



## Application

- DVB-T/-H/-T2 & ISDB-T coverage enhancement
- Railway, road and waterway tunnels

## Key Features

- Up to 8 optical remotes
- Remote repeaters 0.5W, 1W, 10W & 20W
- Off-air or TX reception
- WDM available
- IP Monitoring by GPRS
- Network Management System

## Benefits

- Flexibility : single or multi-optical fibers
- Centralized monitoring
- Exclusive solution

## Contact us

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- [www.protel.it](http://www.protel.it)

# Solution for Mobile TV coverage

## Optical Repeater RF/OF DVB-T/-H/-T2 & ISDB-T



# DVB-T<sup>®</sup> DVB-H/DVB-T2<sup>®</sup> ISDB-T

### To ensure Digital Mobile coverage everywhere

The "Optical Repeater RF-OF DVB-T/-H/-T2 & ISDB-T" ensures continuity of service for mobile TV network in the infrastructures inadequately covered or not, such as tunnels, shopping malls, large office buildings.

The signal reception can be achieved through off-air antenna or by direct connection to a transmitter site via coaxial cable.

The RF-optical converter allows up to 8 remote repeaters RF (0.5W, 10W or 20W) that will power the antennas or radiating cables scattered throughout the infrastructure to cover.

The optical link between the master and the remote repeaters may use one fiber per remote or one single fiber for all remote repeaters with the WDM option.

All peripheral devices are driven through the optical fiber by the master repeater where the WEB / SNMP server is located. The remote control is available through the embedded GPRS modems.

Different such systems can be connected to the optional NMS to build a central point of monitoring.



164 –RF/OF Repeater DVB-T/-H/-T2 & ISDB-T – ed2 - 10/2011

Quality Model FP1004D / ed 27 / 07 / 2011

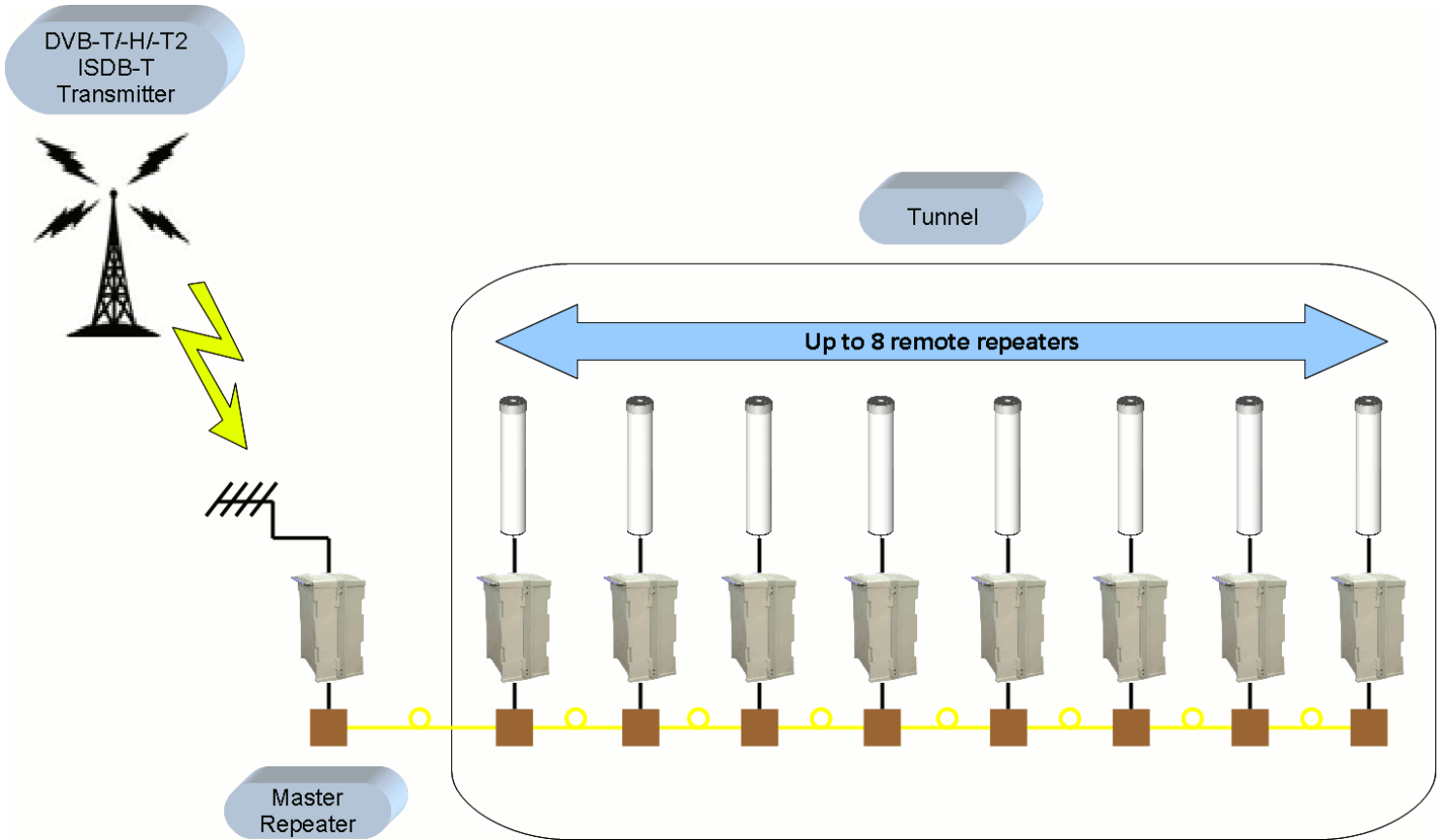
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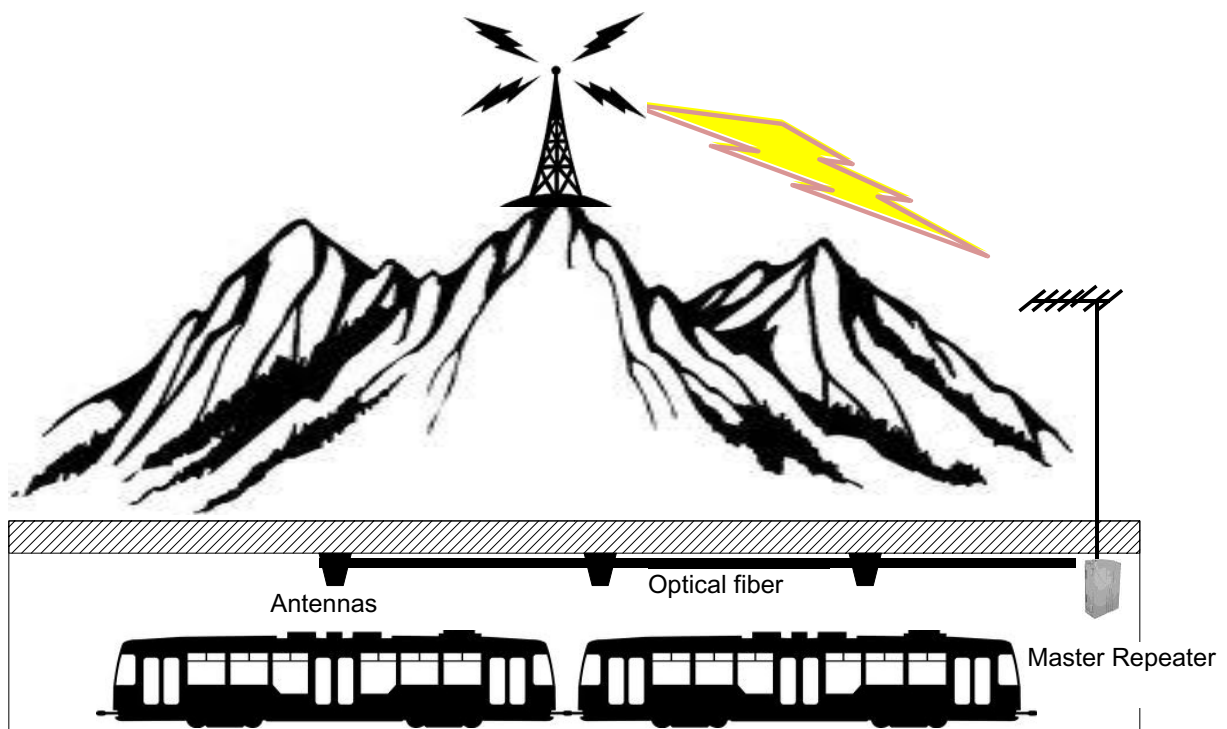
# Solution for Mobile TV coverage

## Optical Repeater RF/OF DVB-T/H/T2 & ISDB-T

### Operation of DVB-T/H/T2 & ISDB-T Repeater RF-OF



### Example coverage of a rail tunnel





# Solution for Mobile TV coverage

## Optical Repeater RF/OF DVB-T/-H/-T2 & ISDB-T

<b>Master Repeater RF/FO Features</b>	
<b>❖ RF Interface</b>	
Standards	DVB-T, DVB-H, DVB-T2, ISDB-T
Input / Output Frequency	470-862 MHz
Bandwidth	8, 7 or 6 MHz
Offset	-3, -2, -1, +1, +2, +3 x 1/6 MHz
Return loss	-17 dB (1,33 : 1)
Input level	-72 to -32 dBm
<b>❖ Optical Interface</b>	
Wavelength	1310 – 1550 ± 20 nm or CWDM
Optical output power	6 dBm ± 2 dB
Compression point	> 15 dBm
Optical connector	E2000 APC
Optical Fiber	SMF (G652 and G655)
<b>❖ Mechanical and electrical</b>	
Control and monitoring	WEB, SNMP Remote control by GPRS (optional) SELECOM Network Management Station (optional)
Maintenance	All the modules are full band and can be easily replaced
Architecture	Outdoor cabinet
Dimensions	H582×L429×P224 mm <sup>3</sup>
Weight	28 kg
Fastening	On wall or on mast
Protection against corrosion	Aluminum treated against the oxidation and painted
Ingress Protection	IP65
Cooling	Natural convection
Power supply range	85-265 VAC or 48 VDC
Power consumption	40 W
Coaxial standard connectors	N female
Temperature	-30°C to +45°C



# Solution for Mobile TV coverage

## Optical Repeater RF/OF DVB-T/H/T2 & ISDB-T

Remote Repeater OF/RF Features	0,5W	5W	10W	20W
<b>❖ RF Interface</b>				
Standards	DVB-T, DVB-H, DVB-T2, ISDB-T			
Input / Output Frequency	470-862 MHz			
Bandwidth	8, 7 or 6 MHz			
Offset	-3, -2, -1, +1, +2, +3 x 1/6 MHz			
Output Level	0.5 Wrms (27 dBm)	1 Wrms (30 dBm)	10 Wrms (40 dBm)	20 Wrms (43 dBm)
Out of band emission	Compliant with : ETSI EN 302 296 V1.1.1			
Shoulders	≥ 37dB (≥ 39dB typ.)			
MER	≥ 30dB (≥ 32dB typ.)			
<b>❖ Optical Interface</b>				
Wavelength	1310 – 1550 ± 20 nm or CWDM			
Optical bandwidth	From 350 to 2200 MHz			
Optical connector	E2000 APC			
Optical Fiber	SMF (G652 and G655)			
Number of optical inputs / outputs	1 input + 1 output			
<b>❖ Mechanical and electrical</b>				
Impact protection class	IK9			
Cooling system	Natural convection cooling with heat sink			
Dimensions	H : 269 mm L : 329 mm P : 142 mm	H : 582 mm L : 429 mm P : 224 mm	H : 582 mm L : 426 mm P : 352 mm	
Rating class	IP54	IP65		
Weight	7 kg	28 kg	49 kg	
Temperature range	- 10°C / + 55°C			
Power supply voltage	Integrated 85-265 VAC power supply			
Power consumption	42 VA	85 VA	140 VA	230 VA
Monitoring	Centralized to the master with an information signal through the optical fiber			

# Solution for Mobile TV coverage

## Optical Repeater RF/OF DVB-T/H/T2 & ISDB-T

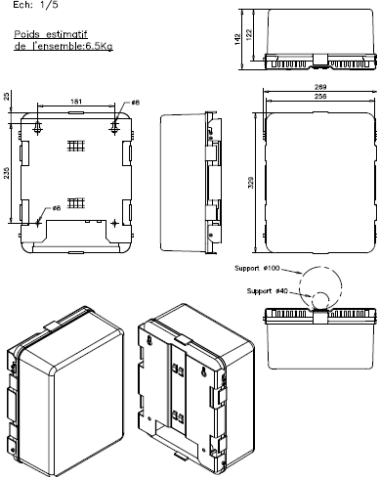
### Mounting Plan

**Remote Repeater OFIRF 0.5W**



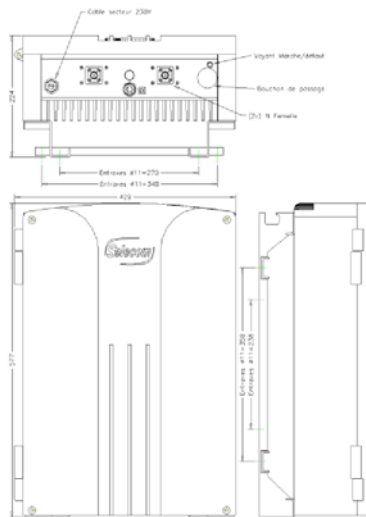
Ech: 1/5

Poids estimatif de l'ensemble: 6,5kg



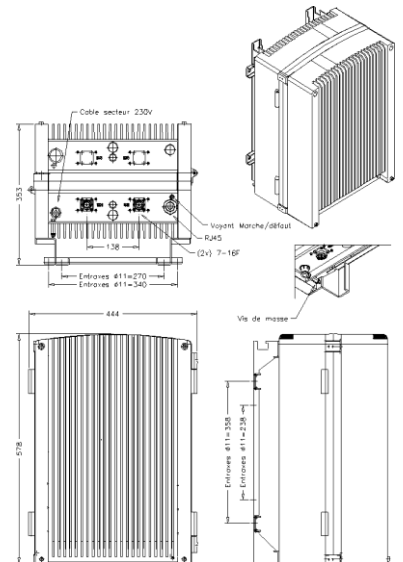
**Master Repeater RF/OF**

**Remote Repeater OFIRF 1W, 5W**



**Remote Repeater OFIRF**

**10W & 20W**







# Solution for Mobile TV coverage

## Optical Repeater RF/OF DVB-T/-H/-T2 & ISDB-T

Ordering Code	Designation
602 371	Master Repeater RF/FO DVB-T/-H/-T2 & ISDB-T
602 335	Remote Repeater OF/RF DVB-T/-H/-T2 & ISDB-T 0.5W
602 336	Remote Repeater OF/RF DVB-T/-H/-T2 & ISDB-T 1W
602 340	Remote Repeater OF/RF DVB-T/-H/-T2 & ISDB-T 5W
602 350	Remote Repeater OF/RF DVB-T/-H/-T2 & ISDB-T 10W
602 360	Remote Repeater OF/RF DVB-T/-H/-T2 & ISDB-T 20W
603 024	Dual Optical Coupler 1/2 – 1/2
603 025	Dual Optical Coupler 1/3 - 2/3

Options	
Cabin protection 	<ul style="list-style-type: none"> <li>✓ Protection against Sunlight and Rain</li> <li>✓ Compatible with all SELECOM Repeaters</li> <li>✓ Easy installation</li> <li>✓ Support for laptop or measuring device</li> </ul>
Electrical Case 	<ul style="list-style-type: none"> <li>✓ Outdoor case</li> <li>✓ Cost effective solution</li> <li>✓ Isolation Transformer</li> <li>✓ GFCI</li> <li>✓ Re-starter</li> <li>✓ Service Outlet</li> <li>✓ CE compliant</li> <li>✓ Custom design on request</li> </ul>
GPRS Modem 	<ul style="list-style-type: none"> <li>✓ For the remote control via GPRS network</li> </ul>
NMS (Network Management System) 	<ul style="list-style-type: none"> <li>✓ NMS software manages a complete network of different</li> <li>✓ Screens with complete status and reports</li> <li>✓ Location on a map of each equipment</li> <li>✓ SMS, EMAIL alerts</li> <li>✓ Equipments control in case of needing</li> </ul>
Couplers 	<ul style="list-style-type: none"> <li>✓ Balanced couplers (1 to 2, 1 to 3, 1 to 4)</li> <li>✓ Unbalanced couplers (1/3-2/3; 1/5-4/5; 1/10-9/10)</li> <li>✓ For all types of antenna combinations</li> </ul>
Antennas 	<ul style="list-style-type: none"> <li>✓ Donor antenna</li> <li>✓ Wall mounted antennas indoor</li> <li>✓ Ceil mounted antennas indoor</li> </ul>
Feeders 	<ul style="list-style-type: none"> <li>✓ Coaxial feeders</li> <li>✓ Radiating cables</li> </ul>