

# MWDAU-2000 and Modules

**CURTISS-  
WRIGHT**

20 Mbps Miniature Wide-band Data Acquisition Unit

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## Key Features

- High speed stand-alone data acquisition unit
- Optional CAIS remote slave capability (RAM based acquisition-simultaneous with standalone function)
- Bit rates up to 20 Mbps with over 2000 user programmable steps when using MWCI-120 overhead
- Bit rates up to 5 Mbps with over 2000 user programmable steps when using MWCI-105 overhead
- Operates at 8 through 16 BPW (CAIS Remote mode)
- Programmable formats and sample Sequence up to 7680 words per major frame
- External simultaneous sample capability
- Up to 31 modules within a stack
- Stackable overhead and signal conditioning modules

## Applications

- Avionics data acquisition unit
- Missile applications
- Air vehicle test, certification or development
- Distributed systems
- CAIS applications

## Overview

The MWDAU-2000 is a miniature, CAIS compatible Wideband DAU for interfacing a variety of analog/digital sensors, and encoding these sources into a wideband PCM output data stream up to 20 Mbps. The unit can be configured to simultaneously support data transfer to a Master encoder over the CAIS Bus, and to provide data acquired from individual wideband DAU's. Curtiss-Wright CAIS Bus Masters include AIC-2000, MCDAU-2000, and CDAU-2000.

## Additional features

- Fully programmable with Curtiss-Wright's Microsoft® Windows® software application
- Extremely rugged construction
- Fully programmable operation
- 2.49" x 2.63" x L ("L" dimension varies depending on number of plug-in modules)
- "Miniature" style interface connectors
- 28VDC operation

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CAIS  
Compatible

## Specifications

### General

- Data output: Serial PCM data stream output is available per IRIG-106 standards. Multiple complimentary outputs support transmission, real-time monitoring, diagnostics or archiving
- Data rate: Programmable, up to 1250 KSPS (20.0 Mbps at 12-bit resolution)
- System setup: The unit is programmed via RS-232/422 or CAIS Bus using Curtiss-Wright's software hosted by a PC-based computer. As a Remote DAU, the MWD AU is programmed via the CAIS Bus, from the designated master unit
- Calibration: System-wide calibration is available. Specific calibration features depend on the types of signal conditioning modules being used

### Encoding

- Analog encoding: Analog Inputs are encoded using 12-bit or 16-bit resolution based on the type of conditioning module. Data is encoded using natural binary representation
- Channel gain/offset: Signal Conditioning modules are fully programmable. Some modules have a common second stage amplifier providing additional gains on a per channel basis. Channel offset is user-programmable in 4,096 steps. All gain/offset control is provided through TTCWare software
- Digital encoding: Digital inputs are formatted for serial PCM transmission and are available from the master unit as one or more data words (depending on the desired resolution)
- System accuracy: Overall end-to-end accuracy better than 0.5% over the operating temperature range. Refer to signal conditioning module data sheets for additional details

### Electrical

- Input power: +28 ±4VDC
- Power consumption: 16W for a typical system configured for stand-alone operation. Up to 100 watts in other configurations, depending on the specific module configuration
- Power control: Has TTL input to initiate power stand-down mode
- Battery backup: Has external battery backup provisions to maintain internal clocks when IRIG or GPS time acquisition is used

### Environmental

- Operating temperature: -35 to 85°C (box ambient temp)
- Storage temperature: -55 to 100°C

- Random vibration: 15 grms, 20 to 2,000 Hz, 10 minutes, any axis
- Acceleration: 25g, indefinite duration, any axis
- Shock: 25g, half-sine, 11 mS, 6 shocks, any axis
- Humidity: 5-95% RH, non-condensing
- Altitude: 0 to 70,000 ft
- EMI/EMC: Per MIL-STD-461/462

### Dimensions and Mechanical

- Dimensions (mm): 2.49"W x 2.63" H (63.25mm x 66.8mm); Length is based on configuration, and can range from 6" up to 18"
- Weight: 1.0 to 4.0 lbs (0.45 to 1.82 Kg); based on configuration

## Modules

### Analog, Audio, Current, Potentiometer, and Voltage Sensors; Acceleration, Air Velocity, Flow/Force, Pressure, Shock (Amplified Output) Sensors

- MAMD-108V◇: 8 channel differential analog multiplexer module
- MAMD-112V◇: 12 channel differential analog multiplexer module
- MAMS-124A◇: 24 channel, single ended analog multiplexer module (PAM output)
- MAMS-124B: 24 channel, single ended analog multiplexer module (Digital output)
- MATD-104F: BEI Motion Pack interface module, programmable gain and 4 pole filter, 3 accelerometer or rate input channels 1 temperature input channel
- MRMS-108: 8 channel RMS to DC converter

◇ Modules without Built-in Digitizer (Require MADC-105)

\* Modules capable of 20 Mbps operation

Acceleration, Bridge, Acoustical, (Piezoresistive); Analog (Low Level), Bridge, Current, Force (Millivolt Output), Load Cell, Potentiometer, Strain Gage; Torque, Bridge (Piezoresistive); Vibration, and Voltage Sensors

- MBRC-112A\*: 12 channel bridge completion module
- MISA-102A: 2 channel isolated analog module with programmable gain of 1 to 10
- MSCD-102P◇: 2 channel signal conditioning module with voltage excitation, and programmable filtering
- MSCD-102S: 2 channel signal conditioning module with voltage excitation, programmable filtering, and simultaneous sampling
- MSCD-102T: 2 channel signal conditioning module with voltage excitation, programmable filtering, and simultaneous sampling with thinning function
- MSCD-104D\*: 4 channel signal conditioner, voltage excitation, programmable digital filtering and simultaneous sampling
- MSCD-104P: 4 channel signal conditioner - voltage excitation, 4 pole programmable filter with simultaneous sample capability
- MSCD-104V◇: 4 channel bridge conditioner. constant voltage excitation with factory-set filter
- MSCD-112A: 12 channel multiplexed signal conditioner with programmable gain, constant voltage excitation, two-pole filter
- MSCD-202A◇: 2 channel signal conditioning module with constant current excitation and factory-set filter
- MSCD-404T\*: 4 channel AC/DC coupled signal conditioning module with ±15VDC excitation, programmable 6-pole Butterworth filter, simultaneous sampling and thinning function
- MSCD-702T: 2 channel AC/DC coupled signal conditioning module with 3.9mA current excitation, constant voltage excitation, 6 pole Butterworth filter, phase matched
- MVEX-100-1\*: 4 channel voltage excitation module with programmable 5V or 10V excitation, 160mA per source current (0.64A total)
- MVEX-100-2\*: 4 channel voltage excitation module with fixed 10V excitation, 240mA per source current (0.96A total)
- MVEX-104S\*: 4 channel voltage excitation module with fixed 10V excitation, 250mA per source current (1A total)

## RTD, Temperature, and Thermocouple Sensors

- MRTD-110A: 10 channel RTD conditioner module with constant current excitation for 3 and 4 wire RTDs
- MRTD-114V◇: 14 channel RTD conditioner module with constant current excitation

- MRTD-118A◇: 18 channel RTD conditioner module with constant current excitation
- MTCD-108V\*: 8 channel thermocouple conditioner with RJC-108 reference junction compensation, 10 Hz
- MTCD-208V\*: 8 channel thermocouple 250/1000 Hz sampling rate, 16 bit/12 bit output

## Pressure Systems Inc. Pressure Scanners

- MPSI-164: 64 channel pressure scanner I/F module. Supports one ESP scanner
- MPSS-101: 64 channel pressure scanner I/F module with programmable gain and offset. Supports one ESP scanner

## Acceleration (Variable Capacitance); Acoustical, Force, Pressure, Shock (Piezoelectric); Vibration Sensors

- MCAS-102W: 2 channel charge amplifier module with double integration
- MCAS-104A◇: 4 channel charge amplifier module with factory-set presample filter
- MCAS-104D\*: 4 channel charge amplifier module with programmable digital presample filter and simultaneous sampling capability
- MSCD-602T: 2 channel signal conditioning module with 3.9mA current excitation, programmable filtering, and simultaneous sampling with thinning function
- MSCD-604A◇: 4 channel AC coupled signal conditioning module with 3.9mA current excitation, 6 pole Butterworth filter
- MSCD-604D\*: 4 channel AC coupled signal conditioning module with 3.9mA current excitation, programmable, DSP based, digital FIR filter
- MSCD-604E◇: 4 channel AC/DC coupled signal conditioning module with 3.9mA current excitation, constant voltage excitation, 6 pole Butterworth filter

## Acceleration, Bridge or Piezoresistive Sensors

- MGRC-102V\*: 2 channel gain ranging conditioner voltage excitation. Frequency = 500, 2000, 5000, 10000 Hz, 6 pole Butterworth filter. Optional MADC-105 for average output
- MGRC-102W\*: 2 channel gain ranging conditioner voltage excitation. Frequency = 500, 2000, 5000, 10000 Hz, 6 pole Butterworth filter with digital average output
- MGRC-202V\*: 2 channel gain ranging conditioner, current excitation. Frequency = 500, 2000, 5000, 10000 Hz, 6 pole Butterworth filters. Optional MADC-105 for average output
- MGRC-202W\*: 2 channel gain ranging conditioner current excitation. Frequency = 500, 2000, 5000, 10000 Hz, 6 pole Butterworth filters with digital average output

◇ Modules without Built-in Digitizer (Require MADC-105)

\* Modules capable of 20 Mbps operation

- MWBD-102V◇: 2 channel wideband signal conditioner module with 6 pole programmable presample filtering 500, 2000,5000,10000 Hz Butterworth and constant voltage excitation
- MWBD-202V◇: 2 channel wideband signal conditioner module with programmable 6 pole presample filtering 500, 2000,5000,10000 Hz Butterworth and constant current excitation

## Synchro/Resolver

- MLRV-102E: 2 channel LVDT/RVDT conditioner module - 2 or 3/4 wire configuration, 1 to 10 VRMS reference, programmable excitation
- MSRD-101V: 1 channel synchro/resolver conditioner module
- MSRD-102A: 2 channel synchro/resolver conditioner module 26 VRMS reference, 11.6 VRMS line to line

## Digital Sensors

- MBLS-124H\*: 24Channel bi-level multiplexer module with programmable threshold (20M compatible)
- MBLS-124V: 24 channel bi-level multiplexer module
- MBLS-124W: 24 channel bi-level multiplexer module with time tag capability
- MFPD-102B: 2 channel frequency/period conditioner module with totalizer backup
- MISD-112A: 12 channel isolated bi-level multiplexer module
- MVFE-100: Voice, frequency, and event module

## Bus/Avionics Interface

- MBCT-553: MIL-STD-1553 Bus controller module
- MBIM-162P: 16PP194 W-Mux Bus monitor module
- MBIM-232: 2 channel RS-232 Bus monitor module
- MBIM-429-4: 4 channel ARINC-429 Bus monitor, Chapter 4 compatible module
- MBIM-429-8: 4 channel ARINC-429 Bus monitor, Chapter 4 and 8 compatible module
- MBIM-553-8: 1-dual redundant 1553 Bus monitor Chapter 4 and 8 compatible module
- MBIM-553E-4: 1-dual redundant 1553 Bus monitor Chapter 4 expanded module
- MBRT-553: 1- dual redundant 1553 R/T module
- MBSD-110: Bit sync module, 10 Mbps
- MCMP-112: Chapter 8 composite output module at 12 Mbps
- MCMP-112C: Chapter 8 composite output module with external clock input
- MSDI-102: 2 Channel serial PCM input module

- MTDM-100: TDMS Bus interface module
- METI-101: 1 channel, Ethernet to IRIG-106, Chapter 8 PCM output module (2 module set)

## GPS/Time Code

- MGPS-101A: Miniature GPS position/time code generator module
- MIRG-120B\*: High speed IRIG time reader/generator module

## Video and Voice

- MCVC-101: 1 channel video input module with H.261 compression
- MCVC-101M: 1 channel video/1 channel audio input module with MPEG-2 video compression
- MCVS-101V: 1 channel CVSD voice conditioner module. MCVS-102V: 2 channel CVSD voice conditioner module
- MRGB-201-1\*: RGB to Composite Video converter module (NTSC and S-Video) with buffered RGB output
- MRGB-201-3\*: RGB to Composite Video converter module (NTSC, PAL and S-Video) with buffered RGB output

## User Defined I/O

- MUTM-225\*: Miniature utility module

## Solid State Recorder

- MMSM-100LST: Solid state recorder module set, uses (2) PCMCIA memory cards, up to 8 Gbyte per card
- MSSR-100C: Solid state recorder module set, uses (2) CompactFlash memory cards, up to 8 Gbyte per card

## System Overhead

- MWCI-105: Overhead module, 5 Mbps operation
- MWCI-120\*: Overhead module, 20 Mbps operation
- MCIF-105: CAIS Bus interface module for CAIS remote configuration
- MADC-105: Overhead ADC module for use with MWCI-105 only. This module is required when using analog conditioning modules with no built-in digitizer

## Ordering Information

Please contact [Curtiss-Wright Defense Solutions](#).

◇ Modules without Built-in Digitizer (Require MADC-105)

\* Modules capable of 20 Mbps operation