



GV-FE110 / GV-FE111 / GV-FE420 / GV-FE421

Camera Integration Notes

Article ID: GV17-10-12-17

Release Date: 12/17/2010

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1. Applied to

GV-Fisheye Camera: GV-FE110, GV-FE111, GV-FE420 and GV-FE421



2. System Requirements

GV-FE110 / GV-FE111:

Operating System	32-bit	Windows XP / Windows Vista / Windows 7 / Windows Server 2008
	64-bit	Windows 7 / Windows Server 2008
GV-System Version		GV-System V 8.4.0.0 with patch files

GV-FE420 / GV-FE421:

Operating System	64-bit	Windows 7 / Windows Server 2008
GV-System Version		GV-System V 8.4.0.0 with patch files

2.1 To Install Patch Files

To connect to GV-Fisheye Camera on GV-System V8.4.0.0, patch files are required. Follow the steps below to install patch files.

1. Locate the patch files in the GV-Fisheye Camera software DVD or download them from the download links listed below.
2. Copy each individual patch file to the folder listed under the **Copy to Destination** column in the table below.
3. If a message pops up to inform you a file with the same name already exists in the folder, click Yes to replace the existing file. The upgrade is complete.

Program	Patch File	Installer Path	Copy to Destination
Main System	GeoFisheye.dll	Download Link	:\GV folder
	GeoFisheye.xml	Software DVD: 4M Fisheye IP	:\GV folder
	GeoIPCamXList.ini	Camera Patch Files→ NVR, DVR	C:\WINDOWS
	GeoProductSetting.ini	and Hybrid	C:\WINDOWS



If you have installed and are using the following programs or functions with GV-Fisheye Camera, you will also need to install the corresponding patch files.

Program	Patch File	Installer Path	Copy to Destination
Remote Viewlog	GeoFisheye.dll	Download Link Software DVD: 4M Fisheye IP Camera Patch Files → Remote Viewlog.exe and SinglePlayer_8400.cab	:\Remote Viewlog
	GeoFisheye.xml		:\Remote Viewlog
Event List Query and Remote Playback function on WebCam	GeoFisheye.dll	Download Link Software DVD: 4M Fisheye IP Camera Patch Files → Remote Viewlog.exe and SinglePlayer_8400.cab	C:\Program Files\GeoOCX\SinglePlaye rOCX\8400
	GeoFisheye.xml		C:\Program Files\GeoOCX\SinglePlaye rOCX\8400
Center V2	GeoFisheye.dll	Download Link Software DVD: 4M Fisheye IP Camera Patch Files → Center V2	:\Center V2
	GeoFisheye.xml		:\Center V2
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
Multi View	GeoFisheye.dll	Download Link Software DVD: 4M Fisheye IP Camera Patch Files → DMMultiview	C:\WINDOWS\GeoOCX\W ebCam\20101001
	GeoFisheye.xml		C:\WINDOWS\GeoOCX\W ebCam\20101001
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
GV-GIS	GeoFisheye.dll	Download Link Software DVD: 4M Fisheye IP Camera Patch Files → GIS	C:\Program Files\GV-GIS
	GeoFisheye.xml		C:\Program Files\GV-GIS
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
WebCam	GeoFisheye.dll	Download Link Software DVD: 4M Fisheye IP Camera Patch Files → Webcam	C:\WINDOWS\GeoOCX\W ebCam\20101001
	GeoFisheye.xml		C:\WINDOWS\GeoOCX\W ebCam\20101001
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS



If you have installed **Control Center**, install the patch files that correspond to the language of your operating system and copy each file to the designated folder specified below.

Control Center			
Language	Patch File	Installer Path	Copy to Destination
English	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_E	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\\WINDOWS
	GeoProductSetting.ini		C:\\WINDOWS
Czech	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_CZE	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\\WINDOWS
	GeoProductSetting.ini		C:\\WINDOWS
Danish	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_DAN	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\\WINDOWS
	GeoProductSetting.ini		C:\\WINDOWS
French	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_FRA	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\\WINDOWS
	GeoProductSetting.ini		C:\\WINDOWS
German	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_GER	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\\WINDOWS



	GeoProductSetting.ini		C:\WINDOWS
Hebrew	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_HEB	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
Hungarian	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_HUN	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
Italian	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_ITA	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
Japanese	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_J and EAS	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
Polish	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_POL	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS



Portuguese	CtrCenter.exe	Download Link	:\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_PTU	:\Control Center
	Matrix.exe		:\Control Center
	GeoFisheye.dll		:\Control Center
	GeoFisheye.xml		:\Control Center
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
Russian	CtrCenter.exe	Download Link	:\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_RUS	:\Control Center
	Matrix.exe		:\Control Center
	GeoFisheye.dll		:\Control Center
	GeoFisheye.xml		:\Control Center
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
Simplified Chinese	CtrCenter.exe	Download Link	:\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_SC	:\Control Center
	Matrix.exe		:\Control Center
	GeoFisheye.dll		:\Control Center
	GeoFisheye.xml		:\Control Center
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
Spanish	CtrCenter.exe	Download Link	:\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_SP	:\Control Center
	Matrix.exe		:\Control Center
	GeoFisheye.dll		:\Control Center
	GeoFisheye.xml		:\Control Center
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS
Serbian	CtrCenter.exe	Download Link	:\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_SRL	:\Control Center
	Matrix.exe		:\Control Center
	GeoFisheye.dll		:\Control Center
	GeoFisheye.xml		:\Control Center
	GeoIPCamXList.ini		C:\WINDOWS
	GeoProductSetting.ini		C:\WINDOWS



Traditional Chinese	CtrCenter.exe	Download Link	:\\Control Center
	EzCtrCenter.exe	Software DVD: 4M Fisheye IP Camera Patch Files → Control Center → Control Center_TC	:\\Control Center
	Matrix.exe		:\\Control Center
	GeoFisheye.dll		:\\Control Center
	GeoFisheye.xml		:\\Control Center
	GeoIPCamXList.ini		C:\\WINDOWS
	GeoProductSetting.ini		C:\\WINDOWS



3. Maximum Number of Channels and Total Frame Rate that GV-System Can Support

The following tables list the maximum number of fisheye channels and the total frame rate that can be supported by GV-System. The CPU usage required to process fisheye images varies when using different mounting positions and view modes.

GV-FE110 / GV-FE111: Ceiling Mount, Single View

PC	Resolution	Codec	Total frame rate by CPU (FPS)	Channel limitation by OS memory (CH)	
				32-Bit	64-Bit
Core i7	1280 x 1024 (1.3M)	H.264	195	6	15
		MJPEG	240		
		MPEG4	255		
Core 2 Quad		H.264	65		
		MJPEG	75		
		MPEG4	75		
Core 2 Duo		H.264	35		
		MJPEG	45		
		MPEG4	45		


GV-FE110 / GV-FE111: Ceiling Mount, Dual 180 Degree

PC	Resolution	Codec	Total frame rate by CPU (FPS)	Channel limitation by OS memory (CH)	
				32-Bit	64-Bit
Core i7	1280 x 1024 (1.3M)	H.264	120	6	15
		MJPEG	135		
		MPEG4	135		
Core 2 Quad		H.264	45		
		MJPEG	50		
		MPEG4	50		
Core 2 Duo		H.264	20		
		MJPEG	25		
		MPEG4	25		

GV-FE110 / GV-FE111: Wall Mount, 360 Degree

PC	Resolution	Codec	Total frame rate by CPU (FPS)	Channel limitation by OS memory (CH)	
				32-Bit	64-Bit
Core i7	1280 x 1024 (1.3M)	H.264	160	6	15
		MJPEG	165		
		MPEG4	170		
Core 2 Quad		H.264	50		
		MJPEG	50		
		MPEG4	50		
Core 2 Duo		H.264	25		
		MJPEG	25		
		MPEG4	30		


GV-FE110 / GV-FE111: Ground Mount, Dual 180 Degree

PC	Resolution	Codec	Total frame rate by CPU (FPS)	Channel limitation by OS memory (CH)	
				32-Bit	64-Bit
Core i7	1280 x 1024 (1.3M)	H.264	135	6	15
		MJPEG	140		
		MPEG4	150		
Core 2 Quad		H.264	50		
		MJPEG	50		
		MPEG4	50		
Core 2 Duo		H.264	20		
		MJPEG	25		
		MPEG4	25		

GV-FE420 / GV-FE421: Ceiling Mount, Dual 180 Degree, Day Mode

PC	Resolution	Codec	Total frame rate by CPU (FPS)	Channel limitation by OS memory (CH)	
				32-Bit	64-Bit
Core i7	2048 x 1944 (4M)	H.264	45	0	6
		MJPEG	50		
Core 2 Quad		H.264	20		
		MJPEG	25		
Core 2 Duo		H.264	5		
		MJPEG	10		

GV-FE420 / GV-FE421: Wall Mount, 360 Degree, Day Mode

PC	Resolution	Codec	Total frame rate by CPU (FPS)	Channel limitation by OS memory (CH)	
				32-Bit	64-Bit
Core i7	2048 x 1944 (4M)	H.264	55	0	6
		MJPEG	65		
Core 2 Quad		H.264	20		
		MJPEG	25		
Core 2 Duo		H.264	10		
		MJPEG	10		



GV-FE420 / GV-FE421: Ground Mount, Dual 180 Degree, Day Mode

PC	Resolution	Codec	Total frame rate by CPU (FPS)	Channel limitation by OS memory (CH)	
				32-Bit	64-Bit
Core i7	2048 x 1944 (4M)	H.264	50	0	6
Core 2 Quad		MJPEG	55		
		H.264	20		
		MJPEG	25		
		H.264	10		
Core 2 Duo		MJPEG	10		

Note:

1. The total frame rate supported is determined with the CPU usage of 60-70%.
2. The test data is determined with "Auto Pan" function disabled.
3. The test is conducted in 16 screen division, full screen mode and with 1920 x 1200 resolution.
4. For each mounting position, the test results for the view mode that requires the highest CPU usage are listed. The exception is the **GV-FE110 / GV-FE111: Ceiling Mount, Single View** table, which serves as a reference and is not the view mode that requires the highest CPU usage for ceiling mount.
5. **GV-FE420/GV-FE421 is only supported on 64-bit operating systems.**

The Windows operating system has memory limits for programs running under it. Different memory limits on 32-bit and 64-bit Windows will restrict the number of IP cameras you can connect to the GV-System. Under 32-bit Windows, up to 6 channels of GV-FE110 / GV-FE111 can be connected, while under 64-bit Windows, you can connect up to 15 channels of GV-FE110 / GV-FE111 or up to 6 channels of GV-FE420 / GV-FE421 to the GV-System. On the other hand, the maximum total frame rate is limited by CPU capacity and usage, and the total frame rate supported is determined with the CPU usage not exceeding 60-70%.



3.1 Example for Calculating Frame Rate

We take the following data as an example to calculate how many frame rates a GV-Fisheye Camera can achieve:

GV-FE110 / GV-FE111: Ceiling Mount, Single View

PC	Resolution	Codec	Total frame rate by CPU (FPS)	Channel limitation by OS memory (CH)	
				32-bit	64-bit
Core i7	1280 x 1024 (1.3M)	H.264	195	6	15

If you are using 64-bit Windows with Core i7, you can connect up to 15 channels of GV-FE110 / GV-FE111 to the GV-System within Windows' memory limit. When mounted on the ceiling using single view, the given CPU usage with H.264 codec can support up to 195 frames per second in total. So, if 15 channels of GV-FE110 / GV-FE111 are connected, the frame rate of each GV-Fisheye channel will be reduced to 13 frames per second, even though the maximum frame rate of a GV-Fisheye Camera is 15 FPS:

$$\text{Total 195 FPS} / 15 \text{ CH} = 13 \text{ FPS} / \text{CH}$$

Similarly, if only 10 channels of GV-FE110 / GV-FE111 are connected to the GV-System with Core i7, the given CPU usage can support up to 19.5 frames per second for each channel (Total 195 FPS / 10 CH = 19.5 FPS / CH). But since the GV-Fisheye Camera can only support up to 15 FPS, each channel will be 15 FPS.

3.2 Conclusion

Under 32-bit Windows, up to 6 channels of GV-FE110 / GV-FE111 can be connected, while under 64-bit Windows, you can connect up to 15 channels of GV-FE110 / GV-FE111 or up to 6 channels of GV-FE420 / GV-FE421 to the GV-System. If you wish to increase the frame rate for each GV-Fisheye channel, you can decrease the number of connected GV-Fisheye Cameras but with a limit of up to 15 FPS per channel.



3.3 Testing Environment

The PC specifications used for testing are listed below:

Core i7

OS	64-bit Windows 7
Motherboard	Micro star P55-GD65 (MS-7583)
CPU	i7 860 2.8GHz
Chipset	Intel IDD131
RAM	DDR3 2GB x 2
VGA	NVIDIA GeForce 9600 GSO512
VGA Driver	8.17.12.6089 (10/8/2010)
GV-System Version	V8.4.0.0 with patch files

Core 2 Quad

OS	64-bit Windows 7
Motherboard	Intel Bearlake
CPU	Q9400 2.66GHz
Chipset	Intel Q35
RAM	DDR2 2GB x 2
VGA	Intel® Q35 Express chipset family
VGA Driver	8.15.10.1930 (9/23/2009)
GV-System Version	V8.4.0.0 with patch files

Core 2 Dual

OS	64-bit Windows 7
Motherboard	Gigabyte 965P-DS3
CPU	6400 2.13GHz
Chipset	Intel P965 / G965
RAM	DDR2 2GB x 2
VGA	ATI-Radeon HD4650
VGA Driver	8.56.1.15 (4/24/2009)
GV-System Version	V8.4.0.0 with patch files