

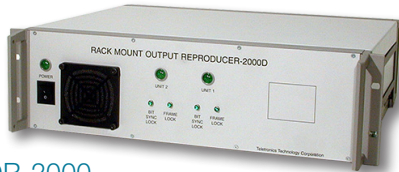
# MARM-2000/RMOR-2000D

**CURTISS-  
WRIGHT**

MUX/DEMUX - Data Link

CURTISSWRIGHTDS.COM

MARM-2000



RMOR-2000

## Key Features

- MARM-2000 features
  - + Acquires multiple asynchronous PCM and video data stream input channels for transmission as a single PCM stream channel
- RMOR-2000D features
  - + Ground-station demux unit to reproduce in real time all PCM and video streams transmitted by the MARM-2000 unit

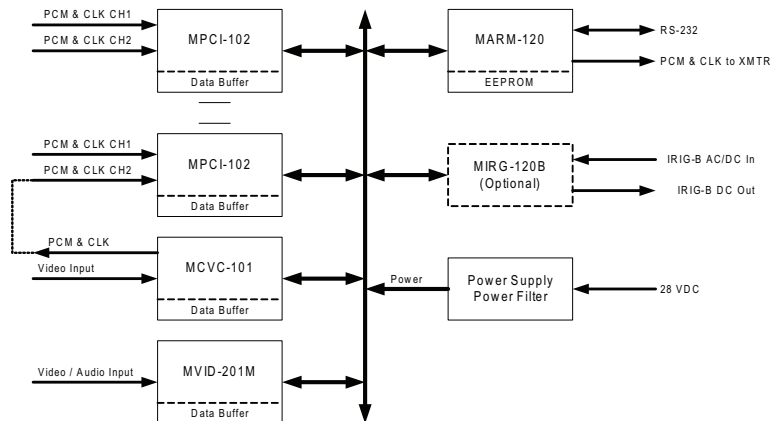
## Applications

- Combines PCM from multiple vendors
- Mission performance
- Performance monitoring and evaluation
- Truth data (simulation/verification)

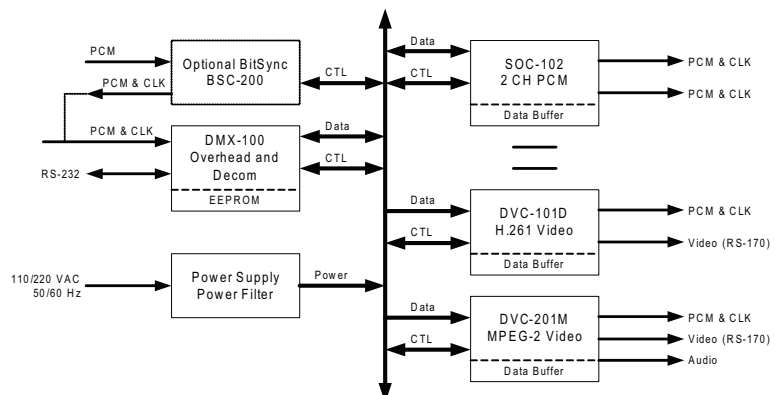
## Overview

The MARM-2000 airborne multiplexer unit is used to transmit multiple asynchronous PCM and video channels as a single high speed PCM channel. The RMOR-2000 receives the real time transmitted PCM channel and reproduces the multiple asynchronous PCM and video channels. The real time PCM output of the MARM-2000 unit can be up to 20 Mbps encoded in NRZ-L or RNRZ-L.

The RMOR-2000D is used along with Curtiss-Wright's airborne multiplexer/encoder products to create a true "real-time" air/ground data reproduction of the airborne multiplexed channels. Airborne data is sampled and encoded by standard Curtiss-Wright airborne products. The data is formatted to guarantee full link transmission integrity (bit transitions are forced every 16 bits in the PCM stream). The Series 2000 receives the data and decodes/reproduces the original signals for real-time viewing/analysis. The Series 2000 is configurable via plug-in cards to reproduce multiple high speed serial data outputs and/or video outputs.



MARM-2000 block diagram



RMOR-2000D block diagram

INFO: CURTISSWRIGHTDS.COM  
EMAIL: DS@CURTISSWRIGHT.COM

TRUSTED  
PROVEN  
LEADER



CAIS  
Compatible

## MARM-2000 Features

- Acquires multiple asynchronous PCM and video data stream input channels for transmission as a single PCM stream channel
- Aggregate data output rate to 20 Mbps with NRZ-L or RNRZ-L output coding
- Rugged, small size and light weight
- Flexible system to support variety of applications
- Plug-in 2 channel PCM input modules (MPCI-102)
- Plug-in 1 channel video input module using H.261 video compression (MCVC-101)
- Plug-in 1 channel video/audio input module using MPEG-2 video compression (MVID-201M)
- Plug-in overhead module (MARM-120)
- Plug-in 1 channel video/audio input module using MPEG-4 video compression (MVID-401M)
- Plug-in 1 channel High Resolution video/audio input module using H.264 video compression (MVID-301D)
- Plug-in 1 channel video input module using JPEG-2000 video compression (MCVC-101J)
- Plug-in 1 channel 3G/HD-SDI video input module using H.264 video compression (MVID-301S)
- Plug-in 4 channel voice encoder module using straight binary or companding compression (MAUD-104M)
- Plug-in overhead module (MARM-120)
- Optional IRIG-B time tag (requires the MIRG-201B) supports high time, low time, and micro time
- Microsoft® Windows® application software included

## Specifications

### General

- Supply: +28VDC ±4VDC
- Power: 12W (depending on exact configuration)
- Operating temperature: -35 to 85°C (box ambient)
- Storage temperature: -55 to 100°C

### Dimensions and Mechanical

- Weight: 1lb (typical)
- Dimensions: 2.49"W x 2.63"H x 4 to 6"L (typical)
- Connectors: MDM style

### MVID-401M: Inputs - Video (MPEG-4)

- Video input: Composite Video, S-Video, RGB, NTSC, PAL
- Output rate: 0.1 Mbps to 6.6 Mbps
- Resolution: Programmable selection from four levels
- Video compression: Based on MPEG-4 Compression algorithm
- Audio input: 1-channel Stereo Audio, or 2-channel Mono, with programmable gain from 5Vp-p to 40Vp-p

### MCVC-101J: Inputs - Video (JPEG-2000)

- Video input: Composite Video, NTSC, PAL
- Output rate: 1 Mbps to 10 Mbps
- Resolution: Adjustable Video Compression Levels
- Video compression: Based on JPEG-2000 Compression algorithm

### MVID-301D: Inputs - Video (H.264)

- Video input: DVI/HDMI, VGA, Composite Video, S-Video
- Output rate: 0.5 Mbps to 20 Mbps
- Resolution: Programmable selection from native resolution down to SIF
- Video compression: Based on H.264 Compression algorithm
- Audio input: 1-channel Stereo Audio, or 2-channel Mono, with programmable gain from 5Vp-p to 40Vp-p

**MVID-301S: Inputs – Video (H.264)**

- Video input: 3G-SDI, HD-SDI
- Output rate: 0.5 Mbps to 20 Mbps
- Resolution: Programmable selection from native resolution down to SIF
- Video compression: Based on H.264 Compression algorithm
- Audio input: 1-channel Stereo Audio, or 2-channel Mono, with programmable gain from 5Vp-p to 40Vp-p

**MAUD-104M: Inputs – Audio**

- Input: Differential, AC coupled
- Number of channels: 4
- Input range: 1.25Vp-p to 40Vp-p
- Sample rate: 8 KSPS to 32 KSPS
- Encoding: Straight Binary Digitization and Companding (A-Law or u-Law)

**MPCI-102: Inputs - PCM**

- Input type: Accepts serial data and 0-degree Bit Clock
- Channels: 2 independent channels per module
- Data rate: Programmable rates up to 10 Mbps
- Input coding: NRZ-L or RNRZ-L
- Input level: TTL or RS-422

**MCVC-101: Inputs – Video (H.261)**

- Input type: Composite Video. 1V p-p.  $Z_{in} = 75 \text{ Ohms}$
- Output type: NRZ-L data and Clock for insertion into the MPCI-102 module
- Output rate: 100 Kbps to 2 Mbps
- Resolution: Normal (CIF @ 352x288), or low resolution (QCIF @ 176x144)
- Video compression: Based on H.261 compression Algorithm

**MVID-201M: Inputs – Video (MPEG-2)**

- Video input: Composite Video, S-Video, RGB, NTSC, PAL
- Output rate: 0.5 Mbps to 10 Mbps
- Resolution: Programmable selection from four levels
- Video compression: Based on MPEG-2 Compression algorithm
- Audio input: 1-channel Stereo Audio, or 2-channel Mono, with programmable gain from 5Vp-p to 40Vp-p

**MARM-120: Output Data - Transmission**

- Output: Serial PCM per IRIG-106
- Data rate: Programmable, up to 20 Mbps
- Output code: NRZ-L or RNRZ-L
- Format: Programmable, including frame structure, sync words, and data word placement, including PCM data and frame time tag data
- RS-232: For setup configuration
- MIRG-201B: Time Tag (optional)
- Input: IRIG-B, AC or DC
- Time tag basis: Provides time tag on a frame basis
- Word formats: High Time, Low Time, and Micro Time
- Time coding: Supports binary and BCD weighted time words

## RMOR-2000 Features

- Ground-station demux unit to reproduce in real time all PCM and video streams transmitted by the MARM-2000 unit
- DMX-100 PCM input card with built-in decom
  - + 20 Mbps aggregate input rate
  - + Accepts PCM and zero-phase clock
- Optional bit-sync BSC-200 bit-sync card
- Plug-in 2 channel PCM output card (SOC-102)
- Plug-in 1 channel video output card using H.261 video compression (DVC-101D)
- Plug-in 1 channel video/audio output card using MPEG-2 video compression (DVC-201M)
- Plug-in 1 channel video/audio output card using MPEG-4 video compression (DVC-401M)
- Plug-in 1 channel video output card using JPEG-2000 video compression (DVC-101J)
- Plug-in 1 channel video/audio output card using H.264 video compression (DVC-301D)
- Plug-in 4 channel voice encoder output card (AUD-104M)
- 19" rack mount chassis
- 110-220 VAC, 50-60 Hz operation
- Microsoft® Windows® application software included

## Specifications

### General

- Supply: 110/220VAC 50/60 MHz
- Power: 30W (depending on exact configuration)
- Operating temperature: -10 to 45°C (box ambient)
- Storage temperature: -25 to 70°C

### Dimensions and Mechanical

- Weight: 15 lb (approximate)
- Dimensions: 19" W x 5.21" H x 14.11" D
- Connectors: "D" style I/O

### Output Data – Video/Audio Reproduction (MPEG-4)

- Card type: DVC-401M
- Channels: 1 per card
- Output: Video/Audio with MPEG-4 compression and output per RS-170
- PCM characteristics: Same as the SOC-102 card
- Video rate: Same as originally sourced from MVID-401M

### Output Data –Video Reproduction (JPEG-2000)

- Card type: DVC-101J
- Channels: 1 per card
- Output: Video with JPEG-2000 compression and output per RS-170
- PCM characteristics: Same as the SOC-102 card
- Video rate: Same as originally sourced from MCV-101J

### Output Data – Video/Audio Reproduction (H.264)

- Card type: DVC-301D
- Channels: 1 per card
- Output: Video/Audio with H.264 compression
- Video output: High Definition video (DVI)
- Video rate: Same as originally sourced

### Output Data –Video/Audio Reproduction (MPEG-2)

- Card type: DVC-101H
- Channels: 1 per card
- Output: Video/Audio with MPEG-2 compression
- PCM characteristics: Same as the SOC-102 card
- Video output: 1280 x 1024 at 60 fps (SXGA)
- Decoded frame rate: 1 to 30 fps (depends on resolution)

## Output Data –Audio

- Card type: AUD-104M
- Channels: 4 per card
- Output levels: 0 - 20 Vp-p (0 - 7.07 RMS)
- Mode: Same as originally sourced from MAUD-104M

## Input Data – PCM Aggregate

- Card type: DMX-100
- Input type: Accepts serial data and 0-degree Bit Clock
- Front end: Has a complete front-end decommutator with frame correlator function
- Data rate: Programmable rates up to 20 Mbps
- Input coding: NRZ-L
- Programming: RS-232/422 compatible

## Output Data – PCM Reproduction

- Card type: SOC-102.
- Channels: 2 per card.
- Output: Serial PCM per IRIG-106 provided for each channel. Also provides 0-degree Bit Clock output.
- Data rate: Programmable, up to 10 Mbps per channel.
- Output code: Same as originally sourced into the MPC1-102, (either NRZ-L or RNRZ-L).
- Format: Same as originally sourced into the MPC1-102 channel

## Output Data – Video Reproduction (H.261)

- Card type: DVC-101D
- Channels: 1 per card
- Output: Video output with H.261 compression and output per RS-170
- PCM characteristics: Same as the SOC-102 card
- Video rate: Same as originally sourced into the MPC1-102 channel

## Output Data –Video/Audio Reproduction (MPEG-2)

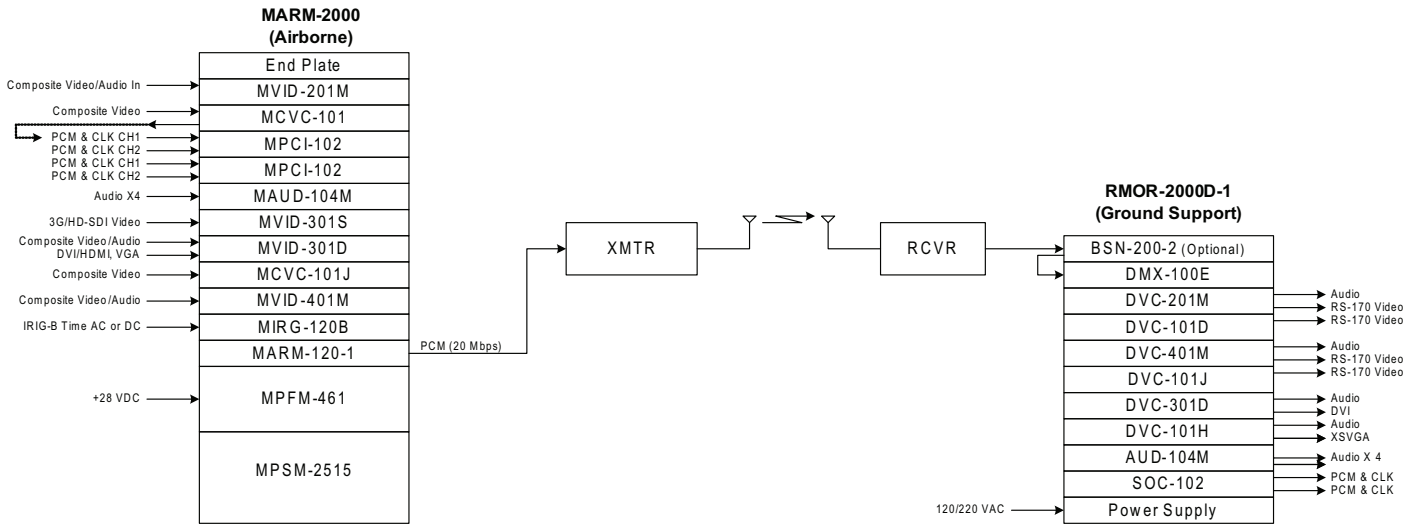
- Card type: DVC-201M
- Channels: 1 per card
- Output: Video/Audio with MPEG-2 compression and output per RS-170
- PCM characteristics: Same as the SOC-102 card
- Video rate: Same as originally sourced into the MVID-201M

## Ordering Information

Contact [Curtiss-Wright](http://Curtiss-Wright) for ordering information

TABLE 1

	MARM-2000	RMOR-2000
Controller	MARM-120 with optional IRIG-B time module MIRG-120B	DMX-100E and optional Bit Sync card BSN-200-2
I/O Cards	<b>Input modules:</b>	<b>Output cards:</b>
	MPCI-102: 2 channel PCM up to 10 Mbps/channel	SOC-102: 2 channel PCM
	MCVC-101: 1 channel H.261 video	DVC-101D: 1 channel RS-170 H.261 video
	MVID-201M: 1 channel MPEG-2 video/audio	DVC-201M: 1 channel RS-170 MPEG-2 video/audio
	MVID-410M: 1 channel MPEG-4 video/audio	DVC-101H: 1 channel XSGA MPEG-2 video/audio
	MCVC-101J: 1 channel JPEG-2000 video	DVC-401M: 1 channel RS-170 MPEG-4 video/audio
	MVID-301D: 1 channel H.264 high res video/audio	DVC-101J: 1 channel RS-170 JPEG-2000 video
	MVID-301S: 1 channel H.264 3G-SDI/HD-SDI video	DVC-301D: 1 channel DVI H.264 video/audio
MAUD-104M: 4 channel audio/analog	AUD-104M: 4 channel audio/analog	



Data Transmission architecture using Curtiss-Wright's MARM and RMOR products