

Analog input module

AI

M3-31A

AI

M3-31B

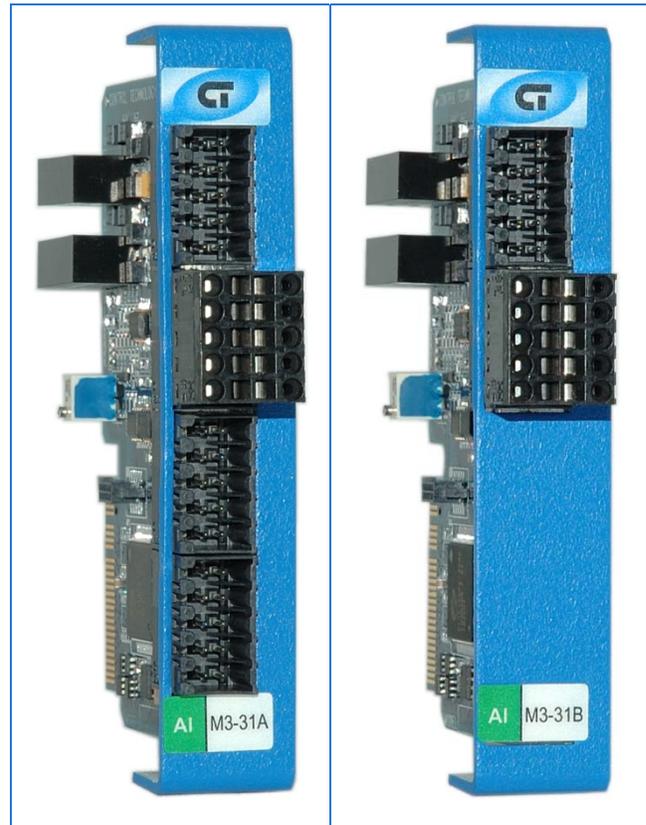
M3-31A: 16 analog inputs (± 10 VDC)

M3-31B: 8 analog inputs (± 10 VDC)

- ▶ 16-bit analog converter
- ▶ Optically and electrically isolated
 - Each module has an electrically isolated analog ground
 - Each channel is optically isolated
- ▶ Each channel has individually configurable digital filtering

General specifications

Inputs per module:	
M3-31A	16
M3-31B	8
Input type	Voltage, ± 10 VDC
Connection	Removable terminal block
Connection type	Tension clamp
Terminal block part number	069-621010
Terminal wire size (UL 1059)	18 - 22 AWG
Test point	All connections
Module size	1 rack slot (0.75"/19 mm)
Bus power required (5 VDC)	0.2 mA
Isolation rating	500 VDC
Operating temperature	
Horizontal installation	0 - 50°C
Vertical installation	0 - 45°C
Storage temperature	-25 - 85°C
Humidity	5 - 95% non-condensing



Actual size

Minimum hardware revision	0, A
Minimum firmware revision	1.02
Minimum operating system revision	5.00.90
Documentation number: 950-533101-002	

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Performance specifications

Parameter	Value
Input range	-10V to +10V
Input resolution	16-bit
Input resistance: Ain to ACOM	10 ¹² Ω
Max input voltage	±32 VDC
Full range calibration error ^{1,2}	0.013% of range
Offset calibration error at 0 V ^{1,2}	0.013% of range
Linearity error (full range) ^{1,2}	0.037% of range
Digital input filter size (settable)	1 – 255 samples
Update rate (all channels):	
M3-31A	625 Hz
M3-31B	1250 Hz

1. Errors are at 25°C.
2. Errors are double across full ambient temperature range of 0 – 50°C.

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M3-31A

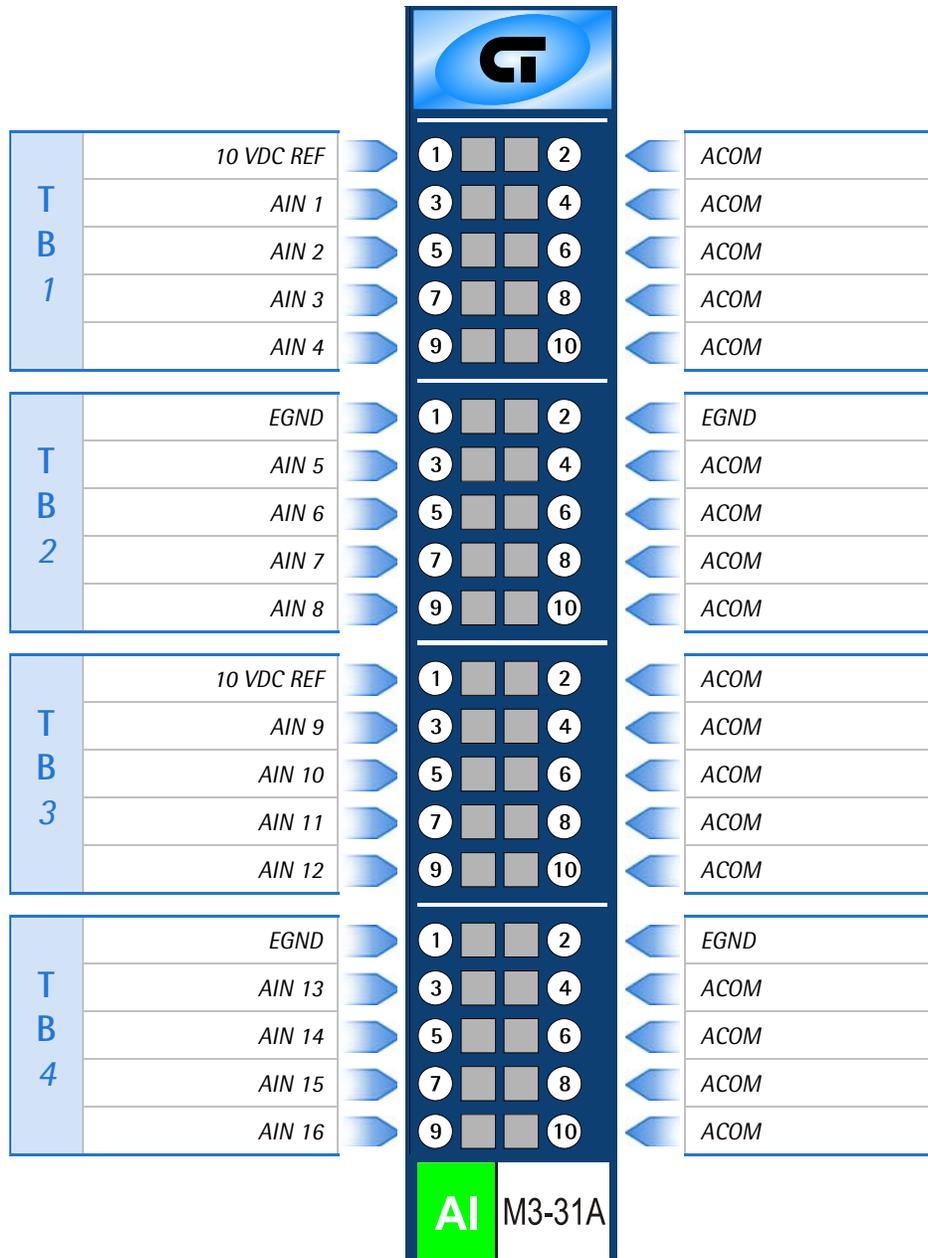
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M3-31B

M3-31A: 16 analog inputs (± 10 VDC)

M3-31B: 8 analog inputs (± 10 VDC)

Terminal block connections



Notes

1. TB3 and TB4 not available on M3-31B.
2. Max total current for all 10 VDC REF connections is 25 mA per module.

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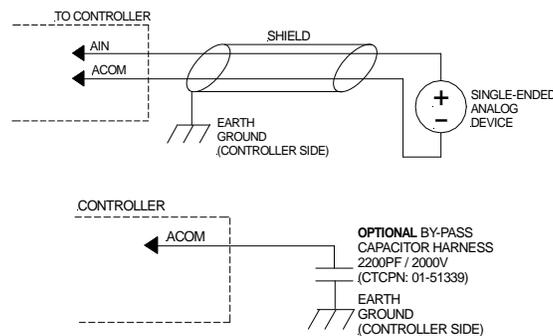
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M3-31A

AI

M3-31B

Application Information



Notes

1. Shield grounds must be terminated on the controller side of the cable.
2. When an analog device is powered via an external power source, it may be necessary to tie the ground of this power source to the module's analog common (ACOM) to limit common mode voltages.
3. Insertion and/or removal of I/O modules should be done with all power removed. Failure to do so may lead to damaged electronics and/or incorrect I/O states.
4. Incorrect I/O connections may lead to damaged electronics and/or incorrect I/O states.
5. For register and programming information, refer to the appropriate controller Applications Guide.
6. The information and illustrations contained herein are the property of Control Technology Corporation and are subject to change without notice. Data based on $V_S = 24 \text{ VDC}$ @ 25°C unless otherwise noted. For additional information and/or updates, visit www.ctc-control.com. Copyright © 2007-2013 Control Technology Corporation. All Rights Reserved.