

Application of Zebax breakout adapters in testing evaluation & Qualification

ZX100 series products

Zebax offers best in class breakout adapters covering range of Samtec Mictor (Tyco) PCISIG M.2 PC/104 FMC VIA 57.1 and more. This document outlines general use of Zebax breakout adapters in areas of circuit module testing, evaluation, and qualification purposes.

This document identifies:

1. Breakout adapters offered by Zebax, ZX100 product lines
2. Utilization of Breakout adapters for purpose of testing, evaluation, and qualification

Revision History

Version	Date	Description
v01	Jan 24, 2017	updated

1 Breakout adapters offered by Zebax, ZX100 product lines

Zebax offers generally known breakout adapters covering [Samtec Mictor FMC VITA 57.1 AHSMC PCISIG M.2 PCIe/104 PCI/104-Express](#) and more test modules catering test & development disciplines. and ongoing development covering more products based on customer requirements and needs. The breakout adapters are often called test boards, extended boards test module as well. ZX100 products can be used on any design as long as the mating connector is supported by Zebax. It is recommended to visit [Product Selection Guide](#) from Zebax or [ZX100 product offering](#) list, matching your design requirements with available Zebax breakout adapter.

In general Zebax offers 2 types of breakout adapters for each supported connector.

- 1- Host to headers
- 2- Host to Victim (Daughter card) with headers

Host to headers is defined as half size breakout adapter where the specified connector interface is extended to standard headers. Examples of such type of breakout adapters are [ZX100](#) [ZX104LN](#) [ZX102](#) [ZX106](#) [ZX181-HPC](#) to name the few.

Host to Victim with headers are full size breakout adapters providing full access to signal interfacing between Host and daughter card. These types of breakout adapters provide complementing connectors on each end where it can be placed **between** the Host and daughter board. Examples of such type of breakout adapters are [ZX101](#) [ZX103](#) [ZX105](#) [ZX180-HPC](#) to name the few.

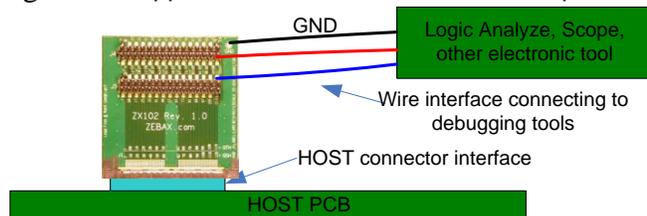
2 Utilization of Breakout adapters for purpose of testing, evaluation, and qualification

Zebax offers multi purpose breakout adapters interfacing with the designated host connector and provide accessible header pins for the following functions:

- 1- Hardware design interface - trouble shoot (debugging)
- 2- Software development testing
- 3- Applying external Evaluation (Daughter card) board to Host (a.k.a. : exposing victim to aggressor)
- 4- Induce external signal such as, random or fixed signal pattern via function generator, adding external circuit inline with Host to daughter card.

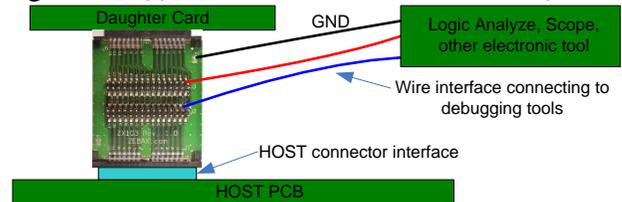
Hardware designs interface requires debugging using Scope, Logic Analyzer, bus interface exerciser, protocol analyzer (I2C, I2S, SPI, etc.) with additive incentive of software variation for purpose of debugging hardware design interface. Figure 1 and 2 suggests methods of debugging by signal monitoring on two different types of breakout out adapters respectively.

Figure 1 – Application of half size breakout adapter



GND test point is common to all Zebax Breakout adapters, check connector type for GND connection at connector or requiring external GND interface.

Figure 2- Application of full size breakout adapter

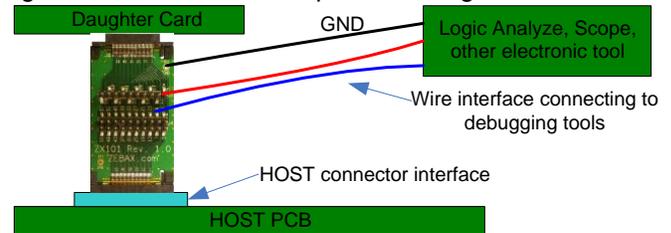


GND test point is common to all Zebax Breakout adapters, check connector type for GND connection at connector or requiring external GND interface.
Wire interface such as Zebax accessory, part number ZX100ACC-SS6.

Software development testing is purely functional test method requiring scope or related debugging tools monitoring signal activities for purpose of host to daughter card interface verification. Typically full extended breakout adapter such as [ZX103](#) [ZX105](#) are required, see figure 3.

In this method, the software testing seeks protocol and functional behavior of the system where both Host and Daughter card are present. Software testing varies in method and complexity of the system; However general rule is to verify I/O signal path (toggling I/O interface as function of GPIO confirming), confirming exchange of data packets (SPI),device address acknowledgment(I2C), verification of clock frequencies and more.

Figure 3 – Software development testing

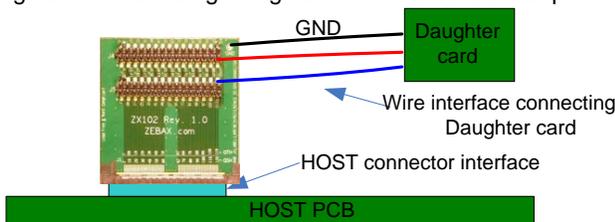


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Applying external Evaluation (Daughter card) board to Host is adaptation of breakout board for purpose of interfacing existing design such as an evaluation board or existing design module to host. This type of application is categorized as software validation, hardware design qualification where special board build is not required since hardware validation, or software driver development is at play. Such applications do not demand new board design integrating new technology with existing Host platform. ZX100 series breakout adapters can facilitate integration of complex evaluation or prototype boards to Host platform. See figure 4, 5, 6.

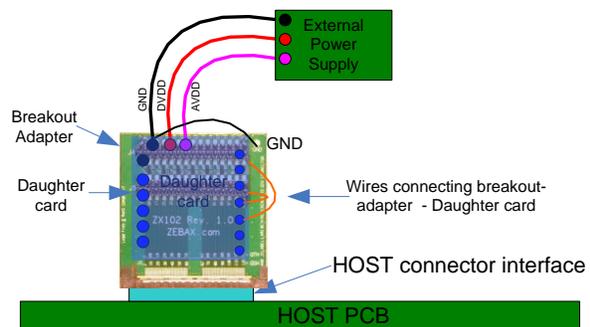
Due to importance role of breakout adapter in testing and variation of daughter cards in size and complexity of circuit interface, one may wish to remove headers located on breakout adapter and apply signal(s) directly to pads (landing pad for the header pin) directly, see figure 7.

Figure 4 – Interfacing Daughter card to Breakout adapter



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Figure 5 – Placing Daughter card on top of Breakout adapter, top view



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Figure 6 – Placing Daughter card on top of Breakout adapter, 3D side view

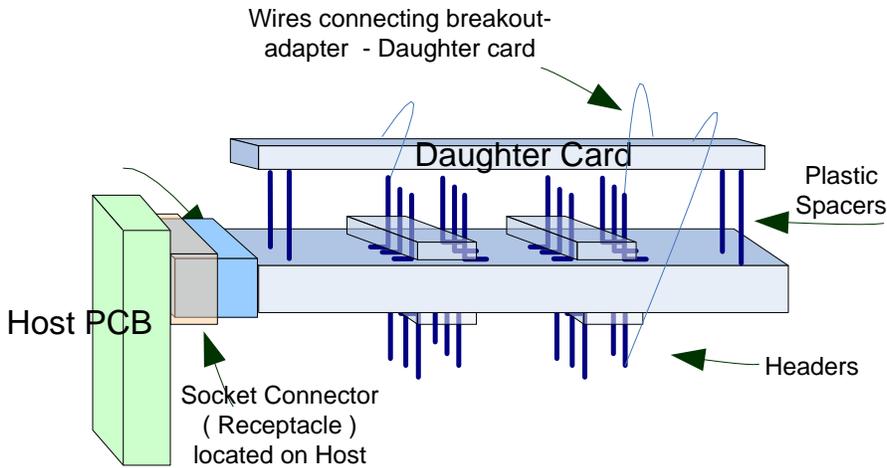
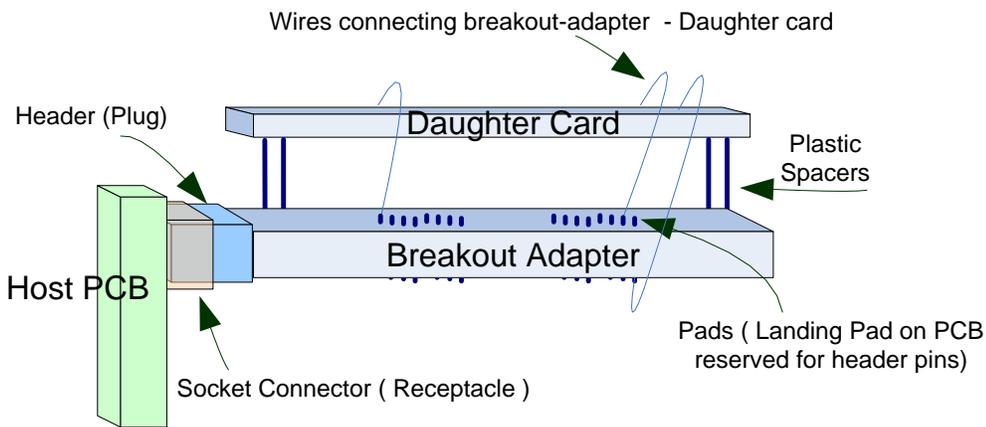


Figure 7 – Placing Daughter card on top of Breakout adapter, 3D side view – REMOVED headers, interfacing directly to Pads (Header landing pads).



DOCUMENT : [ZX100 Breakout Adapters](#) SUBJECT: [Application of Zebax breakout adapters in testing evaluation & qualification](#)

Zebax products are considered to be the most value added piece to any engineering tool due to its wide applications, ease of interface to external devices, durability. ZX100 breakout adapters offer the most valuable debugging, bringup, validation and testing saving hours of engineering works by making the I/O signal exposed for testing. ZX100 series products cover over 100+ connector interfaces in styles, pin counts, Polarity (header – Plug, Socket – Receptacle) meeting design engineering requirements of 50 Ohms impedance traces, 4 6 8 and 12 layers boards along with the GND test points that each test environment requires for probe / external device interface access.

Zebax offers best in class covering [Samtec](#) [Mictor](#) [FMC VITA 57.1](#) [AHSMC](#) [PCISIG M.2](#) [PCIe/104 PCI/104-Express](#) and more breakout test modules extension boards. ZX100 products are widely used in test, debug, validation and characterization of engineering efforts in R&D as well as automation test environment and manufacturing test areas.

Zebax is dedicated in providing best in class solutions supporting engineering and technical communities in test and measurements disciplines.

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