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DATA DISPLAY GROUP

Datasheet

DMC Co. Ltd.

DUS4000

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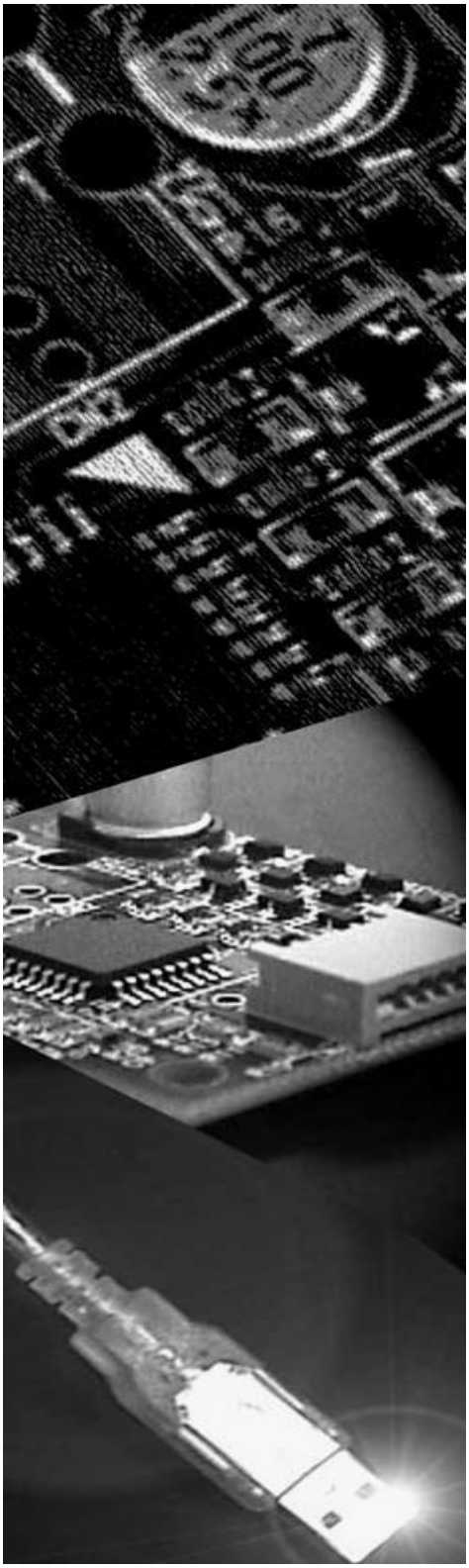

DMC Co., Ltd.

Controller Board for Projected Capacitive Touch Screen DUS4000 Product Specification

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1. Applicable Product

This specification sheet is applied to DUS4000 touch screen controller board.

2. Product Specification

2-1. Touch Screen Board Specification

Item		Spec	Remark
Touch Detection Principle		Projected Capacitive	
Host Interface		USB Full Speed UART	
Input Power-supply Voltage		5[V]±5[%]	
Operating Temp		-20 [℃] to 85 [℃]	No dew condensation
Storing Temp		-40 [℃] to 85 [℃]	No dew condensation
Main IC		MCU 1 [pcs]	
		Sensor IC 4 [pcs]	
Number of Electrodes	Electrode (X)	109	
	Electrode (Y)	62	
Coordinate Performance	Maximum Coordinate Number to Output	5 [Finger]	Standard setting
	Report rate (1 finger)	100 [Hz]	*2
	Report rate (2 fingers)	100 [Hz]	*2
	Report rate (2 fingers at same axis)	100 [Hz]	*2
	Electrode resolution	256 [1/Electrode]	
	2 fingers minimum distance (X)	3.5 [Electrode]	21[mm]@6[mm]◇
	2 fingers minimum distance (Y)	3.5 [Electrode]	21[mm]@6[mm]◇
	Coordinate Accuracy (1 finger: high accuracy area)	max ±0.25 [Electrode]	≒1.5[mm]@6[mm]◇*1
	Coordinate Accuracy (2 fingers: high accuracy area)	max ±0.50 [Electrode]	≒3.0[mm]@6[mm]◇*1
	Coordinate Accuracy (1 finger: low accuracy area)	max ±0.75 [Electrode]	≒4.5[mm]@6[mm]◇*1
	Coordinate Accuracy (2 fingers: low accuracy area)	max ±1.00 [Electrode]	≒6.0[mm]@6[mm]◇*1
	Low accuracy area	3 [Electrode]	Specify area from the edge
Low Power Mode		Active / Suspend	
Calibration	Calibration function	Support	
	Calibration Time	10 - 15 [sec]	*3

*1 The indicated coordinate accuracies are performances under a noise-free environment. The accuracy may significantly drop due to extrinsic noises.

*2 Report rate depends on CR values of the sensor glass. This specification is of the operation by 250KHz clock scan.

*3 Calibration Time varies according to size of the touch screen.

2-2. Host Interface

USB Interface

Item	Value	Note
Host Interface	USB 2.0 Full speed 12[Mbps]	
Power supply	Bus-powered	
Power type	Low power device	Under 100mA
VendorID/ProductID	0x0AFA / 0x07D2, or 0x0AFA / 0x07D3 (At firmware update: 0x0AFA / 0x07D0)	
Power save mode	USB Suspend mode (compliant to USB specification)	

Serial Interface

Item	Value	Note
Host Interface	UART Baud Rate 57.6[Kbps]	
Data bits	8	
Stop bit	1	
Parity check	None	

2-3. Electrical Specification

2-3-1. Maximum Absolute Rating

Item	Specifications			Unit	Note
	Min.	Typ.	Max.		
Touch Panel Power Supply	-0.3		6	V	

2-3-2. DC Characteristics

Board Consumption Current

Test Condition : TA = 25℃, VCC = 5V

Item	Specifications			Unit	Note
	Min.	Typ.	Max.		
Touch Panel Power Supply	4.75	5	5.25	V	
Normal operation mode		60		mA	
Suspend mode		500		uA	

IO Signal (TX, RX) DC Characteristics

Parameter	Specifications			Unit	Note
	Min.	Typ.	Max.		
Input High Voltage	2.0		VDD +0.2	V	VDD=5.25V
Input Low Voltage	-0.3		0.8	V	VDD=4.75V
Output High Voltage	2.4		-	V	VDD=4.75V
Output Low Voltage	-		0.45	V	VDD=5.25V

USB Signal (D+, D-) DC Characteristics

Parameter	Specifications			Unit	Note
	Min.	Typ.	Max.		
Input High Voltage	2.0		-	V	
Input Low Voltage	-		0.8	V	
Output High Voltage	2.8		3.6	V	
Output Low Voltage	0		0.3	V	

IO Signal (Reset) DC Characteristics

Item	Specifications			Unit	Note
	Min.	Typ.	Max.		
Input High Voltage	0.7VDD	5	5.25	V	
Input Low Voltage	-0.5		0.3VDD	V	

2-4. Connector Pin Assignment

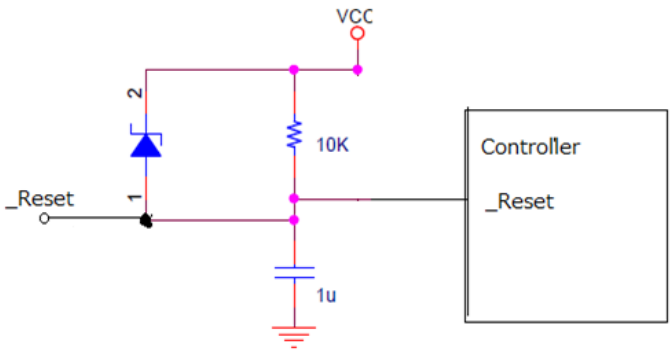
2-4-1. Connector Information

Connector Number	Model Number	Maker
CN4	FH28E-68S-0.5SH	HIROSE
CN5	FH28E-60S-0.5SH	HIROSE
CN6	FH28E-60S-0.5SH	HIROSE
CN1	SM06B-SRSS-TB	JST
CN3	SM11B-SRSS-TB	JST

2-4-2. Connector Terminal

Connector Number	Terminal Number	Terminal Name	Description
CN4			Connector for touch sensor, 68 pins
CN5			Connector for touch sensor, 60 pins
CN6			Connector for touch sensor, 60 pins
CN1	1	Vbus	USB power input
	2	D-	USB D-
	3	D+	USB D+
	4	GND	USB GND
	5	RESET	Reset Terminal Active L Minimum Pulse Width 100μS
	6	GND	Reset GND
CN3	1	ICE_CK	Unused
	2	ICE_DAT	Unused
	3	RSTn	Reset Signal Active L Minimum Pulse Width 100μS
	4	Tx	UART Communication (5VTTL Level) DUS Board → Host Computer
	5	Rx	UART Communication (5VTTL Level) Host Computer → DUS Board
	6	SCL	Unused
	7	SDA	Unused
	8	GPIO1	Unused
	9	Vcc_IN	DC Power Input
	10	ICE_Vcc	Unused
	11	GND	Power Ground

2-4-3. Input Equivalent Circuit of Reset Signal



3. Precautions

Operation may become unstable, depending on the surrounding environment.

Do not use the controller under environments that affect capacitance values (The affecting factors are such as power-supply noises).

The application tool, TPOffset must be executed before operating DMC's touch screens of capacitive multi-touch type (EXC series and DUS series) with the DUS series controller.

TPOffset is the application software executable on Windows. It can be downloaded from the DMC's website below.

DMC's website: TPOffset download page

http://www.dmccoltd.com/english/download/tpoffset.asp

4. Warranty

4-1. Warranty Period

§ The warranty period is limited to 1 year from the date of shipping. The warranty for the initial defection such as appearance defection is limited to 1 month.
§ Any defected parts under proper use will be examined by the supplier and replaced by the new parts if the defection is considered to be caused by the supplier.
§ The replacement is subject to be included in the next lot.

4-2. Warranty Target

§ The warranty only covers the product itself and does not cover any damage to others caused by using this product. Onsite repair or replacement is not supported.
§ We will do our best for delivery problem and product defections, but the warranty for the production line is not covered.

4-3. Warranty Exceptions

Following conditions are not covered with the warranty and subject to charge.
§ Any malfunctions and damages during transportation and transfer by the user.
§ Any malfunctions and damages caused by a natural disaster or a fire.
§ Any malfunctions and damages caused by static electricity
§ Any malfunctions and damages caused by the failure of the associated equipment.
§ If the product is remodeled, disassembled or repaired by the user.
§ If the product is glued onto the equipment and uninstalled.
§ Any malfunctions and damages caused by an improper usage and handling against the specifications and notes.

5. Precautions for Use

5-1. General Handling

§ Keep the product away from any conductive objects while in use.
§ Do not touch the conductive part of the product to avoid being damaged by the electrostatic discharge. Follow the proper procedure for handling.
§ Keep the product in the proper storing environment and avoid any load to the product.
§ Do not use or store the product in the severe condition like following:
Wet environment or a condition where the product is likely to get wet. Where dew condensation is likely to occur. Near solvent or acid.
§ Do not take apart or alter the product.

5-2. Others

§ The contents of this document are subject to change without notice.
§ The manufacturer or sales representatives will not be liable for any damages or loss arising from use of this product.
§ This product is intended for use in standard applications (computers, office automation, and other office equipment, industrial, communications, and measurement equipment, personal and household devices, etc.) Please avoid using this product for special applications where failure or abnormal operation may directly affect human lives, or cause physical injury or property damage, or where extremely high levels of reliability are required (such as aerospace systems, vehicle operating control, atomic energy controls, medical devices for life support, etc.).
§ Any semiconductor devices have inherently a certain rate of failure. The user must protect against injury, damage, or loss from such failures by incorporating safety design measures into the user's facility and equipment.

6. Change History

Ver1.0 (July 12 2013)
First Release

Ver1.1 (August 28 2013)
2-2. Host interface
USB Interface
VendorID/ProductID :
changed to 0x0AFA / 0x07D2, (At firmware update: 0x0AFA / 0x07D0)

Dimensional Drawing
Updated from Rev.1 to Rev.2 (Changed contents are as below)
Unmounted connectors (CN2, SW1) were deleted.
"FG" notations were changed.

Ver1.2 (May 8, 2014)
Changes from the ver. 1.1
2-2. Host interface: VendorID/ProductID (0x0AFA / 0x07D2) was added.
2-3-2.DC Characteristics: IO Signal (Tx ,Rx, Reset) was changed to (Tx, Rx)
2-3-2.DC Characteristics: IO Signal (Tx ,Rx) The numerical value was corrected. (Clerical mistake was corrected.)
2-3-2.DC Characteristics: IO Signal (Reset) was added.
2-4-2.Connector Terminal: CN4 Rx: Fixed [DUS Board → Host Computer] to [Host Computer →DUS Board]

Ver1.3 (March 25, 2015)
Changes from the ver. 1.2
2-1. Touch Screen Board Specification: Maximum Coordinate Number to Output was changed to 5 [Finger]. [Standard Setting] was added to Remark

Dimensional Drawing
Updated from Rev.2 to Rev.3: Tolerances were added.

DUS4000 Product Specification
Ver1.3 issued on March 25, 2015
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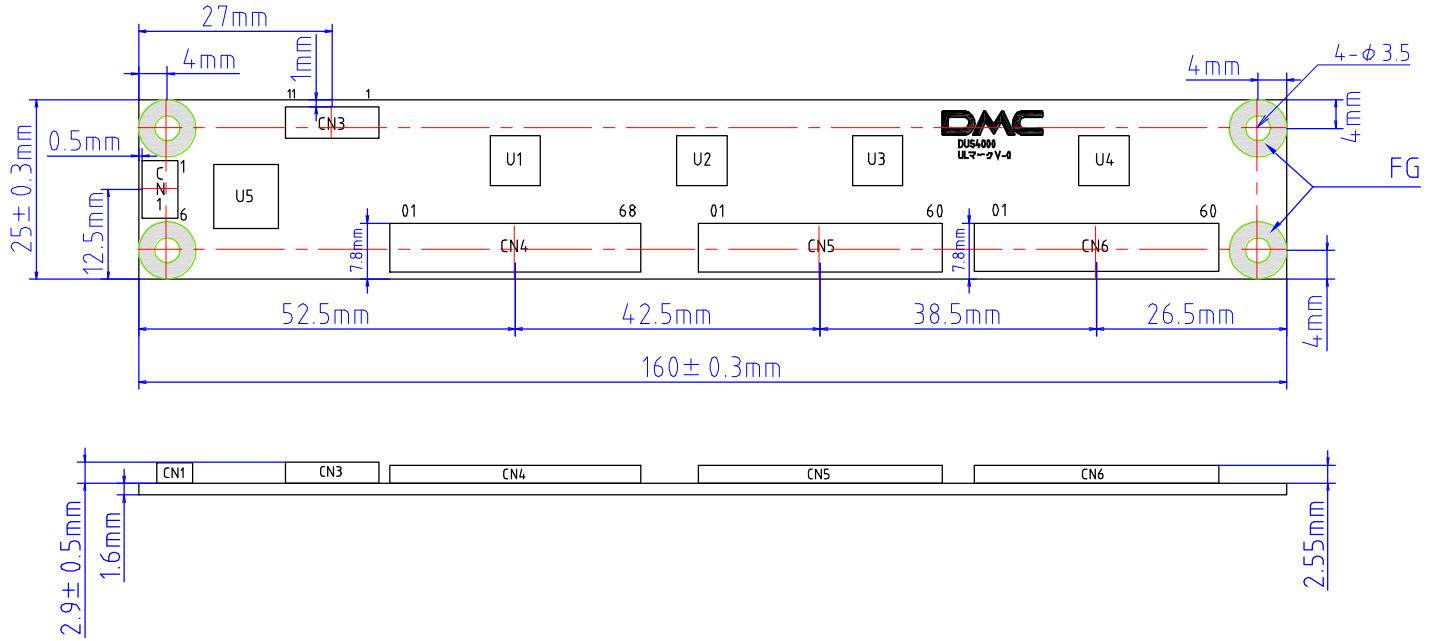

Date	P/N
October 21, 2014	DUS4000
Dimensional Drawing	Rev.
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