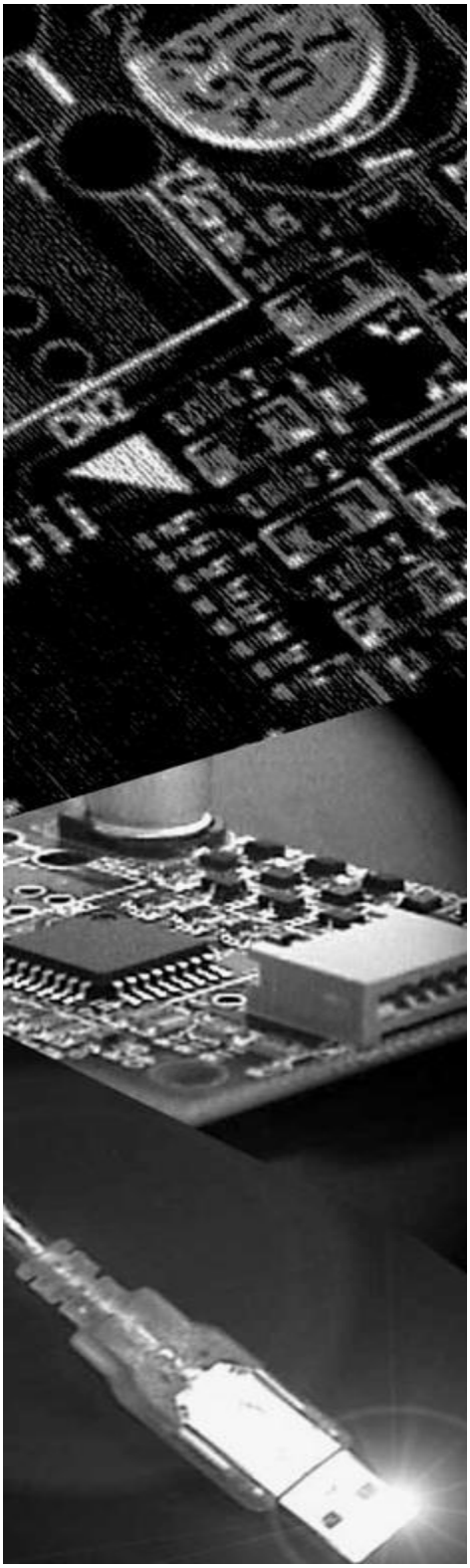

DMC Co., Ltd.

Controller Board for Projected Capacitive Touch Screen
DUS4200 Product Specification

Table of Contents

1. Applicable Product

This specification sheet is applied to DUS4200 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 I2C	Compatibility with UART or I2C depends on firmware. Please check with our sales for compatibility.
Input Power-supply Voltage			4.75～5.25[V]	
Driving Voltage			18V	
Operating Temp			-40 [°C] to 85 [°C]	No dew condensation
Storing Temp			-40 [°C] to 85 [°C]	No dew condensation
Main IC			MCU 1 [pc]	
			Sensor IC 3 [pcs]	
Number of Electrodes	Electrode (X)		116 (Max)	
	Electrode (Y)		66 (Max)	
Coordinate Performance	Normal Coordinate Number to Output		5 [Finger]	Maximum 30
	Report rate (1 finger)		100 [Hz]	*2
	Report rate (2 finger)		100 [Hz]	*2
	Report rate (2 finger at same axis)		100 [Hz]	*2
	Electrode resolution		256 [1/Electrode]	
	2 finger minimum distance (X)		3.5 [Electrode]	21[mm] @ 6[mm]◇
	2 finger minimum distance (Y)		3.5 [Electrode]	21[mm] @ 6[mm]◇
	Coordinate Accuracy (high accuracy area)		Max ±5.0mm	*1
	Coordinate Accuracy (low accuracy area)		Max ±8.0mm	
	Low accuracy area		3 [Electrode]	Specify 3 areas from the edge
Low Power Mode			USB Suspend mode	
Calibration		Calibration function	Support	
		Calibration Time	Max 10 [sec]	*3

*1. Touch contact size: φ10. The indicated coordinate accuracies are performances under a noise-free environment. The accuracy may significantly drop due to extrinsic noises and surrounding environment.
*2. The indicated values depend on software noise filter and CR values of the sensor glass. This specification is of the operation by normal clock scan.
*3. Calibration Time varies according to size of the touch screen.

2.2. Host Interface

2.2.1. USB Interface

Item	Value	Note
Host Interface	USB 2.0 Full speed 12[Mbps]	
Power supply	Bus-powered	
Power type	High power device	
VendorID/ProductID	0x0AFA / 0x07D7 (At firmware update: 0x0AFA / 0x07D6)	
Power save mode	USB Suspend mode (compliant to USB specification)	Except current.

2.2.2. Serial Interface

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

2.2.3. I2C Interface

Item	Specification	Note
Slave adress	0x5C	
Transfer speed	400 kbps	Fast mode
Transfer data length	Maximum 255 bits + Length 1 bits	
Slave mode	Single master IC only. Multi-master IC is not supported	

2.3. Electrical Specification

2.3.1. Maximum Absolute Rating

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

2.3.2. DC Characteristics

Board Consumption Current

Test Condition: TA = 25°C, VCC = 5V

Item	Specifications			Unit	Note
	Min.	Typ.	Max.		
Touch Panel Power Supply	4.75	5	5.25	V	
Normal operation mode		130.0		mA	Report rate:100Hz 10 Finger, 46inch DC5V, USB Vbus
Suspend mode		45.0		mA	USB Vbus

2.3.3. USB Signal (D+, D-) DC Characteristics

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

2.3.4. UART Signal (Rx, Tx) DC Characteristics

Parameter	Specifications			Unit	Note
	Min.	Typ.	Max.		
Input High Voltage (Rx)	2.0	-	3.6	V	
Input Low Voltage (Rx)	-	-	0.6	V	
Output High Voltage (Tx)	2.4	-	3.6	V	
Output Low Voltage (Tx)	-	-	0.4	V	

2.3.5. I2C (SCL, SDA, I2C_INT) DC Characteristics

Item	Specification			Unit	Note
	Min.	Typ.	Max.		
Input High Voltage	2.0	—	3.6	V	
Input Low Voltage	—	—	0.6	V	
Output Low Voltage	—	—	0.4	V	

SCL, SDA, I2C_INT is output by Open drain.

SCL, SDA, I2C_INT is Pullup on DUS4200. (SCL, SDA=3.3V_4.7kΩ, I2C_INT =3.3V_10kΩ)

2.3.6. RESETn Signal DC Characteristics

Parameter	Specifications			Unit	Note
	Min.	Typ.	Max.		
Input High Voltage	2.3	-	3.6	V	
Input Low Voltage	-	-	0.9	V	
Minimum pulse width	1	-	-	ms	

2.4. Connector Pin Assignment

2.4.1. Connector Information

Connector Number	Model Number	Maker
CN1	SM06B-SRSS-TB	JST
CN2	SM11B-SRSS-TB	JST
CN4	FH28H-68S-0.5SH	Hirose
CN5	FH28H-68S-0.5SH	Hirose
CN6	FH28H-68S-0.5SH	Hirose

2.4.2. Connector Terminal

Connector Number	Terminal Number	Terminal Name	Description
CN1	1	VBUS	USB power input
	2	D-	USB D-
	3	D+	USB D+
	4	GND	USB GND
	5	RESETn	Reset Terminal Active Low Minimum Pulse Width 1ms (Connection is unnecessary. It is pulled up within the board.)
	6	GND	Reset GND
CN2	1	ICE_CK	Unused
	2	ICE_DAT	Unused
	3	RESETn	Reset Terminal Active Low Minimum Pulse Width 1ms (Connection is unnecessary. It is pulled up within the board.)
	4	Tx	UART Communication DUS Board to Host Computer
	5	Rx	UART Communication Host Computer to DUS Board
	6	SCL	I2C
	7	SDA	I2C
	8	I2C_INT / GPIO	For Interrupt signal when using I2C
	9	VCC_IN	DC Power Input
	10	ICE_VCC	Unused
	11	GND	Power GND
CN4			Connector for touch sensor, 68 pins
CN5			Connector for touch sensor, 68 pins
CN6			Connector for touch sensor, 68 pins

3. Precautions

Do not boot the controller while a hand or metal is on the touch panel. It may not work properly after booted.

Operation may become unstable depending on the surrounding environment.

Do not use the controller under environments that affect capacitive values (Possible affecting factor is power supply noise.).

The application tool, TPOffset must be executed in advance of the use of touch screens. TPOffset, the application software, which can be downloaded from the DMC's website shown in below. It is executable on Windows OS.

DMC's website: TPOffset download page
http://www.dmccoltd.com/english/download/tpoffset.asp

4. Change History

Ver1.0 (October 25, 2019)

First release

Ver2.0 (June 3, 2020)

Specification for UART interface is added.

Ver3.0 (April 16, 2021)

2.1 Touch Screen Board Specification Added note on Host Interface
Revised operating temperature and storage temperature ranges
Revised coordinate accuracy specification values

2.3.2. DC Characteristics Added max values.

2.4.2. Connector Terminal
CN1: RESETn Added "(Connection is unnecessary. It is pulled up within the board.)".
CN2: RESETn Added "(Connection is unnecessary. It is pulled up within the board.)".
Tx/Rx Deleted "(5V TTL Level)".

3. Precautions Added a sentence

Dimensional Drawing Added components on backside of the board.

Ver4.0 (January 12, 2022)

Specification for I2C interface is added.

5. Warranty

5.1. 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.

5.2. 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.

5.3. 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.

6. Precautions for Use

6.1. 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.

6.2. 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.

DUS4200 Product Specification
Ver4.0 issued on January 12, 2022

DMC Co., Ltd.
Interface with Touch
DMC Co., Ltd.
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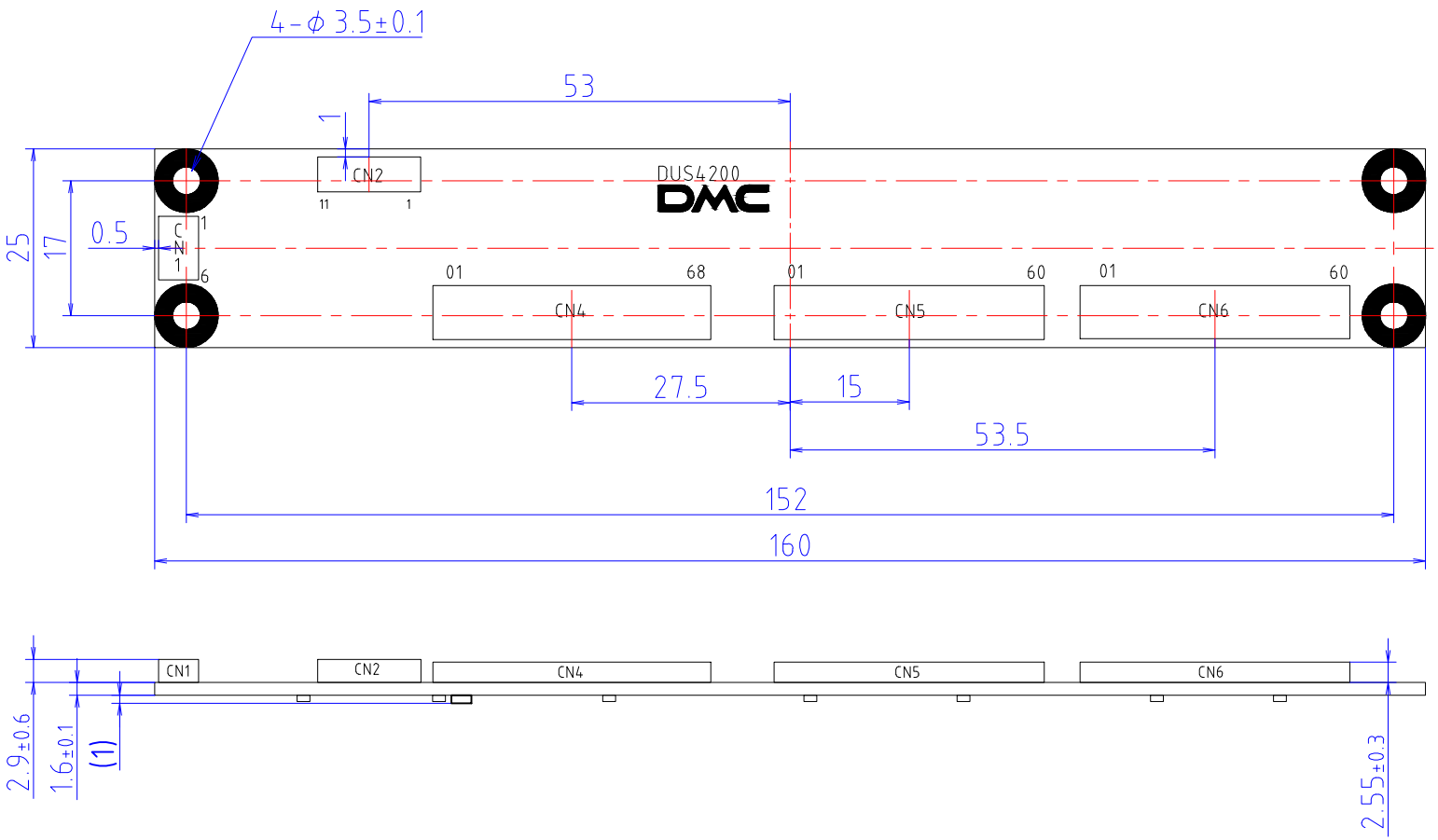

※Tolerance: ±0.3 except for hole diameter
※Material: FR-4
Mass: TYP 20g
※Unit: mm

Date	P/N
January 6.2021	DUS4200
Dimensional Drawing	Rev.
DMC Co., Ltd.	2