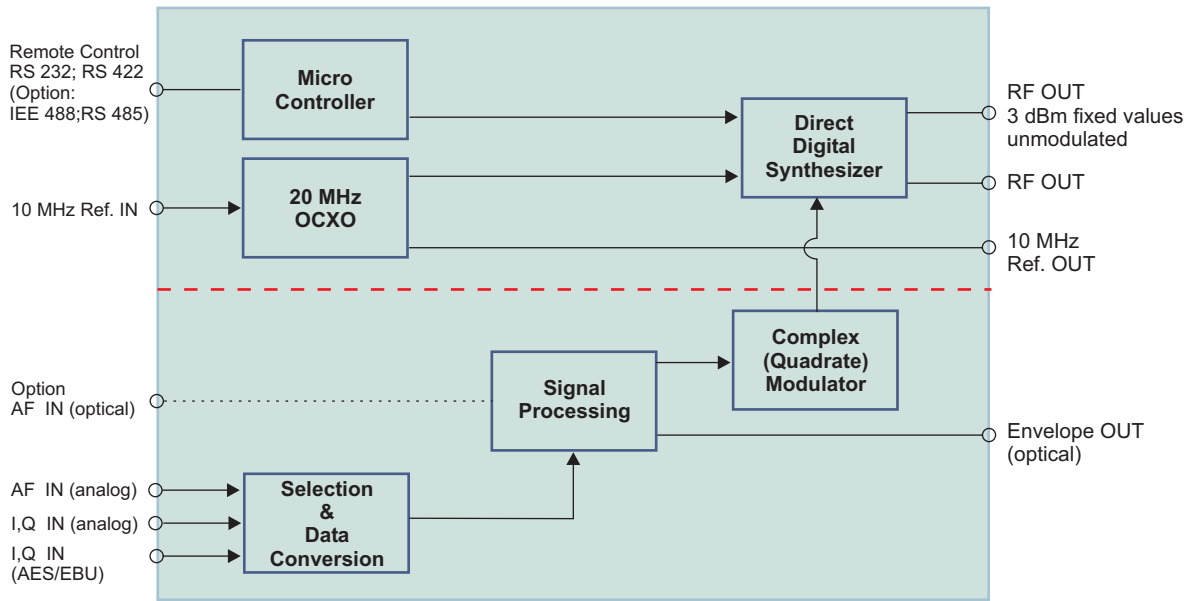




RF Synthesizer TXW 5321

Leading Design
For Digital AM Broadcasting

Outstanding Design for Superior Performance



Outstanding Features

Based on Direct Digital Synthesizer Technology, the TXW 5321 has been acclaimed for its outstanding technical data.

The synthesizer has an internal frequency reference made by an OCXO (Oven Controlled Crystal Oscillator) ensuring a very high frequency stability of 1×10^{-7} per year and extremely low phase noise. As an alternative, an external 10 MHz reference may be used.

Full Digital Signal Processing is performed by ultra fast digital components. The RF output is directly generated with digital-to-analog converters.

Modular Approach

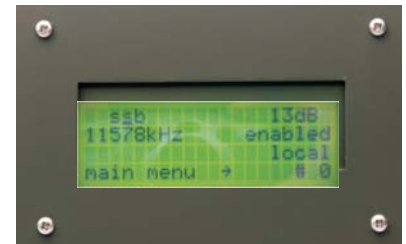
The modular construction and the built-in PCB Error Diagnostic System enable easy equipment servicing.

The modular assembly enables a seamless system upgrade for SSB or DM and optional interface add-ins.

Keyboard

The keyboard allows for quick manual parameter setting when remote mode is disabled. The menu commands and the HELP functions are easy to understand and do not require further special knowledge.

For faster and easier access, the most frequently used buttons (such as parameter setting and changing, menus and enter) are on the bottom of the keyboard.



Display

The display on the front panel gives complete on-line information pertaining to actual modulation mode, frequency, carrier suppression level and output power level.

High System Noise Immunity

Galvanic Isolations for input and output signals (as well as for control interfaces) protect the inner synthesizer circuit and provide high system noise immunity.

Full Digital Signal Processing

The Thomson Direct Digital Frequency Synthesizer TXW 5321 offers full digital signal processing for frequencies from 50 kHz to 30 MHz. The output level is adjustable from 0 to 13 dBm at 50 ohms.

An enhancement for any AM transmitter, the TXW 5321 is fully compatible with the DRM (Digital Radio Mondiale) standard.

The synthesizer is equipped with RS232 and RS422 remote control interfaces or optionally with other interfaces and can be easily built into existing equipment, fitting into a single 19inch rack.

The TXW 5321 is available in 3 versions :

- **TXW 5321**
basic version (DSB)
- **TXW 5321S**
for Single Side Band modulation (SSB) with reduced carrier (H3E and R3E according ITU Regulations)
- **TXW 5321D**
for Digital Modulation (DM) according to the DRM (Digital Radio Mondiale) Standard

Digital AM Broadcasting

The TXW5321D is a member of the Thomson Skywave 2000 product line, developed to enable the transmission of digital audio signals in the AM frequency bands, and including:

- CIRRUS [TXW 5125D] DRM Multi-Program Multiplexer
- STRATUS [TXW 5126D] DRM Versatile Modulator/RF Exciter
- NIMBO-STRATUS [TXW 5124D] DRM Basic Modulator/RF Exciter
- ALTO-STRATUS [TXW 5123D] DRM Encoder/Modulator for Thomson Medium Wave Family M2W and or existing linear amplification transmitters
- SIROCCO [TXW 1005D] DRM Reference Monitoring Analyser
- ZEPHYR [TXW 1004D] DRM Baseband Rack Analyser
- LAPTOP RECEIVER [TXW 1003D]

The qualities of this product line have been field proven within the framework of DRM(Digital Radio Mondiale).

The technical data are fully conform to the DRM Standard and ITU specifications and in line with the ITU recommendation for the new worldwide standard for digital AM broadcasting technology.

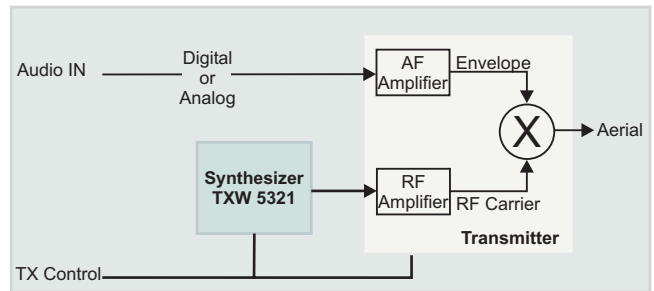


Fig. 1: DSB Radio Transmission
For a standard AM transmitter, the TXW 5321 serves as RF frequency source

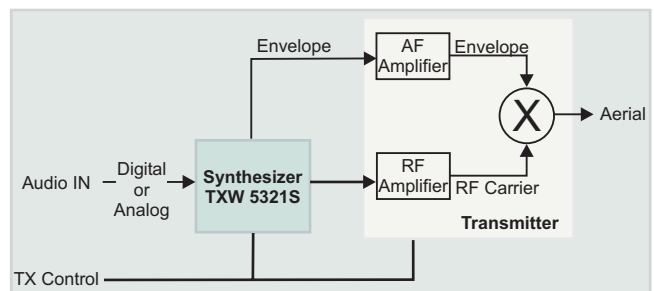


Fig. 2: SSB Radio Transmission
The TXW 5321S offers Digital or Analog audio signal inputs for SSB modulation.

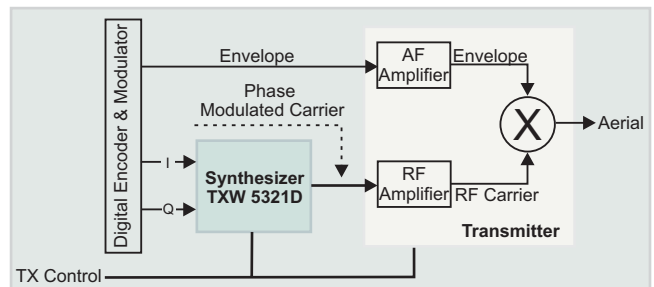


Fig. 3 - 4: DRM (Digital) Radio Transmission
The TXW 5321D accepts digital or analog I/Q signals for digital modulation, whereby the envelope signal goes directly from the digital exciter to the AF input of the transmitter

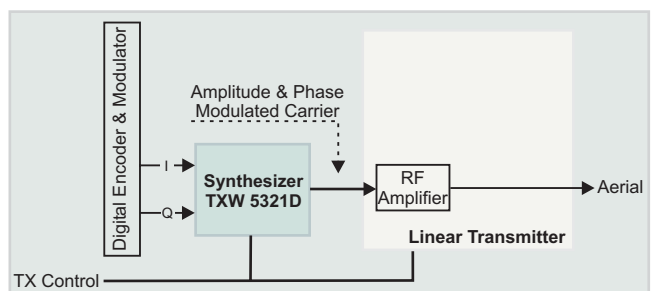


Fig. 4: DRM (Digital) Radio Transmission

Technical Characteristics

TXW 5321

All information and specifications are subject to change without notice

	TXW 5321	TXW 5321S	TXW 5321D
Dimensions	19" rack:	19" rack:	19" rack:
Height (max):	133 mm (3 units)	133 mm (3 units)	133 mm (3 units)
Depth (max)	330 mm	330 mm	330 mm
Type of Synthesis	Direct Digital Synthesis	Direct Digital Synthesis	Direct Digital Synthesis
Operation Mode	DSB	DSB, SSB	DSB, SSB, DRM
Inputs			
Ext. Frequency Ref.	10 MHz, 0 dBm, 50 ohms, BNC	10 MHz, 0 dBm, 50 ohms, BNC	10 MHz, 0 dBm, 50 ohms, BNC
AF	---	optical link, 100 kHz (option)	optical link, 100 kHz (option)
		analog AF (30 Hz to 10 kHz, $\pm 3V$, 600 ohms balanced, XLR3)	analog AF (30 Hz to 10 kHz, $\pm 3V$, 600 ohms balanced, XLR3)
Digital I,Q			AES/EBU, 0 to 48 kHz, XLR3
Analog I,Q			0 to 24 kHz, $\pm 3V$ pp, 47 kohms, BNC
Outputs			
RF	50 kHz to 30 MHz (0 ... 13 dBm adjustable, 1 Hz step, no modulation)	50 kHz to 30 MHz (0 ... 13 dBm adjustable, 1 Hz step, phase modulated)	50 kHz to 30 MHz (0 ... 13 dBm adjustable, 1 Hz step, phase & ampl. modulated)
AF	---	AF envelope	AF envelope
Frequency Reference	10 MHz (3 dBm 50 ohms)	10 MHz (3 dBm 50 ohms)	10 MHz (3 dBm 50 ohms)
RF Quality			
Unwanted Emissions			
Harmonics	< 35 dBc	< 35 dBc	< 35 dBc
Non-harmonic	≤ 50 dBc	≤ 50 dBc	≤ 50 dBc
0 to 1 Hz	≤ 55 dBc	≤ 55 dBc	≤ 55 dBc
1 Hz to 200 Hz	≤ 60 dBc	≤ 60 dBc	≤ 60 dBc
200 Hz to 100 kHz	≤ 70 dBc	≤ 70 dBc	≤ 70 dBc
Phase Noise			
10 Hz	≤ 90 dBc	≤ 90 dBc	≤ 90 dBc
200 Hz	≤ 95 dBc	≤ 95 dBc	≤ 95 dBc
4 kHz	≤ 120 dBc	≤ 120 dBc	≤ 120 dBc
Frequency Stability			
OcXO 20 MHz	1×10^{-7} per year	1×10^{-7} per year	1×10^{-7} per year
Interface			
RS 232	yes	yes	yes
RS 422	yes	yes	yes
IEEE 488	optional	optional	optional
7 digit BCD	optional	optional	optional
RS 485	optional	optional	optional
Display (LCD)			
Frequency	yes	yes	yes
Synthesizer lock	yes	yes	yes
Modulation mode	---	AM, SSB	AM, SSB, DRM
Auto test status	yes	yes	yes
Carrier Reinjection	---	-6 dB to -26 dB (in SSB mode)	-6 dB to -26 dB (in SSB mode)
Temperature			
Operation	0 °C to 50 °C	0 °C to 50 °C	0 °C to 50 °C
Stockage	-20 °C to 70 °C	-20 °C to 70 °C	-20 °C to 70 °C
Humidity	$\leq 95\%$ non-condensing	$\leq 95\%$ non-condensing	$\leq 95\%$ non-condensing
Altitude			
(higher altitudes)	up to 1500 m derating -6 °C per 1000 m	up to 1500 m derating -6 °C per 1000 m	up to 1500 m derating -6 °C per 1000 m
Power Supply			
	108 to 260 VAC single phase 50 / 60 Hz ± 2 Hz	108 to 260 VAC single phase 50 / 60 Hz ± 2 Hz	108 to 260 VAC single phase 50 / 60 Hz ± 2 Hz

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