

## START HERE

### DRN-ACC

#### AC CURRENT INPUT

##### General Description:

The DRN Series of DIN rail-mountable signal conditioners are available for Thermocouple, RTD, Strain, Process, AC Voltage, AC Current and Pulse/Totalizer input types.

The factory calibrated signal conditioners are ideal for all process and power monitoring applications, they feature 3-way isolation, high accuracy input, programmable outputs, and are excellent front end interfaces for programmable logic controllers or data acquisition systems. For maximum user configurability the signal conditioners allow complete input-output scaling via a RS-232 connection to any PC or PLC.

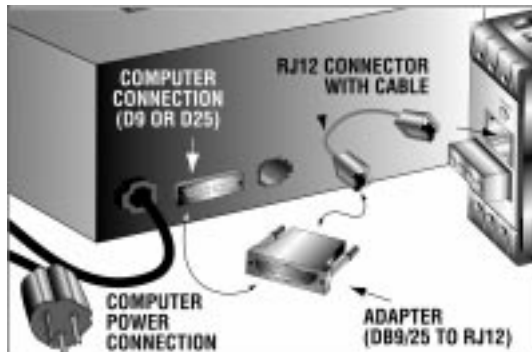
##### Software Description:

The signal conditioner configuration program is a MS DOS/Windows program (this manual is for the Windows version). It is designed especially for the DRN Series Signal Conditioner. This program will run on any PC with Windows application and will start automatically.

##### What You need:

- Your choice of the signal conditioner
- IBM PC or compatible
- Windows software 3.1 or higher, or Windows 95
- RJ12 connector with telephone cable
- Adapter (DB9/25 to RJ12)

##### Setting up your System



## 2

##### INPUT RANGES:

10 mA, 100 mA, 1 Amp, 5 Amp AC current  
Dedicated input terminals for (10, 100 mA same input),  
1 Amp and 5 Amp. Return terminal common to all ranges.

##### FREQUENCY RANGE:

30 Hz to 1KHz

##### INPUT IMPEDANCE:

3.3 Ohms for 10, 100 mA input  
0.2 Ohms for 1 Amp input  
0.04 Ohms for 5 Amp input

##### ISOLATION:

Three way isolation up to 1800 V Peak for 1 minute,  
354 V Peak continuous per IEC spacing.  
Common mode rejection 100 dB

##### INPUT OVER-CURRENT PROTECTION:

10% Above full scale continuously  
100% Above full scale for 10 seconds

##### ANALOG TO DIGITAL TECHNIQUE:

Dual slope

##### READ RATE:

3 readings/second

##### ACCURACY AT 25 °C:

$\pm 0.2\%$  of FS from 30 Hz to 1 KHz

##### TEMPERATURE STABILITY:

10, 100 mA Range 100 ppm/°C typical  
1 Amp Range 150 ppm/°C typical  
5 Amp Range 200 ppm/°C typical

##### STEP RESPONSE FOR RS232 OUTPUT:

2 seconds to 99% of the final value  
(Filter time constant = 64)

##### RESPONSE TIME:

To verify the response time, check the carriage return <CR>, it will be sent at the end of the response. You can send another command after you receive the <CR>.

i.e. send: \*X01  
response: X01<DATA><CR>

##### WARM UP TO RATED ACCURACY:

30 minutes

## 3

##### ANALOG OUTPUT SIGNAL TYPE:

Voltage: 0-10 Volt, maximum current 10mA

Current: 0-20 mA or 4-20 mA, maximum compliance voltage 10 Volts (maximum loop resistance 500Ω)

##### ANALOG OUTPUT LINEARITY:

0.1% of FS

##### ANALOG OUTPUT STEP RESPONSE TIME:

2 seconds to 99% of final value

##### INPUT POWER:

10 to 32 Volt DC

##### POWER CONSUMPTION:

2.4 Watts (100 mA at 24 V DC)

##### OPERATING AMBIENT:

-5 to +55 °C

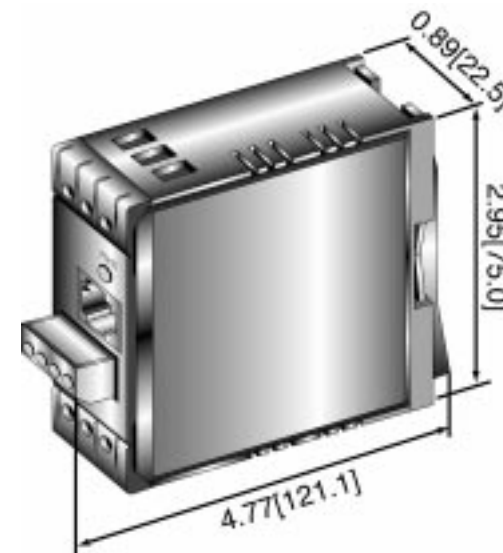
##### STORAGE TEMPERATURE:

-40 to +85 °C

##### RELATIVE HUMIDITY:

90% at 40 °C non-condensing

##### DIMENSIONS:



## 4

#### AC CURRENT VERSION



##### Introduction:

The AC current input signal conditioners are high performance instruments that measure AC currents in 4 ranges with dedicated inputs. The current ranges are 10 mA, 100 mA, 1 Amp and 5 Amps. Key features of the signal conditioners are built in internal current shunts, scalable analog output and a simple RS232 interface for scaling analog output and range selection. The RS232 interface may also be used for digital transmission of the input signal to a computer or a PLC. Additional features include three way isolation between DC power, signal input and analog output/RS232.

##### Operation:

**Note:** When connecting a current signal, ensure that the input signal current is less than or equal to the rating indicated on signal input label. **THERE ARE NO PROTECTIONS AGAINST OVERCURRENT AND THE UNIT WILL BE DAMAGED IF THE INPUT CURRENT EXCEEDS THE MAXIMUM RATING.**



## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit should malfunction, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. OMEGA'S WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

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2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

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2. Model and serial number of product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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# 5

### Power Input and Analog Output Setup:

To connect the signal input proceed as follows:

1. Connect a DC power supply with an output voltage between 10 to 32 Volt DC to the signal conditioner (J1).

**Note:** If power supply used has current limiting, it may not be able to power the signal conditioners if the available output voltage is around 10 Volt, since the peak current may reach 1 to 5 Amp for a few milliseconds.

2. Determine the maximum current to be measured.
3. Determine the appropriate input connection. i.e. 10 mA, 100 mA have the same input, 1 Amp and 5 Amps have their own dedicated input. The return is common to all inputs.
4. Ensure that if the selected range is different from the default then change the internal range by using the Setup Software and select the appropriate range.
5. Connect the signal input to screw terminal, and ensure that the screws are tight. Failure to do so may cause electrical shock should the wires become loose and come out of the screw terminal.

6. To verify that the set up is correct, you may connect a DVM to the analog output. Once connected, power the signal conditioner and apply a known voltage from an AC source to input. Measure and compare with expected values. To custom scale the analog output proceed to the next step.

7. To view/change the scaling that relates the analog output to signal input: connect the RS232 output of the signal conditioner to an available serial port of a computer. The cable and the DB9 or DB25 connectors are available as an option.

8. Turn on the computer, start Windows 3.0 or higher and run the Signal Conditioner Configuration Setup Program. If the program has not been installed, then insert the 3.5" floppy disk in either drive A or B. From the Program Manager choose File, Run; in the command box type either A: setup or B: setup according to your drive designation. The program will create an icon for the signal conditioner. You may start the program by clicking on this icon.



This device is marked with the international hazard symbol. It is important to read the Setup Guide before installing or commissioning this device as it contains important information relating to safety and EMC.

# 6

9. Start the configuration program, you need to indicate which serial port is to be used for serial communication by checking the appropriate check box on the opening menu.

**Note:** It is not necessary to know the serial communication protocol. i.e. baud rate, parity, 7/8 data bit and stop bit; the program will determine this information automatically. However, it is good practice to mark the protocols used on the signal conditioner label if different from default.

10. Once the program starts it will automatically detect the signal conditioner configuration and will display a window of available options. To view the signal input click on the display on/off.

11. To change analog output scaling choose analog output scaling and enter the desired values.

12. Once the custom scaling is finished, **ensure that Send Configuration is clicked**, otherwise the changes will not take effect.

13. The input/output scaling may be fine tuned, while both communication and analog output are active. You may make a change to the analog output in the configuration program, and watch the DVM connected to analog output of the signal conditioner follow the new settings.

14. You may save or print a particular configuration by selecting the file menu. It's always a good practice to both print and save the scaling of each signal conditioner.

15. If the program is not able to establish communication then an error message is displayed. This happens either when the wrong serial port is specified or when the cable is disconnected.

It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

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**WARNING:** These products are not designed for use in, and should not be used for, patient connected applications.

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## DRN-ACC

### AC Current Signal Conditioner

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