VX Series FM Transmitter

VX3-VX6

The Nautel VX Series of transmitters is a range of compact, solid-state FM transmitters focused on maintainability, power density, and affordability.

MODELS

- VX3: 3 kW
- VX3.5: 3.5 kW
- VX4: 4 kW
- VX5: 5 kW
- VX6: 6 kW

GENERAL

- Analog FM transmitter
- High power density
- Compact size: 6 RU height and 25”/63.5 cm max depth
- Weight: 80 lb (15 lb + 65 lb)
- Altitude: 15,000 ft/4,572 m
- AC to RF efficiency up to 77%
- Single-phase and three-phase AC
- Orban Inside audio processor (option)

USABILITY

- Front Panel User Interface
  - Full color 3.5” TFT display
  - Rotary/push button navigation
  - Dedicated RF and Remote ON/OFF buttons
  - USB port (2.0 Type A)
- Fast software updates
- Variable speed fans for improved acoustics and efficiency

SERVICEABILITY

- Solderless PA replacement
- Hot-swappable PA power supplies
- Removable, washable air filters
- Front-supported chassis for rail-free rack installation
- Maintainable with common tools

REDUNDANCY

- Automatic audio input failover to a backup source
- Support for main/standby and N+1 configurations
- Remain on-air, reduced power with PA or PS failures
- Remain on-air with 1 fan failure

SOFTWARE

- HTML5 remote control and monitoring (AUI)
- Encrypted network communications
- SNMP v2c
- RDS Encoder with scrollable 64-character PS
- Analog SFN support
- NTP support

AUI (ADVANCED USER INTERFACE)

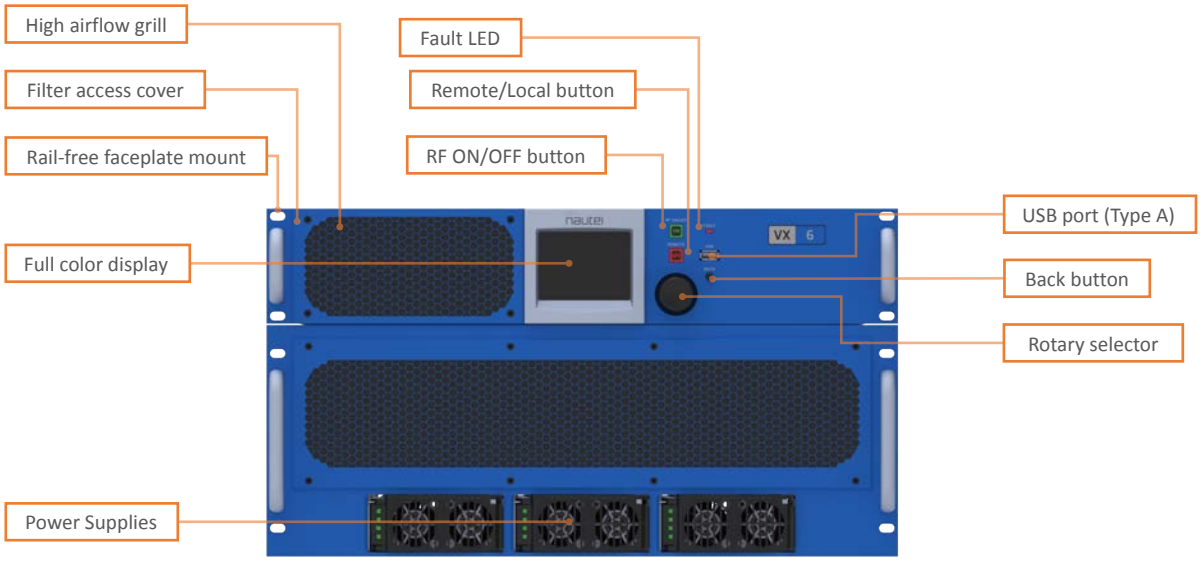
- HTML5 responsive design (desktop, tablet, & smartphone)
- Comprehensive dashboard featuring meters, alarms, audio, and modulation data
- Instrumentation
- PhoneHome

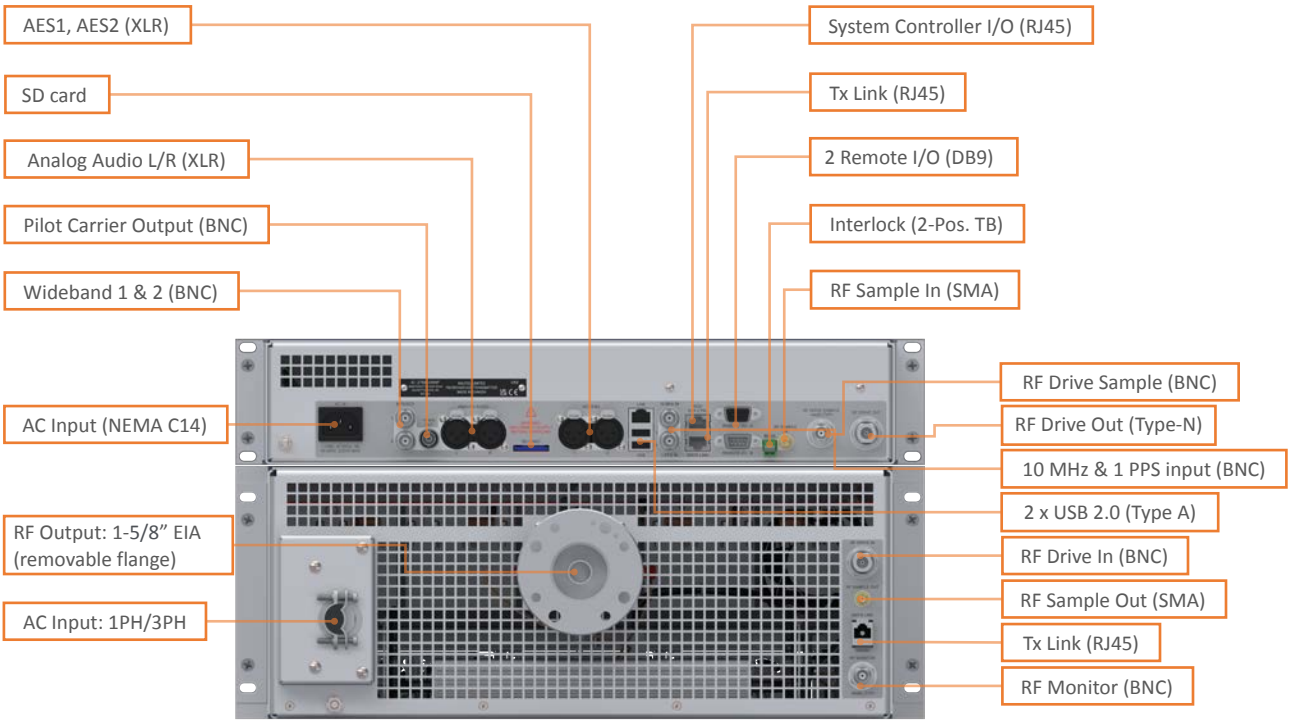
SUPPORT

- 4-Year Warranty
- Phone, online, and email support

REGULATORY

- FCC / ISED / CE compliance


High airflow grill
Filter access cover
Rail-free faceplate mount
Full color display
Power Supplies
Fault LED
Remote/Local button
RF ON/OFF button
USB port (Type A)
Back button
Rotary selector


AES1, AES2 (XLR)
SD card
Analog Audio L/R (XLR)
Pilot Carrier Output (BNC)
Wideband 1 & 2 (BNC)
AC Input (NEMA C14)
RF Output: 1-5/8" EIA (removable flange)
AC Input: 1PH/3PH
System Controller I/O (RJ45)
Tx Link (RJ45)
2 Remote I/O (DB9)
Interlock (2-Pos. TB)
RF Sample In (SMA)
RF Drive Sample (BNC)
RF Drive Out (Type-N)
10 MHz & 1 PPS input (BNC)
2 x USB 2.0 (Type A)
RF Drive In (BNC)
RF Sample Out (SMA)
Tx Link (RJ45)
RF Monitor (BNC)

GENERAL	VX3	VX3.5	VX4	VX5	VX6
Rated Output Power	3 kW	3.5 kW	4 kW	5 kW	6 kW
Output Power Range	300-3300 W	350-3850 W	400-4400 W	500-5500 W	600-6300 W
Power Amplifier	6	6	6	6	6
PA power supply	3				
Pre-Amplifier	1				
Pre-Amplifier power supply	1				
Exciter/Controller	Integrated				
RF Output Connector	1-5/8" EIA with removable field flange (Optional 7/8" adapter for VX3, VX3.5 and VX4)				
RF Terminating Impedance	50 ohms unbalanced				
RF Load VSWR	100% Rated Power into 1.5:1 VSWR				
	110% Rated Power into 1.2:1 VSWR				105%
	Automatic power reduction into higher VSWR				
	Protected from open and short circuits at all phase angles				
RF Frequency Range	87.5 MHz to 108 MHz in 10 kHz steps				
	No tuning required				
Spurious and Harmonic	ISED specification BETS6 Issue 2				
	FCC CFR title 47 part 2, part 73, and part 74		FCC CFR title 47 part 2 and part 73		
	CE Radio Equipment Directive 2014/53/EU				
EXCITER/CONTROLLER					
Exciter/Controller	Integrated analog FM exciter using direct-to-channel digital modulation				
	Built-in RDS encoder, SCA encoder, and stereo generator				
Audio Sources	2 x AES (incl. MPX over AES)				
	Analog L/R				
	2 x Wideband (suitable for composite, RDS, or SCA)				
Audio Backup	Automatic changeover to backup audio source in the event that main audio source fails				
FM Signal-to-Noise Ratio: Digital or Analog Stereo Input	80 dB below 100% modulation (reference 400 Hz, measured in 22 Hz to 22 kHz bandwidth with 75 µs de-emphasis and DIN 'A' weighting)				
FM Signal-to-Noise Ratio: Monaural Digital/Analog or Wideband Composite Operation	90 dB below 100% modulation (reference 400 Hz, measured in 22 Hz to 80 kHz bandwidth with 75 µs de-emphasis and DIN 'A' weighting)				

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VX3-VX6

AC INPUT	VX3	VX3.5	VX4	VX5	VX6
Voltage	185-265 VAC (Nom 208/220/240 VAC) 1PH 47-63 Hz (Line-Line & Line-Neutral) (2 wire plus GND) 185-265 VAC (Nom 208 VAC) 3PH 47-63 Hz (Line-Line & Line-Neutral) Wye or Delta (3 or 4 wire plus GND) 320-460 VAC (Nom 380 VAC) 3PH 47-63 Hz (Line-Line) Wye (4 wire plus GND)				
Power Consumption at Rated Output Power	4307 VA Typical	4886 VA Typical	5507 VA Typical	6700 VA Typical	8040 VA Typical
Typical Efficiency	70%	72%	73%	75%	75%
Power Factor	Unity Power Factor Corrected (0.995 Typical)				
Power Line Harmonics	IEEE 519-2014				
	EN 61000-3-2				
Exciter/Controller Section	90-265 VAC 1PH 47-63 Hz				
IP CONNECTIVITY					
SNMP	Allows VX Series to be set up as part of a network and monitored remotely via a single control point				
	SNMP v2c				
Remote AUI	Remotely connect to a VX transmitter via Nautel's HTML5 Advanced User Interface (AUI). Remote connectivity allows for setting of operating parameters and viewing the transmitter status from any web enabled device.				
Email Notification	Automatically receive email notifications when an alarm has been activated.				
AUDIO PERFORMANCE					
Asynchronous AM S/N Ratio	Better than 60 dB below reference carrier with 100% amplitude modulation using 75 µs de-emphasis (no FM modulation present)				
Synchronous AM S/N Ratio	Better than 50 dB below reference carrier with 100% amplitude modulation using 75 µs de-emphasis				
Audio Low Pass Filter	0 - 15 kHz 0.005 dB, 90 dB attenuation at 19 kHz				
Stereo Pilot Tone	19 kHz ±2 PPM				
38 kHz Suppression	>80 dB below ±75 kHz deviation reference				
Stereo Separation	>60 dB, 30 Hz to 15 kHz				
Stereo THD	0.025% or less, 30 Hz to 15 kHz, BW = 22 Hz to 22 kHz, 75 µS de-emphasis				
CONTROLLING AND MONITORING					
Local Interface (Front panel LCD)	Presets				
	Logs				
	Status (meters and active alarms)				
Status	Fault LED for status summary				
Remote Interface (AUI)	HTML5, responsive design supports desktop, tablet, and smartphone				
	Software upgrades				
	Presets				
	Remote I/O Setup				
	Status (meters and active alarms)				
	Audio Levels				
	Audio Spectrum Analyzer				

AUDIO PLAYER			
FILE FORMAT	**SUPPORTED SAMPLE RATES**	**SUPPORTED CHANNELS**	**OTHER SPECIFICATIONS**
.MP3	24 kHz 32 kHz 44.1 kHz 48 kHz	Mono Stereo	32 kbps minimum bitrate 320 kbps maximum bitrate
.WAV	32 kHz 44.1 kHz 48 kHz	Mono Stereo	16/24/32 bit PCM Encoding
.FLAC	32 kHz 44.1 kHz 48 kHz	Mono Stereo	16/24 bit per sample
.AAC	32 kHz 44.1 kHz 48 kHz	Mono Stereo	AAC-LC and HE-AAC supported AAC, .M4A and .MP4 (audio only) extensions also supported

AoIP STREAMING			
STREAM FORMAT	**SUPPORTED CODEC**	**SUPPORTED BITRATES**	**OTHER SPECIFICATIONS**
Icecast	MP3 FLAC AAC OGG/VORBIS	96 - 320 kbps	Supports .M3U Playlist URLs
Shoutcast	MP3 AAC	96 - 320 kbps	Supports .M3U Playlist URLs
HLS	MP3 AAC	96 - 320 kbps	Supports .M3U8 Playlist URLs

COMPLIANCE	VX3	VX3.5	VX4	VX5	VX6
Complies with:	ISED specification BETS6 issue 2				
	FCC CFR title 47 part 2 and part 73B				
	Conforms with all essential requirements of Radio Equipment Directive 2014/53/EU				
ENVIRONMENTAL					
Temperature Range	0°C to +50°C / 32°F to 122°F				
	Derate 3°C per 500 m above sea level / 2°C per 1000 ft				
Storage Temperature Range	-25°C to +70°C/ -13°F to 158°F				
Humidity Range	0% to 95% non-condensing				
Altitude	15,000 ft/4,572 m				
Cooling Air Requirements	Exciter/Controller (fixed fan speed): 30 CFM/51 m^3/hr				
	Amplifier (variable fan speed) Typical: 220 CFM/374 m^3/hr Max: 335 CFM/569 m^3/hr			Amplifier (variable fan speed) Typical: 250 CFM/425 m^3/hr Max: 365 CFM/620 m^3/hr	
PHYSICAL					
Dimensions	Width = 19"/48.3 cm Standard 19"EIA rack with min opening of 17.5“/44.5 cm				
	Exciter/Controller: Height = 2 RU/3.5"/8.9 cm Amplifier: Height = 4 RU/7”/17.8 cm				
	Exciter/Controller: Depth = 19.88”/50.5 cm (including output connector) Amplifier: Depth = 24.91”/63.3 cm (including flanged 1-5/8” EIA output connector				
Weight	System: 80 lb/36.3 kg Exciter/Controller: 15 lb/6.8 kg Amplifier: 65 lb/29.5 kg Amplifier with power supplies removed: 50 lb/22.7 kg				