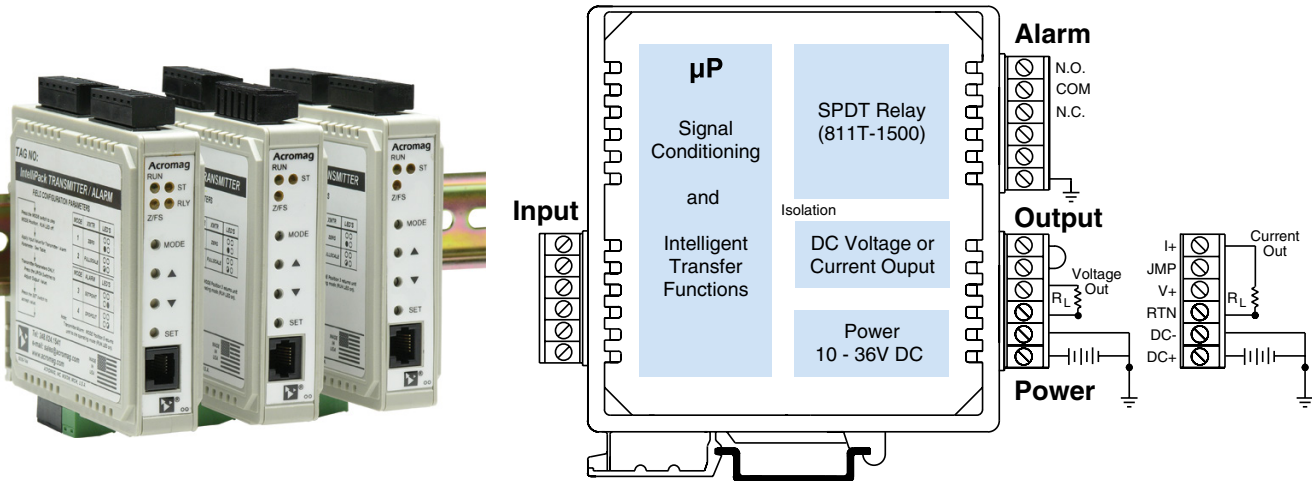


IntelliPack®: 800T Series



IntelliPack 811T Universal DC Transmitters



DC Current, DC Voltage, AC Current Input ♦ Limit Alarm

811T Transmitters

DC Current, DC Voltage, and AC Current Input

Models

811T-0500: Universal DC input transmitter

811T-1500: Transmitter with limit alarm

Input Ranges

DC Current: 0 to 22mA

DC Voltage: $\pm 100V$ DC

AC Current: 0 to 20A AC (with external sensor)

Output Ranges

0 to 1mA, 0 to 20mA, 4 to 20mA DC

0 to 5V, 0 to 10V DC

Limit Alarm

SPDT electro-mechanical relay (-1500 unit only)

Power Requirement

10 to 36V DC

Approvals

UL, cUL listed.

Description

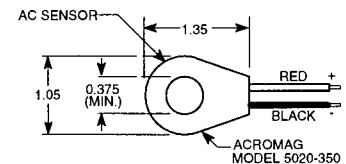
These transmitters isolate and convert sensor inputs to noise-free, proportional DC current or voltage output signals. An optional relay output adds a local limit alarm function.

Each unit offers a selection of input and output ranges, as well as several signal conditioning options. This flexibility enables a single IntelliPack to handle a broad range of applications. As your needs change, you can easily reconfigure the unit for different ranges or functions.

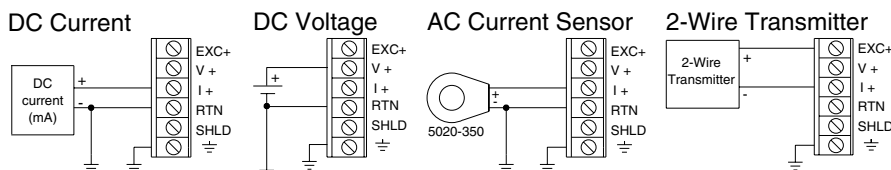
Setup is very easy. IntelliPack modules are quickly configured with the user-friendly Windows software program. Field adjustments are simple with the module's front-panel push-buttons and status LEDs. Once configured, IntelliPacks operate independent of any host computer.

Key Features & Benefits

- High-resolution Sigma-Delta A/D converter delivers high accuracy with low noise.
- Advanced microcontroller provides intelligent signal processing power for linearization, averaging, and square root computations.
- Windows XP/Vista/7 software configuration speeds setup and replacement.
- Multi-purpose inputs and outputs reduce spare stock requirements.
- Relay output option provides local limit alarm capability.



AC Current Sensor Model 5020-350 (ordered separately)



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Performance Specifications

General Input

Analog to Digital Converter (ADC)

16-bit Σ - Δ A/D converter.

Ambient Temperature Effect

Better than $\pm 0.005\%$ of input span per $^{\circ}\text{C}$ or $\pm 1\mu\text{V}$, whichever is greater.

Noise Rejection

Normal Mode: Better than 40dB @ 60Hz.

Common Mode: Better than 100dB @ 60Hz.

Input Response Time (for input step change)

Less than 100ms typical
to 98% of final output value.

Input Overvoltage Protection

Bipolar Transient Voltage Suppressors (TVS).

DC Current Input

DC Current Input Range (100% rangeable)

Input Ranges	Resolution
0 to 22mA DC	757nA
0 to 5mA DC	189nA

DC Current Input Impedance

24.9 ohms

Excitation Supply (for 2-wire instruments)

+15V DC at 24mA maximum

DC Current Input Accuracy

Better than $\pm 0.05\%$ of input span

DC Voltage Input

DC Voltage Input Ranges (100% rangeable)

Input Ranges	Resolution
$\pm 100\text{V DC}$	3.77mV
$\pm 50\text{V DC}$	1.88mV
$\pm 25\text{V DC}$	942 μV
$\pm 12\text{V DC}$	471 μV
$\pm 6\text{V DC}$	236 μV
$\pm 3\text{V DC}$	118 μV

Input impedance

Greater than 500K ohms

DC Voltage Input Accuracy

Better than $\pm 0.05\%$ of input span

AC Current Input

AC Current Input Range (optional)

An optional external AC current sensor is required to monitor AC current signals (Model 5020-350).

AC Current Range	Primary Turns
0 to 20A AC	1
0 to 10A AC	2
0 to 5A AC	4
0 to 2A AC	10
0 to 1A AC	20

AC Current Input Accuracy

Better than $\pm 0.05\%$ of input span

Output (DC V/mA)

D/A Converter

16-bit Σ - Δ

Current Output

Ranges: 0-1mA, 0-20mA, 4-20mA

Compliance: 10V minimum (500 Ω load)

Accuracy: 0.025% of span

Voltage Output

Ranges: 0-5V, 0-10V

Compliance: 10mA maximum with short circuit

protection. 1 Ω output impedance

Accuracy: 0.025% of span

Accuracy (overall input to output)

0.075% of span

Output (Relay)

Relay

One SPDT electro-mechanical relay

Relay Ratings (CSA ratings)

25V DC @ 5A

120/240V AC @ 5A

Relay Time Delay

Adjustable alarm delay of up to 25 seconds

Contact Material

Silver-cadmium oxide (AgCdO)

Expected Mechanical Life

20 million operations

Environmental

Ambient Temperature

Operating: -25 to 70 $^{\circ}\text{C}$ (-13 to 158 $^{\circ}\text{F}$)

Storage: -40 to 85 $^{\circ}\text{C}$ (-40 to 185 $^{\circ}\text{F}$)

Relative Humidity

5 to 95%

Power Requirements

10 to 36V DC. 110mA @ 24V. 170mA @ 15V

Isolation (optional)

4-way (input/output/relay/power).

1500V AC for 60 seconds or 250V AC continuous

Radiated Field Immunity (RFI)

EN61000-4-3, EN50082-1

Electromagnetic Field Immunity (EMI)

Less than $\pm 0.25\%$ of output span effect under the influence of electromagnetic fields from switching solenoids, commutator motors, and drill motors.

Electrical Fast Transient (EFT)

EN61000-4-4, EN50082-1

Surge Withstanding Capability (SWC)

EN61000-4-5, EN50082-1

Electrostatic Discharge (ESD)

EN61000-4-2, EN50082-1

Radiated Emissions

EN50081-1 for Class B equipment

Approvals

UL listed (USA, Canada)

Configuration

Software Configuration

Units are fully programmable via the Windows XP/Vista/7 IntelliPack Configuration Program.

Configuration downloads from PC through EIA232 serial port using Acromag 800C-SIP kit.

Field Configuration

Output, zero/full-scale, relay setpoint and deadband are configurable via push-buttons and a standard calibrator.

LED Indicators

LEDs indicate power, status, calibration, and alarm.



Optional terminal blocks: barrier strip (left) and spring clamp (right). Cage clamp terminal is standard.



Physical

Enclosure

Case: Self-extinguishing NYLON type 6.6 polyamide thermoplastic UL94 V-2 NEMA Type 1 enclosure.

Connectors (Removable Terminal Blocks)

Wire Range: AWG #14-22 (AWG #12 stranded only)

Printed Circuit Boards

Military grade FR-4 epoxy glass circuit board

Dimensions

1.05W x 4.68H x 4.35D inches

26.7W x 118.9H x 110.5D millimeters

Shipping Weight

1 pound (0.45 Kg) packed

Ordering Information

IMPORTANT: All IntelliPacks require initial software configuration (order 800C-SIP). See Note 1 below.

[811T-0500](#)

IntelliPack transmitter unit (DC voltage/current input)

[811T-1500](#)

Same as above, plus an SPDT relay output

[5020-350](#)

AC current sensor. Required for AC current inputs.

See Page 205 for more information.

[800C-SIP](#)

Software Interface Package.

Only one kit is required for all IntelliPack models.

[4001-095](#)

USB-to-Serial adapter

[PS5R-VD24](#)

Power supply (24V DC, 2.1A).

[TBK-B01](#)

Optional terminal block kit, barrier strip style, 2 pcs.
(For use with 811T-0500 model.)

[TBK-B02](#)

Optional terminal block kit, barrier strip style, 4 pcs.
(For use with 811T-1500 model with alarm.)

[TBK-S01](#)

Optional terminal block kit, spring clamp style, 2 pcs.
(For use with 811T-0500 model.)

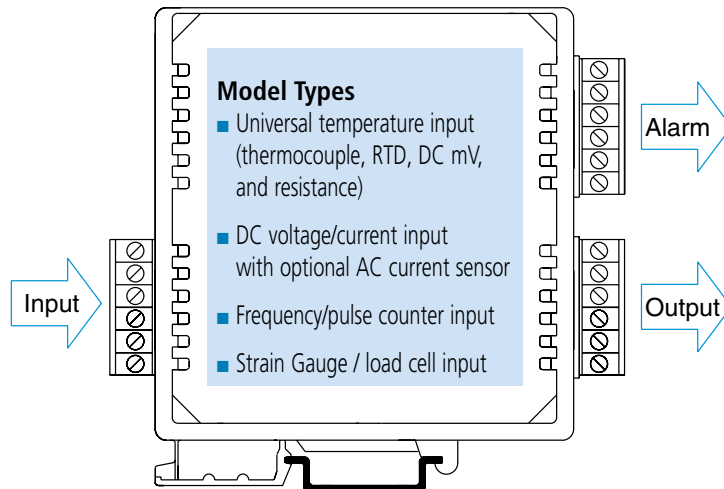
[TBK-S02](#)

Optional terminal block kit, spring clamp style, 4 pcs.
(For use with 811T-1500 model with alarm.)

NOTE 1: To order factory configuration, call Acromag for a configuration form which must accompany your order. Also, append "-C" to model number (example: 811T-1500-C). 800C-SIP kit is still recommended.

IntelliPack®: 800 Series

IntelliPack 800 Series Signal Conditioners



Universal Temperature Input ♦ DC Voltage/current Input ♦ Frequency Input ♦ Strain Gauge Input

800T Models

801T: Universal temperature input
(thermocouple, RTD, DC mV, and resistance)

811T: DC voltage/current input
with optional AC current sensor

841T: Frequency/pulse counter input

IntelliPack transmitters isolate and convert sensor inputs to noise-free, proportional DC current or voltage output signals. An optional relay output adds a local limit alarm function.

Each unit offers a selection of input and output ranges, as well as several signal conditioning options. This flexibility enables a single IntelliPack to handle a broad range of applications. As your needs change, you can easily reconfigure the unit for different ranges or functions.

The internal microprocessor provides several computation functions. A linearizer function lets you linearize/characterize the input signal with custom break points. The averaging function outputs a signal that is proportional to the average of the previous "n" samples, where n is user-defined. IntelliPacks can also generate an output signal that is proportional to the square root of the input signal. Other functions are possible (consult factory).

Setup is very easy. IntelliPack modules are quickly configured with the user-friendly Windows software program. Field adjustments are simple with the module's front-panel push-buttons and status LEDs. Once configured, IntelliPacks operate independent of any host computer.

Key Features & Benefits

General operation

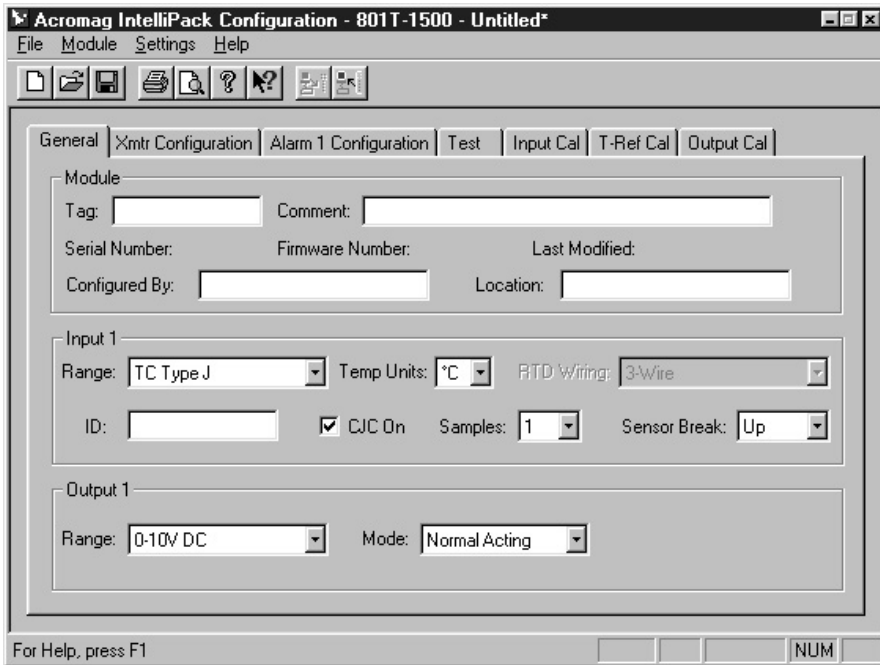
- Advanced microcontroller has integrated, downloadable flash memory and EEPROM for intelligent signal processing.
- Windows /XP/Vista/7 software configuration speeds setup and replacement.
- Push-button reprogrammability facilitates changes in the field without a host PC.
- Plug-in terminal blocks make module installation and removal easy.
- Built-in self-diagnostic routines operate upon power-up and during operation for easy maintenance and troubleshooting.
- 4-way optical isolation separates input, output, power, and relay contacts from each other.
- EMC compliant. Ruggedized circuitry meets directives to provide increased transient immunity and low emissions.
- Wide ambient temperature range ensures reliable performance from -25 to 70°C.
- Wide DC supply range with diode-coupled reverse polarity protection is useful for redundant supplies and battery backup.

Transmitter Operation

- Multi-purpose inputs accept many signal types to reduce spare stock requirements.
- User-programmable outputs let you select and change ranges to meet your needs (0-1mA, 0-20mA, 4-20mA, 0-5V, 0-10V DC).
- Intelligent signal processing functions perform mathematical computations on the input signal for customized outputs.
 - Signal linearization (25 breakpoints)
 - Average signal computation
 - Square root computation
 - Pulse counter (frequency input)
- High-resolution Sigma-Delta A/D converter delivers high accuracy with low noise.
- Relay output option provides local limit alarm capability in addition to the DC current/voltage output signal.
- High-power relays switch voltages up to 230V AC at currents up to 5A.
- User-programmable relay settings let you customize the alarm operation.
 - High or low limit setpoint
 - Automatic or latching alarm reset
 - Failsafe or non-failsafe operation
 - Relay delay to filter transient signals
- Input excitation supply provides power for a two-wire transmitter or a relay input.

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After the initial software configuration, a PC is no longer required. Field calibration is easily handled with the IntelliPack's push-buttons, status LEDs and a standard field calibrator.

Intelligent Transfer Functions

IntelliPack transmitters support the signal processing functions listed below. The functions are easily selected via the configuration software. The next page shows sample screens for the following applications.

Signal Linearizing

IntelliPacks let you define a transfer function where the output is a function of an equation or a complex curve. The input signal is characterized using straight line approximation with a user-defined table of up to twenty-five breakpoints. Typical applications include linearizing analyzer output, flow rates, transducer non-linearities, tank characterization, and logarithmic equations.

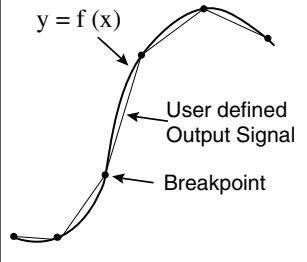
Signal Averaging

This function provides an output signal that is a run-time average of the input signal. Input data samples are taken every 100mS. The output is computed using a user-defined number of the previous "n" samples. Applications include temperature and level measurements subject to electrical transients, air currents, agitation, and vibration.

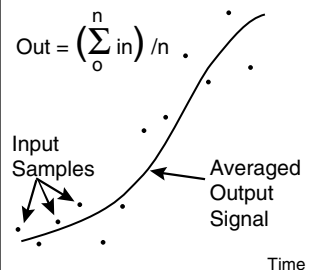
Square Root Computation

IntelliPacks can also output a signal that is proportional to the square root of the input signal. A common use involves flowmeters where the flow rate equals the square root of the measured differential pressure. In this case, the IntelliPack output is equivalent to a linear flow rate signal that is ideal for interfacing to a standard display device.

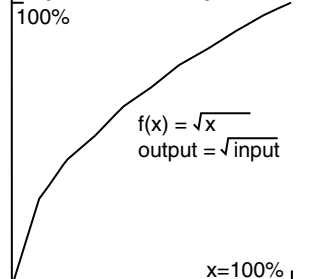
Signal Linearizing



Signal Averaging



Square Root Computation



IntelliPack®: 800 Series

IntelliPack 800 Series Signal Conditioners



Software Configuration Examples

Square Root Computation

Linearizer/Characterizer

Proportional/Inverse

Acromag IntelliPack Configuration - 801T-1500 - Untitled*

File Module Settings Help

General Xmrtr Configuration Alarm 1 Configuration Test Input Cal T-Ref Cal Output Cal

Scaling

Input 1 Range: -210 to 760 °C

Input for 0% Output: -210.0000 °C

Input for 100% Output: 760.0000 °C

Show Graph

Computation

☐ None

☐ Square Root

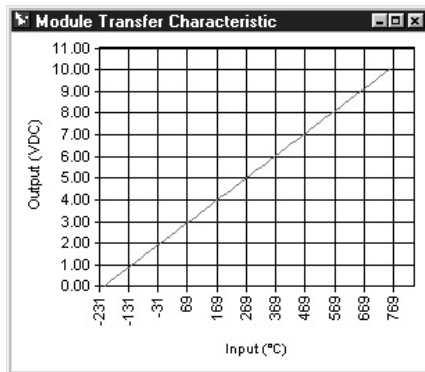
☒ Linearizer Breakpoints: 25

BP	Input %	Output %
1	0.000	0.000
2	4.167	13.053
3	8.333	25.882
4	12.500	38.267
5	16.667	50.000
6	20.833	60.876
7	25.000	70.711
8	29.167	79.335

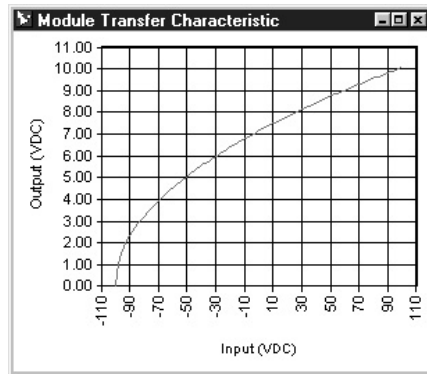
For Help, press F1

NUM

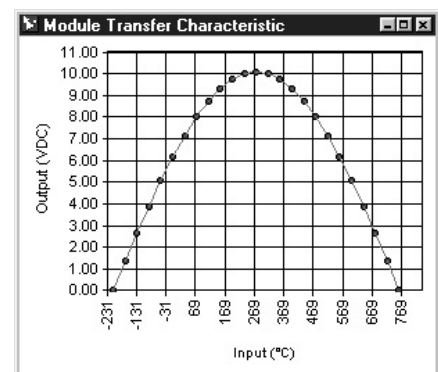
Transmitter configuration property sheet.



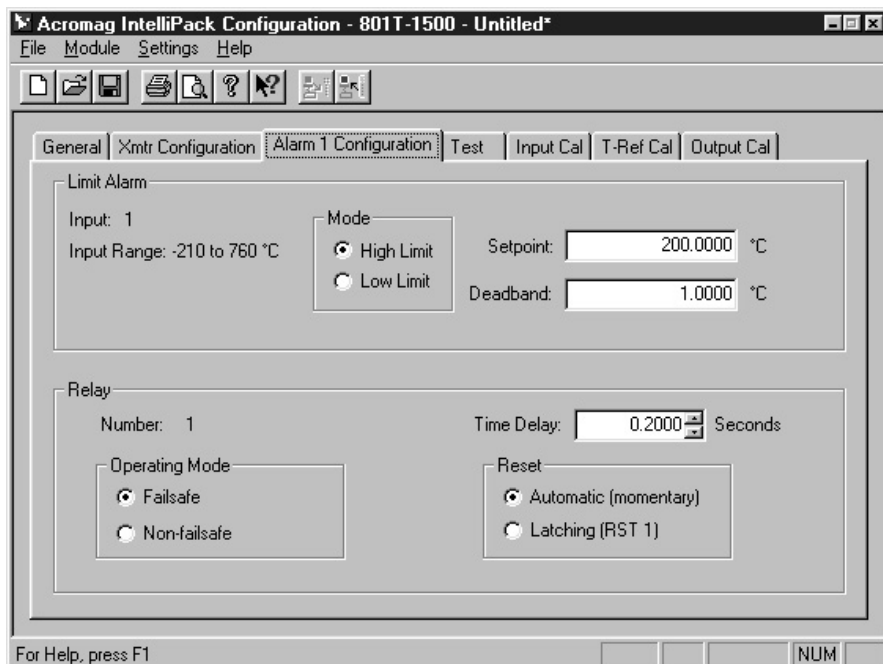
Proportional or inverse output graph.



Square root transfer function graph.

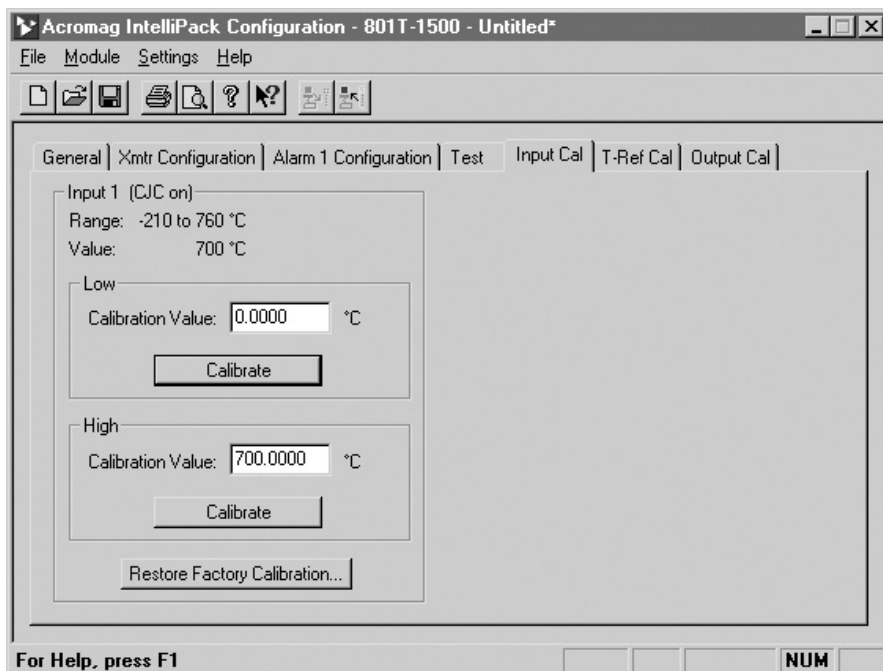


Customizable linearizer transfer function graph.



Relay Output Limit Alarm Configuration

Limit alarm property sheet.



Thermocouple Reference Calibration

Thermocouple reference calibration property sheet.