



## Imperas Peripheral Model Guide

Model Specific Information for  
[renesas.ovpworld.org](http://renesas.ovpworld.org) / can

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## Model Release Status

This model is released as part of OVP releases and is included in OVPworld packages. Please visit [OVPworld.org](http://OVPworld.org).

## Table Of Contents

<b>1.0 Model Specific Information</b>	4
1.1 Description	4
1.2 Licensing	4
1.3 Limitations	4
1.4 Reference	4
1.5 Location	4
<b>2.0 Net Ports</b>	4
<b>3.0 Bus Slave Ports</b>	4
3.1 Bus Slave Port: busPortMR	4
3.2 Bus Slave Port: busPortMDB	5
3.3 Bus Slave Port: busPortMDH	12
3.4 Bus Slave Port: busPortMDW	16
3.5 Bus Slave Port: busPortECC	19
3.6 Bus Slave Port: busPortGR	19
3.7 Bus Slave Port: busPortCR	19
3.8 Bus Slave Port: busPortCRW	20
<b>4.0 Packetnet Ports</b>	20
4.1 Packetnet Port: CAN	20
<b>5.0 Platforms that use this peripheral component</b>	20
<b>6.0 Peripheral components in the library</b>	21
<b>7.0 General Information on Peripheral Models</b>	23
7.1 Background	23
<b>8.0 Building peripherals easily with Imperas iGen</b>	23
<b>9.0 Peripheral model internals</b>	23
<b>10.0 Parts of peripheral models</b>	24
10.1 Configuring the Peripheral Instance with Parameters	24
10.2 Net Ports	24
10.3 Bus master ports	24
10.4 Bus slave ports	24
10.5 Packetnets	24
<b>11.0 More information (documentation) on peripheral models and modeling</b>	24

## 1.0 Model Specific Information

This document provides usage information for an Imperas OVP peripheral behavioral model.

The document is split into sections providing specific information for this peripheral, including any ports for connecting into a platform, registers, other component parts, and configuration options and general information for peripheral modeling with Imperas OVP.

### 1.1 Description

Renesas CAN interface. This is an interface between the CAN controller register interface and a PacketNet can interface.

### 1.2 Licensing

Open Source Apache 2.0

### 1.3 Limitations

No CRC generation or checking.

### 1.4 Reference

VFOREST: R01UH0021EJ0200, Rev. 2.00, Aug 5, 2010

### 1.5 Location

The can peripheral model is located in an Imperas/OVP installation at the VLNV: [renesas.ovpworld.org / peripheral / can / 1.1](https://renesas.ovpworld.org/peripheral/can/1.1).

## 2.0 Net Ports

This model has the following net ports:

Table 1. Net Ports

Name	Type	Must Be Connected	Description
INTTRX	output	F (False)	
INTREC	output	F (False)	
INTERR	output	F (False)	
INTWUP	output	F (False)	

## 3.0 Bus Slave Ports

This model has the following bus slave ports:

### 3.1 Bus Slave Port: *busPortMR*

Table 2. Bus Slave Port: *busPortMR*

Name	Size (bytes)	Must Be Connected	Description
<i>busPortMR</i>	0x300	T (True)	

Table 3. Bus Slave Port: busPortMR Registers:

Name	Offset	Width (bits)	Description	R/W	is Volatile
MR_GMCS	0x8	8			
MR_GMABTD	0x20	8			
MR_LEC	0x248	8			
MR_INFO	0x24c	8			
MR_BRP	0x268	8			
MR_LIPT	0x278	8			
MR_LOPT	0x288	8			

### 3.2 Bus Slave Port: busPortMDB

Table 4. Bus Slave Port: busPortMDB

Name	Size (bytes)	Must Be Connected	Description
busPortMDB	0x1000	T (True)	

Table 5. Bus Slave Port: busPortMDB Registers:

Name	Offset	Width (bits)	Description	R/W	is Volatile
MDB_MDATA000	0x0	32			
MDB_MDATA100	0x4	32			
MDB_MDATA200	0x8	32			
MDB_MDATA300	0xc	32			
MDB_MDATA400	0x10	32			
MDB_MDATA500	0x14	32			
MDB_MDATA600	0x18	32			
MDB_MDATA700	0x1c	32			
MDB_MDLC00	0x20	32			
MDB_MCONF00	0x24	32			
MDB_MDATA001	0x80	32			
MDB_MDATA101	0x84	32			
MDB_MDATA201	0x88	32			
MDB_MDATA301	0x8c	32			
MDB_MDATA401	0x90	32			
MDB_MDATA501	0x94	32			
MDB_MDATA601	0x98	32			
MDB_MDATA701	0x9c	32			
MDB_MDLC01	0xa0	32			
MDB_MCONF01	0xa4	32			
MDB_MDATA002	0x100	32			
MDB_MDATA102	0x104	32			
MDB_MDATA202	0x108	32			
MDB_MDATA302	0x10c	32			
MDB_MDATA402	0x110	32			
MDB_MDATA502	0x114	32			
MDB_MDATA602	0x118	32			
MDB_MDATA702	0x11c	32			
MDB_MDLC02	0x120	32			
MDB_MCONF02	0x124	32			

MDB_MDATA003	0x180	32			
MDB_MDATA103	0x184	32			
MDB_MDATA203	0x188	32			
MDB_MDATA303	0x18c	32			
MDB_MDATA403	0x190	32			
MDB_MDATA503	0x194	32			
MDB_MDATA603	0x198	32			
MDB_MDATA703	0x19c	32			
MDB_MDLC03	0x1a0	32			
MDB_MCONF03	0x1a4	32			
MDB_MDATA004	0x200	32			
MDB_MDATA104	0x204	32			
MDB_MDATA204	0x208	32			
MDB_MDATA304	0x20c	32			
MDB_MDATA404	0x210	32			
MDB_MDATA504	0x214	32			
MDB_MDATA604	0x218	32			
MDB_MDATA704	0x21c	32			
MDB_MDLC04	0x220	32			
MDB_MCONF04	0x224	32			
MDB_MDATA005	0x280	32			
MDB_MDATA105	0x284	32			
MDB_MDATA205	0x288	32			
MDB_MDATA305	0x28c	32			
MDB_MDATA405	0x290	32			
MDB_MDATA505	0x294	32			
MDB_MDATA605	0x298	32			
MDB_MDATA705	0x29c	32			
MDB_MDLC05	0x2a0	32			
MDB_MCONF05	0x2a4	32			
MDB_MDATA006	0x300	32			
MDB_MDATA106	0x304	32			
MDB_MDATA206	0x308	32			
MDB_MDATA306	0x30c	32			
MDB_MDATA406	0x310	32			
MDB_MDATA506	0x314	32			
MDB_MDATA606	0x318	32			
MDB_MDATA706	0x31c	32			
MDB_MDLC06	0x320	32			
MDB_MCONF06	0x324	32			
MDB_MDATA007	0x380	32			
MDB_MDATA107	0x384	32			
MDB_MDATA207	0x388	32			
MDB_MDATA307	0x38c	32			
MDB_MDATA407	0x390	32			
MDB_MDATA507	0x394	32			
MDB_MDATA607	0x398	32			
MDB_MDATA707	0x39c	32			

MDB_MDLC07	0x3a0	32			
MDB_MCONF07	0x3a4	32			
MDB_MDATA008	0x400	32			
MDB_MDATA108	0x404	32			
MDB_MDATA208	0x408	32			
MDB_MDATA308	0x40c	32			
MDB_MDATA408	0x410	32			
MDB_MDATA508	0x414	32			
MDB_MDATA608	0x418	32			
MDB_MDATA708	0x41c	32			
MDB_MDLC08	0x420	32			
MDB_MCONF08	0x424	32			
MDB_MDATA009	0x480	32			
MDB_MDATA109	0x484	32			
MDB_MDATA209	0x488	32			
MDB_MDATA309	0x48c	32			
MDB_MDATA409	0x490	32			
MDB_MDATA509	0x494	32			
MDB_MDATA609	0x498	32			
MDB_MDATA709	0x49c	32			
MDB_MDLC09	0x4a0	32			
MDB_MCONF09	0x4a4	32			
MDB_MDATA010	0x500	32			
MDB_MDATA110	0x504	32			
MDB_MDATA210	0x508	32			
MDB_MDATA310	0x50c	32			
MDB_MDATA410	0x510	32			
MDB_MDATA510	0x514	32			
MDB_MDATA610	0x518	32			
MDB_MDATA710	0x51c	32			
MDB_MDLC10	0x520	32			
MDB_MCONF10	0x524	32			
MDB_MDATA011	0x580	32			
MDB_MDATA111	0x584	32			
MDB_MDATA211	0x588	32			
MDB_MDATA311	0x58c	32			
MDB_MDATA411	0x590	32			
MDB_MDATA511	0x594	32			
MDB_MDATA611	0x598	32			
MDB_MDATA711	0x59c	32			
MDB_MDLC11	0x5a0	32			
MDB_MCONF11	0x5a4	32			
MDB_MDATA012	0x600	32			
MDB_MDATA112	0x604	32			
MDB_MDATA212	0x608	32			
MDB_MDATA312	0x60c	32			
MDB_MDATA412	0x610	32			
MDB_MDATA512	0x614	32			

MDB_MDATA612	0x618	32			
MDB_MDATA712	0x61c	32			
MDB_MDLC12	0x620	32			
MDB_MCONF12	0x624	32			
MDB_MDATA013	0x680	32			
MDB_MDATA113	0x684	32			
MDB_MDATA213	0x688	32			
MDB_MDATA313	0x68c	32			
MDB_MDATA413	0x690	32			
MDB_MDATA513	0x694	32			
MDB_MDATA613	0x698	32			
MDB_MDATA713	0x69c	32			
MDB_MDLC13	0x6a0	32			
MDB_MCONF13	0x6a4	32			
MDB_MDATA014	0x700	32			
MDB_MDATA114	0x704	32			
MDB_MDATA214	0x708	32			
MDB_MDATA314	0x70c	32			
MDB_MDATA414	0x710	32			
MDB_MDATA514	0x714	32			
MDB_MDATA614	0x718	32			
MDB_MDATA714	0x71c	32			
MDB_MDLC14	0x720	32			
MDB_MCONF14	0x724	32			
MDB_MDATA015	0x780	32			
MDB_MDATA115	0x784	32			
MDB_MDATA215	0x788	32			
MDB_MDATA315	0x78c	32			
MDB_MDATA415	0x790	32			
MDB_MDATA515	0x794	32			
MDB_MDATA615	0x798	32			
MDB_MDATA715	0x79c	32			
MDB_MDLC15	0x7a0	32			
MDB_MCONF15	0x7a4	32			
MDB_MDATA016	0x800	32			
MDB_MDATA116	0x804	32			
MDB_MDATA216	0x808	32			
MDB_MDATA316	0x80c	32			
MDB_MDATA416	0x810	32			
MDB_MDATA516	0x814	32			
MDB_MDATA616	0x818	32			
MDB_MDATA716	0x81c	32			
MDB_MDLC16	0x820	32			
MDB_MCONF16	0x824	32			
MDB_MDATA017	0x880	32			
MDB_MDATA117	0x884	32			
MDB_MDATA217	0x888	32			
MDB_MDATA317	0x88c	32			



MDB_MDATA417	0x890	32			
MDB_MDATA517	0x894	32			
MDB_MDATA617	0x898	32			
MDB_MDATA717	0x89c	32			
MDB_MDLC17	0x8a0	32			
MDB_MCONF17	0x8a4	32			
MDB_MDATA018	0x900	32			
MDB_MDATA118	0x904	32			
MDB_MDATA218	0x908	32			
MDB_MDATA318	0x90c	32			
MDB_MDATA418	0x910	32			
MDB_MDATA518	0x914	32			
MDB_MDATA618	0x918	32			
MDB_MDATA718	0x91c	32			
MDB_MDLC18	0x920	32			
MDB_MCONF18	0x924	32			
MDB_MDATA019	0x980	32			
MDB_MDATA119	0x984	32			
MDB_MDATA219	0x988	32			
MDB_MDATA319	0x98c	32			
MDB_MDATA419	0x990	32			
MDB_MDATA519	0x994	32			
MDB_MDATA619	0x998	32			
MDB_MDATA719	0x99c	32			
MDB_MDLC19	0x9a0	32			
MDB_MCONF19	0x9a4	32			
MDB_MDATA020	0xa00	32			
MDB_MDATA120	0xa04	32			
MDB_MDATA220	0xa08	32			
MDB_MDATA320	0xa0c	32			
MDB_MDATA420	0xa10	32			
MDB_MDATA520	0xa14	32			
MDB_MDATA620	0xa18	32			
MDB_MDATA720	0xa1c	32			
MDB_MDLC20	0xa20	32			
MDB_MCONF20	0xa24	32			
MDB_MDATA021	0xa80	32			
MDB_MDATA121	0xa84	32			
MDB_MDATA221	0xa88	32			
MDB_MDATA321	0xa8c	32			
MDB_MDATA421	0xa90	32			
MDB_MDATA521	0xa94	32			
MDB_MDATA621	0xa98	32			
MDB_MDATA721	0xa9c	32			
MDB_MDLC21	0xaa0	32			
MDB_MCONF21	0xaa4	32			
MDB_MDATA022	0xb00	32			
MDB_MDATA122	0xb04	32			

MDB_MDATA222	0xb08	32			
MDB_MDATA322	0xb0c	32			
MDB_MDATA422	0xb10	32			
MDB_MDATA522	0xb14	32			
MDB_MDATA622	0xb18	32			
MDB_MDATA722	0xb1c	32			
MDB_MDLC22	0xb20	32			
MDB_MCONF22	0xb24	32			
MDB_MDATA023	0xb80	32			
MDB_MDATA123	0xb84	32			
MDB_MDATA223	0xb88	32			
MDB_MDATA323	0xb8c	32			
MDB_MDATA423	0xb90	32			
MDB_MDATA523	0xb94	32			
MDB_MDATA623	0xb98	32			
MDB_MDATA723	0xb9c	32			
MDB_MDLC23	0xba0	32			
MDB_MCONF23	0xba4	32			
MDB_MDATA024	0xc00	32			
MDB_MDATA124	0xc04	32			
MDB_MDATA224	0xc08	32			
MDB_MDATA324	0xc0c	32			
MDB_MDATA424	0xc10	32			
MDB_MDATA524	0xc14	32			
MDB_MDATA624	0xc18	32			
MDB_MDATA724	0xc1c	32			
MDB_MDLC24	0xc20	32			
MDB_MCONF24	0xc24	32			
MDB_MDATA025	0xc80	32			
MDB_MDATA125	0xc84	32			
MDB_MDATA225	0xc88	32			
MDB_MDATA325	0xc8c	32			
MDB_MDATA425	0xc90	32			
MDB_MDATA525	0xc94	32			
MDB_MDATA625	0xc98	32			
MDB_MDATA725	0xc9c	32			
MDB_MDLC25	0xca0	32			
MDB_MCONF25	0xca4	32			
MDB_MDATA026	0xd00	32			
MDB_MDATA126	0xd04	32			
MDB_MDATA226	0xd08	32			
MDB_MDATA326	0xd0c	32			
MDB_MDATA426	0xd10	32			
MDB_MDATA526	0xd14	32			
MDB_MDATA626	0xd18	32			
MDB_MDATA726	0xd1c	32			
MDB_MDLC26	0xd20	32			
MDB_MCONF26	0xd24	32			

MDB_MDATA027	0xd80	32			
MDB_MDATA127	0xd84	32			
MDB_MDATA227	0xd88	32			
MDB_MDATA327	0xd8c	32			
MDB_MDATA427	0xd90	32			
MDB_MDATA527	0xd94	32			
MDB_MDATA627	0xd98	32			
MDB_MDATA727	0xd9c	32			
MDB_MDLC27	0xda0	32			
MDB_MCONF27	0xda4	32			
MDB_MDATA028	0xe00	32			
MDB_MDATA128	0xe04	32			
MDB_MDATA228	0xe08	32			
MDB_MDATA328	0xe0c	32			
MDB_MDATA428	0xe10	32			
MDB_MDATA528	0xe14	32			
MDB_MDATA628	0xe18	32			
MDB_MDATA728	0xe1c	32			
MDB_MDLC28	0xe20	32			
MDB_MCONF28	0xe24	32			
MDB_MDATA029	0xe80	32			
MDB_MDATA129	0xe84	32			
MDB_MDATA229	0xe88	32			
MDB_MDATA329	0xe8c	32			
MDB_MDATA429	0xe90	32			
MDB_MDATA529	0xe94	32			
MDB_MDATA629	0xe98	32			
MDB_MDATA729	0xe9c	32			
MDB_MDLC29	0xea0	32			
MDB_MCONF29	0xea4	32			
MDB_MDATA030	0xf00	32			
MDB_MDATA130	0xf04	32			
MDB_MDATA230	0xf08	32			
MDB_MDATA330	0xf0c	32			
MDB_MDATA430	0xf10	32			
MDB_MDATA530	0xf14	32			
MDB_MDATA630	0xf18	32			
MDB_MDATA730	0xf1c	32			
MDB_MDLC30	0xf20	32			
MDB_MCONF30	0xf24	32			
MDB_MDATA031	0xf80	32			
MDB_MDATA131	0xf84	32			
MDB_MDATA231	0xf88	32			
MDB_MDATA331	0xf8c	32			
MDB_MDATA431	0xf90	32			
MDB_MDATA531	0xf94	32			
MDB_MDATA631	0xf98	32			
MDB_MDATA731	0xf9c	32			

MDB_MDLC31	0xfa0	32			
MDB_MCONF31	0xfa4	32			

### 3.3 Bus Slave Port: busPortMDH

Table 6. Bus Slave Port: busPortMDH

Name	Size (bytes)	Must Be Connected	Description
busPortMDH	0x1000	T (True)	

Table 7. Bus Slave Port: busPortMDH Registers:

Name	Offset	Width (bits)	Description	R/W	is Volatile
MDH_MDATA0100	0x0	32			
MDH_MDATA2300	0x8	32			
MDH_MDATA4500	0x10	32			
MDH_MDATA6700	0x18	32			
MDH_MIDL00	0x28	16			
MDH_MIDH00	0x30	16			
MDH_MCTRL00	0x38	16			
MDH_MDATA0101	0x80	32			
MDH_MDATA2301	0x88	32			
MDH_MDATA4501	0x90	32			
MDH_MDATA6701	0x98	32			
MDH_MIDL01	0xa8	16			
MDH_MIDH01	0xb0	16			
MDH_MCTRL01	0xb8	16			
MDH_MDATA0102	0x100	32			
MDH_MDATA2302	0x108	32			
MDH_MDATA4502	0x110	32			
MDH_MDATA6702	0x118	32			
MDH_MIDL02	0x128	16			
MDH_MIDH02	0x130	16			
MDH_MCTRL02	0x138	16			
MDH_MDATA0103	0x180	32			
MDH_MDATA2303	0x188	32			
MDH_MDATA4503	0x190	32			
MDH_MDATA6703	0x198	32			
MDH_MIDL03	0x1a8	16			
MDH_MIDH03	0x1b0	16			
MDH_MCTRL03	0x1b8	16			
MDH_MDATA0104	0x200	32			
MDH_MDATA2304	0x208	32			
MDH_MDATA4504	0x210	32			
MDH_MDATA6704	0x218	32			
MDH_MIDL04	0x228	16			
MDH_MIDH04	0x230	16			
MDH_MCTRL04	0x238	16			
MDH_MDATA0105	0x280	32			
MDH_MDATA2305	0x288	32			

MDH_MDATA4505	0x290	32			
MDH_MDATA6705	0x298	32			
MDH_MIDL05	0x2a8	16			
MDH_MIDH05	0x2b0	16			
MDH_MCTRL05	0x2b8	16			
MDH_MDATA0106	0x300	32			
MDH_MDATA2306	0x308	32			
MDH_MDATA4506	0x310	32			
MDH_MDATA6706	0x318	32			
MDH_MIDL06	0x328	16			
MDH_MIDH06	0x330	16			
MDH_MCTRL06	0x338	16			
MDH_MDATA0107	0x380	32			
MDH_MDATA2307	0x388	32			
MDH_MDATA4507	0x390	32			
MDH_MDATA6707	0x398	32			
MDH_MIDL07	0x3a8	16			
MDH_MIDH07	0x3b0	16			
MDH_MCTRL07	0x3b8	16			
MDH_MDATA0108	0x400	32			
MDH_MDATA2308	0x408	32			
MDH_MDATA4508	0x410	32			
MDH_MDATA6708	0x418	32			
MDH_MIDL08	0x428	16			
MDH_MIDH08	0x430	16			
MDH_MCTRL08	0x438	16			
MDH_MDATA0109	0x480	32			
MDH_MDATA2309	0x488	32			
MDH_MDATA4509	0x490	32			
MDH_MDATA6709	0x498	32			
MDH_MIDL09	0x4a8	16			
MDH_MIDH09	0x4b0	16			
MDH_MCTRL09	0x4b8	16			
MDH_MDATA0110	0x500	32			
MDH_MDATA2310	0x508	32			
MDH_MDATA4510	0x510	32			
MDH_MDATA6710	0x518	32			
MDH_MIDL10	0x528	16			
MDH_MIDH10	0x530	16			
MDH_MCTRL10	0x538	16			
MDH_MDATA0111	0x580	32			
MDH_MDATA2311	0x588	32			
MDH_MDATA4511	0x590	32			
MDH_MDATA6711	0x598	32			
MDH_MIDL11	0x5a8	16			
MDH_MIDH11	0x5b0	16			
MDH_MCTRL11	0x5b8	16			
MDH_MDATA0112	0x600	32			

MDH_MDATA2312	0x608	32			
MDH_MDATA4512	0x610	32			
MDH_MDATA6712	0x618	32			
MDH_MIDL12	0x628	16			
MDH_MIDH12	0x630	16			
MDH_MCTRL12	0x638	16			
MDH_MDATA0113	0x680	32			
MDH_MDATA2313	0x688	32			
MDH_MDATA4513	0x690	32			
MDH_MDATA6713	0x698	32			
MDH_MIDL13	0x6a8	16			
MDH_MIDH13	0x6b0	16			
MDH_MCTRL13	0x6b8	16			
MDH_MDATA0114	0x700	32			
MDH_MDATA2314	0x708	32			
MDH_MDATA4514	0x710	32			
MDH_MDATA6714	0x718	32			
MDH_MIDL14	0x728	16			
MDH_MIDH14	0x730	16			
MDH_MCTRL14	0x738	16			
MDH_MDATA0115	0x780	32			
MDH_MDATA2315	0x788	32			
MDH_MDATA4515	0x790	32			
MDH_MDATA6715	0x798	32			
MDH_MIDL15	0x7a8	16			
MDH_MIDH15	0x7b0	16			
MDH_MCTRL15	0x7b8	16			
MDH_MDATA0116	0x800	32			
MDH_MDATA2316	0x808	32			
MDH_MDATA4516	0x810	32			
MDH_MDATA6716	0x818	32			
MDH_MIDL16	0x828	16			
MDH_MIDH16	0x830	16			
MDH_MCTRL16	0x838	16			
MDH_MDATA0117	0x880	32			
MDH_MDATA2317	0x888	32			
MDH_MDATA4517	0x890	32			
MDH_MDATA6717	0x898	32			
MDH_MIDL17	0x8a8	16			
MDH_MIDH17	0x8b0	16			
MDH_MCTRL17	0x8b8	16			
MDH_MDATA0118	0x900	32			
MDH_MDATA2318	0x908	32			
MDH_MDATA4518	0x910	32			
MDH_MDATA6718	0x918	32			
MDH_MIDL18	0x928	16			
MDH_MIDH18	0x930	16			
MDH_MCTRL18	0x938	16			

MDH_MDATA0119	0x980	32			
MDH_MDATA2319	0x988	32			
MDH_MDATA4519	0x990	32			
MDH_MDATA6719	0x998	32			
MDH_MIDL19	0x9a8	16			
MDH_MIDH19	0x9b0	16			
MDH_MCTRL19	0x9b8	16			
MDH_MDATA0120	0xa00	32			
MDH_MDATA2320	0xa08	32			
MDH_MDATA4520	0xa10	32			
MDH_MDATA6720	0xa18	32			
MDH_MIDL20	0xa28	16			
MDH_MIDH20	0xa30	16			
MDH_MCTRL20	0xa38	16			
MDH_MDATA0121	0xa80	32			
MDH_MDATA2321	0xa88	32			
MDH_MDATA4521	0xa90	32			
MDH_MDATA6721	0xa98	32			
MDH_MIDL21	0xaa8	16			
MDH_MIDH21	0xab0	16			
MDH_MCTRL21	0xab8	16			
MDH_MDATA0122	0xb00	32			
MDH_MDATA2322	0xb08	32			
MDH_MDATA4522	0xb10	32			
MDH_MDATA6722	0xb18	32			
MDH_MIDL22	0xb28	16			
MDH_MIDH22	0xb30	16			
MDH_MCTRL22	0xb38	16			
MDH_MDATA0123	0xb80	32			
MDH_MDATA2323	0xb88	32			
MDH_MDATA4523	0xb90	32			
MDH_MDATA6723	0xb98	32			
MDH_MIDL23	0xba8	16			
MDH_MIDH23	0xbb0	16			
MDH_MCTRL23	0xbb8	16			
MDH_MDATA0124	0xc00	32			
MDH_MDATA2324	0xc08	32			
MDH_MDATA4524	0xc10	32			
MDH_MDATA6724	0xc18	32			
MDH_MIDL24	0xc28	16			
MDH_MIDH24	0xc30	16			
MDH_MCTRL24	0xc38	16			
MDH_MDATA0125	0xc80	32			
MDH_MDATA2325	0xc88	32			
MDH_MDATA4525	0xc90	32			
MDH_MDATA6725	0xc98	32			
MDH_MIDL25	0xca8	16			
MDH_MIDH25	0xcb0	16			

MDH_MCTRL25	0xcb8	16			
MDH_MDATA0126	0xd00	32			
MDH_MDATA2326	0xd08	32			
MDH_MDATA4526	0xd10	32			
MDH_MDATA6726	0xd18	32			
MDH_MIDL26	0xd28	16			
MDH_MIDH26	0xd30	16			
MDH_MCTRL26	0xd38	16			
MDH_MDATA0127	0xd80	32			
MDH_MDATA2327	0xd88	32			
MDH_MDATA4527	0xd90	32			
MDH_MDATA6727	0xd98	32			
MDH_MIDL27	0xda8	16			
MDH_MIDH27	0xdb0	16			
MDH_MCTRL27	0xdb8	16			
MDH_MDATA0128	0xe00	32			
MDH_MDATA2328	0xe08	32			
MDH_MDATA4528	0xe10	32			
MDH_MDATA6728	0xe18	32			
MDH_MIDL28	0xe28	16			
MDH_MIDH28	0xe30	16			
MDH_MCTRL28	0xe38	16			
MDH_MDATA0129	0xe80	32			
MDH_MDATA2329	0xe88	32			
MDH_MDATA4529	0xe90	32			
MDH_MDATA6729	0xe98	32			
MDH_MIDL29	0xea8	16			
MDH_MIDH29	0xeb0	16			
MDH_MCTRL29	0xeb8	16			
MDH_MDATA0130	0xf00	32			
MDH_MDATA2330	0xf08	32			
MDH_MDATA4530	0xf10	32			
MDH_MDATA6730	0xf18	32			
MDH_MIDL30	0xf28	16			
MDH_MIDH30	0xf30	16			
MDH_MCTRL30	0xf38	16			
MDH_MDATA0131	0xf80	32			
MDH_MDATA2331	0xf88	32			
MDH_MDATA4531	0xf90	32			
MDH_MDATA6731	0xf98	32			
MDH_MIDL31	0xfa8	16			
MDH_MIDH31	0xfb0	16			
MDH_MCTRL31	0xfb8	16			

### 3.4 Bus Slave Port: busPortMDW

Table 8. Bus Slave Port: busPortMDW

Name	Size (bytes)	Must Be Connected	Description
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busPortMDW	0x1000	T (True)	
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Table 9. Bus Slave Port: busPortMDW Registers:

Name	Offset	Width (bits)	Description	R/W	is Volatile
MDW_MDATA012300	0x0	32			
MDW_MDATA456700	0x10	32			
MDW_MID00	0x20	32			
MDW_MDATA012301	0x80	32			
MDW_MDATA456701	0x90	32			
MDW_MID01	0xa0	32			
MDW_MDATA012302	0x100	32			
MDW_MDATA456702	0x110	32			
MDW_MID02	0x120	32			
MDW_MDATA012303	0x180	32			
MDW_MDATA456703	0x190	32			
MDW_MID03	0x1a0	32			
MDW_MDATA012304	0x200	32			
MDW_MDATA456704	0x210	32			
MDW_MID04	0x220	32			
MDW_MDATA012305	0x280	32			
MDW_MDATA456705	0x290	32			
MDW_MID05	0x2a0	32			
MDW_MDATA012306	0x300	32			
MDW_MDATA456706	0x310	32			
MDW_MID06	0x320	32			
MDW_MDATA012307	0x380	32			
MDW_MDATA456707	0x390	32			
MDW_MID07	0x3a0	32			
MDW_MDATA012308	0x400	32			
MDW_MDATA456708	0x410	32			
MDW_MID08	0x420	32			
MDW_MDATA012309	0x480	32			
MDW_MDATA456709	0x490	32			
MDW_MID09	0x4a0	32			
MDW_MDATA012310	0x500	32			
MDW_MDATA456710	0x510	32			
MDW_MID10	0x520	32			
MDW_MDATA012311	0x580	32			
MDW_MDATA456711	0x590	32			
MDW_MID11	0x5a0	32			
MDW_MDATA012312	0x600	32			
MDW_MDATA456712	0x610	32			
MDW_MID12	0x620	32			
MDW_MDATA012313	0x680	32			
MDW_MDATA456713	0x690	32			
MDW_MID13	0x6a0	32			
MDW_MDATA012314	0x700	32			
MDW_MDATA456714	0x710	32			

MDW_MID14	0x720	32			
MDW_MDATA012315	0x780	32			
MDW_MDATA456715	0x790	32			
MDW_MID15	0x7a0	32			
MDW_MDATA012316	0x800	32			
MDW_MDATA456716	0x810	32			
MDW_MID16	0x820	32			
MDW_MDATA012317	0x880	32			
MDW_MDATA456717	0x890	32			
MDW_MID17	0x8a0	32			
MDW_MDATA012318	0x900	32			
MDW_MDATA456718	0x910	32			
MDW_MID18	0x920	32			
MDW_MDATA012319	0x980	32			
MDW_MDATA456719	0x990	32			
MDW_MID19	0x9a0	32			
MDW_MDATA012320	0xa00	32			
MDW_MDATA456720	0xa10	32			
MDW_MID20	0xa20	32			
MDW_MDATA012321	0xa80	32			
MDW_MDATA456721	0xa90	32			
MDW_MID21	0xaa0	32			
MDW_MDATA012322	0xb00	32			
MDW_MDATA456722	0xb10	32			
MDW_MID22	0xb20	32			
MDW_MDATA012323	0xb80	32			
MDW_MDATA456723	0xb90	32			
MDW_MID23	0xba0	32			
MDW_MDATA012324	0xc00	32			
MDW_MDATA456724	0xc10	32			
MDW_MID24	0xc20	32			
MDW_MDATA012325	0xc80	32			
MDW_MDATA456725	0xc90	32			
MDW_MID25	0xca0	32			
MDW_MDATA012326	0xd00	32			
MDW_MDATA456726	0xd10	32			
MDW_MID26	0xd20	32			
MDW_MDATA012327	0xd80	32			
MDW_MDATA456727	0xd90	32			
MDW_MID27	0xda0	32			
MDW_MDATA012328	0xe00	32			
MDW_MDATA456728	0xe10	32			
MDW_MID28	0xe20	32			
MDW_MDATA012329	0xe80	32			
MDW_MDATA456729	0xe90	32			
MDW_MID29	0xea0	32			
MDW_MDATA012330	0xf00	32			
MDW_MDATA456730	0xf10	32			

MDW_MID30	0xf20	32			
MDW_MDATA012331	0xf80	32			
MDW_MDATA456731	0xf90	32			
MDW_MID31	0xfa0	32			

### 3.5 Bus Slave Port: busPortECC

Table 10. Bus Slave Port: busPortECC

Name	Size (bytes)	Must Be Connected	Description
busPortECC	0x4	T (True)	

Table 11. Bus Slave Port: busPortECC Registers:

Name	Offset	Width (bits)	Description	R/W	is Volatile
ECC_E6A0CTL	0x0	16			

### 3.6 Bus Slave Port: busPortGR

Table 12. Bus Slave Port: busPortGR

Name	Size (bytes)	Must Be Connected	Description
busPortGR	0x200	T (True)	

Table 13. Bus Slave Port: busPortGR Registers:

Name	Offset	Width (bits)	Description	R/W	is Volatile
GR_GMCTRL	0x0	16			
GR_GMABT	0x18	16			
GR_GMCONF	0x10	16			

### 3.7 Bus Slave Port: busPortCR

Table 14. Bus Slave Port: busPortCR

Name	Size (bytes)	Must Be Connected	Description
busPortCR	0x200	T (True)	

Table 15. Bus Slave Port: busPortCR Registers:

Name	Offset	Width (bits)	Description	R/W	is Volatile
CR_MASK1L	0x0	16			
CR_MASK1H	0x8	16			
CR_MASK2L	0x10	16			
CR_MASK2H	0x18	16			
CR_MASK3L	0x20	16			
CR_MASK3H	0x28	16			
CR_MASK4L	0x30	16			
CR_MASK4H	0x38	16			
CR_CTRL	0x40	16			
CR_ERC	0x50	16			
CR_IE	0x58	16			
CR_INTS	0x60	16			
CR_BTR	0x70	16			

CR_RGPT	0x80	16			
CR_TGPT	0x90	16			
CR_TS	0x98	16			

### 3.8 Bus Slave Port: busPortCRW

Table 16. Bus Slave Port: busPortCRW

Name	Size (bytes)	Must Be Connected	Description
busPortCRW	0x100	T (True)	

Table 17. Bus Slave Port: busPortCRW Registers:

Name	Offset	Width (bits)	Description	R/W	is Volatile
CRW_MASK1	0x0	16			
CRW_MASK2	0x10	16			
CRW_MASK3	0x20	16			
CRW_MASK4	0x30	16			

## 4.0 Packetnet Ports

This model has the following packetnet ports:

### 4.1 Packetnet Port: CAN

Table 18. CAN

Name	Maximum Packet Size (bytes)	Must Be Connected	Description
CAN	128	F (False)	

## 5.0 Platforms that use this peripheral component

Peripheral components can be used in many different platforms, including those developed by Imperas or by other users of OVP. You can use this peripheral in your own platforms.

Table 19. Publicly available platforms using peripheral 'can'

Platform Name	Vendor
RenesasUPD70F3441	renesas.ovpworld.org
RenesasUPD70F3441	renesas.ovpworld.org

This peripheral is used in some virtual platforms that have restricted release. Please contact Imperas for more information.

## 6.0 Peripheral components in the library

Table 20. Publicly available Imperas/OVP peripheral models (227 models)

Peripheral	Peripheral	Peripheral
renesas.ovpworld.org/clkgen	renesas.ovpworld.org/crc	renesas.ovpworld.org/csib
renesas.ovpworld.org/csie	renesas.ovpworld.org/dma	renesas.ovpworld.org/intc
renesas.ovpworld.org/memc	renesas.ovpworld.org/rng	renesas.ovpworld.org/taa
renesas.ovpworld.org/tms	renesas.ovpworld.org/tmt	renesas.ovpworld.org/uartc
renesas.ovpworld.org/UPD70F3441Logic	riscv.ovpworld.org/CLINT	riscv.ovpworld.org/PLIC
riscv.ovpworld.org/SmartLoaderRV64Linux	safepower.ovpworld.org/node	safepower.ovpworld.org/NostrumNode
safepower.ovpworld.org/ring_oscillator	safepower.ovpworld.org/TTElNode	sifive.ovpworld.org/artyo
sifive.ovpworld.org/DDRCTL	sifive.ovpworld.org/gpio	sifive.ovpworld.org/MSEL
sifive.ovpworld.org/PLIC	sifive.ovpworld.org/PRCI	sifive.ovpworld.org/pwm
sifive.ovpworld.org/spi	sifive.ovpworld.org/teststatus	sifive.ovpworld.org/UART
smc.ovpworld.org/LAN9118	smc.ovpworld.org/LAN91C111	ti.ovpworld.org/tca6416a
ti.ovpworld.org/UartInterface	ti.ovpworld.org/ucd9012a	ti.ovpworld.org/ucd9248
vendor.com/fifo	xilinx.ovpworld.org/axi-gpio	xilinx.ovpworld.org/axi-intc
xilinx.ovpworld.org/axi-pcie	xilinx.ovpworld.org/axi-timer	xilinx.ovpworld.org/logicore-fit
xilinx.ovpworld.org/mdm	xilinx.ovpworld.org/mpmc	xilinx.ovpworld.org/xps-gpio
xilinx.ovpworld.org/xps-iic	xilinx.ovpworld.org/xps-intc	xilinx.ovpworld.org/xps-ll-temac
xilinx.ovpworld.org/xps-mch-emc	xilinx.ovpworld.org/xps-sysace	xilinx.ovpworld.org/xps-timer
xilinx.ovpworld.org/xps-uartlite	xilinx.ovpworld.org/zynq_7000-can	xilinx.ovpworld.org/zynq_7000-ddrc
xilinx.ovpworld.org/zynq_7000-devcfg	xilinx.ovpworld.org/zynq_7000-dmac	xilinx.ovpworld.org/zynq_7000-gpio
xilinx.ovpworld.org/zynq_7000-iic	xilinx.ovpworld.org/zynq_7000-ocm	xilinx.ovpworld.org/zynq_7000-qos301
xilinx.ovpworld.org/zynq_7000-qspi	xilinx.ovpworld.org/zynq_7000-sdio	xilinx.ovpworld.org/zynq_7000-slcr
xilinx.ovpworld.org/zynq_7000-spi	xilinx.ovpworld.org/zynq_7000-swdt	xilinx.ovpworld.org/zynq_7000-ttc
xilinx.ovpworld.org/zynq_7000-tz_GPVsecurity	xilinx.ovpworld.org/zynq_7000-tz_security	xilinx.ovpworld.org/zynq_7000-usb
altera.ovpworld.org/dw-apb-timer	altera.ovpworld.org/dw-apb-uart	altera.ovpworld.org/IntervalTimer32Core
altera.ovpworld.org/IntervalTimer64Core	altera.ovpworld.org/JtagUart	altera.ovpworld.org/PerformanceCounterCore
altera.ovpworld.org/RSTMGR	altera.ovpworld.org/SystemIDCore	altera.ovpworld.org/Uart
amd.ovpworld.org/79C970	andes.ovpworld.org/ATCUART100	andes.ovpworld.org/NCEPLIC100
andes.ovpworld.org/NCEPLMT100	arm.ovpworld.org/AaciPL041	arm.ovpworld.org/CompactFlashRegs
arm.ovpworld.org/CoreModule9x6	arm.ovpworld.org/DebugLedAndDipSwitch	arm.ovpworld.org/DMemCtrlPL341
arm.ovpworld.org/IcpControl	arm.ovpworld.org/IcpCounterTimer	arm.ovpworld.org/IntICP
arm.ovpworld.org/IntICP	arm.ovpworld.org/KbPL050	arm.ovpworld.org/L2CachePL310
arm.ovpworld.org/LcdPL110	arm.ovpworld.org/MmcPL181	arm.ovpworld.org/RtcPL031
arm.ovpworld.org/SerBusDviRegs	arm.ovpworld.org/SmartLoaderArm64Linux	arm.ovpworld.org/SmartLoaderArmLinux
arm.ovpworld.org/SMemCtrlPL354	arm.ovpworld.org/SysCtrlSP810	arm.ovpworld.org/TimerSP804
arm.ovpworld.org/TzpcBP147	arm.ovpworld.org/UartPL011	arm.ovpworld.org/VexpressSysRegs
arm.ovpworld.org/WdtSP805	atmel.ovpworld.org/AdvancedInterruptController	atmel.ovpworld.org/ParallelIOController
atmel.ovpworld.org/PowerSaving	atmel.ovpworld.org/SpecialFunction	atmel.ovpworld.org/TimerCounter
atmel.ovpworld.org/UsartInterface	atmel.ovpworld.org/WatchdogTimer	cadence.ovpworld.org/gem
cadence.ovpworld.org/uart	cirrus.ovpworld.org/GD5446	freescale.ovpworld.org/KinetisADC
freescale.ovpworld.org/KinetisAIPS	freescale.ovpworld.org/KinetisAXBS	freescale.ovpworld.org/KinetisCAN
freescale.ovpworld.org/KinetisCMP	freescale.ovpworld.org/KinetisCMT	freescale.ovpworld.org/KinetisCRC
freescale.ovpworld.org/KinetisDAC	freescale.ovpworld.org/KinetisDDR	freescale.ovpworld.org/KinetisDMA

freescale.ovpworld.org/KinetisDMAC	freescale.ovpworld.org/KinetisDMAMUX	freescale.ovpworld.org/KinetisENET
freescale.ovpworld.org/KinetisEWM	freescale.ovpworld.org/KinetisFB	freescale.ovpworld.org/KinetisFMC
freescale.ovpworld.org/KinetisFTFE	freescale.ovpworld.org/KinetisFTM	freescale.ovpworld.org/KinetisGPIO
freescale.ovpworld.org/KinetisI2C	freescale.ovpworld.org/KinetisI2S	freescale.ovpworld.org/KinetisLLWU
freescale.ovpworld.org/KinetisLPTMR	freescale.ovpworld.org/KinetisMCG	freescale.ovpworld.org/KinetisMPU
freescale.ovpworld.org/KinetisNFC	freescale.ovpworld.org/KinetisOSC	freescale.ovpworld.org/KinetisPDB
freescale.ovpworld.org/KinetisPIT	freescale.ovpworld.org/KinetisPMC	freescale.ovpworld.org/KinetisPORT
freescale.ovpworld.org/KinetisRCM	freescale.ovpworld.org/KinetisRFSYS	freescale.ovpworld.org/KinetisRFVBAT
freescale.ovpworld.org/KinetisRNG	freescale.ovpworld.org/KinetisRTC	freescale.ovpworld.org/KinetisSDHC
freescale.ovpworld.org/KinetisSIM	freescale.ovpworld.org/KinetisSMC	freescale.ovpworld.org/KinetisSPI
freescale.ovpworld.org/KinetisTSI	freescale.ovpworld.org/KinetisUART	freescale.ovpworld.org/KinetisUSB
freescale.ovpworld.org/KinetisUSBDCD	freescale.ovpworld.org/KinetisUSBHS	freescale.ovpworld.org/KinetisVREF
freescale.ovpworld.org/KinetisWDOG	freescale.ovpworld.org/Uart	freescale.ovpworld.org/VybridADC
freescale.ovpworld.org/VybridANADIG	freescale.ovpworld.org/VybridCCM	freescale.ovpworld.org/VybridDMA
freescale.ovpworld.org/VybridGPIO	freescale.ovpworld.org/VybridI2C	freescale.ovpworld.org/VybridLCD
freescale.ovpworld.org/VybridQUADSPI	freescale.ovpworld.org/VybridSDHC	freescale.ovpworld.org/VybridSPI
freescale.ovpworld.org/VybridUART	freescale.ovpworld.org/VybridUSB	imperas.ovpworld.org/frameBuffer
imperas.ovpworld.org/uart	imperas.ovpworld.org/usecCounter	intel.ovpworld.org/82077AA
intel.ovpworld.org/82371EB	intel.ovpworld.org/8253	intel.ovpworld.org/8259A
intel.ovpworld.org/NorFlash48F4400	intel.ovpworld.org/PciIDE	intel.ovpworld.org/PciPM
intel.ovpworld.org/PciUSB	intel.ovpworld.org/Ps2Control	marvell.ovpworld.org/GT6412x
maxim.ovpworld.org/max673x	microsemi.ovpworld.org/CoreUARTapb	mips.ovpworld.org/16450C
mips.ovpworld.org/MaltaFPGA	mips.ovpworld.org/SmartLoaderLinux	motorola.ovpworld.org/MC146818
national.ovpworld.org/16450	national.ovpworld.org/16550	national.ovpworld.org/16550_4bytes
nxp.ovpworld.org/iMX6_Analog	nxp.ovpworld.org/iMX6_CCM	nxp.ovpworld.org/iMX6_GPC
nxp.ovpworld.org/iMX6_GPIO	nxp.ovpworld.org/iMX6_GPT	nxp.ovpworld.org/iMX6_MMDC
nxp.ovpworld.org/iMX6_SDHC	nxp.ovpworld.org/iMX6_SRC	nxp.ovpworld.org/iMX6_UART
nxp.ovpworld.org/iMX6_WDOG	ovpworld.org/Alpha2x16Display	ovpworld.org/DynamicBridge
ovpworld.org/FlashDevice	ovpworld.org/ledRegister	ovpworld.org/SerInt
ovpworld.org/SimpleDma	ovpworld.org/switchRegister	ovpworld.org/temperatureSensor
ovpworld.org/trap	ovpworld.org/trap4K	ovpworld.org/vEthernet_Bridge
ovpworld.org/VirtioBlkMMIO	ovpworld.org/VirtioNetMMIO	philips.ovpworld.org/ISP1761
renesas.ovpworld.org/adc	renesas.ovpworld.org/bcu	renesas.ovpworld.org/brg
renesas.ovpworld.org/can	renesas.ovpworld.org/can	

## 7.0 General Information on Peripheral Models

This document provides usage information for an Imperas OVP peripheral behavioral model.

The document is split into sections providing specific information for this peripheral, including any ports for connecting into a platform, registers etc. and configuration options and general information for peripheral modeling with Imperas OVP.

### 7.1 Background

Imperas OVP simulation technology enables very high performance simulation, debug and analysis of platforms containing multiple processors and peripheral models. The technology is designed to be extensible: you can create new models of processors, peripherals and other platform components using interfaces and libraries defined by OVP.

The peripheral models created using the OVP APIs run on the Peripheral Simulation Engine (PSE).

The model is typically written in C and compiled into an executable for the PSE processor architecture. The model is compiled for speed of execution and to protect IP. It is dynamically loaded by the simulator at run time.

## 8.0 Building peripherals easily with Imperas iGen

To aid with model creation, Imperas products include iGen, a model generation tool. iGen takes the laborious and error-prone task of constructing the various hardware model and software element files required for a typical model, and automates this process. iGen creates the needed C files. iGen also creates the C++ SystemC TLM2 interface files needed to run peripheral models in SystemC simulations.

iGen takes as input a simple script specification that includes device internals such as registers and memories, port information, component descriptors, and other elements. iGen then builds the C code model files and user editable templates. These include model frameworks with registers, function calls, memory map, and other items. It ensures that all component parts of the model are well-structured using best practices, and are consistent throughout the files, thus eliminating a common source of errors.

More information on iGen can be found: [imperas.com/products](http://imperas.com/products).

## 9.0 Peripheral model internals

Each instance of a peripheral model runs on its own virtual machine with an address space large enough for the model. This processor (the PSE) and its memory are separate from any processors, memories and buses in the platform being simulated; they exist only to execute the code of the peripheral model.

Interception of functions defined in the peripheral model allows the use of features of the host system in the

implementation of the behavior of a peripheral. As an example, a real platform might contain a video display device. When simulating this system, it is generally more convenient not to simulate the complete video display device but to use a video package available on the host machine, such as SDL, and to use this to render to the host display. Also models of uarts, ethernet devices and USB components can make use of the host PC resources during simulation, to allow, for example, a simulation to browse the real internet, or the simulation to connect to a real USB device.

## **10.0 Parts of peripheral models**

### ***10.1 Configuring the Peripheral Instance with Parameters***

A peripheral can include the behaviour of several configurations. These are controlled when the peripheral is instanced in the platform by setting parameters defined on the peripheral.

### ***10.2 Net Ports***

Peripherals may be connected to other peripherals or processors with signal wires (nets). These can be used to act as interrupt signals or used to control behavior between peripherals.

The wires are created in the platform as nets and this net is connected into the peripheral using a net port.

### ***10.3 Bus master ports***

A bus master port initiates (and controls the address of) a bus cycle. Bus cycles are generated by behavioral code within the peripheral model.

### ***10.4 Bus slave ports***

A peripheral can be defined as having several bus slave ports. The bus slave ports can be split into several address blocks. Each address block be either local memory or memory mapped registers. Both of these can have associated callback functions. A memory mapped register can also be defined as specific read/write access, whether it is volatile, and also whether it is associated with a reset pin and mask. A memory mapped register can also have specific bit fields defined.

### ***10.5 Packetnets***

A peripheral can be defined as being connected to packetnet ports. A packetnet is used to model packet based communication such as Ethernet, CAN bus or GSM. A packetnet is created in a platform, then connected to packetnet ports on model instances. A packetnet can have many connections, each able to send or receive packets. A packetnet is used as an efficient method of communication within OVP models.

For more information on modeling with packetnets, please see the peripheral modeling documentation: [OVP\\_Peripheral\\_Modeling\\_Guide.pdf](#), [OVPSim\\_and\\_CpuManager\\_User\\_Guide.pdf](#) and the example: [\\$IMPERAS\\_HOME/Examples/Models/Peripherals/packetnet](#).

## **11.0 More information (documentation) on peripheral models and modeling**

More information on modeling and APIs can be found at: [OVPworld.org/technology\\_apis](http://OVPworld.org/technology_apis).



Specifics on modeling peripherals can be found: [OVP Peripheral Modeling Guide.pdf](#).

A full list of the currently available OVP documentation is available: [OVPworld.org/documentation](#).

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