

## BSF 3604

Band selective fibre optic TETRA repeater for EMEA & APAC

### Key features

- High power, 36 dBm
- Optimized for low noise figure.
- Full monitoring and control through SNMP, webserver or AEM monitoring software via OMU.
- The unique combination of high output power and highly linear power amplifiers ensures large coverage with uniformly excellent signal quality
- Optimized for low noise figure.
- The BSF 3604 can optionally be upgraded with a second optical transceiver module for redundant fibre applications



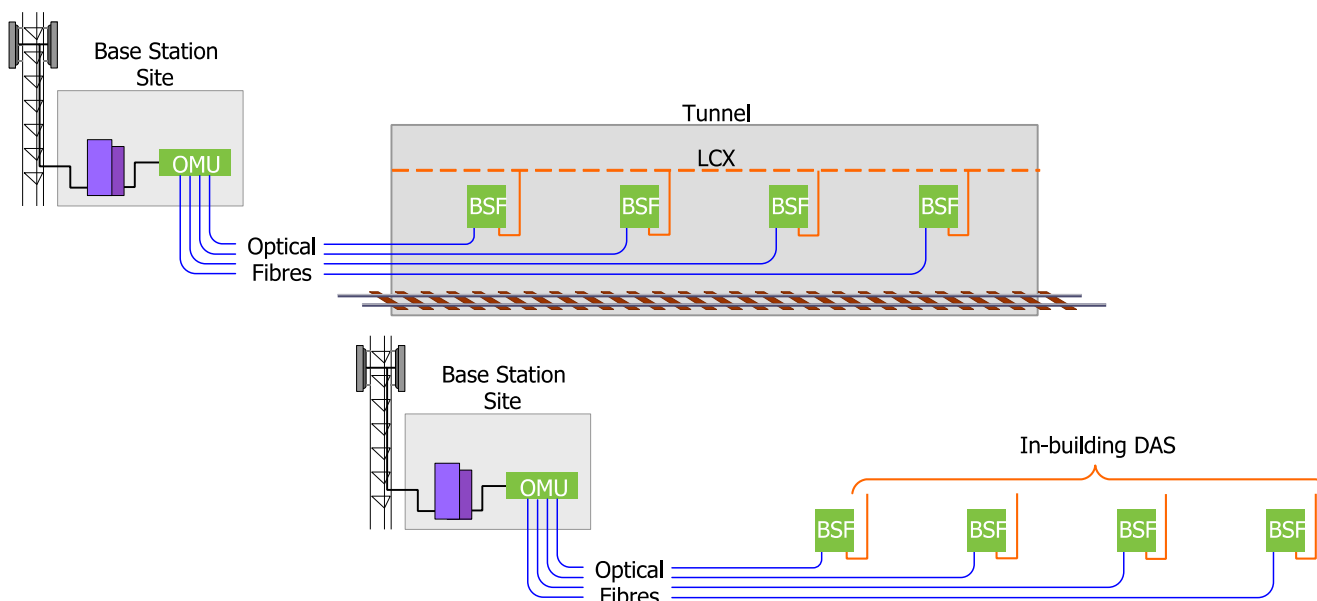
The BSF 3604 is a fibre optic fed TETRA repeater (supports other technologies within supported frequencies ranges, DMR, P25, LTE etc). The repeater is part of a system that is fed from a PBE Axell Optical Master Unit (OMU). RF signals are coupled off from a nearby base station by the OMU which modulates the RF to optical signals which are distributed via fibre optic cables to one or several remote BSF repeaters. The maximum optical loss allowed for is 10 dBo of fibre between the OMU and the most distant last remote unit that the OMU supports.

These remote BSF repeaters can be installed up to 20 km from the base station site, offering great flexibility when providing RF coverage in areas where off air reception is not a preferable or possible solution. The remote BSF repeaters demodulate the optical signal to RF and feed it to a Distributed Antenna System (DAS) or Leaky Feeder array to distribute the RF signal throughout the area to be covered. The high output power of the remote BSF repeaters results in a need to deploy fewer remote sites, which lowers the capital expenditures for the deployment.

The fibre optic system is easily remotely monitored and controlled by PBE Axell's effective supervision tool, Active Element Manager (AEM).

### Automatic optical gain setting

The system gain is adjusted for optical loss in the fibre by measuring the level of a pilot carrier sent from the OMU. The level of the received pilot carrier is continuously monitored.



## Technical specification

| Electrical specifications                                                                                                                                    |               |                                                                                              |                      |           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------|----------------------|-----------|
| General frequency ranges available:<br><br>Other frequency bands and duplex options available upon request within the 330 MHz to 520 MHz public safety band. |               | Downlink                                                                                     | Uplink               | Bandwidth |
|                                                                                                                                                              |               | 390 MHz to 395 MHz                                                                           | 380 MHz to 385 MHz   | 5 MHz     |
|                                                                                                                                                              |               | 395 MHz to 400 MHz                                                                           | 385 MHz to 390 MHz   | 5 MHz     |
|                                                                                                                                                              |               | 420 MHz to 425 MHz                                                                           | 410 MHz to 415 MHz   | 5 MHz     |
|                                                                                                                                                              |               | 425 MHz to 430 MHz                                                                           | 415 MHz to 420 MHz   | 5 MHz     |
|                                                                                                                                                              |               | 460 MHz to 465 MHz                                                                           | 450 MHz to 455 MHz   | 5 MHz     |
|                                                                                                                                                              |               | 465 MHz to 470 MHz                                                                           | 455 MHz to 460 MHz   | 5 MHz     |
|                                                                                                                                                              |               | 390 MHz to 397 MHz                                                                           | 380 MHz to 387 MHz   | 7 MHz     |
|                                                                                                                                                              |               | 423 MHz to 430 MHz                                                                           | 413 MHz to 420 MHz   | 7 MHz     |
|                                                                                                                                                              |               | 390 MHz to 396.5 MHz                                                                         | 380 MHz to 386.5 MHz | 6.5 MHz   |
| Number of frequency bands                                                                                                                                    |               | 1 duplexed                                                                                   |                      |           |
| Duplex distance (in one band)                                                                                                                                |               | 10 MHz (others upon request)                                                                 |                      |           |
| Impedance                                                                                                                                                    |               | 50 Ω                                                                                         |                      |           |
| Output power/carrier (DL) per band                                                                                                                           | 1 carrier:    | +36 dBm                                                                                      |                      |           |
|                                                                                                                                                              | 2 carriers:   | +33 dBm                                                                                      |                      |           |
|                                                                                                                                                              | 3-4 carriers: | +30 dBm                                                                                      |                      |           |
|                                                                                                                                                              | 8 carriers:   | +27 dBm                                                                                      |                      |           |
| IP3                                                                                                                                                          |               | Typical +68 dBm                                                                              |                      |           |
| Noise figure (UL)                                                                                                                                            |               | <6 dB, 5 dB typical at maximum gain                                                          |                      |           |
| Group delay                                                                                                                                                  |               | 2 μs max                                                                                     |                      |           |
| Fibre optic loss compensation                                                                                                                                |               | Implemented                                                                                  |                      |           |
| Spurious emissions from RF port                                                                                                                              |               | < -36 dBm                                                                                    |                      |           |
| Intermodulation products                                                                                                                                     |               | < -60 dBc or < -36 dBm                                                                       |                      |           |
| Optical module electrical specification                                                                                                                      |               |                                                                                              |                      |           |
| Maximum optical output power                                                                                                                                 |               | +3 dBm ±2 dB                                                                                 |                      |           |
| Maximum optical input power                                                                                                                                  |               | +2 dBm                                                                                       |                      |           |
| Power Requirements                                                                                                                                           |               |                                                                                              |                      |           |
| Voltage options                                                                                                                                              |               | 120 V ac, 60Hz or 230 V ac, 50Hz, or -48 V dc                                                |                      |           |
| Power Consumption                                                                                                                                            |               | <100 W, typical                                                                              |                      |           |
| External connection                                                                                                                                          |               |                                                                                              |                      |           |
| Local Maintenance Terminal                                                                                                                                   |               | RS232                                                                                        |                      |           |
| RF Port                                                                                                                                                      |               | 7/16 DIN female                                                                              |                      |           |
| Optical Port                                                                                                                                                 |               | SC/APC female                                                                                |                      |           |
| Remote connection                                                                                                                                            |               | Via fibre link to OMU as standard<br>Option: factory configured for Ethernet alarm reporting |                      |           |
| Mechanical and Environmental specification                                                                                                                   |               |                                                                                              |                      |           |
| Dimensions (H x W x D)                                                                                                                                       |               | 540 mm x 382 mm x 198 mm                                                                     |                      |           |
| Weight                                                                                                                                                       |               | 28 kg                                                                                        |                      |           |
| Cooling                                                                                                                                                      |               | Convection                                                                                   |                      |           |
| Mounting                                                                                                                                                     |               | Aluminium (IP65) wall-mount enclosure                                                        |                      |           |
| Operating Temperature                                                                                                                                        |               | -25°C to +55°C                                                                               |                      |           |
| Storage                                                                                                                                                      |               | -30°C to +70°C                                                                               |                      |           |
| Humidity                                                                                                                                                     |               | 0 to 95% RHNC                                                                                |                      |           |
| Compliance                                                                                                                                                   |               |                                                                                              |                      |           |
| EU Directives                                                                                                                                                |               | 2014/53/EU (RED)<br>(EU) 2015/863 (RoHS3)                                                    |                      |           |
| Complies with: RED                                                                                                                                           | Safety        | EN 62368-1, EN 60825-1, EN 50385                                                             |                      |           |
|                                                                                                                                                              | EMC           | EN 301 489-1, EN 301 489-5                                                                   |                      |           |
|                                                                                                                                                              | Radio         | EN 302 561                                                                                   |                      |           |