



# Data Sheet

## Graphic Cards for FUJITSU Desktop ESPRIMO

FUJITSU Desktop ESPRIMO are used for common office applications. To fulfill the demands of demanding applications, ESPRIMO Desktops can be ordered with either graphics on board or a graphics card plugged into an expansion slot.

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### General


Fujitsu offers for its ESPRIMO Desktops different suppliers for graphic cards, which are selected carefully. Parameters like quality, availability and experiences play an important role.


The ESPRIMO Desktops feature on board graphics within their chipsets and/or processors. However, a range of optional graphic cards are available.


	NVIDIA NVS 315 1GB PCIe x16 (available w/ LP or FH bracket)			
Description	Low Profile PCI Express x16 - graphics controller card			
Field of application	Professional 2D and 3D office text and graphics display applications, DVI dual display applications, beamer presentation, Hardware prepared for picture and video recording and editing for i.e. Internet presentations. Displaying of HDCP encrypted videos in full resolution.			
Mainboard interface	PCI Express x16 mechanical			
TV Interfaces	-			
Connectors on graphic-board	1*DMS 59			
Connectors after LFH-splittercable	2*DVI-I (15pin VGA possible by using optional DVI/VGA-converters) or 2*Display Port			
Shipped adapters	LFH-splitter cable must be ordered separately DVI/VGA-converters must be ordered separately			
Possible monitor combinations	With DMS 59 to DVI-I splitter cable: Single/Dual VGA/DVI-D/DVI-A/DVI-I in every combination possible on each output. With DMS 59 to DP splitter cable: only digital connections are possible. Combination with DP/DVI-D adapter cable possible.			
Dual RAMDAC	each 400MHz			
Electrical power consumption	7W - 19W			
Technical specification	Local Frame Buffer: 1GB, mounted on graphics board Graphics processor: 523 MHz Core Frequency Memory Frequency: 875 MHz, 64bit memory interface Full DX11 compliant OpenGL 4.1 HDCP support (High Bandwidth Digital Content Protection) at all digital connectors			
Operating systems	Windows VISTA 32bit / 64bit, Windows 7 32bit / 64bit, Windows 8 / Windows 8 Pro, Windows 8.1 / Windows 8.1 Pro			
Dimensions(W x D in mm)	145 x 65, low profile bracket or full height bracket depending on target system			
Cooling solution	With fan			
Approvals	CE, FCC Class B, EN55022, EN55024, EN60950			
Driver certification	Windows 7 32-bit, Windows 7 64-bit, Windows 8, Windows 8 Pro Windows 8.1, Windows 8.1 Pro			
Mainboard onboard graphic	DISABLED when using graphics card in main graphic slot			
	All resolutions dependent on display type 4:3 or 16:9 (additional resolutions possible depending on monitor EDID data). Color depth [bit/pixel]: 8/16/32			
	Resolutions		Display type:	
			4:3 or 5:4	16:9 or 16:10
	640x480, 720x480, 720x576, 800x600	x	x	-
	848x480, 960x600	x	-	x
	1024x768	x	x	-
	1088x612	x	-	x
	1152x864	x	x	-
	1280x720, 1280x768, 1280x800	x	-	x
	1280x960, 1280x1024	x	x	-
	1360x768, 1440x900, 1600x900, 1600x1024	x	-	x
	1600x1200	x	x	-
	1680x1050, 1920x1080, 1920x1200	x	-	x
	1920x1440 (analog only)	x	x	-
	2048x1536 (analog only)	x	x	-
	2560x1440 (DP only)	x	-	x
	2560x1600 (DP only)	x	-	x


## ATI Radeon HD7350 1GB FH

Description	ATI Radeon HD7350 1GB FH		
Field of application	PCI Express x16 - graphics controller card  DX11 gaming support with entry level performance. Smooth playing up to 1024x768 resolution possible. 2D and 3D office text and graphics display applications, TV projector, beamer presentation, picture and video recording and editing for i.e. Internet presentations. Displaying of HDCP encrypted videos in full resolution.		
Mainboard interface	PCI Express x16 mechanical		
TV Interfaces	-		
Connectors on graphic-board	2*DVI-I dual link (15pin VGA by using DVI/VGA-converter)		
Connectors after LFH-splittercable	-		
Shipped adapters	2*DVI/VGA converter		
Possible monitor combinations	Single/Dual VGA/DVI-D/DVI-A/DVI-I in every combination possible on each output		
Dual RAMDAC	each 400MHz		
Electrical power consumption	9W - 15W		
Technical specification	Local Frame Buffer: 1GB DDR3, mounted on graphics board Graphics processor: 650 MHz Core Frequency Memory Frequency: 800 MHz (=DDR-rate 1600MHz), 64bit memory interface Full DX11 compliant OpenGL 3.2 HDCP support (High Bandwidth Digital Content Protection) at all digital connectors		
Operating systems	Windows XP 32bit / 64bit, Windows VISTA 32bit / 64bit, Windows 7 32bit / 64bit, Windows 8 / Windows 8 Pro		
Dimensions(W x D in mm)	168 x 106		
Cooling solution	fanless (heatsink)		
Approvals	CE, FCC Class B, EN55022, EN55024, EN60950		
Driver certification	Windows XP 32-bit, Windows XP 64-bit, Windows 7 32-bit, Windows 7 64-bit, Windows 8, Windows 8 Pro		
Mainboard onboard graphic	DISABLED when using graphics card in main graphic slot		
	All resolutions dependent on display type 4:3 or 16:9 (additional resolutions possible depending on monitor EDID data) Color depth [bit/pixel]: 32		
	Resolutions	Display type:	
		4:3 or 5:4	16:9 or 16:10
	640x480, 720x480, 720x576, 800x600	x	-
	848x480, 960x600	x	x
	1024x768	x	-
	1088x612	x	x
	1152x864	x	-
	1280x720, 1280x768, 1280x800	x	x
	1280x960, 1280x1024	x	-
	1360x768, 1440x900, 1600x900, 1600x1024	x	x
	1600x1200	x	-
	1680x1050, 1920x1080, 1920x1200	x	x
	1920x1440 (analog only)	x	-
	2048x1536 (analog only)	x	-
	2560x1440	x	x
	2560x1600	x	x

	AMD Radeon R9 255 2GB FH			
Description	PCI Express x16 - graphics controller card			
Field of application	DX11.1 gaming support with high midrange performance. Smooth playing up to 2560x1440 resolution possible. Prepared for upcoming 4k displays with up to 4096x2160 resolution.			
Mainboard interface	PCI Express x16 mechanical			
TV Interfaces	HDMI possible via DVI to HDMI converter or DP to HDMI converter (optional)			
Connectors on graphic-board	1*DVI-I dual link, 2*DP			
Connectors after LFH-splittercable	-			
Shipped adapters	1*DVI/VGA converter			
Possible monitor combinations	DP, DP, DVI-I => three monitor support; VGA possible over the DVI-I interface via DVI to VGA adapter (bundled); 2nd DVI via DP to DVI adapter cable (optional)			
Dual RAMDAC	each 400MHz			
Electrical power consumption	4W - 68Wmax (depending on graphic load)			
Technical specification	Local Frame Buffer: 2GB GDDR5, mounted on graphics board Graphics processor: 930 MHz Core Frequency Memory Frequency: 2300 MHz (=DDR-rate 4600MHz), 128bit memory interface Full DX11.1 compliant, OpenGL 4.3 HDCP support (High Bandwidth Digital Content Protection) at all digital connectors Occupies 2 PCI Express slots			
Operating systems	Windows 7 32bit / 64bit, Windows 8 / Windows 8 Pro, Windows 8.1 / Windows 8.1 Pro			
Dimensions (W x D in mm)	173 x 110			
Cooling solution	with fan, but low noise emission over all load conditions through dual slot cooling			
Approvals	CE, FCC Class B, EN55022, EN55024, EN60950			
Driver certification	Windows 7 32-bit, Windows 7 64-bit, Windows 8, Windows 8 Pro, Windows 8.1, Windows 8.1 Pro			
Mainboard onboard graphic	DISABLED when using graphics card in main graphic slot			
	All resolutions dependent on display type 4:3 or 16:9 (additional resolutions possible depending on monitor EDID data) Color depth [bit/pixel]: up to 36bit			
<div>Resolutions / Display types</div> <div></div>	Resolutions		Display type:	
			4:3 or 5:4	16:9 or 16:10
	640x480, 720x480, 720x576, 800x600	x	x	-
	848x480, 960x600	x	-	x
	1024x768	x	x	-
	1280x720, 1280x768, 1280x800	x	-	x
	1280x960, 1280x1024	x	x	-
	1360x768, 1440x900, 1600x900, 1600x1024	x	-	x
	1600x1200	x	x	-
	1680x1050, 1920x1080, 1920x1200	x	-	x
	1920x1440 (analog only)	x	x	-
	2048x1536 (analog only)	x	x	-
	2560x1440 (DVI-D and DP only)	x	-	x
	2560x1600 (DVI-D and DP only)	x	-	x
	3840x2160 @ 60Hz (DP only)	x	-	x
	4096x2160 @ 60Hz (DP only)	x	-	x

	NVIDIA GeForce 605 DisplayPort 1GB (available w/ LP or FH bracket)			
Description	Low Profile PCI Express x16 - graphics controller card			
Field of application	DX11 gaming support with entry level performance. 2D and 3D office text and graphics display applications, TV projector, and beamer presentation, Hardware prepared for picture and video recording and editing for i.e. Internet presentations. HDTV-Displaying of HDCP encrypted videos in full resolution. The board features a DisplayPort interface and is capable of high resolutions up to 2560x1600.			
Mainboard interface	PCI Express x16 mechanical			
TV Interfaces	HDMI possible via DVI to HDMI converter (optional)			
Connectors on graphic-board	1*DVI-I dual link, 1* DP			
Connectors after LFH-splittercable	-			
Shipped adapters	1*DVI/VGA converter			
Possible monitor combinations	DP, DVI-I => dual monitor support; VGA possible over the DVI-I interface via DVI to VGA adapter (bundled); 2nd DVI via DP to DVI adapter cable (optional)			
Dual RAMDAC	each 400MHz			
Electrical power consumption	6W - 23Wmax (depending on graphic load)			
Technical specification	Local Frame Buffer: 1GB, mounted on graphics board Graphics processor: 520 MHz Core Frequency Memory Frequency: 800 MHz (=DDR-rate 1600), 64bit memory interface Full DX11 compliant OpenGL 4.2 HDCP support (High Bandwidth Digital Content Protection) at all digital connectors			
Operating systems	Windows XP 32bit/ 64bit, Windows VISTA 32bit/ 64bit, Windows 7 32bit/ 64bit, Windows 8 / Windows 8 Pro			
Dimensions(W x D in mm)	145 x 65			
Cooling solution	fanless (heatsink)			
Approvals	CE, FCC Class B, EN55022, EN55024, EN60950			
Driver certification	Windows XP 32-bit, Windows XP 64-bit, Windows 7 32-bit, Windows 7 64-bit, Windows 8, Windows 8 Pro			
Mainboard onboard graphic	DISABLED when using graphics card in main graphic slot			
	All resolutions dependent on display type 4:3 or 16:9 (additional resolutions possible depending on monitor EDID data) Color depth [bit/pixel]: 8/16/32			
	Resolutions		Display type:	
			4:3 or 5:4	16:9 or 16:10
	640x480, 720x480, 720x576, 800x600	x	x	-
	848x480, 960x600	x	-	x
	1024x768	x	x	-
	1088x612	x	-	x
	1152x864	x	x	-
	1280x720, 1280x768, 1280x800	x	-	x
	1280x960, 1280x1024	x	x	-
	1360x768, 1440x900, 1600x900, 1600x1024	x	-	x
	1600x1200	x	x	-
	1680x1050, 1920x1080, 1920x1200	x	-	x
	1920x1440 (analog only)	x	x	-
	2048x1536 (analog only)	x	x	-
	2560x1440 (DVI-D and DP only)	x	-	x
	2560x1600 (DVI-D and DP only)	x	-	x

	NVIDIA GeForce GT 630 DisplayPort 2GB (available w/ LP or FH bracket)		
Description	Low Profile PCI Express x16 - graphics controller card		
Field of application	DX11.1 gaming support with low midrange performance. Smooth playing up to 1920x1200 resolution possible. 2D and 3D office text and graphics display applications, TV projector, beamer presentation, picture and video recording and editing for i.e. Internet presentations. Displaying of HDCP encrypted videos in full resolution.		
Mainboard interface	PCI Express x16 mechanical		
TV Interfaces	HDMI possible via DVI to HDMI converter (optional)		
Connectors on graphic-board	1*DVI-I dual link, 1* DP		
Connectors after LFH-splittercable	-		
Shipped adapters	1*DVI/VGA converter		
Possible monitor combinations	DP, DVI-I => dual monitor support; VGA possible over the DVI-I interface via DVI to VGA adapter (bundled); 2nd DVI via DP to DVI adapter cable (optional)		
Dual RAMDAC	each 400MHz		
Electrical power consumption	8W - 35Wmax (depending on graphic load)		
Technical specification	Local Frame Buffer: 2GB DDR3, mounted on graphics board Graphics processor: 875 MHz Core Frequency Memory Frequency: 891 MHz (=DDR-rate 1600), 128bit memory interface Full DX11 compliant OpenGL 4.4 HDCP support (High Bandwidth Digital Content Protection) at all digital connectors		
Operating systems	Windows XP 32bit/ 64bit, Windows VISTA 32bit/ 64bit, Windows 7 32bit/ 64bit, Windows 8 / Windows 8 Pro		
Dimensions(W x D in mm)	145 x 65, low profile bracket or full height bracket depending on target system		
Cooling solution	with fan		
Approvals	CE, FCC Class B, EN55022, EN55024, EN60950		
Driver certification	Windows XP 32-bit, Windows XP 64-bit, Windows 7 32-bit, Windows 7 64-bit, Windows 8, Windows 8 Pro		
Mainboard onboard graphic	DISABLED when using graphics card in main graphic slot		
 Resolutions / Display types	Resolutions	Display type:	
		4:3 or 5:4	16:9 or 16:10
	640x480, 720x480, 720x576, 800x600	x	x
	848x480, 960x600	x	-
	1024x768	x	x
	1088x612	x	-
	1152x864	x	x
	1280x720, 1280x768, 1280x800	x	-
	1280x960, 1280x1024	x	x
	1360x768, 1440x900, 1600x900, 1600x1024	x	-
	1600x1200	x	x
	1680x1050, 1920x1080, 1920x1200	x	-
	1920x1440 (analog only)	x	x
	2048x1536 (analog only)	x	-
	2560x1440 (DVI-D and DP only)	x	x
	2560x1600 (DVI-D and DP only)	x	-

	NVIDIA GeForce GTX 745 2GB (available w/ LP or FH bracket)			
Description	Low Profile PCI Express x16 - graphics controller card			
Field of application	DX11.1 gaming support with high midrange performance. Smooth playing up to 2560x1440 resolution possible. Prepared for upcoming 4k displays with up to 4096x2160 resolution.			
Mainboard interface	PCI Express x16 mechanical			
TV Interfaces	HDMI possible via DVI to HDMI converter or DP to HDMI converter (optional)			
Connectors on graphic-board	1*DVI-I dual link, 2*DP			
Connectors after LFH-splittercable	-			
Shipped adapters	1*DVI/VGA converter			
Possible monitor combinations	DP, DP, DVI-I => three monitor support; VGA possible over the DVI-I interface via DVI to VGA adapter (bundled); 2nd DVI via DP to DVI adapter cable (optional)			
Dual RAMDAC	each 400MHz			
Electrical power consumption	7W - 40Wmax (depending on graphic load)			
Technical specification	Local Frame Buffer: 2GB DDR3, mounted on graphics board Graphics processor: 1032 MHz Core Frequency Memory Frequency: 900 MHz (=DDR-rate 1800MHz), 128bit memory interface Full DX11.1 compliant, OpenGL 4.4 HDCP support (High Bandwidth Digital Content Protection) at all digital connectors Occupies 2 PCI Express slots			
Operating systems	Windows 7 32bit / 64bit, Windows 8 / Windows 8 Pro, Windows 8.1 / Windows 8.1 Pro			
Dimensions(W x D in mm)	158 x 69, low profile bracket or full height bracket depending on target system			
Cooling solution	with fan, but lowest noise emission over all load conditions through dual slot cooling			
Approvals	CE, FCC Class B, EN55022, EN55024, EN60950			
Driver certification	Windows 7 32-bit, Windows 7 64-bit, Windows 8, Windows 8 Pro, Windows 8.1, Windows 8.1 Pro			
Mainboard onboard graphic	DISABLED when using graphics card in main graphic slot			
	All resolutions dependent on display type 4:3 or 16:9 (additional resolutions possible depending on monitor EDID data) Color depth [bit/pixel]: up to 36bit			
<div>Resolutions / Display types</div> <div></div>	Resolutions		Display type:	
			4:3 or 5:4	16:9 or 16:10
	640x480, 720x480, 720x576, 800x600	x	x	-
	848x480, 960x600	x	-	x
	1024x768	x	x	-
	1280x720, 1280x768, 1280x800	x	-	x
	1280x960, 1280x1024	x	x	-
	1360x768, 1440x900, 1600x900, 1600x1024	x	-	x
	1600x1200	x	x	-
	1680x1050, 1920x1080, 1920x1200	x	-	x
	1920x1440 (analog only)	x	x	-
	2048x1536 (analog only)	x	x	-
	2560x1440 (DVI-D and DP only)	x	-	x
	2560x1600 (DVI-D and DP only)	x	-	x
	3840x2160 @ 60Hz (DP only)	x	-	x
	4096x2160 @ 60Hz (DP only)	x	-	x

## Benchmarks

The data reflects laboratory performance only. The customer configuration may perform differently, depending on the software, components and peripherals used.

Graphics controller	3DMARK (DX11)
NVIDIA GeForce GTX 745 *	2215
AMD Radeon™ R9 255 *	2070
NVIDIA GeForce GT630 *	885
NVIDIA GeForce 605 *	300
ATI Radeon™ HD 7350 *	255
NVIDIA NVS 315 x16	315
Intel® processor graphics	3DMARK (DX11)
Intel® Core™ i7 4790 processor **	850
Intel® Core™ i5 4690 processor **	845
Intel® Core™ i5 4590 processor **	815
Intel® Core™ i5 4460 processor **	733
Intel® Core™ i3 4160 processor **	685
Intel® Pentium® G3450 processor **	455

### Test system for graphics cards:

* FUJITSU Desktop ESPRIMO P920	D3222-A12 GS2
Processor	Intel® Core™ i7 4790 processor
System Memory	4 x 4 GB DDR3-1600MHz
Storage	SSD 256 GB
3DMark 13 Version	Fire Strike V1.1
Graphics Driver	341.21 WHQL (NVIDIA) or 14.301.1001 WHQL (AMD) or 10.18.10.4029 (Intel)
OS	Windows® 7 Professional 64-Bit (SP1)
System BIOS Version	R1.33.0
Hint	DirectX11 compatible hardware necessary

\*\* Same system but different processors and w/o discrete graphics card