

PenMount Development Manual
PenMount Controller
DMC9512

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1. LOGIC INSTRUCTIONS

The instructions here is for "Host" (your computer) to set up the working conditions you would prefer to use. Since DMC9512 processes the instructions from Host in an asynchronous way, at 19200 baud rate, the Host may send instructions at its own needs.

Once the Set-Up has been finished successfully, DMC9512 starts sending point data in accord with the settings.

2. THE WORKING CONDITIONS OF DMC9512

The transmit data packet from DMC9512 controller to host is list as below, it is PEN data (X, Y coordinate):

```

AT PEN DOWN
FF FD FD
FF (000000xx) (xxxxxxxx) (000000yy) (yyyyyyyyyy)
      :
      :
FF (000000xx) (xxxxxxxx) (000000yy) (yyyyyyyyyy)
FF FE FE
AT PEN UP

```

3. INSTRUCTIONS TO DO SET-UP

The transmit message from host to DMC9512 controller and its returned code is list as below:

3.1 THE INSTRUCT FORMAT

The instruction sent from the Host must be in this 5-byte format. The control instructions always start with "D" and "G".

D	G	OP Code	Parameter 1	Parameter 2
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		Length	Value
"D"	Identifier	1 Byte	D
"G"	Identifier	1 Byte	G
OP Code	Operation Code	1 Byte	-
Parameter 1	First parameter	1 Byte	Depending on the OP Code
Parameter 2	Second parameter	1 Byte	Depending on the OP Code

3.2 THE MESSAGE FORMAT (BACK FROM DMC9512)

DMC9512 returns data packets in the following 2 types:

Type 1: Message (All in 3-Byte length)

DMC9512 returns messages in 3 sub-types when a setting function is received from the Host:

ERROR CODE	FFF000 (Hex) means an error occurred during the setting.
SUCCESS CODE	FF7000 (Hex) means a successful settings.
RESPONSE CODE	FF (Hex), Parameter 1, Parameter 2 to echo the received 2 parameters from the Host.

Type 2: Point Data

(Please refer to the Note under 'The working conditions of DMC9512')

DMC9512 sends Pen (Touch) Point Data in these formats.

3.3 THE INSTRUCTIONS SET

(1) Pen Calibration instruction

The instruction set up the assigned available touch panel area and the screen size for converting the panel resolutions into the screen resolutions.

OP Code	02 (Hex)
Parameter 1,2	See the following table

Parameter (in Hex)

1	2	Description	Return from DMC9512 (Hex)
0X	XX	Set screen width	FF 0X XX
1Y	YY	Set screen height	FF 0Y YY
40	XX	Set the X-coordinate of the Left Top corner, Notes: XX is to be used as the lower byte of the X-coordinate while higher byte is set to (00)Hex inside DMC9512 automatically.	FF 40 XX
50	YY	Set the Y-coordinate of the Left Top corner, Notes: YY is to be used as the lower byte of the Y-coordinate while higher byte is set to (00)Hex inside DMC9512 automatically.	FF 50 YY
60	XX	Set the X-coordinate of the Right Bottom corner, Notes: XX is to be used as the lower byte of the X-coordinate while higher byte is set to	FF 60 XX

		(03)Hex inside DMC9512 automatically.	
70	YY	Set the Y-coordinate of the Right Bottom corner.	FF 70 YY
70	YY	Notes: YY is to be used as the lower byte of the Y-coordinate while higher byte is set to (03)Hex inside DMC9512 automatically.	
80	00	Echo a success code	FF 70 00

(2) Send Touch (or Pen) Date Enable/Disable

The instruction set up the assigned DMC9512 can send Touch (or Pen) data or not.

OP Code	0A (Hex)
Parameter 1,2	See the following table

Parameter (in Hex)

1	2	Description	Return from DMC9512 (Hex)
0	0	Disable DMC9512 send Touch (or Pen) data to Host	FF 0A 00
1	0	Enable DMC9512 can send Touch (or Pen) data to Host	FF 0A 01

(3) Read DMC9512 vision

The instruction read DMC9512 version

OP Code	0B(Hex)
Parameter 1,2	See Following table

Parameter (in Hex)

1	2	Return from DMC9512	Description
0	0	FF <u>yy</u> b : <u>szzzt</u> (b: mean is the format in bit)	Production version # = <u>yy</u> From 00 to EF Testing version = <u>szzzt</u> S = # of points sampled 0 = 4 points 1 = 8 points zzz = reserved ttt = Delay time (in 0.5 ms) 0001 = 1 Delay 0010 = 2 Delay

DMC9512 Response:

SUCCESS CODE or ERROR CODE depending on the actual result of the setting operation.

Note:

On doing the calibration, the resolution conversion was mapping into the coordinate on user screen by the following calculation:

$$X = ((X' - X_{min}) / (X_{max} - X_{min})) * (\text{screen width})$$

$$Y = ((Y' - Y_{min}) / (Y_{max} - Y_{min})) * (\text{screen height})$$

X	The X-coordinate on user screen
Y	The Y-coordinate on user screen
X'	The X-coordinate on touch panel
Y'	The Y-coordinate on touch panel
Xmin	The X-coordinate of the Upper-Left corner on touch panel
Xmax	The X-coordinate of the Lower-Right corner on touch panel
Ymin	The Y-coordinate of the Upper-Left corner on touch panel
Ymax	The Y-coordinate of the Lower-Right corner on touch panel

SUCCESS CODE or ERROR CODE depending on the actual results of the setting operation.

4. POWER ON CODE

When power on DMC9512, and then DMC9512 will send POWER-ON code.

POWER-ON CODE:

“FF FC FC”

5. SUGGESTED COMMUNICATION SEQUENCE BETWEEN HOST AND DMC9512

5.1 Set Disable Code

- 1) Host send : 'D' 'G' 0A 00 00 (disable)
- 2) Waiting for DMC9512 response 'FF 0A 00' code

5.2 Set Screen Width and Height to Maximum

- 1) Host send : 'D' 'G' 02 03 FC
- 2) Waiting for DMC9512 controller response 'FF 70 00' code
- 3) Host send: 'D' 'G' 02 13 FC
- 4) Waiting for DMC9512 response 'FF 70 00' code

5.3 Set Calibration Data

- Host send: 'D' 'G' 02 40 XX XX means 03 to FF
- Waiting for DMC9512 response 'FF 70 00' code
- Host send: 'D' 'G' 02 50 YY YY means 03 to FF
- Waiting for DMC9512 response 'FF 70 00' code
- Host send: 'D' 'G' 02 60 XX XX means 03 to FF
- Waiting for DMC9512 response 'FF 70 00' code
- Host send: 'D' 'G' 02 70 YY YY means 03 to FF
- Waiting for DMC9512 response 'FF 70 00' code

5.4 Set Screen Width and Height again

- 1) Host send : 'D' 'G' 02 0X XX XX means 1 to 03FC
- 2) Waiting for DMC9512 response 'FF 70 00' code
- 3) Host send: 'D' 'G' 02 1Y YY YY means 1 to 03FC
- 4) Waiting for DMC9512 response 'FF 70 00' code

5.5 Set Enable Code

- 1) Host send : 'D' 'G' 0A 01 00 (enable)
- 2) Waiting for DMC9512 response 'FF 0A 01' code

Note: It has to be waiting for DMC 9512 controller response after each command sent by host

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