



## FEATURES

- **RF and baseband scrambling**
- **Enhanced security modes**
- **Front panel adjustments for video and audio modulation**
- **Accepts stereo audio signal from a 4.5 MHz or baseband source**

The Modulating Video Processor II (MVP-II) is a feature and performance enhanced version of the original MVP scrambler. The MVP-II can be used for all STARCOM pay and addressable terminal/descramblers by emulating any previous Motorola encoder. The MVP-II is designed to allow increased flexibility in installation and more standard operating modes primarily in the areas of compatibility and signal security.

## EASY INSTALLATION

There are four user adjustments on the MVP-II: composite IF and sound IF levels, and video modulation and audio deviation adjustments. A user reference card is provided, located on the top cover, in addition to the operation manual, to help make the task of selecting the optimum operating mode an easy one.

## EASY TO USE

Along with the standard remote control interface the front and rear panel switches and display have been improved to provide operational information quickly and easily. Set up options can be selected either at the rear panel or through an access door on the top cover. An accessory package is included with each MVP that provides spare lugs for the terminal block as well as extra screws.

## STEREO COMPATIBLE

The MVP-II provides two stereo interfaces: 4.5 MHz and composite baseband. The desired interface is chosen via a switch on the rear panel and a Stereo LED on the front panel indicates when either mode is selected.



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## **REMOTE CONTROL OPERATION**

The MVP-II can be remotely controlled from all GI addressable controllers.

## **OPERATING MODES**

There are three basic operating modes in the MVP-II: RF, BASEBAND, and MIXED. In the RF mode, the MVP-II scrambles the video signal by suppressing the sync information. Timing and Data information are amplitude modulated (AM) on the sound carrier. When emulating a DS/E several multi-mode scrambling algorithms can be employed to provide enhanced signal security. In the BASEBAND mode, all the features of DS/E mode are available plus several baseband video inversion modes as well as audio privacy. The Baseband mode uses an inband data scheme that is MULTIPOINT compatible and does not require AM modulating on the sound carrier. The MIXED mode is used when both RF and baseband type terminals reside in the same system. Both data formats are transmitted and the operating modes are limited to the various sync suppression modes which are compatible with both terminal types. Hamlin and Eagle emulation modes are both standard on all MVP's.

## **SECURITY MODES**

The MVP-II offers many enhanced security features. Please contact your Motorola account executive for information on enhanced security modes of operation.

## **MVP-II: Product Range**

The Model MVP-II- DIU is a MVP-II encoder that includes a data inserter unit (DIU) option board. This option provides the capability of carrying row teletext data in video channels. These data channels are carried on two horizontal lines during the vertical blanking interval (VBI) on the video signal.

The MVP-II-WLC provides compatibility with Scientific Atlanta's scrambling modes and is used in conjunction with a Scientific Atlanta encoder. The MVP-II-Z provides compatibility with Zenith modes of scrambling with the exception of the PM mode, and is used in conjunction with Zenith encoders. The MVP-II-T provides compatibility with all modes of Tocom scrambling and is used in conjunction with a Tocom (HVP-III) encoder. The MVP-II-SIF provides the scrambling interface in wireless (MMDS) transmission systems. The MVP-II-T provides compatibility with all modes of Tocom scrambling. The MVP-II-I is used in conjunction with a Tocom (HVP-III) encoder. A factory installed option board is required for this option. The MVP-II-DIU provides the capability for data to be inserted in the vertical blanking interval (VBI) of the video. The MVP-II-DIU allows for two data channels per 6 MHz video channel. The MVP-II-DIU will accept data from the ACC-4000, Data Provider Translator or a Third Party Provider. A factory installed option board is required for this option. The MVP-II SIF provides the proper IF (Snd/Pix) interface to wireless (MMDS) transmitters. Pal I,B, and D (China) models are available. A factory installed option board is required for this option. All MVP-II options allow the use of IMPULSE technology when using Motorolas' IMPULSE series terminals.

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**Specifications**  
**Analog Addressable Modulating Video Processor[MVP-II]**

<b>Video</b>	
Input	1V p-p NTSC standard (75 Ohm)
Video AGC Range	+/- 6 dB (0.5 V to 2.0 Vp-p)
Video Input Return Loss	25 dB Minimum
Video Output	1 V p-p (in Standby); other modes encoded
Video Output Return Loss	25 dB
<b>Audio</b>	
Nominal Input Level (attenuator off)	0 dBm (0.775 Vrms)
Nominal Input Level (attenuator on)	+ 12 dBm (3.085 Vrms)
Input Attenuator	12 +/- 0.5 dB, switchable
Audio ALC Range	+/- 10 dB
Audio Pre-emphasis	75 usec +/- 5%
Audio Input Impedance	600 Ohm balanced or 50 K Ohm unbalanced,
Audio Output Level	switchable
Audio Output Impedance	0 dB (+/-1 dB relative to the input signal in Standby)
<b>Scrambling</b>	
Video	Clear/inverted
Sync	0 dB/ 6 dB/ 10 dB
Audio	Clear / 2H Subcarrier
<b>Composite IF Output</b>	
Picture IF Frequency	45.75 MHz 1.5 kHz
Sound IF Frequency	41.25 MHz 1.6 kHz
Level (adjustable)	+25 dBmV to +45 dBmV
Intercarrier Input Level	+10 dBmV Minimum
Return Loss	15 dB Minimum
Sound Carrier Level	-15 dB from 38.9 MHz, adjustable +/- 5 dB
Video S/N (weighted)	62 dB Minimum



Video Frequency Response	50 Hz to 4.2 MHz +/-1 dB
Video Group Delay	NTSC system M advance
Video DG	2%
Video DP	2 deg
Video Modulation at Center Detent	85% +/- 2%
Nominal Adjustment Range	+/- 10%
Audio S/N	-70 dB
Audio THD	0.3%
Audio Frequency Response	50 Hz to 14 kHz +/- 1 dB
Audio Deviation at Center Detent	25 +/- 2 kHz
Nominal Adjustment Range	+/- 6 dB
Minimal Adjustment Range	4.5 dB
<b>Remote Control</b>	
Bi-Phase In/Out	13,980 bps
Address	selectable (260097 to 260999)
<b>Auxiliary IF Switch Drive</b>	
Input Voltage Range for activation	+4<V high <+12 V
<b>Test Point</b>	
Video	Selectable In/Out
Video Test Point Level	1 V p-p into 75 Ohms
Audio	Selectable In/Out
Audio Test Level	0 dB + 1 dB relative to the input signal
Sync	Selectable Vertical/Composite
IF	-20 dB (relative to composite IF out)
<b>Standby Input</b>	
Input Voltage Range for Activation	+ 4 < V high < +12 V
<b>Alarm Output</b>	
Maximum Current Sources	0.01 A
Vol ( at 0.01)	0.3 V
<b>AC Power Line Requirements</b>	
Voltage	117 V Nominal
Frequency	60 Hz
Power	35 W



<b>Physical Dimensions</b>	
Height	1.75 cm
Width	19" cm
Depth	18" cm
Weight	11 lbs.
<b>Environmental</b>	
Space	1.75 cm Minimum each side of unit
Temperature	0 to + 40 degrees C

### **MVP-II-N**

<b>Video</b>	
Input	1V p-p Pal-N standard (75 Ohm)
Video AGC Range	+/- 6 dB (0.5 V to 2.0 Vp-p)
Video Input Return Loss	25 dB Minimum
Video Output	1 V p-p (in Standby); other modes encoded
Video Output Return Loss	25 dB
<b>Audio</b>	
Normal Input Level (attenuator off)	0 dBm (0.775 Vrms)
Normal Input Level (attenuator on)	+12 dBm (3.085Vrms)
Input Attenuator	12 +/- 0.5 dB, switchable
Audio ALC Range	+/- 10 dB
Audio Pre-emphasis	75 usec +/- 5%
Audio Input Impedance	600 Ohm balanced or 50k Ohms unbalanced, switchable
Audio Output Level	0 dB (+/- 1 dB relative to the input signal in Standby)
Audio Output Impedance	600 Ohm balanced
<b>Scrambling</b>	
Video	Clear/inverted
Sync	0 dB/ 6 dB/ 10 dB
Audio	Clear / 2H Subcarrier /
	SP Subcarrier
<b>Composite IF Output</b>	
Picture IF Frequency	45.75 MHz
Sound IF	41.25 MHz



Maximum Input Voltage	+12 V
Minimum Input Voltage	-12 V
<b>Alarm Output</b>	
Maximum Current Sources	0.01 A
Vol. ( at 0.01)	0.3 V
<b>AC Power Line Requirements</b>	
Voltage	220 V nominal
Frequency	50 Hz
Power	35 W
<b>Physical Dimensions</b>	
Height	4.45 cm
Width	48.26 cm
Depth	45.72 cm
Weight	5 kgs
<b>Environmental</b>	
Space	4.45 cm Minimum each side of unit
Temperature	0 to +40 degrees C

**MVP-II-I**

<b>Video</b>	
Input	1V p-p Pal-I standard (75 Ohms)
Video AGC Range	+/- 6 dB (0.5 V to 2.0 Vp-p)
Video Input Return Loss	25 dB Minimum
Video Output	1 V p-p (in Standby);
Other modes encoded	
Video Output Return Loss	25 dB
<b>Audio</b>	
Normal Input Level (attenuator off)	0 dBm (0.775 Vrms)
Normal Input Level (attenuator on)	+12 dBm (3.085 Vrms)
Input Attenuator	12 +/- 0.5 dB, switchable
Audio ALC Range	+/- 10 dB
Audio Pre-emphasis	50 usec +/-5%



Audio Input Impedance	600 Ohm balanced or 50 K Ohm unbalanced, switchable
Audio Output Level	0 dB (+/-1 dB relative to the input signal in Standby)
Audio Output Impedance	600 Ohm balanced
<b>Scrambling</b>	
Video	Clear/inverted
Sync	0 dB/ 6 dB/ 10 dB
Audio	Clear / 2H Subcarrier
<b>Composite IF Output</b>	
Picture IF Frequency	38.9 MHz +/- 750 Hz
Sound IF	32.9 MHz +/- 500 Hz
Level (adjustable)	+25 dBmV to +45 dBmV
Ext. Pix to Input Level	+40 < levels < +50 dBmV
Intercarrier (5.5MHz)	+10 dBmV Minimum
Input Level	
Return Loss	15 dB Minimum
Sound Carrier Level	-15 dB from 38.9 MHz, adjustable +/- 5 dB
Sound Carrier Deviation	+/- 50 kHz +/- 2 kHz
Video S/N	65 dB Minimum (66 dB typical)
Video Frequency Response	50 Hz to 5.0 MHz +/-1 dB
Video Group Delay	Pal I, no precorrection
C/L Delay	+/- 50nS
Video DG	< 2.5%
Video DP	< 2 deg
Video Modulation at	80% +/- 2%
Center Detent	
Nominal Adjustment Range	+/- 35 mV
Audio S/N	-70 dB
Audio THD	0.50%
Audio Frequency Response	50 Hz to 14 kHz +/- 1 dB
Audio Deviation at	50 +/-2 kHz
Center Detent	
Nominal Adjustment Range	+/- 6 dB
Minimal Adjustment Range	4.5 dB



<b>Remote Control</b>	
Bi-Phase In/Out	13,980 bps
Address	selectable (260097 to 260999)
<b>Auxiliary IF Switch Drive</b>	
Actuator Voltage	<0.5 V
Maximum Input Voltage	+12 V
Minimum Input Voltage	-12 V
<b>Test Point</b>	
Video	Selectable In/Out
Video Test Point Level	1 V p-p into 75 Ohms
Audio	Selectable In/Out
Audio Test Level	0 dB + 1 dB relative to
The Input Signal	
Sync	Selectable Vertical/Composite
IF	-20 dB (relative to composite IF out)
<b>Standby Input</b>	
Actuator Voltage	<0.5 V
Maximum Input Voltage	+12 V
Minimum Input Voltage	-12 V
<b>Alarm Output</b>	
Maximum Current Sources	0.01 A
Vol. ( at 0.01)	0.3 V
<b>AC Power Line Requirements</b>	
Voltage	220 V Nominal
Frequency	50-60 Hz
Power	35 watts
<b>Physical Dimensions</b>	
Height	4.45 cm
Width	48.26 cm
Depth	45.72 cm
Weight	5 kgs
<b>Environmental</b>	
Space of unit	4.45 cm Minimum each side
Temperature	0 to +40 degrees C





**MVP-II-B**

<b>Video</b>	
Input	1V p-p Pal-B standard (75 Ohms), 625 line, 50 Hz
Video AGC Range	+/-6 dB (0.5 V to 2.0 Vp-p)
Video Input Return Loss	25 dB Minimum
Video Output	1 V p-p (in Standby); other modes encoded
Video Output Return Loss	25 dB
<b>Audio</b>	
Normal Input Level (attenuator off)	0 dBm (0.775 Vrms)
Normal Input Level (attenuator on)	+12 dBm (3.085 Vrms)
Input Attenuator	12 +/- 0.5 dB, switchable
Audio ALC Range	+/- 10 dB
Audio Pre-emphasis	50 usec +/-5%
Audio Input Impedance	600 Ohms balanced or 50 K Ohms unbalanced, switchable
Audio Output Level	0 dB (+/-1 dB relative to the input signal in Standby)
Audio Output Impedance	600 Ohms balanced
<b>Scrambling</b>	
Video	Clear/inverted
Sync	0 dB/ 6 dB/ 10 dB
Audio	Clear / 2H Subcarrier
<b>Composite IF Output</b>	
Picture IF Frequency	38.9 MHz
Sound IF	33.4 MHz
Level (adjustable)	+25 dBmV to +45 dBmV
Ext. Pix to Input Level	+40 < levels < +50 dBmV
Intercarrier (5.5 MHz)	+10 dBmV Minimum
Input Level Return Loss	15 dB Minimum
Sound Carrier Level	-15 dB from 38.9 MHz, adjustable +/- 5 dB
Sound Carrier Deviation	+/- 50 kHz +/- 2 kHz
Video S/N	64 dB Minimum (66 dB Typical)
Video Frequency Response	50 Hz to 5.0 MHz +/- 1 dB
Video Group Delay	Pal B General 1/2 correction
Video DG	2.50%
Video DP	2 deg
Video Modulation at Center Detent	87.5% +/- 2%



Nominal Adjustment Range	+/- 35 mV
Audio S/N	-70 dB
Audio THD	0.50%
Audio Frequency Response	50 Hz to 14 kHz +/- 1 dB
Audio Deviation at Center Detent	50 +/- 2 kHz
Nominal Adjustment Range	+/- 6 dB
Minimal Adjustment Range	4.5 dB
<b>Remote Control</b>	
Bi-Phase In/Out	13,980 bps
Address	selectable (260097 to 260999)
<b>Auxiliary IF Switch Drive</b>	
Actuator Voltage	<0.5 V
Maximum Input Voltage	+12 V
Minimum Input Voltage	-12 V
<b>Test Point</b>	
Video	Selectable In/Out
Video Test Point Level	1 V p-p into 75 Ohms
Audio	Selectable In/Out
Audio Test Level	0 dB + 1 dB relative to the input signal
Sync	Selectable Vertical/Composite
IF	-20 dB (relative to composite IF out)
<b>Standby Input</b>	
Actuator Voltage	<0.5 V
Maximum Input Voltage	+12 V
Minimum Input Voltage	-12 V
<b>Alarm Output</b>	
Maximum Current Sources	0.01 A
Vol. ( at 0.01)	0.3 V
<b>AC Power Line Requirements</b>	
Voltage	100-240 V Nominal
Frequency	50-60 Hz
Power	35 W
<b>Physical Dimensions</b>	
Height	4.45 cm



Width	48.26 cm
Depth	45.72 cm
Weight	5 kgs
<b>Environmental</b>	
Space	4.45 cm Minimum each side of unit
Temperature	0 to +40 degrees C

**MVP-II-C38**

<b>Video</b>	
Input	1V p-p PAL-PAL standard (75 Ohms)
Video AGC Range	+/- 6 dB (0.5 V to 2.0 V p-p)
Video Input Return Loss	25 dB Minimum
Video Output	1 V p-p (in Standby); other modes encoded
Video Output Return Loss	25 dB
<b>Audio</b>	
Normal Input Level (attenuator off)	0 dBm (0.775 Vrms)
Normal Input Level (attenuator on)	+ 12 dBm (3.085 Vrms)
Input Attenuator	12 +/- 0.5 dB, switchable
Audio ALC Range	+/- 10 dB
Audio Pre-emphasis	50 usec +/-5%
Audio Input Impedance	600 Ohms balanced or 50 K Ohms unbalanced, switchable
Audio Output Level	0 dB (+/-1 dB relative to the input signal in Standby)
Audio Output Impedance	600 Ohms balance
<b>Scrambling</b>	
Video	Clear/inverted
Sync	0 dB/ 6 dB/ 10 dB
Audio	Clear / 2H Subcarrier
<b>Composite IF Output</b>	
Picture IF Frequency	38.0 MHz +/- 750 Hz
Sound IF	31.5 MHz +/- 500 Hz
Level (adjustable)	+ 25 dBmV to + 45 dBmV
Ext. Pix to Input Level	+40 < levels < +50 dBmV
Intercarrier (5.5 MHz)	+10 dBmV Minimum
Input Level Return Loss	15 dB Minimum



Sound Carrier Level	-15 dB from 38.0 MHz, adjustable +/- 5 dB
Sound Carrier Deviation	+/- 50 kHz +/- 2 kHz
Video S/N	64 dB Minimum (66 dB typical)
Video Frequency Response	50 Hz to 5.75 MHz +/- 1 dB
Video Group Delay	Pal-D (flat)
Video DG	< 2.5%
Video DP	< 2 deg
Video Modulation at Center Detent	87.5% +/- 2%
Nominal Adjustment Range	+/- 35 mV
Audio S/N	-70 dB
Audio THD	0.30%
Audio Frequency Response	50 Hz to 14 kHz +/- 1 dB
Audio Deviation at Center Detent	50 +/- 2 kHz
Nominal Adjustment Range	+/- 6 dB
Minimal Adjustment Range	4.5 dB
<b>Remote Control</b>	
Bi-Phase In/Out	13,980 bps
Address	selectable (260097 to 260999)
<b>Auxiliary IF Switch Drive</b>	
Actuator Voltage	<0.5 V
Maximum Input Voltage	+12 V
Minimum Input Voltage	-12 V
<b>Test Point</b>	
Video	Selectable In/Out
Video Test Point Level	1 V p-p into 75 Ohms
Audio	Selectable In/Out
Audio Test Level	0 dB + 1 dB relative to the input signal
Sync	Selectable Vertical/Composite
IF	-20 dB (relative to composite IF out)
<b>Standby Input</b>	
Actuator Voltage	<0.5 V
Maximum Input Voltage	+12 V
Minimum Input Voltage	-12 V



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<b>Alarm Output</b>	
Maximum Current Sources	0.01 A
Vol. ( at 0.01)	0.3 V
<b>AC Power Line Requirements</b>	
Voltage	220 V Nominal
Frequency	50 Hz
Power	35 W
<b>Physical Dimensions</b>	
Height	4.45 cm
Width	48.26 cm
Depth	45.72 cm
Weight	5 kgs
<b>Environmental</b>	
Space	4.45 cm Minimum each side of unit
Temperature	0 to + 40 degrees C

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