3-4. kvartal 2016

## DAB-sendere og komplette løsninger til gunstige priser.

Velg gjennomprøvde og driftsikre løsninger. Bakke-Nett AS er autorisert leverandør av kvalitetssendere og utstyr fra bla. markeds-ledende Rohde & Schwarz og Italienske RVR.

## Velg en kompetanseleverandør med landsdekkende servicenettverk.

Bakke-Nett AS er autorisert leverandør av utstyr til kringkastingsmarkedet med 25 års bransjeerfaring. Med våre dekningsmålinger. er du sikret riktig dimensjonering av sendereffekter og antenneutstyr. Gjennom våre samarbeidspartnere på service og installasjon er vi representert over hele landet med faglig kompetente ingeniører. Dette sikrer deg som kunde god driftsikkerhet, lave installasjonskostnader og raske responstider.

**Lavt strømforbruk og varmeavgivning.** Den nye serien DAB-sendere fra R&S er energiøkonomiske, og strømforbruket er nær 50% av konvensjonelle DAB-sendere. Dette gir lave driftskostnader over tid.

**Lite plasskrevende.** Kompaktsenderne fra Rohde & Schwarz passer i std. 19" rack. Sammen med integrert EDI/ETI konverter og GPS-mottager gjør dette at løsningen er lite plasskrevende, og reduserer dine innplasseringskostnader. Dette gir orden, oversikt og bidrar også til større driftsikkerhet.
RVR's 500W sendere leveres ferdig montert i rack med tilhørende utstyr som filter osv.
Mange av våre løsninger leveres med passiv-utstyr dimensjonert for enkel oppgradering til høyere sendereffekter. Dette gir deg fleksibilitet, og lavere kostnader ved videre utbygging.

**Våre leveranser.** Du trenger ikke finne opp hjulet selv. Sammen finner vi mest optimale løsning for ditt behov. **Bakke-Nett AS** leverer ferdig idriftsatt anlegg på site, til avtalt pris, så kan **du** fokusere på å lage god radio til dine lyttere.

**Ta kontakt:** Bakke-Nett AS priser løsninger tilpasset ditt behov og ønsker. Vi bistår også gjerne med dekningsmålinger og totalprosjektering for kartlegging av investeringsomfang ved utbygging.

**Bakke-Nett AS** **Tlf. 413 04 884 / 917 70 878** **E-post: post@bakke-nett.no**

# Prisliste pr. 1/7-16

Regnet etter en Eurokurs på 9,5.

## R&S TMV9

| | |
|---|---|
| 350W sender: | Kr: 159 900,- |
| 700W sender | Kr: 189 000,- |
| 1400W sender | Kr: 298 000,- |

## RVR DAB

| | |
|---|---|
| 50W sender Inkl. filter | Kr: 59 000,- |
| 100W sender Inkl. filter | Kr: 69 000.- |
| 500W sender inkl. filter og rack. | Kr: 169 000,- |

## Filter:

| | |
|---|---|
| 100W filter | Kr: 19 000,- |
| 600W filter | Kr: 29 000,- |
| 1500W filter | Kr: 34 900,- |

Antenner

| | |
|---|---|
| 2 Kw dipol antennesystem med 2 antenner, splitter og mellomkabel. | Kr: 12 900.- |
| 2 Kw panel antennesystem med 2 antenner og mellomkabling. | Kr: 15 900,- |

Priser er notert eks. mva. og fraktkostnader.

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# Doherty technology

- **Highest power efficiency on the market**
- **Outstanding power efficiency reduces energy costs by more than 40%**

**COFDM-TV and DAB:**

- **UHF: efficiency in normal mode of 25%**
- **UHF: enhanced efficiency in Doherty mode of up to 38%**
- **VHF: efficiency in normal mode of 33%**
- **VHF: enhanced efficiency in Doherty mode of up to 46%**

**ATSC:**

- **UHF: efficiency in normal mode of up to 30%**
- **UHF: enhanced efficiency in Doherty mode of up to 42%**
- **VHF: efficiency in normal mode of up to 41%**
- **VHF: enhanced efficiency in Doherty mode of up to 50%**

# Example for saving of energy costs
## TMV9

- **Transmitter with output power:** **1.45 kW**
- **Lifetime of transmitter:** **10 years**
- **Assumed energy price:** **1,23 Kr/kWh**

| | Average transmitter | R&S®TMV9 with Doherty |
|---|---|---|
| Efficiency | 20 % | 46 % |
| Energy costs | 614 180 Kr | 323 244 Kr |
| **Saved energy costs in 10 years:** | | **291 000 Kr** |

- **Energy cost savings of more than 50%**

# VHF power amplifier R&S® PMV901
## General

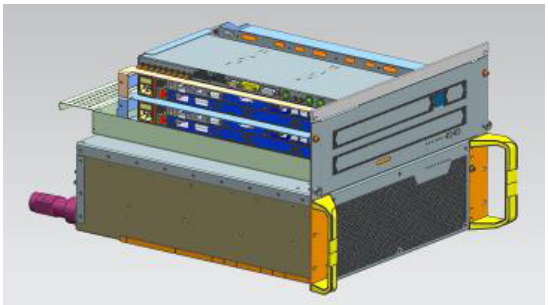
- **750 W output power**
- **4 final stage transistors**
- **Enhanced efficiency mode Doherty (option)**

- **Power supply 3 kW, passively cooled**
- **Optionally 2nd power supply for 1+1 PS redundancy**

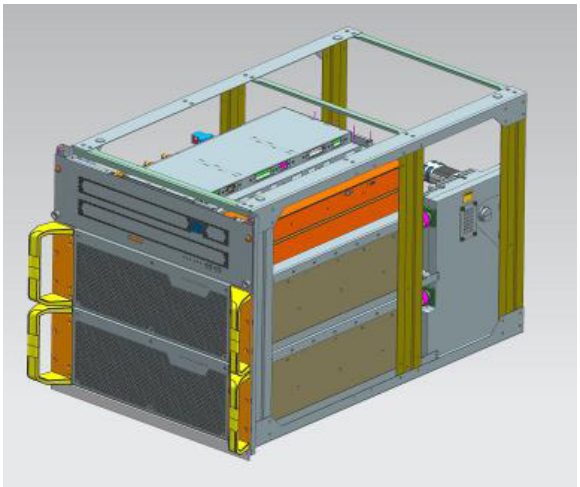
- **2 Blowers**
- **Dust filter (optional)**

- **Harmonic filter included**
- **Lightning protection included**

## Option for integration in 3 party racks
## for systems with one and two PAs



**R&S®TMU9/TMV9, 1 PA system w/o rack**



**R&S®TMU9, 2 PAs system w/o rack**

**Simple and quick to install solution for customers with no need for a rack**

(Guiding rails and mounting material not provided)

# DAB/DMB GOLD 50
# DAB/DMB GOLD 100

digital video

*DAB/DMB GOLD 100 front view*

## Features

> **MODULATIONS:** the **DAB/DMB GOLD 50&100** fully supports the latest versions the standard DAB / DAB + and T-DMB. Other configurations can be implemented on request.
> **CONNECTIVITY:** two redundant inputs G703/G704 are available, optionally two Gigabit inputs for EDI protocol or a satellite input.
> **PERFORMANCE:** very high modulation performance (ratio of modulation error, stability, signal level of the generated spurious out of band, low phase noise).
> **MODALITY:** operation in MFN (Multiple Frequency Network) and SFN (Single Frequency Network).
> **PRE-CORRECTION:** the powerful digital linear and non-linear adaptive pre-correction guarantee the automatic optimization of the operating parameters for the best quality and efficiency of transmission.
> **CONTROLS:** the display, indicators and actuators and the simple and intuitive software configuration interface with icons, allow wide interaction between user and the equipment in an easy to use menu, via RS232 or IP interface with visualization of the main parameters on the large LCD screen.
> **MONITORING AND TEST:** the **DAB/DMB GOLD 50&100** callows the monitor of the ETI- TS (TS and CRC Error) and includes the generation of a number of test signals (ETI frame, PRBS insertion, suppressed carrier). for an effective verification of the transmitter operation.
> **TELEMETRY:** the advanced integrated telemetry system allows the signal transmission Alarms and receiving commands via IP or SMS via modem.
> **MECHANICAL:** the rack is reasonably compact and robust stainless steel in 3 rack units for output power up to 100W$_{rms}$.

## *Caratteristiche*

> ***MODULAZIONI:*** *il **DAB/DMB GOLD 50&100** supporta pienamente le ultime versioni dello standard DAB / DAB+ and T-DMB. Altre configurazioni possono essere realizzati su richiesta.*
> ***CONNETTIVITA':*** *sono disponibili due ingressi ridondanti G703/G704, opzionalmente due ingressi Gigabit per protocollo EDI o un ingresso satellite.*
> ***PRESTAZIONI:*** *altissime prestazioni di modulazione (rapporto di errore di modulazione, stabilità del segnale, livello delle spurie generate fuori banda, basso rumore di fase).*
> ***MODALITA':*** *funzionamento in reti MFN (Rete a Frequenze Multiple) e SFN (Rete a Frequenze Singole).*
> ***PRECORREZIONE:*** *la potente precorrezione adattativa digitale lineare e non-lineare garantisce l'ottimizzazione automatica dei parametri di funzionamento per la migliore qualità ed efficienza di trasmissione.*
> ***CONTROLLO:*** *il Display gli indicatori e gli attuatori semplici ed intuitivi ed il software di configurazione con un'interfaccia con icone, permettono un'ampia interazione tra utente ed apparato con un'estrema semplicità di utilizzo da menu, tramite RS232 o interfaccia IP con visualizzazione dei principali parametri sull'ampio schermo LCD.*
> ***MONITORING AND TEST:*** *il **DAB/DMB GOLD 50&100** consente il controllo dello status dell'ETI-TS (TS and CRC Error) ed include la generazione di numerosi segnali di Test (ETI Frame, PRBS insertion, suppressed carrier) per una efficace verifica del funzionamento del trasmettitore.*
> ***TELEMETRIA:*** *l'avanzato sistema di telemetria integrato consente la trasmissione di segnalazione di allarmi e la ricezione di comandi via IP o via SMS tramite modem.*
> ***MECCANICA:*** *il rack è ragionevolmente compatto e robusta in acciaio inossidabile in sole 3 unità per potenza di uscita fino a 100W$_{rms}$.*

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BROADCAST EQUIPMENT

## Technical specifications

| | DAB/DMB GOLD 50 | DAB/DMB GOLD 100 |
|---|---|---|
| ***Parameter*** | ***Value*** | |
| **STANDARDS** | | |
| Transmission DAB / DAB+ | EN300 401 v 1.41 | |
| Transmission DMB | EN300 TS 102 429 401 v 1.1.1 | |
| Operation | MFN / SFN | |
| **INPUT ETI TS INTERFACES** | | |
| Connectors | 2 x ETI BNC 75 Ohm Female | |
| Frame rate | G.703 / 2048kbps +/-50ppm , G.704 Automatically detected | |
| Standard | ETS300799 ETSI | |
| **OPTIONAL INPUTS** | | |
| Satellite Input | DVB-S DVB-S2 :950-2150 MHz / -60—25 dBm / SMA 75 Ohm | |
| Gigabit TS Input | 2 x 10/100/1000 / RTP,UDP, IGMP2-3, EDITS102693 / RJ45 | |
| **OUTPUT** | | |
| Frequency | VHF Band III ( %A-13F) 174 MHz to 240 MHz | |
| Output Power after Filter | 50 W rms | 100 W rms |
| Output Connector | N f (other on request) | |
| Shoulders | > 40 dB | |
| MER | > 38 dB | |
| Channel bandwith | 1.5 MHZ according standard | |
| **CLOCK AND SYNCHRONIZATION** | | |
| Internal High Quality Source | High precision low noise 10MHZ OCXO | |
| External 10MHZ (auto selection) | BNC Female Connector for SFN operation | |
| External 1PPS (auto selection) | BNC Female Connector for SFN operation | |
| **PRE-CORRECTION** | | |
| Adaptative Linear Precorrector | Amplitude +-3 dB/0-3 micros./1 x SMA Female -5/-15 dBm | |
| Adaptative Not Linear Precorrector | Phase +- 180 °/ 1 x SMA Female , -5/-15 dBm | |
| **MONITORING** | | |
| Monitored Parameters | SNR, L&R Shoulders, PAPR, DAP Status | |
| **POWER SUPPLY** | | |
| Voltage | 110 / 230 VAC +10 ÷ -15% Monophase Δ | |
| Frequency | 50 - 60 Hz | |
| Power | about 300 W | about 450 W |
| **POWER SUPPLY** | | |
| Dimensions | Std. 4" HE Rack | |

All pictures are RVR's property and they are only indicative and not binding. The pictures can be modified without notice.
These are general specifications. They show typical values and are subject to change without notice.

CE 99/5/CE **Revision: 03/16**

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RINA
ISO 9001:2000
Certified Quality System

# DAB transmitter

## > DAB transmitter series

# DABTX500/00S001

*DABTX500/00S001 front view*

## Features

> **HARDWARE FEATURES:** thanks to the modularity of the system can be simply realized all the configurations demanded from the customer for every kind of application.
> **POWER & QUALITY:** with the creation of the new family of RVR's high power modular amplifiers, is possible to realize compact equipments from **500 W** up to **2 kW**, extremely redundant, sturdy, flexible and economic.
> **RELIABILITY & REDUNDANCY (business continuity):** elevated number of self-sufficient modules and independent between they, that guarantee the continuity of service with a minimum reduction of the output power in case of faults on the main compnents. If one or more power amplifier modules fails (totally or partially) the amplifier automatically reducesoutput power to a safe value but continues transmitting. In case of faulty of one or more power supplies, the amplifier continue to work with reduced power.
> **USER-FRIENDLY FEATURES:** user-friendly software and a simple, intuitive HM interface let you easily set up and control all machine operating parameters. user-friendly software and a simple, intuitive HM interface let you easily set up and control all machine operating parameters.
> **EASE OF MAINTENANCE: accessibility** and ease of maintenance are ensured by advanced modular engineering concepts incorporated in the transmitter and by its **lightweight** components.

## *Caratteristiche*

> ***HARDWARE FEATURES:*** *grazie alla modularità del sistema è possibile con estrema facilità realizzare configurazioni personalizzate su richiesta del cliente e per ogni tipo di applicazione.*
> ***POWER & QUALITY:*** *con la nuova famiglia di trasmettitori modulari basata sugli amplificatori modulari di alta potenza è possibile realizzare apparati di potenza variabile dai **500 W** fino a **2 kW**, estremamente ridondanti, affidabili ed economici.*
> ***RELIABILITY & REDUNDANCY (business continuity):*** *l'elevato numero dei moduli di potenza autosufficienti e indipendenti tra loro garantisce la massima continuità di servizio con una minima riduzione di potenza nel caso di guasto di uno dei componenti principali. Infatti se uno o più moduli di potenza dovessero guastarsi, l'amplificatore riduce la propria potenza ma continua a trasmettere.*
> ***USER-FRIENDLY FEATURES:*** *un software con interfaccia semplice ed intuiva permette di configurare e controllare in maniera semplice ed intuitiva tutti i parametri di esercizio della macchina.*
> ***EASE OF MAINTENANCE:*** *l' accessibilità e semplicità di manutenzione è garantita da una avanzata ingegnerizzazione modulare del trasmettitore e dal **peso contenuto** degli apparati di cui è composto.*

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## Technical specifications

| Parameter | DABTX500/00S001<br>Value |
|---|---|
| **INPUT** | |
| Connectors | 2 x ETI BNC Female |
| Frame rate | 2048kbps +/-50ppm G.703 and G.704 Automatically detected |
| Standard | ETS300799 ETSI |
| **OUTPUT** | |
| Frequency | VHF Band II From 174 MHz to 240 MHz |
| Output Power | 500 Wrms with filter |
| Output Connector | 7/8" EIA Flanged |
| Shoulders | > 40 dB |
| Channel bandwith | 1.5 MHZ |
| **CLOCK AND SYNCHRONIZATION** | |
| Internal | High quality 10MHZ OCXO |
| External 10MHZ | BNC Female Connector for SFN operation |
| External 1PPS | BNC Female Connector for SFN operation |
| **MODULATION** | |
| DAB Mode | I , II , III or IV |
| Standard | EN300401 ETSI |
| Operation | MFN / SFN |
| **CONTROL AND MONITORING** | |
| Linear Precorrector | Adaptative |
| | 1 x SMA Female internal Connector |
| Not Linear Precorrector | Adaptative |
| | 1 x SMA Female internal Connector |
| **POWER SUPPLY** | |
| Voltage | 230 VAC +10 ÷ -15% Monophase Δ |
| | 400 VAC +10 ÷ -15% Threephases Y |
| Frequency | 50 - 60 Hz |
| Power | About 2kW |
| **POWER SUPPLY** | |
| Dimensions | Std. 19" 27HE Rack. |

All pictures are RVR's property and they are only indicative and not binding. The pictures can be modified without notice.
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CE 99/5/CE **Revision: 03/15**

## Ordering Information

| *Example Code* | *Description* |
|---|---|
| ***DABTX500/00S001*** | *DAB transmitter, 500 W (DABPA500-V + DABPE002-V)* |



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Bakke Nett

Kompetanseleverandør av kringkastingsutstyr og tjenester

# DAB-sendere og utstyr
# Dekningsmålinger
# Prosjektering
# Utbygging
# Service

**www.bakke-nett.no**