

## Model STR-1800

# Multi-Mode UHF/VHF Mobile Data Radio

## Flexible Solution for Reliable Narrowband Communications

### Applications

- Long Range VHF/UHF Data Telemetry Links
- Distributed Power Control Systems
- Remote Monitoring of Oil/Gas, Water/Wastewater Stations
- SCADA Primary and Relay Stations
- Small / Micro / Nano / Cube Sat TT&C Links
- UAV, RPV and Similar Remote Control and Monitoring
- Supports ARTM PCM/FM and SOQPSK

### Key Features

- Multiple Waveforms for 6.25, 12.5, and 25 kHz Channels
- Multi-Mode Analog and Digital Transceiver
- Embedded Audio Tone FM and Digital Modem
- Field Upgradable for Enhanced Performance



The STR-1800 family of VHF/UHF transceivers represent a MIL-spec ruggedized land mobile solution for applications requiring high power (up to 45 Watts) as well as high reliability. The ultra-compact size of these radios make them ideal for a wide variety of applications. The STR-1800 Multi-Mode Data Radio is a new generation of the STR line of mobile data radios that provides increased performance and functionality for deployment in legacy 25 kHz and newer 12.5 kHz and 6.25 kHz channels subject to FCC narrowbanding mandates.

The STR-1800 provides one of the fastest transmit turn-on and receive recovery times of similar high power products, making it an ideal choice for time-critical data telemetry applications. Supporting 25 kHz, 12.5 KHz, or 6.25 kHz channel spacing, the radio supports data speeds up to 19200 baud.

The main chassis is one-piece, die-cast aluminum, providing a product which is resistant to impact while also being extremely effective at heat dissipation. The thermal design provides for a high ratio of transmit to receive duty cycles. Up to 32 Configuration Profiles can be stored with user-defined link names and recalled with a single command, simplifying fast and accurate configuration changes.

A front panel DB-9 and DB-25 connectors provide all digital and analog user interfaces including those required for programming radio frequencies, bandwidths, and transmit power levels, as well as audio input/output, push to talk, and active channel selection. Rear panel connections are provided for the RF interface as well as primary power (+12 VDC).

SRI is a leading supplier of advanced products for defense, civil, and commercial satellite, aircraft and missile test range, and test & measurement data communications and telemetry applications and has been able to leverage knowledge and experience in these markets to apply proven, reliable military SOQPSK-TG telemetry transmission techniques to commercial Land Mobile Radio (LMR) data communications. Previous industry practices relied on variations of FSK and GMSK techniques to meet narrowbanding 6.25 kHz channel requirements. This breakthrough significantly improves link reliability and performance for applications requiring extended operating ranges over difficult terrain.

The radio features an output power level up to 45 Watts and is available for domestic and most international uses supporting analog and digital signals. Various models of the product family cover most commonly utilized VHF or UHF frequency bands. Different versions of the radio's are certified through the FCC, IC, ASA, and ETSI.



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## **RF Specifications**

Frequency Range:  
STR-1810 : 136 to 174 MHz  
STR-1820 : 400 to 470 MHz  
STR-1830 : 400 to 470 MHz (ETSI/Other Countries)  
STR-1835: 450 to 520 MHz (ASA)  
STR-1840: 136 to 174 MHz (ETSI/Other Countries)  
Consult Factory for Other Frequency Bands  
Channel Spacing: 25/12.5/6.25 kHz  
Preset Channels: 8  
Stability: +/- 0.0001% of Fc  
Duty Cycle:  
Capable of 30 seconds continuous transmit or 25% continuous transmit/receive duty cycle  
Compliance:  
Various models available for:  
FCC  
IC  
ETSI  
ASA  
type certification. Contact factory for further information

## **Analog Modulation**

Type: FM (V.23 FSK)  
AAR Fast FSK (FFSK)  
Rated Deviation:  
+/- 5 kHz for 25 kHz Spacing  
+/- 2.5 kHz for 12.5 kHz Spacing

## **Digital Modulation**

Type: SOQPSK-TG  
Data Rates: 1200, 4800 bps  
Occupied Bandwidth: 25 kHz  
12.5, 6.25 kHz (FCC Narrowband Compliant)

## **Interface Conversion**

User In/Output Mode: V.23 FSK, RS-422  
Over-The-Air Mode: V.23 FSK, SOQPSK

## **Transmit Characteristics**

Output Power: Selectable between 5, 10, 25, and 40 Watts  
[May be limited in specific regions of operation]  
Output Protection:  
Operating into a 10:1 VSWR of any phase angle will not damage the transceiver  
Spurious/Harmonic Output: -70 dB below rated power  
Modulation Sensitivity:  
Adjustable from 50 mvolt RMS audio input signal for 60% of rated deviation  
Frequency Response:  
Flat from 300 to 3000 Hz (no pre-emphasis)  
Turn-on Time:  
Within 25 msec (UHF) or 40 msec (VHF) of keying, radio reaches 90% of rated output power.  
Output SNR: 30 dB minimum fully modulated  
Audio Input Impedance: 50 Ohm

## **Receive Characteristics**

Sensitivity: 0.25 uV (12 dB SINAD) typical  
Dynamic Range:  
0 to -100 dBm for 23 dB SINAD (1 kHz Tone at 60% dev)  
Spurious/Image Rejection: 70 dB minimum  
Intermodulation: 70 dB minimum  
Selectivity:  
75 dB typical for 25 kHz spacing  
65 dB typical for 12.5 kHz spacing  
50 dB typical for 6.25 kHz spacing  
Recovery Time: 30 msec from removal of key signal  
Audio Output:  
Adjustable from 60% dev for 1 V p-p output into 600 ohm resistive load for 1 kHz input signal  
Frequency Response:  
Flat from 300 to 3000 Hz (no de-emphasis)  
Overload Protection:  
A +28 dBm input continuous applied to input will not cause any permanent damage

## **Programming Control Specifications**

Platform: Windows compatible PC  
Preset Channel Controls:  
Frequencies  
Bandwidths  
Output Power Levels  
Interface:  
Special control cable from serial COM port to STR-17xx

## **Other Specifications**

Chassis: ~ 2" High, ~ 6" Wide, and ~ 7" Deep  
Weight: 3 lbs  
Connectors  
1 UHF for RF Input/Output  
1 25 Pin D (Front Panel) for:  
Programming Interface  
Audio/Data Input/Output  
Preset Channel Selection  
PTT  
1 9 Pin D (Front Panel) for:  
Programming Interface  
Digital Data Input/Output  
Primary Power  
13.6 VDC ± 15% ( transmit 12.5 A, receive 0.7 A)  
MTBF: 25,000 Hours  
Operator Adjustments: None  
Temperature  
-30° TO 60° C (Operational and Storage)  
Vibration  
2 g rms 5 Hz-300 Hz sinusoidal, 3 axes, continuous  
Shock  
10 g half sine, 15 msec; 3 axes  
Humidity  
Up to 100% 'non-condensing'  
Altitude  
10,000 feet operating and 40,00 feet non-operating

\* All specifications subject to change without notice or obligation to retrofit.

Consult factory for custom options and/or alternate specifications