Agilent E5346A

Passively Probing a Motorola M-CORE Target System with E5346A High-Density Termination Adapters

Product Note

Agilent Technologies

Innovating the HP Way

Passively Probing a Motorola M-CORE Target System with E5346A High-Density Termination Adapters

This product note describes how to connect an Agilent Technologies logic analyzer to a Motorola M-CORE target system for use with an inverse assembler.

Signals required for inverse assembly are shown in the pinout information table beginning on page 7 and must be routed to AMP Mictor 38 connectors for connection to the logic analyzer.

Four 16-channel logic analyzer pods are required for inverse assembly. These four pods are connected via the Mictor connectors to two high-density termination adapters. The adapters are not included with the inverse assembler and must be ordered separately.

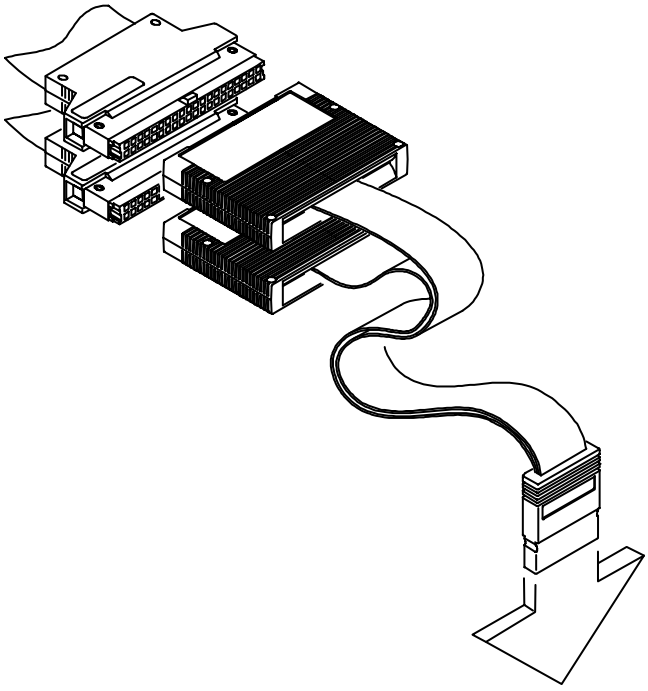

Figure 1. High-Density Termination Adapter Cables

Direct Connection through Agilent E5346A High-Density Adapter Cables

The E5346A high-density adapters use a minimal amount of board space. Each high-density adapter connects two logic analyzer pods, providing 32 channels of logic analysis per connector and access to two clock pins, as shown in figure 2.

Grounds need to be connected to pin 3 of the AMP Mictor connector. SCL, +5VDC and SDA are not to be connected to the target system (pins 1, 2, and 4 on the Mictor connector).

Top view surface mount connector
AMP "Mictor 38" pin assignment

+5VDC	1		2	SCL
GND DC	3		4	SDA
CLK	5		6	CLK
D15	7		8	D15
D14	9		10	D14
D13	11		12	D13
D12	13		14	D12
D11	15		16	D11
D10	17		18	D10
D9	19		20	D9
D8	21		22	D8
D7	23		24	D7
D6	25		26	D6
D5	27		28	D5
D4	29		30	D4
D3	31		32	D3
D2	33		34	D2
D1	35		36	D1
D0	37		38	D0

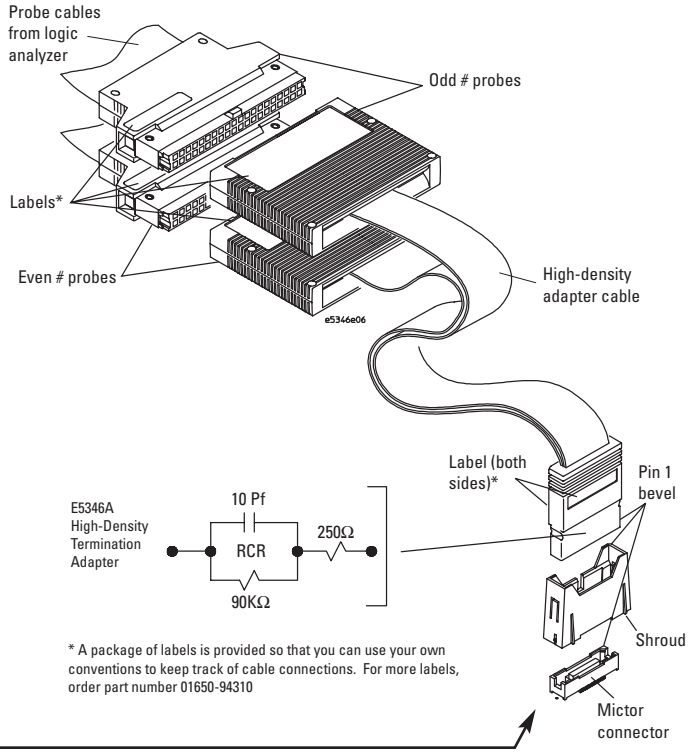

Figure 2. Agilent E5346A High-Density Termination Adapter

Termination for logic analysis is included at the probe tip of the E5346A high-density termination adapter for easy application and use. A schematic of this termination is shown in figure 3.

The AMP Mictor connector must be placed close enough to the target system so that the stub length created is less than 1/5 the Tr (bus risetime). For PC board material (er=4.9) and Zo in the range of 50-80Ω, use a propagation delay of 160 ps/inch of stub.

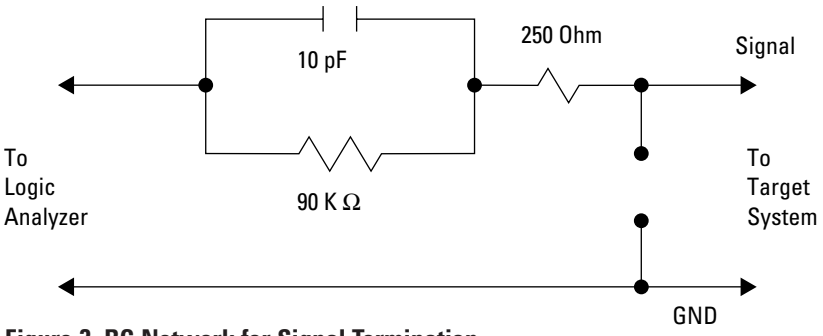

Figure 3. RC Network for Signal Termination

Four E5346A adapters and Mictor connectors are needed to probe all the required signals for inverse assembly.

Mictor Connector

The AMP Mictor connectors are available from AMP (PN 2-767004-2) or from Agilent Technologies (PN E5346-68701). The Agilent Mictor kit contains five AMP Mictor connectors and five support shrouds. The signals +5 VDC, SCL, and SDA are not used for probing and should not be connected to the target system, as shown in figure 2.

Support Shroud

A support shroud (E5346-44701) is recommended to provide additional strain relief between the E5346A adapter and the AMP Mictor connector, as shown in figure 5. The shroud fits around the AMP Mictor connector and requires two through-hole connections to the target board. Five shrouds are included with five AMP Mictor connectors in the E5346-68701 kit.

Inverse Assembler

An inverse assembler translates logic levels captured by the logic analyzer into M-CORE mnemonics and identifies the microprocessor bus cycles captured, such as memory read/write, interrupt acknowledge, or I/O read/write.

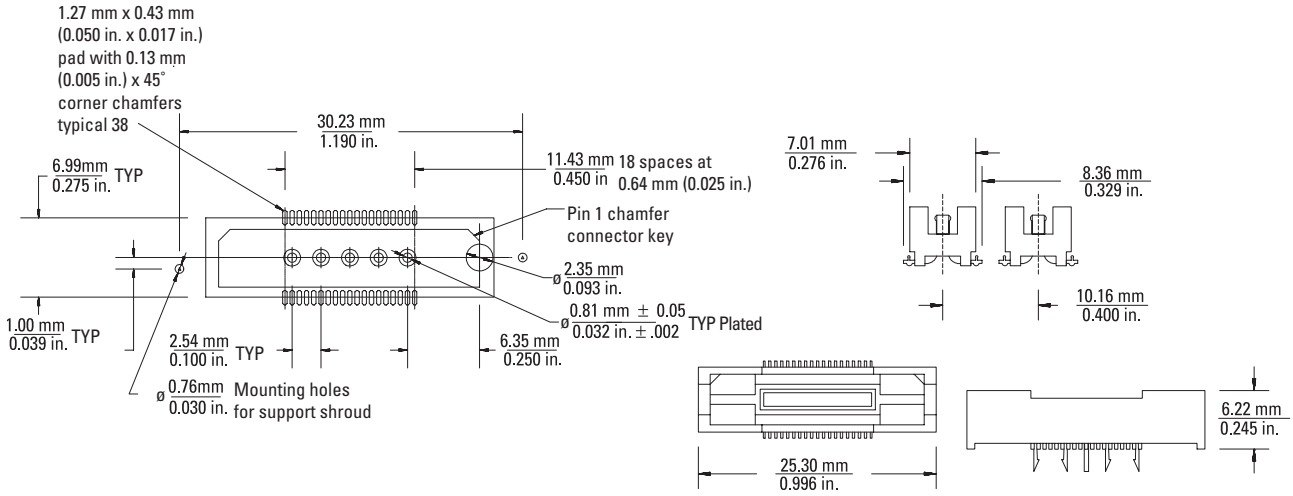

Figure 4. AMP Mictor Connector Dimensions

Source Correlation Tool Set

The inverse assembler can be used with the Agilent B4620B source correlation tool set. This allows you to time-correlate an acquired trace to written code. The source correlation tool set uses the information provided in your object file to build a database of source files, line numbers, and symbol information.

IEEE 695, Elf/Dwarf, and ASCII symbol files are supported.

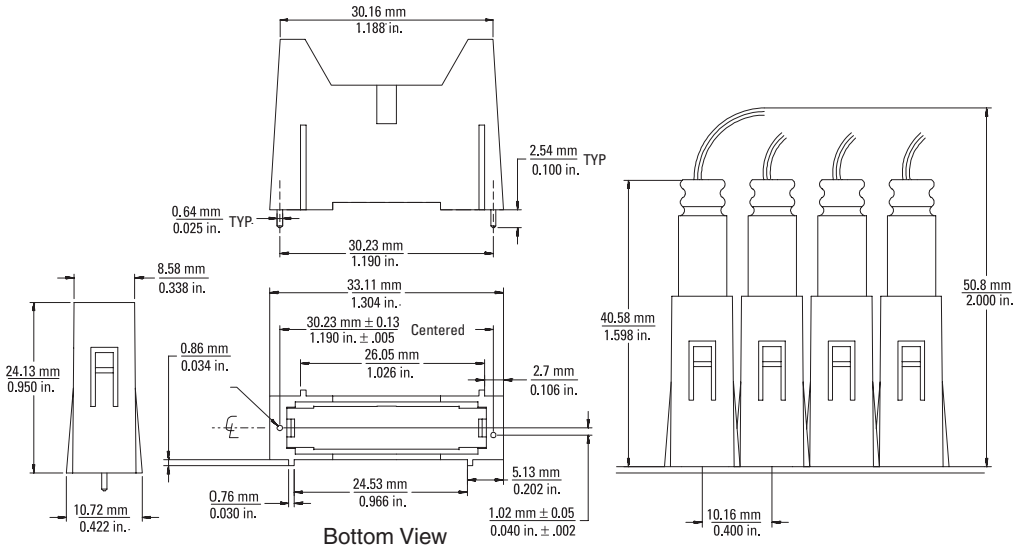

Figure 5. Support Shroud Dimensions

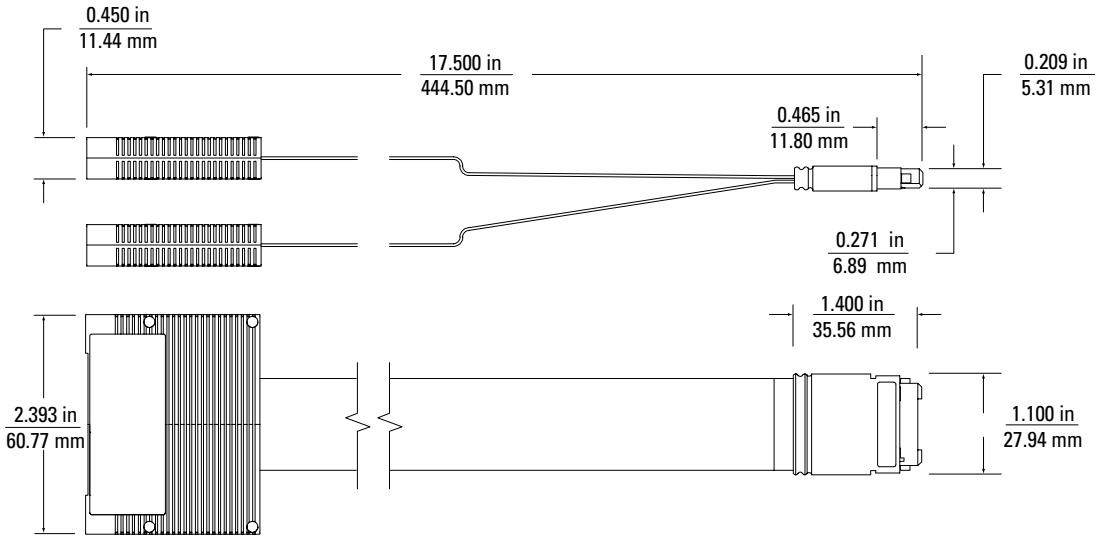

Figure 6. High-Density Termination Adapter Cable Dimensions

Required Signals for RIM Memory Controller Inverse Assembly

This table describes the connections for the three Mictor 38 connectors necessary for compatibility with the inverse assembler and the E5346A high-density termination adapter cables. This is intended to be a guide for placing probing connectors on a target system.

For inverse assembly, J1 and J2 are required. For additonal bus analsis J3 can be used.

Mictor Conn. #	AMP Mictor Pin #	Signal Name	Mictor Conn. #	AMP Mictor Pin #	Signal Name
J1 (odd)	38	DO (LSB)	J1 (even)	37	D16
	36	D1		35	D17
	34	D2		33	D18
	32	D3		31	D19
	30	D4		29	D20
	28	D5		27	D21
	26	D6		25	D22
	24	D7		23	D23
	22	D8		21	D24
	20	D9		19	D25
	18	D10		17	D26
	16	D11		15	D27
	14	D12		13	D28
	12	D13		11	D29
	10	D14		9	D30
	8	D15		7	D31 (MSB)
	6	CLKOUT		5	#SHS
J2 (odd)	38	A0 (LSB)	J2 (even)	37	A16
	36	A1		35	A17
	34	A2		33	A18
	32	A3		31	A19
	30	A4		29	A20
	28	A5		27	A21
	26	A6		25	A22 (MSB)
	24	A7		23	#CS1
	22	A15		21	#CS2
	20	A9		19	#CS3
	18	A10		17	#CS4
	16	A11		15	TSIZ0
	14	A12		13	TSIZ1
	12	A13		11	CSEO
	10	A14		9	CSE1
	8	A8		7	R/#W
	6	#TEA		5	#TA

Mictor Conn. #	AMP Mictor Pin #	Signal Name	Mictor Conn. #	AMP Mictor Pin #	Signal Name
J3 (odd)	38	PSTAT0	J3 (even)	37	USER DEF.
	36	PSTAT1		35	USER DEF.
	34	PSTAT2		33	USER DEF.
	32	PSTAT3		31	USER DEF.
	30	#OE		29	USER DEF.
	28	#EB0		27	USER DEF.
	26	#EB1		25	USER DEF.
	24	#EB2		23	USER DEF.
	22	#EB3		21	USER DEF.
	20	#RESET		19	USER DEF.
	18	#RSTOUT		17	USER DEF.
	16	USER DEF.		15	USER DEF.
	14	USER DEF.		13	USER DEF.
	12	TC[0]		11	USER DEF.
	10	TC[1]		9	USER DEF.
	8	TC[2]		7	USER DEF.
	6	USER DEF.		5	USER DEF.

Note: The Agilent inverse assembler only supports devices with the RIM memory controller. The EIM and risc-local bus are not currently supported.

Note: Connecting the CAN bus signals allows the logic analyzer's serial tool to analysis reconstruct the CAN bus packets. Make sure the signal is non-differential.

Related Literature	Pub. Number
Probing Solutions for Agilent Logic Analysis Systems	5968-4632E

Product Ordering Information

E5346A High-Density Termination Adapter

E5346-68701 Kit of Five Mictor Connectors and Five Support Shrouds

E5346-63201 High-Density Right Angle Adapter

E5346-44701 High-Density Termination Adapter Support Shroud

E9612A Opt. #001 Motorola M-CORE Inverse Assembler

B4620B Source Correlation Tool Set

AMP PN 2-767004-2 AMP Mictor Connector (order from AMP)

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