



Installation Instructions

CN1 Control Interface Breakout Boards

(Catalog Number: 2090-U3BB2-DM44, 2090-U3BB-DM12)

The CN1 Control Interface Breakout Boards provide discrete wire termination for signals on the CN1 Input/Output connector of the Ultra3000™ drives (2098-DSD-xxx or 2098-DSD-HVxxx) and Ultra3000 SERCOS™ drives (2098-DSD-xxx-SE or 2098-DSD-HVxxx-SE).

The 12-pin board (2090-U3BB-DM12) is intended for use with SERCOS drives, but may be used in non-SERCOS applications with minimal I/O requirements.

The user must supply an external 5.2V dc auxiliary power source if control power is to be retained when main power is removed from micro-sized drives (2098-DSD-005, -010, or -020).

Standard electrical tools (screwdriver, needlenose plier, wire cutter/stripper, etc.) are required to assemble the board.

Ultra3000 Pinouts and Corresponding Breakout Board Terminals

The following tables list the signals that are transferred from the CN1 connector of an Ultra3000 drive to a CN1 Breakout Board. Graphics show the important features on each breakout board.

Refer to the *Ultra3000 Digital Servo Drives Installation Manual* (2098-IN003x-EN-P) for additional information about these signals.

IMPORTANT

Proper interface cable construction minimizes and controls system-level noise. Always build and route cables as described in these Instructions and in the *Ultra3000 Digital Servo Drives Installation Manual*.

2090-U3BB2-DM44

This table lists signals that are transferred from the Ultra3000 CN1 connector using the 2090-U3BB2-DM44 board.

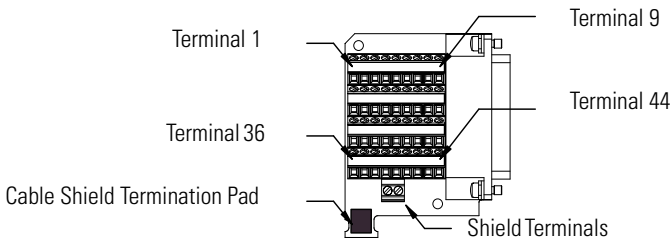
Terminal Marking	Signal	Connector-Pin
1	EPWR_5V	CN1-1
X- ¹	AUX_COM	CN1-2
X+ ¹	5V_AUX_PWR	CN1-3
4	AX+	CN1-4
5	AX-	CN1-5
6	BX+	CN1-6
7	BX-	CN1-7
8	IX+	CN1-8
9	IX-	CN1-9
16	AMOUT+	CN1-16
17	AMOUT-	CN1-17
18	BMOUT+	CN1-18
19	BMOUT-	CN1-19
20	IMOUT+	CN1-20
21	IMOUT-	CN1-21
22	ACOM	CN1-22
23	AOUT	CN1-23
24	ILIMIT	CN1-24
25	CMND+	CN1-25
26	CMND-	CN1-26

Terminal Marking	Signal	Connector-Pin
27	IOCOM	CN1-27 and CN1-28
29	IOPWR	CN1-29 and CN1-30
31	INPUT1	CN1-31
32	INPUT2	CN1-32
33	INPUT3	CN1-33
34	INPUT4	CN1-34
35	INPUT5	CN1-35
36	INPUT6	CN1-36
37	INPUT7	CN1-37
38	INPUT8	CN1-38
39	OUTPUT1	CN1-39
40	OUTPUT2	CN1-40
41	OUTPUT3	CN1-41
42	OUTPUT4	CN1-42
43	RELAY+	CN1-43
44	RELAY-	CN1-44
\perp ²	SHIELD	—
\perp ²	SHIELD	—

¹ 5V auxiliary power source is connected to the X+ (pos.) and X- (neg.) terminals.
Do not ground the supply elsewhere in the system, as X-is connected to chassis ground of the drive.

² Termination points for shield from the user supplied cabling.
Refer to *System Design for Control of Electrical Noise* on page 8 for guidelines.

Figure 1 2090-U3BB2-DM44 Layout Diagram



2090-U3BB-DM12

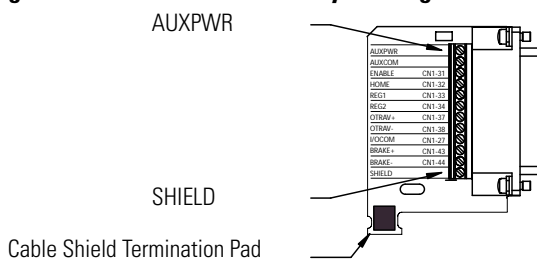
This table lists signals that are transferred from the Ultra3000 CN1 connector using the 2090-U3BB-DM12 board.

Signal by Interface Type		Connector- Pin
SERCOS	non-SERCOS	
AUXPWR ¹	AUXPWR ¹	CN1-3
AUXCOM ¹	AUXCOM ¹	CN1-2
ENABLE	INPUT1	CN1-31
HOME	INPUT2	CN1-32
REG1	INPUT3	CN1-33
REG2	INPUT4	CN1-34
OTRAV+	INPUT7	CN1-37
OTRAV-	INPUT8	CN1-38
I/OCOM	I/OCOM	CN1-27
BRAKE+	RELAY+	CN1-43
BRAKE-	RELAY-	CN1-44
SHIELD ²	SHIELD ²	—

¹ 5V auxiliary power source is connected to the AUXPWR (pos.) and AUXCOM (neg.) terminals.
Do not ground the supply elsewhere in the system; AUXCOM connects to chassis ground of the drive.

² Termination point for shield from the user supplied cabling.
Refer to *System Design for Control of Electrical Noise* on page 8 for guidelines.

Figure 2 2090-U3BB-DM12 Layout Diagram



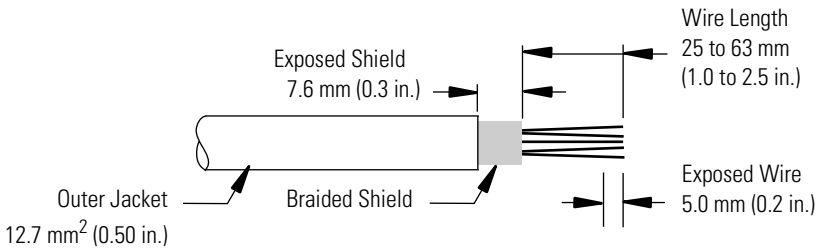
Installation

The CN1 Control Interface Breakout Board screw-clamp terminal block accommodates 0.14 mm² to 1.5 mm² (26 to 16 AWG) solid wire, or 0.14 mm² to 1.00 mm² (26 to 18 AWG) stranded wire. The circuit board provides shield termination and strain relief for the I/O cable.

I/O Cable Preparation

The figure below lists the suggested trim lengths [mm (in.)] for the feedback cable jacket and signal wires.

Figure 3 I/O Cable Trim Lengths



Breakout Board Assembly and Installation

This section details how to affix the I/O cable to the breakout board circuit card for proper cable termination, and how to connect the assembly to the CN1 connector on the drive.

Note: This section assumes use of the optional plastic cover. If the plastic cover is not used, steps 3 and 5 do not have to be performed.

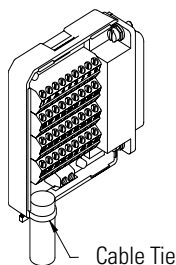
TIP



Wiring can be performed after the break-out board is attached to the drive. However, working on a horizontal surface speeds assembly.

1. Position the exposed cable shield on the circuit board's metal termination strip, and fasten the cable shield to the circuit board assembly with the supplied cable tie as shown below. Use a minimum force of 80 N (18 lbs) to ensure that the cable is secure, and the shield makes a good electrical connection to the circuit board.

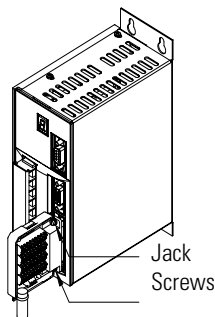
Figure 4 Back Cover Installation



2090-U3BB2-DM44 shown with back cover installed.

2. Insert the individual signal wires into the appropriate terminals on either circuit board, and torque each terminal to 0.25 Nm (2.2 lb-in.). Gently pull on each wire to ensure fastness. Reinsert any loose wires.
3. Attach the rear plastic cover to the circuit board. Align the plastic posts with the holes in the circuit board. Then press down to seat the board on the cover.
4. Plug the breakout board assembly into the CN1 connector of the drive, and torque the two jack screws to 0.40 Nm (3.5 lb-in.).

Figure 5 Installation on Drive



2090-U3BB2-DM44 shown with back cover installed.

5. Snap the front plastic cover onto the breakout board assembly, taking care not to pinch any signal wires.

Dimensions

Figure 6 Board Dimensions

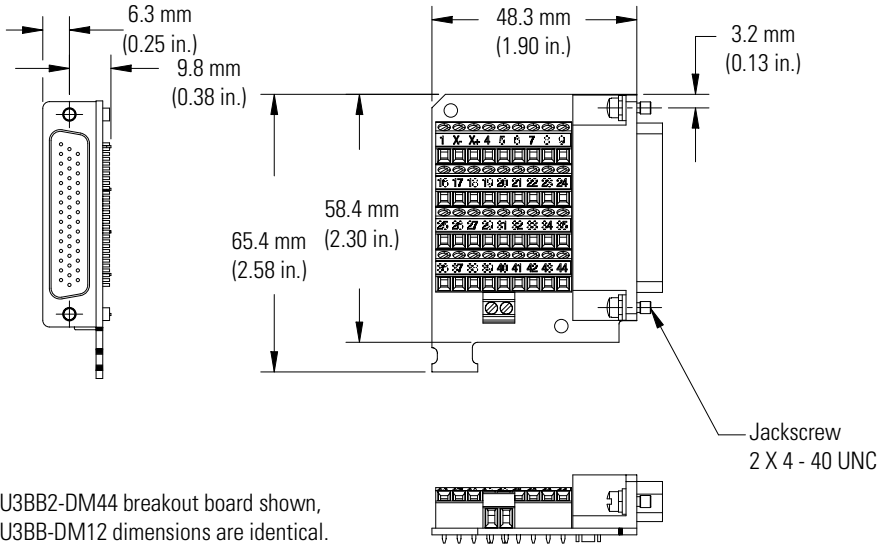
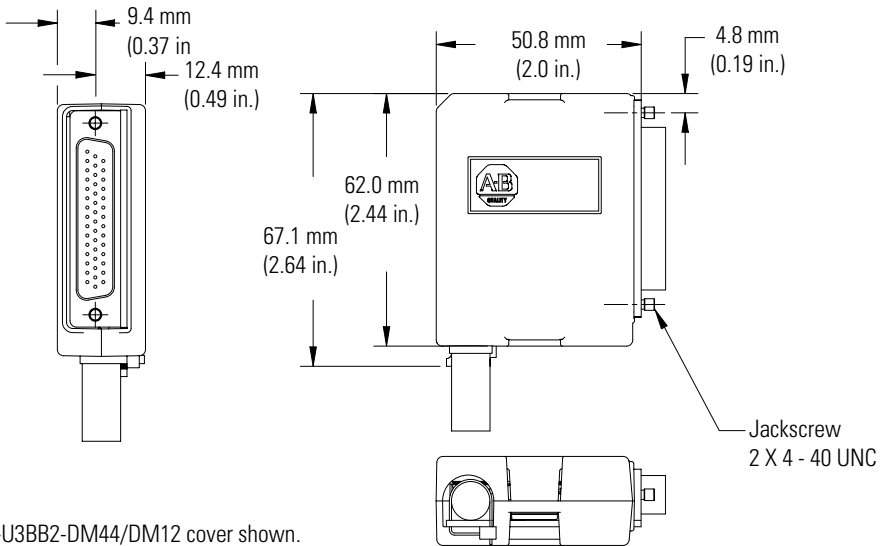


Figure 7 Cover Dimensions



Specifications

Description		Specification
Cable Diameter		12.7 mm ² (0.50 in.) maximum
Signal Wire Diameter	Solid Stranded	0.14 mm ² to 1.5 mm ² (26 to 16 AWG) 0.14 mm ² to 1.00 mm ² (26 to 18 AWG)
Cable Trim Lengths	Exposed Shield Signal Wire Overall Exposed Signal Wire	7.6 mm (0.3 in.) 25 to 63 mm (1.0 to 2.5 in.) 5.0 mm (0.2 in.)
Operating Temperature		0° to 55° C (32° to 131° F)
Dimensions	Board: Height Width Depth (extending from drive) Cover: Height Width Depth (extending from drive)	65.4 mm (2.58 in.) 16.1 mm (0.63 in.) 48.3 mm (1.90 in.) 67.1 mm (2.64 in.) 21.8 mm (0.86 in.) 50.8 mm (2.0 in.)
Weight	2090-U3BB-DM12 Board 2090-U3BB-DM12 Board with Cover 2090-U3BB2-DM44 Board 2090-U3BB2-DM44 Board with Cover	36 g (0.08 lb) 48 g (0.11 lb) 50 g (0.11 lb) 62 g (0.14 lb)
Fastener Tension	Cable Tie Force Signal Wire Terminal Torque Jack Screw Torque	80 N (18 lbs) 0.25 Nm (2.2 lb-in.) 0.40 Nm (3.5 lb-in.)

Related Documentation

The following documents contain additional information concerning related Allen-Bradley products. To obtain a copy, contact your local Rockwell Automation office or distributor, or access on-line at: www.theautomationbookstore.com or www.ab.com/manuals/gmc.

For information about:	Read this document:	Publication Number
Other Breakout Boards	<i>CN2 Control Interface Breakout Board</i>	2090-IN006x-EN-P
	<i>CN1 Control Interface Breakout Boards with Integral 24V-to-5V Auxiliary Power Converter</i>	2090-IN008x-EN-P
Connecting to Ultra3000 drive	<i>Ultra3000 Digital Servo Drives Installation Manual</i>	2098-IN003x-EN-P
Commissioning and troubleshooting Ultra3000 drive	<i>Ultra3000 Digital Servo Drives Integration Manual</i>	2098-IN005x-EN-P
A glossary of industrial automation terms and abbreviations	<i>Allen-Bradley Industrial Automation Glossary</i>	AG-7.1
How to minimize and control system-level noise	<i>System Design for Control of Electrical Noise</i>	GMC-RM001x-EN-P
An overview of Allen-Bradley motion controls and systems.	<i>Motion Control Selection Guide</i>	GMC-SG001x-EN-P

For more information refer to our web site: www.ab.com/motion
For Allen-Bradley Technical Support information refer to: www.ab.com/support or Tel: (1) 440.646.5800

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