



Cortina Systems® IXF1104 4-Port Gigabit Ethernet Media Access Controller

Errata

18 September 2008

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Revision 16.0

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Revision History

<p style="text-align: center;">Revision 16.0 Revision Date: 18 September 2008</p>
<p>Added the Spec. Changes #1 – 5 (see Section 2.2, Specification Changes, on page 5).</p>
<p style="text-align: center;">Revision 15.0 Revision Date: 01 Dec 2006</p>
<p>First release of this document from Cortina Systems, Inc.</p>
<p style="text-align: center;">Revision 014 Revision Date: 28 Sep 2006</p>
<p>Added Erratum:</p> <ul style="list-style-type: none">• Erratum Number 4, Section 4, Overflow Drop Frame Counter Miscounts
<p style="text-align: center;">Revision 013 Revision Date: 14 Mar 2006</p>
<p>Added Erratum:</p> <ul style="list-style-type: none">• Erratum Number 3, Section 3, SerDes Transmit Locks Up With Flow Control (Fiber Mode Only).
<p style="text-align: center;">Revision 012 Revision Date: 12 Oct 2005</p>
<p>Several document changes that have since been added to the datasheet and removed from this document.</p>
<p style="text-align: center;">Revision 011 Revision Date: 25 Jan 2005</p>
<p>Several document changes that have since been added to the datasheet and removed from this document.</p>
<p style="text-align: center;">Revision 010 Revision Date: 01 Sep 2004</p>
<p>Revised table in Section 4.1.0.1, "Stepping/Revision Numbers".</p>
<p style="text-align: center;">Revision 009 Revision Date: 08 Dec 2003</p>
<p>Several document changes that have since been added to the datasheet and removed from this document.</p>
<p style="text-align: center;">Revision 008 Revision Date: 24 Nov 2003</p>
<p>Added documentation change item 2: "Signal Description Table". Subsequent documentation change item numbers increased by one.</p>
<p style="text-align: center;">Revision 007 Revision Date: 23 Sep 2003</p>
<p>Initial external release.</p>
<p style="text-align: center;">Revision 001– 006 Revision Date: 01 May 2003</p>
<p>Internal releases.</p>

1.0 Preface

This Errata document is an update to the specifications listed in [Section 1.1, *Affected Documents/Related Documents*](#). This document is a compilation of device and documentation errata, specification clarifications, and specification changes. It is intended for hardware system manufacturers and software developers of applications, operating systems, or tools.

Disclaimer: Cortina Systems, Inc. (Cortina™) may fix some of the errata in a future product revision and account for the other outstanding issues through documentation or specification changes as noted.

1.1 Affected Documents/Related Documents

Title	Document Number
IXF1104 4-Port Gigabit Ethernet Media Access Controller Datasheet	278757

1.2 Nomenclature

1.2.1 Specification Update Classifications

Errata:

Design defects or errors—these may cause the IXF1104 4-Port Gigabit Ethernet Media Access Controller (IXF1104 MAC) behavior to deviate from published specifications. Hardware and software designed to be used with any given product revision(s) must assume that all errata documented for that product revision(s) are present on all devices of that revision(s).

Specification Changes:

Specification modifications—these changes generally do not adversely affect current designs and are generally incorporated in subsequent releases of the specification.

Specification Clarifications:

Expanded specification descriptions—add greater detail or further highlight a specification's impact to a complex design.

1.2.2 Errata Status Definitions

Fixed:

This erratum has been fixed in a specified product revision.

NoFix:

There are no plans to fix this erratum.

PossibleFix:

This erratum may be fixed in a future product revision.

2.0 Summary of Specification Updates

2.1 Errata

No.	Product Revision	Page	Status	ERRATA
	B0			
1	X	page 6	NoFix	Section 1, MAC TX Statistic Registers Record Incorrect Values in 10/100 Mbps Half-Duplex Mode
2	X	page 6	NoFix	Section 2, Incorrect TxUCPkts Value Statistic Recorded with SPI3 TErr Signal Asserted Packets
3	X	page 6	NoFix	Section 3, SerDes Transmit Locks Up With Flow Control (Fiber Mode Only)
4	X	page 7	NoFix	Section 4, Overflow Drop Frame Counter Miscounts

2.2 Specification Changes

No.	Product Revision	Page	SPECIFICATION CHANGES
	B0		
1	X	page 8	FC-PBGA Package Solder Ball Diameter Has Changed
2	X	page 8	Add a 10/100 MHz Ferrite Bead across the Resistor on the Analog Power Supply Filter Network
3	X	page 8	The 3.3 V Input Signals in the DC Specifications Table have Been Changed
4	X	page 9	Updated Values in the CPU Interface Write Cycle AC Signal Parameters Table
5	X	page 9	Updated Values in the LED Interface AC Timing Parameters Table

2.3 Specification Clarifications

No.	Product Revision	Page	SPECIFICATION CLARIFICATIONS
	#		
None for this revision of this specification update.			

3.0 Errata

Erratum 1: MAC TX Statistic Registers Record Incorrect Values in 10/100 Mbps Half-Duplex Mode

Problem The IXF1104 MAC has four MAC TX Statistics Registers that record incorrect values at 10/100 Mbps half-duplex mode. These errors occur only when the half-duplex flow control function is operational. The following MAC TX Statistic Registers record the correct values if flow control is not activated because the Rx FIFO High Watermark is exceeded:

- CRCError (Addr: Port_Index + 0x56)
- TxPkts64Oct (Addr: Port_Index + 0x45)
- TxUCPktCnt (Addr: Port_Index + 0x42)
- ExcessiveCollisionErrors (Addr: Port_Index + 0x51)

Implication These registers may contain incorrect values.

Workaround Do not enable flow control in 10/100 Mbps half-duplex mode.

Status There are no plans to fix this erratum.

Erratum 2: Incorrect TxUCPkts Value Statistic Recorded with SPI3 TErr Signal Asserted Packets

Problem This erratum occurs only if the following four conditions are met:

1. The IXF1104 MAC is configured to operate in fiber mode.
2. The Network Processor generates 84-byte packets that contain a good Cyclic Redundancy Check (CRC).
3. The packet is terminated by both TEOp and TErr being asserted at the end of every packet sent to the IXF1104 MAC.
4. The default configuration of the Tx FIFO is changed so that it no longer automatically drops packets marked with TErr asserted.

The following is observed if these conditions are met:

1. The TxUCPkt statistic incorrectly increments by 1 for every packet that meets conditions 1 through 3 above. This statistic does *not* increment since all packets are bad, even though the packets have valid CRCs attached.
2. The TxOctets statistic incorrectly increments by 0x51 for every packet that is sent incorrectly by the Network Processor. This statistic should not increment for bad packets.

Implication The TxUCPkts and TxOctets counters incorrectly increment when the above conditions are met.

Workaround Use the default Tx FIFO setting with the automatic bad packet drop function enabled.

Status There are no plans to fix this erratum.

Erratum 3: SerDes Transmit Locks Up With Flow Control (Fiber Mode Only)

Problem When the IXF1104 MAC SerDes block is operating with IEEE 802.3x flow control enabled, the Transmit MAC may cease to transmit data even though the Transmit FIFO occupancy counter indicates data is available. In this situation, the pause frame counter is constantly

loading, but does not decrement the frame count. This situation is triggered when the following types of Ethernet control frames are sent to the device:

- Pause frames with a non-zero quantum, or
- Any other frames with a non-zero value in the byte locations that are used in a Transmit OFF frame to define the pause quantum.

In the lock-up condition, the DTPA signal is de-asserted (low) despite the value of the occupancy counter.

The cause has been traced to a random improper phase relationship that exists between two internal clocks after hardware reset. The lock-up does not occur if the phase relationship is correct after a hardware reset; however, there is no way to determine if the phase relationship between the two clocks is correct after a hardware reset.

Implication Data traffic between the IXF1104 MAC and the link partner stops.

Workaround Disabling the flow control will avoid the lockup caused by this situation.

Note: This lock-up condition does **not** occur using the RGMII or GMII line interfaces.

Status No fix is planned at this time.

Erratum 4: Overflow Drop Frame Counter Miscounts

Problem When the IXF1104 MAC receive FIFO undergoes an overflow occurrence, a register called the Overflow Drop Frame counter is supposed to reflect the lost frames. This counter has been found to miscount at times during this event.

Implication In systems where the IXF1104 MAC may be in a Receive FIFO overflow occurrence, the Overflow Frame Counter cannot be relied upon for a correct count of the lost frames.

Workaround None

Status No fix is planned at this time.

4.0 Specification Changes

Item 1: FC-PBGA Package Solder Ball Diameter Has Changed

Description IXF1104 MAC FC-PBGA package nominal solder ball diameter is corrected in the IXF1104 4-Port Gigabit Ethernet Media Access Controller Datasheet, revision 13.2.

- Notes:**
1. This is a documentation correction only. The package has not physically changed. This does not affect existing designs.
 2. The package drawings in revision 13.2 are rotated 90° compared to the drawings in datasheet revision 12.2 and earlier.
 3. The FC-PBGA package drawings in revision 13.0 and revision 13.1 illustrate an incorrect ball grid array pin-out and should not be referenced.

Table 1 Updated FC-PBGA Ball Size Diameter

FC-PGBA	Nominal Ball Diameter
Documented ball size diameter in revision 12.2 and earlier	0.65 mm
Documented ball size diameter in revision 13.0 and later	0.60 mm

Documents Updated in IXF1104 4-Port Gigabit Ethernet Media Access Controller Datasheet, revision 13.2, document number 278757

Item 2: Add a 10/100 MHz Ferrite Bead across the Resistor on the Analog Power Supply Filter Network

Description Add a Ferrite Bead (FB) across the resistor to decrease noise and to stabilize the power.

Documents Updated in IXF1104 4-Port Gigabit Ethernet Media Access Controller Datasheet, revision 12.2, document number 278757

Item 3: The 3.3 V Input Signals in the DC Specifications Table have Been Changed

Description The Input High Voltage (VIH) has changed from a minimum of 1.7 V to a minimum of 2.0 V and the Input Low Voltage (VIL) has changed from a maximum of 0.7 V to a maximum of 0.8 V.

Documents Updated in IXF1104 4-Port Gigabit Ethernet Media Access Controller Datasheet, revision 13.2, document number 278757

Item 4: Updated Values in the CPU Interface Write Cycle AC Signal Parameters Table

Description The Tcdwd and Tcdrh parameter maximum values in the CPU Interface AC Signal Parameters Table are corrected in the IXF1104 4-Port Gigabit Ethernet Media Access Controller Datasheet, revision 13.2.

The parameter values shown in Table 2 have been changed to the values shown in Table 3:

Table 2 Previous CPU Interface AC Signal Parameters

Symbol	Parameter	Min	Max
Tcdrh	Read data hold time after read de-assertion	8 ns	32 ns
Tcdwd	Write data sampling delay	8 ns	32 ns

Table 3 Corrected CPU Interface AC Signal Parameters

Symbol	Parameter	Min	Max
Tcdrh	Read data hold time after read de-assertion	8 ns	–
Tcdwd	Write data sampling delay	8 ns	40 ns

Documents Updated in IXF1104 4-Port Gigabit Ethernet Media Access Controller Datasheet, revision 13.2, document number 278757

Item 5: Updated Values in the LED Interface AC Timing Parameters Table

Description The Tdatd, Tlath and Tlatl parameter values and parameter names in the LED Interface AC Timing Parameters table are corrected in the IXF1104 4-Port Gigabit Ethernet Media Access Controller Datasheet, revision 13.2.

The parameter values shown in Table 4 have been changed to the values shown in Table 5:

Table 4 Previous LED Interface AC Timing Parameters

Symbol	Parameter	Min	Max	Units
Tdatd	LED_CLK falling edge to LED_DATA valid	2	5	ns
Tlath	LED_CLK rising edge to LED_LATCH rising edge	690	700	µs
Tlatl	LED_CLK falling edge to LED_LATCH falling edge	690	700	µs

Table 5 Corrected LED Interface AC Timing Parameters

Symbol	Parameter	Min	Max	Units
Tdatd	LED_CLK falling edge to LED_DATA valid	–	5	ns
Tlath	LED_CLK falling edge to LED_LATCH rising edge	–	5	ns
Tlatl	LED_CLK rising edge to LED_LATCH falling edge	–	5	ns

Documents Updated in IXF1104 4-Port Gigabit Ethernet Media Access Controller Datasheet, revision 13.2, document number 278757

5.0 Specification Clarifications

None.



For additional product and ordering information:

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