



FM SOLID STATE TRANSMITTER PFS 20000/KS



°The PFS 20000/K transmitter is designed to operate on 87.5 - 108 MHz frequency range for FM radio broadcasting appliances with RF output power. The PFS 20000/K is composed of:

-KE 20, 20 W Exciter;

-KFS 1000, 1000 W FM Driver Amplifier;

-KFS 20000, 20kW FM Power Amplifier.

° COLD-FET™ technology. This revolutionary technology is used in the PFS 20000/K transmitter to optimize the MOSFET's output matching in order to obtain broadband amplification stages without any RF component. This means:

- higher RF efficiency > 83%
- lower heating
- higher devices safety
- higher total reliability
- low AC power consumption

° Uninterrupted service. A true proportional foldback protection circuit keep the transmitter always on the air reducing the output power in case of:

- antenna VSWR
- environmental over-temperature
- failure in one or more amplification modules
- failure in one or more power supply modules

° Frequency-agile PFS 20000/K transmitter is fully broadband. All RF stages, comprising the output filters, can operate on any FM channel, selectable via a integrated digital selector or remotely (optional).

° On-air serviceability. Power amplifier modules can be safely removed during operation, for on-air maintenance. Failure or module removal keep always transmitter on-air.

° Modular assembly. Easy removable identical and interchangeable power amplifier modules reduce spare requirement and service costs.

° Automatic power control circuit maintains constant RF output with precision ($\pm 1\%$).



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- ° Advanced controller provides full front panel transmitter control capabilities and extensive metering of individual modules. Standard or special remote control interface is also available.
- ° Power supply. A rugged, high-efficiency (> 93%) power supply support each PA module and can be on-air removed and replaced. Power supplies are protected from incoming AC line overvoltage, overcurrent, transient and lightning.
- ° High redundancy. High on-air reliability is assured by using multiple power amplifier modules, each comprised of four individual PA's, with independent power supplies and optional dual exciters.
- ° Cooling: an oversized standard air cooling system with internal fans extends transistors life. In the standard version, air enters through removable filters in the front panel of each PA and power supply module. Air is exhausted from the rear of cabinet or from the top (optional). A special version is also available when it is necessary to separate transmitter cooling air from building air.
- ° Low overheating. Thanks to the high RF efficiency, due to COLD-FET technology, the heatsink overheating respect to the environmental temperature is limited at + 10°C only. This permits to operate even in overheated sites.
- ° Low AC power consumption. The high overall efficiency means a reduction of AC power consumption and operating costs.
- ° Low maintenance. The overall operating costs are reduced and the maintenance is optimised for three year intervals thanks to the absence of wear-out mechanism in solid state devices.
- ° Meets or exceeds international standards for safety and electrical specifications.

OPTIONS FOR PFS 20000/K

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High performance built-in DIGITAL STEREO GENERATOR, stereo separation ³ 78 dB.
For KE20, KCL 30, KCL 60, KCL 120, KCL 300, KCL 500, PM120, PM 300 , PM500
and all versions /K and /P and /LD



PFS 20000/KS TECHNICAL CHARACTERISTICS

RF Specifications:

Operating frequency range	87.5 ÷ 108 MHz
Output power	0 - 20000 W adjustable
Output connector	EIA 1+3/8" (other on request)
Power drain at maximum power	31000 VA typ.
Output impedance	50 Ω
Harmonics and spurious emissions (ref. to carrier)	≤ -80 dBc
Synchronous AM (ref. 100% mod.)	< - 50 dB
Asynchronous AM (ref. 100% mod.)	≤-55 dB
RF probe	-70 dB, 50 Ω, BNC
Power stability	< 1%
RF efficiency	83% typ.
Overall efficiency	65% typ.

A.F. Data (ref. to KE 20 Exciter):

Mono operations:	
Input level	-10÷+12 dBm adj.
Input connectors	XLR female/bal.
Input impedance	600 Ω
Bandwidth (± 0.25 dB)	20 Hz÷15 KHz
Pre-emphasis	50/75 µs
Deviation from pre-emph. curve	± 0.5 dB
FM S/N ratio (±75 kHz deviation at 1 kHz, 50 µs de-emph.)	≥ 80 dB
THD + N	≤ 0.1 %
19 kHz attenuation	≥ 55 dB
AM syncro residual	< -64 dBc
AM asyncro residual	< -68 dBc
Stereo operations (MPX input):	
Input level	-10÷+12 dBm
Input connector	BNC, unbal.
Input impedance	10 kΩ
Bandwidth (± 0.2 dB)	20 Hz÷100 KHz
FM S/N ratio (±75 kHz deviation at 1 kHz, demodul., 50 µs de-emphasis)	≥ 74 dB
Stereo separation (20 Hz÷15 kHz)	≥ 60 dB
THD	< 0.2%

Measures (on the Combining and Control unit front panel):

Total output forward power
Total output reflected power
Output forward power of each plug-in 1 kW module
Output reflected power of each plug-in 1 kW module
DC supply voltage of each plug-in 1 kW module
DC supply current of each plug-in 1 kW module



PFS 20000/KS TECHNICAL CHARACTERISTICS

Protections:

The internal logic circuitry provides proportional fold-back protection, without on-air interruptions, for:
- VSWR
- air over-temperature or insufficient cooling
- output combiner unbalancing
- fault of RF or power supply stages

Automatic power control:

The automatic power control circuitry provides the output power regulation with a precision of 2% over the whole band.
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Remote control interface:

I/O Connector	DB-25
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Monitored & controlled functions:

- stand-by
- Total forward output power
- Total reflected output power
- DC supply voltage of each plug-in 1 kW module
- DC supply current of each plug-in 1 kW module
- alarms status

AC Power requirements:

Type of DC voltage regulation	switch-mode
Operating Voltage	208/220/380 Vac \pm 10%, 50/60 Hz, three phases 110/220/240 Vac \pm 10% Vac 50/60 Hz, single-phase.

Operating conditions:

Cooling	forced air by internal fans
Service	continuous 24/24 h
Operating temperature	-5 $^{\circ}$ \div +45 $^{\circ}$ C
Relative humidity	95%
Max.installation altitude	3000 m a.s.l.

Weight and size:

Weight	985 kg
W x D x H (see options)	627 x 803 x 1640 mm - 2 racks

Options:

KFS/RC	Full remote control interface
Air cooling exit	cabinet top side or rear (to be specified)
Air cooling parts	Chimineys and hardware on request

Features and specifications subject to change without notice.