AstroNova®
Test & Measurement

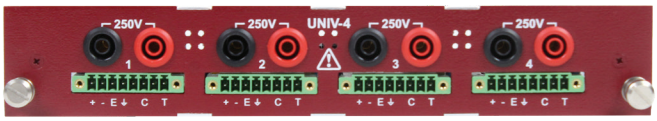
UNIV-4

Universal Input Module for Daxus® DXS-100 and SmartCorder® DDX-100 Data Acquisition Systems

MODULE OVERVIEW

The UNIV-4 is a 4-channel universal input module that measures voltage, temperature, strain, pressure, acceleration, current, and more. This module accepts voltages up to 250 V_{rms} and a wide variety of sensors including thermocouples, RTD's, bridge-based sensors, and accelerometers. Ideal for mixed signal applications, the UNIV-4 provides maximum flexibility for acquiring different types of inputs with a single module.

UNIV-4 for Daxus® DXS-100



UNIV-4 for SmartCorder® DDX-100

MODULE HIGHLIGHTS

- **4 Universal inputs**
- **Accepts thermocouple, RTD, bridge based sensors, and IEPE type sensors**
- **Simultaneous sampling at up to 200kS/s/ch**
- **16-bit resolution**
- **High accuracy**
- **Built-in counter and timer functions**
- **250 VRMS or DC Cat II isolation**

ORDERING INFORMATION

For the UNIV-4 Universal Input Module

SYSTEM	PART NO.
Daxus DXS-100	32950000
SmartCorder DDX-100	32950600

POPULAR ACCESSORIES

ITEM	PART NO.	DESCRIPTION
ADP-I	32950501	IEPE Adapter
ADP-T	32950502	Thermocouple Adapter
ADP-R	32950503	RTD Adapter
GL-40	13442000	General Use Lead Set
LC-40	13441003	Pair of Test Leads and Pincer Clips (1 red, 1 black)

UNIV-4 SPECIFICATIONS

COMMON SPECIFICATIONS	
Channels Per Module	4
Rated Isolation	250 VRMS or DC, CAT II (iso-common to chassis and other iso-commons)
Frequency Counter Capability	Yes, all channels. Software selectable.
Counter Modes	Gated time frequency counter, cycle based frequency counter, pulse event counter, gated pulse event counter, quadrature counter, pulse width detector, period width detector, duty cycle detector, edge separation detector.
Frequency ctr range (menu)	Up to 80 KHz
Frequency ctr range (spec'd)	2 - 40 KHz
Frequency ctr accuracy	± 0.07% of Measurement + .002 Hz
Min counter input amplitude	25% of span for freq and pulse counters, 90% of span for all other modes
Pulse counter range	4000000000 maximum. (16 bit display resolution)
Pulse width accuracy	.002% of measurement + .00167% of span + 0.7 µs
Pulse width range	25 µs – 2500000
Edge separation accuracy	.002% of measurement + .00167% of span + 0.7 µs
Edge separation range	25 µs – 5000000 µs
Period width accuracy	.001% of measurement + .00167% of span + 0.7 µs
Period width range	25 µs – 100000 µs (10 Hz – 40 KHz)
Duty cycle accuracy	.5% (Inputs in the 1 Hz - 5 KHz range with 5% - 95% duty cycles)
Counter Timebase	50 MHZ
Cold Start Drift	0.1% of attenuator (60 min.)
SINGLE ENDED INPUT	
Connector	Guarded banana jacks (red/black)
Input	Single-ended, AC/DC coupled
Sample Rate	200 KHZ
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Bandwidth	40 KHz (-3dB)
AC Coupled 3dB Point	< 0.54 Hz (0.47 Hz typ)
Off Ground Measurements	Yes
Zero Suppression	Yes, digital.
Attenuator Ranges	1, 10, 100, 200 and 400 Volt
Measurement Ranges	± 400 V (400 VFS or 800 VFS w/ zero offset), ± 200 V (200 VFS or 400 VFS w/ zero offset), ± 100 V (100 VFS or 200 VFS w/ zero offset), ± 10 V (10 VFS or 20 VFS w/ zero offset), ± 1 V (1 VFS or 2 VFS w/ zero offset. 0.1V min span)
Max Rated Input	250 Vrms or DC, Cat II
Max Transient Input	± 800 V peak (not to exceed 250Vrms)
DC Accuracy (25°C)	± 0.06% of attenuator
Overshoot	< 0.25%
Intrinsic Noise (pk-pk)	< 0.02% of attenuator + .02% of span (400V through 10V atts) < 0.16% of attenuator + .02% of span (1V att)
IMR at 60 Hz	Better than -80 dB
Min Input Impedance	> 1 Megohm
DIFFERENTIAL INPUT	
Connector	8 wire screw terminal
Input	Differential, DC coupled
Sample Rate	200 KHz
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Bandwidth	35 KHz
Measurement Ranges	± 1000 mV, ± 100 mV, ± 20 mV
Max Transient Input	± 20 V (no damage)
Common Mode Voltage	± 10 V
Zero Suppression	Yes, digital.
DC Accuracy (25°C)	± 0.06% of attenuator
Overshoot	< 0.25%
Intrinsic Noise	< 0.02% of attenuator + .02% of span (1000 mV Att), < 0.05% of attenuator + .02% of span (100 mV Att) < 0.18% of attenuator + .02% of span (20 mV Att)
Input Impedance	> 300 KΩ (150 KΩ balanced to isolated common)
CMR at 60 Hz	> 85 dB
Excitation	DC Voltage - adjustable, 0.1 to 10 V. 30 mA maximum
Excitation Accuracy	0.05 V voltage mode

UNIV-4 SPECIFICATIONS

RESISTANCE INPUT	(32950503 ADP-R option)
Connector	4 wire screw terminal
Input	Differential, DC coupled
Sample Rate	2.5 Hz
A/D	24 bit SigmaDelta (one per channel)
Anti-Aliasing Filter	Inherent
Measurement Ranges	0 to 1500 Ω
Max Transient Input	± 20 V (no damage)
Accuracy	0.03% of measurement + 0.04 Ω

DCVM INPUT	
Connector	8 wire screw terminal
Input	Differential, DC coupled
Sample Rate	2.5 Hz
A/D	24 bit SigmaDelta (one per channel)
Anti-Aliasing Filter	Inherent
Measurement Ranges	-10 mV to + 100 mV
Max Transient Input	± 20 V (no damage)
Common Mode Voltage	± 10V
Zero Suppression	Yes, digital.
DC Accuracy (25°C)	20 V (no damage) 0.04% of attenuator
Intrinsic Noise (pk-pk)	< 0.005% of attenuator
Input Impedance	> 300 KΩ (150 KΩ balanced to isolated common)

THERMOCOUPLE INPUT	(32950502 ADP-T needed for internal CJC)
Connector	Type U miniature thermocouple
Input	Differential, DC coupled
Sample Rate	2.5 Hz
A/D	24 bit SigmaDelta (one per channel)
Anti-Aliasing Filter	Inherent
Specified Range Type J:	-210 to 1200°C
Specified Range Type K:	-200 to 1372°C
Specified Range Type E:	-200 to 1000°C
Specified Range Type T:	-200 to 400°C
Specified Range Type N:	-200 to 1300°C
Specified Range Type B:	600 to 1820°C (250 to 1820 on menu)
Specified Range Type R:	0 to 1767°C (-20 to 1768 on menu)
Specified Range Type S:	0 to 1767°C (-20 to 1768 on menu)
Specified Range Type C:	0 to 2316°C
Max Transient Input	± 20 V (no damage)
Common Mode Voltage	± 10V
Resolution	0.01°C
Thermocouple types	J,K,E,T,N,B,R,S,C

Accuracy (25°C) J (< 0)	± 3.0°C.
Accuracy (25°C) J (0 to 1200)	± 1.0°C.
Accuracy (25°C) K (< 0)	± 3.0°C.
Accuracy (25°C) K (0 to 1372)	± 1.0°C.
Accuracy (25°C) E (< -100)	± 3.0°C.
Accuracy (25°C) E (-100 to 1000)	± 1.5°C.
Accuracy (25°C) T (< -100)	± 2.5°C.
Accuracy (25°C) T (-100 to 400)	± 1.5°C.
Accuracy (25°C) N (< -50)	± 3.0°C.
Accuracy (25°C) N (-50 to 1300)	± 1.5°C.
Accuracy (25°C) B	± 4.5°C.
Accuracy (25°C) R	± 5.5°C.
Accuracy (25°C) S	± 5.5°C.
Accuracy (25°C) C (W5ReM26Re)	± 3.0°C.
Cold Junction Compensation	Yes, both internal and external.
Compensation Error	Included in accuracy specification
Linearization	NIST ITS-90
Input Impedance	> 300 KΩ (150 KΩ balanced to isolated common)

UNIV-4 SPECIFICATIONS

RTD INPUT	(32950503 ADP-R option)
Connector	4 wire screw terminal
Input	Differential, DC coupled
Sample Rate	2.5 Hz
A/D	24 bit SigmaDelta (one per channel)
Anti-Aliasing Filter	Inherent
Measurement Ranges	Pt100(385) -200 to 800°C, Pt100(3916) -200 to 630°C (-200 to 800 on menu)
Max Transient Input	± 20 V (no damage)
Resolution	0.01 *C
Supported RTD Probe types	Pt 100 - 385 (DIN 43760, IEC751 and ASTM 1137), Pt 100 - 3916 (JIS C1604), Pt 100 - 3926 (reference grade) – future
DC Accuracy (25°C)	Pt 100 - 385 0.04% of measurement + 0.1°C, Pt 100 - 3916 0.1% of measurement + 0.2°C
Linearization	Yes
IEPE (LIVM) INPUT	**(32950501 ADP-I option)**
Connector	Isolated BNC
Input	Single Ended, AC coupled with constant current excitation
Sample Rate	200 KHz
A/D	16-bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Measurement Ranges	± 10 V (1 to 20 VFS)
Max Transient Input	± 30 V (no damage)
Accuracy (25°C)	± 0.1% of attenuator
Overshoot	< 0.25%
Intrinsic Noise (pk-pk)	< 0.02% of attenuator + .02% of span
Min Input Impedance	> 1 Megohm
IMR at 60 Hz	Better than -85 dB
Excitation	4.5 mA DC current
Excitation Accuracy (25°C)	20%
Excitation Compliance Voltage	20V (Approx 24V open circuit voltage)
Excitation Protection	Short Circuit Protected
Coupling Time Constant	10 s (± 30%) (10µF / 1M‡)
Rated Isolation	30 Vrms or 60 VDC

World Headquarters
600 East Greenwich Ave
West Warwick, RI 02893 USA
Toll-Free: 877-867-9783
Tel: +1-401-828-4000
daq@astronovainc.com
tm.astronovainc.com

China
Part D, Building No. 3 Plot Section
No. 81 Meiyue Road
Pilot Free Trade Zone
(Shanghai) 200131
Tel: +86 21 5868 3687
tm.astronovainc.cn

European Headquarters
Waldstrasse 70
63128 Dietzenbach
Deutschland
Tel: +49 (0) 6074-31025-00
tm.astronovainc.de