

Select instrumentation analog inputs when...

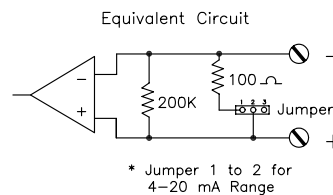
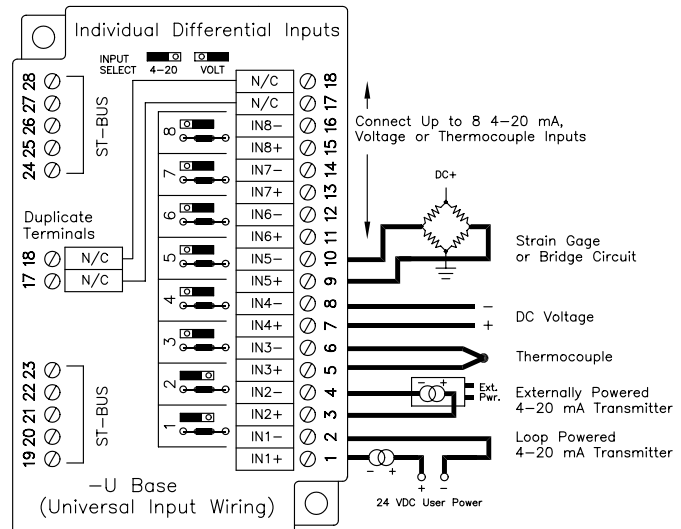
...you need to read thermocouples, or you need differential inputs for high accuracy, or you need floating 4-20 mA inputs.

- Advanced 16-bit A/D converter for extreme accuracy
- True differential inputs minimize noise and ground loops
- Software selectable ranges – mix inputs on module
- Linearizes and compensates thermocouple readings
- Upscale/downscale thermocouple burnout detection
- Fault tolerant 4-20 mA range with an auto-polarity feature



| Performance Specifications | |
|------------------------------------|-------------------|
| Number of channels | 8 |
| Lowest voltage range | +/- 0.062 Volts |
| Maximum voltage range | +/- 10.0 Volts |
| Auto-polarity current range | 4-20 mA |
| Thermocouple types (see note) | J,K,E,R,T,B,C,N,S |
| A/D resolution | 16 bits |
| Full scale accuracy (@ 20°C) | +/- 0.02% |
| Input span adjustability | +/- 25% |
| Input offset adjustability | +/- 25% |
| Span temperature coefficient | +/- 30 ppm per °C |
| Offset temperature coefficient | +/- 30 ppm per °C |
| mV and voltage input impedance | 200K Ohms |
| 4-20 mA input impedance | 100 Ohms |
| CMRR (at 50/60 Hz) | 160 db |
| DMRR (at 50/60 Hz) | 66 db |
| Common mode input voltage: | |
| Between two input terminals | +/- 25 VDC |
| Between inputs and ground | 1200 Volts |
| No damage input voltage | +/- 50 VDC |
| Fastest scan rate (all 8 channels) | 500 mS |
| Maximum ST-Bus power | 1200 mW |
| Isolation (input to ST-Bus) | 1200 VDC |
| Operating temperature range | -30 to 70°C |
| Storage temperature range | -40 to 85°C |
| Humidity (non-condensing) | 5 to 95% |

Note: Thermocouple inputs are cold junction compensated and reported as °F, °C or 0.1°C.



Ordering Information

| Description | Part Number |
|------------------------|---------------|
| 8 Inputs w/Wiring Base | ST-AI-INS-08U |
| Module only | ST-AI-INS-08M |

Select 100 Ohm RTD inputs when...

...you need accurate temperature measurements using 100 Ohm platinum RTDs.

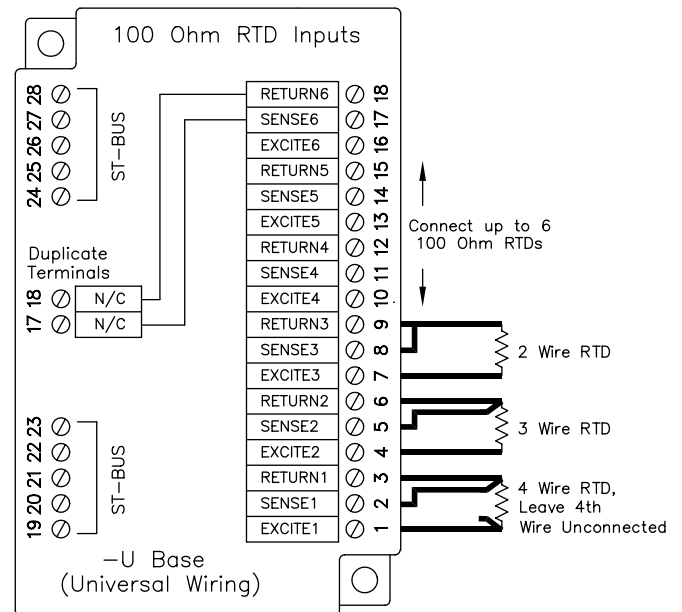
Select 10 Ohm copper RTD inputs when...

...you need to interface to existing 10 Ohm copper RTD sensors.

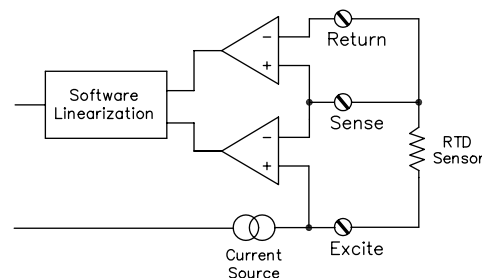
- Best performance/lowest cost precision temperature solution
- Resistance Temperature Detectors (RTD) are more accurate than thermocouples
- RTD linearization is performed in software for extreme accuracy and repeatability
- Excitation current is pulsed on only during the measurement to reduce self-heating of the RTD



| Performance Specifications | | |
|---|---|-------------------------------|
| | ST-AI-RTD-06U | ST-AI-RTC-06U |
| Number of channels | 6 | 6 |
| RTD type | 100 Ohm platinum Alpha = .00385 or .00392 | 10 Ohm copper |
| Compatible lead configurations | 2, 3, or 4 wire | 2 or 3 wire |
| Input range | -200 to 850°C | -200 to 260°C |
| Basic A/D resolution | 16 bits | 16 bits |
| Scaled resolution | 0.1°C | 0.1°C |
| Full scale accuracy (@20°C) | 0.5°C | 1.0°C |
| Span temperature coefficient | +/- 25 ppm/°C | +/- 25 ppm/°C |
| Offset temperature coefficient | +/- 25 ppm/°C | +/- 25 ppm/°C |
| Excitation current (pulsed to reduce self-heating) | 250 µA | 1.5 mA |
| Maximum lead wire resistance | 100 Ohms per side, balanced | 40 Ohms per side, balanced |
| Input protection | +/- 25 VDC | +/- 25 VDC |
| Fastest scan rate (all 6 channels) | 700 mS | 700 mS |



Equivalent Circuit



Ordering Information

| Description | Module w/Base | Module Only |
|--------------------|---------------|---------------|
| 100 Ohm RTD Inputs | ST-AI-RTD-06U | ST-AI-RTD-06M |
| 10 Ohm RTD Inputs | ST-AI-RTC-06U | ST-AI-RTC-06M |

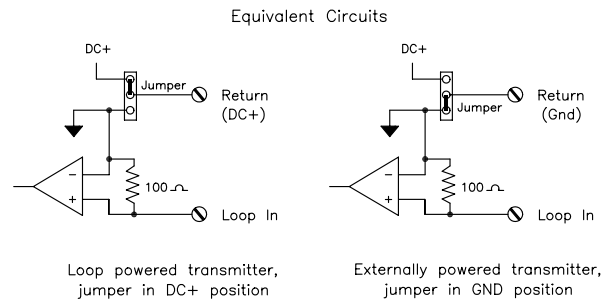
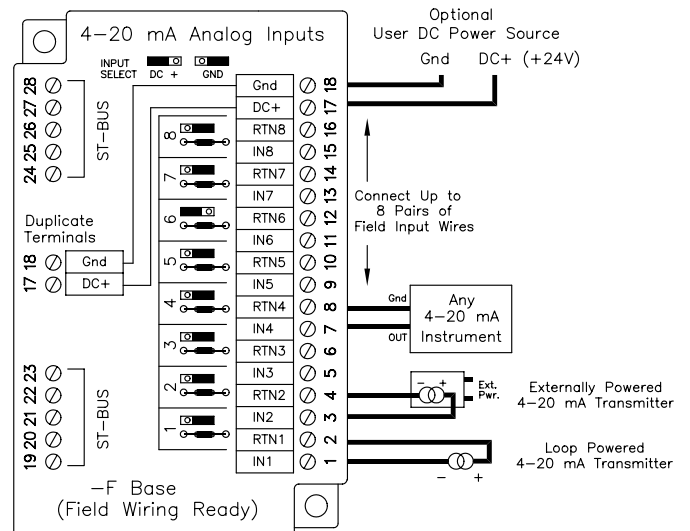
Select an 8 channel 4-20 mA input module when...

...the convenience of field wiring ready terminals will simplify your design and reduce panel wiring.

- 12-bit A/D converter for precision measurements
- Field ready wiring saves time and panel space
- Field configurable wiring choice for loop-powered transmitters or ground return instruments
- Field replaceable shunts reduce maintenance time



| Performance Specifications | |
|---|--------------------------|
| Number of channels | 8 |
| Input range | 4-20 mA |
| A/D resolution | 12 bits |
| Input resolution | 6 μ A |
| Full scale accuracy (@ 20°C) | 0.10% |
| Input span adjustability | +/- 25% |
| Input offset adjustability | +/- 25% |
| Span temperature coefficient | +/- 50 ppm per °C |
| Offset temperature coefficient | +/- 50 ppm per °C |
| Input impedance | 100 Ohms |
| DMRR (differential rejection at 50/60 Hz) | 66 db |
| Input protection | Field-replaceable shunts |
| Fastest scan rate (all 8 channels) | 5 mS |
| User DC loop power (optional) | 24 VDC |
| Maximum ST-Bus power | 600 mW |
| Isolation (input to ST-Bus) | 1200 VDC |
| Operating temperature range | -30 to 70°C |
| Storage temperature range | -40 to 85°C |
| Humidity (non-condensing) | 5 to 95% |



Ordering Information

| Description | Part Number |
|--------------------------------|---------------|
| 8 Current Inputs w/Wiring Base | ST-AI-20M-08F |
| Module only | ST-AI-20M-08M |

Select high density 4-20 mA inputs when...

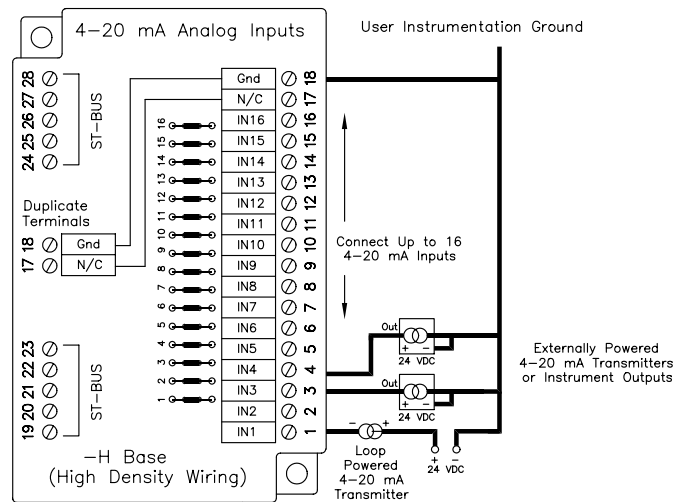
...reduced panel space and lowest cost are primary requirements.

- 12-bit A/D converter for precision measurements
- High density modules have lowest cost per point
- Group isolation eliminates ground loops and interactions with other modules
- Field replaceable shunts reduce maintenance time

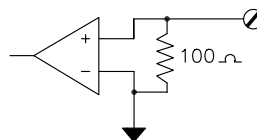


Performance Specifications

| | |
|---|--------------------------|
| Number of channels | 16 |
| Input range | 4-20 mA |
| A/D resolution | 12 bits |
| Input resolution | 6 μ A |
| Full scale accuracy (@ 20°C) | 0.10% |
| Input span adjustability | +/- 25% |
| Input offset adjustability | +/- 25% |
| Span temperature coefficient | +/- 50 ppm per °C |
| Offset temperature coefficient | +/- 50 ppm per °C |
| Input impedance | 100 Ohms |
| DMRR (differential rejection at 50/60 Hz) | 66 db |
| Input protection | Field-replaceable shunts |
| Fastest scan rate (all 16 channels) | 10 mS |
| Maximum ST-Bus power | 600 mW |
| Isolation (input to ST-Bus) | 1200 VDC |
| Operating temperature range | -30 to 70°C |
| Storage temperature range | -40 to 85°C |
| Humidity (non-condensing) | 5 to 95% |



Equivalent Circuit



Ordering Information

| Description | Part Number |
|---------------------------------|---------------|
| 16 Current Inputs w/Wiring Base | ST-AI-20M-16H |
| Module only | ST-AI-20M-16M |



Application Idea

Pair this 16 channel 4-20 mA input module with the current limiter module (on the next page) for the highest system performance at the lowest cost.

Select a voltage analog input module when...

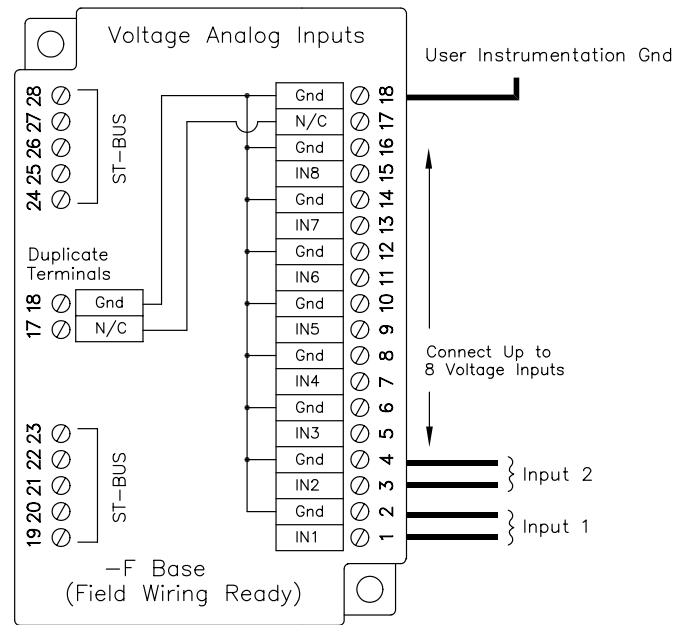
...all the voltage input signals return to a common ground point.

- Software selectable voltage ranges maximize input resolution
- Group isolation eliminates ground loops and interactions with other modules
- 50/60 Hz rejection eliminates errors from power line noise

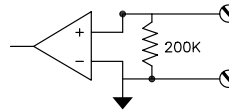


Performance Specifications

| | |
|---|-------------------------------|
| Number of channels | 8 |
| Input ranges: bipolar | +/- 1.0, 2.0, 5.0, 10.0 Volts |
| A/D resolution | 12 bits |
| Input resolution | 0.6 mV |
| Full scale accuracy (@ 20°C) | 0.10% |
| Input span adjustability | +/- 25% |
| Input offset adjustability | +/- 25% |
| Span temperature coefficient | +/- 50 ppm per °C |
| Offset temperature coefficient | +/- 50 ppm per °C |
| Input impedance | 200K Ohms |
| DMRR (differential rejection at 50/60 Hz) | 66 db |
| Input protection | +/- 50 VDC |
| Fastest scan rate (all 8 channels) | 5 mS |
| Maximum ST-Bus power | 950 mW |
| Isolation (from ST-Bus) | 1200 VDC |
| Operating temperature range | -30 to 70°C |
| Storage temperature range | -40 to 85°C |
| Humidity (non-condensing) | 5 to 95% |



Equivalent Circuit



Ordering Information

| Description | Part Number |
|--------------------------------|---------------|
| 8 Voltage Inputs w/Wiring Base | ST-AI-10V-08F |
| Module only | ST-AI-10V-08M |

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