

## ADI40 - 40 Pin Analogue Interface Unit

### Analogue Inputs and Outputs

Monitor Temperature

Analyze Thermocouple signals and DC Voltage

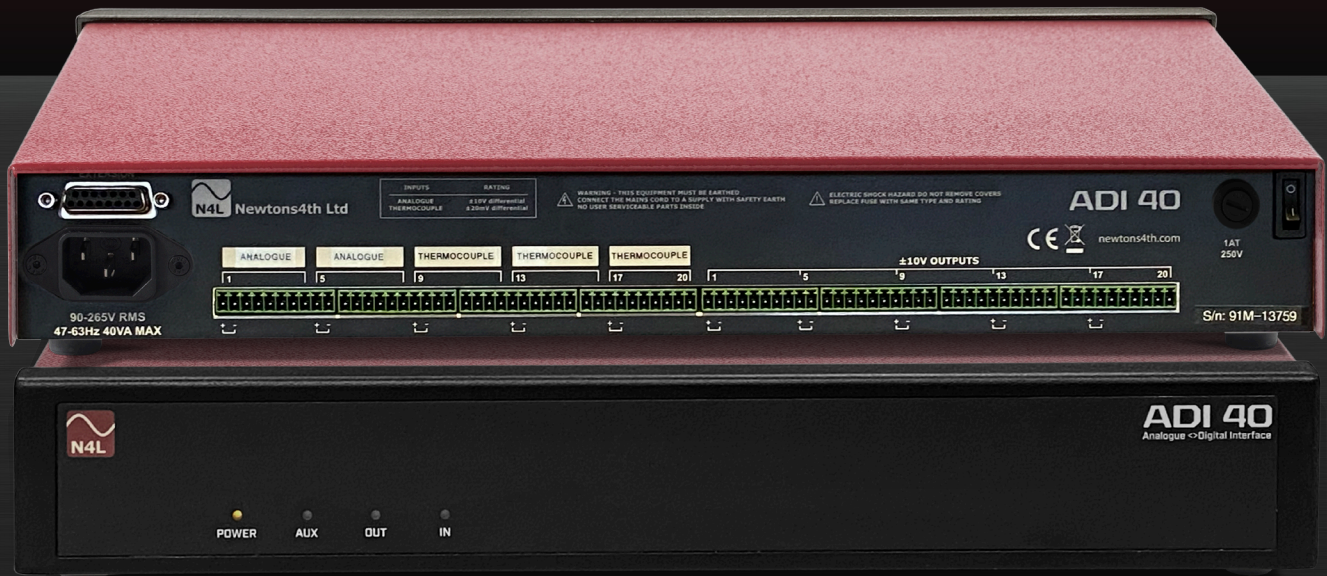
Output DC voltage levels proportional to measured parameters

### Typical Applications

Data Logging External Sensors

Output to Chart Recorders

DC Signal Data Acquisition

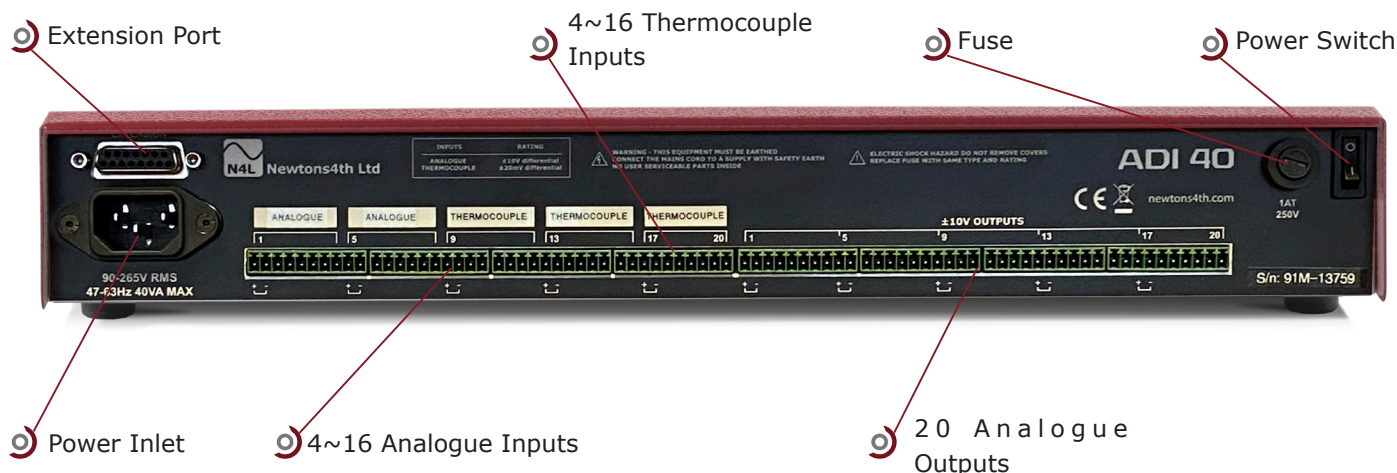


### Product Overview

Inputs (20 Total)	Up to 16 DC Inputs +/- 10V Differential, Up to 16 Thermocouple inputs
Outputs (20 Total)	20 Outputs +/- 10V Differential
Thermocouple Inputs	Up to 16 Thermocouple Inputs (J or K Type - Factory Set)
Interface	Direct Digital Interface with PPA35/PPA45/5500 Power Analyzer
Data Logging	All Input Parameters Available Via "MULTILOG" Command
Chart Recording	Power Analyzer + ADI40 parameters available on output Pins
Measurement Speed	10ms
Output Signal Slew Rate	0.1V/us
Versatile	Log data from various sensors including speed, torque and pressure
Compact Design	Rack mountable - Ideal for system integration

## Product Overview ADI40

The ADI40 Analogue<>Digital Interface unit is a powerful multi-channel measurement system for use in conjunction with the PPA3500, PPA4500 and PPA5500 Power Analyzers. The ADI40 offers a seamless interface between the Power Analyzer, Analogue Signals and Software. The ADI40 also interfaces with chart recorders via 20 DC output channels, any of the internally computed/logged measurements can be output as a DC voltage level and scaled accordingly. The 20 inputs can be configured as 4, 8, 12 or 16 thermocouples and 16, 12, 8 or 4 DC inputs respectively upon order.



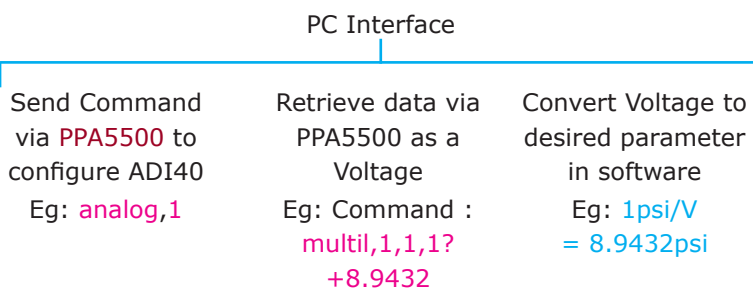
## Key Technical Details ADI40

Featuring a sample rate of 2kS/s, it is possible to obtain data rates of 10ms with all input/outputs active. The Power Analyzer communicates with the ADI40 via the Extension Port on the rear of the unit. Digital data is sent to the Power Analyzer via the extension port and is available via the "Multilog" command, communication to the Power Analyzer is made via USB, LAN, RS232 or GPIB. The Input impedance of the DC Input Channels is 1M $\Omega$  between positive and negative as well as 1M $\Omega$  to ground, providing fully differential inputs. All 20 outputs are fully differential, featuring 12 bit resolution, an output impedance of 10 $\Omega$  and the ability to drive up to 50mA of current.

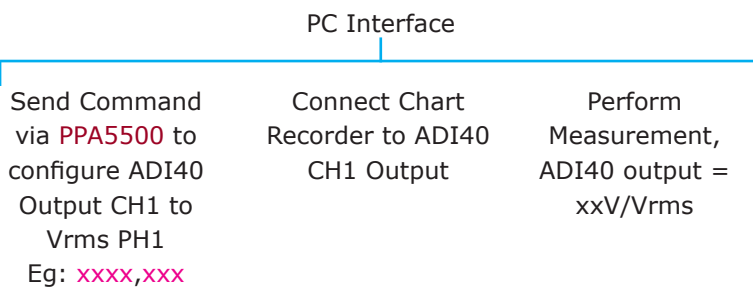
## Example Configuration ADI40

An example configuration is shown below, a pressure transducer is connected to the ADI40-4 (4 Thermocouple inputs) which is in turn connected to the PPA5530 via the extension port. The commands required to query CH1 Input of the ADI40 are also illustrated.

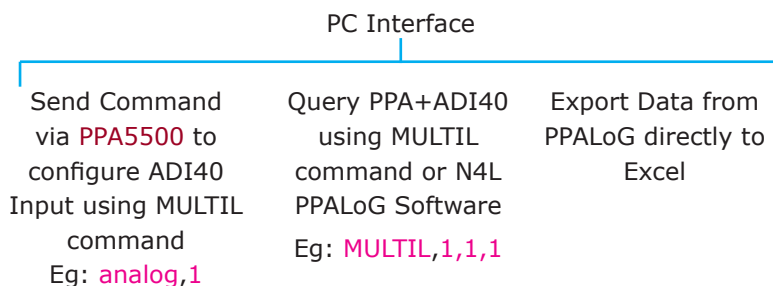
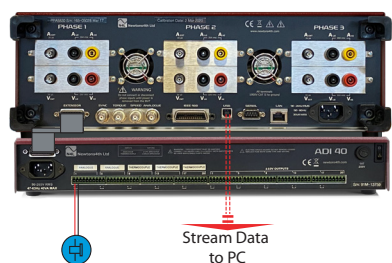
### Configuring Inputs



### Configuring Outputs



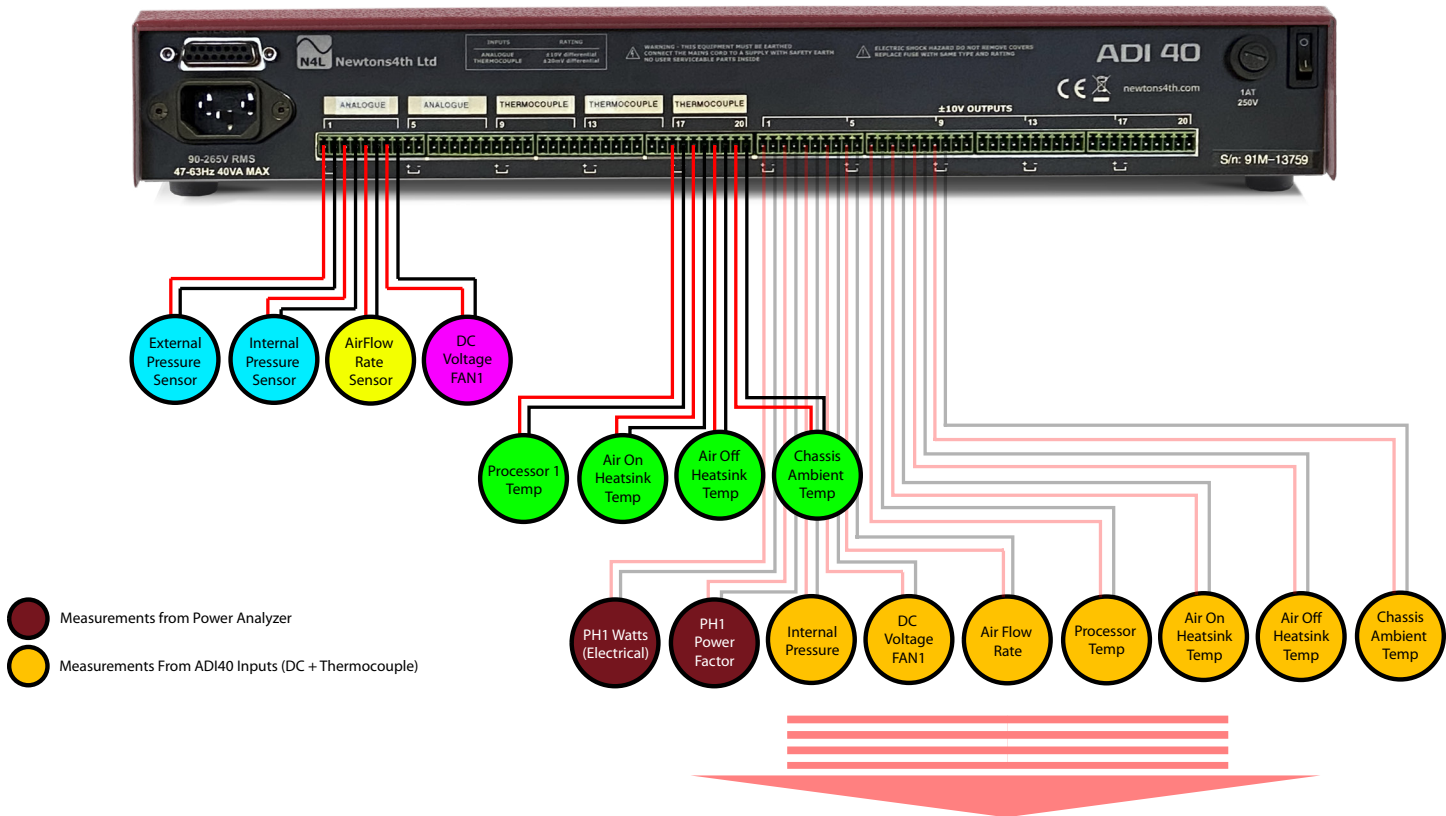
### Retrieving Data Via Communication Port



■ Example Application : Desktop PC ADI40

The schematic below illustrates how the ADI40-4 can be used to analyse various signal types. The ADI40 is used to monitor the performance of a desktop PC, where Internal Chassis Pressure, External Atmospheric Pressure, Airflow through the ventilation holes in the PC case and DC Fan Voltage are monitored via the ADI40 Inputs. The Thermocouple inputs are used to monitor various components including the main CPU temperature, Air On + Air Off Heatsink temperatures as well as Chassis Ambient temperature.

ADI40 Typical Application : Desktop PC Performance Analysis



DC Output Signals Sent to Chart Recorder, updated every 100ms (Maximum Update Rate 10ms)

■ Output to Chart Recorders ADI40

All Data collected, including the data recorded by the Power Analyzer (PPA3500/PPA4500/PPA5500) such as Watts, VA, Vrms, Irms, Power Factor etc, are available via the communication port (LAN, USB, RS232 or GPIB) or can be mapped to any of the DC Output Channels.

In the Desktop PC application above, measurements from the Power Analyzer are combined with measurements from the ADI40 and sent to a chart recorder via Output Channels 1 ~ 9. Up to 20 parameters can be mapped to the analogue outputs with update rates down to 10ms. The ADI40 offers the engineer a central measurement system combining accurate mechanical and electrical analysis.

■ Product Summary ADI40

The ADI40 can be used in many applications, from home electronics to the aerospace industry and defence. It supplements the N4L Precision Power Analyzer range and offers great versatility. The simple command stucture and convenient connection method enable the engineer to reduce installation and configuration times without comprimising flexibility. Inputs are differential with fast response times to transient events of the measured parameters, enabling analysis of rapidly changing conditions such as compressor start sequences where speed, pressure and temperature change quickly.

Product Compatibility

Power analyzer	ADI40
PPA5500	○
PPPA4500	○
PPA3500	○
PPA1500	—
PPA500	—

— Not Compatible      ○ Compatible

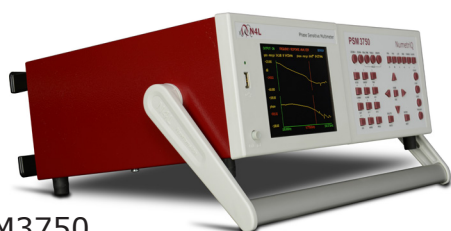


# SPECIFICATION

	ADI40		
Inputs			
	Model	Thermocouples	DC Inputs
No. of Inputs	ADI40-4	4	16
	ADI40-8	8	12
	ADI40-12	12	8
	ADI40-16	16	4
Thermocouple Types supported	Type J or Type K - Factory set		
Input Voltage Range (CH 1 ~ 16)	Bipolar +/- 10V		
Input Thermocouple Range (*1 Factory set option)	+/- 200°C with 0.1°C resolution standard or +/- 500°C with 0.25°C resolution (*1)		
Sampling rate	2ks/s		
Input Impedance	1MΩ		
Input Impedance to Ground	1MΩ		
Update data rate	minimum 10ms		
Accuracy	Voltage +/- 0.1% FS    Temperature +/- 1°C *2		
Resolution	12 bit		
Maximum Common Mode Voltage	-1V ~ +14V		
Maximum Input Voltage	+/- 30V		
Outputs			
No. of Outputs (DC)	20		
Output Voltage Range	Bipolar +/- 10V		
Output Slew Rate	0.1V/uS		
Maximum Source Current	50mA		
Output Impedance	10Ω		
Accuracy	0.1% FS		
Resolution	12 bit		
General			
Operating Coinditions	5 to 40°C Ambient Temperature (or air intake temperature when rack mounted) 20-90% Relative Humidity non condensing *2 Junction compensation ≤ 3°C across inputs subject to ambient stability		
Weight	Approximately 3.5kg		
Size	Size H: 62.37mm, W: 395mm, L: 280mm		
Warranty	3 Years		
Power Supply	90 ~ 265Vrms, 50 ~ 60Hz, 40VAmx		

All specifications at 23°C ± 5°C . These specifications are quoted in good faith but Newtons4th Ltd reserves the right to amend any specification at any time without notice

The N4L product range also includes Power, Frequency Response and Impedance Analyzers, Selective Level Meters and Laboratory Power Amplifiers



**PSM3750**  
10μHz ~ 50MHz Frequency Response Analysis



**PPA5500**  
10mHz ~ 2MHz Power Analysis



## Newtons4th

Newtons4th Ltd (abbreviated to N4L) was established in 1997 to design, manufacture and support innovative electronic equipment to a world-wide market, specialising in sophisticated test equipment particularly related to phase measurement. The company was founded on the principle of using the latest technology and sophisticated analysis techniques in order to provide our customers with accurate, easy to use instruments at a lower price than has been traditionally associated with these types of measurements. Flexibility in our products and an attitude to providing the solutions that our customers really want has allowed us to develop many innovative functions in our ever increasing product range.

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