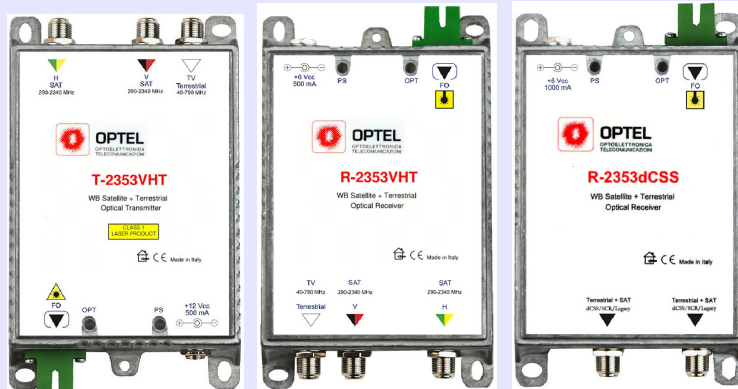
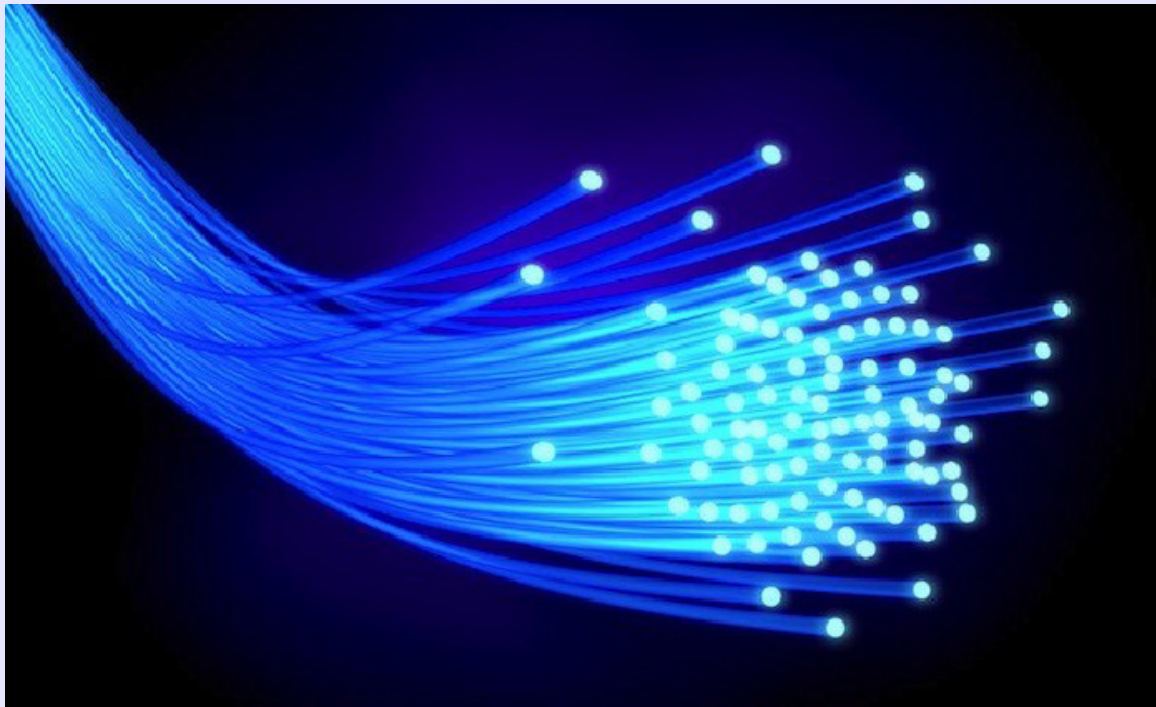


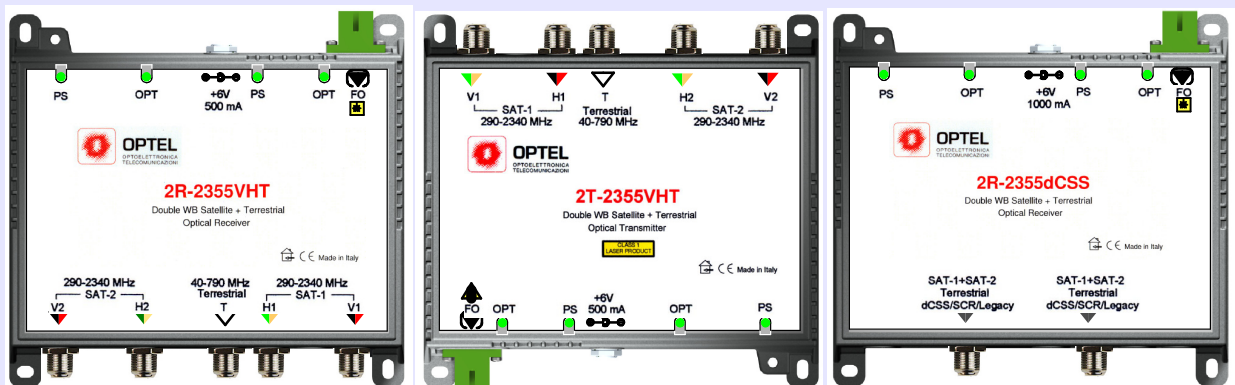


# Satellite Optical Modules

## TV-SAT & DVB-T Optical Fiber Distribution



Single SAT + Terrestrial TV Optical Modules



Double SAT + Terrestrial TV Optical Modules



## GENERAL

The Optical Fiber Satellite product range, originally designed and made in Italy by OPTEL, includes optical Transmitters and optical Receivers for distributing, by means of a passive singlemode optical network, the TV-SAT and the DTT signals to Buildings, Hotels, Campus, Hospitals, wide residential area, etc

All the Satellite Optical products are fully compliance with DVB-T2, DVB-S2, SKY-Q, FTTH system and any kind of decoder.

## SINGLE SATELLITE MODULES



### T-2353VHT H & V Polarity + DVB-T inputs

T-2353VHT Module receives 3 RF signals. The 2 Horizontal and Vertical polarity RF signals (290-2340 MHz) coming from a WB LNB of a Satellite Antenna and the Terrestrial signal (40-790 MHz) coming from Terrestrial Antenna are converted all together into an optical signal transmitted over a single monomode fiber optic. The 3 RF inputs modulate an OPTEL's customized triple wavelength DFB high quality Laser having an emitted aggregate power suitable to distribute the full BW TV-SAT and the full BW TV-Terrestrial up-to 32 users by means of a PON (Passive Optical Network) followed by the R-2353VHT or R-2353dCSS Receivers.



### R-2353VHT H & V Polarity + DVB-T outputs

R-2353dCSS Module converts the optical signal transmitted by the T-2353VHT Module into Horizontal and Vertical polarities RF signals (290-2340 MHz) and to the RF Terrestrial signal (40-790 MH). The optical to electrical conversion is done by means of a high sensitivity and linear OPTEL's customized triple wavelength PD that allow the TV-SAT full BW RF signal and the TV-Terrestrial full BW RF signal to be distributed by means of a PON (Passive Optical Network) to up-to 32 terminal points with high quality performance.



### R-2353dCSS 2 dCSS/SCR/Legacy/Terrestrial + DVB-T outputs

R-2353dCSS Module converts the optical signal transmitted by the T-2353VHT Module into Horizontal and Vertical polarities RF signals (290-2340 MHz) and to the RF Terrestrial signal (40-790 MH). The above 3 RF signals are then converted to 2 dCSS/SCR/Legacy outputs signals (950-2150 MHz) each one mixed with the Terrestrial and able to serve up-to 16 independent users. The optical to electrical conversion is done by means of a high sensitivity and linear OPTEL's customized triple wavelength PD that allow the 2 dCSS/SCR/Legacy output signals to be distributed by means of a PON (Passive Optical Network) to up-to 32 terminal points with high quality performance.



## **Satellite Optical Fiber Transmitter Module** **V-H Wide Band, Terrestrial FM,DAB,DVB-T Inputs**

### **PRODUCT DESCRIPTION**

T-2353VHT is an Optical Fiber Transmitter Module originally designed and developed by OPTEL suitable to Transmit the full bandwidth TV-Satellite and TV-Terrestrial RF signals over one singlemode fiber

@ - T-2352VH is an optional version available without Terrestrial

### **PRODUCT FEATURES**

- @ - Multi Quantum Well (MQW) DFB Laser Diodes
- @ - Optical emission multi-wavelength with integrated WDM over one singlemode fiber
- @ - Single stage 30 dB optical isolation on each LD
- @ - Long life time of the Lasers >100.000 hours
- @ - V-H Wide Band LNB + Terrestrial Inputs
- @ - Low Noise
- @ - Low distortion
- @ - Diecast Zamak case

### **MAIN TECHNICAL CHARACTERISTICS**

**ELECTRICAL** (Linked with R-2353VHT Module by means of single monomode fiber splitting PON)

Satellite Horizontal & Vertical Polarity Input Level	dBuV	75 ....85
Satellite Horizontal & Vertical Frequency Range	MHz	290.....2340
Terrestrial Input Level	dBuV	75....85
Terrestrial Frequency Range	MHz	47.....790
Satellite & Terrestrial Input Impedance	Ohm	75
Satellite & Terrestrial Input Return Loss	dB	10

### **OPTICAL**

Optical Fiber	G652D 9/125 um singlemode	
Optical Connector	SC-APC	
Optical Output Power	dBm	>10
Maximum number of User splitting optical points	32	

### **MECHANICAL**

Case	Diecast Zamak	
Dimension	mm	110 x 84 x 27

### **POWER SUPPLY, MONITORING & ALARMS**

Power Supply & Monitoring	+12V / 500 mA / Green Lamp ON	
Low Output Optical Power (LA)	Red Lamp ON / Green Lamp OFF	
Nominal Output Optical Power (OP)	Green Lamp ON / Red Lamp OFF	
Temperature operating range	0 to +40 o C	





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# R-2353VHT

## **Satellite Optical Fiber Receiver Module** **V-H Wide Band, Terrestrial FM,DAB,DVB-T Outputs**

### **PRODUCT DESCRIPTION**

R-2353VHT is an Optical Fiber Receiver Module originally designed and developed by OPTEL suitable to receive the full bandwidth TV-Satellite and TV-Terrestrial RF signals over one singlemode fiber Transmitted by the T-2353VHT Transmitter Module.

@ - R-2352VH is an optional version available  
without Terrestrial

### **PRODUCT FEATURES**

- @ - Multi-wavelength photodiodes with integrated WDM over a singlemode fiber
- @ - Low noise Front-End
- @ - V-H Wide Band + Terrestrial Outputs
- @ - Low distortion
- @ - Diecast Zamak case

### **MAIN TECHNICAL CHARACTERISTICS**



<b>OPTICAL</b> (Linked with T-2353VHT Module by means of single monomode fiber splitting PON)			
Optical Fiber			G652D 9/125 um singlemode
Optical Connector			SC-APC
Minimum Optical Link Loss allowed	dB		6 (from T- 2353VHT)
Maximum Optical Link Loss allowed	dB		18 (from T- 2353VHT)
<b>ELECTRICAL</b> (Linked with T-2353VHT Module by means of single monomode fiber splitting PON)			
Satellite Horizontal & Vertical Polarity Output Level	dBuV		60 ...80
Satellite Horizontal & Vertical Frequency Range	MHz		290.....2340
Terrestrial Output Level	dBuV		60...80
Terrestrial Frequency Range	MHz		47.....790
Satellite & Terrestrial Output Impedance	Ohm		75
Satellite & Terrestrial Output Return Loss	dB		10
<b>MECHANICAL</b>			
Case			Diecast Zamak
Dimension	mm		110 x 84 x 27
<b>POWER SUPPLY, MONITORING &amp; ALARMS</b>			
Power Supply & Monitoring			+6V / 500 mA / Green Lamp ON
Low Input Optical Power (LA)			Green Lamp OFF
Nominal Input Optical Power (OP)			Green Lamp ON
Temperature operating range			+5 to +35 o C





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# R-2353dCSS

## Satellite Optical Fiber Receiver Module 2 dCSS / SCR / Legacy + Terrestrial Outputs

### PRODUCT DESCRIPTION

R-2353dCSS is an Optical Fiber Receiver Module originally designed and developed by OPTEL suitable to receive the full bandwidth TV-Satellite and TV-Terrestrial RF signals over one singlemode fiber Transmitted by the T-2353VHT Transmitter Module.

An integrated circuit inside the module converts the WB H & V polarities into 2 dCSS/Legacy output aggregate signals mixed with the Terrestrial.

### PRODUCT FEATURES

- @ - Multi-wavelength photodiode with integrated WDM over a singlemode fiber
- @ - Available with 2 dCSS/SCR/Legacy + Terrestrial outputs
- @ - Compatible with SKY Q, EN50494, EN50607, Legacy
- @ - Low noise Front-End
- @ - Low distortion
- @ - Diecast Zamak case

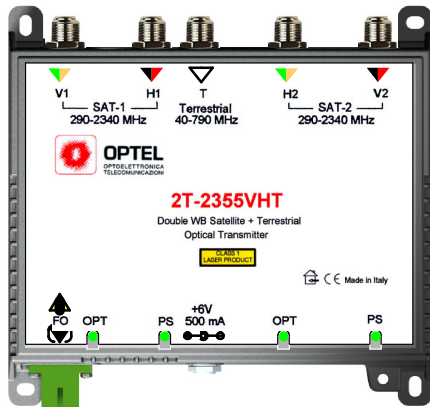
### MAIN TECHNICAL CHARACTERISTICS



<b>OPTICAL</b> (Linked with T-2353VHT Module by means of single monomode fiber splitting PON)		
Optical Fiber		G652D 9/125 um singlemode
Optical Connector		SC-APC
Minimum Optical Link Loss allowed	dB	6 (from T- 2353VHT)
Maximum Optical Link Loss	dB	18 (from T-2353VHT)
<b>ELECTRICAL</b> (Linked with T-2353VHT Module by means of single monomode fiber splitting PON)		
Number of user outputs	Nu	2
Number of User Band	Nub	16
Supported Standard	EN40494 / EN50607 / SKYdCSS DiSEqC 1.0/2.0 / Univ. Voltage & Tone	
Output Frequency Range	MHz	950....2150
Satellite Output Level	dBuV	85
Terrestrial Frequency Range	MHz	47.....790
Terrestrial Output Level	dBuV	75
Satellite/Terrestrial Isolation	dB	50
Satellite & Terrestrial Output Conn / Impedance	Ohm	F / 75
Satellite & Terrestrial Output Return Loss	dB	12
<b>MECHANICAL</b>		
Case		Diecast Zamak
Dimension	mm	110 x 84 x 27
<b>POER SUPPLY, MONITORING &amp; ALARMS</b>		
Power Supply		+6V / 1000 mA / Green Lamp ON
Low Input Optical Power (LA)		Green Lamp OFF
Nominal Input Optical Power (OP)		Green Lamp ON
Temperature operating range		+5 to +35 o C



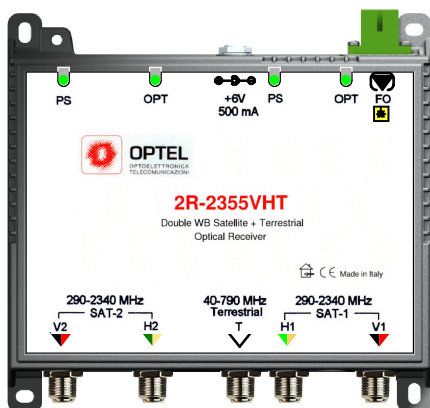
## DOUBLE SATELLITE MODULES



### 2T-2355VHT 2H & 2V + DVB-T inputs

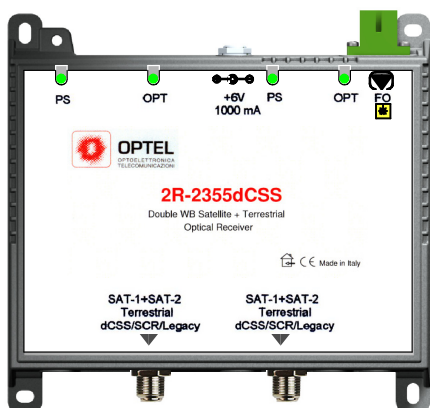
2T-2355VHT Module receives 5 RF signals from 2 TV-SAT and 1 TV-Terrestrial. It receives from each TV-SAT the Horizontal and Vertical polarity RF signals (290-2340 MHz) coming from its WB LNB or also receives from the Terrestrial Antenna the Terrestrial RF signal (40-790 MHz) and converts all together into an optical signal transmitted over a single monomode fiber optic.

The 5 RF inputs modulate an OPTEL's customized quintuple wavelength DFB high quality Laser having an emitted aggregate power suitable to distribute the 2 full BW TV-SAT and the full BW TV-Terrestrial up to 32 users by means of a PON (Passive Optical Network) followed by the 2R-2355VHT or 2R-2355dCSS Receivers.



### 2R-2355VHT 2H & 2V + DVB-T outputs

2R-2355VHT Module converts the optical signal transmitted by the 2T-2355VHT Module into 2 Horizontal and 2 Vertical polarities RF signals (290-2340 MHz) and to the RF Terrestrial signal (40-790 MHz). The optical to electrical conversion is done by means of a high sensitivity and linear OPTEL's customized quintuple wavelength PD that allow the 2 TV-SAT full BW RF signals and the TV-Terrestrial full BW RF signal to be distributed by means of a PON (Passive Optical Network) to up to 32 terminal points with high quality performance.



### 2R-2355dCSS 2 dCSS/SCR/Legacy e DVB-T outputs

2R-2355dCSS Module converts the optical signal transmitted by the 2T-2355VHT Module into 2 Horizontal and 2 Vertical polarities RF signals (290-2340 MHz) and to the Terrestrial RF signal (40-790 MHz). The above 5 RF signals are then converted to 2 dCSS/SCR/Legacy outputs signals (950-2150 MHz) each one mixed with the Terrestrial and able to serve up to 16 independent users.

The optical to electrical conversion is done by means of a high sensitivity and linear OPTEL's customized quintuple wavelength PD that allow the 2 dCSS/SCR/Legacy output signals to be distributed by means of a PON (Passive Optical Network) to up to 32 terminal points with high quality performance.



## **Double Satellite Optical Fiber Transmitter Module 2H + 2V Wide Band, Terrestrial, FM,DAB,DVB-T Inputs**

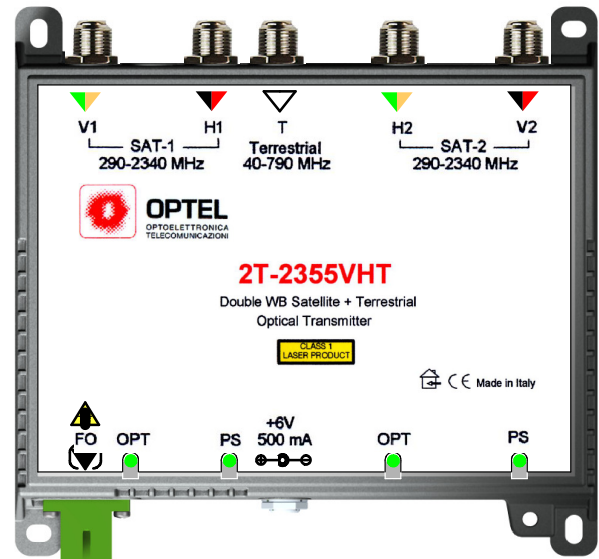
### **PRODUCT DESCRIPTION**

2T-2355VHT is an Optical Fiber Transmitter Module originally designed and developed by OPTEL suitable to Transmit the full bandwidth of 2-TV-Satellite and TV-Terrestrial RF signals over one singlemode fiber.

@ - 2T-2354VH is an optional version available without Terrestrial

### **PRODUCT FEATURES**

- @ - Multi Quantum Well (MQW) DFB Laser Diodes
- @ - Multi-optical emission wavelength with integrated WDM over one singlemode fiber
- @ - Single stage 30 dB optical isolation on each LD
- @ - Long life time of the Lasers >100.000 hours
- @ - 2V-2H Wide Band LNB +Terrestrial Inputs
- @ - Low Noise
- @ - Low distortion
- @ - Diecast Zamak case



### **MAIN TECHNICAL CHARACTERISTICS**

#### **ELECTRICAL** (Linked with 2R-2355VHT Module by means of single monomode fiber splitting PON)

Satellite 2 Horizontal & 2 Vertical Polarity Input Level	dBuV	75 ....85
Satellite 2 Horizontal & 2 Vertical Frequency Range	MHz	290.....2340
Terrestrial Input Level	dBuV	75....85
Terrestrial Frequency Range	MHz	47.....790
Satellite & Terrestrial Input Impedance	Ohm	75
Satellite & Terrestrial Input Return Loss	dB	10

#### **OPTICAL** (Linked with 2R-2355VHT Module by means of single monomode fiber splitting PON)

Optical Fiber	G652D 9/125 um singlemode	
Optical Connector	SC-APC	
Optical Output Power	dBm	>10
Maximum number of User splitting optical points	32	

#### **MECHANICAL**

Case	Diecast Zamak	
Dimension	mm	147 x 110 x 27

#### **POWER SUPPLY, MONITORING & ALARMS**

Power Supply	+12V / 1000 mA / Green Lamp ON	
Low Output Optical Power (Laser Alarm)	Red Lamp ON / Green Lamp OFF	
Nominal Output Optical Power (OP)	Green Lamp ON / Red Lamp OFF	
Temperature operating range	0 to +40 o C	



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# 2R-2355VHT

## Satellite Optical Fiber Receiver Module

### 2H, 2V Wide Band, Terrestrial, FM, DAB, DVB-T Outputs

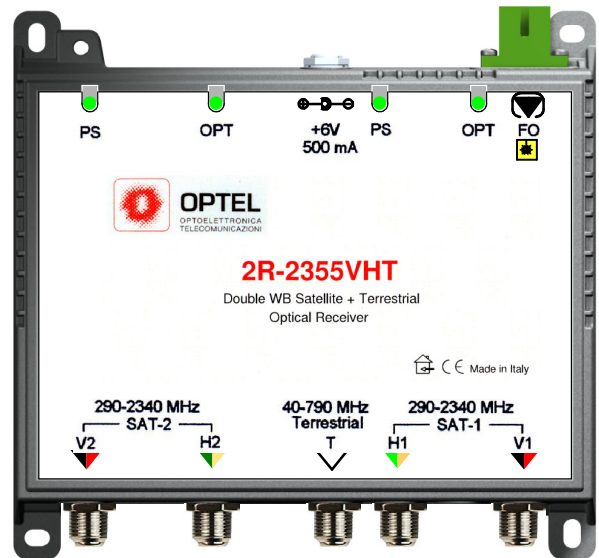
#### PRODUCT DESCRIPTION

2R-2355VHT is an Optical Fiber Receiver Module originally designed and developed by OPTEL suitable to receive the full bandwidth double TV-Satellite and TV-Terrestrial RF signals over one singlemode fiber Transmitted by the 2T-2355VHT Transmitter Module.

@ - 2R-2354VH is an optional version available without Terrestrial

#### PRODUCT FEATURES

- @ - Multi-wavelength photodiode with integrated WDM over a singlemode fiber
- @ - Low noise Front-End
- @ - 2V-2H Wide Band + Terrestrial Outputs
- @ - Low distortion
- @ - Diecast Zamak case



#### MAIN TECHNICAL CHARACTERISTICS

##### OPTICAL (Linked with 2T-2355VHT Module by means of single monomode fiber splitter PON)

Optical Fiber	G652D 9/125 um singlemode	
Optical Connector	SC-APC	
Minimum Optical Link Loss allowed	dB	6 (from 2T- 2355VHT)
Maximum Optical Link Loss	dB	18 (from 2T- 2355VHT)

##### ELECTRICAL (Linked with 2T-2355VHT Module by means of single monomode fiber splitter PON)

Satellite 2 Horizontal & 2 Vertical	Polarity Output Level	dBuV	60 ...80
Satellite 2 Horizontal & 2 Vertical	Frequency Range	MHz	290.....2340
Terrestrial	Output Level	dBuV	60....80
Terrestrial	Frequency Range	MHz	47.....790
Satellite & Terrestrial	Output Impedance	Ohm	75
Satellite & Terrestrial	Output Return Loss	dB	10

##### MECHANICAL

Case	Diecast Zamak	
Dimension	mm	147 x 110 x 27

##### POWER SUPPLY, MONITORING & ALARMS

Power Supply	+6V / 1000mA / Green Lamp ON	
Low Input Optical Power (ALM)	Green Lamp OFF	
Nominal Input Optical Power (OP)	Green Lamp ON	
Temperature operating range	+5 to +35 o C	





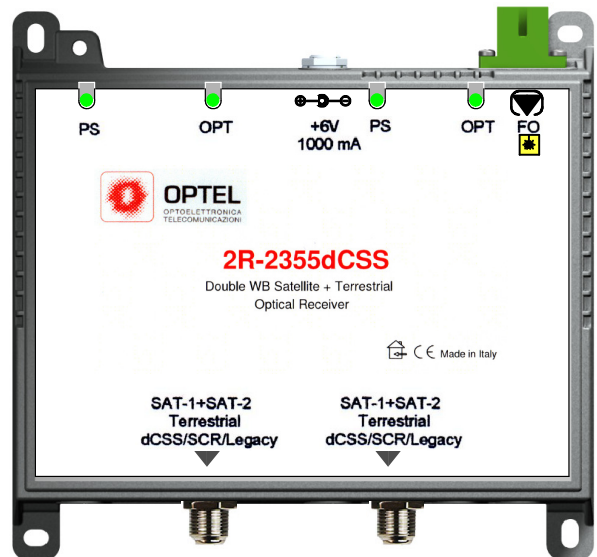
## **Double Satellite Optical Fiber Receiver Module** **2 dCSS / SCR / Legacy + Terrestrial Outputs**

### **PRODUCT DESCRIPTION**

2R-2355dCSS is an Optical Fiber Receiver Module originally designed and developed by OPTEL suitable to receive the full bandwidth double TV-Satellite and FM, DAB, DVB-T Terrestrial RF signals over one singlemode fiber Transmitted by the 2T-2355VHT Double Satellite Transmitter Module.

### **PRODUCT FEATURES**

- @ - Multi-wavelength photodiode with integrated WDM over a singlemode fiber
- @ - Available with 2 dCSS-SCR-Legacy outputs
- @ - Compatible with SKY Q, EN50494, EN50607, Legacy
- @ - Low noise Front-End
- @ - Low distortion
- @ - Diecast Zamak case



### **MAIN TECHNICAL CHARACTERISTICS**

#### **OPTICAL** (Linked with 2T-2355VHT Module by means of single monomode fiber splitting PON)

Optical Fiber	G652D 9/125 singlemode	
Optical Connector	SC-APC	
Minimum Optical Link Loss allowed	dB	6 (from 2T- 2355VHT)
Maximum Optical Link Loss	dB	18 (from 2T- 2355VHT)

#### **ELECTRICAL** (Linked with 2T-2355VHT Module by means of single monomode fiber splitting PON)

Number of user outputs	Nu	2
Number of User Band	Nub	16
Supported Standard	EN40494 / EN50607 / SKYdCSS DiSEqC 1.0/2.0 / Univ. Voltage & Tone	
Output Frequency Range	MHz	950....2150
Satellite Output Level	dBuV	85
Terrestrial Frequency Range	MHz	47.....790
Terrestrial Output Level	dBuV	75
Satellite/Terrestrial Isolation	dB	50
Satellite & Terrestrial Output Conn / Impedance	Ohm	F / 75
Satellite & Terrestrial Output Return Loss	dB	12

#### **MECHANICAL**

Case	Diecast Zamak	
Dimension	mm	147 x 110 x 27

#### **POWER SUPPLY, MONITORING & ALARMS**

Power Supply	+6V / 1500 mA / Green Lamp ON	
Low Input Optical Power (ALM)	Green Lamp OFF	
Nominal Input Optical Power (OP)	Green Lamp ON	
Temperature operating range	+5 to +35 o C	