

AVALON RF  **Wireless Solutions**
For Audio & Video Links



TX418M - UHF
TX518M - 900MHz-2.15GHz
TX618M - 2.15GHz-2.5GHz
70 mW Video Transmitter

User's Guide & Operating Manual

AV030528/1-000
REV. A1 - 23 December 2003

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1. General

The TX418M/TX518M/TX618M series rugged transmitters are intended for use in short range military, homeland security, mobile security, broadcasting and motion picture production. All have an RF output power of approx. 70mW.

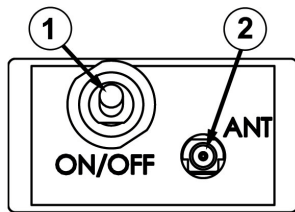
The following table details a brief matrix of the transmitters:

Model	Tuning range	Extended tuning range (optional)	Modulation
TX418M	460MHz-860MHz	460MHz-860MHz	VSB
TX518M	900MHz-926MHz	900MHz-2.150GHz	FM
TX618M	2.4GHz-2.48GHz	2.150GHz-2.5GHz	FM

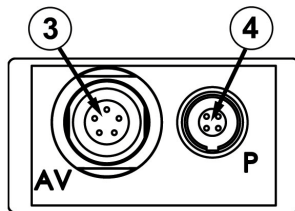
All transmitters offer the following features:

- A single broadcast quality video channel with no delay.
- Two broadcast quality audio channels.

Any reference in this manual to TX618M series also implies the TX418M and TX518M.



Top View	
1	Power On/Off
2	Antenna - MMCX



Bottom View	
3	Audio/Video Input – See Figure C
4	Power/Video Input – See Figures B

Back View	
5	Frequency Select

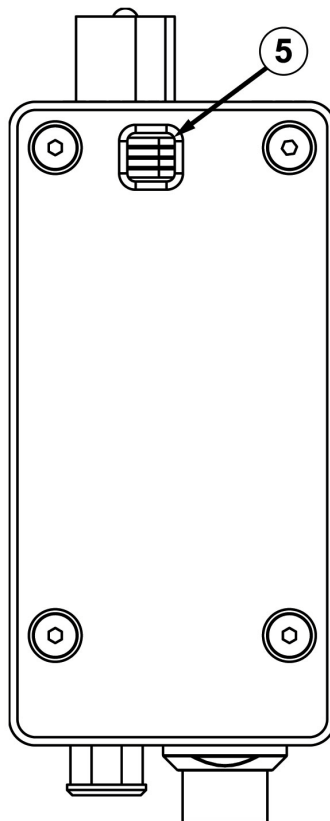


Figure A – TX618M Series Controls and Connectors

1.1 Video.

The video input is buffered, combined with the two audio subcarriers, then DC level restored, limited by a white level clipping circuit, pre-emphasized and (VSB on TX418M series) (FM on TX518M/TX618M series) modulated onto the transmitter RF carrier.

Avalon RF offers the following video indices of modulation (TX518M/TX618M only):

- Industry standard frequency deviation of 4MHz.
This option offers longer range at reference quality.
- Wide frequency deviation of 6MHz.
This option offers broadcast quality but with shorter range.

1.2 Audio.

The two audio inputs are buffered and FM modulated on two subcarriers. The factory preset subcarrier frequency is 6.0MHz and 6.5MHz but may be factory programmed to any frequency from 4.8MHz to 7.5MHz.

1.3 RF Output.

The TX618M has a single MMCX RF output with a 50 Ω (ohm) impedance.

2. Specifications

2.1 User Interface - On/Off Switch.

The TX618M series transmitter has an on/off switch. This shuts off power to the entire transmitter.

2.2 Setup.

The TX618M transmitter has four frequency select switches that select a frequency (1 of 16). The preset frequencies are defined by a label on the transmitter.

The user is advised to select a channel within the permissible frequency range to begin with, and if any interference is observed, switch over to another channel.

The transmitter retains its setup during power down.

2.3 Electrical Interface.

The transmitter has the following interfaces:

2.3.1 Power Input

- a) The transmitters operate off a 9Vdc-16Vdc unregulated voltage source.
- b) This input is switched and protected against reverse polarity.
- c) Typical power input current consumption is 160mA.

2.3.2 Video Input.

- a) The video input accepts RS170, CCIR, NTSC or PAL signals.
- b) Input voltage is 1Vp.p with a negative sync tip of 0.3V.
- c) The input impedance is 75 Ω (ohm).

2.3.3 Audio 1 and Audio 2 Inputs.

The audio inputs accept signals of 1Vp.p. and have an input impedance of 600 Ω (ohm).

2.3.4 RF output to antenna.

- a) The main RF output connector is a 50 Ω (ohm) MMCX receptacle.
- b) The RF output power is approx. 70mW.

2.4 Interconnecting.

The interface to/from the transmitter is:

- a) Power/Video Input.

LEMO ECG.00B.304.CLN
 or Equivalent

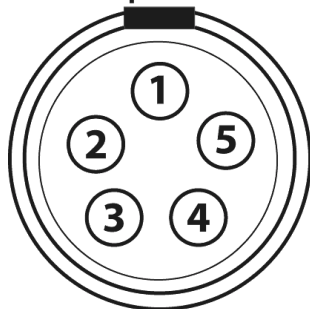


Pin Number	Function
1	Power Return
2	Video Input
3	Video Return
4	Power Input

Figure B – Power/Video

- b) Audio/Video Input.

LEMO ECG.0B.305.CLN
 or Equivalent



Pin Number	Function
1	Audio Return
2	Audio 1 Input
3	Audio 2 Input
4	Video Input.
5	Video Return

Figure C – Audio/Video

2.5 Mechanical

2.5.1 Mounting.

Mounting can be done in one of the following methods:

a) Clamping.

Clamping (or hard mounting) is the only method of mounting in all fixed installations.

Clamping is the preferred method of mounting in all mobile installations where most electrical interfaces are used. This is due to the connector and cable weight.

b) Clip on.

Avalon RF offers a clip on kit. This method is recommended when only one or two interfaces are in use.

c) Velcro[®] to a flat surface.

Using Velcro[®] to secure the transmitter is recommended when only a few interfaces are in use.

d) Drop-in.

The transmitter can be dropped into a bucket mounted on the side of the video camera, like the ones usually found in ENG service.

2.5.2 Mechanical Data.

- a) Size 2.45" x 1.24" x 0.66 (see Figure D)
62mm x 31mm x 17mm
- b) Weight <5.6 oz.
<158 gram
- c) Shipping weight <32 oz.
<900 gram

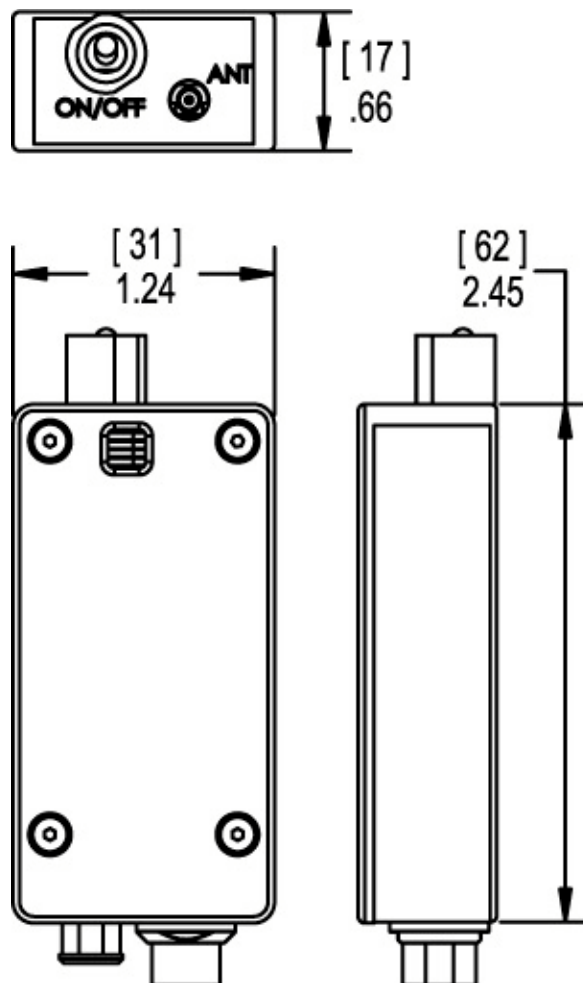


Figure D – TX618M Mechanical Outline

2.6 Environmental Conditions.

The TX618M Series is designed to meet the following environmental conditions:

- 2.6.1 Operating temperature -4° to 122° F
-20° to 50° C
- 2.6.2 Storage temperature -13° to 150° F
-25° to 65° C
- 2.6.3 Vibration 1.5G, from 10Hz to 2KHz, sine wave, 3 axis
- 2.6.4 Shock 15G, 25msec, half sine wave, three axis
- 2.6.5 Humidity 5 to 95%, non-condensing
- 2.6.6 Inclination Any
- 2.6.7 Altitude -1500 feet to 15,000 feet
-450 meter to 4,500 meters

3. Operating the transmitter.

Before applying power, make sure all connectors and all antennas are hooked up.

NOTE

The transmitter will not transmit unless it has an antenna.

3.1 The transmitter has two operator controls and one indicator:

a) Channel select.

Units that have a manual synthesizer have a 4 position dip switch that selects a channel number (from 1 to 16). The preset channel numbers are defined by a label on the side wall of the transmitter.

b) On/Off

4. Ordering information

4.1 Base models.

TX418M	UHF VSB modulated, output power (OP) of 70mW
TX518M	900-928MHz, FM modulated, OP of 70mW
TX618M	2.4GHz-2.483GHz, FM modulated, OP of 70mW

All units come with the following standard accessories:

- 4.1.1 Omni directional $\frac{1}{4}$ wavelength whip antenna
- 4.1.2 A 3-foot power cord with flying leads to connect to a customer specific battery pack.
- 4.1.3 User guide & operating manual (this manual).
- 4.1.4 A reusable carton.

4.2 Options.

- 4.2.1 Option 00 – European version (TX418M only).
Tunes from 470MHz to 860MHz with European channel spacing.
- 4.2.2 Option 03 – Wideband (TX518M only)
- 4.2.4 Option 04 – Extended tuning range
- | | |
|--------|--------------------|
| TX418M | not available |
| TX518M | 900MHz-1.3GHz |
| TX618M | 2.150GHz to 2.5GHz |
- 4.2.5 Option 05 – Extended tuning range (TX518M-2 only)
Tuning range from 1.3GHz to 1.7GHz
- 4.2.6 Option 06 – Extended tuning range (TX518M only)
Tuning range from 1.7GHz to 2.15GHz
- 4.2.7 Option NM – Basic unit installed in an outdoor NEMA 4 box with an internal power and signal distribution panel.
- 4.2.8 Option SP – Basic unit installed in an outdoor NEMA 4 box with solar panel, charger and internal lead-acid battery

4.3 Recommended accessories.

4.3.1 Antennas

Omni-directional antennas for mobile application:

Gain	UHF	900MHz	2.4GHz	Comments
0dbi	AX400	AX500	AX600	¼ wave whip
3dbi		AX503CP	AX603CP	RHCP whip
4dbi		AX504LS	AX504CP	RHCP Log Spiral
6dbi	AX406CP		AX606	Vertical polarized whip
8dbi			AX608	Vertical polarized whip

Directional antennas for ground fixed applications:

Gain	UHF	900MHz	2.4GHz	Comments
6dbi	AX406LP	AX506LP		Log periodic
10dbi			AX610CP	Circular polarized panel
12dbi	AX412YG	AX512YG		Vertical polarized whip
13dbi			AX613CP	Vertical polarized whip
16dbi			AX616CP	Vertical polarized whip
24dbi			AX624PD	Vertical polarized whip
27dbi			AX627PD	Vertical polarized whip

4.3.2 Cables

T.B.D.

4.3.3 Battery Packs

- a) BAT80 – 14.4V/80WH Li-Ion battery pack with charger and power cable to transmitter. Will run a TX618M transmitter for 20 hours.
- b) BAT92 – 14.4V/92WH Li-Ion battery pack with charger and power cable to transmitter. Will run a TX618M transmitter for 23 hours.