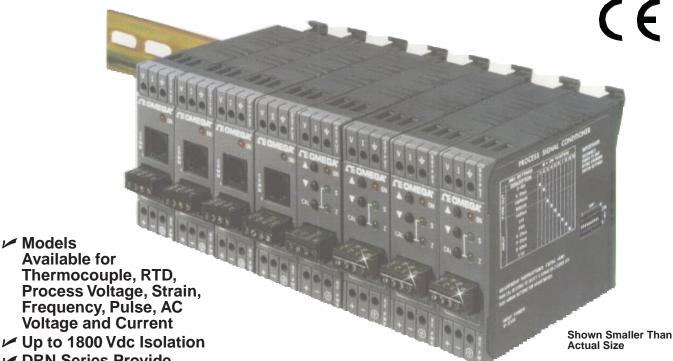
## DRN/DRX Series Signal **Conditioners**



✓ DRN Series Provide

0-10 Vdc, 4-20 mA or 0-20 mA Output

✓ DRX Series Provide **RS-485 Output** 

The DRN/DRX Series DIN rail mount signal conditioners represent state-of-the-art signal conditioning technology, ideal for all process and power monitoring applications. The intelligent microprocessor based modules provide a wealth of features including, high accuracy inputs, field programmable ranges and 3-way electrical isolation. Models are available for most process signals including thermocouples, RTDs process voltage, strain, frequency, pulse, ac voltage and ac current measurement. Two base styles are available, the DRN series which provides an output in an analog voltage or current format, and the DRX series which provides a digital RS-485 output.

#### **DRN Series**

The DRN Series are the perfect front-end for a PLC or data acquisition system. They feature an analog output signal which is directly proportional to the input

signal. The output, which is scalable, may be set for 0-10 V, 4-20 mA or 0-20 mA. The module is easily configured for different operating parameters by connecting to a standard PC serial port and using the DRN-CONFIG Windowsbased software package. Once the module is configured, the parameters are saved in non-volatile memory. The unit may be disconnected from the PC and only needs to be connected to a PC agáin if an operating parameter is to be changed.

DRX series

The DRX Series provide a complete sensor-to-computer solution. The modules accept a variety of input signals and produce a RS-485 signal that may be sent to a computer or virtually any other instrument containing an RS-485 serial port. The DRX series may be used to create a comprehensive distributed process monitoring network. Up to 32 modules may be interconnected over a distance of 1200 m (4000 ft) on a single pair of wires. Through the use of optional RS-485 repeaters, additional modules and distances are easily accommodated. With repeaters, up

to 254 modules may be connected to a single RS-485 port. The modules feature a powerful, easy-to-use ASCIII-based command set. Because communication is accomplished by simply reading and writing to and from the computer's serial port, a program may be developed using any language that provides serial port support. No special software drivers or libraries are required.

**Patented** 



#### **Common Specifications:**

Input Power Supply: 10 to 32 Vdc
DRX Output: 2-wire (half duplex) RS-485
DRN Output: 0 to 10 V @ 10 mA max;
0 to 20 mA or 4 to 20 mA, 10 V compliance

Isolation: 1800 V peak

Typical Step Response to 99%:

1 second

Operating Ambient: -5 to 55°C

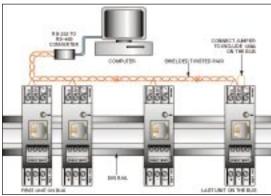
(23 to 131°F)

Storage Temperature Range: -40 to 85°C

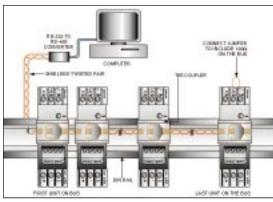
(-40 to 185°F)

**Mounting:** 32 and 35 mm DIN rail **Dimensions:** 75 H x 22.5 W x 121 mm D (2.95" x 0.89" x 4.77")

The DRX Series digital conditioners may be connected to an RS-485 bus using either screw terminator or RJ-12 connector.



Screw terminal connector to RS-485 bus on DRX modules



RJ-12 connector to RS-485 bus on DRX modules











### **Power Supplies**



- ✓ 24 Vdc Supply for DRN Modules
- Available with 300 or 750 mA Capacity

DRN power supplies convert ac power to 24 Vdc, to provide power for signal conditioners. The compact DRN-PS-300 uses a switching supply, and is similar in size to DRN signal conditioners, while the PS-750 uses a high performance linear supply.

Dimensions, DRN-PS-300: 75 H x 22.5 W x 121 mm D (2.95" x 0.89" x 4.77") Dimensions, DRN-PS-750:

**Dimensions, DRN-PS-750:** 70 H x 75 W x 151 mm D (2.76" x 2.95" x 5.95")



To Order (Specify Model Number)				
Model No. Price Input Output				
DRN-PS-300	\$110	90 to 250 Vac	24 Vdc @ 300 mA	
DRN-PS-750	130	115/230 Vac	24 Vdc @ 750 mA	

Ordering Example: DRN-PS-750, DIN rail mount power supply, 115/230 Vac input, 24 Vdc @ 750 mA output, \$130.

Input	Thermocouple	RTD	ac Voltage	ac Current	Process	Strain/Bridge	Frequency	Pulse
Model		DRN/DRX-RTD	DRN/DRX-ACV	DRN/DRX-ACC	DRN/DRX-PR	DRN/DRX-ST	DRN/DR	
Page	C-7	C-8	C-12	C-12	C-9	C-10	C-11	
Input Type	Thermocouple temperature sensor	RTD Temperature sensor Pt100, 500, 1000 $\Omega$ 10 $\Omega$ Cu	ac Voltage	ac Current	dc Millivolt, Volt and Current	Millivolt	NAMU Contact cl Iow lev open coll	osure /el ector
Input Range	J, K, T, E, R, S, B, N, J DIN thermocouple full range	α = 385, 392 Full range of RTD 2, 3 or 4-wire	Full Scale Range: 400 mV to 400 V	Full Scale Range: 10 mA to 5 A	Full Scale Range: ±400 mV to ±10 V 0 to 20 mA	0 to 30 mV 0 to 100 mV ±100 m	Full Scale 20k to 200 M pulses	Range 0 to 50 kHz
Accuracy	±1°C	±0.5°C	0.2%	0.2%	0.1% FS	0.2% FS	0.01% FS	0.02% FS
Resolution	0.1°C	0.1°C	10 to 14 Bit	10 to 14 Bit	12 to 15 Bit	13 to 15 Bit	15 to 19	9 Bit
Output	DRX Series: 2-wire (half duplex) RS-485/DRN Output: 0 to 10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA							
Excitation	N/A	N/A	N/A	N/A	14 Vdc @ 25 mA	10 V @ 30 mA	5, 8.2 and 1 @ 25 r	

## Thermocouple Signal Conditioner DIN Rail Mount DRN/DRX Series

Software Selectable Input Types J, K, T, E, R, S, B, N, and J DIN

Calibrations

✓ 0.1°C Resolution

✓ 250 V/1 Min. Input Overvoltage Protection

The DRN-TC and DRX-TC signal conditioners provide high accuracy isolated measurement of thermocouple sensors. For maximum flexibility, the units feature user configurable thermocouple types which are fully field scalable.

Two models are available, the DRN-TC which provides an analog output that is proportional to the input signal and the DRX-TC which uses a digital RS-485 communication link. Both models can accept 9 different thermocouple types. Thermocouples supported include J, K, T, E, R, S, B, N, and J DIN.

The output of DRN-TC can be user set for 0-10 V, 4-20 mÅ or 0-20 mÅ. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS232 port of a personal computer and using the DRN-CONFIG, Windows-based setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

The DRX-TC is a digital signal conditioner which communicates over an RS-485 communication link. Up to 32 modules may be connected to a single RS-485 port stretching up to 4,000 ft. Through the use of RS-485 repeaters, additional modules may be used and further transmission distances are achievable.

#### **Specifications**

Accuracy at 25°C: ±1°C Resolution: 0.1°C

Power Consumption: 2 W (84 mA @ 24 Vdc)

**MODEL DRX-TC** 

Input Types: J, K, T, E, R, S, B, N, J DIN

Input Ranges: See range chart

Input Type	Range, °F	Range, °C
J	-346 to 1400°F	-210 to 760°C
K	-454 to 2500°F	-270 to 1372°C
Т	-454 to 752°F	-270 to 400°C
E	-454 to 1832°F	-270 to 1000°C
R S	-58 to 3214°F	-50 to 1768°C
В	+212 to 3300°F	+100 to 1820°C
N	-454 to 2372°F	-270 to 1300°C
J DIN	-328 to 1652°F	-200 to 900°C



DRX Output: 2-wire (half duplex) RS-485

DRN Output: 0 to 10 V @ 10 mA max; 0 to 20 mA or

4 to 20 mA, 10 V compliance

To Order (Specify Model No.)			
Model No.	Price	Description	
DRX-TC	\$250	Digital signal conditioner with RS-485 output for process signals	
DRN-TC-C	325	Signal conditioner with analog output for process signals	

Each unit supplied with complete operator's manual.

Ordering Example: DRX-TC digital signal conditioner with RS-485 output for process signals (\$250), plus CAT-285 bi-directional RS-232-RS-485 converter for DRX series (\$148), \$250 + 148 = \$398.

Model No.	Price	Description
DRN-CONFIG	\$100	Setup software for DRN series modules, includes serial connection cable
DRN-PS-300	110	Power supply, 90-250 Vac input, 24 Vdc output @ 300 mA
DRN-PS-750	130	Power supply, 115/230 Vac input, 24 Vdc output @ 750 mA
FC	25	Factory calibration. Consult engineering for ordering information.

### RTD Signal Conditioner DIN Rail Mount DRN/DRX Series



- Software Selectable Input Types
- u 100 $\Omega$  Pt, 500 $\Omega$  Pt, 1000 $\Omega$  Pt, and 10 $\Omega$  Copper RTDs
- ✓ 0.1°C Resolution
- ✓ 1800 V Isolation

The DRN-RTD and DRX-RTD signal conditioners provide high accuracy isolated measurement of RTD temperature sensors. For maximum flexibility, the units feature user configurable RTD types which are fully field scalable.

Two models are available, the DRN-RTD which provides an analog output that is proportional to the input signal and the DRX-RTD which uses a digital RS-485 communication link. Both models can accept 2, 3, or 4 wire  $100\Omega PT$ ,  $500\Omega PT$ ,  $1000\Omega PT$ , and  $10\Omega CU$  RTDs.

The output of DRN-RTD can be user set for 0-10V, 4-20 mA or 0-20 mA. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS232 port of a personal computer and using the DRN-CONFIG, Windowsbased setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

The DRX-RTD is a digital signal conditioner which communicates over an RS-485 communication link. Up to 32 modules may be connected to a single RS-485 port stretching up to 4,000 ft. Through the use of RS-485 repeaters, additional modules may be used and further transmission distances are achievable.



**Specifications** 

Accuracy at 25°C: ±0.5°C

Input Types: Platinum RTD,  $100\Omega$ ,  $500\Omega$  or  $1000\Omega$  element;  $10\Omega$  Cu element (2, 3 or 4 wire,

385 or 392 curve) **Resolution:** 0.1°C

Power Consumption: 2 W (84 mA @ 24 Vdc) Input Range: -200 to 850°C

(-328 to 1562°F)

DRX Output: 2-wire (half duplex)

RS-485

**DRN Output:** 0-to-10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA,

10 V compliance

Model No.	Price	Description	
DRX-RTD	\$250	Digital signal conditioner with RS-485 output for process signals	
DRN-RTD-C	355	Signal conditioner with analog output for process signals	

Patented

Each unit supplied with complete operator's manual.

Ordering Example: DRX-RTD digital signal conditioner with RS-485 output for process signals (\$250), plus DRN-PS-300 power supply, 115 Vac input, 24 Vdc output @ 300 mA (\$110), \$250 + 110 = \$360.

Model No.	Price	Description
DRN-CONFIG	\$100	Setup software for DRN series modules, includes serial connection cable
DRN-PS-300	110	Power supply, 90-250 Vac input, 24 Vdc output @ 300 mA
DRN-PS-750	130	Power supply, 115/230 Vac input, 24 Vdc output @ 750 mA
FC	25	Factory calibration. Consult Engineering for ordering information.

# Process Inputs Signal Conditioner DIN Rail Mount DRN/DRX Series

SoftwareSelectable InputTypes and Ranges

✓ Unipolar/Bipolar 400 mV to 10 Vdc, 0-20 mA dc

✓ 11 to 14-Bit Resolution

✓ 14 Vdc Excitation

✓ 1800 V Isolation

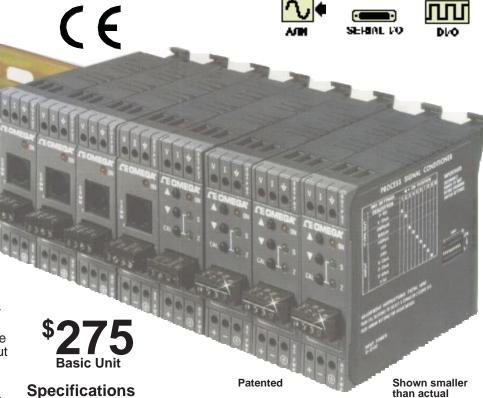
∠ 250 Vac/1 Min.

Input Overvoltage Protection (Voltage Input Only)

The DRN-PR and DRX-PR signal conditioners provide high accuracy isolated measurement of process signals. For maximum flexibility, the units feature user configurable input types which are fully field scalable.

Two models are available, the DRN-PR which provides an analog output that is proportional to the input signal and the DRX-PR which uses a digital RS-485 communication link. Both models can accept unipolar and bipolar signals from 400 mV to 10 Vdc full scale. A 0-20 mA current range is also available. The DRN/DRX-PR also contains a 14 Vdc reference voltage which may be used for transducer excitation. The output of DRN-PR can be user set for 0-10 V, 4-20 mA or 0-20 mA. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS232 port of a personal computer and using the DRN-CONFIG, Windows-based setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

The DRX-PR is a digital signal conditioner which communicates over an RS-485 communication link. Up to 32 modules may be connected to a single RS-485 port stretching up to 4,000 ft. Through the use of RS-485 repeaters, additional modules may be used and further transmission distances are achievable.



Accuracy at 25°C: ±0.1% FS Excitation: 14 Vdc @ 25 mA Resolution: 11 to 14-bit

Power Consumption: 2 W (84 mA @ 24 Vdc) without excitation, 3 W (125 mA @ 24 Vdc) with excitation Input Ranges: Uni/bipolar, 400 mV

to 10 Vdc; 0 to 20 mA

**DRX Output:** 2-wire (half duplex)

RS-485

**DRN Output:** 0 to 10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA, 10

V compliance

To Order (Specify Model No.)		
Model No.	Price	Description
DRX-PR	\$275	Digital signal conditioner with RS-485 output for process signals
DRN-PR-C	325	Signal conditioner with analog output for process signals

Each unit supplied with complete operator's manual.

Ordering Example: DRX-PR digital signal conditioner with RS-485 output for process signals (\$275), plus DRN-PS-300 power supply, 115 Vac input, 24 Vdc output @ 300 mA (\$110), \$275 + 110 = \$385.

Model No.	Price	Description
DRN-CONFIG	\$100	Setup software for DRN series modules, includes serial connection cable
DRN-PS-300	110	Power supply, 90-250 Vac input, 24 Vdc output @ 300 mA
DRN-PS-750	130	Power supply, 115/230 Vac input, 24 Vdc output @ 750 mA
CAT-285	148	Bi-directional RS-232-RS-485 converter for DRX series
FC	25	Factory calibration. Consult engineering for ordering information

Strain Gage/Bridge Transducer Signal Conditioner

DIN Rail Mount DRN/DRX Series

- Software Selectable **Input Ranges**
- Unipolar/Bipolar 30 mV to 100 mV
- ✓ 13-Bit Resolution
- ✓ 10 Vdc Excitation
- ✓ 0.2% FS Accuracy
- ✓ 1800 Volts Isolation
- ✓ 250 Vac/1 Min. Input **Overvoltage Protection**

The DRN-ST and DRX-ST signal conditioners provide high accuracy isolated measurement of strain gages, load cells and other bridge based transducers. For maximum flexibility, the units feature user configurable input types which are fully field scalable.

Two models are available, the DRN-ST which provides an analog output that is proportional to the input signal and the DRX-ST which uses a digital RS-485 communication link. Both models can accept signals from 30 to 100 mV full scale and provide 10 Vdc reference voltage which may be used for transducer excitation. The output of DRN-ST can be user set for 0-10 V, 4-20 mA or 0-20 mA. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS232 port of a personal computer and using the DRN-CONFIG, Windows-based setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

The DRX-ST is a digital signal conditioner which communicates over RS-485 communication link. Up to 32 modules may be connected to a single RS-485 port stretching up to 4,000 feet. Through the use of RS-485 repeaters, additional modules may be used and further transmission distances are achievable.

#### **Specifications**

Accuracy at 25°C: ±0.2% FS Resolution: 13 to 15 bit Excitation: 10 V @ 30 mA



Power Consumption: 2 W without excitation (84 mÅ @ 24 Vdc), 3 W with excitation (125 mA @ 24 Vdc)

100 mV full scale

Input Ranges: 0 to 30 to 0 to

**DRX Output:** 2-wire (half duplex)

RS-485

**DRN Output:** 0 to 10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA,

10 V compliance

To Order (Specify Model No.)			
Model No.	Price	Description	
DRX-ST	\$300	Digital signal conditioner for strain gages and bridge transducers with RS-485 output	
DRN-ST-C	345	Signal conditioner for strain gages and bridge transducers with analog output	

Each unit supplied with complete operator's manual.

**Ordering Example:** DRX-ST digital signal conditioner for strain gages and bridge transducers with RS-485 output (\$300), plus CAT-285 bi-directional RS-232-RS-485 converter for DRX series (\$130), \$300 + 148 = **\$448**.

Model No.	Price	Description
DRN-CONFIG	\$100	Setup software for DRN series modules, includes serial connection cable
DRN-PS-300	110	Power supply, 90-250 Vac input, 24 Vdc output @ 300 mA
DRN-PS-750	130	Power supply, 115/230 Vac input, 24 Vdc output @ 750 mA
FC	25	Factory calibration. Consult engineering for ordering information.

# Frequency/Pulse Signal Conditioner DIN Rail Mount DRN/DRX Series

\$250

- ✓ Software Selectable Input Type
- 0-50 kHz Frequency Input 2 Million Pulse Capacity
- Proximity, Switch, Magnetic, Pickup, NAMUR, Contact Closure, and Open Collector Input Types

#### ✓ 1800 V Isolation

The DRN-FP and DRX-FP signal conditioners provide high accuracy isolated measurement of frequency and pulse signals. For maximum flexibility, the units feature user configurable input types which are fully field scalable.

Two models are available, the DRN-FP which provides an analog output that is proportional to the input signal and the DRX-FP which uses a digital RS-485 communication link. Both models measure frequency signals up to 50 kHz and can count up to two million pulses. The DRX-FP and DRN-FP are compatible with a wide variety of transducers including proximity, switch, magnetic pickup, NAMUR, contact closure and open collector transducers.

The output of DRN-FP can be user set for 0-10 V, 4-210 mA or 0-20 mA. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS232 port of a personal computer and using the DRN-CONFIG, Windows based setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

The DRX-FP is a digital signal conditioner which communicates over an RS-485 communication link. Up to 32 modules may be connected to a single RS-485 port stretching up to 4,000 ft. Through the use of RS-485 repeaters, additional modules may be used and further transmission distances are achievable.



Accuracy at 25°C: ±0.02% FS for frequency, ±0.01% FS for

pulse input

Resolution: 15 to 19 Bit Max Count: 999.999

**Power Consumption:** 2 W (84 mA @ 24 Vdc) without excitation, 3 W (125 mA @ 24 Vdc) with excitation

Input Ranges: Frequency from 200 Hz to 50 kHz, pulse from 20,000 to 200,000,000 (200M) pulses

full scale

DRX Output: 2-wire (half duplex)

RS-485

**DRN Output:** 0 to 10 V @ 10 mA max; 0 to 20 mA or 4 to 20 mA

To Order (Specify Model No.)		
Model No.	Price	Description
DRX-FP	\$250	Digital signal conditioner with RS-485 output for process signals
DRN-FP-C	295	Signal conditioner with analog output for process signals

Each unit supplied with complete operator's manual.

**Ordering Example:** DRX-FP digital signal conditioner with RS-485 output for process signals (\$250), plus DRN-PS-300 power supply, 115 Vac input, 24 Vdc output @ 300 mA (\$110), \$250 + 110 = **\$360**.

Model No.	Price	Description	
DRN-CONFIG	\$100	Setup software for DRN series modules, includes serial connection cable	
DRN-PS-300	110	Power supply, 90-250 Vac input, 24 Vdc output @ 300 mA	
DRN-PS-750	130	Power supply, 115/230 Vac input, 24 Vdc output @ 750 mA	
CAT-285	148	Bi-directional RS-232-RS-485 converter for DRX series	
FC	25	Factory calibration. Consult engineering for ordering information.	

SERIAL VO

AC Voltage/Current Signal Conditioners DIN Rail Mount DRN/DRX Series

✓ Software Selectable Input Ranges

DRX-ACV: 0-400 mV to

0 to 400 Vac

DRX-ACC: 0-10 mA to

0-5 A ac

✓ 14-Bit Resolution (max)

✓ 0.2% FS Accuracy

✓ 1800 V Isolation

The DRN/DRX Series signal conditioners provide high accuracy isolated measurement of ac voltage and current signals. For maximum flexibility, the units feature user configurable inputs which are fully field scalable.

Four models are available, the DRN-ACV and DRN-ACC accept ac voltage and ac current respectively and provide an analog output which is proportional to the input. The DRX-ACV and DRX-ACC accept ac voltage and ac current respectively and provide a digital RS-485 communication link. The DRN-ACC and DRX-ACC can accept ac currents from 0-10 mA to 0-5 A ac. The DRX-ACV and DRN-ACV can accept ac voltages from 0-400 mV to 0-400 Vac.

The output of DRN-ACC and DRN-ACV can be user set for 0-10 V, 4-20 mA or 0-20 mA. Input scaling and configuration of other operating parameters is accomplished by connecting to a standard RS232 port of a personal computer and using the DRN-CONFIG, Windows-based setup software. Once configured the settings may be stored in non-volatile memory and the unit disconnected from the PC.

The DRX-ACC and DRX-ACV are digital signal conditioners which communicate over an RS-485 communication link. Up to 32 modules may be connected to a single RS-485 port stretching up to 4,000 ft. Through the use of RS-485 repeaters, additional modules may be used and further transmission distances are achievable.

#### **Specifications**

Accuracy at 25°C: ±0.2% FS Resolution: 10 to 14-bit



( )

Power Consumption: 2 W; 84 mA @ 24 Vdc

#### MODEL DRX-ACV/ DRN-ACV

Input Ranges: 0 to 400 mV to 0 to 400 Vac

full scale

Interface: RS-485; RJ-12 or screw terminal

connector

#### MODEL DRX-ACC/ DRN-ACC

Input Ranges: 0 to 10 mA to 0 to 5 A ac full

scale

DRX Output: 2-wire (half duplex) RS-485 DRN Output: 0 to 10V @ 10 mA max; 0 to 20

@ 10 mA max; 0 to mA or 4 to 20 mA



To Order (Specify Model No.)			
Model No.	Price	Description	
DRX-ACC	\$270	Digital signal conditioner with RS-485 output for ac current inputs	
DRX-ACV	270	Digital signal conditioner with RS-485 output for ac voltage inputs	
DRN-ACC-C	345	Signal conditioner with analog output for ac current inputs	
DRN-ACV-C	345	Signal conditioner with analog output for ac voltage inputs	

Each unit supplied with complete operator's manual.

**Ordering Example:** DRX-ACV digital signal conditioner with RS-485 output for ac voltage inputs (\$270), plus DRN-PS-300 power supply, 115 Vac input, 24 Vdc output @ 300 mA (\$110), \$270 + 110 = **\$380**.

Model No.	Price	Description
DRN-CONFIG	\$100	Setup software for DRN series modules, includes serial connection cable
DRN-PS-300	110	Power supply, 90-250 Vac input, 24 Vdc output @ 300 mA
DRN-PS-750	130	Power supply, 115/230 Vac input, 24 Vdc output @ 750 mA
FC	25	Factory calibration. Consult engineering for ordering information.