

Crystal v2.2.2 Compatibility List

Document History

FW version	Date	Change List
V2.0.3	20121104	Initial
V2.1.0	20140528	Support new model of HDD: <ol style="list-style-type: none"> 1. Seagate 4T Surveillance (SV35) 2. Seagate Video 3.5 series of HDD(3T/4T) 3. WD Purple series of HDD (1T/2T/3T/4T)
V2.1.4	20140825	Support new model of HDD: <ol style="list-style-type: none"> 1. Seagate Constellation CS (4T/3T/2T/1T) 2. WD RE(3T) Add the test list of graphic card.
V2.1.4	20141114	Add Seagate SV35, Surveillance + SRS support
V2.2.0	20141224	Add compatible hard drives: <ol style="list-style-type: none"> 1. Seagate: ST6000NM0024 (6TB) 2. Toshiba: MD03ACA400V (4TB) 3. Seagate: ST4000VM000 (4TB) Add supported keyboard/joystick: <ol style="list-style-type: none"> 1. Videotec: DCZ keyboard 2. CH Products: VM Desktop
V2.2.1	20150121	Add appendix A and appendix B to introduce how to configure and use supported joystick and keyboards
V2.2.2	20150420	Add compatible hard drives: Seagate: ST6000VN001; ST6000VX001; S4000NC001

Compatibility list included versions in this build are:

CT-4000/CT-4000R		
Initial	V2.0.3	CT-4040_2.0.0_0074_1042.bin
	V2.1.0	CT-4000(R)_2.1.0_0024_1823.bin
	V2.1.4	CT-4000(R)_2.1.4_0047_1507.bin
	V2.2.0	CT-4000(R)_2.2.0_0023_1436.bin

CT-8000R/CT-8000RP		
Initial	V2.0.3	CT-8000R_2.0.0_0074_1044.bin
	V2.1.0	CT-8000R(P)_2.1.0_0024_1826.bin
	V2.1.4	CT-8000R(P)_2.1.4_0047_1511.bin
	V2.2.0	CT-8000R(P)_2.2.0_0023_1442.bin

1. Hard Drives

There are several product segments in hard drive industry such as Enterprise grade, Surveillance grade, Green series and the other consumer desktop hard drives. NUUO recommends system designers choose Enterprise grade or Surveillance grade drives to ensure high storage stability and performance. 24 x 7 operational capabilities are also important because your surveillance system is running around the clock.

Enterprise grade drives are recommended when the configuration of RAID (Redundant Array of Independent Disks) is required. Furthermore, to avoid vibration issue, please consider the maximum HDD number per storage system for system vibration tolerance, for example, if there are more than 5 HDDs in this storage system, please choose Enterprise grade drives or any HDD that has built-in RV Sensor. Enterprise grade drives are also highly recommended for rack-mount storage system or any industrial environments where are always full of vibrations.

Green series hard drives should never be used with NUUO recorders to avoid data lost due to long wake up time from a sleeping drive. Consumer desktop series hard drives should be avoided with NUUO recorders because it's suitable for 8x5 environments only. It's different from your surveillance needs.

Enterprise

Vendor	Family	Model	Capacity	Interface	Firmware
Seagate	Constellation ES.3	ST6000NM0024 (!)	6TB	SATA 6Gb/s	SN02
		ST4000NM0033	4TB	SATA 6Gb/s	0001
		ST3000NM0033	3TB	SATA 6Gb/s	0001
		ST2000NM0033	2TB	SATA 6Gb/s	0001
		ST1000NM0033	1TB	SATA 6Gb/s	0001
	Constellation ES	ST3500514NS	500GB	SATA 3Gb/s	SN12
		ST31000524NS	1TB	SATA 3Gb/s	SN12
	Constellation CS	ST4000NC000	4TB	SATA 6Gb/s	CE02
		ST3000NC000	3TB	SATA 6Gb/s	CE02
		ST2000NC000	2TB	SATA 6Gb/s	CE02
		ST1000NC000	1TB	SATA 6Gb/s	CE02
		ST4000NC001 (*)	4TB	SATA 6Gb/s	CN03
	Enterprise NAS + SRS	ST6000VN0011 (*)	6TB	SATA 6Gb/s	AN02
Enterprise NAS	ST6000VN0001 (*)	6TB	SATA 6Gb/s	AN02	
WD	RE	WD4000FYYZ	4TB	SATA 6Gb/s	01.0
		WD3000FYYZ	3TB	SATA 6Gb/s	01.0
		WD2003FYYS	2TB	SATA 3Gb/s	01.0
		WD1003FBYX	1TB	SATA 3Gb/s	01.0
		WD5003ABYX	500GB	SATA 3Gb/s	01.0
	SE	WD4000F9YZ	4TB	SATA 6Gb/s	01.0
		WD3000F9YZ	3TB	SATA 6Gb/s	01.0
		WD2000F9YZ	2TB	SATA 6Gb/s	01.0
Toshiba	MD03ACAxxx	MD03ACA400V	4TB	SATA 6Gb/s	FL1V
	MG04ACAxxx	MG04ACA500E	5TB	SATA 6Gb/s	FP3B
	MG03ACAxxx	MG03ACA300	3TB	SATA 6Gb/s	FL1A
		MG03ACA200	2TB	SATA 6Gb/s	FL1A

		MG03ACA100	1TB	SATA 6Gb/s	FLOA
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Video Surveillance

Vendor	Family	Model	Capacity	Interface	Firmware	
Seagate	SV35 + SRS	ST3000VX004	3TB	SATA 6Gb/s	CV26	
		ST2000VX004	2TB	SATA 6Gb/s	CV26	
		ST1000VX002	1TB	SATA 6Gb/s	CV26	
	Video	ST4000VM000	4TB	SATA 6Gb/s	SC25	
	Surveillance	ST4000VX000	4TB	SATA 6Gb/s	CV13	
		ST6000VX0001 (*)	6TB	SATA 6Gb/s	VN02	
		ST4000VX002	4TB	SATA 6Gb/s	CV13	
	Surveillance + SRS	ST4000VX0011 (*)	6TB	SATA 6Gb/s	VN02	
		SV35	ST3000VX000	3TB	SATA 6Gb/s	CV12/CV26
	ST2000VX000		2TB	SATA 6Gb/s	CV12/CV26	
	ST2000VX000		1TB	SATA 6Gb/s	CV12/CV26	
	ST31000526SV		1TB	SATA 6Gb/s	CV12	
	ST3500411SV		500 GB	SATA 6Gb/s	CV12	
	WD	Purple	WD40PURX	4TB	SATA 6Gb/s	80.0
			WD30PURX	3TB	SATA 6Gb/s	80.0
WD20PURX			2TB	SATA 6Gb/s	80.0	
WD10PURX			1TB	SATA 6Gb/s	01.01A01	

(*) Newly tested compatible hard drive models

(!) Only compatible to CT-4000 and CT-4000R

**Some listed devices may go EOL, so we cannot promise the market availability.

2. iSCSI Support

Brand	Model	Infrastructure	HDD	Capacity*
EMC	IOMEGA px12-350r	SAN	SATA	36 TB
EMC	IOMEGA px12-450r	SAN	SATA	48 TB
EMC	VNX 5300	SAN	Nearline SAS	375 TB
HP	P2000 G3 MSA	SAN	SAS	36 TB
HP	P2000 G3 MSA	SAN	SATA	36 TB
Qsan	P600Q-DS316	SAN	SATA	48 TB
Proware	EN-3166JS6H-NQX	SAN	SATA	48 TB

*Capacity is the volume size of each iSCSI model, not the supported volume size of NUUO Crystal™.

**NUUO Crystal™ supports up to 6 iSCSI target. Each iSCSI target has size limitation of 16TB. The total size for iSCSI is 96TB (16TB x 6 targets)

3. DAS Support

Brand	Model	Host Interface	HDD	Capacity
Axis	FIT500	eSATA	SATA	15 TB

4. Graphic Card tested

Brand	Series/Model
ATI	Radeon HD 4350
AMD	Radeon HD 5450
	Radeon HD 6670
	Radeon HD 6750M
NVIDIA	GeForce GT 610
	GeForce GT 210
Intel HD	Graphics 3000
	Graphics 4000

5. Keyboard/Joystick Support

Vendor	Model
Videotec	DCZ Keyboard*
CH Products	VM Desktop*
Axis	295
Axis	T8311
Logitech	Attack 3

*Newly tested supported keyboard/joystick

**NUUO supports all the models of joysticks that are compatible with Windows.

***See appendix for introductions of configuring and using keyboard and joystick.

Supported function:

Type	Function
View and grid switching	Go to monitor # Next view Previous view Next grid Previous grid Go to grid #
Screen layout switching	Toggle single camera view Toggle full-screen
PTZ control	Digital / Optical switch Zoom in Zoom out

	Go to preset #
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6. UPnP Router (auto port-forwarding)

Vendor	Model
D-Link	DIR-300

Note: This is the model we tested for auto port-forwarding function. Basically, all router possess UPnP function should be compatible.

7. Web Browser support

OS \ Browser	IE 8 32-bit	IE 9 32-bit	IE 10 32-bit	IE 11 32-bit	Firefox 23 and later
Windows XP-SP3 32-bit	PASS	N/A	N/A	PASS	PASS
Windows 7 32/64-bit	PASS	PASS	N/A	PASS	PASS
Windows 8 32/64-bit	N/A	N/A	PASS	PASS	PASS
Windows 8.1 32/64-bit	N/A	N/A	N/A	PASS	PASS

8. OS supported for NuClient AP

OS \ Application	Backup Player	Install Wizard	NuClient	Offline Tool	Verification Tool	Uninstall Toolkit
Windows XP	PASS	PASS	PASS	PASS	PASS	PASS
Windows 7 32/64-bit	PASS	PASS	PASS	PASS	PASS	PASS
Windows 8 32/64-bit	PASS	PASS	PASS	PASS*	PASS	PASS
Windows 8.1 32/64-bit	PASS	PASS	PASS	PASS*	PASS	PASS
MAC OS X 10.7	PASS	PASS	PASS	N/A	PASS	N/A

MAC OS X 10.8	PASS	PASS	PASS	N/A	PASS	N/A
MAC OS X 10.9	PASS	PASS	PASS	N/A	PASS	N/A

* Please close UAC when operating Offline tool for license activation and transfer.

9. UPS Support

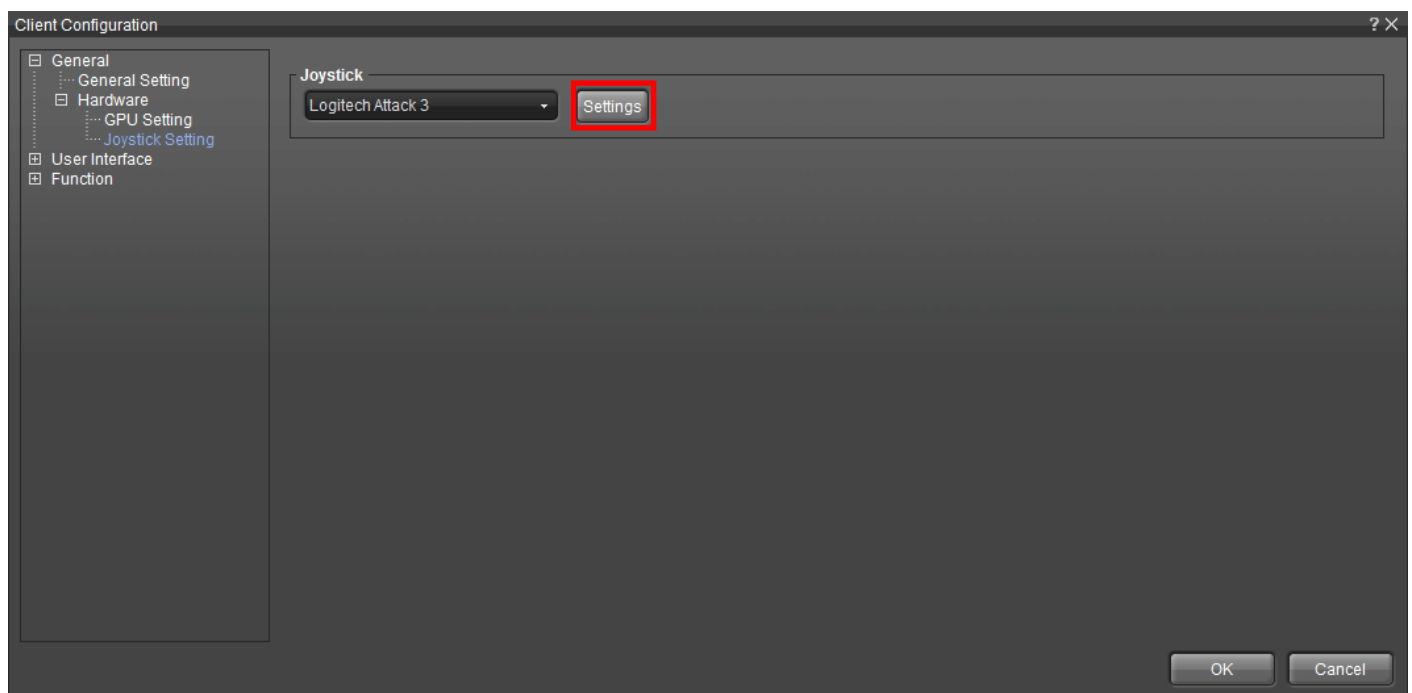
Vendor	Model
APC	APC Smart-UPS XL 3000VA (SUA3000XL)
APC	APC Smart-UPS 1500VA

Appendix A: Introductions of configuring generic USB keyboard and joystick

Supported generic USB keyboard/joystick:

Vendor	Model
CH Products	VM Desktop
Axis	295
Axis	T8311
Logitech	Attack 3

Click “**Client Configuration**” from the global menu, and then select “**General->Hardware->Joystick Settings**”, and then click “**Setting**” button:

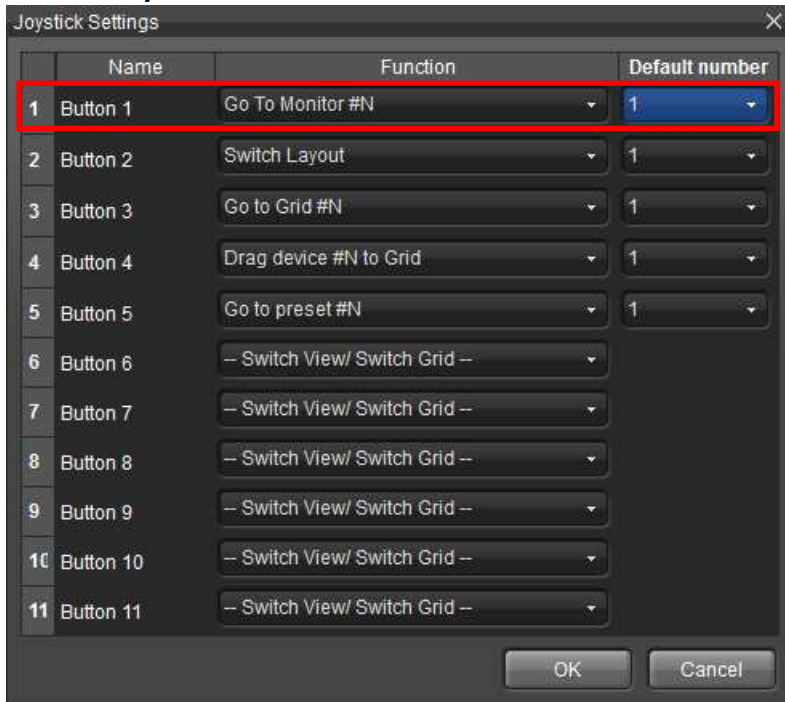


There are two types of keystroke:

1. A **combo-keystroke** triggers a specific action with argument embedded. The variable argument is represented as “**#N**”. A default argument should be assigned for each **combo-keystroke**.
2. A **single-keystroke** triggers a specific action without any argument. No default argument is needed.

Currently there are 5 **combo-keystrokes** and 8 **single-keystrokes** supported.

Combo-keystroke:

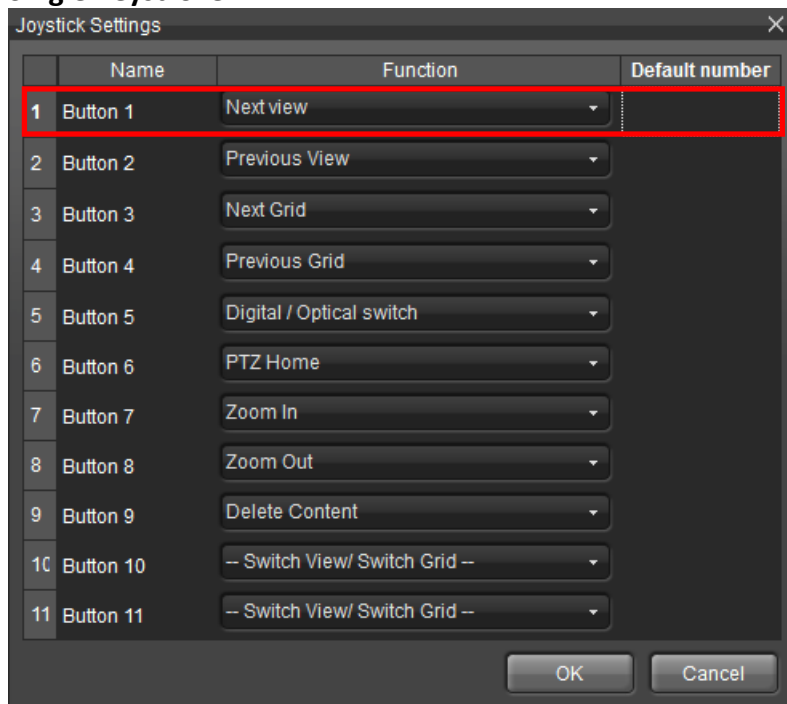


Function	Description	Default number (argument)
Go To Monitor #N	Move focus to the first grid of monitor #N For example: Go to 1 st monitor: #N = 1 Go to 3 rd monitor: #N = 3	1 – (number of monitors utilized by client application)
Switch Layout	Switch layout For example: Switch to 1x1 layout: #N = 1 Switch to 2x2 layout: #N = 2 Switch to 1+5 layout: #N = 3 Switch to 3x3 layout: #N = 4 Switch to 2+8 layout: #N = 5	1 – 5
Go to Grid #N	Go to specified grid by focusing it For example: Focus grid 101: #N = 101 Focus grid 204: #N = 204	1 – 100 (default number represents the grid number of the last focused monitor)
Drag device #N to Grid	Drag device #N to the focused grid For example: Recording Server A has 10 devices Recording Server B has 20 devices Drag 5 th device of Server A to the focused grid: #N = 5 Drag 10 th device of Server B to the focused grid: #N = 20	1 – (number of total devices of all recording servers)
Go to preset #N	Go to preset number #N For example: Go to preset point 6: #N = 6	1 – 64 (maximum count of preset points)

For example, **Button 1** is mapped with **Function** “Go To Monitor #N”, and its **Default number** is “1”

Key Strokes	Action
➤ Press Button 1 and release it	Focus the first grid of monitor 3
➤ Press 3	
➤ Press Button 1 and release it	
➤ Press Button 1 and hold it	Focus the first grid of monitor 3
➤ Press 3	
➤ Release Button 1	
➤ Press Button 1 and release it	Focus the first grid of monitor 1 by default
➤ Press Button 1 and release it	

Single-keystroke:



Function	Description
Next view	Select next view
Previous view	Select previous view
Next Grid	Focus next grid
Previous Grid	Focus previous grid
Digital / Optical switch	Toggle digital PTZ / optical PTZ
PTZ Home	Move PTZ camera to home position
Zoom In	Zoom In a PTZ camera
Zoom Out	Zoom Out a PTZ camera
Delete Content	Delete displayed content of the focused grid. (displayed content may be video, I/O, or E-Map)

For example, pressing **Button 1** will trigger an action to select the next view.

Appendix B: Introductions of using Videotec DCZ keyboard

DCZ keyboard has its own proprietary keystrokes to trigger following actions:

Function	Key Strokes Example	Action
Go To Monitor #N	Monitor + 1 + Monitor	Focus the first grid of monitor 1
Go to Grid #N	Cam + 1 + 0 + 2 + Cam	Focus Grid 102
Drag device #N to Grid	Live + 1 + 0 + Live	Drag 10 th device to the focused grid
Go to preset #N	Preset + 5 + Preset	Go to preset point 5
Next view	+NEXT	Select next view
Previous view	-PREV	Select previous view

DCZ keyboard has a joystick upon it, and we can use the joystick to control camera's optical and digital PTZ motion with proportional speed.

