

# TEMU

## ***GRLIB IrqMp Device Model Manual***

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Table 1. Record of Changes

Rev	Date	Author	Note
1.1	2016-05-12	MH	Auto gen tables.
1.0	2015-07-31	MH	Initial version.

## 1. Introduction

The IrqMP is part of the GRLIB device library from Gaisler. It is a multiprocessor capable interrupt controller.

The controller supports among things the routing of interrupts to different processor cores, and also broadcasted interrupts.

## 2. Configuration

### **config.nCpu**

Number of processors supported.

### **config.enExtIrq**

Enable extended IRQs.

### **pnp.config**

Plug and play configuration word for APB plug-and-play.

### **cpu**

Up to 16 CPUs supported. IfaceRef property should be connected to the different CPUs.

## 3. Attributes

### 3.1. Properties

Name	Type	Description
broadcast	uint32_t	
config.enExtIrq	uint8_t	
config.logInterrupts	uint8_t	
config.nCpu	uint8_t	
config.traceReads	uint8_t	
config.traceWrites	uint8_t	
cpu	[16 x iref / <unknown>]	
extIntAck	[16 x uint32_t]	

Name	Type	Description
force	[16 x uint32_t]	
irqClear	uint32_t	
irqCtrl	[16 x iref / <unknown>]	
irqForce0	uint32_t	
irqLevel	uint32_t	
irqPending	uint32_t	
mask	[16 x uint32_t]	
mpStatus	uint32_t	
object.timeSource	object	Time source object (a cpu or machine object)
pnp.bar	uint32_t	
pnp.config	uint32_t	

## 3.2. Interfaces

Name	Type	Description
ApbIface	ApbIface	
DeviceIface	DeviceIface	
IrqClientIface	IrqClientIface	uptree interrupt handlers (e.g. CPUs)
IrqIface	IrqCtrlIface	
MemAccessIface	MemAccessIface	
ResetIface	ResetIface	

## 3.3. Ports

Prop	Iface	Description
irqCtrl	IrqClientIface	irq port

## 4. Limitations

The following deviations from real hardware are known to exist with this model:

- Broadcasted interrupts are broadcasted at the current time to all CPUs, if it was triggered by a non-synchronised event, the interrupt is raised at different times on the different cores. Depending on the IRQ frequency and the configured quanta length, this may result in problems.