

SkyWave DX250

TELSTAR

www.telstar-electronics.com

Mobile RF Linear Amplifier



Features

- High Reliability Design
- +13.8V_{DC} Operation
- All Mode (AM, FM, SSB)
- Frequency Coverage (26-28MHz)
- Temperature Tracking Class-AB Bias
- High Output Power / Low Harmonic Content
- MRF454 Narrowband Tuned Configuration
- Carrier Operated or Manual¹ Transmit / Receive Switching
- Continuous Reverse Voltage Protection without Damage to Amplifier or Fuse
- Thermal Shutdown
- Fuse Protected
- Selectable SSB Delay
- Power & Transmit Indicators
- Low Stand-By Power Consumption
- High Temperature Teflon[®] Wire
- Rugged Black ABS Chassis – UL 94V0 Rated
- Premium Components & Printed Circuit Board

¹ Contact Telstar Electronics for details on this feature.

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Installation / Operating Instructions

1. Find a suitable place for the amplifier to reside in the system. Avoid areas that are confined and could reduce proper convection airflow around the heat sink. This will cause overheating and can result in premature failure of the amplifier.

IMPORTANT – *The amplifier should always be orientated in the vehicle so the heat sink faces upward for maximum convection cooling. Make certain the heat sink doesn't have objects touching it and is unobstructed to upward airflow.*

2. Connect the power wires to a source capable of delivering 13.8 V_{DC} @ 15A with red being positive, Black negative (ground). The following are recommendations as to the gauge of wire used to supply from the source for various lengths.

NOTE - The further the amplifier is from the power source, the larger the cross-sectional area of the wire needs to be. It's important to note that in many installations, the Black (negative) wire can be short and connected locally to the chassis of the vehicle, providing that it presents a "vehicle ground".

Length (Feet)	Recommended Wire Type
1-15	AWG #12 Stranded
15+	AWG #10 Stranded

3. Attach a 50-Ohm impedance coaxial cable from transceiver to INPUT connector on amplifier.
4. Attach a 50-Ohm impedance coaxial cable from the OUTPUT to the antenna system.

IMPORTANT - *Make certain the antenna system has a VSWR of 1.5:1 or less and is capable of handling up to 250W RMS.*

5. Move the ON/OFF switch on the front panel to the ON position to engage amplifier.

NOTE - With the switch in the OFF position the input and output of the amplifier are coupled together, effectively making the amplifier transparent to the system.

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6. Move the AM/FM/SSB mode switch to the proper position for the mode you will be operating.

NOTE - This completes the installation. You are now ready to operate...

7. Key the AM/FM transmitter and speak normally into the microphone. The red LED indicator above the AM/FM/SSB switch should illuminate, showing the amplifier has changed to the transmit mode. When the radio goes back into the receive mode, the LED indicator will turn off.

NOTE – The transmit indicator LED will operate somewhat different when transmitting SSB signals. This is due to the lack of RF carrier supplied by the radio when no audio is present at the radio microphone.

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SkyWave DX250 Revision "C"
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Troubleshooting

Symptom	Possible Cause	Possible Solution
Unit inoperative. (Power LED indicator doesn't illuminate.)	Poor connection of power wires.	Check power wire connections.
	Power wires connected backward.	Check power wire polarity.
	Internal fuse blown.	Remove bottom cover ² and check fuse integrity.
	Power source inoperative.	Check power source integrity.
Unit inoperative. (Power LED indicator is illuminated.)	No RF drive.	Check integrity of input coaxial cable.
	Insufficient RF input drive.	Check transmitter for minimum drive requirement. See " Electrical Specifications " for minimum RF drive.
Internal relay chatters during transmit.	AM/FM/SSB mode switch in wrong position for SSB operation.	Select proper transmitting mode.
	Insufficient RF input drive.	See " Electrical Specifications " for minimum RF drive.
	Inadequate power source.	See " Electrical Specifications " for current requirements.
No output.	Input & output coaxial cables reversed.	Check for proper coaxial cable orientation & attachment.

² If the unit is still under the 90-day warranty period, removing the bottom cover will void warranty. Contact Telstar Electronics for return authorization.

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Electrical Specifications

Parameter	Conditions/Notes	Value
Operating Modes	-	AM, FM, SSB
Voltage Requirements	Typical	+13.8V _{DC}
	Maximum	+16V _{DC}
DC Current	-	15A Maximum
RF Input Power	Minimum	500mW (AM, FM)
	Maximum	12W-RMS (AM, FM) 40W-PEP (SSB)
RF Power Output	@1dB Compression	200W-RMS (AM/FM) 280W-PEP (SSB)
2nd Harmonic	100W CW@28MHz (Typical)	-49dBc ³
3rd Harmonic	100W CW@28MHz (Typical)	-45dBc
Input / Output Impedance ⁴	-	50-Ohms
Input / Output Connectors	-	SO-239
Input SWR ⁵	Typical	1.2:1
Power Gain	Typical	15dB @ 28MHz
Bandwidth	0.5dB Flatness	26-28MHz
Class-AB Bias Current	-25°C to 100°C Heat Sink Temperature	100mA +/-30mA
Fuse	ATO - Automotive Type	20A
SSB Relay Dropout Delay	Typical	1.0 Second
Stand-By Power	Typical	150mW
Reverse Voltage Protection	No Damage to Amplifier or Fuse	Continuous
Thermal Shutdown	Heat Sink Temperature	~120°C
Chassis	UL 94V0 Rated	Rugged Black ABS Plastic
Printed Circuit Board	Solder Mask & Silkscreen	FR4 Material
Weight	-	~6 Pounds

³ Decibels below carrier.

⁴ An antenna system with an SWR of 1.5:1 or less is critical for proper amplifier operation.

⁵ Standing Wave Ratio.

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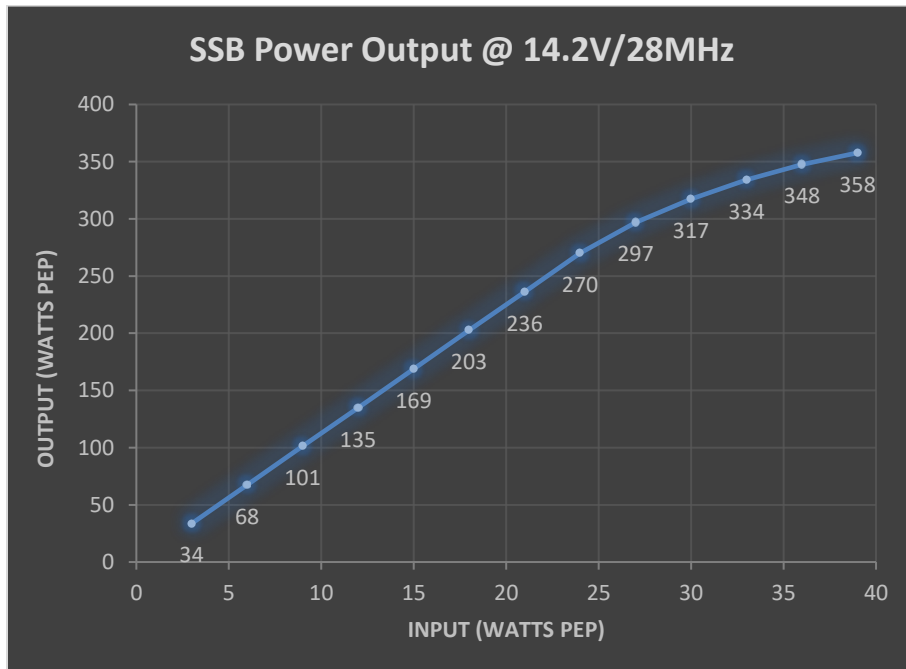
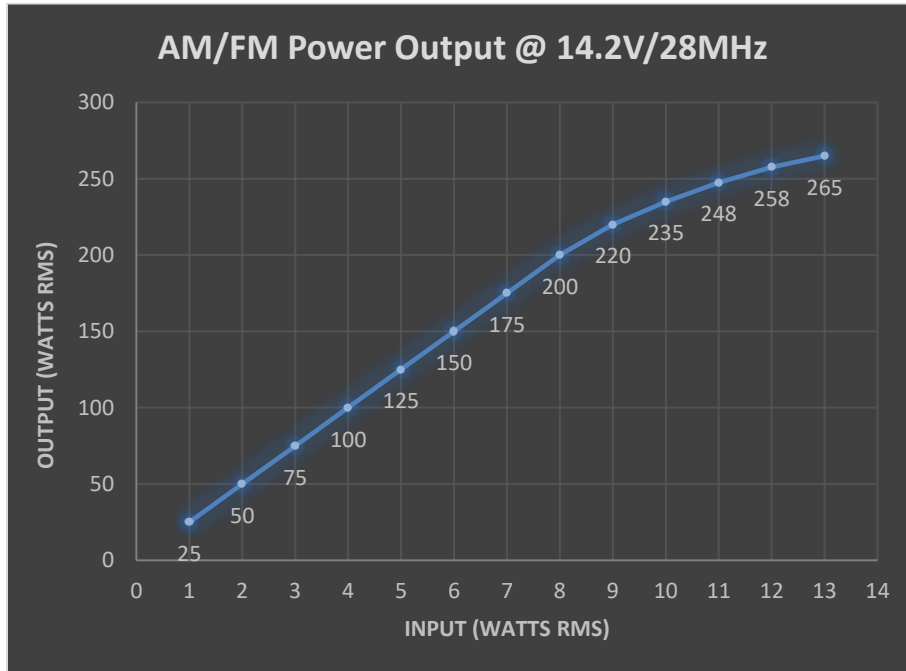
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RF Performance



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