

System Requirements for dSPACE Release 2014-B

If your system meets the following requirements, you can work with RCP and HIL software (containing RTI, ConfigurationDesk, MotionDesk, ModelDesk, etc.), AutomationDesk, TargetLink, Model Compare, ControlDesk Next Generation, SystemDesk, and VEOS. Performing more complex tasks has additional requirements regarding your system, see *Additional Requirements for Specific Products and Tasks* on page 6.

The system requirements of the current dSPACE Release, are also available at <http://www.dspace.com/go/sysreq>.

Host PC Hardware

You can use x86-compatible personal computers as host PCs for your dSPACE applications. If you install the 64-bit versions you need a 64-bit (x64) processor.

ControlDesk Next Generation can also be installed on the MicroAutoBox Embedded PC, running under Microsoft Windows 7 Ultimate (32-bit version).

Host Processor

RCP and HIL software, AutomationDesk, TargetLink, Model Compare, SystemDesk, VEOS, and ControlDesk Next Generation require at least a Pentium 4 at 2 GHz (or equivalent).

For SystemDesk a Pentium 4 at 3 GHz or higher is recommended. For VEOS a processor with at least two CPU cores is recommended.

Main Memory

- To work with 32-bit versions of RCP and HIL software, AutomationDesk, TargetLink, or ControlDesk Next Generation, the main memory must be at least 1 GB RAM (2 GB RAM or more recommended).
- To work with SystemDesk, Model Compare or VEOS, the main memory must be at least 2 GB RAM (for SystemDesk and Model Compare recommended: 3 GB RAM or more).
- To work with the 64-bit versions of RCP and HIL software, TargetLink or Model Compare the main memory must be at least 4 GB RAM (recommended: 8 GB RAM or more).

Disk Space

- For a complete installation of the 32-bit or 64-bit DVD set, you need up to 18 GB of free hard disk space (for each DVD set) on the program partition (plus up to 9 GB on the system partition, for example, for runtime software like the Microsoft .NET Framework).
- Additional disk space is required for non-dSPACE software, such as software from The MathWorks.

Disk Drives

DVD drive for the software installation.

Required Ports for Connecting Hardware

RCP and HIL software

- For communication with RapidPro hardware, you need a USB port.

TargetLink and VEOS

For processor-in-the-loop (PIL) simulation, you need:

- A serial port (COM1, COM2, COM3 or COM4) that can be run at 19.200, 38.400, 57.600 or 115.200 bps
- A free USB port when using the NEC CanIt F3377, MCT S12X T-Board USB, Freescale MPC5561EVB USB, Infineon TBTC1767 or Infineon SK-EB XC2287 evaluation board

ControlDesk Next Generation

- For connecting hardware (DCI-CAN1, CalHub, DCI GSI), you need a USB port version 1.1 (USB 2.0 recommended).
- For using the Steering Controller Instrument, you need a USB port to connect a game controller device.

- To connect a video camera to the video capturing device, you need a USB port or an Ethernet port (depending on the camera used.).
- For using ControlDesk Failure Simulation, you need a serial port that can be run at 9.600 bps to connect dSPACE Simulator's failure insertion unit (FIU).

Display

- To work with RCP and HIL software, MATLAB requires an OpenGL-compliant graphics adapter (16, 24, or 32-bit). The color must be set to at least 16-bit in the Windows Display Properties.
- To work with TargetLink and/or ModelCompare, you need a standard graphics adapter with 1024 x 768 resolution (min.). Windows' display property "Custom Text Size (DPI)" must be set to 100 % (default setting) or to 125 %. Other settings are not supported.
- To work with ControlDesk Next Generation requires a graphics card supporting at least Microsoft DirectX 9. If you use ControlDesk Next Generation in a VMware environment, 3D support must be enabled in VMware.

Additional Requirements for License Handling

- Dongle licenses: To install the execution key (dongle), you need a USB port.
- Floating network licenses: All the PCs on which you want to run dSPACE software (dSPACE License Clients) need to be able to establish a TCP/IP connection to the dSPACE License Server.

Required Slots

- You cannot install a modular system based on DS1005, DS1006 or DS1007 in the host PC. You can install these systems only in an expansion box.
- To install a DS1103, you need one free ISA slot and three adjacent brackets. The standard PCs currently available do not provide ISA slots. As an alternative install a DS1103 in an expansion box. When installed directly in the host PC, the DS1103 cannot be used with the standard installation routines. In this case, contact dSPACE Support.
- To install a DS1104, you need one free 33 MHz/32-bit 5 V PCI slot or one PCIe slot depending on the board variant.
- To connect your modular system (based on DS1005/DS1006), DS1103, MicroAutoBox, or dSPACE Simulator Mid-Size to the host PC via a bus connection, you need link boards in your host PC:
 - The DS815 Link Board (PC) requires one free PC card slot (type 2).
 - The DS817 Link Board (PC) requires one free 5 V PCI slot.
 - The DS819 Link Board (PC) requires one free PCI Express slot (x1 ... x32).
 - The DS821-34 mm Link Board (PC) requires one free ExpressCard/34 slot or one free ExpressCard/54 slot.
 - The DS821-54 mm Link Board (PC) requires one free ExpressCard/54 slot.
- The DS1007, MicroAutobox II, MicroLabBox and the SCALEXIO system require no link board. Host PC communication is established via Ethernet.

Operating System

Operating System on Host PC for 32-bit dSPACE Software

Your operating system must be:

- Windows 7 (32-bit or 64-bit version) with Service Pack 1. Only the editions Windows 7 Professional, Ultimate, and Enterprise are supported. The editions Windows 7 Home Basic and Home Premium are not supported.

Notes:

- 32-bit dSPACE software supports the 64-bit version of Windows 7. Other 64-bit operating systems are not supported. 32-bit dSPACE software runs under 64-bit Windows operating systems in a WoW64 (Windows-On-Windows64) subsystem.
- ControlDesk Next Generation can also be installed on the MicroAutoBox Embedded PC, running under Microsoft Windows 7 Ultimate (32-bit version).

Operating System on Host PC for 64-bit dSPACE Software

Your operating system must be:

- Windows 7 (64-bit version) with Service Pack 1. Only the editions Windows 7 Professional, Ultimate, and Enterprise are supported. The editions Windows 7 Home Basic and Home Premium are not supported.
- For details on the compatibility with 64-bit MATLAB versions, refer to <http://www.dspace.com/go/MATLAB64bit>.

Allowing communication via additional firewall rules

Additional Windows firewall rules are installed during the installation of various dSPACE software products. For example, one rule allows communication with a dSPACE expansion box such as AutoBox and another rule allows MotionDesk to receive motion data from a network channel.

Operating System on dSPACE License Server

If you purchased floating network licenses, you have to install and configure one of the networked PCs as the dSPACE License Server.

The operating system of the dSPACE License Server must be:

- Windows XP Professional (32-bit version) with Service Pack 3
- Windows Vista Business, Ultimate, or Enterprise (32-bit or 64-bit version) with the latest Service Pack
- Windows 7 Professional, Ultimate, or Enterprise (32-bit or 64-bit version) with the latest Service Pack,
- Windows Server 2003 (32-bit or 64-bit version) or 2008 R2
- Windows Server 2012

The dSPACE License Server does not support non-Windows operating systems.

Windows 7 Limitations

Some limitations apply to Windows 7 as the operating system when you use it in combination with dSPACE software:

- **MATLAB support:** For system requirements of The MathWorks software, refer to http://www.mathworks.com/support/sysreq/current_release/index.html.
- **Fast user switching:** The dSPACE software does not support the fast user switching feature of Windows.
- **User Account Control:** It is recommended to disable Windows' User Account Control (UAC) during the installation of dSPACE software. If you cannot disable it, you should note the following Windows behavior: If UAC is enabled, the setup programs run with the administrator account instead of the user account. Therefore it is important that the administrator account has access to the required drives, particularly to the required network drives.

64-Bit Windows with dSPACE 32-Bit Software Limitations

Some limitations apply when you use 64-bit Windows operating systems in combination with dSPACE 32-bit software:

- **Limitations of device drivers:** Third-party bus interfaces (CAN, LIN, or FlexRay) are supported only if they are provided with 64-bit drivers from the manufacturers.
- **Limitations of TargetLink target compilers:** For information on support for a specific target compiler, contact the respective compiler manufacturer.

dSPACE 64-Bit Software Limitations

Some limitations apply when you use the 64-bit version of dSPACE products:

- **Parallel installation of 32-bit and 64-bit MATLAB version:** On a 64-bit operating system, you can install both a 32-bit and a 64-bit version of a particular MATLAB release, for example, R2014b. However, MATLAB 32-bit/64-bit versions of the same release share the same preference settings folder, which means that you have to set all architecture-dependent settings such as the MEX compiler settings each time you switch between different bit-versions of the same MATLAB release.
- **Importing an A2L file:** It is not possible to import an A2L file into a 64-bit version of TargetLink. However, you can use a workaround described in the dSPACE documentation.
- **dSPACE HIL API .NET** does not support 64-bit MATLAB versions. Therefore also the `rtimepiag` command of RTI-MP is not functional under 64-bit MATLAB.
- **RCP and HIL software (64-bit)** supports only Microsoft Windows SDK 7.1 to build MEX functions.
- **Further limitations:** For further product-specific limitations, refer to <http://www.dspace.com/go/MATLAB64bit>.

Third-Party Software

Microsoft Internet Explorer

dSPACE Release 2014-B supports Microsoft Internet Explorer 6 SP1 or later. However, limitations can occur when you use the Microsoft Internet Explorer with dSPACE software, for example, with AutomationDesk. Refer to the limitations chapter in the relevant documentation. To use the dSPACE HelpDesk of dSPACE Release 2014-B, you need Microsoft Internet Explorer 6 SP1 or later.

MATLAB®

Working with various dSPACE products requires that you have installed one of the following MATLAB releases: MATLAB R2013a, R2013b, R2014a, R2014b.

Note the following exceptions:

- R2014b is not supported by the RTI FPGA Programming Blockset – FPGA Interface.
R2014a is supported by the RTI FPGA Programming Blockset – FPGA Interface for MicroLabBox (Xilinx Vivado based).
R2014a is not supported by the RTI FPGA Programming Blockset – FPGA Interface for all other (Xilinx ISE based) platforms.
- R2013a: Due to performance problems with dSPACE Automotive Simulation Models (ASM), it is recommended to install the following bugfix before you use ASM with R2013a:
<http://www.mathworks.com/support/bugreports/916069>.
- TargetLink and Model Compare are distributed as 32-bit and 64-bit versions. Only the 64-bit versions of these products support the 64-bit versions of MATLAB. The 32-bit versions support only 32-bit versions of MATLAB.
- The RCP and HIL software package is distributed as a 32-bit and a 64-bit version. However, some products are available only as 32-bit versions, for example, if the product is independent of the MATLAB architecture. For details, refer to <http://www.dspace.com/go/MATLAB64bit>.
- The 32-bit version of AutomationDesk and dSPACE Python Extensions also support 64-bit MATLAB versions if the 32-bit MATLAB version from the same MATLAB release is installed on your host PC in parallel.
- VEOS is distributed as a 32-bit version but also supports 64-bit versions of MATLAB.

For C-code generation with RTI, RTI-MP, ConfigurationDesk (Implementation Version) and of Automotive Simulation Models (ASMs) and to build VPUs from Simulink models with dSPACE Target for Offline Simulation you need Simulink Coder and MATLAB Coder from The MathWorks. Make sure that the MATLAB and Simulink versions are supported by the dSPACE software you intend to install. For details refer to our Web site at <http://www.dspace.com/go/compatibility>.

C Compiler for RCP and HIL Software

- For MicroAutoBox, the DS1103, DS1104 and DS1005 boards, and the RapidPro Control Unit with MPC5554, you must install the Microtec PowerPC C Compiler Ver. 3.7.8. If you have ordered the compiler together with your dSPACE system, it is installed automatically with the dSPACE software.
- For the DS1006, the dSPACE DS1006 Compiler Ver. 3.0 (based on GNU C Compiler Ver. 4.8.3) is installed automatically together with the dSPACE software.
- For the DS1007, MicroLabBox and the SCALEXIO system, the required version of the QNX Compiler for dSPACE systems (based on a GNU C compiler) is installed automatically together with the dSPACE software.
- For compiling slave applications for the DS2302, DS2210, and DS2211 I/O boards, you must install TMS 320C3x/C4x Code Generation Tools Ver. 4.70 or 5.11 or TMS 320C3x/C4x Code Composer Tools Release 4.10 from Texas Instruments. Installation of TMS 320C3x/C4x Code Composer Tools Release 4.10 (containing C3x/C4x Code Generation Tools 5.11) under Windows 7 (64-bit) is not possible. For information on a workaround, refer to http://e2e.ti.com/support/development_tools/code_compiler_studio/f/81/t/211223.aspx or contact dSPACE Support.
- For compiling slave applications for the DS1103, you must install Texas Instruments Code Composer Studio (CCStudio) Integrated Development Environment (IDE) v3 – for F24x/C24x devices.

C Compiler for TargetLink

You must install one of the following C compilers to build MATLAB MEX files and software-in-the-loop (SIL) simulation applications:

- Microsoft Windows SDK 7.1 or Microsoft Visual C/C++ Professional Ver. 9.0, Ver. 10.0, Ver. 11.0, or Ver. 12.0.
- LCC Compiler as shipped with the supported 32-bit MATLAB versions. If you use a 64-bit version of MATLAB, an LCC compiler for building 64-bit MEX files is not usable, because it is not shipped with 64-bit MATLAB versions or the shipped LCC-Win64 compiler does not support building MEX files or S-functions.

Processor-in-the-loop (PIL) Simulation

- An evaluation board (EVB) has to be available (see table below)
- A target compiler has to be available (see table below)

Compatible Evaluation Boards for PIL Simulation in TargetLink	Compatible C Compilers
Freescale HCS12EVB	Cosmic 4.8
MCT HCS12 T-Board (DP256)	Metrowerks CodeWarrior 5.1
MCT HCS12 T-Board (DP512)	
Freescale 56F8367 Evaluation Module	Metrowerks CodeWarrior 8.3
Axiom MPC5554DEMO	GNU 4.1
	Green Hills 2013
	Metrowerks CodeWarrior 2.8
	Wind River Diab 5.9
Freescale MPC5604BEVB	Green Hills 2012
	Green Hills 2013
	Wind River Diab 5.9
MCT S12X T-Board	Cosmic 4.8
MCT S12X T-Board USB	Metrowerks CodeWarrior 5.1
I+ME Promotion Package 166	TASKING C166/ST10 Toolchain 8.6, 8.7
Infineon TriBoard TriCore 1766	TASKING TriCore VX-Toolset 3.2, 4.3
Infineon TriBoard TriCore 1766 20 MHz	
Infineon TriBoard TriCore 1767	TASKING TriCore VX-Toolset 3.2, 4.3
Infineon TriBoard TriCore 1796	TASKING TriCore VX-Toolset 3.2, 4.3
	HighTec GNU 3.4
Infineon EasyKit XC2287	TASKING VX-toolset for C166 3.0
NEC Fx3-CAN it!	Green Hills 2013
	NEC 3.40
Renesas M3A-2154	Gaio 9, 11
	Renesas 5.1
Renesas EVB7058	Renesas 9.3, 9.4
Renesas SH72513 System Development Kit	Renesas 9.4
Renesas AB_050_Fx4_70_F4012	Green Hills 2013

If your target is not listed here, refer to the TargetLink PIL Support Web site at <http://www.dspace.com/go/tpil>.

C Compiler for VEOS

You must install one of the following C compilers to build to build software-in-the-loop (SIL) simulation applications:

- Microsoft Visual C/C++ Compiler Ver. 10.0 (provided by Microsoft Windows SDK 7.0a) or Ver. 11.0 (provided by Microsoft Windows SDK 8.1).
- GNU GCC C Compiler (all versions). The GNU GCC Ver. 4.8 is shipped with the dSPACE software and installed automatically.

You must install a target-specific compiler to build processor-in-the-loop (PIL) simulation applications. For details, refer to <http://www.dspace.com/en/pub/home/support/supvers/supverscomp/sdpil.cfm>.

Third-Party Software for ControlDesk Next Generation

- API and driver for CAN, LIN or FlexRay interfaces from Vector Informatik GmbH
To use CAN, LIN or FlexRay interfaces from Vector Informatik GmbH with ControlDesk Next Generation, you need the appropriate API and driver:
 - API: XL Driver Library 8.0 or later (provided by the ControlDesk Next Generation installation)
 - Driver: Vector Driver Ver. 8.0 or later. You need a driver version that is compatible with the API you use. Download the driver from <http://www.vector-informatik.de>.
- Driver for CAN/LIN Interfaces from Kvaser
To use Kvaser CAN/LIN interfaces with ControlDesk Next Generation, you need the appropriate Kvaser driver: Kvaser CAN Ver. 4.0 or later or Kvaser LIN Ver. 7.0 or later. Download it from <http://www.kvaser.com>.
- Driver for CAN, LIN or FlexRay interfaces from Eberspächer Electronics (formerly TZM)
To use these CAN, LIN or FlexRay interfaces with ControlDesk Next Generation, you need the appropriate driver Ver. 6.4 (or later). Download it from <http://www.eberspaecher.com>.
- Drivers for CAN interfaces from KPIT Technologies GmbH
To use CAN interfaces from KPIT Technologies GmbH (<http://www.kpit.com/engineering/automotive/vehicle-diagnostics>) with ControlDesk Next Generation, you need the appropriate driver version. Contact dSPACE or inquire at diagnostics@kpit.com for details.
- Driver software for K-Line interfaces
To use K-Line interfaces from KPIT Technologies GmbH (<http://www.kpit.com/engineering/automotive/vehicle-diagnostics>) with ControlDesk Next Generation, you need the appropriate driver version. Contact dSPACE or inquire at diagnostics@kpit.com for details.
- Driver software for video cameras
To access video cameras from IDS (<http://www.ids-imaging.com>) with ControlDesk Next Generation, you need to install and activate the appropriate driver software. ControlDesk requires the driver software to access these cameras via DirectShow.

Expansion Box Requirements

Connecting an Expansion Box and Host PC via Bus Connection

- The DS814 Link Board has to be installed in the expansion box.
- The DS815, DS817, DS819, or DS821 Link Board has to be installed in the host PC.
- You cannot connect the currently available dSPACE boards to the host PC via DS811 and DS812 Link Board.

Connecting an Expansion Box and Host PC via Ethernet

- A slot CPU with an integrated network adapter has to be installed in the expansion box.
- Valid for DS1007 systems: The DS1007 provides an Ethernet interface onboard to connect the system installed in the expansion box to the host PC via Ethernet.
- The host PC must have a 10baseT (twisted pair, 10 Mbit/s or faster) network adapter.

Required Slots

- To install a DS1103, you need one free, full-size ISA slot and two additional, free, adjacent brackets.
- To install a modular system based on DS1005, DS1006, or DS1007 you need as many free slots in the box as the number of boards you want to install. Note that the DS2210 requires two adjacent brackets altogether. The DS5203 requires two adjacent brackets, if the DS5203M1 I/O modules are installed. The DS2202, DS2211, DS4003 and the DS4004 each require a total of three adjacent brackets.
- Valid for DS1005 and DS1006:
One free full-size ISA slot is required either by the DS814 (bus connection) or the slot CPU (Ethernet connection). Note that the slot CPU (supplied as of March 2008) requires two slots if you use it in an AutoBox with a DS1005.
- The DS1006 has special slot requirements to ensure proper cooling of the AMD Opteron™ processor:
- In a PX20, the slot requirement depends on the board revision: Up to board revision DS1006-03 each DS1006 requires four slots (including one slot for the DS814 Link Board or the slot CPU). As of board revision DS1006-06 each DS1006 requires three slots. However none of them can be used for the DS814 Link Board or the slot CPU.
- In a PX10, the DS1006 requires either two slots (with Gigalink module) or one slot (without Gigalink module), if installed next to the box's power supply (recommended).

Installing DS1006 in an Expansion Box

- The DS1006-based modular system must be installed in a PX10 or PX20 Expansion Box. PX10 supports one, PX20 up to two DS1006.
- The Expansion Boxes need special power supplies and connectors which fulfill the DS1006 requirements. For information on whether your existing expansion box fulfills these requirements, refer to <http://www.dspace.com/go/pxboxvers>.
- You cannot insert a DS1006 in a PX4 Expansion Box, or an AutoBox/TandemAutoBox.

Installing DS1007 in an Expansion Box

- The DS1007-based modular system can be installed in a PX10 or PX20 Expansion Box or in an AutoBox/Tandem-AutoBox. PX10 and AutoBox support one, PX20 and Tandem-AutoBox support up to two DS1007.
- You cannot insert a DS1007 in a PX4 Expansion Box.

Additional Requirements for Specific Products and Tasks

For some complex tasks, your system has to meet additional requirements.

Using RTI FPGA Programming Blockset

Host PC Requirements

- Pentium 4 at 2 GHz (Intel Core 2 6600 at 2.4 GHz or higher recommended)
- 2 GB (4 GB RAM or more recommended)

Remote Control of Measurement and Calibration Systems According to ASAM-MCD 3MC (ASAP3) via AutomationDesk

Software Requirements

- A description file for your ECU
- A binary data (HEX) file containing the basic configuration of the ECU
- A properly installed ASAM MC 3MC-compatible measurement and calibration (MC) system

Hardware Requirements

- An ECU that can be connected to a measurement and calibration (MC) system
- If your host PC provides two free serial interface connectors, both AutomationDesk and the MC system can run on it. Otherwise, AutomationDesk and the MC system require one PC each.

3-D Online Animation via MotionDesk

Software Requirements

- 64-bit version of Windows 7 is recommended.
- The latest driver for the graphics adapter must be installed. This driver must support OpenGL Ver. 2.1 and OpenGL Shading Language Ver 1.4.

Hardware Requirements

- At least a Pentium 4 at 2 GHz, 4 GB RAM is required. Recommended: Intel Core i5 or i7 processor, 8 GB RAM or more.
- At least 12 GB free disk space.
- For a Multi-PC solution with DS1005/DS1006 (not possible for DS1103 or MicroAutoBox) you need additional hardware (not required for DS1007, SCALEXIO systems, VEOS): a MotionDesk Multi-PC Interface Kit for the simulator and an Ethernet card (10 MBit/s or faster) for each connected MotionDesk PC.
- For a Simulink simulation, the Simulation PC and each connected MotionDesk PC must have at least a 10 Mbit/s Ethernet card. If simulation and visualization run on the same PC, one 10 Mbit/s Ethernet card is sufficient for that PC.

Graphics Card Specification

- Type: NVIDIA graphics accelerator (OpenGL-compliant)
- Supported cards: NVIDIA Quadro, Quadro FX, Quadro NVS, also mobile derivatives; NVIDIA GeForce GTX family higher than GeForce GTX 285; NVIDIA GeForce GTX Ti family.
- Unsupported cards: NVIDIA GeForce GT family, GTS family; ATI/AMD graphics accelerators (not tested); Intel graphics accelerators
- Graphics memory: At least 1 GB RAM.

Recommended: at least 2 GB RAM and two output channels (one output channel to display MotionDesk, the other one to display ModelDesk, ControlDesk or MATLAB).

Additional Requirements for Notebooks

- MotionDesk has high requirements with regard to graphic performance and driver quality. In some cases MotionDesk will not operate properly on notebooks.
- The notebook should be equipped with a supported NVIDIA graphics accelerator (see list above).
- MotionDesk requires NVIDIA Optimus technology to be deactivated. The dedicated graphics accelerator must be the only active graphics accelerator.

Onboard Graphic Adapters

dSPACE does not guarantee that MotionDesk will run on computers with onboard graphic adapters for the following reasons:

- The specialized on-board graphics processing units often behave differently from high-end graphics cards.
- Even if the technical specifications of these processing units match the formal requirements, drivers are often not stable enough to satisfy the requirements of 3D real-time applications.

Not Supported Environments

Because it uses OpenGL software rendering, MotionDesk does not support the following environments:

- VMware or similar products utilizing software rendering
- Remote desktop software

Using MotionDesk in one of these environments will result in false rendering because the OpenGL software renderer does not support graphics shaders.

Using Automotive Simulation Models (Vehicle Dynamics, Trailer, Truck, Traffic Scenarios)

If you use the models for vehicle dynamics, trailer, truck and traffic scenario simulations, your host PC has to meet the following requirements.

Software Requirements

- 64-bit version of Windows 7 is recommended.

Hardware Requirements

- At least a Pentium 4 at 2 GHz. Intel Core i5 or i7 processor is recommended.
- The main memory must be at least 4 GB RAM. 8 GB RAM or more are recommended.

Video Capturing with ControlDesk Next Generation

If you use the video capturing device of ControlDesk Next Generation, your host PC has to meet the following additional requirements.

Software Requirements

- 64-bit version of Windows 7 is recommended.

Hardware Requirements

- At least an Intel Core 2 Duo processor at 2 GHz. Intel Core i7 processor at 3.4 GHz is recommended.
- The main memory must be at least 4 GB RAM. 8 GB RAM or more are recommended.

Resource Requirements of dSPACE Boards

dSPACE boards require different resources in the host PC and the expansion box depending on the installation.

Installation in the Host PC

The following table lists the required I/O address ranges together with the default addresses and the required memory of dSPACE boards when installed in the host PC. Some dSPACE boards support Plug & Play in which case they require an interrupt request line (IRQ). However the boards operate correctly even if no free IRQ is available.

Board	Slot Type	Required I/O Address Range	Default I/O Base Address	Required Memory Range	Required IRQ
DS1104	PCI	None	None	Two 4 KB blocks (Plug & play)	1 (PCI)
DS1104 (PCIe variant)	PCIe	None	None	Two 4 KB blocks (Plug & play)	1 (PCIe)
DS815	PCMCIA	10H	Plug & Play	None	1 (ISA)
DS817	PCI	10H	Plug & Play	None	1 (PCI)
DS819 ¹⁾	PCI Express	10H	Plug & Play	None	1 (PCI Express)
DS821 ¹⁾	Express Card	10H	Plug & Play	None	1 (PCI Express)

¹⁾ Supported by the dSPACE software as of dSPACE Release 5.2.

Installation in the Expansion Box

When installed in an expansion box, dSPACE boards require the following resources in the expansion box:

Board	Required I/O Address Range	Default I/O Base Address	Required Memory Range	Required IRQ
DS1005	10H	300H	None	None
DS1006 up to board revision DS1006-03	10H	300H	None	None
DS1006 as of board revision DS1006-06 (multicore processor board)	40H	300H	None	None
DS1103	10H	300H	None	None
DS2302	10H	380H	None	None

The DS1007 PPC Processor Board does not need any resources in the expansion box.

Connection via DS815, DS817, DS819, or DS821 Link Board

The Link Boards require the following resources in the host PC:

Required I/O Address Range	Default I/O Base Address	Required Memory Range	Required IRQ
10H	Plug & Play	None	1 <ul style="list-style-type: none"> • ISA for DS815 • PCI for DS817 • PCI Express for DS819/DS821

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