

Summary

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';
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
GetUniqueDescription
GetIndex
GetParentIndex
GetJTAGIndex
GetShortDescription

IDeviceLink properties

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
 GetUniqueId
 GetDescription

INexusCore properties

MatchesOtherCore
Import_FromParameters
Export_ToParameters
SupportsParameter
GetParameterValue
Export_CoreGenParameters
FindFileInProjectPaths
GetChildCore
GetChildCoreDesignator
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)

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)

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
 GetNexusCoreFromUniqueld
 GetCoreFromDesignator

 GetSoftDeviceFromDeviceId
 GetProgrammableDeviceFromDeviceId

 GetHardDeviceCount
 GetSoftDeviceCount
 GetBoardDeviceCount
 GetProgrammableDeviceCount

 GetHardDevice
 GetSoftDevice
 GetBoardDevice
 GetProgrammableDevice

 GetCurrentHardDevice
 SetCurrentHardDevice
 GetCurrentSoftDevice
 SetCurrentSoftDevice
 GetCurrentBoardDevice
 SetCurrentBoardDevice
 GetCurrentProgrammableDevice
 SetCurrentProgrammableDevice

 SetCurrentCore

 GetProjectLinkCount
 GetPCBProjectLinkCount
 GetProjectLink
 GetPCBProjectLink
 ProcessFlowRunner
 AddHardDeviceByName
 RemoveHardDevice
 SynthesizeCoresForProject

INexusWorkbench properties

HardDevices
 SoftDevices
 BoardDevices
 ProjectLinks
 PCBProjectLinks

 ProgrammableDevices

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)

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

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)

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****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	INexusNotification properties
GetCode	Code

See also

Code property

(INexusNotification interface)

Syntax

```
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	IPCBProjectLink properties
GetProject	
GetProjectFullPath	
DocumentKind	
GetSchComponentLinkCount	
GetSchComponentLink	

ContainsProjectLink
CrossProbe

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

IProjectLink properties

NexusCores_All

NexusCores_Instrument

GetCoreFromDesignator
GetCoreFromDesignator
GetNexusCoreCount_All
GetNexusCoreCount_Instrument

GetNexusCore_All
GetNexusCore_Instrument

See also

IPProject interface

GetState and SetState Methods**GetNexusCore_All method**

(IPProjectLink interface)

Syntax

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

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

IPProjectLink interface

GetNexusCore_Instrument method

(IPProjectLink interface)

Syntax

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

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

IPProjectLink interface

Methods**ContainsEmbeddedProject method**

(IPProjectLink interface)

Syntax

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

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

IPProjectLink 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**

IPProjectLink interface

GetProject method

(IPProjectLink interface)

Syntax

```
Function GetProject : IProject;
```

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

IPProjectLink interface

IFPGAProject interface

GetFPGAProject method

(IPProjectLink interface)

Syntax

```
Function GetFPGAProject : IFPGAProject;
```

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

IPProjectLink interface

IEmbeddedProject interface

GetEmbeddedProject method

(IPProjectLink interface)

Syntax

```
Function GetEmbeddedProject : IEmbeddedProject;
```

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

IPProjectLink interface

IFPGAProject interface

GetProjectFullPath method

(IPProjectLink interface)

Syntax

```
Function GetProjectFullPath : WideString;
```

Description

Example**See also**

IPProjectLink interface

Properties**NexusCores_All [aIndex property**

(IPProjectLink interface)

Syntax

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

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

IPProjectLink interface

NexusCores_Instrument[aIndex property

(IPProjectLink interface)

Syntax

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

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

IPProjectLink interface

ISchComponentLink Interface**ISchComponentLink Interface****Overview**

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

ISchComponentLink methods

GetComponentDesignator
 GetLibraryReference
 GetComponentDocumentPath
 GetSubProjectPath
 GetDescription
 GetProjectPath
 GetProjectLink
 CrossProbe
 SetSubProjectPath

ISchComponentLink properties

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;
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',
    {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,
    eDHSTLIIII,
```

```

eDHSTL18I,
eDHSTL18II,
eDHSTL18III,
eLVDS,
eLVPECL,
eDSSTL18I,
eDSSTL18II,
eDSSTL2I,
eDSSTL2II,
eDSSTL3I,
eDSSTL3II,
eBLVDS25,
eLVPECL25,
eRSDS25,
eLVDS33,
eLVDS25_DCI,
eLVDS33_DCI,
eLVDSEXT25,
eLVDSEXT33,
eLVDSEXT25_DCI,
eLVDSEXT33_DCI,
eULVDS25,
eLVDS_DT,
eLVDSEXT25_DT,
eULVDS25_DT,
eMiniLVDS25,
eDHSTLII_DCI,
eDHSTL18II_DCI,
eDSSTL2II_DCI,
eDSSTL18II_DCI
];

```

```
cUnknownInstruction = $FFFFFFFF;
```

```
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',
'LVC MOS 1.2V',
'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',
'LVC MOS 1.5V DCI',
'LVC MOS 1.8V DCI',
'LVC MOS 2.5V DCI',
'LVC MOS 3.3V DCI',
'LVC MOS 1.5V DCI DIV2',
'LVC MOS 1.8V DCI DIV2',
'LVC MOS 2.5V DCI DIV2',
'LVC MOS 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',
'LVTTTL18',
'LVTTTL25',
'LVTTTL33',
'LVC MOS15',
'LVC MOS18',
'LVC MOS25',
'LVC MOS33',
'LVC MOS5',
'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',
'LVC MOS12',
'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',
'LVC MOS15_DCI',
'LVC MOS18_DCI',
'LVC MOS25_DCI',
'LVC MOS33_DCI',
'LVC MOS15_DCI_DV2',
'LVC MOS18_DCI_DV2',
'LVC MOS25_DCI_DV2',
'LVC MOS33_DCI_DV2',
'LVDS',

```

```

'LVPECL',
'DSSTL18I',
'DSSTL18II',
'DSSTL2I',
'DSSTL2II',
'DSSTL3I',
'DSSTL3II',
'BLVDS25',
'LVPECL25',
'RS25',
'LVDS33',
'LVDS25_DCI',
'LVDS33_DCI',
'LVDS25_EXT25',
'LVDS25_EXT33',
'LVDS25_EXT25_DCI',
'LVDS25_EXT33_DCI',
'LDT',                                {2.5V}
'ULVDS25',
'LDT_DT',
'LVDS_DT',
'LVDS25_EXT25_DT',
'ULVDS25_DT',
'MiniLVDS25',
'LVC33_1',
'LVC33_2',
'DHSTL18II_DCI',
'DHSTL18II_DCI',
'DSSTL2II_DCI',
'DSSTL18II_DCI'
);

```

```

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,
    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,
    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 =
(eLVTTTL15,
 eLVTTTL18,
 eLVTTTL25,
 eLVTTTL33,
 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,
 eHSTL_12,
 eHSTLI_18,
 eHSTLII_18,
 eHSTLIII_18,
 eHSTLIV_18,
 eCTT,
 eAGP1x,
 eAGP2x,
 eTTL,
 eLVCMOS12,
 eGTL_DCI,
 eGTLP_DCI,
 eHSTLI_DCI,
 eHSTLII_DCI,
```

eHSTLIIII_DCI,
eHSTLIV_DCI,
eHSTLI_18_DCI,
eHSTLII_18_DCI,
eHSTLIIII_18_DCI,
eHSTLIV_18_DCI,
eDHSTLI,
eDHSTLII,
eDHSTLIIII,
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,
eLVDSEXT25,
eLVDSEXT33,
eLVDSEXT25_DCI,
eLVDSEXT33_DCI,
eLDT,
eULVDS25,

```
eLDT_DT,
eLVDS_DT,
eLVDSSEXT25_DT,
eULVDS25_DT,
eMiniLVDS25,
eLVCMOS33_1,
eLVCMOS33_2,
eDHSTLII_DCI,
eDHSTL18II_DCI,
eDSSTL2II_DCI,
eDSSTL18II_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; ByValue : 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**

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
 GetInstruction_IDCODE
 GetInstruction_USERCODE
 GetInstruction_CLAMP
 GetInstruction_HIGHZ
 GetScanClockMaxSpeed
 GetScanClockHaltMode
 GetConformanceStatement
 GetCompliancePattern
 GetDesignWarning
 GetFilename

IBSDLEntity properties**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**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

Overview

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

ICoreGenerator methods ICoreGenerator properties

GenerateModule

See also

GenerateModule method

(ICoreGenerator interface)

Syntax

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

Description

Example

See also

ICoreGenerator interface

IDeviceInformation Interface

Overview

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

IDeviceInformation methods

IDeviceInformation properties

GetIdCode

GetDeviceName

GetDeviceDescription

GetFamilyName

GetFamilyDescription

GetLibraryName

GetVendorPrimitiveLibraryName

GetBaseName

GetEquivalentGatesForBase
GetMaxIOForBase
GetPackageTypeId
GetPackageName
GetPackageTypeDescription
GetPackageId
GetPackageName
GetPackageDescription
GetPackageDimensions
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

GetBSDLEntity method

(IDeviceInformation interface)

Syntax

```
Function GetBSDLEntity : IBSDLEntity;
```

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)

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

GetPackageld 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**Overview**

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

IDeviceIOStandard methods**IDeviceIOStandard properties**

GetDisplayName
GetParamName
GetSlewCount
GetSlewValue
GetDriveCount
GetDriveStrength

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
 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**

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

GetDevicesForFamilymethod

(IDeviceManager interface)

Syntax

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

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

IDeviceManager interface

GetDeviceFamilyManagermethod

(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

IDevicePin properties

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

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

IInstructionOpCode Interface**Overview**

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

IInstructionOpCode methods

GetInstructionName

GetOpCodePattern

IInstructionOpCode properties**See also**

GetInstructionName method

(IInstructionOpCode interface)

Syntax

```
Function GetInstructionName : WideString;
```

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

IInstructionOpCode 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**IDevicePin properties**

```
SetAssociatedBSDLFileName
SetInstructionLength
GetAssociatedBSDLFileName
GetAssociatedLibraryReference
GetAssociatedLibraryFileName
GetInstructionLength
GetNonAssociatedBSDLFileNamesForIdCode
GetAssociatedDeviceSettingsDescription
Import_FromUser_JTAGIdMapping
```

IIstrumentView Interface**Overview**

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

```
IExternalForm
IIstrumentView
```

IIInstrumentView methods

UpdateDisplay
SetProjectDetails
GetInstrumentBounds
SetInstrumentBounds
LiveUpdateNet
ReceiveNotification
Hidden

IIInstrumentView properties**See also****GetInstrumentBounds method**

(IIInstrumentView interface)

Syntax

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

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

IIInstrumentView interface

Hidden method

(IIInstrumentView interface)

Syntax

```
Procedure Hidden;
```

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

IIInstrumentView interface

LiveUpdateNet method

(IIInstrumentView 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**

IIstrumentView interface

SetInstrumentBounds method

(IIstrumentView interface)

Syntax

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

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

IIstrumentView interface

SetProjectDetails method

(IIstrumentView interface)

Syntax

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

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

IIstrumentView interface

UpdateDisplay method

(IIstrumentView interface)

Syntax

```
Procedure UpdateDisplay;
```

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

IIstrumentView interface

IJTagChannel Interface**Overview**

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

IJTagChannel methods

OpenChannel

CloseChannel

IJTagChannel properties

TCK

TDO

PlaceAllDevicesInBypass	TDI
GetChainLength	TMS
ScanChain	
DisplayStatus	
GetDevice	
GetDeviceCount	
GetStringForDevicesOnChain	
DoFlush	
ShiftIn32BitPartialData	
ShiftInNBitPartialData	
ShiftInOutNBitData	
ShiftInOutString	
ShiftInOutPartialString	
ShiftInOutString_IR	
DataRegisterLoad	
LoadInstruction	
SelectInstruction	
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
 GetIndex
 GetInstructionLength
 GetInstructionOpcode
 GetInstructionOpcodeCount
 GetPin
 GetPinCount
 GetPinMapping
 GetPinMappingCount
 GetRegisterAssociation
 GetRegisterAssociationCount
 ReadPinStatesFromChain
 ReloadBSDL
 SetIndex
 UpdateWithPreferredDeviceName

IJTagDevice properties**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

InitializeParallelPort

GetParallelPort

IJtagParallelPort properties**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

GetMask_TCK
GetMask_TDO
GetMask_TDI
GetMask_TMS

IJtagParallelPort_ChannelMapping properties

Mask_TCK
Mask_TDO
Mask_TDI
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

GetJTagChannel_Hard

GetJTagChannel_Soft

GetJTagChannel_Board

GetJTagChannel_SPI

GetBoardChannelMask_TCK

GetBoardChannelMask_TDO

GetBoardChannelMask_TDI

GetBoardChannelMask_TMS

IJtagPort properties

BoardMask_TCK

BoardMask_TDO

BoardMask_TDI

BoardMask_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

IMemorySpace properties

GetBytesPerUnit

Read

Write

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

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

INexusBreakpoint properties

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
MemorySpaceCount
GetMemorySpace
GetProcessorRegister
GetProcessorRegister_PC
GetProcessorRegister_SP
GetMemorySpace_Program

INexusDevice properties

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

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

```
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)

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)

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

INexusDriver properties

GetMemorySpaceLength
GetMemorySpaceName
GetMemorySpaceShortName
GetMemorySpaceWidth
GetNexusDevice
GetProcessorRegisterCount
GetProcessorRegisterName
GetProcessorRegisterShortName
GetProcessorRegisterValue
GetProcessorRegisterWidth
GetRegisterIndex_PC
GetRegisterIndex_SP
LittleEndian
MemoryRead
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**

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**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

IProcessFlow properties

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
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**FlowStageStarting**

AddSummaryLine

AddError

RunStarted

RunEnded

FlowRunning

IProcessFlowRunner properties**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

```
GetRegisterName
GetRegisterLength
GetInstructionOpCodeCount
GetInstructionOpCode
```

IRegisterAssociation properties**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

GetPinName

GetPinNumber

GetKind

GetPinMapping

GetBoundaryCellCount

GetBoundaryCell

IScanPin properties

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
Disable

ISoftBreakpoint properties

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,
    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,
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,
eLVCMOS15_DCI,
eLVCMOS18_DCI,
eLVCMOS25_DCI,
eLVCMOS33_DCI,
eLVCMOS15_DCI_DV2,
eLVCMOS18_DCI_DV2,
eLVCMOS25_DCI_DV2,
eLVCMOS33_DCI_DV2,
eLVDS,
eLVPECL,
eDSSTL18I,
eDSSTL18II,
eDSSTL2I,
eDSSTL2II,
eDSSTL3I,
eDSSTL3II,
eBLVDS25,
eLVPECL25,
eRSDS25,
eLVDS33,
eLVDS25_DCI,
eLVDS33_DCI,
eLVDSEXT25,
eLVDSEXT33,
eLVDSEXT25_DCI,
eLVDSEXT33_DCI,
eLDT,
eULVDS25,
eLDT_DT,
eLVDS_DT,
eLVDSEXT25_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,
    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, TNexusNotification);

```

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;
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;

```

```

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; ByValue : Cardinal) :
TMemoryAddress;
Function  IncrementAddress          (Addr : TMemoryAddress; ByValue : 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',
'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) : TFPGAVendorKind;
```

GetFPGAPinMapFileFromUser

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

UpperCasePos

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

GetFPGAPinMap

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

GetConstraintMapper

```
Function GetConstraintMapper : TConstraintMapper;
```

FPGA Classes

TFPGAVendorPin class

Overview

TFPGAVendorPin Fields

Number
NetName
Mode
PinType
Voltage
SlewRate
DriveStrength
Bank
IsUserNet

TFPGAVendorPin methods

GetDescription
HasPinElectrical
GetPinElectrical
GetPinElectricalString

Destroy
Create

TFPGAVendorPin properties

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

FAllins
 FStatus
 FDeviceName
 Pins
 Chip
 Designator

TFPGAVendorMap methods

ConvertName
 SkipLine
 Create
 Destroy
 SortBy_Number
 SortBy_Name
 SetDeviceName
 Load
 AddPin
 GetLongestNetName

TFPGAVendorMap properties

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

TFPGAVendorMap properties

Load
 GetPinNumberForNet
 StripPinNumberPrefix

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;
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);
```


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
23-May-2008	1.3	Updated Page Size to A4 and information.
01-Sep-2011	-	Updated template.

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