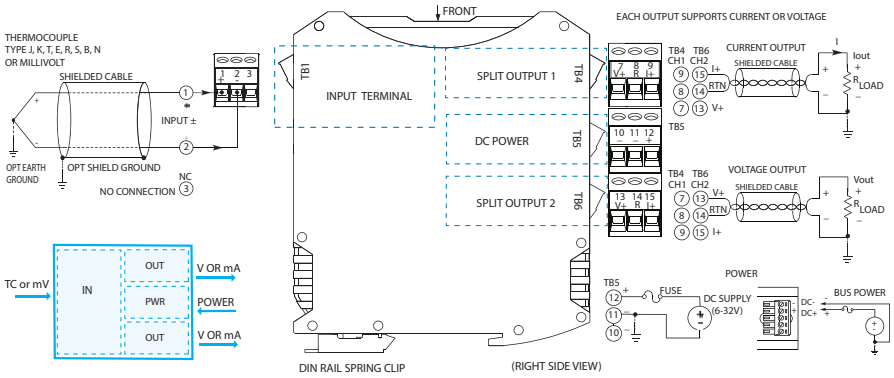
Signal Splitter: SP330 Series

SP333 Thermocouple/millivolt splitter, four-wire



Universal thermocouple or ±100mV input ◆ 0-20mA, ±10V or 0-10V outputs ◆ 6-32V DC external power

Description

The SP333 is a high-performance signal splitter that converts one millivolt or thermocouple input into two isolated proportional control signals. A variety of current and voltage output ranges are supported. Power connects on a terminal block, a rail bus, or both for redundancy.

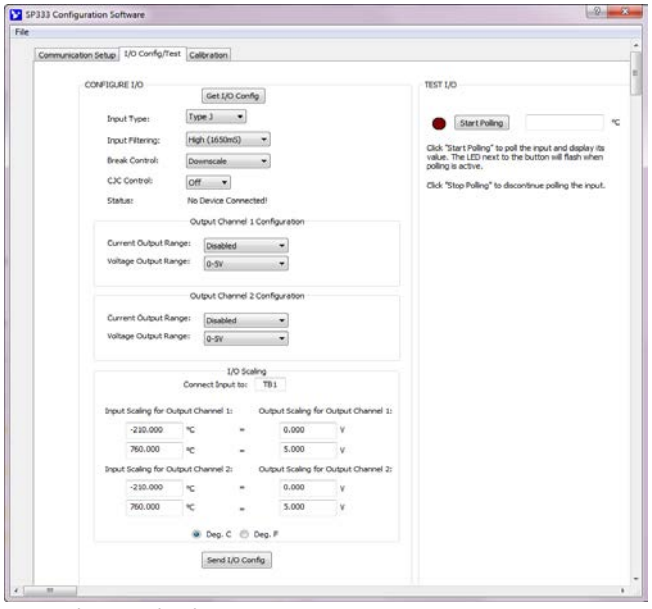
High-voltage isolation separates the input from power and each output circuit. The isolation protects from surges, reduces noise, and eliminates ground loop errors.

Setup is fast and easy with a USB connection to your PC and our Windows software. Acromag's Agility™ mobile app enables configuration on an Android smart phone or tablet. Software simplifies I/O range scaling, calibration, and advanced signal processing capabilities.

These rugged instruments withstand harsh industrial environments to operate reliably across a wide temperature range with very low drift. They feature high immunity to RFI, EMI, ESD, and EFT, plus low radiated emissions.

Key Features & Benefits

- Easy configuration via USB with Windows software or Agility app for Android
- Universal thermocouple or millivolt input (TC Type J, K, T, R, S, E, B, N or ±100mV)
- Input can scale differently for each output
- User-selectable filtering (none, low, med, high)
- Scalable current or voltage output ranges: 0-20mA, 4-20mA, ±5V, ±10V, 0-5V, 0-10V
- Normal or reverse-acting output
- Wide-range DC power input from 6-32V with support for rail power bus and redundancy
- High accuracy, linearity, stability, and reliability
- 1500V isolation
- Space-saving 17.5mm (0.69 inch) design with pluggable terminals for easier wiring
- Shock (25g) and vibration (4g) resistant
- Wide ambient operation (-40 to 75°C)
- CE compliant. UL/cUL Class I Div 2, ATEX / IECEx Zone 2 approvals.



Save configuration files for convenient copy/restore capability.

Windows configuration software (FREE) at www.acromag.com

Android Agility™ app (FREE) at [Google Play Store]

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Performance Specifications

IMPORTANT: To prevent ground loop error between a grounded PC and a grounded input signal, Acromag strongly recommends use of a USB isolator like Acromag's USB-Isolator when configuring a SP330 Series splitter.

USB Interface

USB Connector
USB Mini-B type socket, 5-pin. 5.0 meters cable length max. No driver required uses Windows HID drivers.

Data Rate
12Mbps. USB v1.1 and 2.0 compatible

USB Transient Protection
Transient voltage suppression on power and data lines

Input (Passive)

Default Configuration/Calibration
Input: TC J, -210 to 760°C, med. filter, break: up.
Output: 4 to 20mA

Input Ranges and Accuracy

Input	Range	Accuracy
TC J	-210 to 760°C (-346 to 1400°F)	±0.5°C
TC K	-200 to 1372°C (-328 to 2502°F)	±0.5°C
TC T	-260 to 400°C (-436 to 752°F)	±0.5°C
TC R	-50 to 1768°C (-58 to 3214°F)	±1.0°C
TC S	-50 to 1768°C (-58 to 3214°F)	±1.0°C
TC E	-200 to 1000°C (-328 to 1832°F)	±0.5°C
TC B	260 to 1820°C (500 to 3308°F)	±1.0°C
TC N	-230 to 1300°C (-382 to 2372°F)	±1.0°C
mV	-100 to 100mV	±0.1mV

Error includes the effects of repeatability, terminal point conformity, and linearization (but not CJC error).

Thermocouple Reference (Cold Junction Compensation)
±0.2°C typical, ±0.5°C maximum at 25°C

Ambient Temperature Effect
Better than ±80ppm/°C (±0.008%/°C)

Scaling Adjust
Zero: 0 to 95% of range, typical
Full scale: 5 to 100% of full scale range, typical

Lead Break (Sensor Burnout) Detection
Upscale/downscale ±5% full scale range typical

Input Over-Voltage Protection
Bipolar Transient Voltage Suppressers (TVS), 5.6V clamp level typical

Input Resolution
Millivolt input: 0.0025% (1 part in 40,000)
Thermocouple input: 0.1°C

Input Filter
Selectable digital filtering (none, low, med., and high)

Input Impedance
Current input: 24.9 ohms
Voltage input: 15M ohms

Noise Rejection (with high filter)
Normal mode @ 60Hz: >80dB
Common mode @ 60Hz: >134dB

Output (Two Signals, Active)

Output Range

Range	Over-Range	Resolution
±10V	±10.5V	1 part in 62415
±5V	±5.25V	1 part in 31208
0 to 10V	–0.5527 to +10.5V	1 part in 59240
0 to 5V	–0.27634 to +5.25V	1 part in 60262
0 to 20mA	–1.1054 to 21mA	1 part in 58596
4 to 20mA	–1.1054 to 21mA	1 part in 46877

Output Load
Voltage output: 1K ohms minimum
Current output: 0-550 ohms

Output Response Time (for step input change)

Time to reach 98% of final output value (typical)	
No filter	14 milliseconds
Low filter	41 milliseconds
Medium filter	137 milliseconds
High filter	1141 milliseconds

Output Ripple
Less than ±0.1% of output span

Environmental

Operating Temperature
-40 to 75°C (-40° to 167°F)

Storage Temperature
-40 to 85°C (-40 to 185°F)

Relative Humidity
5 to 95% non-condensing

Power Requirement
6-32V DC external supply, 1.5W max.

Isolation
1500V AC peak. 250V AC (354V DC) continuous between input, output, and power circuits.

Shock and Vibration Immunity
Vibration: 4g, per IEC 60068-2-64
Shock: 25g, per IEC 60068-2-27

Approvals
CE compliant. Designed for UL/cUL Class I Division 2 Groups ABCD, ATEX / IECEx Zone 2.

Electromagnetic Compatibility (EMC) Compliance
Radiated Emissions: BS EN 61000-6-4, CISPR 16
RFI: BS EN 61000-6-2, IEC 61000-4-3
Conducted RFI: BS EN 61000-6-2, IEC 61000-4-6
ESD: BS EN 61000-6-2, IEC 61000-4-2
EFT: BS EN 61000-6-2, IEC 61000-4-4
Surge Immunity: BS EN 61000-6-2, IEC 61000-4-5

Physical

General
General-purpose enclosure designed for mounting on 35mm "T-type" DIN rail.

Case Material
Self-extinguishing polyamide, UL94 V-0 rated, color light gray. General-purpose NEMA Type 1 enclosure.

I/O Connectors
Removable plug-in terminal blocks rated for 12A/250V; AWG #26-12, stranded or solid copper wire.

Dimensions
17.5 x 114.5 x 99.0 mm (0.7 x 4.51 x 3.90 inches)

Shipping Weight
0.22 kg (0.5 pounds) packed

Ordering Information

Models

SP333-0700
Four-wire splitter, thermocouple/millivolt input

Services

SP330-Config/Cal
Factory custom configuration/calibration service. Specify input type, input/output zero and full-scale values, filtering, and sensor fault settings on order.

Software

TTC-SIP (recommend one kit per customer)
Windows Software Interface Package for Acromag SP Series signal splitters. Includes configuration software CD-ROM (5040-944), isolator (USB-ISOLATOR) and two USB cables (4001-112, 4001-113).

Agility Mobile Application
Software configuration software for an Android smart device. Download for free from the Google Play Store. Requires 5028-565 and 4001-113 cables

Accessories

TTBUS-KIT
DIN rail bus power connector, left/right terminal blocks & two end stops #1027-222. One kit supports multiple splitters.

USB-ISOLATOR
USB-to-USB isolator, includes USB cable (4001-112)

4001-112
USB cable, 1 meter, with Type A to Type B plugs

4001-113
USB cable, 1 meter, with Type A to Mini-B plugs

4001-252
DIN rail end stop for hazloc approvals

5028-565
USB-OTG 6 inch cable

ISO9001
AS9100
MADE IN USA

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