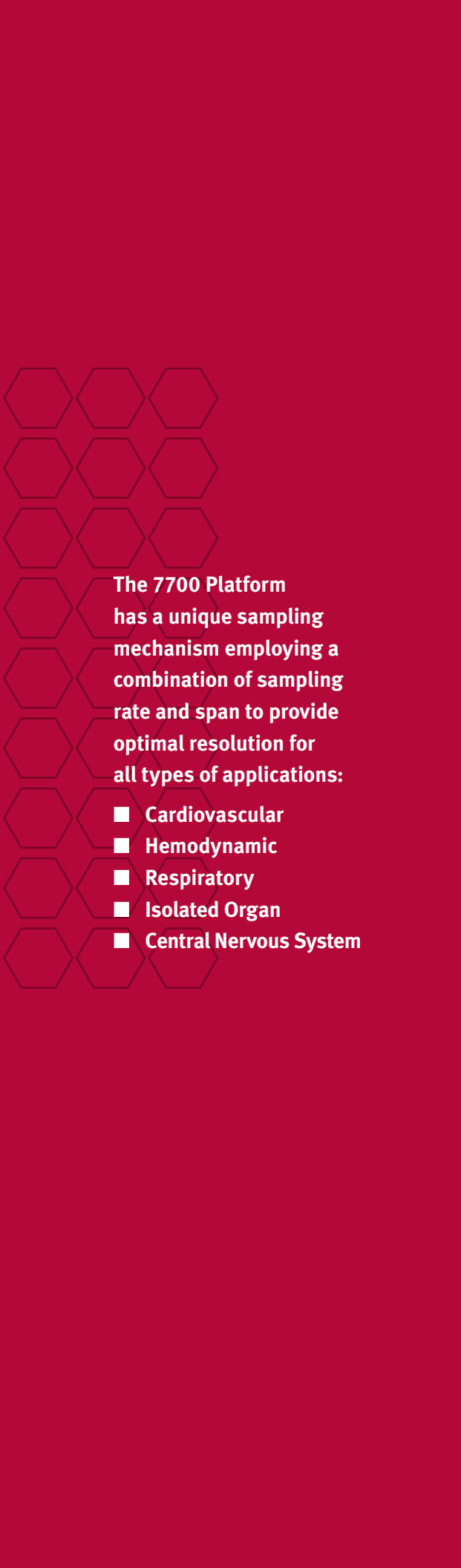


Hardwired Amplification

Digital Signal Conditioners and Accessories

Accelerate your research





The 7700 Platform has a unique sampling mechanism employing a combination of sampling rate and span to provide optimal resolution for all types of applications:


- Cardiovascular
- Hemodynamic
- Respiratory
- Isolated Organ
- Central Nervous System

Better signals mean better data

DSI 7700 digital signal conditioners and accessories accelerate your research by delivering better resolution of data using the latest Digital Signal Processors. Our amplifiers filter the data eliminating inaccuracies and signal offsets, preventing issues that often arise from analog components.

By using the 7700 Platform with Ponemah Analysis Software you achieve stable, accurate and robust data analysis routinely performed in physiology, pharmacology and toxicology laboratories.

DSI 7700 State-of-the-Art Digital Technology offers:

- Easy Graphical User Interface (GUI) setup
 - 16 bit resolution
 - Less noise, less drift, better stability
 - Universal input for multiple physiological signals
 - Low cost per channel
 - Compact design with flexible application-specific signal conditioner modules available (2, 6, and 13 slot chassis available)
 - Synchronization of your hardwired data directly with DSI implantable telemetry data
 - CFR21 Part 11 compliance — all data and changes saved in a configuration file and audit log
 - USB interface to workstation
- 

Hardwired Amplification Options



DSI offers a complete line of transducers, pneumotachs, sensors and cabling options to support your research.

Model	13-7770-BIO12 12 Channel Isolated Biopotential Pod	13-7770-ECG12 Multi-Lead ECG Pod
Description	Satisfy a wide variety of biopotential applications including Langendorff preparations, isolated heart preparations and open-chested models where electrograms or other biopotentials are monitored. <ul style="list-style-type: none"> ■ 12 differential pairs ■ Input Range: 40uV to 40mV Full Scale ■ Input Impedance: >10M Ohm ■ Low Pass filter settings: 100, 300, 1,000Hz 	Accurately conditions up to twelve simultaneous surface ECG leads using a standard industry 10-lead cable with various attachments. <ul style="list-style-type: none"> ■ ECG presentations: Lead I, II, III, aVR, aVL, aVF, 6V-leads ■ High fidelity filtering 0.05 – 500Hz ■ Patient isolation ■ Defibrillation protected with baseline reset ■ Leads off detection ■ TTL output for QRS pulse to trigger external equipment
# Channels	12 Differential pairs	RA, LA, LL, RL, and V1-V6
Inputs Resolution	16 Bits	16 Bits
Maximum Rate	20K Samples/Second per channel	10K Samples/Second per channel
Defibrillator Protection	N/A	360 Joules delivered at 5000V
Isolation	>1500V rms for 1 minute, isolated circuits to chassis	>1500V rms for 1 minute, isolated circuits to chassis
Signal Input		
Input Impedance	>10M Ohm	>10M Ohm
Input Range	40µV to 40 mV Full Scale	±250µV to ±25mV Full Scale
Maximum Input	±30V DC, AC Peak (Max without damage)	±80 V DC, AC Peak (Max without damage)
Programmable Filters		
Low Pass	100, 300, and 1000Hz	10, 30, 100, 300, and 500Hz
High Pass	0.05Hz Fixed (hardware implemented)	0.05, 0.10, 30.0Hz
Accuracy Specifications		
Gain Error, % of FS	≤±0.5%	≤±0.5%
Linearity, % of FS	≤±0.5%	≤±0.5%
Noise	<20µV pk-pk	<15µV pk-pk or 0.1% of Full Scale (whichever is greater)
Zero Drift, % of FS	0.01% of Full Scale per Degree C (typical)	± 2µV per Degree C
Common Mode	> 90dB	> 90dB



ACQ-7700

The ACQ-7700 2-Slot Acquisition Interface is a low cost solution designed specifically to interface to the Ponemah Physiology Platform. The modular design allows the user to easily expand the number of available acquisition channels to a maximum of 64, through the installation of 7700 series signal conditioner modules. The 7700 series signal conditioners are designed

to take in various physiological signals, such as bio-potentials, blood pressures, pulmonary flows, temperatures and even high-level inputs from other sensors. The smaller, portable, and rugged chassis is perfect for laboratories that conduct acute studies using a few test subjects at a time.

When combined with the Multi-Lead ECG POD, a 10-lead patient ECG cable, and the Digital Communication Module (DCOM), researchers have a portable ECG System capable of conditioning up to 12 simultaneous surface ECG leads (Lead I, II, III, aVR, aVL, aVF, and 6 V leads).



Model	13-7715-59 Universal XE	13-7715-68 D/A Module	Model 13-7715-35 Carrier	Model 13-7715-50 Transducer
Description	All-purpose or "Universal" input for physiological signals. Handles a wide variety of signals such as biopotential signals, pulmonary pressure and flow signals, blood pressure and flow signals, temperature signals, isolated tissue and a variety of pressure or tension measurement.	Features 16 channels of Digital-to-Analog output for use with other equipment. Provides Filtering, Output Resolution and user selectable Output Ranges as well as automatic calculation of Units/Volts of the Output signal.	Designed specifically for use with the Validyne DP-45 and DP-250 Pressure Transducers for accurate pulmonary pressure, volume and flow measurements.	Optimized filtering and Input Range for specific applications such as pulmonary pressures, blood pressures and isolated organ.
# Channels	4	16 Channels available	4	3 Differential
Type of Coupling	AC/DC/Gnd		AC	DC/Gnd
Maximum Rate	100K Samples/Second per channel	100KHz	5K Samples/Second per Channel	50K Samples / Second per Channel
Excitation Voltage	2.5, 5, 7.5VDC $\pm 1\%$, and 10VDC $\pm 5\%$ @ 20mA, OFF		Synchronized to Excitation Voltage 5VRMS @ 5KHz for use specifically with Validyne Transducer	2.5, 5 or 10V $+10\%$ @ 30mA, and Off
Digitizer	Per Channel	Per Channel	Per Channel	Per Channel
Options/Accessories	Three lead ECG cable and assorted lead wires; YSI 700 Series temperature probe; Isolated/Defibrillation protected ECG Probe, General Purpose Probe; BD Medical P23, P10 and disposable pressure transducers; Headstage amplifiers and a variety of other transducers, equipment and cabling.	BNC output box allows up to 16 signal outputs.	Validyne DP45 and DP250 series Differential Pressure Transducers.	BD Medical P23, P10 and disposable pressure transducers as well as a host of other pressure (BP and pulmonary), tension and force transducers.
Signal Characteristics				
Input Impedance	10M Ohm		>10M Ohm	10M Ohm
Range	Bipolar: $\pm 25\mu\text{V}$ to $\pm 5\text{V}$ Full Scale. Unipolar: 0-50 μV to 0-5V Full Scale	0.0 to 2.5 Volts Full Scale -2.5 to 2.5 Volts Full Scale 0.0 to 5.0 Volts Full Scale -5.0 to 5.0 Volts Full Scale	Continuously Variable +500 μV to +300mV (0.2mV V to 120mV/V) Full Scale	$\pm 100\text{mV}$ Full Scale
Maximum Input (Max without damage)	$\pm 20\text{VDC}$ or AC Peak		30V DC or AC Peak	30V DC or AC Peak
Analog Bandwidth	DC-5KHz	DC-10KHz	DC-10KHz	DC-5 KHz
Input Suppression				
Zero Suppression	Span $\pm 5\text{V}$ - $\pm 200\text{mV}$: $\pm 5\text{V}$ Span $\pm 200\text{mV}$ - $\pm 0.2\text{mV}$: $\pm 0.5\text{V}$ Less than 0.2mV: $\pm 0.05\text{V}$		Continuously variable $\pm 200\text{mV}$	
Programmable Filters				
Low Pass	Selectable settings of: 10, 30, 100, 300, 1000, 3000, 5000Hz, and OFF		10, 30, and 100Hz	10, 30, and 100Hz
High Pass	Single-pole Bessel with selectable settings of: DC, 0.05, 0.1, 1.0, 3.0, 30, and 100Hz			
Accuracy Specifications				
Gain Accuracy, % of FS	$\lt \pm 0.5\%$ in mV range	$\lt 0.2\%$	$\lt 0.5\%$	$\lt 0.5\%$
Offset Accuracy, % of FS	$\lt \pm 0.4\%$ in mV range at FS	$\lt 0.5\%$		$\lt 0.1\%$
Linearity, % of FS		$\pm 0.4\%$ Full Scale Max	$\lt 0.1\%$	$\lt 0.1\%$
Noise % of FS	$\lt 10\mu\text{V}$ Typical with 1kHz filter at Max Gain	$\lt 0.02\%$	$\lt 0.02\%$	$\lt 15\mu\text{V}$ @ Max Gain
Common Mode Voltage	$\pm 5\text{V}$			+2.5V
Common Mode Rejection	$\gt 60\text{dB}$			$\gt 80\text{dB}$
Crosstalk (60Hz)	$\lt 80\text{dB}$	$\lt 65\text{dB}$	$\lt 45\text{dB}$	$\lt 90\text{dB}$
Zero Suppression Acc. (% of suppr. Voltage)			$\lt 0.5\%$	$\lt 0.25\%$



13-7715-02 Advanced 32	13-7715-04 Advanced 4	Model 13-7715-09 Math Module	13-7715-70 Digital Communication Module	
Ability to acquire Bi-polar measurements from up to 32 high level laboratory inputs simultaneously.	Standard laboratory BNC connections easily allow high level signals to be brought into Ponemah for association with other signals.	Available Math Functions	Provides a communication link with the external BIO12 POD and the Multi-Lead ECG POD. Delivers an ECG sync pulse using standard TTL logic when used with the Multi-Lead ECG POD.	
32 Single-ended or 16 Differential	4 Single-ended	(- Open parenthesis	Both the Bio12 POD and the Multi-lead ECG POD, interface to the DSI 7700 digital signal conditioners via the Digital Communication Module shown above. BIO 12 POD (part # 13-7770-BIO12): Satisfy a wide variety of biopotential applications including Langendorff preparations, isolated heart preparations and open-chested models where electrograms or other biopotentials are monitored. <ul style="list-style-type: none"> • 12 differential pairs • Input Range: 40uV to 40mV Full Scale • Input Impedance: >10M Ohm • Low Pass filter settings: 100, 300, 1,000Hz Multi-Lead ECG POD (part # 13-7770-ECG12): Accurately conditions up to twelve simultaneous surface ECG leads using a standard industry 10-lead patient cable with various attachments. <ul style="list-style-type: none"> • ECG presentations: Lead I, II, III, aVR, aVL, aVF, 6 V-leads • High fidelity filtering 0.05 – 500Hz • Patient isolation • Defibrillation protected with baseline reset. • Leads off detection • TTL output for QRS pulse to trigger external equipment 	
DC	DC) - Closed parenthesis		
250K Samples / Second Aggregate	250K Samples / Second per Channel	+ - Calculates sum of two expressions		
		/ - Calculates ratio		
Multiplexed	Multiplexed	^ - Calculates x to the y power		
Input terminal box with BNCs for connection to most laboratory equipment.	BNC cable kits for connection to most laboratory equipment.	- Calculates the difference between two expressions		
100K Ohm	100K Ohm	* Calculates the product between two expressions		
±1.25, 2.5, 5, 10, 20V Full Scale 0 - 1.25, 2.5, 5, 10, 20V Full Scale	± 1.25, 2.5, 5, 10, 20V Full Scale 0 - 1.25, 2.5, 5, 10, 20V Full Scale	Abs - Returns the positive value		
+ 50V DC or AC Peak	+ 50V DC or AC Peak	Avg - Low pass RC filter to average the input		
DC-10KHz	DC-10KHz	Diff - Calculates the slope of the input		
		Min - Returns minimum value that was sampled		
		Max - Returns the maximum value that was sampled		
		Neg - Negative portion of the input		
		Int - Area under the curve		
		Intp - Integrates the input		
		Ln - Natural logarithm of a positive expression		
		Log - Logarithm of a positive expression		
		Pi - Shorthand for 3.1415927		
		Pos - Positive portion of the input		
		Sq - Raised to the second power		
		Sqrt - Square root of a positive expression		
		Preview Features		
		Acos - Arccosine		
		Apwr - Apparent power is RMS (voltage*current)		
		Asin - Arcsine		
		Atan - Arctangent		
		Cos - Cosine		
		Freq - Monitors an input expression up to 500 Hz		
		Mod - Remainder of the ratio between 2 expressions		
		Phase - Outputs voltage based on the phase difference		
		Rms - The square root of the mean of the square		
		Rpm - Measures rotational speeds up to 30,000 rpm		
		Sin - Sine		
		Tan - Tangent		
		Rpwr - Real Power is calculated as the average of the instantaneous power		



To learn more, talk to a DSI Representative
at 1-800-262-9687 (U.S.A./Canada),
1-651-481-7400 (worldwide),
or visit www.datasci.com

Hardwired Amplification Accessories

Hardwired Sensors



Sensors available for blood pressure, differential pressure, force, biopotential, and temperature measurements.

Scisense ADVantage



DSI offers an “admittance” based PV loop system for rodents, providing absolute ventricular volume in real-time. The system does not require an injection of hypertonic saline “bolus” to factor out parallel conductance, eliminating a time-consuming and error-prone procedure. The

technology eliminates the variability of the non-uniform electrical field created by conductance catheters.

This new technology created by Scisense called the ADVantage™ system, allows the user to achieve a higher degree of accuracy. Lower standard deviations are the end result, with reduced experiment time and fewer animals used. This reduces the cost of running a study and the ability to publish data faster.

BNC Interface Boxes and Cable Kits

Two different BNC Interface boxes are offered: one for the interfacing of high level analog signals generated from existing laboratory equipment into the data acquisition system, and a second for the interfacing of an analog signal generated by the data acquisition system’s D/A option, which may be output to other laboratory devices. For further flexibility, DSI also offers an assortment of Cable Kits to connect most laboratory equipment.

Call DSI for details at 1-800-262-9687 (U.S.A./Canada)
or +1 (651) 481-7400 (worldwide).

DSI™

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