



## PRODUCT OVERVIEW



- TSY SERIES MK2 TV +FM TUNER
- TSM SERIES MK3 TV+FM TUNER
- TSN SERIES MK5 TV TUNER
- TLY SERIES MINI TV TUNER
- TSR SERIES DVR TV TUNER
- TDM SERIES DVB-T MK2 TUNER
- TD SERIES DVB-T MK3 TUNER
- TMD SERIES FMD A+D+FM TUNER
- TQD SERIES FQD A+D TUNER
- TDT SERIES DVB-T TUNER
- TDZ SERIES DVB-T TUNER
- TDU SERIES DVB-T+PIF TUNER
- TDN SERIES MINI DVB-T TUNER
- TDVS SERIES ATSC+PIFTUNER
- UV SERIES FS TV TUNER

## TSY SERIES 2 IN 1 TV TUNER

### Features

- Full frequency range
- PLL controlled tuning
- True-synchronous vision IF demodulator (PLL)
- Demodulated video output, AF sound output, second IF sound output
- I2C-bus control of tuning, address selection, AFC status information
- Complies with national regulations (FCC, JIS, CE, BETS-7 (Canada), CISPR)
- Small vertically-mounted metal housing
- Internal DC/DC converter to generate tuning voltage
- Programmable PLL step size (31.25 / 50 kHz or 62.5 kHz)



### Options

- Phono , F or IEC connectors
- Horizontal or vertical mounting

### Size

- 89 x 39 x 13 mm

### Series description

No	Type	System	Specification
01	TSY-3311C	PAL D/K, I	
02	TSY-3311B	PAL B/G	
03	TSY-3311A	PAL D/K, B/G	
04	TSY-5311N	NTSC M/N	
05	TSY-5311J	NTSC M (Japan)	

### Intermediate frequencies

	System	PAL D/K	PAL B/G	PAL I	NTSC M/N	NTSC M (Japan)
Carrier	MHz	38.90	38.90	38.90	45.75	58.75
Picture	MHz	34,47	34,47	34,47	42.17	55.17
Colour	MHz	32,40	33.40	32.90	41.25	54.25
Sound 1	MHz					

**TSY SERIES MK2 TV+FM TUNER**

**Features**

- TV system and FM radio broadcast
- FM radio band coverage from 76.00 MHz to 108.00 MHz
- Full frequency range
- PLL controlled tuning
- True-synchronous vision IF demodulator (PLL)
- Demodulated video output, AF sound output, second IF sound output
- I2C-bus control of tuning, address selection, AFC status information
- Complies with national regulations (FCC, JIS, CE, BETS-7 (Canada), CISPR)
- Internal DC/DC coverter to generate tuning voltage
- Programmable PLL step size (31.25 / 50 kHz or 62.5 kHz)



**Options**

- Phono, F or IEC connectors
- Horizontal or vertical mounting

**Size**

- 89 x 39 x 13 mm

**Series description**

No	Type	System	Specification
01	TSY-3311CF	PAL D/K, I and FM	
02	TSY-3311BF	PAL B/G and FM	
03	TSY-3311AF	PAL D/K, B/G and FM	
04	TSY-5311NF	NTSC M/N and FM	
05	TSY-5311JF	NTSC M and FM	

**Intermediate frequencies**

	System	PAL D/K	PAL B/G	PAL I	NTSC M/N	NTSC M (Japan)
Picture	MHz	38.90	38.90	38.90	45.75	58.75
Colour	MHz	34,47	34,47	34,47	42.17	55.17
Sound 1	MHz	32,40	33.40	32.90	41.25	54.25
FM	MHz	10.70	10.70	10.70	10.70	10.70

## TSM SERIES MK3 TV TUNER

### Features

- Multi-Standard TV Systems
- Quasi-Split Sound concept
- True 5 V device (low power dissipation)
- Full frequency range
- PLL controlled tuning
- Programmable PLL step size (31.25 / 50 kHz or 62.5 kHz)
- True- synchronous vision IF demodulator (PLL)
- Demodulated video output, AF sound output, second IF sound output
- I2C-bus control of tuning, address selection, AFC status information
- Complies with European regulations
- Complies with FCC sub-part 15 (b)



### Size

- 70,5 x 39,5 x 13,2mm

### Options

- IEC / F-connector
- Horizontal or vertical mounting

### Series description

No	Type	System	Specification
01	TSM-2311Q	PAL (D/K,I,B/G) SECAM L,L'	
02	TSM-2312Q	PAL (D/K,I,B/G) SECAM L,L'	
03	TSM-2312S	PAL (D/K,I,B/G) NTSC M/N	
04	TSM-6311N	NTSC M/N	
05	TSM-2312T	PAL (D/K,I,B/G) SECAM L,L' NTSC M/N	

### Intermediate frequencies

Type	System	PAL D/K	PAL B/G	PAL I	NTSC M/N	SECAM L	SECAM L'
TSM-2311Q		38.90	38.90	38.90	--	38.90	33.95
TSM-2312Q		38.90	38.90	38.90	--	38.90	33.95
TSM-2312S		38.00	38.00	38.00	38.00	--	--
TSM-6311N		--	--	--	45.75	--	--
TSM-2312T		38.90	38.90	38.90	38.90	38.90	33.95

**TSM SERIES MK3 TV+FM TUNER**

**Features**

- **Multi-Standard TV Systems and FM Radio broadcast reception**
- Quasi-Split Sound concept
- True 5 V device (low power dissipation)
- Full frequency range
- FM radio band coverage from 76.00 MHz to 108.00 MHz
- PLL controlled tuning
- Programmable PLL step size (31.25 / 50 kHz or 62.5 kHz)
- True- synchronous vision IF demodulator (PLL)
- Ultra linear FM PLL demodulator for FM radio broadcast
- Demodulated video output, AF sound output, second IF sound output
- I2C-bus control of tuning, address selection, AFC status information
- Complies with European regulations
- Complies with FCC sub-part 15 (b)
- Miniaturised 70 mm metal housing



**Size**

- 70,5 x 39,5 x 13,2mm

**Options**

- IEC / F-connector
- Horizontal or vertical mounting

**Series description**

No	Type	System	Specification
01	TSM-2311QF	PAL (D/K,I,B/G) SECAM L,L' AND FM	
02	TSM-5311NF	NTSC M/N AND FM	

**Intermediate frequencies**

Type	System	PAL D/K	PAL B/G	PAL I	NTSC M/N	SECAM L	SECAM L'	FM
TSM-2311QF		38.90	38.90	38.90	--	38.90	33.95	10.70
TSM-5311NF		--	--	--	45.75	--	--	10.70

## TSN SERIES MK5 TV TUNER

### Features

- Multistandard front-end for CCIR B/G,D/K,I and L/L'
- Video module for NTSC M/N systems
- Single 5V supply with integrated DC-DC converter for tuning voltage supply
- Excellent noise figure performance
- Full frequency coverage from Ch E2 to E69
- PLL controlled tuning with crystal accuracy
- Programmable PLL step size
- True synchronous vision IF demodulation for low distortion
- Quasi Split Sound concept for best sound quality
- I2C-bus control of tuning, and AFC read status
- Minimal adaptation to existing software
- CVBS/AF-MPX and 2nd IF sound output
- Complies with FCC, JIS, BETS-7 (Canada), CISPR13/20 (2001/2002)
- Small horizontal and vertical form factor (about 10% volume reduction compared to MK3 family)
- Application test kit available



### Size

- 70mm x 39mm x 12mm

### Options

- Vertical or horizontal mounting

### Series description

No	Type	System	Specification
01	TSN-2311Q	PAL (D/K,I,B/G) SECAM L,L'	
02	TSN-2311S	PAL (D/K,I,B/G) NTSC	
03	TSN-2312S	PAL (D/K,I,B/G) NTSC	
03	TSN-6311N	NTSC M/N	
04	TSN-6311J	NTSC(JAPAN) NTSC	

### Intermediate frequencies

System	PAL D/K	PAL B/G	PAL I	NTSC M/N	SECAM L	SECAM L'
TSN-2311Q	38.90	38.90	38.90	--	38.90	33.95
TSN-2311S	38.90	38.90	38.90	38.90	--	--
TSN-2312S	38.00	38.00	38.00	38.00	--	--
TSN-6311N	--	--	--	45.75	--	--
TSN-6311J	--	--	--	55.75	--	--

## TLY SERIES MINI 2 IN 1 TV TUNER

### Features

- Ultra mini 2 IN 1 tuner
- Multi-Standard TV Systems
- Quasi-Split Sound concept
- True 5 V device (low power dissipation)
- Full frequency range
- PLL controlled tuning
- Programmable PLL step size (31.25 / 50 kHz or 62.5 kHz)
- True- synchronous vision IF demodulator (PLL)
- Demodulated video output, AF sound output, second IF sound output
- I2C-bus control of tuning, address selection, AFC status information
- Small horizontally mounted metal housing.



### Size

- 50,5 x 28,3 x 7,3mm

### Options

- All PAL and NTSC M/N version **TLY7511-S**
- Multi European [SECAM included] version **TLY7511-Q**
- NTSC M/N version **TLY7511-N**

### Series description

No	Type	System	Specification
01	TLY-7511Q	PAL (D/K,I,B/G) SECAM L,L'	
02	TLY-7511S	PAL (D/K,I,B/G) NTSC M/N	
03	TLY-7511N	NTSC M/N	

### Intermediate frequencies

Type	System	PAL D/K	PAL B/G	PAL I	NTSC M/N	SECAM L	SECAM L'
TLY-7511Q		38.90	38.90	38.90	--	38.90	33.95
TLY-7511S		38.90	38.90	38.90	38.90	--	--
TLY-7511N		--	--	--	45.75	--	--

**TSR SERIES DVR 2 IN 1 TV TUNER**

Features

- Passive or active RF loopthrough
- Multi-Standard TV Systems
- Quasi-Split Sound concept
- True 5 V device (low power dissipation)
- Full frequency range
- PLL controlled tuning
- Programmable PLL step size (31.25 / 50 kHz or 62.5 kHz)
- True- synchronous vision IF demodulator (PLL)
- Demodulated video output, AF sound output, second IF sound output
- I2C-bus control of tuning, address selection, AFC status information
- Complies with European regulations
- Complies with FCC sub-part 15 (b)



Size

- 70,5 x 39,5 x 13,2mm

Options

- IEC / F-connector
- Horizontal or vertical mounting
- Passive or active Antenna loop through

Series description

No	Type	System	Specification
01	TSR-2211Q	PAL (D/K,I,B/G) SECAM L,L'	
02	TSR-2211S	PAL (D/K,I,B/G) NTSC M/N	
03	TSR-6211N	NTSC M/N	

Intermediate frequencies

Type	System	PAL D/K	PAL B/G	PAL I	NTSC M/N	SECAM L	SECAM L'
TSR-2211Q		38.90	38.90	38.90	--	38.90	33.95
TSR-2211S		38.00	38.00	38.00	38.00	--	--
TSR-6211N		--	--	--	45.75	--	--

## TDM SERIES DVB-T TUNER

### Features

- Highly integrated RF module for analog and digital cable applications
- Low power consumption
- Single 5V power supply
- Low noise and excellent linearity and selectivity
- Very low oscillator phase noise
- Flat overall frequency response
- SAW-filter and variable gain IF-amplifier
- Two IF-outputs, one for digital downstream, one for standard analog demodulation
- I2C programmable (3.3V and 5V Bus level and 400kHz clock compliant)
- Modulator with stand-by mode and built-in test pattern generator
- Versions for all world-wide standards

### Size

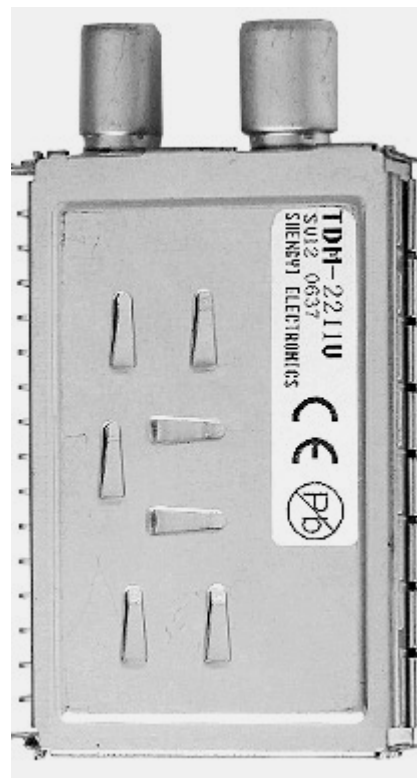
- Compact size: 65mm x 44mm x 14mm

### Options

- Horizontal or vertical mounting
- RF loopthrough or single input
- Different connectors available
- Pin input or output available
- Multistandard modulator for UHF
- Stand-by mode
- Dedicated UHF only type TDM2211-U

### Series description

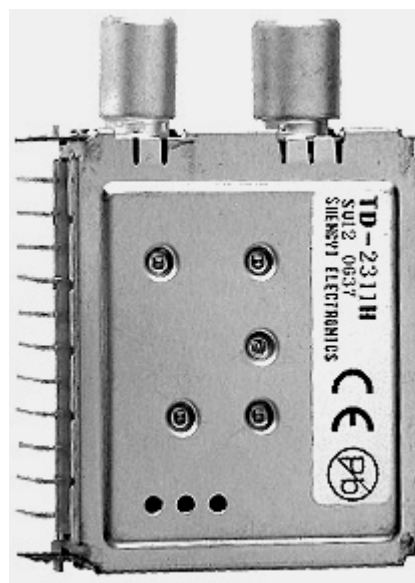
No	Type	System	Specification
01	TDM-2211V	DVB-T UHF/VHF	
02	TDM-2211H	DVB-T UHF/VHF-H	
03	TDM-2211U	DVB-T UHF-only	



## TD SERIES DVB-T TUNER

### Features

- Highly integrated single conversion tuner with active loopthrough
- Versions for different frequency ranges available
- +5V supply voltage only; no external tuning voltage required
- DC – power output through RF-input connector (e.g. indoor antenna supply)
- Superior low noise and high sensitivity performance
- Tuners are suitable for analog and digital applications;
- Compliant to relevant standards e.g. CENELEC and Nordig
- Tuners are available in vertical and horizontal mounting



### Size

- Compact size: 50mm x 44mm x 14mm

### Options

- Horizontal or vertical mounting
- RF loopthrough or single input
- Different connectors available
- Pin input or output available

### Series description

No	Type	System	Specification
01	TD-2311V	DVB-T UHF/VHF	
02	TD-2311H	DVB-T UHF/VHF-H	
03	TD-2311U	DVB-T UHF-only	

**TMD SERIES FMD A+D+FM TUNER**

Features

- DVB-T support with AGC-controlled IF output
- Multistandard front-end for CCIR B/G, D/K,I and L/L' systems
- Standard FM radio coverage 87.5 to 108 MHz
- 5V supply with integrated DC-DC converter for tuning voltage supply
- Excellent phase noise for best performance (typically -105 dBc @ 10 kHz)
- Full frequency coverage from Ch E2 to E69
- PLL controlled tuning with crystal accuracy
- Programmable PLL step size (31.25 , 50 kHz, 62.5, 125, 142.86 166.67 kHz)
- True synchronous vision IF demodulation for low distortion
- Quasi Split Sound concept for best sound quality
- I2C control of tuning, and AFC read status
- Switchable mode between analog and digital TV to conserve energy
- CVBS/AF-MPX and 2<sup>nd</sup> IF sound output
- Complies with CISPR13/20 (2001/2002)
- Small horizontal and vertical form factor



Size

- 70mm x 39mm x 13 mm

Options

- Horizontal or vertical mounting

Series description

No	Type	System	Specification
01	TMD-2211QFV	PAL+SECAM, FM, DVB-T IF output	
02	TMD-2311QV	PAL+SECAM+DVB-T IF output	

**TQD SERIES FQD A+D TUNER**

**Features**

- Analog - Multistandard front-end
- Digital - DVB-T support with AGC controlled
  - ATSC/QAM or ISDB-T supports
- Full frequency range
- True 5V device (low power dissipation)
- Programmable PLL step size
- PLL controlled tuning with crystal accuracy
- True synchronous vision IF demodulation for low distortion
- Quasi Split Sound concept for best sound quality
- I2C-bus control of tuning, address selection,AFC status information
- CVBS/AF-MPX and 2nd sound IF output
- Power up for antenna
- Switchable 7/8 MHz saw filter for DVB-T
- Digital IF saw filtered output with IF amplifier
- RF input with WBA fulfills Open Cable™ return loss requirement
- Low noise and excellent linearity



**Size**

- 70mm x 39mm x 12mm

**Options**

- Vertical or horizontal mounting
- Active splitter output (RF loopthrough)

**Series description**

No	Type	System	Specification
01	TQD-2311QT	PAL+SECAM, DVB-T IF output	
02	TQD-6311NA	NTSC,ATSC/QAM IF output	
03	TQD-6311JI	NTSC,ISDB-T IF output	

## TDT SERIES DVB-T RECEIVER UNIT

### Features

- Small size 40×70×13 mm
- Fully compliant with ETS 300 744 for DVB-T applications
- Full frequency range
- It builds in COFAM-Demod IC Support of 2K & 8K FFT
- Output of MPEG-2 parallel/series transport stream
- Digitally-controlled (PLL) tuning via I2C-bus
- Minimum power supply : 1.8V , 3.3V and 5V
- Programmable PLL step size (31.25 / 50 kHz / 62.5 kHz or 166.67 kHz)
- Internal DC/DC converter to generate tuning voltage
- Channel bandwidth 7and8MHz
- Active Antenna loopthrough



### Size

- 40×70×13 mm

### Options

- Horizontal or vertical mounting
- RF loopthrough or single input
- Different channel decoder ICs available on request

### Series description

No	Type	System	IC	Specification
01	TDT-2211PP	DVB-T TS output	TDA6651+TDA10046	
02	TDT-2211IZ	DVB-T TS output	TUA6034+ZL10353	

**TDU SERIES DVBT+PIF -TUNER**

Features

- Small size 40×70×13 mm
- Fully compliant with ETS 300 744 for DVB-T applications
- Multi-Standard TV Systems
- Full frequency range
- It builds in COFAM-Demod. IC Support of 2K & 8K FFT
- Output of MPEG-2 parallel/series transport stream
- Digitally-controlled (PLL) tuning via I2C-bus
- Minimum power supply : 1.8V , 3.3V and 5V
- Programmable PLL step size (31.25 / 50 kHz / 62.5 kHz or 166.67 kHz)
- Internal DC/DC converter to generate tuning voltage
- Channel bandwidth 6、7、8MHz
- Active Antenna loopthroug



Size

- 70mm x 39mm x 12mm

Options

- Vertical or horizontal mounting
- Active splitter output (RF loopthrough)

Series description

No	Type	System	IC	Specification
01	TDU-2211QP	PAL+SECAM, DVB-T TS output	TDA6651+TDA10046+ TDA9886	
02	TDU-2211QZ	PAL+SECAM, DVB-T TS output	TUA6034+ZL10353+ TDA9886	

## TDZ SERIES DVB-T RECEIVER UNIT

### Features

- Single conversion Tuner
- This terrestrial NIM (Network Interface Module) is for DVB-T application
- COFDM-Demod IC use ZL10353 from Zarlink
- Input frequency range in VHF: 174MHz to 230MHz ; UHF: 470MHz to 862MHz
- PLL controlled tuning
- Output of MPEG-2 parallel/series transport stream
- Channel bandwidth 7and8MHz
- Active Antenna loopthrough

### Size

- 103.6mm×42.6mm×13.8mm

### Options

- Vertical or horizontal mounting
- Active splitter output (RF loopthrough)



### Series description

No	Type	System	IC	Specification
01	TDZ-2211IZ	DVB-T	TUA6034+ZL10353	

## TDN ERIES MINI DVB-T TUNER

### Features

- using in DVB-T system.
- COFDM-Demod. IC is built in
- Dc/dc Converter is built in (using 5V & 3.3V)  
supports ANT Booster supply
- with the reception frequency range  
VHF C5 ~ C12 (174MHz ~ 230MHz)  
UHF C21 ~ C69 (470MHz ~ 862MHz)
- Band selection and tuning is done by PLL IC
- PLL IC is controlled by the COFDM-Demod. IC

### Size

- 50mm x 28mm x 7mm

### Options

- Vertical or horizontal mounting
- Active splitter output (RF loopthrough)



### Series description

No	Type	System	IC	Specification
01	TDN-353F	DVB-T	TUA6034+ZL10353	
02	TDN-302F	DVB-T	TUA6034+DIB3000MC	
03	TDN-146F	DVB-T	TUA6034+TDA10046	
04	TDN-634I	DVB-T	TUA6034 (PLL)	

**TDVS SERIES ATSC+PIF -TUNER**

Features

- Single conversion Tuner
- Demodulator IC: LGDT3303
- Support ATSC digital signal (8VSB)
- Payload data rate : 19.4Mbps (6MHz)
- ITU-J.83B, compliant 64/256QAM
- Built in 5-33V DC/DC converter
- With NTSC System
- Control Interface : I2C

Size

- 68.8mm×36.6mm×10.0mm

Options

- Vertical or horizontal mounting
- Active splitter output (RF loopthrough)

Series description

No	Type	System	IC	Specification
01	TDVS-6311NA	ATSC+NTSC	TUA6034+LGDT3303 +TDA9885	

## UV SERIES FS TV TUNER

### Features

- Member of UV series of small-sized UHF/VHF tuners
- Integrated passive splitter
- Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
- Digitally-controlled (PLL) tuning via I<sup>2</sup>C-bus
- Fast 400kHz I<sup>2</sup>C bus protocol compatible with
  - 3.3V and 5V micro controllers
- Off-air, S-cable and hyperband channels
- World standardized mechanical dimensions and pinning. Horizontal mounting is optionally available.



### Size

- 

### Options

- Vertical or horizontal mounting
- Active splitter output (RF loopthrough)

### Series description

No	Type	System	Specification
01	UV-2311Q	PAL (D/K,I,B/G) SECAM L,L'	
02	UV-6311N	NTSC	

### Intermediate frequencies

Type	System	PAL D/K	PAL B/G	PAL I	NTSC M/N	SECAM L	SECAM L'
UV-2311Q		38.90	38.90	38.90	--	38.90	33.95
UV-6311N		--	--	--	45.75	--	--