FEATURES

* Member of the KS-H-90 family
  VHF/Hyperband/UHF tuners

* Systems CCIR: B/G, H, L/L', I/I'
  OIRT: D/K

* Off-air channels, S-cable channels and Hyperband

* Voltage synthesised tuning (VST)

* Compact size

* Comply to "CENELEC EN55020" and "EN55013"

DESCRIPTION

The KS-H-93 tuners belong 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 suitable for CCIR systems B/G, H, L/L', 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) including amendment 1 (1992) and amendment 2 (1993)

* European standards CENELEC EN55013, EN 55020

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-93 E	CCIR	symmetrical IF output; IEC connector (14.5 mm)
KS-H-93 O	OIRT	symmetrical IF output; IEC connector (14.5 mm)
KS-H-93 EL	CCIR	symmetrical IF output; IEC connector (32.2 mm)
KS-H-93 OL	OIRT	symmetrical IF output; IEC connector (32.2 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

1. 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[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-93 O	Low band	1 to 5	49.75 to 93.25[1]	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[2]		

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.

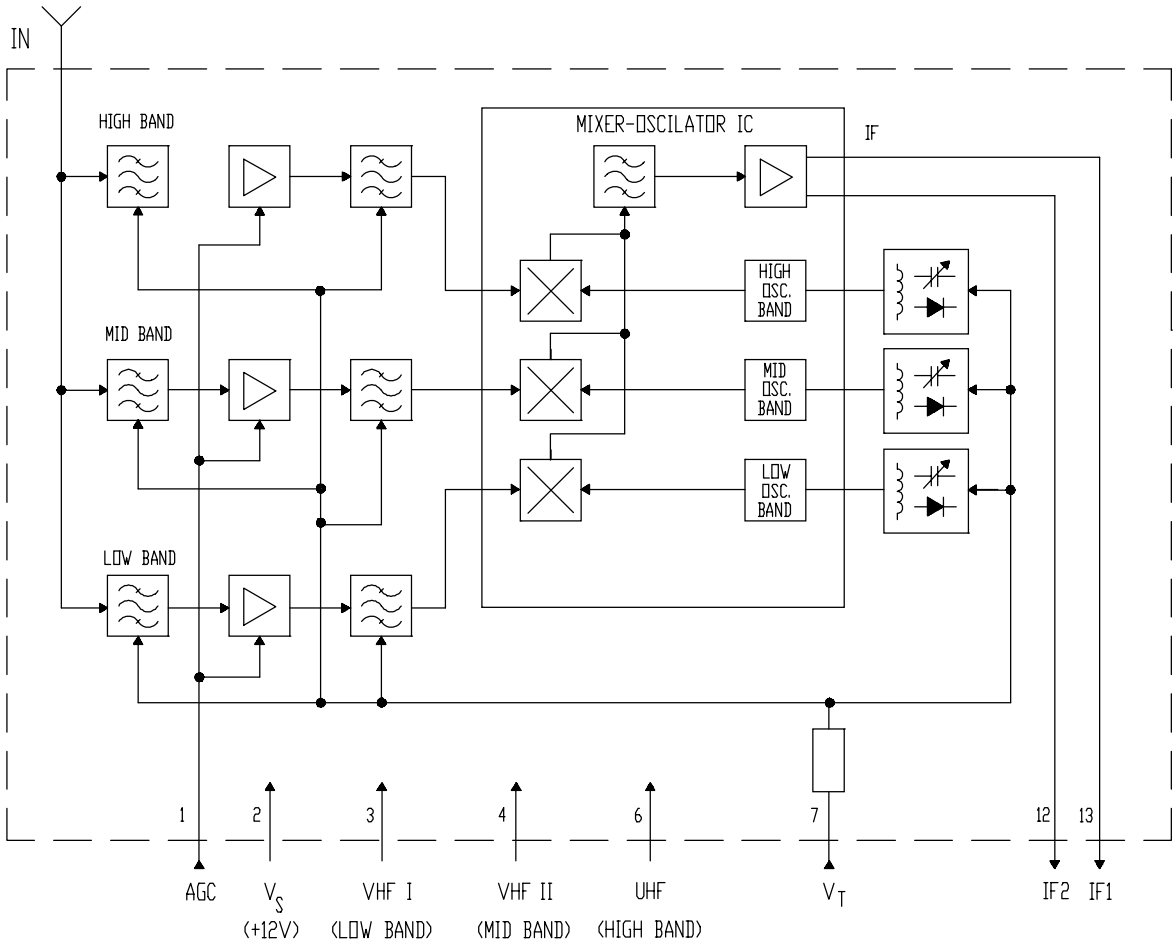

Fig.1 Electrical block diagram

PINNING

SYMBOL	PIN	DESCRIPTION
AGC	1	gain control voltage
B+	2	supply voltage
+ 12 V	3	Low band switch
+ 12 V	4	Mid band switch
+ 12 V	6	High band switch
V_S	7	Tuning voltage 0.7 to 28 V
IF2	12	symmetrical IF output
IF1	13	symmetrical 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	CONDITIONS	MIN.	MAX.	UNIT
Non-operational conditions					
T_{amb}	ambient temperature		-40	+60	^{0}C
RH	relative humidity			85	%
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 I_S	supply voltage supply current	2	11.4	12.0	12.6 65	V mA
V_{BS} I_{BS}	bandswitching voltage bandswitching current	3, 4 and 6	11.4	12.0	12.6 20	V mA
V_{AGC} ΔV_{AGC} I_{AGC}	AGC input voltage AGC input voltage range AGC input current	1	0.85	9.2	9.7 9.2 30	V V µA

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	12.0 +/- 0.1	V
V_{AGC}	AGC input voltage	9.2 +/- 0.1	V
V_T	tuning voltage	28 +/- 0.2	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.	MAX.	UNIT
WSWR V_{ant}	reflection coefficient antenna connection disturbance voltage	referred to 75 Ω impedance < 1.75 GHz; comply to “EN55013 section 3.3”		4 46	dBµV

General characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f_b	frequency range,				
	KS-H-93 E:				
	low band		48.25	168.25	MHz
	mid band		175.25	463.25	MHz
	high band		471.25	855.25	MHz
	KS-H-93 O:				
	low band		49.75	167.25	MHz
	mid band		175.25	463.25	MHz
	high band		471.25	855.25	MHz
G_V	voltage gain:				
	all channels		38		dB
	gain taper			7	dB
F	noise:				
	low band			9	dB
	mid band			10	dB
	high band			11	dB
ΔV_{AGC}	AGC input voltage range:				
	low and mid band		40		dB
	high band		30		dB
αi	image rejection:				
	low band		70		dB
	mid band		66		dB
	high band		53		dB
α_{IF}	IF rejection (picture)				
	low and mid band		60		
	high band		70		
Δf	oscillator drift				
	Ambient temperature change	$\Delta T=25^0C$ +/- 2^0C (25^oC to 50^oC+/-2^oC)			
	low band			+/- 500	kHz
	mid band			+/- 750	kHz
	high band			+/- 1000	kHz
	Supply voltage change	+/- 5%			
	low band			+/- 250	kHz
	mid and high bands			+/- 500	kHz

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.

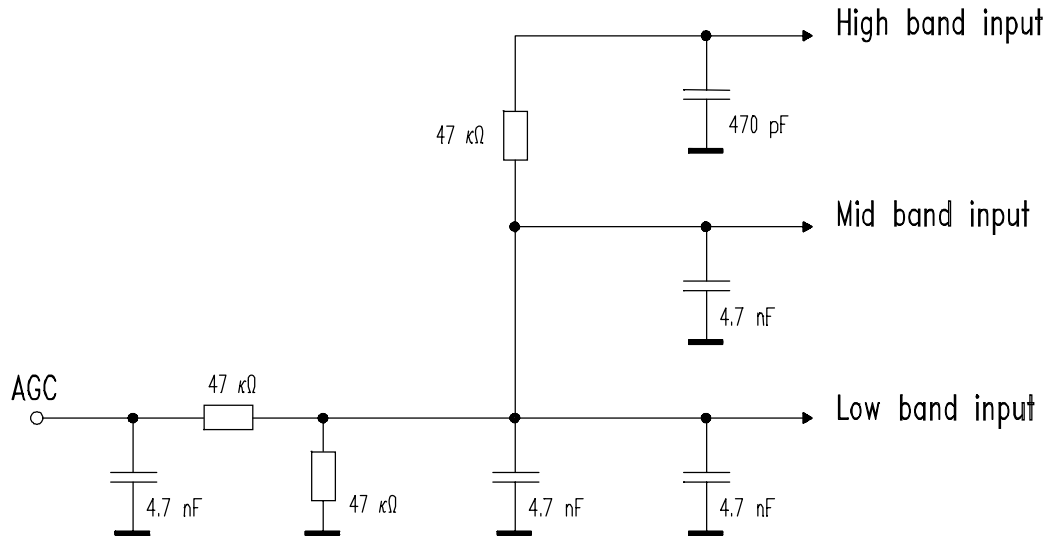

Fig.2 Internal AGC circuit.

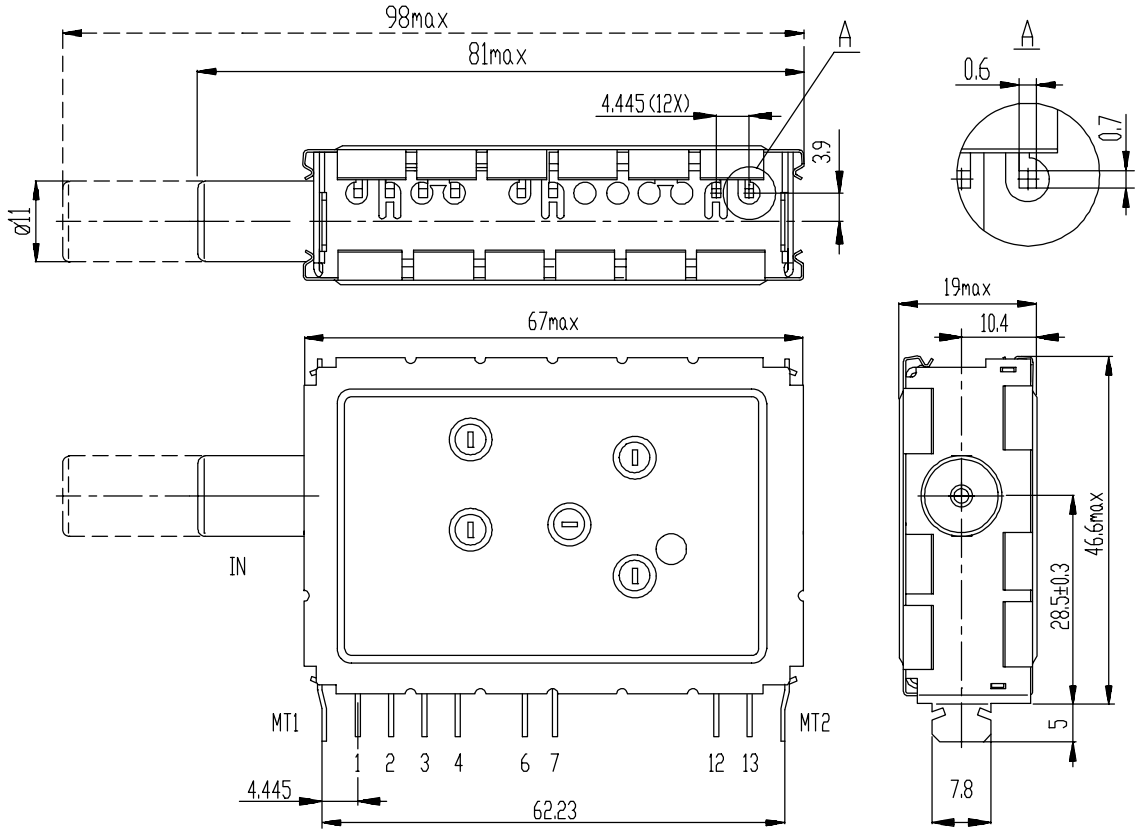

Fig.3 Mechanical outline

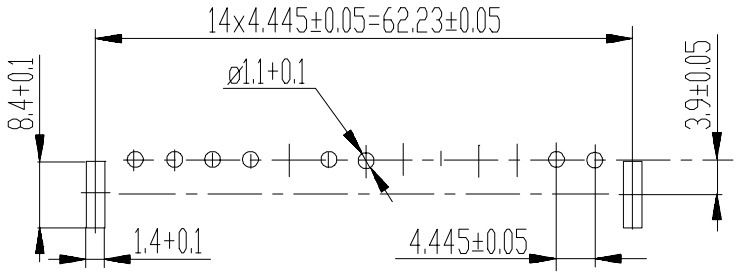

Fig.4 Punching pattern seen from solder side

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