

DMC Co., Ltd.

**Mutli-touch Resistive (MTR) Controller
MTR1000 Product Specification**

Table of Contents

1. Product Overview	2
1-1. Applicable Product.....	2
1-2. Overview.....	2
1-3. Touch Detection Principle.....	2
1-4. Some cases that the controller does not recognize the correct coordinate points.....	3
2. Specifications	4
2-1. General Specification.....	4
2-2. Performance Specification.....	4
2-3. Product ID.....	4
3. Connector	5
3-1. Connector Terminal.....	5
3-2. Mounted Connector.....	5
4. Dimension	6
4-1. Controller Board.....	6
5. Warranty	7
5-1. Warranty Period.....	7
5-2. Warranty Target.....	7
5-3. Warranty Exceptions.....	7
6. Handling notes	8
6-1. Overall handling notes.....	8
6-2. Others.....	8
7. Revision History	9
7-1. Revision History.....	9

1. Product Overview

1-1. Applicable Product

This specification sheet is applied to MTR1000 series, the Multi-touch resistive controller.

1-2. Overview

MTR1000 series is Multi-touch Resistive (MTR) touch screen controller board that recognizes dual inputs and is suitable for hand writing applications.

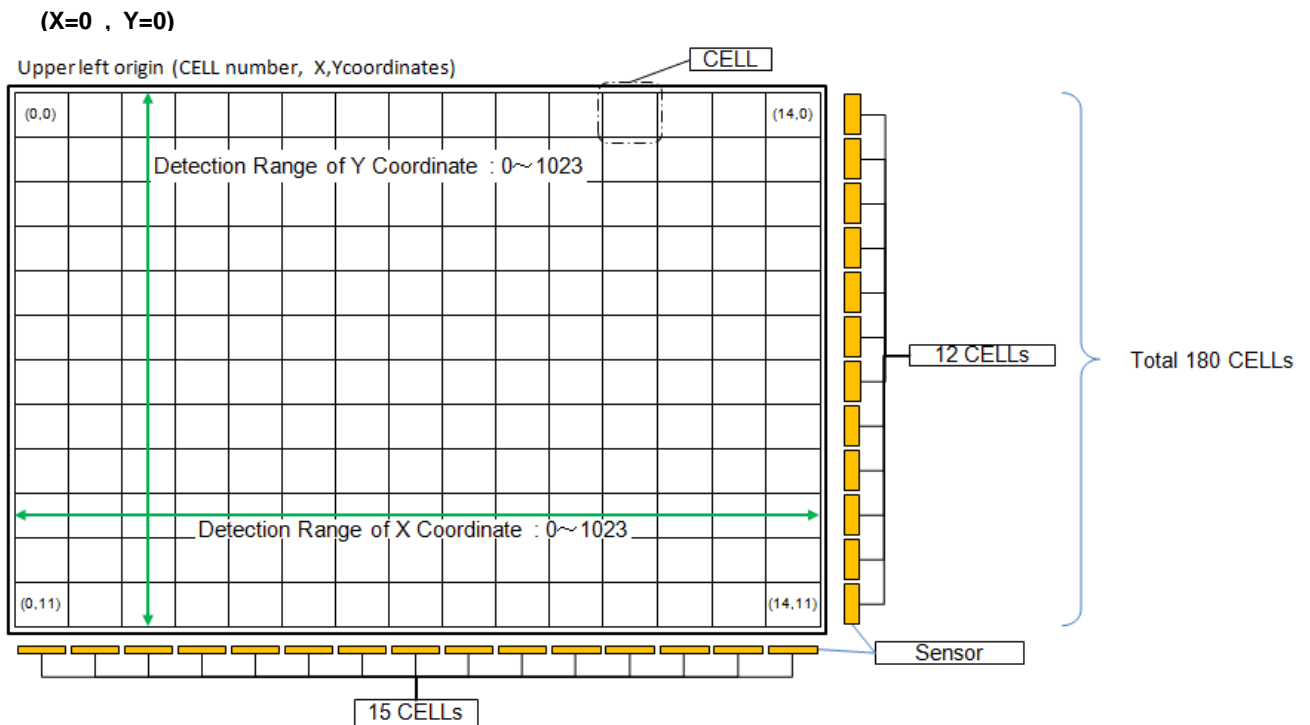
1-3. Touch Detection Principle

MTR Touch Screen is composed of matrix CELLS.

Multiple touch inputs are recognized by detecting a touch input in each CELL.

The top left of the active area is (X=0, Y=0), while the bottom right is (X=0x03FF, Y=0x03FF).

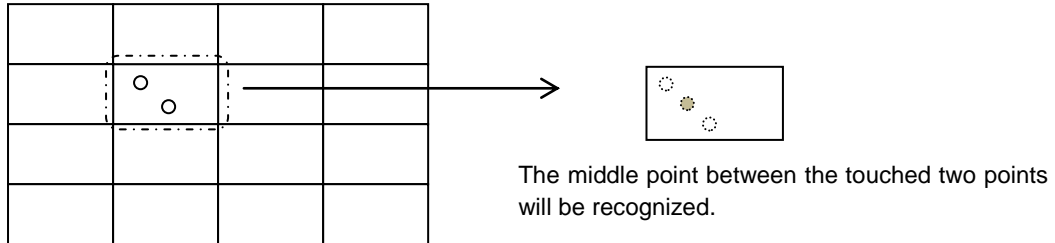
Fig1 Touch Detection Range



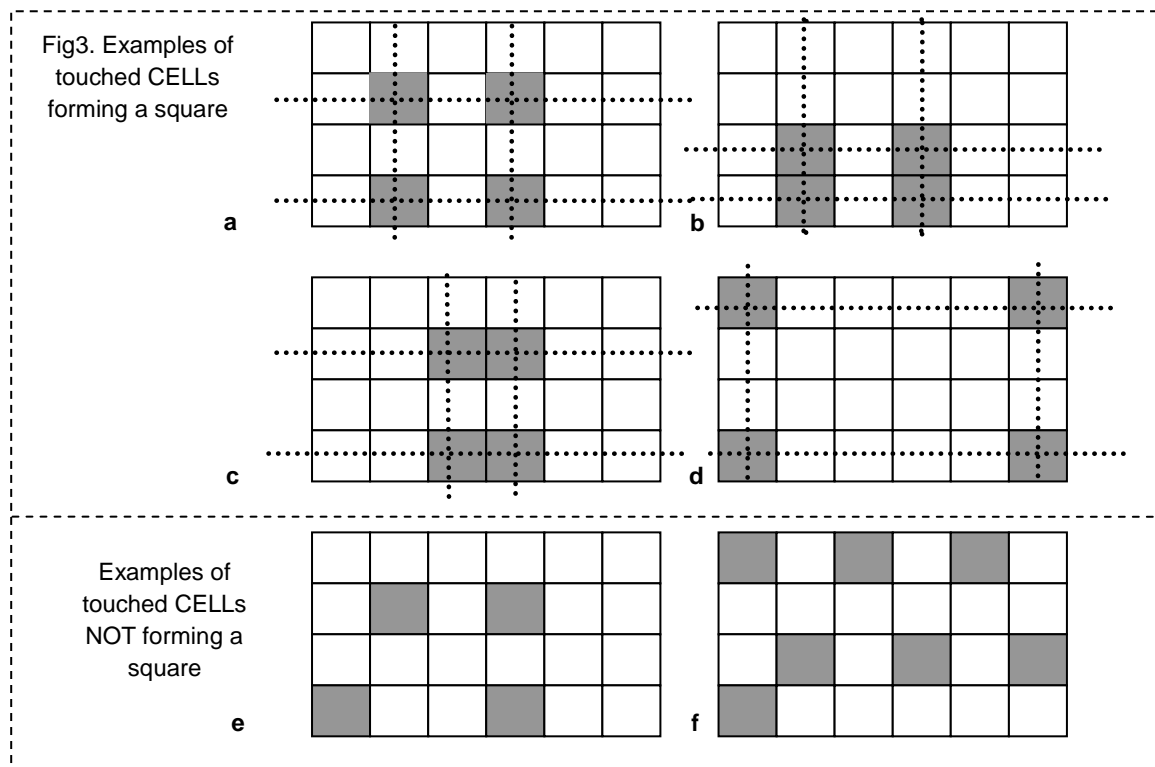
1-4. Some cases that the controller does not recognize the correct coordinate points

1. Controller does not recognize multiple touch inputs in the same CELL. (Fig 2.)
(In case of multiple touch inputs in the same CELL, middle point will be outputted.)

Fig 2. Two point in the same matrix CELL



2. When touched CELLS form a square (Only MTR1000-1215-001)
MTR1000 controller does not recognize touch inputs correctly when more than four CELLS are touched at the same time and when these four touched CELLS form a square.



If 4 touched CELLS form a square, MTR1000 controller may detect wrong touch points, or does not detect any touch inputs at all.

2. Specifications

2-1. General Specification

Item		Rating	Remark
Operating Temp.		-20°C to +85°C (No condensation)	
Storage Temp		-20°C to +85°C (No condensation)	
Supply Voltage		DC 4.75V to 5.25V	
Consumption Current		30 mA (Typical)	
Communication (USB)	Method	USB2.0 HID1.1	Operated via HID digitizer/HID mouse Protocol
	Rate	Full-speed 12[Mbps]	
External Dimensions		65x35 (mm)	
Max Height of Component		3.2 (mm)	

2-2. Performance Specification

Item		Rating	Remark
Max Multi-touch Points		2 points	
Coordinate Resolution		10bit (1024x1024)	
* Input Response Time		12x15 matrix CELLS 1 point detection: 13ms 2 points detection: 17ms	Typical

*The input response times described above are actual values of when 1 finger touches only 1 CELL. If 1 finger touches over several CELLS, the input repose time will be affected.

For reference: 1 finger over 4 CELLS approx 36ms
2 fingers over 8 CELLS approx 100ms

2-3.Product ID

Item		Rating	Remarks
Vendor ID		0x0AFA	Common
Product ID		0x03EC	MTR1000-1215-001
		0x03ED	MTR1000-1215-003

3. Connector

3-1. Connector Terminal

Touch screen connector 1

CN	Function
CN1	Touch screen connector '1'

Touch screen connector 2

CN	Function
CN2	Touch screen connector '2'

Connector for maintenance

CN	Terminal	Function
CN3	1	Xres
	2	TDI
	3	TDO
	4	TCK
	5	TMS
	6	5V
	7	Gnd

USB Connector

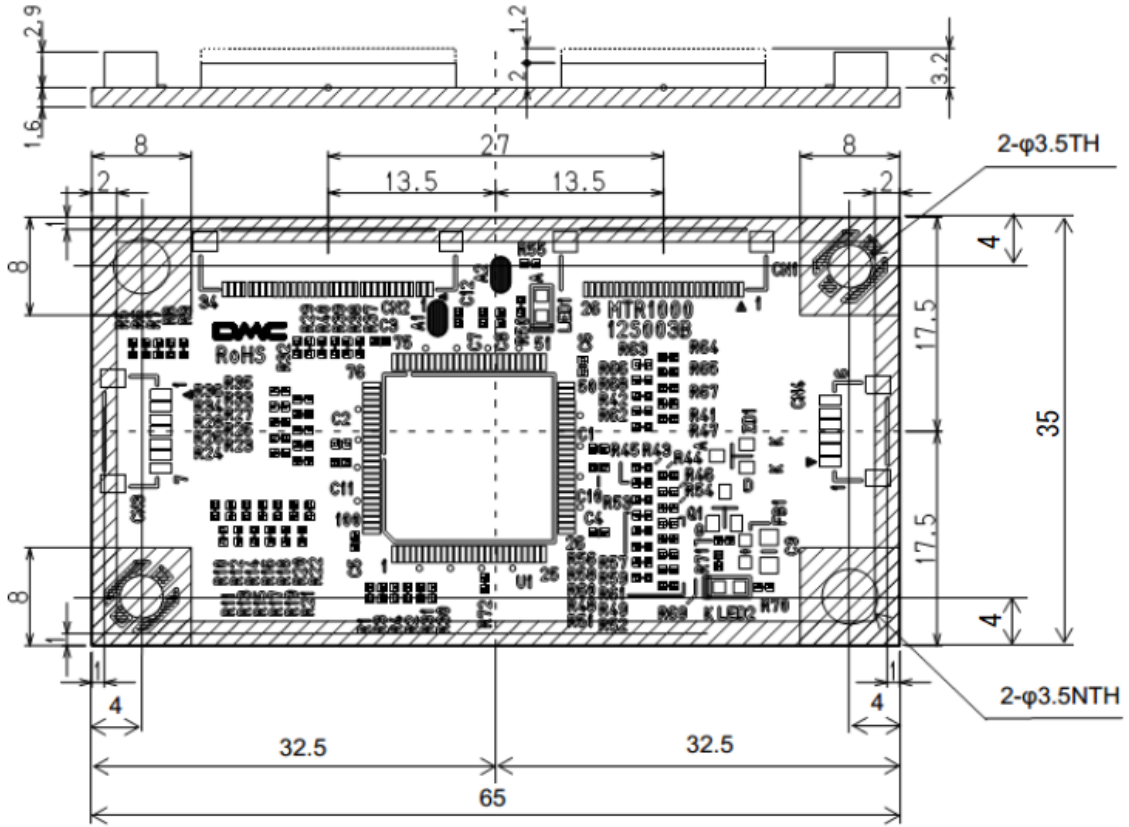
CN	Terminal	Function
CN4	1	5V
	2	D-
	3	D+
	4	Gnd
	5	Reserved (Leave this unconnected)
	6	Shield (Gnd common)

3-2. Mounted Connector

CN	P/N	Manufacturer
CN1	XF2M-2615-1A	OMRON Corporation
CN2	XF2M-3415-1A	OMRON Corporation
CN3	SM07B-SRSS-TBT	JST Mfg Co., Ltd
CN4	SM06B-SRSS-TBT	JST Mfg Co., Ltd

4. Dimension.

4-1. Controller Board



Tolerance: $\pm 0.3\text{mm}$

Unit: mm

5. Warranty

5-1. Warranty Period

- § The warranty period is limited to 1 year from the date of shipping. The warranty for the initial deflection such as appearance deflection 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 deflection 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. Handling notes

6-1. Overall handling notes

- § 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.

7. Revision History

7-1. Revision History

Rev. 1.0 (Jan 30, 2013)

Initial Release

Rev. 1.1 (Jan 31, 2013)

2-2. Performance Specification The section number 2-2 was added.

Rev. 1.2 (June 2, 2015)

2-1. General Specification Operating Temp: 0 to +85°C -> -20 to +85 °C (Reconsideration of the specification)

4-1. Dimension of Controller Board: Longitudinal sizes, locations and dimensions of the screw holes, and dimensional tolerance were added.

Rev. 2.0 (March 31, 2016)

1-4. Some cases that the controller does not recognize the correct coordinate points:
[2. When touched CELLS form a square (Only MTR1000-1215-001)] was added.

2-1. General Specification: Max Height of Component 5mm → 3.2mm
(Correction of misdescription)

2-2. Performance Specification: Reference values of input response time were reviewed.

2-3. Product ID: New item was added

4-1. Controller Board: [Unit: mm] was added.

MTR1000 Series Product Specification

Rev. 2.0 issued on March 31, 2016

©2016 DMC Co., Ltd.

This document can be freely distributed, but any alternation to this document is prohibited



DMC Co., Ltd.

<http://www.dmccoltd.com/english/>

11F Takanaawa Sengakuji Ekimae Bldg., 2-18-10 Takanaawa, Minato-ku, Tokyo 108-0074, Japan

Phone: +81-3-6721-6731 (Japanese), 6736 (English) Fax: +81-3-6721-673