

STEREO GENERATOR AND AUDIO PROCESSOR COM LIM 60

The **COM LIM 60** is an all-in-one equipment (5 bands audio processor with MPX generator, MPX decoder, RDS encoder, loudness control (EBU R 128 and ITU-R BS.1770-4) and changeover/silence detector) for FM applications (15KHz processing) and DAB, HD radio, Sirius XM, Web (20KHz processing).

The **COM LIM 60** sounds great, allowing giving personality to your station by choosing, from the many presets, the one that better suits the style of your radio.

Fully customizable top class audio processing tools with 5 bands compression control, adjustable drive and threshold, dual AGC, 3 bands equalization (low, mid and high frequency), stereo enhancer, voice detector and 5 limiters.

The RDS "dynamic" features allow managing many kinds of services: PS, RT, RT+, PTY, PTYN. Connecting the **COM LIM 60** with the radio automation software, it can manage much additional information such as song title, song artist, on-air program, speaker's name, etc.

The MPX encoder and the dynamic RDS encoder are both integrated in the DSP structure providing an almost ideal MPX signal, easy to integrate with the customer infrastructure.



GENERAL CHARACTERISTICS

WEIGHT	3Kg approximately
DIMENSIONS	1 standard rack unit of 19", 485x44x240mm
AC RATE	90-260VAC, 47-63Hz, 15W
PROCESSING	Fully digital, based on DSP 24bit/100MHz. Signal processing is performed by phase linear filter
OPERATING TEMPERATURE	0 to +50°C

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ANALOG AUDIO INPUT

CONNECTORS	Balanced on 2 XLR, EMI Suppression
NOMINAL INPUT LEVEL (SENSITIVITY)	-12 to +13dBu, adjustable via software
LEVEL RANGE	-21 to + 24dBu
INPUT LEVEL MAX.	+24dBu
A/D CONVERSION	CS4272 DAC 24bit 192kHz
CMRR INPUT	>60dB (20Hz to 20kHz)

DIGITAL AUDIO INPUT

NUMBER OF INPUTS	2
CONNECTORS	Balanced on 1 XLR, EMI Suppression
INPUT IMPEDANCE	110Ω
FORMAT	AES3/EBU & SPDIF
SAMPLE RATE	32, 44.1, 48, 64, 88.2, 96, 192kHz
NOMINAL INPUT LEVEL (SENSITIVITY)	-0.1 to -25dBfs (0.1dB step)
LEVEL RANGE	0 to -36dBfs
CONVERSION DYNAMIC RANGE	124dB (32kHz), 126dB (44.1kHz), 126dB (48kHz), 122dB (96kHz)
CONVERSION RESOLUTION	24 bits

MPX INPUT

CONNECTORS	Unbalanced on 2 BNC, EMI Suppression
INPUT IMPEDANCE	50Ω
NOMINAL INPUT LEVEL (SENSITIVITY)	-6 to +13dBfs, adjustable
CONVERSION DYNAMIC RANGE	PCM4220 24bit 216kHz
LEVEL RANGE	-21 to +24dBu

ANALOG AUDIO OUTPUT

CONNECTORS	Balanced on 2 XLR, EMI Suppression
OUTPUT IMPEDANCE	47Ω
OUTPUT LEVEL	-6 to +18dBu, adjustable software
LEVEL RANGE	-20 to +24dBu
OUTPUT LEVEL MAX.	24dBu
CMRR OUTPUT	>60dB (20Hz to 20kHz)
D/A CONVERSION	CS4272 DAC 24bit 192kHz

DIGITAL AUDIO OUTPUT

OUTPUT NUMBERS	2
CONNECTORS	Balanced on 1 XLR, EMI Suppression
INPUT IMPEDANCE	110Ω
FORMAT	AES3/EBU
SAMPLE RATE	32, 44.1, 48, 64, 88.2, 96kHz, 192kHz
OUTPUT LEVEL ADJUSTMENT	0 to -30dBfs (0.1dB steps)

LEVEL RANGE	0 to -36dBfs
FREQUENCY RANGE	20Hz to 20kHz (+/- 0.025dB when processing is disabled)

MPX OUTPUT

CONNECTORS	Unbalanced on 2 BNC, EMI Suppression
OUTPUT IMPEDANCE	10 Ω
LOAD IMPEDANCE	600 Ω or higher
A/D CONVERSION	Texas PCM1796
NOMINAL INPUT LEVEL (SENSITIVITY)	-9 to +15dBfs

MPX & RDS SIGNAL

PILOT FREQUENCY	19kHz, \pm 1Hz
PILOT INJECTION	-25 to 15.5dB (steps of 0.1), 6-18% total deviation
PILOT STABILITY	\pm 10ppm (-10 to +55°C)
PILOT DISTORTION	0.05% (typical)
DISTORTION AND PILOT NOISE	0.068 % (on 100kHz band)
EXTERNAL COMPOSITE THD	0.005 % (typical on the whole band)
STEREO SEPARATION	>70dB (typical on the whole band)
LINEAR CROSSTALK	\leq -80dB (for 100% modulation)
MAIN>SUB & SUB>MAIN CROSSTALK	>65dB (at least)
FILTERING/DIGITAL BAND	30Hz to 15kHz (-0.1dB), 17kHz (-70dB), 19kHz (-100dB)
PROTECT. 57kHz SUBCARRIER (RDS/RBDS)	Better than 51dB
PRE-EMPHASIS	Off, 50 μ S, 75 μ S (\pm 0.1dB)
FREQUENCY RESPONSE	\pm 0.3dB (30Hz to 15kHz)
OPERATING MODE	Mono/Stereo
MPX/RDS OUTPUT	Adjustable from -10 to 15dB (steps of 0.1dB)
SIGNAL/NOISE RATIO	>90dB (on 100kHz band)
CARRIER SUPPRESSION	>85dB

RDS FEATURES (OPTIONAL)

SUPPORTED GROUP	All
GROUP SEQUENCE	Configurable
PS	8 DSN x 10 PSN
PI	8 DSN x 10 PSN
PTY	RDS/RBDS
AF METHOD A	25
AF METHOD B	Up to 1024 (64 lists)
RT	Yes, 32 messages
RT RATE ADJUSTMENT	Group sequence
RT+ FOR SONGS & CONTENT TAGGING	Yes
TP	Yes
TA CONTROL	Command, Soft, GPI

PTYN	Yes
EON	10 PSN
CT	Yes
TMC, EWS, IH, TDC	Yes
FREE FORMAT GROUPS (FFG)	Yes
OPEN DATA APPLICATION (ODA)	Yes
PS SCROLLING	Yes
AUTO "PARSES" LONG MESSAGES FOR: BEST TEXT DISPLAY	No
SCROLLING BY CHARACTERS	1 to 8
SCROLLING BY WORD, AUTO CENTERING: TRUNCATE LONG WORDS	Yes

COMMUNICATION

CONNECTION WITH RADIO AUTOMATION: SOFTWARE	Yes
NETWORK CONNECTIVITY	4 TCP ports, 4 UDP, 1 SNMP
CONFIGURATION SOFTWARE	Web Server, FTP
PASSWORD PROTECTION	Yes
ASCII PROTOCOL	Configuration messages
UDP, TCP, HTTP, SNTP	Yes
ALERT NOTIFICATIONS ON USER-DEFINED: EVENTS VIA SNMP TRAPS OR EMAILS	Yes
EMBEDDED SNMP AGENT PERMITTING: ACTIVE MANAGEMENT TASKS	Yes
SUPPORTED NETWORK PROTOCOLS	HTTP, SNTP, UDP, TCP, NTP, FTP
UECP PROTOCOL	EBU SPB490 Ver.7.05

GENERAL

GPIO INPUTS/OUTPUTS	6 GPI, 4 GPO
COMMUNICATION PORTS	2xRS232, 3xUSB, 1xLAN
SYNCHRONIZATION	Ext (Pilot MPX), Int, Auto
SYNCHRONIZATION MONITORING	Yes
RDS LEVEL ADJUSTMENT	Digitally controlled
PHASE ADJUSTMENT	0° to 359.9°
SEPARATE OUT RDS+MPX/RDS ONLY	Yes
COMMAND TO ACTIVATE RDS SCA	Yes
OPERATING MODES	Side chain, Loop through, Bypass
RDS SUBCARRIER	100% digitally generated shape
CENELEC - EN50067 COMPLIANT	Yes
CLOCK TIME (CT)	Accurate clock time sync with Internet connection
REMOTE TA TRAFFIC ANNOUNCEMENTS	Yes
AUTOMATIC RTC SYNCHRONIZATION	Autosync with optional USB external GPS receiver

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