



### Key Features

- High speed stand-alone wide-band data acquisition unit
- Optional CAIS remote slave capability (RAM based acquisition-simultaneous with standalone function)
- Bit Rates up to 20 Mbps
- Operates at 8 through 16 BPW
- Programmable formats and sample sequence
- External simultaneous sample capability
- Multiple units can be rate and sample synchronized under control of:
  - + CAIS Minor Frame
  - + CAIS Major Frame
  - + External Sample Clock
- 10-, 12- and 16 slot versions

### Applications

- Stand-alone data acquisition
- Distributed systems
- Vehicle development
- CAIS applications

## Overview

The WDAU-20XX is a CAIS compatible wideband DAU for interfacing a variety of analog/digital sensors. Encoded data is available in the PCM output data stream at up to 20 Mbps. The unit can be configured to simultaneously support selected data transfer to a master encoder over the CAIS Bus, and to provide all acquired data in the PCM output. The unit includes various simultaneous sampling modes.

### Additional Features

- Plug-in overhead and signal conditioning cards
- Fully programmable with Microsoft® Windows® software application
- Extremely rugged construction
- Fully programmable operation

## Specifications

### General

- Operating modes: Non-Synchronized mode: the unit operates under the control of an internal crystal or under an internal Direct Digital Synthesizer [DDS] clock. Synchronized Mode: the unit operates under an internal DDS clock. The PCM rate and the frame rate are derived from an external sample signal. That sample signal can be: CAIS Minor Frame, CAIS Major Frame, or External Clock signal.
- Data rate: Programmable, up to 1250 KSPS (20.0 Mbps at 16-bit resolution)
- System setup: The Stand-alone unit is programmed via RS-232/422 using TTCWare™ hosted by a PC-based computer. A Remote DAU is programmed via the CAIS Bus, through the designated Master unit.
- Calibration: System-wide “Zero Cal and “Shunt Cal” capability. Also provides voltage substitution capability when used with compatible master units.

### Electrical

- Input power: +28 ± 4VDC
- Power consumption: 40 – 80W typical. Exact power consumption depends on the specific card configuration.
- Power control: Has a power stand-down mode, activated via switch closure
- Battery backup: Has external battery backup provisions to maintain internal clocks, memory and other circuits that must maintain operation upon removal of primary power

### 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

### Dimensions and Mechanical

- Dimensions (W x H x L):
  - + WDAU-2010: (10 slots) 4.97 x 5.54 x 9.96” (126.24 x 137.16 x 252.98mm)
    - › Weight: 10 lbs (4.54 Kg) estimated
  - + WDAU-2012: (12 slots) 4.97 x 5.54 x 11.30” (126.24 x 137.16 x 287.02mm)
    - › Weight: 10.5 lbs (4.77 Kg) estimated
  - + WDAU-2016: (16 slots) 4.97 x 5.54 x 13.98” (126.24 x 137.16 x 355.09mm)
    - › Weight: 12 lbs (5.45 Kg) estimated
- Connectors:
  - + Input power uses circular military connector
  - + CAIS Bus Interface uses Twinax style connectors
  - + DAU ID, Data I/O and Control inputs use Commercial “D” and “DD” style connectors

### Encoding

- Analog encoding: Analog Inputs are encoded using 12-bit or 16 bit resolution based on the conditioning card type. Data is encoded using natural binary representation.
- Channel gain/offset: Signal Conditioning cards provide on-card gains. Channel offset is provided via a user-programmable DAC. 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 card data sheets for additional details.
- Word format: Compatible with Stand-alone Unit word settings of 8 through 16 bits/word. The analog data MSB is the first bit transmitted.
- Sample sequence: Compatible with any format defined by the user and as programmed into the master unit.

## Ordering Information

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

## Input/Output Cards

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

- AMD-116A: 16 Channel Analog Multiplexer, Differential, fixed 4Khz Filters with averaging feature
- AMD-116P: 16 Channel Analog Multiplexer, Differential, fixed 4Khz Filters
- RMS-116: 16 Channel RMS to DC Converter

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

- SCD-108D\*: 8 Channel Signal Conditioning card with Voltage Excitation, Bridge Completion, Programmable Digital Filtering & Simultaneous Sampling
- SCD-108S: 8 Channel Signal Conditioning card with Voltage Excitation, Bridge Completion, Programmable 6-Pole Filtering, and Simultaneous Sampling
- SCD-108W: 8 Channel Wideband Signal Conditioning card with Voltage Excitation, Bridge Completion, Programmable 6-Pole Filtering, and Simultaneous Sampling
- SCD-112D\*: 12 Channel Bridge Conditioning card with voltage excitation, I/2 Bridge completion, Programmable Digital Filtering and Simultaneous Sampling
- SCD-116D\*: 16 Channel Signal Conditioning card with Programmable Gain, Programmable Digital Filtering, Voltage Excitation, Simultaneous Sampling
- SCD-208D\*: 8 Channel Signal Conditioning card with Programmable Current Excitation, Programmable Digital Filtering and Simultaneous sampling
- SCD-208S: 8 Channel Signal Conditioning card with Programmable Current Excitation, Programmable 6-Pole Filtering, and Simultaneous Sampling
- SCD-608D\*: 8 Channel Signal Conditioning card with Voltage and Current Excitation, Bridge Completion, Programmable Digital Filtering and Simultaneous Sampling
- SCD-608S: 8 Channel Accelerometer card with Voltage & Current Excitation, Full Bridge Conditioner, and Programmable 6-Pole Filtering with simultaneous sampling
- SCD-608W\*: 8 Channel Signal Conditioning card with Voltage and Current Excitation, Bridge Completion, Programmable Digital Filtering and Simultaneous Sampling

RTD, Temperature, and Thermocouple Sensors

- RTD-110A: 10 Channel RTD Conditioner card with Constant Current Excitation, 4 Wire Output, Gain = 1 to 80
- RTD-122A: 20 Channel RTD Conditioner card with Constant Current Excitation, Gain = 1 to 80. Digital output.
- TCD-116\*: 16 Channel thermocouple Multiplexer with Ref Junction Compensation, RJC-108, supports J, K, E, and T type thermocouples
- TCD-216\*: 16 Channel Thermocouple Multiplexer with Ref Junction Compensation, RJC-108, 250/1000 Hz update rate, 16/12 bit resolution, supports J,K,E and T type thermocouples

Pressure Systems Inc. ESP Series Pressure Scanners

- PSS-101: 64 Channel Pressure Scanner interface card, with programmable gain and offset. Supports one ESP Scanner.
- PSS-102: 128 Channel Pressure Scanner interface card, with programmable gain and offset. Supports Two ESP Scanners.
- PSS-164A: 64 Channel Pressure Systems ESP Series pressure Scanner Interface card. Supports one ESP Scanner.
- PSS-264A: 128 Channel Pressure Systems ESP Series pressure Scanner Interface card. Supports Two ESP Scanners.

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

- CAS-108D\*: 8 Channel Charge Amplifier card with Programmable Digital Filter and Gain

Acceleration, Bridge or Piezoresistive Sensors

- GRC-104A\*: 4 Channel Gain Ranging Conditioner with Constant Voltage Excitation, Constant Current Excitation, Programmable 6 pole Butterworth Filter, average output and simultaneous sample

\* Cards capable of 20 Mbps operation

## Input/Output Cards

### Synchro/Resolver

- LRV-103: 3 Channel LVDT/RVDT Conditioner card with 2 or 3/4 Wire Configuration, 1 to 10 VRMS (or 10 to 30 VRMS) reference, programmable Excitation
- SRD-103: 3 Channel Synchro/Resolver Conditioner card, 16 Bit @ 18 RPS

### Digital Sensors

- BLS-148: 48 Channel Bi-Level Multiplexer card with time tag capability
- BLS-148H\*: 48 Channel High Speed Bi-level Multiplexer card
- FPD-104-1: 4 Channel Frequency/Period Conditioner card, with 20 bit output
- FPD-104-2: 4 Channel Frequency/Period Conditioner card, with 24 bit output
- FPD-104B: 4 Channel Frequency/Period Conditioner card with 20 bit output and Totalizer back-up

### Bus/Avionics Interface

- ASB-100: Avionics Standard Communications Bus Monitor card
- BCT-553: 1 - Dual Redundant 1553 Bus controller
- BIM-100: Altitude to ARINC 429 Converter card
- BIM-232: 4 Channel RS 232/RS422 Bus Monitor with Rosemont and Honeywell PPT Transducer Capability and Enhanced Triggering Capability
- BIM-429-4: 8 Channel ARINC 429, Chapter 4 Compatible, Bus Monitor
- BIM-429-8: 8 Channel ARINC 429, Chapter 4 and 8 Compatible, Bus Monitor
- BIM-553-4: 1 Dual Redundant 1553 Chapter 4 Compatible, Bus Monitor
- BIM-553-8: 1 Dual Redundant 1553 Chapter 4 & 8 Compatible, Bus Monitor
- BRT-553: MIL-STD-1553 Remote Terminal card
- CDL-101: 1 Channel Cross Channel Data Link card
- SDI-102: 2 Channel Serial PCM Input card
- SDI-120B: 2 Channel Serial PCM Input Card with Bit Synchronizer

### GPS/Time Code

- GPS-101A: GPS Conditioning card
- IRG-101B\*: IRIG Time Reader/Generator card

### Video and Voice

- CVC-101: 1-Channel Video and Voice Input card with H.261 video compression
- CVC-101M: 1 Channel Video/1 Channel Audio Input card with MPEG-2 Video Compression
- CVS-101: 1 Channel Voice Conditioner card
- CVS-102: 2 Channel Voice Conditioner card
- CVS-104: 4 Channel Voice Conditioner card
- VFE-100: 1 Channel Voice Conditioner, 2 Channel Event Counter card

### System Overhead

- WCI-120\*: Master Overhead card, required for all configurations
- WCI-120D\*: CAIS Bus Interface card, required for Remote Unit configuration

### User Defined I/O

- USR-100: Utility Card with back plane electronics

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