PLCnext Engineer

Changing the Date and Time on the PLC

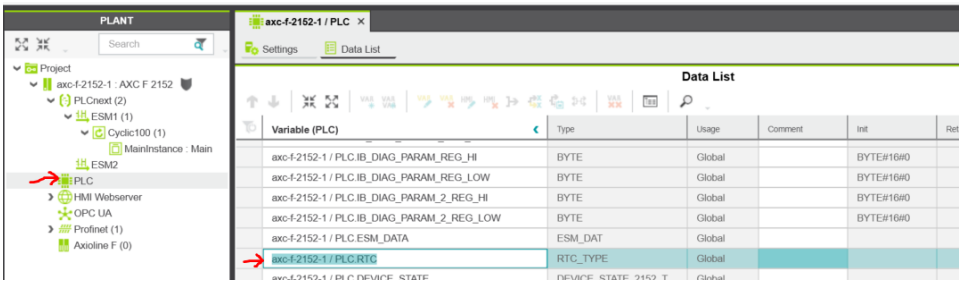
For PLCnext Engineer

1. Introduction:

It is necessary to be able to edit the Date and/or Time of the PLC Controller for many different reasons. This document uses an extended Firmware Function of the PLCnext to accomplish this task.

1. Reading the Current Date and Time from PLCnext Controller

Fortunately, the PLCnext has a Global tag that has the Current Date/Time of the PLC. The tag is: PLC.RTC (Real Time Clock) and is available under the 'System Variables' (as below):



The RTC is of Data Type 'RTC_TYPE', which has the following members:

TAG NAME	TYPE
RTC.YEAR	UINT
RTC.MONTH	USINT
RTC.DAY	USINT
RTC.HOURS	USINT
RTC.MINUTES	USINT
RTC.SECONDS	USINT

All of these Variables are 'READ-ONLY', but one can freely "MOV" or 'Assign' to another Global or local variable in the PLC program as needed.

The Only issue is that it is not possible to directly change the Date/Time from here. Please see Section 2 for Details to do this.

NOTE: There is another Function Block that comes with the Library that can be used to retrieve the current Date/Time "**PBCL_DateTimeGet_1"** (similar to the RTC Built-in Tags), that is will be available after the installation of Libraries in Section 2. However, this function blocks only reads the Date/Time on Power Cycle, so it is not really a useful tool for Reading the Date/Time.

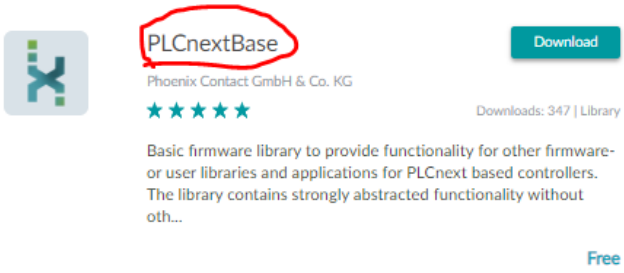
2. Writing the Date/Time to PLCnext Controller

This is no built-in, simple way to change the Date/Time on a PLCnext controller. This funciton requires direct access to Firmware features that are not simply currently available with standard Function Blocks.

2.1 Download PLCnextBase Library

To achieve this function, it is required to use a special, low level Function Block that Phoenix Contact provides at no charge at the PLCnext Store (http://plcnextstore.com).

These Library Files are included in the file called “PLCnextBase”



When clicking on the ‘PLCnextBase’ Text (as circled above), it will redirect to a new screen with information regarding the Function Block, as well as several functions that the Function Blocks can perform. At the top of the screen, choose the appropriate version to Match the PLCnext Firmware. They will change over time, so please take some time to verify. For Example:

Version 1.1.0 Build 1 - 2020.0.1 LTS

Version 1.1.0 Build 3 – 2020.3

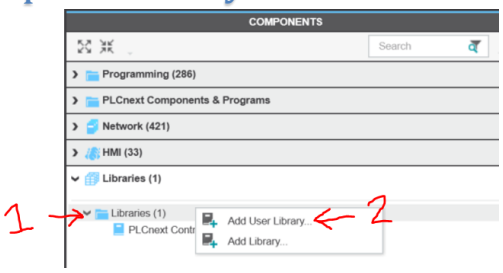
Download and Install.

This is the Default Location where it is installed on the Programming computer.

C:\Users\Public\Documents\Phoenix Contact Libraries\PLCnext Engineer\PLCnextBase_1_1_0

If this is modified while downloading, make careful note, as this is important to know the location during an import of these Library Files into PLCnext Engineer.

2.2 Import Library into PLCnext Engineer.



1- Right Click on 'Libraries' then **2-** Select 'Add User Library..'

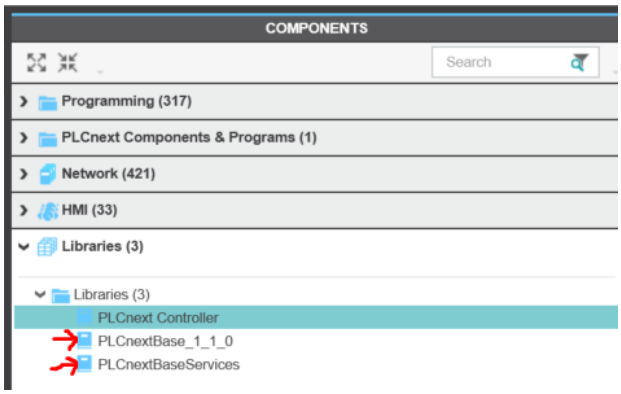
Locate the PLCnextBase Library files installed at the end of Section 2.1.

There are Two Library Files required to be imported for proper function:

PLCnextBase_x_x_x (where x is version number)

PLCnextBaseServices

The 'Libraries' Tab will look similar to the below.



<u>Ensure that both Libraries Exist as above before proceeding !!!</u>

2.3 Add “ServiceProvider” to Task Manager

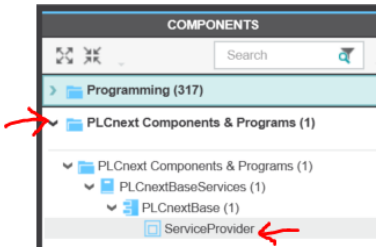
Due to the fact that this is low-level firmware function, it is necessary to activate the ServiceProvider in a running TASK.

The “ServiceProvider’ is located under

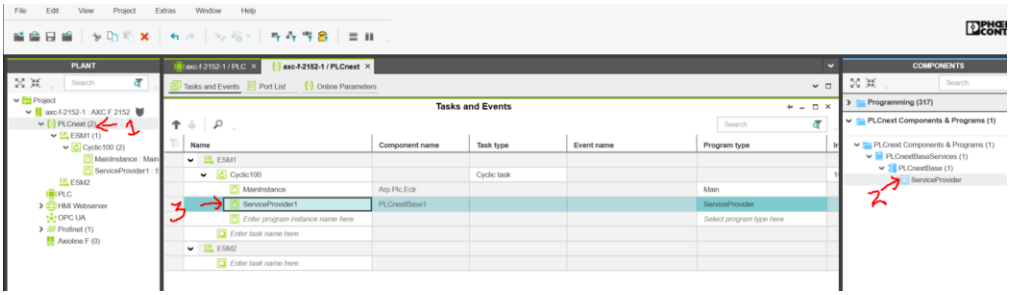
Components -> PLCnext Components & Programs

-> PLCnextBase Services

-> PLCnextBase



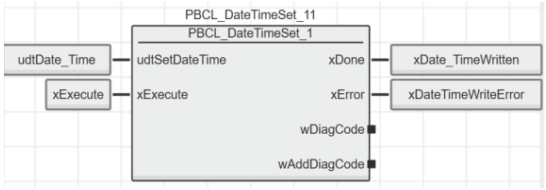
Now, ‘Drag’ the **<u>ServiceProvider</u>** Program into an existing Task or create a new one. It does not make much difference, but it does not need to be in a fast task.



2.4 Insert the PBCL_DateTimeSet_1 Function Block

Now that the 'Service' is running, simply need to insert the PBCL_DateTimeSet_1 Function Block into the desired PLC Program. Writing the Date and Time to the system is now possible with a Rising Edge Trigger.

It will look something like the below:



The abadove tags are defined as:

udtDate_Time has DataType of PBCL_udtDateTime_1

TAG NAME	TYPE
udtDate_Time.iYear	INT
udtDate_Time.iMonth	INT
udtDate_Time.iDay	INT
udtDate_Time.iHour	INT
udtDate_Time.iMinute	INT
udtDate_Time.iSecond	INT

First step is to Fill the udtDate_Time variables with the correct Data.

Note: A valid Value must be Provided to each "udtDate_Time.x" Variable. To avoid errors, Never Write the .iYear,iMonth,iDay with a value of '0'. Only the .iHour, iMinute, iSecond should ever be left at '0' when writing the Values.

The final step is to provide a Rising Edge to "xExecute (Bool)" input to the Function Blocks.

Monitor the Values of the 'RTC' variable from Section1 to ensure that the values were written correctly.

NOTE: There is another Function Block that comes with the Library that can be used to retrieve the current Date/Time "**PBCL_DateTimeGet_1"** (similar to the RTC Built-in Tags), however, this function blocks only reads the Date/Time on Power Cycle, so it is not really a useful tool for Reading the Date/Time.