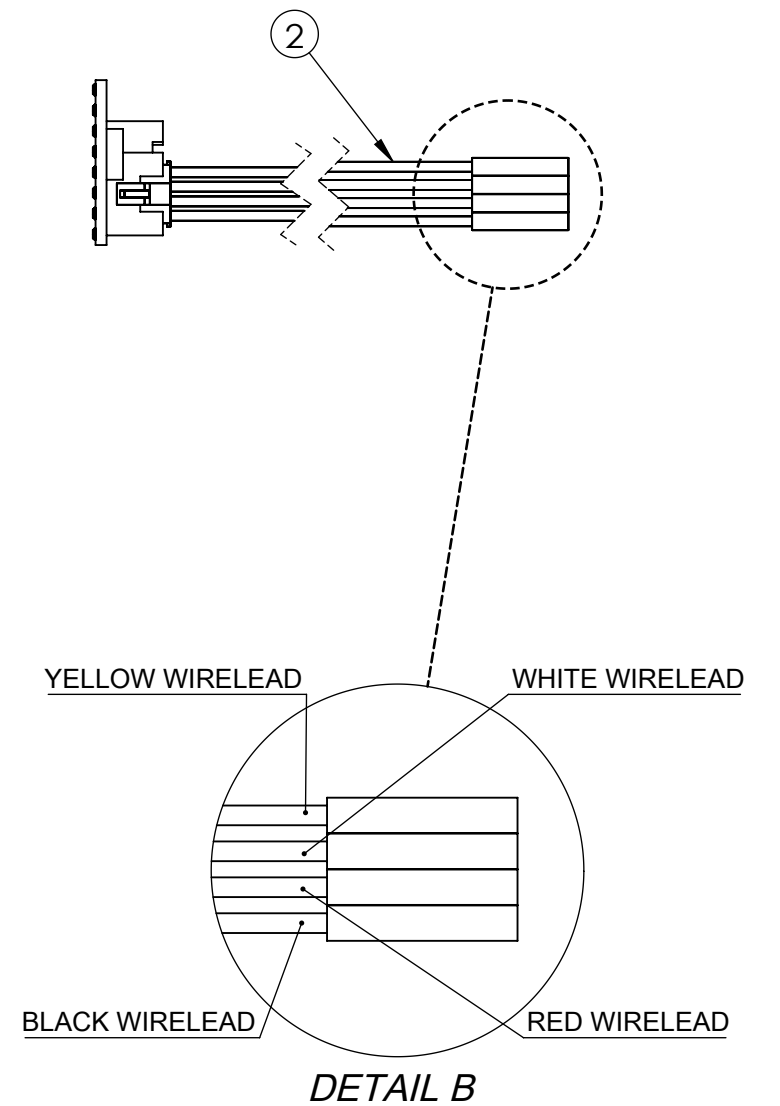
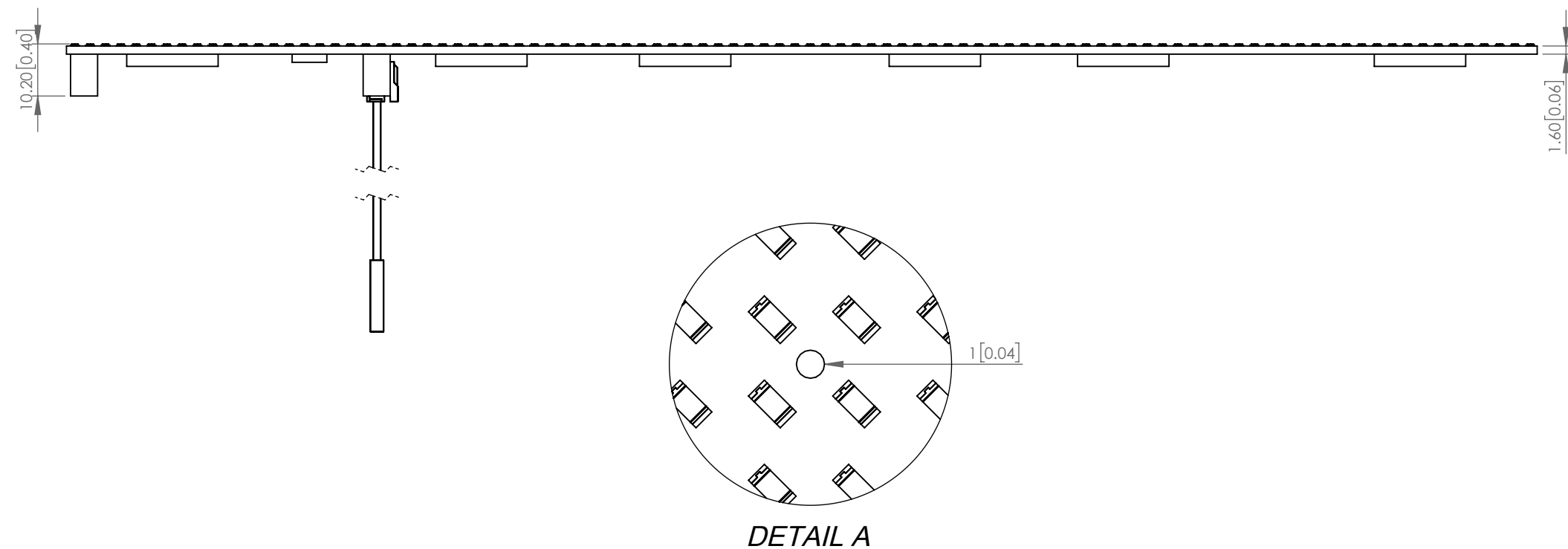
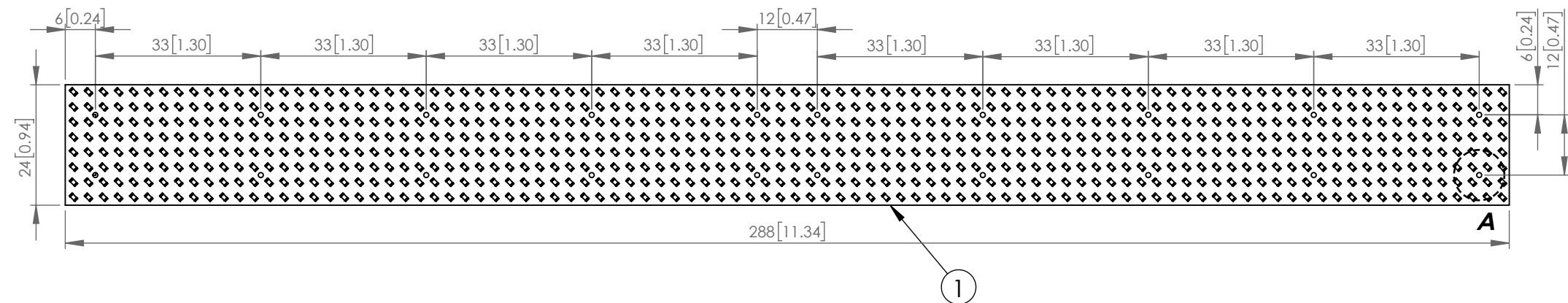




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 LUMEX Creating LED and LCD Solutions Together™	N. GARY AVE. CAROL STREAM, IL 60188 PHONE : 800-278-5666 FAX : 630-315-2150 WEB : WWW.LUMEX.COM425	96 * 8 PIXELS, PCB WITH 768 PCS LEDS * 1		DATE : 2016/09/28	DRAWN BY : E.C.
		THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.		PAGE : 1 OF 8	CHKD BY : K.C.
		CONFIDENTIAL INFORMATION		SCALE : NTF	APRVD BY : R.C.
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BOM :

P/N	ITEM	COMPONENT	QTY
LDM-768-1LT-X	1	LDM-768-1LT-X1-PCB	1
	2	WIRE002	1

P/N INFORMATION :

PART NUMBER	COLOR
LDM-768-1LT-G1	GREEN
LDM-768-1LT-Y1	YELLOW
LDM-768-1LT-R1	RED

WIRELEAD DEFINITION :

COLOR	DEFINITION
YELLOW	TX1
WHITE	RX1
RED	5V
BLACK	GND

LOAD CURRENT & POWER CONSUMPTION WITH ALL LED ON :

Current consumptom	GREEN	YELLOW	RED	UNIT	GREEN	YELLOW	RED	UNIT
All LEDs off	28	28	28	mA	0.14	0.14	0.14	W
Diming level 0	128	302	308	mA	0.64	1.51	1.54	W
Diming level 1	228	420	440	mA	1.14	2.1	2.2	W
Diming level 2	320	550	590	mA	1.6	2.75	2.95	W
Diming level 3	420	670	710	mA	2.1	3.35	3.55	W
Diming level 4	510	790	830	mA	2.55	3.95	4.15	W
Diming level 5	610	900	950	mA	3.05	4.5	4.75	W
Diming level 6	690	1000	1060	mA	3.45	5	5.3	W
Diming level 7	790	1110	1180	mA	3.95	5.55	5.9	W
Diming level 8	870	1200	1290	mA	4.35	6	6.45	W
Diming level 9	950	1310	1390	mA	4.75	6.55	6.95	W
Diming level 10	1010	1390	1490	mA	5.05	6.95	7.45	W
Diming level 11	1115	1490	1590	mA	5.575	7.45	7.95	W

UART CONFIGURATION :

ITEM	SETTING VALUE
BAUD RAT	115200
DATA BIT	8
STOP BIT	1
PARITY BIT	NONE
FLOW CONTROL	NONE

LED ELECTRO-OPTICAL CHARACTERISTICS TA =25 ° :

PARAMETER		MIN	TYP	MAX	UNITS	TEST COND
GREEN LED	PEAK WAVELENGTH		525		nm	If=20mA
	FORWARD VOLTAGE	2.7	3.3	3.7	Vf	If=20mA
	REVERSE VOLTAGE			5.0	Vr	Ir=20uA
	LUMINOUS INTENSITY	140		450	mcd	If=20mA
	VIEWING ANGLE		120		2x theta1/2	If=20mA
	EMITTED COLOR	GREEN				
EPOXY LENS FINISH		WATER CLEAR				
YELLOW LED	PEAK WAVELENGTH		591		nm	If=20mA
	FORWARD VOLTAGE	1.7	2.0	2.4	Vf	If=20mA
	REVERSE VOLTAGE			5.0	Vr	Ir=20uA
	LUMINOUS INTENSITY	16	40		mcd	If=20mA
	VIEWING ANGLE		100		2x theta1/2	If=20mA
	EMITTED COLOR	YELLOW				
EPOXY LENS FINISH		WATER CLEAR				
RED LED	PEAK WAVELENGTH		632		nm	If=20mA
	FORWARD VOLTAGE	1.7	2.0	2.4	Vf	If=20mA
	REVERSE VOLTAGE			5.0	Vr	Ir=20uA
	LUMINOUS INTENSITY	37	56		mcd	If=20mA
	VIEWING ANGLE		100		2x theta1/2	If=20mA
	EMITTED COLOR	RED				
EPOXY LENS FINISH		WATER CLEAR				

LED LIMITS OF SAFE OPERATION AT 25 ° :

PARAMETER		MAX	UNITS
GREEN LED	PEAK FORWARD CURRENT	100	mA
	FORWARD CURRENT	25	mA
	POWER DISSIPATION	95	mW
	ELECTROSTATIC DISCHARGE	150	V
	OPERATING TEMP	-40~+85	°C
	STORAGE TEMP	-40~+90	°C
	SOLDERING TEMP	MAX +260°C @3 SEC	
YELLOW LED	PEAK FORWARD CURRENT	60	mA
	FORWARD CURRENT	25	mA
	POWER DISSIPATION	60	mW
	ELECTROSTATIC DISCHARGE	2000	V
	OPERATING TEMP	-40~+85	°C
	STORAGE TEMP	-40~+90	°C
	SOLDERING TEMP	MAX +260°C @3 SEC	
RED LED	PEAK FORWARD CURRENT	60	mA
	FORWARD CURRENT	25	mA
	ELECTROSTATIC DISCHARGE	2000	V
	POWER DISSIPATION	60	mW
	OPERATING TEMP	-40~+85	°C
	STORAGE TEMP	-40~+90	°C
	SOLDERING TEMP	MAX +260°C @3 SEC	

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				PART NUMBER	LDM-768-1LT-X1	REV.	--
COMMAND LIST :				void Write_AT_Command(char *string) { Serial.print(string); while (Serial.read() != 'E') {} delay(2); }			
Code	Function	Instruction of AT Command mode	API for Arduino	API of using Write_AT_Command() subroutine above			
N/A	Sent a image(192X64 bitmap) to LED Display (An array consist of 1536 bytes bitmap information)	1. A ""for"" loop to send 1536 bytes user define display information 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	for (i = 0 ; i < 1536; i++) { Serial.write(User_define_array[i]); } while (Serial.read() !='E') {} delay(2);				
0x80	Write a 5X7 Character	1. AT80=(line,column,Character) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT80=(0,0,A)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT80=(0,0,A)")			
0x81	Write a 8X8 String	1.AT81=(line,column,String) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT81=(0,0,ABCD1234)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT81=(0,0,ABCD1234)")			
0x82	Write a 8X16 Character	1.AT82=(line,column,Character) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT82=(0,0,A)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT82=(0,0,A)")			
0x83	Write a 8X16 String	1.AT83=(line,column,String) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT83=(0,0,ABCD1234)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT83=(0,0,ABCD1234)")			
0x84	Dsisplay a 8X8 pattern	1. AT84=(X position,Y position,pattern ID) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT84=(16,32,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT84=(16,32,1)")			
0x85	Dsisplay a 8X16 pattern	1.AT85=(X position,Y position,pattern ID) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT85=(16,32,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT85=(16,32,1)")			
0x86	Dsisplay a 16X16 pattern	1. AT86=(X position,Y position,pattern ID) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT86=(16,32,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT86=(16,32,1)")			
0x87	Dsisplay a 32X32 pattern	1. AT87=(X position,Y position,pattern ID) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT87=(16,32,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT87=(16,32,1)")			

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Code	Function	Instruction of AT Command mode	API for Arduino	API of using Write_AT_Command() subroutine above
0x90	Draw a line	1. AT90=(X0 position,Y0 position,X1 position,Y1 position,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT90=(0,0,127,63,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT90=(0,0,127,63,1)")
0x91	Draw a Rectangle	1. AT91=(X0 position,Y0 position,X1 position,Y1 position,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT91=(10,10,100,49,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT91=(10,10,100,49,1)")
0x92	Draw a filled Rectangle	1. AT92=(X0 position,Y0 position,X1 position,Y1 position,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT92=(10,10,100,49,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT92=(10,10,100,49,1)")
0x93	Draw a Square	1. AT93=(X position,Y position,Width,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT93=(8,10,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT93=(8,10,30,1)")
0x94	Draw a Circle	1. AT94=(X position,Y position,Radius,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT94(64,32,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT94(64,32,30,1)")
0x95	Draw a filled Circle	1. AT95=(X position,Y position,Radius,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT95=(64,32,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT95=(64,32,30,1)")
0x96	Draw a tip upward Triangle	1. AT96=(X position,Y position,Height,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT96=(64,10,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT96=(64,10,30,1)")
0x97	Draw a filled tip upward Triangle	1. AT97=(X position,Y position,Height,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT97=(64,10,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT97=(64,10,30,1)")
0x98	Draw a tip downward Triangle	1. AT98=(X position,Y position,Height,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT98=(64,50,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT98=(64,50,30,1)")
0x99	Draw a filled tip downward Triangle	1. AT99=(X position,Y position,Height,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT99=(64,50,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT99=(64,50,30,1)")
0x9a	Draw a tip leftward Triangle	1. AT9a=(X position,Y position,Width,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT9a=(16,32,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT9a=(16,32,30,1)")

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96 * 8 PIXELS, PCB WITH 768 PCS LEDS * 1

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DATE : 2016/09/28

DRAWN BY : E.C.

PAGE : 4 OF 8

CHKD BY : K.C.

SCALE : NTF

APRVD BY : R.C.

UNIT : mm [INCH]

				PART NUMBER	LDM-768-1LT-X1	REV.	--
Code	Function	Instruction of AT Command mode	API for Arduino	API of using Write_AT_Command() subroutine above			
0x9b	Draw a filled tip leftward Triangle	1. AT9b=(X position,Y position,Width,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT9b=(16,32,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT9b=(16,32,30,1)")			
0x9c	Draw a tip rightward Triangle	1. AT9c=(X position,Y position,Width,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT9c=(120,32,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT9c=(120,32,30,1)")			
0x9d	Draw a filled tip rightward Triangle	1. AT9d=(X position,Y position,Width,0 or 1) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT9d=(120,32,30,1)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT9d=(120,32,30,1)")			
0x9e	Set a pixel for positive display (show pixel)	1. AT9e=(X position,Y position) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT9e=(120,32)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT9e=(120,32)")			
0x9f	Set a pixel for negative display (clear pixel)	1. AT9f=(X position,Y position) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("AT9f=(120,32)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("AT9f=(120,32)")			
0xa0	Display image row by row Up Ward	1. ATa0=(Speed in ms) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("ATa0=(20)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("ATa0=(20)")			
0xa1	Display image row by row Down Ward	1. ATa1=(Speed in ms) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("ATa1=(20)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("ATa1=(20)")			
0xa2	Display image column by column Left Ward	1. ATa2=(Speed in ms) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("ATa2=(20)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("ATa2=(20)")			
0xa3	Display image column by column Right Ward	1. ATa3=(Speed in ms) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("ATa3=(20)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("ATa3=(20)")			
0xa4	Erase image row by row Up Ward	1. ATa4=(Speed in ms) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("ATa4=(20)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("ATa4=(20)")			
0xa5	Erase image row by row Down Ward	1. ATa5=(Speed in ms) 2. Wait until receive a module available byte ('E') from LED Display 3. Wait 2ms	Serial.print("ATa5=(20)"); while (Serial.read() !='E') {} delay(2);	Write_AT_Command("ATa5=(20)")			
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					SCALE : NTF	APRVD BY : R.C.	
					UNIT : mm [INCH]	Pb	

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