

Guide to DSI's

Hardwired Amplification

Digital Signal Conditioners and Accessories



ACQ-7700 Signal Conditioner

DSI™

BetterData. BetterScience.

Better signals mean better data

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

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

DSI's 7700 digital signal conditioners and accessories accelerate your research by delivering better resolution of data using the latest Digital Signal Processors. Our signal conditioners 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 acquisition and 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



Model	13-7715-59 Universal XE
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.
# Channels	4
Type of Coupling	AC/DC/Gnd
Maximum Rate	100K Samples/Second per channel
Excitation Voltage	2.5, 5, 7.5VDC $\pm 1\%$, and 10VDC $\pm 5\%$ @ 15mA, OFF
Digitizer	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, and disposable pressure transducers; Headstage amplifiers and a variety of other transducers, equipment and cabling.
Signal Characteristics	
Input Impedance	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
Maximum Input (Max without damage)	$\pm 20\text{VDC}$ or AC Peak
Analog Bandwidth	DC-5KHz
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: $\pm 0.05\text{V}$
Programmable Filters	
Low Pass	Selectable settings of: 10, 30, 100, 300, 1000, 3000, 5000Hz, and OFF
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	$< \pm 0.5\%$ in mV range
Offset Accuracy, % of FS	$< \pm 0.4\%$ in mV range at FS
Linearity, % of FS	
Noise % of FS	$< 10\mu\text{V}$ Typical with 1kHz filter at Max Gain
Common Mode Voltage	$\pm 5\text{V}$
Common Mode Rejection	$> 60\text{dB}$
Crosstalk (60Hz)	$< 80\text{dB}$

*BNC Interfaces are offered for 4 or 32 high level analog signals
For further flexibility, DSI also offers an assortment of Cable Kits



Model 13-7715-35 Carrier	13-7715-02 Advanced 32	13-7715-04 Advanced 4	13-7715-70 Digital Communication Module
Designed specifically for use with the Validyne DP-45 and DP-250 Differential Pressure Transducers for accurate pulmonary pressure, volume and flow measurements.	Up to 32 input channels available with the ability to select uni-polar, bi-polar, single-ended or differential measurements. *Cable kits offered	Standard laboratory BNC connections easily allow high level signals to be brought into Ponemah for association with other signals. *Cable kits offered	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.
4	32 Single-ended or 16 Differential	4 Single-ended	 <p>13-7770-BIO12 12 Channel Isolated Biopotential Pod</p> <p>Satisfy a wide variety of biopotential applications including Langendorff preparations, isolated heart preparations and open-chested models where electrograms or other biopotentials are monitored.</p> <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 ■ High Pass filter fixed at: 0.05Hz
AC	DC	DC	
5K Samples/Second per Channel	250K Samples / Second Aggregate	250K Samples / Second per Channel	
Synchronized to Excitation Voltage 5VRMS @ 5KHz for use specifically with Validyne Transducer			
Per Channel	Multiplexed	Multiplexed	
Validyne DP45 and DP250 series Differential Pressure Transducers.	Input terminal box with BNCs for connection to most laboratory equipment.	BNC cable kits for connection to most laboratory equipment.	
>10M Ohm	100K Ohm	100K Ohm	
Continuously Variable $\pm 500\mu V$ to $\pm 300mV$ (0.2mV V to 120mV/V) Full Scale	$\pm 1.25, 2.5, 5, 10, 20V$ Full Scale 0 - 1.25, 2.5, 5, 10, 20V Full Scale	$\pm 1.25, 2.5, 5, 10, 20V$ Full Scale 0 - 1.25, 2.5, 5, 10, 20V Full Scale	
30V DC or AC Peak	+ 50V DC or AC Peak	+ 50V DC or AC Peak	
DC-100KHz	DC-10KHz	DC-10KHz	
Continuously variable $\pm 250mV$			
10, 30, and 100Hz			
<0.5%	<0.7%	<0.7%	<p>13-7770-ECG12 Multi-Lead ECG Pod</p> <p>Accurately conditions up to twelve simultaneous surface ECG leads using a standard industry 10-lead cable with various attachments.</p> <ul style="list-style-type: none"> ■ ECG presentations: Lead I, II, III, aVR, aVL, aVF, 6V-leads ■ Selectable high fidelity filtering from 0.05 – 500Hz ■ Patient isolation ■ Defibrillation protected with baseline reset ■ Leads off detection ■ TTL output for QRS pulse to trigger external equipment
	<0.5%	<0.5%	
<0.1%	<0.2%	<0.2%	
<0.02%	<0.5%	<0.5%	
	+20V	+20V	
	>80dB	>80dB	
<45dB	<60dB	<60dB	



13-7770-BIO12 12 Channel Isolated Biopotential Pod

Satisfy a wide variety of biopotential applications including Langendorff preparations, isolated heart preparations and open-chested models where electrograms or other biopotentials are monitored.

- 12 differential pairs
- Input Range: 40uV to 40mV Full Scale
- Input Impedance: >10M Ohm
- Low Pass filter settings: 100, 300, 1,000Hz
- High Pass filter fixed at: 0.05Hz



13-7770-ECG12 Multi-Lead ECG Pod

Accurately conditions up to twelve simultaneous surface ECG leads using a standard industry 10-lead cable with various attachments.

- ECG presentations: Lead I, II, III, aVR, aVL, aVF, 6V-leads
- Selectable high fidelity filtering from 0.05 – 500Hz
- Patient isolation
- Defibrillation protected with baseline reset
- Leads off detection
- TTL output for QRS pulse to trigger external equipment

generated from existing laboratory equipment into the data acquisition system. to connect most laboratory equipment.

Hardwired Amplification Accessories

Hardwired Sensors



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



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 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).

To learn more about DSI's hardware amplification digital signal conditioners and accessories please contact our North American, European or Asia Pacific sales representatives.

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