



ATN30 / ATN31: Anders Attenuator – AC Voltage, True RMS

26th February 2009

Overview

The ABELtronics ATN30/31 are designed to interface with the Anders Electronics AD48 range of backlit and non-backlit DIN-sized Digital Panel Meters (DPMs). The ATN30 is supplied from a nominal 12V, and ATN31 from 24V. The ATN30/31 will provide a voltage reading in the range of 0-275V AC when powered from either a 12V or 24V supply and when used in conjunction with an Anders AD48. The ATN30/31 accurately measures AC voltage by calculating the true-RMS value of the waveform. This provides increased accuracy over traditional methods when measuring non-sinusoidal voltages from inverters and noisy supplies, and can be useful when troubleshooting problems associated with the mains supply. The module is entirely self-contained and is mounted directly on the back of the AD48 behind the dash panel. Additionally, the supply voltage and the voltage the module measures are galvanically isolated from each other allowing the ATN3x to safely measure mains voltages in complete isolation from the low voltage supply.

Specifications

Parameter	ATN30	ATN31	Comments
Supply Voltage Range	9 – 18V DC	18 – 36V DC	Voltage at Supply Terminals
Measuring Voltage Range	0 – 275V AC		Voltage at Input Terminals
Operating Current (AD48)	65mA Max		Non-Backlit Anders Meter
Operating Current (AD48-BL)	100mA Max		Backlit Anders Meter
Resolution	1V		
Accuracy	±2.5%		True-RMS measurement
Sampling Time	0.5 Sec. Typ.		

Mounting and Connection Guidelines

The ATN3x should be connected as shown in Figure 1. The power supply should be independently fused at 250mA per module, and is connected to the + and – Supply terminals. The voltage to be measured is connected to the Live and Neutral terminals, again fused at not more than 100mA for safety. The correct polarity of the input terminals **must** be observed. See the warning below.

Connections to the module are made by means of high quality rising-clamp terminal blocks integral to the device. The terminals will accept wire up to 4mm² in area. It is important not to over-tighten the terminal as damage to the module may result. The use of a cable ferrule is recommended, especially for the Live and Neutral inputs, to prevent shorting from stray strands of cable.

The module is mounted directly to the rear of the Anders DPM by means of the 13 way socket on the front of the module, and is secured to the DPM by means of high-tensile Velcro to aid DPM replacement if required. The Anders DPM is mounted in the dash-panel first, and the ATN3x is plugged onto the rear and secured. **It is vital the Anders DPM is NOT plugged into the ATN3x the wrong way round. Irreparable damage to both modules WILL result.** See Figure 2 for correct connection.

The ATN3x is fully sealed in epoxy resin against water and oil. The Anders DPM, however, exposes its bare circuit board to the environment. Therefore, to maintain accuracy and reliability, it is important to mount the ATN3x and the Anders DPM in a location free from moisture. Additionally, ATN3x is protected against over-voltage at its input terminals, and reverse-polarity connection at its supply terminals.

WARNING

IT IS EXTREMELY IMPORTANT TO NOT REVERSE THE POLARITY OF THE INPUT CONNECTIONS, EVEN THOUGH THE VOLTAGE IS AC. IN THE UNLIKELY EVENT THAT THE ANDERS DPM IS BROKEN, LETHAL VOLTAGES COULD BE PRESENT ON THE ANDERS PCB. IN ADDITION, IF THE METER IS MOUNTED IN A METAL DASH PANEL, THE PANEL MUST BE EARTHED.

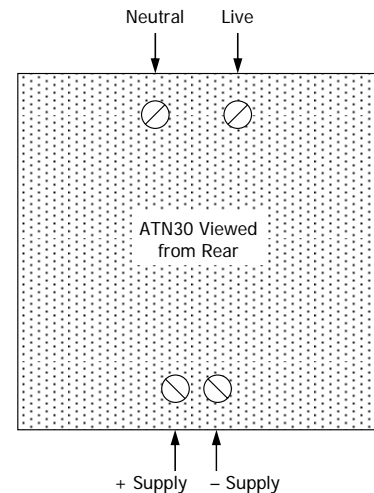


Fig. 1. Connections to the ATN30/31

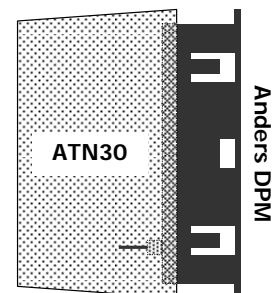


Fig. 2. Correct connection of the Anders DPM to the ATN30/31. Side view, dash panel not shown.