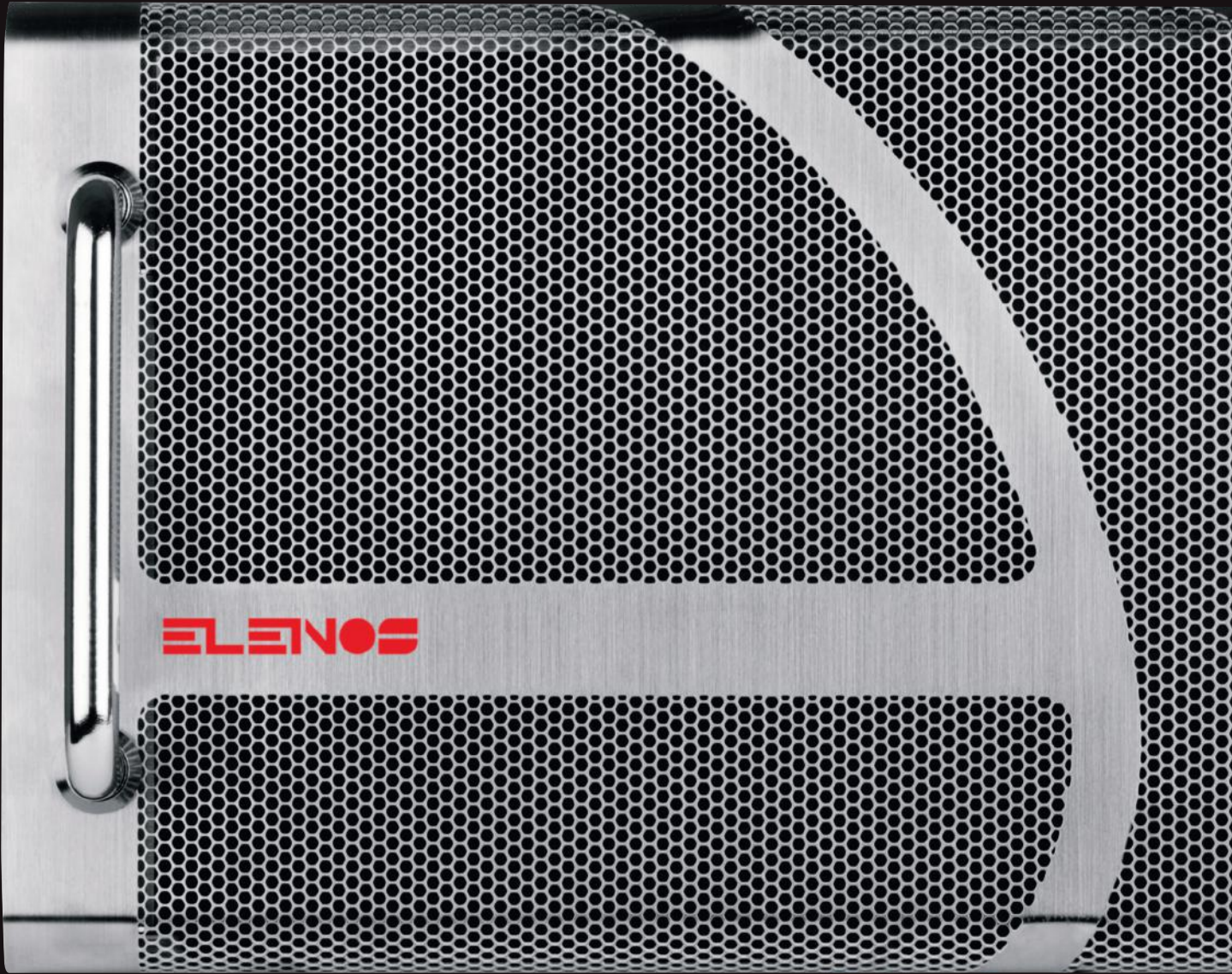




FROM 2.5kW TO 5kW

FM TRANSMITTER

ELENOS[®]
World Broadcast Experience



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Technical data can be subject to change without notice.



our technologies





Brochure

FM TRANSMITTER **MEDIUM** POWER

FM TRANSMITTER MEDIUM POWER

The Elenos medium power transmitter product line includes models from 2500W to 5000W. It can come with an amplifier and integrated modulator (exciter) in the same chassis (4U), or with a separate ETG 2U series low power modulator (exciter) and an E 4U series amplifier. These products represent the most advanced technology in terms of electrical efficiency, compactness, reduced weight, ease of use, and diagnostics. Additionally, the technology in these products offers the most complete access to transmitter operating data, protection operation, and the ability to operate under severe environmental conditions while maintaining undiminished RF and audio specifications.

This product line has been designed to guarantee the maximum performance and operation while lowering operational costs through energy saving technology. The ETG Indium 4U transmitters achieve levels of overall electrical efficiency unseen in the market today, while also providing an extremely high operational performance under extreme environmental conditions (high external temperatures, poorly adjusted antenna, fluctuations in the network). How is this possible? Mainly due to innovative techniques in RF design, intelligent power supplies, and through the use of powerful algorithms designed for optimal performance management.

The great efficiency of the RF amplifiers, modulator, and power supplies has also allowed a noticeable reduction of operating temperature, system weight and size. The resulting advantages are substantial: easier installation and lowered transportation, rack space and energy costs. Each of the transmitters in this product line provide accurate real-time operating data, thus allowing the user a precise status of the equipment operation in order to easily identify possible problems, either through a local user interface or via remote devices. The user can receive data and send instructions to the transmitter via several communication channels — SMS, GPRS, TCP/IP and SNMP.

Features:

Smart Design

Ultra compact size, light weight, clean layout, ease of maintenance and repair.

Low energy consumption

Highly reduced energy consumption and significantly lowered operating costs due to state of the art nature of the design.

Reliability

Extremely high reliability and the ability to ensure continuity of the service even under extreme operating conditions due to intelligent safety protocols, Icefet technology, and Lifextender algorithms.

Total control

Accurate and detailed real time data on the operating status of the transmitter, available at the analytical level, (voltage, current, power, temperature, efficiency, safety,

settings, audio levels, communications).

Local and remote management and control via Serial Protocol, SMS, GPRS, SNMP, WEB. via Sereial Protocol, SMS, GPRS, SNMP, WEB.

Scalability

All products are designed to be scalable with the greatest advantage that any technological improvement affecting the base product is directly transferred to all equipment in the product family via upgrades.

Lower Cost of Ownership

The cost savings due to the compact size of the equipment, planar technology and other features make this series a most competitive value for both large and small networks and radio operators.



Datasheet

FM TRANSMITTER MEDIUM POWER | ETG2500

ETG2500

FM TRANSMITTER MEDIUM POWER

GENERAL DATA

| | |
|-------------------------------------|--|
| Output Nominal Power | 2500 W adjustable |
| Operating band | 87.5 ÷ 108 MHz |
| RS232/RS485 | Yes. Connector DB9 female |
| Points of measure | RF Sample - MPX Monitor |
| Displayed Parameters | More than 50 parameters displayed on a wide graphic OLED |
| Adjustments | From the frontal panel through OLED/from PC |
| Number of L-DMOS in amplifier stage | 4 |
| RF power stage technology | ICEFET & ECOSAVING |
| Dimensions: Rack units | 4U |
| Dimensions: W - H - D | 48.5 - 17.6 - 70 cm |
| Weight | 38 Kg |
| Number of power supplies | 3 |
| Number of cooling fans | 6 |

CONNECTORS

| | |
|----------------|--------------|
| RF Output | 7/8 |
| MPX | BNC Female |
| LEFT & RIGHT | XLR Female |
| AES/EBU | XLR Female |
| AUX | BNC Female |
| Ext.ref 10 MHz | SMA (option) |
| Monitor/19 kHz | BNC Female |

RF PERFORMANCE

| | |
|-----------------------------------|---|
| Output impedance | 50 Ω |
| Automatic power RF control | Stabilizes the output power value on the set value |
| Overall output power RF stability | +/- 0,1 dB |
| VSWR | 2:1 at full power. Automatic power reduction beyond 1.7:1. Transmitter is protected for open and short circuit. |
| Harmonics | < -75 dBc |
| Out of band emission (spurious) | < -80 dBc |

AUDIO PERFORMANCE

| | |
|---|---|
| MPX input level | +15/-10 dBu for 75 KHz standard deviation |
| MPX level adjustment | Soft adjust 0.1 dB steps from front panel |
| MPX input impedance | 5 KΩ selectable |
| L/R input level | +15/-10 dBu for 75 KHz standard deviation |
| L/R level adjustment | Soft adjust 0.1 dBu steps from front panel |
| L/R Input Impedance | Selectable 10 K - 600 Ω, balanced |
| AES/EBU input resolution | 24 bits |
| AES/EBU input sample rate | 32,44,1,48,96 KHz Automatically selected |
| AES/EBU input level | -20 dBFS - 0 dBFS |
| AES/EBU input impedance | 110 Ω balanced |
| AES/EBU-Analog input automatic changeover | Yes |
| PILOT Amplitude adjustment | Soft adjust 0.05% steps from front panel |
| PILOT Phase adjustment | Soft adjust 0.01 degree steps from front panel |
| PILOT tone frequency | 19 KHz |
| PILOT tone deviation | Soft adjust +/- 7.5 KHz |
| PILOT tone frequency stability | +/- 1 Hz |
| THD+N (stereo/mono operation) | < 0.05% with 75 KHz frequency deviation < 0.05% with 100 KHz frequency deviation 30 Hz to 15 KHz |
| Pre-emphasis | 0/25/50/75 microseconds, selectable |
| Pre-emphasis tolerance | +/- 0.1 dB |
| FM S/N (MPX operation) | 82 dB 20 Hz to 23 KHz @ 53 KHz - detector RMS |
| FM S/N CCIR (stereo/mono operation) | > = 72 dB weighted > = 72 dB unweighted 400 Hz, 75 KHz frequency deviation, quasi-peak detector, 50 us de-emphasis |

FM TRANSMITTER MEDIUM POWER | ETG2500

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|--|--|
| Asynchronous AM S/N unweighted | > = 55 dB a 400 Hz, 75 us de-emphasis |
| Synchronous AM S/N | > = 50 dB a 400 Hz, 75 us de-emphasis |
| Amplitude-frequency characteristic (stereo/mono operation) | +/- 0.1 dB (without pre-emphasis) +/- 0.1 dB (with pre-emphasis) 20 Hz to 15 KHz, @ 400 Hz |
| Stereo Crosstalk (typical) | 60 dB @ 400 Hz to 10 KHz |
| Linear crosstalk | >60 db 20 Hz to 15 KHz |
| Intermodulation distortion | <0.05% Measured with two of tones 1 KHz & 1.3 KHz, ratio 1:1 at 100% modulation |
| Class of emission | F3 |
| Stereo emission | According to ITU-R recommendation 450 (pilot tone) |
| EXCITER PERFORMANCE | |
| PLL lock time | <10 sec |
| Frequency deviation | +/- 75 KHz 0.1 dB steps adjustable |
| Maximum frequency deviation | +/- 150 KHz |
| Frequency stability | 1 ppm |
| RF Frequency steps | 10 KHz |
| Phase Response | +/- 0.1 degree from linear phase; 20 KHz to 100 KHz |
| INSTALLATION REQUIREMENTS | |
| Power supply | 230/400 Threephase-Singlephase Version 50-60 Hz VAC |
| Power consumption (typical) | 3.5 KW |
| Overall efficiency (typical from -3 dB to Pnom) | > = 70% |
| Power factor | > 0.95 |
| Current Consumption @ 230VAC/single phase | 15 Amp |
| Magneto-thermic capacity @ 230VAC/single phase | 32 Amp |
| Conductor size @ 230VAC/single phase | 6 sqrt.mm |
| Conductor size @ 230VAC/single phase | 9 AWG |
| Current Consumption @ 230VAC/three phase | 9 Amp |
| Magneto-thermic capacity @ 230VAC/three phase | 20 Amp |
| Conductor size @ 230VAC/three phase | 4 sqrt.mm |
| Conductor size @ 230VAC/three phase | 11 AWG |
| Current Consumption @ 400VAC/three phase | 5 Amp |
| Magneto-thermic capacity @ 400VAC/three phase | 10 Amp |
| Conductor size @ 400VAC/three phase | 2.5 sqrt.mm |
| Conductor size @ 400VAC/three phase | 13 AWG |
| COOLING/NOISE/DATA | |
| Cooling system | Forced air-cooling . From 600 to 1200 m3/h |
| Air temperature increase | 17 °C |
| Acoustic noise | < 65 phon @ transmitter room, 2 m distance of the front of transmitter |
| ENVIRONMENT | |
| Temperature range (operating) | -5 ÷ +45 °C, 23 ÷ 113 °F |
| Temperature range (non operating) | -20 ÷ +55 °C, -4 ÷ 131 °F |
| Humidity range (operating) | 95% @ 40 °C, 104 °F |
| Humidity range (non operating) | 90% @ 55 °C, 131 °F |
| Altitude range (operating) | <3000 meters / <9840 Feet |
| Altitude range (non operating) | <15000 meters / < 49200 Feet |
| TELECONTROL & TELEMETRY | |
| Remote control | Yes |
| Remote control, dry contacts | Yes |
| SNMP option | Yes (external) |



Datasheet

FM TRANSMITTER MEDIUM POWER | ETG3500

ETG3500

FM TRANSMITTER MEDIUM POWER

| GENERAL DATA | |
|---|---|
| Output Nominal Power | 3500 W adjustable |
| Operating band | 87.5 ÷ 108 MHz |
| RS232/RS485 | Yes. Connector DB9 femate |
| Points of measure | RF Sample - MPX Monitor |
| Displayed Parameters | More than 50 parameters displayed on a wide graphic OLED |
| Adjustments | From the frontal panel through OLED/from PC |
| Number of L-DMOS in amplifier stage | 5 |
| RF power stage technology | ICEFET & ECOSAVING |
| Dimensions: Rack units | 4U |
| Dimensions: W - H - D | 48.5 - 17.6 - 70 cm |
| Weight | 38 Kg |
| Number of power supplies | 3 |
| Number of cooling fans | 6 |
| CONNECTORS | |
| RF Output | 7/8 |
| MPX | BNC Female |
| LEFT & RIGHT | XLR Female |
| AES/EBU | XLR Female |
| AUX | BNC Female |
| Monitor/19 kHz | BNC Female |
| RF PERFORMANCE | |
| Output impedance | 50 Ω |
| Automatic power RF control | Stabilizes the output power value on the set value |
| Overall output power RF stability | +/- 0,1 dB |
| VSWR | 2:1 at full power. Automatic power reduction beyond 1.7:1. Transmitter is protected fro open and short circuit. |
| Harmonics | < -75 dBc |
| Out of band emission (spurious) | < -80 dBc |
| AUDIO PERFORMANCE | |
| MPX input level | +15/-10 dBu for 75 KHz standard deviation |
| MPX level adjustment | Soft adjust 0.1 dB steps from front panel |
| MPX input impedance | 5 KΩ selectable |
| L/R input level | +15/-10 dBu for 75 KHz standard deviation |
| L/R level adjustment | Soft adjust 0.1 dBu steps from front panel |
| L/R Input Impedance | Selectable 10 K - 600 Ω, balanced |
| AES/EBU input resolution | 24 bits |
| AES/EBU input sample rate | 32,44.1,48,96 KHz Automatically selected |
| AES/EBU input level | -20 dBFS - 0 dBFS |
| AES/EBU input impedance | 110 Ω balanced |
| AES/EBU-Analog input automatic changeover | Yes |
| PILOT Amplitude adjustment | Soft adjust 0.05% steps from front panel |
| PILOT Phase adjustment | Soft adjust 0.01 degree steps from front panel |
| PILOT tone frequency | 19 KHz |
| PILOT tone deviation | Soft adjust +/- 7.5 KHz |
| PILOT tone frequency stability | +/- 1 Hz |
| THD+N (stereo/mono operation) | < 0.05% with 75 KHz frequency deviation < 0.05% with 100 KHz frequency deviation 30 Hz to 15 KHz |
| Pre-emphasis | 0/25/50/75 microseconds, selectable |
| Pre-emphasis tolerance | +/- 0.1 dB |
| FM S/N (MPX operation) | 82 dB 20 Hz to 23KHz @ 53 KHz - detector RMS |
| FM S/N CCIR (stereo/mono operation) | > = 72 dB weighted > = 72 dB unweighted 400 Hz, 75 kHz frequency deviation, quasi-peak detector, 50 us de-emphasis |

FM TRANSMITTER MEDIUM POWER | ETG3500

| | |
|--|--|
| Asynchronous AM S/N unweighted | > = 55 dB a 400 Hz, 75 us de-emphasis |
| Synchronous AM S/N | > = 50 dB a 400 Hz, 75 us de-emphasis |
| Amplitude-frequency characteristic (stereo/mono operation) | +/- 0.1 dB (without pre-emphasis) +/- 0.1 dB (with pre-emphasis) 20 Hz to 15 KHz, @ 400 Hz |
| Stereo Crosstalk (typical) | 60 dB @ 400 Hz to 10 KHz |
| Linear crosstalk | >60 db 20 Hz to 15 KHz |
| Intermodulation distortion | <0.05% Measured with two of tones 1 KHz & 1.3 KHz, ratio 1:1 at 100% modulation |
| Class of emission | F3 |
| Stereo emission | According to ITU-R recommendation 450 (pilot tone) |
| EXCITER PERFORMANCE | |
| PLL lock time | <10 sec |
| Frequency deviation | +/- 75 KHz 0.1 dB steps adjustable |
| Maximum frequency deviation | +/- 150 KHz |
| Frequency stability | 1 ppm |
| RF Frequency steps | 10 KHz |
| Phase Response | +/- 0.1 degree from linear phase; 20 KHz to 100 KHz |
| INSTALLATION REQUIREMENTS | |
| Power supply | 230/400 Threephase-Singlephase Version 50-60 Hz VAC |
| Power consumption (typical) | 4.9 KW |
| Overall efficiency (typical from -3 dB to Pnom) | > = 70% |
| Power factor | > 0.95 |
| Current Consumption @ 230VAC/single phase | 21.3 Amp |
| Magneto-thermic capacity @ 230VAC/single phase | 32 Amp |
| Conductor size @ 230VAC/single phase | 10 sqrt.mm |
| Conductor size @ 230VAC/single phase | 7 AWG |
| Current Consumption @ 230VAC/three phase | 12.5 Amp |
| Magneto-thermic capacity @ 230VAC/three phase | 20 Amp |
| Conductor size @ 230VAC/three phase | 6 sqrt.mm |
| Conductor size @ 230VAC/three phase | 9 AWG |
| Current Consumption @ 400VAC/three phase | 7.1 Amp |
| Magneto-thermic capacity @ 400VAC/three phase | 16 Amp |
| Conductor size @ 400VAC/three phase | 4 sqrt.mm |
| Conductor size @ 400VAC/three phase | 11 AWG |
| COOLING/NOISE/DATA | |
| Cooling system | Forced air-cooling . From 600 to 1200 m3/h |
| Air temperature increase | 17 °C |
| Acoustic noise | < 65 phon @ transmitter room, 2 m distance of the front of transmitter |
| ENVIRONMENT | |
| Temperature range (operating) | -5 ÷ +45 °C, 23 ÷ 113 °F |
| Temperature range (non operating) | -20 ÷ +55 °C, -4 ÷ 131 °F |
| Humidity range (operating) | 95% @ 40 °C, 104 °F |
| Humidity range (non operating) | 90% @ 55 °C, 131 °F |
| Altitude range (operating) | <3000 meters / <9840 Feet |
| Altitude range (non operating) | <15000 meters / < 49200 Feet |
| TELECONTROL & TELEMETRY | |
| Remote control | Yes |
| Remote control, dry contacts | Yes |
| SNMP option | Yes (external) |



Datasheet

FM TRANSMITTER MEDIUM POWER | ETG5000

ETG5000

FM TRANSMITTER MEDIUM POWER

| GENERAL DATA | |
|---|---|
| Output Nominal Power | 5000 W adjustable |
| Operating band | 87.5 ÷ 108 MHz |
| RS232/RS485 | Yes. Connector DB9 female |
| Points of measure | RF Sample - MPX Monitor |
| Displayed Parameters | More than 50 parameters displayed on a wide graphic 0-LED screen |
| Adjustments | From the frontal panel through OLED/from PC |
| Number of L-DMOS in amplifier stage | 7 |
| RF power stage technology | ICEFET & ECOSAVING |
| Dimensions: Rack units | 4U |
| Dimensions: W - H - D | 48.5 - 17.6 - 70 cm |
| Weight | 45 Kg |
| Number of power supplies | 3 |
| Number of cooling fans | 6 |
| CONNECTORS | |
| RF Output | 7/8 |
| MPX | BNC Female |
| LEFT & RIGHT | XLR Female |
| AES/EBU | XLR Female |
| AUX | BNC Female |
| Monitor/19 kHz | BNC Female |
| RF PERFORMANCE | |
| Output impedance | 50 Ω |
| Automatic power RF control | Stabilizes the output power value on the set value |
| Overall output power RF stability | +/- 0,1 dB |
| VSWR | 2:1 at full power. Automatic power reduction beyond 1.7:1. Transmitter is protected fro open and short circuit. |
| Harmonics | < -75 dBc |
| Out of band emission (spurious) | < -80 dBc |
| AUDIO PERFORMANCE | |
| MPX input level | +15/-10 dBu for 75 KHz standard deviation |
| MPX level adjustment | Soft adjust 0.1 dB steps from front panel |
| MPX input impedance | 5 KΩ selectable |
| L/R input level | +15/-10 dBu for 75 KHz standard deviation |
| L/R level adjustment | Soft adjust 0.1 dBu steps from front panel |
| L/R Input Impedance | Selectable 10K - 600 Ω, balanced |
| AES/EBU input resolution | 24 bits |
| AES/EBU input sample rate | 32,44.1,48,96 KHz Automatically selected |
| AES/EBU input level | -20 dBFS - 0 dBFS |
| AES/EBU input impedance | 110 Ω balanced |
| AES/EBU-Analog input automatic changeover | Yes |
| PILOT Amplitude adjustment | Soft adjust 0.05% steps from front panel |
| PILOT Phase adjustment | Soft adjust 0.01 degree steps from front panel |
| PILOT tone frequency | 19 KHz |
| PILOT tone deviation | Soft adjust +/- 7.5 KHz |
| PILOT tone frequency stability | +/- 1 Hz |
| THD+N (stereo/mono operation) | < 0.05% with 75 KHz frequency deviation < 0.05% with 100 KHz frequency deviation 30 Hz to 15 KHz |
| Pre-emphasis | 0/25/50/75 microseconds, selectable |
| Pre-emphasis tolerance | +/- 0.1 dB |
| FM S/N (MPX operation) | 82 dB 20 Hz to 23KHz @ 53 KHz - detector RMS |
| FM S/N CCIR (stereo/mono operation) | > = 72 dB weighted > = 72 dB unweighted 400 Hz, 75 kHz frequency deviation, quasi-peak detector, 50 us de-emphasis |

FM TRANSMITTER MEDIUM POWER | ETG5000

| | |
|--|---|
| Asynchronous AM S/N unweighted | > = 55 dB a 400 Hz, 75 us de-emphasis |
| Synchronous AM S/N | > = 50 dB a 400 Hz, 75 us de-emphasis |
| Amplitude-frequency characteristic (stereo/mono operation) | +/- 0.1 dB (without pre-emphasis) +/- 0.1 dB (with pre-emphasis) 20 Hz to 15 KHz, @ 400hz |
| Stereo Crosstalk (typical) | 60 dB @ 400 Hz to 10 KHz |
| Linear crosstalk | >60 db 20 Hz to 15 KHz |
| Intermodulation distortion | <0.05% Measured with two of tones 1 KHz & 1.3 KHz, ratio 1:1 at 100% modulation |
| Class of emission | F3 |
| Stereo emission | According to ITU-R recommendation 450 (pilot tone) |
| EXCITER PERFORMANCE | |
| PLL lock time | <10 sec |
| Frequency deviation | +/- 75 KHz 0.1 dB steps adjustable |
| Maximum frequency deviation | +/- 150 KHz |
| Frequency stability | 1 ppm |
| RF Frequency steps | 10 KHz |
| Phase Response | +/- 0.1 degree from linear phase; 20 KHz to 100 KHz |
| INSTALLATION REQUIREMENTS | |
| Power supply | 230/400 Threephase-Singlephase Version 50-60 Hz VAC |
| Power consumption (typical) | 7.1 KW |
| Overall efficiency (typical from -3dB to Pnom) | > = 70% |
| Power factor | > 0.95 |
| Current Consumption @ 230VAC/single phase | 31 Amp |
| Magneto-thermic capacity @ 230VAC/single phase | 45 Amp |
| Conductor size @ 230VAC/single phase | 10 sqrt.mm |
| Conductor size @ 230VAC/single phase | 7 AWG |
| Current Consumption @ 230VAC/three phase | 18.5 Amp |
| Magneto-thermic capacity @ 230VAC/three phase | 32 Amp |
| Conductor size @ 230VAC/three phase | 6 sqrt.mm |
| Conductor size @ 230VAC/three phase | 9 AWG |
| Current Consumption @ 400VAC/three phase | 10.5 Amp |
| Magneto-thermic capacity @ 400VAC/three phase | 20 Amp |
| Conductor size @ 400VAC/three phase | 4 sqrt.mm |
| Conductor size @ 400VAC/three phase | 11 AWG |
| COOLING/NOISE/DATA | |
| Cooling system | Forced air-cooling . From 600 to 1200 m3/h |
| Air temperature increase | 17 °C |
| Acoustic noise | < 65 phon @ transmitter room, 2 m distance of the front of transmitter |
| ENVIRONMENT | |
| Temperature range (operating) | -5 ÷ +45 °C, 23 ÷ 113 °F |
| Temperature range (non operating) | -20 ÷ +55 °C, -4 ÷ 131 °F |
| Humidity range (operating) | 95% @ 40 °C, 104 °F |
| Humidity range (non operating) | 90% @ 55 °C, 131 °F |
| Altitude range (operating) | <3000 meters / <9840 Feet |
| Altitude range (non operating) | <15000 meters / < 49200 Feet |
| TELECONTROL & TELEMETRY | |
| Remote control | Yes |
| Remote control, dry contacts | Yes |
| SNMP option | Yes (external) |

