



Summary

Technical Reference
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This Reference provides a concise reference of the FPGA API as part of the Altium Designer Run Time Library.

The FPGA Application Programming Interface reference covers interfaces for FPGA objects in the FPGA Object Model for the Altium Designer application.

The FPGA interfaces exist as long there are associated existing objects in memory, thus when writing a script or server code, you have the responsibility of checking whether the interface you wish to query exists or not before you proceed to invoke the interface's methods.

To obtain the interface which represents the FPGA work bench object, invoke the **GetNexusWorkbench** function in your script which returns you the **INexusWorkbench** interface. Which you can then extract data from FPGA objects and invoke FPGA object's methods.

Example

```
NexusWorkBench := GetNexusWorkbench;  
If NexusWorkBench.GetSoftDeviceCount > 0 Then  
    SoftDeviceCount := NexusWorkBench.GetSoftDeviceCount  
Else Exit;
```

FPGA API components

The FPGA API is covered in three separate files; RT_FPGA, RT_NexusWorkspace and RT_NexusDevice units.

Main FPGA Interfaces

The **INexusWorkbench** interface is the main interface in FPGA API. To use FPGA interfaces, invoke the **GetNexusWorkbench** function to retrieve the **INexusWorkbench** interface.

Script Examples

There are FPGA script examples in the `\Examples\Scripts\DelphiScript\FPGA` folder which demonstrate the use of FPGA interfaces.

FPGA Interfaces Overview

When you need to deal with the objects associated with the NanoBoard and the FPGA editor software, the starting point is to invoke the **GetNexusWorkbench** function or the **GetDeviceManager** function in your script. This function returns you the **INexusWorkbench** object interface or the **IDeviceManager** object interface.

Main interfaces for the Nexus WorkBench

INexusWorkbench

IProjectLink

IPCBProjectLink

Main interfaces for the Nexus Devices

INexusDevice

INexusBreakpoint

IMemorySpace

IProcessorRegister

IInstrumentView

IJTagChannel

IBSDLObject

IBSDLEntity

IScanPin

IPinMapping

IBoundaryCell

IInstructionOpCode

IRegisterAssociation

IDeviceInformation

FPGA low level routines

Constants

Types

Functions

Classes

Nexus WorkBench Interfaces (RT_NexusWorkspace unit)

Nexus WorkBench Interfaces

INexusWorkBench and its interfaces

IDeviceLink interface

INexusCore interface

INexusWorkBench interface

INexusNotification interface

IPCBProjectLink interface

IProjectLink interface

ISchComponentLink interface

Constants

Nexus Notifications values

```

cNexusDeviceStatusesChanged      = 0;
cNexusHardDeviceChainChanged     = 1;
cNexusSoftDeviceChainChanged     = 2;
cNexusCurrentHardDeviceChanged   = 3;
cNexusCurrentSoftDeviceChanged   = 4;
cNexusProjectCoreTreeChanged     = 5;
cNexusProcessFlowStatusChanged   = 6;
cNexusConnectionStatusChanged    = 7;
cNexusCurrentBoardDeviceChanged  = 8;
cNexusBoardDeviceChainChanged    = 9;
cNexusProjectListChanged         = 10;
cNexusOnIdle                     = 11;
cNexusBeginUpdate                = 12;
cNexusEndUpdate                  = 13;

```

Nexus Parameter Names

```

cNexusParameterName_Device      = 'NEXUS_JTAG_DEVICE';
cNexusParameterName_Connector   = 'NEXUS_JTAG_CONNECTOR';
cNexusParameterName_Order       = 'NEXUS_JTAG_ORDER';
cNexusParameterName_Index       = 'NEXUS_JTAG_INDEX';
cNexusParameterName_Core        = 'NEXUS_CORE';
cNexusParameterName_FPGA        = 'NEXUS_FPGA_DEVICE';

cNexusParameterName_MemoryDepth = 'Memory_Depth';
cNexusParameterName_MemoryWidth = 'Memory_Width';
cNexusParameterName_MemoryDepthA = 'Memory_DepthA';
cNexusParameterName_MemoryWidthA = 'Memory_WidthA';
cNexusParameterName_MemoryDepthB = 'Memory_DepthB';
cNexusParameterName_MemoryWidthB = 'Memory_WidthB';
cNexusParameterName_MemoryType   = 'Memory_Type';
cNexusParameterName_MemoryUse    = 'Memory_Use';
cNexusParameterName_MemoryClockEdge = 'Memory_ClockEdge';
cNexusParameterName_MemoryEnablePin = 'Memory_EnablePin';

```

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```
cNexusParameterName_MemoryContentFile = 'Memory_ContentFile';
cNexusParameterName_MemoryProgramFile = 'Memory_ProgramFile';
cNexusParameterName_MemoryResetPin    = 'Memory_ResetPin';
cNexusParameterName_MemoryByteIndex   = 'Memory_ByteIndex';
cNexusParameterName_MemoryHalfIndex   = 'Memory_HalfIndex';
cNexusParameterName_MemoryByteWrites  = 'Memory_ByteWrites';

cNexusParameterName_ClockCount        = 'Clk_Count';
cNexusParameterName_ClockInputFrequency = 'Clk_InputFreq_MHz';
cNexusParameterName_ClockAOperation   = 'ClkA_Operation';
cNexusParameterName_ClockBOperation   = 'ClkB_Operation';
cNexusParameterName_ClockCOperation   = 'ClkC_Operation';
cNexusParameterName_ClockDOperation   = 'ClkD_Operation';
```

cNexusCoreKindString

```
cNexusCoreKindString : Array[TNexusCoreKind] Of WideString =
(
    {eNexusCoreKind_None           } 'None'           ,
    {eNexusCoreKind_Processor_OCDS } 'Processor_OCDS' ,
    {eNexusCoreKind_Processor_Standard} 'Processor_Normal' ,
    {eNexusCoreKind_Processor_Hard  } 'Processor_Hard'  ,
    {eNexusCoreKind_Memory_Program  } 'Memory_Program' ,
    {eNexusCoreKind_Memory_Data     } 'Memory_Data'     ,
    {eNexusCoreKind_Instrument      } 'Instrument'      ,
    {eNexusCoreKind_ClockManager    } 'ClockManager'    ,
);
```

cNexusCoreInstancePrefixString

```
cNexusCoreInstancePrefixString : Array[TNexusCoreKind] Of WideString =
(
    {eNexusCoreKind_None           } ''           ,
    {eNexusCoreKind_Processor_OCDS } ''           ,
    {eNexusCoreKind_Processor_Standard} ''           ,
    {eNexusCoreKind_Processor_Hard  } ''           ,
    {eNexusCoreKind_Memory_Program  } 'Memory_' ,
    {eNexusCoreKind_Memory_Data     } 'Memory_' ,
    {eNexusCoreKind_Instrument      } ''           ,
    {eNexusCoreKind_ClockManager    } 'Clock_' ,
);
```

```
);
```

cConfigurableComponentInstancePrefix

```
cConfigurableComponentInstancePrefix = 'Configurable_';
```

cNexusProcessorsAndHardProcessor

```
cNexusProcessorsAndHardProcessor : Set Of TNexusCoreKind =
```

```
[
    eNexusCoreKind_Processor_OCDS,
    eNexusCoreKind_Processor_Standard,
    eNexusCoreKind_Processor_Hard
]
```

```
];
```

cNexusProcessors

```
cNexusProcessors : Set Of TNexusCoreKind =
```

```
[
    eNexusCoreKind_Processor_OCDS,
    eNexusCoreKind_Processor_Standard
]
```

```
];
```

cNexusInstruments

```
cNexusInstruments : Set Of TNexusCoreKind =
```

```
[
    eNexusCoreKind_Processor_OCDS,
    eNexusCoreKind_Instrument
]
```

```
];
```

cNexusMemories

```
cNexusMemories : Set Of TNexusCoreKind =
```

```
[
    eNexusCoreKind_Memory_Data,
    eNexusCoreKind_Memory_Program
]
```

```
];
```

cNexusClockManagers

```
cNexusClockManagers : Set Of TNexusCoreKind =
```

```
[
    eNexusCoreKind_ClockManager
]
```

```
];
```

Types

```
TNexusCoreKind = (eNexusCoreKind_None,  
                  eNexusCoreKind_Processor_OCDS,  
                  eNexusCoreKind_Processor_Standard,  
                  eNexusCoreKind_Processor_Hard,  
                  eNexusCoreKind_Memory_Program,  
                  eNexusCoreKind_Memory_Data,  
                  eNexusCoreKind_Instrument,  
                  eNexusCoreKind_ClockManager);
```

Functions

```
Function GetNexusWorkbench                               :  
INexusWorkbench;          SafeCall;  
Function GetNexusCoreKindFromParameters (Parameters : PChar) :  
TNexusCoreKind;  
Function GetNexusCoreKindFromString (S : TDynamicString) :  
TNexusCoreKind;
```

IDeviceLink Interface

IDeviceLink Interface

Overview

The **IDeviceLink** interface hierarchy is as follows;

IDeviceLink methods

- ProcessFlow
- DownloadFlow
- AnyFlowsRunning
- GetParent
- GetChildCount
- GetChild
- GetNexusDevice
- GetNexusCore
- GetProject
- GetConfiguration
- GetJTAGDevice
- GetDeviceName

IDeviceLink properties

GetUniqueDescription
GetIndex
GetParentIndex
GetJTAGIndex
GetShortDescription

See also**AnyFlowsRunning method**

(IDeviceLink interface)

Syntax

```
Function AnyFlowsRunning : Boolean;
```

Description**Example****See also**

IDeviceLink interface

DownloadFlow method

(IDeviceLink interface)

Syntax

```
Function DownloadFlow : IProcessFlow;
```

Description**Example****See also**

IDeviceLink interface

GetChild method

(IDeviceLink interface)

Syntax

```
Function GetChild(Index : Integer) : IDeviceLink;
```

Description**Example**

See also

IDeviceLink interface

GetChildCount method

(IDeviceLink interface)

Syntax

```
Function GetChildCount : Integer;
```

Description

Example

See also

IDeviceLink interface

GetConfiguration method

(IDeviceLink interface)

Syntax

```
Function GetConfiguration : WideString;
```

Description

Example

See also

IDeviceLink interface

GetDeviceName method

(IDeviceLink interface)

Syntax

```
Function GetDeviceName : WideString;
```

Description

Example

See also

IDeviceLink interface

GetIndex method

(IDeviceLink interface)

Syntax

```
Function GetIndex : Integer;
```

Description**Example****See also**

IDeviceLink interface

[GetJTAGDevice method](#)

(IDeviceLink interface)

Syntax

```
Function GetJTAGDevice : IJTAGDevice;
```

Description**Example****See also**

IDeviceLink interface

[GetJTAGIndex method](#)

(IDeviceLink interface)

Syntax

```
Function GetJTAGIndex : Integer;
```

Description**Example****See also**

IDeviceLink interface

[GetNexusCore method](#)

(IDeviceLink interface)

Syntax

```
Function GetNexusCore : INexusCore;
```

Description**Example**

See also

IDeviceLink interface

GetNexusDevice method

(IDeviceLink interface)

Syntax

```
Function GetNexusDevice : INexusDevice;
```

Description

Example

See also

IDeviceLink interface

GetParent method

(IDeviceLink interface)

Syntax

```
Function GetParent : IDeviceLink;
```

Description

Example

See also

IDeviceLink interface

GetParentIndex method

(IDeviceLink interface)

Syntax

```
Function GetParentIndex : Integer;
```

Description

Example

See also

IDeviceLink interface

GetProject method

(IDeviceLink interface)

Syntax

```
Function GetProject : IProject;
```

Description**Example****See also**

IDeviceLink interface

GetShortDescription method

(IDeviceLink interface)

Syntax

```
Function GetShortDescription : WideString;
```

Description**Example****See also**

IDeviceLink interface

GetUniqueDescription method

(IDeviceLink interface)

Syntax

```
Function GetUniqueDescription : WideString;
```

Description**Example****See also**

IDeviceLink interface

ProcessFlow method

(IDeviceLink interface)

Syntax

```
Function ProcessFlow : IProcessFlow;
```

Description**Example**

See also

IDeviceLink interface

INexusCore Interface

INexusCore Interface

Overview

The **INexusCore** interface hierarchy is as follows;

INexusCore methods

GetEmbeddedProject
GetFPGAProject
DownloadProgramMemory
GetNexusWorkbench
GetEmbeddedProjectPath
GetFPGAProjectPath
GetCoreKind
GetComponentDesignator
GetBaseComponentDesignator
GetLibraryReference
GetComponentDocumentPath
GetHexFilePath
GetJTagIndex_FromCore
GetHexFilename
GetHexFileState
GetUniqueld
GetDescription
MatchesOtherCore
Import_FromParameters
Export_ToParameters
SupportsParameter
GetParameterValue
Export_CoreGenParameters
FindFileInProjectPaths
GetChildCore
GetChildCoreDesignator

INexusCore properties

GetChildCoreCount
 GetCrossViewProcessId
 SetCrossViewProcessId
 CrossProbe
 GetChildProgramMemoryCore
 SetEmbeddedProjectPath
 UpdateHexFileState
 GetChildProgramMemoryCoreCount
 Import_FromParameterString
 Export_ToParameterString
 Export_CoreGenParametersToString

See also**CrossProbe method**

(INexusCore interface)

Syntax

```
Procedure CrossProbe;
```

Description**Example****See also**

INexusCore interface

DownloadProgramMemory method

(INexusCore interface)

Syntax

```
Procedure DownloadProgramMemory(NexusDevice : INexusDevice);
```

Description**Example****See also**

INexusCore interface

Export_CoreGenParameters method

(INexusCore interface)

Syntax

```
Procedure Export_CoreGenParameters(Parameters : PChar);
```

Description

Example

See also

INexusCore interface

[Export_CoreGenParametersToString method](#)

(INexusCore interface)

Syntax

```
Function Export_CoreGenParametersToString : WideString;
```

Description

Example

See also

INexusCore interface

[Export_ToParameters method](#)

(INexusCore interface)

Syntax

```
Procedure Export_ToParameters (Parameters : PChar);
```

Description

Example

See also

INexusCore interface

[Export_ToParameterString method](#)

(INexusCore interface)

Syntax

```
Function Export_ToParameterString : WideString;
```

Description

Example

See also

INexusCore interface

FindFileInProjectPaths method

(INexusCore interface)

Syntax

```
Function FindFileInProjectPaths(FileName : WideString) : WideString;
```

Description**Example****See also**

INexusCore interface

GetBaseComponentDesignator method

(INexusCore interface)

Syntax

```
Function GetBaseComponentDesignator : WideString;
```

Description**Example****See also**

INexusCore interface

GetChildCore method

(INexusCore interface)

Syntax

```
Function GetChildCore (Index : Integer ) : INexusCore;
```

Description**Example****See also**

INexusCore interface

GetChildCoreCount method

(INexusCore interface)

Syntax

```
Function GetChildCoreCount : Integer;
```

Description

Example

See also

INexusCore interface

[GetChildCoreDesignator method](#)

(INexusCore interface)

Syntax

```
Function GetChildCoreDesignator(Index : Integer ) : WideString;
```

Description

Example

See also

INexusCore interface

[GetChildProgramMemoryCore method](#)

(INexusCore interface)

Syntax

```
Function GetChildProgramMemoryCore(Index : Integer = 0) : INexusCore;
```

Description

Example

See also

INexusCore interface

[GetChildProgramMemoryCoreCount method](#)

(INexusCore interface)

Syntax

```
Function GetChildProgramMemoryCoreCount : Integer;
```

Description

Example

See also

INexusCore interface

GetComponentDesignator method

(INexusCore interface)

Syntax

```
Function GetComponentDesignator : WideString;
```

Description**Example****See also**

INexusCore interface

GetComponentDocumentPath method

(INexusCore interface)

Syntax

```
Function GetComponentDocumentPath : WideString;
```

Description**Example****See also**

INexusCore interface

GetCoreKind method

(INexusCore interface)

Syntax

```
Function GetCoreKind : TNexusCoreKind;
```

Description**Example****See also**

INexusCore interface

GetCrossViewProcessId method

(INexusCore interface)

FPGA API Reference

Syntax

```
Function GetCrossViewProcessId : Integer;
```

Description

Example

See also

INexusCore interface

GetDescription method

(INexusCore interface)

Syntax

```
Function GetDescription : WideString;
```

Description

Example

See also

INexusCore interface

GetEmbeddedProject method

(INexusCore interface)

Syntax

```
Function GetEmbeddedProject : IProject;
```

Description

Example

See also

INexusCore interface

GetEmbeddedProjectPath method

(INexusCore interface)

Syntax

```
Function GetEmbeddedProjectPath : WideString;
```

Description

Example

See also

INexusCore interface

GetFPGAProject method

(INexusCore interface)

Syntax

```
Function GetFPGAProject : IProject;
```

Description**Example****See also**

INexusCore interface

GetFPGAProjectPath method

(INexusCore interface)

Syntax

```
Function GetFPGAProjectPath : WideString;
```

Description**Example****See also**

INexusCore interface

GetHexFilename method

(INexusCore interface)

Syntax

```
Function GetHexFilename : WideString;
```

Description**Example****See also**

INexusCore interface

GetHexFilePath method

(INexusCore interface)

FPGA API Reference

Syntax

```
Function GetHexFilePath : WideString;
```

Description

Example

See also

INexusCore interface

[GetHexFileState method](#)

(INexusCore interface)

Syntax

```
Function GetHexFileState : TFlowState;
```

Description

Example

See also

INexusCore interface

[GetJTagIndex_FromCore method](#)

(INexusCore interface)

Syntax

```
Function GetJTagIndex_FromCore : Integer;
```

Description

Example

See also

INexusCore interface

[GetLibraryReference method](#)

(INexusCore interface)

Syntax

```
Function GetLibraryReference : WideString;
```

Description

Example

See also

INexusCore interface

GetNexusWorkbench method

(INexusCore interface)

Syntax

```
Function GetNexusWorkbench : INexusWorkbench;
```

Description

This method retrieves the Nexus workbench which encapsulates the workbench. You can use this interface to retrieve interfaces representing objects associated with this nexus workbench.

Example

```
NexusWorkBench := GetNexusWorkbench;
If NexusWorkBench.GetSoftDeviceCount > 0 Then
    SoftDeviceCount := NexusWorkBench.GetSoftDeviceCount
Else Exit;
```

See also

INexusCore interface

GetParameterValue method

(INexusCore interface)

Syntax

```
Function GetParameterValue (Name : WideString) : WideString;
```

Description

A component can have a number of parameters and each parameter has 2 strings – Name and Value. The GetParameterValue retrieves a Value string based on the specified Name parameter.

Example**See also**

INexusCore interface

GetUniqueld method

(INexusCore interface)

Syntax

```
Function GetUniqueId : WideString;
```

Description

This method retrieves the Unique ID for this Nexus core component. Ideally all components used in a design should have unique IDs for synchronization purposes.

Example

See also

INexusCore interface

[Import_FromParameters method](#)

(INexusCore interface)

Syntax

```
Procedure Import_FromParameters (Parameters : PChar);
```

Description

Example

See also

INexusCore interface

[Import_FromParameterString method](#)

(INexusCore interface)

Syntax

```
Procedure Import_FromParameterString (Const Parameters : WideString);
```

Description

Example

See also

INexusCore interface

[MatchesOtherCore method](#)

(INexusCore interface)

Syntax

```
Function MatchesOtherCore (ACore : INexusCore) : Boolean;
```

Description

Example

See also

INexusCore interface

SetCrossViewProcessId method

(INexusCore interface)

Syntax

```
Procedure SetCrossViewProcessId(ProcessID : THandle);
```

Description

Example

See also

INexusCore interface

SetEmbeddedProjectPath method

(INexusCore interface)

Syntax

```
Procedure SetEmbeddedProjectPath(AProjectPath : WideString);
```

Description

This method sets the project path to an embedded project. A parent FPGA project can have child embedded projects.

Example

See also

INexusCore interface

SupportsParameter method

(INexusCore interface)

Syntax

```
Function SupportsParameter (Name : WideString) : Boolean;
```

Description

Example

See also

INexusCore interface

UpdateHexFileState method

(INexusCore interface)

Syntax

```
Procedure UpdateHexFileState;
```

Description

Example

See also

INexusCore interface

INexusWorkbench Interface

Overview

The INexusWorkBench interface represents the workbench in Altium Designer that deals with the Nanoboard, its hard devices and the soft devices (processor cores and virtual instruments) inside the FPGA device on the Nanoboard.

The **INexusWorkbench** interface and its methods/properties are as follows:

INexusWorkbench methods

- GetIsConnected
- GetNexusCoreFromUniqueIId
- GetCoreFromDesignator

- GetSoftDeviceFromDeviceId
- GetProgrammableDeviceFromDeviceId

- GetHardDeviceCount
- GetSoftDeviceCount
- GetBoardDeviceCount
- GetProgrammableDeviceCount

- GetHardDevice
- GetSoftDevice
- GetBoardDevice
- GetProgrammableDevice

- GetCurrentHardDevice
- SetCurrentHardDevice
- GetCurrentSoftDevice
- SetCurrentSoftDevice
- GetCurrentBoardDevice

INexusWorkbench properties

- HardDevices
- SoftDevices
- BoardDevices
- ProjectLinks
- PCBProjectLinks

- ProgrammableDevices

SetCurrentBoardDevice
GetCurrentProgrammableDevice
SetCurrentProgrammableDevice

SetCurrentCore

GetProjectLinkCount
GetPCBProjectLinkCount
GetProjectLink
GetPCBProjectLink
ProcessFlowRunner
AddHardDeviceByName
RemoveHardDevice
SynthesizeCoresForProject
GetPoll
SetPoll
GetPollInterval
SetPollInterval
GetLive
SetLive
GetGoLiveAtStartup
SetGoLiveAtStartup
GetIgnoreSoftwareInHardFlow
SetIgnoreSoftwareInHardFlow
GetIgnoreFPGASourcesInFlow
SetIgnoreFPGASourcesInFlow
GetIgnoreVendorToolsVersion
SetIgnoreVendorToolsVersion
GetShowResultsSummary
SetShowResultsSummary

See also

[GetState and SetState methods](#)

[GetBoardDevice method](#)

(INexusWorkbench interface)

FPGA API Reference

Syntax

```
Function GetBoardDevice (Index : Integer) : IDeviceLink;
```

Description

Example

See also

INexusWorkbench interface

GetHardDevice method

(INexusWorkbench interface)

Syntax

```
Function GetHardDevice (Index : Integer) : IDeviceLink;
```

Description

Example

See also

INexusWorkbench interface

GetPCBProjectLink method

(INexusWorkbench interface)

Syntax

```
Function GetPCBProjectLink (aIndex : Integer) : IPCBProjectLink;
```

Description

Example

See also

INexusWorkbench interface

GetProjectLink method

(INexusWorkbench interface)

Syntax

```
Function GetProjectLink (aIndex : Integer) : IProjectLink;
```

Description

Example**See also**

INexusWorkbench interface

GetSoftDevice method

(INexusWorkbench interface)

Syntax

```
Function GetSoftDevice (Index : Integer) : IDeviceLink;
```

Description**Example****See also**

INexusWorkbench interface

Methods**AddHardDeviceByName method**

(INexusWorkbench interface)

Syntax

```
Function AddHardDeviceByName (aDeviceName : WideString) : IDeviceLink;
```

Description**Example****See also**

INexusWorkbench interface

GetBoardDeviceCount method

(INexusWorkbench interface)

Syntax

```
Function GetBoardDeviceCount : Integer;
```

Description**Example****See also**

FPGA API Reference

INexusWorkbench interface

GetCoreFromDesignator method

(INexusWorkbench interface)

Syntax

```
Function GetCoreFromDesignator (Designator : WideString;Project : IProject )  
: INexusCore;
```

Description

Example

See also

INexusWorkbench interface

GetCurrentBoardDevice method

(INexusWorkbench interface)

Syntax

```
Function GetCurrentBoardDevice : IDeviceLink;
```

Description

Example

See also

INexusWorkbench interface

GetCurrentHardDevice method

(INexusWorkbench interface)

Syntax

```
Function GetCurrentHardDevice : IDeviceLink;
```

Description

Example

See also

INexusWorkbench interface

GetCurrentSoftDevice method

(INexusWorkbench interface)

Syntax

```
Function GetCurrentSoftDevice : IDeviceLink;
```

Description**Example****See also**

INexusWorkbench interface

[GetGoLiveAtStartup method](#)

(INexusWorkbench interface)

Syntax

```
Function GetGoLiveAtStartup : Boolean;
```

Description**Example****See also**

INexusWorkbench interface

[GetHardDeviceCount method](#)

(INexusWorkbench interface)

Syntax

```
Function GetHardDeviceCount : Integer;
```

Description**Example****See also**

INexusWorkbench interface

[GetIgnoreFPGASourcesInFlow method](#)

(INexusWorkbench interface)

Syntax

```
Function GetIgnoreFPGASourcesInFlow : Boolean;
```

Description

Example

See also

INexusWorkbench interface

[GetIgnoreSoftwareInHardFlow method](#)

(INexusWorkbench interface)

Syntax

```
Function GetIgnoreSoftwareInHardFlow : Boolean;
```

Description

Example

See also

INexusWorkbench interface

[GetIgnoreVendorToolsVersion method](#)

(INexusWorkbench interface)

Syntax

```
Function GetIgnoreVendorToolsVersion : Boolean;
```

Description

Example

See also

INexusWorkbench interface

[GetIsConnected method](#)

(INexusWorkbench interface)

Syntax

```
Function GetIsConnected : LongBool;
```

Description

Example

See also

INexusWorkbench interface

GetLive method

(INexusWorkbench interface)

Syntax

```
Function GetLive : Boolean;
```

Description**Example****See also**

INexusWorkbench interface

GetNexusCoreFromUniqueId method

(INexusWorkbench interface)

Syntax

```
Function GetNexusCoreFromUniqueId (AUniqueId : WideString) : INexusCore;
```

Description**Example****See also**

INexusWorkbench interface

GetPCBProjectLinkCount method

(INexusWorkbench interface)

Syntax

```
Function GetPCBProjectLinkCount : Integer;
```

Description**Example****See also**

INexusWorkbench interface

GetPoll method

(INexusWorkbench interface)

Syntax

```
Function GetPoll : Boolean;
```

Description

Example

See also

INexusWorkbench interface

GetPollInterval method

(INexusWorkbench interface)

Syntax

```
Function GetPollInterval : Integer;
```

Description

Example

See also

INexusWorkbench interface

GetProjectLinkCount method

(INexusWorkbench interface)

Syntax

```
Function GetProjectLinkCount : Integer;
```

Description

Example

See also

INexusWorkbench interface

GetShowResultsSummary method

(INexusWorkbench interface)

Syntax

```
Function GetShowResultsSummary : Boolean;
```

Description

Example

See also

INexusWorkbench interface

GetSoftDeviceCount method

(INexusWorkbench interface)

Syntax

```
Function GetSoftDeviceCount : Integer;
```

Description**Example****See also**

INexusWorkbench interface

GetSoftDeviceFromDeviceId method

(INexusWorkbench interface)

Syntax

```
Function GetSoftDeviceFromDeviceId(AnId : WideString) : IDeviceLink;
```

Description**Example****See also**

INexusWorkbench interface

ProcessFlowRunner method

(INexusWorkbench interface)

Syntax

```
Function ProcessFlowRunner : IProcessFlowRunner;
```

Description**Example****See also**

INexusWorkbench interface

RemoveHardDevice method

(INexusWorkbench interface)

FPGA API Reference

Syntax

```
Function RemoveHardDevice (aDeviceLink : IDeviceLink) : Boolean;
```

Description

Example

See also

INexusWorkbench interface

[SetCurrentBoardDevice method](#)

(INexusWorkbench interface)

Syntax

```
Procedure SetCurrentBoardDevice (ADevice : IDeviceLink);
```

Description

Example

See also

INexusWorkbench interface

[SetCurrentCore method](#)

(INexusWorkbench interface)

Syntax

```
Procedure SetCurrentCore (ACore : INexusCore);
```

Description

Example

See also

INexusWorkbench interface

[SetCurrentHardDevice method](#)

(INexusWorkbench interface)

Syntax

```
Procedure SetCurrentHardDevice (ADevice : IDeviceLink);
```

Description

Example**See also**

INexusWorkbench interface

SetCurrentSoftDevice method

(INexusWorkbench interface)

Syntax

```
Procedure SetCurrentSoftDevice (ASoftDevice : IDeviceLink);
```

Description**Example****See also**

INexusWorkbench interface

SetGoLiveAtStartup method

(INexusWorkbench interface)

Syntax

```
Procedure SetGoLiveAtStartup (aValue : Boolean);
```

Description**Example****See also**

INexusWorkbench interface

SetIgnoreFPGASourcesInFlow method

(INexusWorkbench interface)

Syntax

```
Procedure SetIgnoreFPGASourcesInFlow (aValue : Boolean);
```

Description**Example****See also**

INexusWorkbench interface

SetIgnoreSoftwareInHardFlow method

(INexusWorkbench interface)

Syntax

```
Procedure SetIgnoreSoftwareInHardFlow(aValue : Boolean);
```

Description

Example

See also

INexusWorkbench interface

SetIgnoreVendorToolsVersion method

(INexusWorkbench interface)

Syntax

```
Procedure SetIgnoreVendorToolsVersion(aValue : Boolean);
```

Description

Example

See also

INexusWorkbench interface

SetLive method

(INexusWorkbench interface)

Syntax

```
Procedure SetLive (aValue : Boolean);
```

Description

Example

See also

INexusWorkbench interface

SetPoll method

(INexusWorkbench interface)

Syntax

```
Procedure SetPoll (aValue : Boolean);
```

Description**Example****See also**

INexusWorkbench interface

SetPollInterval method

(INexusWorkbench interface)

Syntax

```
Procedure SetPollInterval (aValue : Integer);
```

Description**Example****See also**

INexusWorkbench interface

SetShowResultsSummary method

(INexusWorkbench interface)

Syntax

```
Procedure SetShowResultsSummary (aValue : Boolean);
```

Description**Example****See also**

INexusWorkbench interface

SynthesizeCoresForProject method

(INexusWorkbench interface)

Syntax

```
Procedure SynthesizeCoresForProject (aProject :  
IAbstractVHDLProject;aConfiguration : WideString);
```

Description**Example**

FPGA API Reference

See also

INexusWorkbench interface

Properties

BoardDevices property

(INexusWorkbench interface)

Syntax

```
Property BoardDevices[aIndex : Integer] : IDeviceLink Read GetBoardDevice;
```

Description

Example

See also

INexusWorkbench interface

HardDevices property

(INexusWorkbench interface)

Syntax

```
Property HardDevices [aIndex : Integer] : IDeviceLink Read GetHardDevice;
```

Description

Example

See also

INexusWorkbench interface

PCBProjectLinks property

(INexusWorkbench interface)

Syntax

```
Property PCBProjectLinks [aIndex : Integer] : IPCBProjectLink Read  
GetPCBProjectLink;
```

Description

Example

See also

INexusWorkbench interface

ProjectLinks property

(INexusWorkbench interface)

Syntax

```
Property ProjectLinks [aIndex : Integer] : IProjectLink Read GetProjectLink;
```

Description**Example****See also**

INexusWorkbench interface

SoftDevices property

(INexusWorkbench interface)

Syntax

```
Property SoftDevices [aIndex : Integer] : IDeviceLink Read GetSoftDevice;
```

Description**Example****See also**

INexusWorkbench interface

INexusNotification Interface**INexusNotification Interface****Overview**

The **INexusNotification** interface hierarchy is as follows;

INexusNotification**methods**

GetCode

INexusNotification properties

Code

See also**Code property**

(INexusNotification interface)

Syntax

FPGA API Reference

Property Code : Integer Read GetCode;

Description

Example

See also

INexusNotification interface

GetCode method

(INexusNotification interface)

Syntax

Function GetCode : Integer;

Description

Example

See also

INexusNotification interface

IPCBProjectLink Interface

IPCBProjectLink Interface

Overview

The **IPCBProjectLink** interface hierarchy is as follows;

IPCBProjectLink methods

GetProject

GetProjectFullPath

DocumentKind

GetSchComponentLinkCount

GetSchComponentLink

ContainsProjectLink

CrossProbe

IPCBProjectLink properties

See also

ContainsProjectLink method

(IPCBProjectLink interface)

Syntax

```
Function ContainsProjectLink (AProjectLink : IProjectLink) : Boolean;
```

Description**Example****See also**

IPCBProjectLink interface

CrossProbe method

(IPCBProjectLink interface)

Syntax

```
Procedure CrossProbe;
```

Description**Example****See also**

IPCBProjectLink interface

DocumentKind method

(IPCBProjectLink interface)

Syntax

```
Function DocumentKind : WideString;
```

Description**Example****See also**

IPCBProjectLink interface

GetProject method

(IPCBProjectLink interface)

Syntax

```
Function GetProject : IProject;
```

Description

Example

See also

IPCBProjectLink interface

GetProjectFullPath method

(IPCBProjectLink interface)

Syntax

```
Function GetProjectFullPath : WideString;
```

Description

Example

See also

IPCBProjectLink interface

GetSchComponentLink method

(IPCBProjectLink interface)

Syntax

```
Function GetSchComponentLink (Index : Integer) : ISchComponentLink;
```

Description

Example

See also

IPCBProjectLink interface

GetSchComponentLinkCount method

(IPCBProjectLink interface)

Syntax

```
Function GetSchComponentLinkCount : Integer;
```

Description

Example

See also

IPCBProjectLink interface

IProjectLink Interface

Overview

The IProjectLink interface represents the project links as part of the Nexus Workspace and the interface can fetch the fpga project, embedded project and the generic project.

IProjectLink methods

GetProject

GetFPGAProject

GetEmbeddedProject

GetProjectFullPath

DocumentKind

ContainsEmbeddedProject

GetCoreFromDesignator

GetCoreFromDesignator

GetNexusCoreCount_All

GetNexusCoreCount_Instrument

GetNexusCore_All

GetNexusCore_Instrument

IProjectLink properties

NexusCores_All

NexusCores_Instrument

See also

IProject interface

GetState and SetState Methods

GetNexusCore_All method

(IProjectLink interface)

Syntax

```
Function GetNexusCore_All (Index : Integer) : INexusCore;
```

Description

Example

See also

FPGA API Reference

IProjectLink interface

GetNexusCore_Instrument method

(IProjectLink interface)

Syntax

```
Function GetNexusCore_Instrument(Index : Integer) : INexusCore;
```

Description

Example

See also

IProjectLink interface

Methods

ContainsEmbeddedProject method

(IProjectLink interface)

Syntax

```
Function ContainsEmbeddedProject (AProjectPath : WideString) : Boolean;
```

Description

Example

See also

IProjectLink interface

DocumentKind method

(IProjectLink interface)

Syntax

```
Function DocumentKind : WideString;
```

Description

Example

See also

IProjectLink interface

GetCoreFromDesignator method

(IProjectLink interface)

Syntax

```
Function GetCoreFromDesignator (Designator : WideString) : INexusCore;
```

Description**Example****See also**

IProjectLink interface

GetFPGAProject method

(IProjectLink interface)

Syntax

```
Function GetFPGAProject : IFPGAProject;
```

Description**Example****See also**

IProjectLink interface

GetNexusCoreCount_All method

(IProjectLink interface)

Syntax

```
Function GetNexusCoreCount_All : Integer;
```

Description**Example****See also**

IProjectLink interface

GetNexusCoreCount_Instrument method

(IProjectLink interface)

Syntax

```
Function GetNexusCoreCount_Instrument : Integer;
```

Description

Example

See also

IProjectLink interface

GetProject method

(IProjectLink interface)

Syntax

```
Function GetProject : IProject;
```

Description

Example

See also

IProjectLink interface

IFPGAProject interface

GetFGPAProject method

(IProjectLink interface)

Syntax

```
Function GetFGAProject : IFPGAProject;
```

Description

Example

See also

IProjectLink interface

IEmbeddedProject interface

GetEmbeddedProject method

(IProjectLink interface)

Syntax

```
Function GetEmbeddedProject : IEmbeddedProject;
```

Description

Example

See also

IProjectLink interface

IFPGAProject interface

GetProjectFullPath method

(IProjectLink interface)

Syntax

```
Function GetProjectFullPath : WideString;
```

Description**Example****See also**

IProjectLink interface

Properties**NexusCores_All [aIndex property**

(IProjectLink interface)

Syntax

```
Property NexusCores_All [aIndex : Integer] : INexusCore Read  
GetNexusCore_All;
```

Description**Example****See also**

IProjectLink interface

NexusCores_Instrument[aIndex property

(IProjectLink interface)

Syntax

```
Property NexusCores_Instrument[aIndex : Integer] : INexusCore Read  
GetNexusCore_Instrument;
```

Description**Example****See also**

IProjectLink interface

ISchComponentLink Interface

ISchComponentLink Interface

Overview

The **ISchComponentLink** interface hierarchy is as follows;

ISchComponentLink methods

ISchComponentLink properties

GetComponentDesignator

GetLibraryReference

GetComponentDocumentPath

GetSubProjectPath

GetDescription

GetProjectPath

GetProjectLink

CrossProbe

SetSubProjectPath

See also

CrossProbe method

(ISchComponentLink interface)

Syntax

```
Procedure CrossProbe;
```

Description

Example

See also

ISchComponentLink interface

GetComponentDesignator method

(ISchComponentLink interface)

Syntax

```
Function GetComponentDesignator : WideString;
```

Description

Example**See also**

ISchComponentLink interface

GetComponentDocumentPath method

(ISchComponentLink interface)

Syntax

```
Function GetComponentDocumentPath : WideString;
```

Description**Example****See also**

ISchComponentLink interface

GetDescription method

(ISchComponentLink interface)

Syntax

```
Function GetDescription : WideString;
```

Description**Example****See also**

ISchComponentLink interface

GetLibraryReference method

(ISchComponentLink interface)

Syntax

```
Function GetLibraryReference : WideString;
```

Description**Example****See also**

ISchComponentLink interface

GetProjectLink method

(ISchComponentLink interface)

Syntax

```
Function GetProjectLink : IProjectLink;
```

Description

Example

See also

ISchComponentLink interface

GetProjectPath method

(ISchComponentLink interface)

Syntax

```
Function GetProjectPath : WideString;
```

Description

Example

See also

ISchComponentLink interface

GetSubProjectPath method

(ISchComponentLink interface)

Syntax

```
Function GetSubProjectPath : WideString;
```

Description

Example

See also

ISchComponentLink interface

SetSubProjectPath method

(ISchComponentLink interface)

Syntax

```
Procedure SetSubProjectPath (AProjectPath : WideString);
```

Description

Example

See also

ISchComponentLink interface

Nexus Devices Interfaces (RT_NexusDevices unit)

Nexus Devices Interfaces

Constants

cMemoryLength

```
cMemoryLength = $FFFF;
```

Bit Constants

```
Bit31 = $80000000;
```

```
Bit30 = $40000000;
```

```
Bit29 = $20000000;
```

```
Bit28 = $10000000;
```

```
Bit27 = $08000000;
```

```
Bit26 = $04000000;
```

```
Bit25 = $02000000;
```

```
Bit24 = $01000000;
```

```
Bit23 = $00800000;
```

```
Bit22 = $00400000;
```

```
Bit21 = $00200000;
```

```
Bit20 = $00100000;
```

```
Bit19 = $00080000;
```

```
Bit18 = $00040000;
```

```
Bit17 = $00020000;
```

```
Bit16 = $00010000;
```

```
Bit15 = $00008000;
```

```
Bit14 = $00004000;
```

```
Bit13 = $00002000;
```

```
Bit12 = $00001000;
```

```
Bit11 = $00000800;
```

```
Bit10 = $00000400;
```

```
Bit9 = $00000200;
```

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```
Bit8 = $00000100;
Bit7 = $00000080;
Bit6 = $00000040;
Bit5 = $00000020;
Bit4 = $00000010;
Bit3 = $00000008;
Bit2 = $00000004;
Bit1 = $00000002;
Bit0 = $00000001;
```

Memory Items

```
cMemoryElementZero = 0;
cMemoryAddressZero = 0;
```

```
cGenericDeviceName = 'GenericDevice';
cGenericFamilyName = 'Generic';
```

```
cBreakpointKindString : Array[TNexusBreakpointKind] Of String =
(
    'Stop At Code Address - Any Opcode',
    'Stop At Code Address - Specified Opcode Only',
    'Break on R/W Data From Address - Any Value',
    'Break on R/W Data From Address - Specific Value'
);
```

```
cBreakpoints_Program =
[
    eBreakpointKind_Program_FetchAnyOpcode      ,
    eBreakpointKind_Program_FetchSpecificOpcode
];
```

```
cBreakpoints_Data =
[
    eBreakpointKind_DataAtAddress_AnyValue,
    eBreakpointKind_DataAtAddress_SpecificValue
];
```

```

cBreakpoints_SpecificData =
[
    eBreakpointKind_Program_FetchSpecificOpcode,
    eBreakpointKind_DataAtAddress_SpecificValue
];

cNexusActionString : Array[TNexusAction] Of WideString =
(
    {eNexusAction_None                } 'None',
    {eNexusAction_ProcessorPause      } 'PauseProcessor',
    {eNexusAction_ProcessorContinue   } 'ContinueProcessor',
    {eNexusAction_ProcessorReset      } 'ResetProcessor',
    {eNexusAction_ProcessorSingleStep } 'SingleStepProcessor',
    {eNexusAction_ProgramCompile      } 'CompileProgram',
    {eNexusAction_ProgramDownload     } 'DownloadProgram',
    {eNexusAction_ProgramDebug        } 'DebugProgram',
    {eNexusAction_ShowAboutDialog     } 'ShowAboutDialog',
    {eNexusAction_DeviceReset         } 'ResetDevice',
    {eNexusAction_DeviceDownload      } 'DownloadToDevice',
    {eNexusAction_ShowViewer          } 'ShowViewer',
    {eNexusAction_ChooseFileAndDownload } 'ChooseAndDownload',
    {eNexusAction_ProcessorMenu       } 'ProcessorMenu',
    {eNexusAction_ConfigureJTAGIdMapping } 'ConfigureJTAGIdMapping',
    {eNexusAction_DeviceReset_Flash   } 'Flash_ResetDevice',
    {eNexusAction_ChooseFileAndDownload_Flash } 'Flash_ChooseAndDownload'
);

cNexusActionTargetString : Array[TNexusActionTarget] Of WideString =
(
    {eNexusActionTarget_None          } 'None',
    {eNexusActionTarget_SoftDevice    } 'SoftDevice',
    {eNexusActionTarget_HardDevice     } 'HardDevice',
    {eNexusActionTarget_SoftChain     } 'SoftChain',
    {eNexusActionTarget_HardChain     } 'HardChain',
    {eNexusActionTarget_BoardDevice   } 'BoardDevice',

```

FPGA API Reference

```
{eNexusActionTarget_BoardChain }'BoardChain'  
);
```

Nexus Control Bits

```
Nexus_Control_StepCounterBreakpointEnable = Bit_D7;  
Nexus_Control_ExternalAccess              = Bit_D6;  
Nexus_Control_PeripheralClockEnable       = Bit_D6;  
Nexus_Control_Reset                       = Bit_D5;  
Nexus_Control_DebugEnable                 = Bit_D4;  
Nexus_Control_DebugAcknowledge            = Bit_D3;  
Nexus_Control_DebugRequest                = Bit_D2;  
Nexus_Control_DebugStep                   = Bit_D1;  
Nexus_Control_DebuggerProgramSelect       = Bit_D0;
```

Nexus Memory Access Values

```
Nexus_MemAccess_MemoryRead                = Bit_D2;  
Nexus_MemAccess_MemoryWrite              = Bit_D1;  
Nexus_MemAccess_Data                     = 0;  
Nexus_MemAccess_Program                   = Bit_D0;  
Nexus_MemAccess_ReadData                  = Nexus_MemAccess_MemoryRead Or  
Nexus_MemAccess_Data;  
Nexus_MemAccess_ReadProgram               = Nexus_MemAccess_MemoryRead Or  
Nexus_MemAccess_Program;  
Nexus_MemAccess_WriteData                 = Nexus_MemAccess_MemoryWrite Or  
Nexus_MemAccess_Data;  
Nexus_MemAccess_WriteProgram              = Nexus_MemAccess_MemoryWrite Or  
Nexus_MemAccess_Program;  
Nexus_MemAccess_InActive                  = 0;
```

JTAG Instruction Register Values

```
JTAG_ExTest      = $00;  
JTAG_IdCode      = $01;  
JTAG_Reset       = $02;  
JTAG_Memac       = $0A;  
JTAG_NexusEnable = $0B;  
JTAG_Bypass      = $0F;
```

```
cDifferentialIOStandardTypes = [  
    eDHSTLI,
```

```
eDHSTLII ,
eDHSTLIII ,
eDHSTL18I ,
eDHSTL18II ,
eDHSTL18III ,
eLVDS ,
eLVPECL ,
eDSSTL18I ,
eDSSTL18II ,
eDSSTL2I ,
eDSSTL2II ,
eDSSTL3I ,
eDSSTL3II ,
eBLVDS25 ,
eLVPECL25 ,
eRSDS25 ,
eLVDS33 ,
eLVDS25_DCI ,
eLVDS33_DCI ,
eLVDEEXT25 ,
eLVDEEXT33 ,
eLVDEEXT25_DCI ,
eLVDEEXT33_DCI ,
eULVDS25 ,
eLVDS_DT ,
eLVDEEXT25_DT ,
eULVDS25_DT ,
eMiniLVDS25 ,
eDHSTLII_DCI ,
eDHSTL18II_DCI ,
eDSSTL2II_DCI ,
eDSSTL18II_DCI
];

cUnknownInstruction = $FFFFFFFF;
```

FPGA API Reference

```
ClockHaltModeStrings : Array[TScanClockHaltMode] Of TDynamicString =  
( 'None', 'Low', 'Both' );
```

```
ScanPinKindStrings : Array[TScanPinKind] Of TDynamicString =  
( 'Normal', 'TRST', 'TCK', 'TDO', 'TDI', 'TMS', 'Power', 'Ground' );
```

```
cCellKindStrings : Array[TCellKind] Of TDynamicString =  
(  
{eCellKind_Undefined } '',  
{eCellKind_BC_0 } 'BC_0',  
{eCellKind_BC_1 } 'BC_1',  
{eCellKind_BC_2 } 'BC_2',  
{eCellKind_BC_3 } 'BC_3',  
{eCellKind_BC_4 } 'BC_4',  
{eCellKind_BC_5 } 'BC_5',  
{eCellKind_BC_6 } 'BC_6',  
{eCellKind_BC_7 } 'BC_7',  
{eCellKind_BC_8 } 'BC_8',  
{eCellKind_BC_9 } 'BC_9',  
{eCellKind_BC_10 } 'BC_10'  
);
```

```
cCellFunctionStrings : Array[TCellFunction] Of TDynamicString =  
(  
{eCellFunction_Undefined } '',  
{eCellFunction_Input } 'Input',  
{eCellFunction_Clock } 'Clock',  
{eCellFunction_Output2 } 'Output2',  
{eCellFunction_Output3 } 'Output3',  
{eCellFunction_Control } 'Control',  
{eCellFunction_ControlR } 'ControlR',  
{eCellFunction_Internal } 'Internal',  
{eCellFunction_BiDir } 'BiDir',  
{eCellFunction_ObserveOnly} 'ObserveOnly'  
);
```

```
cStandardDisplayNames : Array[TDeviceIOStandardType] Of TDynamicString =
```

```
('LVTTL 1.5V',  
 'LVTTL 1.8V',  
 'LVTTL 2.5V',  
 'LVTTL 3.3V',  
 'LVCMOS 1.5V',  
 'LVCMOS 1.8V',  
 'LVCMOS 2.5V',  
 'LVCMOS 3.3V',  
 'LVCMOS 5V',  
 'PCI 33Mhz 3.3V',  
 'PCI 33Mhz 5V',  
 'PCI 66Mhz 3.3V',  
 'PCI-X 3.3V',  
 'Compact PCI 3.3V',  
 'SSTL3 Class I',  
 'SSTL3 Class II',  
 'SSTL2 Class I',  
 'SSTL2 Class II',  
 'SSTL18 Class I',  
 'SSTL18 Class II',  
 'GTL',  
 'GTL+',  
 'HSTL Class I',  
 'HSTL Class II',  
 'HSTL Class III',  
 'HSTL Class IV',  
 'HSTL 1.2V',  
 'HSTL Class I 1.8V',  
 'HSTL Class II 1.8V',  
 'HSTL Class III 1.8V',  
 'HSTL Class IV 1.8V',  
 'CTT',  
 'AGP 1x',  
 'AGP 2x',  
 'TTL',  
 'LVCMOS 1.2V',
```

FPGA API Reference

```
'GTL DCI',  
'GTL+ DCI',  
'HSTL Class I DCI',  
'HSTL Class II DCI',  
'HSTL Class III DCI',  
'HSTL Class IV DCI',  
'HSTL Class I 1.8V DCI',  
'HSTL Class II 1.8V DCI',  
'HSTL Class III 1.8V DCI',  
'HSTL Class IV 1.8V DCI',  
'DHSTL Class I',           {1.5V}  
'DHSTL Class II',          {1.5V}  
'DHSTL Class III',         {1.5V}  
'DHSTL 1.8V Class I',      {1.8V}  
'DHSTL 1.8V Class II',     {1.8V}  
'DHSTL 1.8V Class III',    {1.8V}  
'HTT',                      {2.5V}  
'PCML',                     {3.3V}  
'PCML15',                   {1.5V}  
'SSTL18 Class I DCI',  
'SSTL18 Class II DCI',  
'SSTL2 Class I DCI',  
'SSTL2 Class II DCI',  
'SSTL3 Class I DCI',  
'SSTL3 Class II DCI',  
'LVCMOS 1.5V DCI',  
'LVCMOS 1.8V DCI',  
'LVCMOS 2.5V DCI',  
'LVCMOS 3.3V DCI',  
'LVCMOS 1.5V DCI DIV2',  
'LVCMOS 1.8V DCI DIV2',  
'LVCMOS 2.5V DCI DIV2',  
'LVCMOS 3.3V DCI DIV2',  
'LVDS',                     {2.5V?}  
'LVPECL',                   {3.3V}  
'Differential SSTL 1.8V Class I',
```

```

'Differential SSTL 1.8V Class II',
'Differential SSTL2 Class I', {2.5V}
'Differential SSTL2 Class II', {2.5V}
'Differential SSTL3 Class I', {3.3V}
'Differential SSTL3 Class II', {3.3V}
'Bus LVDS 2.5V',
'LVPECL 2.5V',
'RSDS 2.5V',
'LVDS 3.3V',
'LVDS 2.5V DCI',
'LVDS 3.3V DCI',
'LVDSSEXT 2.5V',
'LVDSSEXT 3.3V',
'LVDSSEXT 2.5V DCI',
'LVDSSEXT 3.3V DCI',
'LDT', {2.5V}
'ULVDS 2.5V',
'LDT DT',
'LVDS DT',
'LVDSSEXT 2.5V DT',
'ULVDS 2.5V DT',
'Mini LVDS 2.5V',
'LVC MOS 3.3V (24mA)', {For StratixGX, supported drive strengths
2m , 4m , 8m , 12m , 24m}
'LVC MOS 3.3V (12mA)', {For StratixGX, supported drive strengths
2m , 4m , 8m , 12m}
'DHSTL Class II DCI', {1.5V}
'DHSTL 1.8V Class II DCI', {1.8V}
'Differential SSTL2 Class II DCI', {2.5V}
'Differential SSTL 1.8V Class II DCI'
);

```

```

cStandardParamNames : Array[TDeviceIOStandardType] Of TDynamicString =
('LVTTL15',
'LVTTL18',
'LVTTL25',
'LVTTL33',

```

FPGA API Reference

'LVCOS15',
'LVCOS18',
'LVCOS25',
'LVCOS33',
'LVCOS5',
'PCI33_3',
'PCI33_5',
'PCI66',
'PCIX_3',
'COMPACTPCI_3',
'SSTL3I',
'SSTL3II',
'SSTL2I',
'SSTL2II',
'SSTL18I',
'SSTL18II',
'GTL',
'GTLP',
'HSTLI',
'HSTLII',
'HSTLIII',
'HSTLIV',
'HSTL_12',
'HSTLI_18',
'HSTLII_18',
'HSTLIII_18',
'HSTLIV_18',
'CTT',
'AGP1x',
'AGP2x',
'TTL',
'LVCOS12',
'GTL_DCI',
'GTLP_DCI',
'HSTLI_DCI',
'HSTLII_DCI',

```

'HSTLIII_DCI' ,
'HSTLIV_DCI' ,
'HSTLI_18_DCI' ,
'HSTLII_18_DCI' ,
'HSTLIII_18_DCI' ,
'HSTLIV_18_DCI' ,
'DHSTLI' ,                               {1.5V}
'DHSTLII' ,                              {1.5V}
'DHSTLIII' ,                             {1.5V}
'DHSTL18I' ,                             {1.8V}
'DHSTL18II' ,                            {1.8V}
'DHSTL18III' ,                           {1.8V}
'HTT' ,
'PCML' ,
'PCML15' ,
'SSTL18I_DCI' ,
'SSTL18II_DCI' ,
'SSTL2I_DCI' ,
'SSTL2II_DCI' ,
'SSTL3I_DCI' ,
'SSTL3II_DCI' ,
'LVCOS15_DCI' ,
'LVCOS18_DCI' ,
'LVCOS25_DCI' ,
'LVCOS33_DCI' ,
'LVCOS15_DCI_DV2' ,
'LVCOS18_DCI_DV2' ,
'LVCOS25_DCI_DV2' ,
'LVCOS33_DCI_DV2' ,
'LVDS' ,
'LVPECL' ,
'DSSTL18I' ,
'DSSTL18II' ,
'DSSTL2I' ,
'DSSTL2II' ,
'DSSTL3I' ,

```

FPGA API Reference

```
'DSSTL3II',  
'BLVDS25',  
'LVPECL25',  
'RSDS25',  
'LVDS33',  
'LVDS25_DCI',  
'LVDS33_DCI',  
'LVDSSEXT25',  
'LVDSSEXT33',  
'LVDSSEXT25_DCI',  
'LVDSSEXT33_DCI',  
'LDT',  
'ULVDS25',  
'LDT_DT',  
'LVDS_DT',  
'LVDSSEXT25_DT',  
'ULVDS25_DT',  
'MiniLVDS25',  
'LVCOS33_1',  
'LVCOS33_2',  
'DHSTLII_DCI',  
'DHSTL18II_DCI',  
'DSSTL2II_DCI',  
'DSSTL18II_DCI'  
);
```

{2.5V}

```
cStandardSlewNames : Array[TDeviceIOStandardSlewType] Of TDynamicString =  
( 'SLOW',  
'FAST');
```

```
cStandardDriveStrengths : Array[TDeviceIOStandardDriveStrength] Of  
TDynamicString =  
( '2mA',  
'3mA',  
'4mA',  
'6mA',
```

```
'7mA',
'8mA',
'10mA',
'12mA',
'14mA',
'16mA',
'18mA',
'20mA',
'24mA');
```

Device Support Types

```
cSupportsCPLDDevice = 'CPLD';
cSupportsFPGADevice = 'FPGA';
cSupportsPROMDevice = 'PROM';
cSupportsHardProcessor = 'PROC';
```

Types

TMemoryElement

```
TMemoryElement = LongWord;
PMemoryElement = ^TMemoryElement;
```

TMemoryAddress

```
TMemoryAddress = Int64;
```

TRegisterValue

```
TRegisterValue = LongWord;
```

TMemoryArray

```
TMemoryArray = Array[0..cMemoryLength] Of TMemoryElement;
PMemoryArray = ^TMemoryArray;
```

TTapState

```
TTapState =
(
    TapState_Undefined,
    TEST_LOGIC_RESET,
    RUN_TEST_IDLE,
    SELECT_DR,
    CAPTURE_DR,
```

FPGA API Reference

```
SHIFT_DR,  
EXIT1_DR,  
PAUSE_DR,  
EXIT2_DR,  
UPDATE_DR,  
SELECT_IR,  
CAPTURE_IR,  
SHIFT_IR,  
EXIT1_IR,  
PAUSE_IR,  
EXIT2_IR,  
UPDATE_IR  
);
```

TEdgePolarity

```
TEdgePolarity = (eEdgeRising,eEdgeFalling);
```

TNexusAction

```
TNexusAction =  
(  
    eNexusAction_None,  
    eNexusAction_ProcessorPause,  
    eNexusAction_ProcessorContinue,  
    eNexusAction_ProcessorReset,  
    eNexusAction_ProcessorSingleStep,  
    eNexusAction_ProgramCompile,  
    eNexusAction_ProgramDownload,  
    eNexusAction_ProgramDebug,  
    eNexusAction_ShowAboutDialog,  
    eNexusAction_DeviceReset,  
    eNexusAction_DeviceDownload,  
    eNexusAction_ShowViewer,  
    eNexusAction_ChooseFileAndDownload,  
    eNexusAction_ProcessorMenu,  
    eNexusAction_ConfigureJTAGIdMapping  
);
```

TNexusActionTarget

```

TNexusActionTarget =
(
    eNexusActionTarget_None,
    eNexusActionTarget_SoftDevice,
    eNexusActionTarget_HardDevice,
    eNexusActionTarget_SoftChain,
    eNexusActionTarget_HardChain,
    eNexusActionTarget_BoardDevice,
    eNexusActionTarget_BoardChain
);

```

TNexusBreakpointKind

```

TNexusBreakpointKind =
(
    eBreakpointKind_Program_FetchAnyOpcode,
    eBreakpointKind_Program_FetchSpecificOpcode,
    eBreakpointKind_DataAtAddress_AnyValue,
    eBreakpointKind_DataAtAddress_SpecificValue
);

```

TMemoryKind

```

TMemoryKind =
(
    eMemoryKind_Program,
    eMemoryKind_Data
);

```

TCellKind

```

TCellKind =
(
    eCellKind_Undefined,
    eCellKind_BC_0,
    eCellKind_BC_1,
    eCellKind_BC_2,
    eCellKind_BC_3,
    eCellKind_BC_4,
    eCellKind_BC_5,

```

FPGA API Reference

```
eCellKind_BC_6,  
eCellKind_BC_7,  
eCellKind_BC_8,  
eCellKind_BC_9,  
eCellKind_BC_10  
);
```

TCellFunction

```
TCellFunction =  
(  
    eCellFunction_Undefined,  
    eCellFunction_Input,  
    eCellFunction_Clock,  
    eCellFunction_Output2,  
    eCellFunction_Output3,  
    eCellFunction_Control,  
    eCellFunction_ControlR,  
    eCellFunction_Internal,  
    eCellFunction_BiDir,  
    eCellFunction_ObserveOnly  
);
```

TDisableResult

```
TDisableResult =  
(  
    eDisableResult_Undefined,  
    eDisableResult_HiZ,  
    eDisableResult_Weak0,  
    eDisableResult_Weak1,  
    eDisableResult_Pull0,  
    eDisableResult_Pull1,  
    eDisableResult_Keeper  
);
```

TScanClockHaltMode

```
TScanClockHaltMode =  
(eScanClockHaltMode_None, eScanClockHaltMode_Low, eScanClockHaltMode_Both);
```

TScanPinKind

```
TScanPinKind = (eScanPinKind_Normal,
                eScanPinKind_TRST,
                eScanPinKind_TCK,
                eScanPinKind_TDO,
                eScanPinKind_TDI,
                eScanPinKind_TMS,
                eScanPinKind_Power,
                eScanPinKind_Ground);
```

TDeviceState

```
TDeviceState = (eDeviceState_Unknown,
                eDeviceState_Reset,
                eDeviceState_Programmed,
                eDeviceState_Programmed_ReadProtected,
                eDeviceState_Programmed_WriteProtected,
                eDeviceState_Programmed_ReadWriteProtected);
```

TDeviceIOStandardType

```
TDeviceIOStandardType =
(eLVTTL15,
 eLVTTL18,
 eLVTTL25,
 eLVTTL33,
 eLVCMOS15,
 eLVCMOS18,
 eLVCMOS25,
 eLVCMOS33,
 eLVCMOS5,
 ePCI33_3,
 ePCI33_5,
 ePCI66,
 ePCIX_3,
 eCOMPACTPCI_3,
 eSSTL3I,
 eSSTL3II,
 eSSTL2I,
 eSSTL2II,
```

FPGA API Reference

eSSTL18I,
eSSTL18II,
eGTL,
eGTLP,
eHSTLI,
eHSTLII,
eHSTLIII,
eHSTLIV,
eHSTL_12,
eHSTLI_18,
eHSTLII_18,
eHSTLIII_18,
eHSTLIV_18,
eCTT,
eAGP1x,
eAGP2x,
eTTL,
eLVCOS12,
eGTL_DCI,
eGTLP_DCI,
eHSTLI_DCI,
eHSTLII_DCI,
eHSTLIII_DCI,
eHSTLIV_DCI,
eHSTLI_18_DCI,
eHSTLII_18_DCI,
eHSTLIII_18_DCI,
eHSTLIV_18_DCI,
eDHSTLI,
eDHSTLII,
eDHSTLIII,
eDHSTL18I,
eDHSTL18II,
eDHSTL18III,
eHTT,
ePCML,

ePCML15,
eSSTL18I_DCI,
eSSTL18II_DCI,
eSSTL2I_DCI,
eSSTL2II_DCI,
eSSTL3I_DCI,
eSSTL3II_DCI,
eLVC MOS15_DCI,
eLVC MOS18_DCI,
eLVC MOS25_DCI,
eLVC MOS33_DCI,
eLVC MOS15_DCI_DV2,
eLVC MOS18_DCI_DV2,
eLVC MOS25_DCI_DV2,
eLVC MOS33_DCI_DV2,
eLVDS,
eLVPECL,
eDSSTL18I,
eDSSTL18II,
eDSSTL2I,
eDSSTL2II,
eDSSTL3I,
eDSSTL3II,
eBLVDS25,
eLVPECL25,
eRSDS25,
eLVDS33,
eLVDS25_DCI,
eLVDS33_DCI,
eLVDS EXT25,
eLVDS EXT33,
eLVDS EXT25_DCI,
eLVDS EXT33_DCI,
eLDT,
eULVDS25,
eLDT_DT,

FPGA API Reference

```
eLVDS_DT,  
eLVDS25_DT,  
eULVDS25_DT,  
eMiniLVDS25,  
eLVCOS33_1,  
eLVCOS33_2,  
eDHSTL11_DCI,  
eDHSTL18_DCI,  
eDSSTL2_DCI,  
eDSSTL18_DCI  
);
```

TDeviceIOStandardSlewType

TDeviceIOStandardSlewType = (eSlow, eFast);

TDeviceIOStandardDriveStrength

TDeviceIOStandardDriveStrength = (e2m, e3m, e4m, e6m, e7m, e8m, e10m, e12m, e14m, e16m, e18m, e20m, e24m);

TDevicePinType

TDevicePinType = (eIOPin, eVREFPin, eCLKPin, eSpecialPin, eInputOnlyPin, eDCIP_Pin, eDCIN_Pin, eDiffP_Pin, eDiffN_Pin, eHDiffP_Pin, eHDiffN_Pin, eTransDiffPin, eRecDiffPin, eClkDiffP_Pin, eClkDiffN_Pin, eDLL_Pin);

Functions

```
Procedure InitializeMemoryArray (Var MemoryArray : TMemoryArray);  
Function AllocateMemoryArray (NumElements : Integer) : PMemoryArray;  
Procedure FreeMemoryArray (MemoryArray : PMemoryArray);  
  
Function AddressesEqual (Addr1, Addr2 : TMemoryAddress) :  
Boolean;  
Function ElementsEqual (Element1, Element2 : TMemoryElement) :  
Boolean;  
  
Function GetByteFromElement (Index : Integer; AElement :  
TMemoryElement) : Byte;  
Procedure SetByteOnElement (Index : Integer; Var AElement :  
TMemoryElement; AByte : Byte);  
Function DecrementAddress (Addr : TMemoryAddress; ByValue :  
Cardinal) : TMemoryAddress;
```

```
Function IncrementAddress      (Addr : TMemoryAddress; ByVal :
Cardinal) : TMemoryAddress;
```

```
Function IsFPGADevice        (LibraryReference : TString)
: Boolean;
```

```
Function GetFPGAVendorKindFromLibRef (LibraryReference : TString; Var
AVendorKind : TFPGAVendorKind) : Boolean;
```

IBoundaryCell Interface

Overview

The **IBoundaryCell** interface hierarchy is as follows;

IBoundaryCell methods IBoundaryCell properties

```
GetCellNumber
GetCellKind
GetPortId
GetCellFunction
GetSafeBit
GetControlCellNumber
GetDisableValue
GetDisableResult
GetPin
GetControlCell
GetTargetCell
GetCurrentValue
```

See also

[GetCellFunction method](#)

(IBoundaryCell interface)

Syntax

```
Function GetCellFunction : TCellFunction;
```

Description

Example

See also

IBoundaryCell interface

GetCellKind method

(IBoundaryCell interface)

Syntax

```
Function GetCellKind : TCellKind;
```

Description

Example

See also

IBoundaryCell interface

GetCellNumber method

(IBoundaryCell interface)

Syntax

```
Function GetCellNumber : Integer;
```

Description

Example

See also

IBoundaryCell interface

GetControlCell method

(IBoundaryCell interface)

Syntax

```
Function GetControlCell : IBoundaryCell;
```

Description

Example

See also

IBoundaryCell interface

GetControlCellNumber method

(IBoundaryCell interface)

Syntax

```
Function GetControlCellNumber : Integer;
```

Description**Example****See also**

IBoundaryCell interface

GetCurrentValue method

(IBoundaryCell interface)

Syntax

```
Function GetCurrentValue : Integer;
```

Description**Example****See also**

IBoundaryCell interface

GetDisableResult method

(IBoundaryCell interface)

Syntax

```
Function GetDisableResult : TDisableResult;
```

Description**Example****See also**

IBoundaryCell interface

GetDisableValue method

(IBoundaryCell interface)

Syntax

```
Function GetDisableValue : TBitValue;
```

Description**Example****See also**

FPGA API Reference

IBoundaryCell interface

GetPin method

(IBoundaryCell interface)

Syntax

```
Function GetPin : IScanPin;
```

Description

Example

See also

IBoundaryCell interface

GetPortId method

(IBoundaryCell interface)

Syntax

```
Function GetPortId : WideString;
```

Description

Example

See also

IBoundaryCell interface

GetSafeBit method

(IBoundaryCell interface)

Syntax

```
Function GetSafeBit : TBitValue;
```

Description

Example

See also

IBoundaryCell interface

GetTargetCell method

(IBoundaryCell interface)

Syntax

```
Function GetTargetCell : IBoundaryCell;
```

Description**Example****See also**

IBoundaryCell interface

IBSDLEntity Interface**IBSDLEntity Interface****Overview**

The **IBSDLEntity** interface hierarchy is as follows;

IBSDLEntity methods

GetName
 GetInstructionLength
 GetIdCode
 GetBoundaryLength
 GetPin
 GetPinMapping
 GetBoundaryCell
 GetInstructionOpcode
 GetRegisterAssociation
 GetPinCount
 GetPinMappingCount
 GetBoundaryCellCount
 GetInstructionOpcodeCount
 GetRegisterAssociationCount
 GetPin_TDI
 GetPin_TDO
 GetPin_TMS
 GetPin_TCK
 GetPin_TRST
 GetInstruction_BYPASS
 GetInstruction_EXTEST
 GetInstruction_SAMPLE

IBSDLEntity properties

FPGA API Reference

GetInstruction_IDCODE
GetInstruction_USERCODE
GetInstruction_CLAMP
GetInstruction_HIGHZ
GetScanClockMaxSpeed
GetScanClockHaltMode
GetConformanceStatement
GetCompliancePattern
GetDesignWarning
GetFilename

See also

GetBoundaryCell method

(IBSDLEntity interface)

Syntax

```
Function GetBoundaryCell (Index : Integer) : IBoundaryCell;
```

Description

Example

See also

IBSDLEntity interface

GetBoundaryCellCount method

(IBSDLEntity interface)

Syntax

```
Function GetBoundaryCellCount : Integer;
```

Description

Example

See also

IBSDLEntity interface

GetBoundaryLength method

(IBSDLEntity interface)

Syntax

```
Function GetBoundaryLength : Integer;
```

Description**Example****See also**

IBSDLEntity interface

GetCompliancePattern method

(IBSDLEntity interface)

Syntax

```
Function GetCompliancePattern : WideString;
```

Description**Example****See also**

IBSDLEntity interface

GetConformanceStatement method

(IBSDLEntity interface)

Syntax

```
Function GetConformanceStatement : WideString;
```

Description**Example****See also**

IBSDLEntity interface

GetDesignWarning method

(IBSDLEntity interface)

Syntax

```
Function GetDesignWarning : WideString;
```

Description**Example**

See also

IBSDLEntity interface

GetFilename method

(IBSDLEntity interface)

Syntax

```
Function GetFilename : WideString;
```

Description

Example

See also

IBSDLEntity interface

GetIdCode method

(IBSDLEntity interface)

Syntax

```
Function GetIdCode : LongWord;
```

Description

Example

See also

IBSDLEntity interface

GetInstruction_BYPASS method

(IBSDLEntity interface)

Syntax

```
Function GetInstruction_BYPASS : LongWord;
```

Description

Example

See also

IBSDLEntity interface

GetInstruction_CLAMP method

(IBSDLEntity interface)

Syntax

```
Function GetInstruction_CLAMP : LongWord;
```

Description**Example****See also**

IBSDLEntity interface

[GetInstruction_EXTEST method](#)

(IBSDLEntity interface)

Syntax

```
Function GetInstruction_EXTEST : LongWord;
```

Description**Example****See also**

IBSDLEntity interface

[GetInstruction_HIGHZ method](#)

(IBSDLEntity interface)

Syntax

```
Function GetInstruction_HIGHZ : LongWord;
```

Description**Example****See also**

IBSDLEntity interface

[GetInstruction_IDCODE method](#)

(IBSDLEntity interface)

Syntax

```
Function GetInstruction_IDCODE : LongWord;
```

Description**Example**

See also

IBSDLEntity interface

GetInstruction_SAMPLE method

(IBSDLEntity interface)

Syntax

```
Function GetInstruction_SAMPLE : LongWord;
```

Description

Example

See also

IBSDLEntity interface

GetInstruction_USERCODE method

(IBSDLEntity interface)

Syntax

```
Function GetInstruction_USERCODE : LongWord;
```

Description

Example

See also

IBSDLEntity interface

GetInstructionLength method

(IBSDLEntity interface)

Syntax

```
Function GetInstructionLength : Integer;
```

Description

Example

See also

IBSDLEntity interface

GetInstructionOpcode method

(IBSDLEntity interface)

Syntax

```
Function GetInstructionOpcode (Index : Integer) : IInstructionOpCode;
```

Description

Example

See also

IBSDLEntity interface

[GetInstructionOpcodeCount method](#)

(IBSDLEntity interface)

Syntax

```
Function GetInstructionOpcodeCount : Integer;
```

Description

Example

See also

IBSDLEntity interface

[GetName method](#)

(IBSDLEntity interface)

Syntax

```
Function GetName : WideString;
```

Description

Example

See also

IBSDLEntity interface

[GetPin method](#)

(IBSDLEntity interface)

Syntax

```
Function GetPin (Index : Integer) : IScanPin;
```

Description

Example

See also

IBSDLEntity interface

GetPin_TCK method

(IBSDLEntity interface)

Syntax

```
Function GetPin_TCK : IScanPin;
```

Description

Example

See also

IBSDLEntity interface

GetPin_TDI method

(IBSDLEntity interface)

Syntax

```
Function GetPin_TDI : IScanPin;
```

Description

Example

See also

IBSDLEntity interface

GetPin_TDO method

(IBSDLEntity interface)

Syntax

```
Function GetPin_TDO : IScanPin;
```

Description

Example

See also

IBSDLEntity interface

GetPin_TMS method

(IBSDLEntity interface)

Syntax

```
Function GetPin_TMS : IScanPin;
```

Description**Example****See also**

IBSDLEntity interface

GetPin_TRST method

(IBSDLEntity interface)

Syntax

```
Function GetPin_TRST : IScanPin;
```

Description**Example****See also**

IBSDLEntity interface

GetPinCount method

(IBSDLEntity interface)

Syntax

```
Function GetPinCount : Integer;
```

Description**Example****See also**

IBSDLEntity interface

GetPinMapping method

(IBSDLEntity interface)

Syntax

```
Function GetPinMapping (Index : Integer) : IPinMapping;
```

Description**Example**

See also

IBSDLEntity interface

GetPinMappingCount method

(IBSDLEntity interface)

Syntax

```
Function GetPinMappingCount : Integer;
```

Description

Example

See also

IBSDLEntity interface

GetRegisterAssociation method

(IBSDLEntity interface)

Syntax

```
Function GetRegisterAssociation(Index : Integer) : IRegisterAssociation;
```

Description

Example

See also

IBSDLEntity interface

GetRegisterAssociationCount method

(IBSDLEntity interface)

Syntax

```
Function GetRegisterAssociationCount : Integer;
```

Description

Example

See also

IBSDLEntity interface

GetScanClockHaltMode method

(IBSDLEntity interface)

Syntax

```
Function GetScanClockHaltMode : TScanClockHaltMode;
```

Description

Example

See also

IBSDLEntity interface

[GetScanClockMaxSpeed method](#)

(IBSDLEntity interface)

Syntax

```
Function GetScanClockMaxSpeed : Double;
```

Description

Example

See also

IBSDLEntity interface

[IBSDLObject Interface](#)

[IBSDLObject Interface](#)

Overview

The **IBSDLObject** interface hierarchy is as follows;

IBSDLObject methods

GetDescription

GetShortDescription

GetEntity

IBSDLObject properties

See also

[GetDescription method](#)

(IBSDLObject interface)

Syntax

```
Function GetDescription : WideString;
```

Description

Example

See also

IBSDLObject interface

GetEntity method

(IBSDLObject interface)

Syntax

```
Function GetEntity : IBSDLEntity;
```

Description

Example

See also

IBSDLObject interface

GetShortDescription method

(IBSDLObject interface)

Syntax

```
Function GetShortDescription : WideString;
```

Description

Example

See also

IBSDLObject interface

ICoreGenerator Interface

ICoreGenerator Interface

Overview

The **ICoreGenerator** interface hierarchy is as follows;

ICoreGenerator methods

GenerateModule

ICoreGenerator properties

See also**GenerateModule method**

(ICoreGenerator interface)

Syntax

```
Function GenerateModule(Params : WideString) : LongBool;
```

Description**Example****See also**

ICoreGenerator interface

IDeviceInformation Interface**IDeviceInformation Interface****Overview**

The **IDeviceInformation** interface hierarchy is as follows;

IDeviceInformation methods

GetIdCode
 GetDeviceName
 GetDeviceDescription
 GetFamilyName
 GetFamilyDescription
 GetLibraryName
 GetVendorPrimitiveLibraryName
 GetBaseName
 GetEquivalentGatesForBase
 GetMaxIOForBase
 GetPackageTypeId
 GetPackageTypeName
 GetPackageTypeDescription
 GetPackageId
 GetPackageName
 GetPackageDescription
 GetPackageDimensions

IDeviceInformation properties

FPGA API Reference

GetTemperatureGradeId
GetTemperatureGradeName
GetTemperatureGradeDescription
GetSpeedGradeId
GetSpeedGradeName
GetSpeedGradeDescription
GetOptionDesignatorId
GetOptionDesignatorName
GetOptionDesignatorDescription
GetBSDLFilename
GetBSDLEntity
GetVendorName
GetInstructionLength
GetDevicePinCount
GetDeviceIOCount
GetDevicePin
GetDownloadFileExtensions
GetDSPMultiplierCount
GetClockManagerCount
GetMemorySize
GetTerminationSupport
GetGlobalClockCount
GetConfigMemorySize
GetDiffPairCount
GetHighSpeedDiffPairCount
GetIOStandardCount
GetIOStandard

See also

GetBaseName method

(IDeviceInformation interface)

Syntax

```
Function GetBaseName : WideString;
```

Description

Example

See also

IDeviceInformation interface

GetBSDEntity method

(IDeviceInformation interface)

Syntax

```
Function GetBSDEntity : IBSDEntity;
```

Description**Example****See also**

IDeviceInformation interface

GetBSDLFilename method

(IDeviceInformation interface)

Syntax

```
Function GetBSDLFilename : WideString;
```

Description**Example****See also**

IDeviceInformation interface

GetClockManagerCount method

(IDeviceInformation interface)

Syntax

```
Function GetClockManagerCount : Integer;
```

Description**Example****See also**

IDeviceInformation interface

GetConfigMemorySize method

(IDeviceInformation interface)

FPGA API Reference

Syntax

```
Function GetConfigMemorySize : Integer;
```

Description

Example

See also

IDeviceInformation interface

[GetDeviceDescription method](#)

(IDeviceInformation interface)

Syntax

```
Function GetDeviceDescription : WideString;
```

Description

Example

See also

IDeviceInformation interface

[GetDeviceIOCount method](#)

(IDeviceInformation interface)

Syntax

```
Function GetDeviceIOCount : Integer;
```

Description

Example

See also

IDeviceInformation interface

[GetDeviceName method](#)

(IDeviceInformation interface)

Syntax

```
Function GetDeviceName : WideString;
```

Description

Example

See also

IDeviceInformation interface

GetDevicePin method

(IDeviceInformation interface)

Syntax

```
Function GetDevicePin(Index : Integer) : IDevicePin;
```

Description**Example****See also**

IDeviceInformation interface

GetDevicePinCount method

(IDeviceInformation interface)

Syntax

```
Function GetDevicePinCount : Integer;
```

Description**Example****See also**

IDeviceInformation interface

GetDiffPairCount method

(IDeviceInformation interface)

Syntax

```
Function GetDiffPairCount : Integer;
```

Description**Example****See also**

IDeviceInformation interface

GetDownloadFileExtensions method

(IDeviceInformation interface)

Syntax

```
Function GetDownloadFileExtensions : WideString;
```

Description

Example

See also

IDeviceInformation interface

[GetDSPMultiplierCount method](#)

(IDeviceInformation interface)

Syntax

```
Function GetDSPMultiplierCount : Integer;
```

Description

Example

See also

IDeviceInformation interface

[GetEquivalentGatesForBase method](#)

(IDeviceInformation interface)

Syntax

```
Function GetEquivalentGatesForBase : Integer;
```

Description

Example

See also

IDeviceInformation interface

[GetFamilyDescription method](#)

(IDeviceInformation interface)

Syntax

```
Function GetFamilyDescription : WideString;
```

Description

Example

See also

IDeviceInformation interface

GetFamilyName method

(IDeviceInformation interface)

Syntax

```
Function GetFamilyName : WideString;
```

Description**Example****See also**

IDeviceInformation interface

GetGlobalClockCount method

(IDeviceInformation interface)

Syntax

```
Function GetGlobalClockCount : Integer;
```

Description**Example****See also**

IDeviceInformation interface

GetHighSpeedDiffPairCount method

(IDeviceInformation interface)

Syntax

```
Function GetHighSpeedDiffPairCount : Integer;
```

Description**Example****See also**

IDeviceInformation interface

GetIdCode method

(IDeviceInformation interface)

Syntax

```
Function GetIdCode : LongWord;
```

Description

Example

See also

IDeviceInformation interface

[GetInstructionLength method](#)

(IDeviceInformation interface)

Syntax

```
Function GetInstructionLength : Integer;
```

Description

Example

See also

IDeviceInformation interface

[GetIOStandard method](#)

(IDeviceInformation interface)

Syntax

```
Function GetIOStandard(Index : Integer) : IDeviceIOStandard;
```

Description

Example

See also

IDeviceInformation interface

[GetIOStandardCount method](#)

(IDeviceInformation interface)

Syntax

```
Function GetIOStandardCount : Integer;
```

Description

Example

See also

IDeviceInformation interface

GetLibraryName method

(IDeviceInformation interface)

Syntax

```
Function GetLibraryName : WideString;
```

Description**Example****See also**

IDeviceInformation interface

GetMaxIOForBase method

(IDeviceInformation interface)

Syntax

```
Function GetMaxIOForBase : Integer;
```

Description**Example****See also**

IDeviceInformation interface

GetMemorySize method

(IDeviceInformation interface)

Syntax

```
Function GetMemorySize : Integer;
```

Description**Example****See also**

IDeviceInformation interface

GetOptionDesignatorDescription method

(IDeviceInformation interface)

Syntax

```
Function GetOptionDesignatorDescription : WideString;
```

Description

Example

See also

IDeviceInformation interface

[GetOptionDesignatorId method](#)

(IDeviceInformation interface)

Syntax

```
Function GetOptionDesignatorId : WideString;
```

Description

Example

See also

IDeviceInformation interface

[GetOptionDesignatorName method](#)

(IDeviceInformation interface)

Syntax

```
Function GetOptionDesignatorName : WideString;
```

Description

Example

See also

IDeviceInformation interface

[GetPackageDescription method](#)

(IDeviceInformation interface)

Syntax

```
Function GetPackageDescription : WideString;
```

Description

Example

See also

IDeviceInformation interface

GetPackageDimensions method

(IDeviceInformation interface)

Syntax

```
Function GetPackageDimensions : WideString;
```

Description**Example****See also**

IDeviceInformation interface

GetPackageId method

(IDeviceInformation interface)

Syntax

```
Function GetPackageId : WideString;
```

Description**Example****See also**

IDeviceInformation interface

GetPackageName method

(IDeviceInformation interface)

Syntax

```
Function GetPackageName : WideString;
```

Description**Example****See also**

IDeviceInformation interface

GetPackageTypeDescription method

(IDeviceInformation interface)

Syntax

```
Function GetPackageTypeDescription : WideString;
```

Description

Example

See also

IDeviceInformation interface

[GetPackageTypeId method](#)

(IDeviceInformation interface)

Syntax

```
Function GetPackageTypeId : WideString;
```

Description

Example

See also

IDeviceInformation interface

[GetPackageTypeName method](#)

(IDeviceInformation interface)

Syntax

```
Function GetPackageTypeName : WideString;
```

Description

Example

See also

IDeviceInformation interface

[GetSpeedGradeDescription method](#)

(IDeviceInformation interface)

Syntax

```
Function GetSpeedGradeDescription : WideString;
```

Description

Example

See also

IDeviceInformation interface

GetSpeedGradeId method

(IDeviceInformation interface)

Syntax

```
Function GetSpeedGradeId : WideString;
```

Description**Example****See also**

IDeviceInformation interface

GetSpeedGradeName method

(IDeviceInformation interface)

Syntax

```
Function GetSpeedGradeName : WideString;
```

Description**Example****See also**

IDeviceInformation interface

GetTemperatureGradeDescription method

(IDeviceInformation interface)

Syntax

```
Function GetTemperatureGradeDescription : WideString;
```

Description**Example****See also**

IDeviceInformation interface

GetTemperatureGradeId method

(IDeviceInformation interface)

Syntax

```
Function GetTemperatureGradeId : WideString;
```

Description

Example

See also

IDeviceInformation interface

[GetTemperatureGradeName method](#)

(IDeviceInformation interface)

Syntax

```
Function GetTemperatureGradeName : WideString;
```

Description

Example

See also

IDeviceInformation interface

[GetTerminationSupport method](#)

(IDeviceInformation interface)

Syntax

```
Function GetTerminationSupport : Boolean;
```

Description

Example

See also

IDeviceInformation interface

[GetVendorName method](#)

(IDeviceInformation interface)

Syntax

```
Function GetVendorName : WideString;
```

Description

Example

See also

IDeviceInformation interface

GetVendorPrimitiveLibraryName method

(IDeviceInformation interface)

Syntax

```
Function GetVendorPrimitiveLibraryName : WideString;
```

Description**Example****See also**

IDeviceInformation interface

IDeviceIOStandard Interface**IDeviceIOStandard Interface****Overview**

The **IDeviceIOStandard** interface hierarchy is as follows;

**IDeviceIOStandard
methods**

GetDisplayName

GetParamName

GetSlewCount

GetSlewValue

GetDriveCount

GetDriveStrength

IDeviceIOStandard properties**See also****GetDisplayName method**

(IDeviceIOStandard interface)

Syntax

```
Function GetDisplayName : WideString;
```

Description

Example

See also

IDeviceIOStandard interface

GetDriveCount method

(IDeviceIOStandard interface)

Syntax

```
Function GetDriveCount : Integer;
```

Description

Example

See also

IDeviceIOStandard interface

GetDriveStrength method

(IDeviceIOStandard interface)

Syntax

```
Function GetDriveStrength(Index : Integer) : WideString;
```

Description

Example

See also

IDeviceIOStandard interface

GetParamName method

(IDeviceIOStandard interface)

Syntax

```
Function GetParamName : WideString;
```

Description

Example

See also

IDeviceIOStandard interface

GetSlewCount method

(IDeviceIOStandard interface)

Syntax

```
Function GetSlewCount : Integer;
```

Description

Example

See also

IDeviceIOStandard interface

GetSlewValue method

(IDeviceIOStandard interface)

Syntax

```
Function GetSlewValue (Index : Integer) : WideString;
```

Description

Example

See also

IDeviceIOStandard interface

IDeviceManager Interface

Overview

The IDeviceManager interface represents the device manager in the Altium Designer's FPGA workspace.

IDeviceManager methods

IDeviceManager properties

AreDevicesPinCompatible

ChoosePhysicalDevice

Finalize

GetAllVendors

GetDefaultDevice

GetDevice

GetDeviceFamilyManager

GetDeviceFromDeviceId

FPGA API Reference

GetDeviceInformation
GetDeviceNamesForIdCode
GetDevicesForFamily
GetFamiliesForVendor
GetGenericDeviceManager
Initialize
ReleaseDevice
SetDefaultDevice

See also

AreDevicesPinCompatible method

(IDeviceManager interface)

Syntax

```
Function AreDevicesPinCompatible(DeviceName1 : WideString; DeviceName2 :  
WideString) : LongBool;
```

Description

Example

See also

IDeviceManager interface

ChoosePhysicalDevice method

(IDeviceManager interface)

Syntax

```
Function ChoosePhysicalDevice (DeviceName : WideString; FilterParameters :  
PChar) : WideString;
```

Description

Example

See also

IDeviceManager interface

Finalize method

(IDeviceManager interface)

Syntax

```
Procedure Finalize;
```

Description**Example****See also**

IDeviceManager interface

GetDefaultDevice method

(IDeviceManager interface)

Syntax

```
Function GetDefaultDevice : WideString;
```

Description**Example****See also**

IDeviceManager interface

GetDevice method

(IDeviceManager interface)

Syntax

```
Function GetDevice (DeviceName : WideString ) : INexusDevice;
```

Description**Example****See also**

IDeviceManager interface

GetDeviceFromDeviceId method

(IDeviceManager interface)

Syntax

```
Function GetDeviceFromDeviceId (AnId : WideString ) : INexusDevice;
```

Description**Example****See also**

FPGA API Reference

IDeviceManager interface

GetDeviceInformation method

(IDeviceManager interface)

Syntax

```
Function GetDeviceInformation (DeviceName : WideString ) :  
IDeviceInformation;
```

Description

Example

See also

IDeviceManager interface

GetDeviceNamesForIdCode method

(IDeviceManager interface)

Syntax

```
Function GetDeviceNamesForIdCode(IdCode : LongWord ) : WideString;
```

Description

Example

See also

IDeviceManager interface

Initialize method

(IDeviceManager interface)

Syntax

```
Function Initialize : LongBool;
```

Description

Example

See also

IDeviceManager interface

ReleaseDevice method

(IDeviceManager interface)

Syntax

```
Procedure ReleaseDevice (NexusDevice : INexusDevice);
```

Description

Example

See also

IDeviceManager interface

SetDefaultDevice method

(IDeviceManager interface)

Syntax

```
Procedure SetDefaultDevice (DeviceName : WideString );
```

Description

Example

See also

IDeviceManager interface

GetAllVendors method

(IDeviceManager interface)

Syntax

```
Function GetAllVendors : WideString;
```

Description

Example

See also

IDeviceManager interface

GetFamiliesForVendor method

(IDeviceManager interface)

Syntax

```
Function GetFamiliesForVendor (Const Vendor : WideString) : WideString;
```

Description

Example

See also

IDeviceManager interface

GetDevicesForFamily method

(IDeviceManager interface)

Syntax

```
Function GetDevicesForFamily (Const Family : WideString) : WideString;
```

Description

Example

See also

IDeviceManager interface

GetDeviceFamilyManager method

(IDeviceManager interface)

Syntax

```
Function GetDeviceFamilyManager : IDeviceFamilyManager;
```

Description

Example

See also

IDeviceManager interface

GetGenericDeviceManager method

(IDeviceManager interface)

Syntax

```
Function GetGenericDeviceManager : IGenericDeviceManager;
```

Description

Example

See also

IDeviceManager interface

IGenericDeviceManager interface

IDevicePin Interface

Overview

The IDevicePin interface represents a pin of the FPGA device.

IDevicePin methods

GetClkDifferentialId
 GetDifferentialId
 GetIOBank
 GetIOStandard
 GetIOStandardCount
 GetIsClkDiffN_Pin
 GetIsClkDiffP_Pin
 GetIsCLKPin
 GetIsDCIN_Pin
 GetIsDCIP_Pin
 GetIsDiffN_Pin
 GetIsDiffP_Pin
 GetIsDLLPin
 GetIsHDiffN_Pin
 GetIsHDiffP_Pin
 GetIsInputOnlyPin
 GetIsIOPin
 GetIsReceiveDiffPin
 GetIsSpecialPin
 GetIsTransmitDiffPin
 GetIsVREFPin
 GetPinNumber
 GetUniqueDifferentialID

IDevicePin properties

See also

[GetClkDifferentialId method](#)

(IDevicePin interface)

Syntax

```
Function GetClkDifferentialId : WideString;
```

Description

Example

See also

IDevicePin interface

GetDifferentialId method

(IDevicePin interface)

Syntax

```
Function GetDifferentialId : WideString;
```

Description

Example

See also

IDevicePin interface

GetIOBank method

(IDevicePin interface)

Syntax

```
Function GetIOBank : WideString;
```

Description

Example

See also

IDevicePin interface

GetIOStandard method

(IDevicePin interface)

Syntax

```
Function GetIOStandard (Index : Integer) : IDeviceIOStandard;
```

Description

Example

See also

IDevicePin interface

GetIOStandardCount method

(IDevicePin interface)

Syntax

```
Function GetIOStandardCount : Integer;
```

Description**Example****See also**

IDevicePin interface

[GetIsClkDiffN_Pin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsClkDiffN_Pin : Boolean;
```

Description**Example****See also**

IDevicePin interface

[GetIsClkDiffP_Pin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsClkDiffP_Pin : Boolean;
```

Description**Example****See also**

IDevicePin interface

[GetIsCLKPin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsCLKPin : Boolean;
```

Description**Example**

See also

IDevicePin interface

[GetIsDCIN_Pin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsDCIN_Pin : Boolean;
```

Description

Example

See also

IDevicePin interface

[GetIsDCIP_Pin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsDCIP_Pin : Boolean;
```

Description

Example

See also

IDevicePin interface

[GetIsDiffN_Pin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsDiffN_Pin : Boolean;
```

Description

Example

See also

IDevicePin interface

[GetIsDiffP_Pin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsDiffP_Pin : Boolean;
```

Description**Example****See also**

IDevicePin interface

[GetIsDLLPin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsDLLPin : Boolean;
```

Description**Example****See also**

IDevicePin interface

[GetIsHDiffN_Pin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsHDiffN_Pin : Boolean;
```

Description**Example****See also**

IDevicePin interface

[GetIsHDiffP_Pin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsHDiffP_Pin : Boolean;
```

Description**Example**

See also

IDevicePin interface

GetIsInputOnlyPin method

(IDevicePin interface)

Syntax

```
Function GetIsInputOnlyPin : Boolean;
```

Description

Example

See also

IDevicePin interface

GetIsIOPin method

(IDevicePin interface)

Syntax

```
Function GetIsIOPin : Boolean;
```

Description

Example

See also

IDevicePin interface

GetIsReceiveDiffPin method

(IDevicePin interface)

Syntax

```
Function GetIsReceiveDiffPin : Boolean;
```

Description

Example

See also

IDevicePin interface

GetIsSpecialPin method

(IDevicePin interface)

Syntax

```
Function GetIsSpecialPin : Boolean;
```

Description**Example****See also**

IDevicePin interface

[GetIsTransmitDiffPin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsTransmitDiffPin : Boolean;
```

Description**Example****See also**

IDevicePin interface

[GetIsVREFPin method](#)

(IDevicePin interface)

Syntax

```
Function GetIsVREFPin : Boolean;
```

Description**Example****See also**

IDevicePin interface

[GetPinNumber method](#)

(IDevicePin interface)

Syntax

```
Function GetPinNumber : WideString;
```

Description**Example**

See also

IDevicePin interface

GetUniqueDifferentialId method

(IDevicePin interface)

Syntax

```
Function GetUniqueDifferentialId : WideString;
```

Description

Example

See also

IDevicePin interface

IIInstructionOpCode Interface

Overview

The **IIInstructionOpCode** interface hierarchy is as follows;

**IIInstructionOpCode
methods**

GetInstructionName

GetOpCodePattern

IIInstructionOpCode properties

See also

GetInstructionName method

(IIInstructionOpCode interface)

Syntax

```
Function GetInstructionName : WideString;
```

Description

Example

See also

IIInstructionOpCode interface

GetOpCodePattern method

(IInstructionOpCode interface)

Syntax

```
Function GetOpCodePattern : WideString;
```

Description

Example

See also

IInstructionOpCode interface

IGenericDeviceManager Interface

Overview

The IGenericDeviceManager interface represents the generic device manager.

IDevicePin methods

SetAssociatedBSDLFileName
 SetInstructionLength
 GetAssociatedBSDLFileName
 GetAssociatedLibraryReference
 GetAssociatedLibraryFileName
 GetInstructionLength
 GetNonAssociatedBSDLFileNamesForIdCode
 GetAssociatedDeviceSettingsDescription
 Import_FromUser_JTAGIdMapping

IDevicePin properties

IInstrumentView Interface

Overview

The **IInstrumentView** interface hierarchy is as follows;

IExternalForm
 IInstrumentView

IInstrumentView methods

IInstrumentView properties

FPGA API Reference

UpdateDisplay

SetProjectDetails

GetInstrumentBounds

SetInstrumentBounds

LiveUpdateNet

ReceiveNotification

Hidden

See also

GetInstrumentBounds method

(IInstrumentView interface)

Syntax

```
Procedure GetInstrumentBounds(Var ALeft, ATop, AWidth, AHeight : Integer);
```

Description

Example

See also

IInstrumentView interface

Hidden method

(IInstrumentView interface)

Syntax

```
Procedure Hidden;
```

Description

Example

See also

IInstrumentView interface

LiveUpdateNet method

(IInstrumentView interface)

Syntax

```
Function LiveUpdateNet (Const ANet : INet; AUpdateEnabled : Boolean) :  
Boolean;
```

Description

Example**See also**

IIInstrumentView interface

ReceiveNotification method

(IIInstrumentView interface)

Syntax

```
Procedure ReceiveNotification( ANotification : INotification);
```

Description**Example****See also**

IIInstrumentView interface

SetInstrumentBounds method

(IIInstrumentView interface)

Syntax

```
Procedure SetInstrumentBounds( ALeft, ATop, AWidth, AHeight : Integer);
```

Description**Example****See also**

IIInstrumentView interface

SetProjectDetails method

(IIInstrumentView interface)

Syntax

```
Procedure SetProjectDetails ( AProjectPath, ATarget : WideString);
```

Description**Example****See also**

IIInstrumentView interface

UpdateDisplay method

(IInstrumentView interface)

Syntax

```
Procedure UpdateDisplay;
```

Description

Example

See also

IInstrumentView interface

IJTagChannel Interface

Overview

The **IJTagChannel** interface hierarchy is as follows;

IJTagChannel methods

OpenChannel
CloseChannel
PlaceAllDevicesInBypass
GetChainLength
ScanChain
DisplayStatus
GetDevice
GetDeviceCount
GetStringForDevicesOnChain
DoFlush
ShiftIn32BitPartialData
ShiftInNBitPartialData
ShiftInOutNBitData
ShiftInOutString
ShiftInOutPartialString
ShiftInOutString_IR
DataRegisterLoad
LoadInstruction
SelectInstruction

IJTagChannel properties

TCK
TDO
TDI
TMS

ReadCaptureIR
DeviceOnline
CaptureInstructionRegister
StartShiftDataIn
NextState
ResetTAP
ForceTo_RUN_TEST_IDLE
CurrentTapState
MoveToState_SHIFT_IR
MoveToState_SHIFT_DR
MoveFromState_EXIT1_IR_ToState_SHIFT_DR
MoveFromState_SHIFT_IR_ToState_RUN_TEST_IDLE
MoveFromState_SHIFT_DR_ToState_RUN_TEST_IDLE
MoveFromState_EXIT1_IR_ToState_RUN_TEST_IDLE
MoveFromState_EXIT1_DR_ToState_RUN_TEST_IDLE
SetTCK
SetTDO
SetTDI
SetTMS
GetTCK
GetTDO
GetTDI
GetTMS
Write
Read
SPI_SetDataPin
SPI_SetClockPin
SPI_SetSelectPin
SPI_GetDataPin
SPI_SendReceiveByte
SPI_SendAddress24
SPI_SendAddress32
SPI_BitDelay
SPI_SelectDevice

See also

CaptureInstructionRegister method

(IJTagChannel interface)

Syntax

```
Procedure StartShiftDataIn;
```

Description

Example

See also

IJTagChannel interface

CloseChannel method

(IJTagChannel interface)

Syntax

```
Procedure CloseChannel;
```

Description

Example

See also

IJTagChannel interface

CurrentTapState method

(IJTagChannel interface)

Syntax

```
Function CurrentTapState : TTapState;
```

Description

Example

See also

IJTagChannel interface

DataRegisterLoad method

(IJTagChannel interface)

Syntax

```
Function DataRegisterLoad (Data : LongWord; BitCount : Integer; DeviceIndex : Integer) : LongWord;
```

Description

Example**See also**

IJTagChannel interface

DeviceOnline method

(IJTagChannel interface)

Syntax

```
Function DeviceOnline (DeviceIndex : Integer) : LongBool;
```

Description**Example****See also**

IJTagChannel interface

DisplayStatus method

(IJTagChannel interface)

Syntax

```
Procedure DisplayStatus;
```

Description**Example****See also**

IJTagChannel interface

DoFlush method

(IJTagChannel interface)

Syntax

```
Procedure DoFlush(BitCount : Integer);
```

Description**Example****See also**

IJTagChannel interface

ForceTo_RUN_TEST_IDLE method

(IJTagChannel interface)

Syntax

```
Procedure ForceTo_RUN_TEST_IDLE;
```

Description

Example

See also

IJTagChannel interface

GetChainLength method

(IJTagChannel interface)

Syntax

```
Function GetChainLength : Integer;
```

Description

Example

See also

IJTagChannel interface

GetDevice method

(IJTagChannel interface)

Syntax

```
Function GetDevice(Index : Integer) : IJTagDevice;
```

Description

Example

See also

IJTagChannel interface

GetDeviceCount method

(IJTagChannel interface)

Syntax

```
Function GetDeviceCount : Integer;
```

Description

Example**See also**

IJTagChannel interface

GetStringForDevicesOnChain method

(IJTagChannel interface)

Syntax

```
Function GetStringForDevicesOnChain : WideString;
```

Description**Example****See also**

IJTagChannel interface

GetTCK method

(IJTagChannel interface)

Syntax

```
Function GetTCK : Byte;
```

Description**Example****See also**

IJTagChannel interface

GetTDI method

(IJTagChannel interface)

Syntax

```
Function GetTDI : Byte;
```

Description**Example****See also**

IJTagChannel interface

GetTDO method

(IJTagChannel interface)

Syntax

```
Function GetTDO : Byte;
```

Description

Example

See also

IJTagChannel interface

GetTMS method

(IJTagChannel interface)

Syntax

```
Function GetTMS : Byte;
```

Description

Example

See also

IJTagChannel interface

LoadInstruction method

(IJTagChannel interface)

Syntax

```
Procedure LoadInstruction (Instruction : LongWord; DeviceIndex : Integer);
```

Description

Example

See also

IJTagChannel interface

MoveFromState_EXIT1_DR_ToState_RUN_TEST_IDLE method

(IJTagChannel interface)

Syntax

```
Procedure MoveFromState_EXIT1_DR_ToState_RUN_TEST_IDLE;
```

Description

Example**See also**

IJTagChannel interface

[MoveFromState_EXIT1_IR_ToState_RUN_TEST_IDLE method](#)

(IJTagChannel interface)

Syntax

```
Procedure MoveFromState_EXIT1_IR_ToState_RUN_TEST_IDLE;
```

Description**Example****See also**

IJTagChannel interface

[MoveFromState_EXIT1_IR_ToState_SHIFT_DR method](#)

(IJTagChannel interface)

Syntax

```
Procedure MoveFromState_EXIT1_IR_ToState_SHIFT_DR;
```

Description**Example****See also**

IJTagChannel interface

[MoveFromState_SHIFT_DR_ToState_RUN_TEST_IDLE method](#)

(IJTagChannel interface)

Syntax

```
Procedure MoveFromState_SHIFT_DR_ToState_RUN_TEST_IDLE;
```

Description**Example****See also**

IJTagChannel interface

MoveFromState_SHIFT_IR_ToState_RUN_TEST_IDLE method

(IJTagChannel interface)

Syntax

```
Procedure MoveFromState_SHIFT_IR_ToState_RUN_TEST_IDLE;
```

Description

Example

See also

IJTagChannel interface

MoveToState_SHIFT_DR method

(IJTagChannel interface)

Syntax

```
Procedure MoveToState_SHIFT_DR;
```

Description

Example

See also

IJTagChannel interface

MoveToState_SHIFT_IR method

(IJTagChannel interface)

Syntax

```
Procedure MoveToState_SHIFT_IR;
```

Description

Example

See also

IJTagChannel interface

NextState method

(IJTagChannel interface)

Syntax

```
Procedure NextState(ATMS : Integer);
```

Description

Example**See also**

IJTagChannel interface

OpenChannel method

(IJTagChannel interface)

Syntax

```
Function OpenChannel : LongBool;
```

Description**Example****See also**

IJTagChannel interface

PlaceAllDevicesInBypass method

(IJTagChannel interface)

Syntax

```
Procedure PlaceAllDevicesInBypass;
```

Description**Example****See also**

IJTagChannel interface

Read method

(IJTagChannel interface)

Syntax

```
Procedure Read;
```

Description**Example****See also**

IJTagChannel interface

ReadCaptureIR method

(IJTagChannel interface)

Syntax

```
Function ReadCaptureIR (DeviceIndex : Integer) : LongWord;
```

Description

Example

See also

IJTagChannel interface

ResetTAP method

(IJTagChannel interface)

Syntax

```
Procedure ResetTAP;
```

Description

Example

See also

IJTagChannel interface

ScanChain method

(IJTagChannel interface)

Syntax

```
Procedure ScanChain;
```

Description

Example

See also

IJTagChannel interface

SelectInstruction method

(IJTagChannel interface)

Syntax

```
Procedure SelectInstruction (Instruction : LongWord; DeviceIndex : Integer);
```

Description

Example**See also**

IJTagChannel interface

SetTCK method

(IJTagChannel interface)

Syntax

```
Procedure SetTCK(N : Byte);
```

Description**Example****See also**

IJTagChannel interface

SetTDI method

(IJTagChannel interface)

Syntax

```
Procedure SetTDI(N : Byte);
```

Description**Example****See also**

IJTagChannel interface

SetTDO method

(IJTagChannel interface)

Syntax

```
Procedure SetTDO(N : Byte);
```

Description**Example****See also**

IJTagChannel interface

SetTMS method

(IJTagChannel interface)

Syntax

```
Procedure SetTMS(N : Byte);
```

Description

Example

See also

IJTagChannel interface

ShiftIn32BitPartialData method

(IJTagChannel interface)

Syntax

```
Function ShiftIn32BitPartialData(Data : LongWord) : LongWord;
```

Description

Example

See also

IJTagChannel interface

ShiftInNBitPartialData method

(IJTagChannel interface)

Syntax

```
Function ShiftInNBitPartialData (Data : LongWord;Length : Integer ) :  
LongWord;
```

Description

Example

See also

IJTagChannel interface

ShiftInOutNBitData method

(IJTagChannel interface)

Syntax

```
Function ShiftInOutNBitData (Data : LongWord;BitCount : Integer;DeviceIndex  
: Integer): LongWord;
```

Description**Example****See also**

IJTagChannel interface

ShiftInOutPartialString method

(IJTagChannel interface)

Syntax

```
Function ShiftInOutPartialString(Data : WideString;DeviceIndex : Integer):
WideString;
```

Description**Example****See also**

IJTagChannel interface

ShiftInOutString method

(IJTagChannel interface)

Syntax

```
Function ShiftInOutString (Data : WideString;DeviceIndex : Integer):
WideString;
```

Description**Example****See also**

IJTagChannel interface

ShiftInOutString_IR method

(IJTagChannel interface)

Syntax

```
Function ShiftInOutString_IR (Data : WideString;DeviceIndex : Integer):
WideString;
```

Description**Example**

See also

IJTagChannel interface

SPI_BitDelay method

(IJTagChannel interface)

Syntax

```
Procedure SPI_BitDelay;
```

Description

Example

See also

IJTagChannel interface

SPI_GetDataPin method

(IJTagChannel interface)

Syntax

```
Function SPI_GetDataPin : Byte;
```

Description

Example

See also

IJTagChannel interface

SPI_SelectDevice method

(IJTagChannel interface)

Syntax

```
Function SPI_SelectDevice(BoardAddress : Byte;DeviceAddress : Byte) :  
LongBool;
```

Description

Example

See also

IJTagChannel interface

SPI_SendAddress24 method

(IJTagChannel interface)

Syntax

```
Procedure SPI_SendAddress24 (Address : Integer);
```

Description**Example****See also**

IJTagChannel interface

SPI_SendAddress32 method

(IJTagChannel interface)

Syntax

```
Procedure SPI_SendAddress32 (Address : Integer);
```

Description**Example****See also**

IJTagChannel interface

SPI_SendReceiveByte method

(IJTagChannel interface)

Syntax

```
Function SPI_SendReceiveByte(DataByte : Byte ) : Byte;
```

Description**Example****See also**

IJTagChannel interface

SPI_SetClockPin method

(IJTagChannel interface)

Syntax

```
Procedure SPI_SetClockPin (N : Byte);
```

Description

Example

See also

IJTagChannel interface

SPI_SetDataPin method

(IJTagChannel interface)

Syntax

```
Procedure SPI_SetDataPin (N : Byte);
```

Description

Example

See also

IJTagChannel interface

SPI_SetSelectPin method

(IJTagChannel interface)

Syntax

```
Procedure SPI_SetSelectPin(N : Byte);
```

Description

Example

See also

IJTagChannel interface

StartShiftDataIn method

(IJTagChannel interface)

Syntax

```
Procedure StartShiftDataIn;
```

Description

Example

See also

IJTagChannel interface

TCK property

(IJTagChannel interface)

Syntax

```
Property TCK : Byte Read GetTCK Write SetTCK;
```

Description

Example

See also

IJTagChannel interface

TDI property

(IJTagChannel interface)

Syntax

```
Property TDI : Byte Read GetTDI Write SetTDI;
```

Description

Example

See also

IJTagChannel interface

TDO property

(IJTagChannel interface)

Syntax

```
Property TDO : Byte Read GetTDO Write SetTDO;
```

Description

Example

See also

IJTagChannel interface

TMS property

(IJTagChannel interface)

Syntax

```
Property TMS : Byte Read GetTMS Write SetTMS;
```

Description

Example

See also

IJTagChannel interface

Write method

(IJTagChannel interface)

Syntax

```
Procedure Write;
```

Description

Example

See also

IJTagChannel interface

IJTagDevice Interface

Overview

The IJTagDevice interface represents the actual JTag device which is a communications technology employed by hardware devices and softcores on the Nanoboard to talk with Altium Designer.

JTAG (short for Joint Test Action Group) is the IEEE Boundary Scan Standard 1149.1 The JTAG device in a nutshell is used for FPGA device programming, Altium Designer also supports a second JTAG chain used to communicate to soft edevices uded in your FPGA design. These soft devices could include an on-chip debug version of a microprocessor core or virtual instruments included for debuggin the FPGA deisgn hardware. The Nexus 5001 standard is used as the communications proctocol for the soft chain.

IJTagDevice methods

- GetBoundaryCell
- GetBoundaryCellCount
- GetBoundaryLength
- GetBSDL
- GetCurrentDeviceName
- GetDeviceInformation
- GetFilename
- GetIdCodeFromBSDL
- GetIdCodeFromDevice

IJTagDevice properties

GetIndex
 GetInstructionLength
 GetInstructionOpcode
 GetInstructionOpcodeCount
 GetPin
 GetPinCount
 GetPinMapping
 GetPinMappingCount
 GetRegisterAssociation
 GetRegisterAssociationCount
 ReadPinStatesFromChain
 ReloadBSDL
 SetIndex
 UpdateWithPreferredDeviceName

See also**GetBoundaryCell method**

(IJTagDevice interface)

Syntax

```
Function GetBoundaryCell (Index : Integer) : IBoundaryCell;
```

Description**Example****See also**

IJTagDevice interface

GetBoundaryCellCount method

(IJTagDevice interface)

Syntax

```
Function GetBoundaryCellCount : Integer;
```

Description**Example**

See also

IJTagDevice interface

GetBoundaryLength method

(IJTagDevice interface)

Syntax

```
Function GetBoundaryLength : Integer;
```

Description

Example

See also

IJTagDevice interface

GetBSDL method

(IJTagDevice interface)

Syntax

```
Function GetBSDL : IBSDLEntity;
```

Description

Example

See also

IJTagDevice interface

GetCurrentDeviceName method

(IJTagDevice interface)

Syntax

```
Function GetCurrentDeviceName : WideString;
```

Description

Example

See also

IJTagDevice interface

GetDeviceInformation method

(IJTagDevice interface)

Syntax

```
Function GetDeviceInformation : IDeviceInformation;
```

Description**Example****See also**

IJTagDevice interface

GetFilename method

(IJTagDevice interface)

Syntax

```
Function GetFilename : WideString;
```

Description**Example****See also**

IJTagDevice interface

GetIdCodeFromBSDL method

(IJTagDevice interface)

Syntax

```
Function GetIdCodeFromBSDL : LongWord;
```

Description**Example****See also**

IJTagDevice interface

GetIdCodeFromDevice method

(IJTagDevice interface)

Syntax

```
Function GetIdCodeFromDevice : LongWord;
```

Description**Example**

See also

IJTagDevice interface

GetIndex method

(IJTagDevice interface)

Syntax

```
Function GetIndex : Integer;
```

Description

Example

See also

IJTagDevice interface

GetInstructionLength method

(IJTagDevice interface)

Syntax

```
Function GetInstructionLength : Integer;
```

Description

Example

See also

IJTagDevice interface

GetInstructionOpcode method

(IJTagDevice interface)

Syntax

```
Function GetInstructionOpcode (Index : Integer) : IInstructionOpCode;
```

Description

Example

See also

IJTagDevice interface

GetInstructionOpcodeCount method

(IJTagDevice interface)

Syntax

```
Function GetInstructionOpcodeCount : Integer;
```

Description**Example****See also**

IJTagDevice interface

GetPin method

(IJTagDevice interface)

Syntax

```
Function GetPin (Index : Integer) : IScanPin;
```

Description**Example****See also**

IJTagDevice interface

GetPinCount method

(IJTagDevice interface)

Syntax

```
Function GetPinCount : Integer;
```

Description**Example****See also**

IJTagDevice interface

GetPinMapping method

(IJTagDevice interface)

Syntax

```
Function GetPinMapping (Index : Integer) : IPinMapping;
```

Description**Example**

See also

IJTagDevice interface

GetPinMappingCount method

(IJTagDevice interface)

Syntax

```
Function GetPinMappingCount : Integer;
```

Description

Example

See also

IJTagDevice interface

GetRegisterAssociation method

(IJTagDevice interface)

Syntax

```
Function GetRegisterAssociation(Index : Integer) : IRegisterAssociation;
```

Description

Example

See also

IJTagDevice interface

GetRegisterAssociationCount method

(IJTagDevice interface)

Syntax

```
Function GetRegisterAssociationCount : Integer;
```

Description

Example

See also

IJTagDevice interface

ReadPinStatesFromChain method

(IJTagDevice interface)

Syntax

```
Function ReadPinStatesFromChain(BSDLEntity : IBSDLEntity) : LongBool;
```

Description

Example

See also

IJTagDevice interface

SetIndex method

(IJTagDevice interface)

Syntax

```
Procedure SetIndex (Index : Integer );
```

Description

Example

See also

IJTagDevice interface

UpdateWithPreferredDeviceName method

(IJTagDevice interface)

Syntax

```
Function UpdateWithPreferredDeviceName(NewName : WideString) : LongBool;
```

Description

Example

See also

IJTagDevice interface

ReloadBSDLmethod

(IJTagDevice interface)

Syntax

```
Procedure ReloadBSDL
```

Description

Example

See also

IJtagDevice interface

IJtagParallelPort Interface

Overview

The **IJtagParallelPort** interface hierarchy is as follows;

IJtagParallelPort methods IJtagParallelPort properties

InitializeParallelPort

GetParallelPort

See also

GetParallelPort method

(IJtagParallelPort interface)

Syntax

```
Function GetParallelPort : IParallelPort;
```

Description

Example

See also

IJtagParallelPort interface

InitializeParallelPort method

(IJtagParallelPort interface)

Syntax

```
Function InitializeParallelPort : LongBool;
```

Description

Example

See also

IJtagParallelPort interface

IJtagParallelPort_ChannelMapping

IJtagParallelPort_ChannelMapping Interface

Overview

The **IJtagParallelPort_ChannelMapping** interface hierarchy is as follows;

IJtagParallelPort_ChannelMapping methods	IJtagParallelPort_ChannelMapping properties
GetMask_TCK	Mask_TCK
GetMask_TDO	Mask_TDO
GetMask_TDI	Mask_TDI
GetMask_TMS	Mask_TMS

See also

[GetMask_TCK method](#)

(IJtagParallelPort_ChannelMapping interface)

Syntax

```
Function GetMask_TCK : Integer;
```

Description

Example

See also

IJtagParallelPort_ChannelMapping interface

[GetMask_TDI method](#)

(IJtagParallelPort_ChannelMapping interface)

Syntax

```
Function GetMask_TDI : Integer;
```

Description

Example

See also

IJtagParallelPort_ChannelMapping interface

GetMask_TDO method

(IJtagParallelPort_ChannelMapping interface)

Syntax

```
Function GetMask_TDO : Integer;
```

Description

Example

See also

IJtagParallelPort_ChannelMapping interface

GetMask_TMS method

(IJtagParallelPort_ChannelMapping interface)

Syntax

```
Function GetMask_TMS : Integer;
```

Description

Example

See also

IJtagParallelPort_ChannelMapping interface

Mask_TCK property

(IJtagParallelPort_ChannelMapping interface)

Syntax

```
Property Mask_TCK : Integer Read GetMask_TCK;
```

Description

Example

See also

IJtagParallelPort_ChannelMapping interface

Mask_TDI property

(IJtagParallelPort_ChannelMapping interface)

Syntax

```
Property Mask_TDI : Integer Read GetMask_TDI;
```

Description

Example**See also**

IJtagParallelPort_ChannelMapping interface

Mask_TDO property

(IJtagParallelPort_ChannelMapping interface)

Syntax

```
Property Mask_TDO : Integer Read GetMask_TDO;
```

Description**Example****See also**

IJtagParallelPort_ChannelMapping interface

Mask_TMS property

(IJtagParallelPort_ChannelMapping interface)

Syntax

```
Property Mask_TMS : Integer Read GetMask_TMS;
```

Description**Example****See also**

IJtagParallelPort_ChannelMapping interface

IJtagPort Interface**IJtagPort Interface****Overview**

The **IJtagPort** interface hierarchy is as follows;

IJtagPort methods

Scan

IsConnected

IJtagPort properties

BoardMask_TCK

BoardMask_TDO

FPGA API Reference

GetJTagChannel_Hard	BoardMask_TDI
GetJTagChannel_Soft	BoardMask_TMS
GetJTagChannel_Board	
GetJTagChannel_SPI	
GetBoardChannelMask_TCK	
GetBoardChannelMask_TDO	
GetBoardChannelMask_TDI	
GetBoardChannelMask_TMS	

See also

BoardMask_TCK property

(IJtagPort interface)

Syntax

```
Property BoardMask_TCK : Integer Read GetBoardChannelMask_TCK;
```

Description

Example

See also

IJtagPort interface

BoardMask_TDI property

(IJtagPort interface)

Syntax

```
Property BoardMask_TDI : Integer Read GetBoardChannelMask_TDI;
```

Description

Example

See also

IJtagPort interface

BoardMask_TDO property

(IJtagPort interface)

Syntax

```
Property BoardMask_TDO : Integer Read GetBoardChannelMask_TDO;
```

Description

Example**See also**

IJtagPort interface

BoardMask_TMS property

(IJtagPort interface)

Syntax

```
Property BoardMask_TMS : Integer Read GetBoardChannelMask_TMS;
```

Description**Example****See also**

IJtagPort interface

GetBoardChannelMask_TCK method

(IJtagPort interface)

Syntax

```
Function GetBoardChannelMask_TCK : Integer;
```

Description**Example****See also**

IJtagPort interface

GetBoardChannelMask_TDI method

(IJtagPort interface)

Syntax

```
Function GetBoardChannelMask_TDI : Integer;
```

Description**Example****See also**

IJtagPort interface

GetBoardChannelMask_TDO method

(IJtagPort interface)

Syntax

```
Function GetBoardChannelMask_TDO : Integer;
```

Description

Example

See also

IJtagPort interface

GetBoardChannelMask_TMS method

(IJtagPort interface)

Syntax

```
Function GetBoardChannelMask_TMS : Integer;
```

Description

Example

See also

IJtagPort interface

GetJTagChannel_Board method

(IJtagPort interface)

Syntax

```
Function GetJTagChannel_Board : IJTagChannel;
```

Description

Example

See also

IJtagPort interface

GetJTagChannel_Hard method

(IJtagPort interface)

Syntax

```
Function GetJTagChannel_Hard : IJTagChannel;
```

Description

Example**See also**

IJtagPort interface

GetJTagChannel_Soft method

(IJtagPort interface)

Syntax

```
Function GetJTagChannel_Soft : IJtagChannel;
```

Description**Example****See also**

IJtagPort interface

GetJTagChannel_SPI method

(IJtagPort interface)

Syntax

```
Function GetJTagChannel_SPI : IJtagChannel;
```

Description**Example****See also**

IJtagPort interface

IsConnected method

(IJtagPort interface)

Syntax

```
Function IsConnected : LongBool;
```

Description**Example****See also**

IJtagPort interface

Scan method

(IJtagPort interface)

Syntax

```
Function Scan(ForceFullScan : Boolean) : LongBool;
```

Description

Example

See also

IJtagPort interface

IMemorySpace Interface

IMemorySpace Interface

Overview

The **IMemorySpace** interface hierarchy is as follows;

IMemorySpace methods

GetNexusDevice

GetIndex

GetName

GetShortName

GetWidth

GetLength

GetKind

GetBytesPerUnit

Read

Write

IMemorySpace properties

See also

GetBytesPerUnit method

(IMemorySpace interface)

Syntax

```
Function GetBytesPerUnit : Integer;
```

Description

Example**See also**

IMemorySpace interface

GetIndex method

(IMemorySpace interface)

Syntax

```
Function GetIndex : Integer;
```

Description**Example****See also**

IMemorySpace interface

GetKind method

(IMemorySpace interface)

Syntax

```
Function GetKind : TMemoryKind;
```

Description**Example****See also**

IMemorySpace interface

GetLength method

(IMemorySpace interface)

Syntax

```
Function GetLength : Int64;
```

Description**Example****See also**

IMemorySpace interface

GetName method

(IMemorySpace interface)

Syntax

```
Function GetName : WideString;
```

Description

Example

See also

IMemorySpace interface

GetNexusDevice method

(IMemorySpace interface)

Syntax

```
Function GetNexusDevice : INexusDevice;
```

Description

Example

See also

IMemorySpace interface

GetShortName method

(IMemorySpace interface)

Syntax

```
Function GetShortName : WideString;
```

Description

Example

See also

IMemorySpace interface

GetWidth method

(IMemorySpace interface)

Syntax

```
Function GetWidth : Integer;
```

Description

Example**See also**

IMemorySpace interface

Read method

(IMemorySpace interface)

Syntax

```
Procedure Read (Buffer : PMemoryArray;Address : TMemoryAddress;Length : Integer);
```

Description**Example****See also**

IMemorySpace interface

Write method

(IMemorySpace interface)

Syntax

```
Procedure Write(Buffer : PMemoryArray;Address : TMemoryAddress;Length : Integer);
```

Description**Example****See also**

IMemorySpace interface

INexusBreakPoint Interface**INexusBreakpoint Interface****Overview**

The **INexusBreakpoint** interface hierarchy is as follows;

INexusBreakpoint methods **INexusBreakpoint properties**

GetNexusDevice

FPGA API Reference

Import_FromCore
Export_ToCore
GetKind
GetEnabled
GetBreakOnRead
GetBreakOnWrite
GetData
GetAddressLow
GetAddressHigh
GetDataMask
GetStopped
GetIndex
GetDescription
SetKind
SetEnabled
SetBreakOnRead
SetBreakOnWrite
SetData
SetAddressLow
SetAddressHigh
SetDataMask

See also

Export_ToCore method

(INexusBreakpoint interface)

Syntax

```
Procedure Export_ToCore;
```

Description

Example

See also

INexusBreakpoint interface

GetAddressHigh method

(INexusBreakpoint interface)

Syntax

```
Function GetAddressHigh : Word;
```

Description**Example****See also**

INexusBreakpoint interface

GetAddressLow method

(INexusBreakpoint interface)

Syntax

```
Function GetAddressLow : Word;
```

Description**Example****See also**

INexusBreakpoint interface

GetBreakOnRead method

(INexusBreakpoint interface)

Syntax

```
Function GetBreakOnRead : LongBool;
```

Description**Example****See also**

INexusBreakpoint interface

GetBreakOnWrite method

(INexusBreakpoint interface)

Syntax

```
Function GetBreakOnWrite : LongBool;
```

Description**Example**

See also

INexusBreakpoint interface

GetData method

(INexusBreakpoint interface)

Syntax

```
Function GetData : Byte;
```

Description

Example

See also

INexusBreakpoint interface

GetDataMask method

(INexusBreakpoint interface)

Syntax

```
Function GetDataMask : Byte;
```

Description

Example

See also

INexusBreakpoint interface

GetDescription method

(INexusBreakpoint interface)

Syntax

```
Function GetDescription : WideString;
```

Description

Example

See also

INexusBreakpoint interface

GetEnabled method

(INexusBreakpoint interface)

Syntax

```
Function GetEnabled : LongBool;
```

Description**Example****See also**

INexusBreakpoint interface

GetIndex method

(INexusBreakpoint interface)

Syntax

```
Function GetIndex : Integer;
```

Description**Example****See also**

INexusBreakpoint interface

GetKind method

(INexusBreakpoint interface)

Syntax

```
Function GetKind : TNexusBreakpointKind;
```

Description**Example****See also**

INexusBreakpoint interface

GetNexusDevice method

(INexusBreakpoint interface)

Syntax

```
Function GetNexusDevice : INexusDevice;
```

Description**Example**

See also

INexusBreakpoint interface

GetStopped method

(INexusBreakpoint interface)

Syntax

```
Function GetStopped : LongBool;
```

Description

Example

See also

INexusBreakpoint interface

Import_FromCore method

(INexusBreakpoint interface)

Syntax

```
Procedure Import_FromCore;
```

Description

Example

See also

INexusBreakpoint interface

SetAddressHigh method

(INexusBreakpoint interface)

Syntax

```
Procedure SetAddressHigh (Value : Word );
```

Description

Example

See also

INexusBreakpoint interface

SetAddressLow method

(INexusBreakpoint interface)

Syntax

```
Procedure SetAddressLow (Value : Word );
```

Description**Example****See also**

INexusBreakpoint interface

[SetBreakOnRead method](#)

(INexusBreakpoint interface)

Syntax

```
Procedure SetBreakOnRead (Value : LongBool );
```

Description**Example****See also**

INexusBreakpoint interface

[SetBreakOnWrite method](#)

(INexusBreakpoint interface)

Syntax

```
Procedure SetBreakOnWrite (Value : LongBool );
```

Description**Example****See also**

INexusBreakpoint interface

[SetData method](#)

(INexusBreakpoint interface)

Syntax

```
Procedure SetData (Value : Byte );
```

Description**Example**

See also

INexusBreakpoint interface

SetDataMask method

(INexusBreakpoint interface)

Syntax

```
Procedure SetDataMask (Value : Byte );
```

Description

Example

See also

INexusBreakpoint interface

SetEnabled method

(INexusBreakpoint interface)

Syntax

```
Procedure SetEnabled (Value : LongBool );
```

Description

Example

See also

INexusBreakpoint interface

SetKind method

(INexusBreakpoint interface)

Syntax

```
Procedure SetKind (Value : TNexusBreakpointKind);
```

Description

Example

See also

INexusBreakpoint interface

INexusDevice Interface

INexusDevice Interface

Overview

The **INexusDevice** interface hierarchy is as follows;

INexusDevice methods

JTagIndex
JTagChannel
SetJTagChannel
SetJTagIndex
NexusDriver
ResetDevice
GetDeviceState
ProgramDevice
ReadUserCode
FlowStage_Build
FlowStage_Download
CoreGen_OutputExtension
GetUniqueld
GetHexFilePath
StatusString
BitmapHandle
ResetNexusRegisters
SingleStepProcessor
RunSingleStepInSubstitutionRegister
ResetProcessor
PauseProcessor
ContinueProcessor
RunSteps
ProcessorIsPaused
ProcessorIsReset
ProcessorIsRunning
SoftBreakpointCount
ProcessorRegisterCount

INexusDevice properties

FPGA API Reference

MemorySpaceCount
GetMemorySpace
GetProcessorRegister
GetProcessorRegister_PC
GetProcessorRegister_SP
GetMemorySpace_Program
GetSoftBreakpoint
AddSoftBreakpoint
RemoveSoftBreakpoint
ClearAllSoftBreakpoints
ReadNexusRegisterAtAddress
WriteNexusRegisterAtAddress
ReadStringNexusRegisterAtAddress
WriteStringNexusRegisterAtAddress
CreateViewer
GetViewer
ShowAboutDialog
Supports
LittleEndian
TemporarySuspend
ContinueFromTemporarySuspend
RunDiagnostic
VendorToolsDescriptor
VendorToolsPresent
VendorToolsUpToDate

See also

[AddSoftBreakpoint method](#)

(INexusDevice interface)

Syntax

```
Function AddSoftBreakpoint (MemorySpace : Integer;Address : TMemoryAddress )  
: ISoftBreakpoint;
```

Description

Example

See also

INexusDevice interface

BitmapHandle method

(INexusDevice interface)

Syntax

```
Function BitmapHandle : THandle;
```

Description**Example****See also**

INexusDevice interface

ClearAllSoftBreakpoints method

(INexusDevice interface)

Syntax

```
Procedure ClearAllSoftBreakpoints;
```

Description**Example****See also**

INexusDevice interface

ContinueFromTemporarySuspend method

(INexusDevice interface)

Syntax

```
Procedure ContinueFromTemporarySuspend;
```

Description**Example****See also**

INexusDevice interface

ContinueProcessor method

(INexusDevice interface)

Syntax

FPGA API Reference

```
Procedure ContinueProcessor;
```

Description

Example

See also

INexusDevice interface

CoreGen_OutputExtension method

(INexusDevice interface)

Syntax

```
Function CoreGen_OutputExtension : WideString;
```

Description

Example

See also

INexusDevice interface

CreateViewer method

(INexusDevice interface)

Syntax

```
Function CreateViewer : Boolean;
```

Description

Example

See also

INexusDevice interface

FlowStage_Build method

(INexusDevice interface)

Syntax

```
Function FlowStage_Build : IProcessFlow;
```

Description

Example

See also

INexusDevice interface

FlowStage_Download method

(INexusDevice interface)

Syntax

```
Function FlowStage_Download : IProcessFlow;
```

Description**Example****See also**

INexusDevice interface

GetDeviceState method

(INexusDevice interface)

Syntax

```
Function GetDeviceState : TDeviceState;
```

Description**Example****See also**

INexusDevice interface

GetHexFilePath method

(INexusDevice interface)

Syntax

```
Function GetHexFilePath : WideString;
```

Description**Example****See also**

INexusDevice interface

GetMemorySpace method

(INexusDevice interface)

Syntax

FPGA API Reference

```
Function GetMemorySpace (Index : Integer ) : IMemorySpace;
```

Description

Example

See also

INexusDevice interface

[GetMemorySpace_Program method](#)

(INexusDevice interface)

Syntax

```
Function GetMemorySpace_Program : IMemorySpace;
```

Description

Example

See also

INexusDevice interface

[GetProcessorRegister method](#)

(INexusDevice interface)

Syntax

```
Function GetProcessorRegister (Index : Integer ) : IProcessorRegister;
```

Description

Example

See also

INexusDevice interface

[GetProcessorRegister_PC method](#)

(INexusDevice interface)

Syntax

```
Function GetProcessorRegister_PC : IProcessorRegister;
```

Description

Example

See also

INexusDevice interface

GetProcessorRegister_SP method

(INexusDevice interface)

Syntax

```
Function GetProcessorRegister_SP : IProcessorRegister;
```

Description**Example****See also**

INexusDevice interface

GetSoftBreakpoint method

(INexusDevice interface)

Syntax

```
Function GetSoftBreakpoint (MemorySpace : Integer;Address : TMemoryAddress )
: ISoftBreakpoint;
```

Description**Example****See also**

INexusDevice interface

GetUniqueld method

(INexusDevice interface)

Syntax

```
Function GetUniqueId : WideString;
```

Description**Example****See also**

INexusDevice interface

GetViewer method

(INexusDevice interface)

FPGA API Reference

Syntax

```
Function GetViewer : IInstrumentView;
```

Description

Example

See also

INexusDevice interface

JTagChannel method

(INexusDevice interface)

Syntax

```
Function JTagChannel : IJTagChannel;
```

Description

Example

See also

INexusDevice interface

JTagIndex method

(INexusDevice interface)

Syntax

```
Function JTagIndex : Integer;
```

Description

Example

See also

INexusDevice interface

LittleEndian method

(INexusDevice interface)

Syntax

```
Function LittleEndian : LongBool;
```

Description

Example

See also

INexusDevice interface

MemorySpaceCount method

(INexusDevice interface)

Syntax

```
Function MemorySpaceCount : Integer;
```

Description**Example****See also**

INexusDevice interface

NexusDriver method

(INexusDevice interface)

Syntax

```
Function NexusDriver : INexusDriver;
```

Description**Example****See also**

INexusDevice interface

PauseProcessor method

(INexusDevice interface)

Syntax

```
Procedure PauseProcessor;
```

Description**Example****See also**

INexusDevice interface

ProcessorIsPaused method

(INexusDevice interface)

FPGA API Reference

Syntax

```
Function ProcessorIsPaused : LongBool;
```

Description

Example

See also

INexusDevice interface

ProcessorIsReset method

(INexusDevice interface)

Syntax

```
Function ProcessorIsReset : LongBool;
```

Description

Example

See also

INexusDevice interface

ProcessorIsRunning method

(INexusDevice interface)

Syntax

```
Function ProcessorIsRunning : LongBool;
```

Description

Example

See also

INexusDevice interface

ProcessorRegisterCount method

(INexusDevice interface)

Syntax

```
Function ProcessorRegisterCount : Integer;
```

Description

Example

See also

INexusDevice interface

ProgramDevice method

(INexusDevice interface)

Syntax

```
Function ProgramDevice(BitFilename: WideString) : Integer;
```

Description**Example****See also**

INexusDevice interface

ReadNexusRegisterAtAddress method

(INexusDevice interface)

Syntax

```
Function ReadNexusRegisterAtAddress (Address : Byte;BitCount : Integer ) :  
LongWord;
```

Description**Example****See also**

INexusDevice interface

ReadStringNexusRegisterAtAddress method

(INexusDevice interface)

Syntax

```
Function ReadStringNexusRegisterAtAddress (Address : Byte;BitCount : Integer  
) : WideString;
```

Description**Example****See also**

INexusDevice interface

ReadUserCode method

(INexusDevice interface)

Syntax

```
Function ReadUserCode : LongWord;
```

Description

Example

See also

INexusDevice interface

RemoveSoftBreakpoint method

(INexusDevice interface)

Syntax

```
Function RemoveSoftBreakpoint (MemorySpace : Integer;Address :  
TMemoryAddress ) : LongBool;
```

Description

Example

See also

INexusDevice interface

ResetDevice method

(INexusDevice interface)

Syntax

```
Function ResetDevice : LongBool;
```

Description

Example

See also

INexusDevice interface

ResetNexusRegisters method

(INexusDevice interface)

Syntax

```
Procedure ResetNexusRegisters;
```

Description

Example**See also**

INexusDevice interface

ResetProcessor method

(INexusDevice interface)

Syntax

```
Procedure ResetProcessor;
```

Description**Example****See also**

INexusDevice interface

RunDiagnostic method

(INexusDevice interface)

Syntax

```
Function RunDiagnostic : LongBool;
```

Description**Example****See also**

INexusDevice interface

RunSingleStepInSubstitutionRegister method

(INexusDevice interface)

Syntax

```
Procedure RunSingleStepInSubstitutionRegister;
```

Description**Example****See also**

INexusDevice interface

RunSteps method

(INexusDevice interface)

Syntax

```
Procedure RunSteps(StepCount: Integer);
```

Description

Example

See also

INexusDevice interface

SetJTagChannel method

(INexusDevice interface)

Syntax

```
Procedure SetJTagChannel(AJTagChannel : IJTagChannel);
```

Description

Example

See also

INexusDevice interface

SetJTagIndex method

(INexusDevice interface)

Syntax

```
Procedure SetJTagIndex (AJTagIndex : Integer );
```

Description

Example

See also

INexusDevice interface

ShowAboutDialog method

(INexusDevice interface)

Syntax

```
Procedure ShowAboutDialog;
```

Description

Example**See also**

INexusDevice interface

SingleStepProcessor method

(INexusDevice interface)

Syntax

```
Procedure SingleStepProcessor;
```

Description**Example****See also**

INexusDevice interface

SoftBreakpointCount method

(INexusDevice interface)

Syntax

```
Function SoftBreakpointCount : Integer;
```

Description**Example****See also**

INexusDevice interface

StatusString method

(INexusDevice interface)

Syntax

```
Function StatusString : WideString;
```

Description**Example****See also**

INexusDevice interface

Supports method

(INexusDevice interface)

Syntax

```
Function Supports (Action : PChar ) : LongBool;
```

Description

Example

See also

INexusDevice interface

TemporarySuspend method

(INexusDevice interface)

Syntax

```
Procedure TemporarySuspend;
```

Description

Example

See also

INexusDevice interface

VendorToolsDescriptor method

(INexusDevice interface)

Syntax

```
Function VendorToolsDescriptor : WideString;
```

Description

Example

See also

INexusDevice interface

VendorToolsPresent method

(INexusDevice interface)

Syntax

```
Function VendorToolsPresent : LongBool;
```

Description

Example**See also**

INexusDevice interface

VendorToolsUpToDate method

(INexusDevice interface)

Syntax

```
Function VendorToolsUpToDate : LongBool;
```

Description**Example****See also**

INexusDevice interface

WriteNexusRegisterAtAddress method

(INexusDevice interface)

Syntax

```
Procedure WriteNexusRegisterAtAddress(Address : Byte;BitCount : Integer;Data : LongWord);
```

Description**Example****See also**

INexusDevice interface

WriteStringNexusRegisterAtAddress method

(INexusDevice interface)

Syntax

```
Procedure WriteStringNexusRegisterAtAddress(Address : Byte;Data : WideString);
```

Description**Example****See also**

INexusDevice interface

INexusDriver Interface

Overview

INexusDriver methods

AddSoftBreakpoint
ContinueProcessor
CoreGen_OutputExtension
CreateCustomViewer
Finalize
FlowStage_Build
FlowStage_Download
GetBitmapHandle
GetCustomViewer
GetDeviceState
GetMemorySpace_Program
GetMemorySpaceBytesPerUnit
GetMemorySpaceCount
GetMemorySpaceKind
GetMemorySpaceLength
GetMemorySpaceName
GetMemorySpaceShortName
GetMemorySpaceWidth
GetNexusDevice
GetProcessorRegisterCount
GetProcessorRegisterName
GetProcessorRegisterShortName
GetProcessorRegisterValue
GetProcessorRegisterWidth
GetRegisterIndex_PC
GetRegisterIndex_SP
LittleEndian
MemoryRead

INexusDriver properties

MemoryWrite
PauseProcessor
ProcessorIsPaused
ProcessorIsReset
ProcessorIsRunning
ProcessorIsUsingReducedInstructionSet
ProgramDevice
ReadUserCode
RemoveSoftBreakpoint
ResetDevice
ResetNexusRegisters
ResetProcessor
RestoreProcessorState
RunDiagnostic
RunSingleStepInSubstitutionRegister
RunSteps
SaveProcessorState
SetNexusDevice
SetProcessorRegisterValue
ShowAboutDialog
SingleStepProcessor
Supports
VendorToolsDescriptor
VendorToolsPresent
VendorToolsUpToDate

See also**[VendorToolsUpToDate method](#)**

(INexusDriver interface)

Syntax

```
Function VendorToolsUpToDate : LongBool;
```

Description**Example****See also**

FPGA API Reference

INexusDriver interface

VendorToolsPresent method

(INexusDriver interface)

Syntax

```
Function VendorToolsPresent : LongBool;
```

Description

Example

See also

INexusDriver interface

VendorToolsDescriptor method

(INexusDriver interface)

Syntax

```
Function VendorToolsDescriptor : WideString;
```

Description

Example

See also

INexusDriver interface

Supports method

(INexusDriver interface)

Syntax

```
Function Supports (Action : PChar ) : LongBool;
```

Description

Example

See also

INexusDriver interface

SingleStepProcessor method

(INexusDriver interface)

Syntax

```
Procedure SingleStepProcessor;
```

Description**Example****See also**

INexusDriver interface

ShowAboutDialog method

(INexusDriver interface)

Syntax

```
Procedure ShowAboutDialog;
```

Description**Example****See also**

INexusDriver interface

SetProcessorRegisterValue method

(INexusDriver interface)

Syntax

```
Function SetProcessorRegisterValue (RegisterIndex : Integer;Value :
TRegisterValue ) : LongBool;
```

Description**Example****See also**

INexusDriver interface

SetNexusDevice method

(INexusDriver interface)

Syntax

```
Function SetNexusDevice(ANexusDevice : INexusDevice) : LongBool;
```

Description**Example****See also**

INexusDriver interface

SaveProcessorState method

(INexusDriver interface)

Syntax

```
Function SaveProcessorState : LongBool;
```

Description

Example

See also

INexusDriver interface

RunSteps method

(INexusDriver interface)

Syntax

```
Procedure RunSteps(StepCount: Integer);
```

Description

Example

See also

INexusDriver interface

RunSingleStepInSubstitutionRegister method

(INexusDriver interface)

Syntax

```
Procedure RunSingleStepInSubstitutionRegister;
```

Description

Example

See also

INexusDriver interface

RunDiagnostic method

(INexusDriver interface)

Syntax

```
Function RunDiagnostic : LongBool;
```

Description**Example****See also**

INexusDriver interface

LittleEndian method

(INexusDriver interface)

Syntax

```
Function LittleEndian : LongBool;
```

Description**Example****See also**

INexusDriver interface

RestoreProcessorState method

(INexusDriver interface)

Syntax

```
Function RestoreProcessorState : LongBool;
```

Description**Example****See also**

INexusDriver interface

ResetProcessor method

(INexusDriver interface)

Syntax

```
Procedure ResetProcessor;
```

Description**Example****See also**

INexusDriver interface

ResetNexusRegisters method

(INexusDriver interface)

Syntax

```
Procedure ResetNexusRegisters;
```

Description

Example

See also

INexusDriver interface

ResetDevice method

(INexusDriver interface)

Syntax

```
Function ResetDevice : LongBool;
```

Description

Example

See also

INexusDriver interface

RemoveSoftBreakpoint method

(INexusDriver interface)

Syntax

```
Function RemoveSoftBreakpoint (MemorySpace : Integer;Address :  
TMemoryAddress;Replaced : TMemoryElement ) : LongBool;
```

Description

Example

See also

INexusDriver interface

ReadUserCode method

(INexusDriver interface)

Syntax

```
Function ReadUserCode : LongWord;
```

Description**Example****See also**

INexusDriver interface

ProgramDevice method

(INexusDriver interface)

Syntax

```
Function ProgramDevice(FileName : WideString): Integer;
```

Description**Example****See also**

INexusDriver interface

ProcessorIsRunning method

(INexusDriver interface)

Syntax

```
Function ProcessorIsRunning : LongBool;
```

Description**Example****See also**

INexusDriver interface

ProcessorIsReset method

(INexusDriver interface)

Syntax

```
Function ProcessorIsReset : LongBool;
```

Description**Example**

See also

INexusDriver interface

ProcessorIsPaused method

(INexusDriver interface)

Syntax

```
Function ProcessorIsPaused : LongBool;
```

Description

Example

See also

INexusDriver interface

PauseProcessor method

(INexusDriver interface)

Syntax

```
Procedure PauseProcessor;
```

Description

Example

See also

INexusDriver interface

MemoryWrite method

(INexusDriver interface)

Syntax

```
Function MemoryWrite (MemorySpaceIndex : Integer; Buffer :  
PMemoryArray; Address : TMemoryAddress; Length : Integer ) : LongBool;
```

Description

Example

See also

INexusDriver interface

MemoryRead method

(INexusDriver interface)

Syntax

```
Function MemoryRead (MemorySpaceIndex : Integer; Buffer :
PMemoryArray; Address : TMemoryAddress; Length : Integer ) : LongBool;
```

Description**Example****See also**

INexusDriver interface

[GetRegisterIndex_SP method](#)

(INexusDriver interface)

Syntax

```
Function GetRegisterIndex_SP : Integer;
```

Description**Example****See also**

INexusDriver interface

[GetRegisterIndex_PC method](#)

(INexusDriver interface)

Syntax

```
Function GetRegisterIndex_PC : Integer;
```

Description**Example****See also**

INexusDriver interface

[GetProcessorRegisterWidth method](#)

(INexusDriver interface)

Syntax

```
Function GetProcessorRegisterWidth (RegisterIndex : Integer ) : LongWord;
```

Description**Example**

See also

INexusDriver interface

GetProcessorRegisterValue method

(INexusDriver interface)

Syntax

```
Function GetProcessorRegisterValue (RegisterIndex : Integer ) :  
TRegisterValue;
```

Description

Example

See also

INexusDriver interface

GetProcessorRegisterShortName method

(INexusDriver interface)

Syntax

```
Function GetProcessorRegisterShortName (RegisterIndex : Integer ) :  
WideString;
```

Description

Example

See also

INexusDriver interface

GetProcessorRegisterName method

(INexusDriver interface)

Syntax

```
Function GetProcessorRegisterName (RegisterIndex : Integer ) : WideString;
```

Description

Example

See also

INexusDriver interface

GetProcessorRegisterCount method

(INexusDriver interface)

Syntax

```
Function GetProcessorRegisterCount : Integer;
```

Description

Example

See also

INexusDriver interface

GetNexusDevice method

(INexusDriver interface)

Syntax

```
Function GetNexusDevice : INexusDevice;
```

Description

Example

See also

INexusDriver interface

GetMemorySpaceWidth method

(INexusDriver interface)

Syntax

```
Function GetMemorySpaceWidth (MemorySpaceIndex : Integer ) : LongWord;
```

Description

Example

See also

INexusDriver interface

GetMemorySpaceShortName method

(INexusDriver interface)

Syntax

```
Function GetMemorySpaceShortName (MemorySpaceIndex : Integer ) : WideString;
```

Description

Example

See also

INexusDriver interface

GetMemorySpaceName method

(INexusDriver interface)

Syntax

```
Function GetMemorySpaceName (MemorySpaceIndex : Integer ) : WideString;
```

Description

Example

See also

INexusDriver interface

GetMemorySpaceLength method

(INexusDriver interface)

Syntax

```
Function GetMemorySpaceLength (MemorySpaceIndex : Integer ) : Int64;
```

Description

Example

See also

INexusDriver interface

GetMemorySpaceKind method

(INexusDriver interface)

Syntax

```
Function GetMemorySpaceKind (MemorySpaceIndex : Integer ) : TMemoryKind;
```

Description

Example

See also

INexusDriver interface

GetMemorySpaceCount method

(INexusDriver interface)

Syntax

```
Function GetMemorySpaceCount : Integer;
```

Description

Example

See also

INexusDriver interface

GetMemorySpaceBytesPerUnit method

(INexusDriver interface)

Syntax

```
Function GetMemorySpaceBytesPerUnit (MemorySpaceIndex : Integer ) :  
LongWord;
```

Description

Example

See also

INexusDriver interface

GetMemorySpace_Program method

(INexusDriver interface)

Syntax

```
Function GetMemorySpace_Program : Integer;
```

Description

Example

See also

INexusDriver interface

GetDeviceState method

(INexusDriver interface)

Syntax

```
Function GetDeviceState : TDeviceState;
```

Description

Example

See also

INexusDriver interface

GetCustomViewer method

(INexusDriver interface)

Syntax

```
Function GetCustomViewer : IInstrumentView;
```

Description

Example

See also

INexusDriver interface

GetBitmapHandle method

(INexusDriver interface)

Syntax

```
Function GetBitmapHandle : THandle;
```

Description

Example

See also

INexusDriver interface

FlowStage_Download method

(INexusDriver interface)

Syntax

```
Function FlowStage_Download : IProcessFlow;
```

Description

Example

See also

INexusDriver interface

FlowStage_Build method

(INexusDriver interface)

Syntax

```
Function FlowStage_Build : IProcessFlow;
```

Description

Example

See also

INexusDriver interface

Finalize method

(INexusDriver interface)

Syntax

```
Function Finalize : LongBool;
```

Description

Example

See also

INexusDriver interface

CreateCustomViewer method

(INexusDriver interface)

Syntax

```
Procedure CreateCustomViewer;
```

Description

Example

See also

INexusDriver interface

CoreGen_OutputExtension method

(INexusDriver interface)

Syntax

```
Function CoreGen_OutputExtension : WideString;
```

Description

Example

See also

INexusDriver interface

ContinueProcessor method

(INexusDriver interface)

Syntax

```
Procedure ContinueProcessor;
```

Description

Example

See also

INexusDriver interface

AddSoftBreakpoint method

(INexusDriver interface)

Syntax

```
Function AddSoftBreakpoint (MemorySpace : Integer;Address : TMemoryAddress )  
: TMemoryElement;
```

Description

Example

See also

INexusDriver interface

IPinMapping Interface

IPinMapping Interface

Overview

The **IPinMapping** interface hierarchy is as follows;

IPinMapping methods

GetPinName

GetPinNumber

IPinMapping properties

GetScanPin

See also

[GetPinName method](#)

(IPinMapping interface)

Syntax

```
Function GetPinName : WideString;
```

Description

Example

See also

IPinMapping interface

[GetPinNumber method](#)

(IPinMapping interface)

Syntax

```
Function GetPinNumber : WideString;
```

Description

Example

See also

IPinMapping interface

[GetScanPin method](#)

(IPinMapping interface)

Syntax

```
Function GetScanPin : IScanPin;
```

Description

Example

See also

IPinMapping interface

IProcessFlow Interface

IProcessFlow Interface

Overview

The **IProcessFlow** interface hierarchy is as follows;

IProcessFlow methods

StageName
StageCaption
StageDescription
InputDescription
OutputDescription
CanRun
IsCategory
Run
RunIfOutOfDate
RunAll
RunWholeStage
Stop
UpdateFlowState
FlowState
IsRunning
RunningStage
LastRunResult
ClearLastRunResult
ProjectChanged
SetBasePath
GetBasePath
CanEditProperties
EditProperties
ReportCount
ReportPath
GetParentStage
SetParentStage
GetChildStageCount

IProcessFlow properties

GetChildStage
 ClearChildren
 AddChildStage
 GetDependenciesCount
 GetDependency
 ClearDependencies
 AddDependency

See also**AddChildStage method**

(IProcessFlow interface)

Syntax

```
Procedure AddChildStage (aStage : IProcessFlow );
```

Description**Example****See also**

IProcessFlow interface

AddDependency method

(IProcessFlow interface)

Syntax

```
Procedure AddDependency (aStage : IProcessFlow );
```

Description**Example****See also**

IProcessFlow interface

CanEditProperties method

(IProcessFlow interface)

Syntax

```
Function CanEditProperties : LongBool;
```

Description

Example

See also

IProcessFlow interface

CanRun method

(IProcessFlow interface)

Syntax

```
Function CanRun : LongBool;
```

Description

Example

See also

IProcessFlow interface

ClearChildren method

(IProcessFlow interface)

Syntax

```
Procedure ClearChildren;
```

Description

Example

See also

IProcessFlow interface

ClearDependencies method

(IProcessFlow interface)

Syntax

```
Procedure ClearDependencies;
```

Description

Example

See also

IProcessFlow interface

ClearLastRunResult method

(IProcessFlow interface)

Syntax

```
Procedure ClearLastRunResult;
```

Description

Example

See also

IProcessFlow interface

EditProperties method

(IProcessFlow interface)

Syntax

```
Procedure EditProperties;
```

Description

Example

See also

IProcessFlow interface

FlowState method

(IProcessFlow interface)

Syntax

```
Function FlowState : TProcessFlowState;
```

Description

Example

See also

IProcessFlow interface

GetBasePath method

(IProcessFlow interface)

Syntax

```
Function GetBasePath : WideString;
```

Description

Example

See also

IProcessFlow interface

GetChildStage method

(IProcessFlow interface)

Syntax

```
Function GetChildStage (aIndex : Integer ) : IProcessFlow;
```

Description

Example

See also

IProcessFlow interface

GetChildStageCount method

(IProcessFlow interface)

Syntax

```
Function GetChildStageCount : Integer;
```

Description

Example

See also

IProcessFlow interface

GetDependenciesCount method

(IProcessFlow interface)

Syntax

```
Function GetDependenciesCount : Integer;
```

Description

Example

See also

IProcessFlow interface

GetDependency method

(IProcessFlow interface)

Syntax

```
Function GetDependency (aIndex : Integer ) : IProcessFlow;
```

Description

Example

See also

IProcessFlow interface

GetParentStage method

(IProcessFlow interface)

Syntax

```
Function GetParentStage : IProcessFlow;
```

Description

Example

See also

IProcessFlow interface

InputDescription method

(IProcessFlow interface)

Syntax

```
Function InputDescription : WideString;
```

Description

Example

See also

IProcessFlow interface

IsCategory method

(IProcessFlow interface)

Syntax

```
Function IsCategory : LongBool;
```

Description

Example

See also

IProcessFlow interface

IsRunning method

(IProcessFlow interface)

Syntax

```
Function IsRunning : LongBool;
```

Description

Example

See also

IProcessFlow interface

LastRunResult method

(IProcessFlow interface)

Syntax

```
Function LastRunResult : TFlowRunResult;
```

Description

Example

See also

IProcessFlow interface

OutputDescription method

(IProcessFlow interface)

Syntax

```
Function OutputDescription : WideString;
```

Description

Example

See also

IProcessFlow interface

ProjectChanged method

(IProcessFlow interface)

Syntax

```
Procedure ProjectChanged (aProjectPath : WideString );
```

Description

Example

See also

IProcessFlow interface

ReportCount method

(IProcessFlow interface)

Syntax

```
Function ReportCount : Integer;
```

Description

Example

See also

IProcessFlow interface

ReportPath method

(IProcessFlow interface)

Syntax

```
Function ReportPath (aIndex : Integer ) : WideString;
```

Description

Example

See also

IProcessFlow interface

Run method

(IProcessFlow interface)

Syntax

```
Function Run (ARunner : IProcessFlowRunner) : TFlowRunResult;
```

Description

Example

See also

IProcessFlow interface

RunAll method

(IProcessFlow interface)

Syntax

```
Function RunAll (ARunner : IProcessFlowRunner) : TFlowRunResult;
```

Description

Example

See also

IProcessFlow interface

RunIfOutOfDate method

(IProcessFlow interface)

Syntax

```
Function RunIfOutOfDate(ARunner : IProcessFlowRunner) : TFlowRunResult;
```

Description

Example

See also

IProcessFlow interface

RunningStage method

(IProcessFlow interface)

Syntax

```
Function RunningStage : IProcessFlow;
```

Description

Example

See also

IProcessFlow interface

RunWholeStage method

(IProcessFlow interface)

Syntax

```
Function RunWholeStage (ARunner : IProcessFlowRunner) : TFlowRunResult;
```

Description

Example

See also

IProcessFlow interface

SetBasePath method

(IProcessFlow interface)

Syntax

```
Procedure SetBasePath (aPath : WideString );
```

Description

Example

See also

IProcessFlow interface

SetParentStage method

(IProcessFlow interface)

Syntax

```
Procedure SetParentStage (aStage : IProcessFlow );
```

Description

Example

See also

IProcessFlow interface

StageCaption method

(IProcessFlow interface)

Syntax

```
Function StageCaption : WideString;
```

Description

Example

See also

IProcessFlow interface

StageDescription method

(IProcessFlow interface)

Syntax

```
Function StageDescription : WideString;
```

Description

Example

See also

IProcessFlow interface

StageName method

(IProcessFlow interface)

Syntax

```
Function StageName : WideString;
```

Description

Example

See also

IProcessFlow interface

Stop method

(IProcessFlow interface)

Syntax

```
Procedure Stop;
```

Description

Example

See also

IProcessFlow interface

IProcessFlowRunner Interface

IProcessFlowRunner Interface

Overview

The **IProcessFlowRunner** interface hierarchy is as follows;

IProcessFlowRunner methods

IProcessFlowRunner properties

FlowStageStarting

AddSummaryLine

AddError

RunStarted

RunEnded

FlowRunning

See also

[UpdateFlowState method](#)

(IProcessFlow interface)

Syntax

```
Function UpdateFlowState : LongBool;
```

Description

Example

See also

IProcessFlow interface

[AddError method](#)

(IProcessFlowRunner interface)

Syntax

```
Procedure AddError (AType, AFullErrorText : WideString);
```

Description

Example

See also

IProcessFlowRunner interface

AddSummaryLine method

(IProcessFlowRunner interface)

Syntax

```
Procedure AddSummaryLine (ASection, AKey, AValue, AReportPath : WideString);
```

Description

Example

See also

IProcessFlowRunner interface

FlowRunning method

(IProcessFlowRunner interface)

Syntax

```
Function FlowRunning : LongBool;
```

Description

Example

See also

IProcessFlowRunner interface

FlowStageStarting method

(IProcessFlowRunner interface)

Syntax

```
Procedure FlowStageStarting (AStage : IProcessFlow);
```

Description

Example

See also

IProcessFlowRunner interface

RunEnded method

(IProcessFlowRunner interface)

Syntax

```
Procedure RunEnded;
```

Description**Example****See also**

IProcessFlowRunner interface

RunStarted method

(IProcessFlowRunner interface)

Syntax

```
Procedure RunStarted;
```

Description**Example****See also**

IProcessFlowRunner interface

IProcessorRegister Interface**Export_ToCore method**

(IProcessorRegister interface)

Syntax

```
Procedure Export_ToCore;
```

Description**Example****See also**

IProcessorRegister interface

GetByte0 method

(IProcessorRegister interface)

Syntax

```
Function GetByte0 : Byte; {LSB}
```

Description**Example**

See also

IProcessorRegister interface

GetByte1 method

(IProcessorRegister interface)

Syntax

```
Function GetByte1 : Byte;
```

Description

Example

See also

IProcessorRegister interface

GetByte2 method

(IProcessorRegister interface)

Syntax

```
Function GetByte2 : Byte;
```

Description

Example

See also

IProcessorRegister interface

GetByte3 method

(IProcessorRegister interface)

Syntax

```
Function GetByte3 : Byte; {MSB}
```

Description

Example

See also

IProcessorRegister interface

GetIndex method

(IProcessorRegister interface)

Syntax

```
Function GetIndex : Integer;
```

Description

Example

See also

IProcessorRegister interface

[GetName method](#)

(IProcessorRegister interface)

Syntax

```
Function GetName : WideString;
```

Description

Example

See also

IProcessorRegister interface

[GetNexusDevice method](#)

(IProcessorRegister interface)

Syntax

```
Function GetNexusDevice : INexusDevice;
```

Description

Example

See also

IProcessorRegister interface

[GetShortName method](#)

(IProcessorRegister interface)

Syntax

```
Function GetShortName : WideString;
```

Description

Example

See also

IProcessorRegister interface

GetValue method

(IProcessorRegister interface)

Syntax

```
Function GetValue : TRegisterValue;
```

Description

Example

See also

IProcessorRegister interface

GetWidth method

(IProcessorRegister interface)

Syntax

```
Function GetWidth : Integer;
```

Description

Example

See also

IProcessorRegister interface

Import_FromCore method

(IProcessorRegister interface)

Syntax

```
Procedure Import_FromCore;
```

Description

Example

See also

IProcessorRegister interface

SetValue method

(IProcessorRegister interface)

Syntax

```
Procedure SetValue(NewValue : TRegisterValue);
```

Description

Example

See also

IProcessorRegister interface

IRegisterAssociation Interface

IRegisterAssociation Interface

Overview

The **IRegisterAssociation** interface hierarchy is as follows;

IRegisterAssociation methods **IRegisterAssociation properties**

GetRegisterName

GetRegisterLength

GetInstructionOpCodeCount

GetInstructionOpCode

See also

GetInstructionOpCode method

(IRegisterAssociation interface)

Syntax

```
Function GetInstructionOpCode(Index : Integer) : IInstructionOpCode;
```

Description

Example

See also

IRegisterAssociation interface

GetInstructionOpCodeCount method

(IRegisterAssociation interface)

Syntax

```
Function GetInstructionOpCodeCount : Integer;
```

Description

Example

See also

IRegisterAssociation interface

GetRegisterLength method

(IRegisterAssociation interface)

Syntax

```
Function GetRegisterLength : Integer;
```

Description

Example

See also

IRegisterAssociation interface

GetRegisterName method

(IRegisterAssociation interface)

Syntax

```
Function GetRegisterName : WideString;
```

Description

Example

See also

IRegisterAssociation interface

IScanPin Interface

IScanPin Interface

Overview

The **IScanPin** interface hierarchy is as follows;

IScanPin methods

GetDirection

IScanPin properties

GetPinName
GetPinNumber
GetKind
GetPinMapping
GetBoundaryCellCount
GetBoundaryCell
GetCurrentValue

See also**GetBoundaryCell method**

(IScanPin interface)

Syntax

```
Function GetBoundaryCell(Index : Integer) : IBoundaryCell;
```

Description**Example****See also**

IScanPin interface

GetBoundaryCellCount method

(IScanPin interface)

Syntax

```
Function GetBoundaryCellCount : Integer;
```

Description**Example****See also**

IScanPin interface

GetCurrentValue method

(IScanPin interface)

Syntax

```
Function GetCurrentValue : Integer;
```

Description

Example

See also

IScanPin interface

GetDirection method

(IScanPin interface)

Syntax

```
Function GetDirection : TPinElectrical;
```

Description

Example

See also

IScanPin interface

GetKind method

(IScanPin interface)

Syntax

```
Function GetKind : TScanPinKind;
```

Description

Example

See also

IScanPin interface

GetPinMapping method

(IScanPin interface)

Syntax

```
Function GetPinMapping : IPinMapping;
```

Description

Example

See also

IScanPin interface

GetPinName method

(IScanPin interface)

Syntax

```
Function GetPinName : WideString;
```

Description

Example

See also

IScanPin interface

GetPinNumber method

(IScanPin interface)

Syntax

```
Function GetPinNumber : WideString;
```

Description

Example

See also

IScanPin interface

ISoftBreakpoint Interface

ISoftBreakpoint Interface

Overview

The **ISoftBreakpoint** interface hierarchy is as follows;

ISoftBreakpoint methods

Import_FromCore

Export_ToCore

GetAddress

GetReplaced

GetNexusDevice

SetAddress

SetReplaced

Enable

ISoftBreakpoint properties

Disable

See also

Disable method

(ISoftBreakpoint interface)

Syntax

```
Function Disable : LongBool;
```

Description

Example

See also

ISoftBreakpoint interface

Enable method

(ISoftBreakpoint interface)

Syntax

```
Function Enable : LongBool;
```

Description

Example

See also

ISoftBreakpoint interface

Export_ToCore method

(ISoftBreakpoint interface)

Syntax

```
Procedure Export_ToCore;
```

Description

Example

See also

ISoftBreakpoint interface

GetAddress method

(ISoftBreakpoint interface)

Syntax

```
Function GetAddress : TMemoryAddress;
```

Description**Example****See also**

ISoftBreakpoint interface

GetNexusDevice method

(ISoftBreakpoint interface)

Syntax

```
Function GetNexusDevice : INexusDevice;
```

Description**Example****See also**

ISoftBreakpoint interface

GetReplaced method

(ISoftBreakpoint interface)

Syntax

```
Function GetReplaced : TMemoryElement;
```

Description**Example****See also**

ISoftBreakpoint interface

Import_FromCore method

(ISoftBreakpoint interface)

Syntax

```
Procedure Import_FromCore;
```

Description**Example**

See also

ISoftBreakpoint interface

SetAddress method

(ISoftBreakpoint interface)

Syntax

```
Procedure SetAddress (Value : TMemoryAddress);
```

Description

Example

See also

ISoftBreakpoint interface

SetReplaced method

(ISoftBreakpoint interface)

Syntax

```
Procedure SetReplaced(Value : TMemoryElement);
```

Description

Example

See also

ISoftBreakpoint interface

FPGA Enumerated Types

Nexus enumerated types

The enumerated types are used for many of the FPGA interfaces methods which are covered in this section. For example the INexusCore interface has a Function `GetCoreKind : TNexusCoreKind;`. You can use this Enumerated Types section to check what the range is for the TNexusCoreKind type.

Nexus Control Bits

```
Nexus_Control_StepCounterBreakpointEnable = Bit_D7;  
Nexus_Control_ExternalAccess              = Bit_D6;  
Nexus_Control_PeripheralClockEnable       = Bit_D6;  
Nexus_Control_Reset                        = Bit_D5;  
Nexus_Control_DebugEnable                  = Bit_D4;
```

```

Nexus_Control_DebugAcknowledge      = Bit_D3;
Nexus_Control_DebugRequest          = Bit_D2;
Nexus_Control_DebugStep              = Bit_D1;
Nexus_Control_DebuggerProgramSelect = Bit_D0;

```

Nexus Instruction Registers

```

JTAG_ExTest      = $00;
JTAG_IdCode      = $01;
JTAG_Reset       = $02;
JTAG_Memac       = $0A;
JTAG_NexusEnable = $0B;
JTAG_Bypass      = $0F;

```

Nexus Memory Access Bits

```

Nexus_MemAccess_MemoryRead = Bit_D2;
Nexus_MemAccess_MemoryWrite = Bit_D1;
Nexus_MemAccess_Data       = 0;
Nexus_MemAccess_Program    = Bit_D0;
Nexus_MemAccess_ReadData   = Nexus_MemAccess_MemoryRead Or
Nexus_MemAccess_Data;
Nexus_MemAccess_ReadProgram = Nexus_MemAccess_MemoryRead Or
Nexus_MemAccess_Program;
Nexus_MemAccess_WriteData  = Nexus_MemAccess_MemoryWrite Or
Nexus_MemAccess_Data;
Nexus_MemAccess_WriteProgram = Nexus_MemAccess_MemoryWrite Or
Nexus_MemAccess_Program;
Nexus_MemAccess_Inactive   = 0;

```

TBitValue

```
TBitValue = (eBit_Undefined,eBit_0,eBit_1,eBit_X);
```

TCellFunction

```

TCellFunction =
(
    eCellFunction_Undefined,
    eCellFunction_Input,
    eCellFunction_Clock,
    eCellFunction_Output2,
    eCellFunction_Output3,

```

FPGA API Reference

```
eCellFunction_Control,  
eCellFunction_ControlR,  
eCellFunction_Internal,  
eCellFunction_BiDir,  
eCellFunction_ObserveOnly  
);
```

TCellKind

```
TCellKind =  
(  
    eCellKind_Undefined,  
    eCellKind_BC_0,  
    eCellKind_BC_1,  
    eCellKind_BC_2,  
    eCellKind_BC_3,  
    eCellKind_BC_4,  
    eCellKind_BC_5,  
    eCellKind_BC_6,  
    eCellKind_BC_7,  
    eCellKind_BC_8,  
    eCellKind_BC_9,  
    eCellKind_BC_10  
);
```

TDeviceIOStandardDriveStrength

```
TDeviceIOStandardDriveStrength = (e2m, e3m, e4m, e6m, e7m, e8m, e10m, e12m,  
e14m, e16m, e18m, e20m, e24m);
```

TDeviceIOStandardSlewType

```
TDeviceIOStandardSlewType = (eSlow, eFast);
```

TDeviceIOStandardType

```
TDeviceIOStandardType =  
(eLVTTL15,  
    eLVTTL18,  
    eLVTTL25,  
    eLVTTL33,  
    eLVCMOS15,
```

eLVCMOS18,
eLVCMOS25,
eLVCMOS33,
eLVCMOS5,
ePCI33_3,
ePCI33_5,
ePCI66,
ePCIX_3,
eCOMPACTPCI_3,
eSSTL3I,
eSSTL3II,
eSSTL2I,
eSSTL2II,
eSSTL18I,
eSSTL18II,
eGTL,
eGTLP,
eHSTLI,
eHSTLII,
eHSTLIII,
eHSTLIV,
eHSTLI_18,
eHSTLII_18,
eHSTLIII_18,
eHSTLIV_18,
eCTT,
eAGP1x,
eAGP2x,
eTTL,
eLVCMOS12,
eGTL_DCI,
eGTLP_DCI,
eHSTLI_DCI,
eHSTLII_DCI,
eHSTLIII_DCI,
eHSTLIV_DCI,

FPGA API Reference

eHSTLI_18_DCI,
eHSTLII_18_DCI,
eHSTLIII_18_DCI,
eHSTLIV_18_DCI,
eDHSTLI,
eDHSTLII,
eDHSTLIII,
eDHSTL18I,
eDHSTL18II,
eDHSTL18III,
eHTT,
ePCML,
ePCML15,
eSSTL18I_DCI,
eSSTL18II_DCI,
eSSTL2I_DCI,
eSSTL2II_DCI,
eSSTL3I_DCI,
eSSTL3II_DCI,
eLVCOS15_DCI,
eLVCOS18_DCI,
eLVCOS25_DCI,
eLVCOS33_DCI,
eLVCOS15_DCI_DV2,
eLVCOS18_DCI_DV2,
eLVCOS25_DCI_DV2,
eLVCOS33_DCI_DV2,
eLVDS,
eLVPECL,
eDSSTL18I,
eDSSTL18II,
eDSSTL2I,
eDSSTL2II,
eDSSTL3I,
eDSSTL3II,
eBLVDS25,

```

eLVPECL25,
eRSDS25,
eLVDS33,
eLVDS25_DCI,
eLVDS33_DCI,
eLVDSSEXT25,
eLVDSSEXT33,
eLVDSSEXT25_DCI,
eLVDSSEXT33_DCI,
eLDT,
eULVDS25,
eLDT_DT,
eLVDS_DT,
eLVDSSEXT25_DT,
eULVDS25_DT,
eLVCMOS33_1,
eLVCMOS33_2
);

```

TDevicePinType

```
TDevicePinType = (eIOPin, eVREFPin, eCLKPin, eSpecialPin);
```

TDeviceState

```

TDeviceState = (eDeviceState_Unknown,
                eDeviceState_Reset,
                eDeviceState_Programmed,
                eDeviceState_Programmed_ReadProtected,
                eDeviceState_Programmed_WriteProtected,
                eDeviceState_Programmed_ReadWriteProtected);

```

TDisableResult

```

TDisableResult =
(
    eDisableResult_Undefined,
    eDisableResult_HiZ,
    eDisableResult_Weak0,
    eDisableResult_Weak1,
    eDisableResult_Pull0,

```

FPGA API Reference

```
eDisableResult_Pull1,  
eDisableResult_Keeper  
);
```

TEdgePolarity

```
TEdgePolarity = (eEdgeRising,eEdgeFalling);
```

TFlowRunResult

```
TFlowRunResult = (eFlowRun_DidNotRun, eFlowRun_Cancelled,  
eFlowRun_Failure, eFlowRun_Success);
```

TMemoryElement

```
TMemoryElement = LongWord;
```

TMemoryKind

```
TMemoryKind = (  
eMemoryKind_Program,  
eMemoryKind_Data  
);
```

TNexusAction

```
TNexusAction =  
(  
eNexusAction_None,  
eNexusAction_ProcessorPause,  
eNexusAction_ProcessorContinue,  
eNexusAction_ProcessorReset,  
eNexusAction_ProcessorSingleStep,  
eNexusAction_ProgramCompile,  
eNexusAction_ProgramDownload,  
eNexusAction_ProgramDebug,  
eNexusAction_ShowAboutDialog,  
eNexusAction_DeviceReset,  
eNexusAction_DeviceDownload,  
eNexusAction_ShowViewer,  
eNexusAction_ChooseFileAndDownload,  
eNexusAction_ProcessorMenu,  
eNexusAction_ConfigureJTAGIdMapping,  
eNexusAction_Flash_DeviceReset,
```

```

    eNexusAction_Flash_ChooseFileAndDownload
);

```

TNexusActionTarget

```

TNexusActionTarget = (
    eNexusActionTarget_None,
    eNexusActionTarget_SoftDevice,
    eNexusActionTarget_HardDevice,
    eNexusActionTarget_SoftChain,
    eNexusActionTarget_HardChain,
    eNexusActionTarget_BoardDevice,
    eNexusActionTarget_BoardChain
);

```

TNexusBreakPointKind

```

TNexusBreakpointKind =
(
    eBreakpointKind_Program_FetchAnyOpcode,
    eBreakpointKind_Program_FetchSpecificOpcode,
    eBreakpointKind_DataAtAddress_AnyValue,
    eBreakpointKind_DataAtAddress_SpecificValue
);

```

TNexusCoreKind

```

TNexusCoreKind = (eNexusCoreKind_None,
    eNexusCoreKind_Processor_OCDS,
    eNexusCoreKind_Processor_Standard,
    eNexusCoreKind_Memory_Program,
    eNexusCoreKind_Memory_Data,
    eNexusCoreKind_Instrument,
    eNexusCoreKind_ClockManager);

```

TNexusNotification

```

TNexusNotification = Class(TNotificationWithCode, INexusNotification);

```

TProcessFlowState

```

TProcessFlowState = (eFlowState_UpToDate, eFlowState_OutOfDate,
    eFlowState_Missing, eFlowState_None);

```

TRegisterValue

TRegisterValue = LongWord;

TScanClockHaltMode

```
TScanClockHaltMode =  
(eScanClockHaltMode_None, eScanClockHaltMode_Low, eScanClockHaltMode_Both);
```

TScanPinKind

```
TScanPinKind = (eScanPinKind_Normal,  
                eScanPinKind_TRST,  
                eScanPinKind_TCK,  
                eScanPinKind_TDO,  
                eScanPinKind_TDI,  
                eScanPinKind_TMS,  
                eScanPinKind_Power,  
                eScanPinKind_Ground);
```

TTapState

```
TTapState =  
(  
    TapState_Undefined,  
    TEST_LOGIC_RESET,  
    RUN_TEST_IDLE,  
    SELECT_DR,  
    CAPTURE_DR,  
    SHIFT_DR,  
    EXIT1_DR,  
    PAUSE_DR,  
    EXIT2_DR,  
    UPDATE_DR,  
    SELECT_IR,  
    CAPTURE_IR,  
    SHIFT_IR,  
    EXIT1_IR,  
    PAUSE_IR,  
    EXIT2_IR,  
    UPDATE_IR  
);
```

TTargetBoardKind

```
TTargetBoardKind= (eTargetBoardKind_Unknown,
                   eTargetBoardKind_Xilinx,
                   eTargetBoardKind_Altera,
                   eTargetBoardKind_NanoBoard_NB1_Rev1,
                   eTargetBoardKind_NanoBoard_NB1_Rev2,
                   eTargetBoardKind_BurchBoard);
```

FPGA Constants

Bit Constants

```
Bit31 = $80000000;
Bit30 = $40000000;
Bit29 = $20000000;
Bit28 = $10000000;
Bit27 = $08000000;
Bit26 = $04000000;
Bit25 = $02000000;
Bit24 = $01000000;
Bit23 = $00800000;
Bit22 = $00400000;
Bit21 = $00200000;
Bit20 = $00100000;
Bit19 = $00080000;
Bit18 = $00040000;
Bit17 = $00020000;
Bit16 = $00010000;
Bit15 = $00008000;
Bit14 = $00004000;
Bit13 = $00002000;
Bit12 = $00001000;
Bit11 = $00000800;
Bit10 = $00000400;
Bit9  = $00000200;
Bit8  = $00000100;
Bit7  = $00000080;
Bit6  = $00000040;
```

FPGA API Reference

```
Bit5 = $00000020;  
Bit4 = $00000010;  
Bit3 = $00000008;  
Bit2 = $00000004;  
Bit1 = $00000002;  
Bit0 = $00000001;
```

Nexus Notification Codes

```
cNexusDeviceStatusesChanged = 0;  
cNexusHardDeviceChainChanged = 1;  
cNexusSoftDeviceChainChanged = 2;  
cNexusCurrentHardDeviceChanged = 3;  
cNexusCurrentSoftDeviceChanged = 4;  
cNexusProjectCoreTreeChanged = 5;  
cNexusProcessFlowStatusChanged = 6;  
cNexusConnectionStatusChanged = 7;  
cNexusCurrentBoardDeviceChanged = 8;  
cNexusBoardDeviceChainChanged = 9;  
cNexusProjectListChanged = 10;  
cNexusOnIdle = 11;  
cNexusBeginUpdate = 12;  
cNexusEndUpdate = 13;
```

Nexus parameter names

Device Names

```
cNexusParameterName_Device = 'NEXUS_JTAG_DEVICE';  
cNexusParameterName_Connector = 'NEXUS_JTAG_CONNECTOR';  
cNexusParameterName_Order = 'NEXUS_JTAG_ORDER';  
cNexusParameterName_Index = 'NEXUS_JTAG_INDEX';  
cNexusParameterName_Core = 'NEXUS_CORE';  
cNexusParameterName_FPGA = 'NEXUS_FPGA_DEVICE';
```

Memory Parameter Names

```
cNexusParameterName_MemoryDepth = 'Memory_Depth';  
cNexusParameterName_MemoryWidth = 'Memory_Width';  
cNexusParameterName_MemoryDepthA = 'Memory_DepthA';  
cNexusParameterName_MemoryWidthA = 'Memory_WidthA';
```

```

cNexusParameterName_MemoryDepthB      = 'Memory_DepthB';
cNexusParameterName_MemoryWidthB      = 'Memory_WidthB';
cNexusParameterName_MemoryType        = 'Memory_Type';
cNexusParameterName_MemoryUse         = 'Memory_Use';
cNexusParameterName_MemoryClockEdge   = 'Memory_ClockEdge';
cNexusParameterName_MemoryEnablePin   = 'Memory_EnablePin';
cNexusParameterName_MemoryContentFile = 'Memory_ContentFile';
cNexusParameterName_MemoryProgramFile = 'Memory_ProgramFile';
cNexusParameterName_MemoryResetPin    = 'Memory_ResetPin';
cNexusParameterName_MemoryByteIndex   = 'Memory_ByteIndex';
cNexusParameterName_MemoryHalfIndex   = 'Memory_HalfIndex';
cNexusParameterName_MemoryByteWrites  = 'Memory_ByteWrites';

```

Clock Names

```

cNexusParameterName_ClockCount        = 'Clk_Count';
cNexusParameterName_ClockInputFrequency = 'Clk_InputFreq_MHz';
cNexusParameterName_ClockAOperation   = 'ClkA_Operation';
cNexusParameterName_ClockBOperation   = 'ClkB_Operation';
cNexusParameterName_ClockCOperation   = 'ClkC_Operation';
cNexusParameterName_ClockDOperation   = 'ClkD_Operation';

```

Other constants

```

cMemoryElementZero = 0;
cMemoryAddressZero = 0;

```

```

cStandardDriveStrengths : Array[TDeviceIOStandardDriveStrength] Of
TDynamicString =
('2mA', '3mA', '4mA', '6mA', '7mA', '8mA', '10mA', '12mA', '14mA', '16mA',
'18mA', '20mA', '24mA');

```

```

cSupportsCPLDDevice = 'CPLD';
cSupportsFPGADevice = 'FPGA';
cSupportsPROMDevice = 'PROM';

```

Nexus functions

Nexus WorkBench Functions

```

Function GetNexusWorkbench : INexusWorkbench;

```

FPGA API Reference

```
Function GetNexusCoreKindFromParameters (Parameters : PChar) :  
TNexusCoreKind;
```

```
Function GetNexusCoreKindFromString (S : TDynamicString) :  
TNexusCoreKind;
```

Nexus Devices Functions

```
Function GetJTagParallelPort : IJtagParallelPort;
```

```
Function GetDeviceManager : IDeviceManager;
```

```
Function GetCoreGenerator : ICoreGenerator;
```

```
Function GetNexusActionFromParameters (Parameters : PChar) :  
TNexusAction;
```

```
Function GetNexusActionTargetFromParameters(Parameters : PChar) :  
TNexusActionTarget;
```

```
Function GetToolchainNameFromParameters (Parameters : PChar) :  
TDynamicString;
```

```
Function DeviceIsNanoBoardController(NexusDevice : INexusDevice) : Boolean;
```

```
Function IdCodeIsNanoBoardController(IdCode : LongWord ) : Boolean;
```

```
Function GetMaskedIdCode(Const IdCode : LongWord) : LongWord;
```

```
Procedure InitializeMemoryArray (Var MemoryArray : TMemoryArray);
```

```
Function AddressesEqual (Addr1, Addr2 : TMemoryAddress) :  
Boolean;
```

```
Function ElementsEqual (Element1, Element2 : TMemoryElement) :  
Boolean;
```

```
Function GetByteFromElement (Index : Integer; AElement :  
TMemoryElement) : Byte;
```

```
Procedure SetByteOnElement (Index : Integer; Var AElement :  
TMemoryElement; AByte : Byte;
```

```
Function DecrementAddress (Addr : TMemoryAddress; ByVal :  
Cardinal) : TMemoryAddress;
```

```
Function IncrementAddress (Addr : TMemoryAddress; ByVal :  
Cardinal) : TMemoryAddress;
```

```
Function IsDifferentialIOStandard(Const AStandardName : TDynamicString) :
Boolean;
```

```
//Overloaded functions
```

```
Function CompareIdCodes(Const IdCodeA : Integer;          Const IdCodeB :
Integer) : Boolean;
```

```
Function CompareIdCodes(Const IdCodeA : TDynamicString; Const IdCodeB :
Integer) : Boolean;
```

FPGA LowLevel API

FPGA Constants

FPGAVendorKindStrings

```
FPGAVendorKindStrings : Array [TFPGAVendorKind] Of TDynamicString =
('Altera',
 'Xilinx',
 'Actel',
 'Lattice');
```

FPGAVendorPinFilterStrings

```
FPGAVendorPinFilterStrings : Array[TFPGAVendorKind] Of TDynamicString =
('Altera Pin, Report files (*.pin, *.fit.rpt)|*.PIN;*.FIT.RPT',
 'Xilinx UCF, PAD, CSV files (*.ucf; *.pad; *.csv)|*.UCF;*.PAD;*.CSV',
 'Actel Report files (*.rpt)|*.RPT',
 'Lattice PAD Files (*.pad)|*.PAD'
);
```

FPGAAttributeNameStrings

```
FPGAAttributeNameStrings : Array[TFPGAAttributes] Of TDynamicString =
('ARRAY_TO_NUMERIC',
 'CLOCK_BUFFER',
 'CRITICAL',
 'ENUM_ENCODING',
 'FPGA_GSR',
 'INHIBIT_BUF',
 'MACROCELL',
 'NUMERIC_TO_ARRAY',
 'PART_NAME',
 'PINNUM',
```

FPGA API Reference

```
'PROPERTY',  
'UNGROUP',  
'XILINX_BUFG',  
'XILINX_GSR'  
);
```

FPGA types

TFPGAVendorKind

```
TFPGAVendorKind = (eFPGAVendor_Altera,  
                   eFPGAVendor_Xilinx,  
                   eFPGAVendor_Actel,  
                   eFPGAVendor_Lattice);
```

TFPGAAttributes

```
TFPGAAttributes = (eFPGA_ArrayToNumeric    ,  
                   eFPGA_ClockBuffer      ,  
                   eFPGA_Critical          ,  
                   eFPGA_EnumerateEncoding,  
                   eFPGA_GSR              ,  
                   eFPGA_InhibitBuffer    ,  
                   eFPGA_Macrocell        ,  
                   eFPGA_NUmericToArray   ,  
                   eFPGA_PartName         ,  
                   eFPGA_PinNumber        ,  
                   eFPGA_Property         ,  
                   eFPGA_Ungroup          ,  
                   eFPGA_XilinxBUFG      ,  
                   eFPGA_XilinxGSR);
```

FPGA Functions

CreatePinMapForVendorKind

```
Function CreatePinMapForVendorKind (AVendorKind : TFPGAVendorKind) :  
TFPGAVendorPinMap;
```

GetVendorKindFromFileName

```
Function GetVendorKindFromFileName (AFileName : TDynamicString) :  
TFPGAVendorKind;
```

GetFPGAVendorKind

```
Function GetFPGAVendorKind(AVendorKind : TDynamicString) : TFGPAVendorKind;
```

GetFPGAPinMapFileFromUser

```
Function GetFPGAPinMapFileFromUser(Var AFileName : TDynamicString;
                                     Var AVendorKind : TFGPAVendorKind;
                                     LimitFiltersToVendor : Boolean =
False) : Boolean;
```

UpperCasePos

```
Function UpperCasePos (ASubStr, AString : TDynamicString) : Integer;
```

GetFPGAPinMap

```
Function GetFPGAPinMap(AConfirmWarningsFlag : Boolean;
                       AVendorName, ADeviceName : TDynamicString;
                       APinCount : Integer) :
TFGPAVendorPinMap;
```

GetConstraintMapper

```
Function GetConstraintMapper : TConstraintMapper;
```

FPGA Classes

TFGPAVendorPin class

Overview

TFGPAVendorPin Fields	TFGPAVendorPin methods	TFGPAVendorPin properties
Number	GetDescription	
NetName	HasPinElectrical	
Mode	GetPinElectrical	
PinType	GetPinElectricalString	
Voltage		
SlewRate		
DriveStrength	Destroy	
Bank	Create	
IsUserNet		

See also

Fields

Number : TDynamicString;
NetName : TDynamicString;
Mode : TDynamicString;
PinType : TDynamicString;
Voltage : TDynamicString;
SlewRate : TDynamicString;
DriveStrength : TDynamicString;
Bank : TDynamicString;
IsUserNet : Boolean;

Methods

Constructor Create(ANumber, ANetName : TDynamicString);
Function GetDescription : TDynamicString;
Function HasPinElectrical : Boolean;
Function GetPinElectrical : TPinElectrical;
Function GetPinElectricalString : TDynamicString;

Properties

N/A

TFPGAVendorMap class

Overview

TFPGAVendorMap Fields	TFPGAVendorMap methods	TFPGAVendorMap properties
FAllins	ConvertName	
FStatus	SkipLine	
FDeviceName	Create	
Pins	Destroy	
Chip	SortBy_Number	
Designator	SortBy_Name	
	SetDeviceName	
	Load	
	AddPin	
	GetLongestNetName	

See also**Fields****Private fields**

```

FAllPins      : Boolean;
FStatus       : Boolean;Methods
FDeviceName   : TDynamicString;

```

Public fields

```

Pins          : TList;
Chip          : TDynamicString;
Designator    : TDynamicString;

```

Methods

```

Function      ConvertName(AName : TDynamicString) : TDynamicString; Virtual;
Function      SkipLine  (ALine : TDynamicString) : Boolean;           Virtual;
Constructor   Create;
Destructor    Destroy; Override;
Procedure     SortBy_Number;
Procedure     SortBy_Name;
Procedure     SetDeviceName(ADeviceName : TDynamicString);
Function      Load(AFileName : TDynamicString) : Boolean;           Virtual;
Function      AddPin(ANumber, ANetName : TDynamicString): TFPGAVendorPin;
Function      GetLongestNetName : TDynamicString;
Function      ContainsAllPins : Boolean;
Function      GetPinByNumber      (ANumber : TDynamicString) :
TFPGAVendorPin;
Function      GetPinByNetname     (ANetName : TDynamicString) :
TFPGAVendorPin;
Function      GetPinNumberForNet   (ANetName : TDynamicString) :
TDynamicString; Virtual;
Function      GetPinNumberForBusNet(ANetName : TDynamicString; Range1, Range2
: Integer) : TDynamicString; Virtual;

```

TFPGAAlteraPinMap class**Overview**

TFPGAAlteraPinMap Fields	TFPGAAlteraPinMap methods	TFPGAAlteraPinMap properties
	ConvertName	
	ConvertMode	
	ConvertDrive	
	SkipLine	
	ParsePinToken	
	ParseInputToken	
	ParseOutputToken	
	ParseBiDirToken	
	ParseChipStatement	

See also

Fields

N/A

Methods

```
Function      ConvertName      (AName : TDynamicString) : TDynamicString;
Override;

Function      ConvertMode      (AMode      : TDynamicString) : TDynamicString;
Virtual;

Function      ConvertDrive      (ADrive      : TDynamicString) : TDynamicString;
Virtual;

Function      SkipLine          (ALine : TDynamicString) : Boolean;
Override;

Procedure     ParsePinTokens    (Tokens : TStringList);
Virtual;

Procedure     ParseInputTokens  (Tokens : TStringList);

Procedure     ParseOutputTokens (Tokens : TStringList);

Procedure     ParseBiDirTokens  (Tokens : TStringList);

Procedure     ParseChipStatement(ALine : TDynamicString);
Virtual;

Function      Load(AFileName : TDynamicString) : Boolean;      Override;
```

TFPGAXilinxPinMap class

Overview

TFPGAVendorMap Fields

FDelimiter

TFPGAVendorMap methods

ConvertName

SkipLine

ConvertBank

ConvertMode

ConvertSlew

ConvertDrive

ParseUCFPinTokens

ParsePADPinTokens

LoadUCFFile

LoadPADFile

Load

GetPinNumberForNet

StripPinNumberPrefix

TFPGAVendorMap properties**See also****Fields**

FDelimiter : Char;

Methods

```
Function ConvertName      (AName      : TDynamicString) : TDynamicString;
Override;
```

```
Function SkipLine        (ALine      : TDynamicString) : Boolean;
Override;
```

```
Function ConvertBank     (ABank     : TDynamicString) : TDynamicString;
Virtual;
```

```
Function ConvertMode     (AMode     : TDynamicString) : TDynamicString;
Virtual;
```

```
Function ConvertSlew     (ASlew     : TDynamicString) : TDynamicString;
Virtual;
```

```
Function ConvertDrive    (ADrive    : TDynamicString) : TDynamicString;
Virtual;
```

```
Procedure ParseUCFPinTokens (Tokens   : TStringList);
Virtual;
```

FPGA API Reference

```
Procedure ParsePADPinTokens (Tokens : TStringList);
Virtual;
Procedure LoadUCFFile (AFileName : TDynamicString);
Virtual;
Procedure LoadPADFile (AFileName : TDynamicString);
Virtual;
Function Load(AFileName : TDynamicString) : Boolean;
Override;
Function GetPinNumberForNet (ANetName : TDynamicString) : TDynamicString;
Override;
Function StripPinNumberPrefix(APrefix : TDynamicString) : Boolean;
```

TFPGAActelPinMap class

Overview

This class represents the Pin Mapping information of an Actel device. The FPGAActelPinmap class is inherited from the generic TFPGAVendorPinMap class.

TFPGAActelPinMap Fields	TFPGAActelPinMap methods	TFPGAActelPinMap properties
-------------------------	--------------------------	-----------------------------

See also

TFPGAVendorPinMap class.

Fields

N/A

Methods

```
Function ConvertName (AName : TDynamicString) : TDynamicString; Override;
Procedure ParsePinTokens(Tokens : TStringList); Virtual;
Function Load(AFileName : TDynamicString) : Boolean; Override;
```

TFPGALatticePinMap class

Overview

TFPGALatticePinMap Fields	TFPGALatticePinMap methods	TFPGALatticePinMap properties
	ConvertName	

ExtractPinNumAndBank
 ExtractStandardAndType
 ExtractDriveAndSlew
 ParsePADPinTokens
 ExtractDriveAndSlew
 ParsePADPinTokens
 Load

See also

Methods

```

Function ConvertName (AName : TDynamicString) : TDynamicString; Override;
Function ExtractPinNumAndBank (AString : TDynamicString; Var Pin, Bank:
TDynamicString) : Boolean;
Function ExtractStandardAndType(AString : TDynamicString; Var Standard,
PinType: TDynamicString) : Boolean;
Function ExtractDriveAndSlew (AString : TDynamicString; Var Drive, Slew:
TDynamicString) : Boolean;
Procedure ParsePADPinTokens (Tokens : TStringList);
Function Load(AFileName : TDynamicString) : Boolean; Override;
  
```

TConstraintMapper class

Overview

TConstraintMapper methods

GetVendorConstraintValue
 GetGenericConstraintValueForDevice
 GetGenericConstraintValueForVendor

Destroy

Create

TConstraintMapper properties

See also

Fields

Methods

```
Function GetVendorConstraintValue(  
    ADeviceName : TDynamicString;  
    AConstraintName : TDynamicString;  
    AConstraintValue : TDynamicString) : TDynamicString;
```

```
Function GetGenericConstraintValueForDevice(  
    ADeviceName : TDynamicString;  
    AConstraintName : TDynamicString;  
    AConstraintValue : TDynamicString) : TDynamicString;
```

```
Function GetGenericConstraintValueForVendor(  
    AVendorName : TDynamicString;  
    AConstraintName : TDynamicString;  
    AConstraintValue : TDynamicString) : TDynamicString;
```

```
Destructor Destroy; Override;
```

```
Constructor Create(AFileName : TDynamicString);
```

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Revision History

Date	Version No.	Revision
22-Nov-2005	1.0	New product release
14 Feb 2006	1.1	Updated for Altium Designer 6.0
29 Jun 2006	1.2	Updated for Altium Designer 6.3

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