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M3 Controller MCTRL660 User Manual





For Rental Market

Xi' an NovaStar Tech Co., LTD

1 Overview

MCTRL660, NovaStar's latest independent master control, is mainly applied to screen leasing. It adopts an innovative architecture to implement smart configuration; the screen debugging can be completed within 30 seconds. It adopts the Nova G4 engine; the screen is stable and flicker free without scanning lines; the images are exquisite and have a good sense of depth. It supports Nova's new-generation point-by-point correction technology; the correction is fast and efficient. It can implement white balance calibration and color gamut mapping based on different features of LEDs used by screens to ensure reproduction of true colors. It is the only control system supporting the input of 12-bit high-definition multimedia interface (HDMI) and high-bandwidth digital content protection (HDCP) in China. It supports screen configuration at any time without a computer. It supports manual adjustment of the screen brightness, which is convenient and efficient. These features satisfy the special needs of screen leasing to the maximum extent.



2 Product Appearance and Interfaces

ON MCTRL660 Rus LED Duplay Controller STA	DVI IN 50% HDMIIN 50% Master 1 2 3 4 EDID RES: 1920×10800H60Hz
ON MCTRL660 LED Display Controller OFF	MENU Master 1 2 3 4 EDID RES: 1920×1080@60Hz
PWR : Indicate the power indicator.	Operation screen:
RUN: Indicate equipment running indicator	A DVI IN D O: 50%
1. It blinks quickly when no video source is	B Master E 1 2 3 4 C EDID RES: 1920×1080@60Hz
available and blinks normally when a video	A. Indicate access of a video source on the
source is available. when the redundancy	UDMI It blinks in the case of no video
works, the indicator fades gradually.	HDIMI. It blinks in the case of no video
STA : Indicate equipment running indicator 2.	source input.
It is steady on when the aquipment runs	B. Indicate that the machine is in the master
It is steady on when the equipment funs	mode.
normally and blinks during authorization.	C. Indicate that the resolution is 1920 pixels x
Button: Press the button to enter the option	1080 nivels and that the frame frequency
and rotate the button to conduct selection or	1000 pixels and that the frame frequency
adjustment.	is 60 Hz.
S . wit from the surrout operation or	D. Indicate that the current brightness of the
. exit from the current operation of	screen is 50%.
option.	E. Indicate that network interface 2 has
	loads.



	NY OUT DVI IN DVI IN TO PO AUDIO HONI IN HONI IN TO PO AUDIO UART OUT AC 100-240V-50/60HZ UART OUT AC 100-240V-50/60HZ
	OUT DVIIN IDUI HDMIIN TO PC AUDIO HDMIIN TO PC AUDIO UART OUT AC- 100-240V-50/60HZ
DVI OUT : Indicate the digital visual interface	TO PC : Indicate the interface for connecting the
(DVI) output interface.	computer.
DVI IN : Indicate the DVI input interface.	AUDIO : Indicate the audio input interface.
OUT1-OUT2 : Indicates output by four network	UART IN : Indicate the cascading input interface of
interfaces.	serial ports.
HDMI OUT: Indicate the HDMI output interface.	UART OUT: Indicate the cascading output
HDMI IN : Indicate the HDMI input interface.	interface of serial ports.
	AC-100-240V-50/60HZ: Indicate the AC power interface.

3 Operation Instructions

All operations on the MCTRL660 are implemented through the button and return key.

Button: Press the button to enter a menu. After entry into a menu, rotate the button to adjust the value or

select a submenu.

Return key: Press the return key to exit from the current menu or operation.



4 Procedure

4.1 Step 1: Connecting the Hardware

Connect the hardware by referring to the interface description in Chapter 2.

4.2 Step 2: Screen Configuration

- The screen being power-on, if the cabinet is in normal display, enter into step 2); if the cabinet is in abnormal display, first load the cabinet file, and fix it to the receiving card; see detailed operation in 4.5 Advanced Setting .
- 2) Return to the **"Screen Configuration"** submenu. Rotate the button to switch to submenus of other options respectively to perform configurations, as shown in the following figures:



- a) Set **Cabinet Row Num** and **Cabinet Col Num** according to the actual situation of the screen.
- b) Set Cabinet Out1 Num. The device has some limitations on the cabinet quantity of



network interfaces. For details, see precautions for screen setting i).

- c) Set the alignment of the screen. Pay attention to precautions for screen setting iii), iv) and v) below.
- d) Set the resolution of the video source.



ii. In the case of special-shaped cabinets, different cabinet sizes and special-shaped screen, the NovaLCT-Mars software is required to be connected to configure the screen.

iii. During connection setting, you can rotate the button to see the effects of different connections on the screen in real time. If you are satisfied with the connection, you must press the button to save the setting. You can press the return key to exit from the current operation.

- iv. During connection setting, you must ensure that the connection of each network interface is downward in the same direction.
- v. During connection setting, you must ensure that network interface 1 is the start position of the

whole connection.

4.3 Step 3: Adjusting the Brightness of the Screen

Return to the main menu interface. Press the button to select the corresponding value. You can rotate the

Brightness

Screen Configuration

Advanced Setting

Display Control

button to adjust the brightness at this time.



4.4 Setp4 Input Resolution

Namely the resolution of home page display of interface, which must be in coincidence with output

resolution of video source.



50%



After step 4 is completed, you can turn on the screen and normally use the screen. To achieve better

display effects, you can continue to set other parameters.

You can set other parameters by referring to Section 4.5 "Advanced Setting."

4.5 Advanced Setting

4.5.1 load Cabinet Files

After the screen is powered on, if the cabinet fails to display normally, you must load cabinet files first. The cabinet files must be sent to the MCTRL660 through the NovaLCT-Mars beforehand. The following figures show the procedure:

(stem(S)	Tools(C)	Plug-in To	ool(P) Us	er(U) Lang	juage(Lang))(L) Help(H	4)	
3rightness	Display C	Control M	onitor Fur	ction Card	R			
cal System	Info							
Control Sv	ctom:	1	Other	Device:	0	View	/ Detail	
Condition	stem.		Office				Detail	
onitor Info	III-		D		69	-		



NovaLCT-Mars V3.2.2 RT5.0.0 T1	
System(S) Tools(C) Plug-in Tool(P) User(U) Language(Lang)(L) Help(H) Image: System Signal System Info Image: System Info	
Control System: 1 0 admin Monitor Info Login Cancel	
Server Status: Server Version:2.0	
Screen Config Brightness Calibration Display Control Monitor Function Card Local System Info Control Svstem: 1 Other Device: 0 View Detail	
erver Status: Server Version:2.0	
Screen Config Select Serial Port Current Serial Port. COM4 Select the corresponding port of the MCTRL660.	ng COM
Config Screen	rowse



Module Info Chip:	Part out outfloc							
Chip:								
	MBI5036 Sir	ze:	32W×16H	Sca	n Type:	1/2 scan		
Direction:	Horizontal De	code Type:	74HC138 Deco	ding Dat	a Group:	2		>>
Cabinet Info				11 - 17 - 17 - 17 - 17 - 17 - 17 - 17 -				
Regular		_		egular	_			
Pixel Width:	128 -11	99 Plea	ise 🔺 🕅	ldth: 22	Height	t 22	Diago	
Pixel Height	128 - <=1	28 the wi	sure	oading error. F	lease adi	ust perform.	make st	ure
Module Casc.	Right to Left	and he	eight 🖕	Construct	Wi	iew Cabinet	and hei	ght -
erformance Setti	ng							
Group Swap	More Setting							
Refresh Rate:	60 👻	Hz	Accelerate R	1	•			
Gray Scale:	Normal 8192 👻		Gray Mode:	Gray First	+			
Data Clock:	12.5 -	MHz	Data Duty:	50	-	(25~75) %		
Clock Phase:	6 🔹		Low Gray Co	0				
Blanking Time:	15	(=1.20us)	Ghost Contro	13		(1~14)		
Line Change T	3	(0~12)						
	L	and a						
Brightness Effi	52.69%		Min OE:	496 ns				
Smart Setting			Load File	Save F	ile Re:	ad From HW	Send To H	W
				Sa	ive Config	File	Save	Close
				Sa	ave Config	File	Save	Close
lovaLCT-Mars	V3.2.2 RT5.0.0 T1	10		Sa	ive Config	File	Save	Close
lovaLCT-Mars	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To	ol(P) User	(U) Language	e(Lang)(L)	Help(H)	File	Save	Close
lovaLCT-Mars stem(S) Too	V3.2.2 RT5.0.0 T1 IS(C) Plug-in To Screen Config(S)	al(P) Useri	(U) Language	e(Lang)(L)	Help(H)	File	Save	Close
lovaLCT-Mars stem(S) Too	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B)	al(P) Usen	(U) Language	e(Lang)(L)	Help(H)	File	Save	Close
IovaLCT-Mars stem(S) Too	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B) Cabinet Database Calibration(C)	ol(P) Useri	(U) Language trol M	e(Lang)(L) Ionitor Fur	Help(H)	File	Save	Close
IovaLCT-Mars stem(S) Too reen Conf al System	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B) Cabinet Database Calibration(C) Display Control/P	ai(P) Useri e(L)	(U) Language Irol M	e(Lang)(L) Jonitor Fur	Help(H)	File and	Save	Close
IovaLCT-Mars stem(S) Too reen Conf al System Control Sv	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B) Cabinet Database Calibration(C) Display Control(P Monitor(M)	ol(P) Usen e(L) ')	(U) Language Irol M	e(Lang)(L) ionitor Fur	Help(H)	File rd	Save	Close
IovaLCT-Mars stem(S) Too reen Conf al System Control Sv	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B) Cabinet Database Calibration(C) Display Control(P Monitor(M) Function Card(F)	ol(P) Useri e(L)	(U) Language Irol M	e(Lang)(L) Ionitor Fur	Help(H)	rd Detail	Save	Close
IovaLCT-Mars stem(S) Too reen Cont al System Control Sy nitor Info	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B) Cabinet Database Calibration(C) Display Control(P Monitor(M) Function Card(F) Hardware Informa	oi(P) Useri e(L)))	(U) Language Irol M	e(Lang)(L) lonitor Fur	Help(H)	rd Detail	Save	Close
IovaLCT-Mars stem(S) Too reen Conf al System Control Sy nitor Info	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B) Cabinet Database Calibration(C) Display Control(P Monitor(M) Function Card(F) Hardware Informa Multiple Screen M	ol(P) Usen e(L) ') ation(H) lanagement(A	(U) Language trol M	e(Lang)(L) Jonitor Fur	Help(H)	rd Detail	Save	Close
IovaLCT-Mars stem(S) Too reen Conf al System Control Sy nitor Info	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B) Cabinet Database Calibration(C) Display Control(P Monitor(M) Function Card(F) Hardware Informa Multiple Screen M Point Detect(T)	ol(P) Usen e(L) ') ation(H) lanagement(A	U Language rol M	e(Lang)(L) Ionitor Fur	Help(H)	rd Detail	Save	
IovaLCT-Mars stem(S) Too reen Cont al System Control Sy httor Info	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B) Cabinet Databasi Calibration(C) Display Control(P Monitor(M) Function Card(F) Hardware Informa Multiple Screen M Point Detect(T) Prestore Picture(F	al(P) User e(L))) ation(H) lanagement(A R)	(U) Language Irol M	e(Lang)(L) lonitor Fur	Help(H)	rd Detail	Save	
IovaLCT-Mars stem(S) Too reen Conf al System Control Sy nitor Info	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B) Cabinet Database Calibration(C) Display Control(P Monitor(M) Function Card(F) Hardware Informa Multiple Screen M Point Detect(T) Prestore Picture(F Color Restore(O)	ol(P) Usen e(L))) ation(H) lanagement(A R)	(U) Language Irol M	e(Lang)(L)	Help(H)	rd Détail	Save	
IovaLCT-Mars stem(S) Too reen Conf al System Control Sy nitor Info	V3.2.2 RT5.0.0 T1 Is(C) Plug-in To Screen Config(S) Bightness(B) Cabinet Database Calibration(C) Display Control(P Monitor(M) Function Card(F) Hardware Informa Multiple Screen M Point Detect(T) Prestore Picture(F Color Restore(O) Light Panel Flash	ol(P) Usen e(L) ') ation(H) lanagement(A R)	(U) Language Irol M	e(Lang)(L) ionitor Fur	Help(H)	rd Detail	Save	



Serial Fort: COM4	Serial Port: COM4 -	
	Move Up P6-file Mo P8-file Mo Move Down Mov	ve Vp e Down
Add Config File Delete Config	Add Config File Delete Config	

Tip: After the **MCTRL660 Setting** interface is displayed, the NovaLCT-Mars automatically reads the existing configuration files in the MCTRL660. The NovaLCT-Mars can perform operations such as modification of file name, adjustment of file order and deletion to these files.

Perform operations on the MCTRL660. Rotate the button to select "Advanced Setting" and then press the button. The "Advanced Setting" submenu is displayed. Rotate the button to select "Load RCFG Files" and the Press the button again. as shown in the following figures. The cabinet files imported by the NovaLCT-Mars already exist in the MCTRL660. Select the cabinet file of the corresponding specifications and then press the button to send the file to all the cabinets of the MCTRL660.



Brightness Screen Configuration Advanced Setting Display Control

50%

Offset Image Quality Input Resolution Redundancy Backup

Load RCFG Files Save To Hardware Smart Gray Mode Enable Restore Factory Settings

P6-file P3-file

Press the return key to return to the **"Advamced Setting"** submenu. Rotate the button to select **"Save To Hardware**" and then press the button to fix the cabinet file to the receiving card.

4.5.2 Other parameters

Press the return key to return to the main menu. Rotate the button to select **Advanced Setting** and then press the button. The **Advanced Setting** submenu is displayed. Rotate the button again. The eight setting options under the **Advanced Setting** submenu are displayed. You need only to set the following parameters: **Offset**, **Image Quality**, **Redundancy Backup**, and **Smart Gray Mode**.



	Brightness Screen Configuration <mark>Advanced Setting</mark> Display Control	50%	Offset Image Quality Input Resolution Redundancy Backup	
			Load RCFG Files Save To Hardware Smart Gray Mode E Restore Factory Setting	nable s
1) Adji	Offset ust the initial coordinate of picture	s on the screen.		
	Offset Image Quality Input Resolution Redundancy Backup		Horizontal X Vertical Offset Y	0
2)	Image Quality			

Image Quality ر ۲

Adjust Gamma, Contrast, Saturation and Hue of the screen.



3) Redundancy Backup

Set this controller to the master mode or backup mode when the system has multiple controllers.





4) Smart Gray Mode

This parameter is set to be off by default. To successfully enable this function, you must load the

configuration files first. Currently, only non-pulse-width modulation (PWM) chips are supported.



Load RCFG Files Save To Hardware Smart Gray Mode Enable Restore Factory Settings

4.6 Display control



1) Normal

The screen is restored to normal display.



2) Black Out

The screen is black out, then the home page display of MCTRL660 operation screen is as follows:



3) Freeze

Screen freezes, then the home page display of MCTRL660 operation screen is as follows:



4) Test Mode

The screen shall be tested through four colors (red, green, blue and white) and four shapes.



Then the home page display of MCTRL660 operation screen is as follows:





4.7 Language Setting

Language	► 1	 <mark>中文/Chiness</mark> English/英文	

5 Hardware Program updating

MCTRL660 connect to a computer, and run NovaLCT-Mars on this computer, Login as an advanced user

and type in **admin** on the NovaLCT-Mars main interface to open the page for updating the hardware

program.

System(S)	Tools(C) F	Plug-in Too	ol(P) Use	er(U) Lan <u>c</u>	juage(Lang)	(L) Help(H	4)		
Brightness	Display Cor	ntrol Mo	nitor Fun	ction Card					
ocal System	Info								
Control Svs	stem: 1		Other [Device:	0	View	/ Detail		
Control Svs	stem: 1		Other I	Device:	0	View	/ Detail		
Control Svs onitor Info	stem: 1		Other I	Device:	0	View	v Detail	F	



	.2.2 RT5.0.0 T1							
System(S) Tools(C) Plug-in Tr	ool(P) Use	r(U) Lan Advanced I	guage(Lang)(Login(A)	(L) Help(H))		
ocal System Info	ay control M		Jser Login	-				
Control System:	1	o	Passw	admin	6			
Aonitor Info			1					
E (E	111	B	Log	gin	Cancel			
0 0	0	0	0			0	0	0
erver Status: Server	Version:2.0							
NovaLCT-Mars V3	.2.2 RT5.0.0 T1			-				
NovaLCT-Mars V3 System(S) Tools(.2.2 RT5.0.0 T1 C) Plug-in T	ool(P) Use	r(U) Lan	iguage(Lang)	(L) Help(H	1)	0	
NovaLCT-Mars V3 System(S) Tools(.2.2 RT5.0.0 T1 C) Plug-in T	ool(P) Use	r(U) Lan	iguage(Lang)	(L) Help(H	4)	0	
NovaLCT-Mars V3 System(S) Tools(.2.2 RT5.0.0 T1 C) Plug-in T	ool(P) Use	r(U) Lan	iguage(Lang)	(L) Help(H	4)		
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NovaLCT-Mars V3 System(S) Tools(Constant Screen Config Bri ocal System Info	2.2 RT5.0.0 T1 C) Plug-in Tr C) ghtness Cali	ool(P) Use	er(U) Lan	oguage(Lang)	(L) Help(F	4) ard		
NovaLCT-Mars V3 System(S) Tools(Config Bri ocal System Info Control System:	2.2 RT5.0.0 T1 C) Plug-in To C ghtness Cali	ool(P) Use	r(U) Lan	oguage(Lang)	(L) Help(F	1) ard		
NovaLCT-Mars V3 System(S) Tools(Screen Config Bri ocal System Info Control System:	2.2 RT5.0.0 T1 C) Plug-in Tr C) ghtness Cali	ool(P) Use	r(U) Lan	nguage(Lang) bl Monitor	(L) Help(H Function C View	4) ard Detail		
NovaLCT-Mars V3 System(S) Tools(Control System: Ionitor Info	2.2 RT5.0.0 T1 C) Plug-in To control Plug-in To con	ool(P) Use	r(U) Lan	oguage(Lang) ol Monitor	(L) Help(H	4) ard / Detail		
NovaLCT-Mars V3 System(S) Tools(Screen Config Bri ocal System Info Control System: Ionitor Info	2.2 RT5.0.0 T1 C) Plug-in Tr ghtness Cali 1	ool(P) Use	er(U) Lan	nguage(Lang) bl Monitor 0	(L) Help(H Function C View	4) ard Detail		
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NovaLCT-Mars V3 System(S) Tools(Control System: Nonitor Info	2.2 RT5.0.0 T1 C) Plug-in To ghtness Cali	ool(P) Use	er(U) Lan	ol Monitor	(L) Help(H	4) ard / Detail		
NovaLCT-Mars V3 System(S) Tools(Screen Config Bri ocal System Info Control System: Ionitor Info	2.2 RT5.0.0 T1 C) Plug-in To ghtness Cali 1	ool(P) Use	r(U) Lan	nguage(Lang) ol Monitor	(L) Help(H	I) ard Detail		
NovaLCT-Mars V3 System(S) Tools(Control System Info Control System: Ionitor Info Control System:	2.2 RT5.0.0 T1 C) Plug-in To diagonal diagonal ghtness Cali 1 Version:2.0	ool(P) Use	rr(U) Lan	nguage(Lang) ol Monitor	(L) Help(H	I) ard Detail		

NOVASTAR

d Program		-	1.000	2.481	1.000	Contract of the local division of the local	and the second second	-
Load Program								
Choose Serial Port	Operation							
Current Serial Port	COM4	-	Device Count	1				
Select Program								
Program Name:	Ver							
Program Version:								
Prooram Path:	D.WovaLCT	-Mars Data Mars S	_V3.1.1Test\De	ta Mare S.VO.	ITest			
Select Items To Loa	d							
🖾 Sending Board	MCU 🔲 S	ending Board FP	GA	Scan Boa	ard FPGA		ange Rec	onnect
Hardware Version Inf	o Refresh One	Sending Board	p1 📑 Po	nt T	Scan Board		Re	fre str
Sending Board MCU	Sending Board FP	GA Scan Board Fi	PGA			*		
Communication Info	C						-	
2013/11/22 11:28:51	-Reconnect cont	rol system succe	eđ,				- 1	
2013/11/22 11:29:21	-Reconnect.com	rol system succei	ed.					
							-0	lear

Current Serial Port

Select the serial port through which the hardware to be updated is connected to the computer.

Program Path

Select the program to be loaded to the hardware here.

Sending Board MCU

Select this option if the MCU program of a sending board is to be updated.

Sending Board FPGA

Select this option if the FPGA program of a sending board is to be updated.

Scan Board FPGA



Select this option if the FPGA program of a scan board is to be updated.

Change

Click this button to load the selected program to the selected hardware.

Refresh All

If this option is selected, the version information of all sending boards and scan boards connected to the

current serial port will be refreshed when click the **Refresh** button.

Refresh One

If this option is selected, only the version information of the selected scan board will be refreshed when

click the **Refresh** button.

Refresh

Click this button to show the current version information of the hardware. This can be used to check whether the hardware program has been updated.

6 FAQ and Precautions

- Currently, this product only supports no-computer configuration for the rectangular screen composed of the cabinets of the same size and the same specification. The special-shaped cabinets and screens require online configuration.
- 2) You are recommended not to concurrently perform the no-computer operation and online operation for a screen.