


DATA SHEET

UV1316 MK4 VHF/UHF/Hyperband PAL TV tuner

Product specification

Approval by : 
Name / Date : Lim Kui Yong / 05.11.2004

PHILIPS

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****FEATURES**

- Member of UV1300 MK4 family of small-sized full band tuners
- Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
- Digitally-controlled (PLL) tuning via I²C-bus
- Reduced power consumption
- Software controlled weak signal booster
- Off-air, S-cable and hyperband channels from 48.25 MHz to 863.25MHz inclusive
- World standardized mechanical dimensions and pinning. Horizontal mounting is optionally available
- Various connector types available

**ORDERING INFORMATION**

TYPE	DESCRIPTION	ORDER NUMBER
UV1316/A I-4	Asymmetrical IF, IEC	3139 147 20691
UV1316/S I-4	Symmetrical IF, IEC	3139 147 20891
UV1316/S I H-4	Symmetrical IF, IEC, horizontal mount	3139 147 22111
UV1316/A I H-4	Asymmetrical IF, IEC, horizontal mount	3139 147 22101
UV1316/A L-4	Asymmetrical IF, IEC long	3139 147 22301
UV1316/A P-4	Asymmetrical IF, phono	3139 147 22411
UV1316/A L-H-4	Asymmetrical IF, IEC long, horizontal mount	3139 147 22421
UV1316/S L-4	Symmetrical IF, IEC long	3139 147 24111

MARKING

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

- Type number
- Code number
- Origin letter of factory
- Change code
- Year and week code

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****DESCRIPTION**

The UV1316 MK4 tuner belongs to the UV1300 family of fourth generation WSP tuners, which are designed to meet a wide range of TV applications. It is a full band tuner suitable for CCIR systems B/G, H, L, L', I and I'. The low IF output impedance is designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

The UV1316 MK4 is backwards compatible with its predecessors, the UV1316 MK1, MK2 and MK3. In addition, a 5 level Analog Digital Converter comes standard with the MK4.

This tuner complies with the requirements of radiation, signal handling capability and immunity conforming to:

- CISPR 13 (1990) incl. amendment 1 (1992) and amendment 2 (1993)
- European standards CENELEC EN55013, EN55020
- CISPR13 (4th Edition)

INTERMEDIATE FREQUENCIES

SIGNAL	FREQUENCY ⁽¹⁾ (MHz)				
	SYSTEM B/G, H	SYSTEM L	SYSTEM L', ⁽²⁾	SYSTEM I	SYSTEM I'
Picture carrier	38.90	38.90	33.40	39.50	38.90
Color	34.47	34.47	37.83	35.07	34.47
Sound 1	33.40	32.40	39.90	33.50	32.90
Sound 2	33.16	-	-	33.00	32.40

Notes

(1) The oscillator frequency is above the input signal frequency.

(2) Does not cover channel FA.

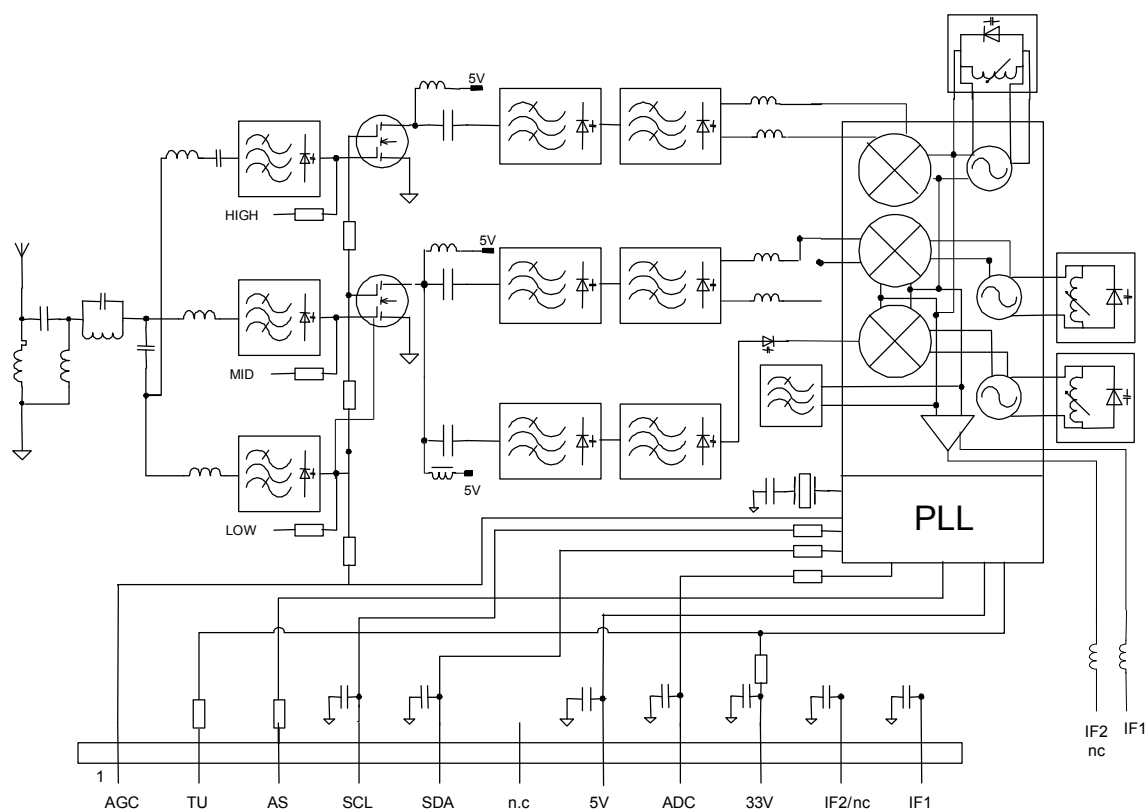
CHANNEL COVERAGE

BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
	CHANNELS	FREQUENCY RANGE (MHz)	CHANNELS	FREQUENCY RANGE (MHz)
Low band	E2 to C	48.25 to 82.25 ⁽³⁾	S01 to S08	69.25 to 154.25
Mid band	E5 to E12	175.25 to 224.25	S09 to S38	161.25 to 439.25
High band	E21 to E69	471.25 to 855.25 ⁽⁴⁾	S39 to S41	447.25 to 463.25

Notes

⁽³⁾ Sufficient margin is available to tune down to 44.00MHz.

⁽⁴⁾ Sufficient margin is available to tune up to 865.25MHz.

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****BLOCK DIAGRAM****PINNING**

SYMBOL	PIN	DESCRIPTION
AGC	1	Automatic Gain Control Voltage
TU	2	Tuning voltage monitor (output)
AS	3	I ² C-Bus Address Select
SCL	4	I ² C-Bus Serial Clock
SDA	5	I ² C-Bus Serial Data
n.c.	6	Not Connected
V _s	7	Supply Voltage +5V
ADC	8	ADC Input ⁽⁵⁾
V _{ST}	9	Fixed tuning Supply Voltage +33V
I.F out 2 / d.n.c	10	Symmetrical I.F output 2 / Do not connect for asymmetrical
I.F out 1	11	Asymmetrical I.F Output / Symmetrical I.F output 1
GND	M1,M2,M3,M4	Mounting Tags (Ground)

NOTE

⁽⁵⁾ Standard 5 level Analog to Digital Converter

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****LIMITING VALUES****Environmental conditions**

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Non-operational Conditions					
T_{AMB}	Ambient temperature		-25	+85	°C
RH	Relative humidity		-	95	%
g_B	Bump acceleration	25g	-	245	m/s ²
g_S	Shock acceleration	50g	-	490	m/s ²
	Vibration amplitude	10 to 55 Hz	-	0.35	mm
Operational conditions					
T_{AMB}	Ambient temperature		-10	+65	°C
RH	Relative humidity		-	95	%

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	4.75	5.00	5.50	V
$V_{S(ripple)}$	Peak to peak ripple voltage susceptibility ⁽⁶⁾		10	-	-	mV
I_S	Supply current		-	-	100	mA
V_{ST}	Tuning supply voltage	9	30	33	35	V
$V_{ST(ripple)}$	Peak to peak ripple voltage susceptibility		10	-	-	mV
I_{ST}	Tuning supply current		-	-	1.7	mA
V_{AGC}	AGC input voltage	1	-	4.0	4.5	V
ΔV_{AGC}	AGC input voltage range		0.5	-	4.0	V
I_{AGC}	AGC input current		-	-	20	μA
V_{AS}	Address select input voltage	3	-	-	5.5	V
V_{SCL}	Serial clock input voltage	4	-0.3	-	5.5	V
V_{SDA}	Serial data input voltage	5	-0.3	-	5.5	V
I_{SDA}	Serial data input current		-1	-	5	mA

NOTE

⁽⁶⁾ Sinusoidal ripple voltage superimposed on the 5V-supply voltage in the frequency range of 15 kHz to 500 kHz. Criteria for TV interference is >57 dB.

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****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 to system B,G and H.

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 +5V	5 ± 0.125	V
V_{AGC}	AGC supply voltage	4 ± 0.1	V
V_{ST}	Tuning supply voltage	33 ± 0.5	V
t_{pr}	Pre-heating time (+5V at pin 7)	10	Minutes
$Z_{S(AE)}$	Aerial source impedance (unbalanced)	75	Ω

Aerial input characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
VSWR	Reflection coefficient referred to 75 Ω impedance	Picture carrier at maximum gain	-	5	
V_{ant}	Antenna connection disturbance voltage	< 950 MHz	-	46	dB μ V
		0.950 < f < 2.15 GHz	-	54	dB μ V

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****GENERAL CHARACTERISTICS**

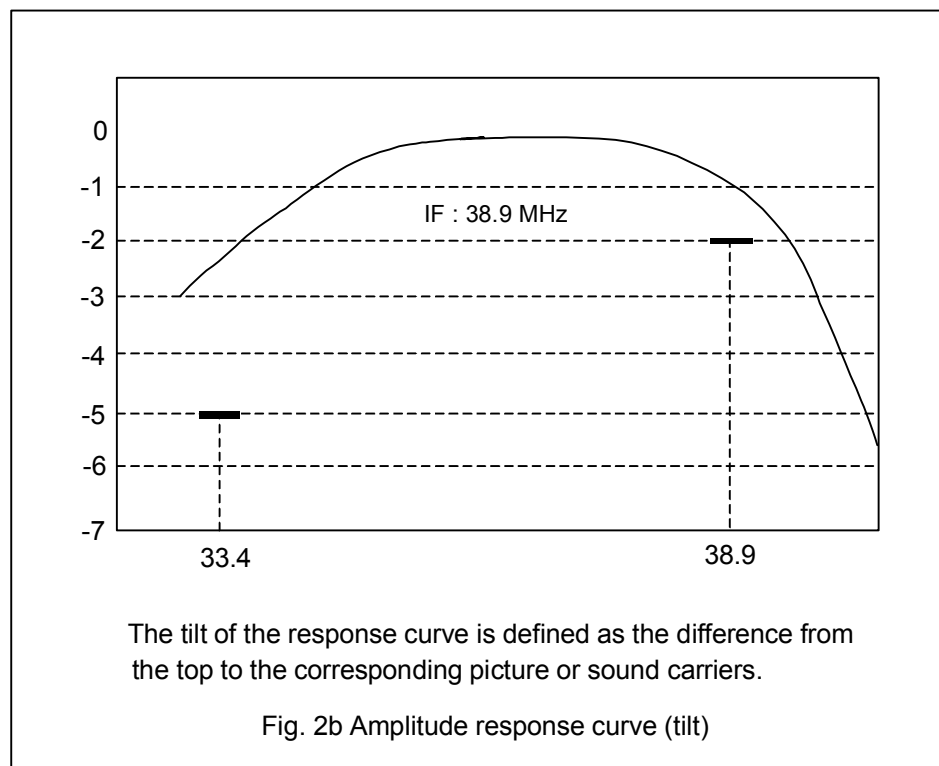
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
f_B	Frequency range: Low band Mid band High band		48.25 161.25 447.25	- - -	154.25 439.25 855.25	MHz MHz MHz
Δf_B	Margin: For low band end (negative) For mid/high band		-2/+3 ± 3	- -	- -	MHz MHz
G_v	Voltage gain: Low and Mid band High band Gain taper - (All off-air channels)		40 40 -	45 45 -	- - 8	dB dB dB
	Noise: Low band Mid band High band		- - -	5 5 5	9 9 9	dB dB dB
ΔV_{AGC}	AGC input voltage range: Low Band Mid Band High band		40 40 35	50 50 45	- - -	dB dB dB
α_i	Image rejection (nominal gain to 10 dB gain reduction): Low and mid band Mid band High band	< 300 MHz > 300 MHz	66 60 50	75 78 55	- - -	dB dB dB
α_{IF}	IF rejection (picture)		60	80	-	dB
	1/2 IF Susceptibility		60	80	-	dB μ V
$\alpha_{1/2RF}$	1/2 RF Rejection		60	-	-	dB
α_S	Sound-chroma moire rejection: Off-air UHF	Up to 40dB gain reduction Up to 30dB gain reduction	56 56	65 75	- -	dB dB
m_x	Cross modulation: In-band All bands ($n\pm 1$) Low band ($n\pm 2$) Mid band($n\pm 2$) High band($n\pm 2$) Out of band		66 70 70 68 -	- 82 82 80 100	- - - - -	dB μ V dB μ V dB μ V dB μ V dB μ V

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4**

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{OSC}	Oscillator voltage:					
	IF pin		-	70	85	dB μ V
	All other pins		-	50	70	dB μ V
	Overloading:					
	1dB gain compression		74	81	-	dB μ V
	PLL lock-out		90	-	-	dB μ V
	Tuning system interference:					
	Crystal harmonics interference rejection at IF output	Input level 50 dB μ V	54	-	-	dB
	Divider interference rejection at IF output		57	-	-	dB
	Residual FM caused by IIC x-talk		-	-	5	kHz
V_{ESD}	Electrostatic discharge (ESD) on all pins	Note 1	2	-	-	kV
V_{SURGE}	- On Antenna		4	-	-	kV
	- On Ground Pin		TBF			
	Oscillator characteristics:					
	Oscillator tuning resolution	Note 2	31.25	-		kHz
	Lock-in time		-	-	100	msec

NOTE

1. All the pins of the tuner are protected against electrostatic discharge (ESD) up to 2 kV. The product is in accordance with EIA/JES022-A114-A
2. Resolution 31.25kHz, 50.00kHz or 62.5 kHz (see table "Ratio select bits")

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****AMPLITUDE RESPONSE****VISIBILITY TEST (INPUT IMMUNITY AND IMMUNITY FROM RADIATED FIELDS)**

The tuners meet the requirements of the European Standard "EN55020", when measured in an adequate television receiver¹. The external AGC must be adjusted so that the picture carrier level (top sync) at the tuner output does not exceed 107 dB μ V at an input signal level of 74 dB μ V or greater.

Refer to section **IF LOAD** on page 14 for more details.

RADIATION

The tuners meet the requirements of the European Standard "EN55013" and "CISPR13" (1990), when measured in an adequate television receiver¹.

Note 1 : Or measured in our reference application board.

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****APPLICATION INFORMATION**

A detailed description of the I²C-bus specification, with applications, is given in brochure "The I²C-bus and how to use it". This brochure may be ordered using the code number 9398 393 40011.

Table 1 I²C-bus data format, 'WRITE' mode

NAME	BYTE	BITS								ACK
		7				0				
		MSB				LSB				
Address Byte	ADB	1	1	0	0	0	MA1	MA0	R/W=0	A
Prog. Div. Byte 1	DB1	0	N14	N13	N12	N11	N10	N9	N8	A
Prog. Div. Byte 2	DB2	N7	N6	N5	N4	N3	N2	N1	N0	A
Control Byte	CB	1	CP	T2	T1	T0	RSA	RSB	WSB	A
Band-switch byte	BB	X	X	X	P4	P3	P2	P1	P0	A

Table 2 Description of symbols used in Table 1

BIT	DESCRIPTION
MA1 and MA0	Programmable address bits (see Table 3)
R/W	Logic 0 for write mode
N14 to N0	Programmable divider bits; $N = N14 \times 2^{14} + N13 \times 2^{13} + \dots + N1 \times 2^1 + N0$
CP	Charge pump current control bit: Logic 0 : Charge pump current is 20µA Logic 1 : Charge pump current is 100µA
T2,T1 and T0	Test bits (see table 4)
RSA and RSB	Reference divider ratio select bits (see Table 5)
WSB	Weak Signal Booster control bit Logic 0 : normal mode – no gain increase : IF filter is used Logic 1 : Weak Signal Booster activated : IF filter is by-passed
P0,P1,P2,P3,P4	Ports control bits : Logic 0 : Corresponding Port is "OFF". High impedance state (default) Logic 1 : Corresponding Port is "ON".

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****I²C-bus address selection**

The module address contains programmable address bits (MA1 and MA0) which offer the possibility of having several synthesizers (up to 4) in one system by applying a specific voltage on the AS input. The relationship between MA1 and MA0 and the input voltage applied to the AS input is given in Table 3.

Table 3 ADDRESS SELECTION

MA1	MA0	ADDRESS	VOLTAGE APPLIED ON AS INPUT
0	0	C0	0V to 0.1xV _{CC}
0	1	C2	Open or 0.2xV _{CC} to 0.3xV _{CC}
1	0	C4	0.4xV _{CC} to 0.6xV _{CC}
1	1	C6	0.9xV _{CC} to 1.0xV _{CC}

Table 4 TEST MODES

T2	T1	T0	TEST MODES
0	0	0	Normal mode
0	0	1	Normal mode ⁽¹⁾
0	1	0	Charge-pump is 'OFF' ⁽³⁾
0	1	1	Byte BB ignored
1	1	0	Charge-pump is sinking current
1	1	1	Charge-pump is sourcing current
1	0	0	½ f _{REF} is available on port P3 ⁽²⁾
1	0	1	½ f _{DIV} is available on port P3 ⁽²⁾

Notes

1. This is the default mode at **Power-On Reset**
2. The P3 port cannot be used when these test modes are active
3. ½ f_{REF} is available on port P3

Table 5 REFERENCE DIVIDER RATIO SELECT BITS

RSA	RSB	REFERENCE DIVIDER RATIO	STEP SIZE (kHz)
X	0	80	50 ⁽¹⁾
0	1	128	31.25 ⁽¹⁾
1	1	64	62.5 ⁽¹⁾

Notes

1. Crystal frequency or signal at XTIN of 4 MHz.

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****CONTROL BYTE 2 :**

Band switching	0	0	0	P4	P3	P2	P1	P0
Low Band	0	0	0	0	0	0	0	1
Mid Band	0	0	0	0	0	0	1	0
High Band	0	0	0	0	0	1	0	0

Ports 0 to 3 control the bandswitching.

TELEGRAM EXAMPLES (WRITE MODE):

Start – ADB – ACK – DB1 – ACK – DB2 – ACK – Stop

Start – ADB – ACK – CB – ACK – BB – ACK – Stop

Start – ADB – ACK – CB – ACK – Stop

Start – ADB – ACK – DB1 – ACK – DB2 – ACK – CB – ACK – BB – ACK – Stop

Start – ADB – ACK – CB – ACK – BB – ACK – DB1 – ACK – DB2 – ACK – Stop

Start – ADB – ACK – DB1 – ACK – DB2 – ACK – CB – ACK – Stop

Note:

Start = start condition

ADB = address byte

ACK = acknowledge

DB1 = divider byte 1

DB2 = divider byte 2

CB = control byte

BB = band-switch byte

Stop = stop condition

For channel selection involving band switching, in order to ensure smooth tuning to the desired channel without causing unnecessary charge pump action, it is recommended to consider the difference between wanted channel frequency (fw) and the current channel frequency (fc):

- If $fw > fc$, use telegram as :

Start – ADB – ACK – DB1 – ACK – DB2 – ACK – CB – ACK – BB – ACK – Stop

- If $fw < fc$, use telegram as :

Start – ADB – ACK – CB – ACK – BB – ACK – DB1 – ACK – DB2 – ACK – Stop

Unnecessary charge pump action will result in very low tuning voltage ($V_T \approx 0V$) which may drive the oscillator to extreme conditions. Refer to Table 2 for recommendations on how to set the charge pump (CP) .

READ MODE; R/W = 1 (see Table 7)

Data can be read from the device by setting R/W bit to 1. After the slave address has been recognised, the device generates an ACKnowledge pulse and the first DATA byte (status byte) is transferred on the SDA line (MSB first). DATA is valid on the SDA line during a HIGH-level of the SCL clock signal. A second DATA byte can be read from the device if the microcontroller generates an ACKnowledge on the SDA line (master ACKnowledge). End of transmission will occur if no master ACKnowledge occurs. The device will then release the DATA line to allow the microcontroller to generate a STOP condition.

The POR flag is set to 1 at power-on. The flag is reset when an end-of-data is detected by the device (end of a READ sequence). Control of the loop is made possible with the in-LOCK flag FL which indicates when the loop is locked (FL=1).

The internal AGC status can be known from bit AGC (AGC=1), which indicates when the selected take-over point is reached.

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4**

A built-in ADC is available on the P6/ADC pin. This converter can be used to apply AFC information to the microcontroller from the IF section of the television. The relationship between the bits A2,A1 and A0 is given in Table 8.

Table 6 'READ' data format

NAME	BYTE	BITS							
		MSB ⁽¹⁾							LSB
Address Byte	ADB	1	1	0	0	0	MA1	MA0	R/W=1
Status Byte	SB	POR	FL	1	1	1	A2	A1	A0

Note:

1. MSB is transmitted first.

Table 7 Description of the bits used in Table 6

BIT	DESCRIPTION
MA1 and MA0	Programmable address bits (see Table 3)
R/W	Logic 1 for read mode
POR	Power-on reset flag : Logic 0 : after end of the first read sequence Logic 1 : at power-on
FL	In-lock flag : Logic 0 : loop is not locked Logic 1 : loop is locked
A2,A1 and A0	Digital outputs of the 5-level ADC (see Table 8)

Table 8 ADC digital outputs ⁽¹⁾

A2	A1	A0	VOLTAGE APPLIED ON ADC INPUT
1	0	0	0.6xV _{CC} to 5.5V
0	1	1	0.45xV _{CC} to 0.6xV _{CC}
0	1	0	0.30xV _{CC} to 0.45xV _{CC}
0	0	1	0.15xV _{CC} to 0.30xV _{CC}
0	0	0	0 to 0.15xV _{CC}

Note:

1. Accuracy is $\pm 0.03 \times V_{CC}$
2. No erratic codes in the transition

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****TELEGRAM EXAMPLES (READ MODE):**

Start – AB (R/W=1) – XX⁽¹⁾ – X⁽²⁾ – Stop

Start – AB (R/W=1) – XX⁽¹⁾ – ACK – XX⁽¹⁾ – X⁽²⁾ – Stop

Notes

⁽¹⁾ XX = Read status byte

⁽²⁾ X = No ACKnowledge from the master means end of sequence

POWER-ON RESET

The power-on detection threshold voltage VPOR is set to tbf V at room temperature. Below this threshold the device is reset to the power-on state.

At power-on state the following actions take place :

- The charge pump current is set to 100 μ A
- The test bits T2, T1 and T0 are set to logic '001'. The charge pump can be either sinking or sourcing.
- The Weak Signal Booster is disabled
- All ports are OFF and the HIGH band is selected by default

Table 9 Default setting of the bits at **POWER-ON RESET**

NAME	BYTE	BITS							
		MSB							LSB
Address Byte	ADB	1	1	0	0	0	MA1	MA0	x
Divider Byte 1	DB1	0	x	x	x	x	x	x	X
Divider Byte 2	DB2	x	x	x	x	x	x	x	x
Control Byte	CB	1	1	1	1	0	x	x	0
Band Switch Byte	BB	X	X	X	0	0	0	0	0

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****TUNING SUPPLY VOLTAGE**

Pin 9 must be set to a typical tuning voltage of 33V (maximum 35V and minimum 30V). Alternatively, a constant current of 1 to 1.5 mA can also be applied. Figure 3 shows an alternative supply from a 140V source. The Zener diode prevents the tuning voltage at pin 9 from exceeding 33V.

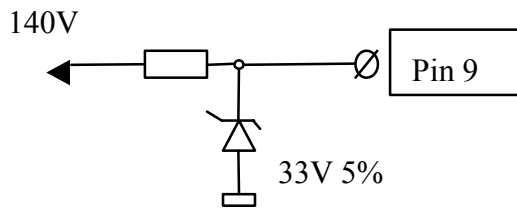


Fig. 3 33V tuning supply

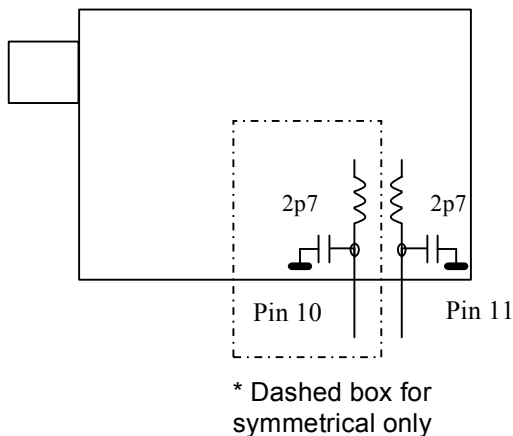
I.F BANDWIDTH (3 dB)

The typical bandwidth is 12 MHz.

I.F OUTPUT IMPEDANCE

(measured at 36.15 MHz)

Asymmetrical : $37 + j54\Omega$
 Symmetrical : $87.6 + j21\Omega$

**I²C-BUS LOAD**

The UV1316E MK3 has a series resistor of 370 Ω and 370 Ω respectively in each of the SCL and SDA lines and a shunt capacitance of 18pF to ground at the pins. A capacitive load of typically 56pF is allowed at these pins for standard 100kHz IIC bus mode. See Fig 4 below.

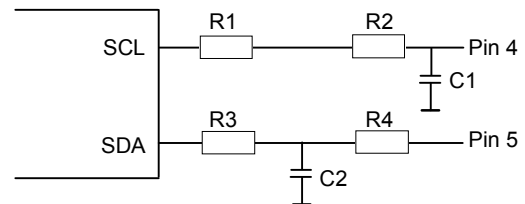


Fig 4. Internal I²C bus loading

I.F LOAD

The maximum permissible resistive load is 280 Ω , the maximum capacitive load is 40pF.

To guarantee optimum signal handling performance, the reactive load of the I.F circuitry (interconnections, saw filter) has to be tuned to tuner I.F center frequency according to the following formula:

$$L_{\text{tune}} = \{(2 \cdot \pi \cdot f)^2 \cdot (C_{\text{int}} + C_{\text{stray}} + C_{\text{SAW}})\}^{-1}$$

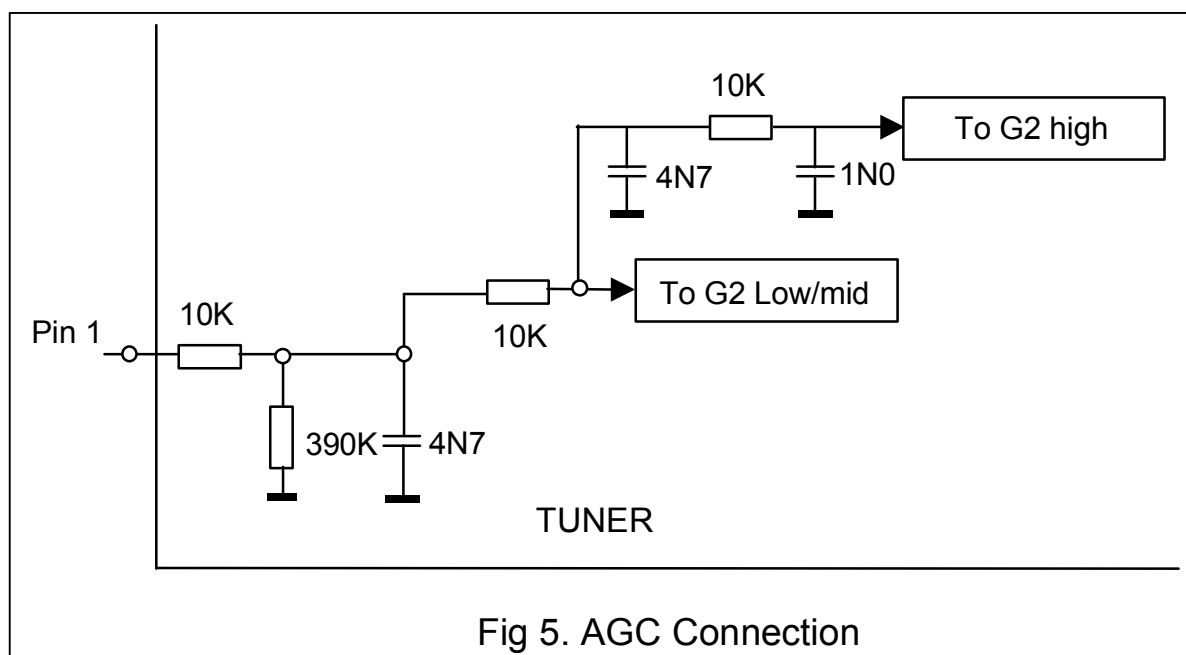
Where C_{int} = internal capacitance of the tuner
 = 2.7pF for asymmetrical
 = 1.35pF for symmetrical

C_{stray} = stray capacitance attributed to layout in the chassis

C_{SAW} = intrinsic capacitance of the SAW filter used/selected

f =desired I.F frequency, usually centered between picture and sound.

The IF output is to be maintained at 107 dB μ V maximum. In case this limit is exceeded, the tuner gain should be reduced accordingly.

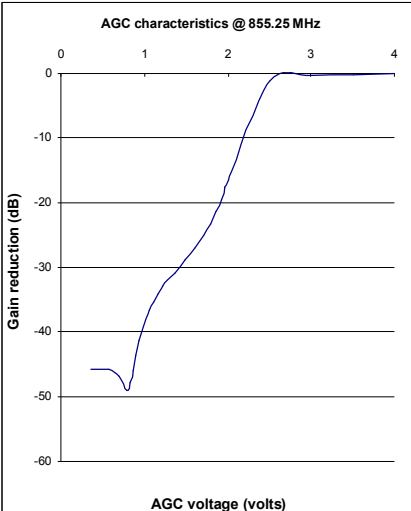
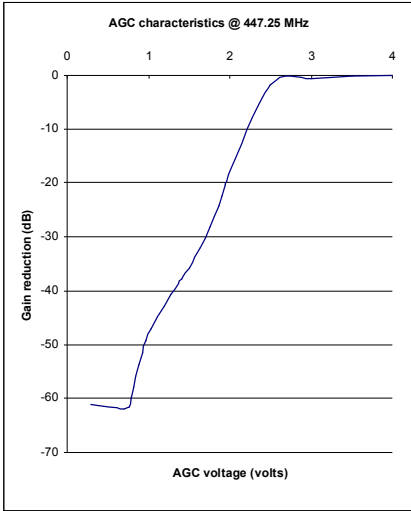
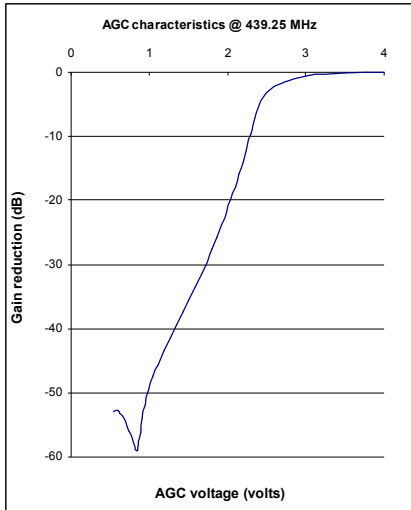
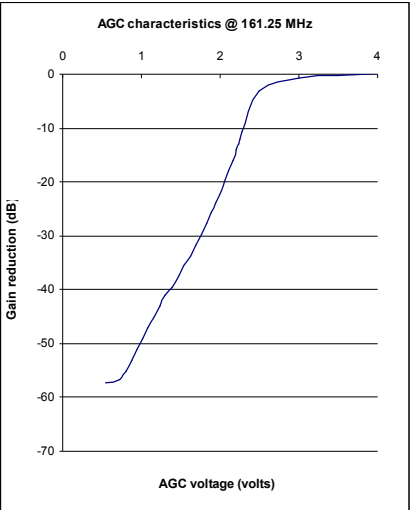
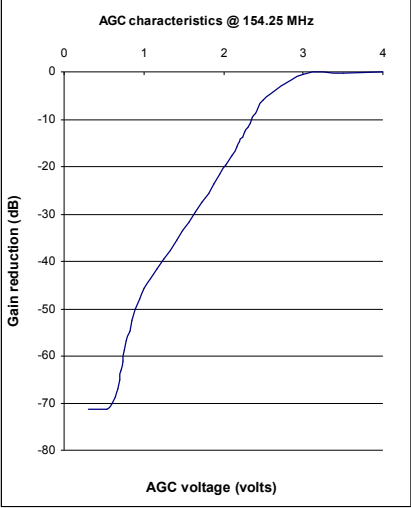
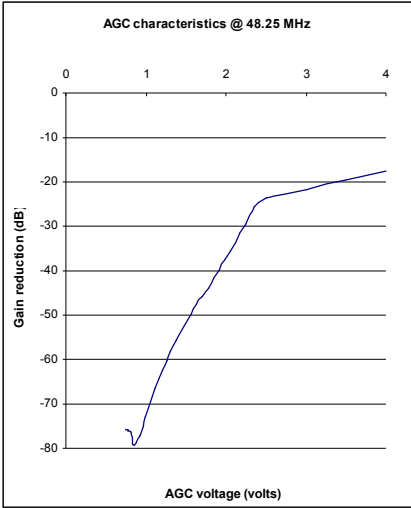
VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****AUTOMATIC GAIN CONTROL (AGC)**

VHF/UHF/Hyperband PAL TV tuner

UV1316 MK4

AGC Characteristics

TYPICAL AGC CURVES



VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****MECHANICAL DATA**

See product drawing 3139 149 0157

AERIAL CONNECTIONS

Standard IEC socket female 75Ω.

SOLDERABILITY

The solderability of pins and mounting tags when tested initially and after 16 hour steam ageing in accordance with "IEC 60068-2-20", test Ta, method 1 (solder bath 235°C for 2s), results in a wetted area of 95%. No de-wetting will occur when soldered at 260°C for 5s.

RESISTANCE TO SOLDERING HEAT

The product will not be damaged when tested in accordance with "IEC 60068-2-20", test Tb, method 1A (solder bath 260°C for 10±1 s).

MASS

Approximately 34g (IEC)

ROBUSTNESS OF PINS

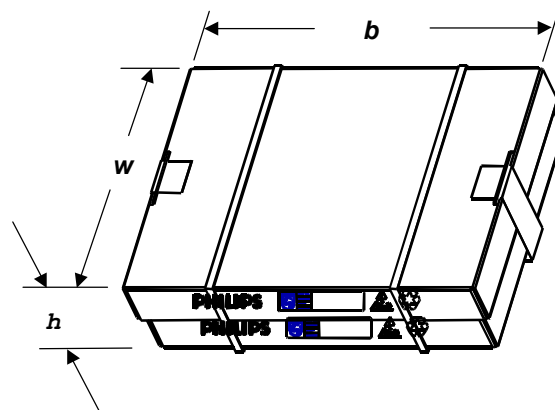
The pins will not be damaged when tested in accordance with "IEC 60068-2-21":

- Test Ua1, tensile of 10N in axial direction
- Test Ua2, thrust of 4N in axial direction

PUNCHING PATTERN OF CHASSIS PCB

For optimum mounting of the tuner to a PCB the following punching pattern is recommended (see 3139 149 0157).

The tuner must be mounted without clearance between the tuner supporting surface and the printed circuit board (PCB). When mounted in this way, the tuner must be soldered to the PCB. This can be achieved by pressing the unit vertically onto the PCB during soldering.

Example of Carton Box:**PACKAGING INFO**

The products are packed in the carton box and transferred to customers by Pallet Transport.

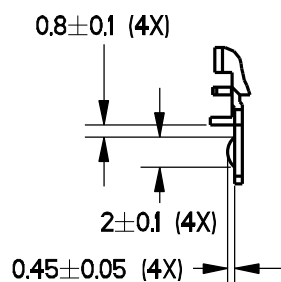
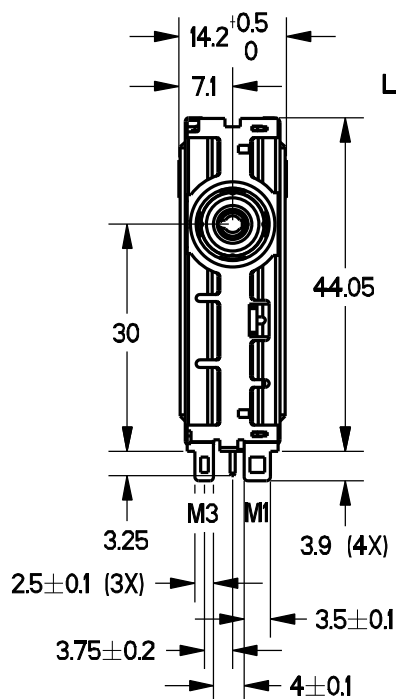
Type		Vertical			Horizontal		
		Dimension b x w x h (cm)	No of sets	Gross wt (kg)	Dimension b x w x h (cm)	No of sets	Gross wt (kg)
IEC-I	Carton	46 x 34 x 7.5	98	3.9	46 x 34 x 9.4	60	3.04
	Pallet	120 x 105 x 105	7742	329.7	120 x 105 x 105	3900	219.6
IEC-L	Carton	46 x 34 x 8.2	98	3.91			
	Pallet	120 x 105 x 105	7056	303.6			

Carton Boxes are made of Corrugated Fibreboard which are free of environmentally banned substances.

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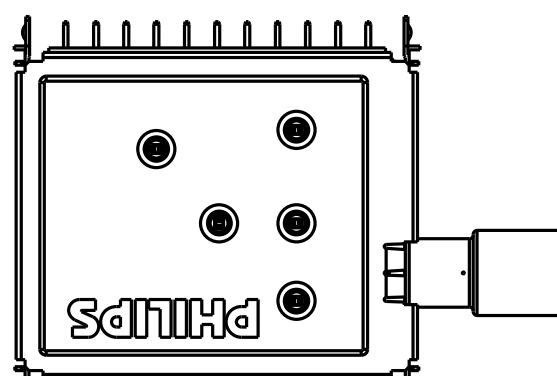
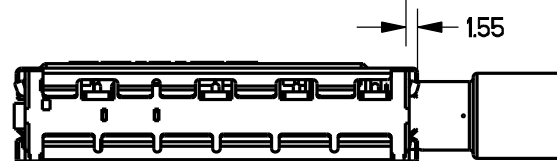
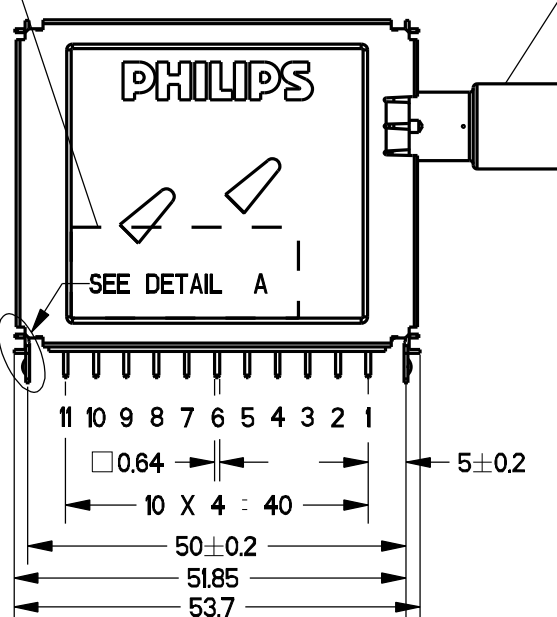
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DETAIL A

LABEL

IEC TYPE



VERTICAL MOUNTING

Note:

- General tolerance ± 0.5 mm unless otherwise stated.
- All dimensions are in millimeter.
- Drawing not to scale.

CLASS NO.

3UM900

PRODUCT DRAWING
UV1300 MK4 MECHANICS

3139 149 0157

1	2004-05-04
1	2003-05-05
1	2003-08-12
1	2003-10-08
1	2004-03-23

NAME JOHNNY LU

SUPERS

5

10

110 - 1

A4

SV

CHECK

DATE 2002-10-01



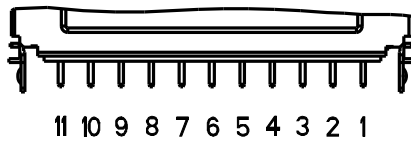
KONINKLIJKE PHILIPS ELECTRONICS N.V.

3139 149 11020

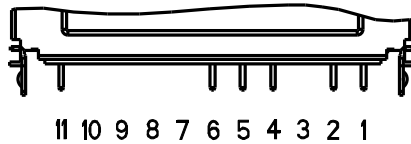
19

Rev L : 05.11.2004

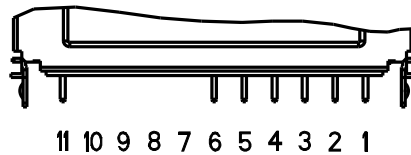
VARIOUS PINNING CONFIGURATION FOR VERTICAL MOUNTING



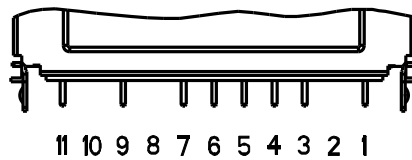
UV1316/16E MK4
UV1338 MK4
UV1336B MK4
UV1336BE MK4
UV1356E MK4



UV13X5C MK3 2 BIT BAND SWITCH
eg. UV13X5C/A I B-3



UV13X5C MK3 3 BIT BAND SWITCH



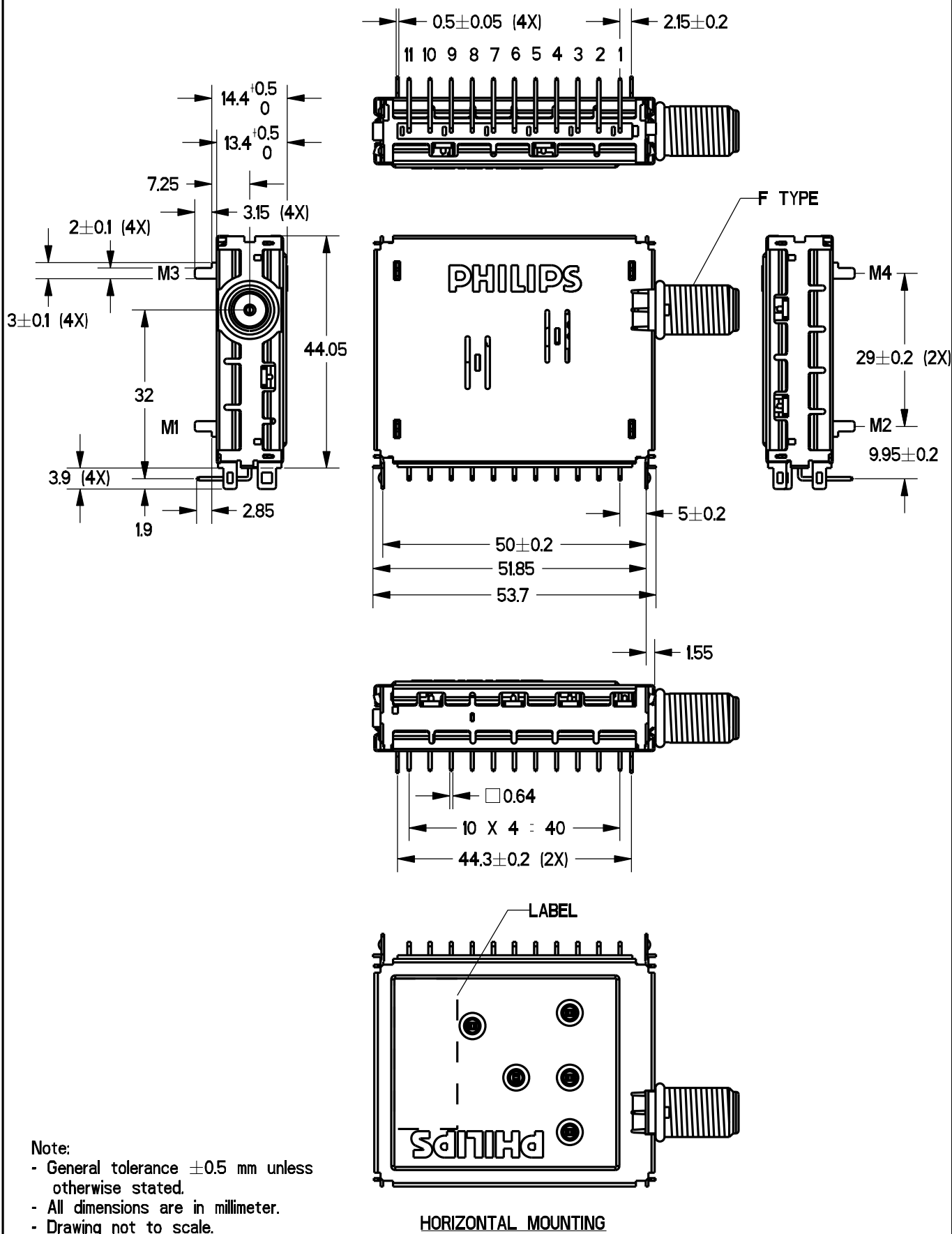
UV1356E/A L-4

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CLASS NO. 3UM900		PRODUCT DRAWING UV1300 MK4 MECHANICS		3139 149 0157		1 2004-05-04	
2002-10-01						1 2003-05-05	
NAME JOHNNY LU		SUPERS .		5		10	
SV		CHECK		DATE 2002-10-01		110 - 2	
				© KONINKLIJKE PHILIPS ELECTRONICS N.V.		A4	

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CLASS NO.

3UM900

PRODUCT DRAWING

UV1300 MK4 MECHANICS

3139 149 0157

1	2004-05-04
1	2003-05-05
1	2003-08-12
1	2003-10-08
1	2004-03-23

NAME JOHNNY LU

SUPERS

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DATE 2002-10-01

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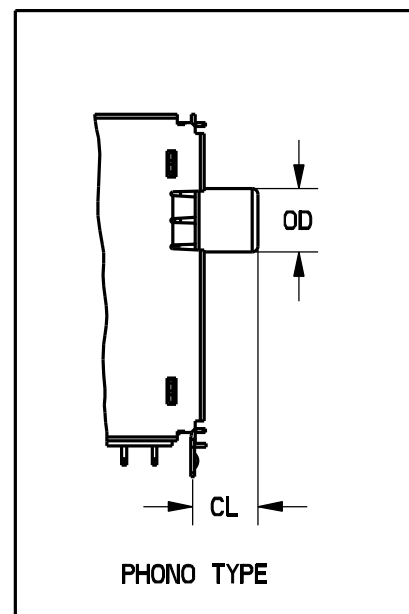
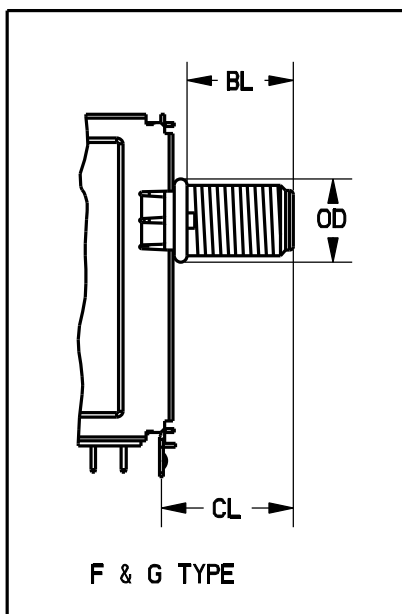
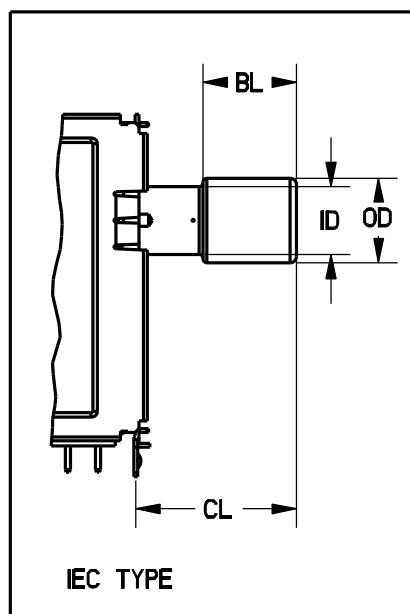
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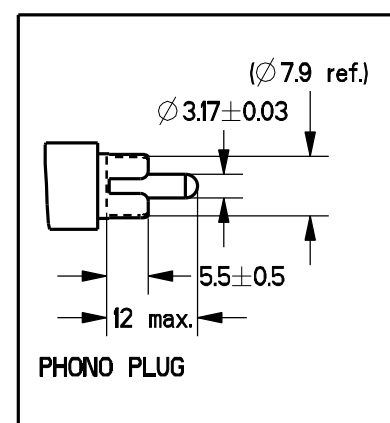
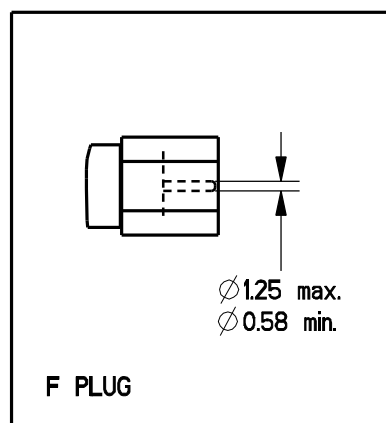
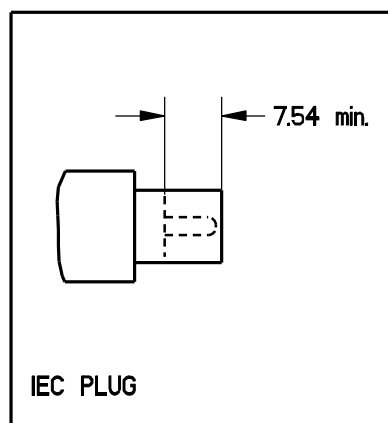


AERIAL CONNECTOR TYPE



CONNECTOR TYPE	CONNECTOR LENGTH, CL	BODY LENGTH, BL	OVERALL DIAMETER, OD	INNER DIAMETER, ID
IEC-I	14.8±0.5	12.3±0.3	11.0±0.1	8.0±0.2
IEC-L	21.2±0.5	12.3±0.3	11.2±0.1	9.0±0.3
F-F	17.5±0.5	14.1±0.5	11.0±0.2	--
F-G	22.2±0.5	16.5±0.3	12.15±0.15	-
PHONO-P	8.7±0.5	--	8.35±0/-0.1	--

MALE CONNECTOR REQUIREMENT



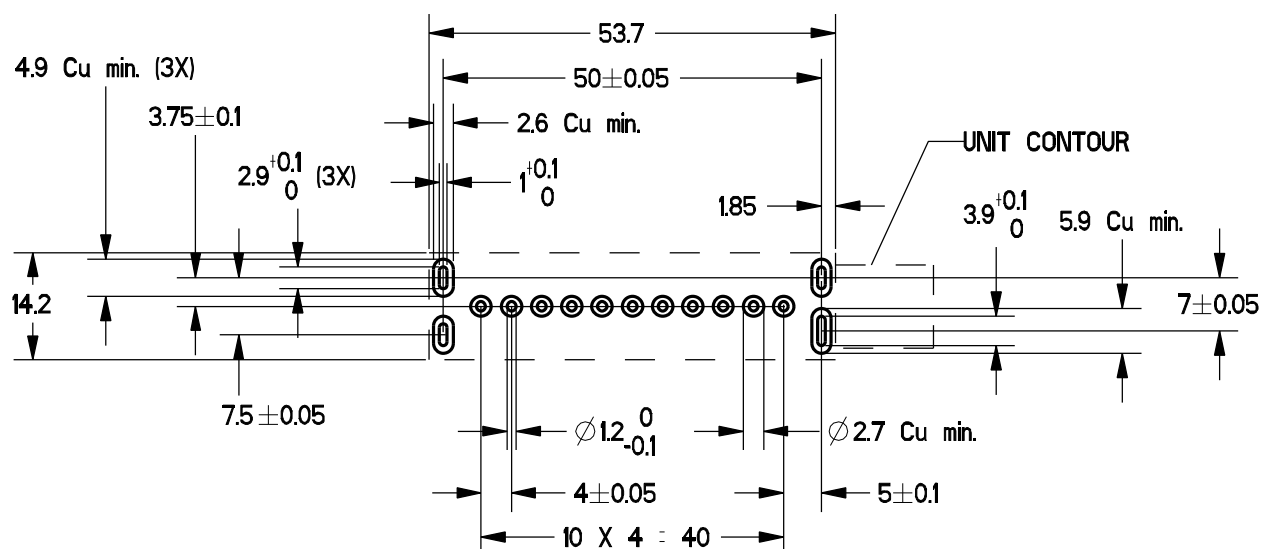
For dimension which is not reflected in drawing, refer to IEC 60169-2 (for IEC plug) and IEC 60169-24 (for F plug).

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2002-10-01					1 2003-05-05
					1 2003-08-12
					1 2003-10-08
					1 2004-03-23
NAME JOHNNY LU	SUPERS	5	10	110 - 4	A4
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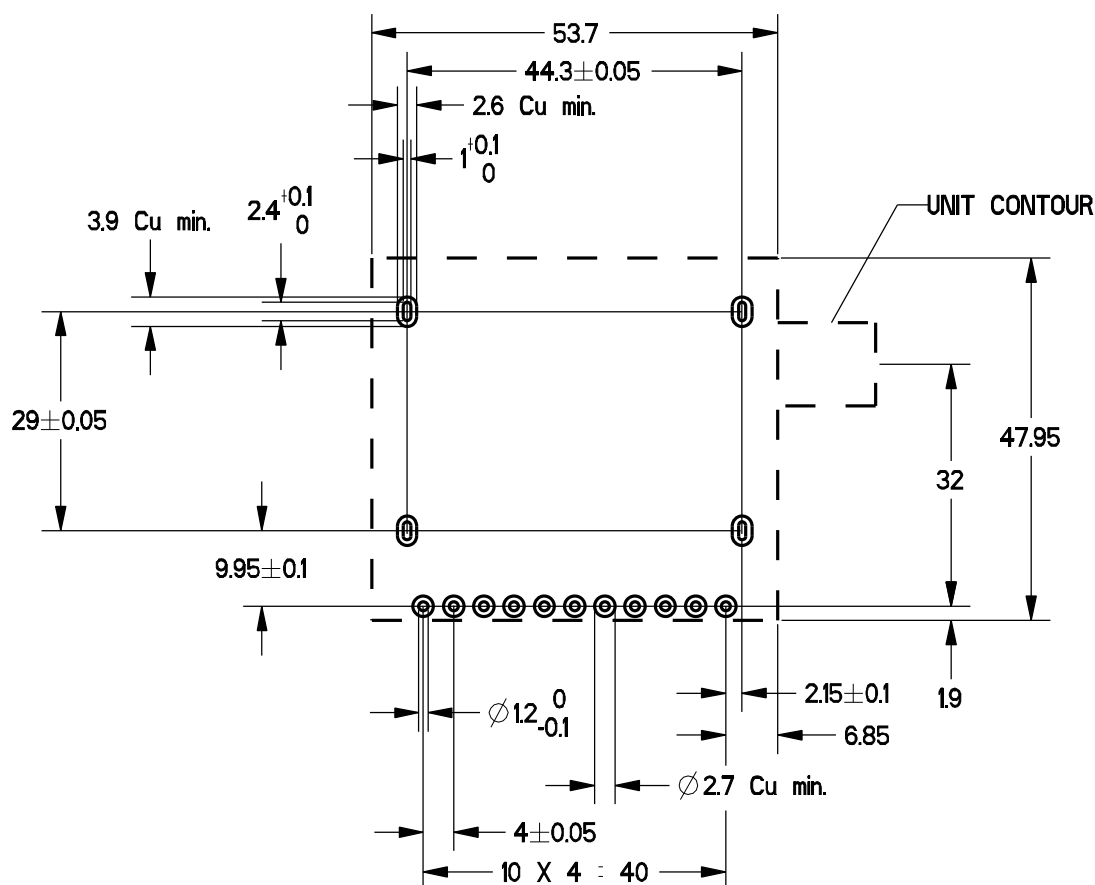
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PUNCHING PATTERN OF CHASSIS PCB

PUNCHING PATTERN SEEN FROM SOLDER SIDE



VERTICAL MOUNTING



HORIZONTAL MOUNTING

CLASS NO. 3UM900	PRODUCT DRAWING UV1300 MK4 MECHANICS				3139 149 0157				1	2004-05-04
2002-10-01									1	2003-05-05
NAME JOHNNY LU	SUPERS .				5	10	110 - 5		1	2003-08-12
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									1	2004-03-23
										A4

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****Document revision history**

Rev #	Date	Approved by	Remarks
	03-01-15		draft create by Toh Yeow Teng
	03-01-22		draft - changes in pg 6
a	03-03-03		draft - changes in pg 2, 6, 7, 9 and last page
a	03-03-24		draft - changes in pg 2, 6, 10 to 15
a	03-04-07		draft - changes in pg 3, 6, 7, 9
a	03-04-22	Toh Yeow Teng	Trigger by Toh YT changes in pg 2, 6, 15, 16, 17 - 20
b	03-05-09	Toh Yeow Teng	Trigger by Toh YT Preliminary to Product, Updating pg 2, 8, 9, 15, 16
c	03-06-09	Toh Yeow Teng	Trigger by Toh YT Updating pg 6 only
d	03-09-10	Toh Yeow Teng	Trigger by Johnny Lu Updating Mechanical drawings
e	03-10-10	Ng Bee Theng	Trigger by Johnny Lu Updating Mechanical drawings
f	04-01-12	Ng Bee Theng	Trigger by Belle/Heng SH pg 2 - updating ordering information, pg 19 to 23 - mechanical drawings pg 26 – RF Solutions Sales Offices.
g	04-02-04	Alan Yeo	Trigger by Heng SH pg 19 – updating packing info
h	04-02-12	Toh Yeow Teng	Trigger by Heng SH/Daniel Lee pg 2 – ordering information (add 2 new type UV1316/A P-4 and UV1316/A L H-4) pg 20 to 24 – updating mechanical drawings
i	04-02-18	Toh Yeow Teng	Trigger by Daniel Lee; pg 3 – Intermediate frequencies (SYSTEM L' refer to note 2)
j	04-02-23	Toh Yeow Teng	Trigger by Daniel Lee, pg 2 – ordering information description change for UV1316/A P-4 pg 3 – updating note 2 should be Does not cover channel FA
k	04-05-20	Toh Yeow Teng	Trigger by Heng SH; Updating Mechanical drawings
L	04-11-05	Lim Kui Yong	Trigger by Belle Ng; Pg 2 : add new type no. UV1316/S L-4

VHF/UHF/Hyperband PAL TV tuner**UV1316 MK4****DEFINITIONS**

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specification.
Application Information	
Where application information is given, it is advisory and does not form part of the specification	

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