# IsoUs – Ultimate Step Framework for .NET

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# 1 PREFAZIONE

This manual, decsribes the IsoUs Framework for .NET application.
The framewotk is contained in the **UsWork.dll**.

## *1.1 Before Start*

The use of UsWork.DLL provides that there is the configuration file **"IsoUs.cfg"** already installed in the same folder.
The configuration file contains all the informations necessary to component for the proper functioning and adaptation to the CNC in use.
In the same folder UsWork.DLL must be the following DLL:

***Compiler.DLL***
***ComSynk.DLL***

These are directly allocated by the component itself and therefore only require their presence.
The component is loaded in the development environment like all other components of the framework running the standard usage.

**First you must assign the address of the property SetIsoUsCnC CN (usually 0)**

```
const String KeyName = "HKEY_CURRENT_USER\\Software\\Promax\\ISONS\\InstallPathUs";
UsWork.IsoUs MyUsIso = new UsWork.IsoUs();

    // Run Application
    private void StartIsoUs()
    {
      // Reg Application
      Microsoft.Win32.Registry.SetValue (KeyName, "ISONS", Environment.CurrentDirectory); //WPF
       Microsoft.Win32.Registry.SetValue(KeyName, "ISONS", Application.StartupPath); //Windows Form
       MyUsIso.SetIsoUsCnC(CncIndex, "IsoUs.cfg");
    }
```

# 2 Events

## 2.1 AbsRelChanged

Event occurs to change the state of NC by absolute or relative. Generated as a result of an instruction manual functions G90 or G91.
**False** indicate Absolute Motion
**True** indicate Relative Motion

**Example c#:**

```
private void AbsRelChanged(object sender, UsWork.BoolArgs e)
{
  if (e.Value == false)
    … Absolute
  else
    … Relative
}
```

## 2.2 AcquisitionExecuteChanged

Event occurs to change the bit of a statusword **"probe acquisition"**.
Boolean value that indicates the status of acquisition
**True** acquisition terminated
**False** acquisition in RUN

**Example c#:**

```
private void AcqExecute(object sender, Boolean e)
{
    if(e..Value==True) // Acq Terminated
    else // Acq Run
}
```

## 2.3 AllAxesReadyChanged

Event occurs to change the Axes Status (homing or Enable)
Boolean value that indicates the axes sttus
**True** All Axes Reday (Homing e Enable)
**False** One o more Axis not ready (Homing e Enable)

## 2.4 AxesDemandValueChanged

Event occurs to change the demand position of Axes

| | |
|---|---|
| **FormatRealValue** | contains an array of string formatted values of the absolute reference positions axes to machine zero |
| **FormatSpaceErr** | contains an array of string formatted values of the axes of space errors (difference between the theoretical position and current position) |
| **Format** | Contains an array of string formatted values of the axes positions These are referred to the axis and Zero Offset |
| **RealValue** | contains an array of Int32 values of the coordinates axes to machine zero absolute reference |
| **Value** | contains an array of Int32 values of the positions These are referred to the axis and Zero Offset |
| **Mask** | Int32 Bit mapped that indicates which axis has changed positions Bit 0 Axis X - Bit 1 Axis Y etc. .. The bit is not enabled, the event did not generate |

**Example c#:**

```
private void AxesDemandValueChanged(object sender, UsWork.AxesValueArg e)
{
    Int32 P = 1;
     for (int n = 0; n < e.FormatValue.Length; n++)
     {
              if ((Mask & P) == P)    // value changed
              {
                       MyQuoteAbs[n].Text = FormatRealValue[n];
                       MyQuoteRel[n].Text = FormatValue[n];
              }
      P <<= 1;
     }
}
```

## 2.5 AxesMoveChanged

Event occurs to change the Axes movement

**True** Axis movement

**False** Axis stop

**Example c#:**

```
private void MoveChanged(object sender, NsWork.BoolArgs e)
{
  if (e.Value == false)
     axis stop
  else
   axis movement
}
```

## 2.6 AxesOffsetValueChanged

Event occurs to change the offset axes following a G93 statement

**Format** containing a value formatted string

**Index** index of the axis

**Value** containing the integer value of the offset axis

**Example c#:**

```
private void AxesOffsetValueChanged(object sender, UsWork.OffsetArgs e)
{
  labelval.Text = e.Format;
  Int32 Value = e.Value;
  Double ValZero = e.Value;
  ValZero /= MyUsIso.UsAxesValue.AxesResolution;
}
```

## 2.7 AxesOriginChanged

Event occurs to change the axis zeros following a G94 statement

**Format** String position formatted value

**Index** Axis index

**Value** Int32 offset axis

**Example c#:**

```
private void AxesOriginChanged (object sender, UsWork.OffsetArgs e)
{
  labelval.Text = e.Format;
  Int32 Value = e.Value;
  Double ValZero = e.Value;
  ValZero /= MyUsIso.UsAxesValue.AxesResolution;
}
```

## 2.8 AxesDemandValueChanged

Event occurs to change the real position of Axes

| | |
|---|---|
| **FormatRealValue** | contains an array of string formatted values of the absolute reference positions axes to machine zero |
| **FormatSpaceErr** | contains an array of string formatted values of the axes of space errors (difference between the theoretical position and current position) |
| **Format** | Contains an array of string formatted values of the axes positions These are referred to the axis and Zero Offset |
| **RealValue** | contains an array of Int32 values of the coordinates axes to machine zero absolute reference |
| **Value** | contains an array of Int32 values of the positions These are referred to the axis and Zero Offset |
| **Mask** | Int32 Bit mapped that indicates which axis has changed positions Bit 0 Axis X - Bit 1 Axis Y etc. .. The bit is not enabled, the event did not generate |

## 2.9 AxisEnabledChanged

Event occurs to change the enabled status of the driver of an axis
Value contains the status
**True** Axis enabled
**False** Axis disabled
**IndexAxis** contains the index of axis (0-1-2) eg X, Y, Z

**Example c#:**

```
private void AxisEnabledChanged (object sender, UsWork.HomingEnableArgs e)
{
  if (e.Value == false)
    e.IndexAxis...     //Disable
  else
     e.IndexAxis...    // Enable
}
```

## 2.10 AxisHomeChanged

Event that occurs when an axis has finished homing function
Value contains the status of Home
**True** Axis homing OK
**False** Axis not homing
**IndexAxis** contains the index of the axis (0-1-2) eg X, Y, Z

**Example c#:**

```
private void AxisHomeChanged (object sender, UsWork.HomingEnableArgs e)
{
  if (e.Value == false)
    e.IndexAxis...     // no homing
  else
     e.IndexAxis...    // homing
}
```

## 2.11 DigitalInputChanged

Event occurs to change the status of a digital input.
The digital inputs enabled the generation of events must first be configured in the file **IsoUs.cfg** in the following mode:
**<EventsData UserGeneric="" DigitalInputs=" inputn,inputn1,inputn2 etc " />**
Where Inputn1,Inputn2 ecc. are the NC real digital inputs
Ex:
**<EventsData UserGeneric="" DigitalInputs=" 1,5,32 " />**

**Example c#:**

```
private void DigitalInputChanged(object sender, UsWork.DigitalInputArgs  e)
{
   for(int n=0;n<e.DigitalInput.Length;n++)
   {
      // e.DigitalInput is a integer vector that contains the digital inputs changed
      // ex: e.DigitalInput[0]=digital input 1 changed
      //  e.DigitalStato is a boolean vector that  contains the state of relative input
      // e:x e.DigitalStato[0]=false Input 1  false
      // test input 1
      if(e.DigitalInput[n]==1)
      {
         if(e.DigitalStato[n]==true)
         {
            if(IsoNs .IsStatusRun==true)    // if run
               IsoNs.ProgramRun.PauseProg();
         }
      }
   }
}
```

## 2.12 EnableExtOverrideChanged

Event occurs to change the enabled status of the external potentiometer override
**True** external override enbled
**False** external override disabled

**Example c#:**

```
private void EnableExtOverrideChanged (object sender, UsWork.BoolArgs e)
{
   if (e.Value == false)
      .....Disable
   else
      ..... Enable
}
```

## 2.13 EndImportChanged

Event occurs when the last IMPORT file is terminated
**e.FileName** NULL
**e.FileImportPath** Path file that has terminated the execution

## 2.14 ExtPauseRequestChanged

Event that occurs at the change of external input **PAUSE** program
The input is defined in the CN application VTB
**True** request from external **PAUSE**

**Example c#:**

```
private void ExtPauseRequestChanged (object sender, UsWork.BoolArgs e)
{
  if (e.Value == true)
    MyUsIso.UsGcodeRun.PauseGcode();
}
```

## 2.15 ExtRunRequestChanged

Event that occurs at the change of external input **RUN** program
The input is defined in the CN application VTB
**True** request from external **RUN**

**Example c#:**

```
private void ExtRunRequestChanged(object sender, UsWork.BoolArgs e)
{
  if (e.Value == true)
    MyUsIso.UsGcodeRun.ExecuteGcode(LineStart);      // Run Prog
}
```

## 2.16 ExtStopRequestChanged

Event that occurs at the change of external input **STOP** program
The input is defined in the CN application VTB
**True** request from external **STOP**

**Example c#:**

```
private void ExtStopRequestChanged(object sender, UsWork.BoolArgs e)
{
  if (e.Value == true)
    MyUsIso.UsGcodeRun.StopGcode();
}
```

## 2.17 FeedAxesChanged

Event occurs to change the set F
The event is generated by **F** instructions or manual functions
Contains an integer value of **F**
Format contains a string formatted to units of measurement set

**Example c#:**

```
private void FeedAxesChanged(object sender, UsWork.FeedArgs e)
{
  LedFeed.Level = e.Value;
  LblFeed.Text = e.Format;
}
```

## 2.18 RealFeedAxesChanged

Event occurs to change the Real Axes Feed calculato in the CNC
**Must be enabled the parameter ENABLE_RFEED**
Contains an integer value of **F**
Format contains a string formatted to units of measurement set

**Esempio c#:**

```
private void RealFeedAxesChanged(object sender, UsWork.FeedArgs e)
{
  LedFeed.Level = e.Value;
  LblFeed.Text = e.Format;
}
```

## 2.19 HeadOffsetValueChanged

Event occurs to change the offset head following a **Hn** command
**Format** containing a value formatted string
**Index** index of the axis
**Value** containing the integer value of the offset axis

**Example c#:**

```
private void HeadOffsetValueChanged (object sender, UsWork.OffsetArgs e)
{
  labelval.Text = e.Format;
  Int32 Value = e.Value;
  Double ValZero = e.Value;
  ValZero /= MyUsIso.UsAxesValue.AxesResolution;;
}
```

## 2.20 MachineParametersUpdate

Evento occurs when one ore more machine parameters are changed by browser.

## 2.21 MulHandWheelChanged

Event occurs to change the multiplier value software for electronic handwheel. This event is generated even if the multiplier varies from application through VTB switch.
**Value** Int32 Contains the multiplier value

**Example c#:**

```
private void MulHandWheelChanged (object sender, UsWork.GenArgs e)
{
    Label1.Text=e.Value.ToString();
}
```

## 2.22 M_CnC_ExecuteChanged

Event that occurs at the end of a **M** function internal to the NC
**True** M in RUN
**False** M terminated

**Example c#:**

```
private void M_CnC_ExecuteChanged (object sender, UsWork.BoolArgs e)
{
  if(e.Value==true)
    // M START
  else
    // M terminated
}
```

## 2.23 OnCloseComRequest

Event occurs to end communication to NC

## 2.24 OverrideValueChanged

Event occurs to change the value of the Override Percentage FEED velocity axis.
**Value** Int32 analog input value (0-1023)
**PercValue** Percentage

**Example c#:**

```
private void OverrideValueChanged (object sender, UsWork.OverrideArgs e)
{
  LedOverride.Level = e.Value;
  LblOw.Text = e.PercValue + " %";
}
```

## 2.25 PauseChanged

Event occurs to change the pause state of NC
**True** NC in pause
**False** resume from pause

**Example c#:**

```
private void PauseChanged(object sender, UsWork.PauseArgs e)
{
  if (e.Value == false)
     // Resume
  else
     // PAUSE
}
```

## 2.26 RemoveMarkLineChanged

Event application required by simulation that enables an application to remove the marker line ISO. This event has a specific use is enabled only if the simulation with the file **Simulation.dll**. This file may take to the main interface to remove the marker line after an event **RequestMarkLineChanged**

## 2.27 RequestMarkLineChanged

Event application required by simulation that enables an application to mark a line in the Gcode ISO This event has a specific use is enabled only if the simulation with the file **Simulation.dll**. This file may take to mark a main interface
ISO line to highlight it

## 2.28 RunStopChanged

Event that occurs at the change of state of the NC STOP RUN
**True** NC in RUN
**False** NC in STOP

**Example c#:**

```
private void RunStopChanged(object sender, UsWork.BoolArgs e)
{
  ProgInRun = e.Value;
  if (e.Value == false)
    // from RUN to STOP
  else
    // from STOP to RUN
}
```

## 2.29 RunStopChangedWithType

Event that occurs at the change of state of the NC STOP RUN with RUN type
**True** NC in RUN
**False** NC in STOP

**Example c#:**

```
private void RunStopChangedWithType (object sender, UsWork.TypeRunArgs e)
{
    // TypeRun=0 Normal Run
    // TypeRun=1 Preview Run
    // TypeRun=2 Resume from Block Run
    // TypeRun=3 Retrace Run
    // TypeRun=4 Execution Time Calc Run
}
```

## 2.30 ScriptChanged

Event that occurs at the RUN / STOP ISONS script code that is invoked when the method IsoNs.ProgramRun.ExecuteScript
**True** Script RUN
**False** Script terminated

**Example c#:**

```
private void ScriptChanged(object sender, UsWork.BoolArgs e)
{
  if (e.Value == false)
    .. Terminated
  else
     .. in esecuzione
}
```

## 2.31 SelectAxisJogChanged

Event occurs to change the value of the selected axis to jog.
**e.value** axis selected

| | | |
|---|---|---|
| **0 → Axis X** | **1 → Axis Y** | **2 → Axis Z** |
| **3 → Axis A** | **4 → Axis B** | **5 → Axis C** |
| **6 → Axis U** | **7 → Axis V** | **8 → Axis W** |

**Example c#:**

```
private void SelectAxisJogChanged (object sender, UsWork.GenArgs e)
{
    Label1.Text=e.Value.ToString();
}
```

## 2.32 SpeedSpindleChanged

Event occurs to change the spindle speed in response to an instruction **S** from Gcode
**Value** Int32 **S** value
**Format** String formatted value
**PercValue** Double percentage of maxvalue ( maxvaluesetted in isous.cfg)

**Example c#:**

```
private void SpeedSpindleChanged(object sender, UsWork.FeedArgs e)
{
    LedSpeed.Level = e.Value;
    LblSpeed.Text = e.Format;
    LblPerc.Text=e.PercValue.ToString();
}
```

## 2.33 StartImportChanged

Event occurs when IMPORT instruction is executed
**e.FileName** Text of imported file.
**e.FileImportPath** File of imported file

## 2.34 StepModeChanged

Event occurs to change the state of NC by way of execution STEP by STEP (line by line) to the continuous play mode.
**True** Step Mode
**False** Normal mode

**Example c#:**

```
private void StepModeChanged(object sender, UsWork.BoolArgs e)
{
  if (e.Value == false)
    BtnStepMode.ImageIndex = 0;
  else
    BtnStepMode.ImageIndex = 1;
}
```

## 2.35 TabUtChanged

Event occurs to change the selected value of the tool table.
ISO function **Tn**
Value Int32 **T** number selected

**Example c#:**

```
private void TabUtChanged(object sender, UsWork.GenArgs e)
{
    Label1.Text=e.Value.ToString();
}
```

## 2.36 ToolDiameterChanged

Event occurs to change the settings of the tool diameter.
Created in response to an instruction of the **D** Gcode. The value is contained in an integer and represents the thousandths of a millimeter in diameter tool.

**Example c#:**

```
private void ToolDiameterChanged (object sender, UsWork.GenArgs e)
{
  m_ActDiam = e.Value;
}
```

## 2.37 ToolLengthChanged

Event occurs to change the tool length set by the Gcode
**Value** contains the value in thousandths of a millimeter of the tool length

**Example c#:**

```
private void ToolLengthChanged (object sender, UsWork.GenArgs e)
{
  m_ActLenUt=e.Value;
}
```

## 2.38 UsFatalError

If this event is allocated, IsoUs does'not manages the fatal Errors by notify the external application can get the events from Fatal Errors

```
void MyUsIso_UsFatalError(object sender, UsWork.UsFatalErr e)
{
  MessageBox.Show("ERROR CN : " + e.UsCnNumber.ToString() + "\n" + e.UsErrorMessage);
}
```

## 2.39 UsNotifyChanged

System Notify
Type:

| | |
|---|---|
| **CNC ALARM** | Alarm on CNC |
| **CNC WARNING** | Warning on CN |
| **DEFINE ERROR** | Defined Error by user (ERROR Gcode Function) |
| **GCODE ERROR** | Error in Gcode |
| **INFORMAZIONI** | Info |

**Example c#:**

```
private void MyUsIso_UsNotifyChanged(object sender, UsWork.UsNotify e)
{

        switch(e.NotifyType)
        {
          case UsWork.IsoUs.UsNotifyType.UsCncAlarm:
            // CNC in Alarm
            MessageBox.Show("CNC ALARM : " + e.NotifyDescription);
            break;
          case UsWork.IsoUs.UsNotifyType.UsCncWarning:
            // CNC in Warning
            MessageBox.Show("CNC WARNING : " + e.NotifyDescription);
            break;
          case UsWork.IsoUs.UsNotifyType.UsGcodeDefineError:
            // Error define by User
            MessageBox.Show("CNC ERROR DEFINE BY USER : " + e.NotifyDescription);
            break;
          case UsWork.IsoUs.UsNotifyType.UsGcodeError:
            // Error in Gcode
            MessageBox.Show("ERROR IN GCODE : " + e.NotifyDescription);
            break;
          case UsWork.IsoUs.UsNotifyType.UsInfo:
            // Information
            MessageBox.Show("INFO : " + e.NotifyDescription);
            break;
        }

    }
```

## 2.40 VariableUserChanged

Event that occurs at the change of a variable USER GENERIC IsoUs.cfg configured.
GENERIC USER variables can be used for data exchange between NC and PC (since these are manageable by applying the CN VTB )
**Value** Int32 Array that contains the value of USER changed
**Mask** Bit mapped indicate which USER is changed
Bit 0 User configured 1
Bit 1 User configured 2 etc.
Only those with bit 1 are changed

**Example c#:**

```
private void VariableUserChanged(object sender, UsWork.UserGeneric e)
{
  Int32 P=1;
  for(int n=0;n<e.Value.Length;n++) // check variable changed
  {
    if((e.Mask & P)==P) // variable changed
      LblUser.Text = e.Value[n].ToString();
    P <<= 1;   // shift bit
  }
}
```

## 2.41 WorkLineDemandChanged

Event occurs to change the number of demand lines running
**Value** contains an integer number of demand line running

**Example c#:**

```
private void WorkLineDemandChanged (object sender, UsWork.GenArgs e)
{
    Label1.Text=e.Value.ToString();
}
```

## 2.42 WorkLineRealChanged

Event occurs to change line number REAL running on CN
This line number may differ from the demand.
**Value** contains an integer number of CURRENT line running

**Example c#:**

```
private void WorkLineRealChanged (object sender, NsWork.GenArgs e)
{
    Label1.Text=e.Value.ToString();
}
```

## 2.43 WorkPlaneSetChanged

Event occurs to change the work plan as a result of the NC **G17 G18 G19 G70** instructions
**WorkPlaneSet** contains an array of string with the names of the two axes

**Example c#:**

```
private void PianoChanged(object sender, UsWork.WorkPlaneArgs e)
{
  LblPiano1.Text = e.WorkPlaneSet0];
  LblPiano2.Text = e.WorkPlaneSet0[1];
}
```

### *2.44 UsCompiler.CodeLoaded*

Event occurs when the compiled code is loaded in the IsoUs memory
Now is ready to work

### *2.45 G43Changed*

Event occurs when the G43 changes its state
**Value** **True** G43 Enabled
**False** G43 Disabled

### *2.46 Us2ndLimitsChanged*

Event occurs when the 2nd limits are changed
**Value**
**True** 2nd Limits Activated
**False** 2nd Limits Deactivated

# 3 Methods and Properties of UsWork

## 3.1 *Double AxisValueToDoubleUs (Int32 AxisIntValue)*

Return a double value of an Integer Axis Value.
The return value considers the Axes Resolution

## 3.2 *Void PutNotify(String NotifyText)*

**Sends a notify to Notify Manager.**
**Follows an event UsNotifyChanged**
**The notify is also put in the IsoUs_x.log file**

## 3.3 *Void EndSession()*

**Close all communications**

## 3.4 *Void ForceEventAxesValue()*

**Force the Events**
**AxesDemandValueChanged**
**AxesRealValueChanged**
**AxesOriginsChanged**
**AxesOffsetChanged**

## 3.5 *Void SetIsoUsCnC (Int32 IndexCn, String CfgName)*

Init the CnC session
**IndexCn** Index of CNC from 0 to 7 (multiprocess)
**CfgName** Name of configuration file (normally **"IsoUs.cfg")**
Before to call **SetIsoUsCnC** the keys that indicate the location and configuration to be loaded must be registered
The CNC can't be connected to PC. This means the the IsoUs is in DEMO MODE.
Read **IsoUsModeRun**. If **False** the CNC is in DEMO MODE

## 3.6 *Bool IsoUsModeRun*

Property Read
**True** CNC in NORMAL MODE
**False** CNC in DEMO MODE

## 3.7 *Int32[] GetIndexCnC*

Property Read
Get the CnC Index setted by **SetIsoUsCnC**

## 3.8 Int32[] *WorkPlaneSet*

Property Read Write
Work plane setted
Array of Int32[2:
Int32[0] Index of the first Axis of Work Plane
Int32[1] Index of the second Axis of Work Plane

```
Int32[] _Plane = new Int32[2];
_Plane[0] = 0; //X
_Plane[1] = 2; //Z
MyUsIso.WorkPlaneSet = _Plane;
```

### *3.9* String *GetNameConfigIsoUs*

Property Read
Return the name of configuration file

### *3.10* String *GetPathIsoUs*

Property Read
Return the Path of configuration file

# 4 Classi di UsWork

## *4.1 MyMaster*

***Do not use***

## *4.2 UsAxesHomingEnable*

It contains all the methods that manage the Property **HOMING** and **ENABLE** of the axes

### 4.2.1 *bool* AllAxesRedy

Property Read
**True** All Axes Reday – Homing and Enable performed
**False** All Axes not ready

### 4.2.2 Int32[] GetAxesHomingSequence

Property Read
Returns the axes sequence homing configured

Ex:
**AXES CONFIGURED X,Y,Z**
**Sequence configured 2,1 (0 not homing)**
**Return GetSeqHoming Int32 array**i:
**Int32[0]=2**
**Int32[1]=1**
**Int32[0]=0**

**The first axis is Z**
**The second axis is Y**
**The third axis is X**

### 4.2.3 Void EnableAxis(Int32 AxisIndex, bool State)

Enable/Disable Axis
**AxisIndex** Index of axis
**State** **True** Enable
**False** Disable
The number of axis refers to the index of axes configured (0=X – 1=Y 2=Z etc.)
At this stage you can manage the parameter **TIMEOUTENABLE**

### 4.2.4 Void PresetAbsoluteEncoder(Int32 AxisIndex)

Method that executes the preset ZERO for multi-turn absolute encoder type.
This method sets the current position of the CN as ZERO. The method should be used when you want to fix the ABSOLUTE ZERO for the first time.
**AxisIndex** Index of axis

### 4.2.5 Int32 ReadEncoderIndexShift(Int32 AxisIndex)

Method that reads the phase shift in the pulse encoder zero mark in relation to micro-homing.
The value is updated after searching the zero axis.
This method is valid only for boards that are connected encoder with zero mark on the CN
**AxisIndex** Index of axis

### 4.2.6 bool ResetAxesHoming(bool[] Axes)

Reset the Homing
**Axes** Array of bool. The position with **True** indicate, the reset bit of axis

### 4.2.7 Void StartHomingAxis(Int32 AxisIndex)

Run start axis homing procedure
The number of axis refers to the index of axes configured (0=X – 1=Y 2=Z etc.)
At this stage you can manage the parameter TIMEOUTHOME
**AxisIndex** Index of Axis

### 4.2.8 Void StopHomingAxis()

Stop homing sequence. The axis that is making the homing is stopped.

## *4.3 UsAxesManualJog*

Manual movimentation Axes

### 4.3.1 Bool AbsoluteRelativeJog

Property Read Write
Get or Set absolute/relative movimentation
**False** Absolute
**True** Relative

### 4.3.2 Bool ExternalJogActivated

Property Read Write
**False** External Axes selector Disabled
**True** External Axes selector Enabled

### 4.3.3 Int HandWheelMultiplier

Property Read Write
Handwheel multiplier read or set x1 x10 x100 x1000

### 4.3.4 Int SelectAxisForJog

Property Read Write
Read or set the axis for **MoveSelectAxisJog()**

### 4.3.5 Void MoveAxisJog(int AxisIndex,bool Direction)

JOG Axis to direction. The axis is selected by **AxisIndex**.
**AxisIndex** Index of Axis
**Direction** **True**/**False** Direction
**WARNING!!!**
Use **StopMove()** for stop movimentation

**Example c#:**

```
// Button down
private void button1_MouseDown(object sender, MouseEventArgs e)
{
   IsoNs.JogAxis.Jog(0,true);
}
// Button Up
private void button1_MouseUp(object sender, MouseEventArgs e)
{
   IsoNs.JogAxis.StopMove();
}
```

### 4.3.6 Void MoveAxisToTarget(double Target, Int32 AxisIndex)

Method that moves the axis to the position shown in Axis Target passed as doubles.
The unit of measurement of target position is set in the configuration.
If the CNC is in RELATIVE MOTION **AbssoluteRealtiveJog = True** target position is considered as the distance traveled from the point where it is the axis.
If the CNC is in ABSOLUTE MOTION **AbssoluteRealtiveJog = False** Target position is considered by the machine zero set for the axis movement

**Target** Axis target position
**AxisIndex** Index of Axis to be moved
**WARNING!!!**
Use **StopMove()** for stop movimentation

### 4.3.7 Void MoveSelectAxisJog(bool Direction)

JOG Axis to direction. The axis is selected **SelectAxisForJog**
**Direction** **True**/**False** Direction
**WARNING!!!**
Use **StopMove()** for stop movimentation

### 4.3.8 Int32 ReadHandWheelMultiplier()

Return the Handwheel muliplier selected

### 4.3.9 Void SelectAxisHandMult(Int32 AxisIndex,Int32 HandWheelMultValue)

Select the HandWheel multiplier
**AxisIndex** Index of Axis
**HandWheelMultValue** Mulpilier value
The multiplier must have the following values

**1** → **x1**
**10** → **x1**
**100** → **x100**
**1000** → **x1000**

**WARNING!!!**
If you are using an electronic hand wheel with gearbox software, you should always use this method instead of the Property **SelectAxisForJog**.

### 4.3.10 Void SetPositionAxisShift(Int32 AxisIndex,double ShiftValue)

This method, moves the axis in Shift mode. The value ***ShiftValue*** is added at actual axis position (also if the axis is in moving). The entire position is reached during a time depending by parameter **TSHF**_...This value indicate the increment xTAU
**AxisIndex** Index of Axis
**ShiftValue** Value of Shift
Ex:
***TAU=2 Ms***
***ShiftValue=100***
***TSHF_=10***
The entire position is reached in 20 Ms

### 4.3.11 Void StopAllMove()

Stop all manual movements

## *4.4 UsAxesValue*

Axes value

### 4.4.1 Int32 AxesResolution

Property Read
Axes value resolution setted in IsoUs.cfg

### 4.4.2 double CncTaskTime

Property Read
CNC sample time setting (millisecond)

### 4.4.3 Int32 FeedResolution

Property Read
Feed value resolution setted in IsoUs.cfg

### 4.4.4 double ReadDemandPosition(Int32 AxisIndex)

Reads the Demand position
**AxisIndex** Index of Axis

### 4.4.5 double ReadRealPosition(Int32 AxisIndex)

Reads the Real position
**AxisIndex** Index of Axis

### 4.4.6 double ReadRelativeDemandPosition(Int32 AxisIndex)

Reads the Relative (without offset) Demand position
**AxisIndex** Index of Axis

### 4.4.7 double ReadRelativeRealPosition(Int32 AxisIndex)

Reads the Relative (without offset) Real position
**AxisIndex** Index of Axis

## *4.5 UsBreaKPoints*

It contains all the methods and properties to insert breakpoints. Breakpoints allow you to terminate the program at a desired point.
Once the program execution reaches the breakpoint that stops going to PAUSE.

### 4.5.1 Int32[] GetAllBreakPoint()

Return Array of Int32 containing all linee number of breakpoints inserted

### 4.5.2 Int32 InsertBreakPoint(Int32 LineNumber)

Insert a break point
**LineNumber** Gcode Line Number
Return:
**0** Break Point Ok
**1** Break Point All ready inserted
**2** Debug not activated

### 4.5.3 Bool IsBreakPoint(Int32 LineNumber)

Check if there is a Break point
**LineNumber** Gcode Line Number
Return:
**True** There is a BreakPoint
**False** There is not a BreakPoint

### 4.5.4 Void RemoveAllBreakPoints()

Remove all break Points

### 4.5.5 Void RemoveBreakPoint(Int32 LineNumber)

**LineNumber** Gcode Line Number
Return:
**0** Break Point not inserted at line number
**1** Break Point removed ok
**2** Debug not activated

## *4.6 UsCalcTime*

Manages all function for Gcode execution time calcolation

### 4.6.1 TimeSPan GetTotalTime

Property Read
Returns the time in second for Gcode execution

### 4.6.2 bool ExecuteCalcTime()

Start the cala time funtion
It is finished with event RunStop
Ritorna:
**True** Start Ok
**False** CNC not ready
**GetTotalTime** contains the timespan

## *4.7 UsCnErrors*

It contains all the methods and properties to handle errors at the NC following an event **NotifyChanged**

### 4.7.1 bool GetErrors(out String[] CnErrors,out String[] UsErrors)

Return:
**False** no errors
**True** Errors
**CnErrors** array string of CNC errors(null none CNC errors)
**UsErrors** array string of IsoUs Errors (null none IsoUs errors)

### 4.7.2 void ResetCnCAlarms()

Reste the CNC alarms

## *4.8 UsCnCMemory*

Cnc Memory management.

### 4.8.1 Byte[] ReadArrayByteMemory(Int32 MemoryAddress,Int32 Length)

Reads an array of Bytes from CNC

**MemoryAddress** Start memory Addres on CNC

**Length** Number of bytes to read

Return:

**Array** of bytes

### 4.8.2 Int16[] ReadArrayInt16Memory(Int32 MemoryAddress,Int32 Length)

Reads an array of Ont16 from CNC

**MemoryAddress** Start memory Addres on CNC

**Length** Number of Int16 to read

Return:

**Array** of Int16

.

### 4.8.3 Int32[] ReadArrayInt32Memory(Int32 MemoryAddress,Int32 Length)

Reads an array of Int32 from CNC

**MemoryAddress** Start memory Addres on CNC

**Length** Number of Int32 to read

Return:

**Array** of Int32

### 4.8.4 void WriteArrayByteMemory(Int32 MemoryAddress, Byte[] DataValues)

Wrtite an array of Bytes in CNC memory

**MemoryAddress** Start memory Addres on CNC

**DataValues** Array of bytes to write

### 4.8.5 void WriteArrayInt16Memory(Int32 MemoryAddress, Int16[] DataValues)

Wrtite an array of Int16 in CNC memory

**MemoryAddress** Start memory Addres on CNC

**DataValues** Array of Int16 to write

### 4.8.6 void WriteArrayInt32Memory(Int32 MemoryAddress, Int32[] DataValues)

Wrtite an array of In32 in CNC memory

**MemoryAddress** Start memory Addres on CNC

**DataValues** Array of Int32 to write

## 4.9 UsCncMFunctions

It contains all the methods to execute the M in the CNC

### 4.9.1 Void Break_M_Function()

Break all M in execution on the CNC
The VTB Application must stop all M in execution
This method sets only the flag
**ISOV1_STATUS_M_STOP**

### 4.9.2 bool Execute_M_Cnc(Int32 Code_M_Function, Int32[] ParametersValue)

Run M On NC.

| | |
|---|---|
| **Code_M_Function** | **M** code |
| **ParametersValue** | Int32 Array M paramaters (max number for parameters is defined IsoUs.cfg – default 10) |

Return:
**True** M Run
**False** M not configured

**Example c#:**

```
private void GoM()
{
  Int32[] Param=new Int32[3];  // 3 parameters
  // assign the parameters values
  Param[0]=10;
  Param[1]=20;
  Param[2]=30;
  // Start M100
  if(MyIsoUs.UsCncMFunctions.Execute_M_Cnc(100, Param)==false)
    // error
}
```

### 4.9.3 Int32 ReadCnC_M_Parameters(Int32 ParameterNumber)

Read the M parameter on NC .This feature allows a complete interaction between the NC and the functions M PC application. If a function M activated the CN values must communicate to the PC is possible via this function

| | |
|---|---|
| **ParameterNumber** | Parameter number on NC (0 to 10) |

Return
Parameter value

### 4.9.4 bool WriteCnC_M_Parameters(Int32 ParameterNumber,Int32 ParameterValue)

Write a M par on NC

| | |
|---|---|
| **ParameterNumber** | Parameter number |
| **ParameterValue** | Value |

Return
**True** ok
**False** error
This method can also be used to write the variables defined by the compiler ... $ _PARAM1

## *4.10 UsCnCStatusWord*

Questa classe contiene tutte le Property realtive allo stato del CN.

### 4.10.1 bool IsAbsoluteRealtiveMotion

Property Read
Absolute/relative motion
**True** Relative Motion
**False** Absolute motion (refrence to ZERO MACHINE)

### 4.10.2 bool IsStatusAxesMove

Property Read
Indicates the axes status movements
**True** Axes Moviment
**False** Axes stop

### 4.10.3 bool[] IsStatusEnableAxes

Property Read
Axes enable status.
Return a boolean array to length axes number
The relative array index contains the status enabled axis
**True** Axis enabled
**False** Axis disabled

### 4.10.4 bool IsStatusError

Property Read
Status NC error
**True** NC in error
**False** NC OK

### 4.10.5 bool IsStatusExternalOverride

Property Read
Indicates the exetrnal override status
**True** External Override Enabled
**False** External Override Disabled

### 4.10.6 bool[] IsStatuHomingAxes

Property Read
Axes homing status
Return a boolean array to length axes number
The relative array index contains the status homing axis
**True** Axis homing OK
**False** Axis homing NOT OK

### 4.10.7 bool IsStatusPause

Property Read
Indicates NC Stautus PAUSE
**True** PAUSA NC
**False** PAUSA terminated

### 4.10.8 bool IsStatusProbe

Property Read
Indicates the acquisition state (test after StartAcq())
**True** Acquisition terminated
**False** Acquisition in RUN

### 4.10.9 bool IsStatusRun Property di tipo Boolean- Read Only

Property Read
Indicates the NC statusRUN STOP
**True** NC in RUN or PAUSE (check **IsStatusPause**)
**False** NC in STOP

### 4.10.10 bool IsStatusStepMode

Property Read
Indicates the NC mode execution Gcode STEP MODE or NORMAL MODE
**True** STEP MODE
**False** NORMAL MODE

### 4.10.11 bool IsStatus_M_Execution

Property Read
Indicates if M to NC is in RUN
**True** M in RUN
**False** M Terminated

## *4.11 UsCompiler*

Manages the Gcode Compilation

### 4.11.1 List<Compiler.MarkerCs> GetMarker

Property Read
Returns the LIST of marker defined in Gcode

### 4.11.2 List<Compiler.DimaArray> GetUsArray

Property Read
Returns the LIST of array defined in Gcode

### 4.11.3 List<string[]> GetUsDefine

Property Read
Returns the LIST of "define" defined in Gcode

### 4.11.4 List<string> GetUsFixedVariables

Reserved

### 4.11.5 List<string> GetUsVariables

Property Read
Returns the LIST of $ Variables defined in Gcode

### 4.11.6 string LastFileCompiled

Property Read
Returns the path of last file compilated

### 4.11.7 Int32 LastTotalCodeLoaded

Property Read
Returns the number of bytes loaded last time

### 4.11.8 Int32 TotalLinesCompiled

Property Read
Returns the number of lines compiled

### 4.11.9 UsWork.IsoUs.UsErrorCompiler[] CompileGcode(string Gcode,bool CanLoadCode, out Int32 TotalLines)

Compile Gcode from Text

| | |
|---|---|
| **Gcode** | Text of Gcode (must be UPPERCASE) |
| **CanLoadCode** | True automatic load in memory |
| **TotaLines** | Returns the number of lines compiled |

Return:
**Array** UsErrorCmpiler, or **null** if none errors

### 4.11.10 UsWork.IsoUs.UsErrorCompiler[] CompileGcodeFromBlock(string GcodePathFile,bool CanLoadCode, out Int32 TotalLines)

Compile Gcode from Block Execution

| | |
|---|---|
| **GcodePathFile** | Path Gcode |
| **CanLoadCode** | True automatic load in memory |
| **TotaLines** | Returns the number of lines compiled |

Return:
**Array** UsErrorCmpiler, or **null** if none errors

#### 4.11.11 UsWork.IsoUs.UsErrorCompiler[] CompileGcodeFromFile(string GcodePathFile,bool CanLoadCode, out Int32 TotalLines)

Compile Gcode from file
**GcodePathFile** Gcode Path
**CanLoadCode** True automatic load in memory
**TotaLines** Returns the number of lines compiled
Return:
**Array** UsErrorCmpiler, or **null** if none errors
**WARNING This Function is Deprectaed Use CompileGcodeFromPathFile**

#### 4.11.12 UsWork.IsoUs.UsErrorCompiler[] CompileGcodeFromPathFile(string GcodePathFile,bool CanLoadCode, out Int32 TotalLines)

Compile Gcode from file
**GcodePathFile** Gcode Path
**CanLoadCode** True automatic load in memory
**TotaLines** Returns the number of lines compiled **or -1 if file not found**
Return:
**Array** UsErrorCmpiler, or **null** if none errors

#### 4.11.13 bool LoadCode()

Load in the memory the Gcode compiled
Return:
**True** Ok
**False** Error

## 4.12 UsConfig

It contains all the methods and properties that manage the configuration of the NC.
The configuration is read from the file IsoUs.cfg.

## *4.13 UsGcodeRun*

This class manages the execution of the ISO program

### 4.13.1 double Feed

Property Read Write
Reads or Set the Gcode **FEED**
Normally the **FEED** is setted by Gcode **F** function

### 4.13.2 bool SelectStepMode

Property Read Write
Get/Set the run STEP MODE Gcode
**True** Step Mode enabled
**False** Normal run

### 4.13.3 bool BackupCode()

BackUp the last code compiled.
This can be recovered by **RestoreGcode()**
BackUp avoids to recompile a Gcode file
Return**:**
**True** Ok
**False** BackUp non effettuato

### 4.13.4 bool ExecuteGcode(Int32 NlineStart)

Executes the Gcode loaded
**NlineStart** Number of Line of Start
if **NlineStart >0**, it means RESUME FROM BLOCK and the **MGOBLOCK** is performed
Return**:**
**True** Ok
**False** Error

### 4.13.5 Void ExecuteGcodeFromMarker(Int32[] AddressMarker,Double[] ValuesMarker)

Executes the Gcode when the conditions of the indicated marker.
**MARKER**
*Markers are placed in the part of the normal variables.*
*IsoNs Gcode can resume when these variables have reached a certain value.*
*In advanced programming with the use of VARIABLES and LOOP CYCLE, the recovery from the number of lines is not sufficient, since the positions axes can be increased from the value of variables that are detreminate a loop LOOP. Using markers, you can resume the Gcode by the value of one of these and not by line number, so it is possible to discriminate the resumption of cycles inside LOOP.**AddressMarker*** *Array di Int32 che contiene l' indirizzo fisico in memoria delle variabili MARKER recuperabile con la Property GetMarker, la quale ritorna un Lista di tipo* Compiler.MarkerCs
**AddressMarker** Array of Int32 that contains the memory address of Markers get by Compiler.MarkerCs
**ValuesMarker** Value must have each marker so that the restart condition is satisfied

***Ex:***
In the following example defines a variable Marker named **$INC**.

```
MARKER $INC NUMBER OF LOOP
$VAR=0
$INC=0
```

```
F5
G1X0Y0
LOOP 10
        $INC=$INC+1
        G1X200
        $VAR=$VAR+50
        G0X0Y[$VAR]
END_LOOP
```

You can then enable the resumption of the Gcode when the variable $ INC (the MARKER) assumes a certain value.

```
private void GoMarker()
{
  List<Compiler.MarkerCs> MyMarker = MyUsIso.UsCompiler.GetMarker; // Read Markers
  Int32[] AddrMarker = new Int32[MyMarker.Count];
  for (int n = 0; n < MyMarker.Count; n++)          // Copy address
    AddrMarker[n] = MyMarker[n].AddrVar;
  Int32[] ValMarker = new Int32[1]; // insert the marker value ($INC)
  ValMarker[0] = 5;                          // recovery after 5 cycles
  MyUsIso.UsGocodeRun.ExecuteGcodeFromMarker(AddrMarker, ValMarker); // Start
}
```

### 4.13.6 Void ExecuteGcodeFromMarkerAndLine(Int32[] AddressMarker,Double[] ValuesMarker,Int32 LineNumber)

Equal to **ExecuteGcodeFromMarker** but the LineNumber condition must be satisfied

**LineNumber** Number of line

### 4.13.7 bool ExecuteGcodeScript(String GcodeScript, out UsWork.IsoUs.UsErrorCompiler[] Errors)

Execute Script code

***A script behaves differently from a normal Gcode, as this does not handle a full movement of the axes but only G0 and G1 and can also be run at when the CN is in a state of PAUSE***

**GcodeScript** Text of IsoUs Gcode Script

**Errors** **UsWork.IsoUs.UsErrorCompiler[]** Errors

Return:

**True** Ok

**False** Error

**Example C#**

```
private void Script()
{
  UsWork.IsoUs.UsErrorCompiler[] _Errors;
  if(!MyUsIso.UsGcodeRun.ExecuteGcodeScript("F5G1X100Y100,Z100\nG4F2\nX0Y0Z0", out _Errors))
  {
    if(Errors!=null)
    {
      for (int n = 0; n < Errors.Length; n++) // check errors
        Label1.Text += "E:" + Errors [n].Nline + " " + Errors [n].ErrorType;
    }
    else
      // execution Error
  }
  // Ok
}
```

### 4.13.8 Void PauseGcode()

Pause Gcode
Is performed **MPAUSE** configured
From a state of PAUSE you can share the exact point where it stopped working by invoking the method **ExecuteGcode(0)**.
Is performed **MGOPAUSE** configured

### 4.13.9 bool RestoreGcode()

Recovery the code saved with **BackUpGcode()**
This is loaded in memory redy to work
Return**:**
**True** Ok
**False** Restore Error

### 4.13.10 Void StopGcode()

Force STOP Gcode
Is performed **MSTOP**configured

### 4.13.11 Int32 WorkLineReal()

Read Real line in esecution. Can also use event **WorkLineRealChanged**
It can be used when the CN is in STOP after an alarm to get the precise line of interruption of the Gcode.

## *4.14 UsGcodeVariables*

This class provides access to the read and write variables ISONS Gcode.
Variables accessible are those of general type $.
It is necessary that the Gcode has been compiled.
The following variables are always at a fixed address

| Name | Address | Name | Address |
|---|---|---|---|
| $_PARM_1 | 0 | $_PARM_6 | 5 |
| $_PARM_2 | 1 | $_PARM_7 | 6 |
| $_PARM_3 | 2 | $_PARM_8 | 7 |
| $_PARM_4 | 3 | $_PARM_9 | 8 |
| $_PARM_5 | 4 | $_PARM_10 | 9 |

The above variables can be read and written also before the Gcode compilation
The possibility of writing the variables of the Gcode allows you to configure the processing cycle in a parametric mode.

### 4.14.1 List<string> GetAllVariablesName

Property Read
Get all Variable configured
Return:
The list of string with Variables Name without $

### 4.14.2 Int32 GetVariableAddress(String VariableName)

Get variable Address
**VariableName** Variable name without $
Return:
**>=0** Variable Address
**-1** Variable not found

### 4.14.3 String GetVariableName(Int32 VariableAddress)

Get variable Name
**VariableAddress** Variable Address
Return:
**Name** Variable name without $
**“”** Variable not found

### 4.14.4 double ReadVariableByAddress(Int32 VariableAddress)

Read Variable by Address
**VariableAddress** Variable Address
Return:
**Value double**
**Exception variable not found**

### 4.14.5 double ReadVariableByName(string VariableName)

Read Variable by Name
**VariableName** Variable name without $
Retrun:
**Value double**
**Exception variable not found**

#### 4.14.6 bool WriteVariableByAddress(Int32 VariableAddress,double VariableValue)

Write Variable by Address
**VariableAddress** Variable Address
**VariableValue** Value
Return:
**True** Ok
**False** Variable not found

#### 4.14.7 bool WriteVariableByName(string VariableName,double VariableValue)

Write Variable by Name
**VariableName** Variable name without $
**VariableValue** Value
Return:
**True** Ok
**False** Variable not found

## 4.15 UsInputOutput

It contains all the methods and properties to manage all the resources of the NC Input Output. The management of these resources depends on the type of CN used and the hardware configuration.

### 4.15.1 bool ReadDigitalInput(Int32 InputNumber)

Read Digital Input
**InputNumber** Digital Input from 0 to 255
Return:
**True** ON
**False** OFF

### 4.15.2 bool ReadDigitalOutput(Int32 OutputNumber)

Read Digital Output
**OutputNumber** Digital Output from 0 to 255
Return:
**True** ON
**False** OFF

### 4.15.3 Int32 ReadGroupDigitalInputs(Int32 Group)

Read a Group of Digital Inputs
**Group** Group from 0 to 7 (0 first 32 digital inputs)
Return:
32 bit Digital Inputs
**Bit Set** ON
**Bit Reset** OFF

**Example c#:**

```
private void TestInput()
{
   // Read first group
   Int32 Group = MyUsIso.UsInputOutput.ReadGroupDigitalInputsg(0);
   // Test input1 and 5
   if((Group & 1)==1 && (Group & 16)==16)
      // ON
}
```

### 4.15.4 Int32 ReadGroupDigitalOutputs(Int32 Group)

Read a Group of Digital Outputs
**Group** Group from 0 to 7 (0 first 32 digital outputs)
Return:
32 bit Digital Outputs
**Bit Set** ON
**Bit Reset** OFF

### 4.15.5 void WriteDigitalOutputs(Int32 OutputNumber,bool OutputState)

Write a Digital Outputs
**OutputNumber** Digital Output from 0 to 255
**OutputState** State **1** ON **0** OFF

## *4.16 UsLogFile*

Log file management

### 4.16.1 string PathUsLog

Property Read Write
Set or Get the Path of Log file

## *4.17 UsMachineParameters*

This class manages all parameters of CN.
All machine parameters are stored in the file and must be IsoUs.cfg

### 4.17.1 UsWork.UsMachineParametersCs.AxesVisType AxesValueMode

Property Read Write
Get or Set the type of read axes values:

| | |
|---|---|
| **DEMAND_POSITION** | Demand Position |
| **DEVIATION_POSITION** | Following error |
| **DISABLE** | only DEMAND_POSITION |
| **REAL_POSITION** | Real Position |

### 4.17.2 List<ComSynk.ParametriMacchina> MyParameterList

Property Read
Return the List of machine parameters

### 4.17.3 Int32 NumberOfParameters

Property Read
Return the number of machine parameters

### 4.17.4 String[] ParametersGroups

Property Read
Return the GROUP configured (ex: General,Axis X etc.)

### 4.17.5 String PathUsCfg

Property Read
Return the IsoUs.cfg Path

### 4.17.6 Void DownLoadParamaters()

Reads all the configuration parameters IsoUs.cfg and saves them in preparing an internal list to read the other of these methods.
**This should be in every case the first method to be invoked before the management parameters.**

### 4.17.7 bool GetParameterDataByIndex(Int32 ParameterIndex, out String ParameterName,out String ParameterDescr,out String ParameterGroup,out Int32 ParameterValue,out Int32 ParameterAddress)

Get a parameter from Index

| | |
|---|---|
| **ParameterIndex** | Index of parameter in the internal List |
| **ParameterName** | Return Parameter Name |
| **ParameterDescr** | Return Parameter Description |
| **ParameterGroup** | Return Parameter Group |
| **ParameterValue** | Return Parameter Value |
| **ParameterAddress** | Return Parameter Address on CNC |

Return:
**True** Ok
**False** Paramater not found or **DownLoadPara()** not performed

#### 4.17.8 bool GetParameterDataByName (String ParameterName, out Int32 ParameterIndex,out String ParameterDescr,out String ParameterGroup,out Int32 ParameterValue,out Int32 ParameterAddress)

Get a parameter from Name

| | |
|---|---|
| **ParameterName** | Parameter Name (CASE Sensitive) |
| **ParameterIndex** | Return Parameter Index |
| **ParameterDescr** | Return Parameter Description |
| **ParameterGroup** | Return Parameter Group |
| **ParameterValue** | Return Parameter Value |
| **ParameterAddress** | Return Parameter Address on CNC |

Return:
**True** Ok
**False** Paramater not found or **DownLoadPara()** not performed

#### 4.17.9 bool GetParameterExtendedData(Int32 ParameterIndex, out Int32 Transform,out Int32 MinValue,out Int32 MaxValue,out Int32 PassWordLevel,out Int32 Familiy, out Int32 AxisIndex, out List<ComSynk.EnumCs> Enums)

Get a parameter extend data from Index

| | |
|---|---|
| **ParameterIndex** | Index of parameter in the internal List |
| **Transform** | Return Parameter Transform |
| **MinValue** | Return Parameter Minimum Value |
| **MaxValue** | Return Parameter Maximum Value |
| **PassWordLevel** | Return Parameter Password Level |
| **Family** | Return Parameter Familiy |
| **AxisIndex** | Return Parameter Axis Index (-1 none Axis) |
| **Enums** | Return Parameter ENUMERATIVE DESCRIPTION (if present) |

Return:
**True** Ok
**False** Paramater not found or **DownLoadPara()** not performed

#### 4.17.10 bool GetParameterValueByIndex(Int32 ParameterIndex,out Int32 ParameterValue)

Get a parameter from Index

| | |
|---|---|
| **ParameterIndex** | Index of parameter in the internal List |
| **ParameterValue** | Return Parameter Value |

Return:
**True** Ok
**False** Paramater not found or **DownLoadPara()** not performed

#### 4.17.11 bool GetParameterValueByName (String ParameterName,out Int32 ParameterValue)

Get a parameter from Name

| | |
|---|---|
| **ParameterName** | Parameter Name (CASE Sensitive) |
| **ParameterValue** | Return Parameter Value |

Return:
**True** Ok
**False** Paramater not found or **DownLoadPara()** not performed

#### 4.17.12 bool RestoreUsCfgBackUp()

Restore thye BackUp copy
Return:
**True** Restore Ok
**False** Error

#### 4.17.13 Void SaveUsCfg()

Save in the **IsoUs.cfg** the parameter internal list
Before, a copy of backup is made (use **RestoreUsCfgBackUp())**

#### 4.17.14 Void SendAllParameters()

Send all Parameters to CNC
Some parameters are available only after **UpdateParameters()**

#### 4.17.15 Void UpdateParameters()

Update the parameters
Call it after **SendAllParameters()**

#### 4.17.16 bool WriteParametersByIndex(Int32 ParameterIndex, Int32 ParameterValue, bool WriteInCnC)

Write a parameter by Index
**ParameterIndex** Index of parameter in the internal List
**ParameterValue** Parameter Value
**WriteInCnC** if **True** the Parameter is send to CNC (the **UpdateParameters() is not called**)
Return:
**True** Ok
**False** Error

#### 4.17.17 bool WriteParametersByName(string ParameterName, Int32 ParameterValue, bool WriteInCnC)

Write a parameter by Name
**ParameterName** Parameter Name
**ParameterValue** Parameter Value
**WriteInCnC** if **True** the Parameter is send to CNC (the **UpdateParameters() is not called**)
Return:
**True** Ok
**False** Error

## *4.18 UsMHMfunctions*

It contains all the methods that handle the compilation and Property of M and HM, which are run at a PC (not inside the CN)
These can then be retrieved by the method ExecuteMtoCn.GoMtoCn (....)

### 4.18.1 bool GenerateHMFunction (Int32 HMFunctionNumebr, String GCode,out UsWork.IsoUs.UsErrorCompiler[] Errors)

### 4.18.2 bool GenerateMFunction (Int32 MFunctionNumebr, String GCode,out UsWork.IsoUs.UsErrorCompiler[] Errors)

This method allows you to fill out a HM or M function and save it automatically in the configuration folder.
**..FunctionNumber** M or HM number
**GCode** String Code ISO
**Errors** Array Error compiler
Return:
**True** M/HM Ok
**False** Error

## *4.19 UsOffsetAndOrigins*

This class manages the capabilities of the MANUAL WORK ORIGIN.
IsoUs manipulate an array of 256 different positions for WORK ORIGIN. The positions are indexed by GCODE instruction **USER_ZERO Index Value**.
This function is the same of GCODE G94

### 4.19.1 List<ComSynk.FileZeri> GetAllOriginsByFile

Property Read
Get all origins setted in the dafault file
Return:
List of 9 string position that contains the values of origin for single Axis
**The List position is the Index of Origin**

### 4.19.2 bool HeadOffsetSuspend

Property Read Write
Suspend or Resume the Heads Offset selected by **Hn**
**False** Suspend (As G87)
**True** Resume (As G88)

### 4.19.3 Int32 IndexOffset

Property Read Write
Get or Set the Index OFFSET
Value from 0 to 255

### 4.19.4 Int32 IndexOrigin

Property Read Write
Get or Set the Index ORIGINS
Value from 0 to 255

### 4.19.5 bool IsOffset

Property Read
Read if the OFFSET is activated
**False** Disabled
**True** Enabled

### 4.19.6 bool IsOrigins

Property Read
Read if the ORIGINS are activated
**False** Disabled
**True** Enabled

### 4.19.7 bool OffsetSuspend

Property Read Write
Suspend or Resume the Offset selected by **G93**
**False** Suspend (As G96)
**True** Resume (As G97)

### 4.19.8 bool OriginsSuspend

Property Read Write
Suspend or Resume the Origins selected by **G94**
**False** Suspend (As G98)
**True** Resume (As G99)

### 4.19.9 Int32[] SingleAxisIndexOrigins

Property Read Write
Get or Set the index origin fo the single Axis
**Array Int32 that contains the Index Origins for Axis**

### 4.19.10 Void ActivateOriginFile()

Activates the Origins by file ZERI.VAL (default File)

### 4.19.11 Int32 AxesOffsetDisable(Int32 Index)

Disable the Offset at Index
**Index** Offset Index
Return:
**1** Error
**0** Ok

### 4.19.12 Int32 AxesOriginDisable(Int32 Index)

Disable the Origin at Index
**Index** Origin Index
Return:
**1** Error
**0** Ok

### 4.19.13 double[] GetCurrentOffset(Int32 Index)

Get the Current offset at Index
**Index** Offset Index
Return:
Array of Axes Offset position

### 4.19.14 double[] GetCurrentOffsetSetted()

Get the Offset at current Index
Return:
Array of Axes Offset position

### 4.19.15 double[] GetCurrentOrigins(Int32 Index)

Get the Current Origin at Index
**Index** Origin Index
Return:
Array of Axes Origin position

### 4.19.16 double[] GetCurrentOriginsSetted()

Get the Origin at current Index
Return:
Array of Axes Origin position

### 4.19.17 double[] GetOriginsFromUsFile(Int32 Index)

Get the Origins at Index from default file ZERI.VAL
**Index** Origin Index
Return:
Array of Axes Origin position

### 4.19.18 Int32 SetAxesOffsetToCurrentPosition(Int32 OffsetIndex)

Set the OFFSET at Index to current axes position
**OffsetIndex** Offset Index
**The OFFSET is automatically enabled**
Return:
**1** Error
**0** Ok

### 4.19.19 Int32 SetAxesOffsetToPosition(double[] OffsetValue, Int32 OffsetIndex)

Set the OFFSET at Index by values
**OffsetValue** array of Offset Values for Axis
**OffsetIndex** Offset Index
**The OFFSET is automatically enabled**
Return:
**1** Error
**0** Ok

### 4.19.20 Int32 SetAxesOriginsToCurrentPosition(Int32 OriginIndex)

Set the ORIGIN at Index to current axes position
**OriginIndex** Origin Index
**The ORIGIN is automatically enabled**
Return:
**1** Error
**0** Ok

### 4.19.21 Int32 SetAxesOriginsToPosition(double[] OriginsValue, Int32 OringinIndex)

Set the ORIGIN at Index by values
**OriginsValue** array of Origin Values for Axis
**OriginIndex** Origin Index
**The ORIGIN is automatically enabled**
Return:
**1** Errore
**0** Ok

### 4.19.22 Int32 SetAxisOffsetToCurrentPosition(Int32 OffsetIndex, Int32 AxisIndex)

Set the OFFSET at Index by current position for single Axis
**OffsetIndex** Offset Index
**AxisIndex** Axis Index
**The OFFSET is automatically enabled**
Return:
**1** Error
**0** Ok

### 4.19.23 Int32 SetAxisOffsetToPosition(double OffsetValue,Int32 OffsetIndex, Int32 AxisIndex)

Set the OFFSET at Index by value for single Axis
**OffsetValue** Offset Value
**OffsetIndex** Offset Index
**AxisIndex** Axis Index
**The OFFSET is automatically enabled**
Return:
**1** Error
**0** Ok

### 4.19.24 Int32 SetAxisOriginToCurrentPosition(Int32 OriginIndex, Int32 AxisIndex)

Set the ORIGIN at Index by current position for single Axis

**OriginIndex** Origin Index
**AxisIndex** Axis Index
**The ORIGIN is automatically enabled**
Return:
**1** Error
**0** Ok

### 4.19.25 Int32 SetAxisOriginToPosition(double OriginValue,Int32 OriginIndex, Int32 AxisIndex)

Set the ORIGIN at Index by value for single Axis

**OrigintValue** Origin Value
**OriginIndex** Origin Index
**AxisIndex** Axis Index
**The ORIGIN is automatically enabled**
Return:
**1** Error
**0** Ok
**0** Ok

### 4.19.26 bool IsoG43FromTable(Int32 Kmode,Int32 Axis, bool Direction)

Enable G43 from Tool Table

**Kmode** See the K parameter G43 function
**Axis** Axis Index
**Direction** Correction direction (**false** Negative – **true** Positive)
Return:
**True** Ok
**False** Error (CNC in Run or Axis not configured)

### 4.19.27 bool IsoG43FromLen(Double ToolLen,Int32 Kmode,Int32 Axis, bool Direction)

Enable G43 from Tool Len

**ToolLen** Tool Len
**Kmode** See the K parameter G43 function
**Axis** Axis Index
**Direction** Correction direction (**false** Negative – **true** Positive)
Return:
**True** Ok
**False** Error (CNC in Run or Axis not configured)

### 4.19.28 bool IsoG44(Int32 G44Ext)

Disable G43

**G44Ext** See command **G43.0 G43.1**
Return:
**True** Ok
**False** Error (CNC in Run or Axis not configured)

### 4.19.29 bool IsoG43State()

Read the G43 state
Return:
**True** G43 Enabled
**False** G43 Disabled

## *4.20 UsOverrideFeed*

This class manages the OVERRIDE FEED

.

### 4.20.1 bool ExternalOverrideFeed

Property Read Write

Enable/Disable External Override

**True** Enabled

**False** Disabled

### 4.20.2 Int32 OverrideFeedAxes

Property Read Write

Get or Set the internal override value

**Value from 0 to 100 %**

## *4.21 UsPassWordManagement*

IsoUs PassWord managaement

### 4.21.1 bool ResetUsPassWord(Int32 PassWordLevel)

Reset the current Password to defualt value
**PassWordLevel** PassWord level to Reset from 0 to 2
Defualt value:
**Level 0** → 684618
**Level 1** → 684619
**Level 2** → 684620
Return:
**True** Ok
**False** Error

### 4.21.2 bool SetUsNewPassWord(String NewPassWord,Int32 PassWordLevel)

Set the new PassWord at level
**NewPassWord** New Password
**PassWordLevel** PassWord level to Set from 0 to 2
Return:
**True** Ok
**False** Error

### 4.21.3 bool TestUsLevelPassWordBlock(Int32 PassWordLevel)

Check the PassWord level if locked or Unlocked
**PassWordLevel** PassWord level to check from 0 to 2
Return:
**True** Unlocked
**False** Locked

### 4.21.4 bool TestUsPassWord(String PassWord,Int32 PassWordLevel)

Check the PassWord at level
**PassWord** PassWord to check
**PassWordLevel** PassWord level to Check from 0 to 2
Return:
**True** PassWord Ok
**False** PassWord Error

## *4.22 UsPositioners*

Positioners class manager
The positioners must be enabled in VTB application

### 4.22.1 bool AllAxesPositionerReady

Property Read
Return the state of all positioners (Homing and Enable)
**True** Ready
**False** Not Ready

### 4.22.2 Int32 NumberOfPositioners

Property Read
Return the number of positioners declared in VTB application

### 4.22.3 bool EnablePositioner(Int32 PositionerIndex,bool EnableState)

Enable/Disable Positioner
**PositionerIndex** Positioner Index
**EnableState** **True** Enable **False** Disable
Return:
**True** Ok
**False** Positioner Error

### 4.22.4 bool IsAlarm(Int32 PositionerIndex,out bool Status)

Reads the Alarm status
**PositionerIndex** Positioner Index
**Status** **True** Alarm **False** Ok
Return:
**True** Ok
**False** Positioner Error

### 4.22.5 bool IsEnabled(Int32 PositionerIndex,out bool Status)

Reads the Enable status
**PositionerIndex** Positioner Index
**Status** **True** Enabled **False** Disabled
Return:
**True** Ok
**False** Positioner Error

### 4.22.6 bool IsHoming(Int32 PositionerIndex,out bool Status)

Reads the Homing status
**PositionerIndex** Positioner Index
**Status** **True** Homing Ok **False** Homing not made
Return:
**True** Ok
**False** Positioner Error

### 4.22.7 bool IsMoving(Int32 PositionerIndex,out bool Status)

Reads the Movement status
**PositionerIndex** Positioner Index
**Status** **True** Movement **False** Stop
Return:
**True** Ok
**False** Positioner Error

### 4.22.8 bool Preset(Int32 PositionerIndex, Int32 PresetValue, out bool Status)

Preset Axis value
**PositionerIndex** Positioner Index
**PresetValue** Preset Valòue
**Status** **True** Preset Ok **False** Preset Error
Return:
**True** Ok
**False** Positioner Error

### 4.22.9 bool ReadDemandPosition(Int32 PositionerIndex, out Int32 PositionValue)

Reads Demand Position
**PositionerIndex** Positioner Index
**PositionValue** Demand Position value
Return:
**True** Ok
**False** Positioner Error

### 4.22.10 bool ReadRealPosition(Int32 PositionerIndex, out Int32 PositionValue)

Reads Real Position
**PositionerIndex** Positioner Index
**PositionValue** Real Position value
Return:
**True** Ok
**False** Positioner Error

### 4.22.11 bool SetOffsetValue(Int32 PositionerIndex, Int32 OffsetValue)

Set OFFSET position
**PositionerIndex** Positioner Index
**OffsetValue** OFFSET value
Return:
**True** Ok
**False** Positioner Error

### 4.22.12 bool SetVelocity(Int32 PositionerIndex, Int32 VelocityValue)

Set FEED
**PositionerIndex** Positioner Index
**VelocityValue** FEED value
Return:
**True** Ok
**False** Positioner Error

### 4.22.13 bool StartHoming(Int32 PositionerIndex)

Start homing
Read StatusWord for check end Homing
**PositionerIndex** Positioner Index
Return:
**True** Ok
**False** Positioner Error

### 4.22.14 bool StartPositionTarget(Int32 PositionerIndex, Int32 PositionValue, bool AbsoluteValue)

Start positioner at Target
**PositionerIndex** Positioner Index
**PositionValue** Target Value
**AbsoluteValue** **True** Target Absolute Value **False** Target Realtive Value
Return:
**True** Ok
**False** Positioner Error

### 4.22.15 bool StatusWord(Int32 PositionerIndex, Out Int32 Status)

Reads StatusWord
**PositionerIndex** Positioner Index
**Status** StatusWord bit mapped (bit 1 setted):
**Bit 0** → **Enable**
**Bit 1** → **Homing**
**Bit 2** → **Move**
**Bit 3** → **Allarm**
Return:
**True** Ok
**False** Positioner Error

### 4.22.16 bool Stop(Int32 PositionerIndex)

Stop the Positioner
**PositionerIndex** Positioner Index
Return:
**True** Ok
**False** Positioner Error

## *4.23 UsRetrace*

This class handles all the logic functionality of IsoNs Retrace.
The retrace and a mode useful for some types of machines. In practice, it scrolls the tool path on the piece with a kind of simulation, but with axes in motion. The path of the sliding mode occurs in both forward and reverse JOG.This allows you to choose how to RESTART POINT OF VIEW of any section even though this is not a starting point or end of an element. you can make a fresh start from any point of an arc or a straight line. With axes in motion, can have a real vision on the machine POINT OF RESTART.
Is performed **MGORETRACE** configured
**Before using the functions of retrace, you must call the method InitRetrace()**

### 4.23.1 Int32 GetLineRetrace

Property Read
Return the Gcode Line currently in execution in retrace mode.

### 4.23.2 Void ExecuteProg()

Start the Gcode from the current point where the axes are on the profile.
This method is invoked when the operator decided the point of restart of the profile.
Is performed **MGORETRACE** configured

### 4.23.3 bool GetPosAxisAtLine(out Int32 PosX, out Int32 Posy, Int32 Nline)

Reads the axes position at line number
**Posx** Axis X Position
**Posy** Axis Y Position
**NLine** Gcode Line number
Return:
**True** Ok
**False** Line not found

### 4.23.4 Void GoLine(Int32 Nline)

Move axes to block the line indicated.
Need to skip parts of the tool path.
**Nline** Gcode Line number to jump

### 4.23.5 Void InitRetrace()

Enable the feature RETRACE. This method must be called before using any of the Property and the other class methods retraced.
In practice prepares a list of all the Gcode simulation.

### 4.23.6 Void JogDown()

Move axis in the negative direction on the path PIECE.
The jog speed is set in the Gcode
For STOP Axes use **StopJog ()**

### 4.23.7 Void JogUp()

Move axis in the positive direction on the path PIECE.
The jog speed is set in the Gcode
For STOP Axes use **StopJog ()**

### 4.23.8 Void StopJog()

Stp Axes **JogUp()** or **JogDown()**

## *4.24 UsSimulation*

Simulation Gcode

### 4.24.1 Void **ExecuteSimulation()**

The current Gcode loaded, will be simulated in the preview window

## *4.25 UsSpindleManager*

This Class allows to manage all functions for Analog 0-10V Spindle Output.
The Spindle Output is configured in IsoUs by Machine Parameters Spindle Table
(See IsoUs Documentation)

### 4.25.1 Void WriteSpindleSpeed(Int32 _Val)

Write the value **_Val** in the Analog Output configured for Spindle
**_Val** is in **BIT**, therefore fo an output of **10V** on the Channels **0-15** the value must be **2047**, for the Channel **NGMEVO PWM 255** (max)

### 4.25.2 Int32 ReadSpindleSpeed()

Read the last value write with ***WriteSpindleSpeed()***
Return 0-2047 for the channels 0-15
0-255 for the channel NGMEVO PWM

### 4.25.3 Void WriteSpindleOw(Int32 _Val)

Write the Override value for the Analog Output configured for Spindle
The value is between **0** (0%) and **1024** (100%).
**WARNING**
For this function, must be enabled the parameter **ENABLE_OW_SPEED** on **INTERNAL VIRTUAL**
The Minimum and Maximum value is restrained by parameter:

| | |
|---|---|
| **SPEED_OW_MIN** | Minimum Value of Override |
| **SPEED_OW_MAX** | Maximum Value of Override |

### 4.25.4 Int32 ReadSpindleOw()

Read the Overide value set
Return 0-1024

### 4.25.5 Int32 SpindleOwState

Property Read
Return the mode set of Spindle Override

| | |
|---|---|
| **0** | **Disable** |
| **1** | **Managed by VTB** |
| **2** | **Managed by WriteSpindleOw()** |

### 4.25.6 Int32 SpindleAnalogBitRes

Property Read
Return the BIT resolution set for the Spindle Analog Output

| | |
|---|---|
| **2048** | **Channels 0-15** |
| **255 (max)** | **Channel NGMEVO PWM** |

## *4.26 UsStaticVariables*

This class handles files of variables saved in permanent memory. IsoNs allows you to save the contents of variables in a file so that it can be reloaded later. These files are also manageable Gcode.Le PERMANENT are all variables of type DOUBLE, and are included in a list. Ilist<Double>.

**The file are saved in internal path of**

### 4.26.1 String GetPathStaticFile

Property Read

Return the path of permanents variables.

### 4.26.2 List<double> GetStaticVariables

Property Read

Get the values of static variables.

Necessary use **LoadStaticFile** before

### 4.26.3 bool LoadStaticFile(String StaticFileName)

Load in memory the static file

**StaticFileName** File name (Use GetPathStaticFile for get the Path)

Return:

**True** Ok

**False** File not found

### 4.26.4 Void SaveFile(String StaticFileName)

Save in the file the curren LIST get from **GetStaticVariables**.

**StaticFileName** File Name (only name)

## *4.27 UsToolInfo*

Tool informations

### 4.27.1 Int32 GetIndexAxisLengthEnabled

Property Read
Get the Index Axis where is enabled the Length correction
**-1** No Axis

### 4.27.2 double GetToolDiameterSet

Property Read
Get the current Tool Diameter setted

### 4.27.3 bool GetToolDirection

Property Read
Get the Tool Length correction direction
**True** Positive
**False** Negative

### 4.27.4 double GetToolLengthSet

Property Read
Get the Length correction value

### 4.27.5 bool IsToolLengthActivated

Property Read
Get if enabled Tool Length correction
**True** Enabled
**False** Disabled

## *4.28 UsToolsHeadsTable*

It contains all the methods and properties related to the management of the tool **HEADS** and the parameters of the **TOOLS** table.

### 4.28.1 Int32 GetNumberOfHeads

Property Read
Get the number of Heads configured

### 4.28.2 Int32 GetNumberOfToolsTable

Property Read
Get the number of Tools configured

### 4.28.3 Int32 SelectHEad

Property Read Write
Get or Set an **HEAD**.
The value of SET must be between 0 and the maximum number of HEAD included in the configuration. An exception is generated if the value is not within this range.
Returns -1 if no **HEAD** is selected
This function is equal to **Hn** in Gcode

### 4.28.4 Int32 SelectTollTable

Property Read Write
Get or Set a **TOOL TABLE**.
The value of SET must be between 0 and the maximum number of TABLES included in the configuration tool. An exception is generated if the value is not within this range.
Returns -1 if no TABLE is selected
This function is equal to **Tn** in Gcode

### 4.28.5 double GetHeadParameter(Int32 ParameterIndex)

Reads the parameter specified in **ParameterIndex** from the **HEAD** table selected.
**ParameterIndex** Index of parameter to selected head
Return:
Parameter Value

### 4.28.6 double GetToolParamater(Int32 ParameterIndex)

Reads the parameter specified in **ParameterIndex** from the **TOOL** table selected.
**ParameterIndex** Index of parameter to selected Tool
Return:
Parameter Value

### 4.28.7 Void SaveToolTabelParameters()

Save the parameters of the tool table in memory (written with WriteParTab) in the configuration on disk permanently

### 4.28.8 Void WriteHeadParameter(double Value,Int32 HeadIndex, Int32 ParameterIndex)

Write a parameter to Head
**Value** Parameter value
**HeadIndex** Head Index
**ParameterIndex** Parameter index

### 4.28.9 Void WriteToolParameter(double Value,Int32 TableIndex, Int32 ParameterIndex)

Write a parameter to Tool
**Value** Parameter value
**TabelIndex** Tool Index
**ParameterIndex** Parameter index

## *4.29 UsGenericVariables*

This class handles variables UserGenric for data exchange with the NC.
These variables are of type Int32, and can be used to read / write values of using them for general data exchange between PC applcazione CN VTB.
The number of variables is 30

### 4.29.1 Int32 ReadUserCnCVariable(Int32 UserAddress)

Reads a User Generic Variable from CNC
**UserAddress** User Address from 0 to 29
Return:
User Value

### 4.29.2 Void WriteUserCnCVariable(Int32 UserAddress,Int32 UserValue)

Writes a User Generic Variable in the CNC
**UserAddress** User Address from 0 to 29
**UserValue** User Value

## *4.30 Us2ndLimitsManager*

Racchiude tutti i metodi e proprietà che gestiscono i secondi limiti assi

### 4.30.1 bool Is2ndLimits

Property Read
Return:
**True** 2nd Limits activated
**False** Primary Limits activated

### 4.30.2 bool **Activated2ndLimits()**

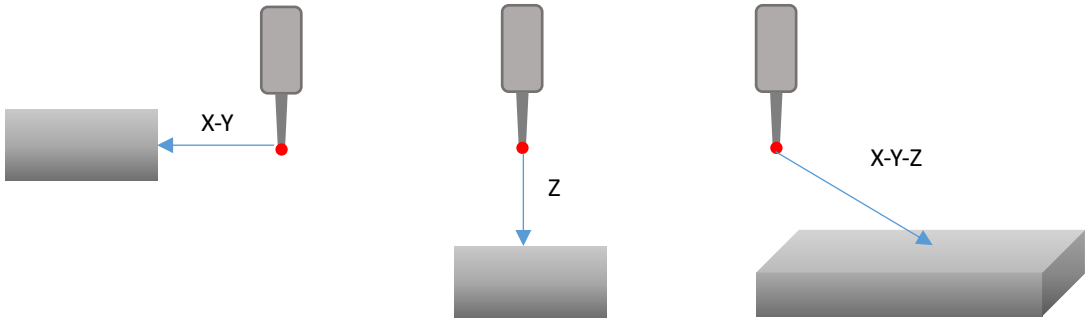
Activate the **2nd** Software Limits
Return:
**True** – Ok
**False** – CnC in Run

### 4.30.3 bool **Reset2ndLimits()**

Deactivates the **2nd** Limits and activates the **PRIMARY** software Limits
Ritorna:
**True** – Ok
**False** – CnC in Run

## 4.31 UsProbe

This class manages the capabilities of Acquisitions sensor boards. Acquisitions by The sensor requires that the axes are moved to a position up and be detected by this sensor.
The axes can be moved at one time, however, can move only one axis in the direction of the probe Acquisition .




### 4.31.1 Double[] GetAxesValue

Property Read
Read acquisition positions axes
After acquisition executed you can use this prpoerty for read all positions axes
Return:
**Double[]** Array axes positions at sensor

### 4.31.2 bool StartProbeAcquisition(double[] AxesValue)

Start Acquisition at postion
When the sensor detected the piece, the **AcqusitionExecuteChanged** event is performed.
Otherwise **NotifyChanged** event is performed if axes reach the position target.
Is possible test StatusCn **IsStatusProbe**.
**AxesValue** Array for Target positions.
Return:
**True** Acquisition Started
**False** Error Axes position array

**WARNING**
Before run **StartProbeAcquistion** you must set the RUN NC by following instructions
**MyMaster.GetCommand.RunProg();**
At end (normal end or error) **StartProbeAcquistion** you must set the STOP NC by following instructions
**MyMaster.GetCommand.StopProg();**

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