DL205 - Cost-effective Micro Modular PLC

**What is it?**

The DL205 series PLC is a micro modular PLC that allows you to drastically lower your control system cost. This PLC has the necessary specifications to replace PLCs coating two to three times as much.

**What’s it got?**

The DL205 advanced CPU, the D2-262, offers 30.4K of total memory (15.8K of program memory) and can support up to 16,384 I/O points. The D2-262 has two built-in communication ports that, depending on the specifications of each, can support devices such as HMI, serial networks, remote I/O and ASCII devices. Its 280+ RLL (Relay Ladder Logic) and I/O functions give it the ability to be part of a large and powerful control system with a price that meets a tiny budget! Four base sizes with built-in power supply support 12/24 VDC, 110/220 VAC and 125 VDC (six and nine-slot only) power sources. Over 35 I/O and communication modules are available from discrete and analog to high-speed counter and Ethernet modules.

### DL205 CPU

**RLL (Relay Ladder Logic based) CPU**

D2-262 [H2D2-00] - 30.4K memory, maximum 16,384 I/O (also see Do-more section for new-generation CPU)

### AC input modules

**DC output modules**

D2-04T1 $103.00 4 pt. 12-24V sink, YA/pt
D2-08T1 $180.00 8 pt. 12-24V sink
D2-08T2 $186.00 8 pt. 12-24V source
D2-16T1 $152.00 16 pt. 12-24V sink
D2-16T2 $192.00 16 pt. 12-24V source
F2-16T1P $162.00 16 pt. 12-24 VDC sink
F2-16T2P $163.00 16 pt. 12-24 VDC source
D2-32T1 $183.00 32 pt. 12-24V sink
D2-32T2 $139.00 32 pt. 12-24V source

### AC output modules

D2-08A $165.00 8 pt. 18-220VAC
F2-08A $208.00 8 pt. 20-125VAC, high current
D2-12TA $209.00 12 pt. 18-110VAC

### Relay output modules

**Analog and Temperature modules**

**Related products include:**

- Industrial DIN-rail mountable Ethernet hub/switch
- ZIPLink connector modules - relay, fuse and LED options (see Wiring Solutions section)
- Connectivity to SureServe and SureStep motion products

**Available in the U.S. and Canada only**

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For the latest prices, please check AutomationDirect.com.
DL205

Reasons why the DL205 is an extremely practical PLC

1. 2-for-1 prices

Check out our prices on everything from I/O modules to bases and you’ll see that our everyday list prices are among the lowest in the industry. For instance, you can buy multiple D2-262 systems for the price of one Allen-Bradley’s CompactLogix CPUs. Will that help your budget?

2. Practical built-in communication includes easy-to-use ASCII instructions

Our D2-262 CPU, priced at $424.00, offers two built-in communication ports. The top port supports programming and operator interfaces. The bottom port supports the same, as well as ASCII input and output (bar code readers, label printers, scales, servo drives), Modbus RTU master/slave, and Remote I/O master. And our new CPU platform for DL205 hardware, Do-more, has even more practical ports onboard, such as Ethernet and a USB programming port. See the DMH catalog sections for details.

3. Practical communication

Many communication modules are available for DL205 PLCs, including Ethernet, DeviceNet, and a general purpose serial communication module that supports HMIs, programming, operator panels, Modbus RTU slave and DirectNET slave.

4. Practical counting/pulse

At $445.00, our high-speed countermodule (H2-CTRIO2) has four independently configurable timer/counter channels (up to 250 kHz) and two pulse output generators (up to 250 kHz). The easy-to-use configuration tool is included in our PLC programming software, so it’s a snap to integrate with your other applications.

5. Practical low-cost analog

Do you need up to 16-bit resolution, up to eight channels of input or output, combination, RTD or thermocouple modules? The DL205 PLC has it all. And many of our modules have selectable unipolar or bipolar voltage range options (0-5V, 0-10V ±5V or ±10V) too.

6. Super flexible coprocessor module

Create custom BASIC programs to interface to barcode readers, VF drives or other intelligent ASCII devices. The module comes with 128K memory, 26 MHz CPU and three independent communication ports.

7. Practical temperature sensing

The DL205 series features a four-channel thermocouple module (F2-04THM for $529.00) that is jumper-configurable for the nine most popular thermocouple types, as well as four common voltage ranges. The module comes with 128K memory, 26 MHz CPU and three independent communication ports.

8. High current modules

We offer high current relay modules that can support up to 10A per point.

9. Practical high-density modules and ZipLink connections

DL205 I/O modules offer a wide range of points per module including 4- pt., 8- pt., 12-, 16- pt. and 32- pt. modules. To help you wire them fast and inexpensively, ZipLink quick connection cables and terminal blocks allow you to connect PLC I/O modules to terminal blocks in seconds. These 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 Wiring Solutions section or check out our convenient ZipLink selector tool.

10. Auto-tune PID

Some of the traditional PLC companies require a separate ladder program for each PID loop and for loop scheduling. We make it automatic:

• Fill out a chart for alarm and ramp/speed
• Automatic loop scheduling
• Programming software includes the loop tune screen with trending (shown to the left)
• Loop auto-tuning, which allows the CPU to automatically determine the near-optimum loop settings

11. Local Expansion

In addition to remote I/O and Ethernet remote I/O, the DL205 family supports local expansion I/O! Up to four DL205 bases can be connected (30 meters total) to a local base that contains a D2-262 CPU. With expansion I/O, all bases are updated synchronously with each I/O scan for a deterministic system.
DL205 - Great Fit For On/Off Sequential Control

1. 2-for-1 prices on I/O
Our I/O prices are incredibly low. This gives the DL205 a cost advantage on small I/O systems as well as large systems. Over 19 discrete modules are available on the DL205 system, ranging from 4-point modules to 32-point densities. The price comparison table below shows a few examples of how our prices compare to the list prices of similar modules from another vendor.

2. Practical built-in communications includes ASCII in and out
The D2-262 CPU offers two built-in communication ports. Connect a text panel or touch panel to one port and a bar code reader or scale to the second port, or use any supported protocol for PLC networking.

3. Expands from 8 I/O to 16,384 I/O
The DL205 PLC family is highly expandable. Four base sizes can be connected via local expansion I/O, serial remote I/O and Ethernet remote I/O to create a system as large as 16,384 I/O addressed by a single D2-262 CPU.

4. Put I/O anywhere
Reduce your wiring cost by locating I/O near your field devices. Up to four expansion bases of I/O (all synchronously updated each scan) can be placed 30 meters total run from the local base. 100baseT Ethernet bases (H2.EBC100) can each be located up to 100 meters from a local base with an Ethernet Remote Master module (H2-ERM100). Fiber optic versions of these Ethernet modules allow this distance to be increased to 2,000 meters.

5. Great sequential instructions
Think of our drum instruction as a software emulation of a mechanical cam switch or a programmable limit switch. The rotation (steps) of the drum is controlled by time or events (inputs or control relays). As the drum sequences through the steps in your application, up to 16 preconfigured outputs/control relays change state. Drums are an efficient way to program sequential operations and our drums are made super easy to program with point and click editing.

6. RLL, /Box and RLL+ Programming
Our Relay Ladder Logic (RLL) incorporates /Boxes, intelligent modularized instructions, that perform simple to complex ladder logic. RLL+, or “stage” programming, incorporates instructions that allow you to break your program into “stages” or states of a flow chart. Stages may also help reduce your memory requirements and scan time.

7. High-density modules save space and money, and can be wired in seconds using ZIPLinks
The DL205 modules offer a variety of I/O density from four to 32 I/O points per module. These modules are small and can get cramped when wiring. Use ZIPLink products for fast and easy wiring, including feedthrough terminals, relay terminals, fuse terminals and LED terminals (good for high density inputs).

For the latest prices, please check AutomationDirect.com.
2-for-1 prices on analog I/O

Our analog I/O prices are very low. This allows the DL205 to be cost advantaged on small I/O systems as well as large systems.

Analog and temperature modules connect to almost any device.

The DL205 offers many analog modules, including thermocouple (16-bit) and RTD (16-bit). Our modules support a wide range of signals including 4-20 mA (sinking and sourcing), 0-5V, 0-10V, -5V to +5V, and -10V to +10V, allowing the DL205 PLC to connect to almost any device including pressure transmitters, proportional valves, AC drives, panel meters and more. Our 16-bit thermocouple module can also be configured to measure 16-bit input signals of -5 VDC to +5 VDC, 0-156 mv, -156 mv to +156 mv.

Built-in operator interface connectivity, device networking, and ASCII communications

The D2-262 offers two built-in communication ports. Connect a test panel or touch panel to one port and a bar code reader or scale to the second port. The bottom port also supports networking protocols such as DirectNET and Modbus RTU master/slave.

C-more panels for a low-cost window into your application

Our C-more panels have some great features for process applications, including Factory symbol library (2,000 bit mapped graphical symbols), PID faceplates, recipe download objects, meters, trend graphs, bar graphs, thumbwheel switch objects, data logging and more.

Built-in PID with auto-tune

The D2-262 with 16 built-in PID loops allows you to do PID control with ease. Some traditional PLC suppliers require a separate ladder program for each loop and for loop scheduling. We made it automatic! Key features include: fill-in chart for alarms and ramp/soak and automatic loop scheduling. The loop tune and trend software is included in our DirectSOFT programming package. The loop auto-tuning allows the CPU to automatically determine the near optimum loop settings.

Locate I/O anywhere

Reduce your wiring cost by putting the I/O next to thermocouples, sensors and other field devices by using expansion bases, remote bases, Ethernet remote bases and even fiber optic remote bases. Our analog and temperature modules work in all of these configurations.

For the latest prices, please check AutomationDirect.com.

For more information on DirectSOFT PLC programming software, see the DL Overview section.
Built-in communications to operator interfaces, PLC networking, and more

The D2-262 CPU offers two built-in communication ports that support a wide array of devices. The top port supports programming and operator interfaces. The bottom port on the D2-262 supports RS-232/422/485 networking, along with ASCII in/out, Remote I/O master and Modbus RTU master/slave. (With the D2-262 CPU you can connect this port directly to our GS series drives.)

Custom communication built by you

The F2-CP128 ($604.00) is a universal communication CoProcessor module. Create custom BASIC programs to interface to barcode readers, VF drives, or other intelligent devices with various protocols. (Write your own driver to a unique serial device.) Comes with 128K memory, 26 MHz CPU and three independent communication ports. Two ports support master/slave RS-232/422/485 and the third supports RS-232.

Industrial Ethernet switches for more deterministic communications

You can use most off-the-shelf Ethernet hubs or switches with our Ethernet communication products. However, we wanted to offer industrial Ethernet switches that would make your communications easy to set up and extremely reliable. The STRIDE series of switches are DIN-rail mountable and are powered by 24 VDC. Use them to connect our DL205, DL405 or Terminator I/O and our GS1 and GS2 drives via our Ethernet drive card (GS-EDRV100), all on the same network.

Telephone modem support

AutomationDirect offers an industrial telephone modem (MDM-TEL) that allows access to PLC data and programs via a telephone line. The rugged industrial telephone modem can be tricky, but it can connect our PLCs. Connecting telephone modems to PLCs can be tricky, but the industrial telephone modem can be hooked up in seconds. The modem allows for remote PLC programming (use our DirectSOFT programming package over the phone), long distance PLC-to-PLC communications, and PLC data reporting to a PC HTML.

Built-in ASCII

The D2-262 CPU supports ASCII input and ASCII output. We designed powerful fill-in-the-blank instructions that are used within your RLL program to allow easy communication to or from ASCII devices.
DL205 - Handles Simple Data Acquisition and Supervisory Control

3-for-1 prices makes the DL205 a low price leader

Data acquisition systems often require many data points to be collected. This may include dozens, hundreds or perhaps thousands of discrete, analog or temperature inputs. This type of system can be extremely expensive with traditional PLCs or SCADA (Supervisory Control and Data Acquisition) systems. Previous pages describe how you can often buy two or three DL205 I/O modules (discrete and analog) for the price of one module from some traditional suppliers. Add data acquisition software and you can afford to do more when using AUTOMATIONDIRECT.

High-speed, low-cost Ethernet connects I/O and VFDs

The DL205 supports a wide range of Ethernet-based products for connecting additional field I/O (our Terminator I/O, DL205 I/O, DL405 I/O) or even variable speed drives to your monitoring or control system. All of our Ethernet products are priced so you can take advantage of Ethernet for almost any application.

Program our PLCs and touch panels over Ethernet

Our DL205, DL405 systems and C-more panels can be programmed over an Ethernet network. This feature is built into our standard low-cost programming software packages for those products.

High-speed Ethernet links PLC systems to a supervisory system

Use off-the-shell Ethernet switches to communicate between multiple PLCs (peer-to-peer between PLCs) and a supervisory system. We offer the STRIDE series of industrial Ethernet switches for deterministic requirements.

For simple data logging, DataWorx (see www.bizwaredirect.com) easily connects the DL205 via Ethernet to standalone PLCs or network servers. Collect data without the need for special PC programming or any 3rd party HWX, SCADA, or DAQ software application.

Locate operator panels anywhere

Multiple serial communication ports available on our PLCs and optional Ethernet capabilities allow you to locate operator panels near the operator.

Locate I/O anywhere

Reduce your wiring cost by placing I/O near your field devices. Up to four expansion bases of I/O (all synchronously updated each scan) can be placed up to 30 meters from the PLC CPU base. High-speed 100baseT Ethernet bases (H2-ERM100) can be located up to 100 meters from a local base with an Ethernet remote master module (H2-ERM100). Fiber optic versions of these Ethernet modules increase the distance to 2,000 meters. Serial remote I/O bases can be located up to 1,200 meters (at 19.2 Kbaud) from the local base. All of these remote bases support the DL205’s discrete, analog and temperature modules.

For the latest prices, please check AutomationDirect.com.
The DL205 PLC family offers two different modules for applications that require counting and pulse output features. Read on to see which module best fits your application needs.

**The DL205 - Cost-effective Counting and/or Pulse Output**

**The D2-CTRINT offers:**

- One 5 kHz up/down counter or quadrature input
- Two 5 kHz high-speed counters
- Programmable pulse output with external interrupts and separate acceleration and deceleration profiles for positioning and velocity control (5 kHz pulses max per second)
- Four external interrupt inputs for immediate responses to tasks
- Pulse catch feature allowing the CPU to read four inputs, each having a pulse width as small as 5μs
- Programmable filters for reading up to 4 input signals to ensure input signal integrity

Limitations: For $150.00 there are some limitations. Most often, this module can be used for only one of the functions listed. It cannot use the pulse output and counter features together to control a stepper motor. Some features are not available when used with certain DL205 CPUs. Only one D2-CTRINT module can be used per system and it must be placed in the I/O slot next to the CPU. All programming is done through RLL logic.

**High-performance counting and pulse output with fill-in-the-blank software**

The DL205 high-speed counter module (H2-CTRIO2) is priced at $445.00 and is our high-performance, high-feature offering for counting and pulse output. This module comes with a software utility that makes configuring the module as simple as clicking on features and filling in the blanks. No ladder logic is needed to operate this as a counter module, although you may use some RLL to coordinate your PLC program.

Key features include:
- Two 250 kHz quadrature encoder inputs or four single-channel 250 kHz high-speed counters (32-bit count range for +/-2.1 billion counts)
- Two programmable pulse outputs that support numerous profiles including Trapezoid, Velocity, S-curve, or program-controlled Dynamic Positioning or use these outputs as four discrete isolated outputs for responding to counter presets (128 presets)
- Pulse catch feature (allows the module to read four inputs, each having a pulse width as small as 5μs)
- Programmable filters for reading up to four input signals to ensure input signal integrity
- Can use multiple modules in local DL205 base (any slot except slot 0)

Limitations: All input functions or all output functions can not be done simultaneously. Counting and pulse out can be done simultaneously, however, the module does not internally support closed loop control.

For the latest prices, please check AutomationDirect.com.
Here’s why
There are many process applications that require accurate motion control at a fast pace, without expecting exact precision and blazing speed. The DL205 PLC, with the counter/pulse output modules’ high-speed counting capability and high-frequency pulse output (H2-CTRIO(2)), offers a viable stepper and servo control solution for open-loop motion control.

Here’s how
When coupled with our SureServo or SureStep motion products, the resulting system is extremely cost-effective. A DL205-based motion control system is very well-suited to applications such as:
- cut-to-length
- indexing tables or conveyors

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 100 W to 3 kW
- Use with DirectLOGIC PLCs or any other host control
- Drives feature on-board indexer and adaptive tuning modes
- Free set-up software
- 30-day money-back guarantee
- 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.

The SureStep stepping family has twenty high-torque 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 24 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 the stepping motors to the microstepping drive, and can be easily cut to length if desired.

www.automationdirect.com/dl205
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DL205 PLCS

mDL2-17
DL205 PLCS