



DRAFT

## **DRTXM2 Highway Advisory Radio Transmitter**

### **User's Manual**

#### **FCC COMPLIANCE**

This AM transmitter complies with Part 90 of the FCC rules.

FCC ID: \_\_\_\_\_

FCC Equipment Type: 34-366

Formal Model Number: DRTXM2

Frequency Range: 0.530 – 1.700 MHz

Emission Designator: 6A3 (6K006A3)

Power: 10 Watts

Highway Information Systems, Inc.

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## **I. Introduction**

This document describes the installation and operation of the DRTXM2 AM transmitter designed for highway advisory radio applications.

## **II. Installation**

### **A. External Connections**

1. Under normal conditions, when the transmitter is mounted in the Black Max rack unit, power is fed to it through the back plane and no external power connection is needed.
2. When operating in a standalone configuration, power is fed to transmitter through the two-pin Molex connector near the rear of the printed circuit board using a RED (+) and GREEN (-) pigtail jumper. Voltages are as follows:

Nominal: 12 Volts DC

Normal Range: 10.4 to 13.6 Volts DC.  
Maximum Range: 10 to 14 Volts DC.  
Current is typically less than 2 Amps DC.

3. RF output is from front-panel UHF connector with nominal output impedance of 50 Ohms and nominal power level of 10 Watts.
4. Audio input is into rear-panel RCA connector J1. Nominal level is 0.775 V rms for 100% Modulation.

## **B. Internal controls**

Some of the internal controls can be accessed through the holes in the rear panel. Access to others requires removal of the side panel by removing the 8 Phillips head screws holding it in place.

1. SLIDE SWITCH S3 FOR LIMITER IN / OUT: The limiter switch is typically IN during normal operation. The limiter may be switched OUT under special conditions such as when testing.
2. SLIDE SWITCH S4 FOR LOW-PASS FILTER IN / OUT: The low pass filter (LPF) switch is typically IN for normal operation. The low pass filter may be switched OUT under special conditions such as when testing or when operating with an external filter.
3. DIP SWITCH S1 FOR INPUT SELECT: Under normal conditions, when the transmitter is mounted in the Black Max rack unit, the audio signal from the digital recorder player is fed to the transmitter through the backplane and switch S1 segment 2 should be ON and all others should be OFF. Under standalone operation, when a test signal is being fed through the rear-panel RCA input jack J1, switch S1 segment 1 should be ON and all others should be OFF.
4. DIP SWITCH SEGMENT S2-E FOR TRANSMITTER ENABLE: Under normal operation, the transmitter enable signal is fed to the unit from the back plane. When operating under standalone conditions DIP switch S2 segment E, which is the fifth segment from the top, should be ON (right) to enable the transmitter RF output.
5. **DIP SWITCH SEGMENTS S2 A, B, C, D FOR FREQUENCY SELECT: The four upper segments of dip switch S2 select the frequency divider and must remain unchanged from the positions set when the transmitter was manufactured to prevent damage to the output transistors.**

## **III. Operation**

### **A. Front-Panel Controls**

1. POWER Switch turns transmitter on.

2. POWER LED indicates power on.
3. MEASURE switch selects function of 20 LED bar-graph display as VSWR, FORWARD power, or REFLECTED power.
4. TRANSMIT LED indicates transmitter is in transmit mode.
5. LIMIT LED indicates limiter is enabled and is actively limiting modulation.
6. MODULATION LEDs indicate percent modulation.

## **B. POWER Switch**

The power switch is located at the bottom of the front panel of the transmitter. Switch it on to turn on the transmitter power. The POWER LED will illuminate.

## **C. MEASURE Switch**

The MEASURE switch is located at the top of the front panel. The MEASURE switch controls the function of the 20 LED bar-graph display. In the VSWR position it indicates the Voltage Standing Wave Ratio, which tells how well the antenna is tuned. The lower the reading (the fewer LEDs that are lit) the better the VSWR. The normal reading for the VSWR meter will be between 0 (no LEDs lit) and 1.6 (five LEDs lit).

In the FORWARD position the LED bar-graph display indicates how much power the transmitter is producing.

In the REVERSE position the LED bar-graph display indicates how much power is reflected by the imbalance in the antenna. A higher VSWR reading corresponds with a REVERSE power reading. The actual power that is transmitted can be determined by subtracting the REVERSE power measurement from the FORWARD power measurement.