

**MAST HEAD**

**GaAs-FET PREAMPLIFIERS**

**EVV 2000 HDX \* EVV 700 HDX**

**INSTRUCTION MANUAL**

## INTRODUCTION

Receiver sensitivity and following the DX performance of 2m- and 70cms Transceivers can be described with their noise figure, which normally is in the range of 6 ... 8 dB.

Remarkable improvement in sensitivity can be achieved by the use of a low noise preamplifier such as the EVV Line of models in front of the receiver/transceiver.

The total noise figure then reduces to about 1 dB, which means an improvement of 5 ... 7 dB!

If the EVV preamplifier is located closed to the antenna system, receiver sensitivity also can be improved by the cable losses, which results in a total improvement of 6 ... 10 dB!!

The input stage of both EVV models is equipped with a dual gate GaAs FET, which performs with a noise figure of less than 1 dB and a good intermodulation performance.

These new EVV HDX models are employing a second stage amplifier, running in Class A push pull for low noise figure and superior large signal handling.

Beside the PTT receive/transmit switching mode, a RF VOX circuit allows comfortable and reliable Receive/Transmit ( R/T ) switching.

The output bandfilter efficiently selects unwanted signals away from the amateur radio frequency band for lowest distortion.

## POWER SUPPLY and TRANSMIT / RECEIVE SWITCHING

All EVV HDX preamplifiers require a DC supply of about 12,5 ... 15 V DC at 300 mA.

12,5 V should be regarded as a minimum for operation of the preamp closed to the power supply.

For mast mounting please allow for additional voltage to compensate for the voltage losses across the feeder cable.

A supply voltage of 13,8 V is fine for typical coaxial cable lengths of less than 20 m.

Cable lengths of up to 50 m require a higher supply with 14 - 16 V as recommended.

The supply can be fed to the preamplifier by two separate ways:

- **Via a separate DC cable**

A dual wire line connecting the UHF PL-259 plug in the middle of both N-type connectors allows operation and switching without any additional sets such as a remote controller.

The DC voltage has to be applied for the RECEIVE status, while TRANSMIT the supply **must** be switched to OFF. This simply can be arranged by relays or solid state switches on side of the transceiver used.

If the supply isn't switched to ZERO while the station goes to transmit modes, the preamplifier gets RF power spikes appearing to the output.

We hardly recommend to avoid this, but the internal RF VOX circuit even then will detect the RF power and switch over to Transmit mode.

In this operation case the maximum RF power allowed is less than with an exactly PTT operation - 200 W max. on 2m and 100 W max. on 70 cm.

- **Via the coaxial cable line**

The most common way to feed and switch the mast head preamp became the use of a remote controller unit, such as the dressler EVV-INTERFACE.

The INTERFACE will be located between the transceiver (or final linear amplifier) and the antenna preamplifier in use.

Basically all descriptions as before can be applied to that way how to operate the EVV HDX preamplifier.

When the INTERFACE connects PLUS of the supply voltage to the center of the coaxial feeder, the MINUS comes to the cable outer screen.

The operation DC voltage must be applied to the EVV in receive mode and must be switched to OFF in the transmit mode.

The INTERFACE can arrange this switching sequence by the PTT contact or by a logic switching voltage, whatever is offered by the specific transceiver model.

When the supply doesn't switch over to ZERO while TRANSMIT mode, the preamplifier is hardly loaded by RF power spikes to the output of the preamp circuit.

The EVV HDX is protected against that non allowed status, but this should be avoided.

In case of a non operative switching circuit or in case of quite low transmit power the internal RF VOX electronic circuit detects the RF power present and acts as an automatic T/R switch. To allow for SSB operation, the RF VOX runs with a delay time of typically 1,5 seconds.

## SETTING THE GAIN

This new line of preamplifiers allows to set the gain as desired by the ham operator by an internal high frequency T-attenuator.

The preamp is factory preset to a reasonable value of 16... 18 dB. If you like to reduce this gain You can get access to the gain setting by removing the top cover of the preamplifier. At the rear side of the RF shielded cabinet the red slot axis allows to set for the gain as follows:

turning clockwise = Gain increased up to it's maximum  
 counter clockwise = Gain reduced

## TECHNICAL PERFORMANCE

	EVV 2000 HDX		EVV 700 HDX	
Frequency range	144 - 146	MHz	430-440	MHz
-3 dB bandwidth	6 - 8	MHz	14 - 16	MHz
Noise figure	0,7 - 0,8	dB	0,8 - 0,9	dB
Gain ( adjustable inside )	3 ... 21 dB		4 ... 20	dB
Impedance	50 ohms	N-type	50 ohms	N-type
3rd order IP (out)	+ 25	dBm	+ 29	dBm
Insertion losses	0,06	dB	0,14	dB
Max. power in PTT mode SSB	750	W	500	W
Max. power in PTT mode FM	500	W	300	W
Max. power in VOX mode SSB	200	W	100	W
Max. power in VOX mode FM	100	W	50	W
Supply voltage	12,5 - 15	V DC	12,5 - 15	V DC
Supply current	280 - 300	mA	280 - 300	mA
GaAs FET employed	CF 300 C		CF 300 C	