



## Configuring the NI CB-68LP Screw Terminal Block for use with a 40-channel PCI/PXI-6255 Board for MiDAS DA

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### Abstract

This application note contains charts for wiring National Instruments CB-68LP screw terminal blocks for MiDAS DA hardware. This information applies to National Instruments M-Series device NI PCI/PXI-6255. Connections can be made for as many as 40 differential sensors or 80 single-ended sensors. This document also provides instructions for wiring trigger and sync out connections.

*Note: For information on other NI 62xx M-Series boards, please refer to Application Note 171, Configuring the NI CB-68LP Screw Terminal Block for use with 62xx M-Series Boards for MiDAS DA.*

### Introduction

There are two possible configurations for wiring MiDAS DA with an NI-6255 device. Configuration 1 allows for 8 differential or 16 single-ended sensors using one screw terminal block. Configuration 2, using a second screw terminal block, allows for as many as 40 differential or 80 single-ended sensors. This application note provides instructions for wiring screw terminal blocks for each configuration and also for wiring sync out and trigger connections.

### Wiring Sync Out and Trigger Connections on Terminal Blocks

When using a screw terminal block, you must perform some wiring modifications to access the sync out pulse and the trigger. You must use a BNC pigtail to connect two terminals into a BNC connector for the sync out line, and another pigtail to connect two terminals as the trigger line. The connections are wired as follows on Screw Terminal Block 1. Pin numbers are shown in parentheses.

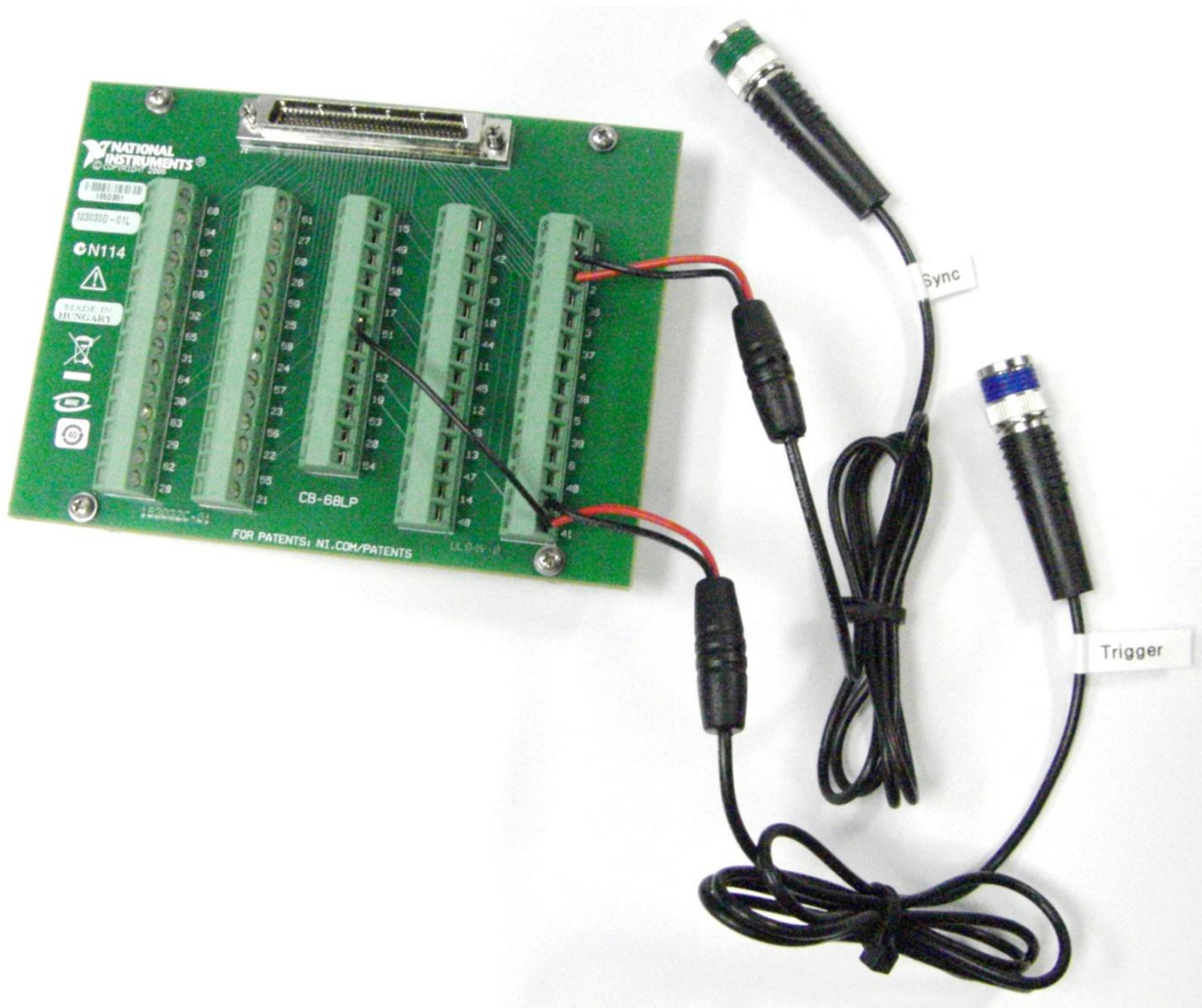
**Sync out:** Connect PFI 12 (2) to DGND (35 or 36)

**Trigger:** Connect PFI 4 (41) to DGND (7)

**Trigger jumper:** Connect P0.5 (51) to PFI 4 (41)

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*Note: For more information, please refer to the image below and the MiDAS DA User Guide.*



### Connecting Sensors with your DAQ Hardware for Configuration 1

MiDAS DA Configuration 1 includes the following hardware components:

- one PCI/PXI board (6255) installed in your computer
- one cable connecting the installed data board to the screw terminal block
- one CB-68LP screw terminal block

This configuration allows for 8 differential or 16 single-ended sensors. The screw terminal connections should be wired according to the following chart.

*Note: For single-ended sensors, only the positive (+) connections are listed. The negative (-) connections must be wired to one of the AI GND connections listed at the bottom of the chart.*

**Screw Terminal Block 1**

Differential Sensor #	Positive / Negative	Differential		Single-Ended		Single-Ended Sensor #
		Pins	DA	Pins	DA	
1	+	68	AI 0	68	AI 0	1
		34	AI 8			
2	+	33	AI 1	33	AI 1	2
		66	AI 9			
3	+	65	AI 2	65	AI 2	3
		31	AI 10			
4	+	30	AI 3	30	AI 3	4
		63	AI 11			
5	+	28	AI 4	28	AI 4	5
		61	AI 12			
6	+	60	AI 5	60	AI 5	6
		26	AI 13			
7	+	25	AI 6	25	AI 6	7
		58	AI 14			
8	+	57	AI 7	57	AI 7	8
		23	AI 15			
	+			34	AI 8	9
	+			66	AI 9	10
	+			31	AI 10	11
	+			63	AI 11	12
	+			61	AI 12	13
	+			26	AI 13	14
	+			58	AI 14	15
	+			23	AI 15	16
AI GND: 24, 27, 29, 32, 56, 59, 64, 67						

## Connecting Sensors with your DAQ Hardware for Configuration 2

MiDAS DA Configuration 2 includes the following hardware components:

- one PCI/PXI board (6255) installed in your computer
- two cables connecting the installed data board to the screw terminal blocks
- two CB-68LP screw terminal blocks

This configuration allows for 40 differential or 80 single-ended sensors. Screw Terminal Block 1 should be wired according to the chart for Configuration 1. Screw terminal connections for Block 2 should be wired according to the following chart.

*Note: For single-ended sensors, only the positive (+) connections are listed. The negative (-) connections must be wired to one of the AI GND connections listed at the bottom of the chart.*

### Screw Terminal Block 2

Differential Sensor #	Positive / Negative	Differential		Single-Ended		Single-Ended Sensor #
		Pins	DA	Pins	DA	
9	+	68	AI 16	68	AI 16	17
	-	34	AI 24			
10	+	33	AI 17	33	AI 17	18
	-	67	AI 25			
11	+	32	AI 18	32	AI 18	19
	-	66	AI 26			
12	+	65	AI 19	65	AI 19	20
	-	31	AI 27			
13	+	30	AI 20	30	AI 20	21
	-	64	AI 28			
14	+	29	AI 21	29	AI 21	22
	-	63	AI 29			
15	+	62	AI 22	62	AI 22	23
	-	28	AI 30			
16	+	27	AI 23	27	AI 23	24
	-	61	AI 31			
	+			34	AI 24	25
	+			67	AI 25	26
	+			66	AI 26	27
	+			31	AI 27	28
	+			64	AI 28	29
	+			63	AI 29	30
	+			28	AI 30	31
	+			61	AI 31	32

**Screw Terminal Block 2 (continued)**

Differential Sensor #	Positive / Negative	Differential		Single-Ended		Single-Ended Sensor #
		Pins	DA	Pins	DA	
17	+ -	26 60	AI 32 AI 40	26	AI 32	33
18	+ -	59 25	AI 33 AI 41	59	AI 33	34
19	+ -	24 58	AI 34 AI 42	24	AI 34	35
20	+ -	23 57	AI 35 AI 43	23	AI 35	36
21	+ -	55 21	AI 36 AI 44	55	AI 36	37
22	+ -	20 54	AI 37 AI 45	20	AI 37	38
23	+ -	19 53	AI 38 AI 46	19	AI 38	39
24	+ -	52 18	AI 39 AI 47	52	AI 39	40
	+			60	AI 40	41
	+			25	AI 41	42
	+			58	AI 42	43
	+			57	AI 43	44
	+			21	AI 44	45
	+			54	AI 45	46
	+			53	AI 46	47
	+			18	AI 47	48
25	+ -	17 51	AI 48 AI 56	17	AI 48	49
26	+ -	16 50	AI 49 AI 57	16	AI 49	50
27	+ -	49 15	AI 50 AI 58	49	AI 50	51
28	+ -	14 48	AI 51 AI 59	14	AI 51	52
29	+ -	13 47	AI 52 AI 60	13	AI 52	53
30	+ -	46 12	AI 53 AI 61	46	AI 53	54
31	+ -	11 45	AI 54 AI 62	11	AI 54	55
32	+ -	10 44	AI 55 AI 63	10	AI 55	56

**Screw Terminal Block 2 (continued)**

Differential Sensor #	Positive / Negative	Differential		Single-Ended		Single-Ended Sensor #
				Pins	DA	
	+			51	AI 56	57
	+			50	AI 57	58
	+			15	AI 58	59
	+			48	AI 59	60
	+			47	AI 60	61
	+			12	AI 61	62
	+			45	AI 62	63
	+			44	AI 63	64
	+			42	AI 64	65
	+			7	AI 65	66
	+			6	AI 66	67
	+			39	AI 67	68
	+			4	AI 68	69
	+			3	AI 69	70
	+			36	AI 70	71
	+			1	AI 71	72
	+			8	AI 72	73
	+			41	AI 73	74
	+			40	AI 74	75
	+			5	AI 75	76
	+			38	AI 76	77
	+			37	AI 77	78
	+			2	AI 78	79
	+			35	AI 79	80
AI GND: 9, 22, 43						

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Xcitex Inc.  
25 First Street, Suite 105  
Cambridge, MA 02141 USA

