Wilcoxon Research PR710 Series
Signal conditioner operating guide

Caution: This manual should be read carefully before operating any of the PR710 series signal conditioners.

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1.0 Product description

1.1 PR710 supplied components

The PR710 Series signal conditioner consists of a main chassis assembly and the associated external power supply. The PR710 Series rack mountable signal conditioner occupies a 5-1/4” rack height in a 19” wide rack.

The PR710 Series signal conditioner is available in two versions, the PR710A and the PR710B. Both models are identical in function, but have different frequency ranges of operation and different input connector types. The PR710A can be used with any IEPE accelerometer. The PR710B has been optimized for use with the 731A low frequency, low noise accelerometer. The PR710 data sheet details the differences between the two models.

1.2 Description of the PR710

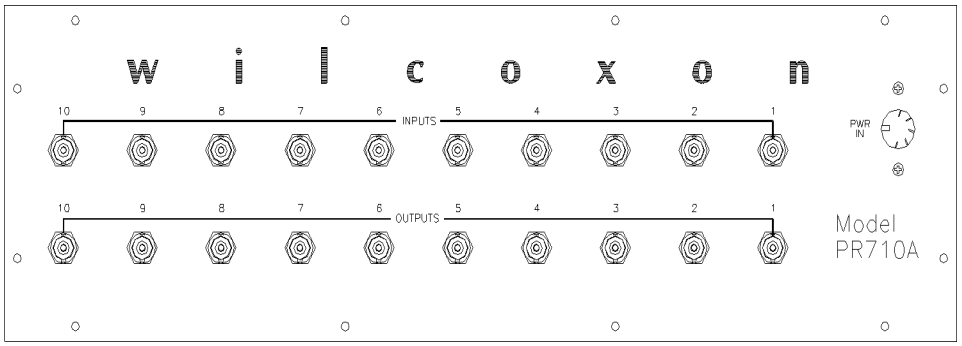
1.2.1 Power supply

The PR710 operates from an external power supply, which helps maintain the exceptionally low noise floor of the PR710 amplifiers. The power supply provides 30 VDC to power the chassis electronics. The power supply operates from any standard AC power source in the world if it provides the required input:
95 to 250 Volts AC, 1.2 Amp maximum
47 to 63 Hz

The unit is shipped with a power cord for standard U.S. power wall outlets. For other countries, IEC-type power cords with AC wall terminations appropriate for that country should be used. The AC input is through a standard IEC 320 connector. The power supply includes an attached output cable and connector.

1.2.2 Rear panel

The rear panel contains two rows of ten (10) BNC connectors. Model PR710A has standard BNC connectors. Model PR710B has twin-axial BNC connectors (see caution below). The INPUT BNC connectors are in the upper row, while the OUTPUT BNC connectors are in the lower row. The power input connector is located in the upper right of the rear panel.

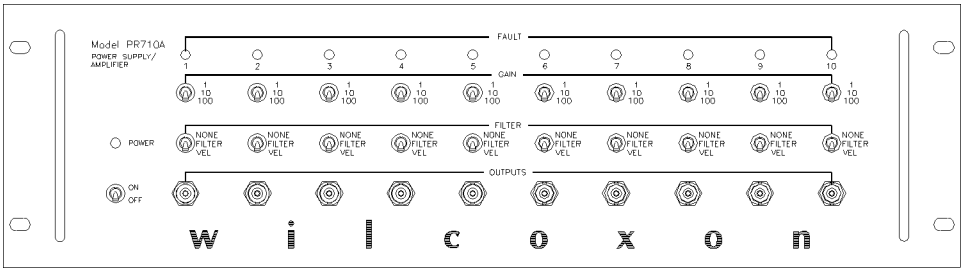


Caution: The PR710B input connectors are twin-axial BNC connectors. Attempting to force a standard co-axial BNC into the twin axial BNC will damage the input connector.

1.2.3 Front panel

The front panel of the PR710 contains the main power switch and control switches for each channel of the PR710. The power switch is in the lower left of the front panel. Above the power switch is the power indicator Light Emitting Diode (LED), which illuminates when the power switch is in the ON position and power is applied to the rear panel power input connector. The LED will extinguish if the input voltage drops below 27 VDC.

Each channel has an LED, two switches, and an OUTPUT BNC connector on the front panel.



The PR710 is specifically designed to furnish the constant DC current necessary to operate the internal amplifier of piezoelectric transducers (accelerometers and velocity sensors), which require a constant current power supply.

Each channel of the PR710 contains a fault monitor with a red LED indicator. The indicator illuminates when a fault occurs, such as the transducer or cable is open or shorted. The fault monitor uses a dual comparator that monitors the DC voltage on the output of the transducer. If either the transducer or cable is shorted, the transducer's bias output voltage will go to zero, tripping the lower comparator and illuminating the fault indicator. Similarly, if either the transducer or cable is open, the voltage will go to the supply voltage, tripping the upper comparator and illuminating the fault indicator. The nominal fault voltages are 2 VDC for a shorted condition and 22 VDC for an open condition. The LED will also illuminate under a severe signal overload conditions.

Each channel has an amplifier gain switch. The amplifier gain (amplification) can be set to amplify by a factor of 1 (0 db), 10 (20 db), or 100 (40 db).

Example #1: A 100 mV/g sensor is connected to a channel. The gain switch is set to "100." The OUTPUT of that channel will be 10.0 Volts/g (100 mV x 100 = 10,000 mV = 10.0 Volts)

Each channel has a filter that can be applied to the sensor signal. Additionally, the accelerometer signal can be integrated to provide a velocity signal output from an accelerometer signal input. The switch position settings are:

NONE: No filtering applied to that channel sensor signal
FILTER: Filter applied according to the table below
VEL: The accelerometer signal of the channel will be integrated to produce a velocity signal output with a gain of 0.1 applied to the mV sensitivity

Example #2: A 100 mV/g accelerometer is connected to a channel. The front panel output gain switch is set to “1” and Velocity is selected. The output sensitivity will be 10 mV/inch/second (100 x 1 x 0.1 = 10 mV/IPS)

Example #3: A 100 mV/g accelerometer is connected to a channel. The front panel output gain switch is set to “100” and Velocity is selected. The output sensitivity will be 1.0 Volt/inch/second (100 x 100 x 0.1 = 1,000 mV/IPS = 1.0 Volt/IPS)

Frequency response of the PR710 filter section for the Model PR710A and PR710B:

Switch setting	**PR710A**	**PR710B**
NONE (no filter)	0.05 - 45,000 Hz	0.05 - 1,000 Hz
FILTER (filter in)	0.05 - 1,000 Hz	0.05 - 100 Hz
VEL (integration in)	1 - 20,000 Hz	1 - 1,000 Hz

The front panel OUTPUT connector is wired in parallel with the rear panel OUTPUT connector. The output of the PR710 may be taken from either the front panel or the rear panel.

Caution: If connections are made to both the front panel OUTPUT connector and the rear panel OUTPUT connector, those connections are being made to the same circuit connection point. They are in parallel.

2.0 Operation of the PR710

1. Ensure the power switch is in the OFF position.
2. Connect AC power to the power supply.
3. Connect the power output cable from the external power supply to the power INPUT connector on the PR710 rear panel.
4. Connect the cable from each sensor to be powered to the rear panel INPUT BNC connector.
5. Connect a cable to the OUTPUT BNC connector and the other end to the measuring equipment used to measure the vibration signal as desired.
6. Verify all cable connections.
7. Turn the front panel power switch to the ON position.
8. Wait about ten seconds and check all channel fault LED indicators. If any channel fault indicator is illuminated for a channel being used, verify the connections for that channel. For troubleshooting assistance refer to Technical Note 14 “Trouble shooting industrial accelerometer installations” available from Meggitt’s online knowledge desk at www.wilcoxon.com.
9. Set the front panel filter selections to NONE or FILTER as desired.
10. Set the front panel switches to VEL for those channels where the accelerometer input signal is to be converted to a velocity vibration signal.
11. Set the front panel gain switches to the gain level for each channel as desired.
12. The PR710 is now ready for use.

3.0 Maintenance

The PR710 contains no user-serviceable parts. No maintenance should be attempted by the user. Opening the chassis and attempting any maintenance may void the user's warranty.

4.0 Technical assistance

4.1 Technical assistance

For technical assistance, please contact Meggitt Sensing Systems at 301-330-8811 or email wilcoxon@meggitt.com.

4.2 Customer service

To obtain a return materials authorization number, please contact customer service at 301-330-8811, or fax 301-330-8873.