

SoC Designer

Version 9.5.0

AXI4-Stream Protocol Bundle User Guide

Non-Confidential



SoC Designer

AXI4-STREAM Protocol Bundle User Guide

Copyright © 2017 Arm Limited (or its affiliates). All rights reserved.

Release Information

The following changes have been made to this document.

| Issue | Date | Confidentiality | Change |
|---------|---------------|------------------|--------------------|
| 0905-00 | November 2017 | Non-Confidential | Release with 9.5.0 |

Non-Confidential Proprietary Notice

This document is protected by copyright and other related rights and the practice or implementation of the information contained in this document may be protected by one or more patents or pending patent applications. No part of this document may be reproduced in any form by any means without the express prior written permission of Arm. **No license, express or implied, by estoppel or otherwise to any intellectual property rights is granted by this document unless specifically stated.**

Your access to the information in this document is conditional upon your acceptance that you will not use or permit others to use the information for the purposes of determining whether implementations infringe any patents.

THIS DOCUMENT IS PROVIDED “AS IS”. ARM PROVIDES NO REPRESENTATIONS AND NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY, SATISFACTORY QUALITY, NON-INFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE DOCUMENT. For the avoidance of doubt, Arm makes no representation with respect to, and has undertaken no analysis to identify or understand the scope and content of, third party patents, copyrights, trade secrets, or other rights.

This document may include technical inaccuracies or typographical errors.

TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL ARM BE LIABLE FOR ANY DAMAGES, INCLUDING WITHOUT LIMITATION ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF ANY USE OF THIS DOCUMENT, EVEN IF ARM HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

This document consists solely of commercial items. You shall be responsible for ensuring that any use, duplication or disclosure of this document complies fully with any relevant export laws and regulations to assure that this document or any portion thereof is not exported, directly or indirectly, in violation of such export laws. Use of the word “partner” in reference to Arm’s customers is not intended to create or refer to any partnership relationship with any other company. Arm may make changes to this document at any time and without notice.

If any of the provisions contained in these terms conflict with any of the provisions of any click through or signed written agreement covering this document with Arm, then the click through or signed written agreement prevails over and supersedes the conflicting provisions of these terms. This document may be translated into other languages for convenience, and you agree that if there is any conflict between the English version of this document and any translation, the terms of the English version of the Agreement shall prevail.

The Arm corporate logo and words marked with ® or ™ are registered trademarks or trademarks of Arm Limited (or its subsidiaries) in the US and/or elsewhere. All rights reserved. Other brands and names mentioned in this document may be the trademarks of their respective owners. Please follow Arm’s trademark usage guidelines at <http://www.arm.com/company/policies/trademarks>.

Copyright © Arm. All rights reserved.
Arm Limited. Company 02557590 registered in England.
110 Fulbourn Road, Cambridge, England CB1 9NJ.

Confidentiality Status

This document is Non-Confidential. The right to use, copy and disclose this document may be subject to license restrictions in accordance with the terms of the agreement entered into by Arm and the party that Arm delivered this document to.

Product Status

The information in this document is final, that is for a developed product.

Web Address

<http://www.arm.com>

Table of Contents

| | | |
|----------|--|----------|
| 1 | Introduction | 5 |
| 2 | Bundle Contents..... | 5 |
| 3 | Models..... | 5 |
| 3.1 | AXI4Stream_Master | 6 |
| 3.2 | AXI4Stream_Slave..... | 6 |
| 4 | AXI4-Stream Port Interfaces | 7 |

1 Introduction

This is the user guide for the SoC Designer AXI4-Stream Protocol Bundle. This protocol bundle contains SoC Designer components and the transaction port interfaces for the Arm AXI4-Stream protocol.

2 Bundle Contents

This bundle contains support packages for the Arm AMBA AXI4-Stream protocol. Also included:

- AXI4-Stream transaction port definition header files and libraries. These are required during runtime of any components with AXI4-Stream ports and when creating components with AXI4-Stream ports.

3 Models

Table 3-1 lists the AXI4 components included in this bundle. These are described in more detail throughout this section.

| <i>Component</i> | <i>Description</i> |
|-------------------|--|
| AXI4Stream_Master | This is an example AXI4-Stream master component. |
| AXI4Stream_Master | This is an example AXI4-Stream slave component. |

Table 3-1 AXI4-Stream Components

The `.conf` file for these components is located under the directory `$MAXSIM_PROTOCOLS\AXI4StreamComponents\etc`. When you launch SoC Designer, it is loaded automatically as part of the `protocols.conf` configuration file.

3.1 AXI4Stream_Master

AXI4Stream_Master is an example AXI4-Stream component using the AXI4-Stream Transaction Master port (`axi4stream`).

Table 3-2 lists the component parameters.

| <i>Name</i> | <i>Description</i> |
|-----------------------|--|
| Data Width | Width in bits of the data bus. It must match the data bus width of the connected model. Allowed values are: 8, 16, 32, 64, 128, 256, 512, and 1024. The default setting is 32. |
| Enable Debug Messages | When set to True, model debug messages are displayed as output. The default setting is False. |

Table 3-2 AXI4Stream_Master Parameters

3.2 AXI4Stream_Slave

AXI4Stream_Slave is an example AXI4-Stream component using the AXI4 slave port (`axi4stream_s`).

Table 3-3 lists the component parameters:

| <i>Name</i> | <i>Description</i> |
|-----------------------|--|
| Data Width | Width in bits of the data bus. It must match the data bus width of the connected model. Allowed values are: 8, 16, 32, 64, 128, 256, 512, and 1024. The default setting is 32. |
| Enable Debug Messages | When set to True, model debug messages are displayed as output. The default setting is False. |

Table 3-3 AXI4Stream_Slave Parameters

4 AXI4-Stream Port Interfaces

AXI4-Stream port classes are CASI implementations of the Arm AMBA4 AXI protocol. The interfaces for AXI4-Stream transactions are described in the .h files located in

`$MAXSIM_PROTOCOLS/AXI4Stream/include:`

- `AXI4Stream_Channel_Port.h`
- `AXI4Stream_Master_Port.h`
- `AXI4Stream_Receiver_PortBase.h`
- `AXI4Stream_Sender_PortBase.h`
- `AXI4Stream_Slave_Port.h`
- `AXI4Stream_TLM.h`
- `AXI4Stream_TransactionInfo.h`