User Manual

Advantech WebAccess/CNC

CNC Machine Monitoring Solution

ADVANTECH
Enabling an Intelligent Planet

Contents

Chapter 1

Advantech WebAccess/CNC

1.1 Advantech WebAccess/CNC

Advantech WebAccess/CNC is the core solution for network CNC devices. WIth its 100% web-based WebAccess/SCADA software structure, WebAccess/CNC provides major CNC networking functions in addition to bringing the advantages of SCADA software to the CNC market. By being able to also monitor I/O devices, WebAccess/CNC brings to you the benefits of CNC information management and status visualization. It allows you to browse SCADA web pages via Internet Explorer (IE) so that you can monitor and capture real-time CNC data and production status information. Your operational efficiency can thus be improved by analyzing device availability.

Advantech WebAccess/CNC is a CNC networking software application designed specifically for the machine tool market. Through the integration of many SCADA drivers, WebAccess/CNC supports most CNC, I/O, and PLC devices for data acquisition from factory equipment and gives you the tools you need to develop industrial networking applications.

1.2 Functions and Features

1.2.1 Functions

- CNC Overview:
  Provides real-time information on connection status, operation mode, CNC status, alarm status, and availability
- CNC Information:
  Provides machine coordination information, operation information, G code, and spindle information
- Availability:
  Provides details of CNC availability to assist with handling production efficiency optimization
- CNC Alarm:
  Provides historical alarms from CNC records; these can be used as an important reference for machine maintenance
- NC Program Management:
  Provides a function for uploading/downloading NC files as well as an editing interface for programming NC files
- Set Parameters:
  Provides a configuration interface for modifying coordinate compensation and tool compensation parameters
- Servo Spin:
  Provides real-time monitoring of spindle loading for the analysis of wear or damage to tools
- Maintenance:
  Provides a configuration interface with basic preventive maintenance functions and manufacturer contact information
- PLC Parameters:
  Provides an instant query interface to obtain PLC register values which facilitates defining the I/O status requirements of CNC controllers.

Note! *WebAccess/CNC for Advantech LNC only supports CNC register read/write. Currently, it does not include a web interface for these nine functions.*

1.2.2 Features

- Supports major CNC and I/O monitoring device functions
- Supports various protocols for connecting common industrial devices and PLCs
- 100% web-based SCADA software including an HTML5 dashboard with cross-platform compatibility
- Provides the full functionality of WebAccess Professional
- Upgradable to increase the number of available CNC connections

1.2.3 Specification

Support CNC Controllers List

- FANUC: 0i-A/B/C/D/F, 16i, 18i, 21i, 31i, 32i (FOCAS library requirement)
- MITSUBISHI: M700/M70, M800/M80 series
  (Please install MITSUBISHI communication middleware EZSocket in advance. Contact your agent or a Mitsubishi Electric representative to purchase a software license.)
- HEIDENHAIN: iTNC530 (DNC optional requirement)
  (The maximum number of connections for HEIDENHAIN is limited to 16 for each instance of WebAccess/CNC runtime)
- SIEMENS: 840D, 828D (OPC/UA license requirement)
- Advantech LNC: M/T 2800/2900/5800/6800/6900/7900

Multi-languages

- EN/TC/SC/JP

SCADA Software

- Advantech WebAccess V8.2 Professional or later

Project Node\SCADA Node

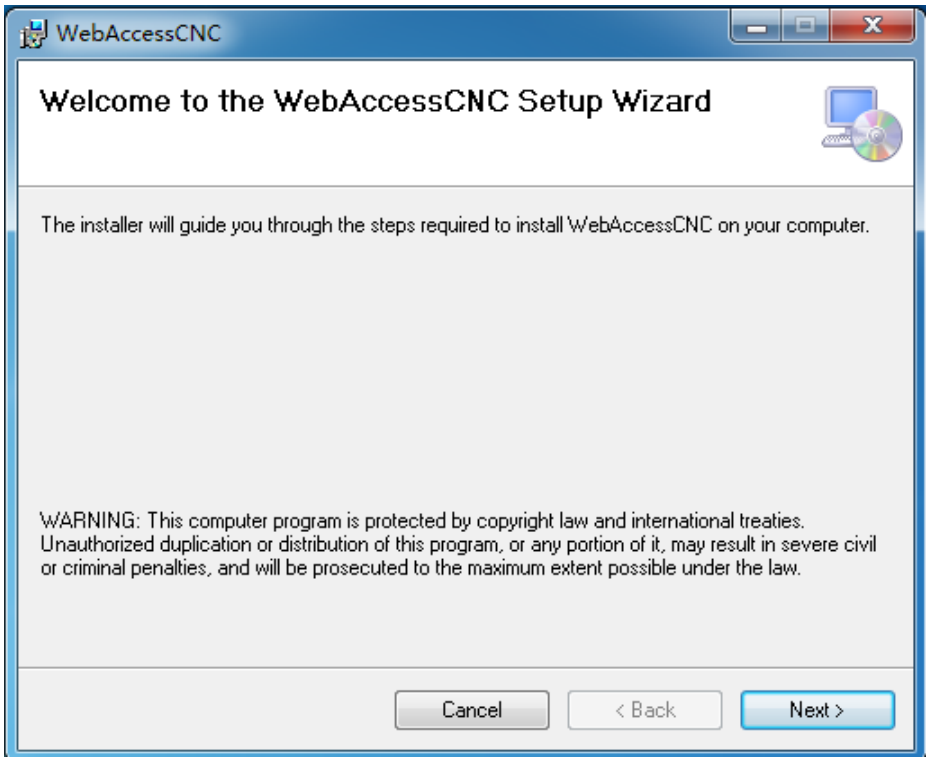
- Operating System:
  - Windows 7 Professional SP1
  - Windows 8.1 Professional
  - Windows Server 2008 R2 or later
  - Microsoft .NET Framework 3.5 for WebAccess/CNC runtime
  - Microsoft .NET Framework 4.5 or later
  - IIS 7.5
- Minimum Hardware Requirements:
  - Intel Atom® or Celeron® Dual-Core processor
  - 4GB RAM
  - 200 GB free disk space
- USB Port:
  - USB port for License Hardkey on SCADA node
- Browser Resolution:
  - Designed for 1280*720 resolution to 1920*1080 resolution
- Browser support:
  - IE 11 or later for full support
  - For dashboard support only, use Chrome (Version 37 or later), Firefox (Version 31 or later), or Safari (Version 7 or later)

Chapter 2

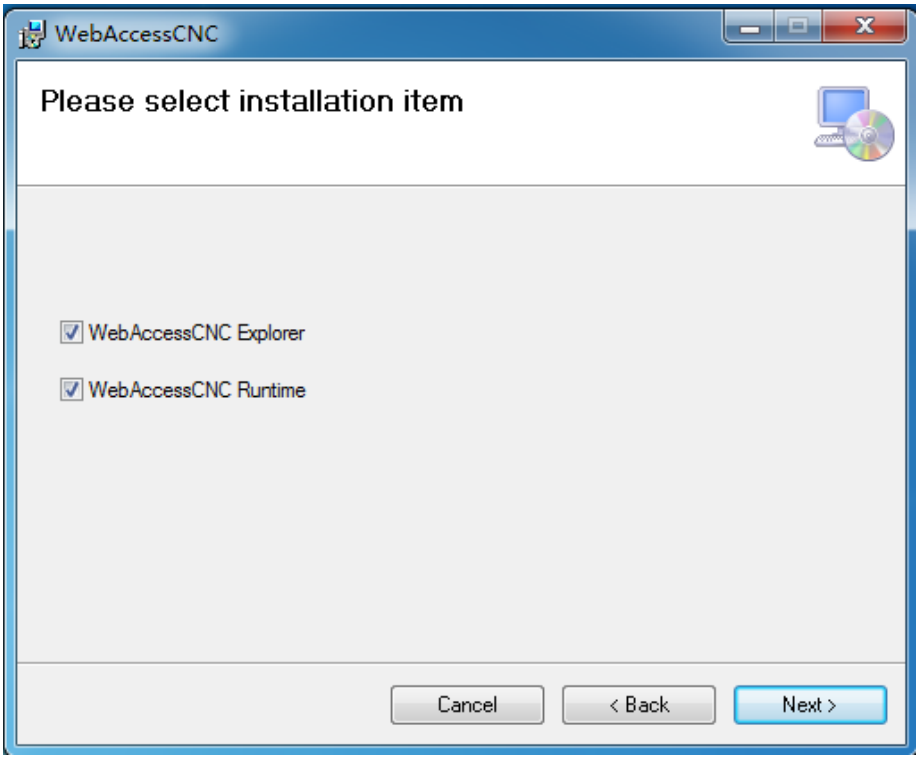
Getting Started

2.1 WebAccess/CNC Installation

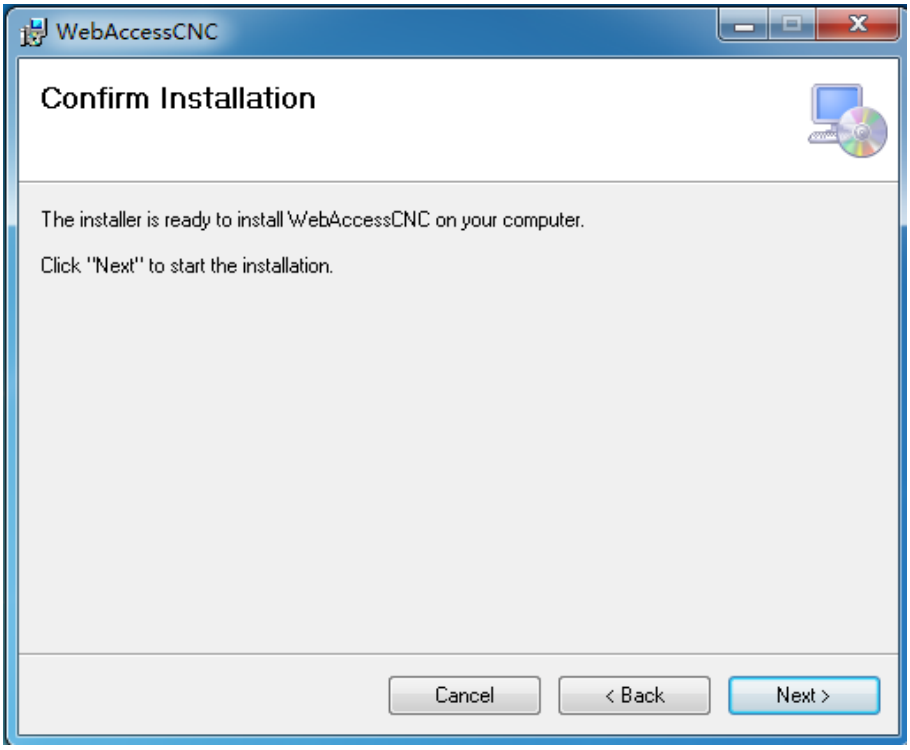
Before you install WebAccess/CNC, you will need to install (1) WebAccess/SCADA V8.2 Professional (or later) and (2) IE 11 or later. The following screenshots will guide you step-by-step through the process of installing WebAccess/CNC:



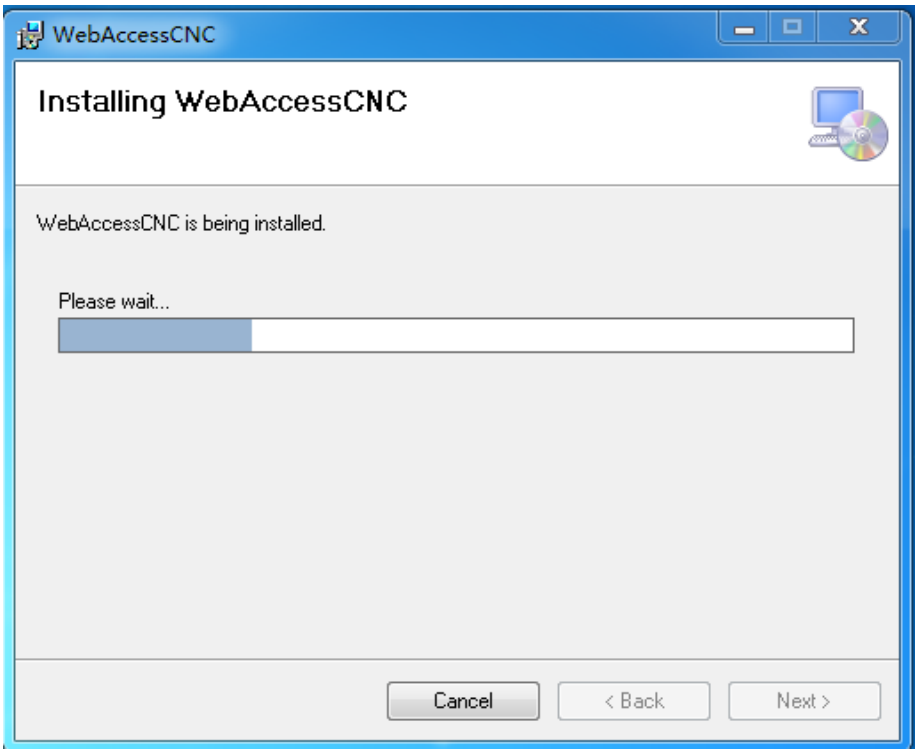
1. Run setup to open the WebAccess/CNC Setup Wizard



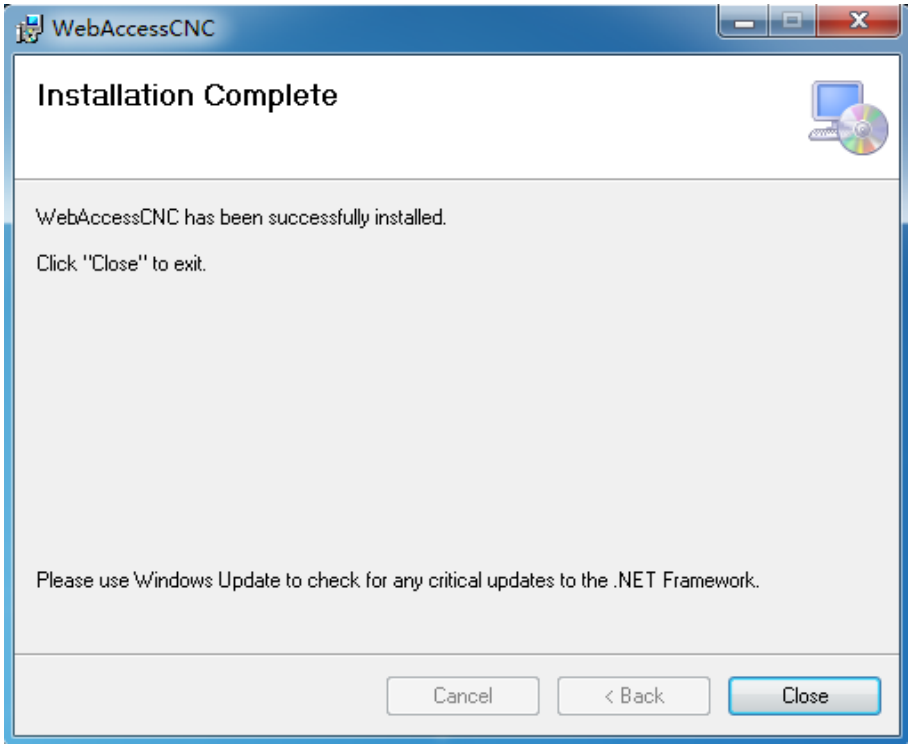
2. Select which items you wish to install



3. Click **[Next]** to confirm the installation



4. Wait for the installation process to complete



5. Press **[Close]** to complete the installation

After the installation has been completed, a log file will be available at the following address: C:\WebAccess\Node\WebAccessCNC\install.log

2.2 CNC Device Settings and CNC Runtime

The **CNC Device Settings** screen in WebAccess/CNC is for configuring the CNC network settings. From this screen, you can add, delete, and modify CNC device settings and also start WebAccess/CNC runtime.

Open **CNC Device Settings** from the start menu (default: Start → All Programs → WebAccess CNC → CNC Device Setting). The launch screen will appear as it is shown in FIgure 2.1.

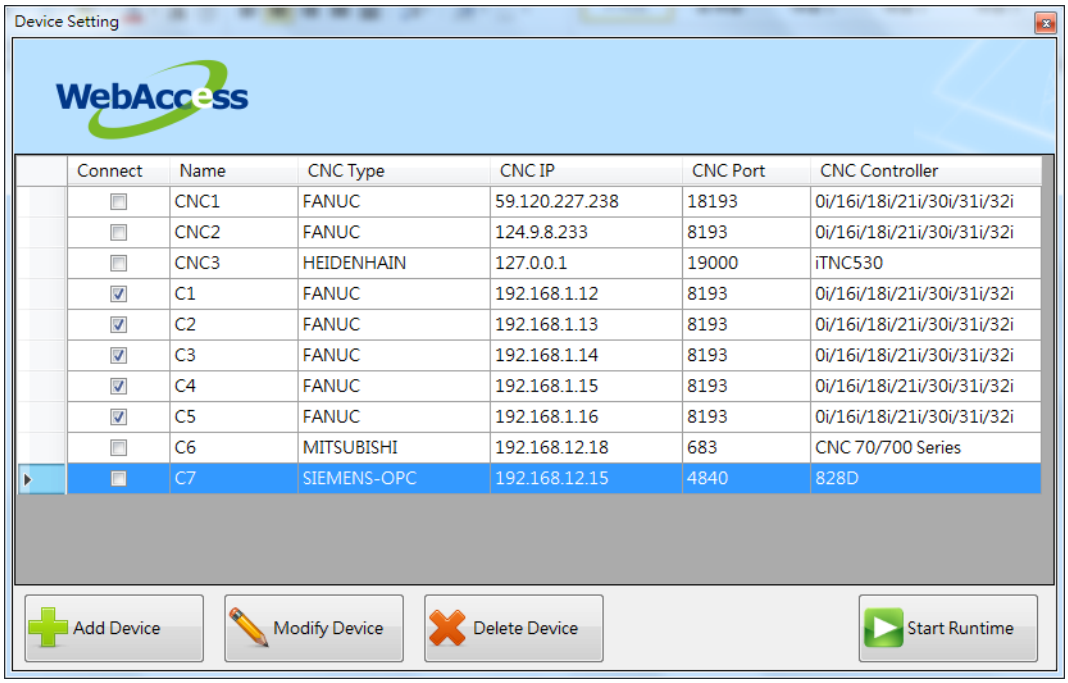


Figure 2.1 Device Settings

Click on **[Add Device]** to open the **Add Device** screen (Figure 2.2) or **[Modify Device]** to open the **Modify Device** screen (Figure 2.3). Click **[Delete Device]** to delete a device. From the **Add Device** screen, you can set the CNC name, CNC type, controller type, CNC IP, CNC port, and data server settings.

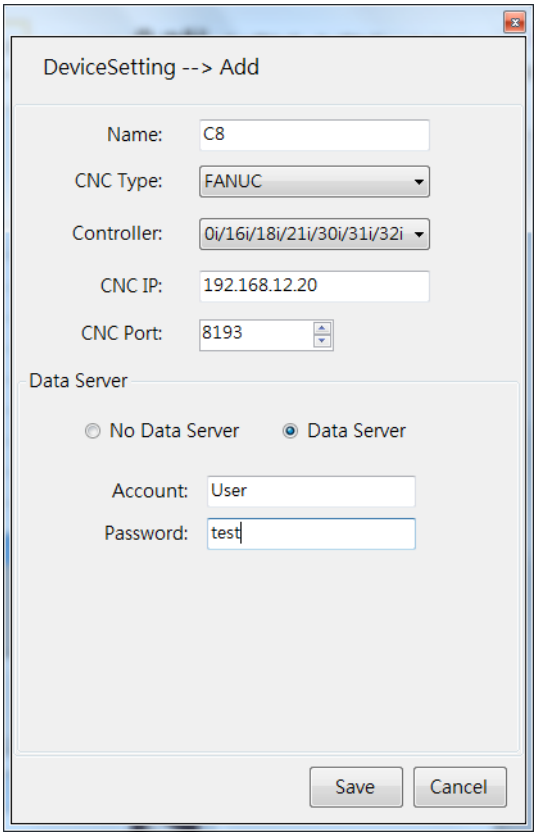


Figure 2.2 Add Device

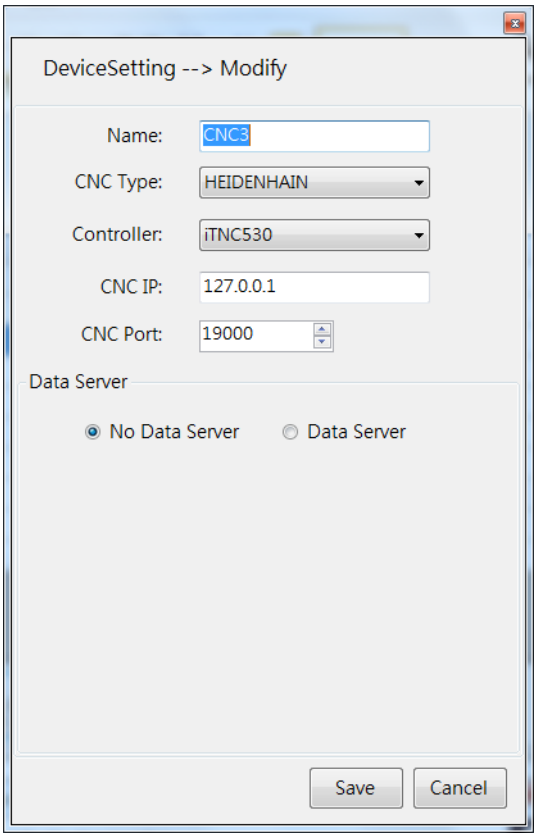


Figure 2.3 Modify Device

There are two methods for starting CNC Runtime:

1. Click **[Start Runtime]** on the **CNC Device Settings** screen. This will enable the CNC runtime connection between the selected CNC devices.
2. From the start menu: Start → All Programs → WebAccess CNC→ Start CNC Runtime

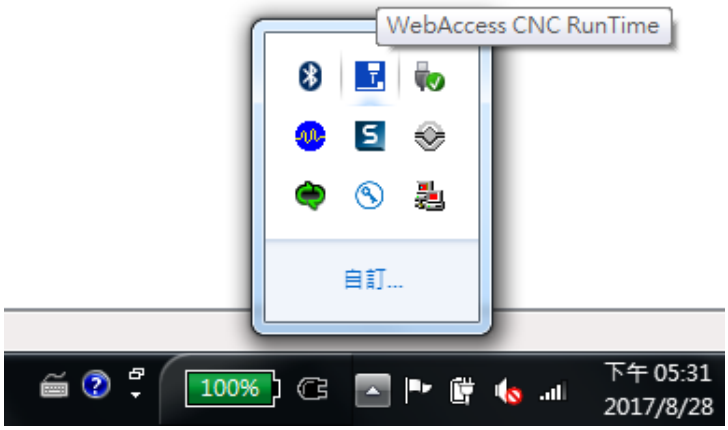


Figure 2.4 WebAccess CNC Runtime

Note! *You can right-click on the WebAccess CNC Runtime icon in the notification area to exit the runtime service.*

Advantech LNC controllers provide an auto detect function so that you do not need to configure the CNC device settings. This function requires that your PC be on the same network segment as the LNC controller.

The CNC types "MITSUBISHI" and "MITSUBISHI_EZ" are effective for when you wish to install the Mitsubishi communication middleware "EZSocket" and need to obtain the installation license simultaneously. To get the Mitsubishi FCSB1224 software license, please see a Mitsubishi agent.

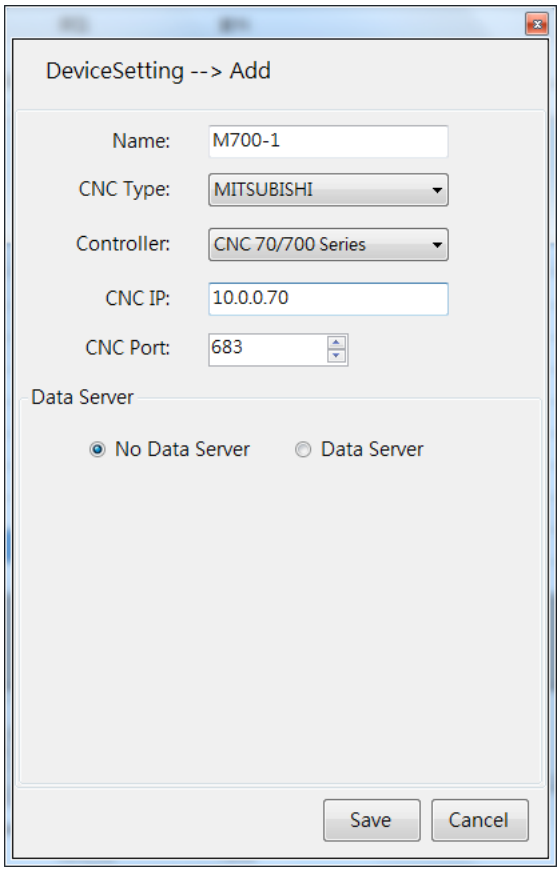


Figure 2.5 Mitsubishi_EZ Configuration

2.3 WebAccess/CNC Explorer

WebAccess/CNC Explorer gives you access to five main screens: **Project Selection**, **PMC Search List**, **LNC Search List**, **Start Searching**, and **Device List**. It provides a configuration interface displaying the supported CNC connection parameters. You can also use this tool to automatically generate WebAccess/CNC projects.

You can start WebAccess/CNC Explorer from the start menu (default: Start → All Programs → WebAccessCNC→ Explorer). The opening screen will appear as shown in Figure 2.6.

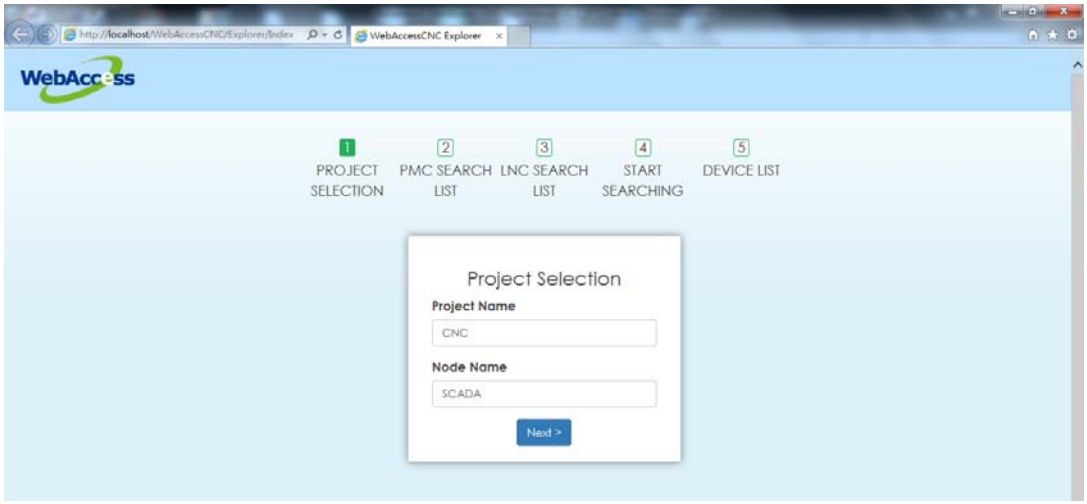


Figure 2.6 WebAccess/CNC Explorer

- Project Selection: This screen allows you to set the WebAccess project name and node name.
- PMC Search List: This screen allows you to enter the IP address and port number of WebAccess/CNC Runtime. The default port number is 9701. Note that “pmc” is the default for both the connection name and the password.
- LNC Search List: This screen allows you to add an LNC controller by automatically searching for an Advantech LNC controller in the same network segment, or by manually setting the IP address of the LNC controller.
- Start Searching: This screen allows you to search for a CNC device from the PMC and LNC settings.
- Device List: After connected CNC devices have been detected, you can submit the selected CNC devices to automatically generate a WebAccess project.

Chapter 3

WebAccess/CNC Functions

The WebAccess/CNC project provides nine main CNC tool functions:

- Overview
- Information
- CNC Alarm
- Program
- Servo Spin
- Set Parameters
- Maintain
- Tools
- PLC Parameters

Note! *The nine CNC functions of the web pages are designed for the common functions of Fanuc, Mitsubishi, Heidenhain and Siemens CNC. The functions are not all suitable for the each CNC types.*

3.1 CNC Web Functions

3.1.1 The Overview Screen

As shown in Figure 3.1, there are four CNC conditions indicated by the lamp status:

- Green: Busy
- Yellow: Idle
- Red: Alarm
- Grey: Disconnect

The other fields are defined as

- Device Name: The CNC device name
- Main Prog: Main program
- Cur Prog: Currently executed program
- Cur Seq: Sequence of the currently executed program
- Mode: MEM/MDI/JOG/MPG(RPF)/single step/other
- Status: Start/hold
- Alarm: Normal/alarm
- EMG: Normal/EMG
- P count: Part count
- Avail. (Today): Availability rate for the current day

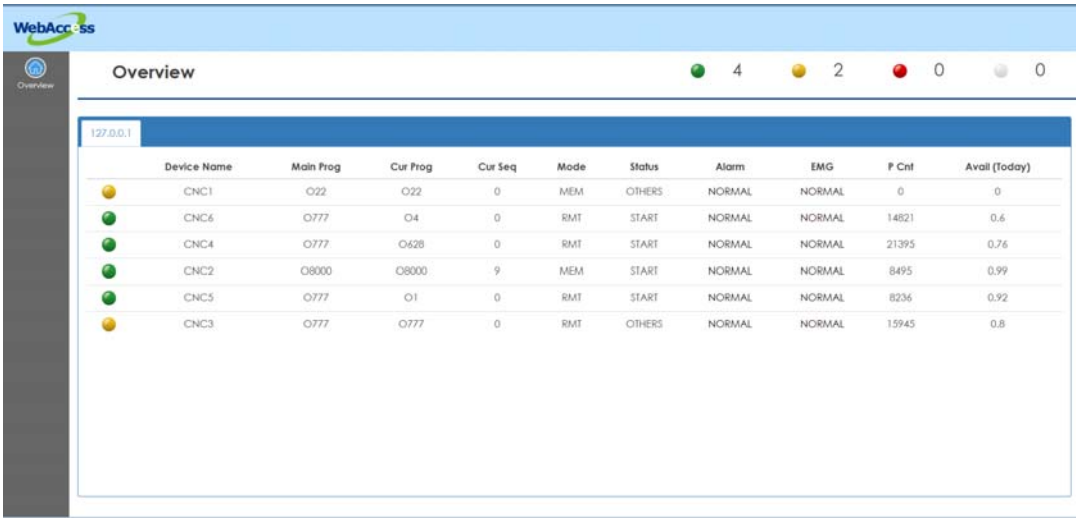


Figure 3.1 Overview screen

3.1.2 The Information Screen

Data monitoring allows you to monitor data from connected CNC devices in real time, including CNC status, coordinates, G-code, non-G-code, part count, CNC operating time, actual feed rate, and actual speed.

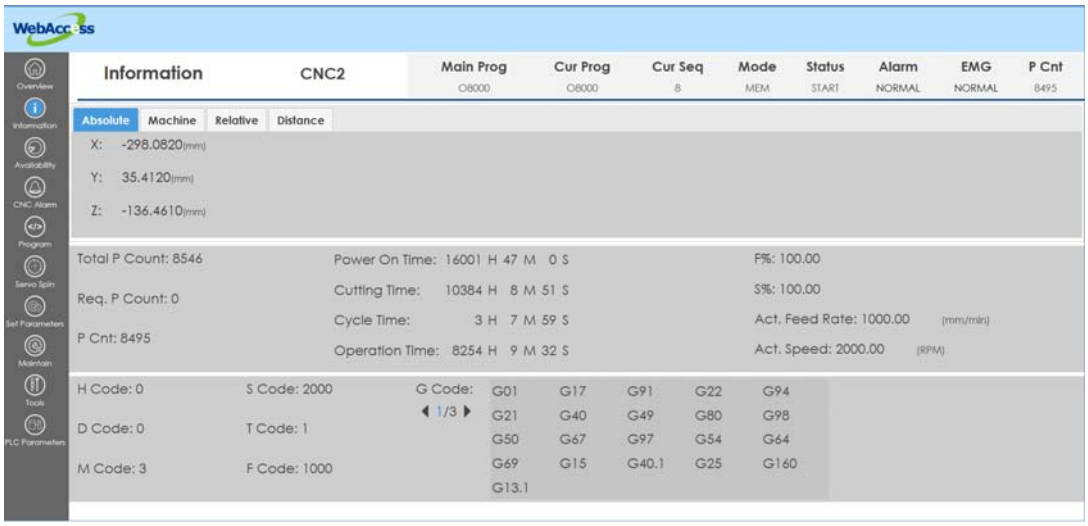


Figure 3.2 Information screen

3.1.3 The Availability Screen:

The query tool provides details of CNC availability inquiries to assist you with handling production efficiency optimization.

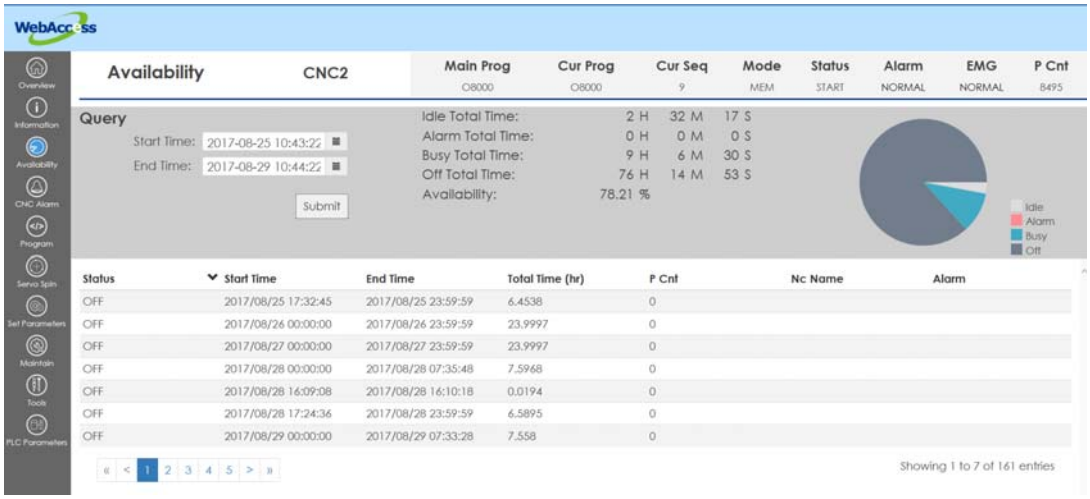


Figure 3.3 Availability screen

3.1.4 The CNC Alarm Screen

This screen provides information on historical alarms and CNC operation records.

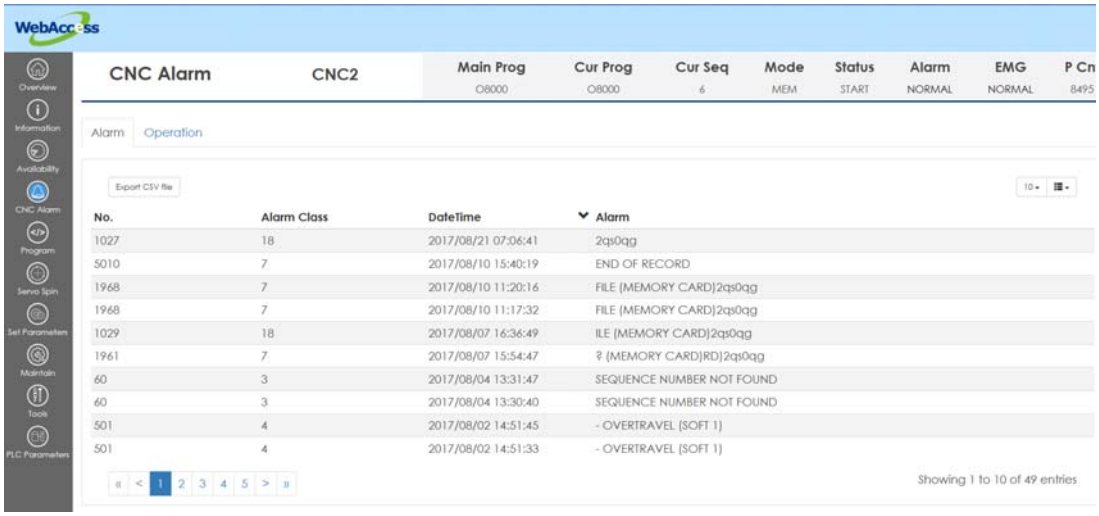


Figure 3.4 Alarm screen

You can export alarm and operation in CSV format. Note that the file will be created in the current project folder (e.g., C:\WebAccess\Node*Project Name_Node Name**log**Device Name*).

3.1.5 The Program Screen

This screen provides a function for uploading/downloading NC files and an editing interface for programming NC files.

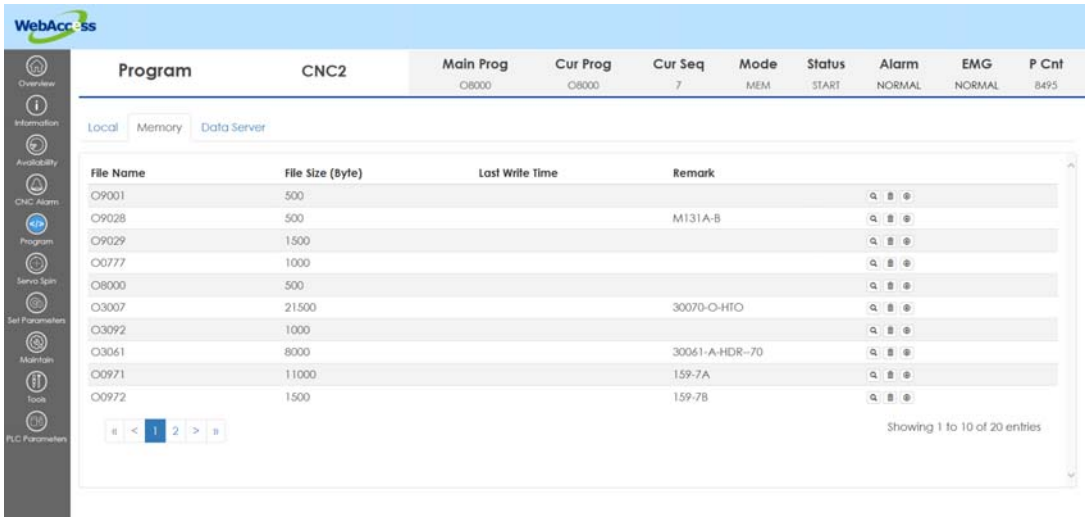


Figure 3.5 Program screen

You can download NC files from memory or a data server to a local folder under your project (e.g., C:\WebAccess\Node***Project Name_Node Name\pgm\Device Name***).

The path of the memory folder can be set by the driver tag “MNcPath.” The default value of this tag is an empty string. Some examples of “MNcPath” are listed as follows:

FANUC: //CNC_MEM/USER/PATH1/

SIEMENS: /nckfs/_N_MPF_DIR

3.1.6 The Servo Spin Screen

This screen provides real-time monitoring information on spindle loading, which allows you to analyze tool wear/damage.

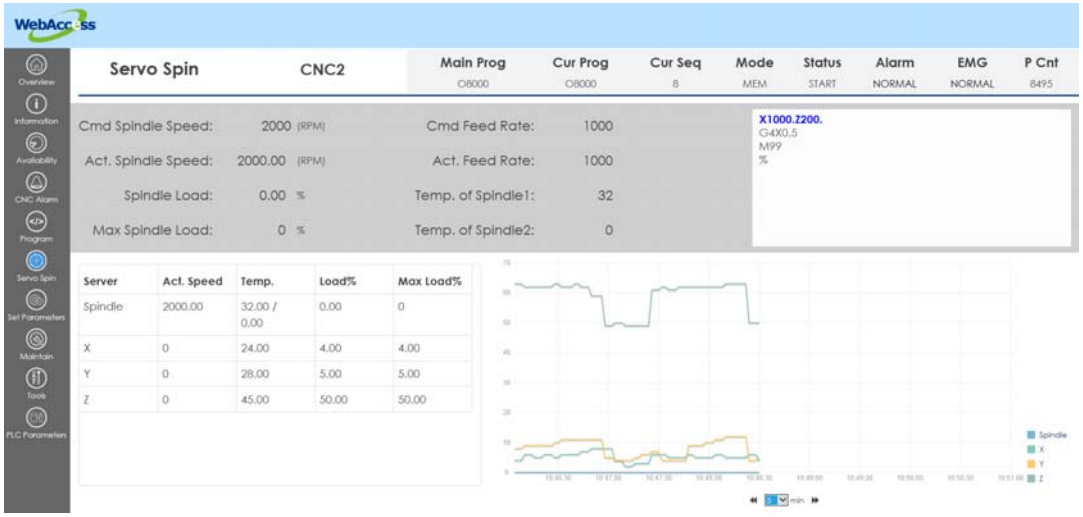


Figure 3.6 Servo Spin screen

3.1.7 The Set Parameters Screen

This screen provides tool offset, work coordinates, and macro variable read/write functions.

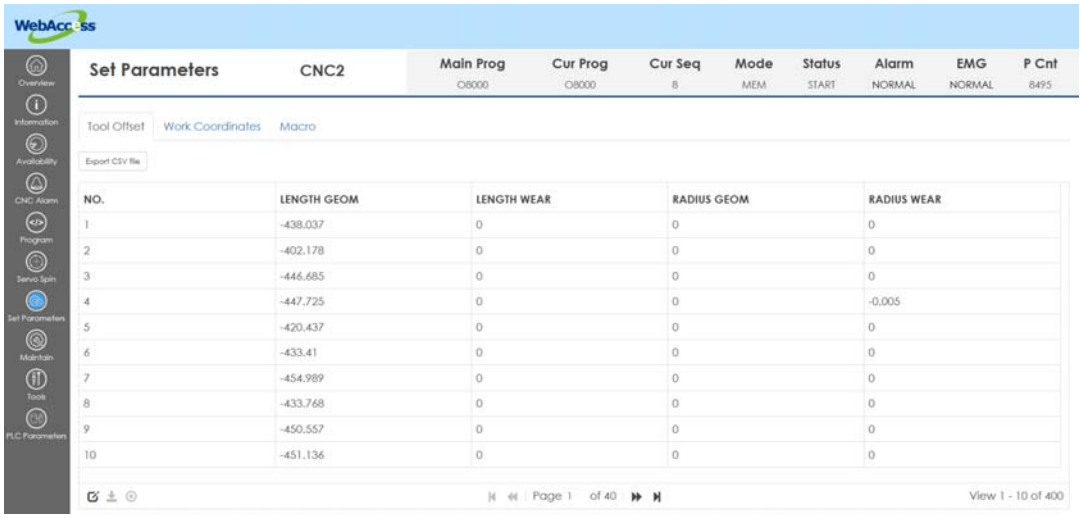


Figure 3.7 Set Parameters screen

3.1.8 The Maintain Screen

WebAccess/CNC provides a basic maintenance function. If a maintenance item does not have a value in “PLC node,” WebAccess/CNC Runtime will detect whether CNC is running and calculate the usage time. Warnings will appear once the usage time is more than or equal to the lifetime.

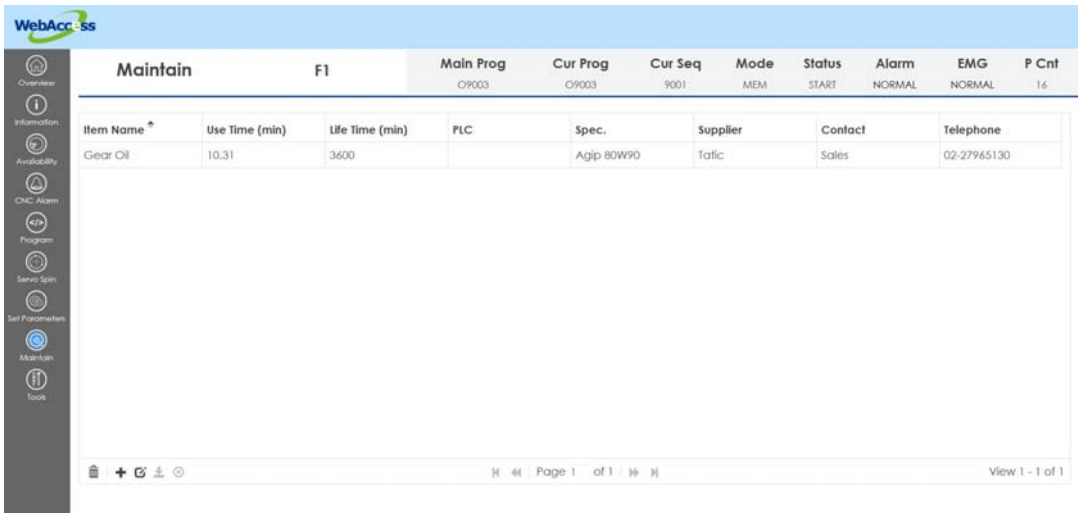


Figure 3.8 Maintain screen

3.1.9 The Tools Screen

WebAccess/CNC provides a basic tools management function. The processing time is measured when CNC is running under MEM mode. A warning will appear once the processing time is more than or equal to the lifetime.

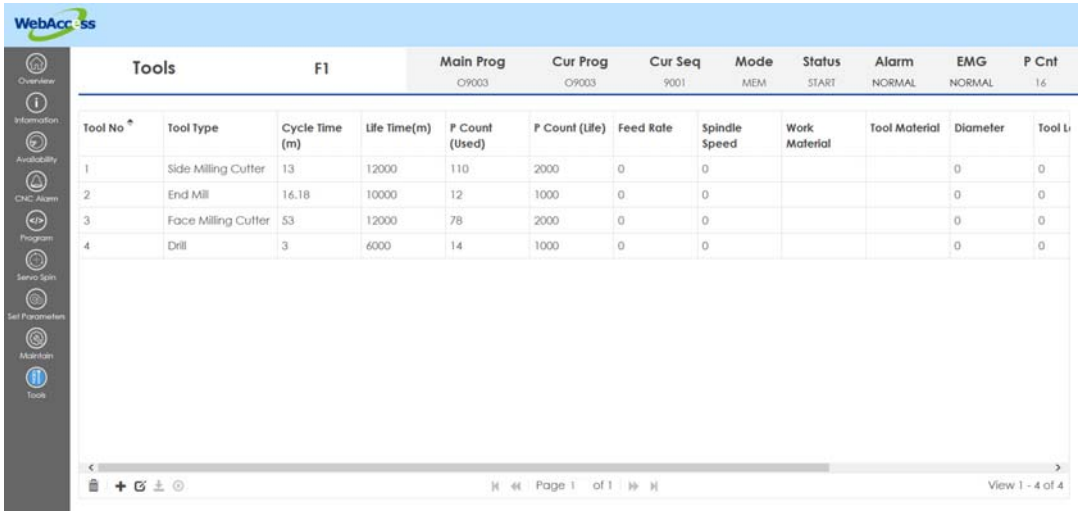


Figure 3.9 Tools screen

3.1.10 The PLC Parameters Screen

WebAccess/CNC provides a PLC register query interface for obtaining information on I/O or memory status. This function can help you to create tags for monitoring the I/O status of CNC machines.

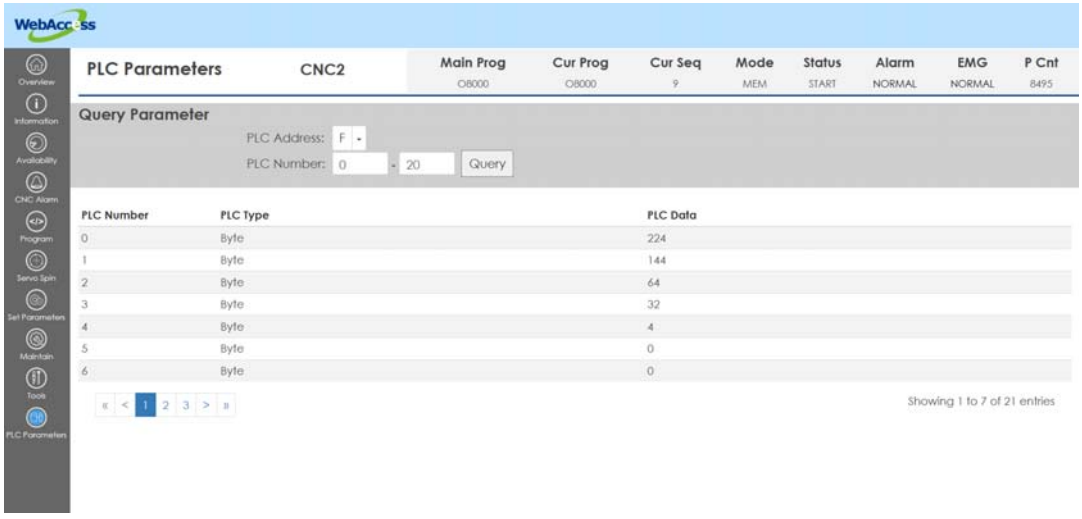


Figure 3.10 PLC Parameters screen

3.2 Parameters of WebAccess/CNC Webpages

The resolution for WebAccess/CNC functions to be viewable is from 1280 x 720 to 1920 x 1080.

The blue WebAccess title bar of the WebAccess/CNC functions web page can be removed by setting the video display parameter “mode” of wacnc.drw, as follows:

uti:../WebAccessCNC/index.asp?goto=graph=main&***mode=1***&hwnd=%HWND&

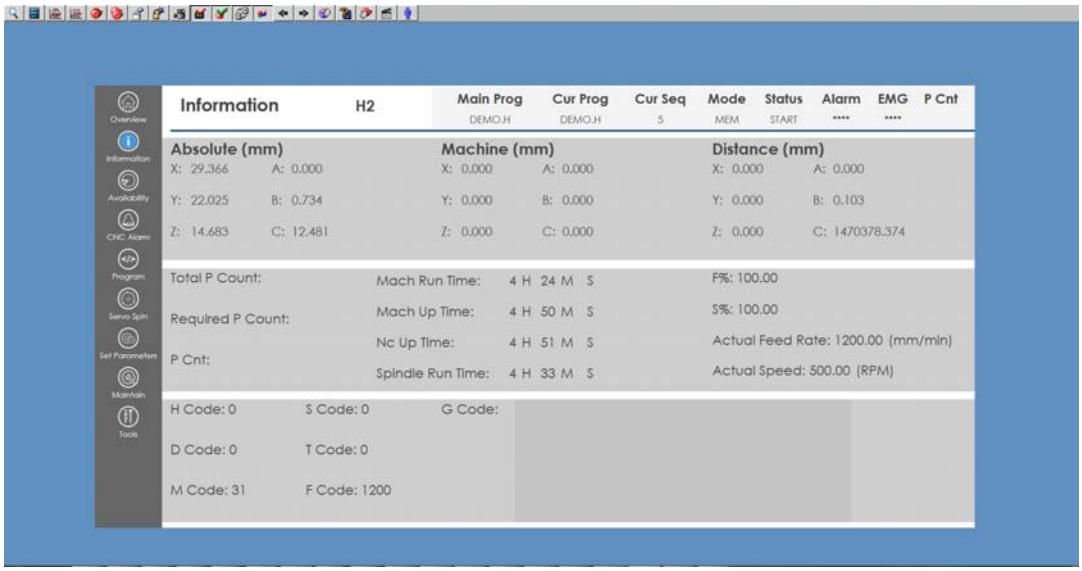


Figure 3.11 Removing the WebAccess title bar

You can set which of the nine main CNC tool screens can be viewed in addition to the Overview screen. Which screens are viewable can be modified by setting the video display parameter “menu” of the wacnc.drw as follows:

uti:../WebAccessCNC/index.asp?goto=graph=main&***menu=224***&hwnd=%HWND&

Table 3.1: WebAccess/CNC menu parameter definition						
“menu” value	0	2	6	128	224	480
Information	✓	✓	✓	✓	✓	✓
Availability	✓	×	×	✓	✓	✓
CNC Alarm	✓	✓	×	✓	✓	✓
Program	✓	✓	✓	✓	✓	✓
Servo Spin	✓	✓	✓	✓	✓	✓
Set Parameters	✓	✓	✓	✓	×	×
Maintain	✓	✓	✓	✓	×	×
Tools	✓	✓	✓	×	×	×
PLC Parameters	✓	✓	✓	✓	✓	×

Figure 3.12 Available functions when the setting “menu=224” is applied

You can set each CNC device’s information page so that it can be accessed directly. To do this, adjust the video display parameters “device” and “comport” in your DRW file as follows:
uti:../WebAccessCNC/index.asp?***device=CNC6***&***comport=1***&hwnd=%HWND&

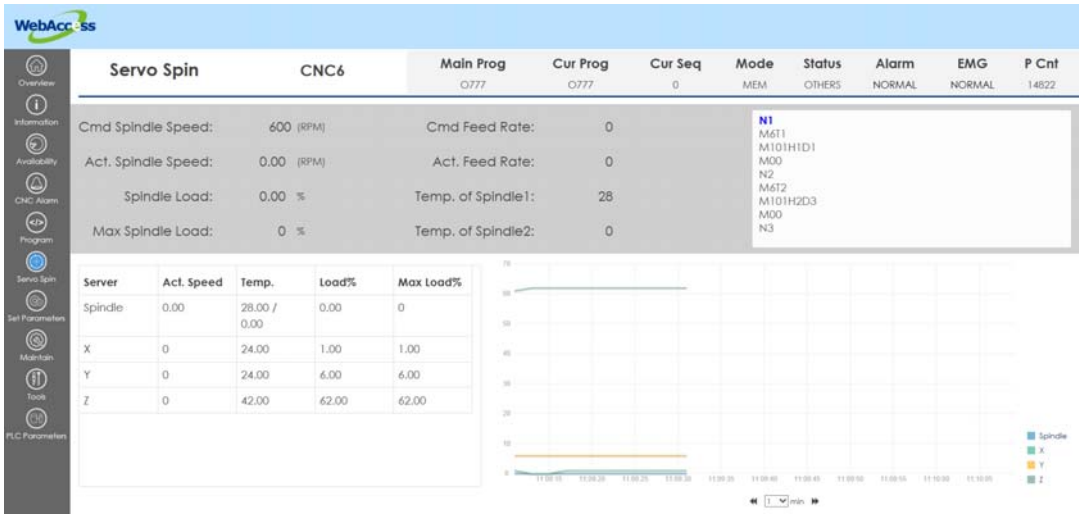


Figure 3.13 Directly access the WebAccess/CNC device information page

Each screen for the different CNC device functions can be accessed directly by setting the video display parameters “page” in your DRW file as follows:
uti:../WebAccessCNC/index.asp?device=H1&comport=1&***page=program***&hwnd=%HWND&

Table 3.2: WebAccess/CNC page parameter definition	
Functions	**Page Name**
Overview	page=overview
Information	page=info
Availability	page=avail
CNC Alarm	page=alarm
Program	page=program
Servo Spin	page=servo
Set Parameters	page=parameter
Maintain	page=maintain
Tools	page=toolmanage
PLC Parameters	page=plcparameter

Chapter 4

WebAccess/CNC Driver

4.1 CNC Runtime API List

Table 4.1 lists the definitions of the WebAccess/CNC driver.

Table 4.1: Supported APIs (See the SKYMARS API Manual)

API	Description
SKY_conn_status_single	Get the CNC connection status
GET_information	Get basic correlation information
GET_information_heid	Get basic correlation information (HEIDENHAIN controller)
GET_status	Get status information
GET_position	Get the coordinate status
GET_gcode	Get the G-code
GET_othercode	Get other codes (H, D, T, M, B, F, and S)
GET_feed_spindle	Get the feed rate/spindle speed
GET_time	Get the CNC system time
GET_time_heid	Get the CNC system time (HEIDENHAIN controller)
GET_part_count	Get the part count
GET_part_total	Get the total part count
GET_part_required	Get the required part count
GET_alm_current2	Get current occurring alarm
GET_msg_current	Get the operation message
GET_alm_history2	Get the alarm history
GET_msg_history	Get the operation history
GET_plc_alarm	Get the PLC alarm history
GET_servo_current	Get current loads of all spindles
GET_servo_load	Get the servo load percentage (%)
GET_servo_speed	Gethe servo speed
GET_spindle_load	Get the percentage of spindle load (%)
GET_spindle_speed	Get the spindle speed
GET_servo_temperature	Get the servo motor temperature
GET_spindle_temperature	Get the spindle temperature
GET_utilization_all_today	Get he utilization rate data for the current day
GET_utilization_single_all	Get all utilization rate data for a single machine
GET_nc_mem_list	Get the NC list from the machine (memory)
GET_nc_ftp_list	Get the NC list from FTP (Fanuc Data Server/MITSUBISHI CF card)
GET_nc_local_list (*)	Get the NC list from local storage
GET_nc_mem_code	Get the NC program content from memory
GET_nc_ftp_code	Get the NC program content from FTP (Fanuc Data Server/ MITSUBISHI CF card)
GET_nc_pointer	Get the pointer (line) of the current NC
GET_nc_current_block	Get the NC of the current and next block
UPLOAD_nc_mem	Upload NC data to memory
UPLOAD_nc_ftp	Upload NC data to FTP (Fanuc Data Server/MITSUBISHI CF card)
DEL_nc_mem	Clear NC data from memory
DEL_nc_ftp	Delete NC data from FTP (Fanuc Data Server/MITSUBISHI CF card)

DEL_nc_local (*)	Delete NC data from local storage
SET_nc_main	Set or assign NC data to the main program
GET_plc_ver	Get the PLC version information
GET_plc_addr2	Get the PLC address of start and end number
GET_plc_status2	Get the PLC status
GET_offset_title	Get the title of the tool offset
GET_offset_all	Get the offset of all tools
SET_offset_single	Write the offset of a single tool
GET_macro_all	Get data for all macro (common) variables
SET_macro_single	Set data for a single macro (common) variable
GET_TOOL_TABLE_SIEMENS	Get SIEMENS tool tables
GET_TOOL_EDGE_PARAMETER_SIEMENS	Get SIEMENS tool edge parameters
GET_maint_all	Get all maintenance management data
GET_toolmanage_all2	Get all tool management data

(*): not SkyMars API

4.2 WebAccess/CNC Driver List

Table 4.2: Driver Block Type List

Block Type Name	Description
FANUC	For FANUC controllers
MIT	For MITSUBISHI controllers
HEID	For HEIDENHAIN controllers
SIEMENS	For SIEMENS controllers
LNCRecon	For Advantech LNC controllers

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)

Tag Name	Address	Type	Description
MachName	Common;20001	Text	Machine name
MNcPath	Common;20017	Text	NC file path in memory
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
DEL_nc_ftp			
Supported CNC: FANUC, MITSUBISHI			
DelFPgm	DEL_nc_ftp;10009	Discrete	Flag from deleting an NC program from the data server (FTP) (0 -> 1)
DelFName	DEL_nc_ftp;20009	Text	Deleted (FTP server) NC program name (input)
DEL_nc_mem			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN			
DelMPgm	DEL_nc_mem;10008	Discrete	Flag from deleting an NC program from memory (0 -> 1)
DelMName	DEL_nc_mem;20008	Text	Deleted (memory) NC program name (input)

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)			
DEL_nc_local			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN,			
DelLPgm	DEL_nc_mem;10010	Discrete	Flag from deleting an NC program from the local disk (0 -> 1)
DelLName	DEL_nc_mem;20010	Text	Deleted (local disk) NC program name (input)
GET_alm_current2			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
AlmClass	GET_alm_current2;0,AlmData,1,AlmClass	Text (Array)	Alarm class
AlmCode	GET_alm_current2;0,AlmData,1,AlmCode	Text (Array)	Alarm code
AlmMsg	GET_alm_current2;0,AlmData,1,AlmMsg	Text (Array)	Alarm message
IsAlarm	GET_alm_current2;1,IsAlarm	Discrete	Alarm status
GET_alm_history2			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
AlmClasH	GET_alm_history2;0,AlmHis,1,AlmClass	Text (Array)	History alarm class
AlmCodeH	GET_alm_history2;0,AlmHis,1,AlmCode	Text (Array)	History alarm code
AlmDateH	GET_alm_history2;0,AlmHis,1,AlmDate	Text (Array)	History alarm date
AlmMsgH	GET_alm_history2;0,AlmHis,1,AlmMsg	Text (Array)	History alarm message
GetHAlm	GET_alm_history2;10001	Discrete	Flag from getting a history alarm (0 ->1)
GET_feed_spindle			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
ActFeed	GET_feed_spindle;1,ActFeed	Analog	Actual feed rate
ActSpin	GET_feed_spindle;1,ActSpindle	Analog	Actual spindle speed
OvFeed	GET_feed_spindle;1,OvFeed	Analog	Feed override
OvSpin	GET_feed_spindle;1,OvSpindle	Analog	Spindle override
GET_gcode			
Supported CNC: FANUC, MITSUBISHI, SIEMENS			
GCode	GET_gcode;0,gcode,1,Gdata	Text (Array)	G-code
GET_information			
Supported CNC: FANUC, MITSUBISHI, SIEMENS			
Axes	GET_information;1,Axes	Analog	Current number of axes
CncType	GET_information;1,CncType	Text	e.g., '18' = Series 180/180i
MaxAxes	GET_information;1,MaxAxes	Analog	Maximum number of axes for this CNC type
NcVer	GET_information;1,Nc_Ver	Text	NC version
Series	GET_information;1,Series	Text	M/T type
GET_information_heid			
Supported CNC: HEIDENHAIN			

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)			
Axes_H	GET_information_heid;1,Axes	Analog	Axes (HEIDENHAIN)
FCL_H	GET_information_heid;1,FCL	Text	FCL (HEIDENHAIN)
Model_H	GET_information_heid;1,Model	Text	Model (HEIDENHAIN)
NcVer_H	GET_information_heid;1,Nc_Ver	Text	NC version (HEIDENHAIN)
PlcVer_H	GET_information_heid;1,Plc_Ver	Text	PLC version (HEIDENHAIN)
GET_msg_current			
Supported CNC: FANUC			
IsMsg	GET_msg_current;1,IsMsg	Discrete	Message status
MsgCode	GET_msg_current;1,MsgCode	Text	Operation message code
MsgText	GET_msg_current;1,MsgText	Text	Operation message text
GET_msg_history			
Supported CNC: FANUC			
MsgCodeH	GET_msg_history;0,MsgHis,1,MsgCode	Text (Array)	History operation message code
MsgDateH	GET_msg_history;0,MsgHis,1,MsgDate	Text (Array)	History operation message date
MsgTextH	GET_msg_history;0,MsgHis,1,MsgText	Text (Array)	History operation message text
GetHMsg	GET_msg_history;10002	Discrete	Flag from getting a history operation message (0 -> 1)
GET_nc_current_block			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN			
CurNcBlk	GET_nc_current_block;0,NcBlock,1,Block	Text (Array)	Get the content of the currently running program blocks
GET_nc_ftp_code			
Supported CNC: FANUC, MITSUBISHI, SIEMENS			
GetFPgm	GET_nc_ftp_code;10005	Discrete	Flag from getting NC program from a data server (FTP) (0 -> 1)
FQNc	GET_nc_ftp_code;20005	Text	FTP data server: NC program name (input)
GET_nc_ftp_list			
Supported CNC: FANUC, MITSUBISHI, SIEMENS			
FNcTime	GET_nc_ftp_list;0,NcList,1,DateTime	Text (Array)	FTP data server: NC program modification date
FNcFD	GET_nc_ftp_list;0,NcList,1,FD	Text (Array)	FTP data server: NC program file type (file/directory)
FNcName	GET_nc_ftp_list;0,NcList,1,NcName	Text (Array)	FTP data server: NC program name
FNcSize	GET_nc_ftp_list;0,NcList,1,Size	Analog (Array)	FTP data server: NC size (Bytes)
GetFList	GET_nc_ftp_list;10019	Discrete	Flag from getting an NC program list from a data server (FTP) (0 -> 1)
GET_nc_local_list			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)			
LNcTime	GET_nc_local_list;0,NcList,1,DateTime	Text (Array)	Local PC: NC program modification date
LNcName	GET_nc_local_list;0,NcList,1,NcName	Text (Array)	Local PC: NC program name
LNcSize	GET_nc_local_list;0,NcList,1,Size	Analog (Array)	Local PC: NC size (Bytes)
GetLList	GET_nc_local_list;10017	Discrete	Flag from getting an NC program list from a local disk (0 -> 1)
GET_nc_mem_code			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
GetMPgm	GET_nc_mem_code;10004	Discrete	Flag from getting an NC program from memory (0 -> 1)
MQNc	GET_nc_mem_code;20004	Text	Internal memory: NC program name (input)
GET_nc_mem_list			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
MNcTime	GET_nc_mem_list;0,NcList,1,DateTime	Text (Array)	Machine memory: NC program modification date
MNcFD	GET_nc_mem_list;0,NcList,1,FD	Text (Array)	Machine memory: NC program file type (file/directory)
MNcName	GET_nc_mem_list;0,NcList,1,NcName	Text (Array)	Machine memory: NC program name
MNcRmk	GET_nc_mem_list;0,NcList,1,Remark	Text (Array)	Machine memory: NC program remark
MNcSize	GET_nc_mem_list;0,NcList,1,Size	Analog (Array)	Machine memory: NC program size (Bytes)
GetMList	GET_nc_mem_list;10018	Discrete	Flag from getting an NC program list from CNC memory (0 -> 1)
GET_nc_pointer			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
CurNcPtr	GET_nc_pointer;1,BlkPointer	Analog	Pointer of the current program
GET_othercode			
Supported CNC: FANUC, MITSUBISHI(only B code), HEIDENHAIN(only M, F, T, S code) SIEMENS			
BCode	GET_othercode;1,BCode	Analog	B-code
DCode	GET_othercode;1,DCode	Analog	D-code
FCode	GET_othercode;1,FCode	Analog	F-code
HCode	GET_othercode;1,HCode	Analog	H-code
MCode	GET_othercode;1,MCode	Analog	M-code
SCode	GET_othercode;1,SCode	Analog	S-code
TCode	GET_othercode;1,TCode	Analog	T-code
GET_part_count			
Supported CNC: FANUC, MITSUBISHI, SIEMENS			
PartCnt	GET_part_count;1,PartCount	Analog	Part count
GET_part_required			
Supported CNC: FANUC, SIEMENS			
PartReq	GET_part_required;1,PartRequired	Analog	Part required
GET_part_total			

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)			
Supported CNC: FANUC			
ParTotal	GET_part_total;1,PartTotal	Analog	Total part count
GET_plc_alarm			
Supported CNC: FANUC			
PlcAlm	GET_plc_alarm;0,PlcAlm,1,AlmMsg	Text (Array)	PLC alarm message
GET_plc_ver			
Supported CNC: FANUC, MITSUBISHI			
PlcDate	GET_plc_ver;1,Date	Text	PLC version date
PlcDesig	GET_plc_ver;1,Designed	Text	PLC version designer
PlcVer	GET_plc_ver;1,Version	Text	PLC version
GET_position			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
AbsPos	GET_position;0,PosData,1,Abs	Analog	
(Array)	The Absolute Coordinate of Axes		
AxisName	GET_position;0,PosData,1,AxisName	Text (Array)	Axis name
RemDist	GET_position;0,PosData,1,Dist	Analog (Array)	Remaining axis distance
MachPos	GET_position;0,PosData,1,Mach	Analog (Array)	Axis machine coordinates
RelPos	GET_position;0,PosData,1,Rel	Analog (Array)	Relative axis coordinates
AxisUnit	GET_position;0,PosData,1,Unit	Text (Array)	Axis unit
GET_servo_current			
Supported CNC: FANUC			
ServCurr	GET_servo_current;0,AxisCurrent,1,Current	Analog (Array)	Load current value of each axis
GET_servo_load			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
SerLd01	GET_servo_load;1,ServoLoadPercent,1,Load	Analog	Load values for each axis (%)
SerLd02	GET_servo_load;2,ServoLoadPercent,1,Load	Analog	Load values for each axis (%)
SerLd03	GET_servo_load;3,ServoLoadPercent,1,Load	Analog	Load values for each axis (%)
SerLd04	GET_servo_load;4,ServoLoadPercent,1,Load	Analog	Load values for each axis (%)
SerLd05	GET_servo_load;5,ServoLoadPercent,1,Load	Analog	Load values for each axis (%)
SerLd06	GET_servo_load;6,ServoLoadPercent,1,Load	Analog	Load values for each axis (%)
SerLd07	GET_servo_load;7,ServoLoadPercent,1,Load	Analog	Load values for each axis (%)
SerLd08	GET_servo_load;8,ServoLoadPercent,1,Load	Analog	Load values for each axis (%)

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)			
SerLd09	GET_servo_load;9,ServoLoad-Percent,1,Load	Analog	Load values for each axis (%)
SerLd10	GET_servo_load;10,Servo-LoadPercent,1,Load	Analog	Load values for each axis (%)
SerLd11	GET_servo_load;11,Servo-LoadPercent,1,Load	Analog	Load values for each axis (%)
SerLd12	GET_servo_load;12,Servo-LoadPercent,1,Load	Analog	Load values for each axis (%)
GET_servo_speed			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
ServSped	GET_servo_speed;0,Servo-LoadPercent,1,Speed	Analog (Array)	Servo shaft speed
GET_servo_temperature			
Supported CNC: FANUC, HEIDENHAIN, SIEMENS			
ServTemp	GET_servo_temperature;0,Temperature,1,AxisTemp	Analog (Array)	Servo motor temperature
GET_spindle_load			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
SpinLoad	GET_spindle_load;1,Load	Analog	Spindle load (%)
GET_spindle_speed			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, *SIEMENS*			
SpinSped	GET_spindle_speed;1,Speed	Analog	Spindle speed
GET_spindle_temperature			
Supported CNC: FANUC, HEIDENHAIN,			
SpinTmp1	GET_spindle_temperature;1,Spindle_1_Temp	Analog	Temperature of Spindle 1
SpinTmp2	GET_spindle_temperature;1,Spindle_2_Temp	Analog	Temperature of Spindle 2
GET_status			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
Alarm	GET_status;1,Alarm	Text	Alarm
NcStatus	GET_status;1,CncStatus	Text	CNC Status (e.g., "STOP", "START")
CurPgm	GET_status;1,CurProg	Text	Current program
CurSeq	GET_status;1,CurSeq	Analog	Sequence of the current program
Emg	GET_status;1,Emg	Text	EMG
MainPgm	GET_status;1,MainProg	Text	Main program
Mode	GET_status;1,Mode	Text	e.g., "MDI", "MEM"
GET_time			
Supported CNC: FANUC, MITSUBISHI, SIEMENS			
CutHour	GET_time;1,Cutting,1,Hour	Analog	Cutting time (hours)
CutMin	GET_time;1,Cutting,1,Minuite	Analog	Cutting time (minutes)
CutSec	GET_time;1,Cutting,1,Second	Analog	Cutting time (seconds)
CycHour	GET_time;1,Cycle,1,Hour	Analog	Cycle time (hours)
CycMin	GET_time;1,Cycle,1,Minuite	Analog	Cycle time (minutes)
CycSec	GET_time;1,Cycle,1,Second	Analog	Cycle time (seconds)
OperHour	GET_time;1,Operation,1,Hour	Analog	Operation time (hours)

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)			
OperMin	GET_time;1,Operation,1,Minuite	Analog	Operation time (minutes)
OperSec	GET_time;1,Operation,1,Second	Analog	Operation time (seconds)
PowHour	GET_time;1,Power,1,Hour	Analog	Power time (hours)
PowMin	GET_time;1,Power,1,Minuite	Analog	Power time (minutes)
PowSec	GET_time;1,Power,1,Second	Analog	Power time (seconds)
GET_time_heid			
Supported CNC: HEIDENHAIN			
RunHour_H	GET_time_heid;1,MachineRunning,1,Hour	Analog	Machine run time (hours) (HEIDENHAIN)
RunMin_H	GET_time_heid;1,MachineRunning,1,Minuite	Analog	Machine run time (minutes) (HEIDENHAIN)
UpHour_H	GET_time_heid;1,MachineUp,1,Hour	Analog	Machine up time (hours) (HEIDENHAIN)
UpMin_H	GET_time_heid;1,MachineUp,1,Minuite	Analog	Machine up time (minutes) (HEIDENHAIN)
NUpHour_H	GET_time_heid;1,NcUp,1,Hour	Analog	NC up time (hours) (HEIDENHAIN)
NUpMin_H	GET_time_heid;1,NcUp,1,Minuite	Analog	NC up time (minutes) (HEIDENHAIN)
SRunHour_H	GET_time_heid;1,SpindleRunning,1,Hour	Analog	Spindle running time (hours) (HEIDENHAIN)
SRunMin_H	GET_time_heid;1,SpindleRunning,1,Minuite	Analog	Spindle running time (minutes) (HEIDENHAIN)
GET_utilization_all_today			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
UtiAAlm	GET_utilization_all_today;0,Util,1,AlarmTotal	Analog	Today machine availability: total abnormal time (hours)
UtiABusy	GET_utilization_all_today;0,Util,1,BusyTotal	Analog	Machine availability for the current day: total busy time (hours)
UtiACyc	GET_utilization_all_today;0,Util,1,CycleTotal	Analog	Machine availability for the current day: total number of processing cycles
UtiAIdle	GET_utilization_all_today;0,Util,1,IdleTotal	Analog	Machine availability for the current day: total idle time (hours)
UtiAOff	GET_utilization_all_today;0,Util,1,OffTotal	Analog	Machine availability for the current day: total off time (hours)
UtiAPTCnt	GET_utilization_all_today;0,Util,1,PartTotal	Analog	Machine availability for the current day: total number of workpieces
GET_utilization_single_all			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
UtiAlmM	GET_utilization_single_all;0,UtilList,1,Alarm	Text (Array)	Single machine availability: alarm number and information
UtiETime	GET_utilization_single_all;0,UtilList,1,EndDateTime	Text (Array)	Single machine availability: end time
UtiNcPgm	GET_utilization_single_all;0,UtilList,1,NcName	Text (Array)	Single machine availability: NC program name

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)			
UtiPCnt	GET_utilization_single_all;0,UtilList,1,PartCount	Analog (Array)	Single machine availability: number of workpieces
UtiStatu	GET_utilization_single_all;0,UtilList,1,Status	Text (Array)	Single machine availability: status (OFF, IDLE, ALARM, BUSY)
UtiSTime	GET_utilization_single_all;0,UtilList,1,StDateTime	Text (Array)	Single machine availability: start time
UtiTTime	GET_utilization_single_all;0,UtilList,1,TotalTime	Analog (Array)	Single machine availability: total time
UtiAlarm	GET_utilization_single_all;1,Util,1,AlarmTotal	Analog	Today machine availability: total alarm time (hours)
UtiBusy	GET_utilization_single_all;1,Util,1,BusyTotal	Analog	Single machine availability: total busy time (hours)
UtiCycle	GET_utilization_single_all;1,Util,1,CycleTotal	Analog	Single machine availability: total number of processing cycles
UtiIdle	GET_utilization_single_all;1,Util,1,IdleTotal	Analog	Single machine availability: total idle time (hours)
UtiOff	GET_utilization_single_all;1,Util,1,OffTotal	Analog	Single machine availability: total off time (hours)
UtiPTCnt	GET_utilization_single_all;1,Util,1,PartTotal	Analog	Single machine availability: total number of workpieces
GetUtiS	GET_utilization_single_all;10003	Discrete	Flag from get utilization single all (0 -> 1)
UtiQST	GET_utilization_single_all;20002	Text	Single machine availability: query start time. Format is YYYY-MM-dd HH:mm:ss (input)
UtiQET	GET_utilization_single_all;20003	Text	Single machine availability: query end time. Format is YYYY-MM-dd HH:mm:ss (input)
SET_nc_main			
Supported CNC: FANUC			
SetMain	SET_nc_main;10011	Discrete	Flag from setting the main program (0 -> 1)
SetMainN	SET_nc_main;20011	Text	Set an NC program name as the main program (input)
SKY_conn_status_single			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
Status	SKY_conn_status_single;1,SKY_conn_status_single,1,Status	Discrete	Connection status
UPLOAD_nc_ftp			
Supported CNC: FANUC, MITSUBISHI, SIEMENS			
UpFPgm	UPLOAD_nc_ftp;10007	Discrete	Flag from uploading NcCode to a data server (FTP) (0 -> 1)
UpFNc	UPLOAD_nc_ftp;20007	Text	The FTP Server Upload NC Program Name (input)
UPLOAD_nc_mem			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
UpMPgm	UPLOAD_nc_mem;10006	Discrete	Flag from upload NcCode to memory (0 -> 1)
UpMNc	UPLOAD_nc_mem;20006	Text	Memory upload: NC program name (input)

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)			
GET_offset_title			
Supported CNC: FANUC, MITSUBISHI			
OffTitle	GET_offset_title;0,Offset,1,Title	Text	Tool offset title
GetOTitle	GET_offset_title;10012	Discrete	Flag from getting a tool offset's title (0 -> 1)
GET_offset_all			
Supported CNC: FANUC, MITSUBISHI			
Offset01	GET_offset_all;0,Offset,1,C0	Analog (Array)	Tool offset value (Column 1)
Offset02	GET_offset_all;0,Offset,1,C1	Analog (Array)	Tool offset value (Column 2)
Offset03	GET_offset_all;0,Offset,1,C2	Analog (Array)	Tool offset value (Column 3)
Offset04	GET_offset_all;0,Offset,1,C3	Analog (Array)	Tool offset value (Column 4)
GetOData	GET_offset_all;10013	Discrete	Flag from getting all tool offset data (0 -> 1)
SET_offset_single			
Supported CNC: FANUC, MITSUBISHI			
SetONum	SET_offset_single;20012	Analog	The number of offset data (input)
SetOVal	SET_offset_single;20013	Analog	The values offset data (input)
SetOData	SET_offset_single;10014	Discrete	Flag from setting the offset data (0 -> 1)
GET_macro_all			
Supported CNC: FANUC, MITSUBISHI,SIEMENS			
MacNum	GET_macro_all;0,Macro,1,MacroNumber	Analog (Array)	The number of macro data
MacData	GET_macro_all;0,Macro,1,MacroData	Analog (Array)	Macro data
GetMacro	GET_macro_all;10015	Discrete	Flag from getting all macro data (0 -> 1)
SET_macro_single			
Supported CNC: FANUC, MITSUBISHI			
SetMacNo	SET_macro_single;20014	Analog	The number of data (input)
SetMacro	SET_macro_single;20015	Analog	The values of macro data (input)
SetMData	SET_macro_single;10016	Discrete	Flag from setting the macro data (0 -> 1)
GET_tool_table_siemens			
Supported CNC: SIEMENS			
ToolMemNo	GET_tool_table_siemens;0,ToolData;1;ToolMemeryNO	Analog (Array)	The number of tools in memory (SIEMENS)
ToolPlace	GET_tool_table_siemens;0,ToolData;1;ToolPlace	Analog (Array)	The number of tools in memory (SIEMENS)
ToolName	GET_tool_table_siemens;0,ToolData;1,ToolName	Text (Array)	The name of a tool in memory (SIEMENS)
EdgeCnt	GET_tool_table_siemens;0,ToolData;1,EdgeCount	Analog (Array)	The edge count of a tool (SIEMENS)
GetTool	GET_tool_table_siemens;10020	Discrete	Flag from getting tool data (SIEMENS) (0->1)

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)			
GET_tool_edge_parameter_siemens			
Supported CNC: SIEMENS			
Edge1PNo	GET_tool_edge_parameter_siemens;1,EdgeData,0,ParmaData,1,ParamNO	Analog (Array)	The parameter number of first tool edge (SIEMENS)
Edge2PNo	GET_tool_edge_parameter_siemens;2,EdgeData,0,ParmaData,1,ParamNO	Analog (Array)	The parameter number of second tool edge (SIEMENS)
Edge3PNo	GET_tool_edge_parameter_siemens;3,EdgeData,0,ParmaData,1,ParamNO	Analog (Array)	The parameter number of third tool edge (SIEMENS)
ToolQMNo	GET_tool_edge_parameter_siemens;20016	Analog	The number of tool in memory (SIEMENS) (Input)
GetTEP	GET_tool_edge_parameter_siemens;10021	Discrete	The flag of getting tool edge parameters (SIEMENS)
GET_plc_status2/SET_plc_status2_adv			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN			
PlcType	GET_plc_status2;1,PlcStatus,1,PlcType;M,N (M: address, N: PLC number)	Discrete (0:byte 1:short 2:int 3:bool 4:double 5:string 6:sbyte)	Type of PLC status data address: FANUC: G, F, Y, X, A, R, T, K, C, D, E MITSUBISHI: X, Y, M, F, L, SM, D, R, W, B, SB,V, SW, SD HEIDENHAIN: M, B, W, D, I, O, T, C, S, IB, IW, ID, OB, OW, OD
PlcData	GET_plc_status2;1,PlcStatus,1,PlcDataStr;M,N (M: address, N: PLC number)	Analog (default)	The data of PLC status data PlcDataStr: PLC data(text) for all type including Byte, Short, Int, Bool, Double, String, Sbyte
GET_plc_status2_Siemens/SET_plc_status2_Siemens			
Supported CNC: SIEMENS			
PlcType	GET_plc_status2_Siemens;1,PlcStatus,1,PlcType;M,N (M: address, N: PLC number)	Discrete (0:byte 1:short 2:int 3:bool 4:double 5:string 6:sbyte)	The type of PLC status data (SIEMENS) Address: SIEMENS: I/IB/ID/IW/M/MB/MD/MM/Q/QB/QD/QW/T/DB
PlcDataS	GET_plc_status2_Siemens;1,PlcStatus,1,PlcDataStr;M,N (M: address, N: PLC number)	Analog (default)	The data of PLC status data (SIEMENS) PlcDataStr: PLC data(text) for all type including Byte, Short, Int, Bool, Double, String, Sbyte
GET_param_data			
Supported CNC: FANUC, MITSUBISHI			
ParaData	GET_param_data;1,ParamData,1,ParamDataStr,1,Data;1	Text	System parameter data
GET_maint_all			

Table 4.3: Driver Tag List (FANUC, MITSUBISHI, HEIDENHAIN, and SIEMENS)			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
Reserved (ItemName)	GET_maint_all;0,Maint-Data,1,ItemTime	Text (Array)	Get maintenance management data for ItemName
Reserved (UseTime)	GET_maint_all;0,Maint-Data,1,UseTime	Analog (Array)	Get maintenance management data for UseTime
Reserved (LifeTime)	GET_maint_all;0,MaintData,1, LifeTime	Text (Array)	Get maintenance management data for LifeTime
Reserved (PlcNode)	GET_maint_all;0,MaintData,1, PlcNode	Text (Array)	Get maintenance management data for PlcNode
Reserved (Spec)	GET_maint_all;0,MaintData,1, Spec	Text (Array)	Get maintenance management data for Spec
Reserved (Supplier)	GET_maint_all;0,MaintData,1, Supplier	Text (Array)	Get maintenance management data for Supplier
Reserved (Contact)	GET_maint_all;0,MaintData,1, Contact	Text (Array)	Get maintenance management data for Contact
Reserved (Telephone)	GET_maint_all;0,MaintData,1, Telephone	Text (Array)	Get maintenance management data for Telephone
GET_toolmanage_all2			
Supported CNC: FANUC, MITSUBISHI, HEIDENHAIN, SIEMENS			
Reserved (ToolNo)	GET_toolmanage_all2;0,Tool-Data,1,ToolNo	Analog (Array)	Get tool management data for ToolNo
Reserved (ToolType)	GET_toolmanage_all2;0,Tool-Data,1,ToolType	Text (Array)	Get tool management data for ToolType
Reserved (CycleTime)	GET_toolmanage_all2;0,Tool-Data,1, CycleTime	Analog (Array)	Get tool management data for CycleTime
Reserved (LifeTime)	GET_toolmanage_all2;0,Tool-Data,1,LifeTime	Analog (Array)	Get tool management data for LifeTime
Reserved (PartCount)	GET_toolmanage_all2;0,Tool-Data,1, PartCount	Analog (Array)	Get tool management data for PartCount
Reserved (LifePartCount)	GET_toolmanage_all2;0,Tool-Data,1,LifePartCount	Analog (Array)	Get tool management data for LifePartCount
Reserved (FeedRate)	GET_toolmanage_all2;0,Tool-Data,1,FeedRate	Analog (Array)	Get tool management data for FeedRate
Reserved (SpindleSpeed)	GET_toolmanage_all2;0,Tool-Data,1,SpindleSpeed	Analog (Array)	Get tool management data for SpindleSpeed
Reserved (WorkMaterial)	GET_toolmanage_all2;0,Tool-Data,1,WorkMaterial	Text (Array)	Get tool management data for WorkMaterial
Reserved (ToolMaterial)	GET_toolmanage_all2;0,Tool-Data,1,ToolMaterial	Text (Array)	Get tool management data for ToolMaterial
Reserved (Diameter)	GET_toolmanage_all2;0,Tool-Data,1,Diameter	Analog (Array)	Get tool management data for Diameter
Reserved (ToolLength)	GET_toolmanage_all2;0,Tool-Data,1,ToolLength	Analog (Array)	Get tool management data for ToolLength
Reserved (Supplier)	GET_toolmanage_all2;0,Tool-Data,1,Supplier	Text (Array)	Get tool management data for Supplier
Reserved (Contact)	GET_toolmanage_all2;0,Tool-Data,1,Contact	Text (Array)	Get tool management data for Contact
Reserved (Telephone)	GET_toolmanage_all2;0,Tool-Data,1,Telephone	Text (Array)	Get tool management data for Telephone

Table 4.4: Error Code of Driver Tag (FANUC, MITSUBISHI, HEIDENHAIN and SIEMENS)

Error Code	Error Types	Description
*[fffc]	Plug-In Time out (-20)	The function has timed out; modify the register value (FANUC only) if you want to extend the time out.
*[ffed]	SkyMars Busy (-19)	SkyMars is running
*[ffee]	Not supported (-18)	The function is not supported for this controller
*[ffef]	Protocol error (-17)	Data from the Ethernet board is incorrect. Please check the Ethernet settings.
*[fff0]	Socket error (-16)	Examine the CNC power supply, Ethernet cable, and I/F board
*[fff1]	DLL file error (-15)	There is no DLL file for each CNC series corresponding to the specified node
*[fff8]	Handle number error (-8)	Get the library handle number
*[fff9]	Version mismatch between the CNC/PMC and library (-7)	The CNC/PMC version does not match the library version. Replace the library or CNC/PMC control software.
*[fffa]	Abnormal library state (-6)	An exception error has occurred with the executed library.
*[fffd]	Reset or stop request (-2)	The RESET or STOP button was pressed. Call the termination function.
*[fffe]	CNC Busy (-1)	Wait until after CNC processing or retry
*[8000]	WebAccess/CNC runtime is offline.	Check whether WebAccess/CNC runtime is running
*[8001]	Error(function is not executed, or not available) (1)	A specific function that should have been called has not been executed; otherwise, the function is not available
*[8002]	Error(data block length error, error of number of data) (2)	Check and correct the data block length or number of data
*[8003]	Error(data number error) (3)	Check and correct the data number
*[8004]	Error(data attribute error) (4)	Check and correct the data attribute
*[8005]	Error(data error) (5)	Check and correct the write data
*[8006]	Error(no option) (6)	There is no corresponding CNC option
*[8007]	Error(write protection) (7)	Write operation prohibited
*[8008]	Error(memory overflow) (8)	CNC tape memory overflow has occurred
*[8009]	Error(CNC parameter error) (9)	CNC parameter is incorrect
*[800a]	Error(buffer empty/full) (10)	The buffer is empty or full
*[800b]	Error(path number error) (11)	A path number is incorrect
*[800c]	Error(CNC mode error) (12)	The CNC mode is incorrect; correct the CNC mode

Table 4.4: Error Code of Driver Tag (FANUC, MITSUBISHI, HEIDENHAIN and SIEMENS)		
*[800d]	Error(CNC execution rejection) (13)	CNC execution rejected. Check the condition of execution.
*[800e]	Error(Data server error) (14)	An error has occurred no the data server
*[800f]	Error(alarm) (15)	The function cannot be executed because of a CNC alarm. Remove the cause of alarm.
*[8010]	Error(stop) (16)	CNC status is “stop” or “emergency.”
*[8011]	Error(State of data protection) (17)	Data protected by the CNC data protection function
*[8012]	Error(Not found Machine ID) (18)	Please check the connected CNC status or disable this CNC connection.
*[8013]	Error(No out) (19)	Please check the error number
*[8014]	Error(Password) (20)	Incorrect password
*[8015]	Error(Compatible) (21)	Version compatibility problem

Table 4.5: Driver Tag List (Advantech LNC)

Advantech LNC provides the ReCon library to connect with CNC/robot controllers. There are six types of controller registers: R, C, S, A, I, O. The common registers are as follows:

Tag Name	Address	Type	Description
AbsPos	R83000	Analog	
(Array)	Absolute position (Axis 1~32)		
DCode	R3006220	Analog	D-code
FastFwdP	R17000	Analog	The percentage of fast forward
FCode	R3006196	Analog	F-code
FedRateP	R17001	Analog	The percentage of feed rate
FeedRate	R82066	Analog	Feed rate
G54P1	R3094352	Analog (array)	G54P1 Code (Axis 1~32)
GCode00	R3094000	Analog (array)	G00 Code (Axis 1~32)
GCode54	R3094032	Analog (array)	G54 Code (Axis 1~32)
GCode55	R3094064	Analog (array)	G55 Code (Axis 1~32)
GCode56	R3094096	Analog (array)	G56 Code (Axis 1~32)
GCode57	R3094128	Analog (array)	G57 Code (Axis 1~32)
GCode58	R3094160	Analog (array)	G58 Code (Axis 1~32)
GCode59	R00001	Analog (array)	G59 Code (Axis 1~32)
HCode	R3006219	Analog	H-code
MachPos	R83064	Analog (array)	The machine position (Axis 1~32)
MCode	R3006197	Analog	M-code
NCode	R3006218	Analog	N-code

Table 4.5: Driver Tag List (Advantech LNC)			
PartCnt	R17019	Analog	Part count
ParTotal	R140018	Analog	Part total count
PartSet	C0027	Analog	Part count setting
RelPos	R83032	Analog (array)	Relative position (Axis 1~32)
SCode	R3006207	Analog	S-code
SCodeNum	R3006202	Analog	The number of S-code
SpinSpdR	R11370	Analog	Spindle speed rate (%)
SpinSped	R83138	Analog	Spindle speed
TCode	R3006212	Analog	T-code
Status	R17003	Discrete	Status
OperMode	R22000	Discrete	Operation mode
MachType	R60000	Discrete	Machine type
SysUnit	R69001	Discrete	The minimal unit of system command
UnitType	R69042	Discrete	The type of system unit
IsFinish	S0027	Discrete	Part count is finished or not
IsArrive	S0098	Discrete	Part count is arrived at the total count or not
IsMsg	S3000	Discrete	Exists warning message or not
IsAlarm	S3000	Discrete	Exists alarm or not

Table 4.6: Error Code of Driver Tag (Advantech LNC)		
Error Code	**Error Types**	**Description**
*[ffff]	System error (driver not loaded)	ReCon lib driver is not loaded
*[8000]	Device is offline	Check LNC device is alive or not

Appendix A

Other Instructions

A.1 FANUC Alarm Message of WebAccess/CNC

By default, WebAccess/CNC alarm messages for FANUC series machines are in English. You can copy the built-in EN/TC/SC alarm message files (the default path is C:\WebAccess\Node\WebAccessCNC\message) and change the file name “alarmMessage.ini” to replace the original one in your project. You can also modify the message to suit specific CNC applications or user needs.

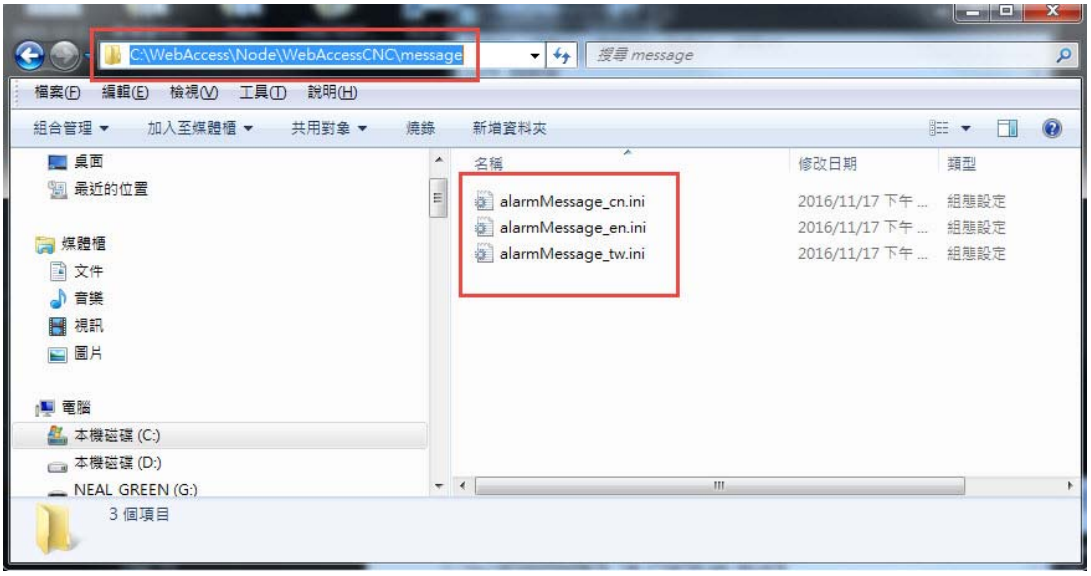


Figure A.1 EN/TC/SC alarm message files for FANUC

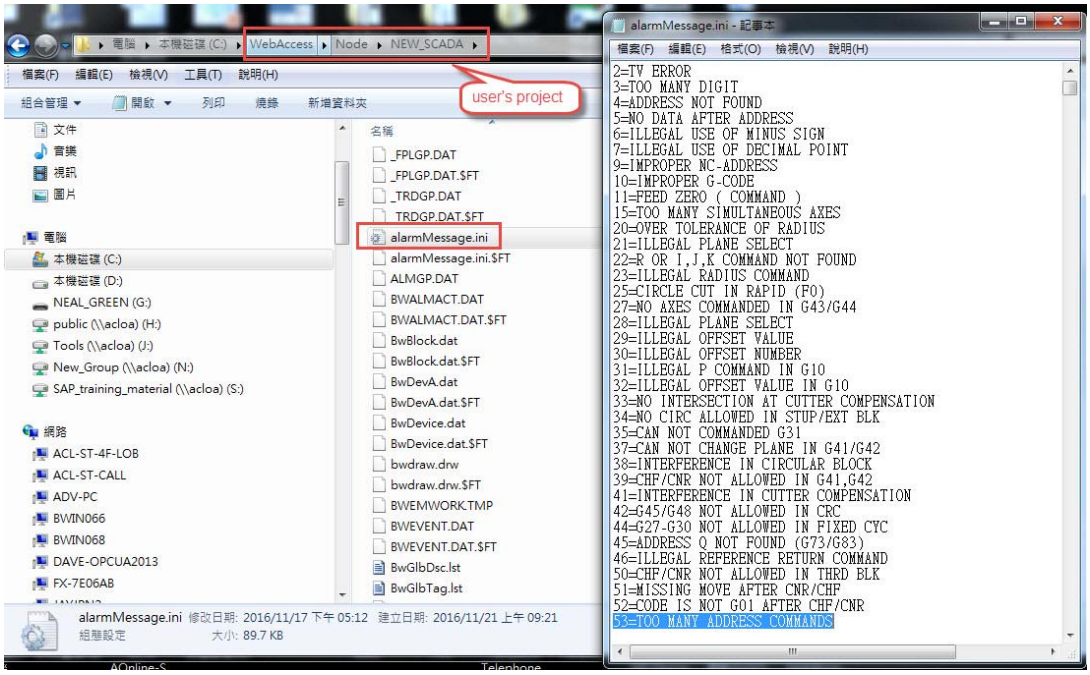


Figure A.2 Default alarm message file location

Table A.1: FANUC Alarm Class List		
Alarm List	**Class Number**	**Description**
(SW)	0	Parameter switch on
(PW)	1	Power off parameter set
(IO)	2	I/O error
(PS)	3	Foreground P/S
(OT)	4	Over travel, external data
(OH)	5	Overheat alarm
(SV)	6	Servo alarm
(SR)	7	Data I/O error
(MC)	8	Macro alarm
(SP)	9	Spindle alarm
(DS)	10	Other alarm (DS)
(IE)	11	Alarm concerning malfunction prevention
(BG)	12	Background P/S
(SN)	13	Synchronized error
?	14	(reserved)
(EX)	15	External alarm message
(PC)	19	PMC error
	20~31	(Not used)

A.2 User Password and User Access Level for SIEMENS OPC/UA

You can use OPC/UA client software as UaExpert to modify the user password and user access level for SIEMENS OPC/UA machines. First, you should enter the system administrator password (default password = “OpcUaClient”) and activate OPC/UA in the SIEMENS OPC/UA configuration dialog box, as follows:

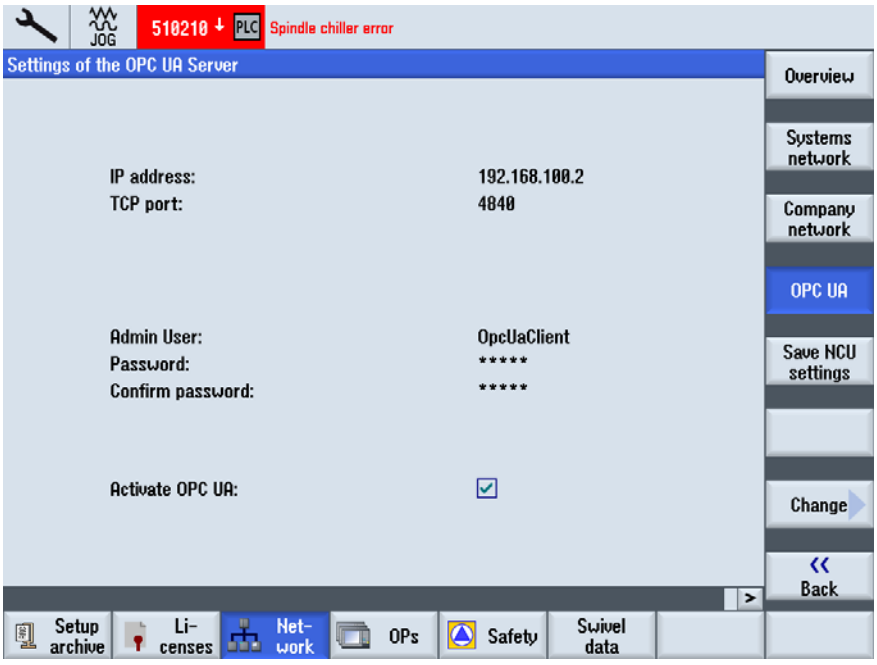


Figure A.3 SIEMENS OPC/UA configuration

When using UaExpert to connect to SIEMENS OPC/UA machines, you can change the administrator password, as follows:

Path: Root\Objects\Sinumerik\Methods\ChangeMyPassword

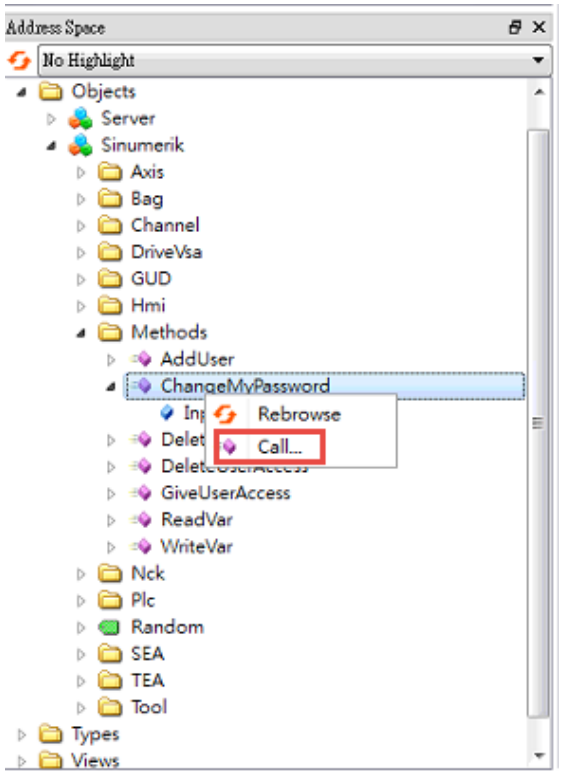


Figure A.4 Calling the ChangeMyPassword object

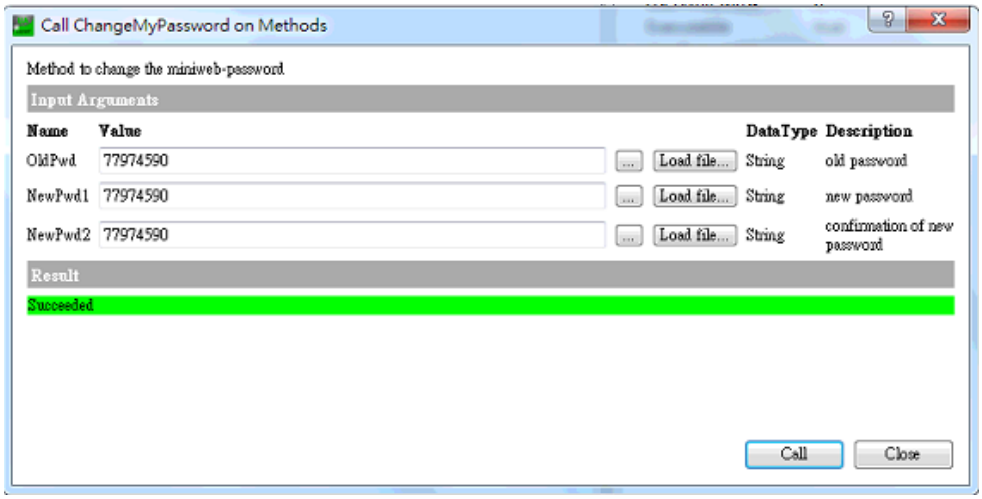


Figure A.5 Changing the administrator password

To change the user access level, you should add a new user named “WebAccess” when using UaExpert to connect SIEMENS OPC/UA machines, as follows:

Path: Root\Objects\Sinumerik\Methods\AddUser

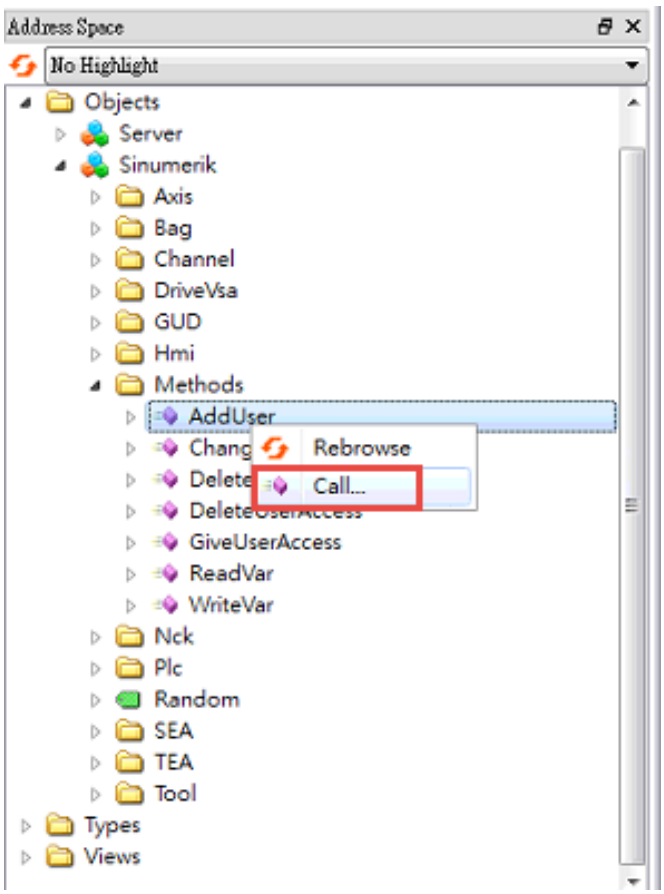


Figure A.6 Calling the AddUser object

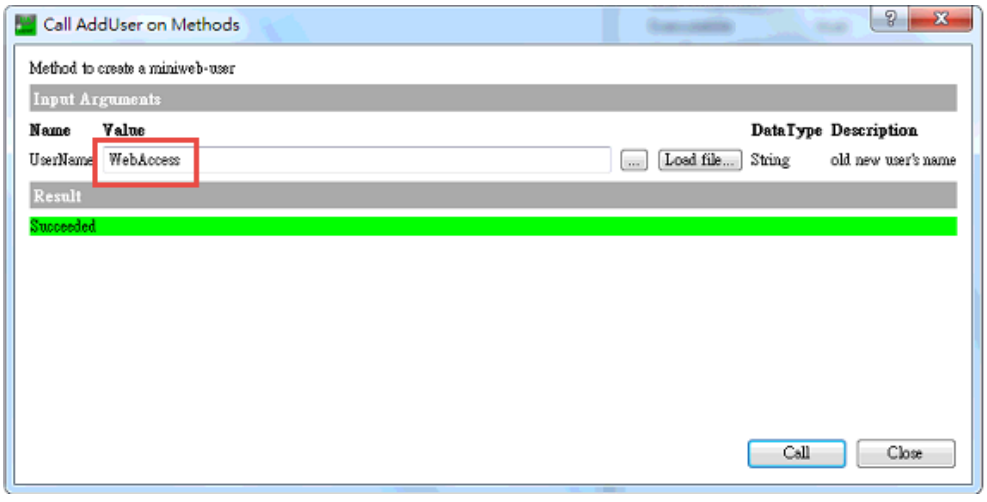


Figure A.7 Adding a new administrator account

After adding a new user as “WebAccess”, you can modify the user access level to be read and write, as follows:

Path: Root\Objects\Sinumerik\Methods\GiveUserAccess

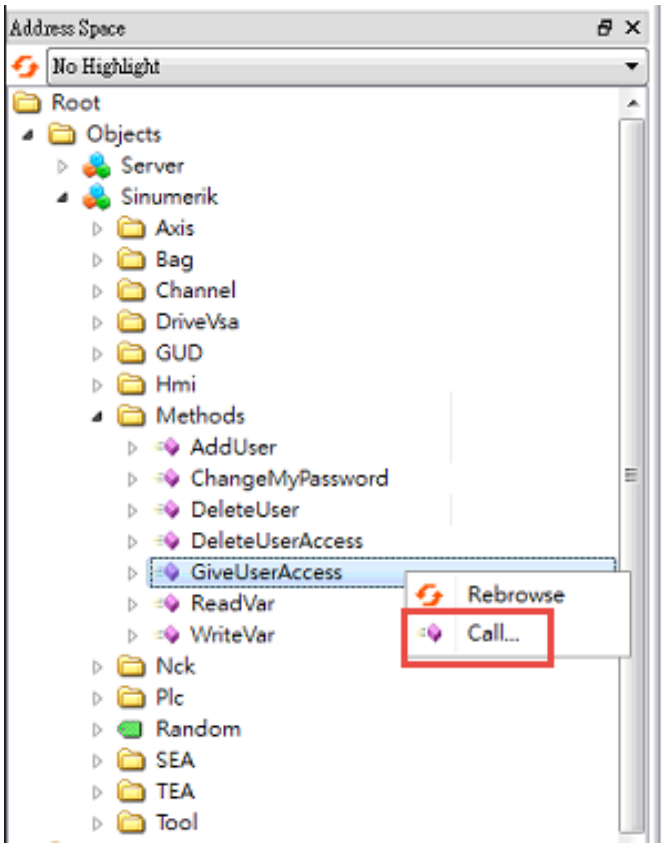


Figure A.8 Calling the ChangeMyPassword object

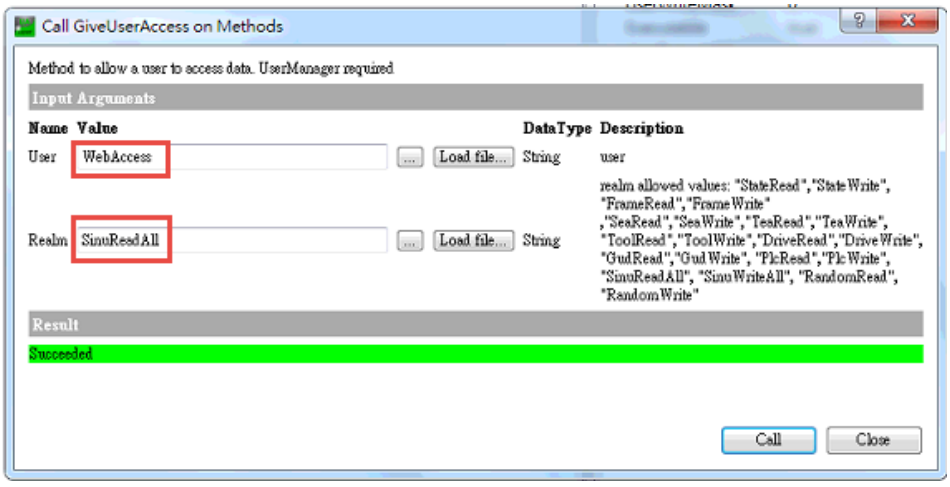


Figure A.9 Giving read access to an administrator account

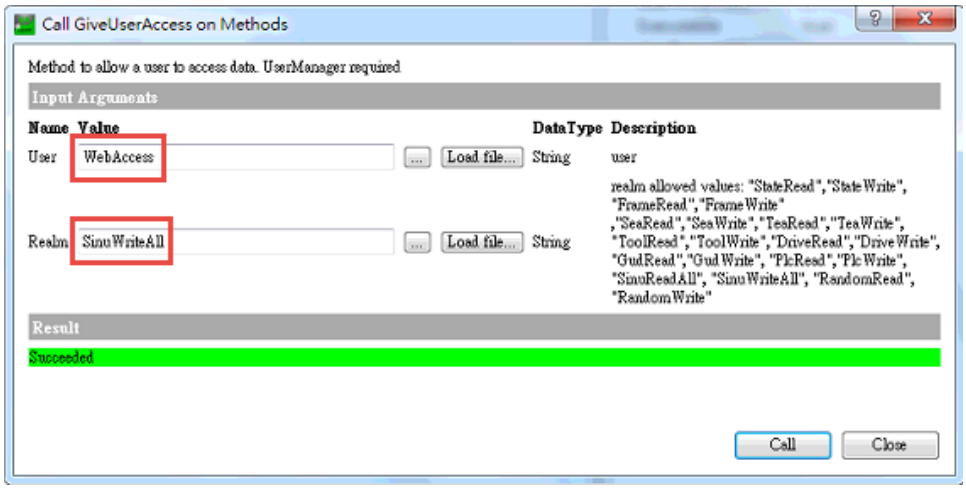


Figure A.10 Giving write access to an administrator account

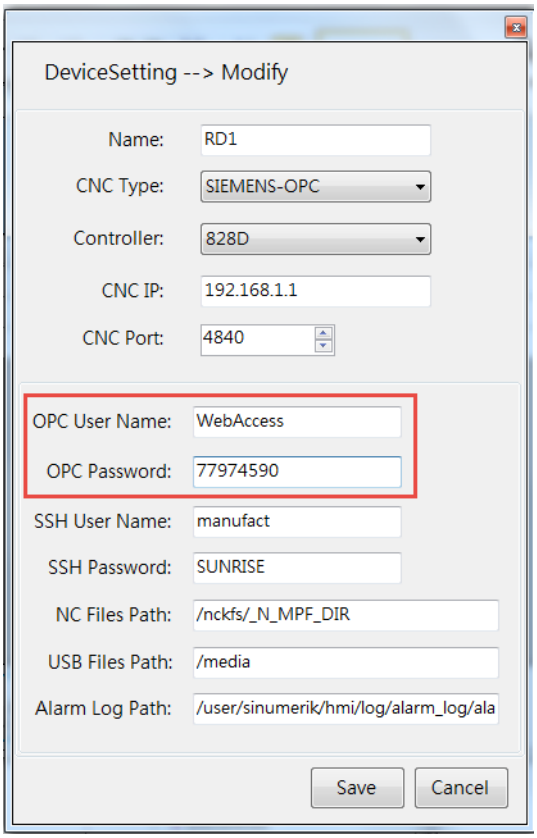


Figure A.11 SIEMENS OPC/UA username/password (CNC device settings)

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