

Equipment views - External output filter

General data

Varnishing/Colour: : RAL 7032
Cooling : Forced ventilation of the plug-ins in the table cabinet / central blower in the rack
Temperature range : Observance of the nominal values in the range between +5°C and +45°C, maintenance of operative readiness between -10°C and +5°C
Mains connection : Connection on top of the rack
Mains voltage / frequency : 195 ... 264 VAC / 48 ... 52 Hz
- Table cabinet : 1-phase/2-phase
- Rack : 3-phase

Inputs

SAT- input : Type N, 50 ohm
Frequency range : 950 ... 1750 MHz
ETI-input : Type BNC - 75 ohm / Type XLR - 120 ohm³⁾
Inputs : ETI(NI, G.703) or 3 x ETI(NI, G.703) or ETI(NI, G.703) + ETI(NA, G.704)⁵³⁷⁶ + ETI(NA, G704)⁵³⁷⁶
Datarate : 2.048 Mbit/s
Feeding : asymmetrical/symmetrical³⁾
Reference frequency inputs : Type SMA - 50 Ohm
Signal frequencies : 0.1 / 0.5 / 1 / 2.048 / 5 / 10 MHz
GPS-input : Type SMA - 50 ohm
Frequency range : 1.57542 GHz
DC-output : +5 V (max. 100 mA)

Output

Frequency ranges
Band III : 216 ... 240 MHz
L-band : 1452 ... 1492 MHz
Frequency stability : $\leq f_0 \times 10E-7$ (MFN)
 ≤ 5 Hz Mode 1 (SFN)
 ≤ 20 Hz Mode 2 (SFN)
Frequency setting : in increments of 8 kHz - software-based
RF-connection : Type N (7/16)
Wave impedance : 50 ohm
Return loss : ≥ 15 dB
Nominal output power : see power classes
Power stability : $\leq \pm 0,5$ dB
Shoulder :
Band III : ≥ 45 dB
L-band : ≥ 30 dB
Ambient transmissions : acc. to BAPT 312ZV04
Level control : LED, LCD or PC and monitoring outputs

DAB output power [W]	Weight appr. [kg]	Equipment efficiency [%]	Power consumption [W]	Equipment dimensions H x W x D [mm]	
B III	50	52	> 10	500 W	462x445x525-TG10HU ⁴⁾
	150	52	> 15	1000 W	462x445x525-TG10HU ⁴⁾
	300	78 (TG)	> 18	1700 W	462x445x525-TG10HU ⁴⁾ 2020x550x805-SG40HU ¹⁾
	600	558	> 16	3700 W	2020x703x1033-SG40HU ¹⁾²⁾
	900	538	> 16	5800 W	2020x703x1033-SG40HU ²⁾
1200	563	> 17	7000 W	2020x703x1033-SG40HU ²⁾	
L-band	25	35 (TG)	> 10	250 W	286x445x495-TG6HU ⁴⁾ 861x554x600-SG18HU ¹⁾
	50	48 (TG)	> 10	500 W	462x445x525-TG10HU ⁴⁾ 861x554x600-SG18HU ¹⁾
	100	52 (TG)	> 13	800 W	462x445x525-TG10HU ⁴⁾ 861x554x600-SG18HU ¹⁾
	200	78 (TG)	> 15	1400 W	462x445x525-TG10HU ⁴⁾ 861x554x600-SG18HU ¹⁾

1) integrated output filter
2) with central blower
3) with 2Mbit adapter
4) dimensions without handling (with handling W: 600mm)

DAB 660
DAB Transmitter
25 W ... 1200 W



- New DAB 660 transmitter generation - compact, modular DAB transmitter system for Band III and the L-band
- GPS-receiver with extremely stable OCXO auxiliary signal
- Comprehensive equipment monitoring system:
 - User-friendly control interface (LCD, PC)
 - Very easy start-up
 - Error history
- Linear high-power stages (AB-operation) with high efficiency
- Highest transmission quality
- Low service requirements:
 - Change of modules without re-adjustment
 - Change of the amplifiers during operation
 - Setting of operating parameters without measuring aids
 - Plug-in connectors also for RF-connections
- Temperature-stable, easily adjustable output filter with low insertion loss
- Power classes
 - Band III: from 50 W to 1200 W
 - L-band: from 25 W to 200 W
- New COFDM encoder generation with 12 bit resolution
- Digital precorrection guarantees high linearity of the high-power stages
- Direct modulation with tunable synthesizer



General

The new DAB 660 transmitter generation complies with the present ETSI-standard and is an innovative further development of the professional DAB 600 transmitter series. The result is a compact, modular transmitter system with optimal efficiency and best transmitting parameters.

The transmitter system is composed of very flexible assembly units, which guarantee cost-effective transmitter operation in band III and the L-band. The individual assembly units are designed in 19" plug-in technique:

- highly integrated low-power stage DAB 660
- redundant linear high-power stages for band III and the L-band
- Power supply of the high-power stages with high MTBF

The single plug-in units are ventilated by force and optimized for specific power classes. The requirements concerning climatization are considerably reduced due to the good equipment efficiency.

Monitoring/Signaling

The central transmitter control is integrated into the central processing unit of the low-power stage. All relevant operating settings / measured values are accessible via the graphical LCD display. Changes of the configuration can be made quickly and conveniently.

As an option a Windows-based PC monitoring program is available.

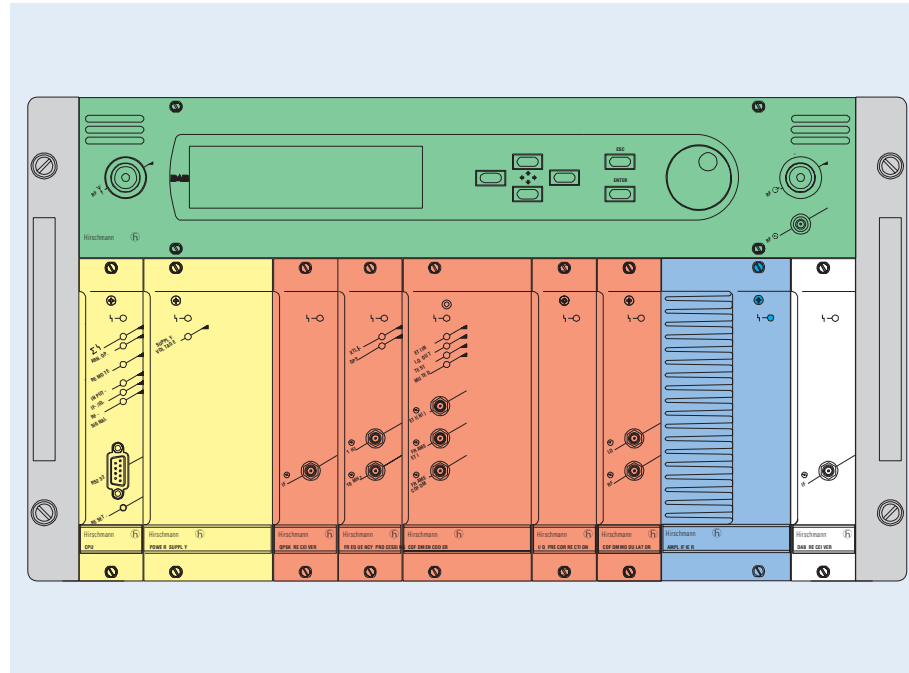
Important operating states are indicated by LEDs on the module front-panels. The most important signals can be measured via monitoring outputs.

As remote interfaces floating contacts, a bit-bus or a RS232 interface are available.

Maintenance

Easy start-up and problem solving is guaranteed by the state-of-the-art monitoring and signaling system.

Re-adjustment after a module change is not necessary. The amplifier can be changed without interrupting operation.



DAB 660 - Low-power stage with fitted amplifier 25 W/L-band

Low-power stage

The DAB 660 low-power stage is a compact DAB-processing and composed of modular functional groups with the following special features:

- COFDM-Encoder of the new generation
 - Fully compatible with the latest ETSI-standard ETS 300.799 and ETS 300.401
 - Optional inputs for two ETI-NI or a ETI-NI and two ETI-NA
 - 12 Bit-I/Q resolution
 - Time-Stamp-Processing in the standard version, integrated CRC check
- Digital precorrection with quasi-dynamical signal precorrection depending on the output power in the I/Q-path contributes to high linearity of the high-power stage.
- COFDM-modulator with direct modulation without intermediate frequency. The synthesizers are low-noise and tunable. The RF output power is regulated (Band III: 2 mW ... 200 mW/ L-band: 3 mW ... 300 mW)
- The frequency processing contains the complete frequency generation with an optional GPS-receiver. For bridging the breakdown of the GPS or the reference signal an extremely stable heatable quartz oscillator is integrated into the low-power stage.

The following external reference signal inputs are available:

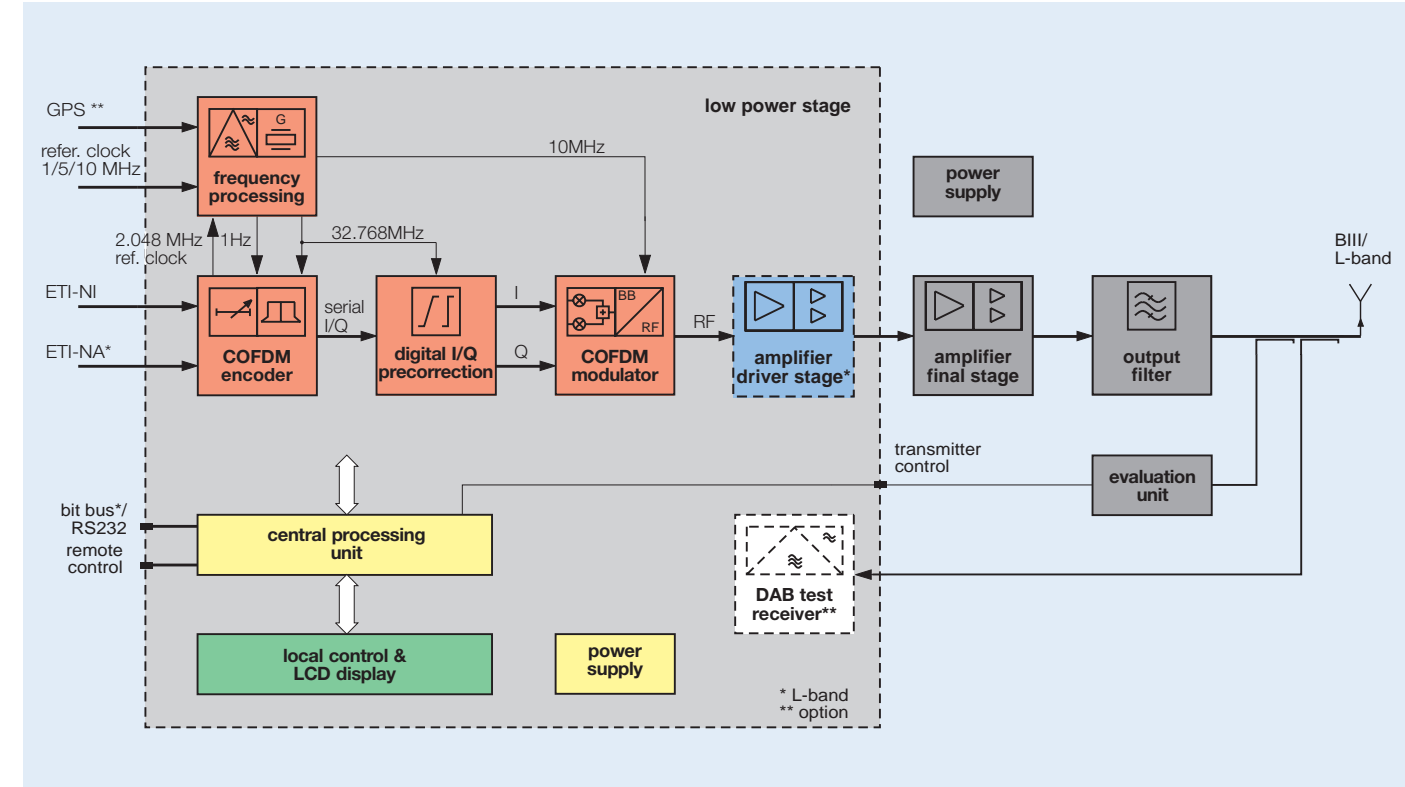
- 1 PPS signal of an external GPS-receiver
- External reference signals for 2.048 MHz, 0.1/0.5/1/5/10 MHz
- Can also be used as a low-power transmitter with integrated amplifier
- All RF- and DC connections are realized as plug-in connectors
- Optional DAB-receiver for monitoring the signal quality
- QPSK-receiver planned as an option

High-power stages

The control of the amplifier is directly effected via the COFDM-modulator in Band III, and via a driver-stage in the low-power stage in the L-band.

Amplifier Band III

- Amplifier 150 W for output power up to 300 W in the table cabinet or amplifier 300 W for output power up to 1200 W in the rack
- Designed as a 3-stage, redundant 150 W amplifier module, final stage with MOSFET-technology (AB-operation).



Block-diagram DAB-transmitter DAB 660 series

Amplifier L-band

- 2-stage amplifier module 50 W with LDMOSFET technology (AB-operation)
- High operational reliability
- 19" 2 HU plug-in units available as amplifiers 50 W or 100 W

Output filter

The output filters for suppressing ambient transmissions are easy to adjust. They have a compact design, are temperature-stable and marked by small insertion loss.

- In band III as a 6-circuit band-pass filter with 2 notches
- In the L-band as a compact dual mode filter or as a 4-circuit band-pass filter

Design

Up to 300 W output power the DAB transmitter is housed in a table cabinet. Starting from 300 W it is housed in a rack with a redundant, central blower and incoming and outgoing air ducts.

Power-classes

Band III ¹⁾	Driver stage	Final stage		DAB-transmitter
		Amplifier module	Plug-in	
50 W/75 W	---	1 x 150 W ²⁾	1 x 2 HU	10 HU - TG
150 W	---	1 x 150 W	1 x 2 HU	10 HU - TG
300 W	---	2 x 150 W	2 x 2 HU	10 HU - TG
		2 x 150 W	1 x 3 HU	40 HU - SG ³⁾
600 W	---	4 x 150 W	2 x 3 HU	40 HU - SG ⁴⁾
900 W	---	6 x 150 W	3 x 3 HU	40 HU - SG ⁴⁾
1200 W	---	8 x 150 W	4 x 3 HU	40 HU - SG ⁴⁾

L-band ¹⁾	Driver stage	Final stage		DAB-transmitter
		Amplifier module	Plug-in	
25 W	---	25 W ⁵⁾	---	6 HU - TG
50 W	25 W ²⁾	1 x 50 W	1 x 2 HU	10 HU -TG
100 W	25 W ²⁾	2 x 50 W	1 x 2 HU	10 HU - TG
200 W	25 W ²⁾	4 x 50 W	2 x 2 HU	10 HU - TG

- 1) Higher RF output power on request
- 2) With reduced output power
- 3) Rack with integrated output filter, without central blower
- 4) Rack with central blower
- 5) Integrated into the low-power stage