

PANEDA BREAK-IN SYSTEM · PBS

# DAB+ break-in for road tunnels. Two systems in 1U.

The Paneda Break-In System (PBS) is a complete all-in-one DAB+ break-in solution, developed for road tunnels and other public areas where people must be reached in an emergency.

**250+**

break-in systems in operation

**GLOBAL**

**ALARM ANNOUNCEMENT**

**250+**

Break-In systems in operation world-wide

**2×**

Complete break-in systems in one 1U unit

**No GPS**

Locked to the off-air signal in time and phase

**30W**

Power consumption

## Description SYSTEM OVERVIEW

### — DAB+ radio break-in ETSI TS 300 401

A break-in system interrupts ongoing radio transmissions to deliver important messages to people in road tunnels and other public areas — for example in the event of a fire or an accident. PBS is developed primarily for **road tunnels**, but is equally suited to train stations, parking garages, shopping centres and other venues — for emergencies as well as general information.



#### Road tunnels

Emergency messages on every car radio.



#### Train stations

Platforms and other transit areas.



#### Garages & venues

Parking garages and shopping centres.

### — A complete system in one unit

PBS replaces the audio in the DAB ensembles with important messages. A single unit handles **two ensembles simultaneously**, with dual COFDM modulators delivering approximately 0 dBm output. To prevent interference — and to avoid re-broadcasting unwanted RF signals in the tunnel — a **dual selective amplifier** filters out exactly the two DAB frequencies needed from the off-air signal.

### — Seamless for every car radio

The system **replicates all off-air services exactly**, with every audio setting preserved, and places no limit on the number of services. Car receivers therefore switch seamlessly between the off-air signal and the break-in signal.

### — Key features

TRIGGER

**API** **GPIO** **Web GUI**

AUDIO

**SIP** **Line-in** **Mic** **File**

METADATA

**DLS text** **SLS graphics**

MONITORING

**Real-time status** **SNMP** **Traps**

## Highlights

BREAK-IN SYSTEM



### No GPS required

OFF-AIR SYNCHRONISED

The system locks onto the off-air signal and maintains time and phase synchronisation internally. A 10 MHz GPS reference is supported, but not needed.



### Alarm announcement

STANDARDISED SIGNALLING

During a break-in, PBS also sends DAB Alarm Announcement signalling, forcing receivers to switch to DAB from FM, Bluetooth, USB or other sources.\*



\* Not all receivers support this feature.

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## One unit. Two ensembles.

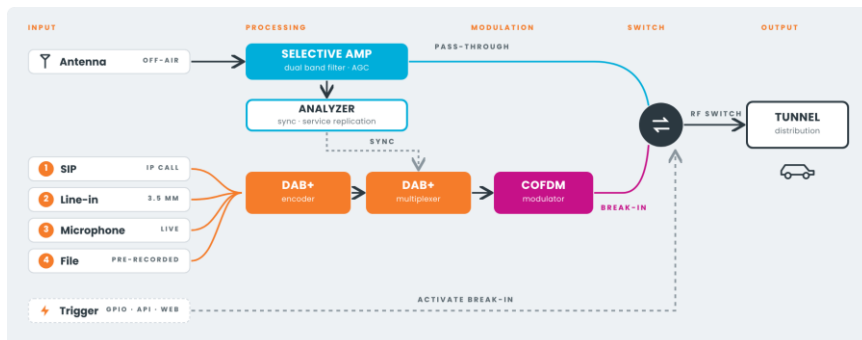
The most compact break-in solution on the market: a single PBS unit contains two complete break-in systems — one per DAB ensemble.

**FORM FACTOR**  
**19" · 1U**
**ENSEMBLES**  
**2 per unit**
**SERVICES**  
**No limit**
**POWER**  
**30 W · 12 V DC**
**RF IN / OUT**  
**SMA · 50 Ω**
**SYNC**  
**Off-air locked**


Front: one TFT status display and control knob per ensemble. Rear: all inputs and outputs, grouped per ensemble.

### How it works

A pick-up antenna receives the off-air DAB signal, which passes through the selective amplifier to the tunnel distribution. When a break-in is triggered — via **GPIO, API or the web interface** — the RF switch changes to the internally generated ensemble, where the original services are replicated and the audio is replaced by the message from SIP, line-in, microphone or file.



Block diagram — off-air pass-through and break-in signal paths.

### Intuitive user interface

A modern HTML5 web interface presents all information in real time — RF status, audio status, statistics, metadata, buffer levels and more. Advanced management, audit logs and event history are just a few of the many other features appreciated by our users.



**Secure by design.** All internal and external connections are encrypted with TLS/HTTPS, with support for two-factor authentication and custom certificates — on a lightweight Linux kernel built on the “all ports closed” principle.

## Technical specifications PANEDA BREAK-IN SYSTEM

|                 |                                            |
|-----------------|--------------------------------------------|
| RF INPUT        | 1 × SMA, 50 Ω · -80 to -15 dBm             |
| FREQUENCY RANGE | 175–240 MHz                                |
| BAND III        | 174.928–239.200 MHz                        |
| RF OUTPUTS      | 2 × SMA, 50 Ω (one per ensemble) · 0 dBm   |
| FILTER          | Built-in selective amplifier with AGC      |
| SYNC            | Off-air locked · 10 MHz reference optional |
| AUDIO INPUT     | 3.5 mm line-in · SIP                       |
| NETWORK         | 2 × RJ45, 1 Gbps                           |
| GPIO            | 15-pin D-sub (trigger and status)          |
| MONITORING      | SNMP, traps                                |
| DISPLAY         | TFT                                        |

|              |                                                                 |
|--------------|-----------------------------------------------------------------|
| STANDARDS    | DAB+ ETSI TS 102 563 · DAB ISO/IEC 13818-3 · STI ETS 300 797    |
| CPU          | Intel i5, 2.3 GHz or higher                                     |
| STORAGE      | mSATA SSD, 60 GB                                                |
| OS           | Embedded Linux (Arch)                                           |
| POWER SUPPLY | 12 V DC ext. PSU, 100–240 V AC, 48–64 Hz · 5 A · MTBF 176,000 h |
| CONSUMPTION  | 30 W                                                            |
| TEMPERATURE  | +5 to +50 °C                                                    |
| FORM FACTOR  | 19" rack, 1U                                                    |
| DIMENSIONS   | 482 × 44 × 250 mm                                               |
| WEIGHT       | 3 kg                                                            |
| EMC          | CE, EN 55022, EN 55024                                          |



### Selective amplifier

**MINIMAL INTERFERENCE**

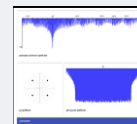
Built-in dual selective amplifier with AGC — only the two DAB frequencies needed are re-broadcast in the tunnel.



### Real-time monitoring

**STATUS AT A GLANCE**

RF, audio, buffers and metadata in the web GUI — plus SNMP and traps for your NMS.



### 24/7 support

**SUPPORT AGREEMENTS**

Superior support agreements, including optional around-the-clock 24/7 support.