Revision 2

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ATN40 / ATN41: Anders Attenuator – AC Current, True-RMS

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Overview

The ABELtronics ATN40/41 are designed to interface with the Anders Electronics AD48 range of backlit and non-backlit DIN-sized Digital Panel Meters (DPMs). The ATN40 is supplied from a nominal 12V, and ATN41 from 24V. The ATN40/41 will provide a current reading in the range of 0-100A AC when powered from either a 12V or 24V supply and when used in conjunction with an Anders AD48 and suitable current transformer (CT unit). The ATN40/41 accurately measures AC current by calculating the true-RMS current value of the waveform. This provides increased accuracy over traditional methods when measuring non-sinusoidal currents 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 input signal from the CT are galvanically isolated from each other to provide maximum interference rejection.

Specifications

Parameter	ATN40	ATN41	Comments
Supply Voltage Range	9 – 18V DC	18 – 36V DC	Voltage at Supply Terminals
Measuring Current Range	0 – 100A AC		Using specified CT
Operating Current (AD48)	65mA Max		Non-Backlit Anders Meter
Operating Current (AD48-BL)	100mA Max		Backlit Anders Meter
Specified CT	100A/5A 1VA		See below for specified CT
Resolution	100mA		
Basic Accuracy	±5%		Accuracy dependent upon accuracy of CT
Sampling Time	0.5 Sec. Typ.		

Mounting and Connection Guidelines

The ATN4x 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 external Current Transformer should be connected to the terminals marked “CT Unit”.

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 4mm^2 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.

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 ATN4x is plugged onto the rear and secured. **It is vital the Anders DPM is NOT plugged into the ATN4x the wrong way round. Irreparable damage to both modules WILL result.** See Figure 2 for correct connection.

The ATN4x 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 ATN4x and the Anders DPM in a location free from moisture. Additionally, ATN4x is protected against over-voltage and current at its input terminals, and reverse-polarity connection at its supply terminals.

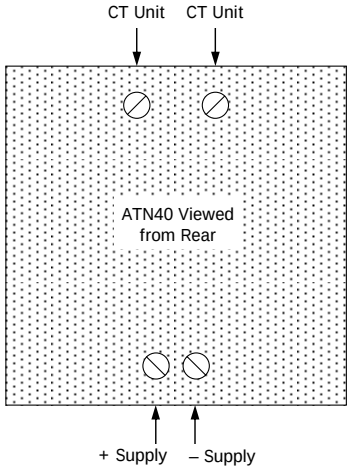

Fig. 1. Connections to the ATN40/41

Current Transformer Guidelines

The accuracy of the module is entirely dependent upon the CT unit chosen. ATN4x is indelibly factory calibrated for a 100A/5A 1VA CT, although ATN4x can be factory calibrated to different CTs than those specified. The cable through which the current is to be measured should ideally be placed centrally through the CT unit. Furthermore, the CT unit should be mounted as far away as possible from sources of magnetic interference, such as thick power cables, but as close as possible to ATN4x; connections between the CT unit and ATN4x should be as short as possible, i.e. less than 30cm, and should use good quality thick cable, at least 1.5mm^2, for maximum accuracy. The accuracy of the unit degrades exponentially with increased cable lengths.

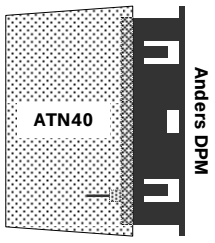

Fig. 2. Correct connection of the Anders DPM to the ATN40/41. Side view, dash panel not shown.

WARNING

IT IS DANGEROUS TO APPLY POWER TO A CABLE PASSING THROUGH A CT WITHOUT FIRST CONNECTING THE CT TO ATN4x. DANGEROUS VOLTAGES CAN BE PRODUCED BY THE CT IF SUFFICIENTLY HIGH CURRENTS ARE PRESENT. ALWAYS SHORT THE CT TERMINALS WITH A PIECE OF WIRE OR A SHORTING LINK PRIOR TO INSTALLING THE CT, AND REMOVE THE SHORTING LINK WHEN ATN4x HAS BEEN CONNECTED. FOLLOW THE MANUFACTURER’S INSTRUCTIONS WHEN INSTALLING CTs.