AUTOMATIONDIRECT

Do▸more!

H2 Series
Programmable Logic Controller (PLC)

Up-to-date price list:
www.automationdirect.com/pricelist

FREE Technical Support:
www.automationdirect.com/support

FREE Videos:
www.automationdirect.com/videos

FREE Documentation:
www.automationdirect.com/documentation

FREE CAD drawings:
www.automationdirect.com/cad

PWR · ETH
RUN · USB
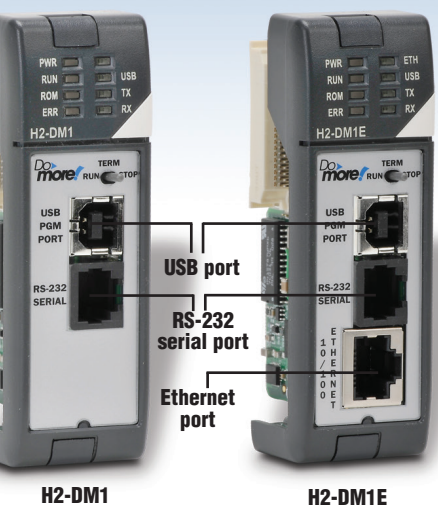ROM · TX
ERR · RX

H2-DM1E

OUT   ANALOG 2CH

F2-02DAS-1

IN   12–24 VDC
0   4
1   5
2   6
3   7

D2–08ND3

IN
ACT

D2-32ND3

A0	A4
A1	A5
A2	A6
A3	A7
B0	B4
B1	B5
B2	B6
B3	B7
C0	C4
C1	C5
C2	C6
C3	C7
D0	D4
D1	D5
D2	D6
D3	D7

22-26VDC
4.5mA
CLASS2

CTR IN   +24 VDC OUTPUTS

OK   0
ER   1
1A   2
2A   3

H2-CTRIO2

IN 9 - 30 VDC 5 - 12 mA
OUT 5 - 36 VDC
1.0A max
per point

2A	1A
2B	1B
2C	1C
2D	1D
2M	1M
C2	NC
C3	C0
Y2	Y0
Y3	Y1

RCV A
RCV B
RCV C

H2-SE

RS232

Do▸more!

TERM
RUN   STOP

USB PGM PORT

RS-232 SERIAL

ETHERNET 10/100

100-240V~
50-60Hz
80VA

G

LG

24V OUT
0.3A

D2-06B-1   110/220V~

Do-more H2 PLCs   mDMH-1

Do-more with DL205 Series I/O

Flexibility and ease of use...

Do-more Series	H2
Fast Processor	✓
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)	✓
Supports EtherNet/IP (-DM1E models only)	✓
DirectLogic Migration Tool (DirectLogic program over to the do-more platform)	✓

The Do-more H2 series micro-modular CPUs are "superchargers" for the time-tested DL205 hardware. We started with a blank slate and included many features our customers have been asking for. It's super fast, has lots of memory, embedded Ethernet and much more!

There are the two CPU options:

| H2-DM1 | $411.00 | (1) USB port, (1) full-duplex serial port |
| H2-DM1E | $549.00 | (1) USB port, (1) full-duplex serial port, (1) Ethernet port |

• Over 1M bytes total memory (includes program, data and documentation).

• Program/monitor/debug over any embedded communication port.

• Supports up to 256 I/O locally and thousands more with optional Ethernet remote expansion racks.

• Supports inexpensive serial port expansion options for connection to bar code readers, ASCII devices, printers, etc.

• Four base sizes with built-in power supply support 12/24 VDC, 110/220 VAC and 125VDC (six and nine-slot only) power sources.

• Over 50 option modules are available, from discrete and analog to high-speed counter and Ethernet modules.

Note: Do-more CPUs are programmed with Do-more Designer software. DirectSOFT is not compatible with these CPUs. However, a conversion utility is available for ladder programs developed with DirectSOFT.

H2-DM1

H2-DM1E

USB port

RS-232 serial port

Ethernet port

Programmed with the intuitive (and FREE) Do-more Designer Software...

• 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 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, RAMPSOAK, and High/Low Alarm

FREE ONLINE PLC TRAINING

Get absolutely free online PLC training through our training partner Interconnecting Automation at www.automationdirect.com/plc-training. This free training encompasses basic PLC fundamentals as well as Do-more Designer specific topics.
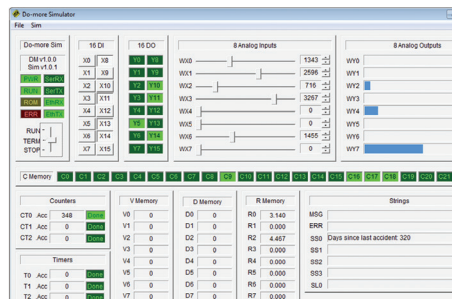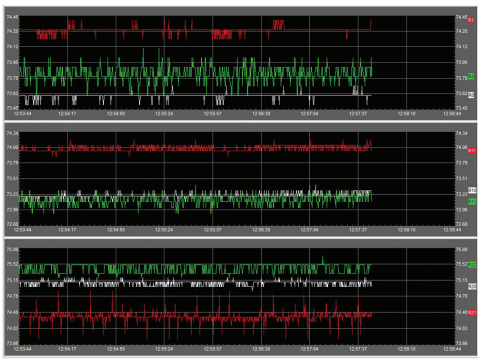

DO-MORE H2
9 SLOT BASE
CPU
16 PT. DC IN
16 PT. DC OUT
16 CH. ANALOG INPUT
16 CH. ANALOG OUTPUT
ZIPLINKS & FIELD POWER SUPPLY

$3,698

Priced to compete

Example system with 16 discrete inputs, 16 discrete outputs, 16 analog inputs, 16 analog outputs, external power supply and ZIPLink connection modules/cables for $3,610.00.

Connection options

Use the time-saving ZIPLink modules and cables or individual terminal blocks to wire your I/O signals.

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

The Do-more H2 series leverages the time-tested I/O hardware of the DL205 PLC system to create an incredibly powerful PLC at a fraction of the cost of comparable PLCs.

1 Cost-effective hardware

The Do-more H2 CPUs take advantage of industry-proven hardware with over 50 compatible I/O modules and a versatile rack based 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 H2 CPUs store all your project documentation onboard, 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 H2 series CPUs have built-in serial and USB ports; and an Ethernet port is optional. Do-more supports Modbus RTU/TCP, EtherNet/IP and even custom protocols. Connect bar code readers, scales, servo drives, etc. and assign a name to each of your devices for easy recognition throughout your program.

4 Practical counting/pulse

At $445.00, 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.

5 Expansion I/O

Do-more H2 series 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 H2 CPUs are lightning fast (executing a 1k Boolean program in just 0.2ms) — about 20x faster than the DL205 processors.

7 FREE! programming software

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, RAMPSOAK, and High/Low ALARM instructions
- Spreadsheet style Math instruction supports formulas, variables, nesting
- "Axis Mode" for motion
- Enhanced security
- Conversion utility for importing DirectSOFT projects
- Strong data typing

and much more...

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 H2 CPUs offer 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, *ZIP*Link 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 *ZIP*Link modules. For information on our 5-second wiring solution, see *ZIP*Links in the Wiring Solutions section.

And much more:
- **Decimal Addressing**
- **Stage Programming**
- **True Bumpless Run-time editing**

Program via USB, serial or Ethernet port

Expand Do-more systems with Ethernet I/O

| CPU | Serial | Pulse | Analog | Relay | AC Input | DC Output | Ethernet | Remote I/O |

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

Do-more with Extra Communications Ports!

Both Do-more H2 CPUs have one serial port built in...

Need more serial ports?

Then check out the two H2-SERIO modules. The serial port modules are a great addition to the Do-more PLC line-up, and allow connection of a wide range of serial devices, such as barcode scanners, scales, printers, modems, etc.

Add serial ports for $81 per port*!

Name your devices!

"Device abstraction" makes it easy to connect external devices - give then logical names and then refer to those names throughout your program code for ease and clarity.

Custom protocol instruction...

...makes it possible to "talk" to almost any device by letting you define any non-standard data exchange (serial or Ethernet)!

* $315.00 for 3-port serial comm module

Download the free Do-more Designer Software today and take a look at these great features and so much more

H2-SERIO-4
Two RS-232 ports & One RS-422/485 **$252.00**

H2-SERIO
Three RS-232 ports **$252.00**
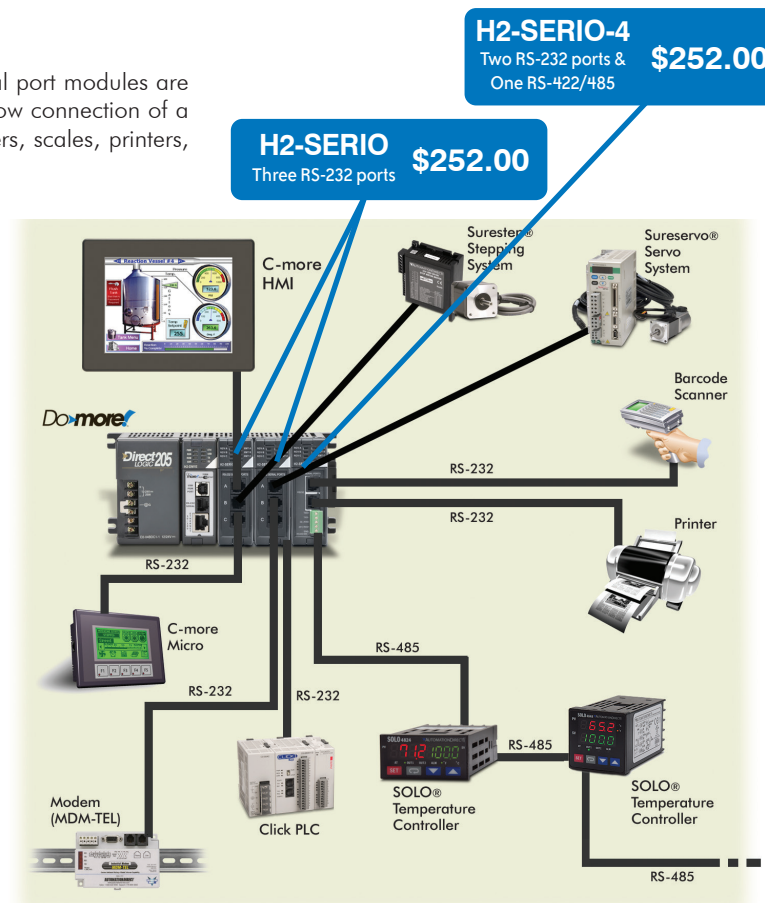
H2-ECOM100 $423.00
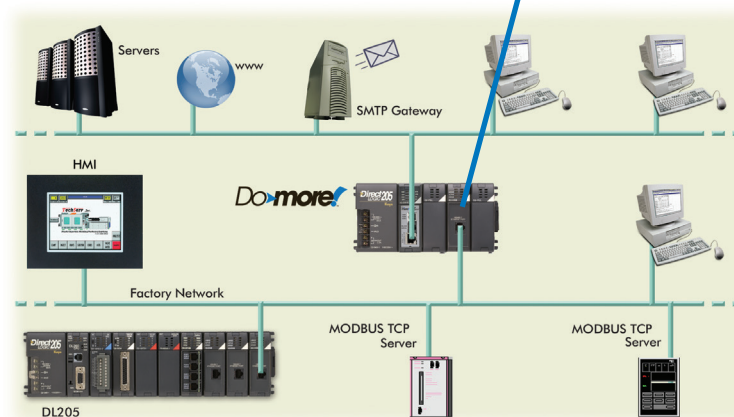
Improved to Do-more!

All your serial port setup is done through the Do-More Designer Software, and if you should need to replace a serial module, all of its parameters and setup are stored in the CPU and are automatically loaded and ready to go when the system powers up.

Need more Ethernet?

The first Ethernet port is a real bargain - it's built into the Do-more H2 CPU (H2-DM1E) for just $100 more than the non-Ethernet version (H2-DM1). But many applications require a second Ethernet port. Add an H2-ECOM100 and connect your Do-more to segregated networks for security or isolation.

Do-more with Ethernet I/O!

Expand your I/O

Your local Do-more H2 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).
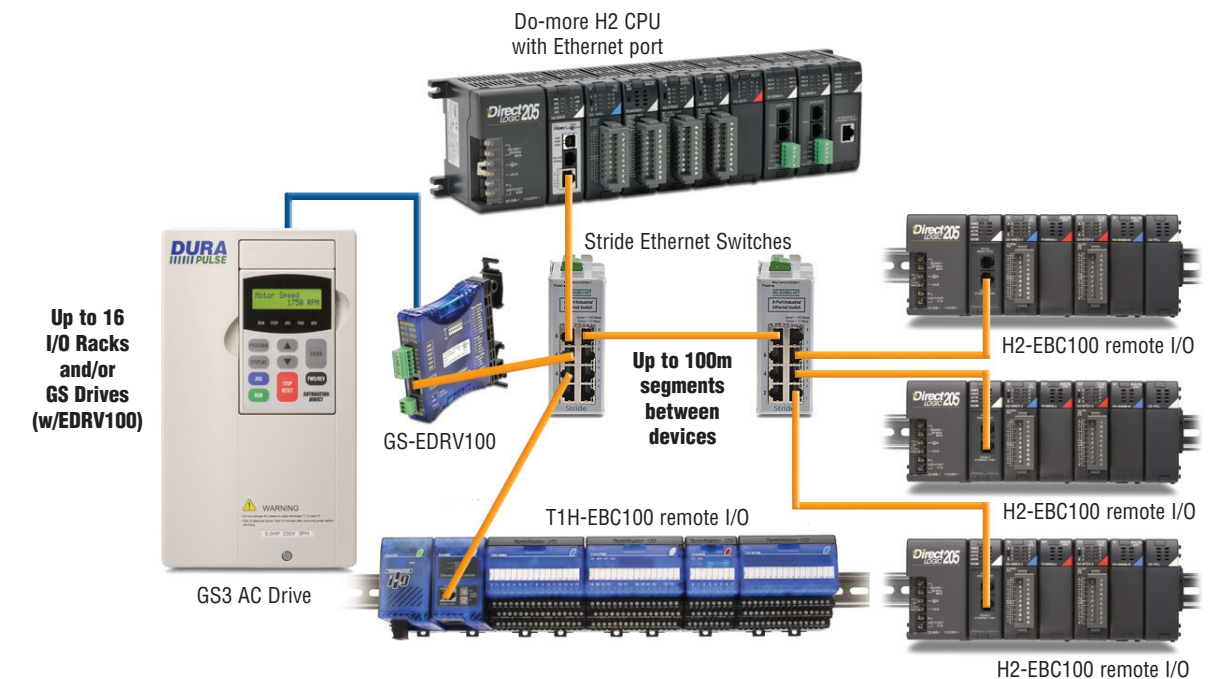

Ethernet I/O Features

- 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)
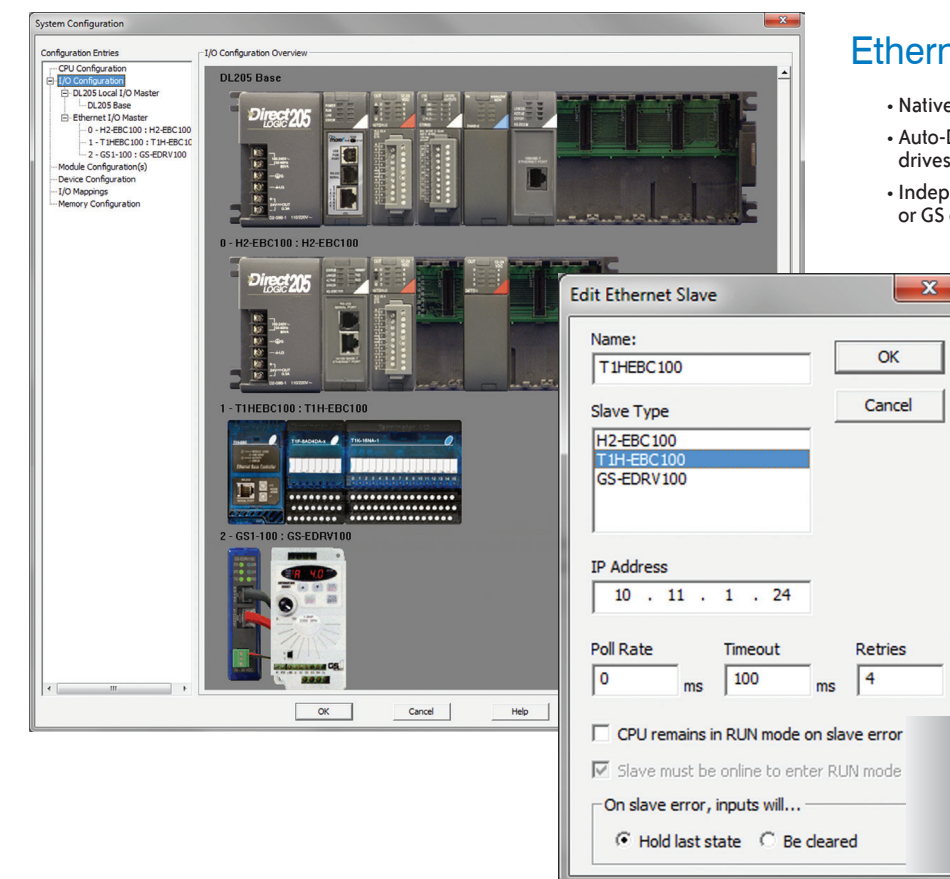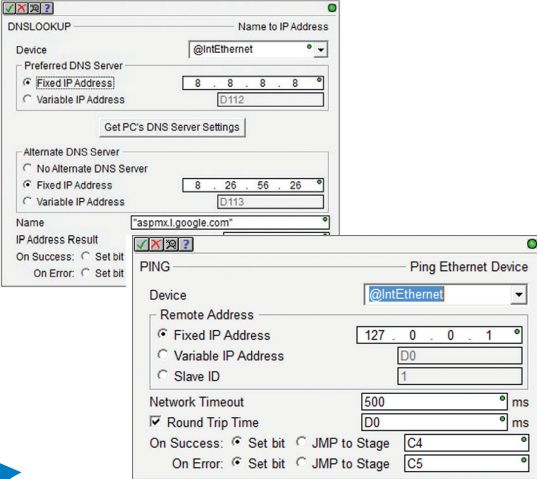
Configure 'critical' I/O so that the CPU will "drop out of run mode" if that I/O rack or GS drive disconnects for some reason.

Or allow the CPU to continue running using the last known values or cleared values.

Do-more with Ethernet I/O Diagnostics
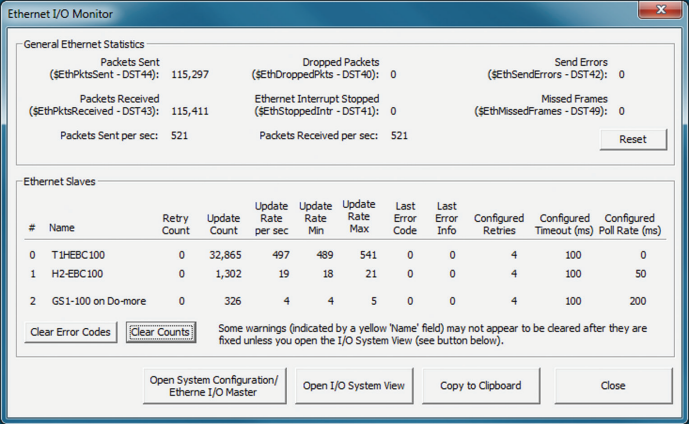
Instructions for DNS Lookup and Ping operations allow your ladder logic code to perform network-centric operations.

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.
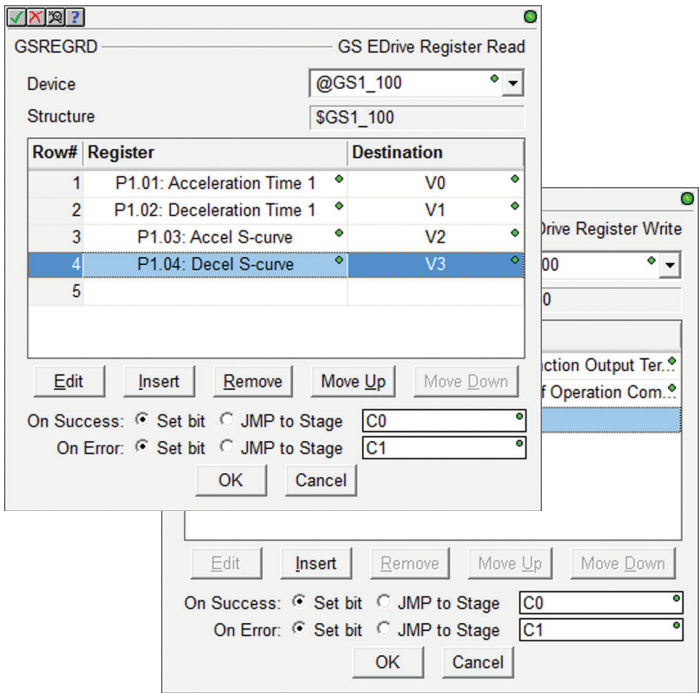
Two Extra Instructions for GS Drive Communications

- 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 High-speed I/O

High-speed operations

The H2-CTRIO2 module is capable of a wide variety of high-speed input and output operations. Many of these operations take place on board the module, and are independent of the scan time of your PLC. With flexible 4-channel input and separate output channel design, this module can satisfy high-speed counting, timing, and pulse catch operations, along with high-speed discrete output or several profile choices of pulse output operations. Not all combinations of input functions and output functions are possible within the resources of the module, but these examples are typical of the applications for this module.

$445.00

H2-CTRIO2

Counting & timing up to 250 kHz:

Four 250 kHz inputs, and two 20-250 kHz pulse train outputs

Inputs Supported:
- Counter
- Quad Counter
- Pulse Catch
- Edge Timer
- Dual Edge Timer

Outputs Supported:
- Pulse train - used for servo/stepper motor control. Configurable for CW/CCW or step and direction.
- Discrete outputs - assigned to Counter/Timer input functions
- Raw output - outputs controlled directly from the CPU interface program
- Programmable limit switch (H2-CTRIO2 only)

Improved to Do-more!

All your CTRIO2 configuration is done through the Do-more Designer Software - no more separate software "workbench". And if you should need to replace a high-speed module, all the setup parameters and profiles are stored in the CPU and are automatically loaded and ready to go when the system powers up.
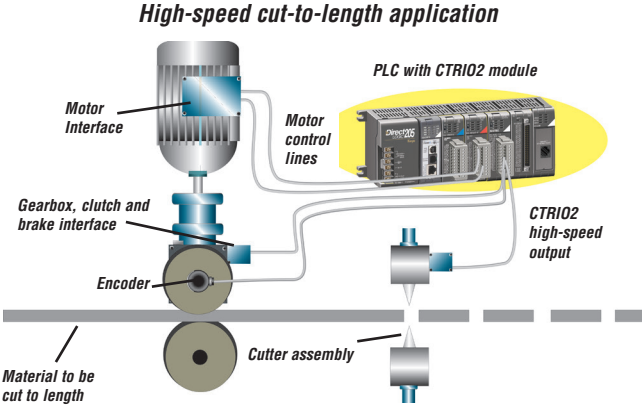
High-speed timing

The H2-CTRIO2 module can be configured for timing functions based on both count or rate. Using a common configuration of a proximity switch sensing the teeth on a gear, the module is able to calculate the velocity of the gear based on the rate at which it receives counts. This value can be scaled within the module to the engineering units required for the application.

PLC with CTRIO2 module

Gear

High-speed edge timing
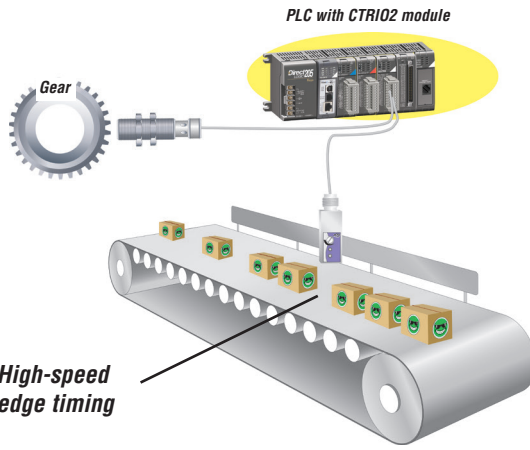
High-speed counting

The CTRIO2 module can be configured for counting functions via the use of an encoder input. Up to two quadrature encoders per CTRIO2 module are available with connections for external reset, capture and inhibit signals. In a simple cut-to-length application as shown below, the encoder provides an input position reference for the material to the module. The module's high-speed outputs are wired to the cutting device and to the clutch and/or braking device. When the count from the encoder is equal to a pre-programmed setpoint within the module, the high-speed outputs are activated to stop and cut the material to a repeatable fixed length. Additionally, the clutch/brake signal can be used as an inhibit signal so counts are not accumulated while the material is being cut.

High-speed cut-to-length application

PLC with CTRIO2 module

Motor Interface

Motor control lines

Gearbox, clutch and brake interface

Encoder

CTRIO2 high-speed output

Material to be cut to length

Cutter assembly

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 H2 series PLC, using the high speed pulse output mode on the CTRIO2 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 *Sure*Servo or *Sure*Step 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...

C-more Touch panel

www.sureservo.com

Rotary indexing liquid fill application

PLC with CTRIO2 module

Pulse output signals

Fill spout

Stepper or servo drive

Stepper motor inside housing

Circular turn table

The *Sure*Servo 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

AutomationDirect Do-more PLC with H2-CTRIO2 modules ($445.000) using pulse output feature
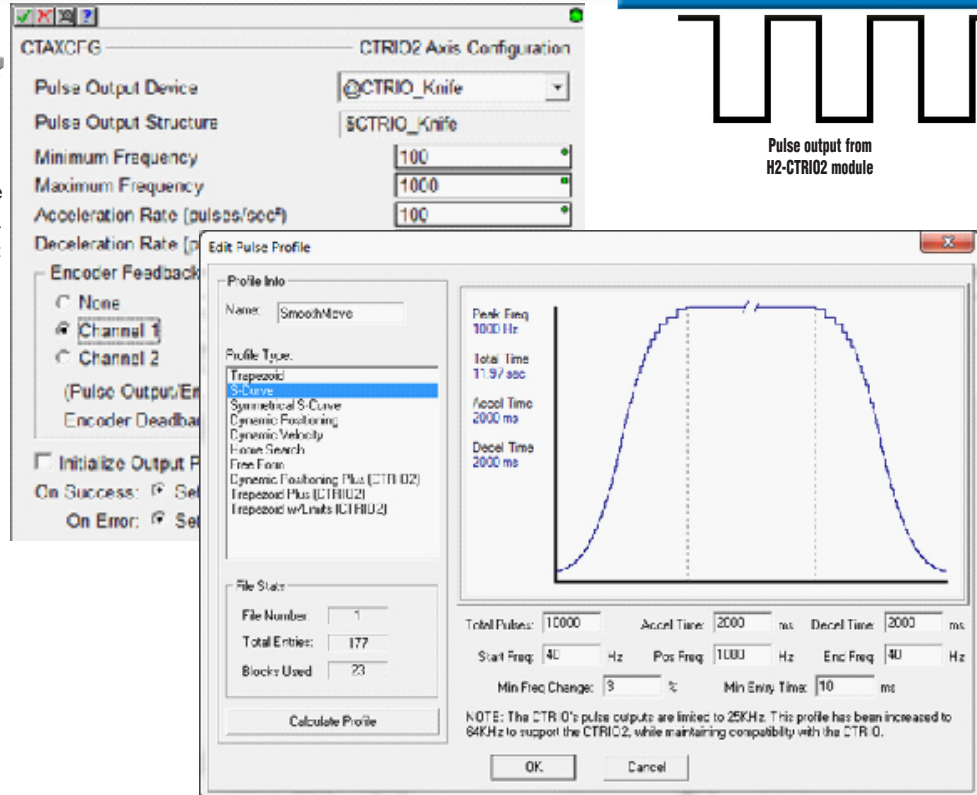
Pulse output from H2-CTRIO2 module

Familiar with H2-CTRIO?

If you've used our legacy 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
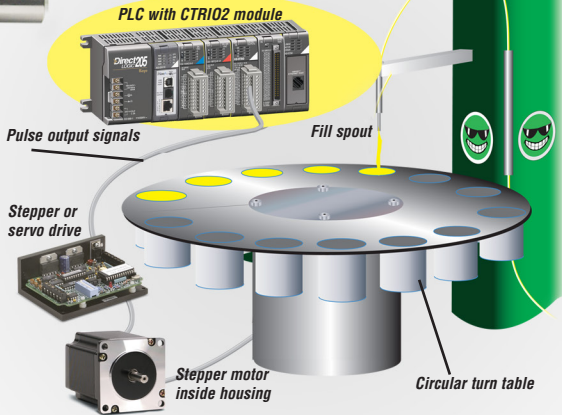
Download the free software today and see for yourself.

* Note: The Do-more H2 series PLC is compatible with both the H2-CTRIO2 and the legacy H2-CTRIO. With Do-more, 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.

For configuration, tuning and diagnostics, use the drive's integrated keypad/display or take advantage of the free *Sure*Servo 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.
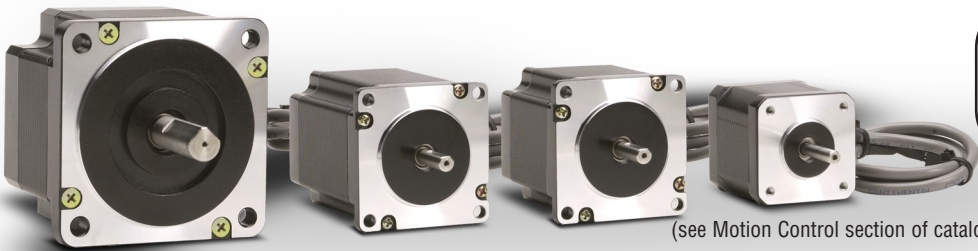
SureStep

Ease of use out of the box!

(see Motion Control section of catalog)

The *Sure*Step stepping family has twenty high-torque 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 61 to 1288 oz-in. A 20-foot extension cable with locking connector is a standard accessory to interface any of four stepping motors to the micro-stepping 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-moreplc.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.
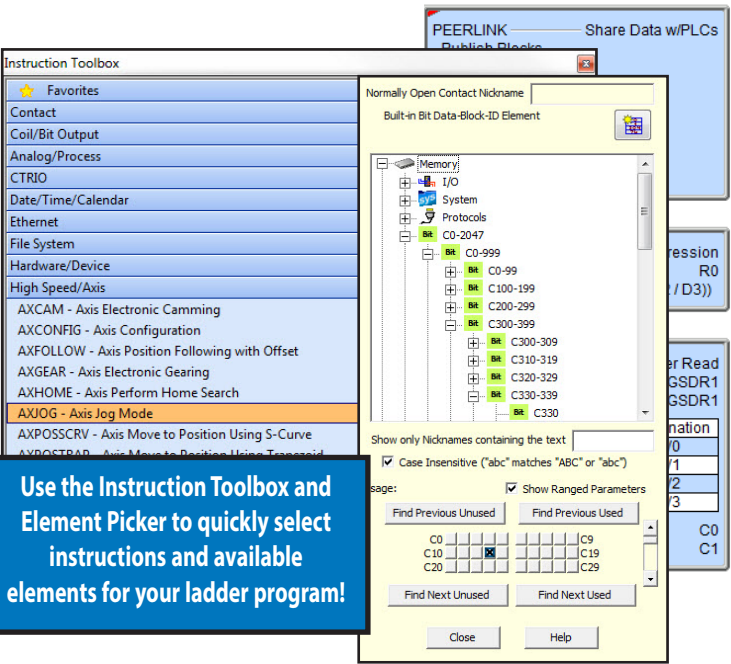
**Use the Instruction Toolbox and Element Picker to quickly select instructions and available elements for your ladder program!**

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.

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.
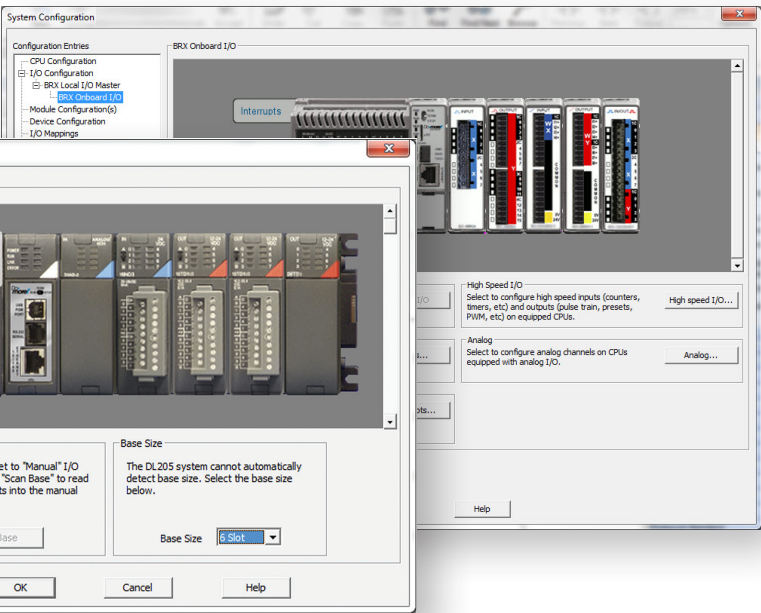
**FREE Software!
Download as often
as you need.
No license or key needed.
Click here to download.**

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.

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 up to 8 levels, plus:

- Ten 'real' functions, including natural log, 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.
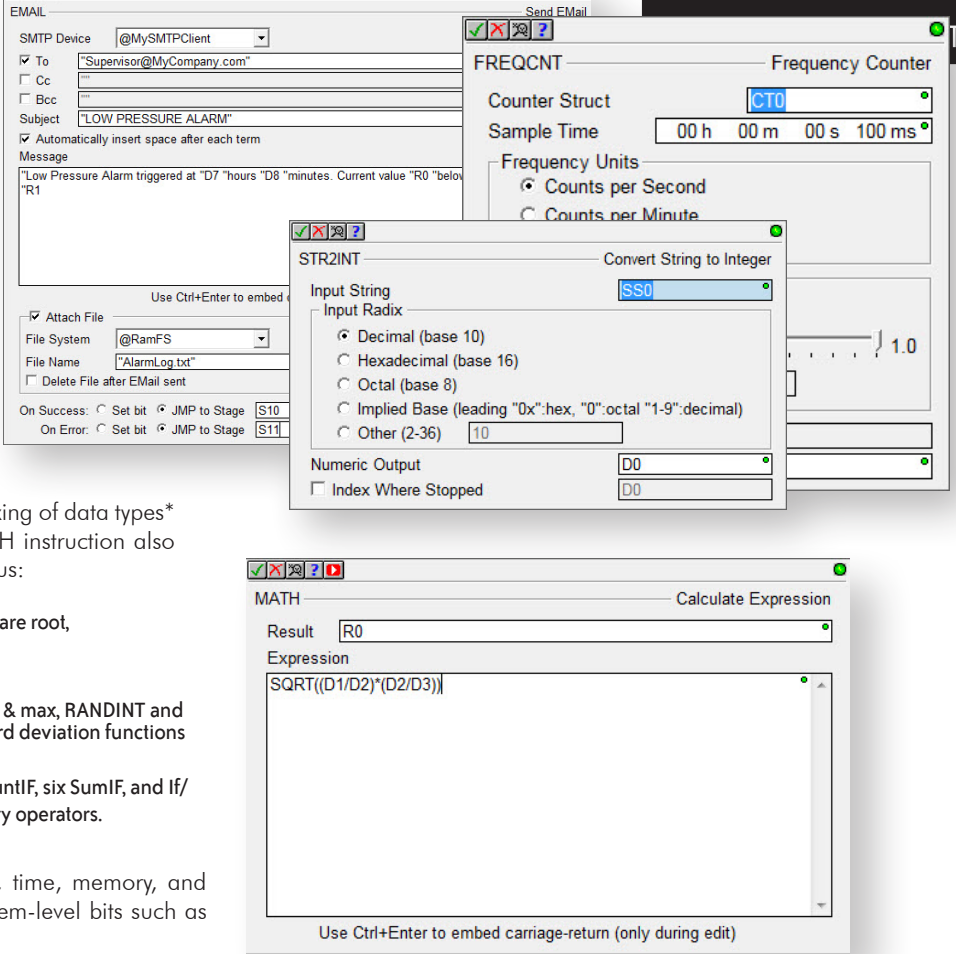
High-speed I/O and motion control: simplified

Dedicated instructions greatly simplify and improve the motion functionality of Do-more PLCs.

- 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.

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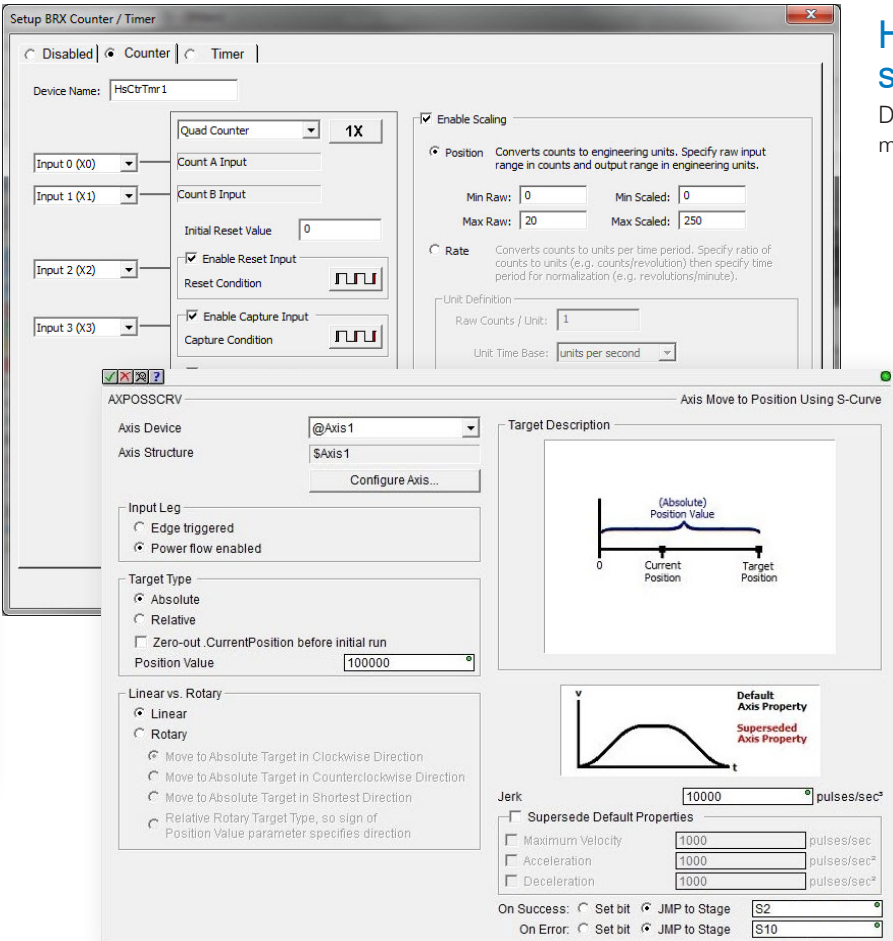
* Note about data types: integer and real types are really all you need but Do-more does include a few BCD and octal conversion instructions for legacy data types.

For the latest prices, please check AutomationDirect.com.   For the latest prices, please check AutomationDirect.com.

AUTOMATIONDIRECT.

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, RAMPSOAK, 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).
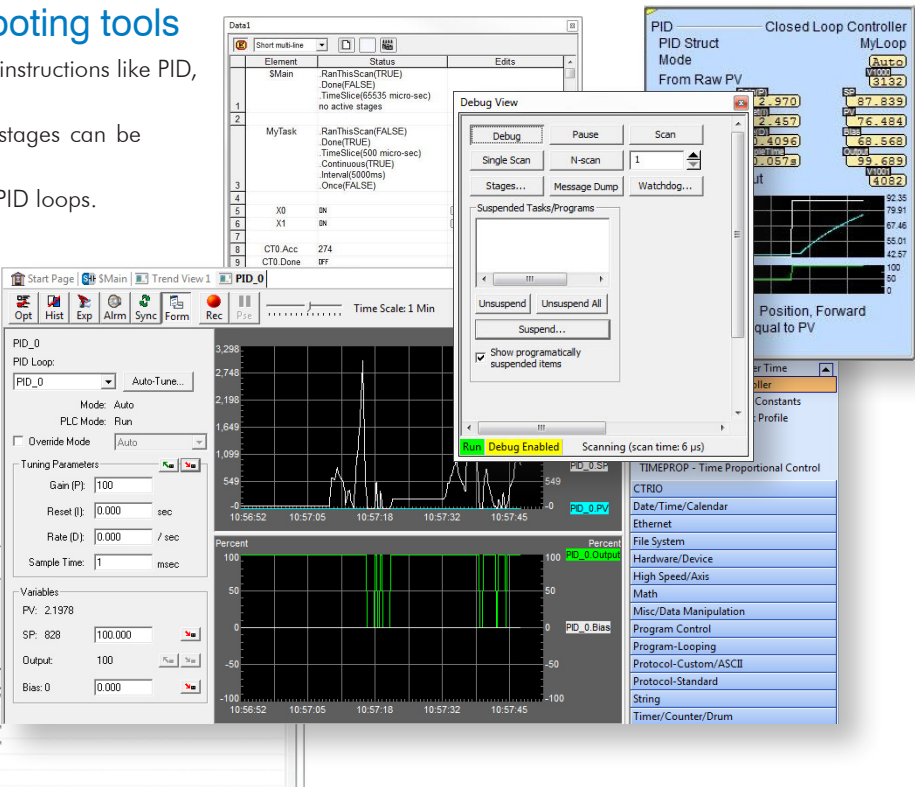
Flexible memory management capabilities

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 the 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.

What's so great about Do-more Designer?
Click to find out!
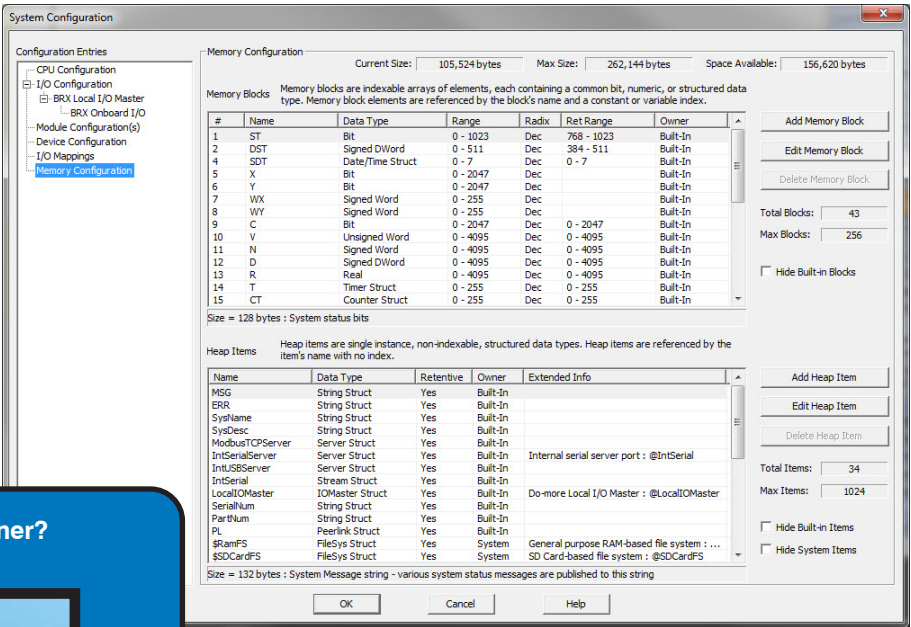
Organize your code with outstanding program management tools

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

Code can be broken up into Programs, Tasks, Subroutines and Interrupt Service Routines:

- Programs run based on events
- Tasks run when called; once, continuously, or at user-defined intervals
- Subroutines are called from other code blocks
- Interrupt Service Routines (ISR) are called when an interrupt trigger is activated

Code blocks can be suspended to isolate code; stages can be enabled or disabled.

Get flexible, powerful control over your program code execution:

- Assign code blocks to a fixed timeslice
- Define "yield points" for logical pauses
- Define priorities and order of execution

Convenient project browser

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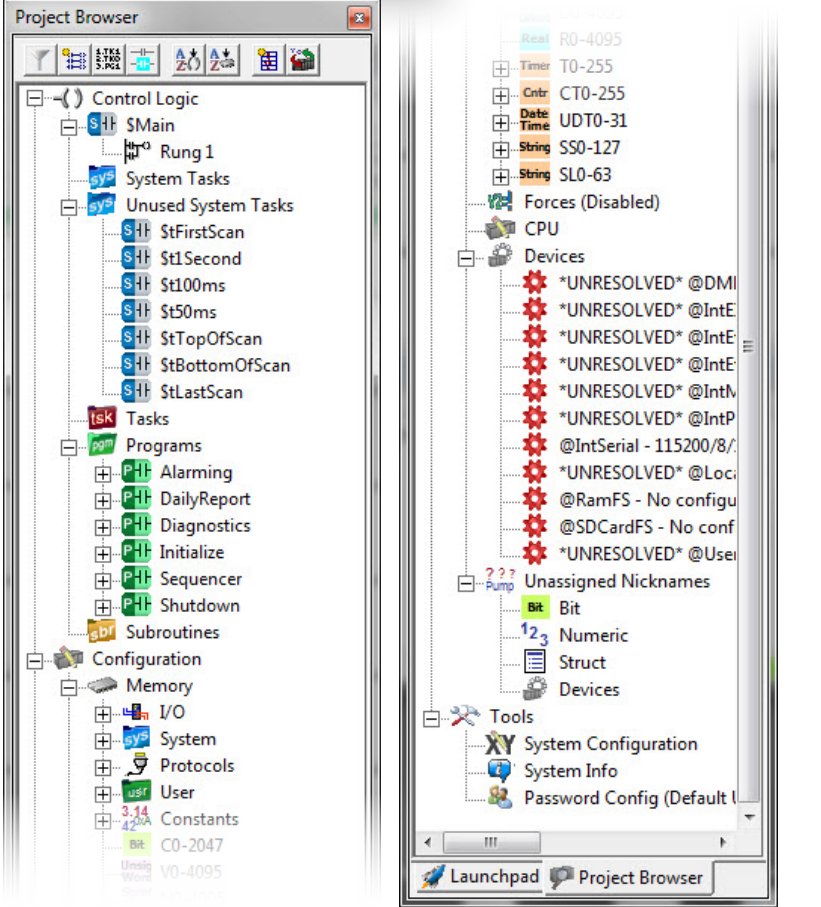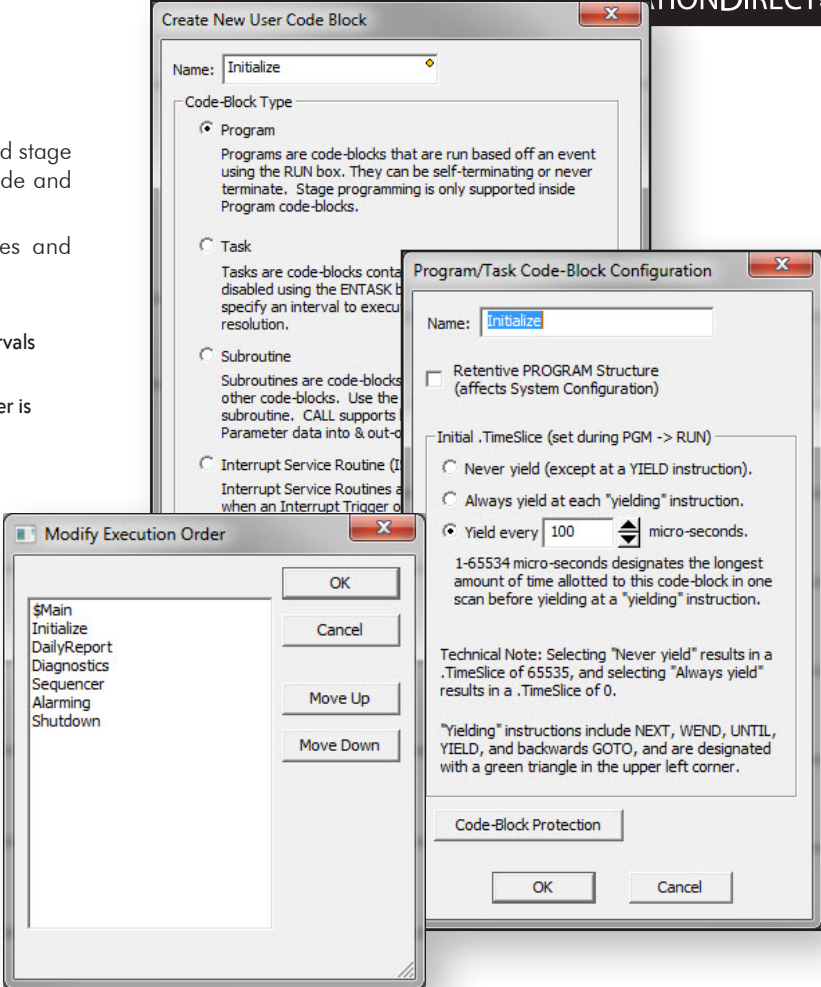
The Project Browser makes it easy to select the code block you want to view or edit. System tasks are predefined for many common actions. Jump directly to any part of your code with just a few clicks.

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.

'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-moreplc.com for more details on all the hardware and software features, and to view all of the informative videos.