

AutoSave

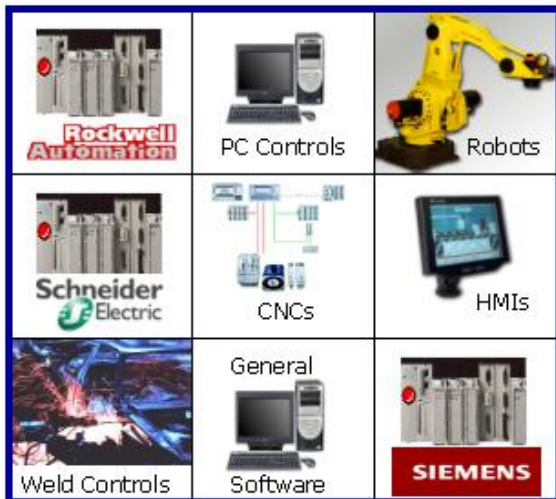
Support for Sinumerik 840D

Enterprise tools for automation source management

OVERVIEW

The ever-expanding AutoSave suite of products provides the software tools needed to manage all your automation programs.

AutoSave controls and tracks the changes for a variety of industrial programmable devices and program sources including CNCs, Siemens, Schneider, and Rockwell processors, robots & weld controllers of all kinds, HMI/OPs, PC based controls, and any and all ancillary files needed.



With this industry-leading standard, it's no wonder AutoSave's installed base includes over ninety (90) automotive plants world-wide supporting over 100,000 devices! MDT Software has the largest installed base in the general manufacturing industry as well.

Our client application's full integration with the Sinumerik 840D offers you both an interactive environment and background monitoring, resulting in a comprehensive change management solution.

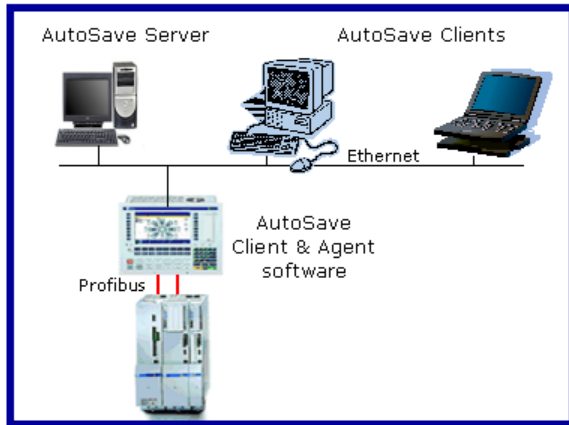
You have complete control over your device programs including:

- Secure Off-line Editing Using Various Standard Text Editors
- Historical Tracking and Audit Trails
- Automatic Change Notification
- Quick Disaster Recovery

CLIENT / SERVER / AGENT

Each 840D is a Computer Numeric Control (CNC) system comprised of a Siemens S7 processor as the base controller, special firmware for numeric control (NC), and a Windows NT-based OP (PCU50 or PCU70) front end for motion control. Within AutoSave, three different programs represent each single system: an 840D module program for the NC (as described in this document), a STEP 7 module program for the S7, and a Universal module program for the motion control/OP display. The AutoSave Sinumerik 840D module is comprised of an AutoSave server acting as the master control center that coordinates all change-related programming activities and stores program files, the AutoSave client installed on *each* 840D's Windows NT system, and, on *each* 840D, an individual agent providing distributed processing efficiencies for the server.

SINUMERIK 840D PROFILE



ARCHIVED CONTENTS

The NC system files archived by the 840D module are stored in **F:\dh**. Normally, the program resides on the drive; however, when portions of the program are in use, they are loaded to the NC processor and erased from the drive. When no longer in use, they are returned to the drive and erased from the NC processor.

Specifically, these files are saved:

- clip.clp - Clipboard
- com.dir - Comments
- dh.dir - Data Management
- def.dir - Definitions
- dg.dir - Diagnostic
- bd.dir - Display-Machine-Data
- vs.dir - FDD Data
- dp.dir - Interactive Programming
- pda.dir - Machine Sequence
- cma.dir - Manufactures Cycles
- mb.dir - MBDD-Alarm-Texts
- hd.dir - MSD-Data
- _nc_act.dir - NC-active-Data
- neuer ordner - Neuer Ordner
- oem.dir - OEM-Data
- mpf.dir - Part Programs
- s7prog – STEP 7 Program
- cst.dir - Standard Cycles
- ibn.dir - Start-up
- spf.dir - Subprograms (of the NC program)
- syf.dir - System
- templ.dir - Templates
- wzv.dir - Tool Management

cus.dir - User cycles

wks.dir – Work Pieces (main programs storage location)

The OP data is stored in the **OEM** directory of drive F. The AutoSave administrator configures the entire directory to be archived by the Universal module program for this device. All the files will be compared or the administrator can designate the precise files to be considered by the AutoSave comparison function if so desired.

The STEP 7 program is backed up as a part of the CNC directory; however, the entire STEP 7 project folder is archived and change managed via the STEP 7 module program for this device. The project object can be comprised of 12 - 1500 files, contains multiple stations of multiple CPUs, communications, and floating programs not assigned to a CPU.

SECURED PROGRAM ACCESS

The GUI-based client interface allows a user to access the AutoSave functions with a login and password. At login, the AutoSave server determines the level of access to the different areas and programs that are permitted to the user *and* the client PC.

MDT SOFTWARE MISSION STATEMENT

MDT Software's mission is to deliver innovative software that propels businesses, both large and small, to new levels of performance and profitability through better automation software change management.

Constantly driven by customer needs and customer input, MDT remains aware of industry trends and standards and delivers innovative solutions that become benchmarks of excellence in industrial automation, thereby maintaining our status as the very best provider of change management software and related services.

VERSION CONTROL

When the user initiates an AutoSave action, the program file set becomes locked and indicates the user and client that have the file checked out. Access to others is denied while the program is in use.

When the user completes the changes, AutoSave prompts for a revision note, creates a new current copy, relegates the previous current to a numbered ancestor, and unlocks the program. Down-loading an ancestor or master copy and restoring it to the current copy can undo unwanted programming changes.

COMMUNICATIONS

Communications between the agent and the OP to the S7 or NC is via Profibus; hence, an individual Profibus wire is configured for each CNC system. Both the agent and the S7 communication connections are configured to this individual Profibus.

UPLOAD

Whether initiated from the CNC's client or a remote client, the CNC's agent is triggered and uploads the CNC's contents to the f:\dh\mdt directory then saves the program's files to the server, creating a new current copy.

This does not interfere with the operations of the CNC.

DOWNLOAD

Whether initiated from the CNC's client or a remote client, the CNC's agent is triggered and a download places the NC files on the CNC's local drive; for safety's sake, a manual process to actually update the NC is then performed by the user.

The user may select the current copy or any available ancestor or version with which to update the processor's files. Accessing the download function only via a context menu

provides additional security, as does AutoSave's prompting for confirmation before initiating the download.

DISASTER RECOVERY

When catastrophic failure of a CNC occurs, time is of the essence! A few simple steps with the aid of AutoSave see to it that the recovery happens in minutes, not hours.

- Replace the defective hardware part.
- Restore the operating system with a product such as Ghost™.
- Insert the AutoSave software CD in the drive and run the automatic Client installation program.
- Run the automatic Agent installation program.
- Log into AutoSave.
- Find or Select from the AutoSave directory the device's CNC module program, right-click on Current Copy and select Download. Entry of a revision comment is required. The download completes and creates a new CNC program Current Copy.
- Find or Select the device's STEP 7 program and perform the download process for it.
- Find or Select the device's OP Universal program and perform a Restore to Local function on the Current Copy. The files are now resident on the CNC.

COMPARISON FEATURES

The AutoSave comparison report is displayed in HTML format. Beginning with summary information about the program and the copies being compared, the report then lists the files containing differences and provides links to the details. Use of color aids in clarifying and pinpointing the precise line-by-line differences.

840D Sample Comparison Report

Program Summary

Program Name	/rimpledal/Ring-Gear	
Program Description	Ring Gear Station on the Rempedal line -- Tool Number 23691 14	
Personality Type	840d	
Compare Date	2003-01-11 01:53:18	

	Current Copy	MASTER
File Date	2003-01-11 01:50:59	2003-01-11 01:38:53
User ID	pwd	pwd
Client ID	dvm-athens-1	dvm-athens-1
Method	Upload	Current to Version
Revision Comment	Debugging the operations and added the H7 routine.	Master Copy as Delevered on 16 November 2002

Mass AutoSave 840D Difference Report

File dh/mpf.dir/H4.MPF Different	
File dh/mpf.dir/H7.MPF is missing from MASTER	✘
File dh/mpf.dir/MAIN1.MPF Different	
File dh/mpf.dir/SPLINE3.MPF Different	

File dh/mpf.dir/H4.MPF

line 44 of MASTER	G01 F=W_F_R3 X1=R051+R012
line 44 of Current Copy	G01 F=W_F_R3 X1=R051+R012+23 ; Need a bit more offset (pwd)

File dh/mpf.dir/MAIN1.MPF

line 91 of MASTER	;RESET MESSAGE // GANTRY IN INITIAL POS
line 91 of Current Copy	;RESET MESSAGE // GANTRY IN START POSITION

File dh/mpf.dir/SPLINE3.MPF

line 19 of MASTER	Y=0.0 Z=0.0 A=1.5;Move the Y,Z,& A axis to the proper starting position.
line 19 of Current Copy	Y=0.0 Z=0.0 A=2.0;Move the Y,Z,& A axis to the proper starting position.
line 59 of MASTER	G4F.100; DWELL FOR BRAKES
line 59 of Current Copy	G4F.250; DWELL FOR BRAKES

SINUMERIK 840D PROFILE

SPECIAL CNC COMPARISON FEATURES

During an AutoSave comparison, the NC's disk data is unzipped and overlaid with the archive data since normal CNC operations remove the data being used by the NC from the PC's disk. Within each version of the comparison copies, an additional check is performed to determine if the NC file archives created by the user are up to date. --Note that the S7 program is backed up in the same directory as the NC's files but **is not** considered in the 840D module's comparison. The *STEP 7-module* program provides appropriate comparison reporting for this component of the CNC. Communicating with the NC device via Profibus, the CNC's agent actually performs the comparison.

COMPARISON ON DEMAND

Any two copies of a program, such as current, local, ancestor, version, or processor, can be compared to each other.

This comparison is done on an as-needed basis and may be performed from any client with configured access to the device program.

AUTOMATED COMPARISON

The Sinumerik 840D module allows for scheduled, unattended comparisons of configured groups of programs. Using the agent to perform the actual upload and comparison, AutoSave can compare the processor copy to the current copy or compare the current copy to a selected version (permanent/master copy).

This module supports the **AutoUpdate** feature that enables AutoSave to replace the existing current copy if it is different than the processor.

NOTIFICATION

Notification e-mail is automatically sent to selected, designated personnel when scheduled comparisons are completed and provides links to complete HTML detail reports as shown in the example.

CAPABILITIES

System Highlights	
Client: Real-time Ancestry	☑
Server: Auto Unattended Operation	☑
Agent: Parallel/Distributed Processing	☑
Secured Program Access	☑
Version Control w/file compression	☑
Device Upload	☑
Device Download	☑
Client Highlights	
Compare	☑
Compare Documentation Text	☑
Server / Agent Highlights	
Time-Base Scheduling	☑
AutoCompare	☑
AutoNotify	☑
AutoUpdate	☑
Server Platform Support	
Windows	☑

EDITOR REQUIREMENTS

MDT certified this module as operating properly with Siemens Sinumerik 840D v5.