

# Do-more PLC Family - Two Ways to Do-more!

## Both series leverage proven AutomationDirect (Koyo) hardware...

The Do-more family of PLC CPUs are “superchargers” for two of our time-tested hardware platforms. We started with a blank slate and included many features our customers have been

asking for. It’s superfast, has lots of memory, embedded Ethernet, and an advanced instruction set that makes ladder logic programming more intuitive and fill-in-the-blank than ever.

## Choose the Do-more H2 with our DL205 Racks and I/O Modules...

- Rack based - choose 3, 4, 6, or 9 slot bases
- Up to 256 I/O points in the local base, expand with Ethernet I/O
- Specialty modules include motion control (CTRIO), additional serial ports (SERIO), and Ethernet (ECOM)
- Wire via Ziplink modules, individual terminal blocks or direct to the I/O module (where possible)



## ...or Choose the Do-more T1H with our Terminator Series I/O Modules

- Same CPU (internally) as the Do-more H2 series
- Up to 16 I/O modules in the base system, select from all Terminator I/O options
- Up to 256 I/O points in the local base, expand with Ethernet I/O
- Specialty module for motion control (CTRIO)
- Terminator simplifies field wiring - no need for additional terminal blocks or Ziplink modules - saving tremendous amounts of DIN rail space.
- Field power is supplied via the Terminator power supply - no need for a separate field power supply

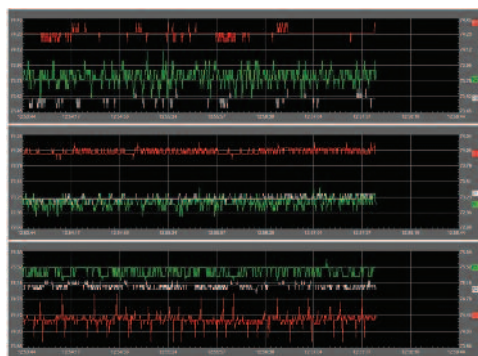


Both series offer flexibility and ease of use...

Do-more Series	H2	T1H
Fast Processor (same chip set)	✓	✓
Free Software	✓	✓
Auto-Discovery of all I/O (local & Exp.)	✓	✓
USB & Serial Ports	✓	✓
Optional Ethernet Port on CPU	✓	✓
Axis Mode for Motion Control	✓	✓
Supports Ethernet I/O from CPU port (-DM1E models only)	✓	✓

Both series are programmed with the intuitive (and FREE) Do-more Designer Software...

- Your code is portable between the two hardware platforms
- Built-in software simulator speeds your development process
- All documentation stored on the CPU (never search for it again!)
- Spreadsheet style math simplifies calculations tremendously

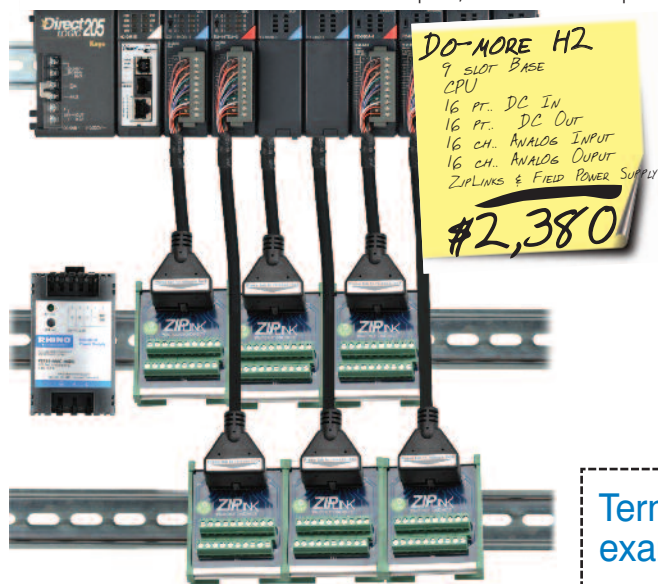


...and both include insightful monitoring tools for real-time tuning and testing

- Debug View window can suspend each task and program separately.
- PID View window allows precise tuning of your PID loops
- Data View window monitors your chosen program elements - discrete or analog I/O, and system parameters
- View Trend Data in its own view as well as within specific ladder instructions like PID, RAMP/COAST, and High/Low Alarm.

Compare these systems with the same I/O count:

16 discrete inputs, 16 discrete outputs, 16 analog inputs and 16 analog outputs



### Do-more Terminator Series (T1H)

Ready to terminate I/O directly, and field power is supplied. Less than 18 Inches of DIN rail space required.

Terminator uses 40% less DIN rail in this example.

Space and cost savings vary with complexity of the system.

The Terminator series is generally less expensive with higher I/O counts, (especially analog I/O).

Both the Do-more H2 Series and Do-more T1H Series can handle 256 I/O points in the base system. And both are easy to expand with Ethernet I/O.

### Do-more H2 Series

Requires ZipLink modules (or individual terminal blocks) for wiring and a separate field power supply; a total of over 31 inches of DIN-rail space.



# 11 Ways You can *Do-more!* with this PLC!

The Do-more family leverages the time-tested hardware of the DL205 series or the Terminator I/O series to create an incredibly powerful PLC at a fraction of the cost of comparable PLCs and PACs.

## 1 Cost-effective hardware

The Do-more CPUs take advantage of industry-proven hardware with over 50 compatible I/O modules and your choice of a rack based or rackless design. With our everyday list prices that are among the lowest in the industry, it's inexpensive to buy AND it's inexpensive to maintain down the road.

## 2 All documentation on board

Do-more stores all your project documentation on the CPU, easily retrieved by any PC with the FREE Do-more Designer software installed. You can also store your own PDF, HTML or other format files with the disk-based version of the project to aid future improvement or troubleshooting efforts.

## 3 This communications powerhouse includes built-in USB, serial, and (optional) Ethernet...

All Do-more series CPUs have built-in serial and USB ports; and an Ethernet port is optional. Do-more even supports custom protocols and lets you name all your devices for easy recognition throughout your program. Connect bar code readers, scales, servo drives, etc.

## 4 Practical counting/pulse

At \$299.00, the latest high-speed counter module (H2-CTRIO2) has four independently configurable timer/counter channels (up to 250 kHz) and two pulse output generators (up to 250 kHz). All configuration and profile setup is now built in to the Do-more Designer software, so it's a snap to integrate with your other application logic. The original H2-CTRIO is also supported, as well as the T1H-CTRIO.

## 5 Expansion I/O

Do-more supports Ethernet remote I/O. Connect up to 16 Ethernet I/O racks and/or GS drives to the built-in Ethernet port on the Do-more CPU (-DM1E models).

## 6 High-Performance Processor

The Do-more CPUs are lightning fast (executing a 1k Boolean program in just 0.2ms) – about 20x faster than the DL205 processors.



Watch the Overview Video here:  
<http://n2adc.com/domorevids>

Program via USB,  
 serial or Ethernet port



Expand Do-more systems  
 with Ethernet I/O

## 7 FREE! programming software

The Do-more Designer software represents a clean break from the past (DirectSOFT)\*. We listened to our customers to create a powerful, easy-to-use programming environment with all the features you expect from modern PLC programming software:

- Flexible program management supports a mix of stage and ladder logic for a best-of-both-worlds approach that simplifies your code and makes troubleshooting easier.
- Support for up to 2,000 PID loops with auto-tuning AND instruction-specific monitoring windows for PID, RAMP/COAST, and High/Low ALARM instructions
- Spreadsheet style Math instruction supports formulas, variables, nesting
- “Axis Mode” for motion
- Enhanced security
- Strong data typing and much more...

\* This required that we drop support for the old handheld programmer (good riddance!) AND there isn't a conversion utility for legacy DirectSOFT ladder programs (sorry!\*\*)

\*\* There was no way around it - and we thought you would like to know this fact up-front.



### Built-in Simulation Tool

The Do-more Designer software includes a hyper-accurate simulator, a “virtual PLC” on your PC. It's actually the very same code that executes inside the Do-more CPU!

- **Connect and download to it just like a physical PLC.**
- **Simulates discrete and analog I/O with access to timers, counters, control bits, etc.**
- **Use the simulator with “Trend View” for outstanding visibility into your PID process.**
- **Allows you to test and debug your logic without a PLC present!**

## 8 Smarter architecture

Do-more offers about nine times the data memory and four times the program memory of the DL205 processors, and you can allocate all that data memory the way you want it - no rigid, predefined blocks of wasted space!

## 9 Powerful control over program execution

Define execution order for your tasks and programs. Then give each a fixed timeslice, with smart “yield points” for logical pause locations. You have complete control over the order and timing of your PLC code.

## 10 Enhanced troubleshooting tools

Suspend tasks or programs and disable stages. Monitor program status bits. Trend data in multiple views. Turn on the Do-more Logger and log error messages right to the Network Message Viewer application on your PC. Do-more has all the troubleshooting tools you need to get your code up and running quickly and efficiently.

## 11 Practical high-density modules and ZipLink connections

DL205 I/O modules offer a wide range of points per module including 4, 8, 12, 16 and 32-point modules. To help you wire them fast and inexpensively, ZIPLink quick connection cables and terminal blocks help you connect I/O modules to terminal blocks in seconds. These easily pay for themselves by reducing wiring costs. We also offer relay, fused and LED ZIPLink modules. For information on our 5-second wiring solution, see ZIPLinks in the Terminal Blocks and Wiring section.



**And much more:**

- Decimal Addressing
- Stage Programming
- True Bumpless Run-time editing

Many I/O modules have matching ZIPLink connection cables/blocks. Connect even 32-point modules in seconds!



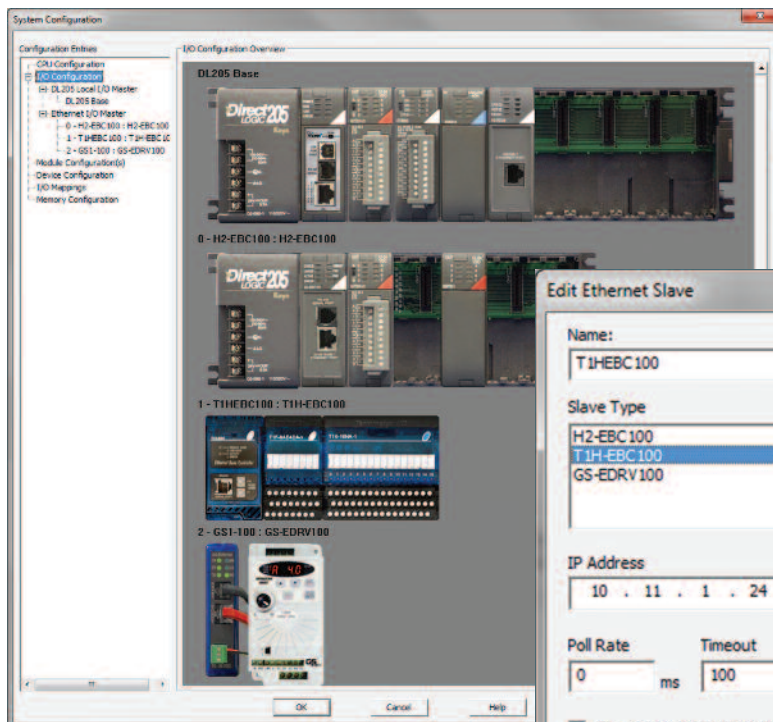
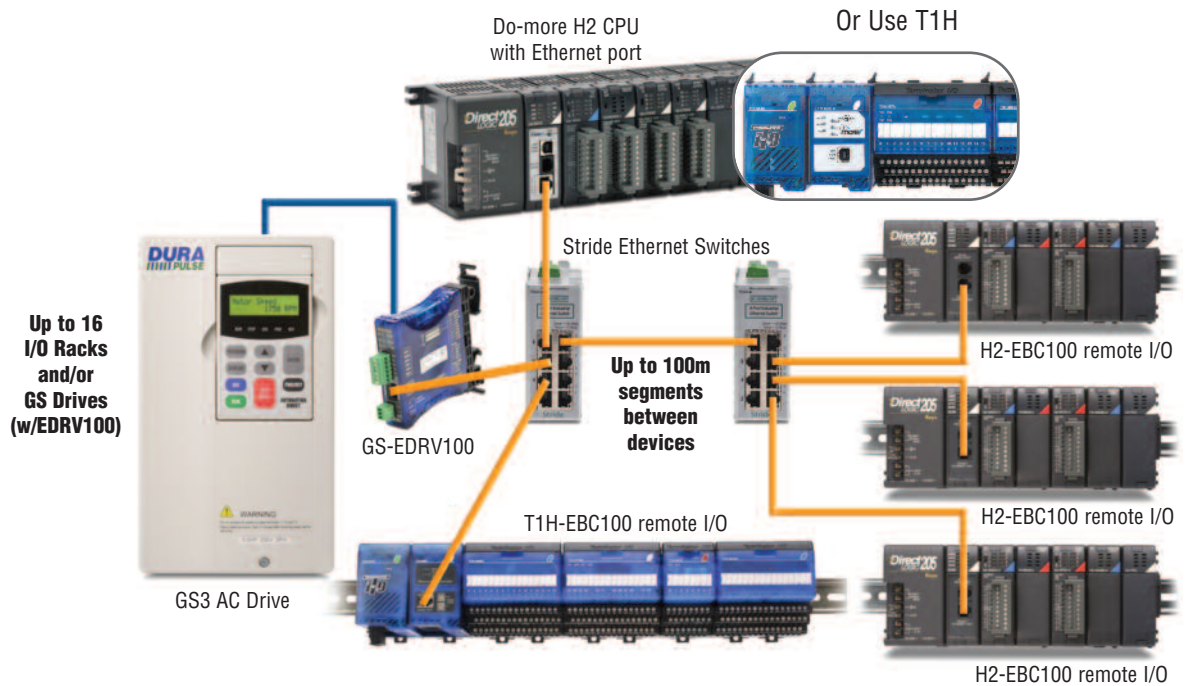
# Do-more with Ethernet I/O!

## Expand your I/O

Your local Do-more base supports up to 256 I/O points. If you need more, you can expand your system with up to 16 I/O racks and/or GS drives using Ethernet I/O, now supported by the embedded Ethernet port on the -DM1E CPUs. Each of those 16 racks can provide hundreds more I/O points.

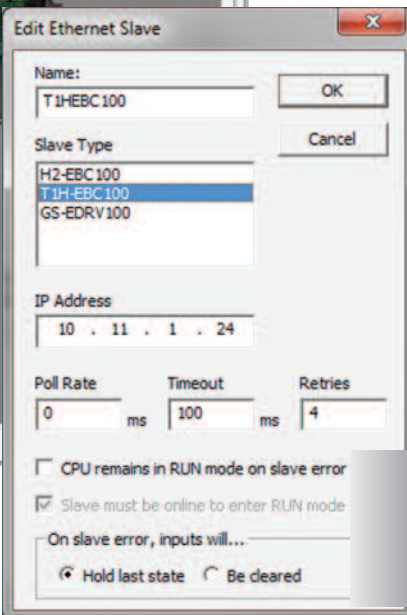
## Locate I/O Anywhere

DL205 remote I/O bases can each be located up to 100 meters from the local base (or between Ethernet switches) using EBC100 slave modules in the remote bases. And you have the flexibility of using Terminator rackless field I/O drops as well (w/ T1H-EBC100).



## Ethernet I/O Features

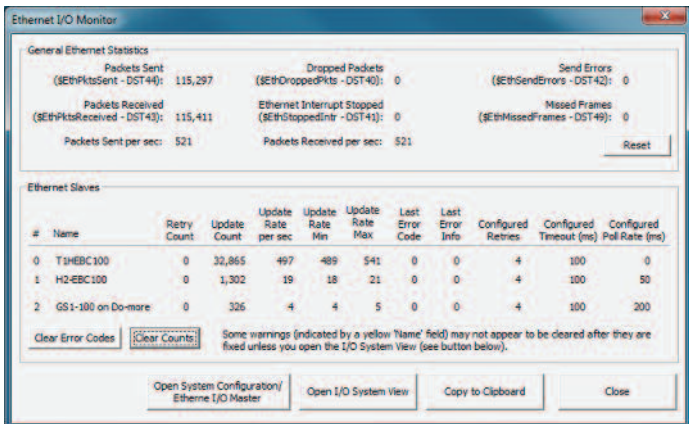
- Native Addressing (X/Y, WX/WY tags)
- Auto-Discovery of all attached I/O racks, modules and drives
- Independently adjustable poll rates for each I/O rack or GS drive (with GS-EDRV100 Ethernet interface card)



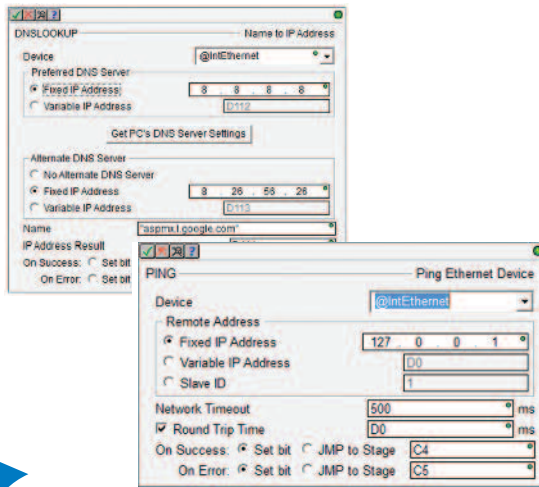
Configure 'critical' I/O so that the CPU will "drop out of run mode" if that I/O rack or GS drive disconnects for some reason.  
Or allow the CPU to continue running using the last known values or cleared values.

# Do-more with Ethernet I/O Diagnostics

Instructions for DNS Lookup and Ping operations allow your ladder logic code to perform network-centric operations.



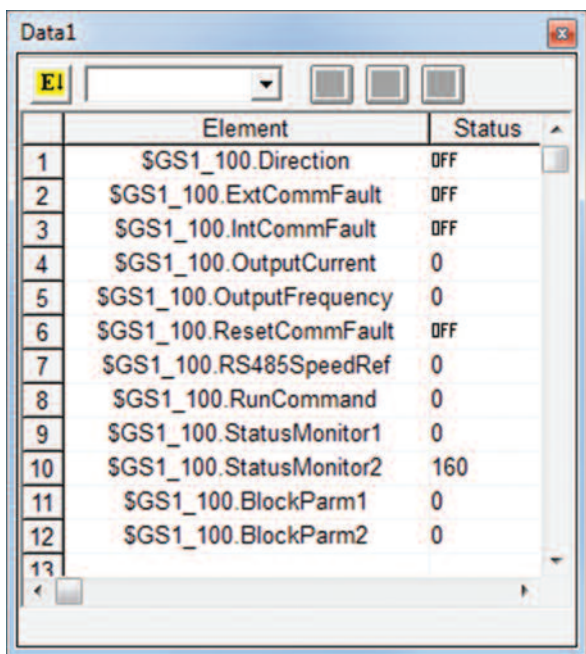
Ethernet I/O Monitor offers unparalleled visibility of all traffic on your Ethernet I/O network. Identify specific problems at a glance and jump to the System Configuration or Viewing screens with a single click.



# Do-more with GS Drives

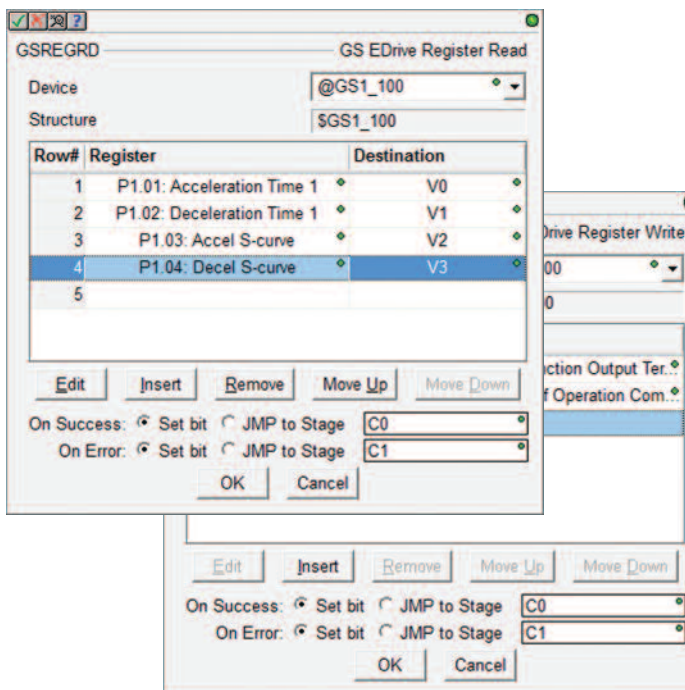
## A 'Structure' for GS Drives

- Automatically created whenever you attach a GS drive to the Ethernet I/O network via a GS-EDRV100 module
- Contains the most popular drive parameters
- Parameters in the structure sync automatically with the drive. No need to read or write these values - just use these tags in your ladder, like native I/O tags
- 15 user-defined registers allow customization of the structure
- If you need access to other drive parameters use the GS Register Instructions below.



## Two Extra Instructions for GS Drive Communications

- GS EDrive Register Read (GSREGRD) allows reading of any drive register that is not in the 'Structure'
- GS EDrive Register Write (GSREGWR) allows writing of any drive register that is not in the 'Structure'





# Do-more with Precise Motion Control!

## Here's why

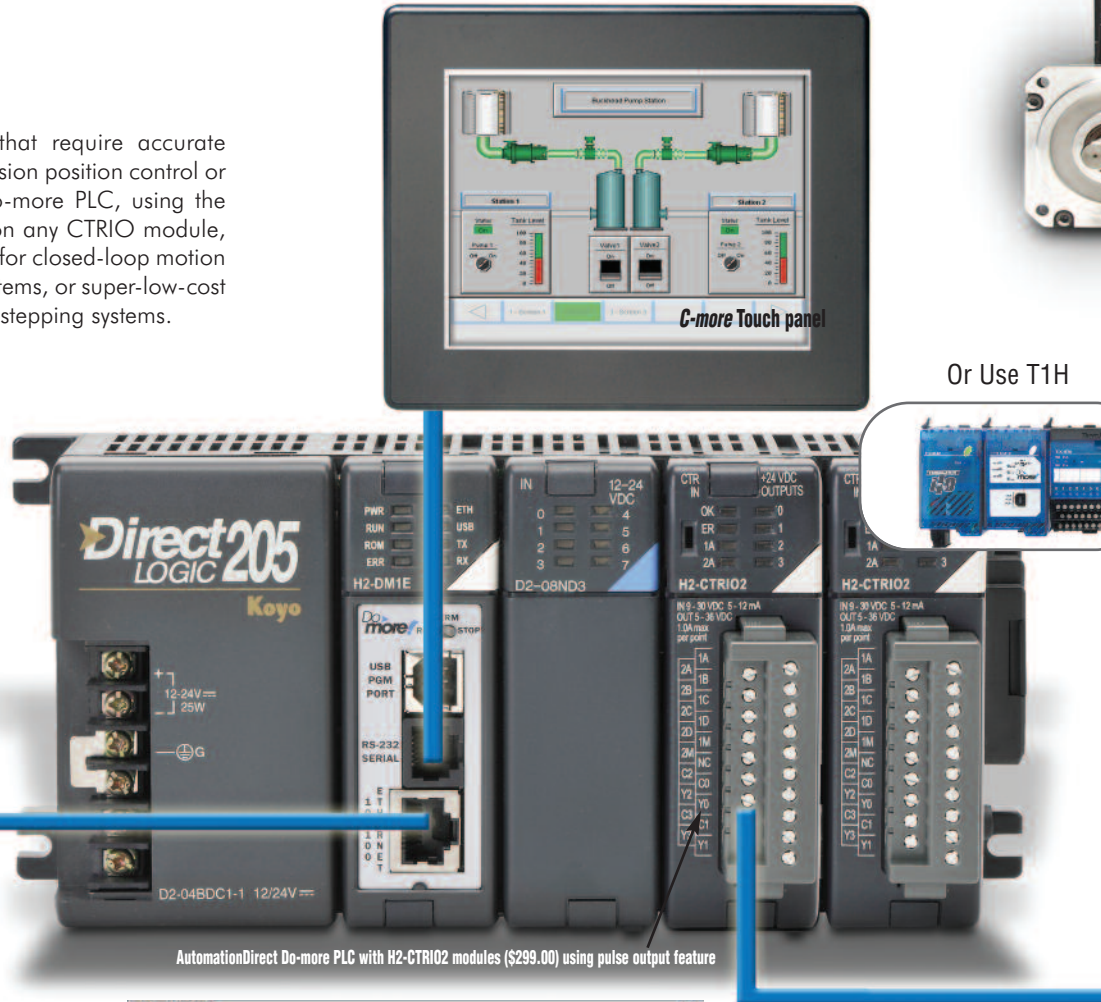
There are many applications that require accurate motion control, whether it's precision position control or tight speed regulation. The Do-more PLC, using the high speed pulse output mode on any CTRIO module, offers a superior control solution for closed-loop motion control using SureServo servo systems, or super-low-cost open-loop control with SureStep stepping systems.

## Here's how

When coupled with our SureServo or SureStep motion products, the resulting system is extremely cost-effective.

A Do-more-based motion control system is very well-suited to applications such as:

- cut-to-length
- indexing tables or conveyors
- and many more...



Or Use T1H

## Familiar with H2-CTRIO?

If you've used our H2-CTRIO module in the past, take a look at the H2-CTRIO2\*. When coupled with a Do-more CPU, you get:

- Faster pulse output frequency (20-250 kHz)
- All configuration and motion profiles are created in the Do-more Designer Software and are stored in the CPU.
- The new "Axis Mode" instructions make the code for your motion application a cinch

Download the free software today and see for yourself.

\* Note: The CTRIO2 is only available for use with the 205 Series (H2) processor.

\* Note: The Do-more PLC is also compatible with the legacy H2-CTRIO and T1H-CTRIO modules and you will benefit from having the configuration and profiles created in the Do-more Designer Software and stored on the CPU. This alone is a big improvement over the previous functionality.

**CTAXCFG CTRIO2 Axis Configuration**

Pulse Output Device: @CTRIO\_Knife  
 Pulse Output Structure: SCTRIO\_Knife  
 Minimum Frequency: 100  
 Maximum Frequency: 1000  
 Acceleration Rate (pulses/sec<sup>2</sup>): 100  
 Deceleration Rate (pulses/sec<sup>2</sup>): 100

**Edit Pulse Profile**

Profile Info  
 Name: SmoothMove  
 Profile Type: S-Curve  
 Symmetrical S-Curve  
 Dynamic Positioning  
 Dynamic Velocity  
 Home Search  
 Free Form  
 Dynamic Positioning Plus (CTRIO2)  
 Trapezoid Plus (CTRIO2)  
 Trapezoid w/Limits (CTRIO2)

File Stats  
 File Number: 1  
 Total Entries: 177  
 Blocks Used: 23

Peak Freq: 1000 Hz  
 Total Time: 11.57 sec  
 Accel Time: 2000 ms  
 Decel Time: 2000 ms

Total Pulses: 10000  
 Start Freq: 40 Hz  
 Pos Freq: 1000 Hz  
 End Freq: 40 Hz  
 Min Freq Change: 3 %  
 Min Entry Time: 10 ms

NOTE: The CTRIO's pulse outputs are limited to 25KHz. This profile has been increased to 54KHz to support the CTRIO2, while maintaining compatibility with the CTRIO.

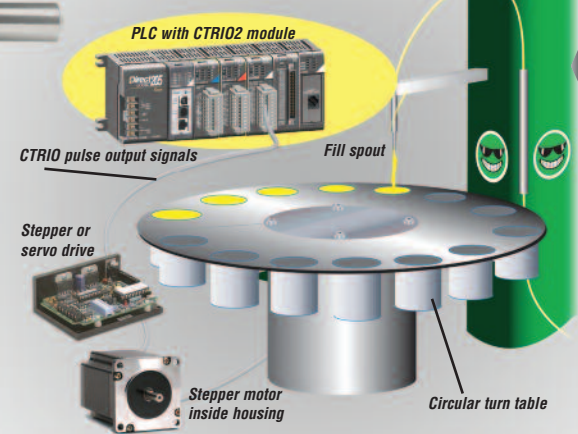




www.sureservo.com



**Rotary indexing liquid fill application**



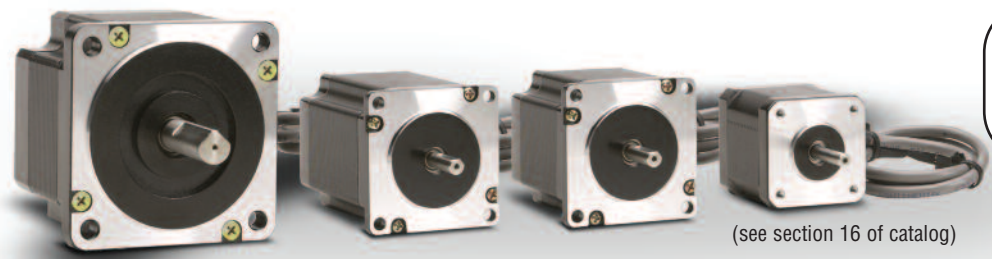
The SureServo family of brushless servo systems from AUTOMATIONDIRECT is fully digital and offers a rich set of features at dynamite prices. Choose from **eight standard servo motors** that can be **used in combination with one of three standard servo drives**.

These servos are designed for flexibility and quick implementation. SureServo drives accept a wide range of command sources:

- Built-in motion controller with preset position, velocity or torque
- Select presets with switch inputs and/or the multi-drop Modbus serial interface
- Position commands with "pulse and direction" or CW/CCW format
- Encoder follower
- Analog voltage Velocity or Torque command
- Eight standard systems from 100W to 3kW
- Use with Do-more PLCs or any other host control
- Drives feature on-board indexer and adaptive tuning modes
- Free set-up software
- 2 year warranty

For configuration, tuning and diagnostics, use the drive's integrated keypad/display or take advantage of the free SureServo Pro™ PC-based software. Tune the system easily with adaptive auto-tuning

selections or manual mode. Adapt to diverse applications with configurable I/O, including 8 digital inputs, 5 digital outputs, 2 analog monitors and a scalable encoder output.



**Ease of use out of the box!**

(see section 16 of catalog)

The SureStep stepping family has four standard motors to handle a wide range of automation applications such as woodworking, assembly, and test machines. Our square frame or high torque style stepping motors are the latest technology, resulting in the best torque to volume. We have **NEMA 17, 23, and 34 mounting**

**flanges and holding torque ranges from 83 oz-in to 434 oz-in.** A 20-foot extension cable with locking connector is a standard accessory to interface any of the four stepping motors to the microstepping drive, and can be easily cut to length if desired.



# Do-more Designer: FREE Software that actually *does more!*

Download the free software today and check out all these great features!

The Do-more Designer Software is a free download at [www.do-more.com](http://www.do-more.com)

To test your program, use the built-in simulator or connect to a Do-more PLC with your choice of a serial, USB or Ethernet connection.



## Built-in simulator

The built-in simulator creates a virtual PLC so you can test your logic without a PLC present.

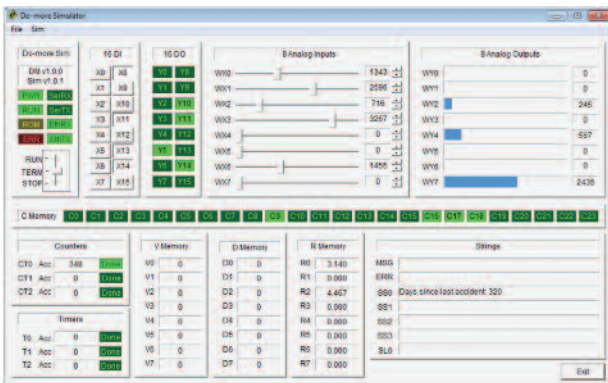
Windows application uses the same code as the CPU firmware - for the most accurate simulation.

Simulates discrete and analog I/O with access to timers, counters, control bits, etc.

Simulate PID - Use the Simulator coupled with the Trend View for outstanding visibility into your PID processes.

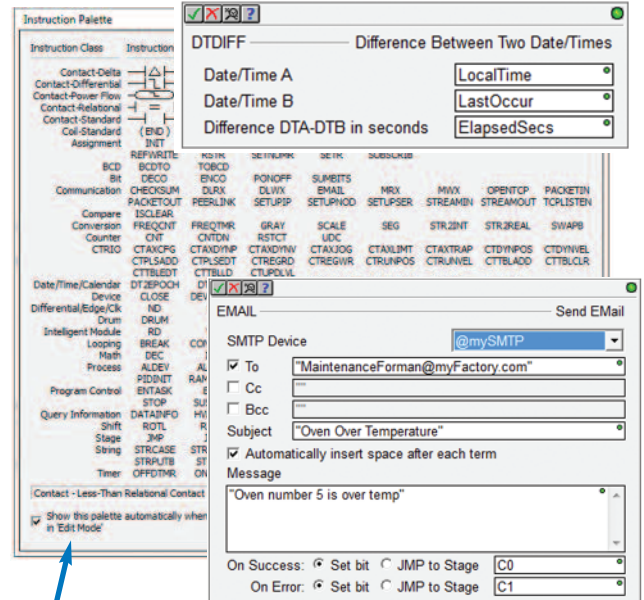
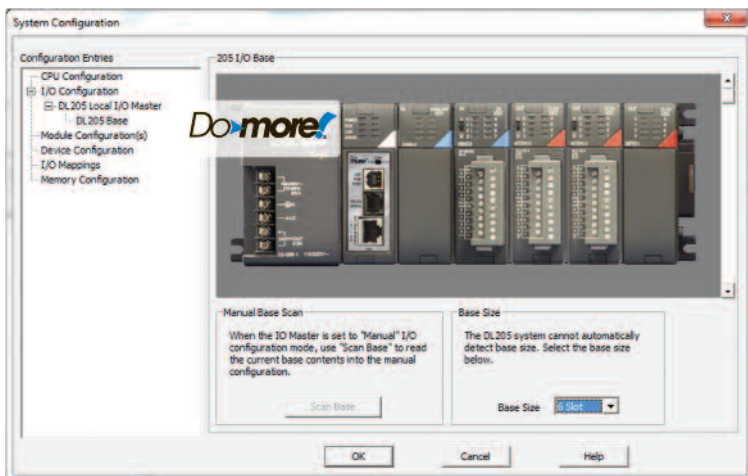


Watch the Video about this topic:  
<http://n2adc.com/domoresim>

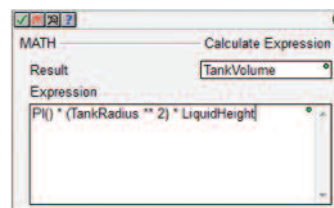
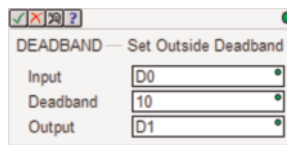


## Local I/O is automatically configured

Connect to your PLC, and visit the I/O Configuration window for full Auto-Discovery of your modules in the local base.



Use the pop-up instruction "Palette" to quickly select an instruction and insert it into your ladder!



## Optimized instruction set

The Do-More instruction set was developed by listening to our customers' needs and requests, with flexibility and ease-of-use as our goals. Download the free software today and take a look at these powerful and easy-to-use instructions.



Watch the Video about this topic:  
<http://n2adc.com/domoremath>

## Powerful, intuitive math

The Spreadsheet style MATH instruction allows mixing of data types\* and it accepts formulas and variables. The MATH instruction also allows nesting with parentheses to 8 levels, plus:

- Ten "Real" Functions, including Natural Log, Log, e, PI, Square Root, and conversions.
- All the standard Trig Functions
- Eight Statistical Functions, including Average, Min & Max, RANDINT and RANDREAL (to generate random values), Standard Deviation functions and more.
- Thirteen Conditional functions, including six CountIF, six SumIF, and If/Else expressions with a full complement of binary operators.

If that's not enough, how about Absolute Value, Time, Memory, and Indirect addressing? You even get access to system-level bits such as \$IndexError, \$OutOfRange, \$Overflow, etc.

\* Note about data types: integer and real types are really all you need but Do-more does include a few BCD and octal conversion instructions for legacy data types.

## High-speed I/O and motion control: simplified

All configuration parameters and profiles are stored in the CPU module – if a High Speed Module needs to be replaced, just drop it in and reboot. (There is no separate CTRIO Workbench application.)

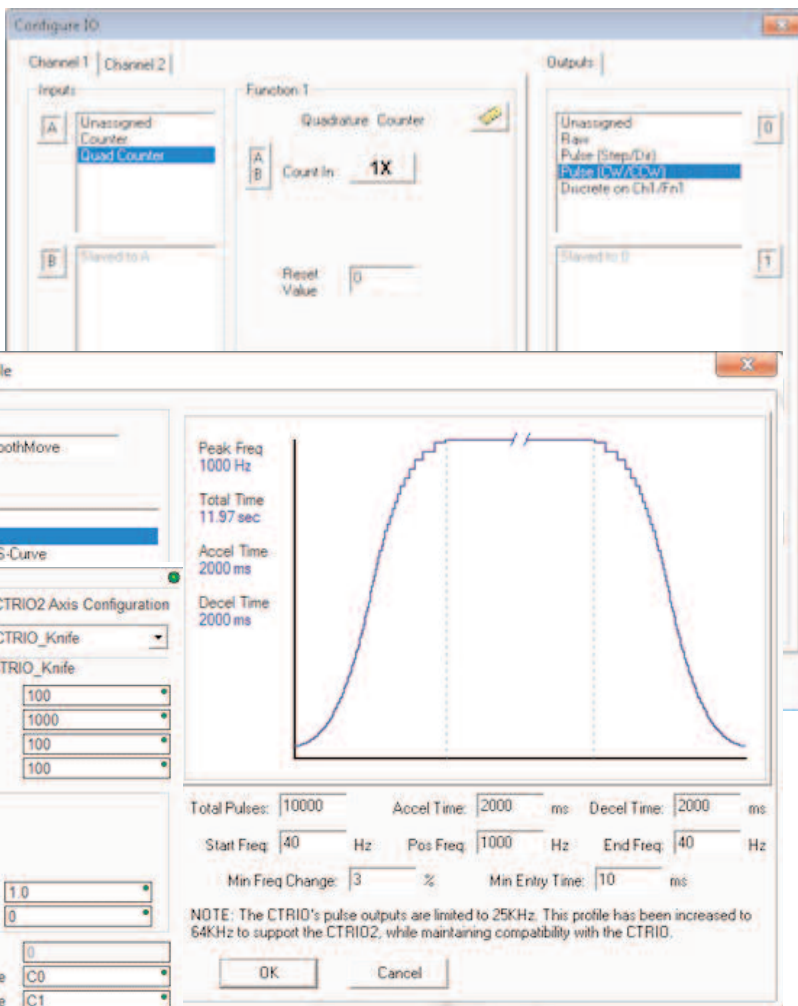
Dedicated instructions greatly simplify and improve functionality of the CTRIO modules.

Native support allows fill-in-the-blank motion profiles and high-speed counter configuration.

Use the 'Axis Mode'\* instructions for dynamic positioning, jogging, and trapezoidal moves.

Assign a logical name to each axis, and use that name throughout your code!

**\* Note: 'Axis Mode' is only available for the H2-CTRIO2.**



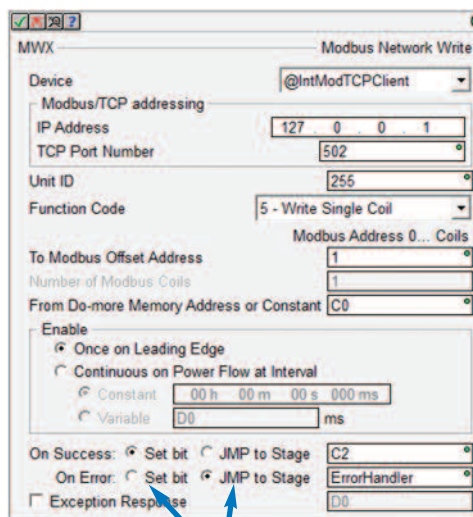
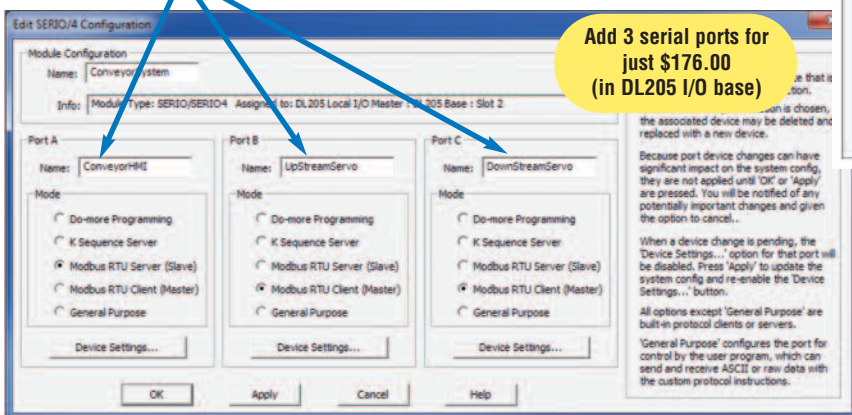
## Communications are easy to define, troubleshoot

The PEERLINK instruction makes it very easy to share data over Ethernet between Do-more CPUs, with transparent data sharing in a designated memory area.

And the Do-more H2 series CPUs make it easy to add cost-effective serial ports by supporting the H2-SERIO(-4) modules.

Do-more offers more security in communications - Modbus and DirectLOGIC transactions reference reserved "Guest Memory" (Modbus and DL memory) so there is no direct access to your I/O image registers from other devices.

Do-more lets you name your devices and reference those meaningful names throughout your program code.



All Communication instructions can either:

- Set a flag, OR
- Jump to Stage

"on success" or "on error". This can really simplify your code!



# The software story just gets better and better!

## Insightful monitoring and troubleshooting tools

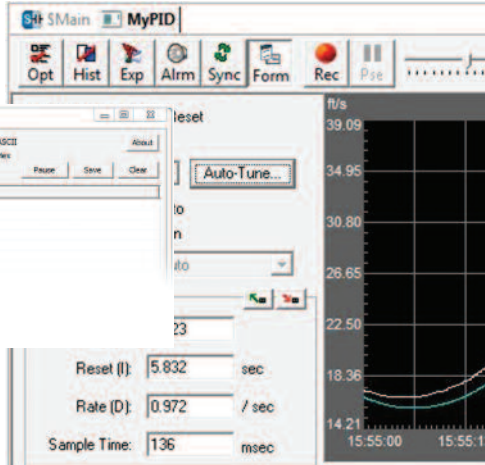
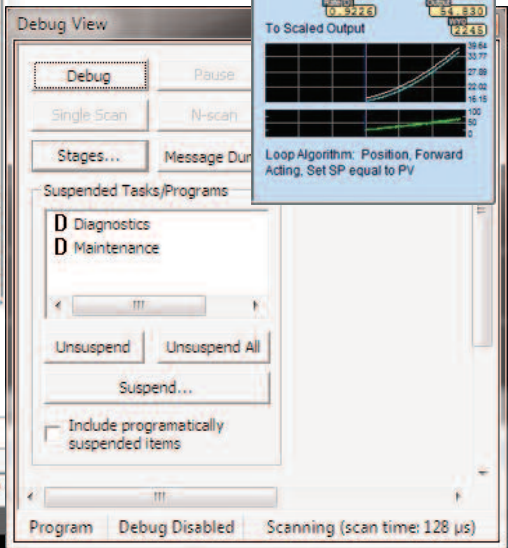
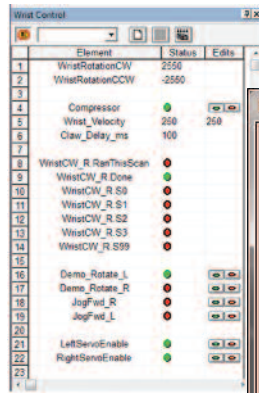
View Trend Data in its own view and within specific ladder instructions like PID, RAMP-SOAK, and High/Low Alarm.

Tasks and Programs can be suspended to isolate code; stages can be enabled or disabled.

The PID Monitoring window allows precise tuning of your PID loops.

Use the Data View to monitor program elements and Program Status Bits for behind-the-scenes visibility into PLC internal operations.

Turn on the Do-more Logger and receive custom error messages via the network message viewer (free Do-more Designer utility that runs on your PC).

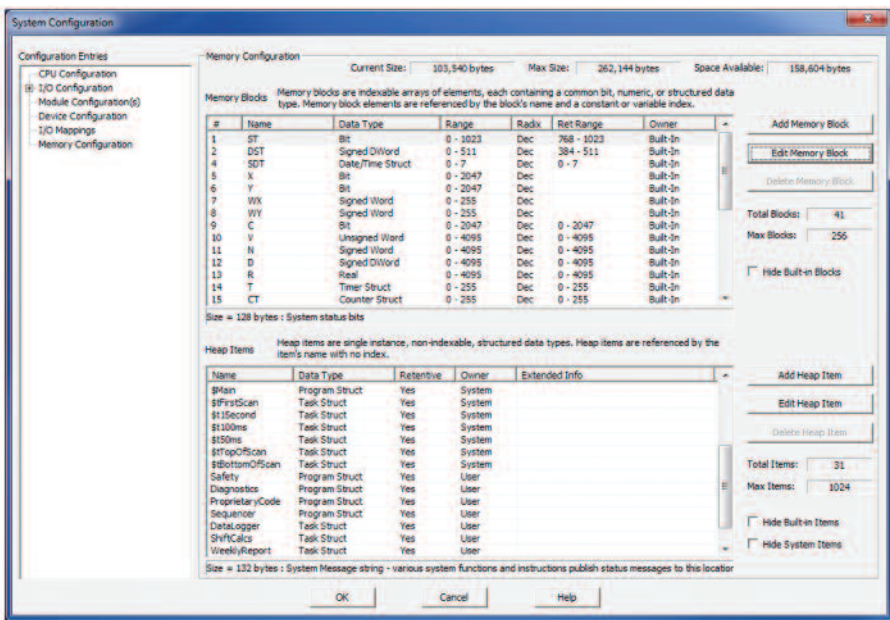


## Flexible memory management capabilities

Strong data typing keeps your data organized and protected. Data structures automatically put the important details at your fingertips.

Do-more can be as flexible as you need. You can allocate all that data memory the way you want it up to specific maximums (no more rigid, predefined blocks of wasted space!).

You can even define your custom memory addresses and assign a data type of your choice to improve the readability of your program.



## Organize your code with outstanding program management tools

Do-more supports straight ladder logic, tasks and stage structures for a best-of-all-worlds approach that simplifies code and makes troubleshooting easier.

Code can be broken up into Tasks and Programs:

- Tasks run when called; once, continuously, or at a user defined interval
- Programs run based on events

Tasks and Programs can be suspended to isolate code; stages can be enabled or disabled.

Get flexible, powerful control over your program code execution:

- Assign tasks or programs a fixed timeslice
- Define “yield points” for logical pauses
- Define priorities and order of execution

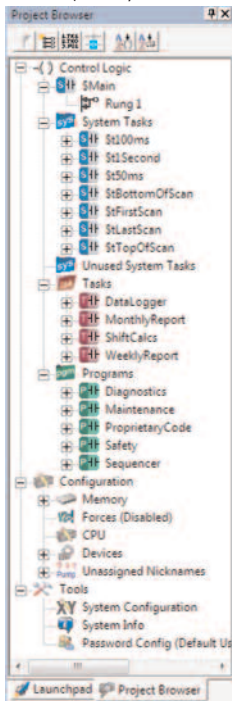
## Project management

All project files are stored onboard the CPU - no more searching for the old laptop with the most recent copy of the program before you can fix your machine!

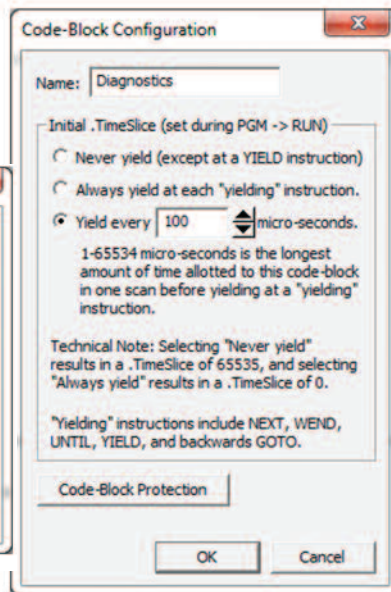
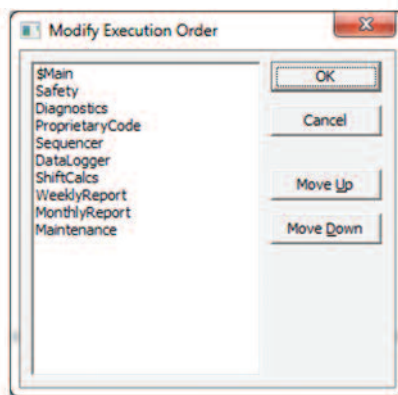
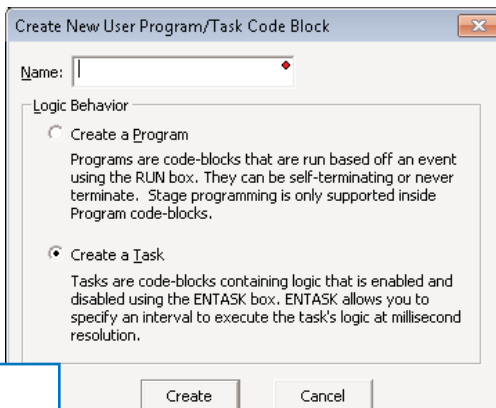
You can also store your own files with the disk-based version of the project to aid future improvement or troubleshooting efforts. Store PDF, HTML or virtually any file format (up to 10Mb) that you want to keep with the project for reference, or information to assist your coworkers or customers whenever they open the project.

The Project Browser makes it easy to select the code block you want to view or edit. System tasks are predefined for many common actions. Jump directly to any part of your code with just a few clicks.

The Do-more Designer software even supports “restore points”, which are basically previous versions of your program that you saved at known good operation. It’s nice to know that you can easily “roll back” your project if your development goes awry.



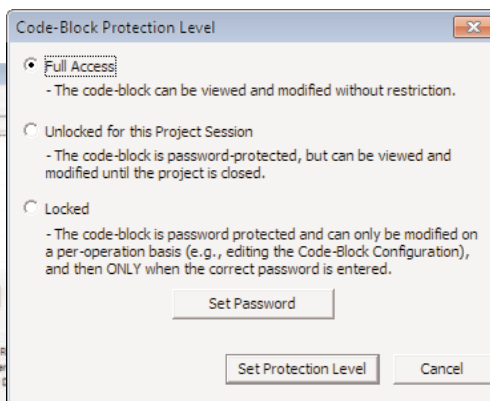
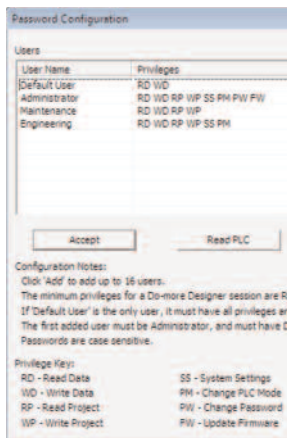
Watch the Video about this topic:  
<http://n2adc.com/domorestage>



## Security for your code and your organization

Do-More Designer offers versatile password protection. Define multiple users, assigning combinations of privileges from the available options. Use code block password protection to allow customers to see enough of the program to allow basic troubleshooting, while keeping your proprietary code blocks hidden and secure.

External devices are relegated to “guest memory” areas; your program code controls all access to actual I/O points. There are separate reserved areas for Modbus and DL memory (DL memory is used for remote I/O racks).



## ‘Bumpless’ Run-time Edits

Do-more Designer can download a new version of your code into the Do-more CPU and seamlessly switch to it **at the beginning of the next scan**. There is no need for any pause (however brief) that can wreak havoc on the operation of your machine or process.

Visit [www.do-more.com](http://www.do-more.com) for more details on all the hardware and software features, and to view all the videos.