

A blue-tinted aerial photograph of a city at night, showing a dense urban landscape with numerous skyscrapers and a river. Overlaid on the image are several glowing white arcs and lines that represent a network or communication system, connecting various points across the city. The image is framed by a blue border with a white inner line.

# CRITICAL COMMUNICATIONS

## TETRA FAMILY

BHE BONN HUNGARY ELECTRONICS LTD.

[WWW.BHE-MW.EU](http://WWW.BHE-MW.EU)



# CRITICAL COMMUNICATIONS

## TETRA FAMILY



# DIGITAL OFF-AIR REPEATERS

- SDR based digital filtering
- Band and channel selective characteristics (up to 6.5 MHz bandwidth or up to 10 channels)\*
- 24 or 36 dBm downlink output power
- Uplink muting function
- Built in isolation measurements between mobile and donor ports
- Built in spectrum analyser function
- Error log with real time clock function
- Ethernet remote control option
- Optional 2G / 4G remote control
- NMS capability & compatibility
- Wall mount construction with IP65 protection or rack mount



**BRTL44**

| Channel | Frequency (MHz) | Gain (dB) |
|---------|-----------------|-----------|
| 1       | 395.00000       | 77.377    |
| 2       | 395.50000       | 77.054    |
| 3       | 396.00000       | 76.860    |
| 4       | 396.50000       | 76.169    |
| 5       | 397.00000       | 76.861    |
| 6       | 398.00000       | 76.683    |
| 7       | 399.00000       | 76.649    |
| 8       | 400.00000       | 76.869    |

Transmission characteristic

Control software

Spectrum Analyser

## PARAMETERS

|       | MODEL  | RF GAIN | OUTPUT POWER |        | HOUSING    |                | SNMP CONTROL |
|-------|--------|---------|--------------|--------|------------|----------------|--------------|
|       |        |         | DOWNLINK     | UPLINK | WALL MOUNT | 19" RACK MOUNT |              |
| MINI  | BRTM32 | 76 dB   | 24 dBm       | 22 dBm | ✓          |                | ✓            |
|       | BRTM47 | 76 dB   | 24 dBm       | 22 dBm |            | ✓              | ✓            |
|       | BRTL42 | 90 dB   | 36 dBm       | 24 dBm | ✓          |                | ✓            |
| MACRO | BRTL44 | 90 dB   | 36 dBm       | 36 dBm | ✓          |                | ✓            |
|       | BRTL37 | 90 dB   | 36 dBm       | 24 dBm |            | ✓              | ✓            |
|       | BRTL48 | 90 dB   | 36 dBm       | 36 dBm |            | ✓              | ✓            |

\* For more details please see our 6.5 MHz TETRA PRODUCT FAMILY brochure.

## OPTICAL REPEATERS

- Master – Slave configuration
- Various architectures: point to point, star, daisy chain
- Modular construction, easy to extend
- Mini and Macro Slave units can be combined
- Wavelength-division multiplexing (WDM)
- Up to 32 slaves supported with 1 master
- Dual TETRA – UHF band support
- Various radio systems support (TETRA, PMR, DMR)
- Multiband options (FM / DAB / TETRA / GSM / LTE)
- NMS capability & compatibility
- Ethernet, SNMP control interface
- Optional 2G / 4G remote control
- Optional uplink muting function
- 19" rack mount master units
- Wall mount, 19" rack mount or optional ATEX housing remote units
- Different level of redundancy
- 24 or 36 dBm composite downlink output power
- Remote control via the master unit

## OPTICAL MASTER REPEATERS

### TECHNICAL

| MODEL  | GAIN          | ABS. MAX INPUT POWER LEVEL | RF BAND  | MAX NUMBER OF SLOTS | MAX NUMBER OF SLAVES | EXTENDABLE | REDUNDANT SUPPORT |
|--------|---------------|----------------------------|----------|---------------------|----------------------|------------|-------------------|
| BRMF56 | -10 dB        | +10 dBm                    | single   | 1                   | 4                    |            | ✓                 |
| BRMF57 | -10 dB        | +10 dBm                    | single   | 2                   | 8                    |            | ✓                 |
| BRMF55 | -20 dB        | +26 dBm                    | single   | 8                   | 32                   | ✓          | ✓                 |
| BRMF65 | -25 dB        | +26 dBm                    | dual     | 8                   | 32                   | ✓          | ✓                 |
| BRMM15 | specification | specification              | 4-5 Band | 4                   | 16                   | ✓          | ✓                 |



### BRMF56

Simple optical master for redundant point-to-point network. Suitable for in-building coverage.

### BRMF55

Single RF band 5 wave WDM optical master unit for redundant star topology. Supports up to 32 optical channels, extendable on site.

### BRMF65

Dual RF band 5 wave WDM master unit for redundant star and daisy chain topology. Supports up to 32 optical slave units, extendable on site.



### BRTF26

Optical Macro Slave  
Single TETRA band  
Single feed

### BRDF28

Optical Macro Slave  
Dual TETRA band  
Single feed

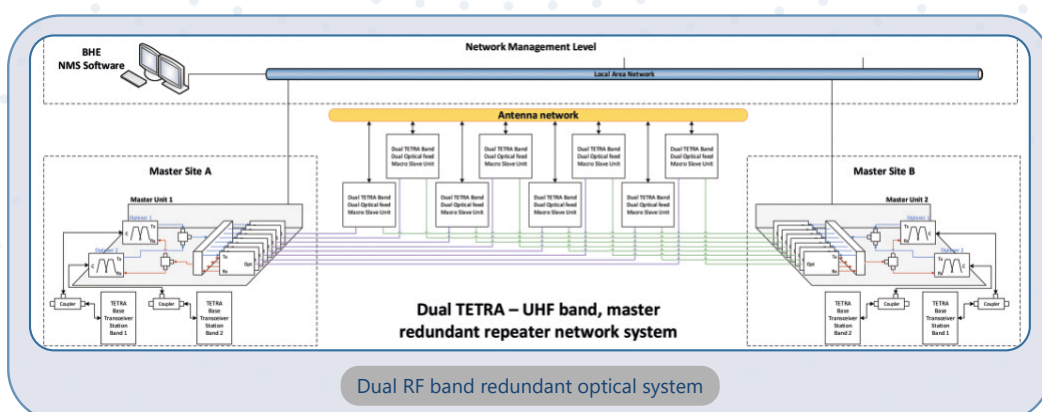
### BRDF29

Optical Macro Slave  
Dual TETRA band  
Dual feed

## OPTICAL SLAVE REPEATERS

|       | TECHNICAL |               |                     |          | HOUSING    |                |      |                   |                    |
|-------|-----------|---------------|---------------------|----------|------------|----------------|------|-------------------|--------------------|
|       | MODEL     | GAIN MAX      | OUTPUT POWER / BAND | RF BAND  | WALL MOUNT | 19" RACK MOUNT | ATEX | DUAL OPTICAL FEED | SNMP LOCAL CONTROL |
| MINI  | BRTF53    | 50 dB         | 24 dBm              | single   | ✓          |                |      |                   | ✓                  |
|       | BRTF54    | 50 dB         | 24 dBm              | single   | ✓          |                |      | ✓                 | ✓                  |
|       | BRTF43    | 50 dB         | 24 dBm              | single   |            | ✓              |      |                   | ✓                  |
|       | BRTF47    | 50 dB         | 24 dBm              | single   |            | ✓              |      | ✓                 | ✓                  |
|       | BRTF41    | 50 dB         | 24 dBm              | single   |            |                | ✓    |                   |                    |
| MACRO | BRTF49    | 65 dB         | 36 dBm              | single   | ✓          |                |      |                   | ✓                  |
|       | BRTF44    | 65 dB         | 36 dBm              | single   |            | ✓              |      |                   | ✓                  |
|       | BRTF52    | 65 dB         | 36 dBm              | single   | ✓          |                |      | ✓                 | ✓                  |
|       | BRTF46    | 65 dB         | 36 dBm              | single   |            | ✓              |      | ✓                 | ✓                  |
|       | BRDF23    | 65 dB         | 33 dBm              | dual     |            | ✓              |      | ✓                 | ✓                  |
|       | BRDF24    | 65 dB         | 33 dBm              | dual     | ✓          |                |      |                   | ✓                  |
|       | BRDF28    | 65 dB         | 36 dBm              | dual     |            | ✓              |      |                   | ✓                  |
|       | BRDF29    | 65 dB         | 36 dBm              | dual     | ✓          |                |      |                   | ✓                  |
|       | BRSM15    | specification | specification       | 4-5 Band | ✓          |                |      |                   | ✓                  |

All slave units based on 5-WDM and can be used in point to point, star and daisy chain configuration as well. In case of adequate/reasonable quantity a custom tailored solution is possible.



# ANALOGUE OFF-AIR REPEATERS

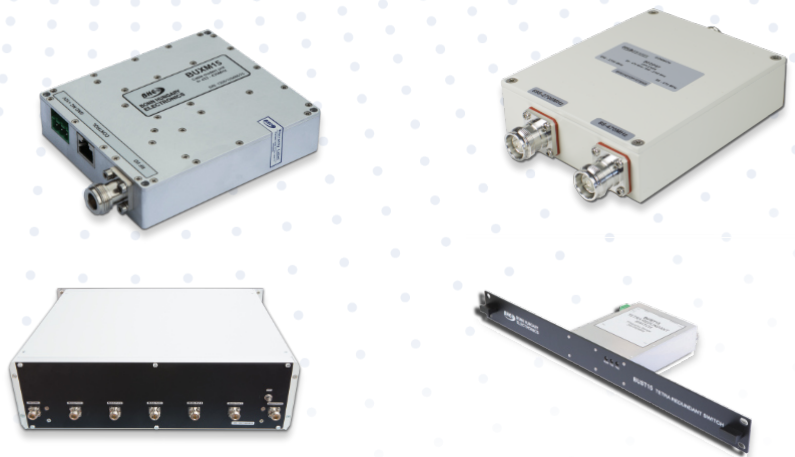
- 18, 22 or 36 dBm downlink output power
- 5 or 6.5 MHz bandwidth\*
- Optional uplink muting function
- Various control interfaces (RS-232, Ethernet, SNMP)
- Optional 2G / 4G remote control
- Indoor or outdoor application
- Wall mounted or 19" rack mount constructions
- Dual TETRA band option



|       |        | HOUSING |                       |            |                |      |               |                |                    |              |
|-------|--------|---------|-----------------------|------------|----------------|------|---------------|----------------|--------------------|--------------|
|       | MODEL  | RF GAIN | DOWNLINK OUTPUT POWER | WALL MOUNT | 19" RACK MOUNT | ATEX | COMBINED PORT | SEPARATED PORT | OPTIONAL UL MUTING | SNMP CONTROL |
| PICO  | BRTS30 | 70 dB   | 18 dBm                | ✓          |                |      | ✓             |                | ✓                  | ✓            |
|       | BRTS31 | 70 dB   | 18 dBm                | ✓          |                |      | ✓             |                | ✓                  | ✓            |
|       | BRTS40 | 70 dB   | 18 dBm                |            |                | ✓    | ✓             |                |                    |              |
| MINI  | BRTM25 | 70 dB   | 22 dBm                | ✓          |                |      | ✓             |                | ✓                  | ✓            |
|       | BRTM27 | 70 dB   | 22 dBm                |            | ✓              |      | ✓             |                | ✓                  | ✓            |
|       | BRTM28 | 70 dB   | 22 dBm                |            | ✓              |      |               | ✓              | ✓                  | ✓            |
|       | BRTM40 | 70 dB   | 22 dBm                |            |                | ✓    | ✓             |                |                    |              |
| MACRO | BRTL43 | 90 dB   | 36 dBm                | ✓          |                |      | ✓             |                | ✓                  | ✓            |
|       | BRTL38 | 90 dB   | 36 dBm                |            | ✓              |      | ✓             |                |                    | ✓            |

# SUPPLEMENTARY PRODUCTS

- Cable break monitor
- 6 channel antenna combiner
- Redundant switch
- TETRA multiband diplexer
- Splitters / combiners
- Directional couplers



\*For more details please see our 6.5 MHz TETRA PRODUCT FAMILY brochure.

# NETWORK MANAGEMENT SYSTEM



- Server-client architecture
- Hierarchical grouping of devices
- Map-based location view
- Performance data monitoring (facilitates preventive maintenance)
- Automatic optical link redundancy management
- Northbound interface: Syslog, SNMP (v1/v2c/v3)
- Continuous feature upgrades (roadmap available)
- Web-based user interface (optional)
- Support for third-party devices on user request
- Repair and maintenance logs

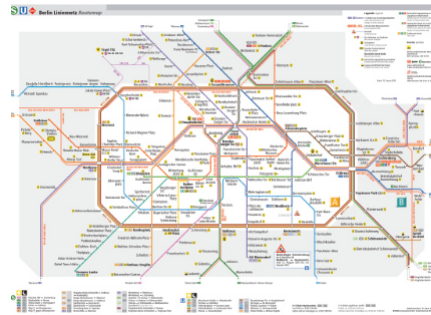
For more information please visit our website here:



## REFERENCE EXAMPLES



**North Sea**  
Windfarm



**Germany, Berlin Metro**  
Entire dual band RF coverage



**Germany, Frankfurt**  
Grand Tower skyscraper



**Finland, Helsinki**  
Mall of Tripla



**Switzerland, Rhätische Bahn**  
Vereina tunnel (20 km long tunnel)



**Netherlands, Amsterdam**  
Schiphol International Airport



Facility Security Clearance since 2020

These certificates refer to BHE's quality management systems. All our products are manufactured according to ISO 9001. Other, sector-specific management systems are only used in case of the customer's explicit request.

**CRITICAL  
COMMUNICATIONS**

TETRA FAMILY

**BHE  
BONN HUNGARY  
ELECTRONICS LTD.**

Tel: +36 (1) 233 2138  
Fax: +36 (1) 233 2506  
Web: [www.bhe-mw.eu](http://www.bhe-mw.eu)  
Email: [sales@bhe-mw.eu](mailto:sales@bhe-mw.eu)



Ipari Park Str. 10. Budapest, H-1044 Hungary