



ATEC® Astro-Med, Inc

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Dash 8Xe and AstroDAQ Xe Module Specifications
 (Updated December, 2005)

NDV1 Differential, non-isolated input module

Connector	Guarded banana jacks (red/black)
Isolation	No
Bandwidth (5V Attenuator)	28 KHz (-3db)
Bandwidth (40V Attenuator)	34 KHz (-3db)
Input	Differential, DC coupled
Off Ground Measurements	Yes
Zero Suppression	Yes, digital.
Measurement Ranges	+/- 5 V (5 VFS or 10 VFS w/ zero offset) +/- 40 V (40 VFS or 80 VFS w/ zero offset)
Max Rated Input	+/- 40 V
Max Transient Input	+/- 40 V
A/D	14 bit SAR
Anti-Aliasing Filter	4 pole Bessel
Accuracy (25°C)	0.25 % of attenuator (12.5 mV and 100 mV)
Cold Start Drift	Less than 0.5% of attenuator
Overshoot	Less than 1% of attenuator
Intrinsic Noise (pk-pk)	< 0.1 % of attenuator
Min Input Impedance	425 K
CMR at 60 Hz	Better than -60 dB
Channels Per Module	1
Frequency Counter	No
Module Part Number	32750-000

Specifications subject to change without notice

IHV1 Isolated high voltage module

Connector	Guarded banana jacks (red/black)
Isolation	250 VRMS or DC, Cat II. (iso-common to chassis and other iso-commons)
Bandwidth (100V attenuator)	39 KHz (-3db)
Bandwidth (other attenuators)	40 KHz (-3db)
Input	Single-ended, DC coupled
Zero Suppression	Yes, digital.
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) +/- 50 V (50 VFS or 100 VFS w/ zero offset) +/- 40 V (40 VFS or 80 VFS w/ zero offset) +/- 20 V (20 VFS or 40 VFS w/ zero offset) +/- 10 V (10 VFS or 20 VFS w/ zero offset) +/- 5 V (5 VFS or 10 VFS w/ zero offset)
Max Rated Input	+/- 250 Vrms or DC
Max Transient Input	+/- 800 V (not to exceed 250 Vrms)
A/D	16 bit SAR
Anti-Aliasing Filter	4 pole Bessel
Accuracy (25°C)	+/- 0.15% of Attenuator
Cold Start Drift	Less than 0.2% of attenuator
Overshoot	Less than 2% of attenuator
Intrinsic Noise (pk-pk)	< 0.1 % of Attenuator
Min Input Impedance	1 Mohm
IMR at 60 Hz	> 75 dB
Channels Per Module	1
Frequency Counter	Yes. Software selectable.
Module Part Number	32750-010

Specifications subject to change without notice

IBR1 Isolated differential/ bridge amplifier with DC excitation

Connector	5 wire screw terminal
Isolation	250 VRMS or DC, Cat II (iso-common to chassis and other iso-commons)
Bandwidth	40 KHz (-3db)
Input	Differential, DC coupled
Zero Suppression	Yes, digital
Absolute Max Input	+/- 12 V (either input referenced to iso-common)
Measurement Ranges	+/- 2 V +/- 200 mV +/- 50 mV +/- 20 mV
Max Transient Input	60 V
A/D	16 bit SAR
Anti-Aliasing Filter	4 pole Bessel
Accuracy (25°C)	+/- 0.15 % of attenuator
Cold Start Drift	Less than 0.2% of attenuator
Overshoot	Less than 2% of attenuator
Intrinsic Noise (pk-pk)	< 0.1 % of attenuator (2V, 200 mV Attenuators) < 0.2 % of attenuator (50 mV Attenuator) < 0.2 % of attenuator (20 mV Attenuator)
Min Input Impedance	250 K (balanced to signal common)
CMR at 60 Hz	> 90 dB
Excitation	DC adjustable to 10 V @ 30 mA
Excitation Range	0.1 to 10.0 V
Excitation Accuracy	0.05 V
Auto Balance	yes (limited by maximum span)
Channels Per Module	1
Frequency Counter	Yes. Software selectable.
Bridge Completion Resistors:	Yes, internal. Includes location for 3-wire ¼ bridge.
Module Part Number	32750-020

Specifications subject to change without notice

IHV2 Isolated very high voltage module

Connector	Guarded Banana Jacks
Isolation	600 VRMS or DC Cat II (either input to chassis and across inputs) 300 VRMS or DC Cat III
Bandwidth	34 KHz (-3db)
Input Type	Isolated differential, balanced to internal common.
Coupling	DC
Zero Suppression	Yes, digital.
Measurement Ranges	+/- 1000 V +/- 800 V +/- 400 V +/- 200 V +/- 100 V
Max Rated Input	600 Vrms or DC
Max Transient Input	+/- 1000 V (not to exceed 600 Vrms)
A/D	16 bit SAR
Anti-Aliasing Filter	4 pole Bessel
Accuracy (25°C)	+/- 0.15% Attenuator
Cold Start Drift	Less than 0.2% of attenuator
Overshoot	Less than 1% of attenuator
Intrinsic Noise (pk-pk)	< 0.15 % Attenuator
Min Input Impedance	4M (differential)
IMR	> 70 dB @ 60 Hz
Channels Per Module	1
Frequency Counter	Yes. Software selectable.
Module Part Number	32750-030

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IRTD Isolated RTD amplifier for Pt 100 Resistance Temperature Detectors

Connector	4 wire screw terminal
Isolation	Yes
Bandwidth	2.5 Hz update rate
Absolute Max Input	+/- 10V
Measurement Ranges:	Pt100(385) -200 to 800 °C Pt100(3916) -200 to 630 °C (-200 to 800 on menu) Pt100(3926) -200 to 630 °C (-200 to 800 on menu) resistance 0 to 400 Ω (0 to 450 Ω on menu)
Minimum full scale	10 °C
A/D	24 bit Sigma Delta
Anti-Aliasing Filter	Inherent
Resolution	0.01 °C
Accuracy (25°C)	0.05% of measurement + 0.2 °C
Accuracy (resistance 25°C)	0.02% of measurement + 0.05 Ω
Cold Start Drift	< 0.3° C
Intrinsic Noise (pk-pk)	< 0.03 °C
Intrinsic Noise (resistance)	< 0.01 Ω
Linearization	yes
Supported RTD Probe types	Pt 100 - 385 (DIN 43760, IEC751 and ASTM 1137) Pt 100 - 3916 (JIS C1604) Pt 100 - 3926 (reference grade)
Excitation	1 mA constant current (+/- 4%)
Channels Per Module	1
Frequency Counter	No
Module Part Number	32750-040

Specifications subject to change without notice

ITCU Universal thermocouple amplifier

Connector	Type U miniature thermocouple
Isolation	250 VRMS or DC, Cat II.
Bandwidth	5 Hz update rate
Absolute Max Input	+/- 10V
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:	-20 to 1768 °C
Specified Range Type S:	-20 to 1768 °C
A/D	24 bit Sigma Delta
Anti-Aliasing Filter	Inherent
Resolution	0.01 °C
Thermocouple types	J,K,E,T,N,B,R,S
Accuracy (25°C) J	+/- 0.8 °C
Accuracy (25°C) K	+/- 1.0 °C
Accuracy (25°C) E	+/- 0.8 °C
Accuracy (25°C) T (-100 to 400)	+/- 1.0 °C
Accuracy (25°C) T (-200 to -100)	+/- 2.0 °C
Accuracy (25°C) N	+/- 0.8 °C
Accuracy (25°C) B	+/- 2.0 °C
Accuracy (25°C) R	+/- 2.0 °C
Accuracy (25°C) S	+/- 2.0 °C
Accuracy (25°C) 100 mV	+/- 0.01% of attenuator
Cold Junction Compensation	Yes
Compensation Error	included in above accuracy specification
Intrinsic Noise (pk-pk, J,K,E,T,N)	< 0.07 °C
Intrinsic Noise (pk-pk, B,R,S)	< 0.5 °C
Intrinsic Noise (pk-pk, 100 mV)	< 0.005 % of attenuator
IMR	> 110 dB @ DC
Linearization	NIST ITS-90
Channels Per Module	1
Frequency Counter	No
Module Part Number	32750-090

Note: Specified accuracy does not include probe errors.

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LIVM Low impedance voltage module with DC current excitation

Channels Per Module	1
A/D	16 bit SAR
Anti-Aliasing Filter	4 pole Bessel
Isolation	Yes, 250 Vrms or DC to chassis common. *
Connector	Isolated BNC
Bandwidth	6 Hz to 30 KHz (-3db)
Input	AC coupled transducers with integral electronics
Coupling Time Constant	300 ms (+/- 20%)
Zero Suppression	N/A
Absolute Max Input	+/- 40V
Measurement Ranges	+/- 5000 mV +/- 500 mV +/- 200 mV +/- 50 mV
Max Transient Input	60 V
Accuracy LIVM mode (25°C)	2 % of attenuator
Accuracy Diff mode (25°C)	0.15 % of attenuator
Cold Start Drift	Less than 2% of attenuator
Intrinsic Noise - 50 mV atten	.2% of attenuator (pk-pk)
Intrinsic Noise - other attens.	.1% of attenuator (pk-pk)
Min Input Impedance	25 K Ω (differential)
IMR at 60 Hz - 5000 mV att	80 dB
IMR at 60 Hz - other attens.	90 dB
Excitation	4 mA DC current
Excitation Accuracy	20% (25 °C)
Excitation Compliance Volt.	18V (23V open circuit voltage)
Excitation Protection	Short Circuit Protected
Module Part Number	32750-070

* Isolation limited to 30 Vrms or 60V DC when non-insulated mating BNC connector used since hazardous voltage would otherwise be accessible.

Specifications subject to change without notice

IDCV Isolated high accuracy, wide dynamic range DC voltmeter

Connector	Guarded banana jacks (red/black)
Isolation	250 VRMS or DC, Cat II. (iso-common to chassis and other iso-commons)
Input Type	Single-ended, Isolated
Input Coupling	DC
Minimum Input Impedance	> 1 M Ω
Zero Suppression	Yes, digital.
Bandwidth	6 Hz update rate (.65 Hz 3dB point typical)
Max Rated Input	- 5 V to +130V
Max Transient Input	+/- 250 V
A/D	24 bit Sigma Delta
Anti-Aliasing Filter	Inherent
Accuracy (25°C)	+/- 55 ppm of reading + .7 mV
Intrinsic Noise (pk-pk)	< 1.0 mV (.7 mV typ)
IMR (DC)	> 110 dB
Channels Per Module	1
Module Part Number	32750-110

Specifications subject to change without notice

IHV3 High voltage module

Connector	Guarded banana jacks (red/black)
Isolation	250 VRMS or DC, Cat II. (iso-common to chassis and other iso-commons)
Bandwidth	22 KHz (-3db) (350 through 40 V Atts) 20 KHz (-3db) (20 V Att) 17 KHz (-3db) (10000 through 500 mV Atts) 12 KHz (-3db) (100 through 50 mV Atts)
Input	Single-ended, DC coupled
Zero Suppression	Yes. digital
Measurement Ranges	+/- 350 V +/- 200 V +/- 100 V +/- 50 V +/- 40 V +/- 20 V +/- 10000 mV +/- 5000 mV +/- 1000 mV +/- 500 mV +/- 100 mV +/- 50 mV
Max Rated Input	+/- 250 Vrms or DC
Max Transient Input	+/- 800 V (not to exceed 250 Vrms)
A/D	16 bit SAR
Anti-Aliasing Filter	4 pole Bessel
Accuracy (25°C)	+/- 0.15% of Attenuator
Cold Start Drift	Less than 0.5% of attenuator
Intrinsic Noise (pk-pk)	< 0.2 % of Attenuator (Volt Attenuators) < 0.2 % of Attenuator + 2 mV (mV Attenuators)
Min Input Impedance	1 M ohm
IMR at 60 Hz (Volt Attens.)	> 50 dB
IMR at 60 Hz (mVolt Attens)	> 60 dB
Channels Per Module	1
Frequency Counter	Yes. Software selectable.
Module Part Number	32750-130

Specifications subject to change without notice