White Paper
Energy Consumption ESPRIMO E910 E90+

In order to strengthen the leadership in implementing European environmental protection regulations, Fujitsu Technology Solutions provides all important energy information about their products. With the publication of energy consumption values and the typical Annual Energy Consumption (AEC), we join the proposal from the preparatory studies for the EU Commission regarding energy using products (e.g. http://www.ecocomputer.org). In addition we calculate the typical energy consumption (TEC) based on ENERGY STAR® 5 certification.

Fujitsu Technology Solutions is also taking significant effort to reduce the energy consumption in data centres by providing highest energy efficiency with PRIMERGY servers. To underline these efforts Fujitsu Technology solutions joined the Green Grid and Climate Savers Computing initiatives and publishes SPECpower benchmark results for PRIMERGY servers.

A. Web page addresses for information on Energy, Environment and End-of-life treatment

Fujitsu Technology Solutions supports important information for energy, environment and End-of-life treatment on basis of European directives and beyond, for:
Energy: http://www.fujitsu.com/fts/energy
Environment: http://www.fujitsu.com/fts/green
End-of-life treatment: http://www.fujitsu.com/fts/recycling

B. Software to use hardware power management

All Clients are designed to use the hardware power management potential efficiently. The defaults for the power management settings ex factory even exceed the Energy Star shipment requirements.

Settings in Microsoft® Windows® for	Desktop, Notebook	Notebook (Battery)
Turn off the display	10 min	5 min
Turn off the hard disc	10 min	5 min
Standby	20 min	15 min
Hibernating	60 min	60 min

C. Power Consumption and typical Annual Energy Consumption for Clients

Intel® Core™ i7 3770

	Modes used in Energy Star calculator	power consumption for standard configuration
Configuration Information		**3.5" HDD, 2 x2 GB, ODD, Windows® 7™**
Related Processor for power consumption		Intel® Core™ i7 3770
Power consumption notes		ACPI S5/WOL enabled: power level 2 minutes after shut down; iAMT can be activated by WOL
Power consumption: Maximum (S0*, running appl., CD in use) 1)		62.5 W
Power consumption: Idle (S0, running OS, Idle-mode)		21.1 W
	On-mode 2)	25.2 W
Power consumption: Standby (S3*, energy saving mode, WOL enabled)	Standby-Modus	0.97 W
Power consumption: Minimum (ACPI status S5*, soft off, WOL enabled)	Off-mode 3)	0.64 W
Power consumption: Minimum (ACPI status S5, soft off, wake up power button)		0.06 W
Typical Annual Energy Consumption (WOL enabled) 4)		56.9 kWh/year
Typical Energy Consumption (TEC), ENERGY STAR® 5 based 5)		74.6 kWh/year
Heat dissipation, WOL enabled (MJ, 1 W = 3.6 kJ/h)		205.0 MJ/year
Heat dissipation, WOL enabled (kBTU, 1 W = 3.4121 BTU/h)		194.3 kBTU/year

Intel® Core™ i7 3770

	Modes used in Energy Star calculator	power consumption for standard configuration
Configuration Information		**2.5" HDD, 2 x2 GB, ODD, Windows® 7™**
Related Processor for power consumption		Intel® Core™ i7 3770
Power consumption notes		ACPI S5/WOL enabled: power level 2 minutes after shut down; iAMT can be activated by WOL
Power consumption: Maximum (S0*, running appl., CD in use) 1)		58.6 W
Power consumption: Idle (S0, running OS, Idle-mode)		17.7 W
	On-mode 2)	21.8 W
Power consumption: Standby (S3, energy saving mode, WOL enabled)	Standby-Modus	0.97 W
Power consumption: Minimum (ACPI status S5*, soft off, WOL enabled)	Off-mode 3)	0.64 W
Power consumption: Minimum (ACPI status S5, soft off, wake up power button)		0.06 W
Typical Annual Energy Consumption (WOL enabled) 4)		49.8 kWh/year
Typical Energy Consumption (TEC), ENERGY STAR® 5 based 5)		62.7 kWh/year
Heat dissipation, WOL enabled (MJ, 1 W = 3.6 kJ/h)		179.2 MJ/year
Heat dissipation, WOL enabled (kBTU, 1 W = 3.4121 BTU/h)		169.8 kBTU/year

Intel® Core™ i7 3770

	Modes used in Energy Star calculator	power consumption for standard configuration
Configuration Information		**SSD, 2 x2 GB, ODD, Windows® 7™**
Related Processor for power consumption		Intel® Core™ i7 3770
Power consumption notes		ACPI S5/WOL enabled: power level 2 minutes after shut down; iAMT can be activated by WOL
Power consumption: Maximum (S0*, running appl., CD in use) 1)		59.5 W
Power consumption: Idle (S0, running OS, Idle -mode)		16.2 W
	On-mode 2)	20.5 W
Power consumption: Standby (S3, energy saving mode, WOL enabled)	Standby-Modus	0.97 W
Power consumption: Minimum (ACPI status S5*, soft off, WOL enabled)	Off-mode 3)	0.64 W
Power consumption: Minimum (ACPI status S5, soft off, wake up power button)		0.06 W
Typical Annual Energy Consumption (WOL enabled) 4)		47.1 kWh/year
Typical Energy Consumption (TEC), ENERGY STAR® 5 based 5)		57.5 kWh/year
Heat dissipation, WOL enabled (MJ, 1 W = 3.6 kJ/h))		169.7 MJ/year
Heat dissipation, WOL enabled (kBTU, 1 W = 3.4121 BTU/h)		160.9 kBTU/year

1) The Maximum Mode is measured according to SYSTEST 32 of Fujitsu for PCs (to be replaced by Energy Star standard benchmarking tool when available).

2) The On-mode is determined by the proposal of the European MEEuP Product Cases Report (2005) based on the MEEuP Methodology Report for the European Commission (2005):

On-mode for Office PC is calculated by: 90% Idle, 10% full load / maximum.

3) Display power consumption of 0.0 watt in Off-Mode realized either with 0-Watt-Power-Save-Mode on selected Fujitsu display models or switched monitor outlet on power supply unit of certain PC models.

4) The typical Annual Energy Consumption (AEC) is calculated simular to the energy calculator of Energy Star: www.eu-energystar.org

Power management is set to normal. The choice of use for calculation is Busy Office with the following usage patterns:

Power measurement at: 230 V / 50 Hz

Hours / day	Business: Office (260 days/a)
On-mode 2)	8
Standby-Modus	2
Off-mode 3)	14

Other day´s per year are calculated in Off-mode; WOL: Wake on LAN
*) ACPI: Advanced Configuration and Power Interface specification, an open industry standard, first released in December 1996
ACPI S0: Working, the normal working state of the computer
ACPI S3: known as Suspend to RAM (STR), Standby in versions of Windows through Windows Vista
ACPI S5: Soft Off - some components remain powered so the computer can "wake up" from input from the keyboard, clock, modem, LAN or USB device

The measurements of Fujitsu Technology Solutions are based on the Business Usage Szenario.

Used formula for business office: On mode = 0,9*Power consumption Idle + 0,1* Power Consumption Maximum; Typical annual energy consumption = ((8h * Power consumption on mode + 2h *Power consumption Standby +14h *Power consumption Minimum WOL enabled) *260d+105d *Power consumption Minimum WOL enabled*24h)/1000

5) Used formula for Typical Energy Consumption(TEC), ENERGY STAR® 5 based
TEC=(8760/1000) * (Power consumption:Minimum (S5,soft off,wake up power button)*0,55+Power consumption:Standby(S3)*0,05+ Power consumption:idle*0,4)

Power consumption in accordance to Blue Angel certification (max. configuration per category 230 V / 50 Hz)			
Desktop Category (Definition is identical to ENERGY STAR® 5)	B	C	D
Max. power consumption: Idle (S0, running OS, Idle-mode)	35.4 W	40.1 W	43.2 W
Max. power consumption: Standby (S3, energy saving mode, WOL enabled)	0.08 W	0.08 W	0.07 W
Max. power consumption: Minimum (ACPI status S5, soft off, WOL disabled)	2.03 W	1.32 W	2.02 W
Max. typical energy consumption (TEC), based on ENERGY STAR® 5	125.2 kWh/year	141.4 kWh/year	152.6 kWh/year

Fujitsu OPTIMIZATION Services

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Learn more about Fujitsu ESPRIMO E910 E90+, please contact your Fujitsu sales representative or Fujitsu Business partner, or visit our website.
www.fujitsu.com/fts/ESPRIMO

Fujitsu green policy innovation

Fujitsu Green Policy Innovation is our worldwide project for reducing burdens on the environment. Using our global know-how, we aim to resolve issues of environmental energy efficiency through IT. Please find further information at http://www.fujitsu.com/global/about/environment/



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2012-08-27 CE-EN