

**RF SOLUTIONS**

# PRODUCT OVERVIEW

- Multimedia Front-Ends
- Network Interface Modules
- Digital/Analog Terrestrial Tuners
- Digital/Analog Cable Tuners
- RF Input Modules
- Digital Satellite Tuners
- Mainstream TV Tuner

**PHILIPS**

## FMD1216ME

### Hybrid DVB-T/Analog multistandard Front-End module with FM radio



#### Features

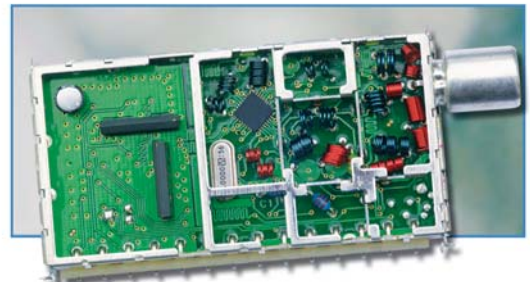
- DVB-T support with AGC-controlled IF output
- Multistandard front-end for CCIR B/G, D/K, I and L/L' systems
- Standard FM radio coverage 87.5 to 108 MHz
- 5V supply with integrated DC-DC converter for tuning voltage supply
- Excellent Phase Noise for best performance (typically -105 dBc @ 10 kHz)
- 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
- I<sup>2</sup>C control of tuning, and AFC read status
- Switchable mode between analog and digital TV to conserve energy
- CVBS/AF-MPX and 2nd IF sound output
- Complies with CISPR13/20 (2001/2002)
- Small horizontal and vertical form factor
- Application test kit with the Philips TDA10046 DVB-T channel decoder

#### Size

- 70mm x 39mm x 13 mm

## FQ1200 MK5

### Environmental-friendly high performance Front-End module



#### Features

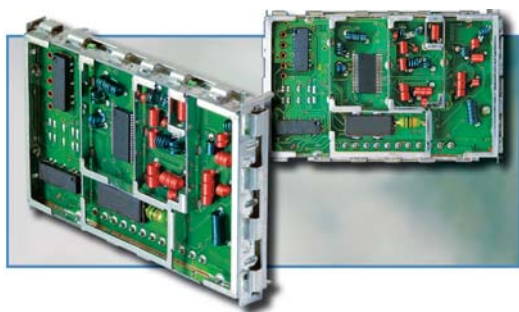
- Multistandard front-end for CCIR B/G, D/K, I and L/L' (FQ1216ME)
- Video module for NTSC M/N systems (FQ1236, FQ1238, FQ1286 and FQ1288)
- Single 5V supply with integrated DC-DC converter for tuning voltage supply
- Excellent Noise Figure performance (typically less than 4.8 dB for FQ1238, FQ1286 and FQ1288)
- 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
- I<sup>2</sup>C bus control of tuning, and AFC read status
- Minimal adaptation to existing software
- CVBS/AF-MPX and 2nd IF sound output
- Complies with CISPR13/20 (2001/2002) (FQ1216ME) and FCC requirements (FQ1236)
- Small horizontal and vertical form factor (about 10% volume reduction compared to MK3 family)
- Application test kit available

#### Size

- 70mm x 39mm x 12mm

## FQ1200A MK4

### Low Profile Multimedia Front-End



#### Features

- Miniaturized front-end module suitable for notebook and LCD TV applications
- Single and Multistandard TV systems
- Full frequency range
- True 5V device (low power dissipation)
- Quasi Split Sound concept
- Integrated LNA for good sensitivity and better video performance due to different RF connectors used
- 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/MPX sound output, second IF sound output.
- I<sup>2</sup>C-bus control of tuning, address selection, AFC status information
- RF via pin
- Complies with FCC, JIS, CE, BETS-7 (Canada) and CISPR13/20 (2001/2002)
- Low profile with thickness of only 6.8 mm

#### Size

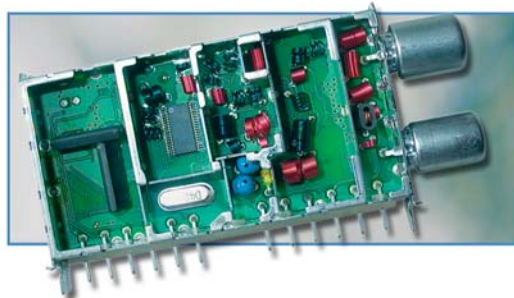
- Compact 58 x 38 x 6.8mm

#### Options

- Multi-Europe (including SECAM)
- NTSC M/N (USA)
- NTSC (Japan)

## FQ1216LME MK3

### Multimedia Front-End With Quasi Split Sound



#### Features

- Multistandard front-end with active loopthrough for PIP application
- Single 5V supply with integrated DC-DC converter for tuning voltage supply
- 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
- I<sup>2</sup>C bus control of tuning, and AFC read status
- CVBS/AF-MPX and 2nd IF sound output
- Complies with CISPR13/20 (2001/2002)
- Small horizontal and vertical form factor

#### Size

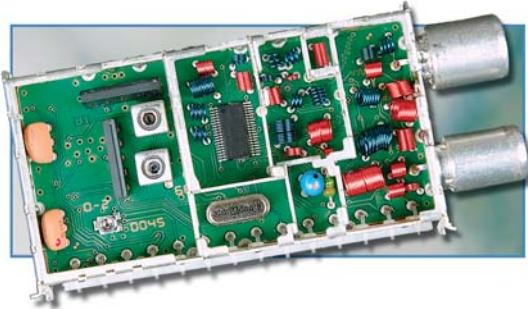
- 70mm x 39mm x 13 mm

### Family Types available

Type	Description
FQ1216LME	B/G, I, D/K, L/L'
FQ1216LMP	B/G, I, D/K,
FQ1236L	M/N
FQ1286L	(M) Japan

# FM1200 MK3

## Multimedia Front-End with FM Stereo Radio



### Features

- Multistandard and FM stereo radio broadcast
- Single 5V power supply
- Internally generated 30V tuning voltage supply
- Full frequency range from channel 2 to channel 69
- FM band coverage
- PLL controlled tuning
- Programmable PLL step size (31.25, 50 or 62.5 kHz)
- Internal broadband AGC control for good signal handling
- Supports auto-search tuning for FM radio (patent pending)
- True synchronous vision IF demodulator (PLL)
- High performance Quasi Split Sound (QSS)
- Ultra linear FM PLL demodulator for FM broadcast
- Demodulated video output, AF sound output, and IF sound output
- FM Radio Stereo Decoder integrated (L and R channels output)
- I<sup>2</sup>C-bus control of tuning, address selection, AFC status information
- Complies with FCC, JIS, CE, BETS-7 (Canada), CISPR 13/20 (2001/2002)
- Small horizontally mounted metal housing

### Size

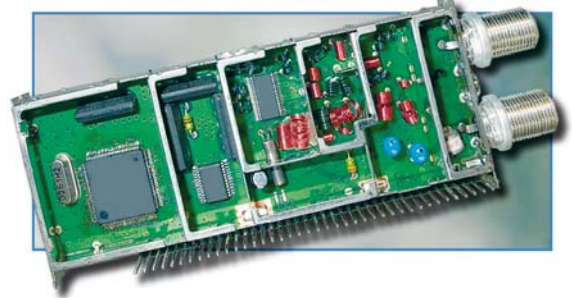
- 70mm x 39mm x 13mm

### Family Description

Type	System
FM1216ME	B/G, D/K, I, L/L'
FM1216MP	B/G, D/K, I
FM1236	M/N
FM1286	(M) Japan

# TUV1236D/U

## NTSC/ATSC/QAM Modules



### Features:

- NTSC, ATSC or ITU-J.83B (64/256QAM) reception
- Excellent isolation performance between RF connectors (FCC compliant, for dual input versions)
- DC-DC converter (33V supply is not required)
- Low power dissipation (<1.75W)
- Full frequency range coverage from 57MHz to 864MHz
- PLL controlled tuning (Programmable step sizes of 31.25, 50 or 62.5 kHz)
- I<sup>2</sup>C-bus control of tuning, address selection, AFC status information
- Internal broadband AGC control for good signal handling
- Output MPEG-2 transport stream (serial or parallel), CVBS, AF/MPX, 2nd sound IF
- SmartAntenna technology supported for enhanced ATSC reception
- Complies with FCC, BETS-7 (Canada)
- NTSC Baseband demodulation integrated

### Size

- 99mm x 39mm x 13mm

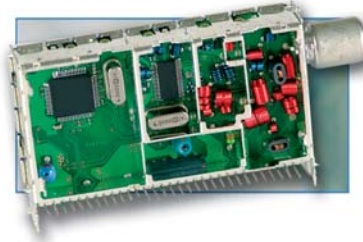
### Options

- Horizontal or vertical mounting
- RF loopthrough or single input (TUV1236D)
- Different connector types available on request
- Dual input with RF Switch (TUV1236D)
- RF switch to select off air or cable input (dual antenna Input) (TUV1236D)
- Out of Band Demodulation integrated (TUV1236U)
- OpenCable Ready solution together with PA/PS input modules (TUV1236U)

## One Common Footprint Network Interface Modules



**CUI200 -**  
Cable Applications



**TUI200 -**  
Terrestrial Applications



**SUI200 -**  
Satellite Applications

### Features SU/CU/TU

- Output of MPEG-2 parallel/serial transport stream
- I<sup>2</sup>C-bus serial bus and repeater
- Radiation complying to CISPR13

### Features CU/TU

- IF output
- Minimum power supply: 1.8V, 3.3V and 5V
- SAW-filter and variable gain IF-amplifier
- Internal broadband AGC control for good signal handling

### Features CU

- Fully compliant with ETS 300 429 specification for DVB-C applications
- Support up to 256 QAM
- Wide symbol rate of 0.87 to 6.9 Mbaud

### Features TU

- Fully compliant with ETS 300 744 for DVB-T applications
- Exceeds NorDig specification
- Support of 2K & 8K FFT
- Various puncture code and guard

### Features SU

- Fully compliant with ETS 300 421 specification for DVB-S and DSS™ applications
- Multistandard QPSK and BPSK demodulation
- Suitable for mixed and variable bit rates from 1-45 Ms/s
- Excellent input signal sensitivity; large dynamic input range
- Switchable baseband lowpass filter bandwidth
- Simple LNB supply control via 3 output ports
- Standard 22KHz tone and DiSEqC™ 1.0 Modulator output
- Direct conversion tuner concept
- Total power consumption typically 1.6W (without LNB power supply)
- Address select function for up to 4 NIMs in one application

### Size:

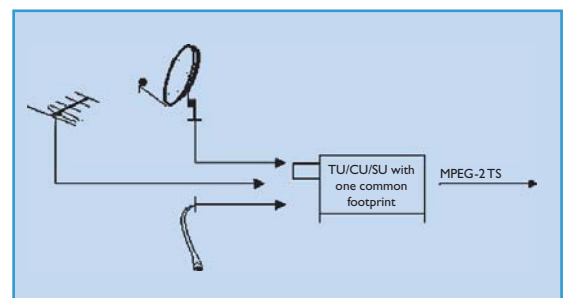
- Compact size: 70mm x 40mm x 13mm

### Options:

- Horizontal or vertical mounting
- RF loopthrough or single input
- Different connectors available
- American and European versions
- Different channel decoder ICs available on request

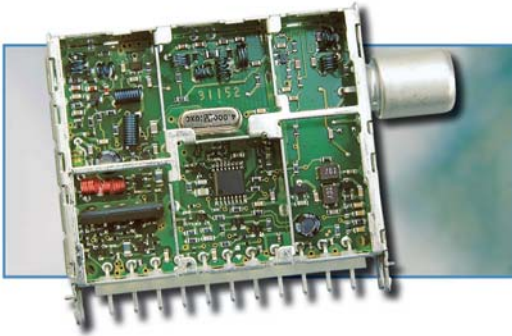
### Reference Design:

- Reference Design: Reference board fitting CU, SU and TU and software available on request



# TDI300

## Digital/Analog Terrestrial Tuners



### Features

- UHF/VHF tuner for analog and digital terrestrial applications
- Single 5V power supply
- Internally generated 30V tuning supply
- SAW-filter and variable gain IF-amplifier
- I<sup>2</sup>C programmable and allows a tuning step size of 166.67 kHz for digital and 62.5 kHz for analog applications
- Internal AGC detector with adjustable take over point (TOP)
- 4 MHz reference signal output

### Size

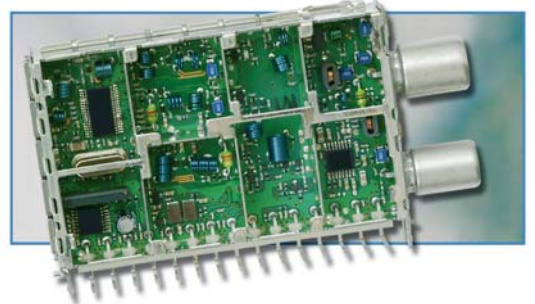
- Compact size: 50mm x 44mm x 14mm

### Options

- Horizontal or vertical mounting
- RF loopthrough or single input
- Different connectors available
- European and American types
- Dedicated UHF only type TD1344
- Full frequency range TD1316

# TDMI300

## Digital/Analog Terrestrial Tuners



### Features

- UHF/VHF tuner for analog and digital terrestrial applications
- DVB-T compliant: 2K & 8K
- Exceeds NorDig specification
- Excellent adjacent channel protection and sensitivity
- Single 5V power supply
- Internally generated 30V tuning voltage supply
- Internal and external gain control
- Fast PLL tuning speed (programmable step size e.g. 62.5kHz and 166.67kHz)
- Switchable 7/8 MHz SAW-filter and variable gain IF-amplifier
- DC-out through input connector for indoor antenna supply

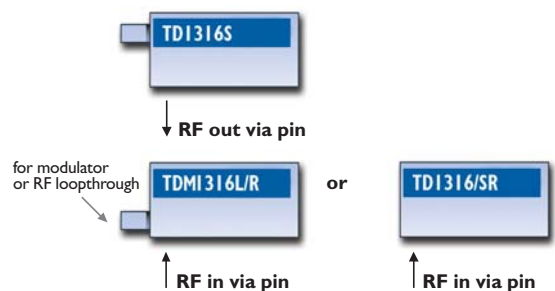
### Size

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

### Options:

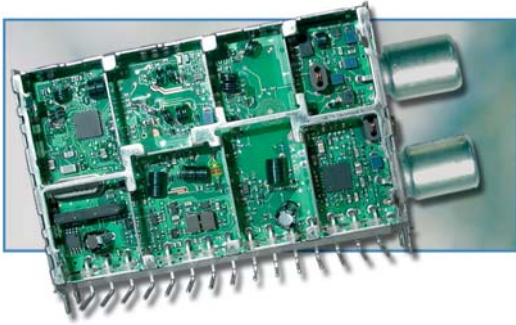
- Horizontal or vertical mounting
- RF loopthrough or single input
- Different connectors available
- Pin input or output available
- Multistandard modulator for UHF
- Stand-by mode

### Architecture for terrestrial PVR



## CD(M) I 300(L)

### Digital/Analog Cable Tuners



#### 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
- I<sup>2</sup>C 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

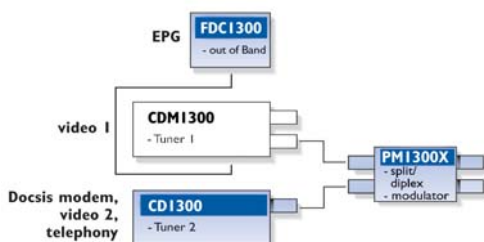
#### Size

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

#### Options

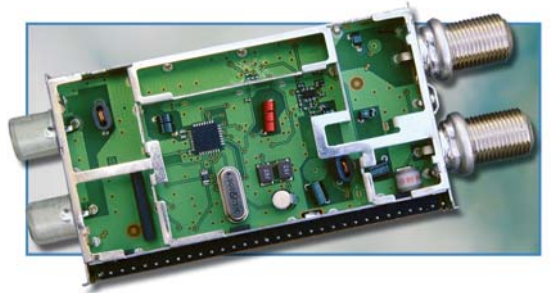
- Horizontal or vertical mounting
- RF loopthrough or single input
- Internal RF gain control loop
- Pin input or output available
- Multistandard modulator
- Integrated diplexer for return-channel
- DC-out through input connector for external antenna amplifier
- UHF and VHF (channel 3/4) operation with switchable harmonics suppression filter

### Architecture for Return Channel Cable STB



## PA/PM/PSI 200

### RF Input Modules



#### Features PA I 200 and PS I 200:

- Two inputs (cable and terrestrial)
  - High sensitivity terrestrial input
  - OpenCable compliant cable input
- High isolation input switch acc. to FCC
- Target application: set-top box/iDTV for ATSC/NTSC, DVB-T, QAM reception
- Max. 4 RF-outputs
  - 2 connector outputs and 2 pin outputs or
  - 4 connector outputs
- 70MHz - 130MHz forward data channel (OOB)

#### Features PMI 200:

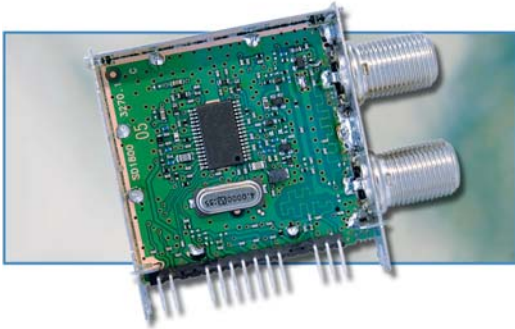
- One input (cable or terrestrial)
  - High sensitivity terrestrial input
  - OpenCable compliant cable input
- One modulator / loopthrough output
- Target application: set-top box/iDTV for ATSC/NTSC, DVB-T, QAM reception
- Max. 4 RF-outputs
  - 2 connector outputs and 2 pin outputs or
  - 4 connector outputs
- Conversion isolation acc. to OpenCable
- (Euro-)DOCSIS compliant diplexer filter for return channel
- NTSC channel 3-4 or Multi Europe modulator

#### Size

- 70mm x 40mm x 13mm

# SDI800

## Digital Satellite Tuners



### Features

- Horizontal or vertical mounting
- Transparent for all digital satellite modulation standards (BPSK, QPSK, 8PSK and 16QAM)
- Excellent input level sensitivity
- Suitable for fixed and variable bit-rates from 1 to 45 Ms/s
- Applicable for all standard channel decoders
- Baseband demodulated I, Q output
- Direct conversion to baseband (ZIF concept)
- Low power consumption
- I<sup>2</sup>C-bus control
- CENELEC compliant
- DiSEqC™ compatible

### Size

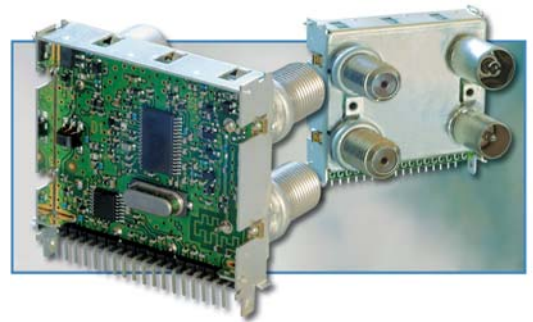
- Compact size 41 x 39 x 13mm

### Options

- Horizontal or vertical mounting
- RF loophrough or single input
- DC input for external antenna amplifier

# SD(M)I700

## Digital Satellite Tuners



### Features

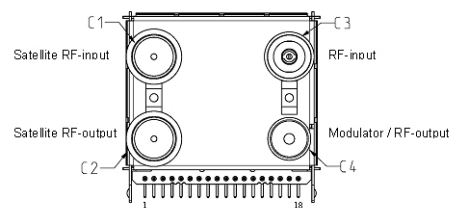
- Transparent for all digital satellite modulation standards (BPSK, QPSK and 8PSK)
- Excellent input level sensitivity
- Suitable for fixed and variable bit-rates from 1 to 45 Ms/s
- Applicable for all standard channel decoders
- Baseband demodulated I, Q output
- Direct conversion to baseband (ZIF concept)
- I<sup>2</sup>C-bus control
- CENELEC compliant
- DiSEqC™ compatible
- Modulator with stand-by mode and built-in test pattern generator

### Size

- Compact size 42 x 39 x 11mm

### Options

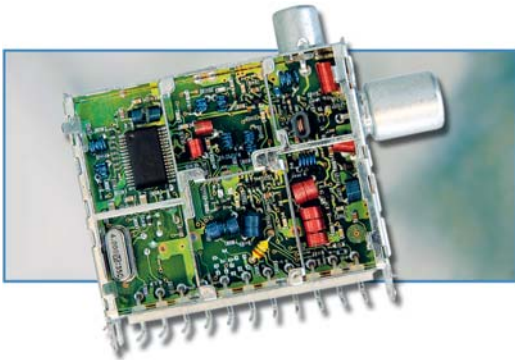
- RF loophrough or single input
- DC input for external antenna amplifier
- Multistandard modulator
- UHF and VHF (channel 3/4 operation) with switchable harmonics suppression filter





## UVI300

### Mainstream TV Tuner



#### Features

- Members of UVI300 MK4 family of small-sized full band tuners
- Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
- Reduced power consumption
- Software controlled weak signal booster
- Off-air, S-cable and hyperband channels from 48.25MHz to 863.25MHz inclusive
- Digitally-controlled (PLL) tuning via I<sup>2</sup>C-bus
- Various connector types available
- World standardized mechanical dimensions and pinning
- CENELEC compliant
- CISPR 13 compliant

#### Size

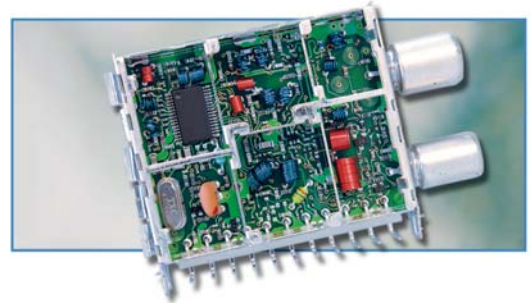
- 54 x 44 x 14mm

#### Options

- Horizontal mounting
- RF loopthrough
- Active splitter output
- NTSC M/N version

## URI300

### Mainstream TV Tuner



#### Features

- Members of URI300 MK3 family of World Standard Pinning small-sized feature tuners
- Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
- FM band coverage from 87.5MHz to 108.0MHz
- Off-air, S-cable and hyperband channels from 48.25MHz to 863.25MHz inclusive
- Fast 400kHz I<sup>2</sup>C bus control compatible with 3.3V and 5V micro controllers
- Digitally-controlled (PLL) tuning via I<sup>2</sup>C-bus
- Various connector types available
- World standardized mechanical dimensions and pinning
- CENELEC compliant
- CISPR 13 compliant

#### Size

- 54 x 44 x 14mm

#### Options

- Horizontal mounting
- FM input on IEC
- FM input via PIN
- NTSC M/N version

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