

**AMERICAN SIGNAL COMPANY
AM TRANSMITTER
QDC HAR 100**



**Equipment Manual: HAR 100
Transmitter Rev. 01**



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Table of Contents

Section	Description	Page
One	Introduction to the QDC HAR 100	3
Two	Equipment Specifications	5
Three	Installation and Operation	6
Four	Schematic Diagram	7
Five	Factory Service Procedure	9

Section One

Introduction to the QDC HAR 100

In 1977, the Federal Communications Commission authorized a one-way communications system with the motoring public called Travelers Information Service. This service is authorized under FCC Rules and Regulations §Part 90.242 and Licensee Eligibility under §Part 90.17(a) that allows only local governmental agencies to obtain a license and operate these Travelers Information Systems (TIS) and Highway Advisory Radio (HAR) stations.

The QDC HAR 100 is a crystal controlled, solid-state, high efficiency AM transmitter. The design incorporates a high efficiency Class D RF Final Amplifier and a Class S high efficiency modulator. The QDC HAR 100 is suitable for both solar and battery operation. The power output for the QDC HAR 100 is continuously variable from 0.1 watts to 10 watts and does not require any complex power and modulation adjustments. The power adjustment is made at a single control. The QDC HAR 100 is equipped with both a bi-directional power meter and a high performance audio processor with over 25 dB dynamic range to ensure that your transmission is always four and clear.

The QDC HAR 100 is FCC Certified for applications in the travelers Information Service. The FCC Identifier QDC HAR 100, is located on the equipment ID label on the outside cover. Examine the ID label upon installation to ensure that the frequency indicated on the label matches the frequency assignment shown on the station license or Temporary Authority for operation. The Station Temporary Authority is called an STA.

Check with your vendor or representative to make sure that your license and your station is within FCC Compliance.

The QDC HAR 100 comes equipped with the following:

- (1) This manual
- (2) Manual showing schematic diagram
- (3) Manual showing parts locator
- (4) Mounting screws
- (5) Power connector terminal block
- (6) Retaining block
- (7) Hardware sets for the power connector
- (8) Spare fuses

Make sure all of these items are present when unpacking the unit.

Section Two

Equipment Specifications

DISPLAY	Power Efficient Electro-Luminous/Standby Constant VSWR and Power Sampling
POWER SUPPLY	Switch Mode Power Supply 110, 220, 24V
ELECTRICAL	
Audio Output Level	-30 to +3 dBm, Adjustable
Audio Output Impedance	600 ohm balanced, Built-in Audio Limiter
Local Microphone Input Level	-60 to -30 dBm, Adjustable
Local Microphone Input Impedance	200 to 1000 ohms, unbalanced
TELCO Audio Input Impedance	600 ohms
Local Control Storage Time	35 Minutes
Remote Control Storage Time	20 Minutes
Number of Message Channels	8 Channels Local, 5 Channels Remote
Distortion (400 Hz, -5 dam)	Less than 5% THAD
Noise (Ref, 1 KHz, 0 dBm)	-45 db
Frequency Response	+/- 3db 100 Hz to 5 KHz
Modulation:	Pulse Width Modulation
Power Requirements	12 Volts DC, Battery or by and AC adapter
Protection	No Load/Overload/RF/Telco/Power Built-in 3000-Volt Internal Surge Protection
MECHANICAL	
Dimensions	3 1/2" H by 14" deep by 19" wide
Mounting	Standard EIA Equipment Cabinet
Weight	About 5 1/2 Lbs.
CONNECTIONS	
Power	On a 10 Pin Terminal Block
Audio Output Balanced	Part of 10 Pin Terminal Block
Monitor Audio Speaker	Part of 10 Pin Terminal Block
Microphone	Permanent Connection
TELCO	RJ-11 Telephone Line
Program	Local RJ-11 Powered Jack

Section Three

Installation and Operation

Safety Notice

A factory-authorized and trained representative of the American Signal Company, or other experienced electrician in accordance with national, state and any other electrical codes having Jurisdiction, should perform this installation. All work should also be performed under the direction of the service crew safety foreman.

Installation

The QDC HAR 100 is designed to be installed on a common equipment backplane that is bonded to earth ground. All necessary equipment should be mounted and grounded to the common backplane. The QDC HAR 100 enclosure provides necessary EMI/RFI shielding and prevents interference between components, depending on the options of your stations equipment.

Power Connector

The power control connector, J1, is the 4-pin terminal block type connector at the bottom of the QDC HAR 100. From left to right the pinout is:

- Pin1: +26.4 Vdc
- Pin2: Ground (power supply return)
- Pin3: Off A (short to Off B to turn transmitter Off)
- Pin4: Off B (short to Off A to turn transmitter On)

Use 20 awg stranded wire, or larger for all connections at the power connector. Make sure that the length of wire for these connections is as short as possible, 2 feet maximum.

Audio Connector

The audio connector is the RCA phono type connector beside the power connector. The audio input is transformer coupled, so polarity need not be observed. The audio level (-23 to +8 dBm) is not critical and need not be adjusted for changes in carrier level.

Antenna Connector

The antenna Connector, J3, is the BNC type connector located at the top of the unit. Use 50-ohm coaxial cable, RG-58a/u or equivalent. We recommend that all installations use a coaxial lightning protection device such as a Polyphaser IS-50UX-CO. The antenna system should be a 50 ohm system and should be installed in such a manner as to comply with FCC Rules (47 CFR 90.242).

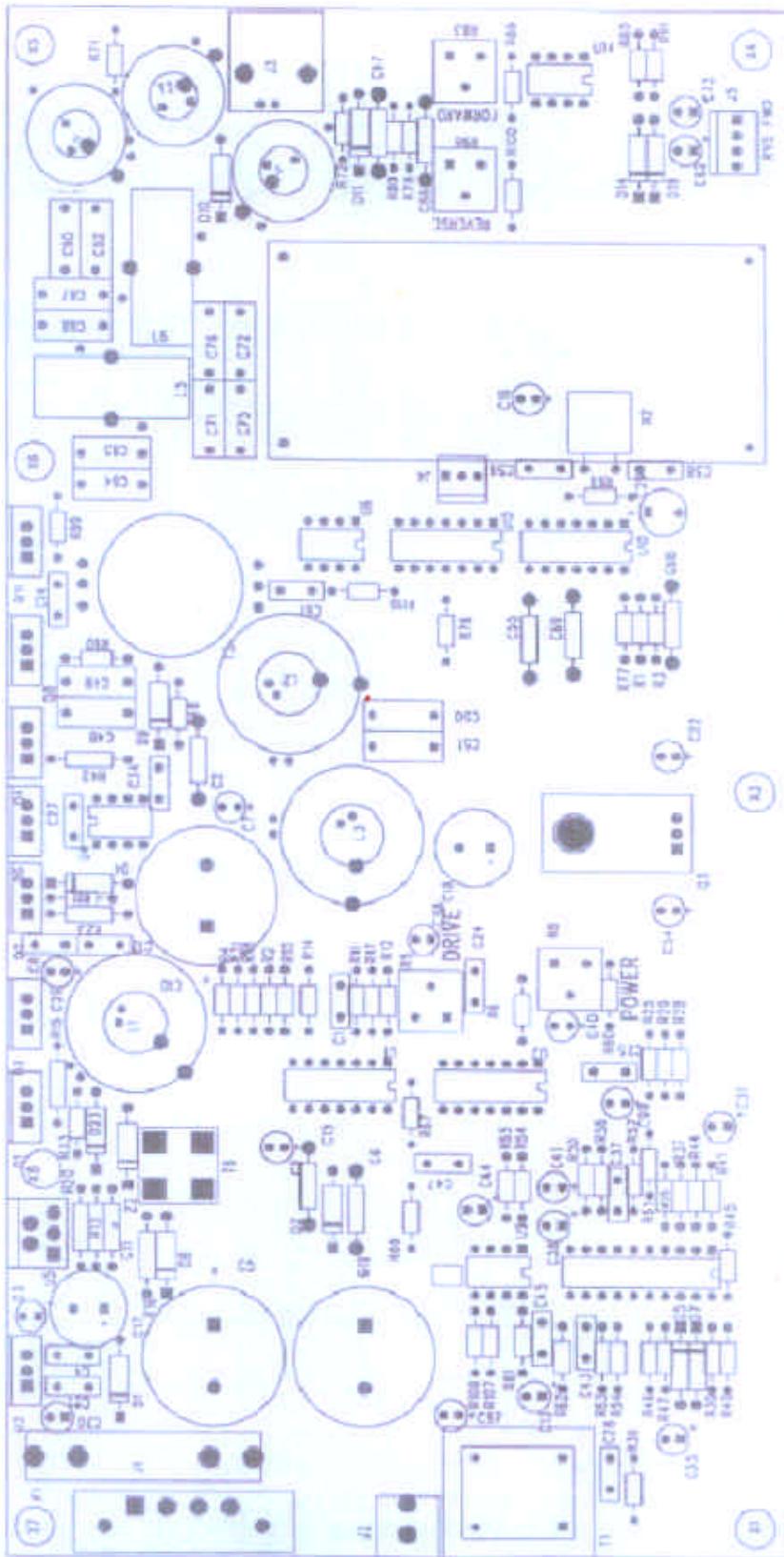
Tune the antenna system for the minimum reflected power indicated on the LCD Display. Do not operate the transmitter for long periods of time with a very high VSWR.

Power Adjustment

If it is necessary to reduce the power output of the transmitter in order to comply with FCC Rules regarding field strength:

- (1) Remove the top cover of the QDC HAR 100
- (2) Locate the power control, R8
- (3) Adjust the power control for the desired forward power, to 10 watts, on the LCD Display
- (4) Reinstall the top cover.

Section Four



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Section Five

AMERICAN SIGNAL COMPANY AmSig® Limited Warranty

Limited Warranty. AmSig warrants all highway advisory radio systems against manufacturing defects in materials and workmanship for one year from the date of shipment from AmSig's factory. Within this period AmSig will repair or replace equipment returned to the factory prepaid, without charge for parts and labor. After repair or replacement, AmSig will ship the equipment back to the Buyer by the same mode or type of delivery used by the Buyer to send the equipment to AmSig (overnight courier, same class of mail or UPS delivery, freight line, etc).

This limited warranty does not cover (a) damage or failure caused by or attributable to acts of God, abuse, misuse, improper or abnormal usage, faulty installation, improper maintenance, lightning or other incidents of excessive voltage; (b) any repairs other than those provided by an AmSig authorized service facility; or (c) transportation costs other than as provided above; (d) damage or failure caused by any difficulty or impairment in the ability to calculate and compare the date data between the twentieth and twenty-first centuries (commonly known as the "Y2K" problem) or to recognize leap years-all such date related problems are addressed in the Section entitled "Year 2000 Warranty".

Certain components of the equipment are covered by warranties from manufacturers other than AmSig. Copies of those warranties will be delivered to the Buyer along with the equipment AmSig has no liability for and does not provide warranty service for these items, which include engine, battery or batteries, battery charger, hydraulic pump system, tires, wheels, axles, brakes, and trailer hitch (if any). The Buyer should consult the applicable manufacturer for a specific warranty regarding a specific component. AmSig's limited warranty does not cover any damages to parts otherwise covered by AmSig's limited warranty if and to the extent that such damages are caused by or result from a defective or malfunctioning item warranted by another manufacturer.

AmSig's limited warranty obligation shall be automatically suspended upon the Buyer's failure to pay any obligation owed to AmSig according to the terms agreed upon between them (whether pursuant to this Quotation or any other agreement between them). Such suspension shall continue until the Buyer has paid such obligation in full. Notwithstanding the foregoing, AmSig shall honor its limited warranty obligation for any equipment that has been sold by the Buyer, unless the owner of the equipment is in default under any obligation to pay the Buyer for such equipment.

YEAR 2000 WARRANTY

In addition to the foregoing, AmSig warrants to owner that its products sold hereunder, in the form delivered by AmSig, will without impairment in the functioning of the product, be able to calculate and compare date data between the twentieth and twenty-first centuries, and will recognize the year 2000 as a leap year. However, this limited Year 2000 Warranty shall apply if (i) AmSig's products are used properly and in accordance with the documentation provided by AmSig, (ii) all associated products, such as, but not limited to hardware, software, and firmware, used in combination with the product exchange date data with AmSig's products, and (iii) AmSig is provided with written notice of a defect or other problem claimed under this limited Year 2000 Warranty within one (one) year of such shipment of said AmSig product.

As owner's sole and exclusive remedy under these warranties, AmSig shall, in its sole discretion either (i) provide services to repair a nonconformity with these limited warranties, or (ii) replace the nonconforming component of its product. THE FOREGOING IS OWNER'S SOLE AND EXCLUSIVE REMEDY FOR BREACH OF THESE WARRANTIES.

EXCEPT AS PROVIDED ABOVE, AmSig MAKES NO EXPRESS WARRANTIES. FURTHER, AmSig MAKES NO WARRANTY OF MERCHANTABILITY AND NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSES WHATSOEVER WITH RESPECT TO THE EQUIPMENT BEING SOLD.