



Solution for TETRA coverage

AIR Repeater™ TETRA / TETRAPOL 400 RF/RF

Applications

- TETRA / TETRAPOL 400 MHz coverage enhancement
- Outdoor : Mountainous areas, Industrial plants
- Indoor : Confined areas

Key Features

- Output power up to 5W
- Outdoor case IP65
- Wall- or mast-mounting
- Squelch uplink function
- IP Monitoring by modem GPRS, GSM-R or TETRA

Benefits

- Cost effective alternative to BTS
- Only one equipment for TETRA & TETRAPOL
- Easy remote monitoring

Contact us

Distributore per l'Italia :

PROTEL SAS

Via Magellano 3 A/B6
Cesano Boscone (MI)
Tel.: 02 48 60 02 65



To ensure TETRA coverage everywhere

The "AIR Repeater™ TETRA/TETRAPOL 400 RF/RF" is designed to enhance outdoor coverage by cell extension as a cost-effective alternative to TETRA Base Station. In addition, it ensures continuity of service for TETRA / TETRAPOL 400 MHz radio mobile network in the infrastructures inadequately covered or not, such as tunnels, industrial buildings or warehouse, shopping centers, hospitals, subway parking, etc...

Thanks to the gain limiter, the equipment is able to operate with mobile phones near or far from the repeater without risk of saturation.

Whole-integrated in an outdoor case, this repeater can be easily installed anywhere.

The squelch function on uplink permits to reduce the noise on the BTS and to save energy: the uplink amplifier is switched on only if necessary.

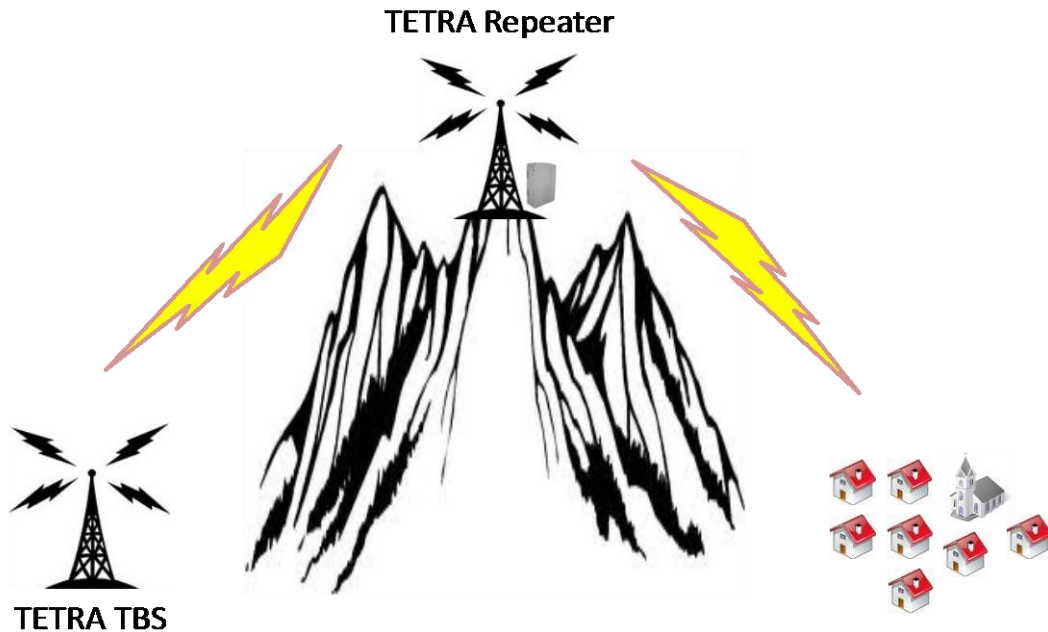
The equipment can be configured and monitored with the embedded WEB/SNMP server. Remote access is available through GPRS or TETRA modem. An optional NMS is available to monitor several systems from a centralized monitoring center.



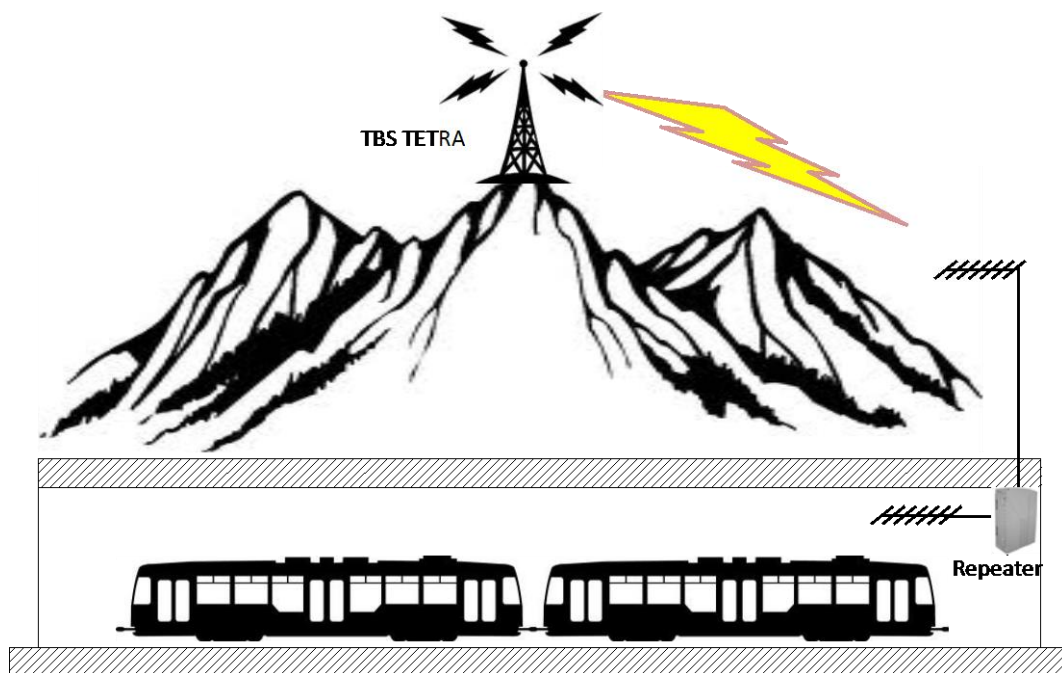
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Example of outdoor usage



Example coverage of small rail tunnel





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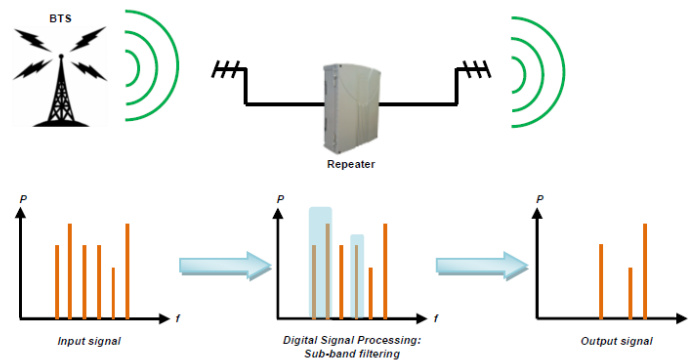
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RF Features		DL = +17 dBm version	DL = +24 dBm version	DL = +37 dBm version
Frequency range (to specify when ordering)		<u>Up - Link (RX)</u> 380 - 385 MHz 385 - 390 MHz 410 - 415 MHz 415 - 420 MHz 450 - 455 MHz 455 - 460 MHz		<u>Down - Link (TX)</u> 390 - 395 MHz 395 - 400 MHz 420 - 425 MHz 425 - 430 MHz 460 - 465 MHz 465 - 470 MHz
Bandwidth (to specify when ordering)		From 1 to 5 MHz (Adjusted SAW filter)		
Bandwidth Ripple		≤ ± 2 dB	≤ ± 2 dB	≤ ± 1 dB
Amplification Class		AB		
Adjustable Gain		50dB to 80dB (step 0.5dB)	50dB to 80dB (step 0.5dB)	62dB to 92dB (step 0.5dB)
Noise factor		≤ 6 dB @ Gain max		
Nominal output power UL or DL	1 carrier	+17 dBm	+24 dBm	+37 dBm
	2 carriers	+14 dBm	+21 dBm	+34 dBm
	4 carriers	+11 dBm	+18 dBm	+31 dBm
	8 carriers	+8 dBm	+15 dBm	+28 dBm
	16 carriers	+5 dBm	+12 dBm	+25 dBm
	32 carriers	+2 dBm	+9 dBm	+22 dBm
IP3		> 40 dBm	> 51 dBm	> 69 dBm
DL / UL rejection		> 90 dB	> 90 dB	> 110 dB
DL / UL isolation		> 40 dB	> 40 dB	> 80 dB
Group Delay		≤ 4 μs		
RF Connector		N female 50Ω		

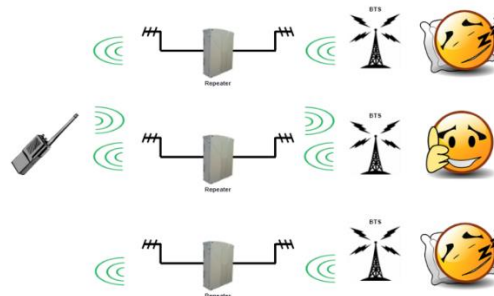
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Digital Channelization Module (optional)		
Number of rejection filters		4
For each filter	<i>Bandwidth</i>	Adjustable from 100 kHz to 5 MHz (step 12.5 kHz)
	<i>Central frequency</i>	Adjustable from f_0 to $f_0 + 5$ MHz (step 12.5 kHz)
	<i>Attenuation</i>	Adjustable from 0 dB to 30 dB
Group delay		$\leq 5 \mu s$



"Uplink Squelch" function	
<p>To allow maximum deploy repeaters RF / RF in a given area, connected to the same base station, it is necessary to have a function that cuts off transmission of the uplink channel when the repeater is not applied a communication.</p> <p>Indeed, a RF/RF repeater, even if it does not retransmit carrier, returns a background thermal noise, very low. But the sum of all those little noises generates power noise which can desensitize the base station, which would limit the use of RF / RF repeaters.</p>	<p>The principle is extremely simple:</p> <ul style="list-style-type: none"> ➤ No communication is requested by a mobile in the area covered by the repeater ⇒ The UL channel is paused ⇒ No noise is emitted by the repeater ➤ A communication is requested by a mobile in the area covered by the repeater ⇒ The UL channel is operated within milliseconds ⇒ The communication is provided ➤ After a certain time, the repeater is no longer sought ⇒ UL channel is re-paused ⇒ No noise is emitted by the repeater





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Cabinet Features															
Power supply voltage		Integrated 230 VAC or 48 VDC or 24 VDC power supply													
Power consumption		UL \ DL	17dBm	24dBm	37dBm										
		17dBm	72 W	85 W	120 W										
		24dBm	85 W	100 W	135 W										
		37dBm	120 W	135 W	150 W										
Dimensions		Outdoor case UL \ DL 17dBm 24dBm 37dBm 17dBm Case A Case A Case B 24dBm Case A Case A Case B 37dBm Case B Case B Case B Case A : H 578 mm x L 429 mm x P 224 mm Case B : H 578 mm x L 444 mm x P 353 mm													
						Indoor case UL \ DL 17dBm 24dBm 37dBm 17dBm Case A Case A Case B 24dBm Case A Case A Case B 37dBm Case B Case B Case C Case A : H 3U x L 19" x P 452 mm Case B : H 5U x L 19" x P 452 mm Case C : H 6U x L 19" x P 452 mm									
		Weight		Outdoor case UL \ DL 17dBm 24dBm 37dBm 17dBm 25 kg 25 kg 35 kg 24dBm 25 kg 25 kg 35 kg 37dBm 35 kg 35 kg 65 kg											
								Indoor case UL \ DL 17dBm 24dBm 37dBm 17dBm 16 kg 16 kg 35 kg 24dBm 16 kg 16 kg 35 kg 37dBm 35 kg 35 kg 65 kg							
Connectors				N female											
Rating class				IP65											
Temperature range				- 25°C / + 55°C											
Cooling system				Outdoor case											
		Indoor case													
Monitoring		Dry Loop Green & Red LED WEB, SNMP (Optional)													
MTBF		≥ 200 000 hours													

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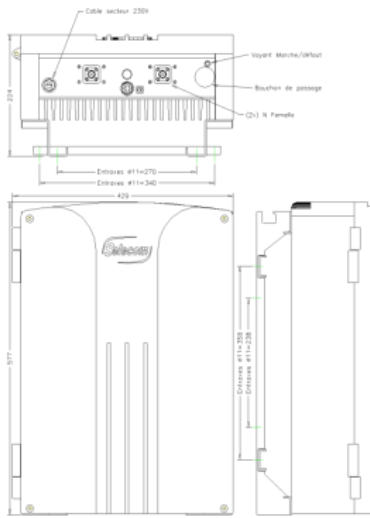
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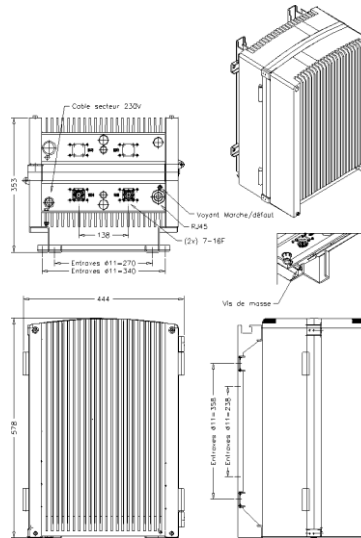
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Mounting Plan



Outdoor Case A



Outdoor Case B

Ordering Information

Designation	Ordering Code
Repeater RF/RF TETRA/TETRAPOL	See table
IP-GPRS Monitoring Module (optional)	807 004-TETRA
TETRA Modem (optional)	807 004-SRG
Digital Channelization Module (optional)	UPLINK DOWNLINK
	602 801-UL 602 801-DL

Repeater RF/RF TETRA/TETRAPOL Outdoor case			
DL \ UL	17dBm	24dBm	37dBm
17dBm	603 090-X-Y	603 094-X-Y	603 091-X-Y
24dBm	603 121-X-Y	603 095-X-Y	603 093-X-Y
37dBm	603 122-X-Y	603 123-X-Y	603 092-X-Y

Repeater RF/RF TETRA/TETRAPOL Indoor 19" case			
DL \ UL	17dBm	24dBm	37dBm
17dBm	603 096-X-Y	603 100-X-Y	603 097-X-Y
24dBm	603 119-X-Y	603 101-X-Y	603 099-X-Y
37dBm	603 120-X-Y	603 124-X-Y	603 125-X-Y

Frequency Range	UL	380-385 MHz		385-390 MHz		410-415 MHz		415-420 MHz		450-455 MHz		455-460 MHz	
		390-395 MHz		395-400 MHz		420-425 MHz		425-430 MHz		460-465 MHz		465-470 MHz	
X =		38/40A		38/40B		41/43A		41/43B		45/47A		45/47B	

Power Supply	230 VAC		48 VDC		24 VDC	
Y =	230		48		24	

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