



DIGITAL BROADCAST

FM

PFG Series



PFG Series

Air or Liquid cooled FM transmitters

PFG Series Specifications



The PFG series of Modular FM transmitters is designed to operate in the whole 87.5 – 108 MHz frequency range for FM radio broadcasting applications and cover a power range from 100W to 40kW.

Each transmitter includes the following elements:

- ▶ Exciter.
- ▶ Amplifier.
- ▶ Control logic unit.
- ▶ External cooling unit in case of liquid cooling system.

Mozart series exciters

All exciters in PFG series are the Mozart series, latest audio excellence in FM broadcasting.

GREEN RF™ technology

The GREEN RF™ technology, combined with the new 65:1 devices, is the latest evolution of the world-famous patented COLD-FET™ technology applied on DB's transmitters. The main advantages are:

- ▶ High RF efficiency (>70%).
- ▶ Higher safety.
- ▶ Higher reliability.
- ▶ Lower heating.
- ▶ Lower AC power consumption.

Complete remote control

PFG series has an extremely complete Web server, SNMP, GSM or SMS remote control system, available as option.

WiFi touch management

Remote management via WiFi on mobile, smartphones or tablets, available as option.

Hot-Plug Solution (optional)

All PFG transmitters over 5kW can be equipped optionally with the hot-plug system to instantly extract the amplifier modules with transmitter in full power. All the amplifier modules slide on telescopic rails and can be completely extracted and removed for on-air maintenance or replacement without disconnecting any cable and without interrupting the transmitter operation.

Uninterrupted service

An intelligent protection circuit reduces the output power without on-air interruption, keeping the RF devices always within the safe operating parameters in case of:

- ▶ Load mismatching.
- ▶ Environmental over-temperature.
- ▶ Cooling failure.
- ▶ Failure in one or more amplification modules.
- ▶ Failure in power supply modules.

High efficiency cooling system

The air cooling system limits the heat-sink temperature rise to only about 10°C above ambient temperature. This guarantees the properly functioning even at high temperatures and in sites with extreme climate conditions.

Air cooling

The PFG series oversized air cooling system widely extends transistor life. The amplifier modules are equipped with externally mounted redundant fans to allow easy and fast cleaning, or eventual replacement, without opening or removing any module and without interrupting the transmitter operation.

Liquid Cooling

An oversize heat exchanger, single or double (optional), suitable for outdoor or indoor installation, and equipped with single or double (optional) pump system for maximum redundancy, is the main component of the powerful liquid cooling system. DB liquid cooling system assures high reliability, cooling efficiency and easy installation, thanks to the special design of liquid cooled heat-sinks inside the amplifier and low pressure liquid distribution. This system is designed to successfully face every hard climate condition.

Advantages of PFG liquid cooling

Substantial advantages of our liquid cooling technology compared to air cooling are:

- ▶ Properly working even with hard climate conditions.
- ▶ Dramatically reduction of air conditioning needing.
- ▶ Correct functioning in dusty environment even with high humidity or salinity.
- ▶ Very low acoustic noise.
- ▶ Low heat radiation into the environment.
- ▶ Longer life for transistors and active elements due to colder continuous operation.

AAD Technology

Prevents corrosion from air moisture and increases reliability.

- ▶ Components are made in anticorrosive aluminum.
- ▶ Air is ducted to avoid contact with electronic parts.
- ▶ All electronic boards and cabling are tropicalized with a special resin to protect the circuits against salt air.

Human Interface, Connectivity and Web Remote Control

Full control and adjustments of the main parameters by Web - SNMP interfaces:

- ▶ Operation Frequency.
- ▶ Output power.
- ▶ Input connector impedance for Left and Right connectors.
- ▶ Insertion and adjustment of the limiter.
- ▶ Choice of the active input connectors.
- ▶ Enabling of the input audio connectors.
- ▶ Audio sensitivity of all inputs.
- ▶ Pre-emphasis value.
- ▶ Audio mode selection.
- ▶ Foldback VSWR threshold setting (in % value).
- ▶ Deviation for:
 - ▶ total input signal
 - ▶ 19 kHz pilot
 - ▶ RDS signal
 - ▶ SCA signal
 - ▶ AUX signal
 - ▶ AES/EBU signal
- ▶ Phase of 19kHz pilot.
- ▶ Warning levels for:
 - ▶ audio lower than a specific threshold set by the customer
 - ▶ audio over a specific threshold set by the customer
 - ▶ low power (the output power is lower than a specific threshold set by the customer)
 - ▶ VSWR (the reflected power is higher than a specific threshold set by the customer)
 - ▶ Audio low times (how much time the audio remains lower than the specific threshold)
 - ▶ Audio over times (how much time the audio remains higher than the specific threshold)
 - ▶ Weekly scheduler page
 - ▶ Network parameters settings:
 - ▶ MAC address
 - ▶ IP address
 - ▶ Subnet mask
 - ▶ Gateway
 - ▶ SNMP parameters settings:
 - ▶ TRAP IP addresses
 - ▶ Read community
 - ▶ Write community
 - ▶ Trap type
 - ▶ Informs timeout
 - ▶ Informs retries
- ▶ WEB accesses settings:
 - ▶ user name
 - ▶ password
- ▶ NTP parameters settings:
 - ▶ Preferred and backup servers
 - ▶ Update interval
 - ▶ Time zone
 - ▶ Status
- ▶ E-mails configuration (e-mail sent in case of alarm reporting the complete status of the unit and, as attachment, the log file in .txt format):
 - ▶ Station ID (label to identify the station)
 - ▶ Account Username
 - ▶ Account Password
 - ▶ Server SMTP url
 - ▶ Server SMTP port
 - ▶ Security and Authentication mode
 - ▶ Destination Addresses (up to 5 different addresses can receive the notification)

Parallel Remote Control Connector Interface (optional) with dry contact relay outputs and opto-isolated inputs with the following signals available: on/off, local/remote, alarm status, RF higher than a preset threshold, reset of alarms, change between 6 available memories (for 6 different configurations of the unit).

Efficiency Enhancement

PFG design was optimized to get minimum losses of the passive elements and excellent performances of the active elements in order to increase the AC efficiency up to more than 70%.



Latest generation LD-MOS devices increase DC to RF efficiency up to 85%, with a drastic reduction of energy consumption.



Hot-plug fans: 5 minutes maintenance time, no need to open or switch off the unit.



All PFG transmitters over 5kW can be equipped optionally with the hotplug system to instantly extract the amplifier modules with transmitter in full power.

● **GREEN RF™**

Latest generation LD-MOS devices increase DC to RF efficiency up to 85%, with a drastic reduction of energy consumption. Overall AC to RF efficiency is over 70%.

● **COLD-FET™**

Lower heating + High RF efficiency = Longer device's life.

● **65:1**

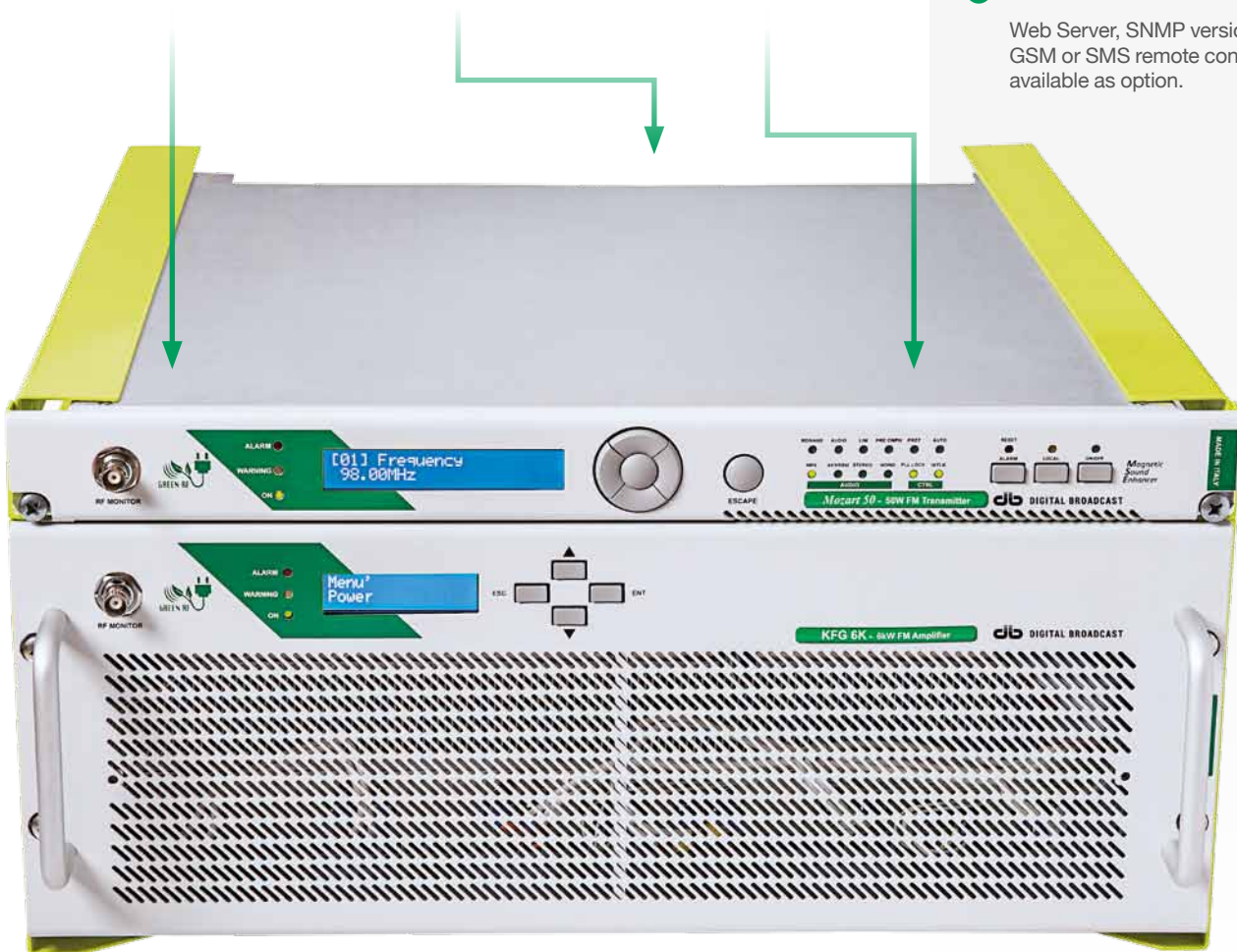
No more load mismatch failures: all devices have VSWR 65:1 built-in protection.

● **N+1 facility**

N+1 facility control available to remotely modify the frequency and power output for redundant systems.

● **Web controlled**

Web Server, SNMP version 2C, GSM or SMS remote control available as option.



GENERAL

Frequency range	87.5 to 108 MHz adjustable with 10kHz step
Output impedance	50 Ω
Deviation capability	±75 kHz, up to ±200 kHz with distortion < 0.5%
Pre-emphasis	0, 25, 50, 75 us (selectable)
Spurious and harmonic suppression	Exceeds CCIR/FCC requirements
Synchronous AM (ref. 100% mod.)	< - 58 dB
Asynchronous AM (ref. 100% mod.)	< - 50 dB
RF Probe	-50 dBc, 50 Ω, BNC
Power stability	< 2% (ALC)
DC to RF efficiency	83% typ.
Modulation monitoring	BNC connector
Pilot tone	Phase and Amplitude adjustable from display and WEB interface
Log file	Up to 200 dated events memorized in the transmitter memory, accessible from display and WEB interface

AUDIO INPUTS

Modulating input signal	Mono, Stereo (Left, Right, Left + Right), Encoded stereo (MPX), SCA, RDS, AUX, Digital AES/EBU
Input connectors	Left (XLR connector), Right (XLR connector), MPX (BNC connector), SCA (BNC connector), RDS (BNC connector), AUX (BNC connector), AES/EBU (XLR connector)

Audio Input levels for ± 75 kHz deviation

Mono	Adjustable from -9 to +18 dBu
Stereo	Adjustable from -9 to +18 dBu
MPX	Adjustable from -6 to +6 dBu or from +6 to +18 dBu (selectable at order)
AES/EBU	Adjustable from -15 to 0 dBFS
Input sensitivity adjustment	With 0,05dB steps by front panel display interface or by WEB interface
Limiter	It can be enabled/disabled and adjusted from 30 kHz to 180 kHz by front panel display and WEB interface
Internal RDS coder	Synchronized with the 19kHz pilot of the internal stereo coder or the 19kHz pilot of an external MPX signal

REMOTE CONTROL

Parallel Remote Control Connector Interface:	Available with dry contact relays outputs and opto-isolated inputs
Parallel Remote Signals (TLS):	On Local/remote Audio presence in the input Alarm status RF higher than a preset threshold Status of each of the 6 available memories (active / not active)
Parallel Remote Controls (TLC):	On Off Reset alarms Choice of the active memory among 6 possible configurations
Web log file	<ul style="list-style-type: none"> up to 64000 events stored in the web board The log file is saved in the PC in common text format (.txt)
SNMP	SNMP v2c with Traps and Informs
Weekly scheduler page	Available for the modification of the basic parameters of the unit up to 4 times for each day

SOFTWARE

Update:	Available without proprietary tools Firmware remotely upgradable by TCP/IP for modulator board and web board Received software automatically controlled before being installed Possibility to return to the previous firmware release after new release has been installed Possibility to select by WEB / SNMP which release (the new or the old one) will run on air
Configuration download	The configuration of the active memory can be downloaded and stored in the PC. This file can be uploaded in another unit to set it with the same configuration without any other adjustment

FRONT PANEL

Front panel menu	Accessible from LCD display
Direct function push buttons	Available on the front panel for the following functions: <ol style="list-style-type: none"> 1. ON/OFF (Stand-by) 2. Local/Remote 3. Reset Alarms
Status leds:	Presence of leds to indicate the status of the unit at the first glance.
Working parameters leds:	Audio Status: <ul style="list-style-type: none"> • RDS/AUX input signal present • Audio presence on the input (Left or Right) • Limiter inserted • Pre-emphasis inserted • MPX input signal active • AES/EBU input signal active • STEREO operation with internal stereo coder • MONO operations Control Status <ul style="list-style-type: none"> • Interlock • PLL locked

AC POWER REQUIREMENTS

AC supply voltage	115 / 230 VAC \pm 15%, single-phase or 230/380 VAC \pm 15%, three-phases
AC supply frequency	50 Hz or 60 Hz, \pm 5%
Power factor	> 0.9

ENVIRONMENT

Cooling	Forced air with built-in axial fans / Liquid cooling (optional)
Service	Continuous 24/24h
Operating temperature	-5°C to +45°C Derate 3°C per 500 m above 2000 mt asl
Relative humidity	Up to 95%

Contact Information

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MODEL	OUTPUT POWER	OUTPUT CONNECTOR	OCCUPIED RACK UNITS	SUPPLIED RACK
PFG 100	100 W	N	19" x 3U	No rack
PFG 300	300 W	N	19" x 3U	No rack
PFG 500	500 W	N	19" x 3U	No rack
PFG 1k	1000 W	DIN 7/16	19" x 3U	No rack
PFG 2k	2000 W	EIA 7/8"	19" x 4U	No rack
PFG 3k	3000 W	EIA 7/8"	19" x 4U	No rack
PFG 6k/1x	6000 W	EIA 7/8"	19" x 5U	No rack
PFG 6k/2x	6000 W	EIA 1+5/8"	19" x 19U	19" x 19U
PFG 8k	8000 W	EIA 1+5/8"	19" x 24U	19" x 24U
PFG 10k/2x	10 kW	EIA 1+5/8"	19" x 31U	19" x 31U
PFG 10k/4x	10 kW	EIA 1+5/8"	19" x 31U	19" x 31U
PFG 15k	15 kW	EIA 3+1/8"	19" x 41U	19" x 41U
PFG 20k	20 kW	EIA 3+1/8"	19" x 45U	19" x 45U
PFG 30k	30 kW	EIA 3+1/8"	2 racks of 19" x 41U	2 racks of 19" x 41U
PFG 40k	40 kW	EIA 4+1/2"	2 racks of 19" x 45U	2 racks of 19" x 45U

All specifications are subject to change without notice.