



Product Change Notification

Product Change Notification Number: WC095201

Notification Date: Feb. 11, 2010

Title: ATMXT224 Firmware Revision Change from V1.5 to V1.6

Product Identification:

ATMXT224-CU

ATMXT224-CCU

ATMXT224-MAH

Reason for Change:

☒ Design
☐ Manufacturing Location

☐ Processing
☒ Quality/Reliability

☐ Logistics
☐ Material

Change Description:

As part of the continuous improvement process for the mXT224 touchscreen driver IC, a number of performance and functional enhancements were identified. These enhancements provide system benefits to customers and shall be implemented by transitioning the existing V1.5 firmware to V1.6 production release.

The enhancements in V1.6 are backwards compatible with V1.5.

Atmel recommends the implementation of V1.6 as it shall result in improved features & functions for customers.

The functional objects which are improved by the transition to V1.6 are summarized in the enclosed [Attachment 1](#).

Identification Method to Distinguish Change:

Marking of device:

Current marking ATMXT224-CU:	New marking ATMXT224-CU:
ATMEL	ATMEL
MXT224	MXT224
CU-1R5	CU-1R6
LOTCODE	LOTCODE
Current marking ATMXT224-CCU:	New marking ATMXT224-CCU:
ATMEL	ATMEL
MXT224	MXT224
CCU-1R5	CCU-1R6
LOTCODE	LOTCODE
Current marking ATMXT224-MAH:	New marking ATMXT224-MAH:
ATMEL	ATMEL
MXT224	MXT224
MAH-1R5	MAH-1R6
LOTCODE	LOTCODE

Qualification Data:

☐ available ☐ will be available in WW ____ ☒ not applicable

Samples:

☒ Please contact your Atmel Sales representative.

Quantifiable Impact on Quality & Reliability:

Please refer to Attachment1 for a summary of the improvements.

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Proposed First Ship Date*: May 10, 2010

**The Proposed First Ship Date is the forecasted date that a customer may expect to receive changed product. This is determined by the estimated date of inventory depletion on the PCN issue date. This may be affected by fluctuations in supply and demand. Consequently, although customers should be prepared to receive changed product on this date, Atmel will continue to ship pre-changed product until a time in which inventory has been depleted. This may result in pre-changed product being shipped to customers after this forecasted date.*

Atmel Contact: pcnadm@atmel.com

Atmel will deem this change accepted unless specific conditions of acceptance are provided in writing within 30 days from the date of this notice. All correspondence must be sent to the Atmel Contact e-mail address listed above.

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Attachment 1

Overview

This document provides a summary of the improvements related to mXT224 (ATMXT224) firmware release 1.6.
Issues associated with the interface driver are also included.

Summary: Improvement & Fixes in Version 1.6

#	Object : Improvements / Fixes	Host Driver Impact	System Impact	Notes / Comments
1	Command Processor Object			
	a) Configuration CRC checksum calculation improvement.	None if driver does not hard code CRC	Correct checking of configuration state is possible	
2	Power Configuration Object			
	a) Improved system time resolution.	None	Improvement to precision & predictability of gesture behavior	The system time is calculated using an improved method when in free run or sync mode
	b) Improved reporting of a cycle overflow when waking from deep sleep.	None	Overflow flag is now more reliable	
3	Acquisition Configuration Object			
	a) Resolved an issue that could cause the chip to free run when using sync mode and the cycle is overrun.	None	Reduced power and better acquisition predictability in sync mode	
	b) DRIFTST setting of 0 now suspends drift for 4 seconds after detection (default). [It is normal to configure a hold time of several seconds to avoid rapid touching from partly or fully drifting out the touch (including face/palm).]	None, (unless driver really intended hold time of zero)	For normal settings this change has no impact.	Note1.For a hold time of zero use 1 (200 to 400ms). Otherwise leave at default of zero.
4	Multiple Touch Touchscreen Object			
	a) Clipping controls now support a range from -128 to +127.	None if clip setting below +127	Better flexibility to correct misalignment sensors	Driver may choose to support the negative clip for future possibility to correct offset sensors.
	b) Added a JUMPLIMIT control.	None if feature not required	Can improve multi-touch behavior, preventing jump/cross-over of rapid left/right/left taps	Default of zero behaves as per 1.5 i.e. no jump control
	c) Fixed the FILTERLIMIT control so that it does not affect the amount of movement hysteresis.	None, if FILTERLIMIT =0	More predictable behavior of settings as other parameters are varied	If FILTERLIMIT setting configured to >0, review the hysteresis settings which may require adjustment to achieve previous hysteresis effect

#	Object	Improvements / Fixes	Host Driver Impact	System Impact	Notes / Comments
	d) Eliminated a rare issue that could occur if 10 touches were applied to the screen at the same time (within a TCHDI period).		None	Improved system resulting in the correct system response	Very rare condition addressed
	e) Improved handling of large values for the edge correction controls.		None	Better predictability of this setting's behavior	
5	Key Array Object				
	a) Fixed an issue where the enabled internal AKS could cause the chip to “free run” when multiple keys were touched.		None	Power saving under Key Array configuration	
6	GPIO/PWM Configuration Object				
	a) Improved the REPORTMASK control.		None	None	GPIO behavior as required
7	Grip/Face Suppression Object				
	a) Improved the predictability of the SUPEXTTO.		None	Better operation of face suppression	
	b) Added a GRIPMODE control bit to the CTRL field controlling whether or not touches can be unsuppressed if they move into the touchscreen's active region.		Driver dependant action	None	If the GRIPMODE control bit is zero then change is transparent. Grip suppression in “non locking mode” may be more suitable for some operating systems.
	c) Sensor drift improved such that it is not suspended during DI extension.		None	None	Feature now operating as intended
	d) Improved behavior for face suppression under multiple large touches		None, but check settings used	None	Feature now operating as intended
8	Noise Suppression Object				
	a) Improved behavior when in 16X by 14Y mode with both median and GCAF filtering on.		None	More predictable behavior when object in use	
	b) Improved behavior when Frequency Hopping and GCAF are both turned on.		None	None	Feature now operating as intended
	c) Improved noise measurement and frequency hopping algorithm.		None	Better robustness against noise.	
	d) Added a new GCAFCHG status message and a DISGCAFCHG bit in CTRL to disable GCAFCNG		None if not enabled	Better debugging	If enabled; message can be used to debug / change chip behavior if required
	e) Added a FREQINDEX field to the object's message.		None	Better debugging	
	f) Improved behavior when any FREQ[] values are set to 255.		None	None	Feature now operating as intended
	g) Fixed a problem where the system could recalibrate		None	None	More predictable sensor behavior

	the sensor due to noise.			with extreme noise
9	Proximity Sensor object			
	a) Some controls have been renamed to better reflect function.	None	None	Better naming improves the understanding of each parameter. Driver may choose to rename fields in source code to match.
	b) Added a MVDTHR control to complement the MVNULLRATE control.	None if proximity not used	None	If proximity is used then allows improved control of the movement based algorithm
10	Self Test object			
	a) Tests for adjacent pin faults correctly on all pins when in CTE modes other than 16X by 14Y.	None	None	Feature now operating as intended
11	Improved configuration check: illegal config.			
	a) Improved configuration check where an illegal config could be ignored is written within a narrow vulnerable time window	None	More robust behavior	Timing window has been closed in V1.6. Achieved by waiting for settings to be completely written before processing them
12	Improved cycle synchronization after fast DI			
	a) Corrected issue with V1.5 whereby, after a touch had been placed an erroneous overflow message may be produced and the chip may not run in the correct power mode for a period of time afterwards.	None	Improved predictability and removal of erroneous state	
13	I2C Communications			
	a) Fixed I2C timing issue where chip may hold SCL and SDA lines low until chip is reset.	None	More robust behavior Correct possibility of I2C lockup condition	

Issues for interface driver:

- Added a JUMPLIMIT control to the Multiple Touch Touchscreen (T9) object.
- Added a MVTHR to the Proximity Sensor (T23) object.
- Added a FREQUENCY field to the Noise Suppression (T22) message.
- Multiple Touch Touchscreen (T9) clipping controls are now signed and have a different range (-128 to 127).
- To get the same behavior as V1.5 from the Proximity Sensor (T23) object's rate-based messaging (using MVNULLRATE), MVTHR should be set to 40.
- Memory locations will have moved in this version
 - Static references to settings will no longer work and must be updated.
 - The chip internally stored NVM will no longer be aligned to the RAM locations, with the exception of the User Data (T38) object.