedance	- - -	6.0 7.0 8.0	9 10 11	dB dB dB
$\Delta V_{AGC}$	AGC input voltage range:  low and mid band high band		40 30	55 40	- -	dB dB
$\alpha_i$	image rejection:  low band mid band high band		70 66 53	75 70 60	- - -	dB dB dB
$\alpha_{IF}$	IF rejection (picture):  channel E2 low and mid bands high band		50 60 70	62 70 76	- - -	dB dB dB
$V_{ESD}$	electrostatic discharge (ESD):  protection on pins 1 to 4 and 6, 7, 12,13 protection on antenna socket	note 1	2 8		- -	kV kV
$\Delta f$	oscillator drift:  Ambient temperature range low band mid band high band  Supply voltage change low band mid band high band	$\Delta T=25^{\circ}\text{C}+/-2^{\circ}\text{C}$ (25°C to 50°C)  +/-5%			+/-500 +/-750 +/-1000  +/-250 +/-500 +/-500	kHz kHz kHz  kHz kHz kHz

## Note

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

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**Visibility test**

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

**Radiation**

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

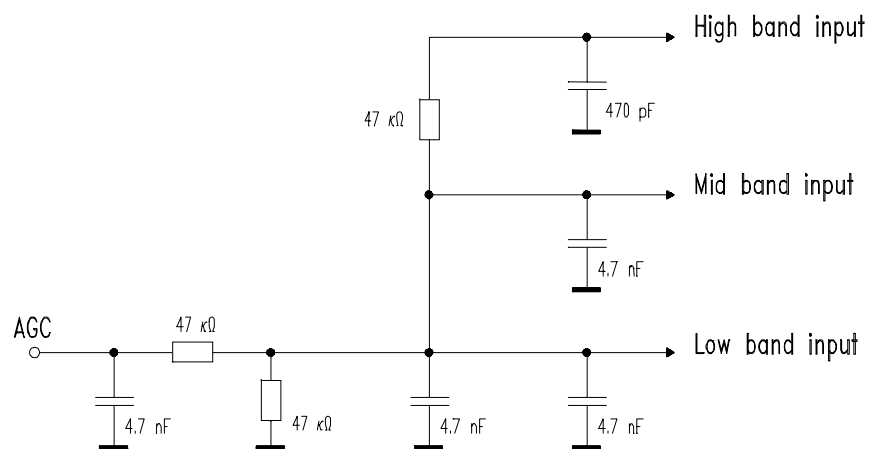


Fig.2 Internal AGC circuit.

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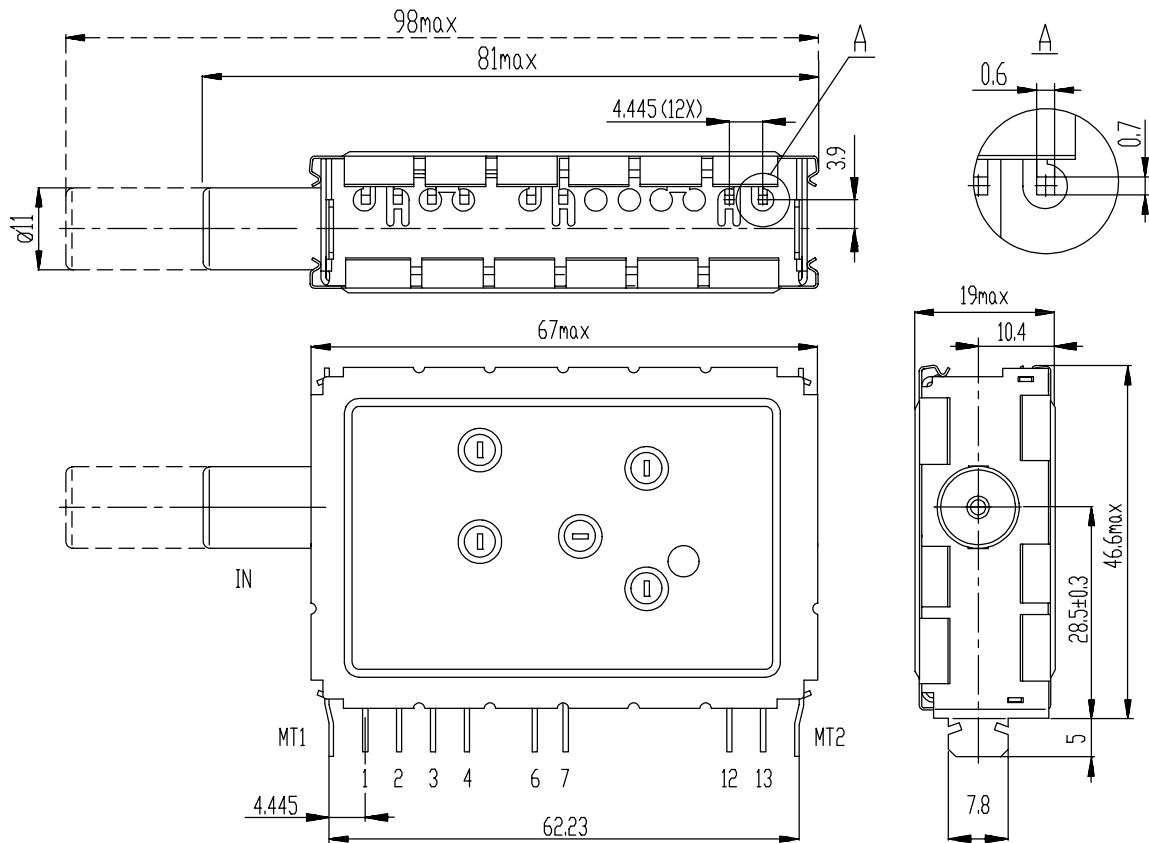


Fig.3 Mechanical outline

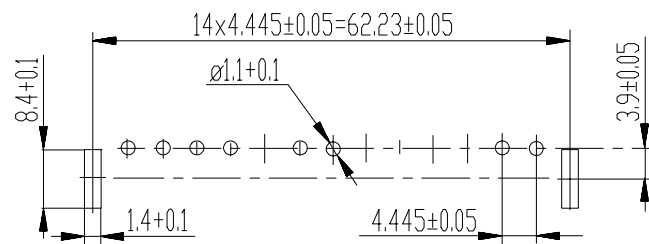


Fig.4 Punching pattern seen from solder side

**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 indemnify Selteka for any damages resulting from such improper use or sale.