

OpenCNC 6.5 Integrator Release Notes

What is Covered in this Document

This version of the Integrator Release Notes describes changes made to OpenCNC from version 6.4 to 6.5. Previous Integrator Release Notes for OpenCNC **6.x** can be found in the MDSI Documentation.

OpenCNC Product Descriptions

OpenCNC Pro - This version supports 5-10 axes of simultaneous motion. The United States government prohibits export of this product to any country that is not on the approved export list for controlled technology. Violating this law can result in large fines and imprisonment. To ensure compliance with this law, you must obtain prior written approval from MDSI before you can ship this product outside of the United States or Canada. This product cannot be exported to Mexico without first obtaining an Export License.

OpenCNC Plus - This product is limited to four axes of simultaneous motion. Unlike OpenCNC Pro, you may export this product to most, but not all, countries in the world. However, to assure compliance you must obtain prior written approval from MDSI before you can ship this product outside of the United States, or Canada.

OpenCNC Demo - This is the demonstration version of OpenCNC. It has the following features and limitations.

- Demo version runs on Windows XP, 2000, NT, ME, and 98 Second Edition.
- This product does not require Venturcom RTX or an OpenCNC dongle to run.
- Maximum interrupts are 100 per second.
- Does not support I/O or hardware interrupts.

Operating Systems and Minimum Requirements

- Windows NT Service Pack 6a, Windows 2000 Service Pack 4, or Windows XP Service Pack 2
- 256 megabytes RAM (512 megabytes recommended). Memory chips in the PC must all be the same size (i.e. do not use a 256 MB chip and a 128 MB chip in the same PC). MDSI highly recommends that you only use memory chips from the same vendor.

During Windows 2000 testing we discovered several OpenCNC startup problems that were directly related to the memory in the PC.

- Intel Pentium Processor - 300 MHz or above including Celeron, and PII, PIII, and P4 processors (recommended 1 GHz PIII).
- Intel manufactured motherboard.
- At least 1 gigabyte of free hard drive space for Windows NT, 5 gigabytes for Windows 2000 or Windows XP.
- CD-ROM Drive.

Users upgrading an OpenCNC system from Windows NT to Windows 2000 or Windows XP have three options. Only the first is totally supported by MDSI.

- The recommended option is to add a new hard drive to the computer and do a clean install of Windows 2000 or Windows XP on the new hard drive.
- The second option is to install Windows 2000 or Windows XP on a blank partition of the current hard drive. This option is discouraged since having an NT and 2000 partition on a single hard drive is not fully supported by Microsoft and MDSI did experience some failures during installation testing.
- Upgrading a partition from NT to 2000 or XP is not supported by MDSI due to the inconsistencies in the Windows directory structure after the upgrade has occurred.

Documentation and Online Help Improvements

- MDSI documentation has been converted to compiled HTML. It has been reorganized and split into small sections to make it easy to locate and search for topics. Microsoft **HTML Help** provides improved searching and browsing capabilities that will help you find information about the MDSI software quickly.
- MDSI documentation can be read directly from the MDSI CD.
- VARs, OEMs, and End-users can add their own HTML based documentation that can be viewed from **HTML Help**.
- Printed manuals will no longer be available from MDSI.
- Users of Windows NT and Windows 2000 must install Internet Explorer 5.5 Service Pack 2 or later to use **HTML Help**. IE 5.5 SP2 is included on the MDSI CD. Users of Windows XP will not have to install IE 5.5 since it is a standard part of the operating system.

New Features

The following new features have been added to OpenCNC 6.5.

Hand-Wheel Feed

Hand-Wheel Feed allows the user to hand feed a part program using a hand-wheel. The rate at which the part program runs is determined by the speed the user turns the hand-wheel. The NC part program is programmed in the usual way with feeds and rapids. If the value coming from the hand-wheel is lower, then OpenCNC limits the feed. The motion will never go faster than the programmed feed rate. When the user stops turning the hand-wheel, the motion will stop. Turning the hand-wheel feed function off allows the machine to continue in automatic mode wherever the user left off in the part program.

Integration

This feature requires modifications to the [tune file](#) (.tun), [winGen](#), and possible PLC logic changes. We suggest consulting MDSI before trying to integrate this feature.

Variables

The following variables have been added for this feature:

- [jsHandWFeedAvg\[\]](#)
- [jsHandWFeedEnc\[\]](#)
- [jsHandWFeedGain\[\]](#)
- [jsHandWFeedNow\[\]](#)
- [jsHandWFeedOn\[\]](#)
- [jsHandWFeedStop\[\]](#)

Lathe Macros

The machining of a part on a lathe can be tedious to compute all of the motions required to rough and finish features on the part. The effort can be substantially reduced by using macros. The macros are supplied with the parameters that guide the path generation. The macros then do all of the computations.

The following Lathe Macro's have been added:

- [Finishing Macro](#)
- [Grooving Macro](#)
- [Profile Define Macro](#)
- [Roughing Macro](#)
- [Tool Definition Macro](#)

Integration

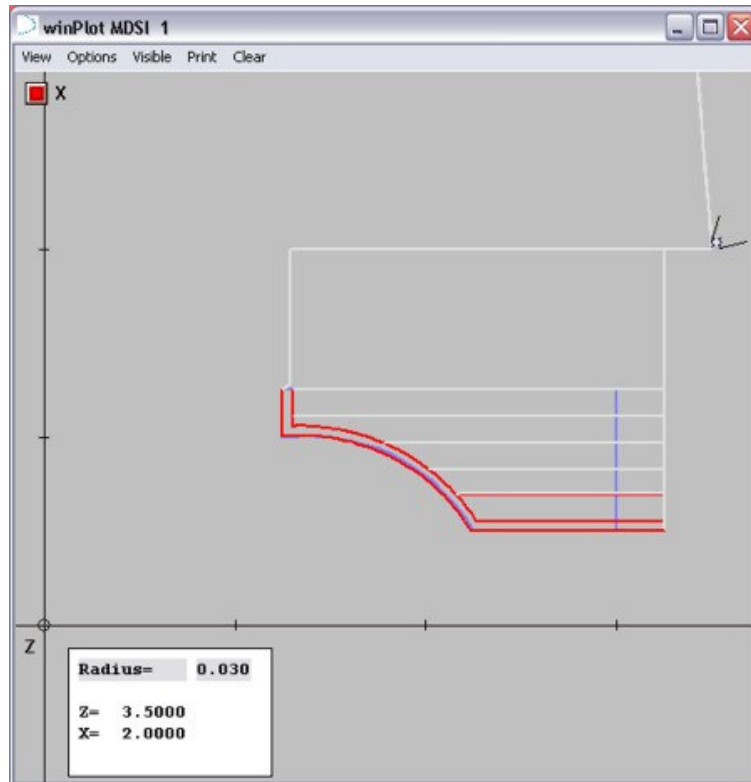
This feature requires modifications to the [tune file](#) (.tun), part program, and possible PLC logic changes.

RTX Ping

This is a diagnostic utility used to ping an Ethernet port in hard real-time from a command prompt. There are no integration changes that need to be made and no variables have been added to use this utility.

winPlot

Plots out the machine coordinates during operation for diagnostic purposes.



Integration

If the machine is a lathe, the **macroLatheVariables.var** file must be added to the [start file](#) (.ost) after [accMsg](#) as shown below:

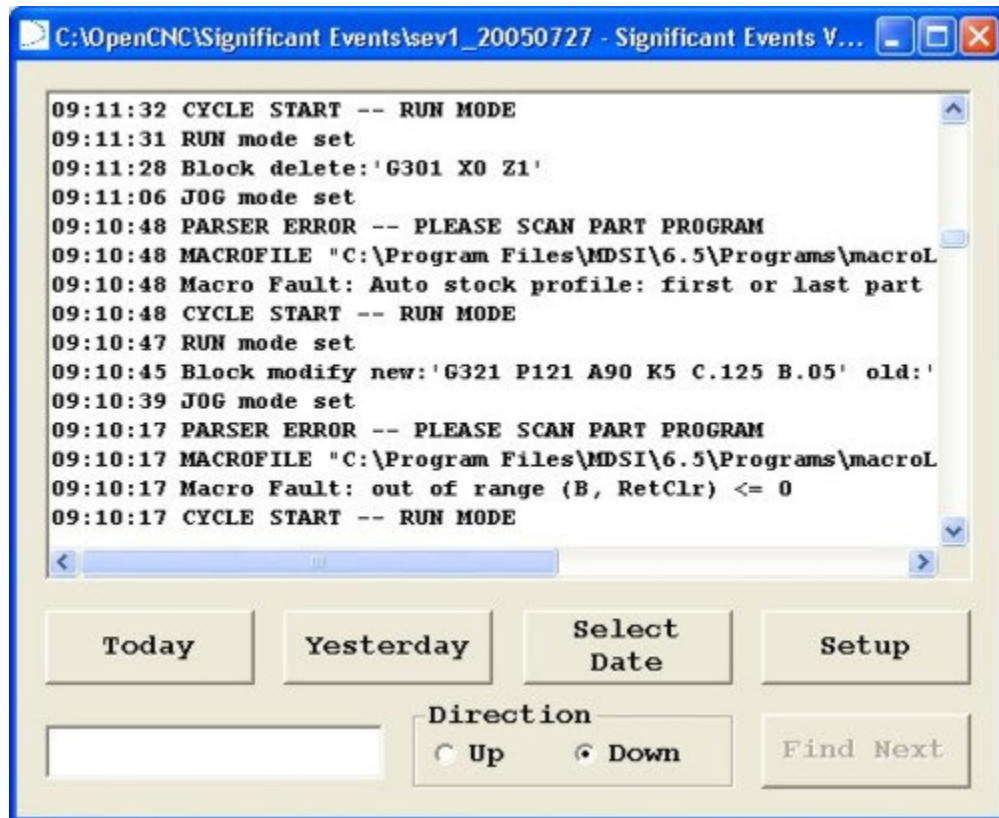
```
v "C:\Program
Files\MDSI\x.x\Programs\macroLatheVariables.var"
```

If you want to have this loaded from the MDSI menu, the [menu file](#) (.men) needs to have an entry similar to the following (usually set to level 1):

```
1:Plot:"C:\Program Files\MDSI\x.x\Programs\winPlot":@
```

winSevView

Used to display and search specific Significant Events (SEV) files. This program replaces **winSevShow**. There are no integration changes that need to be made and no variables have been added to use this utility.



MAXIMUM Factory Lite

[MAXIMUM Factory Lite](#) is a demo version of MDSI's factory enterprise software, **MAXIMUM Factory**. This program is not necessary to run OpenCNC but can be useful for showing general machine cycles. **MAXIMUM Factory** is much more powerful and can be used to tie all of the machines in a plant together to view machine down-times, part counts, work orders, and maintenance details. To install [MAXIMUM Factory Lite](#) to your machine file, use the [Installation instructions](#). It is already available with the demoLathe and demoMill.

Auto Save

The command line argument "-autosave" has been added to [oprProg](#) and [oprOff](#). This option sets the part program, fixture offsets, and tool offsets to be automatically saved when they have been changed.

When the -autosave option is enabled, and a change is made in the part program, fixture table, or tool offset table, a file is stored in a user designated folder (fileName.autosave). If the user then saves the part program or offset table, the autosaved file will be deleted.

If the control is turned off before a file is saved in the normal way, and after changes are made, the autosaved file will be loaded the next time the given part program or offset file is loaded.

Integration

This feature requires modifications to your [start file](#) (.ost) and the following variables may be added to your [tune file](#) (.tun).

Variables

The following variables have been added for this feature:

- [defProgSavePath](#)
- [defTIOffSavePath](#)
- [defFixSavePath](#)

New winVar Option

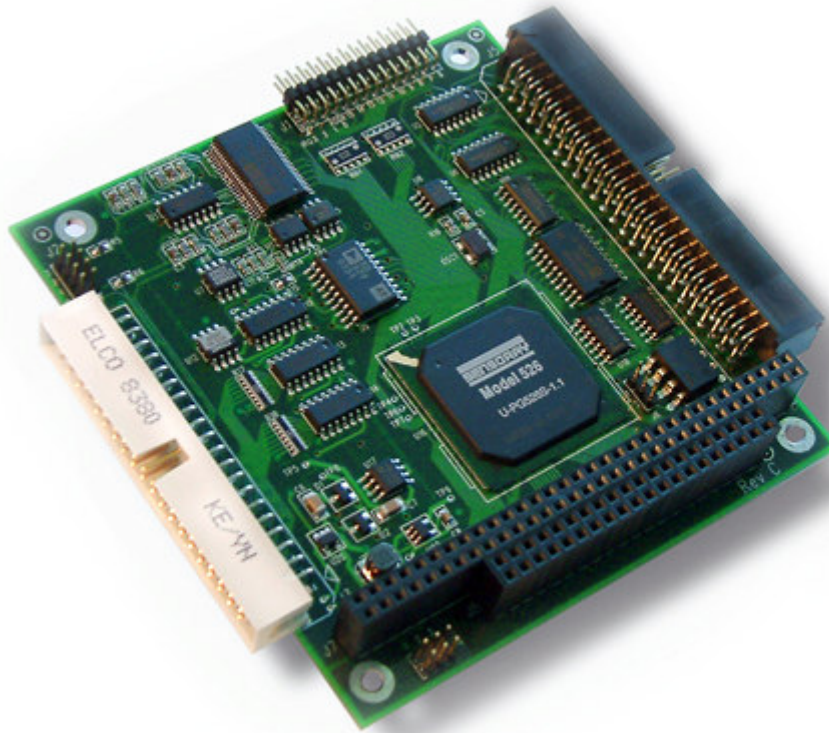
[WinVar](#) displays the current values of all MDSI system and PLC global variables. You can use [winVar](#) to view or change these values manual. You can also create customized sets of variables and save them to files for use in installation, integration, or maintenance. The **-k** argument has been added to [winVar](#) to enable small versions of the on-screen keyboard and keypad to be used when only the input box is to be displayed. No variables have been added to use this feature.

Integration

To use this option you may need to add the **-k** argument to the [winVar](#) line in your [menu file](#) (.men).

Sensoray 526 Driver

The Sensoray 526 measures incremental encoder pulses, analog voltages and detects digital signals. It also generates analog voltages, digital outputs and an interrupt timer.



The Sensoray 526 has the following features:

- 4 24-bit quadrature encoder inputs
- 4 16-bit analog outputs DAC's
- 8 16-bit analog inputs
- Single supply (5 volt) input power
- Programmable interrupt timer

Integration

This feature requires modifications to the [start file](#) (.ost), [tune file](#) (.tun), and [hardware installation](#).

Variables

There are no new variables for this feature but the following variables may need to be added or edited in your [tune file](#):

- [dacRemap\[\]](#)
- [dacRemapTach\[\]](#)

Servo Dual Feedback

This feature has a position feedback on the scale and another feedback on the motor. These items are partially uncoupled. To use this feature, the scale encoder is used as the main feedback and the motor feedback provides extra damping for stability.

Integration

This feature requires modifications to the [tune file](#) (.tun), hardware setup, and possible PLC changes.

Variables

The following variables have been added for this feature:

- [axDampingGain\[\]](#)
- [axDampingGainDF\[\]](#)
- [axEncMapDF\[\]](#)

New winProg Option

[winProg](#) is the OpenCNC program used to display the part program. You have the option to use MDSI's file browser or the Microsoft Windows native file browser when loading and saving files in winProg. We have made the following changes to the native file browser settings.

- Added the ability to Load and Save using the native file browser.
- Corrected the browse box for the Load window.

No modifications are necessary to any machine file and there are no variables for these changes to be implemented.

Following Error Exceeding Tolerance

Following error may now exceed tolerance for a period of time before an error occurs. This time can be set separately for threading from other operations. A following error exceeded error will not occur until the following error has exceeded the model limit for this amount of time.

Integration

This feature requires modifications to the [tune file](#) (.tun) and possible PLC changes.

Variables

The following variables have been added for this feature:

- [axFErrFailWinStd\[\]](#)
- [axFErrFailWinThd\[\]](#)

G04 Modified

[G04](#) is allowed to be interpreted in seconds instead of number of minutes for [G95](#) mode (Feed Per Revolution).

Integration

This feature requires modifications to the [tune file](#) (.tun) and the part program.

Variables

The following variable has been added for this feature:

- [defDwellNoPerRev](#)

Other Improvements

The following improvements have been made to OpenCNC 6.5.

- OpenCNC now allows either the decimal point or comma to be used as the separator for European support. The part program only uses decimal points which is an industry standard.

- Added the variable [jsSystemError\[\]](#) to keep track of the type of error (parser or sequencer) that has been encountered. Constants have been added to [common.eqv](#) to deal with this new variable.
- Added a new entry into the windows registry at HKLM\Software\MDSI\OpenCNC\6.5\OperatorDir. This entry contains the location of the "\OpenCNC" Operator Files folder chosen during the OpenCNC installation.
- Fixed a problem in [winGen](#) where an incorrect value could be set when the [PROMPTBOOL](#) command is used with a long variable (not a char or ISaGRAF boolean variable).
- Removed the check that verified if the user account has [Increased Scheduling Priority](#) user rights from [winMenu](#) and placed it in **startup.exe**.
- Fixed error where the following message "subLookAhead - bad microcommand length" was displayed incorrectly.
- Fixed a problem which occurred when a second job stream is used, causing a bad microcommand length error.
- Updated the [Acromag PCI Bus Carrier Card](#) driver intPCI.rtss to support REV D of the PCI-STP card.
- Removed Windows NT Service Pack 6a from the Installation CD. If you are running OpenCNC 6.5 on a Windows NT system, you must have Windows NT Service Pack 6a installed. You can download this service from Microsoft's site at <http://www.microsoft.com/downloads/>.
- Added NetEdit 3 to the installation CD for use with [Ethernet I/O](#) setup.
- [SoftSercans](#) can again be started from OpenCNC's [start file](#) (.ost). It is necessary that both SoftSercans drivers, **SoftSercansEXE.dll** and **SoftSercansRTX.rtss**, be present in the MDSI Programs directory. Previous versions of OpenCNC only supplied **SoftSercansEXE.dll**; now both files are supplied.

Also added SoftSercans 1V-series drivers back into OpenCNC; these (in this case, 1V12) are needed for certain combinations of Sercos ISA cards and drives. 2V-series drivers use SoftSercans 2V16.

The OpenCNC installation creates the following files in the Programs folder (i.e. "C:\Program Files\MDSI\x.x\Programs"):

SoftSercansEXE.dll	Win32 SoftSercans driver for Indramat; the installation default is 2V, but it may be overwritten by the 1V driver using the SoftSercans_1v batch file (below).
SoftSercansEXE_2v.dll	Win32 SoftSercans 2V driver for Indramat.
SoftSercansEXE_1v.dll	Win32 SoftSercans 1V driver for ISA cards.
intSercos2V.rtss	RTX SoftSercans 2V driver for Indramat.
intSercos1V.rtss	RTX SoftSercans 1V driver for Indramat.
startSoftSercans2V.exe	OpenCNC program to start the 2V driver.
startSoftSercans1V.exe	OpenCNC program to start the 1V driver.
SoftSercans_2v.bat	Overwrites the drivers with the 2V versions.
SoftSercans_1v.bat	Overwrites the drivers with the 1V versions.
SoftSercansRTX.rtss	Win32 SoftSercans driver for Indramat; the installation default is 2V, but it may be overwritten by the 1V driver using the SoftSercans_1v batch file (above).
SoftSercansRTX_2v.rtss	Overwrites the SoftSercans drivers with the 2V versions.

SoftSercansRTX_1v.rtss Overwrites the SoftSercans drivers with the 1V versions.

During OpenCNC installation, backup copies of the 1V-series and 2V-series drivers are placed in the MDSI Programs directory, and OpenCNC is partially configured to use the 2V-series drivers. You must also install SoftSercans 1V or 2V. The OpenCNC CD provides installation programs for SoftSercans 1V and 2V. If you installed SoftSercans 1V, you must then run "SoftSercans_1v.bat" to configure OpenCNC for the 1V drivers.

You can switch between SoftSercans 1V and 2V by running the SoftSercans uninstaller, installing the desired SoftSercans from the CD, then running SoftSercans_1v.bat or SoftSercans_2v.bat. After running SoftSercans_1v.bat a text file named SoftSercans_1v_in_use.txt will be created in the programs folder to indicate that OpenCNC is configured for SoftSercans 1V. If SoftSercans_2v.bat is run, the SoftSercans_1v_in_use.txt file will be removed, and SoftSercans_2v_in_use.txt will be created to indicate that OpenCNC is configured for SoftSercans 2V.

For more information about [SoftSercans](#) with MDSI software, please look at the [SERCOS](#) section of the [Configuring Hardware](#) section of this manual.

- Fixed a problem where EOB Stop would not stop at the next block after a [G33](#) when it did not contain a motion G code ([G00](#), [G01](#), etc.). Also fixed the problem where the control would not change modes if [G33](#) was the last motion block in a program. If feed hold is attempted during a [G33](#) block, it will be delayed until the next block which does not contain a [G33](#), at which time it will be activated. This allows execution of all blocks following a [G33](#) which do not contain a motion G code, because feed hold has no effect on non-motion blocks.
- Made changes to [jsRetraceFeed\[\]](#) so that feed override will always be used instead of rapid or jog override.
- Fixed problems with [winVar](#) and [winDataTool](#) when there were more than 10 axes. These programs can now handle 16 axes.
- Made changes to [JobLoadSave](#) where if [defJobFileName](#) is specified in the [tune file](#) (.tun), that the job will be loaded at startup if [jobLoadSave -load](#) is used in the StartUp group of the [menu file](#) (.men). If [defJobFileName](#) is not defined in the [tune file](#) (.tun), the part program, tool offsets, and fixture offsets which were last used will be loaded.
- Set the default value of [defSEVProbeUse](#) and [defSEVMacroUse](#) to 2.
- Added Move and Size window to the [Job Loader](#) and [Job Creator](#) ([winJobAdmin](#) program).

- Increased the maximum allowed circular contour radius from 422.733 to 845.466 inches (like other dimensions). Removed the error messages:

```
SCAN -- GIVEN R VALUE TOO LARGE  
SCAN -- COMPUTED PATH TOO LONG
```

- Significant Event messages are now generated when [jsPctFeedOverride\[\]](#) or [jsPctRapidOverride\[\]](#) are changed. A single feed override SEV message will appear when [mPctFeedOverride](#) or [jsPctFeedOverride\[\]](#) are changed, and will report the combined (effective) feed override percentage. A single rapid override SEV message will appear when [mPctRapidOverride](#) or [jsPctRapidOverride\[\]](#) are changed, and will report the combined (effective) rapid override percentage. When 2 or more parsers are used ([mNumModeEnable](#) > 1) the job stream number will be added to the SEV message (e.g. "JS1"). If [jsPercentAvoid\[\]](#) is changed causing an override to change, the SEV message will appear immediately, without the 5 second settling delay.
- The [winGen](#) command [FEEDOVERRIDE\(\)](#) has been changed to allow a job stream number of -1, which indicates that [mPctFeedOverride](#) is to be used instead of [jsPctFeedOverride\[\]](#) to control the feed override.
- Fixed [lead screw compensation](#) for rotary wrap axes.
- Changed the color code of dongle's for OpenCNC. The following is the new color code:

Tan — OpenCNC Plus

Green — OpenCNC Pro

Note

If you are upgrading from a previous version of OpenCNC Pro, please contact 1-888-OPENCNC ext.205 to receive your new dongle.

- [mdsiOffsetWriteVB](#) and [mdsiOffsetsReadVB](#) have been changed to accept job stream numbers based on [mJSCount](#) instead of [mNumJSParsers](#).
- Corrected the value displayed in the SEV messages when a fixture offset is changed for rotary axes so that it is displayed in degrees.

- Fixed problem with using slide jog and [defNewSCurveUse](#) to stop the axis on overtravel once homed out. Previously this function only worked properly in the positive direction but now also works in the negative direction.
- Added the constant **mdsiMacro_CSPProgramCoordinates** to **mdsiCoordinateSystemTypes** for user convenience in the OpenCNC API.
- Fixed high-speed machining check for unequal acceleration/deceleration/jerk values to allow G-codes which generate no motion.
- Fixed problem with system errors caused when a feedhold becomes active while cut-to-cut is forced between multiple [G33](#) blocks.
- The following variables have been removed from OpenCNC.
 - axAccel[]
 - axFErrAclGain[]
- Fixed problem with incorrect interpolation retracing a linear block after a circular block.
- [G78](#) now flags an error and aborts if the total cut depth (j) equals the total specified finish cut depth (p*I).
- [winFeShow's](#) real unit scaling now accommodates different [dacVoltMax\[\]](#) values for different axes.
- The following programs were removed from the installation as they were obsolete versions of other programs.
 - ipdacQ.exe
 - ipquadQ.exe
 - pcidacQ.exe
 - pciquadQ.exe
 - vigdacQ.exe
 - vigquadQ.exe
 - winAnaInQ.exe
 - winAnaOutQ.exe
 - winDiolnQ.exe

- winDioOutQ.exe
- winFeShowQ.exe
- winFixQ.exe
- winMenuMaintQ.exe
- winMenuQ.exe
- winMsgQ.exe
- winOffQ.exe
- winPadQ.exe
- winPosQ.exe
- winProgQ.exe
- winVarQ.exe