

Hyperband television tuner
KS-H-791 , KS-H-781 / 782
FEATURES

- Members of the KS-H-79 family small sized VHF/Hyperband/UHF tuners
- Systems CCIR: B/G, H; OIRT: D/K
- Voltage synthesized tuning (VST)
- Off-air channels, S-cable channels and Hyperband
- Compact size
- Comply to "CENELEC EN55020" and "EN55013"

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

- CISPR 13 (1990) includ. 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

DESCRIPTION

The KS-H-791/791A tuners belong to the KS-H-79 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 IF output can drive a SAW filter directly and has capability to drive a symmetrical or asymmetrical load.

ORDERING INFORMATION

TYPE	SYSTEM	DESCRIPTION
KS-H-791 E	CCIR	symmetrical IF output; IEC connector (22.5 mm)
KS-H-791 EA	CCIR	asymmetrical IF output; IEC connector (22.5 mm)
KS-H-791 O	OIRT	symmetrical IF output; IEC connector (22.5 mm)
KS-H-791 OA	OIRT	asymmetrical IF output; IEC connector (22.5 mm)
KS-H-781 E	CCIR	symmetrical IF output; IEC connector (22.5 mm)
KS-H-781 EA	CCIR	asymmetrical IF output; IEC connector (22.5 mm)
KS-H-781 O	OIRT	symmetrical IF output; IEC connector (22.5 mm)
KS-H-781 OA	OIRT	asymmetrical IF output; IEC connector (22.5 mm)
KS-H-781 EP	CCIR	symmetrical IF output; PHONO connector
KS-H-781 EAP	CCIR	asymmetrical IF output; PHONO connector
KS-H-781 OP	OIRT	symmetrical IF output; PHONO connector
KS-H-781 OAP	OIRT	asymmetrical IF output; PHONO connector
KS-H-782 EA	CCIR	asymmetrical IF output; IEC connector (22.5 mm)

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Correct.	Doc. №	Signature	Date		8
Prepared	Naudziunas		03.09.08		
Confirmed	G. Jurna		03.09.08		

INTERMEDIATE FREQUENCIES

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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-791 E / EA KS-H-781 E / EA KS-H-781 EP / EAP KS-H-782 EA	Low band	E2 to Z	48.25 to 83.25	S01 to S9	69.25 to 161.25
	Mid band	E5 to E12	175.25 to 224.25	S10, S11 to S41	168.25, 231.25 to 463.25
	High band	E21 to E69	471.25 to 855.25		
KS-H-791 O / OA KS-H-781 O / OA KS-H-781 OP / OAP	Low band	1 to 5	49.75 to 93.25	SK1 to SK7	111.25 to 159.25
	Mid band	6 to 12	175.25 to 223.25	SK8, SK11 to SK40	167.25, 231.25 to 463.25
	High band	21 to 69	471.25 to 855.25		

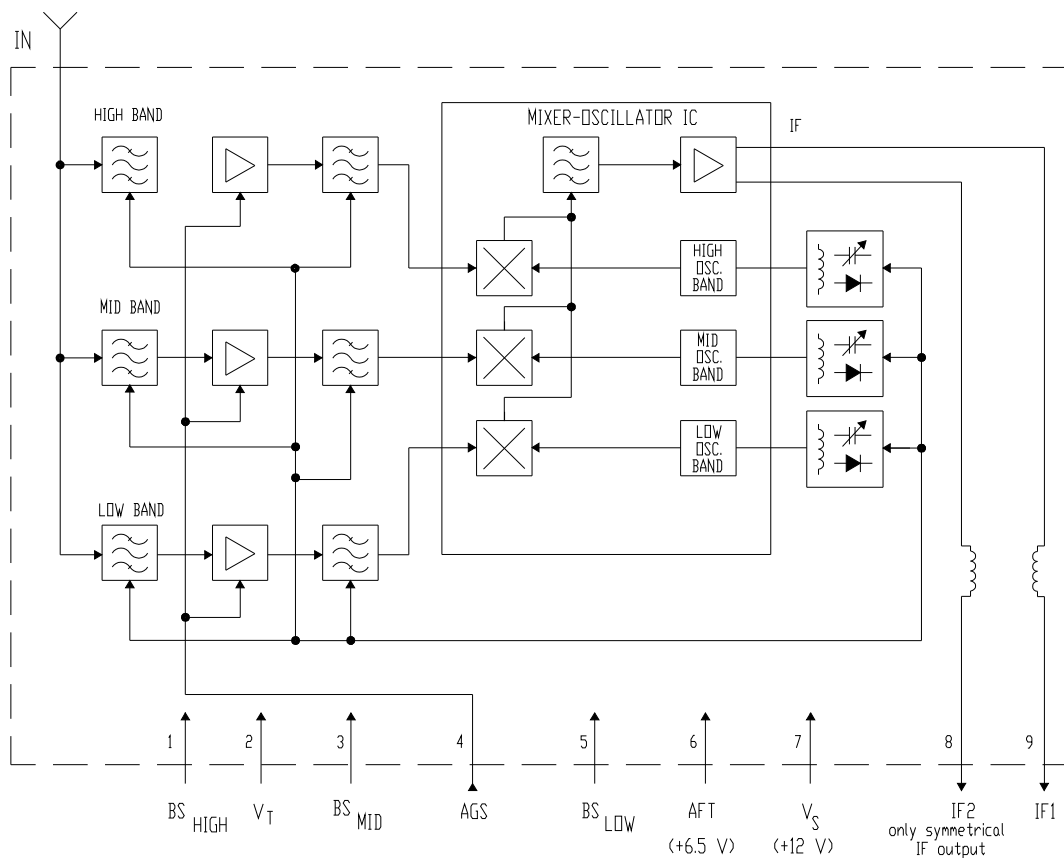


Fig.1 Electrical block diagram

PINNING

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SYMBOL	PIN	DESCRIPTION
BS _{HIGH}	1	high band switch
V _T	2	tuning voltage
BS _{MID}	3	mid band switch
AGC	4	gain control voltage
BS _{LOW}	5	low band switch
AFT	6	AFT voltage +6,5 V , KS-H-782 n. c.
V _S	7	Supply voltage +12 V
IF2 only symmetrical IF output	8	KS-H-791 / 781: symmetrical IF output; KS-H-791 A / 781 A / 782 A : n. c.
IF1	9	KS-H-791 / 781: symmetrical IF output; KS-H-791 A / 781 A / 782 A : asymmetrical IFoutput
GND	MT1, MT2	mounting tags (ground)
IN		aerial input connector

LIMITING VALUES
Environmental conditions

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
Non-operational conditions				
T _{amb}	ambient temperature	-40	+60	°C
RH	relative humidity	-	100	%
Operational conditions				
T _{amb}	ambient temperature	-15	+60	°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	7	11.75	12.0	12.5	V
I _S	supply current		-	-	65	mA
ΔV _T	tuning voltage range	2	0.5	-	28	V
I _T	tuning current		-	-	50.0	μA
V _{AGC}	AGC input voltage	4	-	8.0	8.5	V
ΔV _{AGC}	AGC input voltage range		0.85	-	8.0	V
I _{AGC}	AGC input current		-	-	90	μA
V _{AFT}	AFT input voltage	6	-	6.5	-	V
ΔV _{AFT}	AFT input voltage range		2.0	-	11.0	V
I _{AFT}	AFT input current		-	-	5.0	μA
V _{BS}	bandswitching voltage	1, 3, 5	11.75	12.0	12.5	V
I _{BS}	bandswitching current		-	-	25	mA

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Bandswitching

BAND	PIN 1	PIN 3	PIN 5	UNIT
Low	0 or open	0 or open	12	V
Mid	0 or open	12	0 or open	V
High	12	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	°C
RH	relative humidity	60 +/- 15	%
V_s	supply voltage	12.0 +/- 0.1	V
V_{AGC}	AGC input voltage	8.0 +/- 0.1	V
t_{pr}	pre-heating time (+12 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	5	
V_{ant}	antenna connection disturbance voltage	< 1.75 GHz; comply to "EN55013 section 3.3"	-	-	46	dB μ V

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General characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
f_b	frequency range: KS-H-791 / 781 E / EA , 781 EP / EAP , 782 EA					
	low band		48.25	-	161.25	MHz
	mid band		168.25	-	463.25	MHz
	high band		471.25	-	855.25	MHz
	KS-H-791 / 781 O / OA , 781 OP / OAP					
	low band		49.75	-	159.25	MHz
mid band		167.25	-	463.25	MHz	
high band		471.25	-	855.25	MHz	
G_v	voltage gain: all channels gain taper	Symmetrical IF output is loaded with a test circuit according diagram fig.2.	38	45	52	dB
			-	-	8	dB
Y	RF-curves, tilt	Symmetrical IF output is loaded with a test circuit according diagram fig.2	-	2.5	4.0	dB
F	noise: low and mid band high band	Symmetrical IF output is loaded with a test circuit according diagram fig.2.	-	5	10	dB
			-	6	11	dB
ΔG_{AGC}	AGC input voltage range (0.85-8) V: low and mid band high band		45	60	-	dB
			40	50	-	dB
α_i	image rejection: low band mid band: to 300 MHz over 300 MHz high band		60	74	-	dB
			60	70	-	dB
			55	65	-	dB
			48	60	-	dB
α_{IF}	IF rejection (picture): Channel E2 low band mid and high bands		55	65	-	dB
			60	70	-	dB
			65	78	-	dB
V_{ESD}	electrostatic discharge(ESD): protection on pins 1 to 9 protection on antenna socket	The tuner meets specifications IEC 1000-4- 2 level 1 for pins and level 4 for antenna socket.	2	-	-	kV
			8	-	-	kV
Δf_{AFT}	AFT characteristic At AFT voltage 6,5V \pm 4,5V: low and mid band high band	KS-H-782 EA to nothing	0,6	1,0	-	MHz
			0,6	1,0	-	MHz
Δf	oscillator drift: Ambient temperature range low band mid band high band Supply voltage change low band mid band high band	$\Delta T=25^{\circ}C \pm 2^{\circ}C$ ($25^{\circ}C$ to $50^{\circ}C$) +/-5%			+/-500	kHz
					+/-1200	kHz
					+/-1200	kHz
					+/-250	kHz
					+/-500	kHz
					+/-500	kHz

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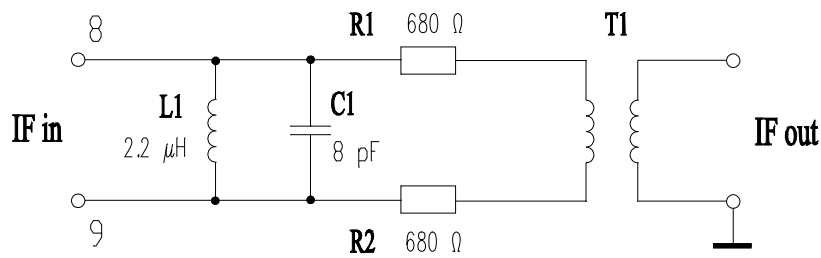
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Visibility test

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.



Dummy Attenuation = 22.6 dB

T1 – RF Transformer.
 W – Ratio = 1:4 (IF – IN = 4 / IF – OUT = 1).
 Type: MCL T4-1 or equivalent.
 Supplier: Industrial Electronics GmbH,
 Hauptstr. 71-79,
 65760 Eschborn, Tel: (0)6196 - 48689

Fig. 2 Test circuit

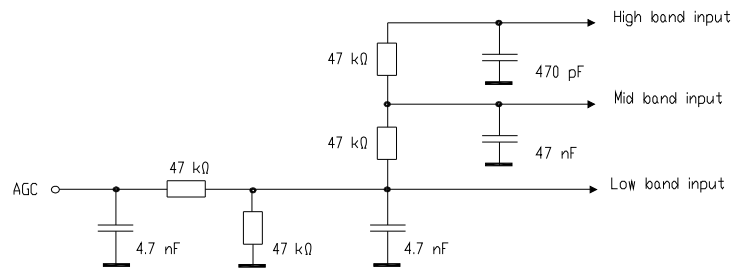


Fig.3 Internal AGC circuit.

AGC characteristics shown on Fig. 4

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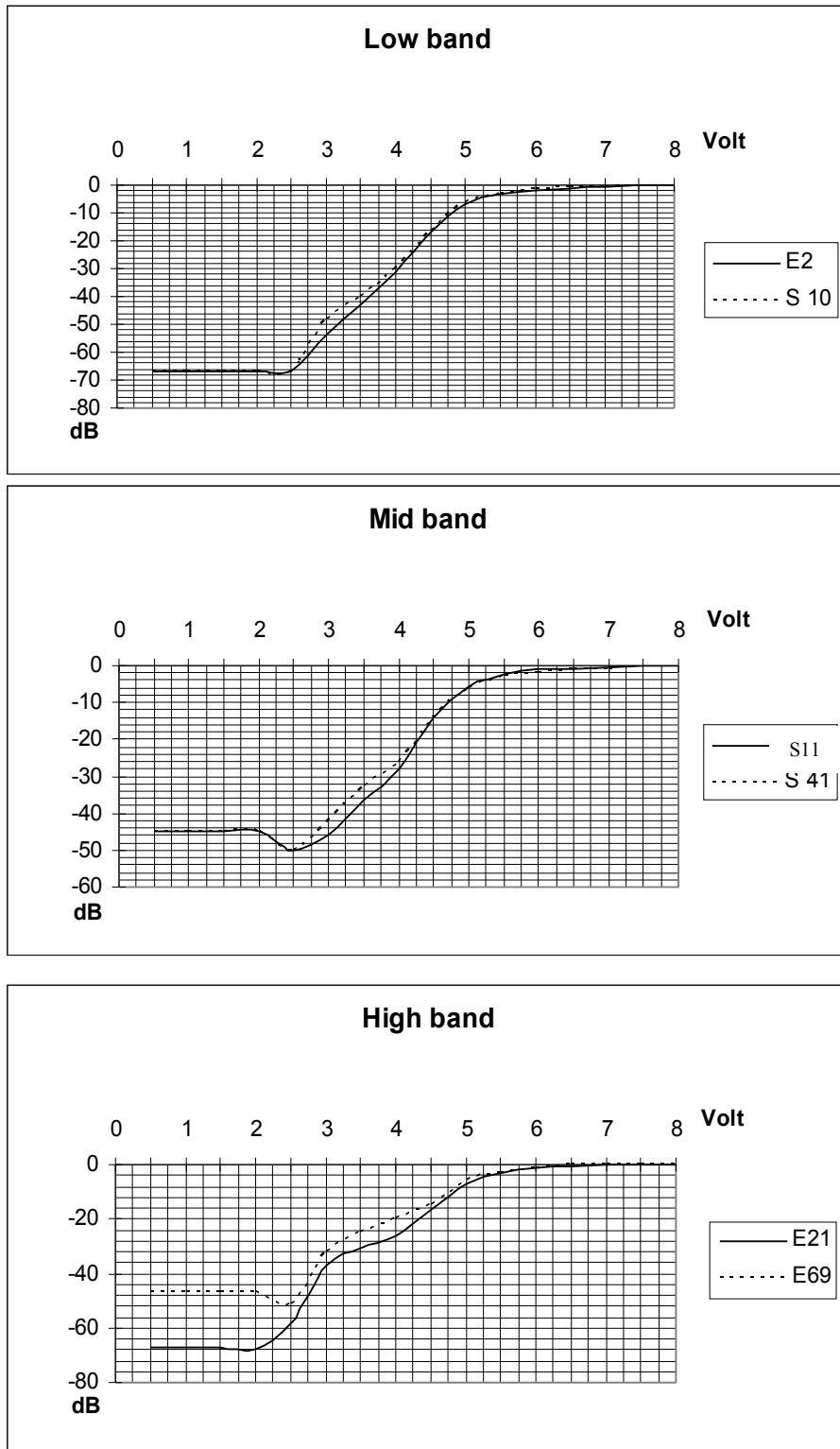


Fig.4 AGC characteristics

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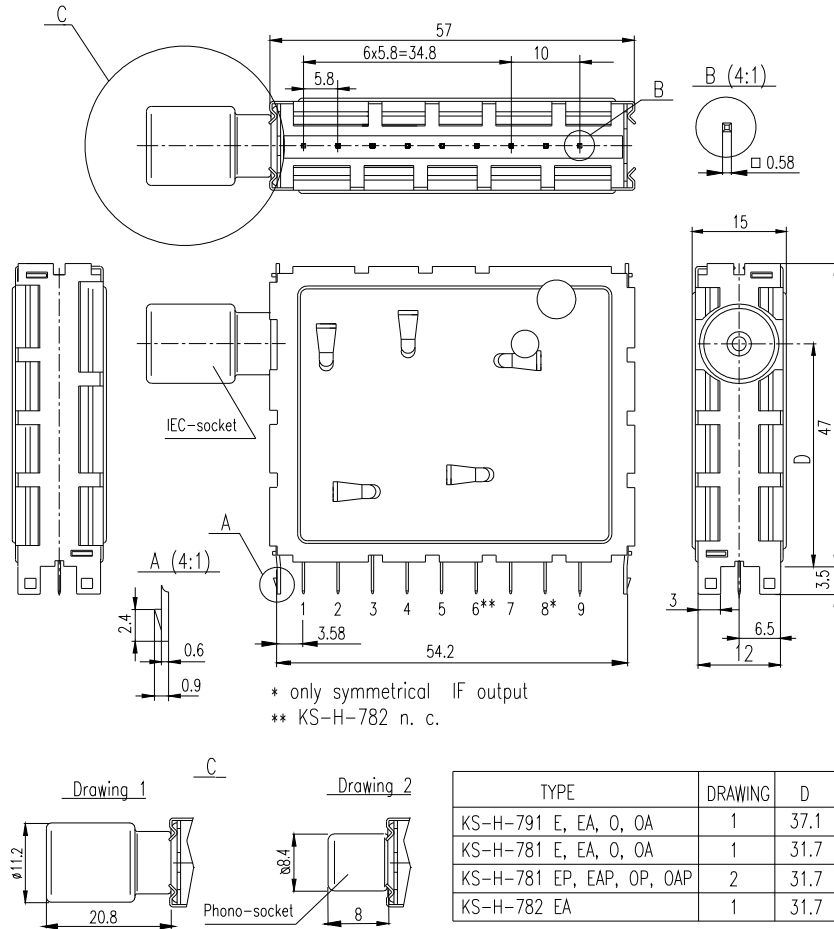


Fig.5 Mechanical outline

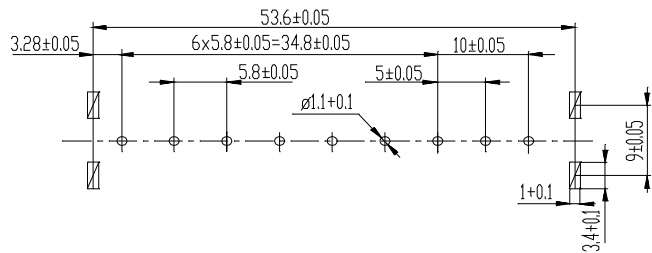


Fig.6 Punching pattern seen from solder side

Aerial connections

Standard IEC socket female 75 Ω only KS-H-791, KS-H-781 , KS-H-782.
 Standard PHONO socket female 75 Ω only KS-H-781 P.

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.